THE UNIVERSITY OF MICHIGAN
SCHOOL OF SOCIAL WORK

Course Title: Statistics in Policy Analysis and Evaluation
Division Number: 782
Course Number: SW 673
Credit Hours: 3
Prerequisites
Foundation Research Course
Location
Methods Course in the Social Policy and Evaluation Concentration

Description of the Course and its Place in the MSW Program

Course Description:
This course will develop students’ ability to use quantitative methods to describe real world situations in social work settings and to make inferences based on that information to improve social policy decisions and service delivery programs. Students will develop skills to assess the value and limitations of program data for important organization and policy decisions and to understand, apply and describe measures of central tendency and variability to various data. Students will learn the appropriateness of statistical methods in policy and program evaluation situations. Students will apply statistical techniques to construct meaningful charts, tables, and graphs. Students will learn to use appropriate language with their statistical analyses to clarify meaning and to explain the inferences that can be made from specific data.

Course Content:
This course focuses on learning the direct application of analytical skills. Students will conduct, interpret, and present statistical analyses of data to various audiences. Students will receive an orientation to the theoretical foundations of descriptive and inferential statistics. Students will be introduced to models of statistical design and analysis derived from social science theory and research, and will learn to apply these models as they develop skills to assess statistical analysis and reports in contemporary social work practice, program and policy. Students will learn to apply techniques for policy analysis and evaluation.

Course Objectives:
Students will be able to:
• identify appropriate statistical methods to use in common policy and program evaluation situations;
• apply basic statistical techniques to common policy and program evaluation situations;
• apply common measures of central tendency and variability and a variety of scales to program data;
• construct meaningful charts, tables, and graphs of statistical analyses;
• prepare written, oral and visual reports using appropriate statistical language.

Relationship to Four Curricular Themes:

Multiculturalism and Diversity: Students will develop the capacity to identify ways in which gender, race, ethnicity, social class, age and other forms of social stratification and disenfranchisement in community related issues influence and are affected by the decisions made from statistical analyses and related methodologies.

Social Change and Social Justice: The ability to assess policies and programs analytically is necessary if the social work profession is to play an important role in shaping the outcome of ongoing program and policy debates to reflect issues in social change and justice. This course provides students with the capacity to understand and influence the role statistical analysis and the interpretation of such analysis play in the formation and implementation of policy, practice and program development.

Promotion and Prevention: Prevention and promotion activities are difficult to evaluate and therefore raise special challenges in statistical analysis. It is important to expose students to the language of statistics so that they may comprehend useful and appropriate statistical techniques for different problems. In this way they may analyze and
evaluate promotion and prevention activities prior to the development, implementation, and analysis of any relevant policy issue or initiative that they encounter in the course of their professional activities.

**Social Science:** Social workers need to be able to identify statistical methods that optimize a combination of rigor and feasibility. Social workers should also examine the ways in which social science data is translated into current policy and practice and the consequences (both positive and negative) which emerge. This course provides students with the capacity to understand and influence the role statistical analysis plays in the formation and implementation of policy, practice and program development.

**Relationship of this Course to Social Work Ethics and Values:** Ethical standards of research methods (NIH guidelines), social work practice (NASW Code of Ethics) and evaluation practice (Program Evaluation Standards) will be used to review issues commonly confronted in the statistical analysis of policy and evaluation. The ethical standards of utility, feasibility, accuracy and propriety are particularly relevant to statistical analysis and evaluation and are therefore emphasized and discussed.

### Particulars of the Fall, 2003 Course

<table>
<thead>
<tr>
<th>Course</th>
<th>SSW 673</th>
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<tbody>
<tr>
<td>Instructor</td>
<td>Sherrie A. Kossoudji</td>
</tr>
<tr>
<td>Office</td>
<td>2788 SSW Building</td>
</tr>
<tr>
<td>Phone</td>
<td>734-763-6320</td>
</tr>
<tr>
<td>Fax</td>
<td>734-763-3372</td>
</tr>
<tr>
<td>e-mail</td>
<td><a href="mailto:kossoudj@umich.edu">kossoudj@umich.edu</a></td>
</tr>
<tr>
<td>Class Time</td>
<td>Tuesdays, 9am-12pm</td>
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<tr>
<td>Class Location</td>
<td>SSW Building—B696, computer classroom</td>
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<tr>
<td>Office Hours</td>
<td>Tuesdays 1:30-3:30 and appointments can easily be made by email</td>
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**Source Materials, Core Texts:**

**Required for Purchase and Available at local college bookstores:**


**Bring this book to class!**

The **Basic Practice of Statistics** is an important backup reference for students. Our lectures will not follow the book specifically because we will be using social work examples. But every concept discussed in class is also presented in the book. **Please use it.** Our class web site will also have links to numerous online statistics textbooks. These can be very useful to you if you can’t figure out what Moore is saying about a particular topic or if there’s something about his style that you don’t like. Just look up any book online, find the chapter with the same topics as we are discussing (all statistics textbooks have more or less the same chapters) and see if you like or understand the alternative presentation better.

