The Combined Impact of Campus and State Alcohol Policies on College Drinking and Harms

Pamela J. Trangenstein, PhD, MPH,[1] Timothy S. Naimi, MD, MPH,[2] Ziming Xuan, ScD, SM, MA,[3] Raimee H. Eck, PhD, MPH, MPA,[4] Thomas K. Greenfield, PhD,[1] Sally Casswell, PhD,[5] David H. Jernigan, PhD, MA[6]

Introduction: Little is known about what policies and practices may prevent alcohol-related harms to others. This study tested whether campus alcohol policies were associated with alcohol use and alcohol-related harms to others among college students and whether these associations differ in states with weak versus strong alcohol policies.

Methods: This cross-sectional study used data from a 2021 probability-based survey of U.S. college students. The main predictor was a campus alcohol policy score that combined 33 policies. Alcohol use outcomes included past 30-day volume and binge drinking frequency, and analyses with alcohol use outcomes included 968 students who drink. In 2024, models with alcohol-related harms to other outcomes used data from 1,737 students (comprising abstainers and those who drink alcohol) and 3 alcohol-related harms to others: verbal, physical, and sexual. Models also assessed interactions between campus and state alcohol policy scores.

Results: Stronger campus alcohol policy scores were associated with lower alcohol volumes (incidence rate ratio=0.91; 95% CI=0.86, 0.97; *p*=0.003) and lower odds of verbal alcohol-related harms to others (AOR=0.86; 95% CI=0.75, 0.98; *p*=0.022). Associations between campus alcohol policy scores and binge frequency, verbal alcohol-related harms to others, and sexual alcohol-related harms to other were only significant in states with weak policies, whereas the association between campus alcohol policy scores and alcohol volumes held across state policy environments.

Conclusions: Student drinking and rates of alcohol-related harms to others were lower on campuses with stronger alcohol policies. Campus alcohol policy scores were associated with lower volume overall and with reduced binge drinking and verbal and sexual alcohol-related harms to others in states with weaker policies. Findings highlight the importance of campus alcohol policies in such states.
Am J Prev Med 2026;70(3):108143. © 2025 Elsevier Inc. All rights are reserved, including those for text and data mining, AI training, and similar technologies.

INTRODUCTION

Alcohol use on college campuses has fallen alongside youth drinking in the U.S.[1,2] Yet, the rates of alcohol use, binge drinking, and alcohol-related harms, particularly those affecting individuals around the people who drink, remain unacceptably high. More than half of college students are harmed by the drinking around them.[3] In 2021, approximately 1.6 million college students were verbally harassed; 550,000 experienced unwanted sexual contact; and 470,000 were physically harmed by someone who had

From the [1]Alcohol Research Group, Public Health Institute, Emeryville, California; [2]Canadian Institute for Substance Use Research, University of Victoria, Victoria, Canada; [3]Department of Community Health Sciences, Boston University School of Public Health, Boston, Massachusetts; [4]Department of Heath, Behavior, and Society, Johns Hopkins Bloomberg School of Public Heath, Baltimore, Maryland; [5]SHORE & Whariki Research Centre, Massey University, Auckland, New Zealand; and [6]Department of Health Law, Policy, and Management, Boston University School of Public Health, Boston, Massachusetts

Address correspondence to: Pamela J. Trangenstein, PhD, MPH, Alcohol Research Group, Public Health Institute, 6001 Shellmound Avenue, Suite 450, Emeryville CA 94608. E-mail: ptrangenstein@arg.org.

been drinking.[3] There is a continuing need for prevention strategies that sustain recent declines in alcohol use and protect against alcohol-related harms on college campuses.

State alcohol policy scores summarize the strength of the policy environment, typically using a weighted sum of the policies in place. They are associated with a broad range of outcomes, including youth and adult alcohol use, drink driving, violence, and alcohol-related harms to others (AHTOs) among the general population.[4-6] Emerging evidence suggests that their effects may also be relevant for college campuses because rates of college alcohol use, binge drinking, alcohol-related arrests, alcohol-related disciplinary infractions, and sexual assault are lower in states with stronger alcohol policies.[7,8]

A newer approach is to codify and score campus alcohol policies, which offer more proximal protection against alcohol problems for students and institutions.[9,10] The authors are aware of a single study that scored policies at 22 colleges using the National Institute on Alcohol Abuse and Alcoholism's College Alcohol Intervention Matrix (AIM), finding that more comprehensive policy environments were associated with lower rates of heavy drinking.[11] However, policy scores derived using College AIM may be incomplete because it omits most (22 of 35) of the policies listed on college websites, such as bans on tailgating, drinking games, and consumption in private dorm rooms.[12] Furthermore, little is known about campus alcohol policy scores (CAPSs)' associations with AHTOs.

