MATH 3080: Statistical Report Assignment No.3

Data set for each problem is available at <http://vps63.heliohost.us/e-stat/>. Go under the title “Data in Statistical Studies” → “Worksheet Data Sets/Textbook Data Sets.”

1. (Sample assignment problem.) The researchers are interested in determining whether the HEC and HGMF procedures agreed in the level of E. coli concentrations in meat samples. We should first obtain the regression relationship with HGMF serving as the explanatory variable.

Go under the title “Worksheet Data Sets” → “E Coli Detection.”

*Study Questions*:

* 1. Make a residual plot for the model. Is it reasonable to assume variance homogeneity?
  2. Do the data support that HEC and HGMF are yielding significantly different E. coli concentrations?
  3. HGMF shows a measurement value of 1.2, and the corresponding measurement of HEC about 0.6. It that unusual? How about HEC of 1.8 when HGMF shows 3.6?

1. An experiment involved 18 cancer tumors. For each tumor the weight was registered as well as the emitted radioactivity obtained with a special medical technique (scintigraphic images). Assume that we are interested in prediction of the tumor weight from the radioactivity. We want to use a linear regression model.

Go under the title “Textbook Data Sets” → “Tumor size.”

*Study Questions:*

* 1. Make a residual plot for the model. Is it reasonable to assume variance homogeneity?
  2. Try a transformation of the tumor weight variable so that a linear regression model on the transformed data fits the data in a satisfactory way (in e-Statistics: “Descriptive Statistics” → “Transformed Data”)
  3. A patient shows his radioactivity value of 8, and his tumor weighs about 0.7. It that unusual?