

Sociology 433

An Introduction to Demographic Methods

Instructor: Samuel Clark

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Office Hours: By appointment, 220 Condon Hall

Lectures: Wednesday and Friday, 1:30 pm – 3:20 pm, 116 William H. Gates Hall (Law Building)

Course Objective

This course introduces the basic concepts and measures employed by demographers. The aim is to provide students with an understanding of the basic structure and dynamics of a population and to familiarize them with commonly used measures and analytical tools. Human populations will be emphasized while most of the material presented will apply equally well to other types of populations. Upon completing the course students should be able to use the basic tools of demographic analysis and be able to read demographic literature.

Prerequisites

This course assumes a command of arithmetic and experience using MS Excel to manipulate numbers. Students should be able to enter and manipulate “formulas” in Excel. *Although not necessary*, familiarity with Calculus will allow the student to read more widely and appreciate the derivations of the techniques presented.

Readings

The course closely follows the text book titled “Demography: Measuring and Modeling Population Processes” by Preston et al. which has been ordered at the University Bookstore and should be available for purchase there. *All readings assigned from this book are required.*

Additional readings are listed in the syllabus. Most of these are available electronically on the course web site faculty.washington.edu/samclark/Soc433, and if not, can be borrowed from the CSDE library in Raitt Hall. Additional readings that are required are marked with a '†' symbol.

Assignments

There are five assignments. Each of these must be completed in full and handed in by their due date in order to receive credit. They will be available on the class web site faculty.washington.edu/samclark/Soc433.

Presentations

Each of you will be required to present *at least one* of the extra readings (journal articles) in class. These presentations will contribute to your "participation" grade. You are encouraged to use this as an opportunity to practice public presentation in a friendly informal setting, and you can present *as many* papers as you want.

Grading System

The course grade will be based on five assignments (40%), an in-class midterm (20%), a take-home final examination (30%) and class participation and presentations (10%).

Class Participation

Students are strongly encouraged to participate in the class, and class participation counts for 10% of the final grade.

1 Week One, March 30 – April 3

! Preston, S. H., P. Heuveline and M. Guillot. 2001. "**Chapter 1: Basic Concepts and Measures.**" Pp. 1-20 in Demography: Measuring and Modeling Population Processes. Oxford, UK: Blackwell.

1.1 April 1: Introduction

1.2 April 3: Basic Concepts and Measures

Ryder, N.B. 1964. "[Notes on the Concept of a Population.](#)" *American Journal of Sociology* 69:447-463.

Pollard, A.H., F. Yusuf, and G.N. Pollard. 1990. "Sources of Demographic Statistics." Pp. 1-11 in Demographic Techniques. Third Edition. Sydney and New York: Pergamon Press.

2 Week Two, April 6-10

! Preston, S. H., P. Heuveline and M. Guillot. 2001. "**Chapter 2: Age-Specific Rates and Probabilities.**" Pp. 21-37 in Demography: Measuring and Modeling Population Processes. Oxford, UK: Blackwell.

2.1 April 8: Demographic Rates & Probabilities

Coale, A.J. 1974. "[The History of Human Population](#)." *Scientific American* 231(3): 41-51.

2.2 April 10: Age Standardization & Decomposition

Assignment 1: Introductory Concepts, Rates & Probabilities

DUE Friday April 17 by 5:00 pm via email

Kitagawa E.M. 1955. "[Components of a Difference between Two Rates](#)." Chapter 6, Pp. 15-23 in Bogue, D.J., E.E. Arriaga and D.L. Anderton. (Eds.) 1993. Readings in Population Research Methodology Volume 1. Chicago: Published for the United Nations Population Fund by Social Development Center.

Pressat, R. 1976. "Location in Time." and "Rates in Demography." chapter 2. Pp. 12-22 in Bogue, D.J., E.E. Arriaga and D.L. Anderton. (Eds.) 1993. Readings in Population Research Methodology Volume 1. Chicago: Published for the United Nations Population Fund by Social Development Center.

Das Gupta, P. 1978. "A [General Method of Decomposing the Difference Between Two Rates into Several Components](#)." *Demography* 15(1): 99-112.

Smith H.L., S.P. Morgan and T. Koropecy-Cox. 1996. "[A Decomposition of Trends in the Nonmarital Fertility Ratios of Blacks and Whites in the United States](#)." *Demography* 33(2): 141-151.

3 Week Three, April 13-17

! Preston, S. H., P. Heuveline and M. Guillot. 2001. "**Chapter 3: The Life Table and Single Decrement Processes.**" Pp. 38-70 in Demography: Measuring and Modeling Population Processes. Oxford, UK: Blackwell.

3.1 April 15: Constructing a Single Decrement Life Table

Graunt, J. 1662 (1977). "Natural and Political Observations Mentioned in a Following Index, and Made Upon the Bills of Mortality." Pp. 11-26 in Mathematical Demography: Selected Papers. Smith, D., and N. Keyfitz (Eds.). Berlin, New York: Springer-Verlag.

