Idaho SEOW
STATE EPIDEMIOLOGICAL OUTCOMES WORKGROUP

Epidemiological Brief:

Alcohol Use Patterns and Health Impacts in Idaho

PURPOSE

This epidemiological brief aims to explore trends in Idahoans' alcohol consumption and subsequent health outcomes, using state-level data from the Behavioral Risk Factor Surveillance System (BRFSS), emergency medical services (EMS), emergency departments, traffic accidents, vital records, and the Idaho Pregnancy Risk Assessment Tracking System (PRATS).

WHAT IS ALCOHOL?

Alcohol and alcoholic beverages contain ethanol, a psychoactive and toxic substance with dependence-producing properties that acts as a central nervous system depressant, affecting nearly every organ in the body.[1] Ethanol is rapidly absorbed from the stomach and small intestine into the bloodstream, where it begins to take effect almost immediately. Once in the bloodstream, alcohol is metabolized by the liver, which can only process a small amount at a time. Excess alcohol that the liver cannot process remains in the bloodstream, contributing to an individual's blood alcohol concentration (BAC), which in turn influences the acute effects of alcohol, such as impaired coordination, altered judgment, and euphoria.[2]

LONG-TERM HEALTH RISKS OF ALCOHOL CONSUMPTION

In addition to its short-term effects on the body, alcohol can also lead to long-term health problems, including an increased risk of cancer, chronic disease, and death.

Alcoholic beverages have been classified as a Group 1 Carcinogen by the International Agency for Research on Cancer since 2009.[3] In January 2025, the U.S. Surgeon General released an advisory on alcohol and cancer risk, highlighting alcohol as the leading preventable cause of cancer in the United States.[4]

The Centers for Disease Control and Prevention (CDC) advises that alcohol consumption increases the risk of seven types of cancer: mouth, throat (pharynx), voice box (larynx), esophagus, bowel, liver, and breast cancer.[5] Even low levels of alcohol consumption can increase cancer risk, with the risk rising as alcohol intake increases.[6]

Excessive alcohol use can increase the risk of chronic diseases such as high blood pressure, heart and liver disease, and alcohol use disorder.[7] The CDC estimates that approximately 178,000 deaths in the United States each year are attributable to excessive alcohol use.[8]

EXCESSIVE ALCOHOL USE INCLUDES:

- Binge drinking (4 or more drinks on one occasion for females, 5 or more for males)
- Heavy drinking (8 or more drinks in one week for females, 15 or more for males)
- Any alcohol use by people younger than 21
- Any alcohol use during pregnancy[7]

Despite the extensive body of scientific research on the harms of alcohol consumption and the demonstrated link to cancer, chronic disease, and death, alcohol use is widespread – an estimated 52% of the U.S. population aged 18 and older consumed alcohol in the past month in 2023.[9]

ACCESS AND AVAILABILITY: ALCOHOL POLICY IN IDAHO

Idaho has enacted several policies to limit alcohol consumption, availability and exposure. The sale and distribution of alcohol is regulated by the Idaho State Liquor Division and enforced by the Idaho State Police Alcohol Beverage Control.

Alcoholic beverages containing more than 16% of alcohol by volume (ABV) may only be sold by a state-controlled liquor store.[10] These stores must be at least 300 feet from a school.[11] Additionally, no liquor may be sold between 1 a.m. and 10 a.m., or on Sundays (1 a.m. Sunday morning to 10 a.m. Monday morning), Christmas, Thanksgiving, or Memorial Day.[12] Beer and wine may be sold from 10 a.m. to 1 a.m. by licensed premises not controlled by the state, such as bars, restaurants and grocery stores. Some cities and counties have passed local ordinances to further regulate alcohol sales, such as allowing alcohol to be sold on Sundays. The state of Idaho imposes an excise tax on beer, wine, and liquor, with each subject to a different tax rate based on the alcohol type and concentration.

