

PART I: GENERAL INFORMATION

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Education

1990	Ph.D.	Biostatistics	University of Toronto
1985	M.Sc.	Statistics	University of Western Ontario
1984	B.Sc.(Honours)	Statistics	University of Western Ontario

Postdoctoral Training

1990–1992	Department of Health Care Policy, Harvard Medical School
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Academic Appointments

2003–	Professor of Health Care Policy (Biostatistics), Harvard Medical School
2003–	Professor, Department of Biostatistics, Harvard School of Public Health
2003–	Affiliate, Center for Basic Research in the Social Sciences, Faculty of Arts and Sciences, Harvard University
1998–2003	Associate Professor, Department of Biostatistics, Harvard School of Public Health
1998–2003	Associate Professor of Biostatistics, Department of Health Care Policy, Harvard Medical School
1995–1998	Assistant Professor, Department of Biostatistics, Harvard School of Public Health
1992–1998	Assistant Professor of Biostatistics, Department of Health Care Policy, Harvard Medical School

Major Harvard Committee AssignmentsHarvard University

2005	Ad Hoc Committee (Tenure), Faculty of Arts and Science, Member
2000–	Standing Committee on the Degree of Doctor of Philosophy in Health Policy, Member
1999–2001	Admissions Committee, Member, Health Policy Ph.D. Program
1997–	Evaluation & Statistics Committee, Ph.D. in Health Policy Program, Member

Harvard Medical School & Harvard School of Dental Medicine

2015-	Social Science Advisory Group
2012-	Financial Interest Review Committee, Member
2009-2012	Promotions, Reappointments, and Appointments Committee, Member
2008–	Harvard Catalyst Pilot Grants, Reviewer
2007	Screening Committee, Member
2006–2008	Faculty Council, Senior Faculty Representative of the Department of Health Care Policy
2004–2010	Standing Committee on Human Studies in the Faculty of Medicine, Member
2004–2005	Faculty Diversity Committee, Member

Department of Biostatistics, Harvard School of Public Health

2007–2008	Faculty Development Committee, Department of Biostatistics
2006–2007	Admissions and Recruiting Committee, Department of Biostatistics
2004–2005	Chair, Seminar Committee, Department of Biostatistics
2003–2004	Degree Program Committee, Department of Biostatistics
2002–2003	Chair, Seminar Committee, Department of Biostatistics
2001–2002	Student Interview Committee, Department of Biostatistics
2000–2001	Postdoctoral Committee, Department of Biostatistics
1999–2000	Practical Training Committee, Department of Biostatistics
1997–1999	Seminar Committee, Department of Biostatistics
1996–1997	Computing Committee, Department of Biostatistics
1995–1998	Curriculum Committee, Department of Biostatistics

Department of Health Care Policy, Harvard Medical School

1996–2001	Statistics Faculty Search Committee, Department of Health Care Policy
1996–1997	MD Faculty Search Committee, Department of Health Care Policy
1995, 1998	Statistics Postdoctoral Search Committee, Department of Health Care Policy

Major Regional and National Committee Assignments**Regional**

2008–2009	Member, Technical Advisory Group, Healthcare Associated Infections, Massachusetts Department of Public Health and the Betsy Lehman Center for Public Safety and Medical Error Reduction
2007–2008	Member, Expert Panel on Prevention and Control of Healthcare Associated Infections in Massachusetts, Massachusetts Department of Public Health and the Betsy Lehman Center for Public Safety and Medical Error Reduction
2002–2012	Director, Massachusetts Data Analysis Center, Commonwealth of Massachusetts
2000–2007	Massachusetts Cardiac Care Quality Advisory Commission, Massachusetts Department of Public Health
1995–1996	Board of Directors, New England Quality Council, Inc.

National

2017–2020	Member, Fisher Lecture Selection Committee, Committee of Presidents of Statistical Societies (COPSS)
2016–	Member, National Academies of Sciences, Engineering, and Medicine, The Intelligence Science and Technology Experts Group (ISTEG)
2016–2017	Co-Chair, Panel on the Review of the Compliance, Safety, Accountability Program of the Federal Motor Carrier Safety Administration, Committee on National Statistics
2012–2016	Member, Committee on Applied and Theoretical Statistics, National Academy of Sciences
2012–2015	Scientific Advisory Board Member, Institute of Clinical Evaluative Sciences, Toronto, Canada
2012–2015	Board Member, Frontier Science and Technology Research Foundation, Inc.
2011–2012	Vice Chair, Methodology Committee, Patient-Centered Outcomes Research Institute
2010–2012	Member, Medicare Evidence Development and Coverage Advisory Committee
2010–2011	Member, IOM Committee on a National Surveillance System for Cardiovascular and Select Chronic Diseases
2009–2010	Member, IOM Committee on Future Directions for the National Healthcare Quality and Disparities Reports

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- Advisory Committee Member, Dual Antiplatelet Therapy (DAPT) Study
Executive Operations Committee Member, Dual Antiplatelet Therapy (DAPT) Study
Review Member, Special Emphasis Panel, ZMH1 ERB-N, National Institute of Mental Health
Review Member, Special Emphasis Panel ITMA, National Institute of Mental Health
Member, ACC/AHA Quality in Technology Working Group
Member, ACC/AHA Performance Measurement Methodology Update Committee
Member, ACC/AHA Guidelines Methodology Review Workgroup
Consultant, Circulatory Systems Devices Advisory Panel, Food and Drug Administration, US Department of Health and Human Services
Member, Board of Advisors for the NCHS/AcademyHealth Policy Fellowship
Member, AHA Evaluation of Novel Markers of Cardiovascular Risk and Subclinical Atherosclerosis Writing Group
Steering Committee Member, Registry of Angioplasty Registries (ROAR), National Heart, Lung, and Blood Institute
Statistical Leader, FDA-DCRI Cardiac Safety Critical Path Initiative: Drug Eluting Stent Thrombosis and Dual Anti-Platelet Therapy Group.
Review Member, Special Emphasis Panel ITMA, National Institute of Mental Health
Member, Measures Implementation and Evaluation Advisory Committee, American Medical Association
Member, Institute of Medicine of the National Academies, Committee of Aerospace Medicine and the Medicine of Extreme Environments
Member, Institute of Medicine Committee to Review NASA's Space Flight Health Standards
Member, Agency for Healthcare Research and Quality (AHRQ) Quality Indicators Workgroup on Risk Adjustment Approaches to Administrative Data
Member, AcademyHealth Methods Council
Statistical Society of Canada Representative to the Florence Nightingale David Award Committee, Committee of Presidents of Statistical Societies
Member, Quality Strategic Directions Committee, Appropriateness Criteria Working Groups, American College of Cardiology
Member, Institute of Medicine of the National Academies, Subcommittee on Performance Measures for Redesigning Health Insurance Benefits, Payment and Performance Improvement Programs
Member, ENAR Distinguished Student Paper Awards Committee
Member, Circulatory Systems Devices Advisory Panel, Food and Drug Administration, US Department of Health and Human Services
Secretary, Eastern North American Region (ENAR) of the International Biometrics Society
Health Policy Statistics Section Chair (2004) and Chair Elect (2003), American Statistical Association
Review Member, National Institute for Mental Health, Interventions
Member, Subcommittee on Standards for NCDR Scientific and Clinical Support, American College of Cardiology
Technical Expert Panel Member, Centers for Medicaid and Medicare Services Doctor's Office Quality Project
Special Emphasis Panel (Statistics) Chairperson, Review Panel, National Institute for Mental Health
Temporary Review Member, Small Business Innovation Research, National Institute for Mental Health

2001–2002	Heart Failure GAP Project Advisory Panel Member, American College of Cardiology & American Heart Association
2000–2005	3 rd , 4 th , 5 th , 6 th Scientific Forums on Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke Program Committee Member, American Heart Association
2000–2001	Health Policy Statistics Section, Program Chair (2001); Program Chair-Elect (2000), American Statistical Association
2000–2005	Heart Failure Performance Measures Writing Group Member, American College of Cardiology & the American Heart Association
2000–2005	Joint Task Force on Performance Measures Member, American College of Cardiology & the American Heart Association
2000–2001	Quality of Care and Outcomes Research Expert Panel Member, American Heart Association
2000	Scientific Program Committee Member, ENAR
1999–2001	Review Member, Health Care Technology & Decision Sciences Review Committee, Agency for Healthcare Policy and Research
1998–2001	Patient Care and Outcomes Review Group Committee Member, American Heart Association
1998–2000	Regional Advisory Board Member, ENAR
1998–1999	Cardiovascular Outcomes Research Conference – Working Group Member, American Heart Association
1997–2000	Reserve Review Member, Health Services Research Initial Review Group Committee, Agency for Health Care Policy and Research
1996	Small Project Grant Program Review Member, Agency for Health Care Policy and Research
1994–1996	Review Member, Behavioral Science Track Award for Rapid Transition Program, National Institute of Mental Health
1992	Reviewer, Statistics and Probability Section, National Science Foundation Program

International

2013-2016	Member, Executive Board, International Biometrics Society
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Professional Societies

2007–	Society of Thoracic Surgeons
2007–	American Heart Association
2002–	American College of Cardiology
2000–	American Public Health Association
1999–	Society for Clinical Trials
1992–	Association for Health Services Research (Now AcademyHealth)
1990–	American Statistical Association
1990–	Institute of Mathematical Statistics
1990	International Biometric Society
1987–	Statistical Society of Canada
1987–	Royal Statistical Society

