

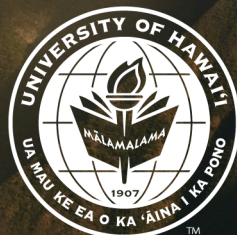
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STATE EPIDEMIOLOGICAL PROFILE 2025

YOUTH SUBSTANCE USE TRENDS IN HAWAII'

by Sex and
Psychosocial Risk
Factors

2021 & 2023



State Epidemiological Profile 2025: Youth Substance Use Trends in Hawai‘i by Sex and Psychosocial Risk Factors, 2021 & 2023

State Epidemiological Outcomes Workgroup (SEOW)

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The findings and opinions presented in this epidemiological profile are those of the authors and do not necessarily represent the views of the sponsoring or partnering agencies.

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Executive Summary

Background & Purpose of the Report

The purpose of this epidemiologic profile is to support the goals of the Strategic Prevention Framework - Partnerships for Success (SPF-PFS) program for the state of Hawai‘i. In partnership with the Alcohol and Drug Abuse Division (ADAD) at the Hawai‘i State Department of Health (DOH) and funded by the Substance Abuse and Mental Health Services Administration (SAMHSA), the SPF-PFS aims to support the development and implementation of comprehensive, evidence-based prevention efforts. Using data driven processes, it seeks to address locally identified priorities, enhance protective factors, reduce risk factors, and build prevention capacity. In alignment with these goals, this profile focuses on trends of substance use among Hawai‘i high school students by sex and psychosocial risk factors. Understanding these trends is imperative for informing effective prevention strategies and efforts to reduce harms among youth, for whom substance use can have long-term impacts on health and well-being.

Data Source

This profile reports 2021 and 2023 data from the Hawai‘i Youth Risk Behavior Survey (YRBS). The YRBS is a biennial survey administered to public middle and high school students that assesses demographic characteristics and health risk behaviors. It uses stratified random sampling methods and data are weighted by demographic characteristics.

This Year’s Profile in Context

This year’s epidemiological profile builds on the 2024 report, which provided a broad statewide overview of alcohol, nicotine, and cannabis use trends in Hawai‘i across age groups, priority populations, and geolocations. The current report focuses specifically on public high school students in Hawai‘i and examines differences by sex, as well as key psychosocial, behavioral, and adverse experience risk factors, using pooled 2021 and 2023 Hawai‘i YRBS data.

Data Summary

Key findings on patterns of substance use among Hawai‘i public high school students in 2021 and 2023 are summarized below. Results that are not statistically significant should be interpreted with caution, as these can reflect data variability or small sample sizes.

Substance use trends overall

- The most common pattern of substance use was current alcohol use (15.4%), followed by current e-cigarette use (13.1%) and current cannabis use (12.6%). Current prescription drug misuse was reported by 6.7% of students, and lifetime methamphetamine use by 1.6%.

- Combustible cigarette use was low overall, while current e-cigarette use was more prevalent among Hawai‘i public high school students, consistent with broader youth nicotine trends.
- Co-use of two substances (involving combinations of alcohol, e-cigarette and cannabis) was reported by about 7% of students, and poly-substance use of alcohol, e-cigarette, and cannabis by about 5%.

Substance use trends by sex

- Female students had *significantly* higher adjusted prevalence of current alcohol use, current e-cigarette use, and lifetime prescription drug misuse compared to male students. Female respondents also had higher prevalence estimates for current binge drinking, cannabis use, and prescription drug misuse, although these differences were not statistically significant.
- Female students had higher adjusted prevalence of every pattern of co- and poly-substance use, though none were statistically significant.
- Combustible cigarette use was slightly higher among male students, but this difference was also not statistically significant.

Substance use trends by behavioral, psychosocial, and adverse experience risk factors

- The three mental health indicators (past-year depression, self-harm, and suicidal thoughts) were associated with significantly higher adjusted prevalence estimates across every pattern of substance use.
- Students who reported early alcohol initiation, driving under the influence or riding with someone who had used alcohol or drugs, food insecurity, bullying, skipping school due to safety concerns, sexual abuse, or forced sex exhibited significantly higher adjusted prevalence across every substance-use outcome (except bullying with methamphetamine). Conversely, usually sleeping at home was associated with significantly lower adjusted prevalence of every pattern of use.
- Methamphetamine estimates were more variable due to sparse data.

Conclusions

- Disparities in youth substance use emerged, with female students and students with psychosocial risk factors reporting greater prevalence of use across a number of the substance use patterns. State-level substance use trends by sex and risk factors should inform prevention efforts, public health decision-making, and policy efforts in Hawai‘i.

Introduction

Adolescent substance use has generally declined over the past two decades, with a sharp decrease during the COVID-19 pandemic followed by a return toward pre-pandemic levels (Hoots et al., 2023; Ross et al., 2024; Centers for Disease Control and Prevention [CDC], 2024; Miech et al., 2025). However, patterns of adolescent substance use prevalence vary by sex. In recent years, sex differences in youth substance use have narrowed, with female youth reporting prevalence comparable to or higher than that of male youth for some substances and age groups. National data indicate that female adolescents report similar or higher prevalence of alcohol use and prescription opioid misuse, while sex differences in cannabis use are smaller and variable (Bhatia et al., 2023; Yang et al., 2024). In contrast, although use of conventional tobacco products (e.g., combustible cigarettes and cigars) has declined substantially overall, male adolescents continue to report higher prevalence (Miech et al., 2025; Singh et al., 2016). At the same time, despite fewer adolescents overall reporting substance use, evidence suggests that patterns of use have become more frequent and intense among those (particularly vulnerable subgroups) who use substances (Harris & Weitzman, 2024). In Hawai‘i, statewide surveillance data reflect similar patterns, including narrowing sex differences in youth substance use and higher prevalence among female youth for some substances (Hawai‘i Health Data Warehouse, 2025). Therefore, despite overall declines in adolescent substance use, persistent sex differences highlight opportunities to further tailor prevention strategies to groups experiencing higher prevalence. Given that adolescence is a critical period for substance initiation and longer-term use trajectories, understanding substance use differences by sex and across key psychosocial and behavioral factors is essential for informing targeted prevention and early intervention strategies in the state.

In the present report, we examined patterns of substance use among Hawai‘i high school students in 2021 and 2023, focusing on single use along with patterns of co-use and poly-use of alcohol, e-cigarettes, and cannabis. We also examined prescription medication misuse and methamphetamine use, which are less prevalent. The main factor in our analysis was sex assigned at birth (male and female). Sex refers to the classification of individuals as male, female, or intersex based on biological and physiological characteristics. In contrast, gender refers to a spectrum of socially determined norms, roles, and expectations. Gender interacts with, but is distinct from, sex (World Health Organization, n.d.). While our indicator captured self-reported sex assigned at birth rather than gender identity, observed differences likely reflect both biological and gender-related influences. In addition to sex, we report differences in substance use patterns across key psychosocial, behavioral, and adverse-experience factors.

Alcohol

Overall, alcohol use rates have trended downward among adolescents (8th-12th graders) since the late 1990s (Miech et al., 2025). While historically more prevalent among male adolescents,

recent studies indicate a trend of greater prevalence of alcohol use and binge drinking among female adolescents (SAMHSA, 2023; Bhatia et al., 2023; Hoots et al., 2023). This change in prevalence has been attributed to a faster decrease in male students' alcohol use compared to a slower decrease among female adolescents (Keyes et al., 2019, 2022; White, 2020). Adolescents who initiate alcohol use in high school progress to binge and high-intensity drinking (Patrick et al., 2023), with female adolescents demonstrating a faster progression from initiation to first binge drinking episode than male adolescents (Cheng & Anthony, 2018). However, age and co-use of alcohol with other substances can influence these trends. Moreover, as some of these trends have shifted in recent years, mixed findings have been observed. For example, according to recent Monitoring the Future (MTF) data, binge drinking was more prevalent among male 12th grade students than their female counterparts (Miech et al., 2025).

Cannabis

Among youth, cannabis use has remained constant from 2013 to 2019 and 2021 to 2022 (Mattingly et al., 2024). Similar to alcohol, this trend varies when accounting for the use of other substances. Among 12th grade students, for example, the prevalence of cannabis use alone (i.e., without reported past-year alcohol use) more than doubled between 2011 and 2019 (Keyes et al., 2022). As with alcohol, a reversal of sex/gender trends has been observed nationally. In 2021 and 2023, cannabis use was higher among female high school students than male (Hoots et al., 2023; CDC, 2024), whereas in 2011, male high schoolers reported more prevalent cannabis use (Yang et al., 2024). Unlike alcohol, this national trend in prevalence appears to be driven by a faster increase in female adolescents' cannabis use compared to slower increase among male adolescents (Keyes et al., 2022). Various studies have pointed to recreational legalization in some U.S. states in relation to the increase in cannabis consumption among female youth (Matheson & Le Foll, 2023; Brooks-Russell et al., 2019; Paschall et al., 2021). The transition from cannabis initiation to more frequent use patterns following initial use may also be differentiated by sex, where female adolescents may be at higher risk of cannabis initiation at younger ages than their male counterparts (Buu et al., 2014) and experience a faster transition from cannabis initiation to regular cannabis use (Schepis et al., 2011).

Nicotine

The prevalence of tobacco use nationwide, declining overall since 2000, appears consistently higher among male than female adolescents (Miech et al., 2025; Bhatia et al., 2023; Singh et al., 2016), though the gap is narrowing (Rahilly & Farwell, 2007). Male adolescents are at higher risk of initiating combustible cigarette use at earlier ages than female adolescents (Pérez et al., 2021) with a stronger association between e-cigarette and combustible cigarette use among the former (Duan et al., 2021). Conversely, women have higher rates of smoking initiation in late adolescence and adulthood compared to men, and more significant health risks (Thompson et al., 2015). While conventional tobacco product use has decreased, there has been a corresponding increase in the prevalence of e-cigarette use (Singh et al., 2016), the most commonly used

nicotine product among U.S. youth (Jamal et al., 2024). E-cigarette use also appears to have shifted from higher use among male youth to higher use among female youth (Kong et al., 2017; Miech et al., 2025). In 2024 MTF data, vaping nicotine (past-month, past-year, and lifetime) was more prevalent among female 8th, 10th, and 12th graders than male (Miech et al., 2025). Others have confirmed a reversal in sex trends of e-cigarette use in recent years, documenting that female high school students report more prevalent use (Seidenberg et al., 2024; Steeger et al., 2025). Meanwhile, oral nicotine pouches (ONPs), the second most common nicotine product among youth after e-cigarettes, are disproportionately used by male youth (Jamal et al., 2024; Miech et al., 2025). However, a number of the national surveys do not ask about ONP usage.

Poly-substance Use of Alcohol, Cannabis, and Nicotine

Poly-substance use (or poly-use), the combined or contemporaneous use of substances, is common among secondary school students (Hoots et al., 2023), particularly of the three most commonly used substances (i.e., alcohol, cannabis, and nicotine). Findings regarding sex/gender differentiation of poly-use are varied and sometimes conflicting (Goodwin et al., 2022). Current poly-use of nicotine, cannabis, and alcohol has been shown to be more prevalent among male youths aged 12-18 (Banks et al., 2017) and male high school students (Gilbert et al., 2021), as has past-year poly-use among male youths aged 15-17 (Silveira et al., 2019). One study using 2017 BRFSS data found that poly-use was highly prevalent among high schoolers who used e-cigarettes, which were most often combined with alcohol and more prevalent among male students (Gilbert et al., 2021). Others have documented more prevalent alcohol-cannabis co-use among male 12th graders than their female counterparts (Patrick et al., 2017, 2019) as well as a more rapid decline in alcohol-cannabis co-use among male 12th graders (Keyes et al., 2022). Another study found no gender differences in alcohol-cannabis co-use among detained youth aged 12-18 (Banks et al., 2019). For other categories of co-use (nicotine-cannabis, nicotine-alcohol), findings are mixed as to whether male youth have more prevalent co-use (Banks et al., 2017; Lozano et al., 2021; Kim, 2021) or there are no differences by sex (Purcell et al., 2020). A study analyzing NSDUH data from 2011-2014 found that male adolescents were more likely to be in every co-use topology (i.e., every combination of alcohol, cigarettes, and cannabis) (Banks et al., 2017); conversely, another study found that male and female adolescents were equally likely to be in each co-use group of alcohol, cigarettes, and cannabis from 2009-2011 (Purcell et al., 2020).

Illicit & Prescription Substances

Illicit substances, excluding cannabis, have also trended downward over recent decades, with a near record low in 2024 among high school students (Miech et al., 2025). While illicit substance use, especially heavy use, continues to be greater among male adolescents (Miech et al., 2025), some longstanding sex/gender trends have been mixed. In 2019 and 2021, illicit drug use was higher among male adolescents, but prescription opioid misuse was higher among female adolescents (Bhatia et al., 2023; Hoots et al., 2023). In 2024 MTF data, male 12th grade students

had higher annual prevalence of every illicit substance, including methamphetamine, compared to female students; however, in 8th grade, female students had higher prevalence of any illicit drug and amphetamine use (Miech et al., 2025). Additionally, female adolescents had more prevalent lifetime inhalant use in 2021, while their use of heroin and injection drugs was lower than male adolescents' (Hoots et al., 2023). Of note, even while adolescent illicit substance use has declined, patterns of problematic use have varied: For instance, opioid use disorder surged from 2016 to 2022 (Hermans et al., 2023) and unintentional opioid overdoses rose from 2019 to 2020 (primarily due to fentanyl contamination; Tanz et al., 2024).

Overall decreases in adolescent substance use are thus overlaid with evolving trends by sex. This points to a heightened need to monitor patterns of poly-substance use, and risk factors for use, with attention to sex and gender dynamics.

Methods & Data Considerations

Data Source

This report utilized pooled cross-sectional 2021 and 2023 high school data from the Hawai'i Youth Risk Behavior Survey (HI-YRBS). The HI-YRBS is a biennial statewide survey that monitors health-related behaviors among public middle and high school students. For this report, we have focused on high school survey respondents. The HI-YRBS is a joint effort between the Hawai'i State Department of Education (DOE), Hawai'i State Department of Health (DOH), the University of Hawai'i College of Education, and the Centers for Disease Control and Prevention (CDC). For the current report, data from the HI-YRBS were obtained via a data request and agreement with the Hawai'i DOH and DOE. Data from 2021 and 2023 were combined to increase sample size and provide more stable estimates. Pre-pandemic data (≤ 2019) were excluded to avoid comparing structurally different pre- and post-COVID conditions. However, COVID-19 disruptions likely created varying substance use patterns across the post-onset years.

Sampling and Weighting

The YRBS employs a two-stage stratified sampling design to generate a representative sample of students in grades 9-12. Survey weights are applied to account for the probability of selection at each sampling stage, adjust for nonresponse, and align the sample with the statewide distribution of students by grade, county, sex, and race and ethnicity. As a result, all estimates reflect population-level proportions rather than raw sample counts. In accordance with CDC guidelines for combining YRBS cycles, pooled sampling weights were created by dividing each single-year weight by two, the total number of survey years combined (2021 and 2023; CDC, 2023). Additional information on YRBS sampling and administration is available from the Hawai'i Health Data Warehouse (<https://hhdw.org/data-sources/youth-risk-behavior-survey/>) and CDC (<https://www.cdc.gov/yrbs/index.html>).

Measures and Definitions

Definitions for all substance use indicators and psychosocial or behavioral factors are provided in **Table 1**. All substance use outcomes were self-reported and included:

- Past 30-day alcohol use, binge drinking, cigarette use, e-cigarette use, cannabis use, and prescription drug misuse
- Past 30-day co-use of two of the following substances: alcohol and e-cigarettes, alcohol and cannabis, or e-cigarettes and cannabis
- Past 30-day poly-substance use of all three: alcohol, e-cigarette and cannabis
- Lifetime prescription drug misuse
- Lifetime methamphetamine use

Although YRBS uses the term “marijuana” for survey questions, we use the standard term cannabis in this report. Throughout the profile, current use refers to past-30 day use. For co- and poly-use measures, combustible cigarette use was excluded due to its low overall prevalence in the sample, whereas e-cigarettes were included as the more prevalent nicotine product among youth. Co- and poly-substance use denote the use of two or more substances in the same time period. This can include coadministration or simultaneous use (on the same occasion or delivery system), sequential use (one substance after another), and concurrent use (different days within the same time period, e.g., 30-day period). For this profile, limitations of survey questions resulted in insufficient detail to differentiate between these types of co-use; we were only able to determine that two or more substances were used within the same 30-day period.

Self-reported psychosocial, behavioral, and adverse-experience risk factors examined in relation to substance use included: depressive symptoms, self-harm, suicidal thoughts, bullying (in school or online), skipping school due to safety concerns, food insecurity, early alcohol initiation, riding with a driver who had used alcohol or drugs, sexual abuse, forced sex, poor grades, and usually sleeping at home (protective factor).

Table 1. Definitions of Substance-Use Outcomes and Psychosocial, Behavioral, and Adverse-Experience Variables

Substance Use Indicator	Definition
Alcohol Use	Drinking alcohol on at least one day during the past 30 days
Binge Drinking	Having four or more drinks of alcohol in a row (if female) or five or more drinks in a row (if male), within a couple of hours, on at least one day during the past 30 days
E-cigarette Use	Use of an electronic vape product on at least one day during the past 30 days
Cigarette Use	Smoking combustible cigarettes on at least one day during the past 30 days
Cannabis Use	Using cannabis/marijuana on at least one day during the past 30 days

E-cigarette & Cannabis Co-use	Reporting both e-cigarette and cannabis use during the past 30 days
E-cigarette & Alcohol Co-use	Reporting both e-cigarette and alcohol use during the past 30 days
Cannabis & Alcohol Co-use	Reporting both cannabis and alcohol use during the past 30 days
Poly-substance Use	Reporting use of all three in the past 30 days: alcohol, e-cigarette, and cannabis
Prescription Drug Misuse (Current)	Taking prescription pain medicine without a doctor's prescription or differently than directed, on one or more occasions during the past 30 days
Prescription Drug Misuse (Ever)	Ever taking prescription pain medicine without a doctor's prescription or differently than directed (including drugs such as codeine, Vicodin, OxyContin, hydrocodone, or Percocet), one or more times during their life
Methamphetamine Use (Ever)	Ever using methamphetamines (also called "speed," "crystal meth," "crank," "ice," or "meth"), one or more times during their life
Psychosocial, Behavioral, and Adverse Experience Variables	Definition
Depression	Having felt so sad or hopeless almost every day for two weeks or more in a row that usual activities were stopped at any time during the past 12 months
Self-Harm	Having purposely hurt oneself without wanting to die (such as cutting or burning) one or more times during the past 12 months
Suicidal Thoughts	Having seriously considered attempting suicide during the past 12 months
Bullying	Having been bullied on school property or electronically (for example, through texting, Instagram, Facebook, or other social media) during the past 12 months
Skipping School (Safety Concern)	Having not gone to school on one or more of the past 30 days because of feeling unsafe at school or on the way to or from school
Sexual Abuse	Having experienced sexual violence (forced kissing, touching, or intercourse) by anyone during the past 12 months
Forced Sex (Ever)	Having ever been physically forced to have sexual intercourse when they did not want to
Food Insecurity	Having most of the time or always gone hungry because there was not enough food at home during the past 30 days
Slept at Home (Mostly)	Having usually slept in a parent's or guardian's home during the past 30 days
Drunk Driving/Riding	Having ever ridden in a car driven by someone, including oneself, who was high or had been using alcohol or drugs
Early Alcohol Initiation	Having had at least one drink of alcohol before age 13
Poor Grades	Having gotten mostly D's or F's in school during the past 12 months

Analytic Approach

All analyses accounted for the complex YRBS survey design, including clustering, stratification, and survey weights; therefore, estimates are for the statewide population of public high school

students. We estimated the adjusted prevalence of each substance use outcome using survey-weighted logistic regression models, controlling for covariates including grade level (9, 10, 11, and 12); sex at birth (male and female); county (Hawai‘i, Honolulu, Kaua‘i, and Maui); amended DOH race/ethnicity (Native Hawaiian, Other Pacific Islander, Filipino, Black, Japanese, Other Asian, White, Hispanic; Other [not including Hispanic]); and survey year (2021 and 2023).

The number of missing values for each variable is reported in the descriptive results. However, observations with missing values were excluded from our adjusted prevalence estimates. We also calculated the 95% confidence intervals (CI) for each prevalence estimate. CIs represent the precision and reliability of the estimates and are shown as error bars in all figures. The width of the CIs primarily depends on the sample size available for each estimate. When comparing two groups, non-overlapping CIs (error bars) indicate a statistically significant difference between groups. When CI ranges (error bars) for groups overlap, differences should be interpreted cautiously, as there is no clear evidence of a difference between groups because the plausible values for each group include some of the same range. This means the observed difference could be due to random variation, and the difference may not be statistically significant. When CI ranges (error bars) do not overlap for groups, this usually suggests a statistically significant difference between the groups. However, very wide CI ranges indicate less precise estimates, so the size and reliability of the difference should still be interpreted with caution.

Data Limitations

The results presented in this report are constrained by several data limitations which should be considered when interpreting findings. YRBS data are cross-sectional, representing a different group of individuals each year rather than tracking the same students over time. Hence, any observed associations between variables can be understood as correlations rather than causal relationships. Additionally, self-reported data are subject to social desirability bias, as respondents may over report socially desirable behaviors or underreport socially unacceptable or stigmatized behaviors. Self-reported data are also prone to recall bias, since respondents may not accurately remember past behaviors. Finally, the YRBS is available only to non-institutionalized legal citizens and permanent residents attending public schools, which excludes some marginalized populations. Survey participation may have also been limited to schools meeting certain criteria, such as minimum enrollment, so not all public schools are represented.

Results

Descriptives

The study sample consisted of 10,021 high school students, 51.7% male and 47.7% female (see Supplemental Table S1 for descriptive estimates and confidence intervals). The largest racial/ethnic groups were Filipino (25.6%), Native Hawaiian (23.2%), and White (17.1%). The most common patterns of substance use were alcohol use (15.4%) followed by e-cigarette use (13.1%), cannabis use (12.6%), and binge drinking (8.2%). About 11% of respondents reported ever misusing prescription medication and 6.7% reported current prescription medication misuse. Each co-use combination (e-cigarette and cannabis, e-cigarettes and alcohol, and cannabis and alcohol) was reported by about 7% of students, while poly-substance use (involving alcohol, e-cigarette and cannabis) was reported by 4.6%.

