PADM 580 INFORMATION SYSTEMS AND STATS FOR ADMINISTRATORS

This course will introduce the MPA student to descriptive and basic inferential statistics. Participants will use computers and software to perform elementary statistical analyses and to prepare presentation quality reports and graphics, making use of statistical information.

My goal for the course: We will focus on student acquisition of skills that are related to these declared purposes of the course, including hypothesis testing in a bi-variate and multivariate setting, using especially contingency tables and multiple regression analysis with data on individuals and on complex social aggregates (especially states, but also local regions and jurisdictions).

Broader MPA program goals are at:
https://umdearborn.edu/fileadmin/groups/22413/Public_Admin_MS_goals___matrix.pdf

Contact Information:

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Structure of the Course:

Read this syllabus carefully. You are responsible for every word of it on the exams.

The purpose of this course is to provide students with basic skills in the methods of policy analysis. It is oriented to practical problems in (1) the analysis of social and political behavior, and (2) the interaction these social and political systems with pertinent biological and physical systems. While other courses deal with substantive areas of knowledge (e.g., "American foreign policy", "environmental policy", or "administrative law"), this one deals with the acquisition of abilities and the mastery of techniques. We will be particularly interested in statistical tests and the computer software that is used in examining them.

Term Paper: For most students, at the end of the semester there will be a term paper, using a panel data set designed for the course, to test hypotheses on *changes* in public opinion. A second option is for a term paper on cross-sectional time-series data, comparing nations. This will be done using a second

data set that I have prepared for the course. These data are organized at the nation-year unit of analysis, and allow analysis of hypotheses on war, on genocide and other mass killing, on environmental variables (energy consumption per capita, and carbon dioxide emissions per capita), and health (life expectancy and infant mortality). A sample term paper making use of the panel data, as well as a sample paper using the nation-year time-series data, will be provided. Some other students may complete a computer simulation term paper project by the end of spring break. It would transform the Club of Rome model of the global environment from a Fortran into an Excel program.

Meeting Times: I plan to meet with the class at the regularly scheduled Monday night each week of the semester, but to put enough of the content on line so that any student can attend only one half of the class sessions and still be keeping in reasonably good touch with the material. This semester we make further steps in switching this course to a hybrid mode (partly on-line), so it's a learning process as we adjust to the new situation and try to get as much material as possible on-line without destroying the ability to get inspired by being together. This learning begins with this syllabus, which is unusually detailed, will be posted on line at my website, and should be studied carefully and repeatedly during the semester by you individually.

INTERDISCIPLINARY FOCUS:

Public administration (and public policy) needs to draw upon knowledge from many different disciplines in order to serve public needs. My own background, as the instructor in the course, is hopefully conducive to that purpose. Also, as the only tenure-track faculty member who has taught this course both to our MPA students (including back in the first decade of that program) and to the MPP students (in the past few years), I will be reflecting on my years of teaching experience. Nonetheless, the material we are covering is fairly universal in its applicability, beyond any particular persons or programs. In fact, the skills taught in this course are broadly relevant, not only in policy analysis at the university, but also in political science, sociology, economics, public administration, and business administration, as well as in government, in business, and in quasi-public institutional leadership at hospitals, schools, and public interest organizations. In fact, these skills are also central to a number of business settings, such as at Google (where it is called "big data" or "data science", and includes computer programming) and in actuarial science (and operations research) in business administration -- and related parts of engineering. Consequently, the lectures will emphasize applications in a broad variety of settings.

What is the relationship of public administration to public policy, and vice versa? The underlying subject, political science, has been called the study of the "authoritative allocation of valued things" (in a famous phrase by David Easton). Politics, then, involves everything about "authorities," i.e., governments; and public policy is what governments do. Public administration is the science of management of governments, as well as other public bodies such as schools and non-profit and public interest organizations. Unfortunately, political scientists have taken a more narrow view of their field than we need in public administration, so we must often pick up the necessary skills from other disciplines, such as economics, operations research, sociology, business administration, and so on.