Community Service Related to Professional Work

2001	External Examiner, University of Toronto, School of Graduate Studies, Multiple Imputation of Missing Data in Clinical Trials (Biostatistics).
1996, 2000	ENAR Session Organizer (Design & Analysis of Medical Device Trials: Regulatory, Industry, Statistical, and Clinical Perspectives (2000); Statistical Methods for Measuring, Assessing, and Modeling Compliance (1996))
1995–2003	Scientific Program Committee Member, International Conference on Health Policy Research (Bi-annual Meeting), Health Policy Statistics Section, American Statistical Association
1993–2001	JSM Session Organizer, American Statistical Association (IRT Modeling: Applications to Health Policy (2001); Statistical Methods for Profiling Medical Providers (1999); Modern Methods for Incorporating Uncertainty in Health Policy Analyses (1997); Statistical Methods in Mental Health Services Research (1995); Bayesian Methods in Health Services Research (1993))
1985–1990	Junior Statistical Consultant, Clinical Research Support Unit, Department of Preventive Medicine & Biostatistics, University of Toronto

Editorial BoardsBoard Member

2015-	Statistical Consultant	New England Journal of Medicine
2008–2016	Associate Editor	Circulation: Cardiovascular Quality and Outcomes
2007–2009	Associate Editor	Statistics in Medicine
2007–2008	Methods Editor	Psychiatric Services
2006–2008	Associate Editor	Biometrics
2006–2009	Associate Editor	Health Services and Outcomes Research Methodology
2002–2004	Member	Medical Decision Making
2000	Guest Editor	Special Issue of Health Services and Outcomes Research Methodology
1998–2005	Editorial Board Member	Health Services and Outcomes Research Methodology

Ad-Hoc Reviewer

American Journal of Public Health	Journal of Health Economics
Annals of Internal Medicine	Journal of Multivariate Analysis
Archives of General Psychiatry	Journal of the American Academy of Child & Adolescent Psychiatry
Bayesian Statistics 4 & 5	Journal of the American Medical Association
Biometrics	Journal of the American Statistical Association
Canadian Medical Association Journal	Journal of the Royal Statistical Society
Cardiac Failure	Life Time Data Analysis
Circulation	Medical Care
Communication in Statistics: Theory & Methods	Milbank Quarterly
Health Risk Analysis	New England Journal of Medicine
Health Services Research	Science
International Journal for Quality in Health Care	Sociological Methods and Research
Joint Commission Journal of Quality Improvement	Statistical Science
Journal of Clinical Outcomes Management	Statistics in Medicine
Journal d'Economie Medicale (France)	

Awards and Honors

2017	Outstanding Lifetime Achievement Award, Council on Quality of Care and Outcomes Research, American Heart Association
2015	L. Adrienne Cupples Award for Excellence in Teaching, Research, and Service in Biostatistics, Boston University
2013	Elected, Society for Research Synthesis Methodology
2012	Distinguished Scientist Award, American Heart Association
2012	Distinguished Service Award, International Society for Pharmacoeconomics and Outcomes Research
2011	Long Term Excellence Award, American Statistical Association, Health Policy Statistics Section
2010	IBM Faculty Award, nominated by IBM Healthcare Transformation Group
2009	Fellow, American Heart Association
	Outstanding Publication Award, American Association of Cardiovascular and Pulmonary Rehabilitation. Suaya JA, Stason WB, Ades PA, Normand S-LT, Shepard DS. "Cardiac rehabilitation and survival in older coronary patients. Journal of the American College of Cardiology, 2009;54:25-33."
2007	Finalist, 2007 NIH Director's Pioneer Award "Rethinking evidence for medical therapies."
2007	Elected Associate, Society of Thoracic Surgeons
2005	Canadian Institute of Health Research Institute of Aging Age Plus Award, Excellence in Research on Aging for British Medical Journal article "Atypical antipsychotic drugs and risk of ischemic stroke: population based retrospective cohort study", BMJ 2005, 330(7489):445-450.
2005	Excellence in Mental Health Policy and Economics Research Award, Best Paper, Journal of Mental Health Policy and Economics
2002	Elected Fellow, American Statistical Association for "influential application of Bayesian methodology to health policy problems, for leadership in the new area of health policy statistics, and for promoting and communicating statistical methods and assessments of the quality of cardiovascular disease and mental illness."
2002	Elected Fellow, American College of Cardiology
1991	National Science Foundation: Young Researcher Award, Support for the 4 th Valencia International Meeting on Bayesian Statistics USA
1989	Life Sciences Graduate Degree Completion Scholarship, University of Toronto, Toronto, Ontario CANADA
1988	Life Sciences Committee Scholarship in Cancer Research, University of Toronto, Toronto, Ontario CANADA
1985–1989	Ontario Graduate Scholarship, University of Toronto, CANADA
1985	Special University Scholarship, Faculty of Graduate Studies, University of Western Ontario, London, Ontario CANADA
1984	Entrance Scholarship, Faculty of Graduate Studies, University of Western Ontario, London, Ontario CANADA
1984	University Gold Medal in Mathematical Statistics, University of Western Ontario, London, Ontario CANADA

PART II: RESEARCH, TEACHING, AND CLINICAL CONTRIBUTIONS

Dr. Normand's research focuses on the development of statistical methods for health services and outcomes research, primarily using Bayesian approaches, including the evaluation of medical devices in randomized and non-randomized settings for pre- and post-market assessments, causal inference, provider profiling, evidence synthesis, item response theory, and latent variables analyses. Her application areas include cardiovascular disease, severe mental illness, medical device safety and effectiveness, and medical technology diffusion.

Dr. Normand is Director of Mass-DAC, a data coordinating center that monitors the quality of all adult cardiac surgeries and coronary interventions in all Massachusetts' acute care hospitals. Since 2002, she has served as the director of Mass-DAC, the data-coordinating center responsible for collecting, analyzing, and reporting on the quality of care for adults discharged following a cardiac procedure from all hospitals in Massachusetts. Dr. Normand and colleagues annually report on hospital and physician performance using prospectively collected medical-record record data. She served as the senior statistician in a 3,000-patient trial in Massachusetts to compare the effectiveness and safety of performing elective angioplasty at hospitals without surgery on-site with that performed at hospitals with surgery on-site. Dr. Normand also serves on the Executive Operations Committee for the Dual Antiplatelet Therapy (DAPT) Study which is a US Food and Drug Administration (FDA) requested randomized clinical trial involving 16,000 patients powered to determine the appropriate duration of combined use of aspirin and a second anti-clotting medication following implantation of a drug eluting stent. In terms of medical products, Dr. Normand is also Director of the Medical Device Epidemiology Network's (MDEpiNet) Methodology Center where statistical methodology for assessing medical device safety and effectiveness is developed and applied. MDEpiNet is a public private partnership hosted by 3 centers and the FDA: the Methodology Center (which Dr. Normand directs), the Science and Infrastructure Center at Weil Cornell Medical School, and the Coordinating Center at Duke University. Together with Dr. Huskamp, Dr. Normand serves as a Co-Principal Investigator of a cooperative agreement award from NIH's Common Fund to examine diffusion pathways of medical products. The investigators are assessing physician organization characteristics associated with the diffusion of pharmaceutical products, medical devices, and biologics within the United States.

Dr. Normand is also leading a grant, together with HCP researchers as well as those from the Department of Biostatistics within the T.H. Chan School of Public Health to develop Bayesian methodology for comparative effectiveness research in the context of big observational data. The main objectives involve the development of robust approaches to causal inference in the presence of many confounders (some observed and some not) when subgroup effects may be present. The researchers are applying their methodology in the area of cancer and cardiology. Dr. Normand is also an investigator on a grant to develop and apply semi parametric competing risk models for profiling the quality of hospital care.

An important aspect of Dr. Normand's academic contributions is in the area of training. Her teaching activities included the development and instruction of courses on: multiple regression for the School of Public Health's Health Policy and Management students; Bayesian Methods for Biostatistics to graduate students in the Department of Biostatistics; and Statistical Methods for Psychiatry for Biostatistics and Epidemiology in the School. She has supervised statistics postdoctoral fellows, economics fellow, graduate students in the areas of biostatistics, health policy, and psychiatric epidemiology. The Committee on Educational Policy at the Harvard School of Public Health has recognized Dr. Normand for outstanding teaching in 1999 (Statistical Methods for Psychiatry), 2000 (Statistical Outreach), and 2001 (Multiple Regression Analysis for Health Policy and Management). She leads a quarterly webinar involving the development and application of methodology for assessing the safety and effectiveness of medical devices.

Funding Information

2016-2020	1R01 MH106682 (PI: Normand/Horvitz-Lennon), Rand Corporation Sub under NIMH, Improving Value of Publicly Funded Mental Health Care
2015-2020	P30DA035772 (PI: Horgan/Busch), Brandeis University Sub under NIDA, Center to Improve System Performance of Drug Abuse Treatment
2015-2017	U01FD005478 (PI: Normand/Sedrakyan), Cornell University Sub under FDA, Creating National Surveillance Infrastructure for Priority Medical Devices
2015-2019	R01GM111339 (PI: Normand), NIGMS, Bayesian Methods for Comparative Effectiveness Research Using Observational Data
2014-2018	R01CA181360 (PI: Haneuse), NCI, Statistical Methods for Hospital Profiling, with Emphasis on Semi-Competing Risk Data
2013-2017	R01HL118314 (PI: Charytan/Normand), NIDDK, Optimizing Revascularization of Coronary Artery Disease in Chronic Kidney Disease.
2013-2018	U01MH103018 (PI: Normand/Huskamp), NIMH, Technology Diffusion Pathways.
2013-2015	R21HD076442 (PI: Chien/Newhouse), NICHD, Improving Pediatric Risk Adjustment Algorithms.