Mental health concerns were common, with 34% of students reporting depressive symptoms, 22% reporting self-harm, and 16% reporting suicidal thoughts in the past year. Bullying was reported by 19% of respondents, skipping school in the past 30 days due to safety concerns by 11%, and having poor grades by 5.5%. About 10% of students reported experiencing sexual abuse and 7.5% reported ever being forced to have sex. Usually sleeping at a parent's or guardian's home in the past 30 days was reported by about 85%. Ever driving under the influence or riding with someone who had used alcohol or drugs was reported by 14.4% of students, and 13.3% reported initiating alcohol use before age 13.

Findings for Substance Use by Sex

Female respondents had higher adjusted prevalence of all single substance use outcomes, except current combustible cigarette use and lifetime methamphetamine use (**Figure 1**). However, comparing female to male students, statistically significant differences were observed only for current alcohol use (15.7%, 95% CI: 13.5–18.2% vs. 10.1%, 95% CI: 7.9–12.8%), current e-cigarette use (12.2%, 95% CI: 10.1–14.7% vs. 7.7%, 95% CI: 6.3–9.4%), and lifetime prescription medication misuse (11.1%, 95% CI: 9.3–13.2% vs. 7.4%, 95% CI: 6.0–9.0%). No statistically significant sex differences were observed for current prescription medication misuse (4.9%, 95% CI: 3.6–6.6% vs. 3.3%, 95% CI: 2.3–4.7%) or binge drinking (7.1%, 95% CI: 5.5–9.1% vs. 4.7%, 95% CI: 3.6–6.2%). Compared to male students, female students had a lower prevalence of current combustible cigarette use (1.3%, 95% CI: 0.81–2.07% vs. 1.9%, 95% CI: 1.31–2.86%) and lifetime methamphetamine use (0.1%, 95% CI: 0.04–0.17% vs. 0.2%, 95% CI: 0.11–0.28%); although, these differences were not statistically significant.

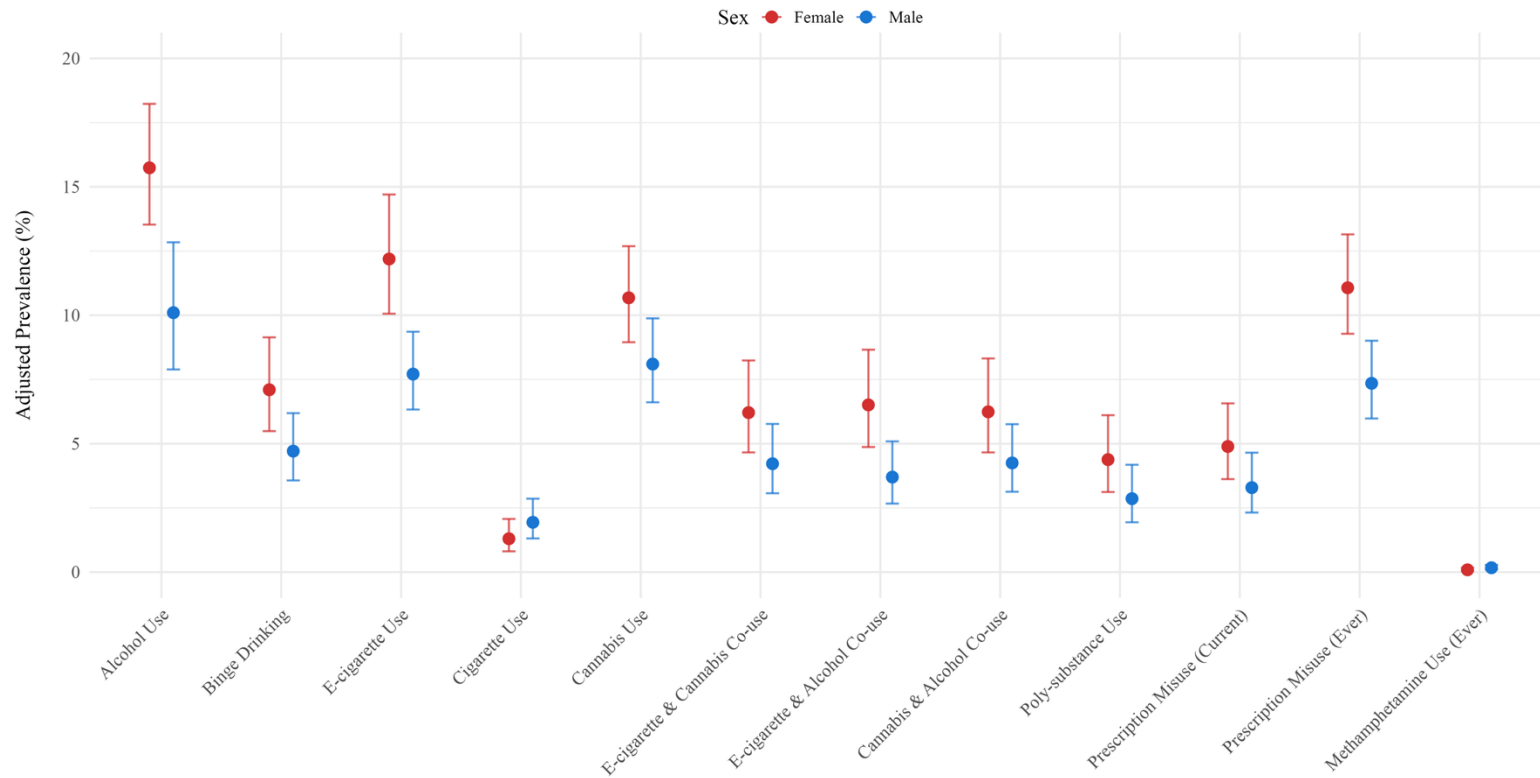
Across all patterns of co- and poly-substance use, female students had higher prevalence estimates; however, none of these differences were statistically significant compared to male students, the prevalence of e-cigarette–cannabis co-use was 6.2% (95% CI: 4.66–8.24%) vs. 4.2% (95% CI: 3.07–5.77%), e-cigarette–alcohol co-use was 6.5% (95% CI: 4.87–8.66%) vs.

3.7% (95% CI: 2.67–5.09%), cannabis–alcohol co-use was 6.2% (95% CI: 4.66–8.32%) vs. 4.3% (95% CI: 3.13–5.76%), and poly-substance use was 4.4% (95% CI: 3.12–6.11%) vs. 2.9% (95% CI: 1.94–4.18%).

Findings for Risk Factors by Sex across Substances

For all substances use outcomes, only a few trends varied by sex across psychosocial, behavioral, and adverse-experience risk factors (see **Supplemental Figures S1-S12**, p. 43-54 of this report). Among male students, those who experienced food insecurity had a significantly higher prevalence of binge drinking (10.9%, 95% CI: 6.20–18.55% vs. 4.0%, 95% CI: 2.94–5.38%; **Supplemental Figure S2**). Among female students, the difference was not statistically significant (10.1%, 95% CI: 6.57–15.13% vs. 5.7%, 95% CI: 4.10–7.74%). Similarly, among male students, those who usually slept at home in the past month had a significantly lower prevalence of cannabis use (6.5%, 95% CI: 5.00–8.29% vs. 24.4%, 95% CI: 16.77–34.01%; **Supplemental Figure S5**), while among female students, those who usually slept at home had a prevalence of 10.0%, 95% CI: 8.28–11.96% vs. 20.0%, 95% CI: 11.00–33.56% for those who did not, and this difference was not statistically significant. The adjusted prevalence of combustible cigarette use (**Supplemental Figure S4**) was significantly greater among female students who reported poor grades (4.6%, 95% CI: 2.23–9.11%) vs. those who did not (1.1%, 95% CI: 0.68–1.88%), while among male students, the difference was not statistically significant (3.6%, 95% CI: 1.52–8.19% vs. 1.2%, 95% CI: 0.72–1.89%). Likewise, the adjusted prevalence of e-cigarette-cannabis co-use (**Supplemental Figure S7**) was significantly higher among female students who experienced bullying (10.0%, 95% CI: 7.10–13.81% vs. 4.7%, 95% CI: 3.57–6.21% for those who did not), whereas among male students, the difference was not statistically significant (8.2%, 95% CI: 4.88–13.44% vs. 3.4%, 95% CI: 2.26–5.06%).

Figure 1. Adjusted prevalence of self-reported substance use by sex among high school students, Hawai'i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, race/ethnicity, county, and survey year

Alcohol Use: Any alcohol use in the past 30 days

Binge Drinking: 4+ (females) or 5+ (males) drinks in a row in the past 30 days

E-cigarette Use: Any e-cigarette use in the past 30 days

Cigarette Use: Any cigarette smoking in the past 30 days

Cannabis Use: Any cannabis use in the past 30 days

E-cigarette & Cannabis Co-use: E-cigarette and cannabis use in the past 30 days

E-cigarette & Alcohol Co-use: E-cigarette and alcohol use in the past 30 days

Cannabis & Alcohol Co-use: Cannabis and alcohol use in the past 30 days

Poly-substance Use: Use of alcohol, e-cigarette, and cannabis in the past 30 days

Prescription Misuse (Current): Misused prescription pain medicine in the past 30 days

Prescription Misuse (Ever): Ever misused prescription pain medicine

Methamphetamine Use (Ever): Used methamphetamines at least once in their lifetime

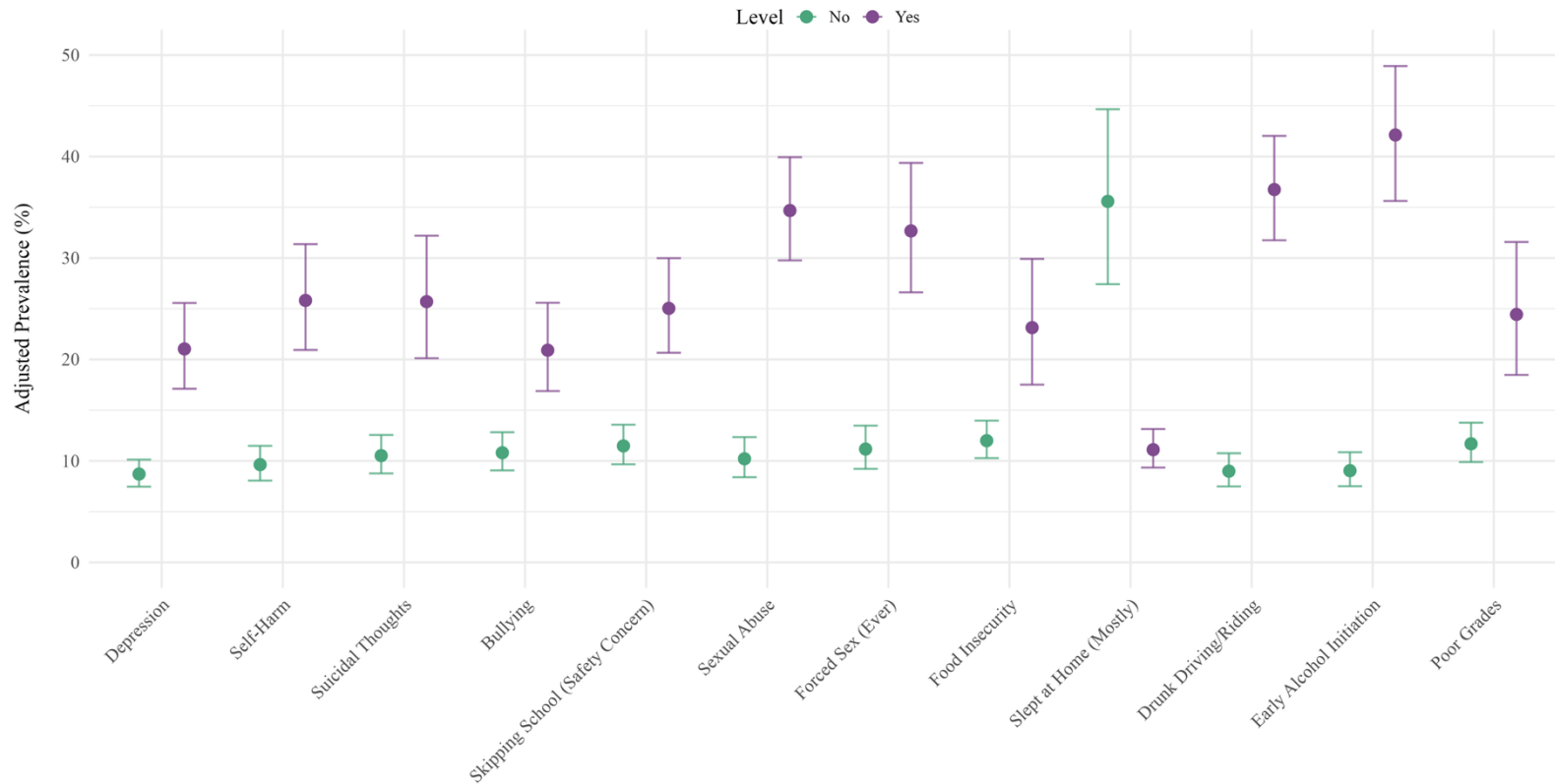
Findings for Substance Use by Risk Factors

Several trends in substance use emerged overall by different risk factors (**Figures 2-13**). Across all substance use outcomes (alcohol, binge drinking, cannabis, cigarette, e-cigarette, co-use and poly-use, prescription medication misuse, and methamphetamine), students who reported depression, self-harm, or suicidal thoughts consistently demonstrated significantly higher adjusted prevalence of substance use compared with those who did not report those factors. Prevalence estimates for those experiencing greater risk factors were typically around 2–4 times significantly higher (with non-overlapping CIs, i.e., the error bars for each prevalence that do not overlap in the figures) for all substance use outcomes. For instance, among those reporting past year depression, the predicted prevalence of alcohol use (**Figure 2**) was 21.0%, 95% CI: 17.12–25.57% vs. 8.7%, 95% CI: 7.47–10.13% for those who did not report depression, and poly-substance use (**Figure 10**) was 6.7%, 95% CI: 4.69–9.71% vs. 2.0%, 95% CI: 1.37–2.86% for those who did not report depression.

Students who reported early alcohol initiation, driving under the influence or riding with someone who had used alcohol or drugs, or experiencing food insecurity exhibited significantly higher, adjusted prevalence, at least 2-3 times, across every substance-use outcome (except methamphetamine use), compared to respondents who did not report those experiences. Most notably, the predicted prevalence of cannabis-alcohol co-use (**Figure 9**) was 8 times higher among those reporting past-month drunk driving/riding compared to those who did not (21.6%, 95% CI: 17.28–26.64% vs. 2.7%, 95% CI: 1.91–3.73%). For methamphetamine use (**Figure 13**), extremely low prevalence produced less stable and more variable confidence-interval widths (i.e., wider bands); however, the groups reporting these risk factors consistently showed significantly higher adjusted prevalence. Conversely, typically sleeping at a parent or guardian's home in the past month was associated with significantly lower prevalence of every use pattern (**Figures 2-13**), functioning as a potent protective factor for youth substance use.

Reports of bullying, poor grades, skipping school due to safety concerns, sexual abuse, or forced sex were all associated with higher adjusted prevalence across every substance use outcomes. In each case, students who reported these adverse experiences had higher adjusted prevalence, many 3 times greater, than those who did not. These associations were significant for every pattern except bullying with methamphetamine use and poor grades with lifetime/current prescription medication misuse. The largest differences were observed for sexual abuse and forced sex. For example, the adjusted prevalence of poly-substance use (**Figure 10**) was 13.0% (95% CI: 8.25%-19.79%) among students who reported lifetime forced sex, compared with 2.9% (95% CI: 2.07%-3.95%) among those who did not. As mentioned above, methamphetamine estimates displayed greater variability due to lower adjusted prevalence.

Figure 2. Adjusted prevalence of self-reported current **alcohol use** by risk factor among high school students, Hawai'i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Alcohol Use: Any alcohol use in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

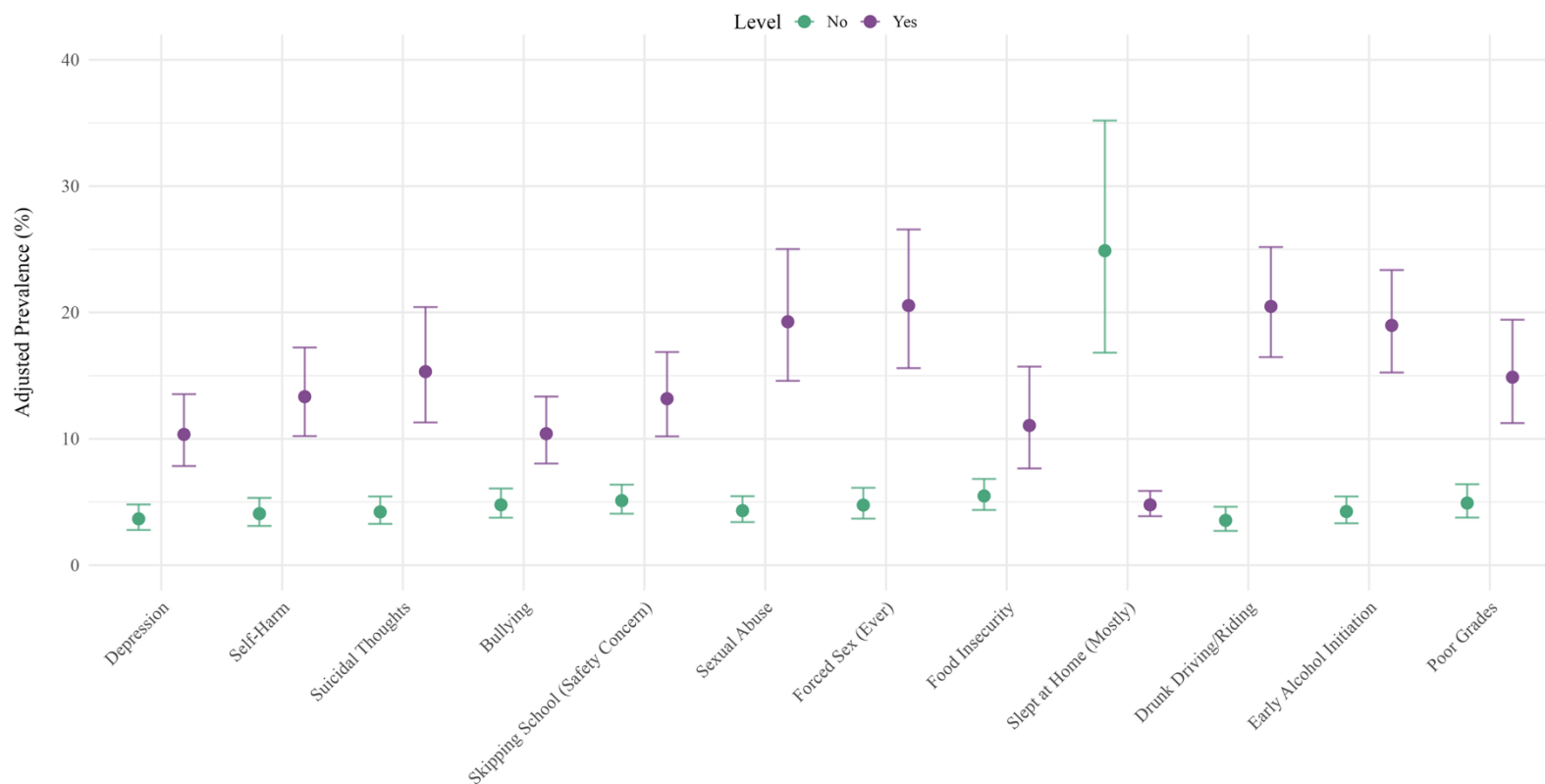
Slept at Home (Mostly): Usually slept in a parent/guardian's home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Figure 3. Adjusted prevalence of self-reported current **binge drinking** by risk factor among high school students, Hawai‘i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Binge Drinking: 4+ (female respondents) or 5+ (male respondents) drinks in a row in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

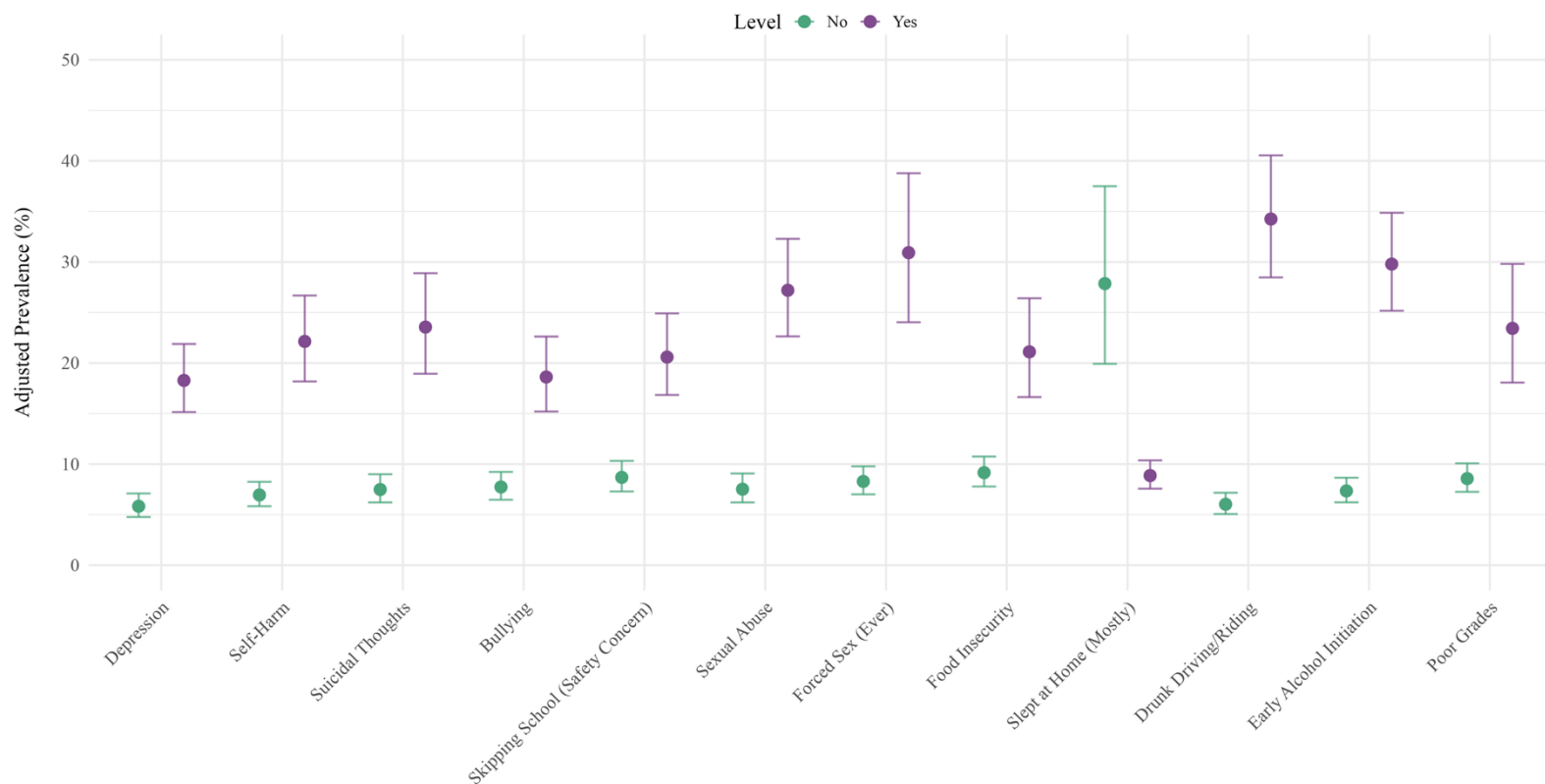
Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Figure 4. Adjusted prevalence of self-reported current e-cigarette use by risk factor among high school students, Hawai‘i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