While there is a division of labor between public policy and public administration, as one moves up (to, say, police chief or Secretary of Defense), it is hard to imagine a task (e.g., the hunt for Osama bin Laden, waging a war,

or the effort to manage the U.S. budget) that does not involve both administrative and policy matters that are inextricably linked. It is probably good to think of all these things (public administration and public policy and government and political science) as part of "public affairs."

GRADES:

There will be three exams during the semester, plus a term paper. These four items will count about equally in the grading for the course. For the exams, you are responsible for reading and knowing all the information in this syllabus, all the readings including textbook exercises for each chapter (including key terms, study questions, and SPSS problems), class handouts and study guides, and all "classroom activity." For our purposes, knowing classroom activity can be attained by coming to class, or (for up to half the weeks) learning the information from electronic versions (described in the next paragraph). In addition, there will be grades given throughout the term for special assignments in data collection and analysis. These, along with "class participation" and attendance, will count for twenty percent of the grade. "Class participation" includes not only making good comments in class, but also contributing constructively to team projects involving the computer assignments. "Attendance" consists of doing the minimum of showing up half the time, since the course is designed to allow you to skip out approximately every other week if you have to. However, I will meet with the class every week, and hope that most of you will be there most of the time.

Because of the nature of this course, in which understanding of one week's material depends on knowledge gained in prior weeks, those taking the course live who miss a class will be expected to examine very carefully electronic version ("e-version") of what they missed. If this is a .pdf file, it will be available either [1] at Ctools or [2] on my web site, or [3] via an email attachment sent to the class. In other cases, it may be necessary to view the pertinent videotape before returning to the next week's live class.

Any late assignment without a signed letter from an M.D. or equivalent authority will result in a two-notch reduction in grade for that exam (e.g., from B- to straight C). Also, UM-D makes reasonable accommodations for persons with documented disabilities. Students should register with the Disability Resource Services Office within the first few weeks of the semester to be eligible for services that semester.

University Attendance Policy:

A student is expected to attend every class and laboratory for which he or she has registered. Each instructor may make known to the student his or her policy with respect to absences in the course. It is the student's responsibility to be aware of this policy. The instructor makes the final decision to excuse or not to excuse an absence. An instructor is entitled to give a failing grade (E) for excessive absences or an Unofficial Drop (UE) for a student who stops attending class at some point during the semester.

Academic Integrity Policy: The University of Michigan-Dearborn values academic honesty and integrity. Each student has a responsibility to understand, accept, and comply with the University's standards of academic conduct as set forth by the Code of Academic Conduct

(http://umdearborn.edu/697817/), as well as policies established by each college. Cheating, collusion, misconduct, fabrication, and plagiarism are considered serious offenses and violations can result in penalties up to and including expulsion from the University.

Disability Statement:

The University will make reasonable accommodations for persons with documented disabilities. Students need to register with Disability Resource Services (DRS) every semester they are enrolled. DRS is located in Counseling & Support Services, 2157 UC (http://www.umd.umich.edu/cs_disability/). To be assured of having services when they are needed, students should register no later than the end of the add/drop deadline of each term. If you have a disability that necessitates an accommodation or adjustment to the academic requirements stated in this syllabus, you must register with DRS as described above and notify your professor.

Safety:

All students are strongly encouraged to register in the campus Emergency Alert System, for communications during an emergency. The following link includes information on registering as well as safety and emergency procedures information: http://umemergencyalert.umd.umich.edu/ Finally, all students are also encouraged to program 911 and UM-Dearborn's Public Safety phone number (313) 593-5333 into personal cell phones. In case of emergency, first dial 911 and then if the situation allows call UM-Dearborn Public Safety.

