Kaitlyn Valentinetti
November 6, 2022
ECo 602: Michael France Nelson
Week 9 Reading Questions

1. Briefly (1 - 2 short paragraphs) describe at least two tradeoffs between the customized ML methods and the canned methods.

   The two main tradeoffs between the customized maximum likelihood methods and the canned methods that I took away from the Bolker reading are precision versus simplicity. When using customized maximum likelihoods, the distribution is typically the most realistic and accurate to the data you are analyzing. In many cases, the custom method will be the most plausible mechanistic model that you could possibly create. Conversely, the canned methods that lacks the complexity of a custom method will have greater inaccuracy and will consequently be farther from the reality of the data.

   On the other hand, the convenience and simplicity of the canned methods makes the methods of analysis quicker and easier. The author states, "If you use a standard method, you can just say (e.g.) "we used a linear regression" in your Methods section and no one will think twice" (Bolker 2008). In other words, canned methods are well-known and trusted, so your analysis will be easily understood for the reader and reliable. However, if you were to use a customized ML method, you would be spending a lot of time in your methods section trying to dissect how you used it. The text also mentions that readers are distrustful of custom statistics because they aren't conventional.
2. Briefly (1 - 2 sentences) describe each of the four key assumptions of the general linear modeling approach.

   The four key assumptions of the general linear model are all observations are independent of one another, all observations are distributed with constant variance (homoscedastic), there is no measurement error in any continuous predictor variables, and normality applies to the model residuals (expected values) not the data as a whole.
3. Explain how the normality assumption can be met in a general linear model, even if the response variable is not normally-distributed. (1 - 2 paragraphs)

The reason that the normality assumption can be met in a general linear model, even if the response variable is not normally distributed, is because the normality assumption doesn't apply to the whole data set. It only applies to the residuals, or the variation around the expected value. Therefore, not only does the response variable have nothing to do with the normality assumption of the general linear model, but none of the values for any variables involved except the residuals have to be normally distributed.