



# Fruit, Green Salad, and Poor Mental Health Among U.S. Adolescents

Zeke Bierman, Applied Data Analysis, Wesleyan University



## Introduction

- Adolescent mental health remains a major public health concern, and diet may be a factor associated with psychological well-being (Kris-Etherton et al., 2020).
- Prior research often focuses on overall dietary patterns rather than specific food behaviors (Upton 2022).
- This study examines whether more frequent consumption of fruit and green salad is associated with lower odds of poor mental health.

## Research Questions

- Are fruit and green salad consumption associated with self-reported mental health levels among adolescents?
- Do these associations remain after accounting for sleep, income, gender, and social support?

## Methods

### Sample

- Respondents (n=6,937) were drawn from the Adolescent Behaviors and Experiences Survey (ABES) of 2021, a nationally representative sample of U.S. students in grades 9-12 attending both public and private schools.

### Measures

- Poor mental health was measured using the question “During the past 30 days, how often was your mental health not good?” Respondents coded 0 indicated good mental health, while 1 indicated poor mental health
- Fruit was measured as self-reported frequency of intake over the previous 7 days on a scale from 1 (not at all) to 7 (4 or more times per day)
- Green salad was measured as self-reported frequency of intake over the previous 7 days on a scale from 1 (not at all) to 7 (4 or more times per day)

## Results

### Bivariate

- Chi-Square analysis showed fruit consumption was significantly associated with poor mental health ( $p < .001$ ).
- Respondents with higher fruit consumption generally reported lower rates of poor mental health, with the lowest proportion among those with the highest fruit intake.

### Multivariate

- Logistic regression analysis showed that green salad consumption was associated with lower odds of poor mental health, although the relationship was *not* statistically significant after controlling for sleep (OR = 0.98,  $p = .296$ ).
- Sleep was significantly associated with lower odds of poor mental health (OR = 0.75,  $p < .001$ ) indicating that each one-unit increase in sleep corresponded with approximately 25% odds of poor mental health
- Overall, sleep appeared to be a stronger correlate of poor mental health than green salad in this model.

- Control variables included sleep duration, gender, income, and social support

## Discussion

- More frequent fruit and green salad consumption were associated with lower probabilities of poor mental health, suggesting that healthier eating habits may relate to adolescent well-being.
- However, sleep, income, gender, and social support showed stronger relationships with poor mental health, indicating that mental health is shaped by multiple behavioral and social factors beyond diet alone.
- Future research should whether combined interventions focused on nutrition, sleep, and social support could improve adolescent mental health outcomes.

## References

- Kris-Etherton, P. M., Petersen, K. S., Hibbeln, J. R., Hurley, D., Kolick, V., Peoples, S., Rodriguez, N., & Woodward-Lopez, G. (2021). Nutrition and behavioral health disorders: Depression and anxiety. *Nutrition Reviews*, 79(3), 247–260.
- Polivy, J., & Herman, C. P. (2005). Mental health and eating behaviours: A bi-directional relation. *Canadian Journal of Public Health*, 96(Suppl. 3), S43–S46.
- Quirk, S. E., Williams, L. J., O’Neil, A., Pasco, J. A., Jacka, F. N., Housden, S., Berk, M., & Brennan, S. L. (2013). The association between diet quality, dietary patterns and depression in adults: A systematic review. *BMC Psychiatry*, 13, Article 175.
- Solomou, S., Robinson, H., & Perez-Algorta, G. (2024). The association of diet quality with the mental health of students during their transition to university. *PLOS ONE*, 19(10), e0310467.
- Upton, N. (2022). Developing our understanding of nutrition in depression. *British Journal of Nutrition*, 127(7), 1010–1017.