**Interpreting Basic Statistics** is a new book for this class. Traditionally, we have a few long report like assignments in this class. This year we will try having shorter weekly assignments instead.

**Recommended for Purchase and Available at local college bookstores:**

**Data Analysis with SPSS** is recommended for anyone who is completely unfamiliar with SPSS and with statistical programs in general, who thinks that they may have problems grasping basic program concepts (we go over everything in class), or who needs a security blanket just to make sure that the answers are available right by the computer.

Our class “assets” will all be managed through our CourseTools web site. Readings, assignments, background materials, handouts, and the class schedule are all available on the class web site. The class schedule will always have the appropriate files attached before class time. To find our site, go to the student gateway site at http://coursetools.ummu.umich.edu/mycourses and click on our class name. You will need your uniqname and kerberos password to get inside the page. Only students registered for this class will have access to the web site. Weekly lecture notes, announcements, and helpful documents will be on the site.

### Weekly Class Schedule      SSW 673—Fall, 2003

<table>
<thead>
<tr>
<th>Date</th>
<th>Theme</th>
<th>Activities</th>
<th>Readings (Please read before the start of class)</th>
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<tbody>
<tr>
<td><strong>Part I: The First Step in Learning Statistics is to Get Your Hands Dirty with Data</strong></td>
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<tr>
<td><strong>Week 1</strong></td>
<td>Getting to Data, Reviewing percentages and the very basics Statistics=Power, a picture is worth a thousand numbers. Talking about statistics</td>
<td>Opening up SPSS, introduction to SPSS, creating and understanding the features of data sets, simple graphs: pie chats, bar charts, histograms, etc.</td>
<td>EVERYONE--- PLEASE READ “TO THE STUDENTS” pages xx to xxv. His summary agrees with my basic philosophy of teaching and understanding statistics. Moore, Chapter 1</td>
</tr>
<tr>
<td>Sept. 3rd</td>
<td>Review How Much Can One Variable Tell Us?</td>
<td>Further introduction to SPSS, ongoing work with data sets, Measures of central tendency and description, frequency distributions</td>
<td>Moore, Chapter 2</td>
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<tr>
<td><strong>Week 2</strong></td>
<td>Review Intimate and not so Intimate Relationships</td>
<td>Correlations, cross tabulations, Gender differences in Distributions, scatterplots</td>
<td>Moore, Chapter 4, Moore, Chapter 6</td>
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<td>Sept. 10th</td>
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<tr>
<td><strong>Week 3</strong></td>
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<td>Sept. 17th</td>
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<tr>
<td><strong>Part II: Don’t build Your Statistical House From Straw (or someone will huff and puff and blow it down)</strong></td>
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<td><strong>Week 4</strong></td>
<td>The Methodological Foundation—If statistics don’t tell you “the truth”, what do they tell you? Why you can’t report the results of statistical analysis with certainty</td>
<td>Understanding Normal distributions The difference between a population and a sample Sampling Distributions Experiment</td>
<td>Moore, Chapter 3 Moore, Chapter 10</td>
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<tr>
<td>Sept. 24th</td>
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<tr>
<td><strong>Week 5</strong></td>
<td></td>
<td>Independence, conditionality, and</td>
<td>Moore, Chapter 11</td>
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<tr>
<td>Oct. 1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>A Solid House Needs Lots of Bricks-Probability Theory</td>