E-cigarette Use: Any e-cigarette use in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

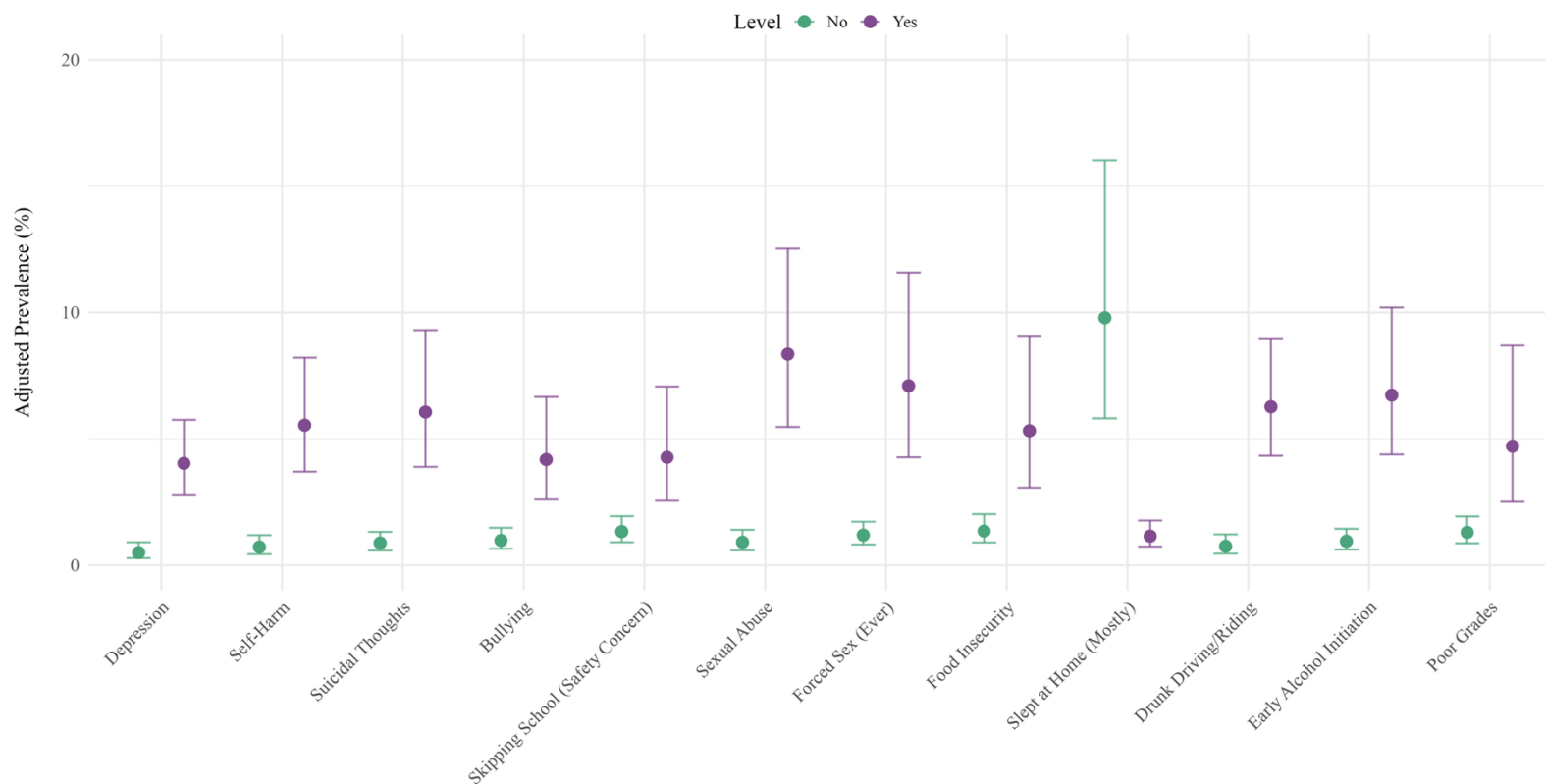
Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Figure 5. Adjusted prevalence of self-reported current **cigarette use** by risk factor among high school students, Hawai‘i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Cigarette Use: Any cigarette use in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

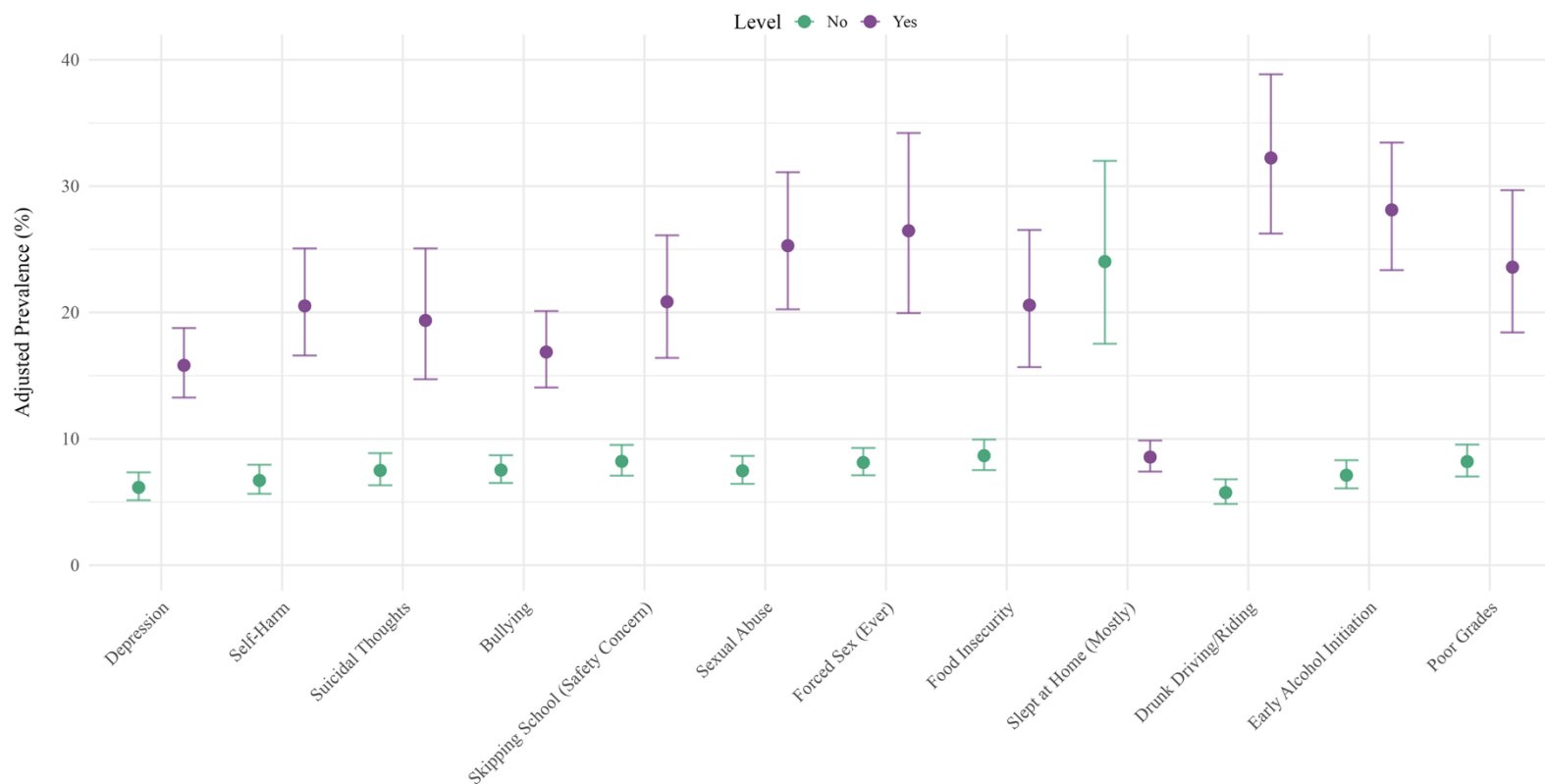
Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Figure 6. Adjusted prevalence of self-reported current **cannabis use** by risk factor among high school students, Hawai‘i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Cannabis Use: Any cannabis use in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

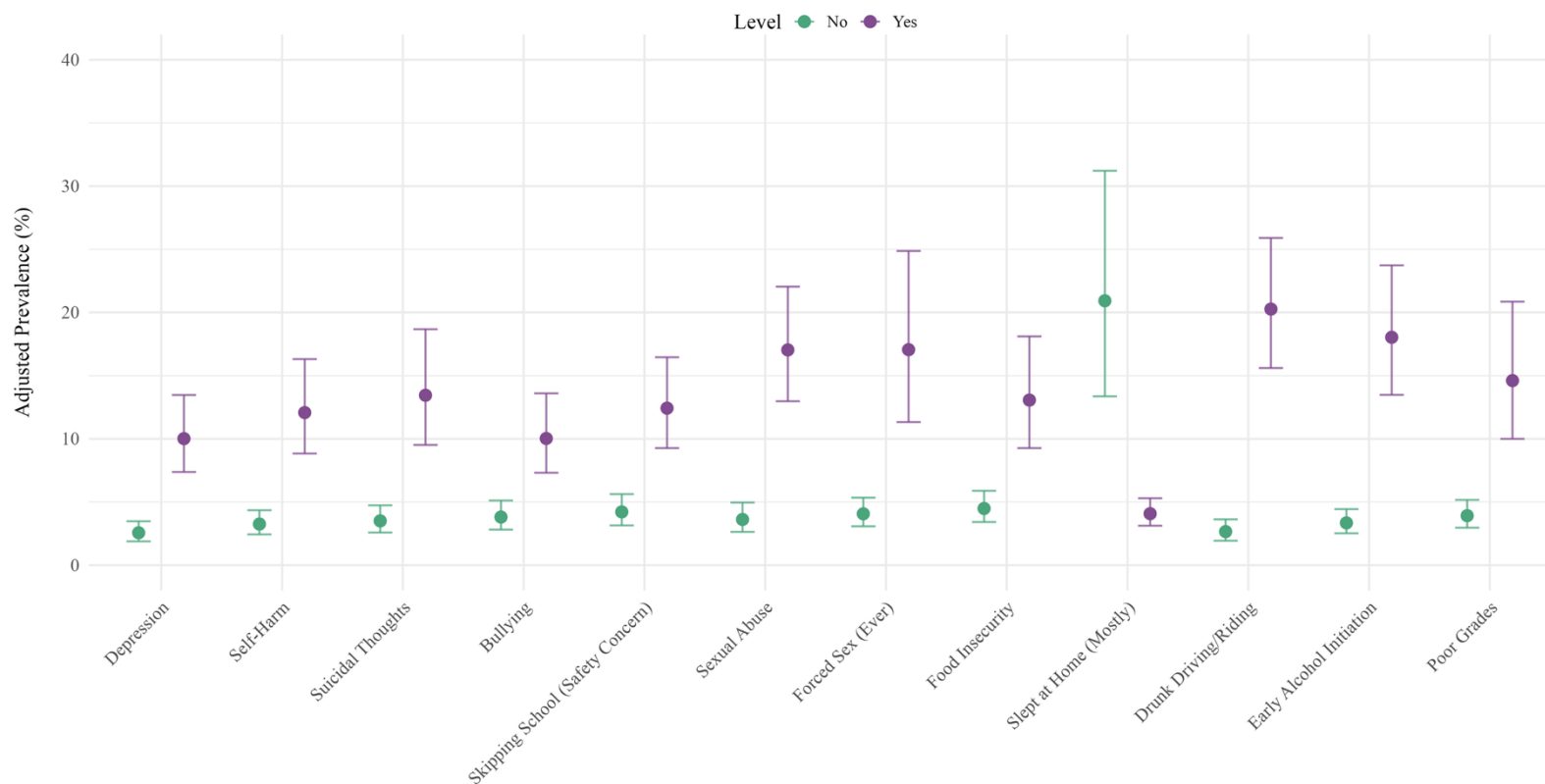
Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Figure 7. Adjusted prevalence of self-reported current e-cigarette-alcohol co-use by risk factor among high school students, Hawai‘i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

E-cigarette & Alcohol Co-use: E-cigarette and alcohol use in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

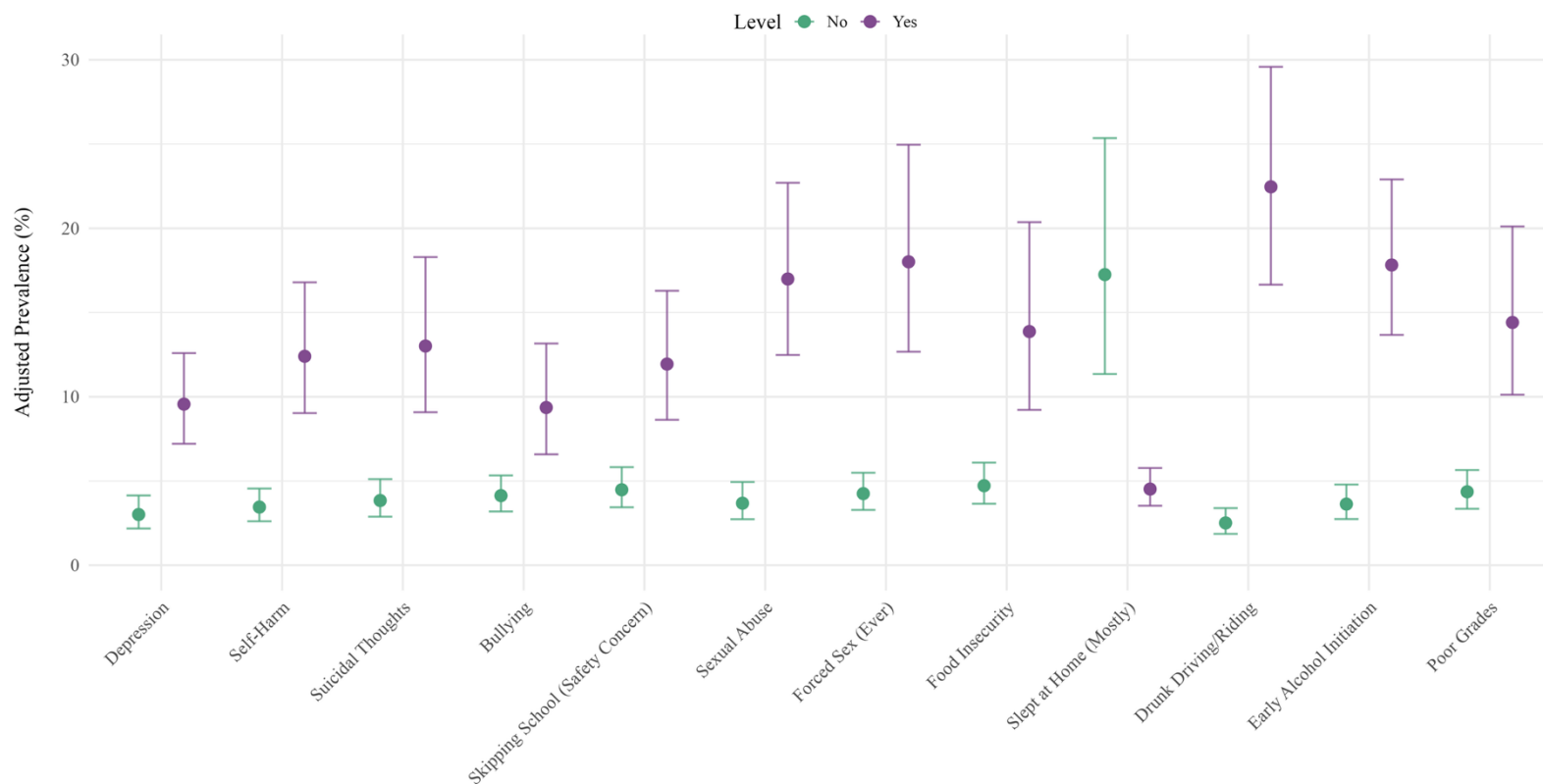
Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Figure 8. Adjusted prevalence of self-reported current e-cigarette-cannabis co-use by risk factor among high school students, Hawai‘i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

E-cigarette & Cannabis Co-use: E-cigarette and cannabis use in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

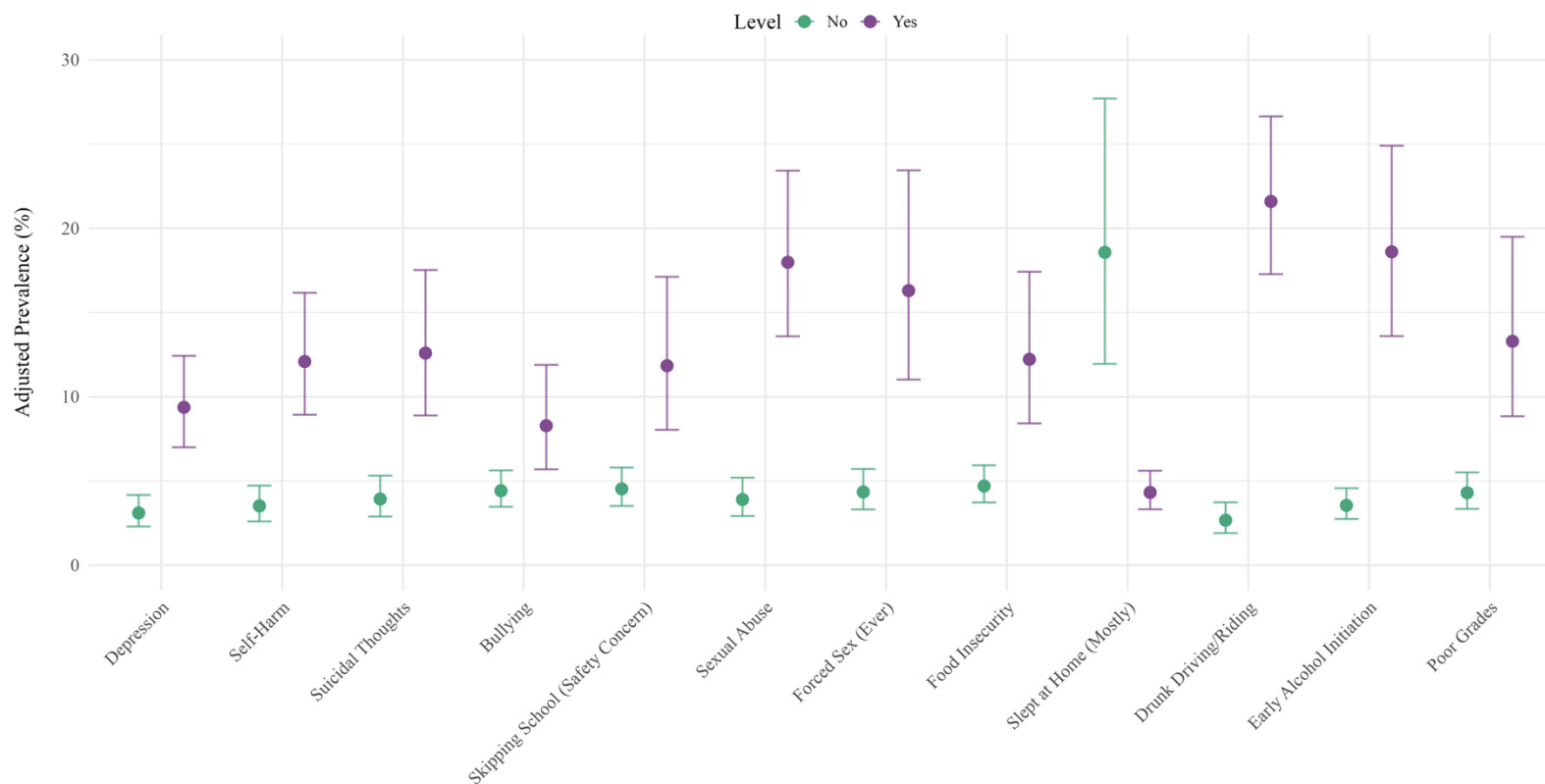
Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Figure 9. Adjusted prevalence of self-reported current **cannabis-alcohol co-use** by risk factor among high school students, Hawai‘i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Cannabis & Alcohol Co-use: Cannabis and alcohol use in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

