

Industrial Relations Center
Carlson School of Management
UNIVERSITY OF MINNESOTA

Using Data and Metrics in Human Resources and Industrial Relations

HRIR 8011 (4 credits)

Fall 2005

Lecture

1:45-3:25 PM
Tuesdays and Thursdays
1-115 CarlSMgmt (3M Auditorium)

Lab

section 2: 8:00-9:40 AM; section 3: 3:45-5:25 PM
Tuesdays
L-117 CarlSMgmt

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Office Hours:

Tuesday 12:30-1:30 PM;
Thursday 8:30-9:30 AM;
and by appointment

Monday 1:00-2:00 PM;
Thursday 12:30-1:30 PM;
and by appointment

This course presents the logic and applications of various methods of data analysis as a foundation for using data and metrics in HRIR decision-making and for analyzing issues and problems in HRIR. These methods include both descriptive and inferential statistics, especially hypothesis tests and confidence intervals. Statistics considered include the mean, variance, correlation, and the results of regression models. Identification of the appropriate analytical technique for analyzing a variety of problems will be emphasized. Also emphasized are potential pitfalls from using overly simple or inappropriate techniques. The course includes an introduction to HRIR metrics.

Course Goals: The basic goals of this course are to develop:

- An understanding of how data and metrics are used in HRIR decision-making,
- An understanding of the logic underlying statistical inference;
- An understanding of basic empirical strategies available to help answer problems/questions in human resources and industrial relations;
- Computer skills for data analysis; and
- A foundation of knowledge in preparation for other courses.

Required Textbook (available at the Coffman Union Bookstore)

Andrew F. Siegel, *Practical Business Statistics*, Fifth Edition (Boston: McGraw-Hill/Irwin, 2003).

Grading

Problem Sets	20 %
Exam One.....Thursday, October 13, 2005	20 %
Descriptive Metrics Report.....Thursday, October 20, 2005	10 %
Exam Two	Thursday, November 17, 2005.....20 %
Analytical Prescriptive Report.....Tuesday, December 13, 2005.....	10 %
Final Exam	Tuesday, December 20, 2005.....20 %
	(8:00-10:00 AM)

It is important not to fall behind and to attend every lecture. Questions are encouraged. The instructor reserves the right to lower a student’s grade due to excessive absences and other disruptive behaviors. The lab sessions are “virtually required.” A few students may know the material well enough to afford not to attend the lab sessions, but for nearly everyone, the lab sessions are a critical component of being successful in this course.

Problem Sets

There are six problem sets. Each assignment is on the HRIR 8011 website at www.hrir8011.info. Each problem set is due in your TA’s mailbox in Room 3-300G by 4:30 PM on the date specified on the course website. Problem sets that are turned in by 4:30 PM the following day will be penalized 10 points. No homework will be accepted more than 24 hours late. The problem sets will be graded by your TA. If your problem sets are neat, legible, and show your work, the TA can give partial credit for incorrect answers when appropriate.

Some of the problem sets will require the use of a computer and the TAs will teach you how to use Excel for statistical analyses. You can use Excel’s data analysis add-in or StatPad, another add-in included on the textbook’s CD. For additional help, use *The Excel Guide* on the CD to accompany Excel’s built-in data analysis add-in or use the StatPad manual (also on the CD) with StatPad.

He uses statistics like a drunken man uses a lamppost – for support rather than illumination.
Andrew Lang (1844-1912)

Exams

The exams will cover material from lecture, the text, and the problem sets. For each exam you are allowed to bring one sheet of 8½ x 11 paper with notes and formulas into the exam. You will also need a simple calculator. Graphing calculators, PDAs, cell phones, and other electronic devices are prohibited. Probability tables will be provided. Books, notebooks, and any other materials are prohibited.

Reports: A Descriptive Metrics Report and an Analytical Prescriptive Report

Each student must submit two written reports using an employee climate survey from “Chelsea Components,” a fictitious maker of computer components. Each report should be written as a memo to the Senior Vice President for Operations for Chelsea Components (who also happens to be your TA). These are individual projects and each student must submit unique, original reports that are each 5-8 double-spaced pages with 1” margins and normal (not large) font. Section headings are encouraged. Be careful to consistently and accurately credit all print and electronic sources used—plagiarism will not be tolerated. APA style is acceptable. Computer output is not acceptable for results tables.

The Descriptive Metrics Report is due at the beginning of class on Thursday, October 20, 2005. The major goal of this report is to update the Senior VP for Operations on some aspects of the employee climate for some groups of Chelsea Components employees (you choose the aspects and the groups). Be sure to use descriptive statistics to establish some baseline metrics and to also compare these metrics across different employee groups. Your report should also include some possible action items and citations for at least five academic journal articles that are relevant to your baseline metrics. These action items can be somewhat speculative or suggestive—you will develop this prescriptive angle in your second report.