ON E-MAIL ETIQUETTE:

While e-mail has become a very important means of communication between students and faculty, it is important to observe appropriate norms of behavior to keep us as safe as possible from viruses. Because of the threat from viruses and similar plagues, I do not open emails that do not have your name as the sender, or emails that do not have a subject heading that indicates a topic related to you and the course. I also do not open e-mail attachments. This means your e-mail must actually be readable by me when I click on it; in other words, when I open an e-mail and there is no text because all the text has been placed in an attachment, I do not open the attachment. Also, term papers and other assignments should be submitted in paper form, not as e-mail. Please do your best to respect these precautions of mine when you wish to contact me, and I look forward to hearing from you. Thank you.

No computer, electronic device, or cell phone use permitted during class, except as needed for the purposes of the class, as worked out with Prof. Wayman.

TEXTS:

Students should acquire the following from the bookstore:

Chava Nachmias and David Nachmias, *Research Methods in the Social Sciences*, Worth Publishers, 7th ed.;
Herbert Weisberg, Jon Krosnick, and Bruce Bowen, *An Introduction to Survey Research, Polling, and Data Analysis* (Beverly Hills, Calif.: Sage Publications, 1996);
Stanley Milgram, *Obedience to Authority* (recommended only).

and www.dollarbillcopying.com has the following:

a course-pac of miscellaneous readings.

DEADLINES:

The deadlines set in the course outline below are generally dated the weekend before class. This indicates the readings and workbook assignments that should be completed in preparation for the class the next day.

COURSE OUTLINE:

Week Number One, *class is Jan. 6, do reading by Jan. 10*

The Nature and Purpose of Social Science and Policy Analysis--

Facts and Empirical Inquiry. "Concepts," "operationalization," "variables," "hypotheses," "theory," "intersubjective verification," and "the failure to disconfirm," provide enough jargon to allow us to talk to each other for the rest of the course.

A **concept** can be defined (Kerlinger 1967: 31) as "a word that expresses an abstraction formed by generalization from particulars." The word *chair* is a concept. Kerlinger gives the five examples of *weight*, *mass*, *energy*, *force*, and *achievement*. A **variable** is "a symbol to which numerals or values have been assigned." (Kerlinger 1967: 32) The definition of a concept can be found in a dictionary. The measurement of a concept, done through a process called operationalization, converts the concept into a variable. **Operationalization** is the specification of the procedures needed to measure a concept. A **hypothesis** is the statement of an association that is conjectured to occur between two variables (or between two concepts). Hypotheses are the core element of science. Testing hypotheses allows us to see if the links we expect between two concepts really are there.

Independent and Dependent Variables: An **independent variable** is treated as the predictor or cause of the hypothesized relationship between the two variables, and the **dependent variable** is treated as the hypothesized outcome or effect.

Probabilistic vs. Deterministic Hypotheses and Laws: Some relationships are deterministic. For instance, Boyle's law (discovered in 1662) is that at a given temperature, for a gas in a balloon, volume is inversely proportional to pressure. Another gas law is that at a constant pressure, the volume of the gas will be proportional to temperature. These are deterministic relationships. If the gas is at 100 degrees Kelvin, the volume will be 1/2 of what it will be at 200 degrees Kelvin. The closest we have to such a law in political science is the confirmed hypothesis that there has never been an inter-state war between two Liberal states or two democracies. Most social science "couplings" or associations between two variables are probabilistic, not deterministic. For instance, in recent decades in the U.S., women tend to vote relatively Democratic compared to men, who tend to vote relatively more Republican.

Physical associations can also be probabilistic. For instance, if you increase the pressure on a gas, some of the molecules, but not all, will increase their velocity and hence the temperature associated with them. This probabilistic pattern, at the level of individual gas molecules, aggregates at the level of the entire body of gas into the deterministic law that volume is proportional to temperature.

Levels of Analysis: A very bad flaw in the textbook is that in some places it seems to assume that all information (measurement of variables) should be done at the individual level of analysis (also known as level of "aggregation"). This would, for example, consist of interviewing someone and getting information on their attitudes on various policy issues. In a data matrix (also called in Excel a "spreadsheet"), the data would consist of a row for each individual, and a column for each attitude (column one might have their attitude on government health care plans, column two might have their attitude on global warming, and so on). In fact, many variables are best collected at higher levels of aggregation, such as the sovereign state. For instance, a data matrix or spreadsheet might contain a row for each country and a column for each variable. The first column might have the country's GNP, the second column how much the country spends on the military, and so on. We will be dealing with data sets of both sorts in this class. Levels of aggregation or measurement include the global system, the pair of countries (e.g., both are democracies, only one is a democracy, or neither is a democracy), and the individual.

