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Course time: Monday & Wednesday, 4:45-7:15
Course location: 300 Classroom South
Office hours: TBA

Course description:

Applied Research Methods and Statistics 2 develops practical skills for summarizing, describing, and analyzing data to enable public policy makers to make better decisions. The major statistical technique is regression analysis. We will use two types of data: a random sample of federal personnel records, with an interval-level dependent variable (annual salary), and surveys of random samples of the U.S. population, with dummy dependent variables (e.g., approval of same-sex marriage, torture of suspected terrorists, abortion, stem-cell research, legalization of marijuana).

We begin with bivariate analyses (e.g., to see whether salaries rise with education, whether support for marijuana legalization rises with liberalism and falls with age, or whether women support same-sex marriage more than men do). We use scatterplots, correlation coefficients, and bivariate regression to answer these questions. We also start thinking about how to ask interesting questions, propose convincing hypotheses, measure variables, and assess the ethical implications of our research.

One key conclusion is that bivariate analyses rarely tell the full story, especially if we are interested in causal relationships. Multiple regression analysis allows us to address such questions as whether men earn more than equally educated and experienced women and whether evangelicals are more likely than equally conservative non-evangelicals to think torture can be justified. We begin multiple regression fairly mechanically, understanding how the size and meaning of the coefficient on X changes when we add Z to the regression. We learn a variety of techniques for assessing the strength of relationships. Next, we think about why coefficients change and which variables we need to include in our regression before we can feel even somewhat confident about drawing causal inferences. We learn why even the best cross-sectional multiple regressions lead to less convincing causal implications than do well-designed experiments.

The midterm tests the material up to this point, then we take up inferential statistics – ways to generalize from the sample to the population. Hypothesis tests frequently allow us to conclude the direction of relationships in the population (e.g., if men, on average, earn $6,000 more than women of the same race, age, level of education, and length of federal service in a sample of 1,000 employees, can we be confident that men, on average, earn more than comparable women in the federal service as a whole?). Confidence intervals allow us to draw conclusions about the
direction and strength of relationships in the population (e.g., if men, on average, earn $6,000 more than women of the same race, age, level of education, and length of federal service in a sample of 1,000 employees, how big is the average salary gap between comparable men and women in the whole federal service?). You will incorporate inferential statistics into your short research papers.

In the final weeks of the semester, we examine a variety of means for gathering data, including survey research, qualitative field studies, and unobtrusive measures. We finish with program evaluation as a practical means to apply the material from this course to assessing the effectiveness of public programs.

**Learning Objectives for Regression Analysis**

Students will learn to:

1. Run basic statistical analysis using SPSS software.
2. Use scatterplots and correlation coefficients to show the direction and strength of relationships between interval-level variables.
3. Interpret regression coefficients on interval-level and dummy independent variables in both bivariate and multiple regression.
4. Explain clearly what it means to hold a variable constant.
5. Discuss the strength of relationships using unstandardized regression coefficients, standardized regression coefficients (beta-weights), and the coefficient of determination ($R^2$).
6. Graph hypotheses about causal relationships among variables.
7. Distinguish between antecedent and intervening variables, models of explanation and interpretation, and spurious and indirect effects.
8. Determine when (and to what extent) we can generalize a relationship from a sample to the population from which the sample was drawn, using both hypothesis tests and confidence intervals.

**Learning Objectives for Research Design**

Students will learn to:

1. Pose research questions.
2. Distinguish between idiographic and nomothetic explanations, deductive and inductive approaches, and quantitative and qualitative methods.
3. Develop hypotheses and operationalize variables.
4. Identify key ethical challenges likely to confront researchers and key ethical principles used to address them.
5. Identify the key advantages and disadvantages of experimental, survey, and qualitative research.
6. Identify special problems faced by evaluation researchers in conducting policy-relevant research in real-world contexts.
Course Work

You will complete two in-class, open-book examinations, a short research paper, twice-weekly homework assignments that require time on the computer, a couple of additional more creative/demanding data assignments, and occasional quizzes. The homework assignments using the SPSS computer package prepare you for the quizzes, paper, and examinations. Quizzes check your understanding of the concepts you’ve learned. The data assignments prepare you for the short paper. The short paper allows you to demonstrate that you have learned how to use statistics in reports: how to choose appropriate statistics to answer particular questions, how to interpret them, and how to write about statistics. The midterm and final examinations require both calculation and interpretation of statistics, while the paper emphasizes application and interpretation.

