UNIVERSITY OF CALGARY

FACULTY OF SCIENCE
Department of Mathematics and Statistics

Statistics 541 (3-1T) Categorical Data Analysis

(see Course Descriptions under the year applicable: http://www.ucalgary.ca/pubs/calendar/)

Syllabus

Topics	**Number of hours**
Introduction: Categorical data, Statistical inference for a proportion	2
Contingency Tables: Table structure, Comparing proportions, Odds ratio, Chi-squared tests, Exact tests for small samples, Association in three-way tables	4
Generalized Linear Models: Components of a generalized linear model, GLMs for binary data, GLMs for count data, Inference and model checking, Fitting generalized linear models	5
Logistic Regression: Interpreting logistic regression, Inference for logistic regression, Categorical predictors, Multiple logistic regression, Summarizing effects	5
Building and Applying Logistic Regression Models: Strategies in model selection, Model checking, Effects of sparse data,	3
Multicategory Logit Models: Logit models for nominal responses, Cumulative logit model for ordinal responses	4
Loglinear Models: Loglinear models for 2-way and 3-way tables, Inference for loglinear models	4
Models for Matched Pairs: Comparing dependent proportions, Measuring agreement	3
Modeling Clustered Responses (Repeated Measures): Marginal models vs. conditional models, Marginal modeling: The GEE approach, GEE for multinomial responses	6
TOTAL HOURS	**36**

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2015-09-02
Gemai Chen

Outcomes:

Students finishing this course successfully are expected to have learned when the following methods may be applied, how to apply them, and how to properly interpret the results.

1. description and inference for binomial and multinomial observations using proportions and odds ratios
2. multi-way contingency tables
3. generalized linear models for discrete data
4. logistic regression for binary responses
5. multi-category logit models for nominal and ordinal responses
6. loglinear models
7. inference for matched-pairs and correlated clustered data

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08:15:17 (course outcomes added)
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