A hypothesis about the causes of war (the dependent variable) might be that war between two countries will be less likely if the global system is unipolar, war will be less likely if both are democracies. This explanation includes variables from two levels of analysis, neither of which is at the individual level. Important social sciences such as macro-economics and international relations generally deal with data from the level of aggregation of the sovereign state. Other important data (such as panel studies of families in poverty) are collected at the individual level. Hence, public administration and public policy require theories and data (often integrated) from several different levels.

Theories and models: Dynamic systems and computer models. Examples: Mortgage repayment dynamics; a simple Keynesian model of a national economy; the Club of Rome model of the global environment. See computer simulation project, on page 1 above.

A **theory** is a set of statements, including hypotheses, organized in a deductive structure such that the hypotheses are derived from underlying axioms, postulates, or assumptions. A purely *scientific theory*, such as Newton's theory of gravitational attraction, or Darwin's theory of evolution, or the political survival theory of Bueno de Mesquita, has only components that we have already listed.

The main reason for a theory is to explain why something is likely to happen. In public policy, the something could be some desired outcome, such as peace or prosperity. That outcome can be called the dependent variable (or outcome variable). A cause of an outcome is something that theoretically would make it more likely to happen. One hopes to find some policy instrument that causes a favorable outcome. That policy is the independent variable, and can also be called a predictor variable.

A theory, by explaining why something happens, allows us to predict when it will happen.

A *normative theory* adds values that *ought* to be pursued. Jefferson's normative theory, called Liberalism, has been expressed succinctly as "We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain inalienable rights, that among these are Life, Liberty, and the pursuit of Happiness. That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed." I do not see how to justify any public policy without some normative theory. Examples of such theories include Idealist-Liberal theories of world politics, Realist theories of World Politics, and Jefferson's Liberal theory of domestic politics (largely derived from John Locke's *Second Treatise of Government*). Staying exclusively scientific might seem desirable. But it cannot be done in fields such as public administration and public policy, insofar as there are topics such as evaluation research, in which some program or policy or institution is evaluated, and that evaluation has to be from the point of view of some norm or end goal (which *ought* to be pursued).

For instance, when I co-authored the accreditation study of the University of Michigan-Dearborn, we had to define our educational goals, on the basis of which the evaluation could be done. Such goals serve as the starting point of normative evaluation, somewhat as the postulates (e.g., given two distinct points, there is one and only one straight line containing them) are the starting point of geometry. There are also ethical rules in research (e.g., ch. 4 of Frankfort-Nachmias and Nachmias). In practice, these are established by legislatures and administrators, but presumably they, also, can only be justified by some underlying goals, as defined by principles of ethics that I have called normative theory.

A **paradigm** is a set of questions and expected answers. Theories can be grouped into paradigms. According to Thomas Kuhn (*The Structure of Scientific Revolutions*), revolutionary science is the replacement of one paradigm with another (such as the replacement of the Ptolemaic-Aristotelian paradigm with the paradigm of Galileo and Newton). Science seems to advance by the ordinary testing of hypotheses and also by the occasional revolution in paradigms.

In my parlance in the course, a **model** is a representation of part of the world that encompasses some theory and makes that theory more specific, dynamic, and precise by the construction of a computer code that tells how events will unfold through time. In other words, we will be dealing with **dynamic, computational models** (as opposed to static models, like a ship, or analogue dynamic models, such as an electrified toy model railroad). For instance, the *World Dynamics* model of our biosphere (Forrester 1973) is the computer program that undergirds the ecological theory of the best-selling book, *The Limits to Growth* (Meadows et al., 1972; Meadows et al., 1992). That theory is part of a new paradigm called environmentalism, which in a narrow sense is based on scientific components only (as in the World Dynamics model), but for most people goes on to have a normative shell (encouraging conservation, re-use, recycling, respect for species diversity, and so on).