The interplay between college and state alcohol policies likely affects alcohol use and AHTOs among college students. From a social ecologic perspective, colleges are embedded within larger communities whose alcohol policy environments shape college drinking and AHTOs.[13] Although both levels of policy matter, researchers have argued that campus conditions more directly shape environments that either permit or discourage excessive drinking.[14] A New Zealand study supports this, finding that strengthened campus alcohol policies were associated with reduced drinking and intoxication, whereas national changes (e.g., retailer hours of sale, blood alcohol concentration limits) were not.[15] The authors are unaware of any U.S. studies assessing this interaction.

This study examined whether college CAPSs were associated with alcohol use and AHTOs among students. It investigated verbal, physical, and sexual AHTOs in addition to alcohol use outcomes because the primary goal of campus alcohol policies is often to prevent and reduce harm. These AHTOs are relatively common[3] and associated with key indicators of college life, such as mental health and academic achievement.[16,17] Analyses further assessed whether state alcohol policies moderated the associations between campus alcohol policies, alcohol consumption, and AHTOs.

METHODS

Study Sample
This study used data from the Harms to Others from Drinking Among College Students (HTOCS) study. The HTOCS sample was drawn using a 2-stage probability-based sampling design. First, colleges and universities (referred to as colleges in the remaining parts of this paper) were selected using probability proportional to size sampling within 8 strata defined by 4 geographic regions and 2 college types (i.e., 2- vs 4-year colleges). All nontribal colleges with a residential component and at least 400 students located in the 50 U.S. states or Washington, District of Columbia were included in the sampling frame. Initially, 61 colleges were selected, and 46 (75.4%) agreed to participate. The Boston University Medical Campus IRB deemed this study exempt because study staff only received deidentified data from the survey contractor. College review boards reviewed and approved the protocol when their procedures required additional review.

Second, students were selected within colleges. Sophomores and juniors at 4-year institutions and 2nd-year students at 2-year institutions were eligible to participate. To ensure adequate representation of Black and Hispanic/Latinx students, colleges provided counts of eligible students who were (1) Black, not Hispanic/Latinx; (2) Hispanic/Latinx; and (3) all other races, not Hispanic/Latinx. School-specific target sample sizes for the 3 racial and ethnic groups oversampled Black and Hispanic/Latinx students. Colleges used these targets to draw random samples for each group. Data were collected from October to December 2021. The American Association for Public Opinion Research cooperation rate was 91%, and the response rate was 16%.

The analytic sample comprised a complete case analysis of 1,737 undergraduate sophomores and juniors (4-year institutions) and 2nd-year students (2-year institutions) who attended class in person or hybrid (86.9% of the full sample). A total of 188 students (7.5%) who only attended class online were excluded because they may have different policy exposures. Data for 1 school that only sampled 21 freshmen were excluded because they did not meet the inclusion criteria. Finally, 59 students with missing data (3.0%) were excluded. These students were more often Hispanic/Latinx and reported lower alcohol and binge drinking rates (Appendix Table 1, available online). Alcohol use outcomes were only relevant to students who currently drink alcohol, so these models were restricted to the 968 students (55.7%)

who consumed alcohol in the past 30 days. Models with AHTO outcomes used the full analytic sample.

Measures

Analyses included 2 alcohol use outcomes: (1) past 30-day volume (i.e., the total number of standard drinks[18] consumed) and (2) binge frequency (i.e., number of days consuming ≥4/≥5 alcoholic drinks for women and men, respectively). The HTOCS survey captured usual quantity in standard drinks and frequency as well as binge frequency and intensity. The authors followed previously established indexing methods to combine quantities consumed on nonbinge and binge drinking days to account for undercoverage.[19]

The study included 3 domains of harm committed by someone who had been drinking: (1) verbal AHTOs combined being harassed/bothered with called names/insulted; (2) physical AHTOs combined being punched/hit with pushed/shoved; and (3) sexual AHTOs were unwanted sexual contact without the students' consent. All AHTOs were binary variables and measured since the academic year started (approximately 3 months).

CAPSs assessed the strength of campus alcohol policies using a methodology developed by the Maryland Collaborative to Reduce College Drinking and Related Problems (Maryland Collaborative).[9,20,21] Two members of the study team collected and reviewed each campus' policy documents to code 35 policies. Policies were weighted by whether the Maryland Collaborative classified them as most effective (2 points), somewhat effective (1 point), or ineffective (0 points).[9,20,21]

The analytic sample contained 15 schools with dry campuses and 30 with wet campuses. Ten policies automatically applied to dry campuses (e.g., prohibition of alcohol consumption in public spaces) and were assigned full points. In addition, 13 policies do not apply to dry campuses (e.g., mandated registration of campus events with alcohol) and were excluded. This reduced the total possible points from 63 to 48 for dry campuses.

