

SOCIOLOGY 702 FALL, 2009
INTRODUCTION TO STATISTICS AND DATA ANALYSIS

Professor Michael A. Malec
Office: McGuinn 402
Office Hours: TBA
Mailbox is in McGuinn 426
Phone: 617-552-4131
E-mail: malec@bc.edu

Assistant: Chris Kelley
McGuinn 410-A
Office Hours: TBA
Mailbox in room 410 is #11
kellyoo@bc.edu

COURSE REQUIREMENTS:

1. There will be 7-9 homework assignments. These will involve computer analysis using the Statistical Package for the Social Sciences (SPSS). This work will constitute thirty percent (30%) of your course grade. It is **ESSENTIAL** that this work is done **ON TIME**, which I define as 3:00 pm on the date due, unless otherwise noted. Late papers will lose 1 point (of a possible 10) of the grade per calendar day. You might also want to download the "SPSS Brief Guide 16.0.pdf" from this web page:

<http://www.bc.edu/software/applications/research/SPSS16.html>

The "Brief Guide" can be used as a reference manual later in the course.

2. Each student will prepare two 9-12 page papers based on independent analysis of data on a topic chosen by the student. A more detailed description of this requirement will be given later.

Paper 1 is due October 16 at 3:00 PM. (30% of course grade)

Paper 2 is due December 14 at 3:00 PM. (40% of course grade)

Late papers will be penalized 3 (or 4) points (of a possible 30 or 40) per calendar day.

NOTE: For both Papers 1 and 2, except for catastrophic medical or grievous personal reasons, I will **NOT** grant extensions.

COURSE TEXTS:

Required: Denise Polit, *STATISTICS AND DATA ANALYSIS*. 2nd ed. Pearson, 2010.

Recommended Supplementary Reading:

Marija Norusis: *SPSS 16.0 STATISTICAL PROCEDURES COMPANION* (or version 15.0 or 13.0, etc.).

Or Norusis: *SPSS 14.0 GUIDE TO DATA ANALYSIS* (or version 16.0 or 13.0, etc.).

Rebecca M. Warner, *APPLIED STATISTICS* (Sage: 2008).

Several other books may be of use for reference purposes and are on reserve in O'Neill:

J. Levin & J. Fox, <i>ELEMENTARY STATISTICS IN SOCIAL RESEARCH</i>	HA29.L388
J. Hedderson, <i>SPSS MADE SIMPLE</i>	HA32.H43
Michael A. Malec, <i>ESSENTIAL STATISTICS FOR SOCIAL RESEARCH</i> (2nd ed.)	H61.M4224
<i>GENERAL SOCIAL SURVEYS: CUMULATIVE CODEBOOK</i>	HN29.N33
Denise F. Polit <i>DATA ANALYSIS AND STATISTICS</i>	RT81.5 .P62 1996
T. Smith and B.J. Arnold, <i>ANNOTATED BIBLIOGRAPHY OF PAPERS</i>	

TOPICS AND READINGS

Dates are subject to change

Additional topics may be added as time allows

1. INTRODUCTION; USING SPSS (Week of Sept. 8)

Objectives: to learn some of the basics of SPSS programming; to submit an SPSS run.

Reading: Handouts as assigned or distributed; Polit, Chs. 1-2 ;
Warner, Chs. 1-2, and 4; Norusis Guide 14.0, Cs. 1-2; Norusis Companion 16.0,
Chs. 1-2 and 7

2. DESCRIPTIVE STATISTICS (Sep. 15, 22)

Objectives: to be able to use, and interpret the output of, the **FREQUENCIES** and **DESCRIPTIVE** procedures in SPSS.

Topics Considered: level of measurement (nominal, ordinal, interval, ratio), histograms, measures of central tendency, measures of dispersion, percentiles, Z scores, mean, median, mode, variance, standard deviation, standard error, skewness, range, the normal distribution. Other topics as deemed appropriate.

Reading:

Polit, Chs. 3 and 5;
Warner, Chs. 1, 2, and 4; Norusis Guide Ch. 5; Norusis Companion, Chs 3-6 and 10; Levin & Fox (L&F), Chs. 1-6 (esp. 5 and 6); Malec, Chs. 1-4

3. DIFFERENCES IN MEANS (Sept. 29, Oct. 6, 13, 20)

Objectives: to be able to use, and interpret the output of, the **T-TEST** and **ONEWAY** procedures.

