Assigned Number _____

Federation Methods and Statistics Qualifying Exam

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

Spring 2009

General Information and Instructions

- Please type or write your **assigned number** on every page of your answers, and **do not** include your name or any other identifying information on your exam.

- If you are **typing** your answers, please double-space them, use 12-point font, and insert page numbers on every page.

- If you are **hand-writing** your answers, please write as neatly as possible on every other line, use one side of the paper, and number your pages.

- Please answer each question thoroughly and write in complete sentences.

- You will receive a flash drive or other device on which to save your answers. Please **save your answers early and often**!

- It is advisable for you to read through all the questions first, then plan your time accordingly. You have until 5:00 pm to complete the exam. You may structure your time as you see fit, and you may take breaks and eat lunch as needed.

- You are **not** allowed to have books, notes, calculators, cell phones, or other electronic devices in or near the exam room. Also, access to the internet will be blocked. A proctor will be in the room at all times, and faculty members will monitor you throughout the day and will be available to answer any questions that you might have.

Section I: Federation Methods Qualifying Exam

Please answer all <u>three</u> questions

1. For **<u>three</u>** of the following problems encountered while conducting research, **<u>describe</u>** the problem, explain **<u>why</u>** it is a problem, and suggest ways to help **<u>minimize</u>** the problem.

   (a) Low response rate for a mailed questionnaire / survey

   (b) Observing illegal behavior by participants in qualitative field research / participant observation

   (c) Compensatory rivalry in an experiment

   (d) Reactive effects in qualitative field research / participant observation

   (e) Low internal consistency reliability (Cronbach's alpha) for a measure

   (f) Plagiarism

2. Select **<u>one</u>** of the following topics for designing a **<u>qualitative</u>** research project:

   - The election of Barack Obama and race relations among college students
   - Married heterosexual couples where the husband took the wife's last name
   - Effects of the attacks in Mumbai, India on Asian Indians living in the U.S.
   - Homeless adults' perceptions of services received at homeless shelters

   Address **<u>all</u>** of the following issues in designing your chosen project:

   (a) Identify the role of theory in qualitative research

   (b) Based on the topic you selected, explain your specific research project and the qualitative approach you will use

   (c) Discuss ethical issues as they relate to your research project

   (d) Describe your sampling design and how you would recruit participants

   (e) Explain how you would collect data from participants

   (f) Discuss how you would analyze your data

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

   • A cross-national study of factors related to crime rates
   • Correlates of volunteering among college students
   • Predictors of perceived quality of care among nursing home residents
   • Variables associated with divorce rates in U.S. cities

   Address **all** of the following issues in designing your chosen project:

   (a) Identify and define the dependent variable and one important independent variable; also list control variables to be included in the analyses

   (b) State **one** testable hypothesis and provide justification for your hypothesis

   (c) Discuss how you would measure the dependent and independent variable in your hypothesis

   (d) Develop a comprehensive data collection plan assuming that you have unlimited money for your project (you are **not** allowed to use existing secondary datasets such as the GSS)

   (e) Based on **all** of the variables listed in part (a) and your responses to parts (b) and (c), describe appropriate technique(s) for analysing your data.

Section II: Federation Statistics Qualifying Exam

Please answer all <u>three</u> questions

1. Answer **<u>both</u>** part (a) and part (b) of this question.

   (a) Discuss the difference between measures of association and tests of statistical significance.

   (b) Select **<u>three</u>** pairs of variables from those listed below (categories for each variable are given in parentheses). For each pair, under the assumption of random sampling, indicate the most appropriate measure of association and test of statistical significance. Justify your choices.

      (i) Cell phone ownership (no, yes) and number of letters written by hand this year (0, 1, 2, etc.)

      (ii) Home foreclosure rate (per 1,000 homes) and unemployment rate (percentage) in U.S. cities

      (iii) Race/ethnicity (white, black, Hispanic, other) and number of hours per week spent on the internet (0, 1, 2, etc.)

      (iv) Self-rated physical health (excellent, good, fair, poor) and self-rated mental health (excellent, good, fair, poor)

      (v) Political affiliation (Democrat, Republican, independent, other) and gender (female, male)

      (vi) U.S. state ranking (1, 2, 3, etc.) on suicide and U.S. state ranking (1, 2, 3, etc.) on homicide

      (vii) Age (in years) and diagnosis of schizophrenia (no, yes)

      (viii) U.S. state color (red, blue) in the 2008 presidential election and U.S. state level of social capital (high, low)

2. Answer **<u>one</u>** of the following – either (a) **<u>or</u>** (b).

   (a) Write a brief essay substantively interpreting Tables 1a and 1b. The data are from a study of body dissatisfaction among 1,610 randomly-selected adolescents attending public school in Switzerland.

   (b) Write a brief essay substantively interpreting the logistic regression analysis results presented in Table 2. The data are from a study of personal security use among 4,303 randomly-selected U.S. adults who acknowledged being afraid of street crime.

3. Answer **all** parts of this question.

   (a) **List** and **briefly explain** the assumptions for ordinary least squares (OLS) regression analysis.

   (b) Describe each of the following as they relate to OLS regression analysis:

      (i) Unstandardized regression coefficient estimate (b)

      (ii) Standardized regression coefficient estimate (β or beta)

      (iii) Level of significance (α or alpha)

      (iv) Coefficient of determination (R^2)

   (c) Write a brief essay substantively interpreting the OLS regression analysis results presented in Table 3. The data are from a study of water-related emotional distress among 72 randomly-selected household heads in a Bolivian squatter settlement.