As of 2023, there were 4,166 alcohol retail outlets in Idaho. Counties with the highest number of outlets per 100,000 population include Custer, Camas, Valley and Lemhi, while Ada, Canyon, Kootenai and Bannock have the highest rate of outlets per square mile. [13]

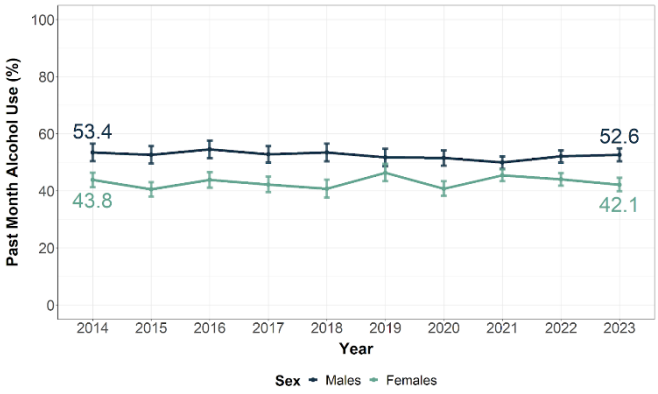
ALCOHOL USE TRENDS IN IDAHO: BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM (BRFSS)

The BRFSS is a state-based survey of non-institutionalized adults aged 18 and older regarding chronic health conditions, health-risk behaviors, and use of preventive health services. The 50 states, D.C., and U.S. Territories conduct BRFSS surveys in coordination with the CDC. The most recent Idaho BRFSS data is from 2023, so this brief examines the 10-year period from 2014-2023.

Past Month Alcohol Use

In 2023, an estimated 47.3% of Idaho adults consumed alcohol in the past month, including 42.1% of females and 52.6% of males. There were no significant trends observed for either sex from 2014 to 2023 (Figure 1).

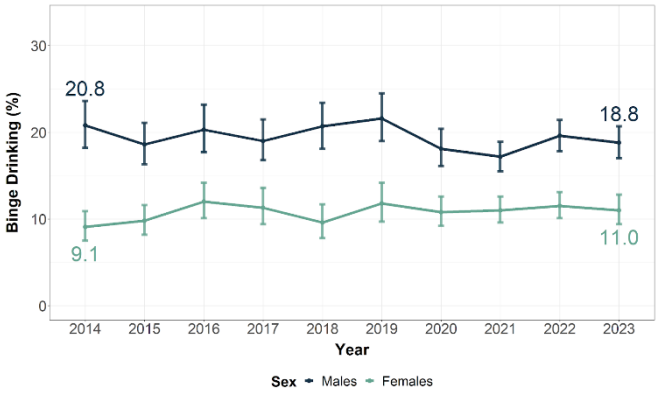
Figure 1. **Past Month Alcohol Use, BRFSS 2014-2023**



Binge Drinking

In 2023, approximately 14.8% of Idaho adults engaged in binge drinking (18.8% of males and 11.0% of females). No significant trends were observed for either sex from 2014 to 2023 (Figure 2).

Figure 2. **Binge Drinking, BRFSS 2014-2023**



Notes on BRFSS Graphs:

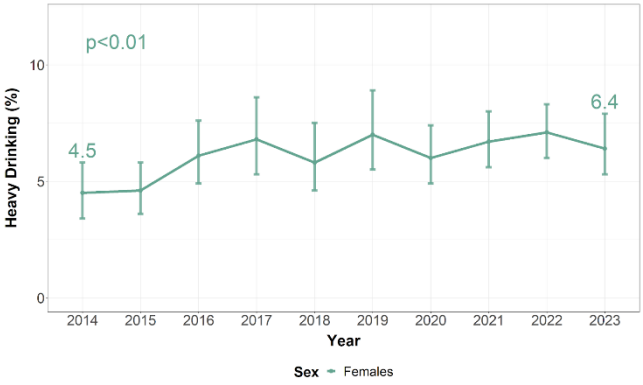
Brackets indicate 95% confidence intervals. The Cochran–Mantel–Haenszel tests for trend (TCMH) was used to identify significance.

To improve visual clarity, rates of heavy drinking among males are not shown in Figure 3 (pg. 3).