- 2013-2015 Harvard Medical School/Portugal (PI: Normand), Comparative analysis and diagnostic treatment procedures provided to coronary artery disease patients: a critical evaluation study between the US and Portuguese health care systems.
- 2012-2016 R01MH093359 (PI: Huskamp/Donohue), NIMH, Influences on Psychiatric Prescribing of Antipsychotics.
- 2012-2017 U01FD004493 (PI: Normand), FDA, The MDEpiNet Medical Counter Measure Study.
- 2011-2016 R01MH094290 (PI: McGuire), NIMH, Mental Health Coverage in Health Care Reform.
- 2011-2014 HHSF223201110172C (PI: Normand), Chickasaw Nation Industries (CNI)/Food & Drug Administration, The Medical Device Epidemiology Network (MDEpiNET) Methodology Center.
- 2010-2013 1RC4 MH092717-01 (PI: O'Malley), NIMH, Accounting for Confounding Bias and Heterogeneity in Comparative Effectiveness.
- 2010-2012 1074629 (PI: Normand), DHHS/FDA, Innovative Methods for Evidence Synthesis for Medical Devices.
- 2010-2013 R01-MH087488 (PI: Horvitz-Lennon/Normand), NIMH, An In-Depth Investigation of Racial & Ethnic Disparities in Schizophrenia Care.
- 2009-2012 5R01-NR010727 (PI:Termkin-Greener), NNR, Co-Investigator, End-of-Life Quality of Care in Nursing Homes.
- 2009-2013 R01-HL101996 (PI: Reede, Joan), NHLBI, Co-Investigator, Factors that Promote and Support Careers of Women of Color in Academic Medicine.
- 2009-2010 IPA (PI: Normand), Center for Devices and Radiographic Devices, Food and Drug Administration, Development of Statistical Surveillance Techniques for Hip Arthroplasty.
- 2009-2010 (PI: Normand), Division of Health Care Finance and Policy, Massachusetts Department of Public Health, Hospital-Wide Mortality Measurement Evaluation.
- 2008-2012 R01-MH080797 (PI: Huskamp), NIMH, Co-Investigator, Effects of Mental Health Parity on High-Cost and Severely Ill Individuals.
- 2008-2011 R01-MH081819 (PI: Frank), NIMH, Co-Investigator, Mental Health Spending and Quality of Care.
- 2008-2012 2-R01-MH54693 (PI: Normand), NIMH. Analysis of Multiple Informant Data in Psychiatry.
- 2006-2010 (PI: Normand/Mauri), Harvard Clinical Research Institute, Principal Investigator. The Mass COMM Trial.
- 2006-2010 R01-LM008142 (PI: Resnic), NLM/BWH, Co-Investigator, A System to Monitor Medical Device Safety in Interventional Cardiology.
- 2005-2010 P50 MH073469 (PI: McGuire), NIMH/CHA, Co-Investigator, Advanced Center for Latino and MH Systems Research.
- 2005-2008 2-R01 MH061434 (PI: Normand) NIMH. Modeling Treatment Use & Effectiveness in Mental Illness
- 2005-2007 R01 HS014774 (PI: Landon) AHRQ, Co-Investigator. Incentive Formularies and the Costs and Quality of Care.
- 2005 (PI: McNeil), Harvard University, Co-Investigator. Programs for Health Systems Improvement.
- 2004-2009 P50 DA10233-06A2 (PI: Frank) NIDA, Co-Investigator. The Brandeis/Harvard Center Study of Managed Care and Drug Abuse Treatment.
- 2004-2007 R01 MH06972-01 (Frank RG: PI) NIMH, Co-Investigator/Statistician. Economic Impacts of New Drugs.
- 2004-2007 R01 MH54693 (PI: Laird) NIMH, Co-Investigator. Analysis of Multiple Informant Data in Psychiatry.
- 2003-2008 P20 MD000537 (PI: McGuire) NCMHD, Co-Investigator. Exploratory EXPORT Center: Bridging Communities.
- 2003-2006 R01 HS13335-01A1 (PI: Epstein) AHRQ, Co-Investigator. The Patterns and Impact of Value-Based Purchasing.

- 2002–2005 NO1 AA21011 (PI: Colditz) NIAA, Co-Investigator. Estimating Alcohol Attributable Fractions of US Morbidity and Mortality Based on Meta-Analyses of Epidemiological Studies.
- 2002–2017 620022A4PRE (PI: Normand) Commonwealth of Massachusetts, Department of Public Health, Principal Investigator. Cardiac Surgery Study.
- 2002–2003 (PI: McNeil) MERCK, Co-Principal Investigator. Sample Sizes in Performance Measurement.
- 2001–2004 R01 MH61434 (PI: Normand) NIMH, Principal Investigator. Modeling Treatment Use & Effectiveness in Mental Illness.
- 2001–2004 R01 HS11651 (PI: Landon) AHRQ, Co-Investigator/Senior Statistician. MD Group Characteristics and Quality of Care for CHD.
- 2000–2005 P01 HS10803 (PI: Newhouse) AHRQ, Co-Investigator/Senior Statistician. Structuring Markets and Competition in Health Care.
- 2000–2003 HHS 100-00-0025 (PI: Frank) DHHS, Co-Investigator/Senior Statistician. Evaluation of Parity in the Federal Employees Health Benefits (FEHB) Program.
- 2000–2003 R01 MH620282 (PI: Frank) NIMH, Co-Investigator/Senior Statistician. Price Indexes of Mental Health Treatment.
- 1999–2003 R01 MH58240 (PI: Normand) NIMH, subcontract to McLean Hospital, Principal Investigator. BASIS 32: A Consumer Mental Health Outcome Measure.
- 1998–2002 R01 MH58288 (PI: Normand) NIMH: subcontract to McLean Hospital, Belmont, MA, Research: Principal Investigator. Mental illness, co-morbidity, and mortality.
- 1998–2001 NIMH (PI: Normand), NIMH, subcontract to University of Massachusetts Medical Center: Principal Investigator. Managed care effects on arrest and forensic commitment.
- 1998–2001 AHCPH (PI: McNeil), Co-Investigator/Senior Statistician. Financial incentives and care of chronic cardiac patients.
- 1998–2001 AAHP (PI: McNeil), Co-Investigator/Senior Statistician. Financial incentives and care of chronic cardiac patients.
- 1998–2000 NCI (PI: Guadagnoli), Co-Investigator/Senior Statistician. Data sources and patterns of care for breast cancer.
- 1998 MERCK (PI: McNeil), Co-Investigator/Senior Statistician. Understanding the use of cholesterol lowering agents after myocardial infarction.
- 1997–2002 R01 MH54076 (PI: Dickey) NIMH, Co-Investigator/Senior Statistician. Outcomes of Medicaid managed care.
- 1997–1999 USQA (PI: McNeil), Co-Investigator/Senior Statistician. Use of cholesterol lowering agents as secondary prevention after acute myocardial infarction.
- 1997–1999 MacArthur Foundation (PI: Frank), Co-Investigator/Senior Statistician. Determining the value of mental health.
- 1996–2001 U18 HS09487 (PI: McNeil) AHCPH, Co-Investigator/Senior Statistician. Quality of care measures for cardiovascular patients.
- 1996–2001 SAMHSA (PI: Frank): subcontract to Brandeis University, Co-Investigator/Senior Statistician. State substance abuse treatment managed care evaluation program.
- 1996–1999 AHCPH (PI: Guadagnoli): subcontract to Boston University, Co-Investigator/Senior Statistician. Adjuvant tamoxifen in old age.
- 1995–1998 NIMH (PI: Dickey), Co-Investigator/Senior Statistician. Regional variation in mental health treatment and cost.
- 1995–1997 VHA – Institutional Participation Agreement (PI: McNeil), Co-Investigator/Senior Statistician. Appropriateness and necessity of cardiac procedure use after AMI in VHA.
- 1995–1997 VHA – Institutional Participation Agreement (PI: McNeil), Co-Investigator/Senior Statistician. Social factors & cardiac outcomes: A prospective study.
- 1994–1999 AHCPH (PI: McNeil), Co-Investigator/Senior Statistician. Validating guidelines for the care of AMI patients.
- 1993–1997 NCI (PI: Normand), Principal Investigator. Hierarchical modeling for assessing breast cancer care.

1993–1994	HCFA (PI: McNeil): subcontract to Duke Medical School, Co-Investigator/Senior Statistician. Analysis of the pilot Cooperative Cardiovascular Project data.
1992–1995	AHCPR (PI: Morris), Co-Investigator. Hierarchical statistical modeling in health policy research.
1992–1995	VHA – Institutional Participation Agreement (PI: McNeil), Co-Investigator/Senior Statistician. The consequences of variation in treatment after AMI in VHA.
1992–1994	AHCPR (PI: Epstein), Co-Investigator/Senior Statistician. Do re-admissions matter?
1992–1993	AHCPR (PI: McNeil), Co-Investigator/Statistician. The consequences of variation in treatment for acute MI.
1990–1994	AHCPR (PI: McNeil), Co-Investigator/Statistician. The consequences of variation in treatment for acute MI.