Science consists of a (growing) set of hypotheses and theories, as well as procedures we can call operationalizations. It is customary to divide science into the **physical sciences** such as physics and chemistry, the **biological sciences** such as biochemistry and medicine, and the **social sciences** such as economics and political science. Some additional ways science works and all fits together are examined in my course PPOL 504, Rational Choice, and in the forthcoming book by Wayman, Williamson, and Bueno de Mesquita, *Prediction*.

Our first class session is January 7th. There are no classes on campus scheduled for Jan. 21st, which is Martin Luther King Day, a national holiday strongly related to public policy and the social sciences.

Supplemental readings and textbook to be completed by **JANUARY 12TH:**

Supplemental readings:

Always be sure to read the on-line or emailed file for weekly lectures.

For instance, this week, read the electronic file for Lecture 1 (in Ctools).

Weisberg, Krosnick, and Bowen, chs. 2 and 8 (The Survey Process and the Process of Data Analysis)

Course-pac, Reading No. 1 -- an example of a policy-relevant theory, from game theory,
Read Wayman, "A Cooperative Solution to Prisoner's Dilemma."

Course-pac, Reading No. 2 -- operationalization of concepts: Dearborn panel questionnaire
(party i.d., post-materialism, political trust and efficacy, political information)

(Course-pac, Reading No. 3 -- Illuminating the Shadow of the Future: Scientific Prediction and the Human Condition. Prospectus with Abstracts). *Note especially the three types of prediction in the prospectus: (1) static prediction, (2) forecasts*

that can be called "post-diction," and (3) prediction of the third kind, forecasting the future. "Prediction is difficult, especially about the future." -- attributed to Niels Bohr.

(Course-pac, Reading No. 4 -- concept formation:
"Explaining the Onset of Mass Killing, 1949-87," accepted, *Journal of Peace Research*, tentatively scheduled for Vol. 47 (No. 1), January 2010. (Co-author with Atsushi Tago.)

Also read *sample term paper* by Lindsay Giuffre, PPOL 501/PADM 580 student from winter term 2010.

Recommended, on concept formation:
"Rethinking Partisanship: Some Thoughts on a Unified Theory," in John Bartle and Paolo Bellucci, eds., *Political Parties and Partisanship: Social Identity and Individual Attitudes*. (Co-author with Bernard Grofman and Matthew Barreto.) Abingdon, Oxon, UK: Routledge, November 2008, pp. 60-74.

Textbook: Frankfort-Nachmias and Nachmias, preface and chs. 1-2 (pp. xix-44), ch. 7

In class, Jan. 6th:
Introduction to course; introduction to the scientific method and social science; to be more specific:

concepts -- examples: 'development,' 'democracy,' 'genocide,' 'political participation,' 'party identification,' and 'mobilization of a policy maker.' In the readings, democracy and genocide are defined and measured in "Explaining the Onset of Mass Killing." Party identification as a concept is discussed in "Rethinking Partisanship." Participation in House Committee decision making is measured in "Buying Time" (see readings for weeks four and five).

theory -- Normative theory is designed to recommend regimes and/or policies, criticize regimes and/or policies, or suggest appropriate patterns of citizen behavior. Three examples are Plato's cave, from *The Republic* (πολιτεία), John Locke's *Second Treatise of Civil Government*, and John Rawls' *A Theory of Justice*. Empirical theory is designed to explain and predict behavior. An example is Anthony Downs' empirical theory of democracy, in his book *An Economic Theory of Democracy*.

hypotheses -- Ex.: Stanley Milgram's *Obedience to Authority* and competing hypotheses predicting different patterns of human behavior.

basic terms, illustrated with panel study questionnaire:
independent and dependent variables; nominal, categoric, and interval measurement; Likert indices.

review of exercises;

bivariate relations and causality.

