July 2nd Tutorial Exercise

1. Install and load the `farawary` package.

2. Familiarize yourself with the `suicide` data from this package.

3. Extract the variables from the dataset for easy use with the following commands:

```
y <- suicide$y
cause <- suicide$cause
age <- factor(suicide$age, levels = c("m", "o", "y"), labels =
     c("Middle-Aged", "Old", "Young"))
sex <- factor(suicide$sex, levels = c("f", "m"), labels =
     c("Female", "Male"))
```

4. Visualize the relationship between `y` and each of the explanatory variables.

5. Fit a linear regression model between `y` and each of the explanatory variables.
    a. How do we interpret each of the β's?
    b. Is the `cause` variable significant? In other words, is the expected suicide count the same for each method?
    c. Is the `age` variable significant? In other words, is the expected suicide count the same for each age?
    d. Is the `sex` variable significant? In other words, is the expected suicide count the same for each sex?
    e. How much of the response variation is explained by the model?
    f. Perform the overall test of significance for this model.

6. Is there an interaction between `cause` and `age` or between `cause` and `sex`? In other words, do suicides rates by different causes seem to be the same for people of different ages or sex?

7. Fit a model which accounts for these interactions.
    a. How much of the response variation is explained by this model?
    b. Is the cause-by-age interaction significant?
    c. Is the cause-by-sex interaction significant?