<td>other problems in probability</td>
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<tr>
<td><strong>Week 6</strong>&lt;br&gt;Oct. 8&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Review Protecting Your Statistical House—Expressing confidence in estimates, Using significance to help make decisions</td>
<td>Confidence intervals, Introduction to tests of significance, the power of a test</td>
<td>Moore, Chapter 13&lt;br&gt;Moore, Chapter 14&lt;br&gt;Moore, Chapter 15</td>
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<td><strong>Week 7</strong>&lt;br&gt;Oct. 15&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Topics of Week 4, 5, and 6 continued (three topics split over four weeks) and extra review</td>
<td>An exercise in report writing using good analysis and good statistical language. Midterm Problem Set practice.</td>
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<td><strong>Week 8</strong>&lt;br&gt;Oct. 22&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>Midterm Problem Set—short and long problems</td>
<td>No class on October 22&lt;sup&gt;nd&lt;/sup&gt;. Students may choose a 12 hour period any time between October 22&lt;sup&gt;nd&lt;/sup&gt; and October 26&lt;sup&gt;th&lt;/sup&gt; to take the midterm.</td>
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<td><strong>Part III: The Good Statistical Cook. First, Know What You Want to Cook, Second, Find the Right Recipe</strong></td>
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<td><strong>Week 9</strong>&lt;br&gt;October 29&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Review Inference; Concrete Statistical Methodology with Social Work Applications</td>
<td>Tests for a population mean, comparing two samples, tests for social service impacts.</td>
<td>Moore, Chapter 16&lt;br&gt;Moore, Chapter 17</td>
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<tr>
<td><strong>Week 10</strong>&lt;br&gt;Nov. 5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Review Inference Continued</td>
<td>Tests for a population proportion, comparing two proportions,</td>
<td>Moore, Chapter 18&lt;br&gt;Moore, Chapter 19</td>
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<tr>
<td><strong>Week 11</strong>&lt;br&gt;Nov. 12&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Review It’s a big World Out There; Comparing More than Two Groups</td>
<td>Boss-ANOVA, inference for Two-Way Tables--Chi-Square; Special emphasis on crosstabs, chi square tests, and further investigations</td>
<td>Moore, Chapter 20&lt;br&gt;Moore, Chapter 22</td>
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<td><strong>Week 12</strong>&lt;br&gt;Nov. 19&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Review What’s the Point (estimation)?</td>
<td>Regress this! Practicing with single variable regression and with multiple variable regression</td>
<td>Moore, Chapter 5&lt;br&gt;Moore, Chapter 21</td>
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<td><strong>Week 13</strong>&lt;br&gt;Nov. 26&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Spillover, Review, Synthesis, Questions</td>
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<td><strong>Week 14</strong>&lt;br&gt;Dec. 3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>Statistical Thinking Revisited</td>
<td>An exercise in report writing using good analysis and good statistical language. Final Exam practice.</td>
<td>Moore, Statistical Thinking Revisited, pages 630 to 632</td>
</tr>
<tr>
<td><strong>Week 15</strong>&lt;br&gt;Dec. 10&lt;sup&gt;th&lt;/sup&gt;</td>
<td>Final Problem Set—short and long problems</td>
<td>Starts at 9:10am in classroom, due at noon. Make sure to bring Interpreting Basic Statistics workbook with you</td>
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</tbody>
</table>
Weekly Assignments and Grading Features  
SSW 683—Fall, 2003

Please read this page carefully and make sure you understand it!

