FEDERATION METHODS AND STATISTICS QUALIFYING EXAM

Federated Graduate Sociology Program of:
Texas Woman's University
University of North Texas

Spring 2007

GENERAL INSTRUCTIONS FOR TAKING THE EXAM

Before you begin the exam, it is advisable that you read through all the questions. Plan your time wisely. You have until 5:00 p.m. to complete the exam.

Please **WRITE ONLY ON EVERY OTHER LINE on ONE SIDE OF THE PAPER**. Please answer each question thoroughly. Answer in complete sentences. Write as neatly as possible—you will not get credit for what cannot be read!

DO NOT PUT YOUR NAME ON THE PAPER

PUT ONLY YOUR ASSIGNED NUMBER _____

Part 1. FEDERATION METHODS QUALIFYING EXAM Spring, 2007

(Remember: WRITE ONLY ON EVERY OTHER LINE on ONE SIDE OF THE PAPER).

Please answer A, B, and C.

A. Define and provide an example of **three** of the following:

a. Grounded theory and case studies
b. Reliability and validity
c. Panel study and cohort study
d. Ecological fallacy and individual fallacy
e. Triangulation and content analysis
f. Stratified sampling and quota sampling

B. Select **one** of the following three topics for a quantitative research project:

1. Explaining High School Dropout in the United States
2. Determinants of Crime Rates in American Cities
3. Why Does the Gender Gap in Income Persist in America?

Address the following issues:

a. identify the dependent variable and one important predictor variable (be sure to define your key concepts, if necessary);
b. state **one** testable hypothesis and justify it;
c. describe how you measure the dependent variable and independent variable in your hypothesis;
d. discuss an appropriate existing data set, or how you would collect your own data, to test your hypothesis;
e. discuss the appropriate technique(s) of data analysis; and
f. discuss the limitations of your study.

C. Select **one** of the following three topics for a qualitative research project:

1. High School Dropouts
2. Mothers on Welfare
3. Perceptions of the Gender Gap

Address the following issues:

a. identify the role of theory in qualitative research;
b. discuss issues of ethics in your research project;
c. describe the sampling design and recruitment of participants;
d. discuss data collection;
e. discuss appropriate technique(s) of data analysis; and
f. discuss the limitations of your study.

Part 2. FEDERATION STATISTICS QUALIFYING EXAM Spring, 2007

(Remember: WRITE ONLY ON EVERY OTHER LINE on ONE SIDE OF THE PAPER).

A. For **three** of the following seven pairs of variables (Measurements or the categories of each variable are given in parentheses), assuming random sampling, indicate clearly the most appropriate measure of association and test of statistical significance. Justify your choices.

   a. Number of siblings and number of children

   b. Race (White, Black, Other) and political orientation (Liberal, Middle-of the-road, Conservative)

   c. Ranking of sociology Ph.D. granting departments (First tier, Second tier, Third or higher tier) and ranking of sociology departments where doctoral recipients are employed (First tier, Second tier, Third or higher tier)

   d. Region of the United States (Northeast, Midwest, South, and West) and housing price ($)

   e. Gender (Male, Female) and number of mental health problems

   f. Student attendance rate (%) and graduation rate (%) in Texas high schools

   g. Gender (Male, Female) and support for constitutional amendment on marriage (Yes, No)

B. Answer **one** of the following questions: question 1 **or** question 2.

1.

a. State the research hypothesis that could be tested using Table 1a. What is the dependent variable? What is the independent variable? How does the independent variable affect the dependent variable? Is your hypothesis confirmed or rejected? Explain. Cite appropriate percentages and interpret relevant statistics to support your answer.

b. Table 1b is an example of elaboration analysis. In elaboration analysis, the relationship between an independent variable and a dependent variable is examined, holding another variable, the "control" variable, constant. What is the control variable in Table 1b? How does the initial relationship between the independent variable and the dependent variable in Table 1a change after the introduction of this control variable into the analysis? Explain, citing appropriate percentages from Table 1b and interpreting the accompanying relevant statistics.

