Sociology 274: Social Statistics
MWF 3:00-3:50

“Statistics present us with a series of techniques that transform raw data into a form that is easier to understand and to communicate or, to put it differently, that make it easy for the data to tell their story.”
–Jan de Leeuw and Richard Berk

Instructor: Kelly Bergstrand
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Office: Social Sciences Building 436
Office Hours: Monday and Thursday 1:00-2:30 and by appointment

Course Description and Objectives
This course is an introduction to social statistics and overviews how to correctly use data to better understand our social world. It starts with how to find and manage datasets and how to depict and understand data, both graphically and with descriptive statistics. We then turn to hypothesis testing and confidence intervals and explore chi-square tests, t-tests and ANOVA. We conclude the course with several chapters on regression analysis, including logistic regression and understanding interaction effects. Throughout the course we will be applying statistical procedures to a sociological data set and at the end of the course students should be able to understand, produce, and report statistics on their own research projects. We will use the statistical software SPSS.

Course Goals:
- Be able to critically evaluate the data and statistics we come across in everyday life.
- Know how to describe data visually and with basic statistics.
- Have a clear understanding of the different ways to analyze data, when to apply certain types of analysis, and the assumptions underlying each procedure.
- Learn how to use statistical software and how to report and interpret statistical results.
- Be able to apply statistical knowledge to projects to produce accurate research.

Required Texts and Reading Materials

Additional reading assignments, announcements and class handouts will be posted on the course D2L site. To access the site, go to [http://d2l.arizona.edu](http://d2l.arizona.edu), click on the UANetID Login in the upper left corner, and then click on the course link. The course will be using SPSS software to conduct analyses.

**Prerequisites**

Students must have passed college algebra or an equivalent course in order to take this course. For questions regarding the prerequisite please contact the Sociology Department’s main office, Social Sciences Room 400 (520-621-3531).

**Course Requirements**

1. **Homework Assignments**: There will be a homework assignment due most weeks. These homework assignments will involve applying what we learn in class to sociological data and then reporting the results. Each Friday I will demonstrate how to use SPSS to do applied analysis with the concepts and procedures covered that week. The homework then will be due the following Wednesday. There will be eight homework assignments, worth 25 points each, and total these will constitute 50% of your grade.

2. **Mid-Term Exam**: The mid-term exam will cover material from lectures, homework assignments, and the readings. The exam will include multiple choice questions and short-answer questions. The mid-term exam will be worth 100 points and 25% of your grade.

3. **Research Project**: At the end of the semester, students will be responsible for developing a research question, finding a data set, applying methods of statistical analysis to the data, and reporting the results. Students will document this research process in a 5-10 page paper. I will distribute a handout in class that clearly outlines how to write up the research project and directs students to websites with datasets that can be downloaded (although students are welcome to find their own datasets). Additionally, after the mid-term (October 15th) students will need to submit a 1-2 page memo that identifies a research question and a dataset that can be used to answer the research question. This will provide me with an opportunity to provide feedback at an early stage. The final research project will be worth 100 points and 25% of your grade.

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<tr>
<th>Assignment</th>
<th>Points</th>
<th>Percent of Grade</th>
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<tbody>
<tr>
<td>Homework Assignments</td>
<td>200</td>
<td>50%</td>
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<tr>
<td>Mid-Term Exam</td>
<td>100</td>
<td>25%</td>
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<tr>
<td>Research Project</td>
<td>100</td>
<td>25%</td>
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<tr>
<td><strong>Total Points</strong></td>
<td>400</td>
<td>100%</td>
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**Grading scale for course**

- 90-100% A
- 80-89% B
- 70-79% C
- 60-69% D
- 59% or below E
Course Policies

Missed Exam
A make-up exam will be scheduled for students who have talked with the professor before the exam and have an approved absence or have had a documented illness/family emergency.

Late Work
Late work will be accepted but will drop one letter grade for each day past the due date that the assignment is turned in. For example, a paper due on Friday that would have received an A if turned in on time on Friday, will receive a B if turned in Saturday and a C if turned in Sunday.

ClassroomCourtesy and Respectful Discussion
Students are expected to arrive to class on time and to turn off any personal electronic devices (cell phones, iPods) during class. During class, students are expected to be respectful by listening carefully to others and not engaging in disruptive or distracting behavior. Every student has the right to disagree with opinions expressed by the professor or other students, however the student must respond in a courteous, respectful way that ensures a safe and tolerant classroom environment. Hostility, intimidation or derogatory comments absolutely will not be tolerated and students who do not act in a respectful manner will be asked to leave the class.

Academic Integrity
Any form of academic misconduct will not be tolerated. Students are expected to observe the University’s Code of Academic Integrity. This Code can be found at: http://deanofstudents.arizona.edu/codeofacademicintegrity.

Students with disabilities
Students with disabilities who require reasonable accommodations to fully participate in course activities or to meet course requirements must register with the Disability Resource Center. If you qualify for services through DRC, please bring your letter of accommodations to me as soon as possible.
Course Outline and Schedule

Week 1: Introduction

M Welcome and Introduction to the Course

W Introduction to Data: Finding and Managing Datasets
Reading: Linneman, Ch. 1 “Life in a Data-Laden Age” pp. 1-18

F Levels of Measurement and Types of Statistical Procedures
Reading: Linneman, pp. 18-25.

Statistical Software: SPSS
Reading: Linneman, “SPSS demonstrations” pp. 25-40.