Chiang, C.L. 1984. "Chapter VI." in The Life Table and Its Applications. Malabar, FL: R.E. Krieger.

Namboodiri, K. 1991. "Chapter III: Life Tables." Pp.74-109 in Demographic Analysis: A Stochastic Approach. San Diego: Academic Press.

3.2 April 17: Using and Interpreting the Single Decrement Life Table: Examples

Assignment 2: Single Decrement Life Table

DUE Friday April 24 by 5:00 pm via email

Assignment 1 Due by 5:00 pm

Hirschman, C., S.H. Preston, and V.M. Loi. 1995. "[Vietnamese Casualties during the American War](#)." *Population and Development Review* 21:783-812.

4 Week Four, April 20-24

! Preston, S. H., P. Heuveline and M. Guillot. 2001. "**Chapter 4: Multiple Decrement Processes.**" Pp. 71-91 in *Demography: Measuring and Modeling Population Processes*. Oxford, UK: Blackwell.

4.1 April 22: Constructing a Multiple Decrement Life Table

Chiang, C.L. 1968. "Competing Risks." Chapter 7, Pp. 107-118 in Bogue, D.J., E.E. Arriaga and D.L. Anderton. (Eds.) 1993. *Readings in Population Research Methodology Volume 2*. Chicago: Published for the United Nations Population Fund by Social Development Center.

Hajnal, J. 1953. "[Age at Marriage and Proportions Marrying.](#)" *Population Studies* 7(2): 111-132.

4.2 April 24: Using and Interpreting the Multiple Decrement Life Table

Assignment 3: Multiple Decrement Life Table

DUE Friday May 8 by 5:00 pm via email

Assignment 2 Due by 5:00 pm

Schoen, R., W. Urton, K. Woodrow and J. Baj. 1985. "[Marriage and Divorce in Twentieth Century American Cohorts.](#)" *Demography* 22(1): 101-114.

Trussell, J., J. Strickler and B. Vaughan. 1993. "[Contraceptive Efficacy of the Diaphragm, the Sponge and the Cervical Cap.](#)" *Family Planning Perspectives* 25(3): 100-105

5 Week Five, April 27 – May 1

Population Association of America (PAA) annual meeting.

5.1 April 29: NO CLASS

5.2 May 1: NO CLASS

6 Week Six, May 4-8

! Preston, S. H., P. Heuveline and M. Guillot. 2001. "**Chapter 5: Fertility and Reproduction.**" Pp. 92-116 in Demography: Measuring and Modeling Population Processes. Oxford, UK: Blackwell.

6.1 **May 6: Concepts and Measures in Fertility and Reproduction**

Henry, L. 1961. "[Some Data on Natural Fertility](#)." Pp.40-52 in Bogue, D.J., E.E. Arriaga and D.L. Anderton. (Eds.) 1993. Readings in Population Research Methodology Volume 10. Chicago: Published for the United Nations Population Fund by Social Development Center.

Keyfitz, N. 1971. "How Birth Control Affects Births." *Social Biology* 18(2): 109-121.

Pressat, R. 1972. "Parity Progression Ratios." Chapter 10, Pp. 40-52 in Bogue, D.J., E.E. Arriaga and D.L. Anderton. (Eds.) 1993. Readings in Population Research Methodology Volume 3. Chicago: Published for the United Nations Population Fund by Social Development Center.

Bongaarts J. and R.G. Potter. 1983. Chapters 1 and 2. Fertility, Biology and Behavior - An Analysis of the Proximate Determinants of Fertility. New York: Academic Press.

Bongaarts, J. and R.G. Potter 1983a. "An Aggregate Fertility Model." chapter 12, pp.57-68 in Bogue, D.J., E.E. Arriaga and D.L. Anderton. (Eds.) 1993. Readings in Population Research Methodology Volume 3. Chicago: Published for the United Nations Population Fund by Social Development Center.

Rindfuss, R.R., J.A. Palmore, and L.L. Bumpass. 1987. "[Analyzing Birth Intervals: Implications for Demographic Theory and Data Collection](#)." *Sociological Forum* 2(4)811-828.

Bongaarts, J. and G. Feeney. 1998. "[On the Quantum and Tempo of Fertility](#)." *Population and Development Review* 24:271-292.

6.2 **May 8: Overview of Human Fertility**

Assignment 4: Fertility and Reproduction

DUE Friday May 15 by 5:00 pm via email

Assignment 3 Due by 5:00 pm

Davis, K. and J. Blake. 1956. "[Social Structure and Fertility: An Analytic Framework](#)." *Economic Development and Cultural Change* 4(3):211-35.

Coale, A.J. and S.C. Watkins (Eds.) The Decline of Fertility in Europe. Princeton: Princeton University Press.

Ryder, N. 1986. "[Observations on the History of Cohort Fertility in the United States](#)." *Population and Development Review* 12(4): 617-643.

