

Psychology 443 – Regression Analysis (formerly Survey Methods and Analysis)
Illinois State University
Spring 2012

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Office:	451 DeGarmo Hall	Class times:	Mon, Wed 9:00 - 10:15
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Course Description

This course addresses a variety of methods of data analysis using regression. It will extend the quantitative foundations covered in PSY 440 (which is a prerequisite for this course) to regression models suitable to analyzing psychological data, including those generated by surveys and experiments. We will explore methodological issues, such as the specification of psychological constructs and sampling procedures, and will explore an array of advanced statistical methods, including mediation analysis, moderation analysis, structural equation modeling, and multilevel modeling. You will rely heavily on computer software to facilitate your understanding of regression analysis, and assignments done outside the classroom will help you to apply the skills learned inside the classroom.

Course Goals

It is my hope that by the end of the semester you will have achieved the following goals:

1. Demonstrate an understanding of the interplay among hypotheses, design, measurement, and analysis, ideally enabling you to apply what you learn here to your apprenticeship, thesis, or dissertation.
2. Demonstrate a conceptual and mathematical understanding of various forms of regression analyses, the ability to interpret the results of those analyses, and the ability to select the appropriate analytic tool for a given hypothesis.
3. Increase familiarity with SPSS as a tool to manage and analyze data, and explore what LISREL and HLM software have to offer.
4. Demonstrate an understanding of the benefits and limitations of regression analysis in understanding and furthering psychological science.

Readings

The textbook used for this course is:

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum.

The APA Publication Manual (6th ed.) is also strongly suggested for this course. Finally, there is a small packet of supplemental readings available at PIP Printing in the Bone Student Center. The supplemental reading list appears at the end of this syllabus.

Assignments and Grades

The extent to which you meet the goals of the course will be determined by a combination of exams, take-home assignments, and a simulated research project. The course grade will be determined by the following:

Exams 150 points total

Two exams will be given during the semester. The Midterm Exam is a 75-minute short-answer exam that assesses your understanding of content covered in the first half of the semester. The Final Exam is a 75-minute short-answer exam that assesses your understanding of content covered during the second half of the semester (after Spring Break). Study guides will be provided for these exams. The Midterm and Final Exams are each worth up to 75 points. Make-up exams will not be given unless an arrangement is made with the instructor prior to the exam day.

Take-Home Assignments 100 points total

Five take-home assignments (each worth up to 20 points) will be given throughout the semester to assess your understanding of the course material. These assignments will balance conceptual and applied topics, and most will require the use of a computer. Take-home exercises are to be turned in during class on the due date. Unless an arrangement has been made with the instructor prior to the due date, exercises submitted the day after the due date will be subject to a 50% off penalty, and exercises turned in more than one day late will receive a 0.

Simulated Research Project 50 points total

The research project will consist of planning a hypothetical research study, analyzing simulated data, and presenting the research results. Students will work in small groups to develop a research topic and a research plan. The members of the group will be responsible for creating simulated data and analyzing the data. Each student must individually submit (a) a proposal for the project that includes specific hypotheses and a hypothetical research plan that would adequately test those hypotheses (15 points) and (b) a summary of the final results of the project in the form of a poster (35 points). Due dates for these components will be announced in class well in advance of the due date.

Final grades will be based on the total number of points in the following manner:

- A = At least 270 points
- B = At least 240 points (but not enough for an A)
- C = At least 210 points (but not enough for a B)
- D = At least 180 points (but not enough for a C)
- F = Fewer than 180 points

Tentative Class Schedule

<i>Date</i>	<i>Topic</i>	<i>Readings</i>
Jan 18	Introduction to regression analysis	Ch. 1
Jan 23, 25	Research methods, design, and measurement	Visser et al. (2000)
Jan 30, Feb 1	Sampling theory and procedures	Meyer & Wilson (2009)
Feb 6, 8	Bivariate correlation and regression	Ch. 2 (Sections 2.1 to 2.7)
Feb 13, 15	Multiple regression	Ch. 3 (Sections 3.1 to 3.6)
Feb 20, 22	Regression diagnostics	Ch. 4 (Sections 4.3 to 4.4)
Feb 27, 29	Hierarchical models	Ch. 5 (Sections 5.1 to 5.5)
Mar 5	TBA	
Mar 7	MIDTERM EXAM	
Mar 19, 21	Moderation with continuous variables	Ch. 7 (Sections 7.1 to 7.7) Hayes & Matthes (2009)
Mar 26, 28	Moderation with categorical variables	Ch. 8 (Sections 8.1 to 8.2) Ch. 9 (Sections 9.1, 9.3.1 to 9.3.2)
Apr 2, 4	Mediation and indirect effects	Ch. 12 (Section 12.1) Preacher & Hayes (2008)
Apr 9, 11	Path analysis	Ch. 12 (Sections 12.2 to 12.4)
Apr 16, 18	Latent variable structural equation modeling	Ch. 12 (Sections 12.5 to 12.8)
Apr 23, 25	Multilevel modeling	Ch. 14 (all sections) Kahn (2011)
Apr 30, May 2	Experience sampling and diary methods	Ch. 15 (Sections 15.1 to 15.4) Bolger et al. (2003)
May 7-11	FINAL EXAM (date and time TBA)	

Academic Integrity

Students are expected to work together in varying degrees in this course, but the line between doing one's own work and doing the work of another student needs to be clear. You are responsible for abiding by ISU's Code of Conduct. If it becomes apparent that you have committed a form of academic dishonesty, you may receive a 0 on the assignment, an F in the course, and/or other disciplinary action. Please ask if you are uncertain about anything.

Special Accommodations

Any student needing to arrange a reasonable accommodation for a documented disability should contact Disability Concerns at 350 Fell Hall, 438-5853 (voice), 438-8620 (TTY).

Supplemental Reading List

- Visser, P. S., Krosnick, J. A., & Lavrakas, P. J. (2000). Survey research. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 223-252). Cambridge, UK: Cambridge University Press.
- Meyer, I. H., & Wilson, P. A. (2009). Sampling lesbian, gay, and bisexual populations. *Journal of Counseling Psychology, 56*, 23-31. doi:10.1037/a0014587
- Hayes, A. F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods, 41*, 924-936. doi:10.3758/BRM.41.3.924
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*, 879-891. doi:10.3758/BRM.40.3.879
- Kahn, J. H. (2011). Multilevel modeling: Overview and applications to research in counseling psychology. *Journal of Counseling Psychology, 58*, 257-271. doi:10.1037/a0022680
- Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54*, 579-616. doi:10.1146/annurev.psych.54.101601.145030