The Analytical Prescriptive Report is due at the beginning of class on Tuesday, December 13, 2005. The major goal of this report is to make proposals to the Senior VP for Operations for improving organizational performance. You should build off of your baseline metrics from your Descriptive Metrics Report to combine a review of the academic literature with a rigorous statistical analysis using the multivariate techniques learned in the course. In other words, do inferential (rather than descriptive) statistics support the recommendations you proposed in your first report? Describe why or why not, and therefore what should and should not be done organizationally.

Many more important details on these reports are provided on the HRIR 8011 website at www.hrir8011.info.

Man hat behauptet, die Welt werde durch Zahlen regiert: das aber weiss ich, dass die Zahlen uns belehren, ob sie gut oder schlecht regiert werde.

Johann Wolfgang von Goethe (1749-1832)

Classroom Expectations

Professors and students are expected to behave professionally at all times. The professors will respect the students, and each student is expected to be respectful of the professors and their fellow students. Professional behavior includes, but is not limited to, the following:

Honesty. Do your own work. Plagiarizing from other students, books and journals, the internet, and other sources is a serious offense and is not acceptable. Be sure to fully cite your work. Make honest contributions to your group projects (do not be a free rider).

Preparation. Come to class prepared to listen, learn, and participate. Attend group meetings prepared to make full contributions and to help other group members make valuable contributions.

Politeness. Ask questions and contribute to class discussions in a positive, inclusive, and respectful manner. Respond to dissenting views with respect and reason. Respect your classmates and your group members.

Attentiveness. Turn off and do not answer your cell phone. Laptop computers are welcome for class-related purposes such as note taking. Other activities are inappropriate and exhibit disrespect towards the instructors and other students. Limit individual conversations, eating, and other distractions to break times. Focus on the tasks at hand during group meetings.

Timeliness. Complete assignments on time. Be on time for group meetings and for class. Unforeseen events occur and students have multiple demands on their time (such as interviews). If you must arrive late or leave early, do so without walking in front of any speakers. Provide advance notice to the instructors whenever possible.

There are three kinds of lies: lies, damned lies and statistics.

Benjamin Disraeli (1804-1881)

Practitioner Guest Lecturers

While the regular lectures focus on developing an understanding of the principles of data analysis and statistical inference, it is also important to see how these tools are used in the professional practice of human resources and industrial relations. Therefore, occasional guest lectures will occur on select Thursdays from 3:45 to 5:25 PM. A preliminary schedule is listed below. Watch for updated information on the HRIR 8011 website. **These guest lectures are an essential part of this course and attendance is expected.**

Thursday, September 15, 2005

TBA, Home Depot

"Using Data to Drive HR Decisions at Home Depot"

Room TBA

Thursday, September 22, 2005

TBA, DuPont

"Six Sigma in Action in HR at DuPont"

Room TBA

Thursday, December 1, 2005

TBA

HR Metrics

This course provides a foundation for understanding how to use data and HR metrics in professional practice. This requires a deep grounding in statistical issues such as measurement, description, sampling, and inference. As such, most of the course material involves business statistics. Students are encouraged to supplement this course material with readings on HR metrics, such as:

Steve Bates, "The Metrics Maze," *HR Magazine* 48 (December 2003), pp. 50-55.

Barbara Davison, "Reviewing Corporate Financials Shows How HR Measures Up," *Employment Relations Today* 30 (Spring 2003), pp. 7-17.

Robert J. Grossman, "Measuring Up: Appropriate Metrics Help HR Prove Its Worth," *HR Magazine* 45 (January 2000), pp. 28-35.

Mark A. Huselid, Brian E. Becker, and Richard W. Beatty, *The Workforce Scorecard: Managing Human Capital to Execute Strategy* (Boston: Harvard Business School Press, 2005).

Dave Ulrich and Wayne Brockbank, *The HR Value Proposition* (Boston: Harvard Business School Press, 2005).

Course Outline

* Denotes recommended; everything else is required

Introduction

1. Course Requirements and Expectations (week 1)
2. HR Metrics (week 1)

See previous page

Part I: Descriptive Statistics

1. Foundations: Data and Measurements (week 2)

* Jessica M. Utts, *Seeing Through Statistics*, Second Edition (Pacific Grove, CA: Duxbury, 1999), chapter 3.

2. Numerical and Graphical Summary Measures (weeks 2-3)

Siegel, chapters 1-5

3. Relationships (Correlation and Regression) (weeks 3-5)

Siegel, pp. 433-469 and pp. 515-525.

★★ *Exam 1*, Thursday, October 13, 2005 (week 6) ★★

Part II: Inferential Statistics

1. Foundations: Probability Distributions (week 6)

Siegel, chapter 7 (except sections 7.2 and 7.5)

2. Foundations: Sampling (week 7)

* Jessica M. Utts, *Seeing Through Statistics*, Second Edition (Pacific Grove, CA: Duxbury, 1999), chapter 4.

