

Duke University

Department of Sociology

GRADUATE QUALIFYING EXAMINATION

POPULATION STUDIES

August 23, 2004 – August 24, 2004

This examination has three sections. You must answer *one* question in each Section. Your answers should be as complete as possible. Your examination should not exceed a total of sixteen (16) double-spaced pages, excluding references. You should follow a journal format (e.g. Demography) for references and citations. You have 24-hours from the time you receive your exam to return it to Claudette Parker as an e-mail attachment.

No discussion about any Qualifying Examination with any other person is permitted until after August 27, 2004.

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I. Methods. Answer 1 of the following 2 questions.

1. The piecewise constant hazard rate/piecewise exponential survival function model and algorithm are a classical approach to the estimation of population life tables from occurrence/exposure mortality rates.
 - a. State the model specification for this piecewise model.
 - b. State the equations for the estimation algorithm for this model.
 - c. What problems arise when this model is applied to age intervals of an abridged life table, i.e., estimated on the basis of mortality rates of 5-year age intervals or longer? Verbally describe (you do not have to give equations) the Keyfitz-Frauenthal approach to abridged life table estimation and how this improves estimates over the exponential model.

2. The life table model:
 - a. There are two perspectives on the population life table model: (i) the cohort survival perspective, and (ii) the stationary population perspective. Describe these.

 - b. The piecewise-constant hazard/piecewise-exponential survival function population life table model has sample-based analogues for use with sample as opposed to longitudinal data. These analogues often are called hazard regression or event history models.
 - i. Describe the mathematical form of a piecewise-constant hazard regression model and how it can be estimated from sample data.
 - ii. Then describe how sample survey data on a demographic event (e.g., age of transition from childless to first birth for women, age to first Activity of Daily Living Disability for older persons) can be used with event history/hazards regression models to develop sample-based life tables of age to this transition.

II. Demography of Aging. Answer 1 of the following 2 questions.

1. Give a concise statement of Omran's epidemiological transition theory. Give a summary of more recent statements by Olshansky and others. Describe the implications of this theory for the demography of mortality in aging populations.
2. What is the status of the debate over the "compression of morbidity" hypothesis in the demography of aging? Review the major contributions to the literature on this topic, assay the empirical evidence, and state your conclusion.

III. Fertility and Migration. Answer 1 of the following 2 questions.

1. One of the hottest topics in contemporary demography is "low" fertility. Respond to both a and b below:
 - a. What is "low" fertility? Low relative to what? Discuss competing explanations and their implications for population growth.
 - b. Take a position on "how low will fertility go?" Do you expect it to become a global crisis in the 21st century?
2. In recent decades, the literature on immigration has been evolving from a predominant emphasis on individual traits to a growing recognition of the causal significance of contextual factors in explaining patterns of immigrant adaptation.
 - a. Discuss the contextual forces affecting immigrant settlement in the U.S. and elaborate on their effect.
 - b. Select one area of research of your choice, related to immigration and adaptation, and formulate a research design that pays particular attention to contextual forces.
 - c. Identify a theoretical framework that might be useful in your project, detail the dependent and independent variables, and suggest possible data sources for the analysis.