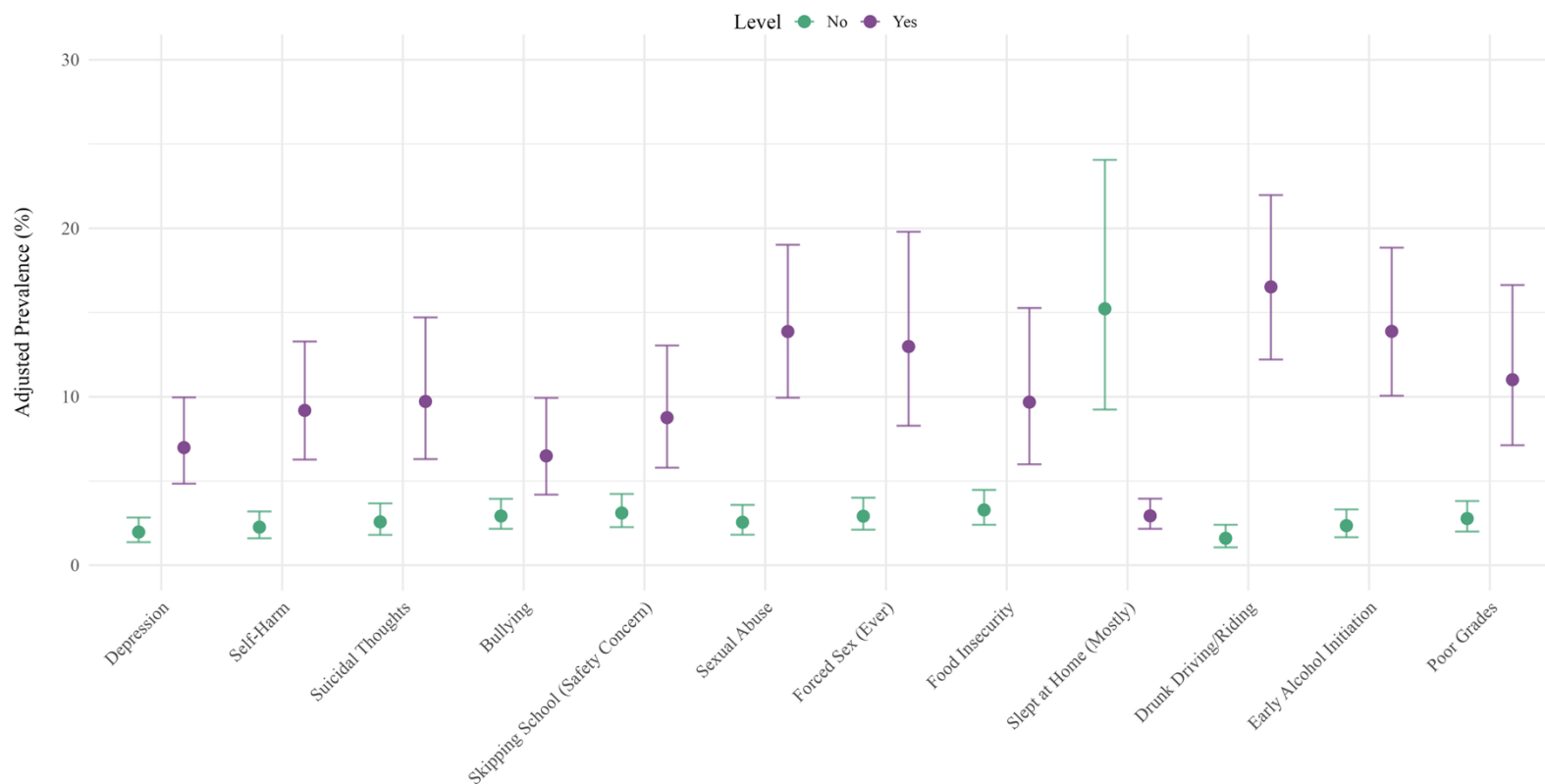
Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Figure 10. Adjusted prevalence of self-reported current poly-substance use (alcohol, e-cigarette, and cannabis) by risk factor among high school students, Hawai‘i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Poly-substance Use: Use of alcohol, e-cigarette, and cannabis in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

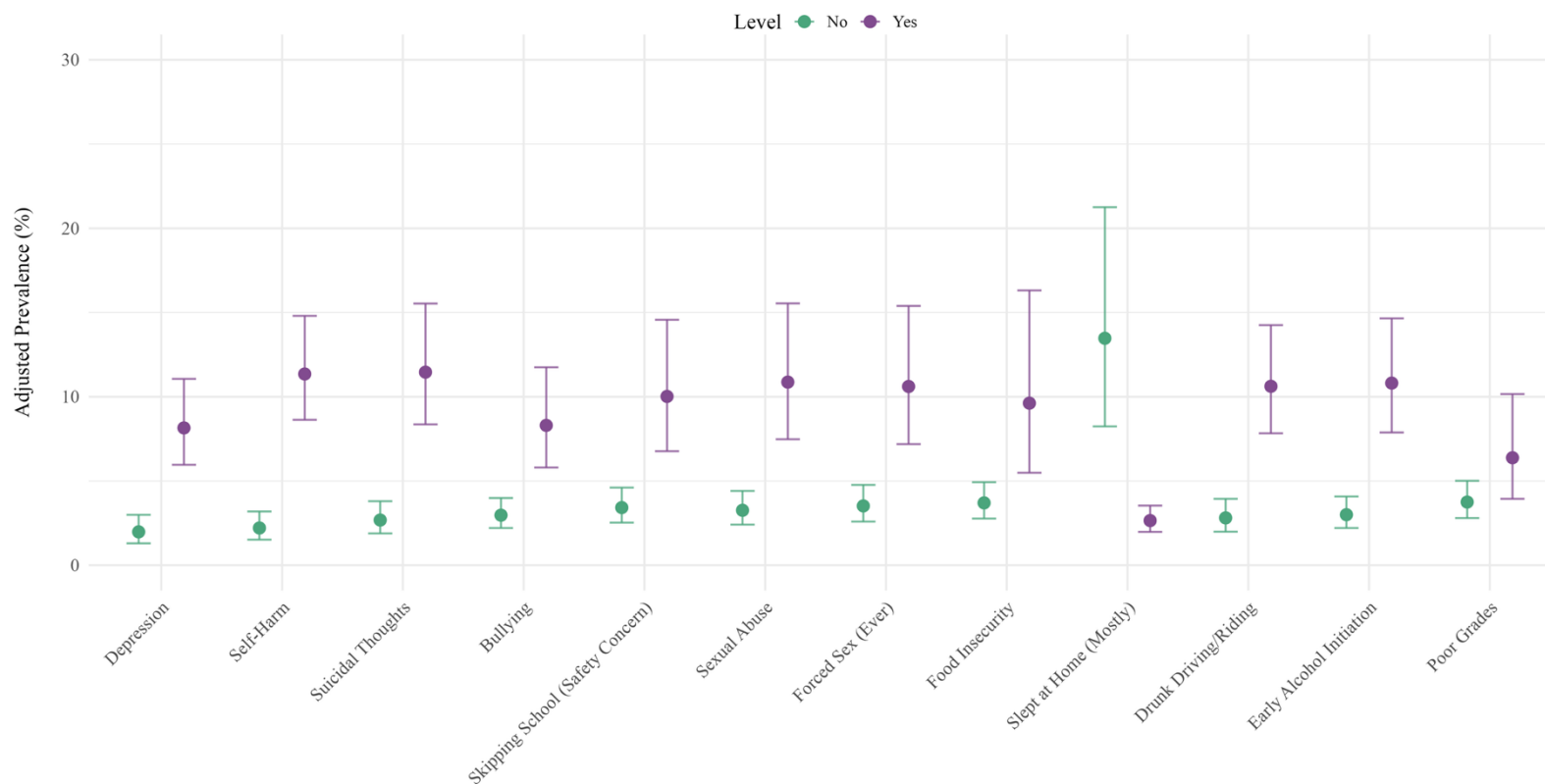
Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Figure 11. Adjusted prevalence of self-reported current prescription medication misuse (current) by risk factor among high school students, Hawai'i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Prescription Misuse (Current): Misusing prescription pain medicine in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

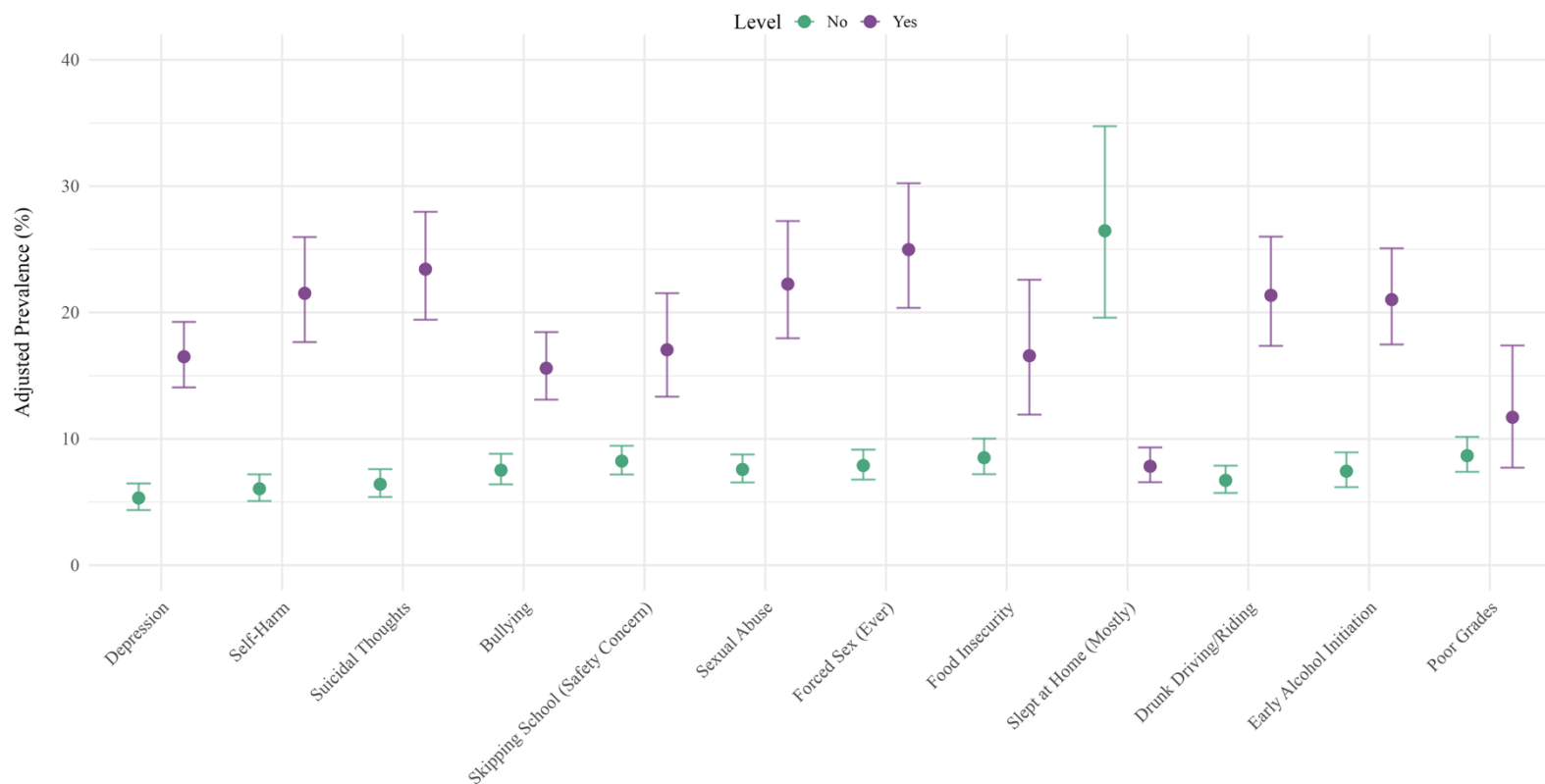
Slept at Home (Mostly): Usually slept in a parent/guardian's home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Figure 12. Adjusted prevalence of self-reported lifetime **prescription medication misuse (ever)** by risk factor among high school students, Hawai‘i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Prescription Misuse (Ever): Ever misused prescription pain medicine

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

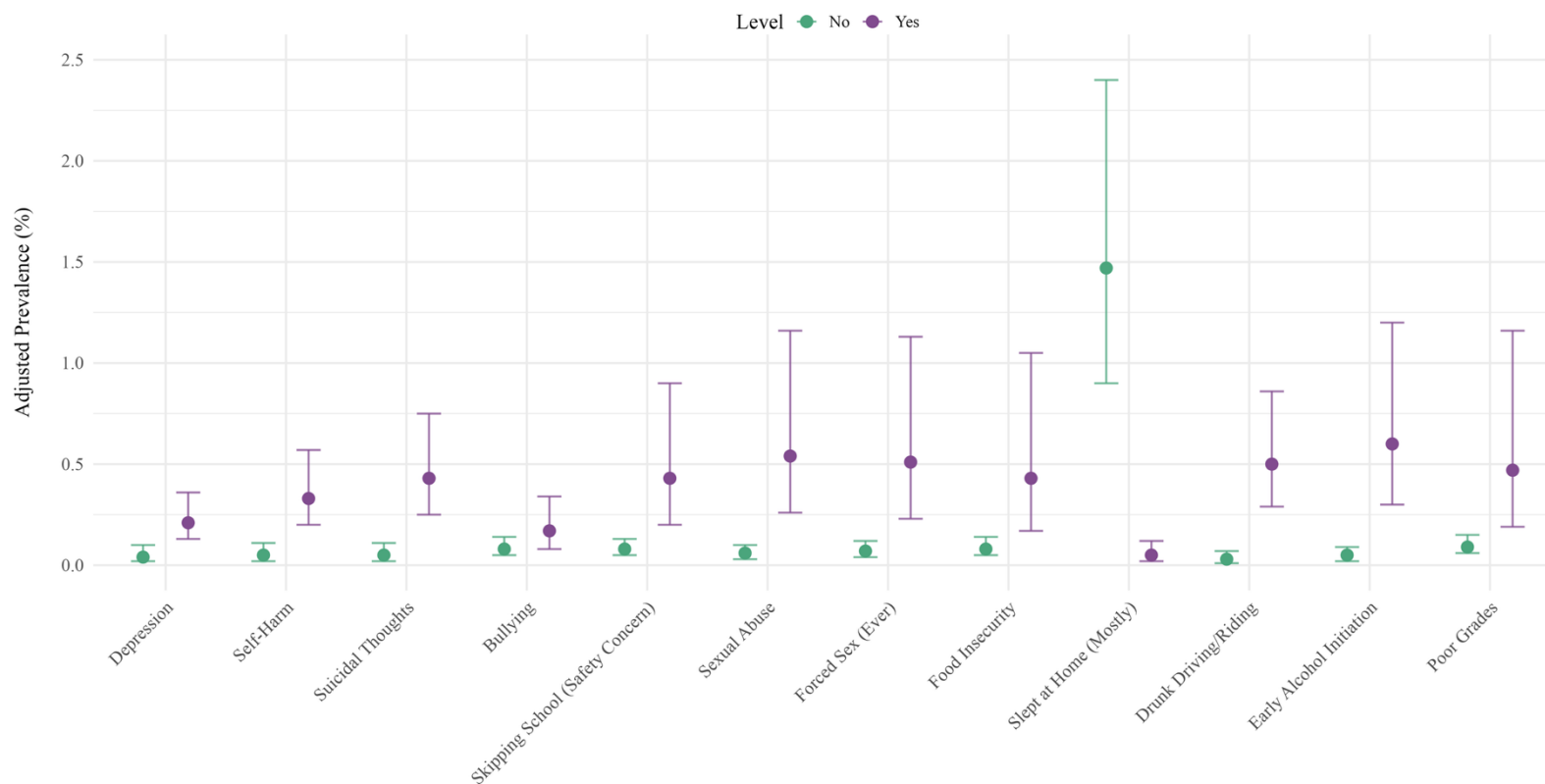
Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Figure 13. Adjusted prevalence of self-reported lifetime **methamphetamine use** by risk factor among high school students, Hawai‘i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Methamphetamine Use (Ever): Used methamphetamines at least once in their lifetime

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Discussion

Consistent with previous studies of adolescent substance use (Tomczyk et al., 2016; Silveira et al., 2019), the most common pattern observed for this epidemiological profile report was alcohol use. Between categories of single use, the least prevalent was lifetime methamphetamine use, followed by current combustible cigarette use. Sex differentiated trends emerged across all substance use patterns, reflecting the recent general national trend toward higher substance use among female adolescents. Female high school students in Hawai‘i reported significantly greater prevalence of current alcohol use, current e-cigarette use, and lifetime prescription medication misuse. These results align with recent national findings of higher female use documenting alcohol use (and binge drinking), cannabis use, e-cigarette use, and prescription medication misuse (SAMHSA, 2023; Bhatia et al., 2023; Hoots et al., 2023; Miech et al., 2025; CDC, 2024; Yang et al., 2024). Meanwhile, male high school students in Hawai‘i reported greater combustible cigarette and methamphetamine use, similar to what others have found (Miech et al., 2025; Jamal et al., 2024); however, these differences were minor in magnitude and not statistically significant.

The prevalence of multiple-substance use was generally similar across co-use categories, with e-cigarette and alcohol co-use slightly higher (around 7%) and poly-substance use involving alcohol, e-cigarettes, and cannabis slightly lower (~5%). By sex, female respondents had greater prevalence rates of every pattern of co-use and poly-use, although none of these differences were statistically significant. These findings contrast with past studies reporting higher co- and poly-substance use among male adolescents (Gilbert et al., 2021; Silveira et al., 2019; Patrick et al., 2017, 2019; Lozano et al., 2021; Kim, 2021; Banks et al., 2017). The higher prevalence of e-cigarette use, cannabis use, and alcohol use among female adolescents may contribute to greater co- and poly-use of these substances compared to male adolescents. While not statistically significant, the observed trend of higher co- and poly-substance use among female high school students in Hawai‘i warrants close monitoring and further investigation to determine whether these patterns will continue to persist over time or differ across subpopulations.

Substance use and poly-use initiation during adolescence is a key determinant of later substance use and adverse health outcomes. For example, early progression to cannabis-nicotine co-use in adolescence is associated with increased likelihood of co-use in young adulthood (Dunbar et al., 2020). Poly-substance use of alcohol, cigarettes, and cannabis before age 16 is associated with substance use disorders in adulthood (Moss et al., 2014), and poly-substance use (alcohol, cigarettes, and cannabis) before age 15 are associated with injection drug use in adulthood (Trenz et al., 2012) as are those with histories of childhood sexual abuse (Hadland et al., 2012). Adolescents who co-use alcohol and cannabis report higher rates of cigarette smoking and binge drinking (Chun et al., 2010), higher levels of depression (Conway et al., 2013), poorer academic performance (Kelly et al., 2015), and greater risk of involvement in the criminal justice system

and substance use dependence in adulthood (Green et al., 2016). Similarly, adolescents who co-use cannabis and nicotine demonstrate poorer academic performance (Dove et al., 2024), greater cannabis dependence (Peters et al., 2012; Schauer & Peters, 2018), and greater nicotine dependence (Rubinstein et al., 2014). Furthermore, nationwide data indicate that the prevalence of co-occurring alcohol use disorder and opioid use disorder among 18- to 26-year-olds has been on the rise (Weitzman & Ong, 2019). Considering the adverse impacts of early substance use on later health and addiction risk, these trends underscore the importance of preventing and addressing substance use during adolescence.

Various risk factors affected the prevalence of substance use across both sexes, including depression, suicidal thoughts, self-harm, food insecurity, bullying, lifetime forced sex, past-year sexual abuse, poor grades, school absences due to a safety concern, driving or riding with a driver under the influence, and early alcohol initiation. It is important to understand that many of these associations are likely bidirectional in nature. Past literature has consistently shown that depression is associated with the use of alcohol, nicotine, and cannabis among youth and young adults, either alone or in combination (Liu et al., 2023; Lechner et al., 2017; Sumbe et al., 2022; Wilkinson et al., 2016; Maslowsky et al., 2014; Conway et al., 2013). There is an uncertain causal direction, and most likely a bidirectional relationship, between depression and cigarette/e-cigarette use, alcohol use, and cannabis use (Fluharty et al., 2017; Lechner et al., 2017; Wilkinson et al., 2016). Additionally, driving under the influence and riding with an impaired driver among adolescents aged 12-18 are significantly associated with greater alcohol and cannabis use over time (Osilla et al., 2019), and early alcohol initiation has been associated with binge drinking (Fisher et al., 2007) and illicit drug use (Trenz et al., 2012). Similarly, bullying is associated with use of cigarettes, alcohol, and cannabis among middle and high school students (Radliff et al., 2012), and food insecurity is associated with binge drinking, cannabis use, prescription opioid misuse, and illicit drug use among high school students (Turner et al., 2022). Further, past studies have found that poor grades are associated with substance use, including co- and poly-use, among adolescents (Bugbee et al., 2019; Tomczyk et al., 2016; Silveira et al., 2019; Liu et al., 2023). For example, a study of Massachusetts high school students found that lower grades were associated with current e-cigarette-cannabis co-use and e-cigarette/combusted tobacco/cannabis poly-use (Liu et al., 2023). Sexual abuse has also been associated with substance use, including alcohol, nicotine, cannabis, and amphetamines, among youth (Draucker et al., 2013). In contrast, typically sleeping at home was associated with significantly lower prevalence of all patterns of substance use, consistent with previous findings that positive and structured family relationships are a strong protective factor for youth substance use (Woodward et al., 2023).

Some risk factors under consideration had differential effects within male and female cohorts. For example, the prevalence of combustible cigarette use was significantly higher among female respondents who reported poor grades, whereas the difference was not significant among males.

Others have documented sex-/gender-differentiated associations of academic achievement with substance use. For example, a four-year longitudinal study of seventh graders found that higher academic achievement predicted a lower frequency of later substance use (tobacco, alcohol, cannabis, stimulants, and illicit drugs) among girls, whereas higher achievement predicted a later increase in frequency of substance use among boys (Huỳnh et al., 2019). Various researchers have also reported sex-differentiated associations between depression and substance use, including e-cigarettes, cigarettes, alcohol, and cannabis (Kim, 2021; Wilkinson et al., 2016; Repetto et al., 2005; Fleming et al., 2008). Similar findings have been reported for risk factors such as sexual abuse. For example, some have found that sexual abuse is associated with alcohol-cannabis co-use and poly-substance use among female, but not male, adolescents (Shin et al., 2010). These findings together indicate that risk factors for substance use vary by sex, highlighting the need for prevention efforts that are tailored to vulnerable subpopulations of adolescents.

Differential patterns of substance use between sexes have implications for health disparities and life outcomes in adolescence and adulthood. For individuals assigned female at birth, more prevalent substance use and poly-substance use may coincide with specific biological and social risk factors. Cigarette advertising has long targeted women and girls, including via gendered appeals to weight loss (Pierce et al., 2010; Amos et al., 2012); similarly, e-cigarette marketing and advertising appeal to (especially younger) women (Basch et al., 2016). On social media, to which American youth have nearly universal exposure (Faverio & Sidoti, 2025), gendered marketing of substances such as e-cigarettes (Greene et al., 2022) and alcohol (Lyons et al., 2024) may play an important role in patterns of poly-substance use. In turn, health outcomes associated with substance use are differentiated by sex. For example, female smokers have lower cessation rates (Piper et al., 2010; Verplaetse et al., 2018) and greater risk of stroke and early death in older age (Haghani et al., 2020), while female e-cigarette users have greater airway resistance and asthma after use (Alam & Silveyra, 2023). Similarly, alcohol consumption has differential health risks, with higher risks of liver disease among women (CDC, 2025) as well as alcohol-related heart disease (McCaul et al., 2019). By contrast, there are higher rates of alcohol-related hospitalizations and death among men (CDC, 2025). Women may experience a faster progression from first cannabis use to onset of cannabis use disorder (Khan et al., 2013), and more severe drug problems when dependent on methamphetamine compared to men (Simpson et al., 2016). Additionally, despite higher rates of prescription medication misuse among women, men are at increased risk of opioid overdose (Neumaier et al., 2025). Similarly, overdose disparities are evident in Hawai‘i, where male residents accounted for 77.2% of all overdoses in 2024 (CDC, 2026).