Report of Current Research Activities

2016-2020	<u>1R01 MH106682</u> . Improving Value of Publicly Funded Mental Health Care. We propose a program of research to investigate antipsychotic utilization and its impacts among Medicaid, Medicare, and dually eligible beneficiaries, and using these findings, to simulate the impacts of strategies to improve value of care. We will quantify antipsychotic overuse among all adult beneficiaries. Among those with serious mental illness, we will assess the short- and long-term health, and economic impacts of cumulative antipsychotic exposure and model the effects of value-enhancing strategies. Health impacts include cardiometabolic disorders; economic impacts include drug purchasing costs, diabetes and cardiovascular prevention or treatment costs, and total health care spending. We use longitudinal Medicaid and Medicare data for adults enrolled in one or both programs in six diverse states and complement these with other data sources.
2015-2020	<u>P30DA035772</u> . Center to Improve System Performance of Drug Abuse Treatment. The Center uses research on payment methods and service delivery approaches to expand the evidence base on improving substance use disorder (SUD) care quality and reduce the cost of health care services, and to inform policy decisions that will profoundly affect the cost, quality and availability of SUD treatment services.
2015-2017	<u>U01FD005478</u> . Creating National Surveillance Infrastructure for Priority Medical Devices. We capitalize on a novel partnership within the FDA's MDEpiNet to build national infrastructure: the Science & Infrastructure Center at Cornell University, the Methodology Center at Harvard Medical School, and major registry partners. We (1) link registries with Medicare, commercial, and state discharge billing claims, and Clinical Data Research Network data to enable post-market surveillance for orthopedic and vascular devices; (2) illustrate pilots for automation in registry creation using electronic health records; and (3) develop, implement, and distribute new methodological approaches that address key data issues emerging from the large linked databases.
2015-2019	<u>R01GM111339</u> . Bayesian Methods for Comparative Effectiveness Research Using Observational Data. We develop new Bayesian methods (1) for causal inference in large observational data to a) estimate average causal effects accounting for model uncertainty in the selection of measured confounders and b) estimate average causal effects in sub-populations accounting for uncertainty in the selection of the subgroups; and (2) for assessing treatment effects in the presence of unmeasured confounders that moderate treatment effects in large observational data. We apply the new methods to observational studies to provide new and fully reproducible knowledge in the areas of medical devices, surgical procedures, and pharmaceutical treatments; and develop flexible, efficient, robust, well documented, user-friendly R libraries and SAS macros, facilitating dissemination of our newly developed methods.
2014-2018	<u>R01CA181360</u> . Statistical Methods for Hospital Profiling, with Emphasis on Semi-Competing Risks Data. We develop a comprehensive Bayesian framework for semi-continuous competing

risk data within both clustered and un-clustered settings with a focus on palliative/End-Of-Life (EOL) care. For EOL care, death is a truncating event and cannot be ignored. The study of a non-terminal event (e.g. readmission) that is subject to a terminal event (e.g. death) is known as the 'semi-competing risks' problem. Methods will be illustrated using data on all Medicare enrollees from 2000-2010 merged with complete tumor data from SEER-Medicare having cancers of the pancreas, lung, colon and brain

- 2013-2017 R01HL118314. Optimizing Revascularization of Coronary Artery Disease in Chronic Kidney Disease. We study the comparative clinical effectiveness, costs, and cost-effectiveness of percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG) surgery in a cohort of Massachusetts' adults with chronic kidney disease. We determine: the association between initial choice of PCI versus CABG and subsequent all-cause mortality, and End Stage Renal Disease (ESRD); the association between initial choice of PCI versus CABG and comparative life-time healthcare-associated costs (considered from the payer perspective); and the associations between initial choice of PCI versus CABG and differences in quality-adjusted survival and incremental cost-effectiveness.
- 2013-2018 U01MH103018. Technology Diffusion Pathways. Using a rich collection of data for the period 2005-2015, we examine the relationship between physician organization traits and diffusion of technology. We (a) study the diffusion of selected new technologies, including technologies we designate to be of higher and lower value, in 4 disease categories - cancer, depression, cardiac, and hip degeneration - as a function of organization characteristics, providing new approaches to characterize the path of technology adoption; using quality measures promulgated by professional societies, technology characteristics, and FDA alerts, we distinguish higher from lower value services, identify organizational factors predictive of their use, and determine if decisions to adopt higher vs. lower value services are correlated; and identify organizational characteristics, adjusting for physician and patient factors, associated with spending for new technologies and for lower vs. higher value services.
- 2012-2017 U01FD004493. The MDEPINET Medical Counter Measure Study. We advance statistical methods to improve understanding of the safety and effectiveness of medical countermeasure-related devices in general, and of their vulnerabilities to chemical, biological, radiological, chemical, or nuclear events in particular. We will develop a probabilistic risk assessment framework supported by a comprehensive set of methodological approaches for continuous evaluation of premarket and postmarket device data, and harness the increasing power of large clinical and administrative databases, including government claims data; clinical data found in international, national and state registries run by professional societies and public health departments; and electronic medical record data.
- 2002-2017 620022A4PRE. Cardiac Surgery Study. We establish the Massachusetts Data Analysis Center (Mass-DAC), a data coordinating center to assemble and analyze the quality of cardiac surgery and coronary interventions performed in all non-federal acute care Massachusetts' hospitals. Clinical data are prospectively collected by trained hospital data managers, harvested by Mass-DAC, and hospital-specific estimates of risk-adjusted mortality are publicly released annually. Surgeon and operator-specific quality estimates, based on 3-year data, are created and confidentially assessed.

Report of Teaching

Local Contributions

- 2017 Harvard Catalyst Biostatistics Symposium: p-values, hypothesis testing and reproducibility, "Generating Evidence for Comparative Effectiveness Research", Prep Time=2.0 hours, Contact Time=1.0 hours

- 2016 Biostatistics 228: Guest lecturer on "Assessing Quality and Equity in Health Care", 10 Students, Prep Time=1.0 hours, Contact Time=2.0 hours
- 2014–2015 Panel Discussion on FDA Advisory Committees, Biostatistics, Guest Panelist (BIO523), 10 Students, Prep Time=1.0 hours, Contact Time=2.0 hours
- 2014 Topics in Medical Device Comparative Effectiveness Research, Epidemiology (EPI521), Guest Lecturer, 15 Students, Prep Time=3.0 hours, Contact Time=2.0 hours
- 2013, 2012 Introduction to Clinical Investigation: Database Research, Harvard Catalyst, Course Developer and Instructor, 100 Students, Preparation Time = 1 hour, Contact Time = 1.5 hours. May and October.
- 2010 Review of Statistical Approaches to the Analysis of Composite Endpoints (BIO300), Preparation Time = 5 hours, Contact Time = 1 hr/wk.
- 2008, 2009 Health Care Policy 750: Course Discussion Leader on "Drug/Device Policy Regulation," 12 Students, Preparation Time = 2 hours, Contact Time = 1 hour.
- 2004, 2008-2016 Epidemiology 219: Guest lecturer on "Item Response Theory Models", 20 Students, Preparation Time = 4 hrs, Contact Time = 2.0 hrs.
- 2001–2003 Bayesian Methodology in Biostatistics (BIO249ab), Course Developer & Instructor, 15 Students, Preparation Time = 3 hr/wk, Contact Time = 5 hrs/wk.
- 2000–2006 Fundamental Methods of Clinical Trials, Scholars in Clinical Science Program, HMS, Guest Lecturer, 10 Students.
- 1998–2001 Multiple Regression Analysis for Health Policy and Management (BIO225c), Department of Biostatistics, HSPH, Course Developer and Instructor, 25 Students, Preparation Time=1 hr/wk, Contact Time=4 hrs/ wk.
- 1998–1999 Statistical Outreach (BIO270), Course Developer and Instructor (with LJ Wei and M Zelen), 6 Students, Preparation Time=5 hrs/wk, Contact Time=2 hrs/wk.
- 1997–2002 Core Seminar in Health Policy (HCP597), Harvard University (Harvard Medical School, Kennedy School of Government, Harvard School of Public Health), Guest Lecturer, 20 Students.
- 1997–1998 Statistical Methods for Psychiatry (BIO269), Department of Biostatistics, Harvard School of Public Health, Course Developer and Instructor, 7 Students, Preparation Time=0.5 hrs/wk, Contact Time=4 hrs/wk.
- 1997 Psychiatric Epidemiology, Department of Epidemiology and Department of Biostatistics, HSPH, Participant in Training Program, 3-8 Students, Preparation Time=0.5 hrs/wk, Contact Time=0.5 hrs/wk.
- 1996 Statistical Methods for Health Care Utilization Data (BIO300), Department of Biostatistics, HSPH, Course Developer and Instructor, 1 Student, Preparation Time=0.1 hr/wk, Contact Time=2 hr/wk.
- 1995–1998 Bayesian Methodology Working Group, Department of Biostatistics, HSPH, Seminar Coordinator, 10 Students, Preparation Time=0.5 hrs/wk, Contact Time=1 hr/wk.
- 1995 Sources of Biases in Estimating Diagnostic Accuracy (BIO300), Department of Biostatistics, HSPH, Course Developer and Instructor, 1 Student, Preparation Time=1 hr/wk, Contact Time=2 hrs/wk.
- 1995 Statistical Issues in Assessing Diagnostic Accuracy with Applications in Psychiatric Epidemiology (BIO300), Department of Biostatistics, HSPH, Course Developer and Instructor, 1 Student, Prep Time=1 hr/wk, Contact Time=2 hrs/wk.