The CAPS was calculated as the sum of the policies weighted for effectiveness. To account for differences in policy applicability, scores were standardized by dividing by the total possible points specific to each campus type (48 for dry campuses and 63 for wet campuses), ensuring comparability across campuses regardless of alcohol ban status. The resulting scores ranged from 0 to 100, capturing the percentage of total possible points earned by each campus. To aid interpretation, the final variable was in deciles, so each 1-unit increase in the regressions equals a 10% increase in the CAPS.

The state alcohol policy environment was measured using the Alcohol Policy Scale (APS), which combines 29 policies across 5 domains: physical availability, underage drinking, drinking driving, social host or dram shop laws, and pricing. Ten of these policies were specific to youth alcohol use, and the remaining 19 focused on general, population-level consumption, which influences alcohol consumption among young people.[5] Analyses used 2021 APS scores based on the student's current state of residence at the time of survey administration. These scores were dichotomized using a median split (low versus high scores) to aid interpretation of the interaction models.

Models adjusted for several covariates. School type (4 year vs 2 year) may affect both the types of campus alcohol policies passed and alcohol-related outcomes. Additional covariates were associated with study outcomes: age in years, centered at the mean; gender identity (male [reference group], female, and transgender, nonconforming, or ≥2 gender identities); race (Black, other races and ethnicities, White, and ≥2 races or ethnicities); ethnicity (Hispanic/Latinx versus not); housing arrangements (on campus versus off campus or other); participation in Greek life, sports, and religious activities (separately); and monthly disposable income ($300 or more versus less). Models without CAPS × APS interactions adjusted for state APS. Regressions with AHTO outcomes adjusted for past 30-day alcohol use (abstainer, nonbinge, and binge) because alcohol consumption is a robust predictor of AHTO victimization.[22]

Statistical Analysis

Survey weights were calculated using an iterative process. The first base weight was the inverse of the probability of selecting the institution from the sampling frame, accounting for the stratum and college enrollment size. The student base weight was the inverse of the probability of selecting a student from each of the 3 recruitment strata (i.e., Black, non-Hispanic/Latinx; Hispanic/Latinx; all others). Finally, survey weights were calibrated to align the HTOCS sample with undergraduates' self-reported race and ethnicity as well as geographic region using data from the Integrated Postsecondary Education Data System.[23]

To assess the overall association of CAPSs with student drinking patterns and AHTOs, analyses included unadjusted and adjusted negative binomial regressions (alcohol use outcomes) and logistic regressions (AHTO outcomes). Intraclass correlation coefficients for students clustered within colleges were all <0.08, suggesting minimal clustering, although SEs were still clustered by college. To examine whether associations with CAPSs differed on the basis of community and state alcohol environments, models were rerun with interactions between CAPSs and state APSs. Marginal estimates from interaction models were obtained and graphed to aid interpretation. Results of unadjusted and adjusted models with covariates appear in

Table 1. Demographics of Sample by Current Drinking Status, Percentage or Mean (SE, Range)

Demographic, behavior, or policy	Full sample (N=1,737)	Students who drink[a] (n=968)
Policy environment		
College alcohol policy score[b]	49.87 (2.67, range: 15−84)	49.87 (2.49, range: 15−84)
Strong state alcohol policy environment[c]	46.28%	46.58%
Alcohol-related outcomes		
Alcohol volume (standard drinks per month)	15.37 (1.42, range: 0−670)	27.52 (1.97, range: 1−670)
Binge drinking frequency (days per month)	1.15 (0.11, range: 0−30)	2.07 (0.16, range: 1−30)
Verbal AHTOs	14.41%	19.84%
Physical AHTOs	4.46%	6.84%
Sexual AHTOs	4.94%	7.04%
Student characteristic		
Age (years)	19.85 (0.07, range: 18−24)	19.98 (0.08, range: 18−24)
Gender identity		
Male	31.09%	31.16%
Female	64.47%	64.50%
Transgender, nonconforming, ≥2 genders	4.44%	4.33%
Race		
Black	10.86%	9.05%
Other races and ethnicities	10.68%	6.05%
Two or more races	8.89%	9.91%
White	69.57%	74.99%
Hispanic/Latinx	15.60%	15.84%
Housing		
On campus	39.17%	34.84%
Off campus	57.45%	60.75%
Other (fraternities, sororities, cooperatives)	3.38%	4.41%
$300 or more per month (versus less)	33.14%	34.70%
Participate in Greek life (versus not)	10.83%	15.29%
Participate in sports (versus not)	11.12%	11.16%
Participate in religious activities (versus not)	11.68%	9.63%
Alcohol use		
Abstainer	44.19%	0.00%
Non-binge	25.68%	45.99%
Binge	30.13%	54.00%
4-year institution (versus 2 -year)	92.49%	94.55%

[a]Students who currently drink are defined as those who reported consuming alcohol in the past 30 days.
[b]College campus alcohol policy scores represent the percentage of total possible points earned by each campus.
[c]Alcohol Policy Scale scores were categorized using a median split, which classified states with scores below 42.8 as weak state policy environments (range=32.0−42.0, median=37.4) and states equal to or above 42.8 as strong policy environments (range=42.8−56.7, median=46.5).
AHTO, alcohol-related harms to other.