This epidemiologic report documents disparities in youth substance use in Hawai‘i, by sex and psychosocial, behavioral, and adverse-experience risk factors. These findings highlight the importance of continued monitoring of those trends and correlates of youth substance use. Future

research and surveillance must also include trends of use and poly-use that account for nicotine pouches, an increasingly popular product that was not available in YRBS datasets. Additionally, policy and care should address poly-substance use trends among sexual and gender minority youth, who experience disproportionately high rates of substance use (Phillips et al., 2025; Dermody, 2018; Fahey et al., 2023). As commercial and regulatory landscapes evolve, the sex/gender dynamics of substance use and poly-substance use may continue to shift.

References

- Alam, F., & Silveyra, P. (2023). Sex differences in e-cigarette use and related health effects. *International Journal of Environmental Research and Public Health*, 20(22), 7079. <https://doi.org/10.3390/ijerph20227079>
- Amos, A., Greaves, L., Nichter, M., & Bloch, M. (2012). Women and tobacco: A call for including gender in tobacco control research, policy and practice. *Tobacco Control*, 21(2), 236–243. <https://doi.org/10.1136/tobaccocontrol-2011-050280>
- Banks, D. E., Hershberger, A. R., Pemberton, T., Clifton, R. L., Aalsma, M. C., & Zapolski, T. C. B. (2019). Poly-use of cannabis and other substances among juvenile-justice involved youth: Variations in psychological and substance-related problems by typology. *The American Journal of Drug and Alcohol Abuse*, 45(3), 313–322. <https://doi.org/10.1080/00952990.2018.1558450>
- Banks, D. E., Rowe, A. T., Mpofu, P., & Zapolski, T. C. B. (2017). Trends in typologies of concurrent alcohol, marijuana and cigarette use among US adolescents: An ecological examination by sex and race/ethnicity. *Drug and Alcohol Dependence*, 179, 71–77. <https://doi.org/10.1016/j.drugalcdep.2017.06.026>
- Basch, C. H., Mongiovi, J., Hillyer, G. C., Ethan, D., & Hammond, R. (2016). An analysis of electronic cigarette and cigarette advertising in US women’s magazines. *International Journal of Preventive Medicine*, 7, 103. <https://doi.org/10.4103/2008-7802.190089>
- Bhatia, D., Mikulich, S. K., Natvig, C., & Sakai, J. T. (2023). Emergence of sex differences in U.S. adolescent substance use. *Substance Use & Misuse*, 58(8), 1021–1029. <https://doi.org/10.1080/10826084.2023.2201861>
- Braymiller, J. L., Riehm, K. E., Meier, M., Krueger, E. A., Unger, J. B., Barrington-Trimis, J. L., Cho, J., Lanza, H. I., Madden, D. R., Kechter, A., & Leventhal, A. M. (2025). Associations of alternative cannabis product use and poly-use with subsequent illicit drug use initiation during adolescence. *Psychopharmacology*, 242(7), 1529–1539. <https://doi.org/10.1007/s00213-023-06330-w>
- Brooks-Russell, A., Ma, M., Levinson, A. H., Kattari, L., Kirchner, T., Anderson Goodell, E. M., & Johnson, R. M. (2019). Adolescent marijuana use, marijuana-related perceptions, and use of other substances before and after initiation of retail marijuana sales in Colorado (2013–2015). *Prevention Science*, 20(2), 185–193. <https://doi.org/10.1007/s11121-018-0933-2>
- Bugbee, B. A., Beck, K. H., Fryer, C. S., & Arria, A. M. (2019). Substance use, academic performance, and academic engagement among high school seniors. *Journal of School Health*, 89(2), 145–156. <https://doi.org/10.1111/josh.12723>
- Buu, A., Dabrowska, A., Mygrants, M., Puttler, L. I., Jester, J. M., & Zucker, R. A. (2014). Gender differences in the developmental risk of onset of alcohol, nicotine, and marijuana use and the effects of nicotine and marijuana use on alcohol outcomes. *Journal of Studies on Alcohol and Drugs*, 75(5), 850–858. <https://doi.org/10.15288/jsad.2014.75.850>
- Centers for Disease Control and Prevention. (2023). *Combining YRBS data across years and sites*. U.S. Department of Health and Human Services. https://www.cdc.gov/yrbs/media/pdf/2023/2023_yrbs_combining_data.pdf

- Centers for Disease Control and Prevention (CDC). (2024, August 6). *Youth Risk Behavior Survey Data Summary & Trends Report: 2013–2023*. <https://www.cdc.gov/yrbs/dstr/index.html>
- Centers for Disease Control and Prevention (CDC). (2025, February 25). *Alcohol Use Effects on Men's and Women's Health*. <https://www.cdc.gov/alcohol/about-alcohol-use/alcohol-and-sex-considerations.html>
- Centers for Disease Control and Prevention (CDC). (2026, February 5). SUDORS Dashboard: Fatal drug overdose data. U.S. Department of Health and Human Services. <https://www.cdc.gov/overdose-prevention/data-research/facts-stats/sudors-dashboard-fatal-overdose-data.html>
- Cheng, H. G., & Anthony, J. C. (2018). Male-female differences in the onset of heavy drinking episode soon after first full drink in contemporary United States: From early adolescence to young adulthood. *Drug and Alcohol Dependence*, *190*, 159–165. <https://doi.org/10.1016/j.drugalcdep.2017.12.035>
- Chun, T. H., Spirito, A., Hernández, L., Fairlie, A. M., Sindelar-Manning, H., Eaton, C. A., & Lewander, W. J. (2010). The significance of marijuana use among alcohol-using adolescent emergency department patients. *Academic Emergency Medicine*, *17*(1), 63–71. <https://doi.org/10.1111/j.1553-2712.2009.00615.x>
- Conway, K. P., Vullo, G. C., Nichter, B., Wang, J., Compton, W. M., Iannotti, R. J., & Simons-Morton, B. (2013). Prevalence and patterns of polysubstance use in a nationally representative sample of 10th graders in the United States. *Journal of Adolescent Health*, *52*(6), 716–723. <https://doi.org/10.1016/j.jadohealth.2012.12.006>
- Dermody, S. S. (2018). Risk of polysubstance use among sexual minority and heterosexual youth. *Drug and Alcohol Dependence*, *192*, 38–44. <https://doi.org/10.1016/j.drugalcdep.2018.07.030>
- Dove, M. S., Tong, E. K., & Gee, K. A. (2024). Co-use of tobacco products and cannabis is associated with absenteeism and lower grades in California high school students. *The Journal of Pediatrics*, *268*, 113935. <https://doi.org/10.1016/j.jpeds.2024.113935>
- Draucker, C. B., & Mazurczyk, J. (2013). Relationships between childhood sexual abuse and substance use and sexual risk behaviors during adolescence: An integrative review. *Nursing Outlook*, *61*(5), 291–310. <https://doi.org/10.1016/j.outlook.2012.12.003>
- Duan, Z., Wang, Y., & Huang, J. (2021). Sex difference in the association between electronic cigarette use and subsequent cigarette smoking among U.S. adolescents: Findings from the PATH Study Waves 1–4. *International Journal of Environmental Research and Public Health*, *18*(4), 1695. <https://doi.org/10.3390/ijerph18041695>
- Dunbar, M. S., Davis, J. P., Tucker, J. S., Seelam, R., Shih, R. A., & D'Amico, E. J. (2020). Developmental trajectories of tobacco/nicotine and cannabis use and patterns of product co-use in young adulthood. *Tobacco Use Insights*, *13*, 1179173X20949271. <https://doi.org/10.1177/1179173X20949271>
- Fahey, K. M. L., Kovacek, K., Abramovich, A., & Dermody, S. S. (2023). Substance use prevalence, patterns, and correlates in transgender and gender diverse youth: A scoping review. *Drug and Alcohol Dependence*, *250*, 110880. <https://doi.org/10.1016/j.drugalcdep.2023.110880>
- Faverio, M., & Sidoti, O. (2025, December 9). Teens, social media and AI chatbots 2025. *Pew Research Center*. <https://www.pewresearch.org/internet/2025/12/09/teens-social-media-and-ai-chatbots-2025/>

- Fisher, L. B., Miles, I. W., Austin, S. B., Camargo, C. A., Jr, & Colditz, G. A. (2007). Predictors of initiation of alcohol use among US adolescents: Findings from a prospective cohort study. *Archives of Pediatrics & Adolescent Medicine*, *161*(10), 959–966. <https://doi.org/10.1001/archpedi.161.10.959>
- Fleming, C. B., Mason, W. A., Mazza, J. J., Abbott, R. D., & Catalano, R. F. (2008). Latent growth modeling of the relationship between depressive symptoms and substance use during adolescence. *Psychology of Addictive Behaviors*, *22*(2), 186–197. <https://doi.org/10.1037/0893-164X.22.2.186>
- Fluharty, M., Taylor, A. E., Grabski, M., & Munafò, M. R. (2017). The association of cigarette smoking with depression and anxiety: A systematic review. *Nicotine & Tobacco Research*, *19*(1), 3–13. <https://doi.org/10.1093/ntr/ntw140>
- Gender and health*. (n.d.). World Health Organization. Retrieved December 18, 2025, from <https://www.who.int/health-topics/gender>
- Gilbert, P. A., Kava, C. M., & Afifi, R. (2021). High-school students rarely use e-cigarettes alone: A sociodemographic analysis of polysubstance use among adolescents in the United States. *Nicotine & Tobacco Research*, *23*(3), 505–510. <https://doi.org/10.1093/ntr/ntaa037>
- Goodwin, S. R., Moskal, D., Marks, R. M., Clark, A. E., Squeglia, L. M., & Roche, D. J. O. (2022). A scoping review of gender, sex and sexuality differences in polysubstance use in adolescents and adults. *Alcohol and Alcoholism*, *57*(3), 292–321. <https://doi.org/10.1093/alcalc/agac006>
- Green, K. M., Musci, R. J., Johnson, R. M., Matson, P. A., Reboussin, B. A., & Ialongo, N. S. (2016). Outcomes associated with adolescent marijuana and alcohol use among urban young adults: A prospective study. *Addictive Behaviors*, *53*, 155–160. <https://doi.org/10.1016/j.addbeh.2015.10.014>
- Greene, A. K., Carr, S., & Jia, H. (2022). Tech, sex, and e-cigarettes: The gendering of vape promotion on Instagram. *Journal of Health Communication*, *27*(9), 682–695. <https://doi.org/10.1080/10810730.2022.2150336>
- Hadland, S. E., Werb, D., Kerr, T., Fu, E., Wang, H., Montaner, J. S., & Wood, E. (2012). Childhood sexual abuse and risk for initiating injection drug use: A prospective cohort study. *Preventive Medicine*, *55*(5), 500–504. <https://doi.org/10.1016/j.ypmed.2012.08.015>
- Haghani, A., Arpawong, T. E., Kim, J. K., Lewinger, J. P., Finch, C. E., & Crimmins, E. (2020). Female vulnerability to the effects of smoking on health outcomes in older people. *PLoS ONE*, *15*(6), e0234015. <https://doi.org/10.1371/journal.pone.0234015>
- Hanson, K. L., Medina, K. L., Padula, C. B., Tapert, S. F., & Brown, S. A. (2011). Impact of adolescent alcohol and drug use on neuropsychological functioning in young adulthood: 10-year outcomes. *Journal of Child & Adolescent Substance Abuse*, *20*(2), 135–154. <https://doi.org/10.1080/1067828X.2011.555272>
- Harris, N. A., & Weitzman, E. R. (2024). Intensifying Substance Use Trends among Youth: A narrative review of recent trends and implications. *Current Psychiatry Reports*, *26*(12), 822–831. <https://doi.org/10.1007/s11920-024-01554-9>
- Hawai'i Health Data Warehouse*. (2025, November 3). <https://hhdw.org/>
- Hermans, S. P., Samiec, J., Golec, A., Trimble, C., Teater, J., & Hall, O. T. (2023). Years of life lost to unintentional drug overdose rapidly rising in the adolescent population,

- 2016–2020. *Journal of Adolescent Health*, 72(3), 397–403.
<https://doi.org/10.1016/j.jadohealth.2022.07.004>
- Hoots, B. E., Li, J., Hertz, M. F., Esser, M., Rico, A., Zavala, E., & Jones, C. (2023). Alcohol and other substance use before and during the COVID-19 pandemic among high school students—Youth Risk Behavior Survey, United States, 2021. *MMWR Supplements*, 72. <https://doi.org/10.15585/mmwr.su7201a10>
- Huỳnh, C., Morin, A. J. S., Fallu, J.-S., Maguire-L., J., Descheneaux-Buffoni, A., & Janosz, M. (2019). Unpacking the longitudinal associations between the frequency of substance use, substance use related problems, and academic achievement among adolescents. *Journal of Youth and Adolescence*, 48(7), 1327–1341. <https://doi.org/10.1007/s10964-019-01038-7>
- Jamal, A., Park-Lee, E., Birdsey, J., West, A., Cornelius, M., Cooper, M., Cowan, H., Sawdey, M., Cullen, K., & Navon, L. (2024). Tobacco product use among middle and high school students—National Youth Tobacco Survey, United States, 2024. *MMWR. Morbidity and Mortality Weekly Report*, 73. <https://doi.org/10.15585/mmwr.mm7341a2>
- Kelly, A. B., Evans-Whipp, T. J., Smith, R., Chan, G. C. K., Toumbourou, J. W., Patton, G. C., Hemphill, S. A., Hall, W. D., & Catalano, R. F. (2015). A longitudinal study of the association of adolescent polydrug use, alcohol use and high school non-completion. *Addiction*, 110(4), 627–635. <https://doi.org/10.1111/add.12829>
- Keyes, K. M., Jager, J., Mal-Sarkar, T., Patrick, M. E., Rutherford, C., Schulenberg, J., & Hasin, D. (2019). Is there a recent epidemic of women’s drinking? A critical review of national studies. *Alcoholism, Clinical and Experimental Research*, 43(7), 1344–1359. <https://doi.org/10.1111/acer.14082>
- Keyes, K. M., Kaur, N., Kreski, N. T., Chen, Q., Martins, S. S., Hasin, D., Olfson, M., & Mauro, P. M. (2022). Temporal trends in alcohol, cannabis, and simultaneous use among 12th-grade U.S. adolescents from 2000 to 2020: Differences by sex, parental education, and race and ethnicity. *Alcoholism, Clinical and Experimental Research*, 46(9), 1677–1686. <https://doi.org/10.1111/acer.14914>
- Khan, S. S., Secades-Villa, R., Okuda, M., Wang, S., Pérez-Fuentes, G., Kerridge, B. T., & Blanco, C. (2013). Gender differences in cannabis use disorders: Results from the National Epidemiologic Survey of Alcohol and Related Conditions. *Drug and Alcohol Dependence*, 130(1), 101–108. <https://doi.org/10.1016/j.drugalcdep.2012.10.015>
- Kim, Y. K. (2021). Gender-moderated associations between adolescent mental health, conventional substance use, and vaping. *Children and Youth Services Review*, 129, 106193. <https://doi.org/10.1016/j.childyouth.2021.106193>
- Kong, G., Kuguru, K. E., & Krishnan-Sarin, S. (2017). Gender differences in U.S. adolescent e-cigarette use. *Current Addiction Reports*, 4(4), 422–430. <https://doi.org/10.1007/s40429-017-0176-5>
- Lechner, W. V., Janssen, T., Kahler, C. W., Audrain-McGovern, J., & Leventhal, A. M. (2017). Bi-directional associations of electronic and combustible cigarette use onset patterns with depressive symptoms in adolescents. *Preventive Medicine*, 96, 73–78. <https://doi.org/10.1016/j.ypmed.2016.12.034>
- Liu, J., Tan, A., Winickoff, J., & Rees, V. (2023). Correlates of adolescent sole-, dual- and poly-use of cannabis, vaped nicotine, and combusted tobacco—ScienceDirect. *Addictive Behaviors*, 146. <https://doi.org/10.1016/j.addbeh.2023.107804>

- Lozano, A., Liu, F., Lee, T. K., Prado, G., Schwartz, S. J., Leventhal, A. M., Kelleghan, A. R., Unger, J. B., & Barrington-Trimis, J. L. (2021). Bidirectional associations between e-cigarette use and alcohol use across adolescence. *Drug and Alcohol Dependence*, 220, 108496. <https://doi.org/10.1016/j.drugalcdep.2020.108496>
- Lyons, A. C., Kersey, K., Emslie, C., Dimova, E., & Burrows, A. (2024). Digital alcohol marketing and gender: A narrative synthesis. *Drug and Alcohol Review*, 43(6), 1361–1387. <https://doi.org/10.1111/dar.13849>
- Maslowsky, J., Schulenberg, J. E., O'Malley, P. M., & Kloska, D. D. (2014). Depressive symptoms, conduct problems, and risk for polysubstance use among adolescents: Results from US national surveys. *Mental Health and Substance Use*, 7(2), 157–169. <https://doi.org/10.1080/17523281.2013.786750>
- Matheson, J., & Le Foll, B. (2023). Impacts of recreational cannabis legalization on use and harms: A narrative review of sex/gender differences. *Frontiers in Psychiatry*, 14. <https://doi.org/10.3389/fpsy.2023.1127660>
- McCaul, M., Roach, D., Hasin, D., Weisner, C., Chang, G., & Sinha, R. (2019). Alcohol and women: A brief overview. *Alcoholism, Clinical and Experimental Research*, 43(5), 774–779. <https://doi.org/10.1111/acer.13985>
- Miech, R. A., Johnston, L. D., Patrick, M. E., & O'Malley, P. M. (2025). *Monitoring the Future national survey results on drug use, 1975–2024: Overview and detailed results for secondary school students*. Institute for Social Research, University of Michigan. <https://monitoringthefuture.org/mtf2025vol1/>
- Moss, H. B., Chen, C. M., & Yi, H. (2014). Early adolescent patterns of alcohol, cigarettes, and marijuana polysubstance use and young adult substance use outcomes in a nationally representative sample. *Drug and Alcohol Dependence*, 136, 51–62. <https://doi.org/10.1016/j.drugalcdep.2013.12.011>
- Neumaier, L., Karimi, N., Jamshidi, N., Tse, W. C., Niesen, R., Butler, S., Xia, T., Lam, T., Nielsen, S., & Picco, L. (2025). Prevalence and risk factors for opioid overdose among women: A systematic review and meta-analysis. *Drug and Alcohol Dependence*, 273, 112702. <https://doi.org/10.1016/j.drugalcdep.2025.112702>
- Osilla, K. C., Seelam, R., Parast, L., & D'Amico, E. J. (2019). Associations between driving under the influence or riding with an impaired driver and future substance use among adolescents. *Traffic Injury Prevention*, 20(6), 563–569. <https://doi.org/10.1080/15389588.2019.1615620>
- Paschall, M. J., García-Ramírez, G., & Grube, J. W. (2021). Recreational marijuana legalization and use among California adolescents: Findings from a statewide survey. *Journal of Studies on Alcohol and Drugs*, 82(1), 103–111. <https://doi.org/10.15288/jsad.2021.82.103>
- Patrick, M. E., Evans-Polce, R. J., Arterberry, B. J., & Terry-McElrath, Y. (2023). Initiation of and escalation to high-intensity drinking in young adults. *JAMA Pediatrics*, 177(3), 286–293. <https://doi.org/10.1001/jamapediatrics.2022.5642>
- Patrick, M. E., Kloska, D. D., Terry-McElrath, Y. M., Lee, C. M., O'Malley, P. M., & Johnston, L. D. (2017). Patterns of simultaneous and concurrent alcohol and marijuana use among adolescents. *The American Journal of Drug and Alcohol Abuse*, 44(4), 441–451. <https://doi.org/10.1080/00952990.2017.1402335>

- Patrick, M. E., Terry-McElrath, Y. M., Lee, C. M., & Schulenberg, J. E. (2019). Simultaneous alcohol and marijuana use among underage young adults in the United States. *Addictive Behaviors*, 88, 77–81. <https://doi.org/10.1016/j.addbeh.2018.08.015>
- Pérez, A., N'hpang, R. S., Callahan, E., Bluestein, M., Kuk, A. E., Chen, B., Perry, C. L., & Harrell, M. B. (2021). Age at initiation of cigarette use in a nationally representative sample of US youth, 2013-2017. *JAMA Network Open*, 4(2), e210218. <https://doi.org/10.1001/jamanetworkopen.2021.0218>
- Peters, E. N., Budney, A. J., & Carroll, K. M. (2012). Clinical correlates of co-occurring cannabis and tobacco use: A systematic review. *Addiction*, 107(8), 1404–1417. <https://doi.org/10.1111/j.1360-0443.2012.03843.x>
- Phillips, M. M., Thompson, M. D., Woodworth, F., Massey, J., & Krause, K. (2025). *State Epidemiologic Profile 2024: Substance Use Trends in Hawai'i*. Alcohol and Drug Abuse Division, Hawai'i State Department of Health. https://www.hawaiihealthmatters.org/content/sites/hawaii/Hawaii_Substance_Use_Epi_Profile_2024_FINAL.pdf
- Pierce, J. P., Messer, K., James, L. E., White, M. M., Kealey, S., Vallone, D. M., & Healton, C. G. (2010). Camel No. 9 cigarette-marketing campaign targeted young teenage girls. *Pediatrics*, 125(4), 619–626. <https://doi.org/10.1542/peds.2009-0607>
- Piper, M. E., Cook, J. W., Schlam, T. R., Jorenby, D. E., Smith, S. S., Bolt, D. M., & Loh, W.-Y. (2010). Gender, race, and education differences in abstinence rates among participants in two randomized smoking cessation trials. *Nicotine & Tobacco Research: Official Journal of the Society for Research on Nicotine and Tobacco*, 12(6), 647–657. <https://doi.org/10.1093/ntr/ntq067>
- Purcell, J. B., Orihuela, C. A., Elliott, M. N., Tortolero Emery, S., Schuster, M. A., & Mrug, S. (2020). Examining sex and racial/ethnic differences in co-use of alcohol, cannabis, and cigarettes in a community sample of adolescents. *Substance Use & Misuse*, 56(1), 101–110. <https://doi.org/10.1080/10826084.2020.1843056>
- Radliff, K. M., Wheaton, J. E., Robinson, K., & Morris, J. (2012). Illuminating the relationship between bullying and substance use among middle and high school youth. *Addictive Behaviors*, 37(4), 569–572. <https://doi.org/10.1016/j.addbeh.2012.01.001>
- Rahilly, C. R., & Farwell, W. R. (2007). Prevalence of smoking in the United States: A focus on age, sex, ethnicity, and geographic patterns. *Current Cardiovascular Risk Reports*, 1(5), 379–383. <https://doi.org/10.1007/s12170-007-0062-0>
- Repetto, P. B., Caldwell, C. H., & Zimmerman, M. A. (2005). A longitudinal study of the relationship between depressive symptoms and cigarette use among African American adolescents. *Health Psychology*, 24(2), 209–219. <https://doi.org/10.1037/0278-6133.24.2.209>
- Ross, J. A., Weitzman, E. R., & Levy, S. (2024). The impact of the COVID-19 pandemic on adolescent substance use. *Current Pediatrics Reports*, 12(3), 62–68. <https://doi.org/10.1007/s40124-024-00322-w>
- Rubinstein, M. L., Rait, M. A., & Prochaska, J. J. (2014). Frequent marijuana use is associated with greater nicotine addiction in adolescent smokers. *Drug and Alcohol Dependence*, 141, 159–162. <https://doi.org/10.1016/j.drugalcdep.2014.05.015>
- Substance Abuse and Mental Health Services Administration (SAMHSA). (2023). *Alcohol Use Among Girls and Young Women: A Worrying Trend*. PEP23-03-10–006.