Heavy Drinking

BRFSS data indicate that approximately 5.9% of Idahoans drank heavily in 2023. A statistically significant trend in the prevalence of heavy drinking among females occurred from 2014 to 2023. An estimated 6.4% of females drank heavily in 2023, a 42% increase from 2014 (Figure 3). In 2023, the percentage of heavy drinking among males was 5.2%, which is not a statistically significant change from 2014.

Figure 3. **Heavy Drinking – BRFSS 2014-2023**



Changes in Female Drinking Behavior

Research indicates that gender differences in risky drinking behaviors are narrowing among adults aged 26–34 and 45–64, largely due to increases in women's alcohol consumption. Additionally, studies have reported rising rates among females in 12-month alcohol use, binge drinking, and high-risk drinking, while rates among males have remained unchanged.[14]

ALCOHOL-RELATED EMS RUNS, EMERGENCY DEPARTMENT VISITS, AND TRAFFIC ACCIDENTS

EMS and Emergency Department Data

Emergency medical services respond to more than 10,000 alcohol-related calls and emergency departments see about 9,000 patients with alcohol-related symptoms across Idaho each year.[15,16] The number of alcohol-related EMS runs typically increases in the summer months and decreases in winter. From 2021 to 2024, Idahoan males received EMS care and visited the emergency department for alcohol-related issues at higher rates than females (Appendix – Figure A). EMS run rates and ED visit rates slightly decreased for both sexes from 2021 to 2022 but increased through 2024.

Traffic Accidents

From 2014 to 2023, there were 12,910 traffic accidents in Idaho in which alcohol was a contributing factor (9,551 accidents involving a male, 3,359 accidents involving a female).[17] Accident rates remained steady from 2014 to 2023, with similar trends seen between males and females (Appendix – Figure B).

MORTALITY

Vital Records

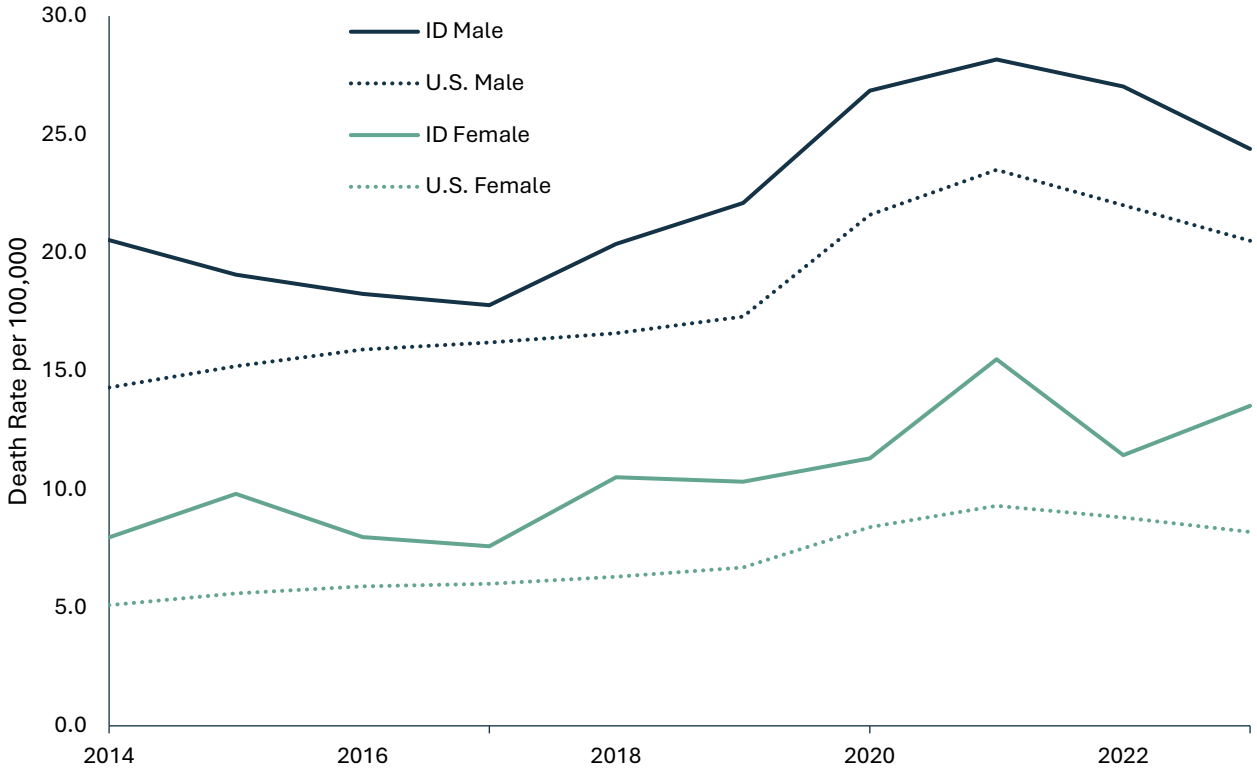
In 2023, the Idaho Bureau of Vital Records reported 373 alcohol-induced deaths, or about 19 deaths per 100,000 residents.[18] From 2014 to 2023, the number of alcohol-induced deaths in Idaho increased by 33%, with female rates rising by 70% and male rates increasing by 19% during this period. National trends indicate a similar pattern. Between 2014 and 2023, U.S. alcohol-induced deaths increased by 33% with female deaths increasing by 60% and male deaths rising by 43%. From 2014-2023, Idaho consistently experienced higher alcohol-induced death rates compared to the national average (Figure 4).

