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## Logistic regression in R

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The logistic model is designed to fit binary data. In its simplest form (one quantitative explanatory variable), it looks like this:

$$\text{logit}(p) = \beta_0 + \beta_1 x,$$

where  $p$  is the expected probability of success when the value of the explanatory variable is  $x$ .  $\beta_0$  and  $\beta_1$  are unknown coefficients that must be estimated using data.

Because the logit function is invertible, this model can also be written

$$p = \frac{e^{\beta_0 + \beta_1 x}}{1 + e^{\beta_0 + \beta_1 x}}$$

In the admissions example,  $\beta_0 = -12.0352$  and  $\beta_1 = 4.0802$ .