

**CONF 811, Research Methods I, Fall 2008**  
**Lecture 1, 4:30-7:10 M, Arlington: Original Building 105B**

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**Subject Matter and Objectives:** Conflict 811 is a Ph.D. level course in quantitative reasoning, covering the workhorse models of statistical social science. It is intended as a complement to the qualitative course Conflict 812. We will cover the widest possible array of statistical tools available in top journals, but from a perspective of learning to read and understand the models as opposed to implementing them with software. The goal of the class is not to produce tool makers or even tool users, but instead research architects who understand what tools are useful for what purposes. Each class session will explore one major approach to statistical modeling, drawing on examples of the technique in the literature. Not all techniques can be covered in any single semester class and many interesting areas will be largely ignored. We will however, become familiar with the most important of the statistical tools in the social science workplace and if the class is successful you should find no journal alienating. We will focus on interpretation of models with attention to essential details; this will involve some mathematical instruction. Even so, we will not deal in mathematical abstractions, but instead with the conceptual structures in the models and the kinds of output that define results and which therefore appear in published tables.

**Prerequisites:** CONF 711, 810 and acceptance in the doctoral program or permission of instructor

**Texts:** There are four required books for the course. All other reading material will be made available online. Each week we will have several exemplary articles to read that demonstrate the use of a technique in the current literature. These articles were chosen not as classic examples, but rather as current ones. For that reason, they should be useful as examples of what you might encounter in the most unforgiving of research contexts—the professional journal. I will provide the class with two or three examples and a group three to four class members will choose one additional article for the class to review. Groups should make their selections known to the instructor by Thursday prior to class so that the articles/chapters can be made available to the rest of the class.

**Advice:** Use e-mail, office hours, and telephone, as well as lectures and labs, to get help when you need it. (Or to offer advice to me when you think I need it.)

**Lectures:** Lectures will focus on basic concepts and their application. Most of the material will be general and conceptual and will not involve more mathematics than is absolutely necessary for fundamental understanding of the material.

**Proposals:** The core work of the class will be a set of three research proposals drawn from your own area research or from topics that are of interest to you. These will demonstrate how one would implement a research project that utilizes a particular statistical model in an area of personal interest. We will focus on the reasons for using any given technique for your particular project and problems that you might encounter in implementation. These three proposals will be due throughout the semester (Tuesday of week 6, week 10, and week 14) and will be graded with specific feedback intended to help you to actually conduct this research in the future if you choose to do so. Make sure to draw an example from the area of the world that you would like to study or on topics that will central to your dissertation research. At the end of the class, you should have three research ideas that are tailored to you own research objectives. More specific instructions will be distributed for each proposal later in the term.

**Groups:** Each person should join a small group of three to four people. The groups will be important in three ways: 1) as places to discuss a weeks readings; 2) to choose a reading for the weeks for which the group is responsible to present the material; 3) to present material for selected weeks. Group members should share information with one another for these and perhaps other purposes.

**Grading:** Each proposal will count for 30% of your final grade with the remainder dedicated to participation in class conversation. Much of this participation will arise from leading discussions on particular topics, but will also arise from casual interaction.

## **Topics and Readings**

### **Week 1 Aug 25<sup>th</sup>: Introduction and Review of Statistical Concepts**

We will begin with personal introductions, background and fears, and then talk about some basic concepts in quantitative thinking like, samples, distributions, conditional dependence, statistical control, coefficients, significance, computing issues etc. The mood should be relaxed and exploratory. We will also review the course plan.

### **Week 2 Sept. 8<sup>th</sup>: To Measure or Not to Measure?**

Here we will focus on the development of a quantitative methods and a new self understanding this development had in the United States and use this as a model for thinking about exporting these approaches to other places and for use on other topics. Rather than avoiding concerns about the use of statistical approaches, we lean right in and with luck develop a richer understanding of our goals for the class.

Readings:

*The Averaged American Surveys, Citizens, and the Making of a Mass Public*  
by Sarah E. Igo

### **Week 3 Sept. 15<sup>th</sup>: Sage Advice on Social Measurement**

With a field of practice that is well over a century old, we have good examples to follow. If we would stand on the shoulders of giants, professor Becker helps us to learn how.

