

**Name:** Sharon-Lise Teresa Normand

**Office Address:** Harvard Medical School  
Department of Health Care Policy  
180 Longwood Avenue, Suite 302  
Boston, MA 02115-5899

**Home Address:** 122 Winchester St  
Brookline, MA 02446

**Phone:** 617-432-3260  
**E-Mail:** sharon@hcp.med.harvard.edu  
**Fax:** 617-432-0173

**Place of Birth:** Capreol, Ontario, Canada  
U.S. Citizen

### Education

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

### Postdoctoral Training

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

### Academic Appointments

1992–1998 Assistant Professor of Biostatistics, Department of Health Care Policy, Harvard Medical School

1995–1998 Assistant Professor, Department of Biostatistics, Harvard School of Public Health

1998–2003 Associate Professor of Biostatistics, Department of Health Care Policy, Harvard Medical School

1998–2003 Associate Professor, Department of Biostatistics, Harvard School of Public Health

2003–2018 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

2018– S. James Adelstein Professor of Health Care Policy, Harvard Medical School

### Major Harvard Committee Assignments

#### Harvard University

1997– Evaluation & Statistics Committee, Ph.D. in Health Policy Program, Member

1999–2001 Admissions Committee, Member, Health Policy Ph.D. Program

2000– Standing Committee on the Degree of Doctor of Philosophy in Health Policy, Member

2005 Ad Hoc Tenure Committee, Faculty of Arts and Science, Member

2017- Harvard Data Science Initiative Planning Committee, member

#### Harvard Medical School & Harvard School of Dental Medicine

2004–2005 Faculty Diversity Committee, Member

2004–2010 Standing Committee on Human Studies in the Faculty of Medicine, Member

2006–2008	Faculty Council, Senior Faculty Representative of the Department of Health Care Policy
2007	Screening Committee, Member
2008–	Harvard Catalyst Pilot Grants, Reviewer
2009-2012	Promotions, Reappointments, and Appointments Committee, Member
2012-	Financial Interest Review Committee, Member
2015-	Social Science Advisory Group

Department of Biostatistics, Harvard School of Public Health

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

Department of Health Care Policy, Harvard Medical School

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

**Major Regional and National Committee Assignments**

**Regional**

1995–1996	Board of Directors, New England Quality Council, Inc.
2000–2007	Massachusetts Cardiac Care Quality Advisory Commission, Massachusetts Department of Public Health
2002–2012	Director, Massachusetts Data Analysis Center, Commonwealth of Massachusetts
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
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

**National**

1992	Reviewer, Statistics and Probability Section, National Science Foundation Program
1994–1996	Review Member, Behavioral Science Track Award for Rapid Transition Program, National Institute of Mental Health
1996	Small Project Grant Program Review Member, Agency for Health Care Policy and Research
1997–2000	Reserve Review Member, Health Services Research Initial Review Group Committee, Agency for Health Care Policy and Research
1998–1999	Cardiovascular Outcomes Research Conference – Working Group Member, American Heart Association
1998–2000	Regional Advisory Board Member, ENAR
1998–2001	Patient Care and Outcomes Review Group Committee Member, American Heart Association

1999–2001 Review Member, Health Care Technology & Decision Sciences Review Committee, Agency for Healthcare Policy and Research

2000 Scientific Program Committee Member, ENAR

2000–2001 Quality of Care and Outcomes Research Expert Panel Member, American Heart Association

2000–2001 Health Policy Statistics Section, Program Chair (2001); Program Chair-Elect (2000), American Statistical Association

2000–2005 Joint Task Force on Performance Measures Member, American College of Cardiology & the American Heart Association

2000–2005 Heart Failure Performance Measures Writing Group Member, American College of Cardiology & the American Heart Association

2000–2005 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup> Scientific Forums on Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke Program Committee Member, American Heart Association

2001–2002 Heart Failure GAP Project Advisory Panel Member, American College of Cardiology & American Heart Association

2002 Technical Expert Panel Member, Centers for Medicaid and Medicare Services Doctor's Office Quality Project

2002 Special Emphasis Panel (Statistics) Chairperson, Review Panel, National Institute for Mental Health

2002 Temporary Review Member, Small Business Innovation Research, National Institute for Mental Health

2002–2005 Member, Subcommittee on Standards for NCDR Scientific and Clinical Support, American College of Cardiology

2003 Review Member, National Institute for Mental Health, Interventions

2003–2005 Secretary, Eastern North American Region (ENAR) of the International Biometrics Society

2003–2007 Member, Circulatory Systems Devices Advisory Panel, Food and Drug Administration, US Department of Health and Human Services

2004 Member, Institute of Medicine of the National Academies, Subcommittee on Performance Measures for Redesigning Health Insurance Benefits, Payment and Performance Improvement Programs

2004 Member, ENAR Distinguished Student Paper Awards Committee

2005–2007 Statistical Society of Canada Representative to the Florence Nightingale David Award Committee, Committee of Presidents of Statistical Societies

2006–2007 Member, Institute of Medicine Committee to Review NASA's Space Flight Health Standards

2006-2007 Member, IOM Committee to Review NASA's Space Flight Health Standards

2006–2008 Member, Measures Implementation and Evaluation Advisory Committee, American Medical Association

2003–2004 Health Policy Statistics Section Chair (2004) and Chair Elect (2003), American Statistical Association

2004–2006 Member, Quality Strategic Directions Committee, Appropriateness Criteria Working Groups, American College of Cardiology

2006–2009 Member, AcademyHealth Methods Council

2006–2007 Member, Agency for Healthcare Research and Quality (AHRQ) Quality Indicators Workgroup on Risk Adjustment Approaches to Administrative Data

2006-2007 Member, IOM Committee to Review NASA's Space Flight Health Standards

2006-2012 Member, IOM Committee to Aerospace Medicine and the Medicine of Extreme Environments

2006–2012 Member, Institute of Medicine of the National Academies, Committee of Aerospace Medicine and the Medicine of Extreme Environments

2007 Review Member, Special Emphasis Panel ITMA, National Institute of Mental Health

2007–2008	Statistical Leader, FDA-DCRI Cardiac Safety Critical Path Initiative: Drug Eluting Stent Thrombosis and Dual Anti-Platelet Therapy Group.
2007–2008	Member, AHA Evaluation of Novel Markers of Cardiovascular Risk and Subclinical Atherosclerosis Writing Group
2007–2009	Steering Committee Member, Registry of Angioplasty Registries (ROAR), National Heart, Lung, and Blood Institute
2007–2009	Consultant, Circulatory Systems Devices Advisory Panel, Food and Drug Administration, US Department of Health and Human Services
2007–2010	Member, Board of Advisors for the NCHS/AcademyHealth Policy Fellowship
2008	Review Member, Special Emphasis Panel ITMA, National Institute of Mental Health
2008	Member, ACC/AHA Quality in Technology Working Group
2008	Member, ACC/AHA Performance Measurement Methodology Update Committee
2008	Member, ACC/AHA Guidelines Methodology Review Workgroup
2009	Review Member, Special Emphasis Panel, ZMH1 ERB-N, National Institute of Mental Health
2009–	Advisory Committee Member, Dual Antiplatelet Therapy (DAPT) Study
2009–	Executive Operations Committee Member, Dual Antiplatelet Therapy (DAPT) Study
2009–2010	Member, IOM Committee on Future Directions for the National Healthcare Quality and Disparities Reports
2010–2011	Member, IOM Committee on a National Surveillance System for Cardiovascular and Select Chronic Diseases
2010–2012	Member, Medicare Evidence Development and Coverage Advisory Committee
2011–2012	Vice Chair, Methodology Committee, Patient-Centered Outcomes Research Institute
2012–2015	Board Member, Frontier Science and Technology Research Foundation, Inc.
2012–2015	Scientific Advisory Board Member, Institute of Clinical Evaluative Sciences, Toronto, Canada
2012–2016	Member, Committee on Applied and Theoretical Statistics, National Academy of Sciences
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
2016–	Member, National Academies of Sciences, Engineering, and Medicine, The Intelligence Science and Technology Experts Group (ISTEG)
2017–2020	Member, Fisher Lecture Selection Committee, Committee of Presidents of Statistical Societies (COPSS)
2018-2019	Chair, Fisher Award Committee, Committee of Presidents of Statistical Societies
2018–	Co-Chair, Standing Committee on the Federal Motor Carrier Safety Administration's Correlation Study, Committee on National Statistics, National Academies
2018–	Chair, Methods Subcommittee, National Evaluation System for health Technology Coordinating Center (NESTcc)

### **International**

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

### **Professional Societies**

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

**Community Service Related to Professional Work**

- 1985–1990 Junior Statistical Consultant, Clinical Research Support Unit, Department of Preventive Medicine & Biostatistics, University of Toronto
- 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)
- 1995–2003 Scientific Program Committee Member, International Conference on Health Policy Research (Bi-annual Meeting), Health Policy Statistics Section, American Statistical Association
- 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)
- 2001 External Examiner, University of Toronto, School of Graduate Studies, Multiple Imputation of Missing Data in Clinical Trials (Biostatistics).

