

Sociology 756
Advanced Demographic Techniques

Spring 2010
T/Th 2:30-3:45
Social Science 6112

Instructor: Jenna Nobles
Email: jnobles@ssc.wisc.edu
Phone: 608-262-4024
Office: 4406 Sewell Social Sciences
Office Hours: Friday 1:30-3:30 or by appointment

This course serves as students' second semester in demographic methods. The course revisits some of the material covered in Sociology 674 (Elementary Demographic Techniques), but focuses on the derivation and continuous-time extension of previously introduced measures. The course also covers a series of additional demographic models. These emphasize (1) how populations change as a function of the *interaction* of multiple demographic processes and (2) how demographic phenomena can be modeled in the absence of perfect information about populations.

The course relies on some basic calculus and matrix algebra but should be accessible to students without much background in either. Prerequisite: Sociology 674 or discussion with instructor.

Required Text: Preston, S., P. Heuveline, and M. Guillot. 2001. *Demography: Measuring and Modeling Population Processes*. London: Blackwell Publishers.
Additional readings can be found on www.jstor.org, or in some cases will be made available online at the class Learn@UW webpage.

CDE: Students are encouraged to attend the weekly Center for Demography and Ecology Seminars, held Tuesdays: 12:20-1:45 in 4308 Sewell Social Sciences.
<http://www.ssc.wisc.edu/cde/demsem/home.htm>. On occasion we will allocate a portion of Tuesday lectures to a discussion of methods used in the presentations.

Computing: All of the problem sets for this class can be done in Microsoft Excel. For students who are interested, I will hold at least one optional matrix programming class mid-semester. We will do this in Stata (non-Mata), Mata, R, or Matlab, depending on student preference. For later assignments, students will have the option of using Excel or programming the assignments and submitting programs for extra credit.

Evaluation: Grades will be based on problem sets (25%), a mid-term exam (35%) and a final exam (40%). Following 674, problem sets will be posted to our class webpage Saturdays at noon. They should take between 1 and 3 hours and are due the following Thursday in class.

Anticipated Course Schedule (we may spend longer amounts of time on topics as needed).

January 19, 21: Introduction, Demographic Rates, Population Growth Rates

-Preston et al. Chapter 1

January 26, 28: Age-Specific Rates and Probabilities, Standardization, Decomposition

-Preston et al. Chapter 2

-Smith, H. S.P.Morgan, T. Koropecjy-Cox. 1996. "A Decomposition of Trends in the Nonmarital Fertility Ratios of Blacks and Whites in the United States, 1960-1992." *Demography* 33(2):141-151.

-Razaque, A., N. Alam, L. Wai, and A. Foster. 1990. "Sustained Effects of the 1974-1975 Famine on Infant and Child Mortality in a Rural Area of Bangladesh." *Population Studies* 44:145-154.

-Sweeney, M.M., and J.A.Phillips. 2004. "Understanding Racial Differences in Marital Disruption." *Journal of Marriage and Family* 66(3):639-650.

February 2, 4, 9, 11: The Life Table, Single Decrement Processes, Variance Estimation

-Preston et al. Chapter 3

-Chiang, C.L. 1984. The Life Table and Its Applications. Krieger Publishing. Pages 147-152.

-Wildeman, C. 2009. "Parental Imprisonment, the Prison Boom, and the Concentration of Childhood Disadvantage." *Demography* 46(2):265-280.

-Eloundou-Enyegue, P. 2004. "Pregnancy-Related Dropouts and Gender Inequality in Education." *Demography* 41(3): 50-528.

-Crimmins, E.M., Y. Saito, D. Ingegneri. 1989. "Changes in Life Expectancy and Disability-Free Life Expectancy in the United States." *Population and Development Review* 15(2): 235-267.

For Feb 11:

- Chiang, C.L. 1984. The Life Table and Its Applications. Krieger Publishing. Pages 78-85, 103-109, 153-167.

- Molla, M.T., D.K. Wagener, and J.H. Madans. 2001. "Summary Measures of Population Health: Methods for Calculating Healthy Life Expectancy." *Health People 2010*: 21. National Center for Health Statistics.

-Lynch, Scott M. and J. Scott Brown. 2005. "A New Approach to Estimating Life Tables with Covariates and Constructing Interval Estimates of Life Table Quantities." *Sociological Methodology* 35: 177-225.

- Efron, B. and R.J. Tibshirani. 1983. *Introduction to the Bootstrap*. Chapters 1,2, and 6.

February 16: Multiple Decrement Processes

-Preston et al. Chapter 4

-Hajnal, J. 1953. "Age at Marriage and Proportions Marrying." *Population Studies* 7(2): 111-32.

-Mensch, B.S., M.J. Grant, and A.K. Blanc. 2006. "The Changing Context of Sexual Initiation in Sub-Saharan Africa." *Population and Development Review* 32(4):699-727.

-Preston, S.H. 1970. "The Age-Incidence of Death from Smoking." *Journal of the American Statistical Association* 65(331):1125-1130.

February 18, 23, 25: Fertility Measures, Demographic Translation

- Preston et al. Chapter 5
- Ryder, N. 1965. "The Cohort as a Concept in the Study of Social Change." *American Sociological Review* 30(6):843-861.
- Bongaarts, J. 1982. "The Fertility-Inhibiting Effects of the Intermediate Fertility Variables." *Studies in Family Planning* 13:179-189.
- DeRose, L. and A. Ezeh. 2005. "Men's Influence on the Onset and Progress of Fertility Decline in Ghana, 1988-98." *Population Studies* 59(2):197-210.

