

# HEALTH RESEARCH AND POLICY

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*Professors:* Bradley Efron, Trevor Hastie, Victor W. Henderson, Mark Hlatky, Iain M. Johnstone, Abby C. King, Philip W. Lavori, Richard A. Olshen, Julie Parsonnet, Robert Tibshirani, Alice S. Whittemore, Dee W. West, Wing Wong

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*Assistant Professor:* M. Kate Bundorf

*Professor (Research):* Dan Bloch

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*Courtesy Associate Professors:* Alex Macario, Yvonne Maldonado, Mark McClellan (on leave), Douglas Owens, David R. Rogosa, Marilyn Winkleby

*Courtesy Assistant Professors:* Michael K. Gould, Paul Heidenreich

*Senior Lecturer:* Irene Corso

*Lecturers:* Raymond Balise, Margaret Eaton, Laurel Habel, Lisa Herrington, Pamela Horn-Ross, Andy Karter, David Lilienfeld, Caroline Tanner, Timothy K. Stanton, Stephen Van Den Eden

*Consulting Professors:* Gary Friedman, Elizabeth Holly, Joseph Selby

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Courses given in Health Research and Policy have the subject code HRP. For a complete list of subject codes, see Appendix.

The Department of Health Research and Policy has three principal areas of scholarly interest:

1. Biostatistics deals with scientific methodology in the medical sciences, emphasizing the use of statistical techniques.
2. Epidemiology is concerned with problems of health and disease in human populations and with efforts toward improving levels of health. Epidemiology also provides training in the application of epidemiologic methods to the study of disease etiology and control.
3. Health Services Research is concerned with many aspects of health policy analysis in the public and private sectors.

## GRADUATE PROGRAMS

The Program in Epidemiology and the Program in Health Services Research are housed in the Department of Health Research and Policy. These programs, which offer M.S. degrees in Epidemiology and in Health Services Research, are described separately in the relevant sections this bulletin. Students with an interest in pursuing advanced degrees with an emphasis on biostatistics can do so through programs offered by the Department of Statistics. Division of Biostatistics faculty participate in these programs.

For additional information, address inquiries to the Educational Coordinator, Department of Health Research and Policy, Stanford University School of Medicine, HRP Redwood Building, Room T213D, Stanford, California 94305-5405.

## COURSES

Course and lab instruction in the Department of Health Research and Policy conforms to the "Policy on the Use of Vertebrate Animals in

Teaching Activities," the text of which is available at <http://www.stanford.edu/dept/DoR/rph/8-2.html>.

**HRP 89Q. Introduction to Crosscultural Issues in Medicine**—Stanford Introductory Seminar. Preference to sophomores. Crosscultural issues that impact health care delivery such as ethnicity, immigration, language barriers, and service expectations. Fosters an understanding of culturally unique and non-English speaking populations, developing interpersonal and communication skills with diverse ethnic groups. GER:EC-AmerCul

3 units, Win (Corso)

**HRP199. Undergraduate Research**—Student investigations sponsored by faculty members. Prerequisite: consent of the instructor.

1-18 units, Aut, Win, Spr, Sum (Staff)

**HRP 206. Topics in Quantitative Methods: Meta-Analysis**—(Enroll in STATS 211, EDUC 493B.)

1-3 units, Win (Olkin)

**HRP 207. Issues and Methods of Health Services and Policy Research**—Primarily for students in the Health Services and Policy Research scholarly track. Topics include health care systems and institutions, health insurance, regulation, cost effectiveness analysis, and medical decision making.

2 units, Aut (Baker, McDonald)

**HRP209. Medicine and the Law**—Topics: medical malpractice, patient consent and confidentiality rights, human subject research, withdrawing life support and physician-assisted suicide, futile medical care, legal requirements in psychiatry, physician discipline, medical staff law, and HMO litigation.

2 units, Win (Eaton)

**HRP 210. Health Law and Policy**—(Same as Law 313.) Open to law or medical students and qualified undergraduates by consent of instructor. The American health care system and its legal and policy problems. Topics: characteristics of medical care compared to other goods and services; difficulties of assuring quality care; the complex patchwork of the financing system; and ethical problems the system raises. Course begins September 6.

3 term units, Aut semester (Greely)

**HRP 211. Law and Biosciences**—(Same as LAW 368.) For medical students; graduate students by consent of instructor. Legal, social, and ethical issues arising from advances in the biosciences. Focus is on human genetics; also advances in assisted reproduction and neuroscience. Topics include forensic use of DNA, genetic testing, genetic discrimination, eugenics, cloning, pre-implantation genetic diagnosis, neuroscientific methods of lie detection, and genetic or neuroscience enhancement. Course begins September 6.