Feeney, G. and J. Yu. 1987. "[Period Parity Progression Measures of Fertility in China](#)." *Population Studies* 41(1):77-102.

Leridon, H. 1992. "[Sterility and Subfecundity: From Silence to Impatience?](#)" *Population: An English Selection* 4:35-54.

7 Week Seven, May 11-15

7.1 May 13: IN-CLASS MIDTERM

7.2 May 15: Methods for Evaluating Data Quality

Assignment 4 Due by 5:00 pm

! Preston, S. H., P. Heuveline and M. Guillot. 2001. "**Chapter 10: Methods for Evaluating Data Quality.**" Pp. 211-23 in Demography: Measuring and Modeling Population Processes. Oxford, UK: Blackwell.

Caldwell, J. C. 1966. "[A Study of Age Misstatement among Young Children in Ghana.](#)" *Demography* 3(2): 477-90.

Preston, S. H. And K. Hill. 1980. "[Estimating the Completeness of Death Registration.](#)" *Population Studies* 34(2):349-66.

Elo, I.T. and S.H. Preston. 1994. "[Estimating African-American Mortality from Inaccurate Data.](#)" *Demography* 31(3):427-58.

8 Week Eight, May 18-22

! Preston, S. H., P. Heuveline and M. Guillot. 2001. "**Chapter 6: Population Projection.**" Pp. 117-37 in Demography: Measuring and Modeling Population Processes. Oxford, UK: Blackwell.

8.1 May 20: Understanding Population Projection

Keyfitz, N. 1985. "Chapter VIII." in Applied Mathematical Demography. Berlin, New York: Springer-Verlag.

Lee, R.D. and L Carter. 1992. "[Modeling and Forecasting U.S. Mortality.](#)" *Journal of American Statistical Association* 87:659-675.

United Nations. 1999. "Chapter VI: The Methodology of the United Nations Population Estimates and Projections." Pp.187-202 in World Population Prospects: The 1998 Revision, Volume III. New York: United Nations.

8.2 May 22: Interpreting Population Projections

Assignment 5: Population Projection

DUE Friday May 29 by 5:00 pm via email

Stoto, M. 1983. "[The Accuracy of Population Projections.](#)" *Journal of American Statistical Association* 78(381): 13-20.

Lee R.D. and S. Tuljapurkar. 1994. "[Stochastic Population Forecasts for the United States: Beyond High, Medium, and Low.](#)" *Journal of the American Statistical Association* 89:1175-1189.

9 Week Nine, May 25-29

! Preston, S. H., P. Heuveline and M. Guillot. 2001. "**Chapter 9: Modeling Age Patterns of Vital Events.**" Pp. 191-210 in Demography: Measuring and Modeling Population Processes. Oxford, UK: Blackwell.

! Coale, A.J. and J. Trussell. 1996. "[The Development and Use of Demographic Models.](#)" *Population Studies* 50:469-484.

9.1 **May 27: Modeling Age Patterns of Vital Events 1**

Henry, L. 1961. "Some Data on Natural Fertility." *Eugenics Quarterly* (June):81-89.

Coale, A.J. and J. Trussell. 1974. "Model Fertility Schedules: Variations in the Age Structure of Childbearing in Human Populations." *Population Index* 40(2):185-258.

Wilson, C., J. Oeppen and M. Pardoe. 1988. "What is Natural Fertility? The Modelling of a Concept." *Population Index* 54(1):4-20.

9.2 **May 29: Modeling Age Patterns of Vital Events 2**

Assignment 5 Due by 5:00 pm

United Nations Department of International Economic and Social Affairs. 1982. *Population Studies, No. 77, Model Life Tables for Developing Countries*. New York: United Nations

Coale, A. J. and P. Demeny. 1966. Regional Model Life Tables and Stable Populations. Princeton, New Jersey: Princeton University Press.

10 Week Ten, June 1-5

! Preston, S. H., P. Heuveline and M. Guillot. 2001. "**Chapter 11: Indirect Estimation Methods.**" Pp. 224-55 in Demography: Measuring and Modeling Population Processes. Oxford, UK: Blackwell.

10.1 June 3: The "Brass Method" of Estimating Child Mortality, *not examined*

Brass, W. 1975. "Methods for Estimating Fertility and Mortality from Limited and Defective Data." Chapel Hill: Laboratories for Population Statistics, University of North Carolina.

United Nations, Department of International Economic and Social Affairs. 1983. Population Studies, No. 81, Manual X, Indirect Techniques for Demographic Estimation. New York: United Nations.

Zaba, B. and J.C. Blacker (Eds.) 2001. Brass Tacks: Essays in Medical Demography : A Tribute to the Memory of Professor William Brass. London: Athlone Press.

10.2 June 5: TBA, *not examined*

11 Exam Week, June 8-12

TAKE-HOME FINAL EXAM TO BE COMPLETED OVER TWO DAYS.

11.1 June 8:

Final exam emailed out at approximately 9:00 am

11.2 June 9:

Final exam **DUE by 5:00 pm** via email