The class makes few expectations about your math background and existing computer skills and begins from a fairly elementary level. However, you are expected to put in the necessary hours to complete the homework and keep up with the pace of the class. Though the homework counts for only a small percentage of the final grade and will take several hours each week, it is essential for understanding the material and doing well on the quizzes, paper and examinations. Remember that a summer class moves twice as quickly as a regular semester class, so you need to spend twice as much time per week on homework. As a concession to summer semester, you can turn in all homework on Mondays, so that you have the weekend to work on it, but you still need to do two homework assignments most weeks. You do not need to do much reading in this class — the homework largely takes the place of the reading you do in most of your courses. Homework is graded merely as completed or not completed. Late homework receives half credit.

Class attendance is not required, but it too is essential. This class builds steadily on material learned in previous class sessions. If you fall behind, by missing classes or not doing the homework, you will have difficulty catching up. As an incentive to show up for class (and on time), I sometimes give quizzes during the first 10 minutes of class. Homework, data assignments, and quizzes combined count for 15% of the course grade. I also review material by asking you questions. If you have reviewed your and my notes shortly before class, you will be much more likely to impress me with your brilliance. Be sure to read through the new material before each class even if you don't understand it.

If you have trouble in the class, please take advantage of help that I, my teaching assistant, or your fellow students can provide. I will be available for office hours every week, at times convenient for most members of the class. Group work is strongly encouraged, particularly for the computer problems.

You may work together on the homework and in thinking through and doing the computer work for the paper assignments, but all written work must be your own. Standards of academic conduct are set forth in the University’s Student Handbook: Conduct and Policies: Academic Honesty. See the webpage http://www.gsu.edu/~wwwcam/book.html for more details. By registering for this
course, you acknowledge your awareness of the Academic Honesty code, and you are obliged to become familiar with your rights and responsibilities as defined by the code. Violations of the code will not be treated lightly, and disciplinary action will be taken should such violations occur. Please see me if you have any questions about the academic violations described in the academic honesty code, especially as they relate to particular requirements for this course.

Note: Over the years I have had to bring several students up on academic honesty charges. It is a very painful process for everyone involved, including me, but I do it when necessary. It is now possible to search the web easily for material copied without proper citation. I am a suspicious reader, and I will search the web if I read a passage that sounds too good to be true.

Course Resources:

My lecture notes are available on the course iCollege site.

Earl Babbie. *The Practice of Social Research*. New York: Wadsworth Publishing Co. (This book is currently in its 14th edition, but it has not changed much since the 8th edition or earlier. Used copies of older editions should be perfectly acceptable.)

These are the only required texts. Those interested in more technical and rigorous explanations of concepts should consider buying a text required in similar courses or checking an appropriate book out from the library. All texts cover fairly similar material, but vary in their rigor, examples, applications, etc. The main problem you will run into is that different books use somewhat different words and symbols to represent the same concepts.

Norusis, *IBM SPSS 19 Guide to Data Analysis*, is on sale for several classes at the campus store. It provides a more detailed explanation of SPSS (complete with pictures) and of some statistics. While my instructions on how to perform SPSS are reasonably detailed and clear, this book can provide a more general context for those who are interested. (Personally, I don’t recommend buying it.)

Any edition of W. Laurence Neuman, *Social Research Methods* is a good substitute or enrichment to Babbie. Any addition of Elizabethann O’Sullivan and Gary R. Rassel, *Research Methods for Public Administrators* can help you see how the methods apply to public administration jobs.