Graduate and Postdoctoral Students; K-Award Mentees

Normand, S-L	Harvard Medical School & Harvard School of Public Health
Mark Glickman	Postdoctoral Fellow in Statistics, July 1993 – Jan 1995. Currently Senior Lecturer on Statistics, Harvard University, and Senior Statistician, Center for Healthcare Organization and Implementation Research, Boston, MA.
Chuanhai Liu	Postdoctoral Fellow in Statistics, Jan 1995 – May 1995. Currently Professor, Department of Statistics, Purdue University, West Lafayette, IN.
MaryBeth Landrum	Postdoctoral Fellow in Biostatistics, Sep 1995 – June 1998. Currently Professor, Department of Health Care Policy, Harvard Medical School, Boston, MA.
Kelly H. Zou	Postdoctoral Fellow in Statistics, Dec 1997 – June 1999. Currently Senior Director, Real World Data & Analytics (RWDnA), Global Health and Value, Pfizer, New York, NY.
Nandini Dendukuri	Postdoctoral Fellow in Biostatistics, Jan 1999 – May 2000. Currently Biostatistician, St. Mary's Hospital, and Adjunct Assistant Professor, Department of Epidemiology and Biostatistics, and Director, Technology Assessment Unit of the McGill University Health Centre, McGill University, Montreal, Quebec, CANADA.
Jeffrey Jonkman	Postdoctoral Fellow in Statistics, Aug 1998 – July 2000. Currently Associate Professor of Mathematics and Statistics, Grinnell College, Grinnel, IA.
James O'Malley	Postdoctoral Fellow in Statistics, Sept 1999 – Aug 2001. Currently Professor, Department of Biomedical Data Science, Geisel School of Medicine, Dartmouth College, Lebanon, NH.
Edmond Shenassa	Graduate Student, 1996 – 2000. Thesis Committee Member, Epidemiology ScD, Harvard School of Public Health. Currently Associate Professor, Maternal and Child Health Program, and Department of Epidemiology and Biostatistics, School of Public Health, University of Maryland, College Park, MD.
Susan Bronskill	Graduate Student, 1997 – 2001. Thesis Co-Principal Advisor, Statistics & Evaluation Track, Health Policy PhD, Harvard University. Currently, Senior Core Scientist Program Lead, Institute for Clinical Evaluative Sciences, Sunnybrook Hospital, and Assistant Professor, Department of Health Policy, Management, and Evaluation, University of Toronto, Toronto, Ontario, Canada.
Karen Clements	Graduate Student, 1997-2003. Thesis Committee Member, Epidemiology ScD, Harvard School of Public Health. Currently Assistant Professor, Biostatistics and Health Services Research, University of Massachusetts Medical School, Worcester, MA.
Josh Breslau	Graduate Student, 2001 – 2005. Thesis Committee Member, Epidemiology ScD, Harvard School of Public Health. Currently, Senior Researcher, RAND Corporation, Pittsburgh, PA.
Douglas Levy	Graduate Student, 2001 – 2004. Thesis Committee Member, Statistics & Evaluation Track, Health Policy PhD, Harvard University. Assistant Professor of Medicine, Harvard Medical School. Currently Instructor, Institute for Health Policy, Massachusetts General Hospital, Boston, MA.
Rusty Tchernis	Postdoctoral Fellow in Economics, June 2002 – May 2004. Currently Associate Professor, Department of Economics, Andrew Young School of Policy Studies, Georgia State University, Atlanta, GA.
Justin Timbie	Graduate Student, 2003 – 2007. Advisor, Evaluation and Statistics Track, Health Policy PhD, Harvard University. Currently, Health Policy Researcher, RAND Corporation, Arlington, VA.

Normand, S-L	Harvard Medical School & Harvard School of Public Health
Heather Litman	Graduate Student, 2004 – May 2005. Orals Committee Member & Thesis Committee Member, Biostatistics PhD, Harvard School of Public Health. Currently Senior Biostatistician, Corrona, LLC, Southborough, MA.
Alexandros Gryparis	Graduate Student, 2004 – 2005. Thesis Committee Member, Biostatistics PhD, Harvard School of Public Health. Currently, Department of Applied Mathematics, University of Crete, Greece.
Armando Teixeira-Pinto	Graduate Student, 2004 – 2007. Thesis Principal Advisor, Biostatistics PhD, Harvard School of Public Health. Currently Level D (Associate Professor), Sydney Medical, University of Sydney, Australia.
Niteesh Choudhry	Graduate Student, 2004 – May 2005. Thesis Committee Member, Evaluative Sciences and Statistics Track, Health Policy PhD, Harvard University. Currently, Professor of Medicine, Harvard Medical School & Associate Physician, Division of Pharmacoepidemiology and Pharmacoeconomics and the Hospitalist Program, Brigham and Women's Hospital, Boston, MA.
Magdalena Cerda	Graduate Student, 2004 – August 2006. Thesis Committee Member, Department of Society, Human Development, and Health, Harvard School of Public Health. Currently, Associate Professor, Department of Emergency Medicine, University of California, Davis, Sacramento, CA.
Tom Concannon	Graduate Student, 2004 – 2006. Thesis Committee Member, Evaluative Sciences and Statistics Track, Health Policy PhD, Harvard University. Currently Assistant Professor, Institute for Clinical Research and Health Policy Studies, Tufts-New England Medical Center and Tufts University School of Medicine, and Senior Policy Researcher, RAND Corporation, Boston, MA.
Jose Suaya	Graduate Student, 2004 – 2005. Thesis Committee Member, Heller School for Social Policy and Management, Brandeis University, Waltham, MA. Currently Pneumococcal Vaccines, WW Medical Development & Scientific Affairs, Pfizer, New York, NY.
Karine Lamiraud	Fullbright Visiting Scholar, July 2005 – September 2005. Sponsor. Graduate of University of Lausanne, Switzerland (Institute of Health Economics and Management). Currently Associate Professor, Department of Economics, Titulaire Chair of Therapeutic Innovation, ESSEC Business School, Cergy, France.
Alisa Busch	K-Award Mentee (K01MH071714-01A2), December 1, 2005 – 2011. Currently Assistant Professor of Psychiatry, Department of Psychiatry, Harvard Medical School, Boston, MA.
Margie Skeer	Graduate Student, 2007 – May, 2009. Thesis Committee Member, Department of Society, Human Development, and Health, Harvard School of Public Health. Currently Assistant Professor of Public Health and Community at the Tufts University School of Medicine, Boston, MA.
Brian Neelon	Postdoctoral Fellow in Biostatistics, July 2007 – June 2009. Currently Associate Professor, Public Health Sciences, Medical University of South Carolina, Charleston, SC.
Frank Yoon	Postdoctoral Fellow in Statistics, September 2009 – August 2011. Currently Director, Statistical Informatics, Truven Health Analytics, New York, NY.
Manuel Gomes	Postdoctoral Fellow, Lecturer in Health Economics, London School of Hygiene & Tropical Medicine. Currently Assistant Professor of Health Economics and MRC Early Career Fellow in Economics of Health, London School of Hygiene & Tropical Medicine, London, UK.

Normand, S-L

Harvard Medical School & Harvard School of Public Health

Lauren Kunz

PhD graduate student, 2011-2014. Primary advisory, Department of Biostatistics, Harvard School of Public Health. Currently Statistician, Office of Biostatistics Research, National Heart, Lung, and Blood Institute, NIH, Washington, DC.

Cai Gillis

PhD graduate student, 2015-current, Department of Epidemiology, Harvard T.H. Chan School of Public Health, Boston, MA.

Robbert Zusterzeel

Graduate student, 2016 – current. MPH-EPI Practicum Committee member, Harvard T.H. Chan School of Public Health, Boston, MA.

Chenyang Gu

Postdoctoral Research Fellow in Biostatistics, September 2016 – current. Co-advisory, Department of Health Care Policy, Harvard Medical School, Boston, MA.

Samrachana Adhikari

Postdoctoral Research Fellow in Statistics, September 2016 – current. Primary advisory, Department of Health Care Policy, Harvard Medical School, Boston, MA.

Undergraduate and High School Mentoring

Anjali Chelliah

Undergraduate Student, Department of Economics, Harvard University.

Christina Awosan

High School Student, Summer 1999, Project Success.

Treacy Silverstein

Undergraduate Student, Mathematical Sciences, Carnegie Mellon University, Summer 2003.

Selected Regional, National, or International Contributions: Invited Presentations (since 2000)

1. Data, Statistics, and Inference. Eastern Mediterranean Region of the International Biometrics Society Meeting. Thessaloniki, Greece. May 2017.
2. Approaches for Quantifying Quality and Disparities in Mental Health Care. Symposium honoring Professor Marvin Zelen. Thessaloniki, Greece. May 2017.
3. Department of Biostatistics and Epidemiology (DBE) and Center for Clinical Epidemiology and Biostatistics (CCEB) Brian Strom Lecture Series Visiting Scholar and Keynote Speaker. University of Pennsylvania, Philadelphia, PA. April 2017.
4. Considerations in Assessing Sex/Gender with Observational Data. Women's Xchange Workshop: Integrating Sex & Gender in Health Research. Women's College Hospital in Toronto, Ontario, Canada. March 2017.
5. Mitigating Confounding Violations Using High-Dimensional Electronic Data. Eastern North American Region (ENAR) Annual Spring Meeting, Washington, DC. March 2017.
6. Statistical Issues in Comparative Effectiveness Research. Eastern North American Region (ENAR) Annual Spring Meeting, Washington, DC. March 2017.
7. Cardiac Safety Research Consortium (CSRC) Think Tank: Real World Data to Assess Cardiovascular Safety. Silver Spring, MD. October 2016.
8. Methodological Considerations. MDEpiNet Registry Assessment of Peripheral Interventional Devices (RAPID) Think Tank, Silver Spring, MD. September 2016.
9. Panel on the Review of the Compliance, Safety, and Accountability Program of the Federal Motor Carrier Safety Administration, Second Meeting. The National Academies, Washington, DC. August 2016.