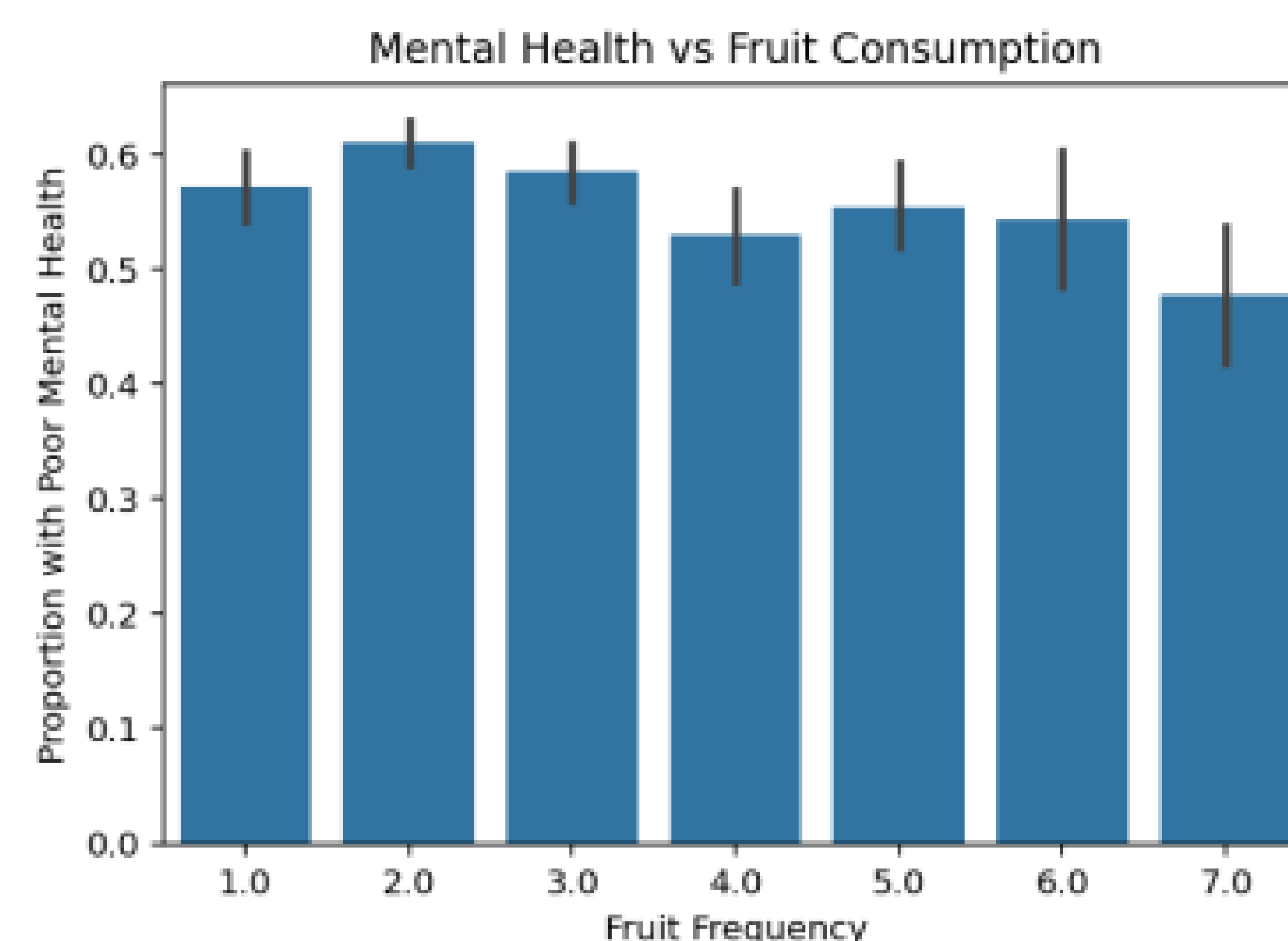


Figure 1: Poor Mental Health by Fruit Consumption Frequency