2. Write a brief essay substantively interpreting the logistic regression analysis presented in Table 2.

C. Answer **all** of the questions below.

1. List and briefly explain the assumptions that must be made to use ordinary least squares regression analysis.

2. What does each of the following tell us?

   a. Unstandardized regression coefficient estimate (b)
   b. Standardized regression coefficient estimate (β, or Beta)
   c. Level of significance (α, or alpha)
   d. Coefficient of determination (R^2)

3. Write a brief essay substantively interpreting Table 3.

Table 1a. Number of Siblings and Graduation from College/University Among U. S. Four-year College/University Students (N=1,850)

	Graduated from College/University		
Number of Siblings	No	Yes	Total
0-1	51.0%	49.0	100.0% (983)
2 or more	63.0%	37.0	100.0% (867)

$\chi^2 = 27.047$, $df = 1$, $p < .001$; Phi = 0.121

Table 1b. Receipt of Parental Financial Support, Number of Siblings, and Graduation from College/University Among U. S. Four-year College/University Students (N=1,850)

No or little financial support from parents

	Graduated from College/University		
Number of Siblings	No	Yes	Total
0-1	85.0%	15.0	100.0% (157)
2 or more	86.0%	14.0	100.0% (389)

$\chi^2 = 0.180$, $df = 1$, $p < .09$; Phi = 0.018

Some financial support from parents

	Graduated from College/University		
Number of Siblings	No	Yes	Total
0-1	53.0%	47.0	100.0% (617)
2 or more	53.0%	47.0	100.0% (338)

$\chi^2 = 0.0001$, $df = 1$, $p < .85$; Phi = 0.0004

A lot of financial support from parents

	Graduated from College/University		
Number of Siblings	No	Yes	Total
0-1	24.0%	76.0	100.0% (209)
2 or more	26.0%	74.0	100.0% (140)

$\chi^2 = 0.145$, $df = 1$, $p < .15$; Phi = 0.020

Table 2. Logistic Regression Estimates Predicting Child Birth[a] Among Women Aged 18-44 on Welfare

Predictor	b	Odds ratio
Demographic variables		
Less than 12 years of education (Yes=1, No=0)	.277*	1.32
Not employed (Yes=1, No=0)	-.171	.84
Nonwhite (Nonwhite=1, White=0)	.638***	1.89
Age (years)	.902***	2.46
Household variables		
Number of children	-.224	.80
Children under age 4 (Yes=1, No=0)	.394	1.48
Married (Yes=1, No=0)	.372*	1.45
Welfare variables		
Receiving all 3 programs(Yes=1, No=0) [b]	.083	1.09
After OBRA (Yes=1, No=0) [c]	.098	1.10
Length of welfare use (years)	-.384*	.68
Constant	-15.213***	.00
-2 log likelihood	150.77	
Model χ^2	80.06	
Pseudo R^2	.25	
N	4,196	

*$p \leq 0.05$ **$p \leq 0.01$ ***$p \leq 0.001$

[a] Child birth is coded 1 for birth and coded 0 for nonbirth.

[b] The 3 welfare programs are Aids for Families with Dependent Children, Food Stamp, and Medicaid.

[c] OBRA – The Omnibus Budget Reconciliation Act of 1981.

Source: Adapted from Table 3 of Mark Rank (1989), "Fertility Among Women of Welfare: Incidence and Determinants." *ASR* 54(2): 296-304.

Table 3. Ordinary Least Squares Regression Estimates Predicting Violent Crime Rate, U.S. Suburbs, 1970, 1980, and 1990

Predictor	1970 b	1970 β	1980 b	1980 β	1990 b	1990 β
Percent in poverty	6.96***	.17	25.58***	.36	14.13***	.18
Population density per Square mile	.06*	.07	.07	.04	.27***	.16
Percent renting home	1.71*	.08	.25	.00	2.92	.06
Population (in 1,000s)	.62	.04	.56	.02	1.17	.09
Percent old housing	-2.53***	-.23	-3.86***	-.15	-4.19***	-.12
Percent female-headed household	58.46***	.30	46.91***	.25	64.42***	.31
Percent nonwhite	12.98***	.36	11.24***	.27	11.22***	.24
Historically high crime suburb (Yes=1, No=0)	1.15***	.12	1.13***	.11	1.17***	.13
Constant	.85		.90		.95	
R^2	.56		.62		.58	
N	550		550		550	

*$p \leq 0.05$ **$p \leq 0.01$ ***$p \leq 0.001$ (two-tailed test)

Notes: b = unstandardized regression coefficient; β = standardized regression coefficient; Sample includes those suburbs for which crime data are available.

Source: Adapted from Table 1 of Allen Liska, John Logan, and Paul Bellair (1998), "Race and Violent Crime in the Suburbs." *ASR* 63(1): 27-38.