

**FEDERATION METHODS AND STATISTICS QUALIFYING EXAM**

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

Spring 2008

**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, 2008**

(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. Focus interview and focus group interview
- b. Conceptual definition and operational definition
- c. Panel study and cohort study
- d. Typology and semantic differential scaling
- e. Experimental design and quasi experimental design
- f. Simple random sampling and convenience sampling

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

1. Who Is More Likely to Support Homosexual Marriage?
2. Determinants of Infant Mortality Rates among U.S. Counties
3. Explaining Income Inequality: A Cross-National Study

Address the following issues in designing your chosen project:

- 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 data collection techniques appropriate for testing 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. How Has Web Surfing Changed American Lives?
2. Why Do Tuition and Fees in Texas Public Universities Keep Climbing up: Perspectives from School Administrators
3. Economic and Social Impacts of Current Mortgage Crisis

Address the following issues in designing your chosen project:

- 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, 2008**

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A. For **five** of the following eight pairs, discuss when it is most appropriate to use which technique in the analysis of data.

1. Measures of central tendency and measures of variation
2. Chi-square test and Lambda
3. Pearson's  $r$  and Spearman's  $\rho$
4. T test for two independent groups and paired-difference t test
5. F test and Eta
6. One-tailed test and two-tailed test
7. Ordinary least squares regression and path analysis
8. Factor analysis and structural equation model with latent variables

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. What role does the control variable play?
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 ( $\beta$ , or Beta)
  - c. Level of significance ( $\alpha$ , or alpha)
  - d. Coefficient of determination ( $R^2$ )

3. Write a brief essay substantively interpreting Table 3.

Table 1a. Type of Citations of Supreme Court Decisions by Warren Court (1962-1966) and Burger Court (1970-1971)

| Type of Citations                                 | Warren Court | Burger Court |
|---|--------------|--------------|
| Positive citations                                | 81.6%        | 40.7%        |
| Negative citations                                | 18.4%        | 59.3%        |
| Total   | 100.0%       | 100.0%       |
| N   | (222)        | (59)         |
| $\chi^2 = 40.6, p = .001;$ $\Phi = .38, p = .001$ |              |              |

Table 1b. Type of Citations of Supreme Court Decisions by Type of Issues in Original Citations (Excluding Non-civil and Non-economic Issues) by Warren Court (1962-1966) and Burger Court (1970-1971)

| Type of Citations                                 | Warren Court | Burger Court |
|---|--------------|--------------|
| <u>Civil liberties</u>                            |              |              |
| Positive citations                                | 87.6%        | 25.0%        |
| Negative citations                                | 12.4%        | 75.0%        |
| Total   | 100.0%       | 100.0%       |
| N   | (170)        | (32)         |
| $\chi^2 = 61.0, p = .001;$ $\Phi = .55, p = .001$ |              |              |
| <u>Economic liberties</u>                         |              |              |
| Positive citations                                | 52.8%        | 54.5%        |
| Negative citations                                | 47.2%        | 45.4%        |
| Total   | 100.0%       | 100.0%       |
| N   | (36)         | (22)         |
| $\chi^2 = 0.02, p = .899;$ $\Phi = .00, p = .899$ |              |              |

Source: Shepard's United States Citations, Cases, the 1964-1968 and 1971-1973 volumes.

**Table 2. Logistic Regression Estimates Predicting Marital Dissolution,<sup>a</sup> U.S. Married Couples,<sup>b</sup> 1976-1987**

| Predictor                                 | b                      | S.E.   | Odds ratio |
|---|------------------------|--------|------------|
| Age                                       | -.044 <sup>***</sup>   | (.009) | .957       |
| Black                                     | .771 <sup>***</sup>    | (.119) | 2.162      |
| Female                                    | .454 <sup>***</sup>    | (.119) | 1.575      |
| Catholic                                  | .130                   | (.130) | 1.139      |
| Long-term cohabitation<br>before marriage | -.255                  | (.281) | .775       |
| Combined earnings (ln)                    | -.554 <sup>***</sup>   | (.087) | .575       |
| Constant                                  | 3.338 <sup>***</sup>   | (.789) | .036       |
| Model $\chi^2$                            | 290.676 <sup>***</sup> |        |            |
| Degrees of freedom                        | 6                      |        |            |
| Pseudo R <sup>2</sup>                     | .25                    |        |            |
| N   | 8,711                  |        |            |

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

<sup>a</sup> Marital dissolution is coded 1 for “dissolved” and coded 0 otherwise.

<sup>b</sup> Most characteristics pertain to the partners who were surveyed.

Source: Adapted from Table 2 of Julie Brines and Kara Joyner (1999), “The Ties That Bind: Principles of Cohesion in Cohabitation and Marriage.” *ASR* 64(3): 333-355.

**Table 3. Ordinary Least Squares Regression Estimates Predicting Frequency of Labor Strikes, U.S. Industries, 1963-1977**

| Predictor   | Model 1    |         | Model 2   |         |
|---|------------|---------|-----------|---------|
|   | b          | $\beta$ | b         | $\beta$ |
| % of workers in labor unions                              | 100.021**  | .130**  | 198.060** | .189**  |
| Sales/inventory ratio                                     |            |         | -.213**   | -.053** |
| % change in industry employment                           |            |         | 143.650** | .097**  |
| % change in profits per worker                            |            |         | -.122     | -.031   |
| % of corporate sales held by the industry's largest firms |            |         | -10.430** | -.063** |
| Average value of assets per firm in the industry          |            |         | .053      | .017    |
| Average # of employees per firm in the industry           |            |         | -.229**   | -.085** |
| Mining industry (Mining = 1, other=0)                     |            |         | 677.230** | .749**  |
| Constant  | -90.011*** |         | -183.790  |         |
| R <sup>2</sup>  | .177       |         | .819      |         |
| N   | 120        |         | 120       |         |

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

Source: Adapted from Table 4 of Michael Wallace, Larry Griffin, and Beth Rubin (1989), "The Positional of American Labor, 1963-1977." *ASR* 54(2): 197-214.