Categorical Data Analysis
STSCI 4110 / BTRY 4110 / ILRST 4110
Spring 2016, 4 credits

This class provides an introduction to categorical data analysis, including logistic regression, stratified tables, matched pairs analysis, polytomous response, and ordinal data. Applications in biological, biomedical, epidemiology and social sciences. Students will use R for statistical analyses.

Class Time and Location: Tues/Thurs 11:40 to 12:55, 110 Hollister Hall

Prerequisites: BTRY 3020 or 6020 or equivalent. BTRY 3080 highly recommended.

Instructor: Melissa Smith, Lecturer, Department of Statistical Science
1176 Comstock Hall
ms429@cornell.edu

Grader: TBA

Office Hours: TBA If you cannot come during office hours, you may contact me by email to arrange an appointment time.

Attendance:
Attendance at lectures is strongly encouraged, but not required. You are responsible for being aware of the announcements and content.

Website:
The course website is available through http://blackboard.cornell.edu/. Please register with the site and check it regularly. We will use Piazza also. This is a good venue for getting answers to questions that you have about the homework assignments.

Text:
An Introduction to Categorical Data Analysis (2007) by Alan Agresti.
http://cornell.worldcat.org/oclc/123502639. This book is available online through the Cornell library and can also be purchased at the bookstore. This is an excellent book with many good examples. The course matches the book fairly closely. Homework assignments contain problems from the text.

Learning Outcomes:
After completing this course, students should be able to:
1. Interpret marginal and conditional associations in multi-way contingency tables;
2. Summarize patterns of association among binary and multi-category response data using logistic regression models and multinomial response models.
3. Build and interpret models for matched pairs analysis, choice modelling and CART.

Statistical Software:
We will be using R for statistical analysis in this class.

Class Conduct:
Computer use is discouraged during class. Likewise, students should not text during class and all cell phones should be turned off.

In-class exams:
You may not bring a computer, but may bring a calculator that does not have any communication capability. *Do not bring cellphones.*

Grading Policy:
Your grade will be based on the homework (20%), two prelims (25% each), and final exam (30%). Homework assignments are equally weighted. The lowest score on the homework assignments will be replaced by the next lowest homework score. The first prelim be an in-class exam. The second prelim will be a take-home where you have to do an analysis of a dataset. The final exam will be during finals week, during the assigned 2.5-hour slot.

If there is a dispute about grading (a homework set or an exam), you may turn in the work with a written request for a regrade within a week of the work being returned. *All* of the work, and not just the disputed question, will be regraded.

Homework assignments will be posted on the course website and will be due one week later. (Homework may not be assigned every week.)

Students may discuss homework problems with one another, but only at the level of a "corridor conversation" with no notes taken. Homework that is late receives 20% off for within 24 hours late and 40% for 24-48 hours late. A zero after that. If you have a *good* reason why you cannot meet a deadline, please check with me as soon as possible, and *before* the deadline passes. In these cases some arrangement can usually be found.

Academic Conduct:
Each student in this course is expected to abide by the Cornell University Code of Academic Integrity. Any work submitted by a student in this course for academic credit should be the student's own work.

All homework assignments are to be completed by students working on their own. You may discuss the homework problems with others if you wish, but only at the level of a discussion in a corridor. No notes should be taken away from such discussions.

You may not work through the solutions with other students, and you cannot share computer files. You may not discuss the homework with past students who may have knowledge of the details of the homework set. You are also not allowed to derive advantage in any way from the existence of solutions prepared in prior years, whether the solutions were former students' work or copies of solutions that had been made available by the instructors.

You are prohibited from buying and selling course materials that I have written. Such behavior constitutes academic misconduct.

I treat violations of Academic Integrity seriously. Prior violations:

1) Student copied homework solutions on 3 homework assignments and claimed that they were her own
   Penalty: 0 for all assignments
   Report filed with the College's Committee on Academic Integrity
   End result: Student failed the course

2) Student had homeworks and handouts in sight during final exam
   Penalty: 0 for the final exam
   Report filed with the College's Committee on Academic Integrity
   End result: D in the course (no credit received) and student did not graduate with his/her class. Had to take an additional course to graduate.

Violations will be handled in accordance with the Code of Academic Integrity available at http://www.theuniversityfaculty.cornell.edu/AcadInteg/code.html and you can learn more at http://www.theuniversityfaculty.cornell.edu/AcadInteg/ .

If you have any questions about this policy, please ask me.

Personal or Academic Stress:
If you are experiencing undue personal or academic stress at any time during the semester or need to talk with someone about a personal problem or situation, I encourage you to seek support as soon as possible. I am available to talk with you about stresses related to your work in my class. Additionally, I can assist you in reaching out to any one of a wide range of campus resources, including:
- Your college's Academic Advising or Student Services Office
- Cornell Learning Strategies Center at 255-6310, http://lsc.sas.cornell.edu
- Gannett Health Services at 255-5155, www.gannett.cornell.edu
- Let's Talk Drop–In Consultation and Support www.gannett.cornell.edu/Let'sTalk
- Peer Support provided by Empathy Assistance and Referral Service at 255-EARS

DISABILITY-RELATED CONCERNS: Students with either an ongoing or short-term disability are encouraged to contact Student Disability Services (SDS) for a confidential discussion of their need for academic accommodations. SDS is located in 420 CCC building; phone number is 254-4545.

How to be Successful in this Class:

- Golden Rule of Success: For every 1 hour in class, you should do 3 hours of work outside of class
- Read the chapter or assigned readings before class.
- Write down the learning objectives.
- After class, evaluate yourself... did you achieve the learning objectives?
- Review your notes. Try an example. (Use unassigned problems, check your answers in the back of the book. Answers to the odd-numbered problems are in the back of the book.)
- Get a study partner or form a study group. Go over practice problems, toss around ideas. Explain a method to someone else. If you teach it, you will learn it.
- Ask questions!