

Exer 5.10

[H/H159-3]

The file `galton.csv` contains data on heights of children and their parents.

Consider this model of a child's height as a function of the father's height, the mother's height, and the sex of the child.

$$\text{height} \sim \text{father} * \text{sex} + \text{mother} * \text{sex}$$

Use the `galton` data to fit the model so that you can see the coefficients. Based on the coefficients, answer the following:

1. There are two boys, Bill and Charley. Bill's father is 1 inch taller than Charley's father. According to the model, and assuming that their mothers are the same height, how much taller should Bill be than Charley?

- A They should be the same height.
- B 0.01 inches
- C 0.03 inches
- D 0.31 inches
- E 0.33 inches
- F 0.40 inches
- G 0.41 inches

Exer 5.10-1

2. Now imagine that Bill and Charley's fathers are the same height, but that Charley's mother is 1 inch taller than Bill's mother. According to the model, how much taller should Charley be than Bill?

- A They should be the same height.
- B 0.01 inches
- C 0.03 inches
- D 0.31 inches
- E 0.33 inches
- F 0.40 inches
- G 0.41 inches

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3. Now put the two parts together. Bill's father is one inch taller than Charley's, but Charley's mother is one inch taller than Bill's. How much taller is Bill than Charley?

- A They should be the same height.
- B 0.03 inches
- C 0.08 inches
- D 0.13 inches
- E 0.25 inches

Exer 5.10-3