**Editorial Boards****Ad-Hoc Reviewer**

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

**Board Member**

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

**Awards and Honors**

1984	University Gold Medal in Mathematical Statistics, University of Western Ontario, London, Ontario CANADA
1984	Entrance Scholarship, Faculty of Graduate Studies, University of Western Ontario, London, Ontario CANADA
1985	Special University Scholarship, Faculty of Graduate Studies, University of Western Ontario, London, Ontario CANADA
1985–1989	Ontario Graduate Scholarship, University of Toronto, CANADA
1988	Life Sciences Committee Scholarship in Cancer Research, University of Toronto, Toronto, Ontario CANADA
1989	Life Sciences Graduate Degree Completion Scholarship, University of Toronto, Toronto, Ontario CANADA
1991	National Science Foundation: Young Researcher Award, Support for the 4 <sup>th</sup> Valencia International Meeting on Bayesian Statistics USA
2002	Elected Fellow, American College of Cardiology
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.”
2005	Excellence in Mental Health Policy and Economics Research Award, Best Paper, Journal of Mental Health Policy and Economics
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.
2007	Finalist, 2007 NIH Director’s Pioneer Award “Rethinking evidence for medical therapies.”
2007	Elected Associate, Society of Thoracic Surgeons
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.”
2010	IBM Faculty Award, nominated by IBM Healthcare Transformation Group
2011	Long Term Excellence Award, American Statistical Association, Health Policy Statistics Section
2012	Distinguished Scientist Award, American Heart Association
2012	Distinguished Service Award, International Society for Pharmacoeconomics and Outcomes Research
2013	Elected, Society for Research Synthesis Methodology
2015	L. Adrienne Cupples Award for Excellence in Teaching, Research, and Service in Biostatistics, Boston University
2017	Outstanding Lifetime Achievement Award, Council on Quality of Care and Outcomes Research, American Heart Association
2018	Mosteller Statistician of the Year, American Statistical Association, Boston Chapter
2019	Elected Fellow, American Association for the Advancement of Science

**RESEARCH, TEACHING, AND CLINICAL CONTRIBUTIONS****Report of Past Funding Information**

- 1990–1994 AHCPR (PI: McNeil), Co-Investigator/Statistician. The consequences of variation in treatment for acute MI.
- 1992–1993 AHCPR (PI: McNeil), Co-Investigator/Statistician. The consequences of variation in treatment for acute MI.
- 1992–1994 AHCPR (PI: Epstein), Co-Investigator/Senior Statistician. Do re-admissions matter?
- 1992–1995 VHA – Institutional Participation Agreement (PI: McNeil), Co-Investigator/Senior Statistician. The consequences of variation in treatment after AMI in VHA.
- 1992–1995 AHCPR (PI: Morris), Co-Investigator. Hierarchical statistical modeling in health policy research.
- 1993–1994 HCFA (PI: McNeil): subcontract to Duke Medical School, Co-Investigator/Senior Statistician. Analysis of the pilot Cooperative Cardiovascular Project data.
- 1993–1997 NCI (PI: Normand), Principal Investigator. Hierarchical modeling for assessing breast cancer care.
- 1994–1999 AHCPR (PI: McNeil), Co-Investigator/Senior Statistician. Validating guidelines for the care of AMI patients.
- 1995–1997 VHA – Institutional Participation Agreement (PI: McNeil), Co-Investigator/Senior Statistician. Social factors & cardiac outcomes: A prospective study.
- 1995–1997 VHA – Institutional Participation Agreement (PI: McNeil), Co-Investigator/Senior Statistician. Appropriateness and necessity of cardiac procedure use after AMI in VHA.
- 1995–1998 NIMH (PI: Dickey), Co-Investigator/Senior Statistician. Regional variation in mental health treatment and cost.
- 1996–1999 AHCPR (PI: Guadagnoli): subcontract to Boston University, Co-Investigator/Senior Statistician. Adjuvant tamoxifen in old age.
- 1996–2001 SAMHSA (PI: Frank): subcontract to Brandeis University, Co-Investigator/Senior Statistician. State substance abuse treatment managed care evaluation program.
- 1996–2001 U18 HS09487 (PI: McNeil) AHCPR, Co-Investigator/Senior Statistician. Quality of care measures for cardiovascular patients.
- 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.
- 1997–2002 R01 MH54076 (PI: Dickey) NIMH, Co-Investigator/Senior Statistician. Outcomes of Medicaid managed care.
- 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 AHCPR (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 MERCK (PI: McNeil), Co-Investigator/Senior Statistician. Understanding the use of cholesterol lowering agents after myocardial infarction.
- 1998–2000 NCI (PI: Guadagnoli), Co-Investigator/Senior Statistician. Data sources and patterns of care for breast cancer.
- 1998–2002 R01 MH58288 (PI: Normand) NIMH: subcontract to McLean Hospital, Belmont, MA, Research: Principal Investigator. Mental illness, co-morbidity, and mortality.
- 1999–2003 R01 MH58240 (PI: Normand) NIMH, subcontract to McLean Hospital, Principal Investigator. BASIS 32: A Consumer Mental Health Outcome Measure.
- 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.
- 2000–2005 P01 HS10803 (PI: Newhouse) AHRQ, Co-Investigator/Senior Statistician. Structuring Markets and Competition in Health Care.



- 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.
- 2002–2003 (PI: McNeil) MERCK, Co-Principal Investigator. Sample Sizes in Performance Measurement.
- 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.
- 2003–2006 R01 HS13335-01A1 (PI: Epstein) AHRQ, Co-Investigator. The Patterns and Impact of Value-Based Purchasing.
- 2003–2008 P20 MD000537 (PI: McGuire) NCMHD, Co-Investigator. Exploratory EXPORT Center: Bridging Communities.
- 2004–2007 R01 MH54693 (PI: Laird) NIMH, Co-Investigator. Analysis of Multiple Informant Data in Psychiatry.
- 2004–2007 R01 MH06972-01 (Frank RG: PI) NIMH, Co-Investigator/Statistician. Economic Impacts of New Drugs.
- 2004–2009 P50 DA10233-06A2 (PI: Frank) NIDA, Co-Investigator. The Brandeis/Harvard Center Study of Managed Care and Drug Abuse Treatment.
- 2005 (PI: McNeil), Harvard University, Co-Investigator. Programs for Health Systems Improvement.
- 2005–2007 R01 HS014774 (PI: Landon) AHRQ, Co-Investigator. Incentive Formularies and the Costs and Quality of Care.
- 2005–2008 2-R01 MH061434 (PI: Normand) NIMH. Modeling Treatment Use & Effectiveness in Mental Illness
- 2005–2010 P50 MH073469 (PI: McGuire), NIMH/CHA, Co-Investigator, Advanced Center for Latino and MH Systems Research.
- 2006–2010 R01-LM008142 (PI: Resnic), NLM/BWH, Co-Investigator, A System to Monitor Medical Device Safety in Interventional Cardiology.
- 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.
- 2008–2012 2-R01-MH54693 (PI: Normand), NIMH. Analysis of Multiple Informant Data in Psychiatry.
- 2008–2011 R01-MH081819 (PI: Frank), NIMH, Co-Investigator, Mental Health Spending and Quality of Care.
- 2008–2012 R01-MH080797 (PI: Huskamp), NIMH, Co-Investigator, Effects of Mental Health Parity on High-Cost and Severely Ill Individuals.
- 2009–2010 (PI: Normand), Division of Health Care Finance and Policy, Massachusetts Department of Public Health, Hospital-Wide Mortality Measurement Evaluation.
- 2009–2010 IPA (PI: Normand), Center for Devices and Radiographic Devices, Food and Drug Administration, Development of Statistical Surveillance Techniques for Hip Arthroplasty.
- 2009–2013 R01-HL101996 (PI: Reede, Joan), NHLBI, Co-Investigator, Factors that Promote and Support Careers of Women of Color in Academic Medicine.
- 2009–2012 5R01-NR010727 (PI:Termkin-Greener), NNR, Co-Investigator, End-of-Life Quality of Care in Nursing Homes.
- 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.
- 2010-2013 1RC4 MH092717-01 (PI: O'Malley), NIMH, Accounting for Confounding Bias and

	Heterogeneity in Comparative Effectiveness.
2011-2014	HHSF223201110172C (PI: Normand), Chickasaw Nation Industries (CNI)/Food & Drug Administration, The Medical Device Epidemiology Network (MDEpiNET) Methodology Center.
2011-2016	R01MH094290 (PI: McGuire), NIMH, Mental Health Coverage in Health Care Reform.
2012-2016	R01MH093359 (PI: Huskamp/Donohue), NIMH, Influences on Psychiatric Prescribing of Antipsychotics.
2012-2018	U01FD004493 (PI: Normand), FDA, The MDEPINET Medical Counter Measure Study.
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.
2013-2015	R21HD076442 (PI: Chien/Newhouse), NICHD, Improving Pediatric Risk Adjustment Algorithms.
2013-2018	R01HL118314 (PI: Charytan/Normand), B&W/NIDDK, Optimizing Revascularization of Coronary Artery Disease in Chronic Kidney Disease.
2014-2018	R01CA181360 (PI: Haneuse), NIH/NCI, Clustered semi-competing risks analysis in quality of end-of-life care studies.

### Report of Current Research Activities

2013-2019	<u>U01MH103018</u> (PI: Normand/Huskamp). <i>Technology Diffusion Pathways</i> . 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.
2015-2019	<u>R01GM111339</u> (PI: Normand). <i>Bayesian Methods for Comparative Effectiveness Research Using Observational Data</i> . 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.
2015-2019	<u>U01FD005478</u> (PI: Normand/Sedrakyan). <i>Creating National Surveillance Infrastructure for Priority Medical Devices</i> . 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.
2015-2020	<u>P30DA035772</u> (PI: Horgan/Busch). <i>Center to Improve System Performance of Drug Abuse Treatment</i> . 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.

- 2016-2020 1R01MH106682 (PI: Normand/Horvitz-Lennon). *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.
- 2017-2021 1R01MD012428-01 (PI: Normand/Horvitz-Lennon). *Improving Minority Health by Monitoring Medicaid Quality, Disparities and Value*. We propose a program of research that seeks to reduce health disparities and improve the health of minority populations served in publicly funded settings through measurement of quality disparities and other critical domains of Medicaid-financed care delivered to adults with schizophrenia. Our ultimate goal is to enable evidence-based policymaking by developing a user-friendly interactive tool to monitor quality, quality disparities, costs, and value, and determine cost of eliminating quality disparities.
- 2018-2020 The Society of Thoracic Surgeons (PI: Normand). *STS Congenital Heart Surgery Database*. This project proposes the development of machine learning and sparse data approaches to enable a better understanding of the quality of surgical care delivered to pediatric and congenital heart disease populations. We will develop diagnosis-based approaches that make use of procedure-specific risk factors utilizing high-dimensional cluster analyses to create homogeneous patient strata; we will then apply non-parametric approaches to assess hospital surgical quality. Methods will be illustrated using data contained in the Society of Thoracic Surgeons Congenital Heart Disease Database.

## Report of Teaching

### Local Contributions

- 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.
- 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.
- 1995–1998 Bayesian Methodology Working Group, Department of Biostatistics, HSPH, Seminar Coordinator, 10 Students, Preparation Time=0.5 hrs/wk, Contact Time=1 hr/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.
- 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.
- 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.

