



STA 4504 (Class number 17181)

Fall 2022

Categorical Data Analysis

MWF 08:30-09:20 in FLO 100

Instructor: Demetris Athienitis

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Course Website: [e-Learning](#)

Course Material: Material will be provided in course website.

- Notes (that at times deviate from textbook).
- Slides (based off of class notes).

Course Communication:

- Discussion forum (Microsoft Teams).
- Office hours (posted under “Pages” in e-Learning).
- E-mail for questions regarding course policies. (Ensure that **STA 4504** is in the subject line. Failure to do so may result in a non-response.)

Required Text(s): *An Introduction to Categorical Data Analysis*, 3rd Edition

Author(s): A. Agresti

ISBN-13: 9781119405269

Course Description: This course requires as a prerequisite a grasp of basic statistical methods including linear models such as regression and ANOVA. Course content includes description and inference for binomial and multinomial observations using proportions and odds ratios; multi-way contingency tables; generalized linear models for discrete data; logistic regression for binary responses; multi-category logit models for nominal and ordinal responses; inference for matched-pairs and correlated clustered data; loglinear models.

Prerequisite(s): STA 3024 or STA 3032 or STA 4210 or STA 4322

Credit Hours: 3

Software: We will be using the statistical software R.

Course Goals and Objectives:

1. Apply statistical tools to make inference about a single binomial proportion or two sample proportions.
2. Understand and explain the properties of different measures of association by estimating various forms of measures of association from retrospective, cross-sectional and prospective studies.
3. Analyze three-way tables.
4. Understand the fundamental importance of the logistic model.
5. Appreciate the strengths and limitations of matched sample designs.

Course Policies

The instructor reserves the right to update any parts of this syllabus as necessary. Students will promptly be notified of any changes.

Demeanor

All members of the class are expected to follow rules of common courtesy in all classroom discussions, email messages, threaded discussion and chats. Please refer to [expected class netiquette](#) online and during class.

Electronic devices

During class time, only laptops and tablets are allowed. Cell phones, smartphones, and phablets are not permissible unless otherwise specified by the instructor. A student found using said device or permissible device used for non-classroom related activities during class time will be asked to leave the classroom which may result in missing any remaining assignments administered during class time.

Assignments

- All **deadlines (excluding exams) are at 23:59** of the due/end date as posted on e-Learning. These are **hard deadlines** meaning that any open or ongoing assignments will automatically be submitted at the deadline. No late assignments will be accepted under any circumstances.
- Students are expected to **work independently and provide original work** (unless otherwise specified in writing). Offering and accepting solutions - even from textbook - is an act of **plagiarism**, which is a serious offense and **all involved parties will be penalized according to the UF Student Honor and Conduct Code**. Discussion amongst students is encouraged, but when in doubt, direct your questions to the instructor.

- Students are expected to **show and explain their work**.
- All electronically **submitted work must be as one merged file**. In Canvas, all uploaded files automatically get a grade of 0, until the teaching assistant grades them.
- Assignments are automatically submitted at deadline even if in progress.
- Feedback on assignments will be provided within two business days (except exams) from the assignment deadline. For assignment file submissions in Canvas, feedback will be provided within the submission by the designated grader.

Projects/Quizzes

Under each module in e-Learning,

- **Homework** that are based on (primarily) textbook exercises.
- **Quizzes** that are *closed notes and timed* and range from conceptual to applied.

There will also be a group project with the completion of Module 9. All deadlines are posted on e-learning. Assignments are automatically submitted at deadline even if in progress.

Exams

There will be three (3) in-class exams that may comprise of multiple choice questions ($\approx 20\%$) and some open-ended questions ($\approx 80\%$). Exams will emphasize more on conceptual questions while HW/Quizzes will be more computational (not always).

Allowed material:

- Provided with exam formula sheet(s). Can be viewed ahead of time on class website.
- Scientific/Graphing Calculator. No cell phones allowed.

Important dates:

Exam #1 October 3rd, at 08:30
 Exam #2 November 4th, at 08:30
 Exam #3 December 13th, at 10:00

Grading

Grade distribution:

Exams 1, 2 and 3	65% (12% lowest, 24% second best, 29% best)
Homework	15%
Quizzes	15% (lowest 1 dropped, conditional on 11 total quizzes)
Project	5%
Extra Credit	0-1% (discussion forum and classroom participation)

Final grade and can be calculated using:

$$\begin{aligned} \text{Final} &= 0.12(\text{worst exam}) + 0.24(\text{second best exam}) + 0.29(\text{best exam}) \\ &+ 0.15 \left(\frac{\sum \text{homeworks}}{100} \times 100 \right) \\ &+ 0.15 \left(\frac{\sum \text{quizzes} - \text{lowest}}{100} \times 100 \right) \\ &+ 0.05 \left(\frac{\text{Project}}{15} \times 100 \right) \\ &(+0 \text{ to } 0.01 \text{ class and discussion forum participation}) \end{aligned}$$

Letter grade assignment:

There will be *no rounding up* of scores.