Appendix Tables 2−5 (available online). All analyses used Stata, Version 16.1.[24]

Dichotomizing variables can result in loss of information and misclassification.[25] To assess potential bias from dichotomizing the APS, a second sensitivity analysis used continuous APS scores. Appendix Tables 6 and 7 (available online) contain these results.

RESULTS

Most of the sample was female (64.47%), was White (69.57%), and/or lived off campus (57.45%), with a mean age of 19.85 years (Table 1). Approximately 1 in every 10 students participated in Greek life (10.83%), sports (11.12%), and/or religious activities (11.68%). Verbal AHTOs were the most common (14.41%), with physical (4.46%) and sexual AHTOs (4.94%) rarer. AHTOs were slightly more prevalent among students who drink (verbal: 19.84%, physical: 6.84%, sexual: 7.04%). Over the past 30 days, students who drank consumed 27.52 drinks and binge drank on 2.07 days on average. The average CAPS was 49.87% for the full sample and students who drink.

Table 2. Negative Binomial Regression Models Predicting Alcohol Outcomes Among Students Who Drink, With and Without Interactions

Predictor	Volume			Binge[a] frequency		
	IRR	95% CI	*p*-value	IRR	95% CI	*p*-value
Without interaction with APS						
College alcohol policy score[b]	**0.91**	**0.86, 0.97**	**0.003**	0.93	0.87, 1.00	0.061
With interaction with APS						
College alcohol policy score	**0.89**	**0.83, 0.95**	**<0.001**	**0.89**	**0.82, 0.97**	**0.006**
Strong state APS score[c] (versus weak)	0.59	0.34, 1.04	0.068	**0.48**	**0.25, 0.90**	**0.023**
College alcohol policy × state APS	1.08	0.98, 1.20	0.115	**1.14**	**1.00, 1.29**	**0.042**

Note: Boldfaces indicate statistical significance (*p*<0.05).
Models adjusted for age, gender identity, race, ethnicity, housing, disposable income, student activities (i.e., Greek life, sports, and religious activities), and school type (i.e., 4-year vs 2-year institution).
[a]Binge drinking defined as ≥4 drinks per occasion for students assigned female sex at birth and ≥5 drinks per occasion for students assigned male sex at birth.
[b]College campus alcohol policy scores represent the percentage of total possible points earned by each campus. These scores were categorized using deciles, so a 1-unit increase represents a 10% increase in the score.
[c]APS scores were categorized using a median split, which classified states with scores below 42.8 as weak state policy environments (range=32.0−42.0, median=37.4) and states equal to or above 42.8 as strong policy environments (range=42.8−56.7, median=46.5). Referent group was weak alcohol policy environment.
APS, Alcohol Policy Scale; IRR, incidence rate ratio.

Each 10% increase in the CAPS was associated with students drinking 9% fewer alcoholic drinks each month (*p*=0.003) after accounting for student characteristics (Table 2). On average, this translates to 2.25 fewer drinks per month (95% CI=0.71, 3.78). The association between CAPS and binge drinking frequency was not significant (*p*=0.061).

Each 10% increase in the CAPS was associated with 14% lower odds of reporting verbal AHTOs (*p*=0.022) (Table 3). Associations between CAPSs and the odds of physical and sexual AHTOs among the full sample were not significant (*p*=0.077 and 0.116, respectively).

Higher campus (*p*<0.001) but not state APS scores (*p*=0.068) were associated with lower alcohol volumes (Table 2). No significant CAPS × APS interaction was observed for alcohol volume (interaction *p*=0.115). However, CAPSs were only associated with lower binge drinking frequency in states with weak alcohol policies (interaction *p*=0.042); each 10% increase in the CAPS corresponded to 0.25 fewer binge drinking days per month (95% CI=0.08, 0.43; *p*=0.005). Figure 1 shows that drinks and binge days decreased with rising CAPSs in states with weak policies, whereas predicted values appeared to remain low in states with stronger policies.