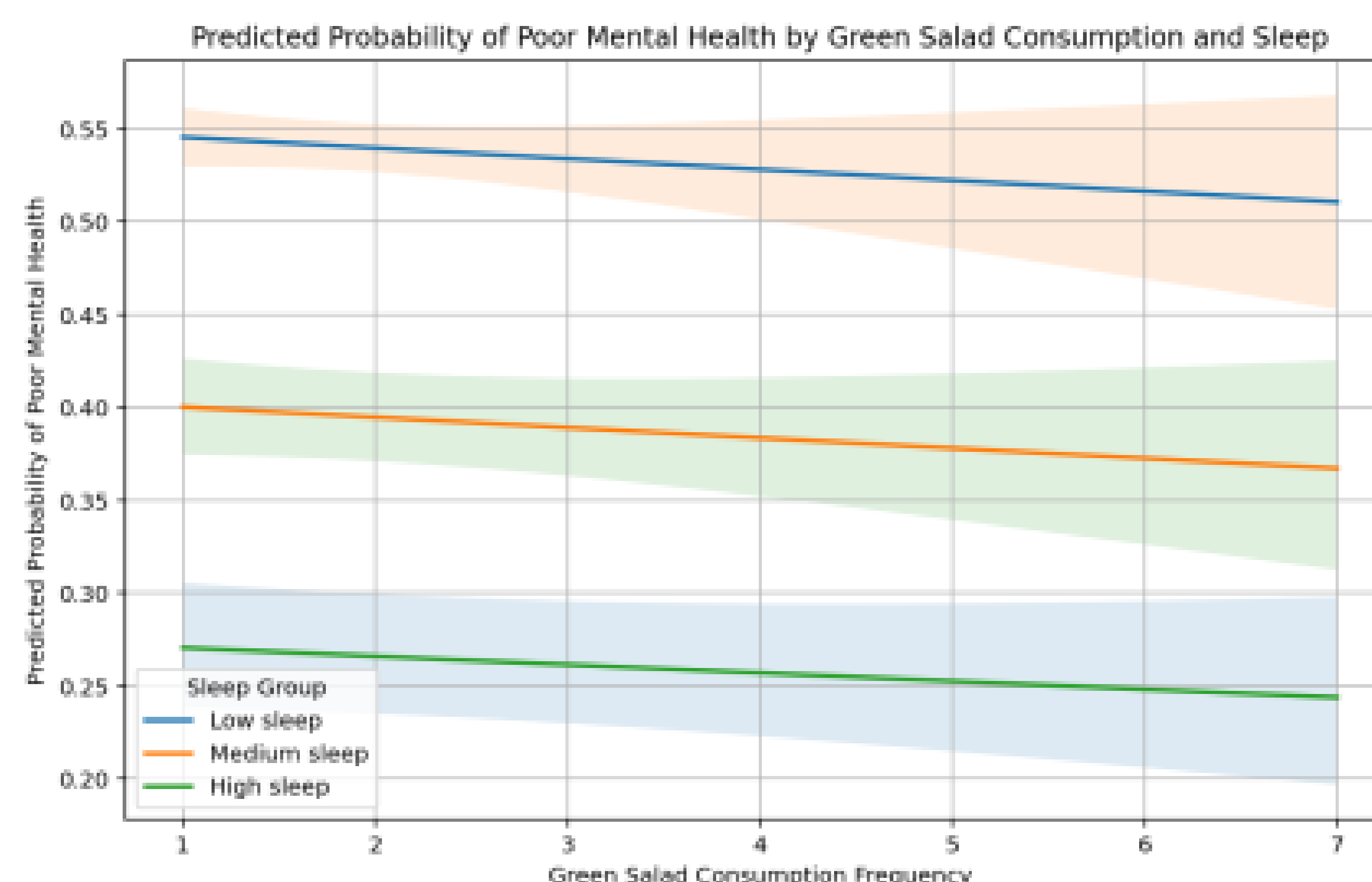


Figure 2: Poor Mental Health by Green Salad Consumption and Sleep Levels