Background & Aim

The purpose of this survey is to explore factors related to drinking behavior on a dry campus. The objective of this study is to find what proportion of students on this dry campus never drink? What factors, such as off-campus living and sex, are related to whether students drink?

Methods

This survey was conducted on a dry campus where no alcohol is officially allowed, even among students of drinking age, so we expect that some portion of the respondents never drink. The non-drinkers would thus always report zero drinks. However, there will also be students who are drinkers reporting zero drinks because they just did not happen to drink during the past weekend. Our zeros, then, are a mixture of responses from non-drinkers and drinkers who abstained during the past weekend. Ideally, we'd like to sort out the non-drinkers and drinkers when performing our analysis.

Here there are 77 observations, a Poisson regression model is used since the response is a count. They include an additional parameter $\alpha$. We define $\alpha$ to be the true proportion of *non-drinkers* in the population. Comparing this Poisson distribution to what we observed, it is clear that many more zeros have been reported by the students than you would expect to see if the survey observations were coming from a Poisson distribution.Then, we will attempt to model $\lambda$and $\alpha$ (or functions of $\lambda$ and $\alpha$ ) simultaneously using covariates like sex, first-year status, and off-campus residence. This type of model is referred to as a zero-inflated Poisson model or ZIP model

Results

Both covariates are statistically significant, but a goodness-of-fit test reveals that there remains significant lack-of-fit (residual deviance: 230.54 with only 74 df; $p<.001$ based on $\chi$^2 test with 74 df). The estimated chance that a first-year student is a non-drinker is 0.630 or 63.0%, while for non-first-year students, the estimated probability of being a non-drinker is 0.354.

Conclusion

Thus, for those who drink, the average number of drinks for males is 2.76 times the number for females ($Z = 5.827$, $p < 0.001$) given that you are comparing people who live in comparable settings, i.e., either both on or both off campus. Among drinkers, the mean number of drinks for students living off campus is 1.52 times that of students living on campus for those of the same sex ($Z = 2.021$, $p = 0.0433$).