10. Capitalizing on the National/International Infrastructure to Develop Methods for 21 Century Active Surveillance, Program Leader and Moderator. Active Surveillance MDEpinet Think Tank, Silver Spring, MD. June 2016.
11. Panel on the Review of the Compliance, Safety, and Accountability Program of the Federal Motor Carrier Safety Administration, First Meeting. The National Academies, Washington, DC. June 2016.
12. On the role of causal inference in the analysis of electronic medical databases (EMD), Panelist. Atlantic Causal Inference Conference, New York, NY. May 2016.
13. Technology Diffusion Pathways. Health Economics Common Fund Diffusion of Medical Technology Workshop, Rockville, MD. May 2016.
14. Statistical considerations in assessing hospital performance. Joint Statistical Meetings, Seattle, WA. August 2015.
15. Common pitfalls in publishing medical papers: a statistical editor's perspective. China Heart Congress, Beijing, China. August 2015.
16. Contemporary statistical approaches for determining the effectiveness and quality of cardiovascular interventions. China Heart Congress, Beijing, China. August 2015.
17. Analytical approaches for characterizing the diffusion of new medical technologies. Nordic Baltic Region of the International Biometrics Society, Reykjavik, Iceland. June 2015.
18. Analytical approaches for characterizing the diffusion of new medical technologies. New Jersey ASA 36th Annual Spring Symposium, Rutgers RWJ School of Medicine, Piscataway, NJ. May 2015.
19. Approaches to comparative effectiveness estimation in prospective observational data. Adrienne L. Cupples Seminar, Boston University, Boston, MA. April 2015.
20. On the use of registries for post-market medical device assessments. 8th FDA/MTLI Workshop, Crystal City, VA. April 2015.
21. Missing data approaches in trials. American College of Cardiology Scientific Sessions, San Diego, CA. March 2015.
22. Statistical issues in comparative effectiveness research. Webinar, Eastern North American Region of the International Biometrics Society. February 2015.
23. CV safety assessments: signal detection with heterogeneous data sources. Cardiac Safety Research Consortium Mini Think Tank, Silver Spring, MD. February 2015.
24. Analytical approaches for characterizing the diffusion of new medical technologies. Johns Hopkins University, Baltimore, MD. October 2014.
25. Combining information for assessing safety, effectiveness, and quality: technology diffusion and health policy. International Chinese Statistical Association and Korean International Statistical Society Meeting, Portland, OR. June 2014.
26. An introduction to comparative effectiveness research. Eastern North American Region of the International Biometrics Society Meeting, Baltimore, MD. March 2014.
27. Assessing quality and equity of care: statistical considerations and applications. Leonard Davis Institute of Health Economics, University of Pennsylvania. March 2014.

28. Comparative effectiveness Research: statistical methods and challenges (workshop). International Conference on Health Policy Statistics, American Statistical Association. Chicago, IL. October 2013.
29. Statistics in Health Policy (2013): advances and retreats. Plenary Talk. International Conference on Health Policy Statistics, American Statistical Association. Chicago, IL. October 2013.
30. Learning what works: uncertainty and selective inference. International Conference on Health Policy Statistics, American Statistical Association. Chicago, IL. October 2013.
31. Statistical considerations in studies of medical devices. Eastern Mediterranean Region of the International Biometrics Society Meeting, Tel Aviv, Israel. April 2013.
32. Statistical considerations in assessing the comparative effectiveness and safety of medical devices. Keynote Speaker, Kansas-Western Missouri Chapter of American Statistical Association Annual Meeting, Kansas City, MO. April 2013.
33. Methodological perspectives on comparative effectiveness research. American Heart Association Annual Meetings, Los Angeles, CA. November 2012.
34. Methodological perspectives on comparative effectiveness research. Harvard School of Public Health Catalyst Symposium, Boston, MA. November 2012.
35. Statistical considerations in assessing the comparative effectiveness and safety of medical devices. Department of Epidemiology, Harvard School of Public Health, Boston, MA. November 2012.
36. The MDEpiNet Methodology Center, FDA Public Meeting on Partnership for Building Global Medical Device Epidemiology and Surveillance Capabilities, Greenbelt, MD. September 2012.
37. Methodological gaps and solutions in evidence synthesis using registries. FDA Public Meeting on Leveraging Registries with Medical Device Data for Postmarket Surveillance and Evidence Appraisal Throughout the Total Product Life Cycle, Greenbelt, MD. September 2012.
38. Innovative methodologies, data sources, and leveraging existing infrastructure. FDA Public Meeting on Post-Approval Studies. Silver Spring, MD. August 2012.
39. Progress from the Patient-Centered Outcomes Research Institute. Engelberg Center for Health Care Reform, Brookings Institution, Washington, DC (webinar: joint with Anne Beal). July 2012
40. Statistical considerations when combining data for comparative effectiveness research. HSPH-Merck Workshop, Harvard School of Public Health, Boston, MA. June 2012
41. Workshop: Comparative effectiveness research. International Chinese Association 21st Applied Statistics Symposium, Boston, MA. June 2012
42. Hospital surveillance for safety and quality. International Summit on Outcomes Research in Healthcare. Beijing, China. April 2012.
43. Statistical considerations in assessing the comparative effectiveness and safety of medical devices. Starr Lectureship, Center for Statistical Sciences, Brown University, Providence, RI. April 2012
Tutorial: Comparative effectiveness research. Eastern National Region of the International Biometrics Society, Washington, DC. March 2012
44. Statistics and evidence synthesis. FDA Public Meeting on 522 Postmarket Surveillance Studies. Silver Spring, MD. March, 2012.

45. The role of shrinkage estimation in comparative effectiveness research. AHRQ 3rd Symposium on Comparative Effectiveness Research, Rockville, MD. June 2011
46. Modern statistical methods for assessing comparative safety and effectiveness: artificial hips. University of Toronto Biostatistics Day, Toronto, Canada, April 2011
47. Modern statistical methods for post-approval surveillance: applications to medical device studies. 4th Annual Medical Device and IVD Statistical Issues Workshop, Washington, DC. April 2011
48. Novel approaches to evidence synthesis for medical devices: a case of total hip arthroplasty. FDA 2nd Annual Public Workshop of the Medical Device Epidemiology Network, Silver Spring, MD. April 2011
49. Innovative methodological approaches to evidence accumulation and synthesis to advance the regulatory science of medical devices, AHRQ Centers for Education and Research on Therapeutics Steering Committee Meeting, Rockville, MD. March 2011
50. Signal refinement in the context of large sample sizes. Expert Workshop on Statistical and Epidemiological Issues in Active Medical Product Surveillance. Engelberg Center for Health Care Reform at Brookings, Washington, DC. February 2011
51. Minimizing confounding in CER: using propensity score methods. American Heart Association Annual Scientific Sessions, Chicago, IL. November 2010.
52. How to minimize confounding in large data sets analyses? American Heart Association Annual Scientific Sessions, Chicago, IL. November 2010
53. Rethinking analytical strategies for surveillance of medical devices and drugs: hip arthroplasty as an example. Health Services Research Methods Rounds, Women's College Research Institute, Toronto, Canada. November 2010.
54. Statistical strategies for combining information: assessing comparative safety. Symposium honoring Steve Lagakos, Athens, Greece. October 2010.
55. Appropriate role of observational data analysis in comparative effectiveness research. AcademyHealth Annual Meeting, Boston, MA. June 2010.
56. Statistical considerations for computing composite measures: application to assessing quality of care. AcademyHealth Annual Meeting, Boston, MA. June 2010.
57. Using registry data to infer comparative effectiveness: comparing bivalirudin to heparin + glycoprotein IIb/IIIa receptor antagonist prior to primary PCI. Premier Annual National Breakthroughs Conference, Washington, DC. June 2010.
58. Designing safety studies: interventional versus observational. Post-Approval Summit, Boston, MA. May 2010.
59. Hospital quality following percutaneous intervention in Massachusetts: 2003 – 2008. Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke Conference, Washington, DC. May 2010.
60. Combining multiple data sources for comparative effectiveness. Rutgers University Workshop on Statistical Issues on Combining Information, New Brunswick, NJ. May 2010.
61. Statistical issues in comparative effectiveness research. IBM Watson Research Lab, Hawthorne, NY. May 2010.

62. Novel methodologies for generating evidence. Medical Device Epidemiology Network, Center for Devices and Radiological Health, FDA. April 2010.
63. Statistical methods for combining information from multiple sources. Association of Clinical Research Professionals, Tampa, FL. April 2010.
64. Comparative effectiveness of total hip replacement systems. Eastern North American Region of the International Biometrics Society, New Orleans, LA. March 2010.
65. Methodology for calculating 30-day mortality rates, American College of Cardiology Annual Scientific Meetings, Atlanta, GA. March 2010.
66. Discussion of Economic outcomes of BARI 2D, American Heart Association Annual Scientific Sessions, Orlando, FL. November 2009.
67. Research synthesis for the real world: assessing safety after market release. Yale School of Public Health, New Haven, CT. October 2009.
68. Research synthesis for the real world. FDA Post-Approval Studies of Medical Devices Workshop, Silver Spring, MD. September 2009.
69. Use of multiple informant data. 49th Annual New Research Approaches for Mental Health Interventions Meeting, Hollywood, FL. July 2009.
70. Assessing safety of medical technologies in the real world. Harvard Medical School 2009 Commencement and Alumni Week, Boston, MA. June 2009.
71. Bayesian inference for health policy decision making. Medicare Evidence Development and Coverage Advisory Committee, Washington DC. June 2009.
72. Statistical surveillance techniques for hip arthroplasty. AHRQ Clinical & Comparative Research Methods II, Rockville, MD. June 2009.
73. Sensitivity analyses for observational studies: assessing safety after market release. 5th Conference of the Eastern Mediterranean Region of the International Biometrics Society, Istanbul, Turkey. May 2009.
74. Statistical strategies for post-market surveillance of medical devices. FDA/ADVAMED Statistical Issues for Medical Devices and Diagnostics Workshop, Gaithersburg, MD. April 2009.
75. Statistical issues in assessing hospital quality of cardiac care. Tufts Medical Center, Cardiology Grand Rounds, Boston, MA. February 2009.
76. Statistical strategies for analyzing observational data. Bipolar Statistical Summit, New York, NY. October 2008.
77. Public reporting of cardiac outcomes: a view of Massachusetts' experience. Centers for Medicare & Medicaid Services Measures Forum Presentation, Teleconference. October 2008.
78. Modeling Diffusion and Effects of New Drugs: Methods and Applications. International Biometrics Conference, Dublin, Ireland. July 2008.
79. Estimating Quality and Effectiveness of Medical Care, Annual Meeting of Finnish Statisticians, Joint Meeting with the Finnish Statistical Society, Finnish Society of Biostatistics and Society of Social Medicine, Helsinki, Finland. May 2008.

