

Assigned Number \_\_\_\_\_

## **Federation Methods and Statistics Qualifying Exam**

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

Fall 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 three questions

1. For three of the following problems encountered while conducting research, describe the problem, explain why it is a problem, and suggest ways to help minimize the problem.
  - (a) Hawthorne effect in an experiment
  - (b) "Going Native" in qualitative field research (a.k.a. participant observation)
  - (c) Reductionist fallacy (a.k.a. "reductionism" or "error of reductionism")
  - (d) Low content validity for a measure
  - (e) Quota sampling
  - (f) Double-barreled question on a mailed questionnaire or survey
  
2. Select one of the following topics for designing a qualitative research project:
  - Sibling rivalry in single- versus two-parent households
  - Mexican Americans' perceptions of treatment received in Emergency Rooms
  - College students' attitudes toward interracial dating
  - Vandalism by high school students

Address all 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:

- Variables associated with unemployment rates in major U.S. cities
- Correlates of alcohol consumption among college students
- A cross-national study of factors related to infant mortality rates
- Predictors of support for same-sex marriage among individuals in the U.S.

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 **three** questions

1. Answer **both** part (a) and part (b) of this question.
  - (a) Discuss the difference between measures of association and tests of statistical significance.
  - (b) Select **three** 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) Employment (number of years) and diagnosis of high blood pressure (no, yes)
    - (ii) Football fan (yes, no) and soccer fan (yes, no)
    - (iii) Lung cancer rate (per 100,000 people) and high blood pressure rate (per 100,000 people) in U.S. cities
    - (iv) Political affiliation (Democrat, Republican, independent, other) and number of hours per day spent watching TV (0, 1, 2, etc.)
    - (v) Socioeconomic status (upper class, middle class, working class, lower class) and educational attainment (less than high school, high school, more than high school)
    - (vi) U.S. state ranking (1, 2, 3, etc.) on burglary and U.S. state ranking (1, 2, 3, etc.) on robbery
    - (vii) Race/ethnicity (white, black, Hispanic, other) and gender (female, male)
    - (viii) iPod ownership (no, yes) and number of music CDs owned (0, 1, 2, etc.)
2. Write a brief essay substantively interpreting Tables 1a, 1b, and 1c. The data are from a study of sexuality among 48 male and 61 female heterosexual students from a mid-sized Southwestern U.S. university.

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 ( $\beta$  or beta)

(iii) Level of significance ( $\alpha$  or alpha)

(iv) Coefficient of determination ( $R^2$ )

(c) Write a brief essay substantively interpreting the OLS regression analysis results presented in Table 2. The data are from a study of homicide rates among 67 countries using data from the World Health Organization.

**Table 1a. Gender Differences in Sexuality-Related Variables Among University Students**

Variable	Men (N = 48)		Women (N = 61)		Statistical Test <sup>f</sup>		
	Mean	Standard Deviation	Mean	Standard Deviation	t	df	P
Number of Sexual Partners (Natural Logarithm) <sup>a</sup>	1.81	1.29	1.15	0.95	3.08	107	0.003
Perceived Prestige of Men With Many Sexual Partners <sup>b</sup>	2.65	1.20	1.79	0.68	4.72	107	<.001
Perceived Prestige of Women With Many Sexual Partners <sup>c</sup>	2.26	0.88	1.75	0.64	3.50	107	<.001
Importance of Quality of Sexual Partners <sup>d</sup>	2.70	1.34	2.44	1.28	1.03	107	0.305
Importance of Quantity of Sexual Partners <sup>e</sup>	3.82	1.17	3.23	1.41	2.33	107	0.022

<sup>a</sup>Number of lifetime sexual partners. The distribution was positively skewed, so the natural logarithm of the variable was used in the analyses.

<sup>b</sup>Average of 7 items (each on a scale from 1 = not at all to 5 = very much) assessing perceived prestige of men who have many sexual partners (e.g., "I respect a man who has had many sex partners"). The averaged scale ranges from 1 to 5 with higher values indicating greater prestige.

<sup>c</sup>Average of 7 items (each on a scale from 1 = not at all to 5 = very much) assessing perceived prestige of women who have many sexual partners (e.g., "I respect a woman who has had many sex partners"). The averaged scale ranges from 1 to 5 with higher values indicating greater prestige.