Males and females between the ages of 55 and 64 experienced the largest increases in alcohol-induced deaths from 2014 to 2023. During these ten years, the rate of alcohol-induced deaths among females in this age group rose by 68%, while the rate for males increased by approximately 26%. In 2023, female Idahoans died from alcohol-induced causes at an average age of 54.5, compared to 57.5 for males.

Alcohol-Related Disease Impact (ARDI)

The CDC calculates ARDI estimates for 58 acute and chronic causes using alcohol-attributable fractions (AAF) and reports data by age and sex.[19] The AAF represents the percentage of deaths from different causes attributable to alcohol consumption. These

Figure 4. Idaho and U.S. Rates of Alcohol-Induced Mortality, 2014 - 2023



alcohol-attributable fractions are used to express the extent to which alcohol consumption contributes to a health outcome.

The annual ARDI estimates for Idaho, based on data from 2020–2021, show an average of 982 alcohol-attributable deaths per year—332 among females and 654 among males—more than 2.5 times the average number of alcohol-induced deaths recorded in the state's vital records system during the same period. The differences between alcohol-related deaths reported by ARDI and alcohol-induced deaths recorded by the state's vital statistics records showcase how the true scope of alcohol-related health outcomes likely extends far beyond the alcohol-induced deaths captured by vital records.

MATERNAL AND INFANT HEALTH

The CDC states that there is no safe amount of alcohol use during pregnancy and no safe time to drink alcohol during pregnancy.[20] The CDC also warns that alcohol use during pregnancy is associated with an increased risk of miscarriage, preterm birth, stillbirth, and sudden infant death syndrome (SIDS).

Using 2019 data from the National Survey of Family Growth, the CDC estimates that 41.6% of pregnancies in the United States were unintended.[21] Research indicates that pregnant people are most likely to drink during the first trimester of pregnancy, likely because many people are unaware that they are pregnant at that time.[22,23] Based on aggregated Idaho PRATS data from 2018 – 2022, an estimated 50.9% of Idahoan mothers reported drinking in the three months before they became pregnant. Among mothers of intended pregnancies, 47.3% reported drinking in the three months before becoming pregnant compared to 60.2% of mothers with unintended pregnancies.[24]

Based on a logistic regression model utilizing PRATS data from 2018-2023, Idahoan mothers who drank in the third trimester of pregnancy were more likely to: (1) smoke during the third trimester; (2) have a college education; (3) have an annual household

income of $50k or more; (4) be older; (5) have a lower number of previous births, and; (6) have an unintended pregnancy (Appendix A – Table A). These findings align with previous research showing a higher likelihood of alcohol use during pregnancy among individuals with similar characteristics.[23,25,26,27]