Similar to binge drinking frequency, CAPSs were only associated with lower odds of verbal (interaction *p*=0.004) and sexual AHTOs (interaction *p*=0.018) in states with weak alcohol policy environments (Table 3). In these states, each 10% increase in the CAPS corresponded to a 3 percentage points lower probability of

Table 3. Logistic Regression Models Predicting AHTOs Among Full Sample, With and Without Interactions

| Predictor	Verbal			Physical			Sexual		
	AOR	95% CI	*p*-value	AOR	95% CI	*p*-value	AOR	95% CI	*p*-value
Campus policy environment									
College alcohol policy score[a]	**0.86**	**0.75, 0.98**	**0.022**	0.86	0.72, 1.02	0.077	0.86	0.72, 1.04	0.116
Policy environment									
College alcohol policy score	**0.79**	**0.68, 0.91**	**0.001**	0.87	0.70, 1.07	0.180	**0.78**	**0.62, 0.97**	**0.027**
State APS score[b]	**0.22**	**0.09, 0.49**	**<0.001**	1.02	0.22, 4.77	0.976	**0.18**	**0.05, 0.68**	**0.011**
College alcohol policy × state APS	**1.29**	**1.08, 1.52**	**0.004**	0.98	0.72, 1.32	0.871	**1.37**	**1.05, 1.78**	**0.018**

Note: Boldfaces indicate statistical significance (*p*<0.05).
Models adjusted for age, gender identity, race, ethnicity, housing, disposable income, student activities (i.e., Greek life, sports, and religious activities), student alcohol use, and school type (i.e., 4-year vs 2-year institution).
[a]College campus alcohol policy scores represent the percentage of total possible points earned by each campus. These scores were categorized using deciles, so a 1-unit increase represents a 10% increase in the score.
[b]APS scores were categorized using a median split, which classified states with scores below 42.8 as weak state policy environments (range=32.0−42.0, median=37.4) and states equal to or above 42.8 as strong policy environments (range=42.8−56.7, median=46.5).
APS, Alcohol Policy Scale.
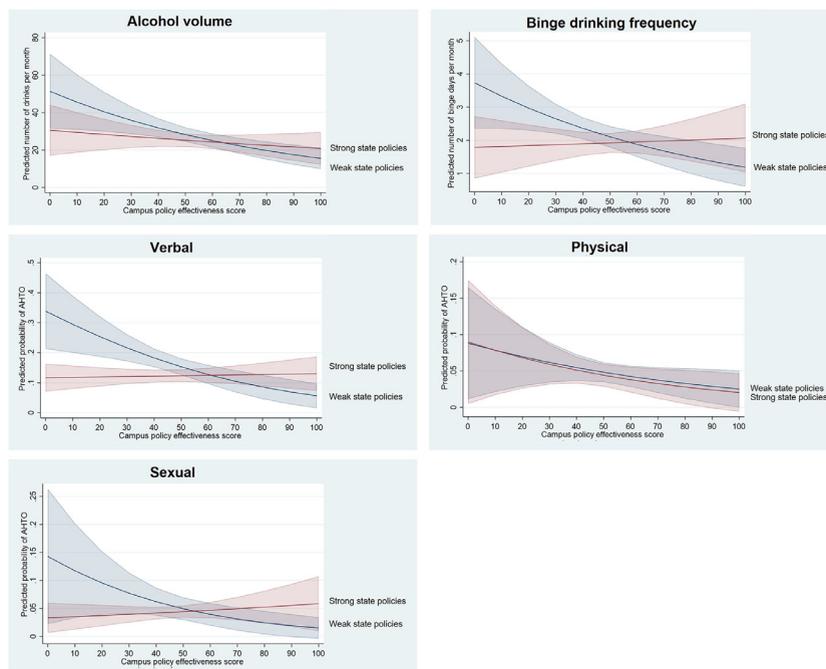
Figure 1. Predicted alcohol use levels and AHTOs as a function of campus and state alcohol policy environments.
Note: College campus alcohol policy scores represent the percentage of total possible points earned by each campus. Binge drinking is defined as ≥4 drinks per occasion for students assigned female sex at birth and ≥5 drinks per occasion for students assigned male sex at birth.
AHTO, alcohol-related harms to other.

verbal AHTOs (95% CI=1.09, 3.91; *p*=0.001) and 1.2 percentage points lower probability of sexual AHTOs in these states (95% CI=0.08, 2.26; *p*=0.040) (Figure 1). Results for the sensitivity analyses that used the continuous APS were consistent with those of the main models (Appendix Tables 6 and 7, available online).

DISCUSSION

This study demonstrates that both campus and state alcohol policies are relevant for college drinking and AHTOs. Campus policies are particularly important in reducing alcohol use outcomes, including verbal AHTOs, in states with weaker alcohol policies, where the absence of strong state-level policies leaves students more vulnerable to high-risk drinking and harms. This novel finding underscores the potential for campus alcohol policies to fill critical gaps in weak state alcohol policy environments, emphasizing their role as an essential tool for harm reduction.

