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## UP 740: Data Analysis Methods

Department of Urban Planning  
University of Wisconsin-Milwaukee

Spring 2008  
Thursdays 9:00 – 11:40  
AUP 144

**Professor Virginia Carlson**

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**D2L** Class site is at <http://d2l.uwm.edu/>

### Course Objectives

At the end of the course, participants should be able to demonstrate understanding of various statistical concepts in planning and policy analysis, identify question(s) and appropriate statistical techniques for a given issue, identify and formulate indicators required for the analysis of a policy, formulate operational definition of concepts, apply the descriptive measures of data analysis; and perform analysis of data using measures of relationships.

### TEXTS AND READINGS

#### **Required**

Neil J. Salkind *Statistics for People Who (Think They) Hate Statistics: The Excel Version*. Sage Publications 2007. (Available at Third Coast Design Centre.)

Larry D. Schroeder et. al., **Understanding Regression Analysis: An Introductory Guide**. Sage Publications. Availability TBD.

#### **Other Useful Resources**

A really really great book that I've used for over twenty years is Sonia Wright *Quantitative Methods and Statistics (Sage Publications 1979)*. It's out of print but if you can find a used copy you'll be very happy you did so. It has short, easily understood chapters on most everything related to beginning statistics. You'll use

it as a reference for a long while. We'll be using excerpts from it from time to time which will be posted on D2L as needed.

Another great book is *The Chicago Guide to Writing about Numbers* by Jane Miller. I've uploaded an excerpt from her book (page 7) to the D2L site, but it might be worth an investment. It's a guide to the standard ways in which numbers are referred to in prose, how to "write numbers" gracefully, how to choose what to present and what not to present, etc.

A resource for writing. Purdue University has put together a website about everything having to do with writing style – tone, grammar, professional writing, how to avoid jargon and informality, etc. It's called OWL (Online Writing Lab).

<http://owl.english.purdue.edu/owl/>

## OTHER MISCELLANEOUS

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**All assignments are to be submitted electronically** to the "Desire to Learn" website unless otherwise specified. Please note that as of this writing, D2L and SARUP use a Microsoft Office Suite that includes the 2002 version of Excel and Word. I'm afraid I'm not equipped to handle later versions of this software, or any MAC products (sorry). Please make sure I can read what you drop in the dropbox.

### ***A Note on Oral and Written Communication***

The most important skills you can develop in the next two years are written and oral communication. You will be expected to do at least one oral presentation.

WRITING EFFECTIVELY IS EXTREMELY IMPORTANT TO YOUR PROFESSIONAL CAREER, SO WE MAKE IT IMPORTANT HERE. In short, writing "counts." A great book for reviewing your grammar and style is a publication by the Modern Language Association: *Line by Line: How to Improve Your Own Writing*. Also see the website put together by Purdue University –<http://owl.english.purdue.edu/owl/>. Especially:

Grammar and punctuation:

<http://owl.english.purdue.edu/handouts/grammar/index.html>

Memos:

<http://owl.english.purdue.edu/owl/resource/590/01/>

### ***Expectations and Ethics***

The standard adopted by most graduate programs, including ours, is that students spend about three hours a week outside of class on class assignments per every hour spent in class. Therefore, for this three-hour class, you are expected to spend approximately nine hours a week outside of class in preparation. Class assignments are based on this expectation. In addition, the nature of graduate education is to learn from each other and to think broadly and conceptually, rather than a more rote "curriculum delivery" that sometimes characterizes

undergraduate education.

Note that late assignments are penalized one letter grade for every day late. Please be considerate of your fellow students who have worked to get their assignments in on time.

**Do not plagiarize (steal from printed sources, word for word) or cheat (collaborate with other students on individual assignments). Unless otherwise stated, all the assignments are to be completed by the individual student ONLY. If you cheat or plagiarize, you will receive a failing grade for this course. NO EXCEPTIONS.**

## **GRADING**

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**Grades will be based on the following assignments. In addition, there will be suggestions throughout the semester for ungraded work you will want to do “for practice.” In general, a good idea is to do the practice sections at the end of every Salkind chapter.**

<b>Homework</b>	<b>40</b>
<b>(8 points times 5 graded assignments)</b>	
<b>Midterm</b>	<b>30</b>
<b>Final paper</b>	<b>30</b>

Homework assignments will generally deal with the material covered over two or three class sessions. The assignment will be given out ahead of time so that as we go through the material in class, you'll have the homework in hand and can be working on it as we go over the relevant material.