80. Statistical Strategies for Post-Approval Studies. Department of Biostatistics and Medical Informatics, University of Porto, Portugal. April 2008.
81. Statistical Issues in Assessing Hospital Quality of Care. MGH Biostatistics Center, Massachusetts General Hospital, Boston, MA. February 2008.
82. Assessing Evidence on Safety and Efficacy: the Role of Meta-Analysis. 4th Annual Scientific Meeting of the International Society of Clinical Trials Management, Washington, DC. February, 2008.
83. Assessing Quality of Care Delivered in the US: A Bayesian Approach. Bayesian Biostatistics Conference. Houston, TX. January, 2008.
84. Using Latent Variables for Assessing Quality of Health Care: Issues and Applications. International Conference on Health Policy Statistics, Philadelphia, PA. January 2008.
85. Large Data Streams and the Power of Large Numbers. IOM Workshop on Redesigning the Clinical Effectiveness Research Paradigm: Innovation and Practice-Based Approaches, Washington, DC. December 2007.
86. Statisticians and FDA Advisory Committees. Boston Chapter of the American Statistical Association, Boston, MA. November 2007.
87. Latent Variable Models for Assessing Quality of Health Care: Issues and Applications. Fall Health Economics Seminar, University of Chicago, Chicago IL. November 2007.
88. Hybrid Designs for Rehabilitation Research. State of Science Conference on Clinical Trials in Rehabilitation Research. Washington, DC. October, 2007.
89. Using Statistical Models for Assessing Quality of Care: Issues and Applications. Center for Outcomes and Policy Research, Dana-Farber Cancer Institute, Boston, MA. October 2007.
90. The Statistics Behind the Numbers. 11th Annual Scientific Meeting of the Heart Failure Society of America. Washington, DC. September 2007.
91. Statistical Strategies for Post-Approval Studies. Surveillance and Biometrics Grand Rounds, Division of Postmarket Surveillance, Center for Devices and Radiological Health, FDA. Washington, DC. September 2007.
92. Methodological Issues in Assessing Quality of Care: Process and Outcomes Measures. AcademyHealth Annual Meeting. Orlando, FL. June 2007.
93. Some Thoughts on Propensity Scores. AcademyHealth Annual Meeting. Orlando, FL. June 2007.
94. Statistical Models for Profiling Quality of Health Care. Columbia Developing Center on Implementation of Evidence-based Practices for Children in a State System Research Seminar, Columbia University, New York, NY. June 2007.
95. (Talk 1) Pre-Market Safety Approaches to Rare Safety Events; (Talk 2) Historical Controls and OPC; (Talk 3) The Mass-DAC Effort. FDA Drug Eluting Stent Thrombosis ThinkTank Meeting, Washington, DC. May 2007.
96. Statistical Considerations in Assessing Quality of Cardiac Care. Mid America Heart Institute of Saint Luke's Hospital Cardiovascular Grand Rounds, Kansas City, MO. April 2007.

97. Multivariate Analyses of Mixed Outcomes. Key Statistical Methods for Device Clinical Trials sponsored by the Harvard Clinical Research Institute and Harvard Medical School, Boston, MA. February 2007.
98. Statistical Models for Profiling Quality of Hospital Care. 4th Conference of the Eastern Mediterranean Region of the International Biometrics Society. Eilat, Israel. January 2007.
99. Statistical Issues in Medical Device Trials. Institute for Technology Assessment, Massachusetts General Hospital. October 2006.
100. Latent Variable Models for Assessing Quality of Health Care: Issues & Applications. Perugia, Italy. September, 2006.
101. Profiling Practices: How Much Do We Know? AcademyHealth Annual Meeting. Orlando, FL. June 2006.
102. Statistical Methods for Assessing Mental Health Treatment Effectiveness: Issues & Applications. 8th Annual Columbia, Penn, Yale Statistics in Psychiatry Symposium, New York, NY. May 2006.
103. Assessing Evidence for New Technologies in the Absence of Randomization: A Review of Concepts and Analytic Approaches. Schering-Plough Research Institute, Kenilworth, NJ. March 2006.
104. Latent Variable Models for Mixed Outcomes: Methods and Applications. Schering-Plough Research Institute, Kenilworth, NJ. March 2006.
105. National Voluntary Consensus Standards for Ambulatory Care: Statistical Challenges in Small Group Settings. National Quality Forum, Washington, DC. December 2005.
106. Causal Estimation Using Quasi-Experimental Designs. International Conference on Health Policy Research (Methods), Boston, MA. October 2005.
107. Quasi-Experimental Designs. Alternative Study Designs for Evidence-Based Practice. AHRQ. Washington, DC. October 2005.
108. Statistical Challenges in Medical Device Clinical Trials. Eastern Mediterranean Region of the International Biometrics Society Meeting, Corfu, Greece. May 2005.
109. Statistical Methods for Profiling Hospitals: Methods and Implications. UVM Statistics Colloquium, University of Vermont, Burlington, VT. April 2005.
110. Limitations of Analyses in CQI: Accuracy. American College of Cardiology Scientific Meetings, Orlando, FL, March 2005.
111. Applied Statistical Methods for Health Policy Data. Department of Mathematics, Smith College, October 2004.
112. Physician Clinical Performance Assessment. Institute of Medicine, National Academies, September 2004.
113. Statistical Models for Health Care Quality Surveillance and Public Reporting. Center for Basic Research in the Social Sciences, Harvard University, Cambridge, MA. (2004).
114. Likelihood-based Methods for Treatment Non-Compliance and Non-Response in Randomized Trials. Second International Workshop in Applied Probability, University of Piraeus, Greece. (2004).
115. Limitations of Outcomes Analysis in CQI. 5th Annual ACC Quality Conference and NCDR User Meeting. New Orleans, LA. (2004).

116. Statistical Models for Health Care Quality Surveillance and Public Reporting. Department of Epidemiology and Biostatistics, Case Western Reserve University, Cleveland, OH. (2003).
117. Optimal Delineation of Health Status in Trial Endpoints. Health Failure Society of America/FDA Workshop. Rockville, MD. (2003).
118. Hierarchical Models and Latent Variable Models: Methods for Assessing Multiple Measures of Quality and Outcomes of Care. International Conference on Health Policy Research, Chicago, IL. (2003)
119. Statistical Models for Monitoring/Surveillance and Public Reporting. Joint Statistical Meetings, San Francisco, CA. (2003)
120. Measuring Quality. American College of Radiology Forum: The Future Quality of Medical Imaging, Reston, VA. (2003)
121. Use and Abuse of Observational Data for QI. 4th Annual ACC Quality Conference and NCDR User Meeting, Chicago, IL. (2003)
122. Some Statistical Issues in Profiling Providers: Cross-Sectional Univariate and Multivariate Outcome Measures. Department of Economics, University of Bristol, UK. (2002)
123. On the Use of Propensity Scores in Medical Decision and Policy Making. Society for Medical Decision Making 24th Annual Meeting, Keynote Dinner Speaker, Baltimore, MD. (2002)
124. Sample Size Considerations in Observational Health Care Quality Studies. CREDES (Research and Information Center for Health Economics), Paris, France. (2002)
125. Analytic Methods for Meta-Analysis. INSERM (French Institute of Health and Medical Research), La Roche-Posay, France. (2002)
126. Statistical Approaches to Profiling Providers of Medical Care. International Health Economics Conference, Hong Kong University of Science and Technology. (2002)
127. Unruly Control Groups: Determining the Appropriateness of Quasi-Experimental Estimators. National Institute of Mental Health Evidence in Mental Health Services Research: What Types, How Much, and Then What? Washington, DC. (2002)
128. Statistical Approaches to Profiling Providers. Yale Medical School, New Haven, CT. (2002)
129. On The Design and Analysis of Health Care Quality Studies: Assessing Chronic Cardiovascular Care in the US. American Statistical Association Annual Meetings, Atlanta, GA. (2001)
130. Models for Profiling Medical Care Providers. Academy for Health Services Research and Health Policy Meetings, Atlanta, GA. (2001)
131. Maryland Health Choice. Academy for Health Services Research and Health Policy Meetings, Atlanta, GA. (2001)
132. Statistical Considerations for Profiling Providers of Medical Care. Keynote Speaker, Department of Health Administration, University of Toronto, Toronto, Canada. (2001)
133. Validating Recommendations for Coronary Angiography Following Acute Myocardial Infarction in the Elderly: A Matched Analysis Using Propensity Scores. Institute for Clinical Evaluative Sciences, Sunnybrook Hospital, Toronto, Canada. (2001)

