Applied Linear Statistical Models

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Richting	Wiskunde
Jaar	MWIS

Examenvragen

Juni 2013

1. Oral discussion questions (without computing, with preparation)
    - What are the two estiomation approaches that were central in this course? Are these methods completely different? Do they produce the same results occasionally? Describe how statistical test are performed in each of these methods.
    - A food company tries to predict the humditiy of the cookies it produces by means of spectral data. The spectral date (the independent variables) are light intensities measured at 1000 different wavelenghts. This means that there are 1000 different independent variables to predict one dependent variable, the humditiy. In total, the company has 100 data points (100 observations). What is the problem with this data set? How can the company proceed? How can it use the data to build a useful regression model? (An answer to this question requires combining everything you learnt in your statistics classes. You did not get a ready answer to this question in the ALSM-class, so you need to think creatively).

2. Data analysis questions
    - The file "lifetime data.jmp" is JMP file that contains a data set with lifetimes of DVD recorders from 2 different manufactureres. Fit an appropriate regression model with lifetime as the dependent variable and manufacturer (mfg) as the independent variable. Is the effect of the independent variable significant? Explain how the likelihood ratio test works for this example to test whether the independent variable has a significant impact on the lifetime? Compare this test to a classical t-test that compares the average lifetime for two manufacturers. Think carefully about a sensible distribution for the dependent variable.
    - The SAS program "ice cream.sas" fits a model with the variable taste as the response and the variable brand as an independent variable. The variable count is a frequency. Explain what kind of analysis is used, and what the conclusions of the study are.
    - Discuss what is demonstrated in the file "drug data.sas". The variables PreTreatment and PostTreatment indicates the number of bacteries in patients. Note that I do not expect you can explain every possible detail in the output. I expect you to recognize the analysis method, and that you can explain the usefulness of the method.
    - What kind of analysis is done in the file "muscles with analysis.sas"? Note that I do not expect that you can explain every possible detail in the output.

(De data-sets en SAS-programma's waarvan sprake, zijn hier te vinden.)

Categorieën:

- Wiskunde
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