3 term units, Aut semester (Greely)

**HRP212. Crosscultural Medicine**—Interviewing and behavioral skills needed to facilitate culturally relevant health care across all population groups. Explicit and implicit cultural influences operating in formal and informal medical contexts.

3 units, Spr (Corso)

**HRP 214. Scientific Writing**—Step-by-step through the process of writing and publishing a scientific manuscript. How to write effectively, concisely, and clearly. Preparation of an actual scientific manuscript. Students are encouraged to bring a manuscript on which they are currently working to develop and polish throughout the course.

2-3 units, Win (Cobb)

**HRP 223. Data Management and Statistical Programming**—The skills required for management and analysis of biomedical data. Topics include importing and exporting data from multiple database systems, visualizing and cleaning data, data management for multicenter projects, and data security. Introduction to applied statistical programming relevant to epidemiologic and clinical research. No previous programming experience required.

2-3 units, Aut (Balise)

**HRP 225. Design and Conduct of Clinical and Epidemiologic Studies**—Intermediate-level. The skills to design, carry out, and interpret epidemiologic studies, particularly of chronic diseases. Topics: epidemiologic concepts, sources of data, cohort studies, case-control studies, cross-sectional studies, sampling, estimating sample size, questionnaire design, and the effects of measurement error. Prerequisite: 159/259 or equivalent, or consent of instructor.

3-4 units, Aut (Popat)

**HRP226. Advanced Epidemiologic and Clinical Research Methods**—The principles of measurement, measures of effect, confounding, effect modification, and strategies for minimizing bias in epidemiologic studies. Prerequisite: 225 or consent of instructor.

3-4 units, Win (Nelson)

**HRP230. Cancer Epidemiology**—Descriptive epidemiology and sources of incidence/mortality data; the biological basis of carcinogenesis and its implications for epidemiologic research; methodological issues relevant to cancer research; causal inference; major environmental risk factors; genetic susceptibility; cancer control; examples of current research; and critique of the literature. Prerequisite: 225, or consent of instructor.

3 units, Win (West) alternate years, not given 2006-07

**HRP 231. Epidemiology of Infectious Diseases**—The principles of the transmission of the infectious agents (viruses, bacteria, rickettsiae, mycoplasma, fungi, and protozoan and helminth parasites). The role of vectors, reservoirs, and environmental factors. Pathogen and host characteristics that determine the spectrum of infection and disease. Endemicity, outbreaks, and epidemics of selected infectious diseases. Principles of control and surveillance.

3 units (Parsonnet, Maldonado) not given 2005-06

**HRP234. Foundations of Pharmacoepidemiology**—Historical development of pharmacoepidemiology, the drug development process and pharmacoepidemiology role in it, pharmacovigilance/drug safety systems, epidemiology in outcomes research, the role of pharmacoepidemiology in risk management, and classic examples of pharmacoepidemiologic investigations.

2-3 units, Spr (Lilienfeld) alternate years, not given 2006-07

**HRP 236. Epidemiology Research Seminar**—Weekly forum for ongoing epidemiologic research by faculty, staff, guests, and students, emphasizing research issues relevant to disease causation, prevention, and treatment. May be repeated for credit.

1 unit, Aut, Win, Spr (Friedman, Henderson)

**HRP248. Promoting Health over the Life Course: Multidisciplinary Perspectives**—(Enroll in HUMBIO 148.)

3 units, Aut (Alles, Stefanick)

**HRP250C. Statistical Analysis in Educational Research: Multivariate Analysis**—(Enroll in EDUC 250C.)

2-4 units, Win (Olkin)

**HRP 251. Design and Conduct of Clinical Trials**—The rationale for phases 1-3 clinical trials, the recruitment of subjects, techniques for randomization, data collection and endpoints, interim monitoring, and reporting of results. Emphasis is on the theoretical underpinnings of clinical research and the practical aspects of conducting clinical trials.

3 units, Spr (Hlatky)

**HRP 252. Outcomes Analysis**—(Same as BIOMEDIN 251.) Introduction to methods of conducting empirical studies which use large existing medical, survey, and other databases to ask both clinical and policy questions. Econometric and statistical models used to conduct medical outcomes research. How research is conducted on medical and health economics questions when a randomized trial is impossible. Problem sets emphasize hands-on data analysis and application of methods, including re-analyses of well-known studies. Prerequisites: one or more courses in probability, and statistics or biostatistics.

3 units, Spr (Bhattacharya)

**HRP 256. Economics of Health and Medical Care**—(Enroll in ECON 126/256, BIOMEDIN 156/256.)

5 units, Aut (Bhattacharya)

**HRP 259. Introduction to Probability and Statistics for Epidemiology**—Topics: random variables, expectation, variance, probability distributions, the central limit theorem, sampling theory, hypothesis testing, confidence intervals. Correlation, regression, analysis of variance, and nonparametric tests. Introduction to least squares and maximum likelihood estimation. Emphasis is on medical applications.