Readings:  
*Tricks of the Trade*  
by Howard Becker

### **Week 4 Sept. 22<sup>nd</sup>: The Science of Surveys**

Although writing up a survey is fairly straightforward, in the end we are developing survey instruments that are meant to measure something real and durable. Techniques for best practice now build on decades of restless experimentation. This book takes the survey event as a psychological phenomenon and gives us insight into best practices on that assumption.

Readings:  
*The Psychology of Survey Response*  
by Roger Tourangeau

### **Week 5 Sept. 29<sup>th</sup>: Scales and Scaling**

Now in its second edition, this is a great reference for pondering the core ideas behind scale construction in social science data. Scales are the core components of our measurements and this book gives us an overview of the various theories at play and techniques that we might consider using. While some of these ideas have already been surplanted, a general education in the area is essential for evaluation of quantitative social science research.

Readings:  
*Scale Development: Theory and Applications*  
by Robert F. DeVellis

### **Week 6 Oct. 6<sup>th</sup>: Regression and ANOVA (*Proposal 1 Due*)**

Regression is the workhorse of statistical analysis and it is closely related to another technique called AN(alysis) O(f) VA(riance). We will learn the basic of regression, how it is related to and subsumes ANOVA and how to use this idea as a paradigm for other more complicated approaches.

Readings:  
Framing and Deliberation: How Citizens' Conversations Limit Elite Influence

James N. Druckman; Kjersten R. Nelson  
American Journal of Political Science. Vol. 47, No. 4 (Oct., 2003), pp. 729-745

Reactive Devaluation of an "Israeli" vs. "Palestinian" Peace Proposal  
Ifat Maoz; Andrew Ward; Michael Katz; Lee Ross  
The Journal of Conflict Resolution. Vol. 46, No. 4 (Aug., 2002), pp. 515-546

### **Week 7 Oct. 14<sup>th</sup>: Logit and Probit**

Logit and Probit models are fairly complicated representations of data, but can be seen as really simple extensions of regression data for binary (yes/no) outcomes. We will learn how the measurement level of our dependent variable demands the use of logit or probit models, but how little changes in our measurement approach once we recognize this. Along the way we will encounter new terms like the odds ratio that are the currency of logit interpretations.

Readings:

Greed and Grievance in Civil War  
Paul Collier and Anke Hoeffler Oxford Economic Papers 2004 56(4):563-595

Ethnicity, Insurgency and Civil War  
Fearon James D., David D Laitin.  
American Political Science Review. Feb 2003.Vol.97, No. 1

### **Week 8 Oct. 20<sup>th</sup>: Multinomial and Ordinal Logit**

Once we understand what a logit is and how it helps us to model binary outcomes, it is a short walk to developing models for multi-category outcomes. We will see how these multiple category dependent variables can be ordered from high to low or disordered or parallel types. Logit models are great ways to deal with such cases by extending the regression framework.

Readings:

Domestic Political Accountability and the Escalation and Settlement of International Disputes  
Paul K. Huth; Todd L. Allee  
The Journal of Conflict Resolution. Vol. 46, No. 6 (Dec., 2002), pp. 754-790

War Casualties, Policy Positions, and the Fate of Legislators  
Scott Sigmund Gartner, Gary M Segura, Bethany A Barratt.  
Political Research Quarterly. Salt Lake City: Sep 2004.Vol.57, Iss. 3

### **Week 9 Oct. 27<sup>th</sup>: Models for Counts (Poisson and Negative Binomial Models)**

To round off our study of regression-type models, we will turn to the case in which our outcomes

are counts of events, like how many times a student was absent from class. While such data are similar in some ways to other measurement classes, there are differences that we will tease out in this session. The core idea is to treat the random part of the model as if it were distributed like a random count variable (with names like Poisson and negative binomial) and leave the rest unchanged. We will see how this approach can be extended to include so called floor effect, in which we have too many zeros in our model as well.

Readings:

The Legacy of Lynching and Southern Homicide  
Steven F Messner, Robert D Baller, Matthew P Zevenbergen.  
American Sociological Review. Albany: Aug 2005. Vol.70, Iss. 4

Poisson-Based Regression Analysis of Aggregate Crime Rates  
D. Wayne Osgood.  
Journal of Quantitative Criminology. 2000. Vol.16, Iss. 1; pp.21-43

### **Week 10 Nov. 3<sup>rd</sup>: Factor Analysis (*Proposal 2 Due*)**

After our tour through the various forms of regression models, we will take up problems of measurement that we encountered in DeVellis' book. We will see how factor models are a great way to think about phenomenon that are there, but which can only be seen by their effects in the world. This idea is crucial for social measurement, because much of what we will study is psychological or mental in nature and only exists for us in language. Factor models bring together a set of correlated measurements that point to a single underlying source of that variation.

