

SOCIOLOGY 702
INTRODUCTION TO STATISTICS AND DATA ANALYSIS
FALL, 2005

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COURSE REQUIREMENTS:

1. There will be 8-10 homework assignments. These will typically involve some 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.

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 21 at 3:00 PM. (30% of course grade)

Paper 2 is due December 12 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 F. Polit *DATA ANALYSIS AND STATISTICS*

Recommended Supplementary Reading:

Norusis, Marija J. *SPSS 12.0 (or 11.0) GUIDE TO DATA ANALYSIS*

HA32.N65147

Several other books may be of use for reference purposes. They are on reserve in O'Neill Library, as are the required texts. They are:

J. Levin & J. Fox, *ELEMENTARY STATISTICS IN SOCIAL RESEARCH*

HA29.L388

J. Hedderson, *SPSS MADE SIMPLE*

HA32.H43

Michael A. Malec, *ESSENTIAL STATISTICS FOR SOCIAL RESEARCH*

(2nd ed.)

H61.M4224

GENERAL SOCIAL SURVEYS: CUMULATIVE CODEBOOK

HN29.N33

Also on reserve, and perhaps of use for the term papers, is:

T. Smith and B.J. Arnold, *ANNOTATED BIBLIOGRAPHY OF PAPERS*

USING THE GENERAL SOCIAL SURVEY

HA155.S55

TOPICS AND READINGS

Dates are subject to change
Additional topics may be added as time allows

1. INTRODUCTION; USING SPSS (Week of Sept. 6)

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

Norusis (12.0 or 11.0) Chs. 1, 2 and 7

2. DESCRIPTIVE STATISTICS (Sep. 13, 20, 27)

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:

Norusis (12.0 or 11.0), Chs 3-6 and 10

Polit, Ch. 3

Levin & Fox (L&F), Chs. 1-6 (esp. 5 and 6)

Malec, Chs. 1-4

3. DIFFERENCES IN MEANS (Oct. 4, 11, 18)

Paper 1 is due Friday, October 21 at 3:00 PM. (30% of course grade)

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

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.

Reading:

Norusis (12.0 or 11.0), Chs. 9 and 12-14

Polit, Chs. 6-7

L&F, Chs. 10 and 11

Malec, Ch. 7

4. **CROSSTABULATION AND MEASURES OF ASSOCIATION**

(Oct. 25, Nov. 1, 8)

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:

Norusis (12.0 or 11.0), Ch. 7-9, 17, and 19 (also 394-396)

Polit, Ch. 8

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. 15, 22, 29)

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.

Reading:

Norusis (12.0 or 11.0), Chs. 19 and 20

Polit, Ch. 9

L&F Ch. 13 (to p. 330)

Malec, Ch. 9 (pp. 154-158), 10, 11 (pp. 189-192)

6. **NONPARAMETRIC TESTS** (Dec. 6)

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:

Norusis (12.0 or 11.0), Ch. 18

Polit, Ch. 8

Paper 2 is due Monday, December 12 at 3:00 PM. (40% of course grade)

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