For Feb 25th:

- Bongaarts, J. and G. Feeney. 1998. "On the Quantum and Tempo of Fertility." *Population and Development Review* 24(2): 271-291.
- Schoen, R. 2004. "Timing Effects and the Interpretation of Period Fertility." *Demography* 41(4): 801-819.
- Kohler, H.P. and J.A.Ortega. 2002. "Tempo-Adjusted Period Parity Progression Measures, Fertility Postponement, and Completed Cohort Fertility." *Demographic Research* 6(6):91-144.
- Schoen, R. 2006. *Dynamic Population Models*. Springer. Chapter 6.

March 2, 4, 9: The Stable Population Model, Exam Review

- Preston et al. Chapter 7, pp. 138-55.
- Preston, S.H. 1982. "Relations between Individual Life Cycles and Population Characteristics." *American Sociological Review* 47: 253-264.
- Alho, J.M. 2008. "Migration, Fertility, and Aging in Stable Populations." *Demography* 45(3): 641-650.

March 11: Midterm Exam (material covered Jan 19-Feb 25)

March 16, 18: Age Distributions and Population Momentum

- Preston et al. Chapter 7, pp. 155-170.
- Preston, S.H., C. Himes, and M. Eggers. 1989. "Demographic Conditions Responsible for Population Aging." *Demography* 26(4):691-704.
- Knodel, J. 1999. "Deconstructing Population Momentum." *Population Today* 27(3):1-2,7.
- Preston, S.H. and M.Guillot. 1997. "Population Dynamics in an Age of Declining Fertility." *Genus* 53(3/4):15-31.

March 23, 25: Age Patterns of Vital Events

- Preston et al. Chapter 9
- Coale, A.J. and P. Demeny. 1983. *Regional Model Life Tables and Stable Populations*. Academic Press. Introduction.
- Coale, A.J. 1971. "Age Patterns of Marriage." *Population Studies* 25(2):193-214.
- Kannisto, V., J. Lauritsen, A.R. Thatcher, J.W.Vaupel. 1994. "Reductions in Mortality at Advanced Ages: Several Decades of Evidence from 27 Countries" *Population and Development Review* 20(4):793-810.
- Tuljapurkar, S. and C. Boe. 1998. "Mortality Change and Forecasting: How Much and How Little Do We Know?" *North American Actuarial Journal* 2(4):13-37.

April 6, 8: Increment-Decrement Life Tables

- Preston et al. Chapter 12
- Rogers, A. 1975. *Introduction to Multiregional Mathematical Demography*. John Wiley and Sons. New York. Chapter 3.
- Schoen, R. 1988. "Practical Uses of Multistate Population Models." *Annual Review of Sociology* 14:341-61.
- Heuveline, P., J. Timberlake, F. Furstenberg. 2003. "Shifting Childrearing to Single Mothers: Results from 17 Western Countries." *Population and Development Review* 29(1): 47-71.
- Yang, Y. 2008. "Long and Happy Living: Trends and Patterns of Happy Life Expectancy in the U.S., 1970-2000." *Social Science Research* 37(4):1235-1252.
- Land, K.C., J. M.Guralnik, and D.G.Blazer. 1994. "Estimating Increment-Decrement Life Tables with Multiple Covariates from Panel Data: The Case of Active Life Expectancy." *Demography* 31(2):297-319.

April 13, 15: Cohort Component Projection, Multiregional Projection

- Preston et al. Chapter 6.
- Lutz, W. W. Sanderson, and S. Scherbov. 2001. "The End of World Population Growth." *Nature*. 412:543-545.
- Mare, R. 1997. "Differential Fertility, Intergenerational Educational Mobility, and Racial Inequality." *Social Science Research* 26(3): 263-291.
- Preston, S.H. and C. Campbell. 1993. "Differential Fertility and the Distribution of Traits: The Case of IQ." *American Journal of Sociology* 98(5):997-1019.
- Mare, R. and V. Maralani. 2006. "The Intergenerational Effects of Changes in Women's Educational Attainments." *American Sociological Review* 71:542-564.

April 20, 22: Introduction to Variable-r

- Preston et al. Chapter 8
- Preston, S. and A. Coale. 1982. "Age Structure, Growth, Attrition and Accession: A New Synthesis." *Population Index* 48(2):217-259.
- Merli, M.G. 1998. "Mortality in Vietnam, 1979-1989." *Demography* 35(3): 345-360.
- Cai, Y. 2008. "An Assessment of China's Fertility Level Using the Variable-r Method." *Demography* 45(2): 271-281.

April 27: Data Quality

- Preston et al. Chapter 10
- Rehner, R.R., F.R. Furstenburg, A.A. Belzer. 1999. "How Much Do We Count? Interpretation and Error-Making in the Decennial Census." *Demography* 36(1):121-134.
- Merli, M.G. and A.E. Raftery. 2000. "Are Births Underreported in Rural China? Manipulation of Statistical Records in Response to China's Population Policies." *Demography* 37(1): 109-126.

April 29, May 4, 6: Indirect Estimation, Exam Review

- Preston et al. Chapter 11
- Zeng, Y., A.J. Coale, M.K. Choe, L.Zhiwu and L. Li. 1994. "Leaving the Parental Home: Census-Based Estimates for China, Japan, South Korea, United States, France, and Sweden." *Population Studies* 48(1):65-80.
- Schmertmann, C.P. 2002. "A Simple Method for Estimating Age-Specific Rates from Sequential Cross-Sections." *Demography* 39(2):287-310.
- Guillot, M. and Y.Yu. 2009. "Estimating Health Expectancies from Two Cross-Sectional Surveys: The Intercensal Method." *Demographic Research* 21(17): 503-534.