Quantitative Methods in Archaeology

Course Description

Archaeological data lend themselves to quantitative analyses. Virtually all modern archaeological research uses some form of computer based methodology, including the collection, storage, manipulation, and analysis of data, and the communication of results. This course is intended to be an introduction to the broad spectrum of quantitative methods available to archaeologists. It is not a course in statistics, and is not designed to give students a high degree of competency in abstruse multivariate analyses. Rather, the course is intended to help you learn to be comfortable working with quantitative data, and to be a sampler of commonly used quantitative methods in archaeology. The underlying philosophy of the course is that quantitative methods, especially those done using a computer, allow archaeologists to look at their data in new ways, and gain greater insights than they could without them. Being able to see data in new ways involves learning and internalizing an exploratory approach to data analysis, and learning to be comfortable using a computer to search for structure and patterns within quantitative information. Gaining such proficiency requires experience and practice. Note: It is a priority of this course is that no one will get lost or left behind. We will go at a pace that is useful for everyone, not just those who already have some experience with quantitative techniques in archaeology. With each exercise there is a more challenging optional problem set, so no one should be bored, either.

Course Requirements

Exercises [Link](https://utexas.instructure.com/courses/1184271/pages/quantitative-methods-in-archaeology-ant-383m)

70% of the course grade is based on 8 exercises that you will hand in. Each is worth 10 percentage points, but you will have the opportunity to utterly blow (or blow off) one assignment without penalty (in other words we will count the 7 exercises that received the highest grades). Exercises will be turned in by Wednesday night through this Canvas site. You will do your write-ups as Word documents (or similar), and as noted in Exercise 1, please make your answers in complete sentences and pay attention to identifying units (hectares, kilometers, rooms, etc.).
Presentations and Final Paper

20% of the course grade is determined by a short paper (about 5-8 pages not including figures, tables, etc.) and in-class presentations of the work you did for it. The paper should apply quantitative methods to a data set that is of particular interest to you. You must give a preliminary overview of the direction you intend to take the project during weeks 5-8 of the course. Then in the last 5 weeks of the course you will give a longer presentation on your project. In an ideal case, a student could use this assignment to carry out some specific set of quantitative analyses of data that would form part of his or her Master's thesis or dissertation, or using a subset of one’s data to learn and develop the methods he or she will apply in a larger study. If you're not in a position to do that, you should try to anticipate what kinds of techniques will be useful in your future research, then learn them on a dataset that I can help you find.

Participation and Case Studies

Active participation (and therefore attendance) are essential in this class.

You will also present two "case studies". By "case study" I mean that I want you to find an article or book chapter that in some useful way demonstrates an effective use of quantitative methods. You should send me a pdf or give me a copy of the paper the week before you are scheduled to present, and then on the day of the presentation you should make a short presentation about the paper. In particular, we're looking for "best practices", so try to say what it was they did using quantitative methods that was most. As we proceed we'll try to keep track of the sorts of strategies that work best.

Readings

A list of readings for each section is included in the Modules. There are two texts, and some on-line readings. The texts are:


I am also going to be using materials from Drennan's *Statistics for Archaeologists (2nd ed. 2010)*
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Resources

Because in the real world there is no standard machine or software that everyone uses I will not insist on the use of particular kinds of computers or software. You will, however, need to have access to a computer. You will also need to have a spreadsheet program (such as Excel, Numbers, NeoOffice, etc.). You will also need to have access to a statistical software package (R, JMP, Minitab, SAS, SPSS, Systat, etc.). I will provide information in class about where you might go to find such programs, and you can also look on the [LINKS](https://utexas.instructure.com/courses/1184271) page for this class. Computers are available for student use in various UT computation centers, and they have spreadsheet programs as well as *some* statistical software (depending on the site, Minitab, SAS, and/or SPSS). A computer with SPSS is also available for this class's use in the Archaeology Lab (SAC 4.166).

Exercises

- **Exercise 1 - Data handling** ([https://utexas.instructure.com/courses/1184271/assignments/3980891](https://utexas.instructure.com/courses/1184271/assignments/3980891))
- **Exercise 2 - More data Handling** ([https://utexas.instructure.com/courses/1184271/assignments/3983942](https://utexas.instructure.com/courses/1184271/assignments/3983942))
- **Exercise 3 - Spreadsheets as analytical tools** ([https://utexas.instructure.com/courses/1184271/assignments/3983965](https://utexas.instructure.com/courses/1184271/assignments/3983965))
- **Exercise 7 - Handling Surfaces** ([https://utexas.instructure.com/courses/1184271/assignments/3983968](https://utexas.instructure.com/courses/1184271/assignments/3983968))
- **Exercise 9 - Intro to Significance statistics** ([https://utexas.instructure.com/courses/1184271/assignments/3983985](https://utexas.instructure.com/courses/1184271/assignments/3983985))

Resources