Topics Considered: probability; sampling distribution, samples vs populations, simple random samples vs other types of samples; the research hypothesis, the null hypothesis, directional vs nondirectional research hypotheses; alpha and the critical region; Type I vs Type II error; statistical significance vs substantive significance, sampling distribution of the mean, confidence intervals, one-tailed vs two-tailed tests; the t-test; equal (or pooled)

variance estimate vs unequal (or separate) variance estimate; simple one-way analysis of variance. Other topics as deemed appropriate.

SC702 Syllabus, Fall, 2009

Reading:

Polit, Chs. 6-7;
Warner, Chs. 3, 5 and 6; Norusis Guide Cha. 10-14; Norusis Companion, Chs. 7-9; L&F, Chs. 10 and 11; Malec, Ch. 7

NOTE: Paper 1 is due Friday, October 16 at 3:00 PM (30% of course grade). Late papers will be penalized 3 points (of a possible 30) per calendar day.

4. CROSSTABULATION & MEASURES OF ASSOCIATION (Oct. 27, Nov. 3, 10)

Objectives: to be able to use, and interpret the output of, the **CROSSTABS** procedure, to understand the distinction between a measure of association and a test of significance, to understand the concept of statistical inference and the uses and misuses of tests of significance.

Topics Considered: measures of association (nominal measures, Chi-Square, PRE measures, ordinal measures; the elaboration paradigm (explanation, interpretation, specification, spurious relationships, suppresser variables); main and interaction effects in crosstabs tables. Other topics as deemed appropriate.

Reading:

Polit, Ch. 8 (to p. 178 only);
Warner, Ch. 8 and section 10.12; Norusis Guide Ch. 17 to p. 377), 18 (pp. 400-402) and 19; Norusis Companion, Ch. 10 (also 447-451); Malec, Ch. 8, 9 (pp. 137-154), 11 (pp. 184-193); L&F, Chs. 7-9, 12, and 13 (pp. 330-354)

5. PEARSON CORRELATION COEFFICIENT (r), PARTIAL CORRELATION, SCATTERPLOTS, AND SIMPLE REGRESSION (Nov. 17, 24, Dec. 1)

Nov. 26 is Thanksgiving – no class.

Objectives: to be able to use, and interpret the output of, the **CORRELATIONS** and **PARTIAL CORR** procedures.

Topics Considered: the Pearson correlation coefficient, R-square, slope, intercept, the equation for a regression line, predicted value vs actual value, standard error of estimate,

use and interpretation of scattergrams, partial correlation, higher order partials. Other topics as deemed appropriate.

SC702 Syllabus, Fall, 2009

Reading:

Polit, Ch. 9;
Warner, Ch. 7, 9 and 10.1-10.11, also skim Ch. 11; Norusis Guide Ch. 20;
Norusis Companion Chs. 11-12 and pp. 237-254; L&F Ch. 13 (to p. 330); Malec,
Ch. 9 (pp. 154-158), 10, 11 (pp. 189-192)

6. NONPARAMETRIC TESTS (Dec. 8)

Objectives: to be able to use, and interpret the output of, the **NONPAR TESTS** and **NONPAR CORR** procedures

Topics Considered:

Spearman's rank correlation coefficient, Mann-Whitney test (and others as time allows). Other topics as deemed appropriate.

Reading: Polit, Ch. 8 (pp. 178-194); ; Norusis Companion, Ch. 19;

Paper 2 is due Monday, December 14 at 3:00 PM (40% of course grade). Late papers will be penalized 4 points (of a possible 40) per calendar day.

ACADEMIC INTEGRITY

It is your obligation to be fully aware of the Boston College policies on academic honesty. ANY violation may subject the offender to severe penalty, including course failure. If you are not familiar with the Boston College policy on academic honesty, see the 2008-09 Boston College Bulletin, p. 36, or on the web at:

<http://www.bc.edu/offices/stserv/academic/resources/policy.html#integrity>

You might also want to download the "SPSS Brief Guide 16.0.pdf" from this web page:

<http://www.bc.edu/software/applications/research/SPSS16.html>

The 'Brief Guide' can be used as a reference manual in the course.

