Stella Dee

Week 8 Reading Questions

I did not work with any other students.

Refer back to sections 7.1 and 8.2 for McGarigal's descriptions of the form of the linear

Note: McGarigal specifies the parametric model using this notation:

$Y \sim Normal(a+bx, \sigma)$

However, both the parametric and non parametric model can be expressed in the more familiar regression model format:

$yi=\beta 0+\beta 1xi+ei$

Q1: Describe the key difference between the non parametric model (Ch. 7.1) and the parametric model (Ch. 8.1)

With a non-parametric model, we don't make assumptions about the underlying distribution of the errors, while with a parametric model, we make an informed suggestion about the underlying distribution of the errors (normal) and see if the data matches the proposed model. For both models the deterministic model is the same.

Q2: What is the difference between interpolation and extrapolation?

Interpolation is predicting y values for un-collected x values, with the extent of those values bounded by what was measured; in McGarigal's words "prediction within the measured range of the data (27)". Extrapolation is when the researcher predicts y values that are beyond the extent of the values that they were able to measure; in McGarigal's words, "prediction beyond the measured range of the data (27)."

Q3: Explain why extrapolation has more pitfalls than interpolation.

Extrapolation has more pitfalls than interpolation because it relies almost entirely on the chosen model rather than the observations directly. If there were errors in the chosen model, or if the model only fits the measured range of data, than it would be easy to extrapolate in error. With interpolation, since all interpolated values are within the range of the measured values, there is less likely to be errors that are as large as extrapolated values.