

Cluster	Course Title	Instructor	Credit	Semester
S	Data Analysis for Educational Research	Satoshi MIWA	2	2014 Summer
Course Description				
<p>The aim of this course is to learn knowledge and skill of data analysis for educational and/or social research. Especially, categorical data analysis, such as log-linear modeling, will be focused. Log-linear modeling is the one of basic methods in categorical data analysis. It can be applied to analyze cross-table, which includes higher order table, in order to test hypothesized model fit, capture the pattern of association among several variables. That is often used in sociology of education, family sociology, social stratification research and so forth.</p> <p>Not only to lecture about basic concepts and statistical theory, but also to practice computer software in lab will be planned in this course. Besides, students will have to make a short presentation about their own research theme, research design, and statistical results every day.</p>				
Objective				
<p>After completing this course, students will;</p> <ol style="list-style-type: none"> 1. Have a deep and wide knowledge of statistics for social and educational study. 2. Know specialized analytical techniques of categorical data analysis. 3. Improve their research skill using computer software. 4. Understand process and results in quantitative research. 				
Learning Method				
<ol style="list-style-type: none"> 1. Lectures; Students will learn minimum knowledge including theory, skill, how to operate the software, and so forth. 2. Practice; Students will exercise the statistical analysis with free software. 3. Research; Students will conduct empirical analysis for their own research interests. 4. Presentation and Discussion; Students will make oral presentation and discuss each other. 				
Contents				
1) Course orientation and introduction				
2) Log-Linear Models 1: Specifying models				
3) Log-Linear Models 2: Fitting marginals				
4) Log-Linear Models 3: Analyzing odds				
5) Students' presentation (own research theme)				
6) Testing for fit 1: Comparisons of different models of the same data				
7) Testing for fit 2: More complex models and hypotheses				
8) Applications to substantive problems 1: Causal models for log-linear models				
9) Applications to substantive problems 2: Analyzing change over time				
10) Students' presentation (data, variables and analytical models)				
11) Applications to substantive problems 3: Mobility tables				
12) Special techniques with log-linear models				
13) Some extensions (association models, latent class models)				
14) Students' presentation (results and discussion)				
15) Concluding remarks				

Requirements

1. Students who take this course MUST have enough knowledge about elementary statistics, such as, cross tabulation, odds ratio, chi-square test, and so on.

If you are not sure whether having enough knowledge or not, please contact to the lecturer's e-mail address (miwa@sed.tohoku.ac.jp) in advance.

2. Students who take this course have to get the textbook (Log-Linear Models by D. Knoke & P. J. Burke) by starting the course.
3. Students who take this course will be required to make a brief presentation at least three times (in principle, once a day).

Evaluation

- Contribution to discussion (40%)
- Oral presentation (60%)

Textbooks and Papers

Textbook:

Knoke, D. and P. J. Burke, 1980, *Log-Linear Models*, Sage.

References:

Hout, M., 1983, *Mobilty Tables*, Sage.

Wong, R. S.-K., 2009, *Association Models*, Sage.

Powers, D. A. and Y. Xie, 2008, *Statistical Methods for Categorical Data Analysis (2nd edition)*, Emerald Group Publishing.

Knoke, D., G. W. Bohrnstedt and A. P. Mee, 2002, *Statistics for Social Data Analysis (4th edition)*, Thomson.