

Duke University

Department of Sociology

**GRADUATE QUALIFYING EXAMINATION**

**POPULATION STUDIES**

AUGUST 27, 2007 – AUGUST 28, 2007

THIS EXAMINATION HAS TWO SECTIONS. YOU MUST ANSWER *BOTH QUESTIONS IN PART A AND 2 OF THREE QUESTIONS IN PART B*. 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 PICK UP YOUR EXAMINATION TO RETURN IT TO CLAUDETTE PARKER.

PLEASE, SIGN BELOW AT THE TIME YOU PICK UP THIS EXAMINATION AND AGAIN WHEN YOU RETURN IT. NO DISCUSSION OF ANY QUALIFYING EXAMINATION WITH ANY OTHER PERSON IS PERMITTED UNTIL AFTER ALL EXAMINATIONS HAVE BEEN COMPLETED.

DATE AND TIME OF PICK UP: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

DATE AND TIME OF PICK RETURN: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

GRADUATE QUALIFYING EXAMINATION

POPULATION STUDIES

**Part A. Answer the following question (Answer both parts a and b.)**

**1. The life table model:**

- (a) In the construction of period population life tables, the estimation of  ${}_n a_x$ , the number of persons-years lived by those who die in the age interval  $x$  to  $x+n$  and the associated conversion of  ${}_n m_x$  to  ${}_n q_x$  are key methodological decisions. Describe four approaches: (i) the piecewise-linear  $l_x$  method, (ii) the piecewise-exponential  $l_x$  method, (iii) the Keyfitz (1966) polynomial iterative method, and (iv) the method of borrowing  ${}_n a_x$  from other populations. What are the limitations of each method? How are they affected by the width of the age intervals used to construct the life table?
- (b) The population life table, when interpreted as a stationary population, sometimes is called the simplest possible population model. (1) Describe verbally this interpretation of the life table. Define the following life table functions in the stationary population model:  $l_x$ ,  $d_x$ ,  $l_0$ ,  ${}_n L_x$ ,  $T_x$ ,  $T_0$ ,  ${}_n L_x/T_0$ ,  $T_x/T_0$ ,  $L_0/T_0$ ,  $e_0$ ,  $1/e_0$ ,  ${}_n m_x$ . (2) Suppose a stationary population suddenly in year  $t$  experiences a sustained increase,  $k_1$ , in the annual number of births. What happens to its age structure? Does it become younger or older? For how long? (3) Suppose conversely that a stationary population suddenly experiences a sustained decrease,  $k_2$ , in the annual number of births. Again, what happens to its age structure?

**Part B. Answer two (2) of the following three (3) questions.**

**2. Aging:** Describe the “compression of morbidity” hypothesis. Summarize the contributions of Fries, Manton-Stallard, and others to this hypothesis and its empirical assessment. In your opinion, what is the status of this hypothesis today and how can we do research to further assess it?

**3. Migration:** Recent theoretical and empirical analyses of international migration emphasize that migration is a social process rather than a single, bounded event. Elaborate on this position and its theoretical, methodological, and public policy implications. Next, formulate a model of migration as a social process based on life course research. Describe the methodology that you would apply to study such a process, drawing on your knowledge of life tables and event history modeling.

**4. Fertility and Family:** Data for Iran suggest that the TFR has fallen dramatically since 1985. In fact based on the retrospective fertility histories in the 2000 Iranian Demographic and Health Survey, the TFR fell from levels of approximately 7 to levels near replacement. In order to try and understand this TFR decline, what analyses would you undertake? What additional data and tabulations would you request from the IDHS? You should assume that the IDHS is your standard fertility survey with retrospective marriage, fertility and contraceptive histories. What other types of data would you like to have and why?

(Note: You are not expected to have special knowledge about Iran and you need not cite any features of its social history. Treat Iran as a “generic” country.)