



Stockholm
University

STOCKHOLM UNIVERSITY
Department of Statistics
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Autumn semester 2012

Statistical Methods Part 1

Coursework, part 1

Exercise 1

Worth 60 marks out of 100 marks.

At the course website there are two datasets, Data1 and Data2. Each dataset contains a grouping variable G , which is in the first column. In the following columns there are five other manifest variables, A , B , C , D and E , which are believed to be indicators of a latent variable X that has two levels (classes).

Step 1

For each dataset, fit a saturated model and the ‘best’ non-saturated model you can find. What constitutes ‘best’ is hard to say since we do not know all details about the purpose of fitting models to these datasets. Make a decision on what you believe is the best model and state why you think so, referring to objective or intersubjective knowledge, concepts and practices.

As always, it is useful to make some initial data exploration.

Write a report. It does not have to be a research paper, but it must be clear and concise. Submit by email to Dan Hedlin by **February 4**.

Step 2

After having submitted the report, you will obtain more data for both Data1 and Data2 generated from the same distributions. Evaluate your best models in the light of the new data and write an addition to your report. You may wish to amend the report you submitted by February 4. Deadline **February 11 2013 at 3 pm**. Submit by email to Dan Hedlin.

Use some suitable software. LEM may be the best choice. Download it and the manual from a website you will find by googling on *Vermunt LEM*. The address is:

<http://www.tilburguniversity.edu/nl/over-tilburg-university/schools/socialsciences/organisatie/departementen/mto/onderzoek/software/>

It is part of the coursework to learn the software well enough to do the coursework.

Please turn page

Exercise 2

1. In the abstract of Carlsson and Roth (2006) (see reference below), the authors list several conclusions. Choose two of the conclusions and discuss their internal and external validity. Ignore their unusual way of writing a probit model on page 14. (15 marks out of 100 marks)
2. Carlsson and Roth sent false applications to a large number of businesses and thus acted deceitfully. Would you say that Carlsson and Roth have been in breach of ethical conduct in research? Motivate your answer. (5 marks out of 100 marks)

Deadline for Exercise 2 is **February 11 2013 at 3 pm**. Submit by email to Dan Hedlin.

Reference

Carlsson, M. and Roth, D.-O. (2006). Evidence of Ethnic Discrimination in the Swedish Labor Market Using Experimental Data. Discussion paper series, IZA DP No. 2281. Forschungsinstitut Institute for the Study of Labor. Bonn, Germany. The paper can be found here: <http://www.temaasyl.se/Documents/Forskning/Forskningsstudier/dp2281.pdf>.