<sup>d</sup>Average of 3 items (each on a scale from 1 = not at all to 5 = very much) assessing the importance of the quality (i.e., traits that they would like their romantic partners to have) of their sexual partners. The averaged scale ranges from 1 to 5 with higher values indicating greater importance of quality.

<sup>e</sup>Average of 3 items (each on a scale from 1 = not at all to 5 = very much) assessing the importance of the quantity (i.e., number) of sexual partners that they have. The averaged scale ranges from 1 to 5 with higher values indicating greater importance of quantity.

<sup>f</sup>t = two-sample t-statistic, df = degrees of freedom, and p = p-value (two-tailed test).

Adapted From: Jonason, P.K. & Fisher, T.D. (2009). The power of prestige: Why young men report having more sex partners than young women. *Sex Roles*, 60, 151-159.

**Table 1b. Pearson Correlations of Sexuality-Related Variables Among University Men (N = 48)**

	Number of Sexual Partners (Natural Logarithm)	Perceived Prestige of Men With Many Sexual Partners	Perceived Prestige of Women With Many Sexual Partners	Importance of Quality of Sexual Partners	Importance of Quantity of Sexual Partners
Number of Sexual Partners (Natural Logarithm)	1.00				
Perceived Prestige of Men With Many Sexual Partners	0.82**	1.00			
Perceived Prestige of Women With Many Sexual Partners	0.60**	0.78**	1.00		
Importance of Quality of Sexual Partners	0.54**	0.51**	0.64**	1.00	
Importance of Quantity of Sexual Partners	0.39**	0.62**	0.47**	0.39**	1.00

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

**Table 1c. Pearson Correlations of Sexuality-Related Variables Among University Women (N = 61)**

	Number of Sexual Partners (Natural Logarithm)	Perceived Prestige of Men With Many Sexual Partners	Perceived Prestige of Women With Many Sexual Partners	Importance of Quality of Sexual Partners	Importance of Quantity of Sexual Partners
Number of Sexual Partners (Natural Logarithm)	1.00				
Perceived Prestige of Men With Many Sexual Partners	0.25	1.00			
Perceived Prestige of Women With Many Sexual Partners	0.24	0.84**	1.00		
Importance of Quality of Sexual Partners	0.05	0.08	-0.13	1.00	
Importance of Quantity of Sexual Partners	0.28*	-0.14	-0.11	0.32*	1.00

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

**Table 2. OLS Regression Results Predicting Homicide Rates in 2000<sup>a</sup>**

Independent Variable	b	$\beta$
Sex Ratio <sup>b</sup>	-7.12**	-0.21**
Serious Drug Trafficking (0 = No, 1 = Yes) <sup>c</sup>	1.14*	0.18*
Number of Police <sup>d</sup>	-0.01	-0.01
Population Density <sup>e</sup>	-0.11	-0.12
Percent Urban <sup>f</sup>	0.01	0.02
Gross Domestic Product (Natural Logarithm) <sup>g</sup>	-0.64**	-0.39**
Gini Coefficient <sup>h</sup>	0.04**	0.28**
Constant	38.73	-----
R <sup>2</sup>	0.67	
N	67	

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

<sup>a</sup>The dependent variable is the homicide rate per 100,000 people reported by the World Health Organization.

<sup>b</sup>Number of males per 100 females.

<sup>c</sup>Country has serious drug trafficking problems, as indicated in the Central Intelligence Agency's World Factbook.

<sup>d</sup>Number of police per 1,000 people.

<sup>e</sup>Number of people per square kilometer.

<sup>f</sup>Percentage of the population living in cities.

<sup>g</sup>Gross domestic product (GDP) is a measure of economic development. Higher values of GDP indicate better economic development. The distribution was positively skewed, so the natural logarithm of GDP was used in the analyses.

<sup>h</sup>The Gini coefficient is a measure of income inequality. Higher values of the Gini coefficient indicate more inequality.

Adapted From: Barber, N. (2009). Countries with fewer males have more violent crime: Marriage markets and mating aggression. *Aggressive Behavior*, 35, 49-56.