<https://library.samhsa.gov/product/alcohol-use-among-girls-and-young-women-worrying-trend/pep23-03-10-006>

- Schauer, G. L., & Peters, E. N. (2018). Correlates and trends in youth co-use of marijuana and tobacco in the United States, 2005–2014. *Drug and Alcohol Dependence, 185*, 238–244. <https://doi.org/10.1016/j.drugalcdep.2017.12.007>
- Schepis, T. S., Desai, R. A., Cavallo, D. A., Smith, A. E., McFetridge, A., Liss, T. B., Potenza, M. N., & Krishnan-Sarin, S. (2011). Gender differences in adolescent marijuana use and associated psychosocial characteristics. *Journal of Addiction Medicine, 5*(1), 65. <https://doi.org/10.1097/ADM.0b013e3181d8dc62>
- Seidenberg, A. B., Donovan, E. M., Liu, M., & Kreslake, J. M. (2024). E-cigarette use by female vs male high school students. *Pediatrics, 154*(5), e2024067767. <https://doi.org/10.1542/peds.2024-067767>
- Shin, S. H., Hong, H. G., & Hazen, A. L. (2010). Childhood sexual abuse and adolescent substance use: A latent class analysis. *Drug and Alcohol Dependence, 109*(1–3), 226–235. <https://doi.org/10.1016/j.drugalcdep.2010.01.013>
- Silveira, M. L., Green, V. R., Iannaccone, R., Kimmel, H. L., & Conway, K. P. (2019). Patterns and correlates of poly-substance use among U.S. youth ages 15-17 years: Wave 1 of the Population Assessment of Tobacco and Health (PATH) Study. *Addiction (Abingdon, England), 114*(5), 907–916. <https://doi.org/10.1111/add.14547>
- Simpson, J. L., Grant, K. M., Daly, P. M., Kelley, S. G., Carlo, G., & Bevens, R. A. (2016). Psychological burden and gender differences in methamphetamine-dependent individuals in treatment. *Journal of Psychoactive Drugs, 48*(4), 261–269. <https://doi.org/10.1080/02791072.2016.1213470>
- Singh, T., Arrazola, R. A., Corey, C. G., Husten, C. G., Neff, L. J., Homa, D. M., & King, B. A. (2016). Tobacco use among middle and high school students—United States, 2011–2015. *MMWR. Morbidity and Mortality Weekly Report, 65*. <https://doi.org/10.15585/mmwr.mm6514a1>
- Steeger, C. M., Gust, C. J., Harlow, A. F., Cambron, C., Barrington-Trimis, J., Combs, K. M., Brooks-Russell, A., & Hill, K. G. (2025). Nicotine and cannabis vaping among early high school adolescents: Disparities of use across sociodemographic characteristics and associations with psychosocial factors. *Addictive Behaviors Reports, 21*, 100577. <https://doi.org/10.1016/j.abrep.2024.100577>
- Sumbe, A., Wilkinson, A. V., Clendennen, S. L., Bataineh, B. S., Sterling, K. L., Chen, B., & Harrell, M. B. (2022). Association of tobacco and marijuana use with symptoms of depression and anxiety among adolescents and young adults in Texas. *Tobacco Prevention & Cessation, 8*(January), 1–11. <https://doi.org/10.18332/tpc/144500>
- Tanz, L. J., Gladden, R. M., Dinwiddie, A. T., Miller, K. D., Broz, D., Spector, E., & O'Donnell, J. (2024). Routes of drug use among drug overdose deaths—United States, 2020–2022. *MMWR. Morbidity and Mortality Weekly Report, 73*, 124–130. <https://doi.org/10.15585/mmwr.mm7306a2>
- Thompson, A. B., Tebes, J. K., & McKee, S. A. (2015). Gender differences in age of smoking initiation and its association with health. *Addiction Research & Theory, 23*(5), 413–420. <https://doi.org/10.3109/16066359.2015.1022159>
- Tomczyk, S., Isensee, B., & Hanewinkel, R. (2016). Latent classes of polysubstance use among adolescents—A systematic review. *Drug and Alcohol Dependence, 160*, 12–29. <https://doi.org/10.1016/j.drugalcdep.2015.11.035>

- Trenz, R. C., Scherer, M., Harrell, P., Zur, J., Sinha, A., & Latimer, W. (2012). Early onset of drug and polysubstance use as predictors of injection drug use among adult drug users. *Addictive Behaviors, 37*(4), 367–372. <https://doi.org/10.1016/j.addbeh.2011.11.011>
- Turner, V. E., Demissie, Z., Sliwa, S. A., & Clayton, H. B. (2022). Food insecurity and its association with alcohol and other substance use among high school students in the United States. *Journal of School Health, 92*(2), 177–184. <https://doi.org/10.1111/josh.13118>
- Verplaetse, T. L., Morris, E. D., McKee, S. A., & Cosgrove, K. P. (2018). Sex differences in the nicotinic acetylcholine and dopamine receptor systems underlying tobacco smoking addiction. *Current Opinion in Behavioral Sciences, 23*, 196–202. <https://doi.org/10.1016/j.cobeha.2018.04.004>
- Weitzman, E. R., & Ong, M.-S. (2019). Rising prevalence of comorbid alcohol and opioid use disorders in adolescents and young adults in the United States. *Journal of General Internal Medicine, 34*(10), 1987–1989. <https://doi.org/10.1007/s11606-019-05068-6>
- White, A. M. (2020). Gender differences in the epidemiology of alcohol use and related harms in the United States. *Alcohol Research : Current Reviews, 40*(2), 01. <https://doi.org/10.35946/arcr.v40.2.01>
- Wilkinson, A. L., Halpern, C. T., Herring, A. H., Shanahan, M., Ennett, S. T., Hussey, J. M., & Harris, K. M. (2016). Testing longitudinal relationships between binge drinking, marijuana use, and depressive symptoms and moderation by sex. *Journal of Adolescent Health, 59*(6), 681–687. <https://doi.org/10.1016/j.jadohealth.2016.07.010>
- Woodward, T. C., Smith, M. L., Mann, M. J., Kristjansson, A., & Morehouse, H. (2023). Risk & protective factors for youth substance use across family, peers, school, & leisure domains. *Children and Youth Services Review, 151*, 107027. <https://doi.org/10.1016/j.childyouth.2023.107027>
- Yang, J., Mejia, M. C., Sacca, L., Hennekens, C. H., & Kitsantas, P. (2024). Trends in marijuana use among adolescents in the United States. *Pediatric Reports, 16*(4), 872–879. <https://doi.org/10.3390/pediatric16040074>

Supplemental Materials

Supplemental Table S1. Descriptive characteristics of the overall sample, Hawai‘i YRBS 2021 and 2023

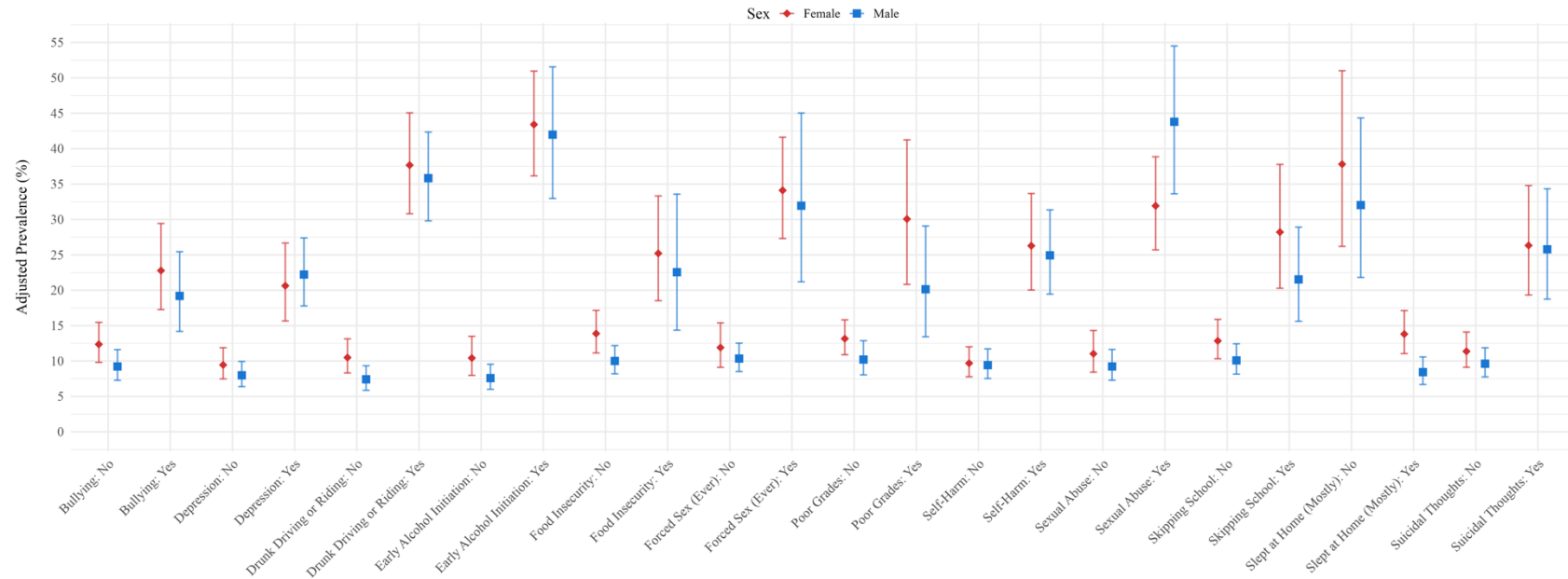
Variable	Level	N (Weighted Percentage)	95% CI
Sex	Female	4811 (47.66%)	[45.74%, 49.58%]
	Male	5146 (51.69%)	[49.71%, 53.67%]
	Missing	64 (0.65%)	[0.45%, 0.89%]
County	Hawai‘i	2410 (15.30%)	[13.64%, 17.07%]
	Honolulu	3212 (66.32%)	[63.16%, 69.39%]
	Kaua‘i	1759 (5.79%)	[5.05%, 6.60%]
	Maui	2640 (12.59%)	[11.25%, 14.01%]

Race and Ethnicity	Black	91 (0.96%)	[0.66%, 1.33%]
	Filipino	1818 (25.59%)	[23.36%, 27.91%]
	Hispanic	1833 (11.72%)	[10.85%, 12.64%]
	Japanese	295 (2.67%)	[1.61%, 4.08%]
	Native Hawaiian	2712 (23.18%)	[20.62%, 25.87%]
	Other	1619 (11.06%)	[10.12%, 12.05%]
	Other Asian	290 (3.08%)	[2.31%, 4.00%]
	Other Pacific Islander	428 (2.75%)	[2.25%, 3.32%]
	White	750 (17.14%)	[13.80%, 20.86%]
	Missing	185 (1.86%)	[1.50%, 2.27%]
Grade	9th Grade	2664 (29.48%)	[25.17%, 34.06%]
	10th Grade	2709 (25.47%)	[22.21%, 28.94%]
	11th Grade	2266 (22.73%)	[19.42%, 26.28%]
	12th Grade	2318 (21.67%)	[17.29%, 26.52%]
	Missing	64 (0.65%)	[0.42%, 0.94%]
Depression	Yes	3472 (34.19%)	[32.43%, 35.99%]
	No	6365 (63.95%)	[62.00%, 65.86%]
	Missing	184 (1.86%)	[1.46%, 2.33%]
Self-Harm	Yes	2180 (21.70%)	[20.61%, 22.81%]
	No	7698 (76.79%)	[75.69%, 77.87%]
	Missing	143 (1.51%)	[1.21%, 1.86%]
Suicidal Thoughts	Yes	1669 (15.95%)	[14.79%, 17.16%]
	No	8197 (82.44%)	[81.06%, 83.77%]
	Missing	155 (1.61%)	[1.30%, 1.97%]
Bullying	Yes	2058 (19.26%)	[17.60%, 21.00%]
	No	7847 (79.47%)	[77.57%, 81.29%]
	Missing	116 (1.27%)	[0.99%, 1.58%]
Skipping School (Safety Concern)	Yes	1185 (10.98%)	[9.66%, 12.40%]
	No	8772 (88.44%)	[87.08%, 89.72%]
	Missing	64 (0.58%)	[0.39%, 0.82%]
Sexual Abuse	Yes	1048 (9.66%)	[8.73%, 10.64%]
	No	8578 (86.68%)	[85.50%, 87.82%]
	Missing	395 (3.66%)	[3.13%, 4.24%]
Forced Sex (Ever)	Yes	811 (7.54%)	[6.60%, 8.56%]
	No	9094 (91.44%)	[90.51%, 92.31%]
	Missing	116 (1.02%)	[0.69%, 1.44%]
Food Insecurity	Yes	576 (5.62%)	[4.92%, 6.38%]
	No	8755 (88.10%)	[86.39%, 89.68%]
	Missing	690 (6.28%)	[5.08%, 7.64%]
Slept at Home (Mostly)	Yes	8424 (85.45%)	[83.70%, 87.09%]
	No	585 (5.13%)	[4.62%, 5.68%]
	Missing	1012 (9.42%)	[7.89%, 11.12%]
Drunk Driving/Riding	Yes	1610 (14.44%)	[13.34%, 15.59%]

	No	7988 (81.49%)	[80.01%, 82.91%]
	Missing	423 (4.06%)	[3.34%, 4.89%]
Early Alcohol Initiation	Yes	1478 (13.25%)	[12.20%, 14.35%]
	No	8084 (82.19%)	[81.18%, 83.17%]
	Missing	459 (4.56%)	[3.96%, 5.22%]
Poor Grades	Yes	597 (5.48%)	[4.79%, 6.22%]
	No	8224 (83.74%)	[82.44%, 84.99%]
	Missing	1200 (10.78%)	[9.65%, 11.99%]
Alcohol Use	Yes	1636 (15.41%)	[14.37%, 16.48%]
	No	7566 (76.84%)	[75.57%, 78.07%]
	Missing	819 (7.76%)	[6.98%, 8.58%]
Binge Drinking	Yes	896 (8.15%)	[7.46%, 8.88%]
	No	8725 (88.10%)	[87.15%, 89.00%]
	Missing	400 (3.75%)	[3.20%, 4.36%]
E-cigarette Use	Yes	1495 (13.06%)	[12.22%, 13.94%]
	No	7808 (80.42%)	[79.22%, 81.59%]
	Missing	718 (6.51%)	[5.80%, 7.27%]
Cigarette Use	Yes	334 (2.98%)	[2.36%, 3.70%]
	No	9513 (95.09%)	[94.17%, 95.92%]
	Missing	174 (1.92%)	[1.56%, 2.34%]
Cannabis Use	Yes	1406 (12.62%)	[11.61%, 13.68%]
	No	8311 (84.69%)	[83.55%, 85.79%]
	Missing	304 (2.69%)	[2.26%, 3.16%]
E-cigarette & Cannabis Co-use	Yes	800 (7.09%)	[6.45%, 7.78%]
	No	8295 (84.48%)	[83.26%, 85.66%]
	Missing	926 (8.42%)	[7.56%, 9.35%]
E-cigarette & Alcohol Co-use	Yes	807 (6.93%)	[6.32%, 7.57%]
	No	7882 (80.58%)	[79.35%, 81.76%]
	Missing	1332 (12.49%)	[11.57%, 13.46%]
Cannabis & Alcohol Co-use	Yes	786 (6.89%)	[6.20%, 7.62%]
	No	8312 (84.40%)	[83.22%, 85.54%]
	Missing	923 (8.71%)	[7.79%, 9.70%]
Poly-substance Use (Alcohol, E-cigarette, & Cannabis)	Yes	528 (4.56%)	[4.02%, 5.13%]
	No	9102 (91.97%)	[91.13%, 92.77%]
	Missing	391 (3.47%)	[3.00%, 3.98%]
Prescription Drug Misuse (Current)	Yes	705 (6.73%)	[6.06%, 7.44%]
	No	8959 (89.88%)	[88.96%, 90.76%]
	Missing	357 (3.39%)	[2.76%, 4.10%]
Prescription Drug Misuse (Ever)	Yes	1162 (10.79%)	[10.00%, 11.62%]
	No	8541 (86.27%)	[85.32%, 87.20%]
	Missing	318 (2.93%)	[2.38%, 3.57%]
Methamphetamine Use (Ever)	Yes	200 (1.60%)	[1.27%, 1.98%]

	No	9486 (95.21%)	[94.48%, 95.87%]
	Missing	335 (3.19%)	[2.53%, 3.96%]

Supplemental Figure S1. Adjusted prevalence of self-reported **alcohol use** by sex and characteristic among high school students, Hawai'i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Alcohol Use: Any alcohol use in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

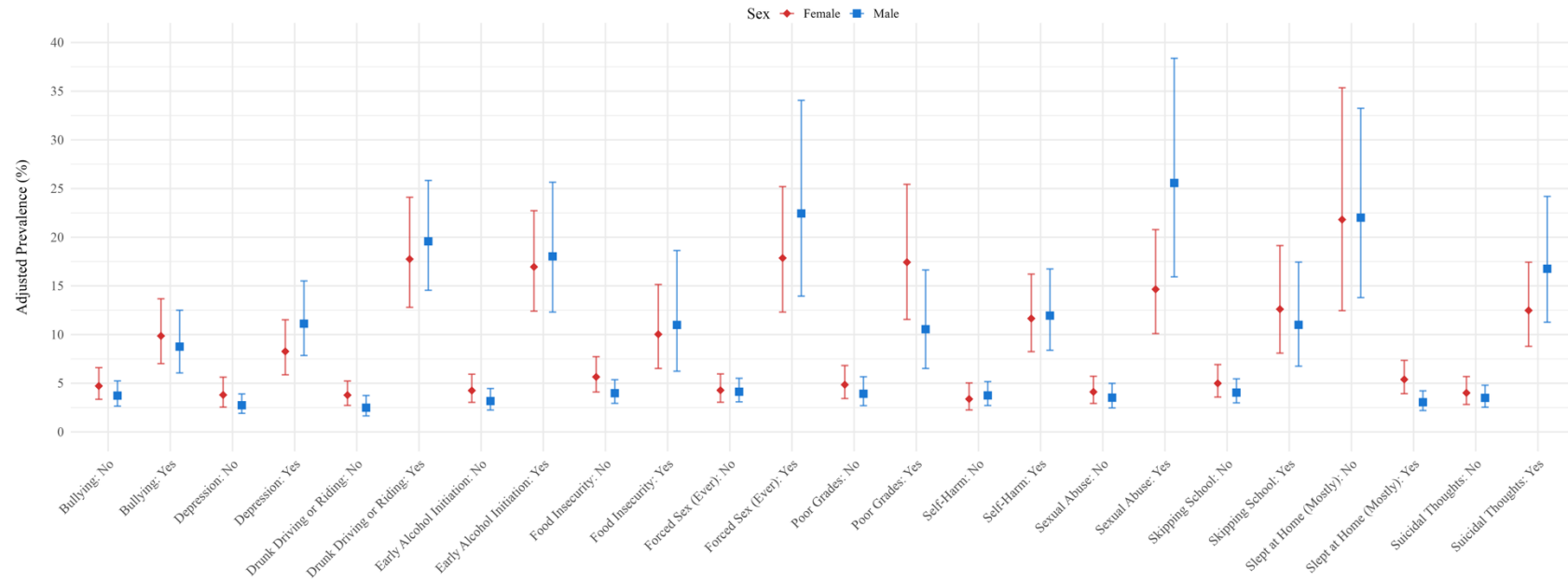
Slept at Home (Mostly): Usually slept in a parent/guardian's home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Supplemental Figure S2. Adjusted prevalence of self-reported **binge drinking** by sex and characteristic among high school students, Hawai'i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Binge Drinking: 4+ (females) or 5+ (males) drinks in a row in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

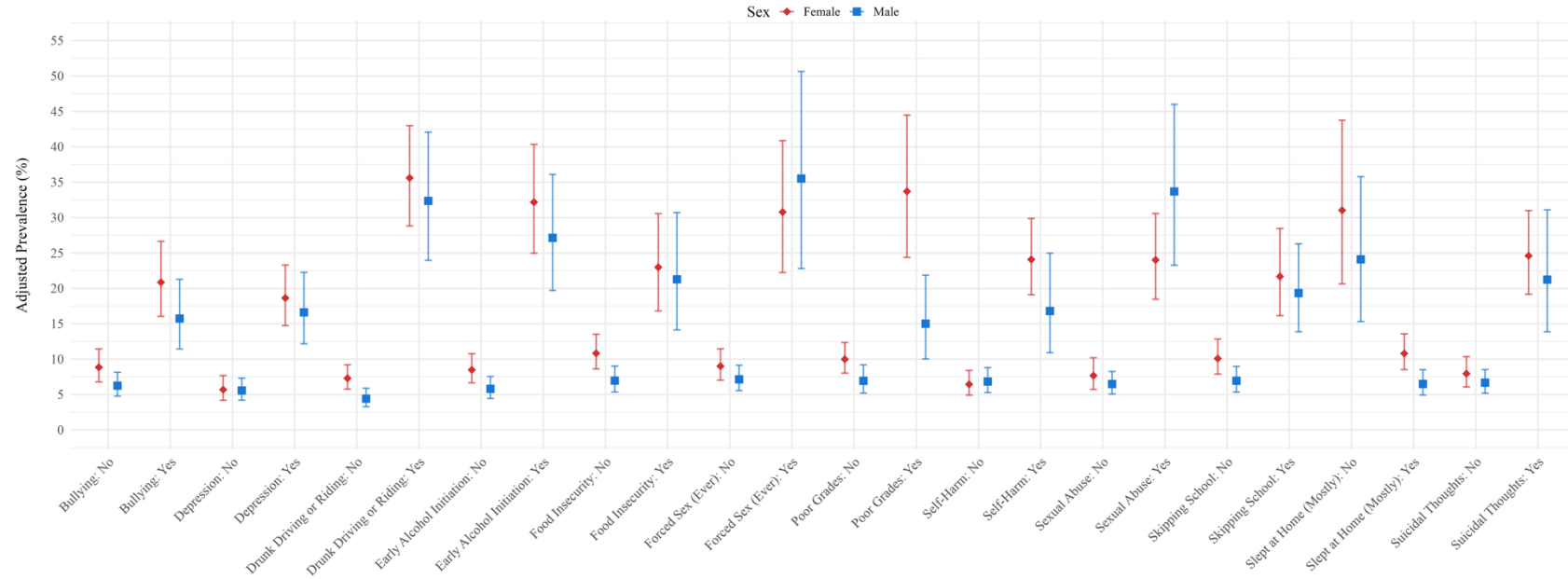
Slept at Home (Mostly): Usually slept in a parent/guardian's home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Supplemental Figure S3. Adjusted prevalence of self-reported **e-cigarette use** by sex and characteristic among high school students, Hawai'i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

