**EEOB590: Writing about statistical analyses in a paper**

* Are the stats in a single section at end of methods, or interspersed throughout methods? (circle one)
* Does the order of questions addressed should match the introduction and results?
  + Yes
  + No
* Does the analysis section of the methods include:
  + Which hypothesis they are testing
  + Name & citation of statistical software and any packages used for analysis or graphing.
  + How data were summarized (mean, percent, etc.) and what they are using for measures of variability (e.g. SD, SE, 95% CI)
  + Statistical tests, with associated data transformations and significance level
  + Method of inference (e.g. p-values from full model or reduced model, post-hoc tests, likelihood ratio test, model selection via AIC)
  + Explanation of any aberrations from standard process (e.g. how they dealt with outliers, missing data, correlated predictors, etc.)
  + Assessment of model fit
  + Details on how figures/graphs were made
* If using a linear model, answer the following questions:
  + What type of model did they use? (e.g. lm, glm, glmer)
  + What is the response?
  + Were data transformed or was a link function used? If so, which function or transformation?
  + Which error distribution was used?
  + Identify predictors.
  + Were predictors standardized?
  + Justify any random effects that were used.
  + Do authors include the equation for the model?
  + Do authors describe how they approached model selection and/or hypothesis testing?
  + If they used model selection, do they:
    - Describe alternative models they fit to data (if appropriate)
    - Outline protocol for model selection (e.g. AIC, likelihood ratio test)
  + If they used post-hoc analyses (e.g. emmeans, glht), do they name the package?
  + Do authors mention how they dealt with overdispersion, if relevant.
  + Do they describe methods they used to assess model adequacy? e.g. plot residuals against fitted values, predictors etc.
* If using multivariate approaches,
  + Which package was used for visualization? Analysis?
  + What methods were used for visualization?
  + Which dissimilarity/distance index was used, and why?
  + What methods were used for statistical analysis?
* In the results section, do authors:
  + Report assessment of model adequacy (e.g. R2 from predicted/observed; proportion of deviance explained)
  + Describe relationships between variables in best fitting model (e.g. x was negatively related to y)? Is this done only for significant variables?
  + Present estimated mean (coefficient from model) and standard error from optimal model?
  + For linear model, report **all** test statistics (e.g. F and p values) if even non-significant?
  + If using Likelihood Ratio Test to test whether something is significant, report test statistics (chi-squared with df, LRT, and p-value)?
* Tables
  + For single model:
    - Present estimated parameters, standard errors, degrees of freedom (if available)
    - Maybe t-values, and p-values of optimal model
  + For model selection:
    - Table showing model rankings with log likelihoods, AIC’s, maybe delta AIC’s.
    - Do they present intermediate models or only a select few models?
* Figures
  + How is error represented?
  + How is significance represented? P values or symbols such as \* and \*\*?