Studies have typically evaluated campus alcohol policies individually, despite students experiencing their combined effects. This study is among the first to use policy scores to examine campus-level alcohol prevention. It builds on the study by Ringwalt et al.,[11] which found that higher CAPSs on the basis of National Institute on Alcohol Abuse and Alcoholism's College AIM

were associated with lower alcohol use but not harms to the person drinking. This study analysis extends these findings in 2 ways. First, the Maryland Collaborative CAPSs emphasize effective environmental strategies specific to campuses, whereas Ringwalt and colleagues[11] included individual-level approaches (e.g., educational campaigns) and community policies. Notably, their results showed the strongest associations for environmental strategies, such as those in the present CAPS. Second, the Maryland Collaborative scores weighted strategies by effectiveness, whereas Ringwalt et al.[11] weighted them by implementation level (ranging from none to high intensity). The authors' weighting is an advancement because associations between CAPSs and alcohol consumption are driven more by policy type and strength than the number of policies in place.[26] These CAPSs allow comparisons across campuses and can be used in a consultative process to encourage campuses to strengthen their policies, as has been done with schools in Maryland.[21]

This study contributes to an emerging literature that finds that campus alcohol policies can reduce AHTOs[27,28] by demonstrating the combined effect of campus alcohol policies for AHTOs. Campus alcohol policies may be colleges' first line of defense in terms of promoting healthier alcohol environments for all students—not just those who drink alcohol. This finding

matters because students who experience verbal AHTOs have lower satisfaction with college and higher odds of suicidal ideation.[16] Colleges face growing pressure to address campus sexual assaults from federal initiatives and from parents.[29] This study's findings suggest that colleges should consider environmental policies that address alcohol use—a key driver of sexual assaults—when developing prevention strategies. However, this study did not detect an association with physical AHTOs. Although it had a moderate sample size (*n*=1,737), the study may have been underpowered to detect this relationship, particularly if it is weak. Given the toll that physical AHTOs can exert on students, the authors encourage future research on this topic using larger sample sizes.

Unfortunately, colleges tend to implement only a fraction of the evidence-based policies.[11,30] Fatalism or the sense that there are no winning solutions to the problem of college drinking and a perceived lack of support are common explanations for why colleges are not taking greater action.[31] This study's findings suggest that there is a suite of alcohol policies capable of addressing and reducing binge drinking and alcohol-related harms. Furthermore, studies find that most college students support key alcohol policies.[32] It is possible that levels of support will rise on college campuses as alcohol consumption declines given the strong association between personal consumption patterns and perceived acceptability of alcohol policies.[33] The authors encourage colleges to poll students to better understand which policies and enforcement strategies they support to identify evidence-based solutions that are feasible to implement.

Limitations

Limitations of this study include that the Maryland Collaborative CAPSs did not address enforcement, which ensures that policy implementation persists over time.[34] Policy scores are unable to identify specific policies or sets of policies that are most effective. Therefore, results should be viewed as complementing and extending previous research on individual effective policies. Although typical for contemporary population-based surveys, the response rate was low (16%). Some student subpopulations who tend to respond late or not respond at all, such as people who drink heavily, are likely under-represented, which would bias results toward the null hypothesis. Students were surveyed during the second year of the coronavirus disease 2019 (COVID-19) pandemic when their social behaviors may have been restricted, which could result in lower prevalence of AHTOs than in previous studies.[3] Results are conservative and specific to U.S. college sophomores and juniors who attend class in person or hybrid and may not generalize to small (<400 students), tribal, or nonresidential colleges.

CONCLUSIONS

This study highlights the critical role of campus alcohol policies as a frontline preventive measure against college drinking and AHTOs. College and state decision makers cannot afford to view their respective alcohol policies as isolated efforts; their collaboration and combined implementation are essential for creating safer and healthier campus communities. Ensuring greater policy protections at the college level may buffer the risks associated with weak state alcohol policy environments, offering a potential path forward toward accelerating gains in reducing and preventing college drinking and associated AHTOs.

ACKNOWLEDGMENTS

CREDIT AUTHOR STATEMENT

Pamela J. Trangenstein: Conceptualization, Writing — original draft, Methodology, Investigation, Visualization. Timothy S. Naimi: Resources, Writing - review & editing. Ziming Xuan: Resources, Writing - review & editing. Raimee H. Eck: Writing - review & editing. Thomas K. Greenfield: Writing - review & editing. Sally Casswell: Writing - review & editing. David H. Jernigan: Funding acquisition, Conceptualization, Resources, Supervision.

