

## Mortality and Health

### DEMOGRAPHY 230

- TIME:** Tuesday and Thursday, 3:30 – 5 p.m.
- LOCATION:** Department of Demography, 2232 Piedmont, Rm. 100
- PROFESSOR:** John R. Wilmoth
- OFFICE HOURS:** Wednesday, 3-5 p.m., 2232 Piedmont, Rm. 204
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- WEBSITE:** <http://demog.berkeley.edu/~jrw/Dem230>
- READER:** Copies of all reading materials are held on reserve in the Demography library (3<sup>rd</sup> floor, 2232 Piedmont Avenue). Please do not remove the reserve copies from the library except for photocopying.
- DESCRIPTION:** This course will examine patterns of mortality and health in human populations, as well as methods for analyzing and understanding those patterns. In order to limit the scope of the course, we will focus primarily on patterns of adult and old-age mortality and health, and on biological processes of aging. In addition, we will emphasize *causes* of variation in health and mortality, rather than *consequences* of such patterns for other aspects of society. For example, we will examine the effects of smoking on health and mortality, but we will not consider the resulting financial costs of smoking-related illness and death.
- GRADING:** Grades will be based on four factors:
- |                     |     |                |     |
|---------------------|-----|----------------|-----|
| Class participation | 10% | Problem sets   | 35% |
| Presentation        | 20% | Research paper | 35% |
- Active participation is an important element of this course. It is expected that students will attend class regularly and be well prepared to discuss assigned readings. Problem sets and the research paper form the bulk of the grade for this course. Student presentations, during the last weeks of class, are another component.
- PROBLEM SETS:** The following problem sets will be distributed during the semester. The organization of topics follows part I of the course outline (see below). Check the calendar (also below) for due dates.
1. Fundamental concepts
  2. Data sources and quality
  3. Probabilities, rates, survival curves, laws of mortality
  4. Mortality surfaces and life tables from complete data (direct estimation)
  5. Active/healthy life expectancy, disability adjusted life years (DALYs)
  6. Infant and child mortality from incomplete data (indirect estimation)
  7. Adult mortality from incomplete data (indirect estimation)

## ORGANIZATION

An outline of the material that is considered central to this course is given below. We will not be able to cover all of these topics in detail, but we will touch on all of them at some point. Students can also refer to this outline when choosing a research topic (for the paper and presentation).

### I. Methods and materials

#### A. Fundamental concepts

1. incidence, prevalence
2. mortality, morbidity, disability
3. causes of death
4. activities of daily living

#### B. Data sources and quality

1. vital statistics, census
2. demographic and health surveys
3. clinical trials
4. health care providers (private or public)
5. ethnographic observation
6. archaeology

#### C. Measures, models, and analyses

1. probabilities, rates, survival curves, laws of mortality
2. mortality surfaces and historical life tables, direct estimation
3. active/healthy life expectancy, disability-adjusted life years (DALYs)
4. model life tables, relational models, indirect estimation

### II. Trends, variation, and explanation

#### A. Age-related changes

1. stages of the life course
2. evolution of lifespan
3. mechanisms of aging
4. laws of mortality

#### B. Time trends

1. epidemiologic transitions
2. historical forces of change
3. quality of life, disability
4. future prospects

#### C. Differentials

1. genetic variation
2. social class, race, ethnicity
3. sex, gender
4. marital status, social support
5. personal behaviors (e.g., smoking, diet, exercise, religion)

