Outline

1. scatterplot (R xyplot or plot)

2. scientific models

3. statistical models \[ \text{observed} = \text{model} + \text{error} \]

4. models of simple functional form

5. choice of model
   (a) What (kind of) function
   (b) Which particular function \[ \text{observed} = \text{fitted} + \text{residual}. \]

6. The linear model
   (a) Choose the function to be linear
       \[ f(x) = b_0 + b_1 x \]
   (b) Choose the slope and intercept to minimize the sums of squares of residuals
       i. define \( \hat{y}_i = b_0 + b_1 x_i \). (the predicted or fitted values)
       ii. define \( r_i = y_i - \hat{y}_i \). (the residuals)
       iii. Choose \( b_0 \) and \( b_1 \) to minimize \( \sum r_i^2 \).

Homework

1. Read Sections 1.6.1, 1.6.2

2. Do problem 1.26. (Due Thursday, February 12)

Useful R

\[
\begin{align*}
&> \text{xyplot(undercount~minority,data=Ericksen)} \ # \text{Ericksen from R package car} \\
&> \text{scatterplot(undercount~minority,data=Ericksen)} \ # \text{scatterplot from car}
\end{align*}
\]