Week Number Two, *class meets Jan. 13th, do reading by Jan. 15th.*

Recommended reading: Stanley Milgram, *Obedience to Authority*.

Research and Scientific Method in a Public Policy and Public Administration Context --
Some tools for evaluative reasoning about social problems will be discussed. **PLEASE COMPLETE THESE ASSIGNMENTS BY JANUARY 20TH:**

Readings: Electronic file for "Lecture 2" (see Ctools)

Textbook: Frankfort-Nachmias and Nachmias, ch. 4 (pp. 67-86)

Workbook: Look over the "Lecture 2" study guide, and think about relevant variables in an area of public policy as listed on the outline of policy areas.

In Class: Dearborn Public Opinion Study Group public opinion questionnaire.

Week Number Three, *class is Jan. 20th.*

Course-pac, Reading No. 2 -- operationalization of concepts: Dearborn panel questionnaire
(party i.d., post-materialism, political trust and efficacy, political information)

Frank W. Wayman and Ronald R. Stockton, "Structure and Stability of Political Attitudes," (Read electronically) *Public Opinion Quarterly*, Vol. 47 (Fall, 1983): 329-346

"In class" segment is replaced by on-line material -- see note under week 2 for directions.

Week Numbers Four and Five, *class meets Jan. 27th and Feb. 3rd,*

Research Design--
Any scientific research project should begin with an overall plan. What are the questions to be investigated? How can these questions best be answered? What evidence should be gathered? Where and when? What sorts of findings would support the hypotheses? What would require rejection of the hypotheses?
DO READINGS BY JANUARY 26TH.

Readings: Stockton and Wayman, *A Time of Turmoil*, Appendix A (handout); Wayman, "Staying the Course" (course pack) -- panel (Compare to student paper assigned for week one.)

Weisberg, Krosnick, and Bowen, ch. 13;

Hall and Wayman, "Buying Time," *American Political Science Review* Vol. 84, No. 3 (Sept. 1990): 797-820. E-version, library.
-- correlational design with 2SLS;

Wayman, "Alliances and War: A Time Series Analysis," course pack
-- time series design;

Read through electronic resources: Douglas Hibbs, "Political parties and macroeconomic policy," *American Political Science Review* 71: 1467-87.

Textbook: Frankfort-Nachmias and Nachmias, chs. 3, 5, and 6 (pp. 45-66, 87-112, and 113-136)

In Class:

Causation

Research Design

True Experimental Design: frustration and aggression vs. modelling and aggression, TV and violence; Iyengar and Kinder on media, agendas, and priming.

Non-Equivalent Control Group Design: Milgram's *Obedience to Authority*;

Readings: Stanley Milgram, *Obedience to Authority*

Interrupted Time-Series Design: Wayman's study of whether military alliances spread war or deter war; Hibbs on American and British elections, and the impact of the new government on inflation and unemployment.

Correlational Design -- 3rd Variable Controls. Predicting the vote for president from a voter's position on the issues, party ID, and assessments of candidates' character.

Readings: Handouts from Francis Hoole's book on development

Discussion of Exercises

Discussion of research article -- Hall and Wayman, "Buying Time"

Week Number Six, *class meets Feb. 10th,*

The FIRST EXAM will cover all the above material, on FEB. 10TH. The exam will be one hour, 20 minutes long (6:10-7:30 PM).

Class on Feb. 11th will resume after the exam, and continue to 9 PM, covering:

Data Analysis. Once hypotheses have been constructed, they must be tested by looking at the evidence. We will learn some basic statistical procedures for analyzing data in the policy sciences. For the term papers, actual data analysis will be conducted using SPSS, a computer software package of statistical programs which make our lives easier.

Intro. to Statistics and Univariate Statistics-- PLEASE COMPLETE THESE ASSIGNMENTS BY FEBRUARY 4TH.