## CALENDAR

Week	Dates	Topic	Readings	Due dates
1	August 28	Introduction		
	August 30	Fundamental concepts (I.A)	Meslé & Vallin; Katz <i>et al.</i> ; Ferrucci <i>et al.</i> ; Verbrugge & Jette	
2	September 4	Stages of the life course (II.A.1)	Arking, Ch1-3	
	September 6	Evolution of lifespan (II.A.2)	Arking, Ch4	#1
3	September 11	Data sources and quality (I.B)	Preston <i>et al.</i> ; Myers & Manton; Redfern; Arnold	
	September 13	Guest lecture: Art Reingold, “Infectious disease and mortality decline in the developing world”	Ahmad <i>et al.</i> ; Pison <i>et al.</i> ; Ibrahim <i>et al.</i>	
4	September 18	Mechanisms of aging (II.A.3)	Arking, Ch5	
	September 20	Laws of mortality (II.A.4)	Wilmoth [2]; Strehler & Mildvan	#2
5	September 25	Probabilities, rates, survival curves, laws of mortality (I.C.1)	Palmore & Gardner, Ch1; Elandt-Johnson & Johnson, Ch2; Kannisto <i>et al.</i>	
	September 27	Epidemiologic transitions (II.B.1)	Omran; Horiuchi; Preston & Haines, Preface and Ch1	
6	October 2	Historical forces of change (II.B.2)	McKeown, Intro and Ch8; Fogel; Preston & Haines , Ch6	
	October 4	Quality of life, disability (II.B.3)	Manton & Gu; Robine <i>et al.</i> ; Murray & Lopez	#3
7	October 9	Mortality surfaces and historical life tables (I.C.2)	Wilmoth [4]; Keyfitz, Ch2; Palmore & Gardner, Ch2	
	October 11	Future prospects (II.B.4)	Wilmoth [1], incl. letters; Lee and Carter; Olshansky <i>et al.</i> , incl. letter; Wilmoth [3]; Arking, Ch7	
8	October 16	Guest lecture: Judith Campisi, “Understanding and controlling cancer”	Cairns; Heimann and Hellman	
	October 18	Genetic variation (II.C.1)	Miller; Kerber <i>et al.</i> ; McGue <i>et al.</i> ; Arking, Ch6	#4
9	October 23	Active/healthy life expectancy, disability-adjusted life years (I.C.3)	Murray; Williams	
	October 25	Guest lecture: TBA	TBA	

## CALENDAR (cont.)

Week	Dates	Topic	Readings	Due dates
	October 30	Social class differentials (II.C.2)	Feinstein; Adler <i>et al.</i>	
10	November 1	Sex and gender differentials (II.C.3)	Waldron; Vallin	#5
	November 6	Model life tables, indirect estimation (I.C.4)	Coale & Demeny, Ch1-3; United Nations, Ch1-3	
11	November 8	Marital status, social support (II.C.4)	House <i>et al.</i> ; Goldman [1] and [2]	
	November 13	Personal behaviors (II.C.5)	Freedman & Petitti; Peto <i>et al.</i> ; Poikolainen; Taubes	#6
12	November 15	Guest lecture: TBA	TBA	
	November 20	Relational models, indirect estimation (I.C.4, cont.)	Timaeus [1] and [2]	
13	November 22	THANKSGIVING		
	November 27	Presentations: TBA		
14	November 29	Presentations: TBA		#7
	December 4	Presentations: TBA		
15	December 6	Presentations: TBA		

## READING LIST

- Adler, Nancy, Thomas Boyce, Margaret A. Chesney, Sheldon Cohen, Susan Folkman, Robert L. Kahn, and S. Leonard Syme. Socioeconomic status and health: The challenge of the gradient. *American Psychologist* 49(1): 15-24.
- Ahmad, Omar B., Alan D. Lopez, and Mie Inoue. The decline in child mortality: a reappraisal. *Bulletin of the World Health Organization* 78(10): 1175-1191, 2000.
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- Arnold, Fred. An assessment of data quality in the Demographic and Health Surveys. In: *Proceedings of the Demographic and Health Surveys World Conference*, Vol. 2, Columbia, Maryland: IRD/Macro International, pp. 785-806, 1991.
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- Feinstein, Jonathan S. The relationship between socioeconomic status and health: A review of the

- literature. *The Milbank Quarterly* 71(2): 279-322, 1993.
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- Heimann, Ruth, and Samuel Hellman. Aging, progression, and phenotype in breast cancer. *Journal of Clinical Oncology* 16(8): 2686-2692, 1998.
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