



# The Relationship Between Alcohol Abuse and Depression: A Comparative Analysis of Males and Females



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## Introduction

- Depression has been widely considered to be a key variable that fosters and proceeds the development of alcohol overconsumption, though the validity of this claim is still in question (Brière et al., 2014, Gilman et al., 2001, Boden et al., 2011).
- Research shows that women not only show a higher percentage of depressive episodes than men, but are also more likely to display problems with alcohol when depressed (NIMH 2021, Ferguson et al., 1997).
- Current research fails to investigate whether individuals who show greater amounts of depression symptoms are more likely to be a drinker.

## Research Questions

- How does the quantity of depression episodes a person has relate to the quantity of alcohol episodes?
- Does this relationship change between male's and female's?
- Does the amount of depression-related symptoms lead to an increase in the likelihood of being a drinker?

## Methods

### Sample

- Respondents (n=9857) were drawn from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) survey, a sample of the civilian, non-institutionalized adult population of the United States

### Measures

- Number of episodes of depression were measured by the prompt "Number of episodes of depression.", and episodes of alcohol episodes by "Number of episodes of alcohol abuse."
- Depression-related symptoms score was compiled of 20 "yes" or "no" questions regarding possible symptoms.
- Binary drinking results were recorded by "Drinking Status" with either "Current drinker"(1) or "Ex-drinker/Lifetime Abstainer"(0)
- Participants included their sex with either "Male" or "Female".