E-cigarette Use: Any e-cigarette use in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

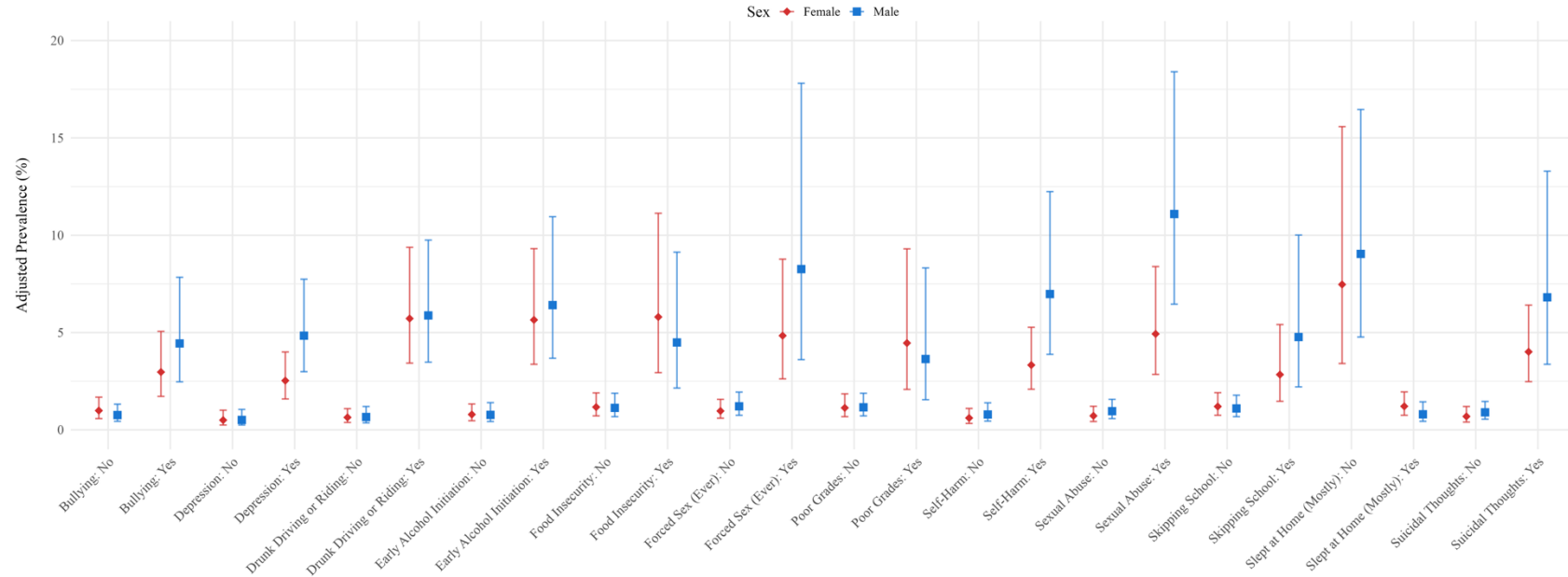
Slept at Home (Mostly): Usually slept in a parent/guardian's home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Supplemental Figure S4. Adjusted prevalence of self-reported **cigarette use** by sex and characteristic among high school students, Hawai'i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Cigarette Use: Any cigarette use in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

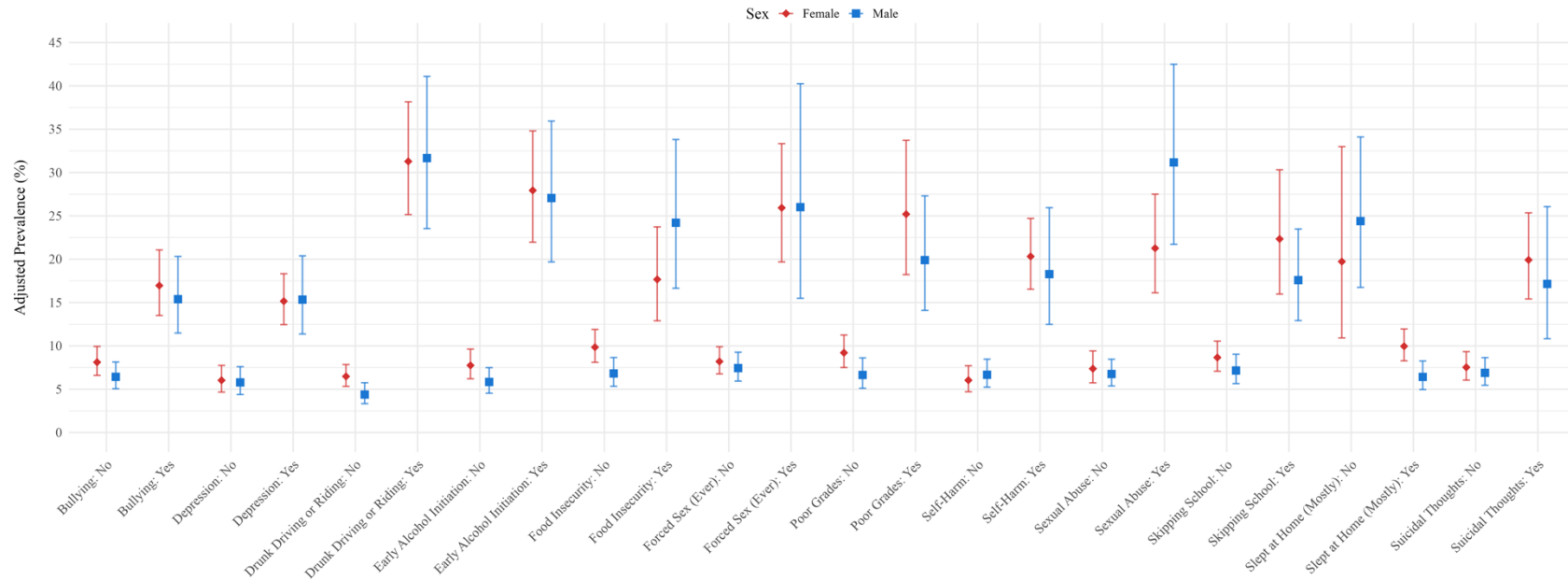
Slept at Home (Mostly): Usually slept in a parent/guardian's home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Supplemental Figure S5. Adjusted prevalence of self-reported **cannabis use** by sex and characteristic among high school students, Hawai'i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Cannabis Use: Any cannabis use in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

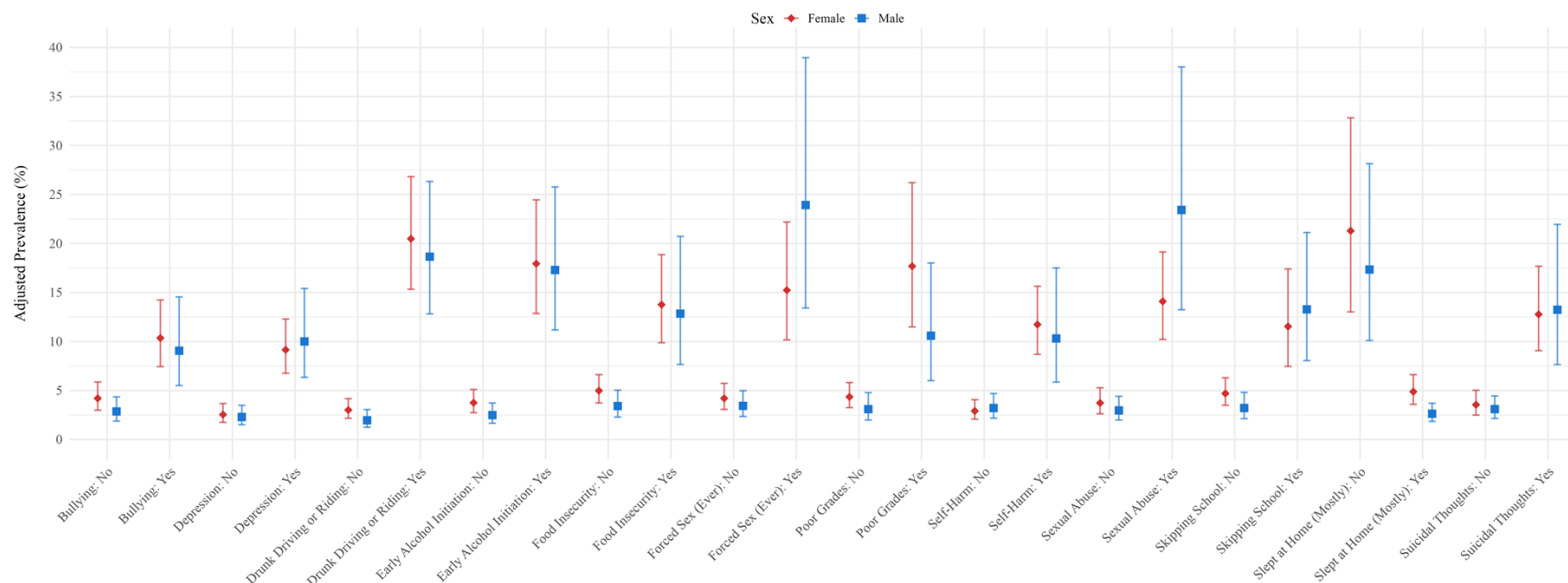
Slept at Home (Mostly): Usually slept in a parent/guardian's home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Supplemental Figure S6. Adjusted prevalence of self-reported e-cigarette-alcohol co-use by sex and characteristic among high school students, Hawai‘i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

E-cigarette & Alcohol Co-use: E-cigarette and alcohol use in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

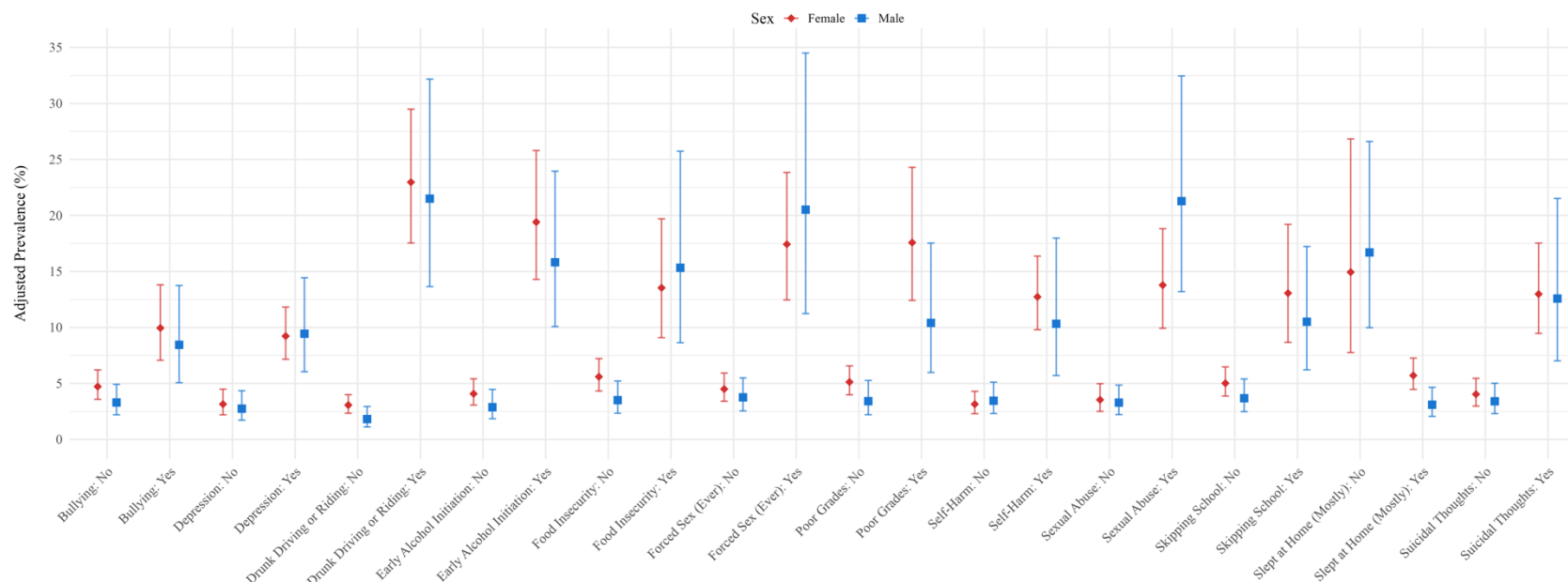
Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Supplemental Figure S7. Adjusted prevalence of self-reported **e-cigarette-cannabis co-use** by sex and characteristic among high school students, Hawai‘i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

E-cigarette & Cannabis Co-use: E-cigarette and cannabis use in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

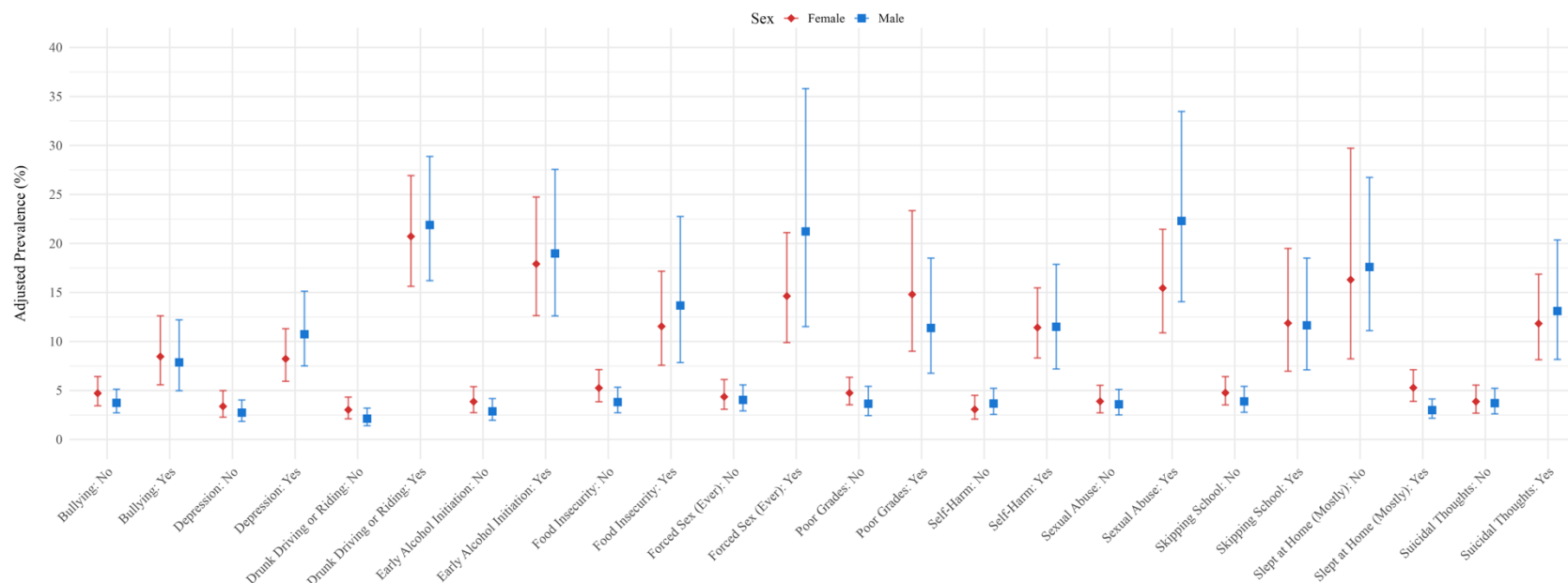
Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Supplemental Figure S8. Adjusted prevalence of self-reported **cannabis-alcohol co-use** by sex and characteristic among high school students, Hawai'i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Cannabis & Alcohol Co-use: Cannabis and alcohol use in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

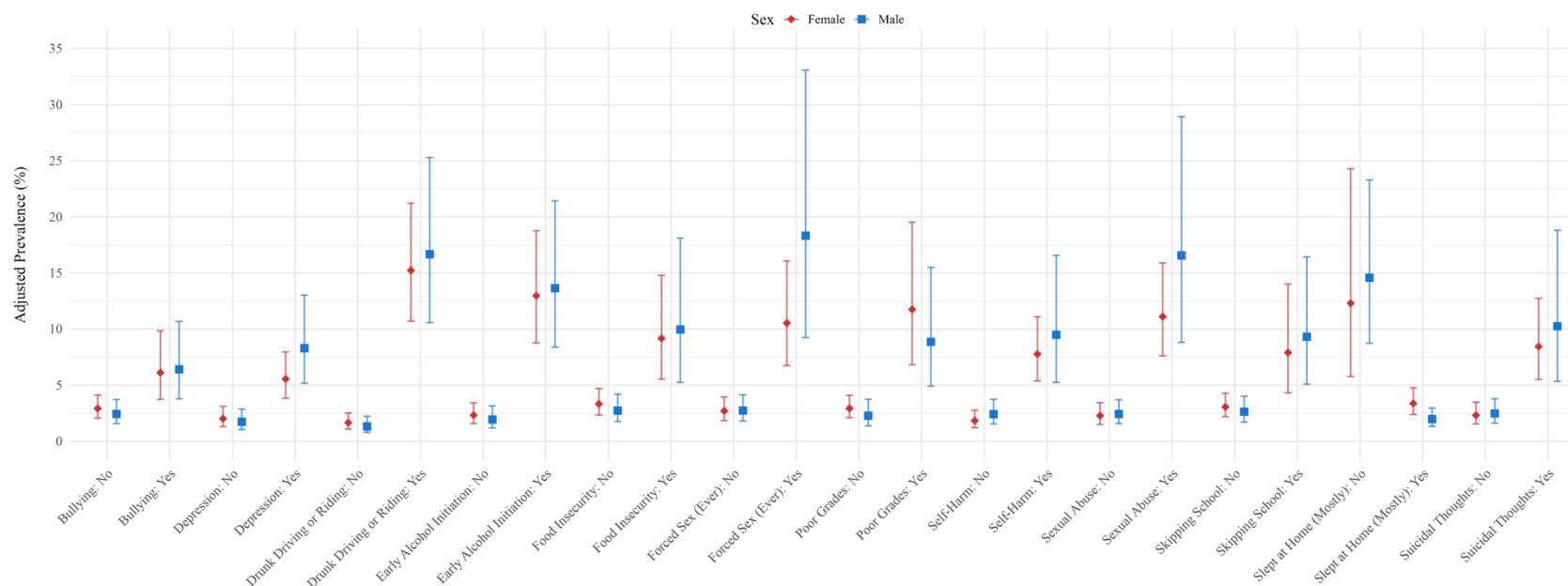
Slept at Home (Mostly): Usually slept in a parent/guardian's home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Supplemental Figure S9. Adjusted prevalence of self-reported poly-substance use (alcohol, e-cigarette, and cannabis) by sex and characteristic among high school students, Hawai'i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Poly-substance Use: Use of alcohol, e-cigarette, and cannabis in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

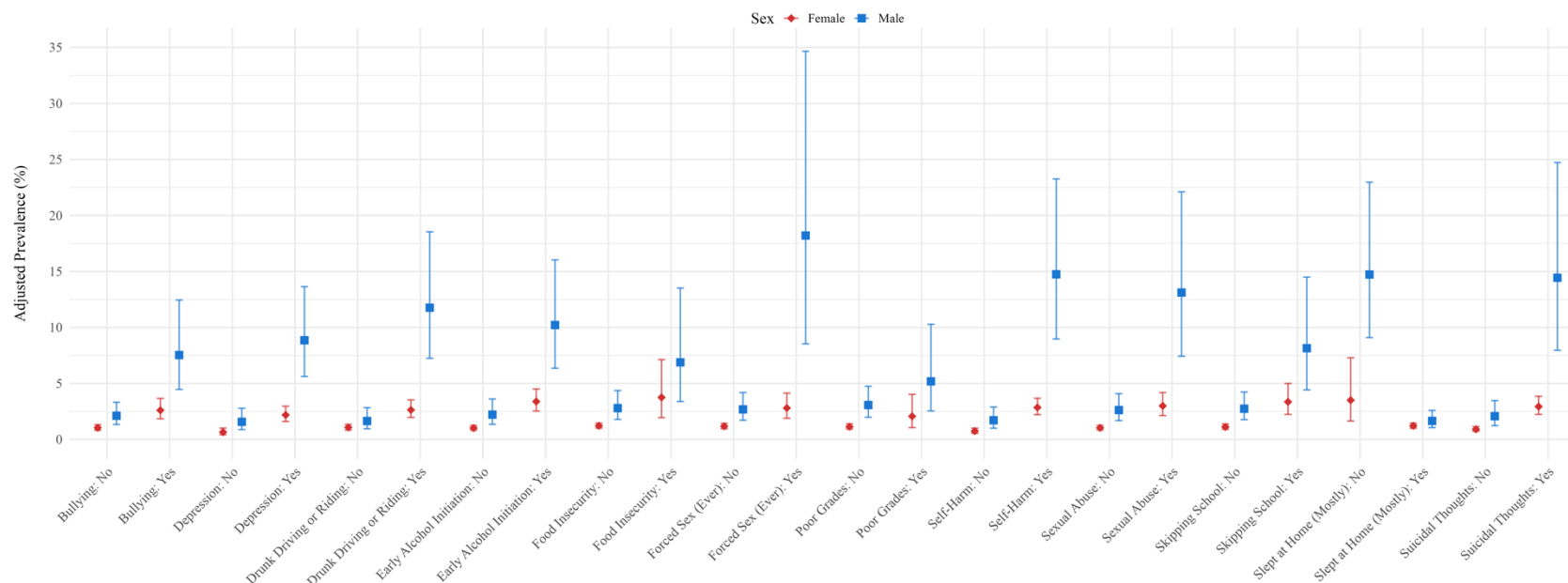
Slept at Home (Mostly): Usually slept in a parent/guardian's home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Supplemental Figure S10. Adjusted prevalence of self-reported **prescription medication misuse (current)** by sex and characteristic among high school students, Hawai‘i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Prescription Misuse (Current): Misusing prescription pain medicine in the past 30 days

