In this lab, we will use the Salary dataset to examine effect modification. Before conducting the analysis, set up the dataset as follows:

1. Read in the Salary dataset from the course web page
2. Remove all observations that are not from 1995
3. Create an indicator variable for male gender (male)
4. Create an indicator variable for being in the arts field (arts)
5. Create an indicator variable for being in the 'other' field (other)
6. Create an interaction between male and arts (malearts)
7. Create an interaction between male and other (maleother)

We will consider the following model for this lab. This is known as a saturated model because there are 6 total parameters used to model the mean ($\beta_0$, $\beta_1$, ..., $\beta_5$) and there are 6 total means that could be estimated for the possible combinations of gender and field.

$$E[\text{Salary} | \text{male, field}] = \beta_0 + \beta_1 \cdot \text{male} + \beta_2 \cdot \text{arts} + \beta_3 \cdot \text{other} + \beta_4 \cdot \text{male} \cdot \text{arts} + \beta_5 \cdot \text{male} \cdot \text{other}$$

Using the above model, give the parameters that can be used to obtain the expected (mean) salary for a given gender and field:

<table>
<thead>
<tr>
<th>Field: Professional</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field: Arts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field: Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fit the above regression model using robust standard errors. For each of the following questions: (1) Give the null and alternative hypothesis being tested (e.g. $H_0: \beta_1 = 0$, $H: \beta_1 \neq 0$), and (2) Give the p-value for this test as given in Stata or R

1. In females, does the salary of professional differ from the salary of arts?

2. In females, does the salary of professional differ from the salary of other?
3. In females, does the salary of arts differ from the salary of other?

4. In females, does salary differ by field?

5. In males, does the salary of professional differ from the salary of arts?

6. In males, does the salary of professional differ from the salary of other?

7. In males, does the salary of arts differ from the salary of other?

8. In males, does salary differ by field?

9. Does salary differ by gender, controlling for field?

10. Does salary differ by field, controlling for gender?

11. Does field modify the association between gender and salary?

12. Does gender modify the association between field and salary?