SUPPLEMENTAL MATERIAL

Supplemental materials associated with this article can be found in the online version at https://doi.org/10.1016/j.amepre.2025.108143.

REFERENCES

1. Pape H, Rossow I, Brunborg GS. Adolescents drink less: how, who and why? A review of the recent research literature. *Drug Alcohol Rev.* 2018;37(suppl 1):S98–S114. https://doi.org/10.1111/dar.12695.
2. Vashishtha R, Pennay A, Dietze P, Marzan MB, Room R, Livingston M. Trends in adolescent drinking across 39 high-income countries: exploring the timing and magnitude of decline. *Eur J Public Health.* 2021;31(2):424–431. https://doi.org/10.1093/eurpub/ckaa193.
3. Yeh JC, Trangenstein PJ, Tiongson PJD, Arria AM, Greenfield TK, Jernigan DH. Harms from others' drinking among college students:

prevalence and risk factors, 2022. *Drug Alcohol Rev.* 2025;44(2):563–575. https://doi.org/10.1111/dar.13992.

4. Naimi TS, Blanchette J, Nelson TF, et al. A new scale of the U.S. alcohol policy environment and its relationship to binge drinking. *Am J Prev Med.* 2014;46(1):10–16. https://doi.org/10.1016/j.amepre.2013.07.015.

5. Xuan Z, Blanchette JG, Nelson TF, et al. Youth drinking in the United States: relationships with alcohol policies and adult drinking. *Pediatrics.* 2015;136(1):18–27. https://doi.org/10.1542/peds.2015-0537.

6. Greenfield TK, Cook WK, Karriker-Jaffe KJ, et al. The relationship between the U.S. state alcohol policy environment and individuals' experience of secondhand effects: alcohol harms due to others' drinking. *Alcohol Clin Exp Res.* 2019;43(6):1234–1243. https://doi.org/10.1111/acer.14054.

7. Kasimanickam MR, Kerr DCR, Killion RE, Naimi TS, Lira MC, Bae H. State alcohol policy environments of U.S. colleges: predictors of sexual assault and alcohol-related arrest and disciplinary action. *Am J Prev Med.* 2024;66(1):1–9. https://doi.org/10.1016/j.amepre.2023.09.015.

8. Kerr DCR, Naimi TS, Lira MC, Bae H. Associations of state-level alcohol policies and population use rates with alcohol use and binge drinking among U.S. 4-year college students, 2008−2019. *J Stud Alcohol Drugs.* 2025 In press. Online April 16. https://doi.org/10.15288/jsad.24-00355.

9. Jernigan DH, Shields K, Mitchell M, Arria AM. Assessing campus alcohol policies: measuring accessibility, clarity, and effectiveness. *Alcohol Clin Exp Res.* 2019;43(5):1007–1015. https://doi.org/10.1111/acer.14017.

10. Thompson K, Cooper S, Langille W, et al. Assessing the implementation of evidence-based alcohol policies on Atlantic Canadian post-secondary campuses: a comparative analysis. *Can J Public Health.* 2024;115(5):789–800. https://doi.org/10.17269/s41997-024-00907-4.

11. Ringwalt CL, Paschall MJ, Gitelman AM. Alcohol prevention strategies on college campuses and student alcohol abuse and related problems. *J Drug Educ.* 2011;41(1):99–118. https://doi.org/10.2190/DE.41.1.f.

12. National Institute on Alcohol Abuse and Alcoholism [NIAAA], Planning Alcohol Interventions Using NIAAA's CollegeAIM (Alcohol Intervention Matrix, 2015, National Institute on Alcohol Abuse and Alcoholism; Washington, DC. https://www.niaaa.nih.gov/sites/default/files/publications/NIAAA_College_Matrix_Booklet.pdf. Accessed October 30, 2024.

13. Nelson TF, Naimi TS, Brewer RD, Wechsler H. The state sets the rate: the relationship among state-specific college binge drinking, state binge drinking rates, and selected state alcohol control policies. *Am J Public Health.* 2005;95(3):441–446. https://doi.org/10.2105/AJPH.2004.043810.

14. Chaloupka FJ, Wechsler H. Binge drinking in college: the impact of price, availability, and alcohol control policies. *Contemp Econ Policy.* 1996;14(4):112–124. https://doi.org/10.1111/j.1465-7287.1996.tb00638.x.

15. Kypri K, Maclennan B, Cousins K, Connor J. Hazardous drinking among students over a decade of university policy change: controlled before-and-after evaluation. *Int J Environ Res Public Health.* 2018;15(10):2137. https://doi.org/10.3390/ijerph15102137.