Readings: Weisberg, Krosnick, and Bowen, chs. 9 and 10

Textbook: Frankfort-Nachmias and Nachmias, ch. 7 -- measurement (pp. 137-160), ch. 8 -- sampling (pp. 149-170), ch. 14 -- data preparation and analysis (pp. 303-318), and ch. 15 -- the univariate distribution (pp. 319-350)

In Class: Mean, Standard Deviation, Standard Error of the Mean, Standard Error of the Difference between two means.

Contingency Tables--
Examining relationships among categorical variables. **FEBRUARY 11TH**. (Categoric variables are variables with a small number of categories, such as social class, which has three categories: working class, middle class, and upper class).

Readings: Weisberg, Krosnick, and Bowen, ch. 11 and 12

Textbook: Frankfort-Nachmias and Nachmias, ch. 16, pp. 351-384, part of ch. 19, pp. 451-453

In Class: Correlation Coefficients and Chi Square

Week Number Seven, *class meets Feb. 17th,*

Correlation and Regression-- Fitting a line through a set of points, and measuring the goodness of fit. **FEBRUARY 18TH**.

Readings: Weisberg, Krosnick, and Bowen, ch. 14
Policy analysis readings to be assigned
Krain, "International Intervention and the Severity of Genocides and Geno-Politicides," *International Studies Quarterly*, 49 (No. 3, Sept.): 363-389
Readings from U. of Michigan affirmative action case (handouts)

Textbook: Frankfort-Nachmias and Nachmias, ch. 16 and 17 (pp. 351-412)

In Class: Correlation Coefficients and Regression

Week Number Eight, *class meets Feb. 24th,*

Inferential Statistics.

Textbook: Frankfort-Nachmias and Nachmias, ch. 19 (pp. 435-456)

Dimensional Analysis, Indices, and Scales. These terms refer to methods of improving measurement and clarifying the meaning of concepts. The following techniques will be illuminated through examples of their use: index construction (Likert "scaling"), Guttman scaling, and factor analysis. **READ THESE ASSIGNMENTS BY MARCH 2ND.**

Readings: Weisberg, Krosnick, and Bowen, pp. 174-81.

Textbook: Frankfort-Nachmias and Nachmias, ch. 18 (pp. 413-434)

In Class: How to do Guttman scaling:

Racial and Law and Order Factors from the Dearborn panel
(readings handout)

[SPRING BREAK IS FEBRUARY 28TH TO MARCH 6TH]

Week Number Nine, *class meets Mar. 9th,*

Causal Analysis-- By combining theory with regression analysis, one can move from knowledge of correlations to knowledge of causal patterns. Multiple regression and path analysis, and two-stage least squares examples will be given. **READ THESE ASSIGNMENTS BY MARCH 10TH**.

Readings: Weisberg, Krosnick, and Bowen, ch. 13, and pp. 270-77.
Excerpts from Wayman and Grofman on change in party i.d., Racial Fears and Realignment in 20th Century America

In Class: Explanations of U.S. Presidential election voting, and cross-national explanations of human well-being as a function of economic development.

Using the Computer: SPSS-- READ THESE ASSIGNMENTS BY MARCH 17TH

Readings: Handout of commands

Workbook: Buchanan, ch. 13 (pp. 195-204)

Assignment: Do Statistical runs for your term paper.

In Class: U. of M. Computing Environment; SPSS commands. Your Term Paper.

Week Number Ten, *class meets Mar. 16th,*

The SECOND EXAM, covering everything since the first exam, will be WED., MARCH 16TH. Class will continue after the exam until 8:45 PM.

Reliability and Validity-- A reliable measure produces the same results under the same circumstances. A valid measure measures what it is supposed to measure. For example, IQ tests are a reliable measure: they will produce about the same results for the same individual time after time. **READ THESE ASSIGNMENTS BY MARCH 24TH.**

Readings: Weisberg, Krosnick, and Bowen, pp. 76-78;

Wayman and Singer, "Evolution and Directions for Improvement in the Correlates of War Project Methodologies" (course-pac); Lee Cronbach, *Essentials of Psychological Testing*, pp. 122-125 -- handout