1997–2002	Core Seminar in Health Policy (HCP597), Harvard University (Harvard Medical School, Kennedy School of Government, Harvard School of Public Health), Guest Lecturer, 20 Students.
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.
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.
2000–2006	Fundamental Methods of Clinical Trials, Scholars in Clinical Science Program, HMS, Guest Lecturer, 10 Students.
2001–2003	Bayesian Methodology in Biostatistics (BIO249ab), Course Developer & Instructor, 15 Students, Preparation Time = 3 hr/wk, Contact Time = 5 hrs/wk.
2004, 2008-2018	Epidemiology 219: Guest lecturer on “Item Response Theory Models”, 20 Students, Preparation Time = 4 hrs, Contact Time = 2.0 hrs.
2008, 2009	Health Care Policy 750: Course Discussion Leader on “Drug/Device Policy Regulation,”12 Students, Preparation Time = 2 hours, Contact Time = 1 hour.
2010	Review of Statistical Approaches to the Analysis of Composite Endpoints (BIO300), Preparation Time = 5 hours, Contact Time = 1 hr/wk.
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.
2014	Topics in Medical Device Comparative Effectiveness Research, Epidemiology (EPI521), Guest Lecturer, 15 Students, Prep Time=3.0 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
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
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
2017	Biostatistics-Biomedical Informatics Big Data Seminar (B3D), “Data, Statistics, and Inference”, Prep Time=2.0 hours, Contact Time=1.0 hours.
2017	Biostatistics 228: Guest lecturer on “Bayesian Approaches to Assessing Hospital Quality of Care”, 10 Students, Prep Time=1.0 hours, Contact Time=2.0 hours
2018	Harvard Data Science Initiative, 45/45 Seminar: Guest lecturer on “Approaches to Measuring the Value of Publicly-Funded Mental Healthcare”, 20 Students, Prep Time=1.0 hours, Contact Time=1.5 hours

### **Graduate and Postdoctoral Students; K-Award Mentees**

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.

Normand, S-L	Harvard Medical School
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.
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.
- 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.
- Mariana Lobo PhD graduate student, 2013-2018. Co-primary advisory, Department of Health Information and Decision Sciences, Faculty of Medicine, University of Porto, Porto, Portugal.

Cai Gillis	PhD graduate student, 2015-2018, Department of Epidemiology, Harvard T.H. Chan School of Public Health, Boston, MA. Currently Contractor (Epidemiology), Biogen, Cambridge, MA; and Senior Data Curator, AlzRisk, Boston, MA.
Simon Hollands	PhD graduate student, 2015 – current. Dissertation Committee member, Pardee RAND Graduate School, Santa Monica, CA.
Robbert Zusterzeel,MD	Graduate student, 2016-2018. MPH-EPI Practicum Committee member, Harvard T.H. Chan School of Public Health, Boston, MA. Currently Director (Data Network), National Evaluation System for health Technology Coordinating Center (NESTcc), Arlington, VA.
Chenyang Gu	Postdoctoral Research Fellow in Biostatistics, 2016-2018. Co-advisory, Department of Health Care Policy, Harvard Medical School, Boston, MA. Currently Associate, Analysis Group, Los Angeles, CA.
Samrachana Adhikari	Postdoctoral Research Fellow in Statistics, 2016-2018. Primary advisory, Department of Health Care Policy, Harvard Medical School, Boston, MA. Currently Assistant Professor of Biostatistics, Department of Population Health, New York University School of Medicine, New York, NY.
Glen McGee	PhD graduate student, 2016 – current. Co-primary advisory, Department of Biostatistics, Harvard T.H. Chan School of Public Health, 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)**

#### **Regional**

1. Comparing Systems of Health Care: Does the Veterans Health Administration Measure Up? Health Care Policy Advisory Council, Harvard Medical School, Boston, MA. (2000)
2. Analyzing Observational Data Using Propensity Scores: Applications in Health Services Research. Biostatistics Colloquium, Department of Biostatistics, Harvard School of Public Health, Boston, MA. (2000)
3. Analyzing Observational Data Using Propensity Scores: Applications in Health Services Research. Statistics Colloquium, Department of Mathematics and Statistics, Boston University, MA. (2000)
4. Statistical Approaches to Profiling Providers. Yale Medical School, New Haven, CT. (2002)
5. Statistical Models for Health Care Quality Surveillance and Public Reporting. Center for Basic Research in the Social Sciences, Harvard University, Cambridge, MA. (2004).
6. Applied Statistical Methods for Health Policy Data. Department of Mathematics, Smith College, October 2004.
7. Statistical Methods for Profiling Hospitals: Methods and Implications. UVM Statistics Colloquium, University of Vermont, Burlington, VT. April 2005.
8. Statistical Issues in Medical Device Trials. Institute for Technology Assessment, Massachusetts General Hospital. October 2006.

9. 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.
10. 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.
11. Statisticians and FDA Advisory Committees. Boston Chapter of the American Statistical Association, Boston, MA. November 2007.
12. Statistical Issues in Assessing Hospital Quality of Care. MGH Biostatistics Center, Massachusetts General Hospital, Boston, MA. February 2008.
13. Public reporting of cardiac outcomes: a view of Massachusetts' experience. Centers for Medicare & Medicaid Services Measures Forum Presentation, Teleconference. October 2008.
14. Statistical issues in assessing hospital quality of cardiac care. Tufts Medical Center, Cardiology Grand Rounds, Boston, MA. February 2009.
15. Assessing safety of medical technologies in the real world. Harvard Medical School 2009 Commencement and Alumni Week, Boston, MA. June 2009.
16. Research synthesis for the real world: assessing safety after market release. Yale School of Public Health, New Haven, CT. October 2009.
17. Designing safety studies: interventional versus observational. Post-Approval Summit, Boston, MA. May 2010.
18. Statistical considerations when combining data for comparative effectiveness research. HSPH-Merck Workshop, Harvard School of Public Health, Boston, MA. June 2012
19. Statistical considerations in assessing the comparative effectiveness and safety of medical devices. Department of Epidemiology, Harvard School of Public Health, Boston, MA. November 2012.
20. Methodological perspectives on comparative effectiveness research. Harvard School of Public Health Catalyst Symposium, Boston, MA. November 2012.
21. Approaches to comparative effectiveness estimation in prospective observational data. Adrienne L. Cupples Seminar, Boston University, Boston, MA. April 2015.

## **National**

1. Statistical Methods for Adjusting Differences Due to Self-selection into Health Plans. American Public Health Association 128<sup>th</sup> Annual Meeting, Boston, MA. (2000)
2. 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)
3. On the Use of Prior Information in Medical Device Trials: Methods & Applications. Food and Drug Administration, Rockville, MD. (2000)
4. Risk Adjustment: Advanced Concepts. 2<sup>nd</sup> 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)



5. Risk Adjustment for Procedures: The Basics. 2<sup>nd</sup> 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)
6. Maryland Health Choice. Academy for Health Services Research and Health Policy Meetings, Atlanta, GA. (2001)
7. Models for Profiling Medical Care Providers. Academy for Health Services Research and Health Policy Meetings, Atlanta, GA. (2001)
8. 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)
9. 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)
10. On the Use of Propensity Scores in Medical Decision and Policy Making. Society for Medical Decision Making 24<sup>th</sup> Annual Meeting, Keynote Dinner Speaker, Baltimore, MD. (2002)
11. Use and Abuse of Observational Data for QI. 4<sup>th</sup> Annual ACC Quality Conference and NCDR User Meeting, Chicago, IL. (2003)
12. Measuring Quality. American College of Radiology Forum: The Future Quality of Medical Imaging, Reston, VA. (2003)
13. Statistical Models for Monitoring/Surveillance and Public Reporting. Joint Statistical Meetings, San Francisco, CA. (2003)
14. 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)
15. Optimal Delineation of Health Status in Trial Endpoints. Health Failure Society of America/FDA Workshop. Rockville, MD. (2003).
16. Statistical Models for Health Care Quality Surveillance and Public Reporting. Department of Epidemiology and Biostatistics, Case Western Reserve University, Cleveland, OH. (2003).
17. Limitations of Outcomes Analysis in CQI. 5<sup>th</sup> Annual ACC Quality Conference and NCDR User Meeting. New Orleans, LA. (2004).
18. Physician Clinical Performance Assessment. Institute of Medicine, National Academies, September 2004.
19. Limitations of Analyses in CQI: Accuracy. American College of Cardiology Scientific Meetings, Orlando, FL, March 2005.
20. Quasi-Experimental Designs. Alternative Study Designs for Evidence-Based Practice. AHRQ. Washington, DC. October 2005.
21. National Voluntary Consensus Standards for Ambulatory Care: Statistical Challenges in Small Group Settings. National Quality Forum, Washington, DC. December 2005.
22. Latent Variable Models for Mixed Outcomes: Methods and Applications. Schering-Plough Research Institute, Kenilworth, NJ. March 2006.

23. 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.
24. Statistical Methods for Assessing Mental Health Treatment Effectiveness: Issues & Applications. 8<sup>th</sup> Annual Columbia, Penn, Yale Statistics in Psychiatry Symposium, New York, NY. May 2006.
25. Profiling Practices: How Much Do We Know? AcademyHealth Annual Meeting. Orlando, FL. June 2006.
26. 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.
27. (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.
28. 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.
29. Some Thoughts on Propensity Scores. AcademyHealth Annual Meeting. Orlando, FL. June 2007.
30. Methodological Issues in Assessing Quality of Care: Process and Outcomes Measures. AcademyHealth Annual Meeting. Orlando, FL. June 2007.
31. 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.
32. The Statistics Behind the Numbers. 11<sup>th</sup> Annual Scientific Meeting of the Heart Failure Society of America. Washington, DC. September 2007.
33. Hybrid Designs for Rehabilitation Research. State of Science Conference on Clinical Trials in Rehabilitation Research. Washington, DC. October, 2007.
34. Latent Variable Models for Assessing Quality of Health Care: Issues and Applications. Fall Health Economics Seminar, University of Chicago, Chicago IL. November 2007.
35. 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.
36. Assessing Quality of Care Delivered in the US: A Bayesian Approach. Bayesian Biostatistics Conference. Houston, TX. January, 2008.
37. Assessing Evidence on Safety and Efficacy: the Role of Meta-Analysis. 4<sup>th</sup> Annual Scientific Meeting of the International Society of Clinical Trials Management, Washington, DC. February, 2008.
38. Statistical strategies for analyzing observational data. Bipolar Statistical Summit, New York, NY. October 2008.
39. Statistical strategies for post-market surveillance of medical devices. FDA/ADVAMED Statistical Issues for Medical Devices and Diagnostics Workshop, Gaithersburg, MD. April 2009.

