

EPID 210: Epidemiology of Aging
Department of Epidemiology and Biostatistics

Overview

- Term: Winter 2019
- Schedule: Fridays, January 11 - March 22, 8:45am to 10:15am
- Classroom: Mission Hall 1105
- Units: 2

Faculty and Staff

Primary Instructor

Rebecca Graff, ScD
Assistant Professor, Department of Epidemiology and Biostatistics
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Office Hours: By Appointment

Guest Lecturers

Steve Cummings, MD, FACP
Professor Emeritus, Department of Medicine
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Kenneth Covinsky, MD, MPH
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Peggy Cawthon, PhD, MPH
Associate Professor, Department of Epidemiology and Biostatistics
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Kala Mehta, DSc, MPH
Associate Professor, Department of Epidemiology and Biostatistics
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Course Coordinator

Clair Dunne, MPA
Analyst 4, Department of Epidemiology and Biostatistics
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Objectives

This seminar course offers an introduction to the methods involved in epidemiologic research of aging and to common functional impairments in elderly populations. Students will learn to integrate epidemiologic methods and subject matter knowledge to critically appraise literature about aging and age-related diseases and disorders. The course is designed to complement the T32 training program in chronic disease and aging.

Upon completion of this course, students will be able to:

- Understand theories of biological and social processes that underlie the development of diseases and disorders in aging populations
- Apply epidemiological and statistical methods to questions asked in aging populations, especially in a longitudinal context
- Identify major risk factors associated with diseases and disorders in older populations

Prerequisites

This course is appropriate for any graduate student, postdoc, fellow, or faculty in a health sciences discipline who is interested in the topic. The only prerequisite is willingness to participate in discussions and to present on key topics.

Course Format

Course content will be delivered through interactive weekly lectures. All course materials will be made available through the [course website](#).

Course Requirements

- Class Participation (25%): Dynamic discussion is critical for this course. It is thus essential that students read the assigned materials and actively participate in the classroom. Students should plan to attend all sessions.
- Write-up Regarding Measurement (15%): Each student must focus on a unique chronic disease or disorder, type of physical or cognitive dysfunction, or mood disorder associated with aging and write two single-spaced pages (excluding references) that consider the issues of measurement that may arise in research in the selected domain. Use standard 8.5"x11" pages with 1-inch margins and an 11- or 12-point standard font. Adhere to length limits; the instructor will not read beyond the length specified. Due at 8:45am on February 1.
- Student Presentation (25%): Each student must prepare a 10-minute lecture and lead a five-minute discussion regarding the domain selected for their measurement assignment. Students should define the condition, provide descriptive epidemiology, and introduce a methods concern (other than measurement) relevant to studying the disorder. Slides should be uploaded by 8:00am on the day of the presentation.

- Debate (25%): Students will vote on a controversial topic in aging epidemiology to debate in class. They will then be randomly assigned to debate one side of the topic. Each group will describe its position in a 15-minute presentation (that includes references), after which the opposing group will have five minutes for critique. The presenting group will then get five more minutes to rebut the critique. After both groups have presented and been critiqued, each will have the opportunity to deliver a five-minute closing argument. All individuals participating in the debate should be active in the presentation and/or rebuttal.

Example debate topics:

- Is the efficacy of statins modified by age at treatment?
- Should men over the age of 65 be screened for osteoporosis?
- Does lifestyle or do genetics contribute more to the risk of dementia?

Slides should be uploaded by 8:00am on March 15.

- Debate Write-up (10%): Working *individually*, each student should write two single-spaced pages (excluding references) summarizing the most salient points of both sides of the debate. Additionally identify one important point that did NOT come up during the debate. Use standard 8.5"x11" pages with 1-inch margins and an 11- or 12-point standard font. Adhere to length limits; the instructor will not read beyond the length specified. Due at 8:45am on March 22.

All assignments should be turned in on the [course website](#).