**SPSS** is available at most computer labs on campus, including the Virtual Computer Lab, and using the labs probably works during the summer. Many of you will find that it is much more convenient to buy (or rent) the student version of SPSS, which used to cost about $70. Since the course packet is cheap and you may already own a copy of Babbie or can buy a used one, your cost should still be under $100.
The class iCollege page contains back-up copies of the syllabus and lecture notes, the SPSS data sets for the homework and paper assignment, old midterm and final exams, and a gradebook. I prefer that you contact me through my regular e-mail address (glewis@gsu.edu) rather than through iCollege.

**Grading:**

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<tr>
<th>Task</th>
<th>Percentage</th>
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<tr>
<td>Midterm examination</td>
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<td>Research paper</td>
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<td>Final examination</td>
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<td>Data assignments, Homework</td>
<td>15%</td>
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<td>and Quizzes</td>
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A  92.0-100
A- 90.0-91.9
B+ 88.0-89.9
B  82.0-87.9
B- 80.0-81.9

**Tentative Course Schedule:**

**June 5**  
**Asking research questions. Using social science methods. Using bivariate regression to examine relationships between two variables.**

- Before class, read Babbie chapters 1 (Human Inquiry and Science) and 4 (Research Design).
- Before class, do Babbie hw 1. (It’s in the Babbie homework folder. Look at but do not answer the essay questions.)
- Read Lectures 1 and 2. (I’m assuming that most of you have already learned scatterplots, correlation coefficients, and bivariate regression, so this should be review, I think.)
- After class, start the homework at the end of Lecture 2.

**June 7**  
**Using multiple regression analysis to study relationships between variables. Using social science methods. Developing hypotheses.**

- Before class, read Lecture 3 and re-read Babbie chapter 4.
- After class, do computer homework 3.

**June 12**  
**Multiple regression 2. Conceptualization, operationalization,**
and measurement: How should we measure our variables?

- Re-read Lecture 3
- Read Babbie chapter 5 (Conceptualization, Operationalization, and Measurement).
- *Do Babbie hw 4 before class.*
- *Computer assignments 2 and 3 due*

June 14  **Measuring the strength of relationships in regression analysis:**
**Standardized coefficients and the coefficient of determination.**

- Read Lecture 4.
- Read Babbie chapter 5.
- Do computer assignment 4 for Monday.
- Do data assignment 1 for Monday.

June 19-21  **Causal modeling. The Ethics of Policy Research.**

- Read lecture 5. Do homework for June 29.
- *Complete Citi Training.*
- Read Babbie chapter 3.
- Do computer assignment 5 for June 26
- *Computer assignment 4 and data assignment 1 due June 19.*

June 26-28  **Inference in regression analysis:**
**The logic of sampling, Hypothesis tests, and Confidence intervals.**

- Read lectures 6 and 7.
- Do computer assignment 6 and 7.
- Read chapter 7 (The Logic of Sampling) in Babbie.
- Do data assignment 2 and computer assignment 6 and 7 for July 5.
- *Computer assignment 5 due June 26.*

July 3  **MIDTERM EXAMINATION.**

July 5  **Survey research.**

- Read chapter 9 (Survey Research) in Babbie.
- *Babbie survey research assignment due.*
•  **Computer assignments 6 and 7 due.**

June 10  **Experiments.**

•  Read chapters 8 (Experiments) in Babbie.
•  Re-read lecture 5.
•  *Babbie experiments homework due.*
•  *Computer assignment 5 due.*

July 12  **Qualitative Field Research and Unobtrusive Research.**

•  Read chapters 10 (Qualitative Field Research) and 11 (Unobtrusive Research) in Babbie.

July 17-19  **Evaluation research.**

•  Read chapter 12 (Evaluation Research) in Babbie.
•  *Babbie evaluation homework due.*
•  *First draft of paper due July 22 if you want feedback.*

July 24  **Catch-Up and Review**

July 26  **FINAL EXAMINATION 4:15-6:45**
[note the time difference – we will discuss in class whether to change this]