40. Statistical surveillance techniques for hip arthroplasty. AHRQ Clinical & Comparative Research Methods II, Rockville, MD. June 2009.
41. Bayesian inference for health policy decision making. Medicare Evidence Development and Coverage Advisory Committee, Washington DC. June 2009.
42. Use of multiple informant data. 49<sup>th</sup> Annual New Research Approaches for Mental Health Interventions Meeting, Hollywood, FL. July 2009.
43. Research synthesis for the real world. FDA Post-Approval Studies of Medical Devices Workshop, Silver Spring, MD. September 2009.
44. Discussion of Economic outcomes of BARI 2D, American Heart Association Annual Scientific Sessions, Orlando, FL. November 2009.
45. Methodology for calculating 30-day mortality rates, American College of Cardiology Annual Scientific Meetings, Atlanta, GA. March 2010.
46. Comparative effectiveness of total hip replacement systems. Eastern North American Region of the International Biometrics Society, New Orleans, LA. March 2010.
47. Statistical methods for combining information from multiple sources. Association of Clinical Research Professionals, Tampa, FL. April 2010.
48. Novel methodologies for generating evidence. Medical Device Epidemiology Network, Center for Devices and Radiological Health, FDA. April 2010.
49. Statistical issues in comparative effectiveness research. IBM Watson Research Lab, Hawthorne, NY. May 2010.
50. Combining multiple data sources for comparative effectiveness. Rutgers University Workshop on Statistical Issues on Combining Information, New Brunswick, NJ. May 2010.
51. 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.
52. 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.
53. Statistical considerations for computing composite measures: application to assessing quality of care. AcademyHealth Annual Meeting, Boston, MA. June 2010.
54. Appropriate role of observational data analysis in comparative effectiveness research. AcademyHealth Annual Meeting, Boston, MA. June 2010.
55. How to minimize confounding in large data sets analyses? American Heart Association Annual Scientific Sessions, Chicago, IL. November 2010
56. Minimizing confounding in CER: using propensity score methods. American Heart Association Annual Scientific Sessions, Chicago, IL. November 2010.

57. 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
58. 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
59. 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
60. Novel approaches to evidence synthesis for medical devices: a case of total hip arthroplasty. FDA 2<sup>nd</sup> Annual Public Workshop of the Medical Device Epidemiology Network, Silver Spring, MD. April 2011
61. The role of shrinkage estimation in comparative effectiveness research. AHRQ 3<sup>rd</sup> Symposium on Comparative Effectiveness Research, Rockville, MD. June 2011
62. Statistics and evidence synthesis. FDA Public Meeting on 522 Postmarket Surveillance Studies. Silver Spring, MD. March, 2012.
63. 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
64. 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
65. Innovative methodologies, data sources, and leveraging existing infrastructure. FDA Public Meeting on Post-Approval Studies. Silver Spring, MD. August 2012.
66. 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.
67. The MDEpiNet Methodology Center, FDA Public Meeting on Partnership for Building Global Medical Device Epidemiology and Surveillance Capabilities, Greenbelt, MD. September 2012.
68. Methodological perspectives on comparative effectiveness research. American Heart Association Annual Meetings, Los Angeles, CA. November 2012.
69. 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.
70. Learning what works: uncertainty and selective inference. International Conference on Health Policy Statistics, American Statistical Association. Chicago, IL. October 2013.
71. Statistics in Health Policy (2013): advances and retreats. Plenary Talk. International Conference on Health Policy Statistics, American Statistical Association. Chicago, IL. October 2013.
72. Comparative effectiveness Research: statistical methods and challenges (workshop). International Conference on Health Policy Statistics, American Statistical Association. Chicago, IL. October 2013.

73. Assessing quality and equity of care: statistical considerations and applications. Leonard Davis Institute of Health Economics, University of Pennsylvania. March 2014.
74. An introduction to comparative effectiveness research. Eastern North American Region of the International Biometrics Society Meeting, Baltimore, MD. March 2014.
75. Analytical approaches for characterizing the diffusion of new medical technologies. Johns Hopkins University, Baltimore, MD. October 2014.
76. CV safety assessments: signal detection with heterogeneous data sources. Cardiac Safety Research Consortium Mini Think Tank, Silver Spring, MD. February 2015.
77. Missing data approaches in trials. American College of Cardiology Scientific Sessions, San Diego, CA. March 2015.
78. On the use of registries for post-market medical device assessments. 8<sup>th</sup> FDA/MTLI Workshop, Crystal City, VA. April 2015.
79. Analytical approaches for characterizing the diffusion of new medical technologies. New Jersey ASA 36<sup>th</sup> Annual Spring Symposium, Rutgers RWJ School of Medicine, Piscataway, NJ. May 2015.
80. Statistical considerations in assessing hospital performance. Joint Statistical Meetings, Seattle, WA. August 2015.
81. Technology Diffusion Pathways. Health Economics Common Fund Diffusion of Medical Technology Workshop, Rockville, MD. May 2016.
82. On the role of causal inference in the analysis of electronic medical databases (EMD), Panelist. Atlantic Causal Inference Conference, New York, NY. May 2016.
83. 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.
84. 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.
85. 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.
86. Methodological Considerations. MDEpiNet Registry Assessment of Peripheral Interventional Devices (RAPID) Think Tank, Silver Spring, MD. September 2016.
87. Cardiac Safety Research Consortium (CSRC) Think Tank: Real World Data to Assess Cardiovascular Safety. Silver Spring, MD. October 2016.
88. Statistical Issues in Comparative Effectiveness Research. Eastern North American Region (ENAR) Annual Spring Meeting, Washington, DC. March 2017.
89. Mitigating Confounding Violations Using High-Dimensional Electronic Data. Eastern North American Region (ENAR) Annual Spring Meeting, Washington, DC. March 2017.
90. 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.

91. Data, Statistics, and Inference. NYU School of Medicine, NYU Langone Medical Center. New York, NY. June 2017.
92. Data, Statistics, and Inference. Academy Health Annual Research Meeting 2017. New Orleans, LA. June 2017.
93. Improving Motor Carrier Safety Measurement. Summer Program on Transportation Statistics. Statistical and Applied Mathematical Sciences Institute, Duke University. Durham, North Carolina. August 2017.
94. Introduction to Statistical Approaches to Comparative Effectiveness Research. ASA Biopharmaceutical Section Webinar Series, American Statistical Association. September 2017.
95. Data, Statistics, and Inference. Biostatistics Seminars, University of Michigan. Ann Arbor, MI. September 2017.
96. What Affects the Diffusion of New Technology? Health Economics Common Fund Program, Health Economics Research Symposium, National Institutes of Health. Bethesda, MD. September 2017.
97. Data, Statistics, and Inference. Health Services Research seminar series, Department of Biostatistics, Vanderbilt University. Nashville, TN. October 2017.
98. Statistical Advances in Health Policy Research. Eastern North American Region (ENAR) Annual Spring Meeting, Atlanta, GA. March 2018.
99. Causal and observational study designs/methods in Medical Decision Making. Health Effects Institute Annual Conference, Chicago, IL. April 2018.
100. Bayesian approaches in quality of care. Applied Biostatistical Sciences (ABS) Network lectures series, Michigan Institute for Clinical & Health Research (MICHHR), University of Michigan, Ann Arbor, MI. March 2019.
101. Bayesian Hierarchical Multivariate Poisson Regression for Characterizing the Diffusion of New Antipsychotic Drugs. Quantitative Methods Workshop, Committee on Quantitative Methods in Social, Behavioral, and Health Sciences, University of Chicago, Chicago, IL. April 2019.

## **International**

1. 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)
2. Propensity Scores: Economic, Epidemiological, and Statistical Perspectives, Panel Moderator. 6<sup>th</sup> Annual International Meeting of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR), Arlington, VA. (2001)
3. 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)
4. Statistical Considerations for Profiling Providers of Medical Care. Keynote Speaker, Department of Health Administration, University of Toronto, Toronto, Canada. (2001)

5. Statistical Approaches to Profiling Providers of Medical Care. International Health Economics Conference, Hong Kong University of Science and Technology. (2002)
6. Analytic Methods for Meta-Analysis. INSERM (French Institute of Health and Medical Research), La Roche-Posay, France. (2002)
7. Sample Size Considerations in Observational Health Care Quality Studies. CREDES (Research and Information Center for Health Economics), Paris, France. (2002)
8. Some Statistical Issues in Profiling Providers: Cross-Sectional Univariate and Multivariate Outcome Measures. Department of Economics, University of Bristol, UK. (2002)
9. Likelihood-based Methods for Treatment Non-Compliance and Non-Response in Randomized Trials. Second International Workshop in Applied Probability, University of Piraeus, Greece. (2004).
10. Statistical Challenges in Medical Device Clinical Trials. Eastern Mediterranean Region of the International Biometrics Society Meeting, Corfu, Greece. May 2005.
11. Causal Estimation Using Quasi-Experimental Designs. International Conference on Health Policy Research (Methods), Boston, MA. October 2005.
12. Latent Variable Models for Assessing Quality of Health Care: Issues & Applications. Perugia, Italy. September, 2006.
13. Statistical Models for Profiling Quality of Hospital Care. 4<sup>th</sup> Conference of the Eastern Mediterranean Region of the International Biometrics Society. Eilat, Israel. January 2007.
14. Using Latent Variables for Assessing Quality of Health Care: Issues and Applications. International Conference on Health Policy Statistics, Philadelphia, PA. January 2008.
15. Statistical Strategies for Post-Approval Studies. Department of Biostatistics and Medical Informatics, University of Porto, Portugal. April 2008.
16. 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.
17. Modeling Diffusion and Effects of New Drugs: Methods and Applications. International Biometrics Conference, Dublin, Ireland. July 2008.
18. Sensitivity analyses for observational studies: assessing safety after market release. 5<sup>th</sup> Conference of the Eastern Mediterranean Region of the International Biometrics Society, Istanbul, Turkey. May 2009.
19. Statistical strategies for combining information: assessing comparative safety. Symposium honoring Steve Lagakos, Athens, Greece. October 2010.
20. 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.
21. Modern statistical methods for assessing comparative safety and effectiveness: artificial hips. University of Toronto Biostatistics Day, Toronto, Canada, April 2011
22. Hospital surveillance for safety and quality. International Summit on Outcomes Research in Healthcare. Beijing, China. April 2012.

23. Workshop: Comparative effectiveness research. International Chinese Association 21<sup>st</sup> Applied Statistics Symposium, Boston, MA. June 2012
24. Statistical considerations in studies of medical devices. Eastern Mediterranean Region of the International Biometrics Society Meeting, Tel Aviv, Israel. April 2013.
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. Statistical issues in comparative effectiveness research. Webinar, Eastern North American Region of the International Biometrics Society. February 2015.
27. Analytical approaches for characterizing the diffusion of new medical technologies. Nordic Baltic Region of the International Biometrics Society, Reykjavik, Iceland. June 2015.
28. Common pitfalls in publishing medical papers: a statistical editor's perspective. China Heart Congress, Beijing, China. August 2015.
29. Contemporary statistical approaches for determining the effectiveness and quality of cardiovascular interventions. China Heart Congress, Beijing, China. August 2015.
30. 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.
31. Data, Statistics, and Inference. Eastern Mediterranean Region of the International Biometrics Society Meeting. Thessaloniki, Greece. May 2017.
32. Approaches for Quantifying Quality and Disparities in Mental Health Care. Symposium honoring Professor Marvin Zelen. Thessaloniki, Greece. May 2017.
33. Statistical Considerations with Big Data: An Introduction. Big Data in Health Services, University of Turku. Turku, Finland. September 2017.
34. Bayesian Application in Small-Sized Clinical Trials: Approaches to Medical Device Evaluation Using RWE. DIA 2018 Global Annual Meeting. Boston, MA. June 2018.
35. (Session 1) Outcomes Research and Health Policy Making: A Statistician's View; (Session 2) New England Journal of Medicine Statistical Reviewer Perspective; (Session 3) Medical Device Evaluation. China Heart Congress (CHC) 2018. Beijing, China. August 2018.
36. Statistical Approaches to Health Care Quality Assessments. Universitat Politècnica de Catalunya-BarcelonaTECH, Barcelona, Spain. January 2019.
37. Keynote: Promoting national and international excellence in biostatistics research. Biostatistics and Data Science: challenges and opportunities. 4<sup>th</sup> General Meeting of BIOSTATNET, Santiago de Compostela, Spain. January 2019.

