ADA1 Syllabus (F16 subset)

Lecture: Stat 427.002, CRN 54725; Stat 527.002, CRN 54726, TR 1530-1645; Location: CTLB 300 (building 55, northeast of Zimmerman)
Website: http://statacumen.com/teaching/ada1/
giOffice hours: Tue/Thu 2-3pm, and by appointment in SMLC 312
email: "Erik B. Erhardt" <erike@stat.unm.edu>, please include "ADA1″ in subject line
Textbook: Required books and notes will be provided free by pdf on UNM Learn. *Optional: Peter Dalgaard, "Introductory Statistics with R", Second Edition, 2008, ISBN: 978-0-387-79053-4. The book is not required, but it will provide a backup for what you learn in class.*
Laptops running R: I encourage you to bring a laptop to class each day so you can try the R programming exercises in class. Classroom laptops (3 per 9-person table) have the software you need.
Saving data: If you're using classroom computers, use **Flashdrives** or UNM's **OneDrive** (available in LoboMail) for saving files. The CTLB computers do not connect to your standard UNM drive space. Sorry.

Teaching Assistants and Peer Mentors
Stat grad students TAs

Chauntal Andrews <andrewsc@unm.edu>, office hours Tue/Thu 14:00-15:00 in SMLC 301
Lindsey Pittington <lpittin@unm.edu>, office hours TBA in SMLC 301

Peer Mentors

1. Andrew Nathan Hollis
2. Ayed Alanzi
3. Sumant Avasarala
4. Maybe more …

Weekly structure

- Pre-class (Tuesday): Reading, Video, Quiz (due before class — solutions become available Tue 3:30, after the quiz is due)
- In-class: Activities in class Tuesday and Thursday due by 5pm the following day, submitted to UNM Learn (evaluated by TA within 1 week).
- Post-class (Thursday): Homework (crowdgrader, due following Thursday before class)
- Post-class (Following Thursday-Tuesday): Grading (crowdgrader, following 1 week + Tuesday before class)

Assessment

- Quizzes will be due each Tuesday before class. Purpose: to assess reading and video comprehension and assure you're prepared to actively participate in class activities with minimal lecture. (About 12, 20% of final grade, the lowest few are dropped.) Most weeks plan for 1-2 hours reading and video, 20 minute quiz.
- In-class assignments are due by 5pm the next day, submitted to UNM Learn. Purpose: to struggle and find success in class with the concepts and skills. (About 24, includes class participation, 20% of final grade, the lowest several are dropped.) Most weeks plan to finish in class.
- Homework (HW) assignments are assigned each Thursday and due the following Thursday, submitted to crowdgrader.org (75% of HW grade). Purpose: to apply concepts and skills to your class poster project. (About 12, 40% of final grade, the lowest few are dropped.) Most weeks plan on 1-4 hours per assignment.
- Peer grading is due by the following Tuesday after each homework is due (25% of HW grade). Purpose: to gain skill assessing the work of others, as well as see alternative strategies to answer questions. Most weeks this will take about 30 minutes to grade 5 other students's HW.
- Poster will be developed through semester (most HW assignment contribute to poster), the last couple weeks we'll complete them, and the last week we'll have poster presentations. Purpose: to have an overarching set of questions to answer using methods learned in the course, with a deliverable you can be proud of! (1 poster and presentation, 12% poster, 2% presentation, and 2% evaluations of others of final grade.) In the last couple weeks, assembling this poster may take 5-10 hours, using a template provided to you.
- Course surveys are due at the beginning and end of the course. Purpose: to participate in national project-based learning projects and improve course. (About 2, 4% of final grade.)

All assignments in this class are electronic, submitted to a website for grading, except for the final poster.
Late assignments will not be accepted.
Rubrics guide assessment (and self-assessment) of homework, code, projects, exams, and presentations. Each assignment will have its own specific rubric.

Collaboration and citation

For homeworks I encourage you to work together. Please discuss the data, code, and problems with one another, but *do your own exploration and write up*. We expect everyone to hand in substantially different homeworks, and we will enforce this under the honor code. The small benefit you might get from plagiarism is not worth the severe penalty (of lost trust, being reported to the dean, no points for the assignment, etc.).

As in life, please use any resources available to you. Projects and some homeworks will explicitly encourage you to use resources on the internet, but showing extra initiative will always be appreciated. You may find R programming tough at first, so feel free discuss your problems with other classmates or meet with or email questions to the TAs or me.

I encourage you to use the ideas of others, but make them your own, giving credit. For projects have a formal bibliography, for homework cite casually, and for code simply copy the URL in as a comment (which is doubly helpful for finding the resource again).

Disability statement

If you have a documented disability that will impact your work in this class, please contact me to discuss your needs. You'll also need to register with the Accessibility Resource Center in 2021 Mesa Vista Hall (building 56) across the courtyard east from the SUB.

Student learning outcomes

At the end of the course, you will be able to:

General outcomes:

1. Organize knowledge in graphs, tables, and code to support concise, comprehensible, and scientifically defensible written interpretations to produce knowledge.
2. Distinguish a testable scientific hypothesis or data-supported interpretation from an opinion.
3. Understand from a data story the goals of the study and apply the correct statistical procedure.
4. Explain the scientific aspects of a problem to nonscientists in a fashion that enhances understanding and decision making.

Topical outcomes:

5. Define parameters of interest and hypotheses in words and notation.
6. Summarize data visually, numerically, and descriptively and interpret the observed characteristics. Calculate and interpret numerical summaries such as mean, variance, five-number summary, confidence intervals, and p-values, and create visual summaries such as bar plots, scatter plots, and histograms. (Never pie charts!)
7. Distinguish between statistical significance and scientific relevance.
8. Use statistical software, such as R, to read and manage data, create informative plots, report numerical summaries, apply statistical models, by recommended programming practice including abstraction and documentation.
9. Understand the differences and limitations of controlled experiments and observational studies. Design experiments to infer causal treatment effects. Analyze observational data to infer associations between measured variables.
10. Identify and explain the statistical methods, assumptions, and limitations used in reported studies in scientific literature or popular media.
11. Evaluate and criticize published studies, the work of peers, and your own work and assess what was done well, what could be done better, and examine whether their conclusions are supported using statistical principles.
12. Make evidence-based decisions by constructing and deciding between testable hypotheses using appropriate data and methods.
13. Discover relationships and make predictions through model development and selection.