PBS 111 Homework 3

Winter 21

1. Using the data from the perceptual learning experiment (percep\_learn.csv) and from the Margarine study, carry out a gls analyses: (treating ‘trial’ and ‘time’ as factors.). Then treat ‘trial’ and ‘time’ as continuous variables and conduct a linear mixed models.
2. I received the following letter from a medical doctor in Neurology asking me for my blessing What would you tell the doc?

“We asked parents of surgically treated patients to assess the behavioral status before and after surgery. Thus, for instance, we asked whether the patient was depressed before surgery (giving the answer 'yes' or 'no') and after surgery (allowing the choice among 'not anymore', 'yes, but less', 'about the same', and 'worse'). By this, we got the following data:

**preoperative** **postoperative**

not anymore 14

yes 30 yes, but less 3

the same 7

worse 6

no 47 no 34

yes 13

Now, I calculated how many did improve, leading to 17 out of 30 [57%] (I did take only the 30 who had depression before surgery because the ones without cannot improve). Similarily, I calculated how many deteriorated, leading to 19 out of 77 [25%] (here I took the whole group because all patients, i.e. the ones with and without preoperative depression, could potentially deteriorate). Thus, question #1: is this assumption correct? Question #2: how can I test for significance? I did a chi square test but my colleague is skeptical whether or not this is correct. I have done the following:

**# yes no**

improved 30 17 13

deteriorated 77 19 58

Giving chi square( 2) = 9.8969 with (sic) P=0.0018.