### **Professional Leadership Roles Related to Teaching**



- 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.
- 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.
- 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.
- 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.
- 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.
- Oct 2002 Workshop Instructor, 4<sup>th</sup> 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.
- 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.
- 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.
- Aug 2003 Workshop Instructor, Measurement, Design and Analysis Methods for Health Outcomes Research, Harvard School of Public Health, Boston, MA. Using Hierarchical Models.
- 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.
- 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.
- 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.
- June 2004 Workshop Organizer and Co-Instructor, AcademyHealth Annual Meetings, San Diego, CA. Statistical Approaches to Observational Data.

Normand, S-L  
Aug 2004

Harvard Medical School

Workshop Instructor, Measurement, Design, and Analysis Methods for Health Outcomes Research, Harvard School of Public Health, Boston, MA. Using Hierarchical Models.

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.

Mar 2005

Faculty Mentor Participant, Duke University, Advanced Research Institute in Geriatric Mental Health Institute.

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.

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 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.

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 2008

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.

Jan 2009

Scientific Committee Organizer, 2009 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.

Jan 2010

Scientific Committee Organizer, 2010 Bayesian Biostatistics Conference, The University of Texas M.D. Anderson Cancer Center, Houston, Texas.

June 2010

Methods Workshop Organizer, Academy for Health Services Research and Health Policy, Boston, MA. Multiple imputation for multivariate incomplete data: A practical guide.

June 2012

Workshop Organizer and Instructor, International Chinese Statistical Association 2012 Applied Statistics Symposium, Boston, MA. Provided an introduction to comparative effectiveness research.

## **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.
3. Morris CN, **Normand SL**. Hierarchical models for combining information and for meta-analysis with discussion. In: Bernardo JM, Berger JO, Dawid AP, Smith AFM, editors. *Bayesian Statistics 4*. Oxford: Clarendon Press 1992:321-44.
4. **Normand SL**, Trichtler D. Parameter updating in a Bayes network. *Journal of the American Statistical Association* 1992; 87(420):1109-1115.
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.
10. Lamas GA, Pashos CL, **Normand SLT**, McNeil BJ. Permanent pacemaker selection and subsequent survival in elderly Medicare pacemaker recipients. *Circulation* 1995; 91(4):1063-1069.
11. Lenz FA, **Normand SL**, Kwan HC, Andrews D, Rowland LH, Jones MW, Seike M, Lin YC, Tasker RR, Dostrovsky JO, Lenz YE. Statistical prediction of the optional site for thalamotomy in Parkinsonian tremor. *Movement Disorders* 1995; 10(3):318-328.
12. **Normand SLT**, Morris CN, Fung KS, McNeil BJ, Epstein AM. Development and validation of a claims-based index for adjusting for risk of mortality – The case of acute myocardial infarction. *Journal of Clinical Epidemiology* 1995; 48(2):229-243.
13. Dickey B, **Normand SLT**, Norton E, Azeni H, Fisher W, Altaffer F. Managing the care of schizophrenia: Lessons from a 4-year Massachusetts Medicaid Study. *Archives of General Psychiatry* 1996; 53(10):945-952.
14. Doksum K, **Normand SL**. Models for degradation processes and event times based on gaussian processes. In: Jewell NP, et al, editors. *Proceedings of the 1994 Conference on Lifetime Data Models in Reliability and Survival Analysis*. Kluwer Academic Publishers 1996; 85-91.
15. **Normand SLT**, Glickman ME, Sharma R, McNeil BJ. Using admission characteristics to predict short-term mortality from myocardial infarction in the elderly – Results from the Cooperative Cardiovascular Project. *Journal of the American Medical Association* 1996; 275(17):1322-1328.
16. **Normand SLT**, Glickman ME, Gatsonis CA. Statistical methods for profiling providers of medical care: Issues and applications. *Journal of the American Statistical Association* 1997; 92(439):803-814.
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.
19. Ayanian JZ, Landrum MB, **Normand SLT**, Guadagnoli E, McNeil BJ. Rating the appropriateness of coronary angiography – Do practicing physicians agree with an expert panel and with each other? *New England Journal of Medicine* 1998; 338(26):1896-1904.
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*. Joesy-Bass, 1998:115-22.
22. **Normand SLT**, McNeil BJ, Peterson LE, Palmer RH. Methodology matters – VIII – Eliciting expert opinion using the Delphi technique: Identifying performance measures for cardiovascular disease. *International Journal for Quality in Health Care* 1998; 10(3):247-260.
23. Frank RG, McGuire TG, **Normand SLT**, Goldman HH. The value of mental health care at the system level: The case of treating depression. *Health Affairs* 1999; 18(5):71-88.
24. Landrum MB, McNeil BJ, Silva L, **Normand SLT**. Understanding variability in physician ratings of the appropriateness of coronary angiography after acute myocardial infarction. *Journal of Clinical Epidemiology* 1999(4); 52:309-319.
25. Landrum MB, **Normand SLT**. Applying Bayesian ideas to the development of medical guidelines. *Statistics in Medicine* 1999; 18(2):117-137.
26. **Normand SLT**. Meta-analysis: Formulating, evaluating, combining, and reporting. *Statistics in Medicine* 1999; 18(3):321-359.
27. Petersen LA, Wright S, **Normand SLT**, Daley J. Positive predictive value of the diagnosis of acute myocardial infarction in an administrative database. *Journal of General Internal Medicine* 1999; 14(9):555-558. PMC1496736
28. Glickman ME, **Normand SLT**. The derivation of a latent threshold instrumental variables model. *Statistica Sinica* 2000; 10(2):517-544.
29. Landrum MB, Bronskill SE, **Normand SL**. Analytic methods for constructing cross-sectional profiles of health care providers. *Health Services & Outcomes Research Methodology* 2000; 1:23-48.
30. Chertow GM, **Normand SLT**, Silva LR, McNeil BJ. Survival after acute myocardial infarction in patients with end-stage renal disease: Results from the Cooperative Cardiovascular Project. *American Journal of Kidney Diseases* 2000; 35(6):1044-1051.
31. Landrum MB, **Normand SL**. Developing & applying medical practice guidelines following acute myocardial infarction: A case study using Bayesian probit & logit models. In: Dey D, Ghosh S, Mallick B, editors. *Generalized Linear Models: A Bayesian Perspective*. Marcel Dekker Inc. 2000:195-213.

32. DuMouchel W, **Normand SL**. Computer modeling and graphical strategies for meta-analysis. In: Berry D, Stangl D, editors. *Meta-Analysis in Medicine and Health Policy*. Marcel Dekker Inc. 2000:127-178.
33. **Normand, SL**, Doksum K. Empirical Bayes procedures for a change point problem with application to HIV/AIDs data. In: Ahmed SE, Reid N, editors. *Empirical Bayes and Likelihood Inference*. Springer Verlag Inc. 2000:67-79.
34. Petersen LA, **Normand ST**, Daley J, McNeil BJ. Outcome of myocardial infarction in Veterans Health Administration patients as compared with Medicare patients. *New England Journal of Medicine* 2000; 343(26):1934-1941.
35. **Normand SLT**, Landrum MB, Guadagnoli E, Ayanian JZ, Ryan TJ, Cleary PD, McNeil BJ. Validating recommendations for coronary angiography following acute myocardial infarction in the elderly: A matched analysis using propensity scores. *Journal of Clinical Epidemiology* 2001; 54(4):387-398.
36. Dickey B, **Normand SL**, Norton EC, Rupp A, Azeni H. Managed care and children's behavioral health services in Massachusetts. *Psychiatric Services* 2001; 52(2):183-188.
37. Horvitz-Lennon M, **Normand SLT**, Gaccione P, Frank RG. Partial versus full hospitalization for adults in psychiatric distress: A systematic review of the published literature (1957-1997). *American Journal of Psychiatry* 2001; 158(5):676-685.
38. Guadagnoli E, Landrum MB, **Normand SLT**, Ayanian JZ, Garg P, Hauptman PJ, Ryan TJ, McNeil BJ. Impact of underuse, overuse, and discretionary use on geographic variation in the use of coronary angiography following acute myocardial infarction. *Medical Care* 2001; 39(5):446-458.
39. Zou KH, **Normand SLT**. On determination of sample size in hierarchical binomial models. *Statistics in Medicine* 2001; 20(14):2163-2182.
40. Jonkman JN, **Normand S-LT**, Wolf R, Borbas C, Guadagnoli E. Identifying a cohort of patients with early-stage breast cancer - A comparison of hospital discharge and primary data. *Medical Care* 2001; 39(10):1105-1117.
41. DiSalvo TG, **Normand S-LT**, Hauptman PJ, Guadagnoli E, Palmer RH, McNeil BJ. Pitfalls in assessing quality of ambulatory care for chronic cardiovascular disease. *American Journal of Medicine* 2001; 111(4):297-303.
42. Shahian DM, **Normand S-LT**, Torchiana DF, Lewis SM, Pastore JO, Kuntz RE, Dreyer PI. Cardiac surgery report cards: Comprehensive review and statistical critique. *Annals of Thoracic Surgery* 2001; 72(6):2155-2168.
43. Petersen LA, **Normand S-LT**, Leape LL, McNeil BJ. Comparison of use of medications after acute myocardial infarction in the Veterans Health Administration and Medicare. *Circulation* 2001; 104(24):2898-2904.
44. **Normand SL**, Zou KH. Sample size considerations in observational health care quality studies. *Statistics in Medicine* 2002; 21:331-345.
45. Bronskill SE, **Normand S-LT**, Landrum MB, Rosenheck RA. Longitudinal profiles of health care providers. *Statistics in Medicine* 2002; 21:1067-1088.
46. Bronskill SE, **Normand S-LT**, McNeil BJ. Post-acute service use following acute myocardial infarction in elderly Medicare patients. *Health Care Financing Review* 2002; 24(2):77-93.