Schedule

Date	Topic(s)	Presenter(s)	Assignment(s)
Jan 11	- Course Introduction - Epidemiology of Aging Overview	Rebecca Graff	- Crimmins EM. Trends in the Health of the Elderly. <i>Annu Rev Public Health</i>. 2004;25:79-98. PMID: 15015913. - Partridge L, Deelen J, Slagboom PE. Facing Up to the Global Challenges of Ageing. <i>Nature</i>. 2018;561(7721):45-56. PMID: 30185958. - Gawande A. (2007) The Way We Age Now. The New Yorker. Available at: https://www.newyorker.com/magazine/2007/04/30/the-way-we-age-now.
Jan 18	Biology of Aging	Steve Cummings	- Rank three possible topics for the measurement assignment (February 1) and student presentation (February 22, March 1, or March 8). The instructor will choose one of the three topics (so as to avoid overlap across students). https://en.wikipedia.org/wiki/Ageing (focusing on the medical, physical, and biologic aspects of aging) - DiLoreto R, Murphy CT. The Cell Biology of Aging. <i>Mol Biol Cell</i>. 2015; 26(25):4524-31. PMID: 26668170. - LeBrasseur NK, Tchkonja T, Kirkland JL. Cellular Senescence and the Biology of Aging, Disease, and Frailty. <i>Nestle Nutr Inst Workshop Ser</i>. 2015;83:11-8. PMID: 26485647.
Jan 25	Methods Themes	Rebecca Graff	- Samelson EJ, Kelsey JL, Kiel DP, et al. Issues in Conducting Epidemiologic Research Among Elders: Lessons from The MOBILIZE Boston Study. <i>Am J Epidemiol</i>. 2008;168(12):1444-51. PMID: 18953059. - Driver JA, Beiser A, Au R, et al. Inverse Association Between Cancer and Alzheimer's Disease: Results from the Framingham Heart Study. <i>BMJ</i>. 2012;344: e1442. PMID: 22411920. - Doll R, Peto R, Boreham J, et al. Mortality in Relation to Smoking: 50 Years' Observations on Male British Doctors. <i>BMJ</i>. 2004;328(7455):1519. PMID: 15213107.
Feb 1	Measurement in Elderly Populations	Rebecca Graff	- Write-up Regarding Measurement - Gianattasio KZ, Wu Q, Glymour MM, et al. Comparison of Methods for Algorithmic Classification of Dementia Status in the Health and Retirement Study. <i>Epidemiology</i>. In press. PMID: 30461528 - Jette AM. How Measurement Techniques Influence Estimates of Disability in Older Populations. <i>Soc Sci Med</i>. 1994;38(7):937-42. PMID: 8202742.
Feb 8	Clinical Perspectives on Aging	Kenneth Covinsky	- Identify one possible topic for the March 15 debate. - Covinsky KE, Pierluissi E, Johnston CB. Hospitalization-Associated Disability: "She Was Probably Able to Ambulate, But I'm Not Sure". <i>JAMA</i>. 2011; 306(16):1782-93. PMID: 22028354. - Rowe JW, Kahn RL. Successful Aging. <i>Gerontologist</i>. 1997;37(4):433-40. PMID: 9279031.
Feb 15	- Longitudinal Methods for Aging Populations - The Life Course Perspective	Rebecca Graff	- Hulmán A, Tabák AG, Nyári TA, et al. Effect of Secular Trends on Age-Related Trajectories of Cardiovascular Risk Factors: the Whitehall II Longitudinal Study 1985-2009. <i>Int J Epidemiol</i>. 2014;43(3):866-77. PMID: 24464190. - Mishra G, Nitsch D, Black S, et al. A Structured Approach to Modelling the Effects of Binary Exposure Variables Over the Life Course. <i>Int J Epidemiol</i>. 2009;38(2):528-37. PMID: 19028777.
Feb 22	Chronic Diseases and Disorders of Aging	Rebecca Graff Student Presentations	- If applicable, upload presentation slides to the course website. - Parikh NI, Gona P, Larson MG, et al. Long-Term Trends in Myocardial Infarction Incidence and Case Fatality in the National Heart, Lung, and Blood Institute's Framingham Heart Study. <i>Circulation</i>. 2009 Mar 10;119(9):1203-10. PMID: 19237656. - Kronmal RA, Barzilay JI, Smith NL, et al. Mortality in Pharmacologically Treated Older Adults with

			Diabetes: The Cardiovascular Health Study, 1989-2001. <i>PLoS Med.</i> 2006;3(10):e400. PMID: 17048978
Mar 1	Frailty, Disability, and Functional Impairment	Peggy Cawthon Student Presentations	- As a group, prepare a one-page outline of your debate arguments. - If applicable, upload presentation slides to the course website. - Fried LP, Ferrucci L, Darer J, et al. Untangling the Concepts of Disability, Frailty, and Comorbidity: Implications for Improved Targeting and Care. <i>J Gerontol A Biol Sci Med Sci.</i> 2004;59(3):255-63. PMID: 15031310. - Theou O, Rockwood MR, Mitnitski A, et al. Disability and Co-Morbidity in Relation to Frailty: How Much Do They Overlap? <i>Arch Gerontol Geriatr.</i> 2012;55(2):e1-8. PMID: 22459318. - Bianchi L, Ferrucci L, Cherubini A, et al. The Predictive Value of the EWGSOP Definition of Sarcopenia: Results From the InCHIANTI Study. <i>J Gerontol A Biol Sci Med Sci.</i> 2016;71(2):259-64. PMID: 26333772
Mar 8	- Cognitive Function - Depression / Mood	Rebecca Graff Student Presentations	- If applicable, upload presentation slides to the course website. - Byers AL, Yaffe K, Covinsky KE, et al. High Occurrence of Mood and Anxiety Disorders Among Older Adults: The National Comorbidity Survey Replication. <i>Arch Gen Psychiatry.</i> 2010;67(5):489-96. PMID: 20439830. - Satizabal CL, Beiser AS, Chouraki V, et al. Incidence of Dementia over Three Decades in the Framingham Heart Study. <i>N Engl J Med.</i> 2016;374(6):523-32. PMID: 26863354.
Mar 15	Debate	N/A	Upload debate slides to the course website.
Mar 22	- Global Health and Aging Populations - Course Wrap-up	Kala Mehta Rebecca Graff	- Laptops Required for Class - Debate Write-up - GBD 2017 DALYs and HALE Collaborators. Global, Regional, and National Disability-Adjusted Life-Years (DALYs) for 359 Disease and Injuries and Healthy Life Expectancy (HALE) for 195 Countries and Territories, 1990-2017: A Systematic Analyses for the Global Burden of Disease Study 2017. <i>Lancet.</i> 2018;392(10159):1859-1922. PMID: 30415748.