Week 8 Writing

Background and Aim:

Drinking is common in our everyday life, even for some of the students in university. This study aims to investigate the potential factors contributing to the drinking behavior of students, such as off-campus living, gender and year of study.

Methods:

This study involves a survey that was conducted on a dry campus collecting information about the number of alcoholic drinks consumed in the past weekend by different students. The data records the number of drinks, gender of the student, whether the student lives off-campus, and whether the student is likely a first-year student. One latent variable in the data is whether a student is a drinker or a non-drinker. If we observe a zero number of drinks reported by a student, then he could be a non-drinker or a drinker who abstained during the past weekend. We will also consider this latent group information in our analysis. The first model used in this case study is a general Poisson regression model regardless of the group information. And the second model used is a zero-inflated Poisson (ZIP) model that distinguishes drinkers and non-drinkers based on the attribute of whether the student is in the first year, and fits regression for the number of drinks among drinkers. The models will be compared through the Vuong Test, which is able to compare predicted probabilities of non-nested models.

Results:

The estimated chance that a first-year student is a non-drinker is 0.630, while for a non-first-year student the chance is 0.354. Among the drinkers, living off-campus and gender are significant factors related to number of drinks at weekends. On average, a student living off-campus tends to have 1.5 more drinks than living on-campus and male students tend to have 2.8 more drinks than female students. With a p-value of 0.0036, the Vuong Test indicates that the zero-inflation model performs better.

Conclusion:

Among the students who drink, the gender of the student and whether the student lives off-campus are statistically significant factors related to the number of drinks consumed at weekends. This information could help the school better control the drinking behavior of students and set up appropriate rules. However, there are also limitations regarding confidentiality of the participants and whether the data is representative. Further research is expected to extend the ordinary Poisson regression to some more general models such as hurdle models or quasi-Poisson models.