P8110: Applied Regression II Spring 2024

Homework #9 [14 points]

Due on Apr 15, 11:59**AM**

**NOTE: Cut and paste relevant SAS/R output to appropriate places in the texts of your solutions. Attach the SAS/R codes to the end of your homework.**

We continue to use the “hwdata4.csv” dataset for tree growth.

1. Draw the spaghetti plots of the size of the tree on the growing time with separate panels for the two growing environments. [2 points]
2. Write a random intercept model with the covariates including time, environment, and their interaction. [2 points]
3. Was the trajectory of growth in the tree size over time different between the two environments? Perform a statistical test. Show the hypotheses, test statistic, p-value, and conclusion. [3 points]
4. Calculate the within-subject correlation coefficient. What’s your observation? [2 points]
5. Write a random intercept and slope model with the covariates including time, environment, and their interaction, and random slope for time. [2 points]
6. Do we need the random intercept and slope model in addition to the random intercept model? Perform a statistical test. Show the hypotheses, test statistic, p-value, and conclusion. [3 points]

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