47. **Normand S-LT**, Frank RG, McGuire TG. Using elicitation techniques to estimate the value of ambulatory treatments for major depression. *Medical Decision Making* 2002; 22:245-261.
48. Norton EC, Harold CA, Lindrooth RC, **Normand S-LT**, Dickey B. Does prospective payment reduce inpatient length of stay? *Health Economics* 2002; 11:377-387.
49. Fisher WH, Dickey B, **Normand S-LT**, Packer IK, Grudzinksas AJ, Azeni H. Managed mental health care and use of a state's inpatient forensic system. *Psychiatric Services* 2002; 53(4):447-451.
50. Dickey B, **Normand S-LT**, Weiss RD, Drake R, Azeni H. Medical morbidity, mental illness, and substance use disorders. *Psychiatric Services* 2002; 53:861-867.
51. Berndt ER, Bir A, Busch SH, Frank RG, **Normand S-LT**. The medical treatment of depression, 1991-1996: Productive inefficiency, expected outcome, and price indexes. *Journal of Health Economics* 2002; 21(3):373-396.
52. Garg PP, Landrum MB, **Normand S-LT**, Ayanian JZ, Hauptman TJ, McNeil BJ, Guadagnoli E. Understanding individual and small area variation in the underuse of coronary angiography following acute myocardial infarction. *Medical Care* 2002; 40(7):614-626.
53. Kessler RC, Andrews G, Colpe LJ, Hiripi E, Mroczek DK, **Normand S-LT**, Walter EE, Zaslavsky A. Short screening scales to monitor population prevalences and trends in nonspecific psychological distress. *Psychological Medicine* 2002; 32(6):959-976.
54. O'Malley AJ, **Normand S-LT**, Kuntz RE. Sample size calculation for a historically-controlled clinical trial with adjustment with covariates. *Journal of Biopharmaceutical Statistics* 2002; 12(2):227-247.
55. O'Malley AJ, **Normand S-LT**, Kuntz RE. Application of models for multivariate mixed outcomes to medical device trials: Coronary artery stenting. *Statistics in Medicine* 2003; 22(2):313-336.
56. O'Malley AJ, **Normand S-LT**. Statistics: Keeping pace with the medical technology revolution. *Chance* 2003; 16(4):41-44.
57. **Normand S-LT**, Belanger AJ, Frank RF. Evaluating selection out of health plans for Medicaid beneficiaries with substance abuse. *The Journal of Behavioral Health Services & Research* 2003; 30(1):78-92.
58. Kessler RC, Barker PR, Colpe LJ, Epstein JF, Gfroerer JC, Hiripi E, Howes MJ, **Normand S-LT**, Manderscheid RW, Walters EE, Zaslavsky AM. Screening for Serious Mental Illness in the General Population. *Archives of General Psychiatry* 2003; 60(2):184-189.
59. Petersen LA, **Normand S-LT**, Druss BG, Rosenheck RA. Process of care and outcomes after acute myocardial infarction for patients with mental illness in an integrated healthcare system. *Health Services Research* 2003; 38(1):41-63. PMC1360873
60. Dendukuri N, **Normand S-LT**, McNeil BJ. Impact of cardiac service availability on case-selection for angiography and survival following acute myocardial infarction. *Health Services Research* 2003; 38(1):21-40. PMC1360872
61. Shahian DM, **Normand S-LT**. The volume-outcome relationship: From Luft to Leapfrog. *Annals of Thoracic Surgery* 2003; 75:1048-1058.

62. Landrum MB, **Normand S-LT**, Rosenheck RA. Selection of related multivariate means: Monitoring psychiatric care in the Department of Veterans Affairs. *Journal of the American Statistical Association* 2003; 98(461):7-16.
63. Horvitz-Lennon M, **Normand S-LT**, Frank RG, Goldman HH. Usual care for major depression in the 1990's: Characteristics and expert-estimated outcomes. *American Journal of Psychiatry* 2003; 160:720-726.
64. Dickey BD, **Normand S-LT**, Hermann R, Eisen SV, Cortes D, Cleary P, Ware N. Guideline recommendations for treatment of schizophrenia: The impact of managed care. *Archives of General Psychiatry* 2003; 60(4):340-348.
65. Petersen LA, **Normand S-LT**, Leape LL, McNeil BJ. Regionalization and the underuse of angiography in the Veterans Affairs Health Care System as compared with a fee-for-service system. *New England Journal of Medicine* 2003; 348:2209-17.
66. Landon BE, **Normand S-LT**, Daley J, Blumenthal D. Physician clinical performance assessment: Prospects and barriers. *The Journal of the American Medical Association* 2003; 290:1183-1189.
67. Dickey B, **Normand S-LT**, Drake R, Weiss RD, Azeni H, Hanson A. Limiting inpatient substance use treatment: What are the consequences. *Medical Care Research and Review* 2003; 60(3):332-346.
68. Dickey B, Dembling B, Azeni H, **Normand S-LT**. Externally caused deaths for adults with substance use and mental disorders, *The Journal of Behavioral Health Services & Research* 2004; January/March:31(1):75-84.
69. Fisher WH, **Normand S-LT**, Dickey B, Packer IK, Grudzinskis AJ, Azeni H. Managed mental health care's effects on arrest and forensic commitment, *International Journal of Law and Psychiatry* 2004; 27:65-77.
70. Eisen SV, **Normand S-LT**, Belanger AJ, Gevorkian S, Irvin EA. BASIS-32 and the Revised Behavior and Symptom Identification Scale (BASIS-R). In: *The Use of Psychological Testing for Treatment Planning and Outcome Assessment, 3<sup>rd</sup> Edition, Volume 3*, M. Maruish ed., Lawrence Erlbaum Associates, Inc., pp. 79-113, 2004.
71. Dickey B, **Normand S-LT**. Toward a model for testing the relationship between quality and costs, *The Journal of Mental Health Policy and Economics* 2004; 7(1):15-21.
72. Levy DE, O'Malley AJ, **Normand S-LT**. Covariate adjustment in clinical trials with non-ignorable missing data and non-compliance. *Statistics in Medicine* 2004; 23, 2319-2339.
73. Wang JC, **Normand S-LT**, Mauri L, Kuntz RE. Coronary artery spatial distribution of acute myocardial infarction occlusions. *Circulation* 2004; 110(3):278-284.
74. **Normand S-LT**. Meta-analysis: Formulating, evaluating, combining, and reporting. In: *Tutorials in Biostatistics, Vol. 2 - Statistical Modeling of Complex Medical Data*, RB D'Agostino (ed), Wiley, Chichester, 2004, 249-288.
75. Chertow GM, **Normand S-LT**, McNeil BJ. Renalism: inappropriately low rates of coronary angiography in elderly persons with renal insufficiency. *Journal of the American Society of Nephrology* 2004; 15:2462-2468.
76. Guadagnoli E, **Normand S-LT**, DiSalvo TG, Palmer RH, McNeil BJ. Effects of treatment recommendations and specialist intervention on care provided by primary care physicians to

- patients with myocardial infarction or heart failure. *The American Journal of Medicine* 2004; 117:371-379.
77. Eisen SV, **Normand S-LT**, Belanger AJ, Spiro A, Esch D. The revised behavior and symptom identification scale (BASIS-24): reliability and validity. *Medical Care* 2004; 42(12):1230-1241.
  78. Jonkman JN, McCarty D, Harwood HJ, **Normand S-LT**, Caspi Y. Practice variation and length of stay in alcohol and drug detoxification centers. *Journal of Substance Abuse Treatment* 2005; 28:11-18.
  79. O'Malley AJ, **Normand S-LT**. Likelihood methods for treatment-noncompliance and subsequent nonresponse in randomized trials. *Biometrics* 2005; 61(June):325-334.
  80. Tchernis R, Horvitz-Lennon M, **Normand S-LT**. On the use of discrete choice models for causal inference. *Statistics in Medicine* 2005; 24:2197-2212.
  81. Landon BE, **Normand S-LT**, Frank RG, McNeil BJ. Characteristics of medical practices in three developed managed care markets. *Health Services Research* 2005; 40(3):675-695. PMC1361163
  82. Shahian DM, Torchiana DF, **Normand S-LT**. Implementation of a cardiac surgery report card. *Annals of Thoracic Surgery* 2005; 80:1146-1180.
  83. Gill SS, Rochon PA, Hermann N, Lee PE, Sykora K, Gunraj N, **Normand S-LT**, Gurwitz J, Marras C, Wodchis W, Mamdani M. Atypical antipsychotic drugs and risk of ischemic stroke: Population based retrospective cohort study. *British Medical Journal* 2005; 330(7489):445-450. PMC549652
  84. Spertus JA, Eagle KA, Krumholz HM, Mitchell KR, **Normand S-LT**. American College of Cardiology and American Heart Association Methodology for the Selection and Creation of Performance Measures for Quantifying the Quality of Cardiovascular Care. *Journal of American College of Cardiology and Circulation* 2005; 45:1147-56 and *Circulation* 2005; 111:1703-1712.
  85. Horvitz-Lennon M, O'Malley AJ, Frank RG, **Normand S-LT**. Improving traditional intention-to-treat analyses: A new approach. *Psychological Medicine* 2005; 35:961-970.
  86. Rochon PA, Gurwitz JH, Sykora K, Mamdani M, Streiner DL, Garfinkel S, **Normand S-LT**, Anderson GM. Reader's guide to critical appraisal of cohort studies: 1. Role and design. *British Medical Journal* 2005; 330(16):895-897. PMC556167
  87. Mamdani M, Sykora K, Li P, **Normand S-LT**, Streiner DL, Austin PG, Rochon PA, Anderson GM. Reader's guide to critical appraisal of cohort studies: 2. Assessing potential for confounding. *British Medical Journal* 2005; 330:960-962. PMC556348
  88. **Normand S-LT**, Sykora K, Li P, Rochon PA, Anderson GM. Reader's guide to critical appraisal of observational cohort studies: 3. Analytical strategies to reduce confounding. *British Medical Journal* 2005; 330:1021-1023. PMC557157.
  89. Lee PE, Sykora K, Mamdani M, Marras C, Stukel T, Anderson G, Gill SS, Shulman K, **Normand S-L**, Rochon PA. Antipsychotic medications and drug induced movement disorders other than parkinsonism: A population based cohort study. *Journal of the American Geriatrics Society* 2005; 53(8):1374-1379.
  90. **Normand S-L**, Rector TS, Neaton JD, Pina IL, Lazar RM, Proestel SE, Fleischer DJ, Cohn JN, Spertus JN. Clinical and analytical considerations in the study of health status in device trials for heart failure. *Journal of Cardiac Failure* 2005; 11(5):396-403.



