

PSQF 6270 HW5: Generalized Linear Models on Your Own Data (15 points)
Due Monday 4/22/2024 by 11:59 PM under “assignments” in ICON

Please submit HW5 in an editable format (e.g., .docx or .rtf extension)
using this file-naming convention: PSQF6270_Lastname_Firstname_HW5

The goal of HW5 is for you to practice conducting analyses using generalized linear models on real data (either your own or public use data, as described the HW5 Plan document).. You may use my example results sections or those from homework as templates, but they need to be customized to match your specific analyses.

HW5 must be at least $\frac{3}{4}$ complete (with respect to points attempted) before it will be accepted, and late submissions will receive a -2 point penalty. You will have the chance to revise your HW5 once for full credit (except any late points), which will be due at the end of finals week.

Please note the following with respect to your writing and the presentation of your results:

- Although there is a list of points to be included further below, **I DO NOT WANT A NUMBERED LIST BACK FROM YOU**. Instead, your text should read like a **traditional results section** in a published paper; see the sample results sections from class examples for guidance. Each numbered point below should be answered in a new paragraph. In answering each question, make sure to describe the empirical criteria by which the answer was provided (i.e., what output content or model comparisons support your statements).
- I also want you to get practice with all relevant aspects of technical writing, including transitions between sections, contextual phrasing, and describing the contents of your tables and figures. For example, in a real results section for publication purposes, you would need to introduce each table and tell the reader what information it provides. You would need to provide and interpret the different types of results (i.e., beginning with descriptive analyses, transitioning into factor analyses) and maintain enough context for the reader to follow you.
- You should use not use the same short dash (-) for everything that is dash-like—please find and use the proper punctuation marks. For instance, $-$ is a real minus sign (used for all negative numbers), $-$ is an en-dash (used for compound phrases used as adjectives, such as *parent–child conflict*), and $—$ is an em-dash (used to set off phrases that clarify the previous phrase, like above; an en-dash with spaces on both sides could be used in place of an em-dash). I have added keyboard shortcuts on all my machines to make this easier (through the *insert symbol* menu in Word). Paying attention to these small details can help your writing look more professional!
- Use past tense throughout when describing how the data were obtained, how the analyses were conducted, and what you found. Present tense is ok if you are referring to the contents of the current tables and figures (e.g., “Table 1 shows...”).

- Be consistent in how you describe your variables—synonyms will only make your writing harder to follow. Boring writing is easier to read!
- APA style (or whatever style you should be publishing in) should be used for all tables and figures—please do not paste in unformatted program output and call it a table. Btw, tables can start in excel so that you can use the number formatting options to control how many digits show after the decimal consistently within columns, but then you'd bring the table into your document and provide a proper title (with font large enough to be legible) Make sure your variables are clearly labeled in all tables and figures (do not refer to variable abbreviations as used in your software).

Items (and their point values) to be included (you can earn up to 2 points for writing quality and proper use of APA style):

1. Write a short “purpose of the present study” section (1–2 paragraphs at most) that briefly introduces your topic area and presents your research questions. **(1 point)**
2. Write a short method section that contains only the most relevant information about your sample and measures/stimuli/design. You may organize this information in whatever format is typically used in journals in your discipline. Include a table of descriptive statistics and sample size for all variables used in your analyses (e.g., Mean, SD, Minimum, and Maximum for quantitative variables; frequencies per category for categorical variables). If you recorded your variables for analysis, please report on the recoded versions. **(3 points)**
3. Begin the results section with text for “analytic strategy” that describes the modeling approach(es) you are using. This should include which software (and which version and package), what type of model (link and distribution), centering and coding of predictors (i.e., who is your reference person for the model intercept) and any other relevant considerations (i.e., why you chose this approach if there were multiple plausible approaches). The idea is that the reader should be able to replicate your analyses with the info given. **(3 points)**

Please also include the following info specific to each model:

- a. Binary outcomes—use AIC and BIC to compare the fit of symmetric link functions (logit or probit) to asymmetric link functions (log-log or c-log-log) and report the model(s) with lower AIC and BIC
- b. Ordinal outcomes—test the proportional odds assumption (or try to, at least) using LRTs or Wald tests. If the non-proportional-odds model fits better, report those findings instead. Please clearly label which submodel a slope is for.
- c. Nominal outcomes—slopes differ across submodels by default, so please clearly label which submodel a slope is for.
- d. Count outcomes—evaluate distribution fit using LRTs, but then report the findings from the best-fitting model (or the most parsimonious model given comparable fit)

- e. Binomial outcomes—evaluate distribution fit using LRTs, but then report the findings from the best-fitting model (or the most parsimonious model given comparable fit)
4. Write the remainder of the results section with text for “findings” to summarize the results your analyses. Model equations can be provided if you wish. The text should be phrased as explicit answers to your research questions to the greatest extent possible. For your final model(s), interpret all fixed effects in terms of direction and significance. Include at least one table of model parameter estimates (along with their effect sizes) and one figure that illustrates your findings using predicted outcomes. **(5 points)**
5. Write the beginning of a discussion section that summarizes the results as explicit answers to the questions you started with (1–2 paragraphs at most). **(1 point)**