

You should use R and the heights data in solving the following problems. I would prefer typed solutions, complete with plots where appropriate.

1. Evaluate the assumptions of normal regression analysis using normal scores plots of the residuals for your linear regression models of the heights of children and fathers and the heights of mothers and fathers.
2. Test the hypothesis that heights of mothers and fathers are independent.
3. This problem asks you to explore multiple linear regression, as described in sections 14.6-8 of the textbook.
 - a) Fit a regression line to the heights data using the heights of children and both parents (for example `lm(child~mom+dad)`). Explain the result (use the `summary` command).
 - b) Check that the residuals are (roughly) normally distributed.
 - c) Estimate the height of the child of a 6 ft tall woman and a 5 ft 8 in tall man. Compare with the expected heights of the child based only on the mother's height and based only on the father's height. Which is the best guess?
 - d) Read enough of section 14.8 to explain why it matters that the heights of mothers and fathers are not independent (and write the explanation).