SUMMARY

The data presented in this brief indicate that while Idahoan males continue to experience a higher rate of negative health outcomes related to alcohol consumption than females, there is a growing trend of risky drinking behaviors and related health consequences among females. These patterns are reflected nationally, with research showing increasing rates of alcohol use and misuse among females.[28,29] While regular alcohol consumption can harm both males and females, females are at greater risk of negative health outcomes—such as liver damage, heart disease, brain damage, and breast cancer—even when consuming similar amounts of alcohol as males.[30,31,32] Although the reasons behind the rise in alcohol consumption among females are not fully understood, Dr. Bryant Shuey, lead author of the study *'Sex-Based Differences in Binge and Heavy Drinking Among US Adults,'* recommends increased screening for binge and heavy drinking to help reduce long-term alcohol-related health consequences among both males and females.[33] Additionally, alcohol consumption during pregnancy has been identified as the leading preventable cause of developmental disabilities and birth defects in the United States, underscoring the critical need to prioritize education, screening, and intervention—particularly for women of childbearing age. [34]

NOTES

Additional alcohol data can be found on the Idaho Department of Health and Welfare's *Alcohol & the Impact on Idaho's Health* Dashboard, available at gethealthy.dhw.idaho.gov/alcohol.

BRFSS Data

BRFSS data used in this report were supported in part by a cooperative agreement between the Idaho Department of Health and Welfare and the Centers for Disease Control and Prevention, FAIN NU58DP006872. Report contents are solely the responsibility of the author(s) and do not necessarily represent official views of the Idaho Office of Drug Policy, the Idaho Department of Health and Welfare, the Centers for Disease Control and Prevention, or the Department of Health and Human Services.

EMS and ED Data

Emergency medical services and emergency department data prior to 2021 is excluded due to incomplete reporting.

Alcohol-Induced Death Data

Alcohol-induced deaths include deaths from mental and behavioral disorders due to alcohol use; degeneration of nervous system due to alcohol; alcoholic polyneuropathy; alcoholic cardiomyopathy; alcoholic gastritis; alcoholic liver disease; alcohol-induced chronic pancreatitis; alcohol-induced acute pancreatitis; findings of alcohol in blood; accidental poisoning by and exposure to alcohol; intentional self-poisoning (suicide) by exposure to alcohol; poisoning by exposure to alcohol; and poisoning by exposure to alcohol in which the intent could not be determined. Alcohol-induced deaths do not include accidents such as falls and motor vehicle crashes, and other causes related to alcohol use. Most alcohol-induced deaths are from alcoholic chronic liver disease and cirrhosis.

For questions about this brief, please email SEOW.idaho@gmail.com.