4-5 units, Aut (Cobb)

**HRP 260A,B,C. Workshop in Biostatistics**—(Same as STATS 260A.) Applications of statistical techniques to current problems in medical science. Enrollment for more than 2 units of credit involves extra reading or consulting and requires consent of instructor.

1-3 units, A: Aut, B: Win, C: Spr (Lazzeroni, Olshen, Bloch, Efron, Hastie, Lavori, Tibshirani, Wong)

**HRP 261. Intermediate Biostatistics: Analysis of Discrete Data**—(Same as STATS 261, BIOMEDIN 233.) The 2x2 table. Chi-square test. Fisher's exact test. Odds ratios. Sampling plans; case control and cohort studies. Series of 2x2 tables. Mantel Hantzel. Other tests. k x m tables. Matched data logistic models. Conditional logistic analysis, application to case-control data. Log-linear models. Generalized estimating equations for longitudinal data. Cell phones and car crashes: crossover design. Topics: generalized additive models, classification trees, bootstrap inference.

3 units, Win (Hastie, Cobb)

**HRP262. Intermediate Biostatistics: Regression, Prediction, Survival Analysis**—(Same as STATS 262.) Methods for analyzing longitudinal data. Topics include Kaplan-Meier methods, Cox regression, hazard ratios, time-dependent variables, longitudinal data structures, profile plots, missing data, modeling change, MANOVA, repeated-measures ANOVA, GEE, and mixed models. Emphasis is on practical applications. Prerequisites: basic ANOVA and linear regression.

3 units, Spr (Cobb)

**HRP 280,281,282. Spanish for Medical Students**—(Same as SPAN-LANG 121M,122M,123M.) Goal is a practical and rapid command of spoken Spanish. Topics: the human body, hospital procedures, diagnostics, food, and essential phrases for on-the-spot reference when dealing with Spanish-speaking patients. Series can be taken independently, depending on the level of prior knowledge.

3 units, 280: Aut, 281: Win, 282: Spr (Corso)

**HRP283. Health Services Research Core Seminar**—Presentation of research in progress and tutorials in the field of health services research.

1 unit, Aut, Win, Spr, Sum (Baker, Bundorf, Garber, Hlatky, Owens)

**HRP 290. Advanced Spanish Conversation**—Oral language skills covering pediatric, gynecological, and other specialty exams; patient health education and counseling; and diseases such as diabetes, asthma, and TB. Prerequisite: Spanish proficiency or consent of instructor.

3 units, Aut, Win, Spr (Corso)

**HRP299. Directed Readings in Health Research and Policy**—Epidemiology, health services research, preventive medicine, medical genetics, public health, economics of medical care, occupational or environmental medicine, international health, or related fields. May be repeated for credit. Prerequisite: consent of instructor.

1-18 units, Aut, Win, Spr, Sum (Staff)

**HRP 351. Innovation and Management in Health Care**—(Same as GSBGEN 351.) The workings of the major institutions such as hospitals, health insurance companies, HMOs, Medicare and Medicaid, federal regulators, and the medical establishment. National health expenditures and alternative models for healthcare financing and delivery. Trends in treatment innovations provided by biopharmaceuticals, medical devices, and surgical procedures; delivery innovations facilitated by information systems and new processes. Policy and business challenges raised by these innovations and the health care ecosystems they promote.

4 units, Win (Zenios)

**HRP 391. Political Economy of Health Care in the United States—**(Same as PUBLPOL 231, MGTECON 331.) The economic tools and institutional and legal background to understand how markets for health care products and services work. Moral hazard and adverse selection. Institutional organization of the health care sector. Hospital and physician services markets, integrated delivery systems, managed care, pharmaceutical and medical device industries. Public policy issues in health care, medical ethics, regulation of managed care, patients' bill of rights, regulation of pharmaceuticals, Medicare reform, universal health insurance, and coverage of the uninsured. International perspectives, how other countries' health care systems evolved, and what the U.S. can learn from their experiences.

*4 units, Spr (Kessler)*

**HRP392. Analysis of Costs, Risks, and Benefits of Health Care—**(Same as MGTECON 332, BIOMEDIN 432.) For graduate students. The principal evaluative techniques for health care, including utility assessment, cost-effectiveness analysis, cost-benefit analysis, and decision analysis. Emphasis is on the practical application of these techniques. Group project presented at end of quarter. Guest lectures by experts from the medical school, pharmaceutical industry, health care plans, and government.

*4 units, Aut (Garber, Owens)*

**HRP 399. Research—**Graduate students investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

*1-18 units, Aut, Win, Spr, Sum (Staff)*