

Center for Human Resources and Labor Studies  
Carlson School of Management  
UNIVERSITY OF MINNESOTA

Using Data and Metrics in Human Resources and Industrial Relations

HRIR 8011 (4 credits)

Fall 2010

*Lecture*

1:45-3:25 PM  
Mondays and Wednesdays  
2-213 Carlson School

*Lab*

section 2: 8:00-9:40 AM Thursdays  
section 3: 9:55-11:35 AM Thursdays  
L-117 Carlson School

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Office Hours:  
Mondays 12:30-1:30 PM and  
Fridays 10:30-11:30 AM  
(see moodle calendar for exceptions),  
and by appointment

Office Hours:  
Wednesdays 8:45-9:45 AM  
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: By the end of this course, you should be able to:

- **Understand** the logic underlying statistical inference.
- **Use** statistical software to manipulate, describe, and analyze data.
- **Identify** appropriate data, metrics, and statistical procedures for making wise HR decisions.
- **Describe data** and **make inferences** using appropriate statistical techniques in support of sound HR decision-making.
- Appropriately **communicate** statistical results and their limitations.
- **Understand** journal articles and other research products in HRIR that use traditional econometric and psychometric methods.

## Grading and Assignments

Problem Sets (Five) .....	20 %	
Descriptive Statistics Exam .....	Thursday, October 21, 2010 .....	25 %
	(time TBA)	
Case Report I .....	Friday, October 29, 2010 .....	15 %
Case Report II .....	Friday, December 3, 2010.....	15 %
Inferential Statistics Exam .....	Saturday, December 18, 2010.....	25 %
	(8:00-10:00 AM, pending official approval)	

Each student is responsible for his/her own learning. **It is important not to fall behind and to attend every lecture. Questions are encouraged in class and during office hours.** 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. The lab schedule is posted on the HRIR 8011 moodle site.

### Problem Sets

There are five problem sets. Each assignment is on the HRIR 8011 moodle site. Each problem set is due at the beginning of class on the date specified on the problem set. Problem sets that are turned in by 1:30 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 the 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 TA will teach you how to use Excel and its data analysis toolpak for statistical analyses. Gaining general proficiency with Excel will likely be useful for your career, but if you are familiar with another statistical package, you can use it if you want.

### 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.

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

## Case Reports

Two cases will be assigned as group projects. These cases are an important way to further your understanding of how statistical analysis—when used appropriately!—can be important in HR decision-making. Details for these two case reports will be posted on the HRIR 8011 moodle site.

## Textbooks

### Required

David S. Moore, George P. McCabe, William M. Duckworth, and Layth C. Alwan, *The Practice of Business Statistics: Using Data for Decisions*, 2nd ed. (New York: W.H. Freeman and Company, 2009) [available at the Coffman Union Bookstore and on reserve in the Herman Library].

### Recommended for those who want another (highly-readable) perspective

Jessica M. Utts, *Seeing Through Statistics*, Second Edition (Pacific Grove, CA: Duxbury, 1999) [available on reserve in the Herman Library].

Note: Working on extra problems from the textbook is a good learning strategy so the solutions manual that contains the answers to all of the odd-numbered problems in *The Practice of Business Statistics* is also on reserve in the Herman Library.

## 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 expected to supplement this course material with readings on HR metrics.** For starters, the HRIR 8011 moodle site has links to some short articles. For more in-depth books on HR metrics, see the following (all are available on reserve in the Herman Library):

Jac Fitz-enz, *The New HR Analytics: Predicting the Economic Value of Your Company's Human Capital Investments* (New York: AMACON, 2010).

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).

Infohrm Group, Inc., *The Human Capital Metrics Standard* (Washington, DC, 2006).

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

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

Benjamin Disraeli (1804-1881)

## 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 or use your smartphone. 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. 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.

*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)

## Course Outline

\* Denotes recommended; everything else is required

### ***Introduction***

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

Read the “Inform 100” (on moodle), sections 1 and 2 of *The Metrics Standard* (on reserve), and some additional articles on HR Metrics (see the HRIR 8011 moodle site for links to some good choices, or search for your own).

### ***Part I: Descriptive Statistics***

3. Numerical and Graphical Summary Measures (week 3)

David S. Moore, George P. McCabe, William M. Duckworth, and Layth C. Alwan, *The Practice of Business Statistics: Using Data for Decisions*, 2nd ed. (New York: W.H. Freeman and Company, 2009) [hereafter, Moore et al., *The Practice of Business Statistics*], chapter 1.

\* Jessica M. Utts, *Seeing Through Statistics*, Second Edition (Pacific Grove, CA: Duxbury, 1999) [hereafter, Utts, *Seeing Through Statistics*], chapters 7-9.

4. Relationships (Correlation and Regression) (weeks 4-6)

Moore et al., *The Practice of Business Statistics*, chapter 2, pp. 569-81.

- Utts, *Seeing Through Statistics*, chapters 10-11.

<p>★★ <i>Descriptive Statistics Exam</i> ★★</p> <p>Thursday, October 21, 2010 (week 7), time and location TBA</p>
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### ***Part II: Inferential Statistics***

5. Foundations: Sampling and Measurement (week 6)

Moore et al., *The Practice of Business Statistics*, chapter 3.

\* Utts, *Seeing Through Statistics*, chapters 3 and 4.

6. Foundations: Probability and Sampling Distributions (weeks 7-8)

Moore et al., *The Practice of Business Statistics*, chapter 4.

\* Utts, *Seeing Through Statistics*, chapter 18.

7. Confidence Intervals (weeks 9-10)

Moore et al., *The Practice of Business Statistics*, pp. 359-69, 423-27, 493-97, 510-14, 582-86.

\* Utts, *Seeing Through Statistics*, chapter 19.

8. Hypothesis Tests (weeks 10-11)

Moore et al., *The Practice of Business Statistics*, pp. 377-402, 428-36, 451-56, 499-501, 515-18, 582-86.

\* Utts, *Seeing Through Statistics*, chapters 21-23.

9. Categorical Data (week 12)

Moore et al., *The Practice of Business Statistics*, chapter 9.

\* Utts, *Seeing Through Statistics*, section 12.2.

**Part III: Regression Analysis: Important Topics and Extensions**

10. Regression Topics and Extensions

The ANOVA Table and Partial F Tests (week 13)

Moore et al., *The Practice of Business Statistics*, pp. 604-8, 644-50.

Specification Issues (weeks 13-14)

Moore et al., *The Practice of Business Statistics*, pp. 654-69.

11. Prediction and Forecasting (week 14)

Moore et al., *The Practice of Business Statistics*, pp. 594-604.

<i>Inferential Statistics Exam</i>		
★★	Saturday, December 18, 2010, 8:00-10:00 AM (location TBA) (pending official approval)	★★

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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. Carlson School students are expected to understand and uphold the Carlson School Code of Conduct. Any violation of the Code of Conduct will not be tolerated and appropriate action will be taken.
5. 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).
6. 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 the HRIR M.A. Program in 3-300 Carlson School of Management (if a graduate student) or the Director of the Center for Human Resources and Labor Studies, also in 3-300 Carlson School of Management (if an undergraduate student).
7. 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.
8. Materials for this course are available in alternative formats upon request. Please contact the Director of the HRIR M.A. Program, 3-300 Carlson School of Management, (612) 624-2500.