Appendix

Figure A. **EMS Run Rates and ED Visit Rates, 2021- 2024**

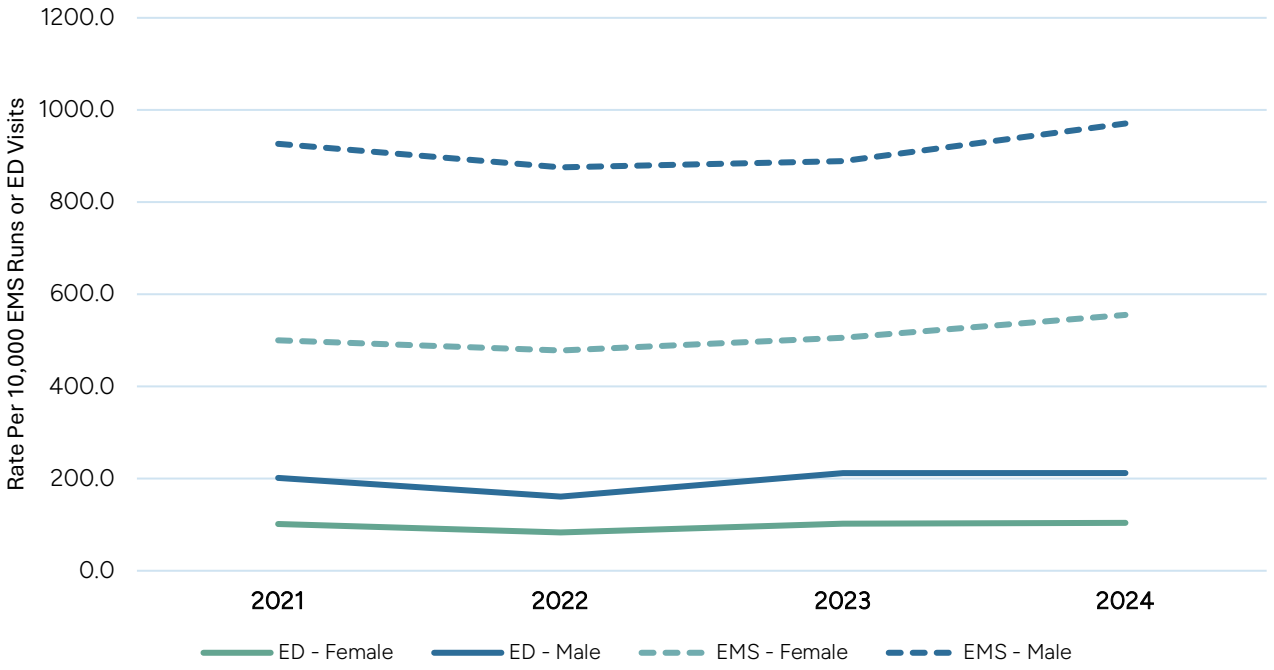


Figure B. **Rates of Traffic Accidents Involving Alcohol per 100,000 Population, 2014-2023**

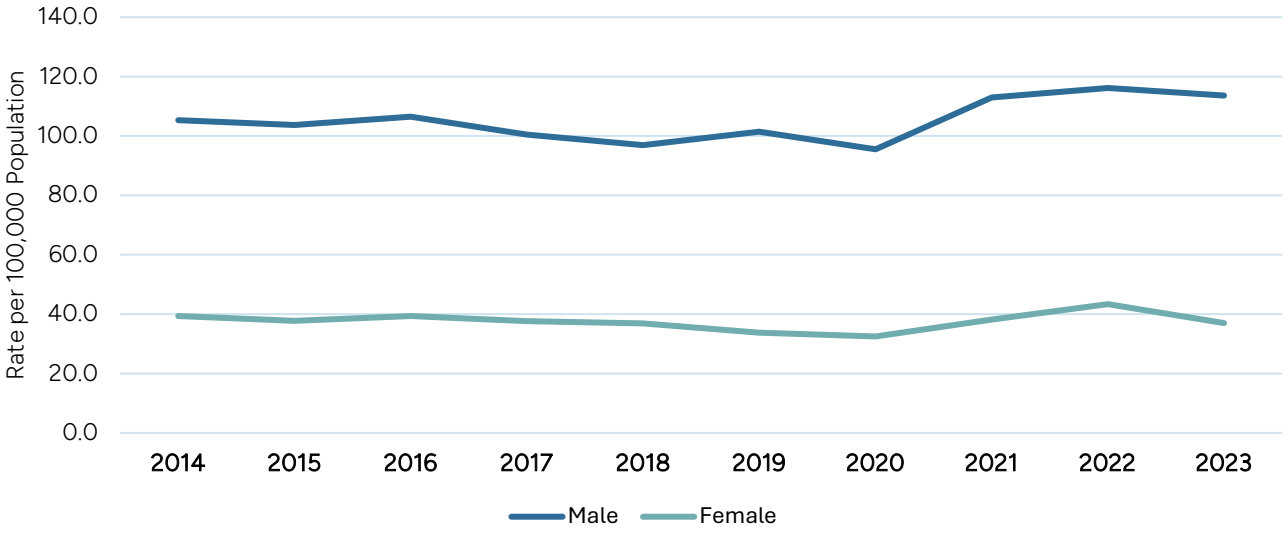


Table A.

