

Fundamentals of Data Analysis: Assignment #10

Deadline: 12/22/2003 (Monday)

Please post to the mailbox next to the IS management office (2nd floor of IS building)

1. A pediatrician wants to know the relation between the amount of the mothers' weight gain during the pregnancy and the birth weight of their infants. He obtained sample data of 15 pairs of mothers and babies as shown in the table below. Run a regression analysis according to the following steps.

| # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|------------------|-----|------|------|------|-----|-----|------|------|------|------|------|------|------|------|------|
| weight gain (X) | 8.0 | 11.5 | 14.0 | 13.5 | 6.5 | 9.5 | 12.5 | 12.0 | 17.0 | 10.5 | 15.0 | 16.0 | 13.0 | 13.5 | 11.5 |
| birth weight (Y) | 3.1 | 3.4 | 3.7 | 3.6 | 2.8 | 3.1 | 3.5 | 3.2 | 4.0 | 3.0 | 4.0 | 4.1 | 3.7 | 3.8 | 3.4 |

- Calculate the sample correlation coefficient value between X and Y.
- Test the hypothesis that the (population) correlation coefficient between X and Y is zero, using a significance level $\alpha = 0.05$.
- Construct the linear regression equation for predicting birth weight of an infant Y from weight gain of mother X.
- Calculate (square root of) the mean squared error D .
- Calculate the unbiased estimate of the standard deviation of prediction error $\sigma_{Y|X}$.
- Calculate the coefficient of determination R^2 .
- Predict the birth weight of the infant whose mother's weight gain is 10 Kg.

2. Write your comments and requests on this lecture (if any).

END.