134. Propensity Scores: Economic, Epidemiological, and Statistical Perspectives, Panel Moderator. 6th Annual International Meeting of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR), Arlington, VA. (2001)
135. Sample Size Determination in Hierarchical Models: An Application to Quality Assessment Studies. Conference on Statistics and Health, Department of Mathematical Sciences, University of Alberta, Edmonton, Alberta, Canada. (2000)
136. Risk Adjustment for Procedures: The Basics. 2nd Scientific Forum on Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke, American Heart Association & the American College of Cardiology, Washington, DC. (2000)
137. Risk Adjustment: Advanced Concepts. 2nd Scientific Forum on Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke, American Heart Association & the American College of Cardiology, Washington, DC. (2000)
138. On the Use of Prior Information in Medical Device Trials: Methods & Applications. Food and Drug Administration, Rockville, MD. (2000)
139. Analyzing Observational Data Using Propensity Scores: Applications in Health Services Research. Statistics Colloquium, Department of Mathematics and Statistics, Boston University, MA. (2000)
140. Analyzing Observational Data Using Propensity Scores: Applications in Health Services Research. Biostatistics Colloquium, Department of Biostatistics, Harvard School of Public Health, Boston, MA. (2000)
141. Comparing Systems of Health Care: Does the Veterans Health Administration Measure Up? Health Care Policy Advisory Council, Harvard Medical School, Boston, MA. (2000)
142. On the Use of Propensity Scores in Health Services Outcomes Research. Techniques for Handling Bias in Health Services Outcomes Research, National Conference, Houston, TX. (2000)
143. Statistical Methods for Adjusting Differences Due to Self-selection into Health Plans. American Public Health Association 128th Annual Meeting, Boston, MA. (2000)

Professional Leadership Roles Related to Teaching

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| June 2012 | Workshop Organizer and Instructor, International Chinese Statistical Association 2012 Applied Statistics Symposium, Boston, MA. Provided an introduction to comparative effectiveness research. |
| June 2010 | Methods Workshop Organizer, Academy for Health Services Research and Health Policy, Boston, MA. Multiple imputation for multivariate incomplete data: A practical guide. |
| Jan 2010 | Scientific Committee Organizer, 2010 Bayesian Biostatistics Conference, The University of Texas M.D. Anderson Cancer Center, Houston, Texas. |
| June 2009 | Methods Workshop Organizer, Academy for Health Services Research and Health Policy, Chicago, IL. Multiple imputation for multivariate incomplete data: A practical guide. |
| January 2009 | Scientific Committee Organizer, 2009 Bayesian Biostatistics Conference, The University of Texas M.D. Anderson Cancer Center, Houston, Texas. |

Normand, S-L June 2008	Harvard Medical School & Harvard School of Public Health Workshop Organizer and Instructor, Academy for Health Services Research and Health Policy, Washington, DC. Introduction to Hierarchical Models for Health Services Research. Provided an introduction to hierarchical models with applications to services research.
June 2007	Workshop Organizer and Instructor, Academy for Health Services Research and Health Policy, Orlando, FL. Introduction to Hierarchical Models for Health Services Research. Provided an introduction to hierarchical models with applications to services research.
June 2006	Workshop Organizer and Instructor, Academy for Health Services Research and Health Policy, Seattle, WA. Introduction to Hierarchical Models for Health Services Research. Provided an introduction to hierarchical models with applications to services research.
Sept 2005	Workshop Organizer and Instructor, Heller School, Brandeis University, Waltham, MA. Introduction to Hierarchical Models for Health Services Research. Provided an introduction to hierarchical models with applications to services research.
June 2005	Workshop Organizer and Instructor, Academy for Health Services Research and Health Policy, Boston, MA. Introduction to Hierarchical Models for Health Services Research. Provided an introduction to hierarchical models with applications to services research.
Mar 2005	Faculty Mentor Participant, Duke University, Advanced Research Institute in Geriatric Mental Health Institute.
Dec 2004	Workshop Instructor, University of Puerto Rico-Cambridge Health Alliance Training Institute, San Juan, PR. Causal Inference: A Review of Concepts and Analytic Approaches.
Aug 2004	Workshop Instructor, Measurement, Design, and Analysis Methods for Health Outcomes Research, Harvard School of Public Health, Boston, MA. Using Hierarchical Models.
June 2004	Workshop Organizer and Co-Instructor, AcademyHealth Annual Meetings, San Diego, CA. Statistical Approaches to Observational Data.
April 2004	Workshop Instructor, Center for Devices and Radiological Health, US Food and Drug Administration, Rockville, MD. Assessing Evidence About Treatments in the Absence of Randomization: A Review of Concepts and Analytic Approaches.
Oct 2003	Workshop Instructor, International Conference on Health Policy Research, Chicago, IL. Introduction to Statistical Methods for Profiling. Provided an introduction to regression-based methods for comparing providers on the basis of observational data.
Oct 2003	Workshop Instructor, Lister Hill Center for Health Policy, University of Alabama at Birmingham, AL. Introduction to Statistical Methods for Profiling. Provided an introduction to regression-based methods for comparing providers on the basis of observational data.
Aug 2003	Workshop Instructor, Measurement, Design and Analysis Methods for Health Outcomes Research, Harvard School of Public Health, Boston, MA. Using Hierarchical Models.
June 2003	Workshop Instructor, Academy for Health Services Research and Health Policy, Nashville, TN. Introduction to Statistical Methods for Profiling. Provided a review of methods of comparing providers and described regression-based methods using hierarchical models.
Nov 2002	Cyber-Workshop Instructor, Academy for Health Services Research and Health Policy, Washington, DC. Introduction to Hierarchical Models for Health Services Research. Provided an introduction to hierarchical models with applications to services research.

- Oct 2002 Workshop Instructor, 4th Scientific Forum on Quality and Outcomes Research in Cardiovascular Disease and Stroke, American Heart Association and the American College of Cardiology, Washington, DC. Introduction to Hierarchical Modeling for Cardiovascular Services Research.
- June 2002 Workshop Instructor, Academy for Health Services Research and Health Policy, Washington, DC. Introduction to Hierarchical Models for Health Services Research. Provided an introduction to hierarchical models with applications to services research.
- June 2001 Keynote Instructor, International Conference on Information Technology Interfaces ITI 2001, Croatia School of Biometrics. Provide an overview of methods for making inferences with observational data including regression-adjustment and propensity score adjustment with applications in health services research.
- March 1998 Advisory Council Meeting on Methodological Issues in Diagnostic Clinical Trials: Health Services and Outcomes Research in Radiology. Sponsored by the US Public Health Service's Office on Women's Health and the National Cancer Institute, Washington, DC. Provided advice regarding the difficulties in assessing the appropriateness of diagnostic tests.
- Dec 1997 Workshop Instructor, Multilevel Hierarchical Regression Models. 1997 International Conference on Health Policy Research, Washington, DC. Provided an overview on applying complex statistical models to the analysis of health services data to help inform policy makers.
- June 1993 Workshop Instructor, Association for Health Services Research and Foundation for Health Services Research Methods Workshop on Hierarchical Statistical Methods for Health Policy, Washington, DC. Provided an overview on applying complex statistical models to the analysis of health services data to help inform policy makers.

PART III: BIBLIOGRAPHY

Standard Journal Articles

1. Egan TM, Herman SJ, Doucette EJ, **Normand SL**, McLeod RS. A randomized, controlled trial to determine effectiveness of fascial infiltration of bupivacaine in preventing respiratory complications after elective abdominal surgery. *Surgery* 1988; 104(4):734-740.
2. Brasher P, Hogg-Johnson S, **Normand SL**. Analysis of the Lake Couchiching data. *Canadian Journal of Statistics* 1990; 18(4):377-382.
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5. Gatsonis C, **Normand SL**, Liu CH, Morris C. Geographic variation of procedure utilization – A Hierarchical Model Approach. *Medical Care* 1993; 31(5):YS54-YS59.
6. Pashos CL, **Normand SLT**, Garfinkle JB, Newhouse JP, Epstein AM, McNeil BJ. Trends in the use of drug therapies in patients with acute myocardial infarction – 1988 to 1992. *Journal of the American College of Cardiology* 1994; 23(5):1023-1030.
7. Doksum KA, **Normand SL**. Gaussian models for degradation processes. Part I: Methods for the analysis of biomarker data. *Lifetime Data Analysis* 1995; 1:131-144.

8. Dickey B, Norton EC, **Normand SL**, Azeni H, Fisher W, Altaffer F. Massachusetts Medicaid managed health care reform: treatment for the psychiatrically disabled. *Advances in Health Economics and Health Services* 1995; 15:99-116.
9. Gatsonis CA, Epstein AM, Newhouse JP, **Normand SL**, McNeil BJ. Variations in the utilization of coronary angiography for elderly patients with an acute myocardial infarction – An analysis using hierarchical logistic regression. *Medical Care* 1995; 33(6):625-642.
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17. **Normand SL**, Glickman ME, Ryan T. Modeling mortality rates for elderly heart attack patients: Profiling hospitals in the Cooperative Cardiovascular Project. In: Gatsonis C, Hodges J, Kass R, Singpurwalla N, editors. *Case Studies in Bayesian Statistics*. Springer-Verlag, 1997:155-236.
18. Tu JV, Pashos CL, Naylor CD, Chen EL, **Normand SL**, Newhouse JP, McNeil BJ. Use of cardiac procedures and outcomes in elderly patients with myocardial infarction in the United States and Canada. *New England Journal of Medicine* 1997; 336(21):1500-1505.
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20. Dickey B, **Normand SLT**, Norton EC, Azeni H, Fisher W. Treatment of long-term psychiatric disorders in the managed care environment – An observational longitudinal study. *Clinical Drug Investigation* 1998; 15(4):303-308.
21. Dickey B, Norton E, **Normand SL**, Azeni H, Fisher W. Managed Mental Health Experience in Massachusetts. In: Mechanic E editor. *Managed Behavioral Health Care: Current Realities and Future Potential*. Josey-Bass, 1998:115-22.

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25. Landrum MB, **Normand SLT**. Applying Bayesian ideas to the development of medical guidelines. *Statistics in Medicine* 1999; 18(2):117-137.
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