

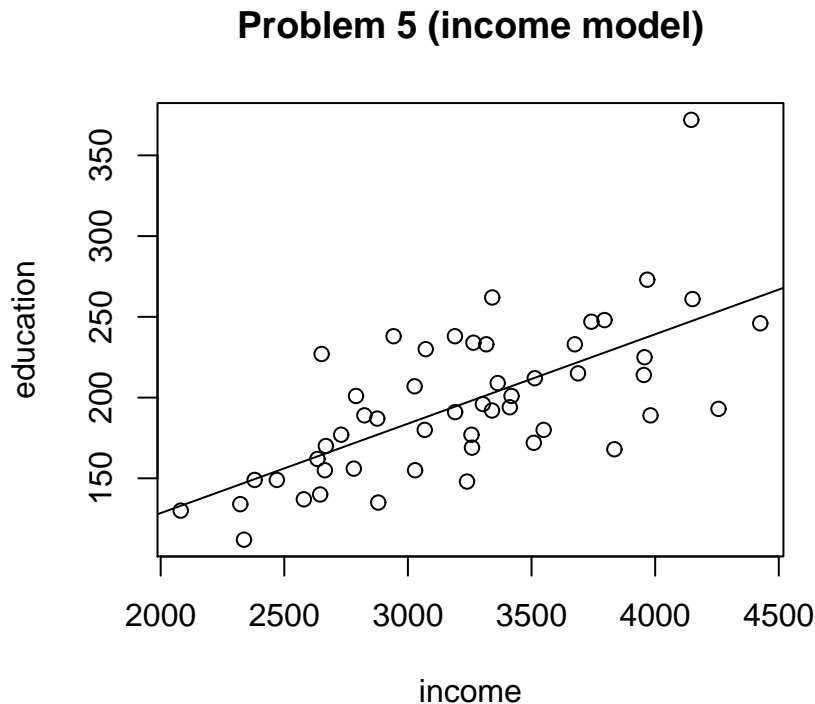
5. First we look at the model with income as the predictor and education spending as the response:

$$eduspend_i = m \cdot income_i + b + \epsilon_i.$$

Using R we found the least squares estimates for m and b to be .055376 and 17.71 respectively. Thus our model is:

$$eduspend_i = .055 \cdot income_i + 17.71 + \epsilon_i.$$

A plot of the data and least squares line is below.



The model indicates that states with higher income spend more on education on average. Specifically, for every extra dollar of statewide average income there will be an associated \$.05 increase in the amount spent on education. (Another way to look at this is that five cents of every dollar is spent on education). The intercept of \$17.71 in education spending for a zero income state is not terribly meaningful.

The standard error for the model is \$34.94, giving the average deviation of the data from the line in the model above, and $r^2 = .4457$, indicating that 44.57% of the variability in state education spending is explained by the model.