	Drinking, 3rd Trimester (Yes)						
Variable	OR	95% CI		Coeff	95% CI		p-value
Smoking, 3rd Trimester							
No	(ref)						
Yes	2.53	1.27	4.95	0.93	0.24	1.6	**0.009**
Ethnicity							
Non-Hispanic	(ref)						
Hispanic	0.63	0.37	1.11	-0.46	-1	0.1	0.11
Education							
High school or less	(ref)						
Some college/Associates	1.38	0.91	2.08	0.32	-0.09	0.73	0.127
College	2.14	1.28	3.67	0.76	0.25	1.3	**0.003**
Maternal Age	1.11	1.08	1.14	0.1	0.08	0.13	**<0.001**
Income							
Less than $24.9k	(ref)						
$25k to $34.9k	1.84	0.90	3.67	0.61	-0.1	1.3	0.092
$35k to $49.9k	1.20	0.65	2.20	0.18	-0.43	0.79	0.563
$50k or more	1.99	1.14	3.32	0.69	0.13	1.2	**0.016**
Marital Status							
No	(ref)						
Yes	0.70	0.46	1.08	-0.35	-0.78	0.08	0.11
Parity	0.89	0.79	0.98	-0.12	-0.23	-0.02	**0.02**
Depression (during pregnancy)							
Rarely/Never	(ref)						
Sometimes	1.00	0.70	1.40	0	-0.35	0.34	0.982
Always/Often	1.27	0.80	1.99	0.24	-0.22	0.69	0.307
Pregnancy Intention							
Unintended/Unsure	(ref)						
Intended	0.68	0.49	0.93	-0.39	-0.71	-0.07	**0.018**

Bolding indicates statistical significance ($p<0.05$)
Observations: 6,923
(ref) = reference group

REFERENCES

[1] World Health Organization. *Alcohol.* https://www.who.int/news-room/fact-sheets/detail/alcohol. Published June 24, 2024. Accessed June 23, 2025.

[2] U.S. Centers for Disease Control and Prevention (CDC). *Alcohol Use and Your Health.* https://www.cdc.gov/alcohol/about-alcohol-use/index.html. Published on January 14, 2025. Accessed June 23, 2025.

[3] World Health Organization International Agency for Research on Cancer. *List of Classifications*. https://monographs.iarc.who.int/list-of-classifications. Published on April 16, 2025. Accessed June 23, 2025.

[4] Office of the U.S. Surgeon General. *Alcohol and Cancer Risk: The U.S. Surgeon General's Advisory.* https://www.hhs.gov/surgeongeneral/reports-and-publications/alcohol-cancer/index.html. Published on January 17, 2025. Accessed June 23, 2025.

[5] CDC. *Alcohol and Cancer Risk.* https://www.hhs.gov/surgeongeneral/reports-and-publications/alcohol-cancer/index.html. Published on January 17, 2025. Accessed on June 23, 2025.

[6] WHO. No level of alcohol consumption is safe for our health. *https://www.who.int/europe/news/item/04-01-2023-no-level-of-alcohol-consumption-is-safe-for-our-health*. Published on January 2, 2023. Accessed on June 23, 2025.

[7] CDC. *Alcohol Use and Your Health.* https://www.cdc.gov/alcohol/about-alcohol-use/index.html. Published on January 14, 2025. Accessed June 23, 2025.

[8] Esser MB, Sherk A, Liu Y, Naimi TS. Deaths from Excessive Alcohol Use — United States, 2016–2021. MMWR Morb Mortal Wkly Rep 2024;73:154–161. DOI: http://dx.doi.org/10.15585/mmwr.mm7308a1

[9] Substance Abuse and Mental Health Services Administration. Key substance use and mental health indicators in the United States: Results from the 2023 National Survey on Drug Use and Health (HHS Publication No. PEP24-07-021, NSDUH Series H-59).

[10] Idaho State Liquor Division. *Idaho State Liquor Laws.* https://liquor.idaho.gov/liquor-laws.html. No publish date. Accessed June 23, 2025.

[11] Idaho Code § 23-303. https://legislature.idaho.gov/statutesrules/idstat/Title23/T23CH3/SECT23-303/. Accessed June 23, 2025.

[12] Idaho Code § 23-927. https://legislature.idaho.gov/statutesrules/idstat/Title23/T23CH9/SECT23-927/. Accessed June 23, 2025.

[13] Idaho Department of Health and Welfare. *Alcohol and the Impact on Idaho's Public Health.* https://www.gethealthy.dhw.idaho.gov/alcohol. Published June 17, 2025. Accessed June 23, 2025.

