

POSTGRADUATE COURSE IN
LINEAR AND LOGISTIC REGRESSION
Day 2
Afternoon exercises:

Part A

Back to the lung function data (`lung`).

We will consider the multiple regression of PEFR on height and sex.

We will consider sex as a **categorical variable** and not use a dummy variable as in the exercise this morning.

Fit model with an **interaction** between sex and height

1. What is the estimated difference in the slopes (with CI) for men and women?
Are the slopes statistical significant different?
You also made such a comparison Monday morning.
Compare this with what you just found.

2. What is the estimated difference (with CI) in expected PEFR for a man and a woman both 170 cm high?
Are this difference statistical significant?
You also made such a comparison Monday morning.
Compare this with what you just found.

Part B

Here we look at data from the lecture today (`fram200`) and the model

$$\ln(sbp) = \beta_0 + \beta_1 \cdot \text{age} + \beta_2 \cdot \text{woman} + \beta_3 \cdot \ln(bmi) + E$$

3. Fit a model with sex as a categorical variable and an **interaction** between sex and age, using **men** as reference for sex.
Spend some time trying to understand the estimates.
4. Fit the same model but now with **women** as reference.
Spend some time trying to understand the estimates.
5. Combine your findings into a conclusion on whether or not there is interaction (effect modification) between sex and age.