91. Shahian DM, Torchiana DF, Shemin RJ, Rawn JD, **Normand S-LT**. The Massachusetts cardiac surgery report card: implications of statistical methodology. *Annals of Thoracic Surgery* 2005; 80:2106-13.
92. Rochon PA, Stukel T, Sykora K, Gill S, Garfinkel S, Anderson GM, **Normand S-LT**, Gurwitz JH, Mamdani M. Atypical antipsychotics and parkinsonism. *Archives of Internal Medicine*, 2005; 165:1882-1888. Cited as PRACTICE POINT, *Nature Clinical Practice Neurology* 2006; 2(3):132-133.
93. Bonow RO, Bennett S, Casey DE, Ganiats TG, Hlatky MA, Konstam MA, Lambrew CT, **Normand S-LT**, Pina IL, Radford M, Smith AL, Warner-Stevens L. ACC/AHA Heart Failure Clinical Performance Measures for Adults with Chronic Heart Failure. *Journal of the American College of Cardiology* 2005; 46(6):1144-1178.
94. Ryan JW, Peterson ED, Chen AY, Roe MT, Ohman EM, Cannon CP, Berger PB, Saucedo JF, DeLong ER, **Normand S-L**, Pollack CV, Cohen DJ (for CRUSADE Investigators). Early versus delayed intervention in non-ST- segment elevation acute coronary syndromes: Analysis using instrumental variables. *Circulation* 2005; 112:3049-3057.
95. Clements KM, Murphy JM, Eisen SV, **Normand S-LT**. Comparison of self-report and clinician-rated measures of psychiatric symptoms and functioning in predicting 1-year hospital readmission. *Administration and Policy in Mental Health and Mental Health Services Research* 2006; 33:568-577.
96. Berndt ER, Busch A, Frank RG, **Normand S-L**. Real output in mental health care during the 1990s. *Forum for Health Economics & Policy* 2006; 9(1):Article 5.
97. Daniels MJ, **Normand S-LT**. Longitudinal profiling of health care units based on continuous and discrete patient outcomes. *Biostatistics* 2006; 7(1):1-15. PMC2791405
98. Timbie J, Frank RG, Horvitz-Lennon MV, **Normand S-LT**. A meta-analysis of the effect of interventions for depression labor supply. *Psychiatric Services* 2006; 57:212-218.
99. Choudhry NK, Anderson GM, Laupacis A, Ross-Degnan D, **Normand S-L**, Soumerai SB. The impact of adverse events of warfarin prescribing in atrial fibrillation: A matched pair analysis. *British Medical Journal* 2006; 332(Jan):141-145. PMC1336760
100. Choudhry NK, Soumerai SB, **Normand S-L**, Ross-Degnan D, Laupacis A, Anderson GM. Warfarin prescribing in atrial fibrillation: the impact of physician, patient, and hospital characteristics. *American Journal of Medicine* 2006; 119:607-615.
101. Dickey B, **Normand S-L**, Eisen SV, Hermann RC, Cleary PD, Cortes D, Ware N. Associations between adherence to guidelines for antipsychotic dose and health status, side-effects, and patient care experiences. *Medical Care* 2006; 44(9):827-834.
102. Krumholz HM, Brindis RG, Brush JE, Cohen DJ, Epstein AJ, Furie K, Howard G, Peterson ED, Rathore SS, Smith SC, Spertus JA, Wang Y, **Normand S-L**. Standards for statistical models for public reporting of health outcomes. *Circulation* 2006; 113:456-462.
103. Busch AB, Huskamp HA, **Normand S-LT**, Young AS, Goldman H, Frank RG. The impact of parity on major depression treatment quality in the federal employees' health benefits program after parity implementation. *Medical Care* 2006; 44:506-512.

104. Goldman HH, Frank RG, Burnam MA, Huskamp HA, Ridgely MS, **Normand S-L**, Young AS, Barry C, Azzone V, Azrin ST, Moran G, Lichtenstein C, Blasinsky M. Behavioral health insurance parity for federal employees. *New England Journal of Medicine* 2006; 354:1378-86.
105. Tchernis R, **Normand S-LT**, Pakes J, Gaccione P, Newhouse JP. Selection and plan switching behavior. *Inquiry* 2006; 43:10-22.
106. Krumholz HM, Wang Y, Mattera JA, Wang Y, Han LF, Ingber MJ, Roman S, **Normand S-L**. An administrative claims model suitable for profiling hospital performance based upon 30-day mortality rates among patients with an acute myocardial infarction. *Circulation* 2006; 113:1683-1692.
107. **Normand S-LT**, Belanger AJ, Eisen SV. Graded response model-based item selection for behavior and symptom identification. *Health Services and Outcomes Research Methodology* 2006; 6:1-19.
108. Bradley EH, Herrin J, Elbel B, McNamara RL, Magid DJ, Nallamothu BK, Wang Y, **Normand S-LT**, Spertus JA, Krumholz HM. Hospital quality for acute myocardial infarction: correlation among process measures and relationship with short-term mortality. *Journal of the American Medical Association* 2006; 296:72-78.
109. Kosiborod M, Lichtman JH, Heidenreich PA, **Normand S-LT**, Wang Y, Brass LM, Krumholz HM. National trends in outcomes among elderly patients with heart failure. *American Journal of Medicine* 2006; 119:616.e1-616.e7.
110. Rosenthal MB, Landon BE, **Normand S-LT**, Frank RG, Epstein AM. Pay for performance in commercial HMOs. *New England Journal of Medicine* 2006; 355:1895-902.
111. Landon BE, **Normand S-LT**, Lessler A, O'Malley AJ, Schmaltz S, Loeb JM, McNeil BJ. Quality of care for the treatment of acute medical conditions in United States hospitals. *Archives of Internal Medicine* 2006; 166:2511-2517.
112. Ross JS, Chas SS, Epstein AJ, Wang Y, Bradley EH, Herrin J, Lichtman JH, **Normand S-LT**, Masoudi FA, Krumholz HM. Quality of care for acute myocardial infarction at urban safety net hospitals. *Health Affairs* 2007; 26(1):238-248.
113. Bernheim SM, Spertus JA, Reid KJ, Bradley Eh, Desai RA, Peterson ED, Rathore SS, **Normand S-LT**, Jones PG, Rahimi A, Krumholz HM. Socioeconomic disparities in outcomes following acute myocardial infarction. *American Heart Journal* 2007; 153:313-9.
114. Krumholz HM, **Normand S-LT**, Spertus JA, Shahian DM, Bradley, EH. Measuring performance for treating heart attacks and heart failure: the case for outcomes measurement. *Health Affairs* 2007; 26(1):75-85.
115. **Normand S-L**, Wolf RE, Ayanian AZ, McNeil BJ. Assessing the accuracy of hospital clinical performance measures. *Medical Decision Making* 2007; 27:9-20.
116. Austin PC, Grootendorst P, **Normand S-LT**, Anderson G. Conditioning on the propensity score can result in biased estimation of common measures of treatment effect. *Statistics in Medicine* 2007; 26:754-768.
117. Azrin ST, Huskamp HA, Azzone V, Goldman HH, Frank RG, Burnam MA, **Normand S-LT**, Ridgely MS, Young AS, Barry CL, Busch AB, Moran G. Impact of full mental health and substance abuse parity for children in the federal employees health benefits program. *Pediatrics* 2007; 119:452-459. PMC1995034

118. **Normand S-LT**, Wang Y, Krumholz HM. Assessing surrogacy of data sources for institutional comparisons. *Health Services and Outcomes Research Methodology* 2007; 7:79-96.
119. Shahian DM, Silverstein T, Lovett A, Wolf RE, **Normand S-LT**. A comparison of clinical and administrative data sources for hospital CABG reports. *Circulation* 2007; 115(12):1518-27.
120. Neaton JD, **Normand SL**, Gelijns A, Starling RC, Mann DL, Konstam MA. Designs for mechanical circulatory support device studies. *Journal of Cardiac Failure* 2007; 13(9):63-74.
121. Shahian DM, Edwards FH, Ferraris VA, Haan CK, Rich JB, **Normand S-LT**, DeLong ER, O'Brien S, Shewan CM, Dokholyan RS, Peterson ED. The measurement of adult cardiac surgery quality; Part I: conceptual framework and measurement selection. *Annals of Thoracic Surgery* 2007; 83:S3-12.
122. O'Brien S, Shahian DM, DeLong ER, **Normand S-LT**, Edwards FH, Ferraris VA, Haan CK, Rich JB, Shewan CM, Dokholyan RS, Anderson RP, Peterson ED. The measurement of adult cardiac surgery quality; Part 2: statistical considerations in composite measure scoring and provider rating. *Annals of Thoracic Surgery* 2007; 83:S13-26.
123. Gill SS, Bronskill SE, **Normand SLT**, Anderson GM, Kykora K, Lam K, Bell CM, Lee PE, Fischer HD, Hermann N, Gurwitz JH, Rochon PA. Antipsychotic drug use and mortality among older adults with dementia. *Annals of Internal Medicine* 2007; 146:775-786.
124. Landon BE, Rosenthal MB, **Normand SLT**, Spettell C, Lessler A, Underwood HR, Newhouse JP. Incentive formularies and changes in prescription drug spending. *American Journal of Managed Care* 2007; 13(part 2):360-369.
125. **Normand S-LT**, Shahian DM. Statistical and clinical aspects of institutional profiling. *Statistical Science* 2007; 22(2):206-226.
126. Wang OJ, Wang Y, Lichtman JH, Bradley EH, **Normand S-LT**, Krumholz HM. "America's Best Hospitals" in the treatment of acute myocardial infarction. *Archives of Internal Medicine* 2007; 167(13):1345-1351.
127. Suaya JA, Shepard DS, **Normand S-LT**, Ades P, Prottas J, Stason WB. Use of cardiac rehabilitation by Medicare beneficiaries after myocardial infarction or coronary bypass surgery. *Circulation* 2007; 116:1653-1662.
128. Rosenthal MB, Landon BE, **Normand S-LT**, Frank RG, Ahmad TS, Epstein AM. Employers' use of value-based purchasing strategies. *Journal of the American Medical Association* 2007; 298(19):2281-2288.
129. Nallamotheu BK, Wang Y, Cram P, Birkmeyer JD, Ross JS, **Normand S-LT**, Krumholz HM. Acute myocardial infarction and congestive heart failure outcomes at specialty cardiac hospitals. *Circulation* 2007; 116:2280-2287.
130. Landon BE, Schneider EC, **Normand S-LT**, Hudson Scholle S, Pawlson LG, Epstein AM. Quality of care in Medicaid managed care and commercial health plans. *Journal of the American Medical Association* 2007; 298(14):674-1681.
131. Concannon TW, Kent DM, **Normand S-L**, Newhouse JP, Ruthazer R, Griffith JL, Beshansky JR, Wong JB, Aversano T, Selker HP. A geospatial analysis of emergency transport and inter-hospital transfer in ST-segment elevation myocardial infarction. *American Journal of Cardiology* 2008; 101:69-74.