Week 2: Describing Data: Tables and Graphs

M Frequency Distributions and Crosstabulations
Reading: Linneman, Ch. 2 “The Art of Visual Storytelling” pp. 46-62

W Graphs
Reading: Linneman, pp. 63-77

Homework 1 due at beginning of class

F Applied Analysis
Reading: Linneman, “SPSS demonstrations” pp. 77-86

Week 3: Basic Descriptive Statistics

M Mean, Median and Mode
Reading: Linneman, Ch. 3 “Summarizing Center and Diversity” pp. 92-102

W Variation
Reading: Linneman, pp. 102-128

Homework 2 due at beginning of class

F Applied Analysis
Reading: Linneman, “SPSS demonstrations” pp. 128-136
Week 4: Crosstabs and the Chi-Squared Test

M  Crosstabs and Expected Frequencies  
**Reading:** Linneman, Ch. 4 “Using Crosstabs to Talk About Populations” pp. 141-150

W  Chi-Squared Test  
**Reading:** Linneman, pp. 151-180

*Homework 3 due at beginning of class*

F  Applied Analysis  
**Reading:** Linneman, “SPSS demonstrations” pp. 181-184

Week 5: Inference: From Samples to Populations

M  Sampling Distribution and the Standard Error  
**Reading:** Linneman, Ch. 5 “Using a Sample Mean or Proportion to Talk about a Population” pp. 141-207

W  Confidence Intervals  
**Reading:** Linneman, pp. 207-220

*Homework 4 due at beginning of class*

F  Applied Analysis  
**Reading:** Linneman, “SPSS demonstrations” pp. 220-227

Week 6: T-tests and Analysis of Variance (ANOVA)

M  T-tests  
**Reading:** Linneman, Ch. 6 “Using Multiple Sample Means to Talk about Populations” pp. 231-240

W  ANOVA  
**Reading:** Linneman, pp. 240-255

*Homework 5 due at beginning of class*

F  Applied Analysis  
**Reading:** Linneman, “SPSS demonstrations” pp. 255-260
### Week 7: Bivariate Correlation and Regression

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<tr>
<th>Day</th>
<th>Topic</th>
<th>Reading</th>
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<tbody>
<tr>
<td>M</td>
<td>Covariance and Correlation Coefficients</td>
<td><em>Reading:</em> Linneman, Ch. 7 “Give Me One Good Reason Why” pp. 264-276</td>
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<td>W</td>
<td>Outliers, Explained Variation, and Predictions</td>
<td><em>Reading:</em> Linneman, pp. 276-293</td>
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<td><strong>Homework 6 due at beginning of class</strong></td>
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<tr>
<td>F</td>
<td>Applied Analysis</td>
<td><em>Reading:</em> Linneman, “SPSS demonstrations” pp. 293-295</td>
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### Week 8: Midterm and Examples

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<th>Day</th>
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<tr>
<td>M</td>
<td>Review for Midterm</td>
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<tr>
<td>W</td>
<td>Midterm</td>
<td><em>No Homework</em></td>
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<td>F</td>
<td>Understanding Regression Results in Articles</td>
<td><em>Reading:</em> Gordon: Ch 1. “Examples of Social Science Research Using Regression Analysis”</td>
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### Week 9: Inference and Hypothesis Testing

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<th>Day</th>
<th>Topic</th>
<th>Reading</th>
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<tr>
<td>M</td>
<td>Statistical Significance</td>
<td><em>Reading:</em> Linneman, Ch. 8 “Using Sample Slopes to Talk about Populations” pp. 303-317</td>
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<td><strong>1-2 page memo on proposed final research project due</strong></td>
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<tr>
<td>W</td>
<td>Hypothesis Testing</td>
<td><em>Reading:</em> Knoke, Bohrnstedt and Mee: Ch. 3 “Hypothesis Testing” pp. 88-100</td>
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<tr>
<td>F</td>
<td>Applied Analysis</td>
<td><em>Reading:</em> Linneman, “SPSS demonstrations” pp. 317-322</td>
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Week 10: Variables in Regression

M  Dichotomous and Categorical Independent Variables  
   Reading: Linneman, Ch. 9 “It’s All Relative” pp. 326-341

W  Control Variables  
   Reading: Linneman, Ch. 10 “Above and Beyond” pp. 348-358

   Homework 7 due at beginning of class

F  Applied Analysis  
   Reading: Linneman, “SPSS demonstrations” pp. 341-344 and 375-378

Week 11: Standardized Coefficients

M  Beta Coefficients  
   Reading: Linneman, Ch. 11 “Some Slopes are Bigger than Others” pp. 384-390

W  Examples of Standardization  
   Reading: Linneman, 390-396

   Homework 8 due at beginning of class

F  Applied Analysis  
   Reading: Linneman, “SPSS demonstrations” pp. 397-398

Week 12: Interaction Effects

M  Interaction Effects  
   Reading: Linneman, Ch. 12 “Different Slopes for Different Folks” pp. 402-425

W  Holiday Break

F  Holiday Break

Week 13: Logistic Regression

M  Logistic Regression  
   Reading: Linneman, Ch. 13 “Explaining Dichotomous Outcomes” pp. 435-450

W  Odds Ratios  
   Reading: Linneman, pp. 450-458

F  Applied Analysis  
   Reading: Linneman, “SPSS demonstrations” pp. 458-461
Week 14: Conclusion

M Course Overview and Conclusion

W Final Research Project Due