Readings:

Are Patriots Bigots? An Inquiry into the Vices of In-Group Pride  
Rui J. P. de Figueiredo, Jr.; Zachary Elkins  
American Journal of Political Science. Vol. 47, No. 1 (Jan., 2003), pp. 171-188

The Effects of Science on National Economic Development, 1970 to 1990  
Evan Schofer; Francisco O. Ramirez; John W. Meyer  
American Sociological Review. Vol. 65, No. 6 (Dec., 2000), pp. 866-887

### **Week 11 Nov. 10<sup>th</sup>: Multi-Dimensional Scaling**

There have been several approaches to measuring latent phenomenon in the history of statistical research and multi-dimensional scaling is an intriguing example. We will see how multi-dimensional scaling is related to factor analysis and how it differs. At the heart of the difference is the nature of our measurements. As it turns out in cases in which we have measured similarities or differences directly, MDS will be our best bet.

Readings:

What Is and What Ought to Be: Popular Beliefs about Distributive Justice in Thirteen Countries  
Gordon Marshall; Adam Swift; David Routh; Carole Burgoyne  
European Sociological Review. Vol. 15, No. 4 (Dec., 1999), pp. 349-367

Changing coalitions in social policy reforms: the politics of new social needs and demands  
Silja Hausermann.  
Journal of European Social Policy. London: Feb 2006. Vol.16, Iss. 1; pg. 5

### **Week 12 Nov. 17<sup>th</sup>: Latent Class Analysis**

Perhaps the most underutilized technique in our toolkit is latent class analysis. LCA, also called mixture analysis, assumes that our latent variables are categorical not dimensional. This makes it different from both FA and MDS. We will see how latent class analysis can help us to model like we think—in types. We will become a bit familiar with the software that is available to help us do these kinds of analyses that is becoming ever more practical as computer speed improves.

Readings:

Natural categories or fundamental dimensions: On carving nature at the joints and the rearticulation of psychopathology  
Andrew Pickles and Adrian Angold  
Development and Psychopathology (2003), 15: 529-551

Should substance use disorders be considered as categorical or dimensional?  
Bengt Muthén.  
Addiction. Abingdon: Sep 2006. Vol.101, Iss. s1; pg. 6

### **Week 13 Nov. 24<sup>th</sup>: Structural Equation Models**

There is a lot of confusion about what exactly we mean by structural equation modeling, but we will see that SEM is a framework for the combination of the best insights from regression models, path analysis and factor analysis. We will also see how new developments place SEM in position to bring in ideas from latent class analysis and growth models as well.

Readings:

Political Sophistication and Policy Reasoning: A Reconsideration  
Paul Goren  
American Journal of Political Science. Vol. 48, No. 3 (Jul., 2004), pp. 462-478

An assessment of the construct validity of Ryff's Scales of Psychological Well-Being: Method, mode, and measurement effects  
Kristen W. Springer, Robert M. Hauser  
Social Science Research. 2006

**Week 14 Dec. 1<sup>st</sup>: Multi-level Models and HLM**

*(Final Proposal Due)*

Social life is lived in nested hierarchies. For example, students can be found in schools, which are found in states. It makes sense to explore models that are directly sensitive to this structured nature of life and multi-level models fill that gap. We will see that multi-level models with exemplars in computer programs like HLM bring in some fascinating ideas that allow us to tell stories about effects at higher levels of aggregation. Central to these models is the concept of random effects. This idea links studies in this area to modeling approaches in econometrics that seem otherwise unrelated.

**Readings:**

Nations of Joiners: Explaining Voluntary Association Membership in Democratic Societies

James E. Curtis; Douglas E. Baer; Edward G. Grabb

American Sociological Review. Vol. 66, No. 6 (Dec., 2001), pp. 783-805

Individuals, Jobs, and Labor Markets: The Devaluation of Women's Work

Philip N. Cohen; Matt L. Huffman

American Sociological Review. Vol. 68, No. 3 (Jun., 2003), pp. 443-463