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

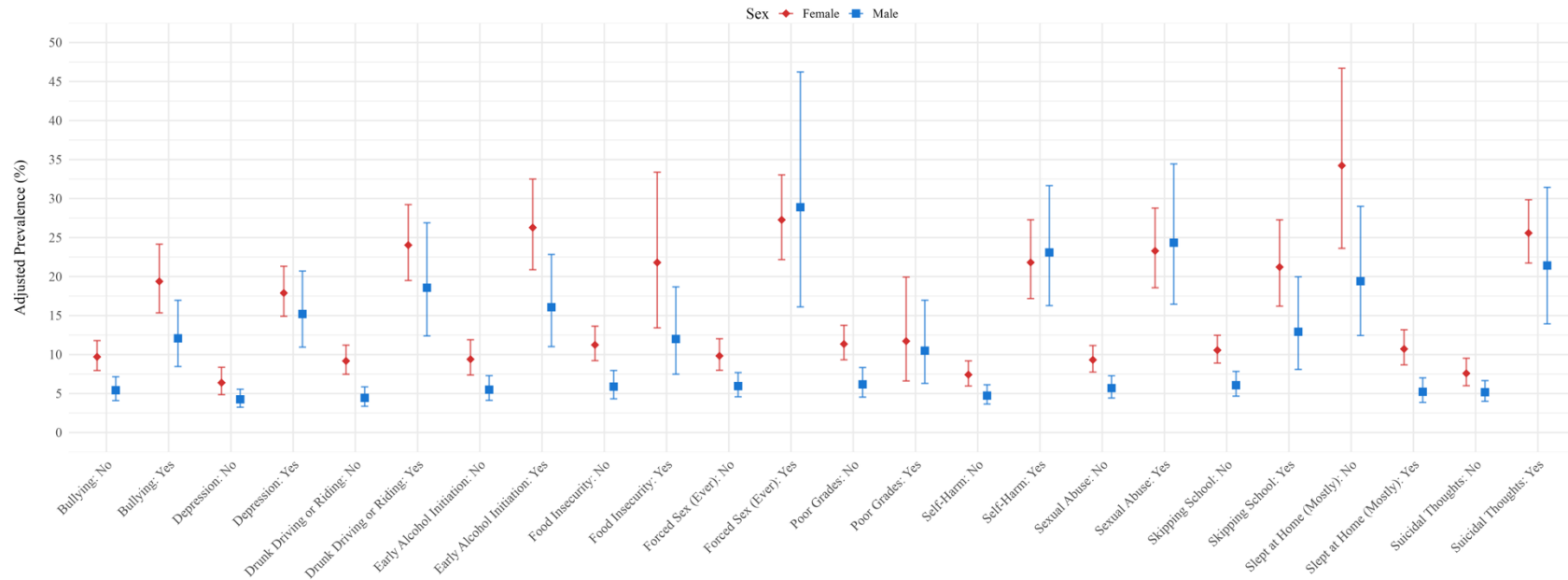
Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Supplemental Figure S11. Adjusted prevalence of self-reported **prescription misuse (ever)** by sex and characteristic among high school students, Hawai‘i YRBS 2021 and 2023

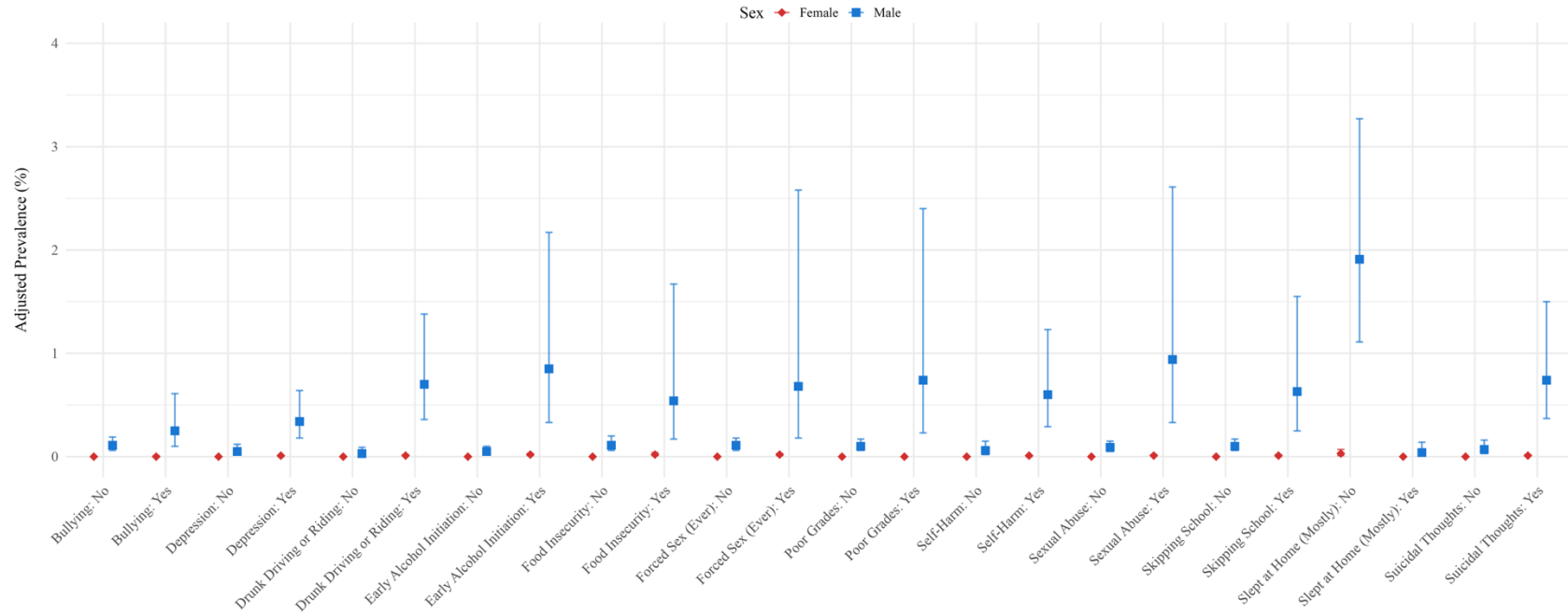


Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Prescription Misuse (Ever): Ever misused prescription pain medicine
Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year
Self-Harm: Intentionally hurt oneself without wanting to die in the past year
Suicidal Thoughts: Seriously considered suicide in the past year
Bullying: Bullied at school or electronically in the past year
Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe
Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex
Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days
Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days
Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs
Early Alcohol Initiation: First drank alcohol before age 13
Poor Grades: Mostly Ds or Fs in school during the past year

Supplemental Figure S12. Adjusted prevalence of self-reported **methamphetamine use (ever)** by sex and characteristic among high school students, Hawai‘i YRBS 2021 and 2023



Note: Prevalence estimates were adjusted for grade level, sex, race/ethnicity, county, and survey year

Methamphetamine Use (Ever): Used methamphetamines at least once in their lifetime

Depression: Felt very sad or hopeless for 2+ weeks in a row in the past year

Self-Harm: Intentionally hurt oneself without wanting to die in the past year

Suicidal Thoughts: Seriously considered suicide in the past year

Bullying: Bullied at school or electronically in the past year

Skipping School (Safety Concerns): Missed school in the past 30 days because of feeling unsafe

Sexual Abuse: Sexual violence (forced kissing, touching, or intercourse) in the past year

Forced Sex (Ever): Has ever been physically forced to have sex

Food Insecurity: Often or always hungry due to not enough food at home in the past 30 days

Slept at Home (Mostly): Usually slept in a parent/guardian’s home in the past 30 days

Drunk Driving/Riding: Rode in a car in the past 30 days with a driver, including oneself, who was high or using alcohol or drugs

Early Alcohol Initiation: First drank alcohol before age 13

Poor Grades: Mostly Ds or Fs in school during the past year

Supplemental Table S2. Adjusted prevalence of self-reported substance use by sex and selected risk factors among high school students, Hawai‘i YRBS 2021 and 2023

Variable	Level	Alcohol Use Weighted % (95% CI)	Binge Drinking Weighted % (95% CI)	E-cigarette Use Weighted % (95% CI)	Cigarette Use Weighted % (95% CI)	Cannabis Use Weighted % (95% CI)	E-cigarette & Cannabis Co-use Weighted % (95% CI)	E-cigarette & Alcohol Co-use Weighted % (95% CI)	Cannabis & Alcohol Co-use Weighted % (95% CI)	Poly-substance Use Weighted % (95% CI)	Prescription Misuse (Current) Weighted % (95% CI)	Prescription Misuse (Ever) Weighted % (95% CI)	Methamphetamine Use (Ever) Weighted % (95% CI)
Sex	Female	15.74% (13.53% - 18.23%)	7.10% (5.49% - 9.14%)	12.19% (10.06% - 14.70%)	1.30% (0.81% - 2.07%)	10.68% (8.95% - 12.69%)	6.21% (4.66% - 8.24%)	6.51% (4.87% - 8.66%)	6.24% (4.66% - 8.32%)	4.38% (3.12% - 6.11%)	4.89% (3.62% - 6.57%)	11.07% (9.28% - 13.15%)	0.09% (0.04% - 0.17%)
	Male	10.10% (7.89% - 12.84%)	4.71% (3.57% - 6.19%)	7.71% (6.33% - 9.36%)	1.94% (1.31% - 2.86%)	8.10% (6.61% - 9.88%)	4.22% (3.07% - 5.77%)	3.70% (2.67% - 5.09%)	4.25% (3.13% - 5.76%)	2.86% (1.94% - 4.18%)	3.29% (2.32% - 4.65%)	7.35% (5.98% - 9.01%)	0.17% (0.11% - 0.28%)
Depression	No	8.71% (7.47% - 10.13%)	3.67% (2.79% - 4.81%)	5.83% (4.77% - 7.10%)	0.50% (0.28% - 0.91%)	6.16% (5.14% - 7.35%)	3.01% (2.18% - 4.14%)	2.57% (1.89% - 3.48%)	3.10% (2.30% - 4.17%)	1.98% (1.37% - 2.86%)	1.98% (1.30% - 2.99%)	5.32% (4.36% - 6.47%)	0.04% (0.02% - 0.10%)
	Yes	21.04% (17.12% - 25.57%)	10.35% (7.85% - 13.54%)	18.28% (15.15% - 21.89%)	4.03% (2.80% - 5.75%)	15.82% (13.27% - 18.77%)	9.56% (7.21% - 12.59%)	10.02% (7.38% - 13.47%)	9.37% (7.00% - 12.43%)	6.78% (4.69% - 9.71%)	8.15% (5.96% - 11.06%)	16.50% (14.07% - 19.26%)	0.21% (0.13% - 0.36%)
Self-Harm	No	9.64% (8.06% - 11.49%)	4.08% (3.11% - 5.33%)	6.95% (5.84% - 8.25%)	0.72% (0.44% - 1.19%)	6.71% (5.65% - 7.95%)	3.45% (2.61% - 4.55%)	3.26% (2.44% - 4.35%)	3.52% (2.60% - 4.73%)	2.25% (1.59% - 3.18%)	2.21% (1.52% - 3.19%)	6.05% (5.08% - 7.19%)	0.05% (0.02% - 0.11%)
	Yes	25.82% (20.94% - 31.37%)	13.34% (10.22% - 17.23%)	22.14% (18.18% - 26.68%)	5.54% (3.70% - 8.21%)	20.52% (16.60% - 25.07%)	12.40% (9.03% - 16.79%)	12.08% (8.84% - 16.31%)	12.09% (8.93% - 16.17%)	8.92% (6.07% - 12.94%)	11.35% (8.63% - 14.80%)	21.52% (17.66% - 25.97%)	0.33% (0.20% - 0.57%)
Suicidal Thoughts	No	10.52% (8.77% - 12.56%)	4.22% (3.27% - 5.44%)	7.49% (6.21% - 9.00%)	0.88% (0.58% - 1.32%)	7.50% (6.33% - 8.87%)	3.84% (2.88% - 5.11%)	3.51% (2.59% - 4.74%)	3.93% (2.89% - 5.32%)	2.54% (1.77% - 3.63%)	2.68% (1.89% - 3.80%)	6.41% (5.40% - 7.60%)	0.05% (0.02% - 0.11%)
	Yes	25.70% (20.12% - 32.20%)	15.32% (11.30% - 20.43%)	23.56% (18.94% - 28.89%)	6.06% (3.89% - 9.30%)	19.37% (14.72% - 25.07%)	13.01% (9.08% - 18.29%)	13.45% (9.52% - 18.68%)	12.59% (8.89% - 17.52%)	9.58% (6.18% - 14.55%)	11.46% (8.36% - 15.53%)	23.43% (19.43% - 27.97%)	0.43% (0.25% - 0.75%)
Bullying	No	10.81% (9.07% - 12.83%)	4.78% (3.76% - 6.07%)	7.74% (6.48% - 9.23%)	0.98% (0.65% - 1.48%)	7.53% (6.51% - 8.70%)	4.13% (3.19% - 5.33%)	3.81% (2.82% - 5.12%)	4.42% (3.47% - 5.63%)	2.87% (2.12% - 3.88%)	2.97% (2.21% - 3.99%)	7.52% (6.40% - 8.82%)	0.08% (0.05% - 0.14%)
	Yes	20.91% (16.89% - 25.59%)	10.41% (8.05% - 13.35%)	18.62% (15.20% - 22.62%)	4.18% (2.60% - 6.66%)	16.87% (14.06% - 20.11%)	9.36% (6.58% - 13.16%)	10.03% (7.32% - 13.60%)	8.28% (5.69% - 11.89%)	6.44% (4.15% - 9.87%)	8.30% (5.80% - 11.75%)	15.59% (13.10% - 18.45%)	0.17% (0.08% - 0.34%)
Skipping School (Safety Concern)	No	11.48% (9.67% - 13.57%)	5.11% (4.08% - 6.38%)	8.69% (7.30% - 10.32%)	1.33% (0.91% - 1.94%)	8.22% (7.09% - 9.52%)	4.48% (3.44% - 5.82%)	4.22% (3.15% - 5.63%)	4.53% (3.52% - 5.80%)	3.06% (2.22% - 4.20%)	3.42% (2.53% - 4.61%)	8.24% (7.18% - 9.45%)	0.08% (0.05% - 0.13%)
	Yes	25.04% (20.66% - 29.99%)	13.18% (10.20% - 16.87%)	20.59% (16.84% - 24.91%)	4.27% (2.55% - 7.07%)	20.85% (16.41% - 26.11%)	11.94% (8.63% - 16.29%)	12.43% (9.27% - 16.46%)	11.84% (8.04% - 17.12%)	8.63% (5.76% - 12.74%)	10.02% (6.77% - 14.57%)	17.05% (13.34% - 21.53%)	0.43% (0.20% - 0.90%)
Forced Sex (Ever)	No	11.17% (9.22% - 13.48%)	4.76% (3.69% - 6.13%)	8.29% (7.01% - 9.78%)	1.19% (0.82% - 1.72%)	8.13% (7.12% - 9.28%)	4.25% (3.28% - 5.49%)	4.07% (3.08% - 5.35%)	4.35% (3.31% - 5.71%)	2.86% (2.07% - 3.95%)	3.52% (2.59% - 4.77%)	7.89% (6.78% - 9.15%)	0.07% (0.04% - 0.12%)
	Yes	32.67% (26.62% - 39.37%)	20.55% (15.60% - 26.57%)	30.92% (24.04% - 38.78%)	7.10% (4.27% - 11.58%)	26.47% (19.95% - 34.21%)	18.01% (12.67% - 24.96%)	17.06% (11.33% - 24.87%)	16.30% (11.02% - 23.44%)	12.97% (8.25% - 19.79%)	10.61% (7.19% - 15.39%)	24.98% (20.37% - 30.23%)	0.51% (0.23% - 1.13%)
Sexual Abuse	No	10.21% (8.40% - 12.35%)	4.32% (3.41% - 5.46%)	7.52% (6.21% - 9.08%)	0.91% (0.59% - 1.40%)	7.47% (6.44% - 8.65%)	3.68% (2.73% - 4.94%)	3.62% (2.64% - 4.96%)	3.90% (2.92% - 5.20%)	2.51% (1.77% - 3.55%)	3.26% (2.41% - 4.41%)	7.58% (6.55% - 8.76%)	0.06% (0.03% - 0.10%)
	Yes	34.68% (29.77% - 39.94%)	19.27% (14.59% - 25.02%)	27.20% (22.64% - 32.29%)	8.35% (5.47% - 12.53%)	25.29% (20.25% - 31.10%)	16.99% (12.48% - 22.70%)	17.04% (12.98% - 22.05%)	17.98% (13.59% - 23.42%)	13.68% (9.83% - 18.74%)	10.87% (7.48% - 15.54%)	22.25% (17.96% - 27.24%)	0.54% (0.26% - 1.16%)
Food Insecurity	No	12.00% (10.28% - 13.97%)	5.48% (4.37% - 6.83%)	9.16% (7.79% - 10.75%)	1.35% (0.90% - 2.02%)	8.67% (7.53% - 9.95%)	4.72% (3.65% - 6.09%)	4.49% (3.42% - 5.89%)	4.70% (3.72% - 5.93%)	3.23% (2.36% - 4.41%)	3.70% (2.77% - 4.93%)	8.51% (7.20% - 10.02%)	0.08% (0.05% - 0.14%)
	Yes	23.14% (17.52% - 29.92%)	11.06% (7.66% - 15.72%)	21.11% (16.63% - 26.41%)	5.32% (3.07% - 9.08%)	20.58% (15.68% - 26.53%)	13.87% (9.22% - 20.36%)	13.07% (9.27% - 18.11%)	12.22% (8.42% - 17.42%)	9.69% (5.94% - 15.41%)	9.62% (5.49% - 16.31%)	16.58% (11.92% - 22.59%)	0.43% (0.17% - 1.05%)

Variable	Level	Alcohol Use	Binge Drinking	E-cigarette Use	Cigarette Use	Cannabis Use	E-cigarette & Cannabis Co-use	E-cigarette & Alcohol Co-use	Cannabis & Alcohol Co-use	Poly-substance Use	Prescription Misuse (Current)	Prescription Misuse (Ever)	Methamphetamine Use (Ever)
		Weighted % (95% CI)	Weighted % (95% CI)	Weighted % (95% CI)	Weighted % (95% CI)	Weighted % (95% CI)	Weighted % (95% CI)	Weighted % (95% CI)	Weighted % (95% CI)	Weighted % (95% CI)	Weighted % (95% CI)	Weighted % (95% CI)	Weighted % (95% CI)
Slept at Home (Mostly)	No	35.58% (27.42% - 44.66%)	24.89% (16.82% - 35.19%)	27.86% (19.92% - 37.49%)	9.79% (5.81% - 16.02%)	24.03% (17.53% - 32.00%)	17.25% (11.35% - 25.35%)	20.93% (13.37% - 31.22%)	18.57% (11.95% - 27.70%)	15.28% (9.22% - 24.25%)	13.47% (8.24% - 21.25%)	26.47% (19.59% - 34.74%)	1.47% (0.90% - 2.40%)
	Yes	11.11% (9.35% - 13.15%)	4.78% (3.88% - 5.88%)	8.87% (7.57% - 10.37%)	1.15% (0.74% - 1.77%)	8.56% (7.41% - 9.87%)	4.52% (3.53% - 5.77%)	4.08% (3.13% - 5.30%)	4.32% (3.32% - 5.61%)	2.88% (2.12% - 3.90%)	2.65% (1.98% - 3.54%)	7.83% (6.57% - 9.32%)	0.05% (0.02% - 0.12%)
Poor Grades	No	11.69% (9.89% - 13.77%)	4.92% (3.77% - 6.41%)	8.57% (7.26% - 10.08%)	1.30% (0.87% - 1.93%)	8.20% (7.02% - 9.55%)	4.36% (3.35% - 5.65%)	3.92% (2.97% - 5.17%)	4.30% (3.34% - 5.51%)	2.72% (1.96% - 3.76%)	3.75% (2.80% - 5.01%)	8.67% (7.39% - 10.16%)	0.09% (0.06% - 0.15%)
	Yes	24.44% (18.48% - 31.58%)	14.88% (11.25% - 19.43%)	23.43% (18.07% - 29.81%)	4.71% (2.51% - 8.69%)	23.59% (18.42% - 29.68%)	14.41% (10.12% - 20.11%)	14.61% (10.00% - 20.86%)	13.29% (8.84% - 19.49%)	10.94% (6.98% - 16.75%)	6.38% (3.94% - 10.16%)	11.71% (7.72% - 17.39%)	0.47% (0.19% - 1.16%)
Drunk Driving/Riding	No	8.99% (7.49% - 10.76%)	3.55% (2.72% - 4.63%)	6.03% (5.06% - 7.17%)	0.75% (0.46% - 1.22%)	5.75% (4.85% - 6.80%)	2.51% (1.86% - 3.39%)	2.66% (1.94% - 3.63%)	2.67% (1.91% - 3.73%)	1.54% (1.03% - 2.31%)	2.81% (1.99% - 3.94%)	6.72% (5.72% - 7.88%)	0.03% (0.01% - 0.07%)
	Yes	36.75% (31.75% - 42.04%)	20.48% (16.47% - 25.18%)	34.25% (28.47% - 40.54%)	6.27% (4.33% - 8.98%)	32.23% (26.25% - 38.85%)	22.46% (16.65% - 29.58%)	20.27% (15.61% - 25.90%)	21.59% (17.28% - 26.64%)	16.59% (12.20% - 22.15%)	10.62% (7.83% - 14.25%)	21.36% (17.36% - 26.00%)	0.50% (0.29% - 0.86%)
Early Alcohol Initiation	No	9.04% (7.51% - 10.86%)	4.25% (3.32% - 5.44%)	7.35% (6.22% - 8.66%)	0.95% (0.62% - 1.44%)	7.12% (6.08% - 8.31%)	3.63% (2.74% - 4.79%)	3.35% (2.53% - 4.44%)	3.55% (2.75% - 4.57%)	2.30% (1.62% - 3.26%)	3.00% (2.21% - 4.08%)	7.44% (6.18% - 8.93%)	0.05% (0.02% - 0.09%)
	Yes	42.13% (35.62% - 48.92%)	18.98% (15.25% - 23.36%)	29.79% (25.17% - 34.86%)	6.73% (4.38% - 10.20%)	28.12% (23.35% - 33.45%)	17.82% (13.67% - 22.90%)	18.04% (13.48% - 23.73%)	18.60% (13.60% - 24.90%)	13.80% (9.98% - 18.77%)	10.81% (7.88% - 14.65%)	21.02% (17.47% - 25.08%)	0.60% (0.30% - 1.20%)