In Class: The four types of validity -- the LSAT and predictive validity, practice LSATs and concurrent validity, final exams and content validity, and anxiety tests and construct validity

Internal and External Validity -- in experimental designs

Weeks Number Eleven, Twelve, and Thirteen*, class meets Mar. 23rd, Mar. 30th, and April 6th. Modes of Observation.*

Modes of Observation--
These are the different techniques used to gather data. **DO READINGS BEFORE CLASS ON MARCH 25TH AND APRIL 1ST.**

Survey Research. Administering questionnaires to people is time consuming, costly, and tedious, but those who love it (whether or not they are living off a large grant from the National Science Foundation) claim that it reveals important aspects of the world we live in. Proctor and Gamble, which is always using it to find what products people will buy, agrees. So do many students of organizational behavior, of American electoral politics, and of other important fields of social science.

Readings: Weisberg, Krosnick, and Bowen, chs. 1-7.

Textbook: Frankfort-Nachmias and Nachmias, ch. 10 (pp. 205-228)

Designing a Survey

Writing Questions

Interviewing

Interviewer Training

Aggregate Data Analysis and other modes of observation (content analysis, evaluation research, etc.)-- DO READINGS BY APRIL 7TH.

Readings: Weisberg, Krosnick, and Bowen, ch. 1

Francis Hoole, excerpts from *Evaluation Research and Development Activities* (Beverly Hills: Sage, 1978) course pack.

Excerpts from UM-Dearborn evaluation, by Higgs and Wayman, handout

Wayman, "Voices Prophesying War," course pack.

Textbook: Ch. 9, pp. 187-204, and chs. 11-13, pp. 229-302

In Class: Other Modes of Research; Uses of Social Science

In Class: Elite Inteviewing; Library and data bank resources; evaluation of the effectiveness of government programs.

Week Number Fourteen*, class meets April 13th,*

Writing and Disseminating Research Findings; Simulation and other Modes of Analysis. DO READINGS BY APRIL 14TH.

Readings: Weisberg, Krosnick, and Bowen, chs. 15-17

Simulation Reading No. 1 (course pack), Jay Forrester, *World Dynamics.* Wright-Allen Press, 1971, chs. 2-3.

Simulation Reading No. 2 (course pack), Joshua Epstein, *War with Iraq: What Price Victory?* Washington, D.C.: Brookings, 1991.

Textbook: Appendix A (SPSS) and Appendix B (Writing Research Reports)

Assignment: Write your term paper.

In Class: Simulation and Other Modes of Research; Uses of Social Science.

Textbook: Ch. 9, pp. 187-204, and chs. 11-13, pp. 229-302

Term papers are due Mon., April 15th, at 6 PM. IMPORTANT: you must hand in two copies of your term paper, WITH YOUR SPSS PRINTOUT ATTACHED TO ONE OF THE TERM PAPER COPIES. Plan ahead. Extension of this deadline is not possible.

Last Class is April 15th; study day is April 20th.

The THIRD EXAM will be Wed., April 27th, at 6:30 PM.

REFERENCES:

Forrester, Jay W. (1973) *World Dynamics*. Cambridge, Mass.: Wright-Allen Press.

Hall, Richard Lee, and Frank W. Wayman (1990) "Buying Time: Moneyed Interests and the Mobilization of Bias in Congressional Committees." *American Political Science Review* 1990.

Kerlinger, Fred N. (1967) *Foundations of Behavioral Research*. N.Y.: Holt, Rinehart, and Winston.

Kuhn, Thomas S. (1962) *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.

Gardner, Gerald, and Paul Stern (1996) *Environmental Problems and Human Behavior*, 2nd edition. Boston: Allyn and Bacon.

Meadows, D.H., D.L. Meadows, and J. Randers, and W.W. Behrens (1972) *The Limits to Growth*. N.Y.: Universe Books.

Meadows, D.H., D.L. Meadows, and J. Randers (1992). *Beyond the Limits: Confronting Global Collapse; envisioning a sustainable future*. Post Mills, Vt.: Chelsea Green.