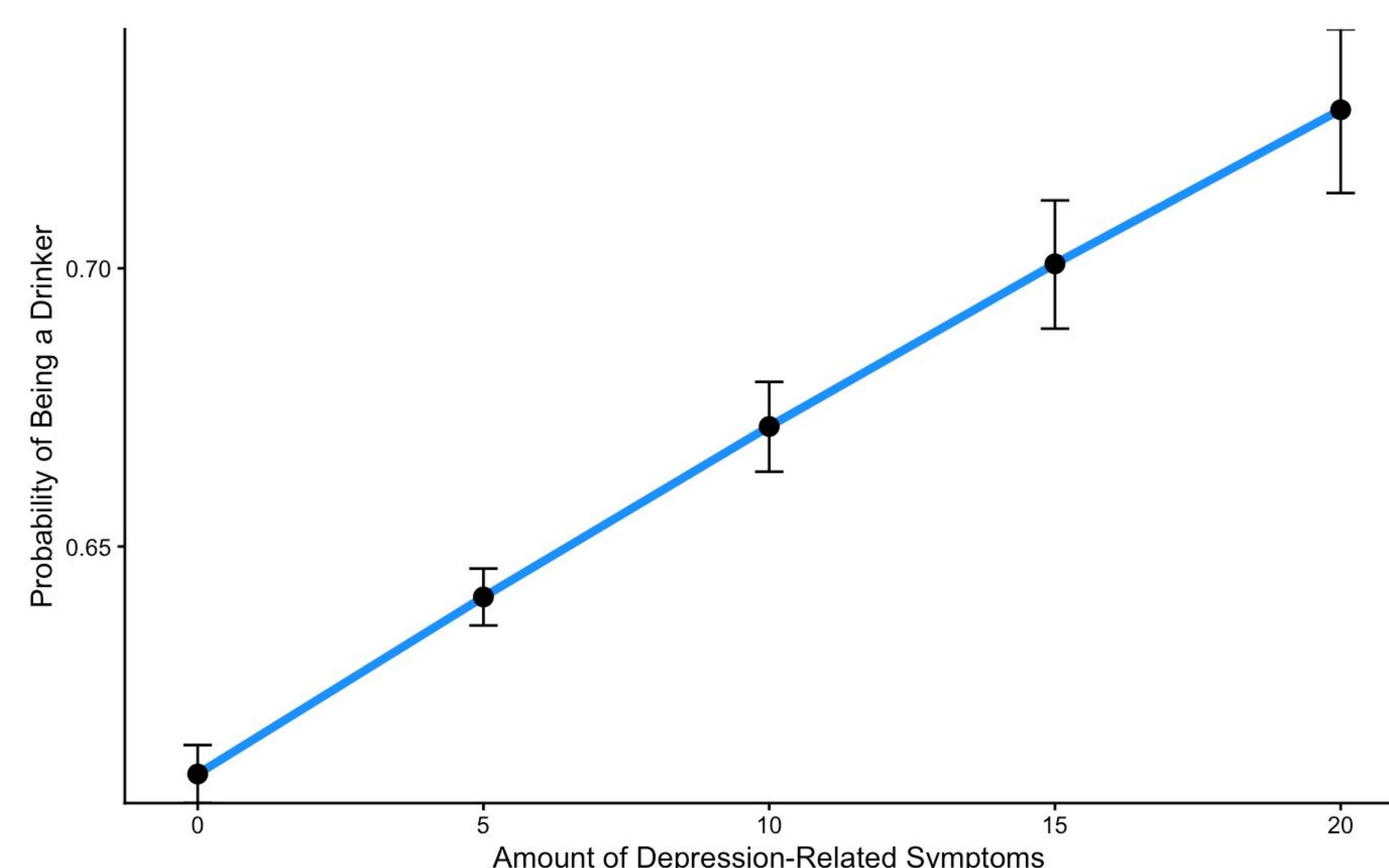
## Results

## Discussion

### Figure 1:

- Logistic regression analysis showed that Depression-Related Symptoms were significantly associated with the probability of being a drinker ( $p = <2e-16$ ).
- For each unit increase in depression score, the odds of being a drinker increase by about 2.75% (OR: 1.0275).
- At depression score 0, there's a 61% chance of being a drinker.

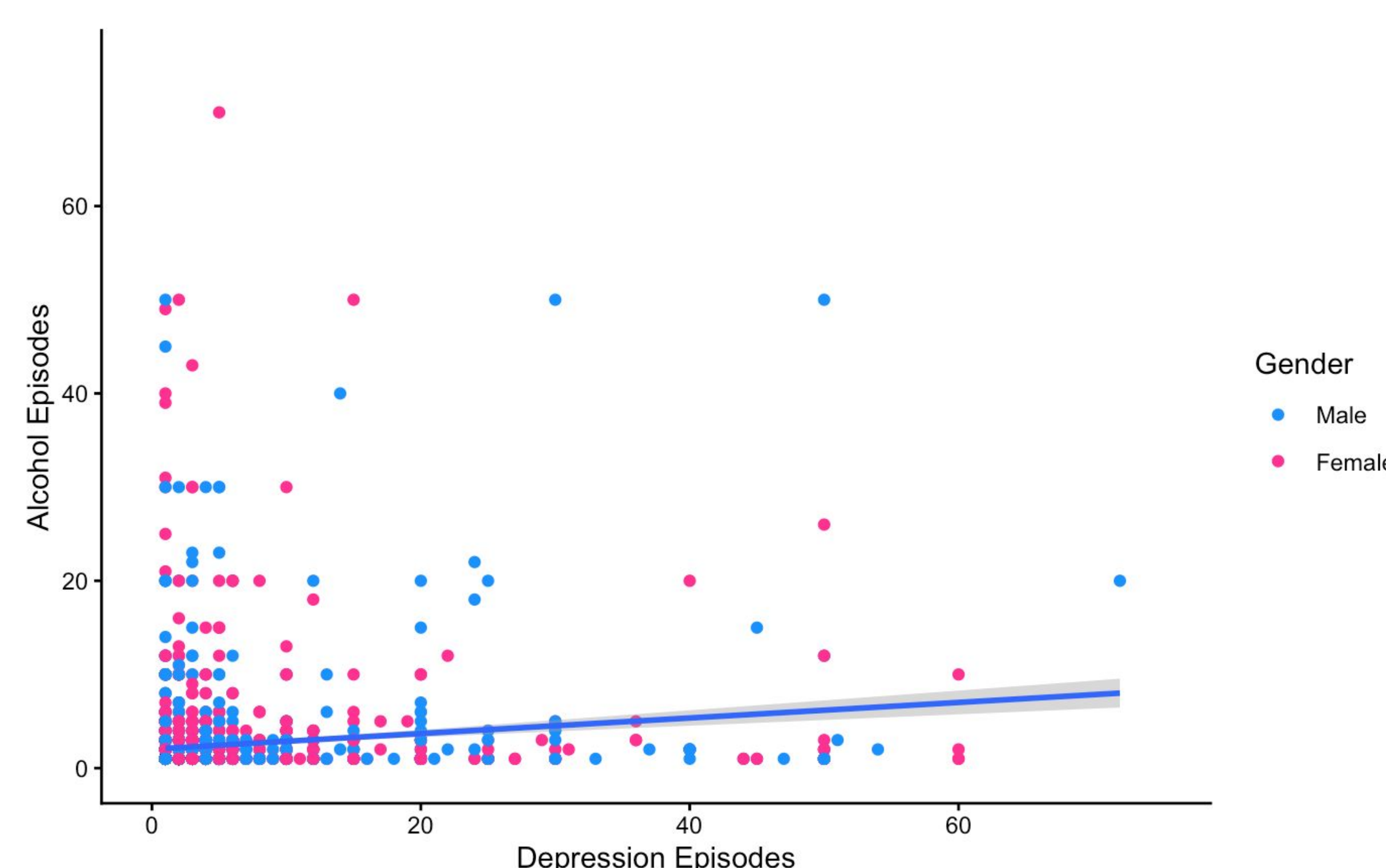
**Figure 1: Probability of Being a Drinker by Depression-Related Symptom Count.**



