SAEM 2026 · TOXICOLOGY

Temporal Trends of Alcohol-Related Visits to the Emergency Department in the Collegiate Population

Rita Farah, Samy Kebaish, Sarah Wendel, Moira Smith, Jacob Britton, Christopher Holstege

Department of Emergency Medicine, University of Virginia · Blue Ridge Poison Center · UVA Health

85.1%

OF ALCOHOL-RELATED COLLEGIATE ED VISITS OCCURRED FRI/SAT/SUN

Compared to a more uniform distribution of non-alcohol visits

OR 5.8
WEEKEND VS WEEKDAY CLUSTERING
95% CI 5.3–6.4 · p < 0.001

OR 6.9
0000–0200 HOUR CLUSTERING
95% CI 6.2–7.7 · p < 0.001 · 60.7% in this window

9.7%
OF 9,809 COLLEGIATE ED VISITS
Were alcohol-related, 2018–2023

BACKGROUND

Binge drinking persists despite overall decline.

Young U.S. adults are drinking less compared to decades prior. However, according to the 2023 NSDUH survey, 29 percent of male and 28 percent of female full-time college students engaged in binge drinking during the past month.

This study aimed to characterize the temporal distribution of alcohol-related emergency department (ED) visits among college students.

METHODS

University-affiliated ED, six years, density-window analysis.

Population. Collegiate student visits to a university-affiliated ED between 2018 and 2023.

Comparison. Temporal patterns of alcohol vs non-alcohol related visits by day of the week and hour of the day.

Density analysis. Temporal window-based analysis at three resolutions (24-hour, 48-hour, 72-hour intervals). Total alcohol-related events within each window computed using an exhaustive rolling-count algorithm.

Ranking. Windows ranked by event count to identify the top 95th percentile for each time horizon.

Tools. Python · SciKit-Learn · NumPy.

RESULTS

Predictable, recurring spikes around campus events.

- **9,809** Total collegiate student ED visits documented over the study period
- **9.7%** Of visits associated with an alcohol diagnosis
- **85.1%** Of alcohol-related visits occurred Fri/Sat/Sun
- **OR 5.8** Weekend vs weekday *(95% CI 5.3–6.4, p < 0.001)*
- **60.7%** Occurred during 0000–0200 hours
- **OR 6.9** 0000–0200 vs other hours *(95% CI 6.2–7.7, p < 0.001)*
- **40%** Clustered around university home football games
- **27%** Clustered on first/last weekend of semesters
- **17%** Clustered around Halloween
- **10%** Identified Greek life-related events

CONCLUSION

Predictable surges support proactive ED staffing and campus partnership.

Our study shows clear, predictable patterns in alcohol-related ED visits through temporal analysis. Recognizing these predictable surges can inform proactive ED staffing and resource allocation to better match anticipated demand. Additionally, these findings suggest that university-affiliated EDs should partner with university student affairs professionals to deliver targeted public education to university students.

ASK ME ABOUT

- Density-window analysis design
- Event clustering methodology
- Campus partnership strategies
- ED staffing implications