Table 1a. Gender Differences in Body-Related Variables Among Swiss Adolescents

Variable	Girls (N = 791)		Boys (N = 819)		Statistical Test[e]		
	Mean	Standard Deviation	Mean	Standard Deviation	t	df	P
Body Mass Index[a]	20.4	3.0	20.6	2.9	-1.38	1529	0.168
Body Dissatisfaction[b]	47.5	15.0	37.1	11.6	15.44	1483	<.001
Internalizing Media Body Ideals[c]	13.4	6.0	11.3	5.1	7.47	1542	<.001
Pressure to Achieve Media Body Ideals[d]	11.7	5.3	8.6	4.2	13.08	1509	<.001

[a]Calculated as weight (in kilograms) divided by height (in meters) squared.

[b]Sum of 20 items (each on a scale from 1 = strongly disagree to 5 = strongly agree) assessing dissatisfaction with one's body (e.g., "there is something wrong with my appearance"). The summed scale ranges from 20 to 100 with higher values indicating greater dissatisfaction.

[c]Sum of 6 items (each on a scale from 1 = strongly disagree to 5 = strongly agree) assessing internalization media-based body ideals (e.g., "I tend to copare my body to people in magazines and on TV"). The summed scale ranges from 6 to 30 with higher values indicating greater internalization.

[d]Sum of 5 items (each on a scale from 1 = strongly disagree to 5 = strongly agree) assessing perceived pressure to achieve media body ideals (e.g., "I feel pressure from TV or magazines to have a perfect body"). The summed scale ranges from 5 to 25 with higher values indicating greater pressure.

[e]t = two-sample t-statistic, df = degrees of freedom, and p = p-value (two-tailed test). Note that degrees of freedom differ between variables due to missing data.

Adapted From: Knauss, C., Paxton, S.J., & Alsaker, F.D. (2008). Body dissatisfaction in adolescnt boys and girls: Objectified body consciousness, internalization of the media body ideal and perceived pressure from media. *Sex Roles, 59*, 633-643.

Table 1b. Pearson Correlations of Body-Related Variables Among Swiss Adolescents (N = 1,610)

	Body Mass Index	Body Dissatisfaction	Internalizing Media Body Ideals	Pressure to Achieve Body Ideals
Body Mass Index	1.00			
Body Dissatisfaction	0.38***	1.00		
Internalizing Media Body Ideals	0.22***	0.62***	1.00	
Pressure to Achieve Media Body Ideals	0.29***	0.61***	0.71***	1.00

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

Table 2. Logistic Regression Results Predicting Carrying a Weapon for Self-Defense[a]

Independent Variable	b	Odds Ratio (e^b)
Gender (0 = Female, 1 = Male)	-0.28**	0.76
Age (In Years)	-0.01***	0.99
Race/Ethnicity (0 = White, 1 = Non-White)	0.04	1.04
Perceived Change in Police Presence[b]		
No Observed Change (Reference)		
Increased Police Presence	0.32**	1.38
Decreased Police Presence	0.15	1.17
Neighborhood Disorder[c]	0.01	1.01
Victimization Experiences[d]	0.29**	1.34
Model χ^2	316.11***	
Pseudo-R^2	0.11	
N	4,303	

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

[a]Respondents were asked if they had carried a weapon for self-defense in the past 12 months. Responses were coded 0 = no and 1 = yes.

[b]Respondents were asked about their perceptions of changes in police presence in their neighborhood over the past 12 months. Response choices were: no change, increase, or decrease.

[c]Sum of 14 items (each coded as 0 = no and 1 = yes) assessing the presence of problems in their neighborhood (e.g., overgrown trees, prostitution, drug dealing). The summed scale ranges from 0 to 14 with higher values indicating greater neighborhood disorder.

[d]Number of victimization experiences (e.g., mugged, assaulted with a weapon) by the repondent in the past 12 months.

Adapted From: Giblin, M.J. (2008). Examining personal security and avoidance measures in a 12-city sample. *Journal of Research in Crime and Delinquency, 45*, 359-379.

Table 3. OLS Regression Results Predicting Water-Related Emotional Distress[a]

Independent Variable	B	β
Respondent Gender (0 = Female, 1 = Male)	-1.02**	-0.30**
Household SES (Ordinal Scale)[b]	-0.26*	-0.20*
Daily Water Use (Liters Per Person)[c]	-0.01	-0.07
Years Living in the Settlement	-0.10**	-0.31**
Percent Reciprocal Exchange Water[d]	2.54***	0.47***
Percent River Water[e]	2.34	0.14
Constant	1.20	
R^2	0.47	
N	72	

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

[a]The dependent variable is the sum of 4 items (each coded as 0 = no, 1 = yes) assessing distress about getting access to water (fear that their water supply would run out, worry about finding sources of water, anger about a family member's inability to find water, and bothered by having to wait in line for water). The summed scale ranges from 0 to 4 with higher values indicating more distress.

[b]The ordinal scale has values of 1 = poorest (unstable employment and insecure access to basic necessities), 2 = low-stable (stable employment but insecure access to basic necessities), 3 = high-stable (stable employment and secure access to basic necessities), and 4 = wealthiest (stable employment, secure access to basic necessities, and accumulated assets).

[c]Household water use per day (in liters) divided by the number of people in the household.

[d]Percentage of household water obtained in reciprocal exchanges with neighbors.

[e]Percentage of household water obtained from local rivers.

Adapted From: Wutich, A. & Ragsdale, K. (2008). Water insecurity and emotional distress: Coping with supply, access, and seasonal variability of water in a Bolivian squatter settlement. *Social Science & Medicine, 67*, 2116-2125.