3. Sampling Distributions and Point Estimation (week 7)

Siegel, chapter 8 (except pp. 306-315)

4. Interval Estimation (Confidence Intervals) (week 8)

Siegel, chapter 9 and pp. 467-473

5. Hypothesis Tests (weeks 9-10)

Siegel, chapter 10, pp. 473-481, and pp. 530-537.

★★ Exam 2, Thursday, November 17, 2005 (week 11) ★★

6. ANOVA (weeks 11-12)

Siegel, chapter 15

7. Categorical Data (week 12)

Siegel, chapter 17

Part III: Regression Analysis: Important Topics and Extensions

1. Prediction (week 13)

Siegel, pp. 481-489

2. Specification Issues (weeks 13-14)

Siegel, chapter 12

3. Dummy Dependent Variables (week 14)

* John W. Budd and Angela M. Brey, "Unions and Family Leave: Early Experience under the Family and Medical Leave Act," *Labor Studies Journal* 28 (Fall 2003), pp. 85-105.

4. Meta-Analysis (week 14)

- * Christos Doucouliagos and Patrice LaRoche, “What Do Unions Do to Productivity? A Meta-Analysis,” *Industrial Relations* 42 (October 2003), pp. 650-691.
- * Michael Ricketta, “Attitudinal Organizational Commitment and Job Performance: A Meta-Analysis,” *Journal of Organizational Behavior* 23 (May 2002), pp. 257-266.
- * Jessica M. Utts, *Seeing Through Statistics*, Second Edition (Pacific Grove, CA: Duxbury, 1999), chapter 24.

Part IV: Statistics in Action (in addition to the guest lecturers)

1. Quality Control (week 14)

Siegel, chapter 18

2. Metrics Revisited (week 15)

★★ <i>Final Exam: Tuesday, December 20, 2005 (8:00–10:00 AM)</i>
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Tentative Lab Schedule
(subject to change)

Week 1	September 6, 2005	TA Introduction Reference Room Introduction (Brenda Wolfe)
Week 2	September 13, 2005	8:00am: No Lab 3:45pm: Introduction to Excel (for those who need it from both sections)
Week 3	September 20, 2005	Using Excel—Data Manipulation and Descriptive Statistics
Week 4	September 27, 2005	Using Excel—Correlation and Simple Regression
Week 5	October 4, 2005	Using Excel—Multiple Regression
Week 6	October 11, 2005	8:00am: No Lab 3:45pm: Exam Q&A (room TBA)
Week 7	October 18, 2005	Reviewing correct solutions for the exam
Week 8	October 25, 2005	Normal Distribution and Sampling Distribution
Week 9	November 1, 2005	Confidence Intervals
Week 10	November 8, 2005	Hypothesis Testing
Week 11	November 15, 2005	8:00am: No Lab 3:45pm: Exam Q&A (room TBA)
Week 12	November 22, 2005	Reviewing correct solutions for the exam
Week 13	November 29, 2005	Using Excel—Categorical Data and ANOVA
Week 14	December 6, 2005	Regression Topics
Week 15	December 13, 2005	No lab

Revision Date: September 1, 2005.

For the latest schedule, see the HRIR 8011 website at www.hrir8011.info

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STATEMENT ON COURSE REQUIREMENTS

1. The instructor will determine the conditions, if any, under which an "Incomplete" will be assigned instead of a grade. The instructor may set dates and conditions for makeup work, if it is to be allowed.
2. A student may not negotiate the submission of extra work in an attempt to raise his or her grade unless the instructor has made such opportunities available to all students.
3. Academic misconduct is a very serious issue with potential consequences ranging from failure in the course in question to dismissal from the University. Academic misconduct is defined broadly as any act that violates the rights of another student in academic work or that involves misrepresentation of your own work. This includes (but is not limited to) cheating on assignments or examinations; plagiarizing, which means representing as your own work any part of work done by another; submitting the same paper, or substantially similar papers, to meet the requirements of more than one course without the approval and consent of all instructors concerned; depriving another student of necessary course materials; or interfering with another student's work. Instructors may define additional standards beyond these.
4. Students with disabilities that affect their ability to participate fully in class or to meet all course requirements should bring this to the attention of the instructor during the first week of class so that appropriate accommodations can be made. Similarly, students for whom English is not their native language may request accommodation (such as additional time for examinations).
5. Student complaints or concerns about some aspect of a course sometimes arise. If possible, it is hoped that these can be resolved through an informal meeting between student and instructor. However, if a student feels this is not feasible, or if such discussion does not remedy the problem, the student may consult with the Director of Graduate Studies in 3-300 Carlson School of Management (if a graduate student) or the Director of the Industrial Relations Center, also in 3-300 Carlson School of Management (if an undergraduate student).
6. University policy prohibits sexual harassment. Copies of the University policy on sexual harassment are available at 419 Morrill Hall. Complaints about sexual harassment should be reported to the University Office of Equal Opportunity at 419 Morrill Hall.
7. Materials for this course are available in alternative formats upon request. Please contact the Director of Graduate Studies, 3-300 Carlson School of Management, (612) 624-2500.