16. Trangenstein PJ, Yeh JC, Sparks A, Arria AM, Greenfield TK, Jernigan DH. Alcohol's collateral damage: harms from others' drinking are linked to academic and mental health challenges among U.S. College students. *J Stud Alcohol Drugs.* 2025;86(5):769–777. https://doi.org/10.15288/jsad.24-00170.

17. Cabalatungan S, McCarthy B. Second-hand effects of college drinking and educational experiences: findings from an analysis of pooled cross-sections. *Drugs Educ Prev Policy.* 2015;22(6):463–469. https://doi.org/10.3109/09687637.2015.1061974.

18. What is a standard drink? National Institute on Alcohol Abuse and Alcoholism (NIAAA). https://www.niaaa.nih.gov/alcohols-effects-health/what-standard-drink. Updated December 2024. Accessed January 20, 2025.

19. Stahre M, Naimi T, Brewer R, Holt J. Measuring average alcohol consumption: the impact of including binge drinks in quantity-frequency calculations. *Addiction.* 2006;101(12):1711–1718. https://doi.org/10.1111/j.1360-0443.2006.01615.x.

20. Arria AM, Jernigan DH. Addressing college drinking as a statewide public health problem: key findings from the Maryland collaborative. *Health Promot Pract.* 2018;19(2):303–313. https://doi.org/10.1177/1524839917711399.

21. Jernigan DH, Cureg JB, Mitchell M, Arria AM. Improving campus alcohol policies through assessment and scoring. *Health Promot Pract.* 2023;24(2):366–372. https://doi.org/10.1177/15248399211056302.

22. Seid AK, Grittner U, Greenfield TK, Bloomfield K. To cause harm and to be harmed by others: new perspectives on alcohol's harms to others. *Subst Abuse Res Treat.* 2015;9(suppl 2):13–22. https://doi.org/10.4137/SART.S23506.

23. IPEDS access databases. Integrated Postsecondary Education Data System. https://nces.ed.gov/ipeds/use-the-data/download-access-database. Released January 2024. Accessed April 25, 2024.

24. StataCorp, Stata Statistical Software: Release 16, 2019, StataCorp, LLC; College Station, TX. available at https://www.stata.com/support/faqs/resources/citing-software-documentation-faqs/

25. Dawson NV, Weiss R. Dichotomizing continuous variables in statistical analysis: a practice to avoid. *Med Decis Making.* 2012;32(2):225–226. https://doi.org/10.1177/0272989X12437605.

26. Erickson DJ, Lenk KM, Toomey TL, Nelson TF, Jones-Webb R. The alcohol policy environment, enforcement and consumption in the United States. *Drug Alcohol Rev.* 2016;35(1):6–12. https://doi.org/10.1111/dar.12339.

27. Kypri K, Maclennan B, Connor J. Alcohol harms over a period of alcohol policy reform: surveys of New Zealand college residents in 2004 and 2014. *Int J Environ Res Public Health.* 2020;17(3):836. https://doi.org/10.3390/ijerph17030836.

28. Wechsler H, Lee JE, Nelson TF, Lee H. Drinking levels, alcohol problems and secondhand effects in substance-free college residences: results of a national study. *J Stud Alcohol.* 2001;62(1):23–31. https://doi.org/10.15288/jsa.2001.62.23.

29. McMahon S, Wood L, Cusano J, Macri LM. Campus sexual assault: future directions for research. *Sex Abuse.* 2019;31(3):270–295. https://doi.org/10.1177/1079063217750864.

30. Nelson TF, Toomey TL, Lenk KM, Erickson DJ, Winters KC. Implementation of NIAAA College Drinking Task Force recommendations: how are colleges doing 6 years later? *Alcohol Clin Exp Res.* 2010;34(10):1687–1693. https://doi.org/10.1111/j.1530-0277.2010.01268.x.

31. DeJong W. Boards of trustees must assume responsibility for making alcohol prevention on campus a top priority. *J Am Coll Health.* 2016;64(1):80–84. https://doi.org/10.1080/07448481.2015.1048455.

32. DeJong W, Towvim LG, Schneider SK. Support for alcohol-control policies and enforcement strategies among U.S. college students at 4-year institutions. *J Am Coll Health.* 2007;56(3):231–236. https://doi.org/10.3200/JACH.56.3.231-236.

33. Garey L, Prince MA, Carey KB. Alcohol policy support among mandated college students. *Addict Behav.* 2011;36(10):1015–1018. https://doi.org/10.1016/j.addbeh.2011.05.011.

34. Jones-Webb R, Nelson T, McKee P, Toomey T. An implementation model to increase the effectiveness of alcohol control policies. *Am J Health Promot.* 2014;28(5):328–335. https://doi.org/10.4278/ajhp.121001-QUAL-478.