CatData HW6

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A4.3, A4.5, A4.15 (3 points)

A4.31 (5 points)

A4.16-A4.17, A5.4 (10 points)

4.3

(a):

Software calculated predicted probabilities at each level of the independent variable, including LI = 8. In logistic regression, for formula is as follows:

$$\hat{\pi} = \frac{\exp(\alpha + \beta x)}{1 + \exp(\alpha + \beta x)}.$$

Table 4.9 contains the coeficient and y-intercept, so just plugging those in, you get:

$$\hat{\pi} = \frac{\exp(-3.7771 + 0.1449(8))}{1 + \exp(-3.7771 + 0.1449(8)),}$$

$$= 0.0679953.$$

(b)

Same deal as with part a:

$$\hat{\pi} = \frac{\exp(\alpha + \beta x)}{1 + \exp(\alpha + \beta x)}.$$

$$\hat{\pi} = \frac{\exp(-3.7771 + 0.1449(26.0))}{1 + \exp(-3.7771 + 0.1449(26.0)),}$$

$$= 0.497575.$$