Scenario: Drug Effects on Blood Pressure

Consider an experiment to evaluate the effect of four different drugs on blood pressure values. The drugs are administered to randomly selected subjects and the change in systolic blood pressure for each subject is recorded. You want to compare the average change in the blood pressure for the different drugs. The data is stored in the **pressure2** data set. **Bpchange** is the dependent variable and the type of **Drug** is the independent variable with four levels (1, 2, 3, and 4).

You want to use a model that explains as much of the variability in the **Bpchange** as possible. This mathematical model $Y_{ij} = \mu + \alpha_i + \varepsilon_{ij}$ is a way to represent the relationship between the dependent and independent variables.

Let's review each part of this model. Y_{ij} equals the observed change in the blood pressure for the *j*th person taking *i*th drug. μ is the overall population mean of the response, **Bpchange**. α_i is the effect of the ith drug. ε_{ij} is the error term, $\varepsilon_{ij} \sim N(0, \sigma^2)$, and is normally distributed with a zero mean and constant variance across each level of **Drug**.

Close