[14] Keyes KM, Jager J, Mal-Sarkar T, Patrick ME, Rutherford C, Hasin D. Is There a Recent Epidemic of Women's Drinking? A Critical Review of National Studies. Alcohol Clin Exp Res. 2019 Jul;43(7):1344-1359. doi: 10.1111/acer.14082.

[15] Idaho Department of Health and Welfare; Division of Public Health; Drug Overdose Prevention Program (June 2025).

[16] Idaho Bureau of EMS and Preparedness; Division of Public Health (June 2025).

[17] Idaho Department of Transportation, 2014 – 2023.

[18] Idaho Bureau of Vital Records and Health Statistics; Division of Public Health (June 2025).

[19] CDC. *ARDI FAQ (Frequently Asked Questions).* https://www.cdc.gov/alcohol/ardi/faqs.html. Published on February 29, 2024. Accessed June 25, 2025.

[20] CDC. *About Alcohol Use During Pregnancy.* https://www.cdc.gov/alcohol-pregnancy/about/. Published on May 16, 2024. Accessed June 25, 2025.

[21] CDC. *Unintended Pregnancy.* https://www.cdc.gov/reproductive-health/hcp/unintended-pregnancy/. Published on May 14, 2024. Accessed June 25, 2025.

[22] Sundermann AC, Velez Edwards DR, Slaughter JC, Wu P, Jones SH, Torstenson ES, Hartmann KE. Week-by-week alcohol consumption in early pregnancy and spontaneous abortion risk: a prospective cohort study. Am J Obstet Gynecol. 2021 Jan;224(1):97.e1-97.e16. doi: 10.1016/j.ajog.2020.07.012.

[23] Ethen MK, Ramadhani TA, Scheuerle AE, Canfield MA, Wyszynski DF, Druschel CM, Romitti PA; National Birth Defects Prevention Study. Alcohol consumption by women before and during pregnancy. Matern Child Health J. 2009 Mar;13(2):274-85. doi: 10.1007/s10995-008-0328-2.

[24] Idaho Pregnancy Risk Assessment Tracking System Results (PRATS), 2018-2023.

[25] Pryor J, Patrick SW, Sundermann AC, Wu P, Hartmann KE. Pregnancy Intention and Maternal Alcohol Consumption. Obstet Gynecol. 2017 Apr;129(4):727-733. doi: 10.1097/AOG.0000000000001933.

[26] Shmulewitz D, Hasin DS. Risk factors for alcohol use among pregnant women, ages 15-44, in the United States, 2002 to 2017. Prev Med. 2019 Jul;124:75-83. doi: 10.1016/j.ypmed.2019.04.027.

[27] Skagerström J, Chang G, Nilsen P. Predictors of drinking during pregnancy: a systematic review. J Womens Health (Larchmt). 2011 Jun;20(6):901-13. doi: 10.1089/jwh.2010.2216.

[28] White A, Castle IJP, Chen CM, Shirley M, Roach D, Hingson R. Converging patterns of alcohol use and related outcomes among females and males in the United States, 2002 to 2012. Alcohol Clin Exp Res. 2015;39:1712–26.

[29] Slade T, Chapman C, Swift W, Keyes K, Tonks Z, Teesson M. Birth cohort trends in the global epidemiology of alcohol use and alcohol-related harms in men and women: systematic review and metaregression. BMJ Open. 2016;6(10):e011827.

[30] Erol A, Karpyak V. Sex and gender-related differences in alcohol use and its consequences: contemporary knowledge and future research considerations. Drug and Alcohol Dependence. 2015;156:1–13.

[31] Guy J, Peters MG. Liver disease in women: the influence of gender on epidemiology, natural history, and patient outcomes. Gastroenterol Hepatol. 2013;9(10):633–639.

[32] Hommer DW. Male and female sensitivity to alcohol-induced brain damage. Alcohol Res Health. 2003;*27(2)*:181–5.

[33] Dejong K, Olyaei A, Lo JO. Alcohol Use in Pregnancy. Clin Obstet Gynecol. 2019 Mar;62(1):142-155. doi: 10.1097/GRF.0000000000000414.