

MTH 4230 Lab 7 Answer Sheet

Due Wed., Apr. 22

1 Part A

1.1 Patient Satisfaction Data Set

1. NA
2. *Don't* print the plot, just answer the following question.

Based on the scatterplot matrix, does *multicollinearity* appear to be a concern (Yes/No)?

3. NA
4. After refitting the model without the three-way interaction, are any of the two-way interactions **not** significant (Yes/No)? -----

If so, which one has the **largest p-value**?

5. After dropping the two-way interaction in the last step, are any of the two remaining two-way interactions **not** significant (Yes/No)? -----

If so, which one has the **largest p-value**?

6. After dropping the second two-way interaction in the last step, is the remaining two-way interaction significant (Yes/No)? -----

7. Which predictors are included in your **final model**?

2 Part B

2.1 Patient Satisfaction Data Set (Cont'd)

1. NA

- From the output of `drop1()`, which predictor (if any) should be **dropped** from the model (i.e. **lowers** the **AIC** the most) (Age/Severity/Anxiety)?
- Which terms does `drop1()` drop when you apply it to the model with **two-** and **three-way interactions**?

Which terms does `drop1()` drop when you apply it to the model with **two-way interactions** only?

3 Part C

3.1 Pesticide Biodegradation Data Set

- NA
- Don't* print the scatterplot matrix. With which of the six predictors is **DT₅₀** most strongly correlated (Nitrate/Potassium/Phosphorus/PH/OrganicMatter/Biomass)?
- The **final model** selected by **backward elimination** is at the bottom of the output of `step()`. Which predictors are contained in the model?
- The **final model** selected by **forward selection** is at the bottom of the output of `step()`. Which predictors are contained in the model?
- The **final model** selected by **backward stepwise** is at the bottom of the output of `step()`. Which predictors are contained in the model?
- The **final model** selected by **forward stepwise** is at the bottom of the output of `step()`. Which predictors are contained in the model?

The authors of the study concluded that:

”Soils showing rapid biodegradation of isoproturon had higher pH values and more microbial biomass.”

Do you agree (Yes/No)? _____

Explain how you arrived at your answer.