<table>
<thead>
<tr>
<th>Date</th>
<th>Assignment: The start day of each assignment is listed. Assignments are due by 11:59pm the following Tuesday.</th>
<th>Point Value</th>
</tr>
</thead>
</table>
| **Week 1 (Sept. 3rd)** | Assignment 1 start:  
Exercise 1 in IBS, 1, 3, 5, 10  
Exercise 6 in IBS, 1,2, 3, 5  
Exercise 7 in IBS,1, 2 ,6 ,8  
673assn1yourfullnamenospaces.doc | 8           |
| **Week 2 (Sept. 10th)** | Assignment 2 start:  
Exercise 3 in IBS, 1, 2, 3, 6, 13  
Exercise 8 in IBS, 1, 2, 3, 6, 10,  
Exercise 10 in IBS, 2, 7, 11, 14, 15  
Graph assignment—document on the web  
673assn2yourfullnamenospaces.doc | 8           |
| **Week 3 (Sept. 17th)** | Assignment 3 start:  
Exercise 18 in IBS, 2, 3, 4, 5, 7, 11  
Exercise 19 in IBS, 1, 5, 7, 11, 12, 13  
673assn3yourfullnamenospaces.doc | 8           |
| **Week 4 (Sept. 24th)** | Assignment 4 start:  
Crosstabulation Exercise—document on the web  
673assn4yourfullnamenospaces.doc | 8           |
| **Week 5 (Oct. 1st)** | Assignment 5 start:  
Exercise 13 in IBS, 3, 4, 5, 6, 7, 11  
Exercise 14 in IBS, 1, 2, 3, 5, 7, 9, 10,  
Exercise 15 in IBS, 2, 4, 7, 8, 9, 12  
Simple writing exercise—document on the web  
673assn5yourfullnamenospaces.doc | 8           |
| **Week 6 (Oct. 8th)** | Assignment 5 start:  
Exercise 13 in IBS, 3, 4, 5, 6, 7, 11  
Exercise 14 in IBS, 1, 2, 3, 5, 7, 8, 9, 10  
Exercise 15 in IBS, 2, 4, 7, 8, 9, 12  
Simple writing exercise—document on the web  
673assn5yourfullnamenospaces.doc | 8           |
| **Week 7 (Oct. 15th)** | Assignment 5 start:  
Exercise 13 in IBS, 3, 4, 5, 6, 7, 11  
Exercise 14 in IBS, 1, 2, 3, 5, 7, 8, 9, 10  
Exercise 15 in IBS, 2, 4, 7, 8, 9, 12  
Simple writing exercise—document on the web  
673assn5yourfullnamenospaces.doc | 8           |
| **Week 8 (Oct. 22nd)** | Midterm Problem Set:  
You will have 12 hours to complete the midterm. It is due 12 hours after you retrieve it from the web site.  
673midtermtyourfullnamenospaces.doc | 15          |
| **Week 9 (Oct. 29th)** | Assignment 6 start:  
Exercise 26 in IBS, 1, 3, 4, 5  
Exercise 27 in IBS, 1, 2, 3, 5, 7, 9, 10, 13  
673assn6yourfullnamenospaces.doc | 8           |
| Week 10 (Nov. 5th) | Assignment 7 start: 
Exercise 30 in IBS, 1, 2, 3, 5, 9, 10, 11 
Exercise 40 in IBS, 2, 5, 6, 9, 10 
Reporting hypothesis testing—document on the web 
673assn7yourfullnamenspaces.doc |
|---------------------|--------------------------|
| Week 11 (Nov. 12th) | Assignment 8 start: 
ANOVA exercise, document on the web 
Exercise 23 in IBS, 2, 4, 6, 7, 8, 9, 11, 13 
673assn8yourfullnamenspaces.doc |
| Week 12 (Nov. 19th) | Assignment 8 start: 
ANOVA exercise, document on the web 
Exercise 23 in IBS, 2, 4, 6, 7, 8, 9, 11, 13 
673assn8yourfullnamenspaces.doc |
| Week 13 (Nov. 26th) | Final Problem Set (In Class) 
673finalyourfullnamenspaces.doc |
| Week 14 (Dec. 3rd)  | |
| Week 15 (Dec. 10th)| Final Problem Set (In Class) 
673finalyourfullnamenspaces.doc |
| Total Points        | 100                      |

Assignments will be turned in to the CourseTools web site as Word documents. A sample format for the assignments is on the web. Please follow file naming conventions (see above—there is a one point penalty for an incorrect file name on an assignment), file format conventions, and deadlines. Assignments will be turned in by the student and will be returned by the instructor electronically through the Coursetools site. The instructor and class will practice the assignment process the first day of class. If any student has difficulty understanding CourseTools, classes on its uses are available through the university. Please take care of any CourseTools problems in a timely manner.

Late Assignments for projects and papers are accepted only with a penalty. A late assignment will be assessed a 25% penalty (this means an 8 point assignment will get a maximum of 6 points, etc. Assignments cannot be turned in more than one week late. If an assignment is more than one week late, 0 points will be given. Assignment #1 if it is turned in on time, can be resubmitted for a better grade the week after getting back scores (with no penalty). No makeups or changes can be made for the other assignments, exams, or problem sets.

Final Course Grades Are Based on Total Points: A+ = 98-100, A = 94-97, A- = 90-93, B+ = 87-89, B = 82-86, B- = 78-81, C+ = 75-77, C = 70-74, not passing = <70
I have completely read the syllabus. I understand its content, and I have asked any questions that I needed to avoid any confusion and to be aware of the ramifications of my actions in this class.

Signed electronically by turning in this paper to the CourseTools site using my kerberos password,

(fill in your full name here)

(fill in the date here).