

Laboration 1: Regression

The laboration report should be returned no later than November 24, 2003.

Six persons are asked about the number of years of higher education, the number of years they have been employed and their salary as thousands of Swedish crowns at their present employment:

Education	2	5	3	5	6	3
Employment	3	5	8	7	23	7
Salary	15	20	17	22	30	16

1. Suppose a simple linear regression model with response `salary` and covariate `education` is suggested.
 - (a) What are the regression coefficients?
 - (b) What is the determ. coeff. and MSE?
 - (c) What is the interpretation of the model for a person with 4 years of higher education?
 - (d) Interpretation of the model for a person with no higher education?

2. Suppose a simple linear regression model with response `salary` and covariate `employment` is suggested.
 - (a) What are the regression coefficients?
 - (b) What is the determ. coeff. and MSE?
 - (c) What is the interpretation of the model for a person with 10 years of previous employment?
 - (d) Interpretation of the model for a person with no previous employment?
 - (e) Which of the models in exercise 1 and 2 is to be preferred?

3. Suppose a simple squared polynomial regression model with response `salary` and covariate `education` is suggested.
 - (a) What are the regression coefficients?
 - (b) What is the determ. coeff. and MSE?
 - (c) What is the interpretation of the model for a person with 4 years of higher education?
 - (d) What is the interpretation of the model for a person with no higher education?

4. Suppose a simple exponential regression model with response `salary` and covariate `employment` is suggested.
 - (a) What are the regression coefficients?
 - (b) What is the determ. coeff. and MSE?
 - (c) What is the interpretation of the model for a person with 10 years of previous employment?
 - (d) For a person with no time of previous employment?

5. Suppose a multiple linear regression model with response `salary` and covariates `education` and `employment` is suggested.
 - (a) What are the regression coefficients?
 - (b) What is the determ. coeff. and MSE?
 - (c) What is the interpretation of the model for a person with 4 years of higher education and 10 years of previous employment?
 - (d) What is the interpretation of the model for a person with no higher education and no previous employment?
 - (e) Compare the gain of accuracy with the previous models.