### Figure 2:

- Simple linear regression showed that for each individual alcohol episode, depression episodes increased by 0.0166 - this relationship was not statistically significant ( $p = 0.076$ ).
- Multivariate analysis showed that holding alcohol constant, females differ from males by  $-0.03$  depression episodes and the relationship isn't statistically significant ( $p = 0.948$ ).
- Males with 0 alcohol episodes have an average of 5.33 depression episodes.

**Figure 2: Number of total Alcohol Episodes by the Total Number of Depression Episodes by Gender**



- Individuals that show more depression symptoms have a higher likelihood of being drinkers.
- There is no significant association between the number of alcohol abuse episodes and the number of depression episodes.
- These contrasting results further solidify current research that remains unclear about the direction of causality between alcohol and depression.
- While females have been believed to be more likely to drink when depressed, no differences were found between gender.
- Further studies should be done to clarify the bidirectional association between alcohol and depression, as well as factors that may contribute to this relationship like stress.

## References

- Brière, F. N., Rohde, P., Seeley, J. R., Klein, D., & Lewinsohn, P. M. (2014). Comorbidity between major depression and alcohol use disorder from adolescence to adulthood. *Comprehensive Psychiatry*, 55(3), 526–533. <https://doi.org/10.1016/j.comppsych.2013.10.007>
- Gilman, S. E., & Abraham, H. D. (2001). A longitudinal study of the order of onset of alcohol dependence and major depression. *Drug and Alcohol Dependence*, 63(3), 277–286. [https://doi.org/10.1016/S0376-8716\(00\)00216-7](https://doi.org/10.1016/S0376-8716(00)00216-7)
- Boden, J. M., & Fergusson, D. M. (2011). Alcohol and depression. *Addiction*, 106(5), 906–914. <https://doi.org/10.1111/j.1360-0443.2010.03351.x>
- National Institute of Mental Health. (2021). *Major depression: Statistics*. U.S. Department of Health & Human Services. <https://www.nimh.nih.gov/health/statistics/major-depression>
- Fergusson, D. M., Horwood, L. J., Swain-Campbell, N., & Beaudrais, A. (1997). Gender differences in the relation between depressive symptoms and alcohol problems: A longitudinal perspective. *American Journal of Epidemiology*, 146(11), 966–974. <https://doi.org/10.1093/oxfordjournals.aje.a009394>