B+	84 to < 88	A	91 to 100	A-	88 to < 91
C+	74 to < 77	B	80 to < 84	B-	77 to < 80
D+	64 to < 67	C	70 to < 74	C-	67 to < 70
E	< 55	D	60 to < 64	D-	55 to < 60

To view the result of the letter grades to your GPA please visit the [UF Grade and Grading Policies](#). **Final grades shown on Canvas are not accurate because they do not account for the conditional weighing of exams and quizzes.**

COVID-19 (and other infectious diseases)

In response to COVID-19, the following recommendations are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

- If you are not vaccinated, get vaccinated. Vaccines are readily available and have been demonstrated to be safe and effective against the COVID-19 virus. Visit [one.uf](#) for screening/testing and vaccination opportunities.
- If you are sick, stay home. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 to be evaluated.
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.

Make-up

Requirements for class attendance and make-up exams, assignments, and other work in this course as well as policies regarding absences, religious holidays, illness and student athletes are consistent with [UF Attendance Policies](#).

Additional make-up policy requirements

- Every effort should be made to complete the assignment/exam during the open period. Only extreme situations will warrant a makeup. Contact the instructor prior to the exam - as soon as you realize you will be unable to take the assignment/exam at the scheduled time. Each case will be reviewed individually. Valid and detailed documentation is a prerequisite for scheduling a makeup under such extenuating circumstances.
- If you have an emergency on the day of the assignment/exam, the instructor must be contacted by midnight of the day of the assignment/exam.
- Make-ups need to be scheduled within a week from the assignment deadline. Student is responsible for scheduling.
- Additional Note: Being on vacation or booking a trip prior to the completion of the semester is not a valid reason to request a makeup. Please reference the most recent [Academic Calendar](#).

Addressing Issues

Technical difficulties

Please contact the UF Help desk via e-Learning “Help” tab. Any requests for make-ups due to technical issues must be accompanied with appropriate documentation/proof including screenshots and communication with the help desk. You MUST contact your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Grievances/Commendations

Should you have any grievances or commendations with your experience in this course you can always address them to the instructor (anonymously) or to the Department of Statistics. For issues that are not satisfactorily resolved at the department level or which seem to be broader than one department, students are referred to the Office of the Ombuds.

UF and CLAS Policies

Dropping, Withdrawing and Incomplete

Dropping and Withdraw

For late course drops and course withdrawals check the [catalog](#).

Incomplete

An incomplete grade may be assigned at the discretion of the instructor as an interim grade for a course in which the student has completed a major portion of the course with a passing grade, been unable to complete course requirements before the end of the term because of extenuating circumstances, and obtained agreement from the instructor and arranged for resolution of the incomplete grade in the next term. Instructors are not required to assign incomplete grades. For complete details please visit [CLAS incomplete grade policy and contract](#).

Accommodating Students with Disabilities

Students requesting accommodation for disabilities must first register with the [Disability Resource Center \(DRC\)](#). The DRC will provide documentation to the students who must then provide this documentation to the instructor when requesting information. You must submit this documentation prior to submitting any assignments for which you are requesting accommodation.

U Matter, We Care

[U Matter, We Care](#), through the Dean of Student's Office, offers care related resources and programs focused on health, safety, and holistic well-being.

Academic Misconduct

Students are held accountable to the [UF Student Honor and Conduct Code](#).

Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Tentative Course Outline

Chapter	Content	Textbook
1	Introduction	1.1-1.4.2
2	Contingency Tables	2.1-2.4, 2.6-2.7
3	Generalized Linear Models	3.1-3.4
Exam 1		
4	Logistic Regression	4.1-4.6
5	Building and Applying Logistic Regression	5.1-5.3
6	Multicategory Logit Models	6.1-6.2
Exam 2		
8	Models for Matched Pairs	8.1, 8.5
9	Modeling Correlated, Clustered Responses	9.1-9.2
10	Random Effects: GLMM	10.1-10.2
7	Loglinear Models for Contingency Tables	7.1-7.4
Exam 3		