The mid-term will be an in-class, open book test.

The final paper asks that you choose from a number of available data sets to explore a policy-related problem using at least one inferential technique. I will make several data sets available; if there is another particular data set that you'd like to work with and that you have access to, feel free to discuss with me.

## CLASS SCHEDULE

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### 1. January 24 – Introduction

#### Readings

Salkind, Chapters 1, 1a, 1b

D2L, Excerpt from *The Chicago Guide to Writing about Numbers* (chapter 7) by Jane Miller.

Review Appendix A to refresh or learn Excel skills.

If the Analysis Tool Pak is not visible and you are on a UWM computer, go to Tools/Add-Ins in the drop-down menu and ask for the Analysis Tool Pak

#### Assignments

**Not graded:** Excel practice at the back of the Salkind chapters 1 – 1b. If you don't know these Excel techniques, learn them now, because we'll be using them throughout the class.

**Homework number 1 (Graded):** A version of exercise number 2 on page 18 of Salkind – *Summarize and Critique Article*.

### 2. January 31 – Kinds of data – NOIR, discrete vs. continuous, reliability, validity

#### Readings

Salkind, Chapter 16 (skim; especially skim/skip sections on measuring reliability and validity)

D2L, Excerpt from Marty Schmidt *Understanding and Using Statistics* (Chapter 1: Data, the Raw Material of Statistical Analysis)

D2L, Excerpt from Sonia Wright *Quantitative Methods and Statistics* (Chapter 3: Measurement)

#### Assignments

Homework number 1 (Summarize and Critique Article) due

Homework number 2 (Describing Homeownership) handed out

### 3. February 7 - Frequency distributions and two-way frequency tables (“Cross Tabs”)

#### Readings

Salkind chapter 4

D2L, Excerpt from Gene Lutz, *Understanding Social Statistics* (Chapter 2: Description through Tables and Graphs)

#### Assignments

### 4. February 14 – More on frequency distributions and making charts and graphs

#### Readings:

Salkind chapter 4

D2L, Excerpt from Gene Lutz, *Understanding Social Statistics* (Chapter 2: Description through

Tables and Graphs)

### **Assignments**

#### **5. February 21 — Measures of Central Tendency**

##### **Readings:**

Salkind, Chapter 2

##### **Assignments**

Homework number 2 (Describing Homeownership) due

Homework number 3 (Describing Distributions) is handed out

#### **6. February 28 – Measures of Variability**

##### **Readings:**

Salkind, Chapter 3

##### **Assignments**

#### **7. March 6 – Correlation Coefficients**

##### **Readings**

Salkind, Chapters 5 and 13

##### **Assignments**

#### **8. March 13– Midterm Exam**

##### **Assignments**

Homework number 3 (Describing Distributions) is due

#### **9. March 27 - Hypothesis Testing; Inferential Statistics; Discussion of final papers**

##### **Readings**

Salkind, Chapter 6

##### **Assignments**

Homework number 4 (Associations and Predictions) given out

#### **10. April 3 - Probability, normal curves and statistical significance**

##### **Readings**

Salkind, Chapters 7 and 8

## Assignments

### **11. April 10 - T-Tests and Chi-square**

#### **Readings**

Salkind, Chapters 9 and 10

Salkind, 15 on Chi-Square

#### **Assignments**

Homework number 4 (Associations and Predictions) is due

Homework number 5 (Group Differences) is given out

### **12. April 17 - ANOVA**

#### **Readings**

Salkind, Chapter 11

### **13. April 24 – Prediction, Regression and Establishing Causality**

#### **Readings:**

Salkind, Chapter 14

TBA

Homework number 5 (Group Differences) is due

### **14. May 1 – Regression Continued**

#### **Readings:**

TBA

### **15. May 8 – Regression Continued**

#### **Readings:**

TBA

Final paper due Wednesday May 14<sup>th</sup> at 9:30 am.