

## Categorical Data Analysis

OE 112

Wednesday 9am – 11:45am

**Instructor** Stefany Coxe, Ph.D.

**Office:** DM 275

**Office hours:** by appointment

**Email:** stefany.coxe@fiu.edu

**Website:** <http://faculty.fiu.edu/~scoxe>

NOTE: Anything on this syllabus is subject to change at the Instructors discretion.

### Course Description

This course covers topics related to statistical analysis of categorical outcome variables, focusing on methods used in the social sciences. Topics include chi-square and other non-parametric methods for categorical outcomes, the generalized linear model (GLiM, including logistic regression, Poisson regression, and survival analysis), and repeated measures extensions of GLiM (such as GEE and generalized linear mixed models). You will analyze, interpret, and write up results using these methods.

### Prerequisite

Graduate coursework in analysis of variance and linear regression. We will cover a variety of topics in this course, but all of them build on a basic ANOVA and regression (general linear model) framework. A course covering multivariate statistics (such as PSY 5246C) is highly recommended but it is not required.

### Teaching Assistant

Our teaching assistant, Ryan Hill, will be available as an additional resource. You can contact him via email: rhill004@fiu.edu

### Software

We will use SPSS / SAS in this course. I expect you to be able to use one of these software packages (e.g., open datasets, transform variables, conduct simple analyses, etc.). I will teach specific procedures for this course.

### Blackboard

Lecture notes, computer code, assignments, and other materials will be posted on Blackboard. You should bring them to class.

### Textbook

*An Introduction to Categorical Data Analysis, 2nd edition* (2007), by Alan Agresti

**Other readings:** I will post relevant articles to Blackboard on an as-needed basis.

## Assignments

### Homework

Four homework assignments covering the four major topic areas of the course: 1) Non-parametric tests and two- and three-way contingency tables; 2) Generalized linear models for binary, ordered, and unordered categories; 3) Generalized linear models for rates and counts; and 4) Models for clustered and repeated-measures categorical outcomes. The assignments involve running several analyses, making some decisions based on the analyses, interpreting output, and presenting the results in tables/figures and text.

### Final Project

I will post several datasets with categorical variables to Blackboard, along with brief descriptions of each. You will propose a project using one of these datasets. This will culminate in a short paper. I want you to focus on developing research questions and mapping them on to appropriate analyses. More details to follow during the semester.

You will need to turn in a 1 to 2 page proposal for your project on March 19. You will present your findings to the class on April 16. The final paper is due April 23.

### Presentation

A short presentation about your final project. Though your paper should be nearly complete at this point, this should help you organize your thoughts. The purpose of this presentation is to give you practice presenting your analysis findings in a group setting. Approximately 10 to 15 minutes.

## Grade Distribution

Homework 1	15%
Homework 2	15%
Homework 3	15%
Homework 4	15%
Final Project proposal	5%
Final Project write-up	25%
Final Project presentation	10%

## Letter Grades

$\geq 93.00$	A
90.00 - 92.99	A-
87.00 - 89.99	B+
83.00 - 86.99	B
80.00 - 82.99	B-
77.00 - 79.99	C+
73.00 - 76.99	C
70.00 - 72.99	C-
67.00 - 69.99	D+

## Course and University Policies

### Attendance

I shouldn't have to tell you to attend every class. This is graduate school.

If you need to miss class for a good reason (such as illness or professional conference), please contact me as soon as possible to make any necessary arrangements.

### Special Needs

Any student with a disability or other special need that may require special accommodations for this course should make this known to the instructor during the first week of class.

Disability Resource Center:

<http://drc.fiu.edu>

[drcupgl@fiu.edu](mailto:drcupgl@fiu.edu)

Graham Center 190

(305) 348-3532

### Academic Misconduct

Students at Florida International University are expected to adhere to the highest standards of integrity in every aspect of their lives. Honesty in academic matters is part of this obligation. Academic integrity is the adherence to those special values regarding life and work in an academic community. Any act or omission by a student which violates this concept of academic integrity shall be defined as academic misconduct and shall be subject to the procedures and penalties set forth herein. All students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook.

### Academic Dishonesty

Please refer to your student handbook for a description of what constitutes academic dishonesty.

**Tentative Course Outline**

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<b>Date</b>	<b>Topics</b>	<b>Readings</b>	<b>Assignments</b>
Jan 08	Introduction, Levels of measurement	Agresti 1	
Jan 15	Non-parametric tests		
Jan 22	2 way contingency tables	Agresti 2	
Jan 29	3 way contingency tables	Agresti 2	
Feb 05	Generalized linear models	Agresti 3	HW 1
Feb 12	Generalized linear models	Agrest 4,5	
Feb 19	Generalized linear models	Agresti 6	HW 2
Feb 26	Generalized linear models	Agresti 3	
Mar 05	Intro to GEE and GLMM		HW 3
Mar 12	<b>Spring Break</b>		
Mar 19	Generalized estimating equations	Agresti 9	Proposal
Mar 26	Generalized linear mixed models	Agresti 10	
Apr 02	Generalized linear mixed models	Agresti 10	
Apr 09	Topic TBD		HW 4
Apr 16	Presentations		
Apr 23	<b>Finals Week</b>		Final Project

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