132. Alegria M, Polo A, Gao S, Santana L, Rothstein D, Jimenez A, Hunter ML, Mendieta F, Oddo V, **Normand S-LT**. Evaluation of a patient activation and empowerment intervention in mental health care. *Medical Care* 2008; 46:247-256.
133. Landon BE, **Normand S-LT**. Performance measurement in small practice settings: challenges and potential solutions. *Annals of Internal Medicine* 2008; 148:353-357.
134. Canino G, Vila D, **Normand S-L**, Perez EA, Ramirez R, Garcia P, Rand C. Reducing asthma health disparities in poor Puerto Rican children: the effectiveness of a culturally tailored family intervention. *Journal of Allergy & Clinical Immunology* 2008; 121:665-670.
135. Landon BE, **Normand S-LT**, Meara E, Zhou Q, Simon SR, Frank RG, McNeil BJ. The relationship between medical practice characteristics and quality of care for cardiovascular disease. *Medical Care Research and Review* 2008; 65(2):167-186.
136. Teixeira-Pinto A, **Normand S-L T**. Statistical methodology for classifying units on the basis of multiple related measures. *Statistics in Medicine* 2008; 27:1329-1350. PMC2278020
137. Timbie JW, **Normand S-LT**. A comparison of methods for combining quality and efficiency performance measures: profiling the value of hospital care following acute myocardial infarction. *Statistics in Medicine* 2008; 27:1351-1370.
138. Shahian DM, **Normand S-LT**. The comparison of "risk-adjusted" hospital outcomes. *Circulation* 2008; 117:1955-1963.
139. Breslau J, Javaras KN, Blacker JM, **Normand S-LT**. Differential item functioning between ethnic groups in the epidemiological assessment of depression. *Journal of Nervous and Mental Disease* 2008; 196(4):297-306. PMC2748987
140. **Normand S-LT**, Wolf RE, McNeil BJ. Discriminating quality of hospital care in the US. *Medical Decision Making* 2008; 28(3):308-322.
141. Timbie JW, Newhouse JP, Rosenthal MB, **Normand S-LT**. A cost-effectiveness framework for profiling the value of hospital care. *Medical Decision Making* 2008; 28(3):419-434.
142. Rochon PA, **Normand S-LT**, Gomes T, Gill SS, Anderson GM, Melo M, Sykora K, Lipscombe L, Bell CM, Gurwitz JH. Antipsychotic therapy and short-term serious events in older adults with dementia. *Archives of Internal Medicine* 2008; 168(10):1090-1096.
143. Glazer J, McGuire T, **Normand S-LT**. Mitigating the problem of unmeasured outcomes in quality reports. *The B.E. Journal of Economic Analysis & Policy* 2008; 8(2):7. PMC2872781
144. **Normand S-LT**. Some old and some new statistical tools for outcomes research. *Circulation* 2008; 118:872-884. PMC2535854
145. Landon BE, Rosenthal MB, **Normand S-LT**, Frank RG, Epstein AM. Quality monitoring and management in commercial health plans. *American Journal of Managed Care* 2008; 14(6):377-386.
146. Keenan PS, **Normand S-LT**, Lin Z, Drye EE, Bhat KR, Ross JS, Schuur JD, Stauffer BD, Bernheim SM, Epstein AJ, Wang YF, Herrin J, Chen J, Federer JJ, Mattera JA, Wang Y, Krumholz HM. An administrative claims model suitable for profiling hospital performance based on 30-day all-cause readmission rates among patients with heart failure. *Cardiovascular Quality and Outcomes* 2008; 1:29-37.

147. Krumholz HM, Keenan PS, Brush JE, Bufalino VJ, Chernew ME, Epstein AJ, Heidenreich PA, Ho V, Masoudi FA, Matchar DB, **Normand S-LT**, Rumsfeld JS, Schuur JD, Smith SC, Spertus JA, Walsh MN. Standards for measures used for public reporting of efficiency in healthcare. *Circulation* 2008; 118(18):1885-93. Epub 2008 Oct 6. *J of Am Coll of Cardiol*, 2008; 52(18):1518-26.
148. Mauri L, Silbaugh TS, Garg P, Wolf RE, Zelevinsky K, Lovett A, Varma MR, Zhou Z, **Normand S-LT**. Drug-eluting or bare-metal stents for acute myocardial infarction. *New England Journal of Medicine* 2008; 359:1330-42.
149. Alegria M, Nakash O, Oddo V, Gao S, Lin J, **Normand S-LT**. How missing information in diagnosis can lead to disparities in the clinical encounter. *Journal of Public Health Management and Practice* 2008; November(Supple),S26-S35. PMC2677445
150. Ross JS, **Normand S-LT**, Wang Y, Nallamotheu BK, Lichtman JH, Krumholz HM. Hospital remoteness and thirty-day mortality from three serious conditions. *Health Affairs* 2008; 27(6):1707-1717.
151. Johnson MA, **Normand S-LT**, Krumholz HM. How are our hospitals measuring up? "Hospital Compare": a resource for hospital quality of care. *Circulation* 2008; 118(13): e498-500.
152. Krumholz HM, **Normand S-LT**. Public reporting of 30-day mortality for patients hospitalized with acute myocardial infarction and heart failure. *Circulation* 2008; 118(13): 1394-7.
153. Mauri L, Silbaugh TS, Wolf RE, Zelevinsky K, Lovett A, Zhou Z, Resnic FS, **Normand S-LT**. Long-term clinical outcomes following drug-eluting and bare metal stenting in Massachusetts. *Circulation* 2008; 118:1817-1827. PMC2821087
154. Garg P, **Normand S-LT**, Silbaugh TS, Wolf RE, Zelevinsky K, Lovett A, Varma MR, Zhou Z, Mauri L. Drug-eluting or bare metal stenting in patients with diabetes mellitus: Results from the Mass-DAC registry. *Circulation* 2008; 118:2277-85.
155. Ten Have TR, **Normand S-LT**, Marcus SM, Brown CH, Lavori P, Duan N. Intent-to-treat vs non-intent-to-treat analyses under treatment non adherence in mental health randomized trials. *Psychiatric Annals* 2008; 38(12): 772-83. PMC2921714
156. Bhaumik DK, Roy A, Aryal S, Hur K, Duan N, **Normand S-LT**, Brown CH, Gibbons RD. Sample size determination for studies with repeated continuous outcomes. *Psychiatric Annals* 2008; 38(12): 765-71. PMC2743342
157. Marcus SM, Siddique J, Ten Have TR, Gibbons RD, Stuart E, **Normand S-LT**. Balancing treatment comparisons in longitudinal studies. *Psychiatric Annals* 2008; 38(12): 805-11. PMC2722117
158. Belin TR, **Normand S-LT**. The role of ANCOVA in analyzing experimental data. *Psychiatric Annals* 2009; 39(7):753-759.
159. Concannon TW, Griffith JL, Kent DM, **Normand S-L**, Newhouse JP, Atkins J, Beshansky JR, Selker HP. Elapsed time in emergency medical services in patients with cardiac complaints: are some patients at greater risk for delay? *Circulation: Cardiovascular Quality and Outcomes* 2009; 2:9-15.
160. Rosenthal MB, Landon BE, **Normand S-LT**, Ahman TS, Epstein AM. Engagement of health plans and employers in addressing racial and ethnic disparities in health care. *Medical Care Research and Review* 2009 66(2):219-231.

161. Busch AB, Frank RG, Sachs G, Normand S-LT. Bipolar-I patient characteristics associated with differences in antimanic medication prescribing. *Psychopharmacology Bulletin* 2009; 4291:35-49. PMC2648065
162. Sherrill J, Sommers DI, Nierenberg, AA, Leon AC, Amdt S, Bandeen-Roche K, Greenhouse J, Guthrie D, **Normand S-LT**, Phillips KA, Shear MK, Woolson R. Integrating statistical and clinical research elements in intervention-related grant applications: summary from an NIMH workshop. *Academic Psychiatry* 2009; 33:221-228. PMC2838497
163. Gill SS, Anderson GM, Fischer HD, Bell CM, Li P, **Normand S-LT**, Rochon PA. Syncope and its consequences in patients with dementia receiving cholinesterase inhibitors: A population-based cohort study. *Archives of Internal Medicine* 2009; 169(9): 867-73.
164. 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.
165. Timbie JW, Shahian DM, Newhouse JP, Rosenthal MB, **Normand S-LT**. Composite measures for hospital quality using quality-adjusted life years. *Statistics in Medicine*, 2009; 28:1239-1254.
166. Horvitz-Lennon M, Donohue J, Domino M, **Normand S-L**. Improving quality and diffusing best practices: the case of schizophrenia. *Health Affairs* 2009; 28(3):701-712. PMC2832306
167. Huskamp H, Busch A, Domino M, **Normand S-L**. Antidepressant reformulations: Who uses them and what are the benefits? *Health Affairs* 2009; 28(3):734-745. PMC2752284
168. Teixeira-Pinto A, **Normand S-LT**. Correlated bivariate continuous and binary outcomes: Issues and applications. *Stat in Medicine* 2009; 28:1753-1773. PMC2818753.
169. Hlatky MA, Greenland P, Arnett DK, Ballantyne CM, Criqui MH, Elkind M, Go AS, Harrell FE, Howard BV, Howard VJ, Hsue PY, Kramer CM, McConnell JP, **Normand S-LT**, O'Donnell CJ, Smith SC, Wilson P, American Heart Association Expert Panel on Subclinical Atherosclerotic Diseases and Emerging Risk Factors and the Stroke Council. Criteria for evaluation of novel markers of cardiovascular risk. A scientific statement from the American Heart Association. *Circulation* 2009; 119(17): 2408–2416. PMC2956982
170. Shahian DM, O'Brien SM, Filardo G, Ferraris VA, Haan CK, Rich JB, **Normand S-LT**, DeLong ER, Shewan CM, Dokholyan RS, Peterson ED, Edwards FH, Anderson RP. The Society of Thoracic Surgeons 2008 cardiac surgery risk models: Part 1 – coronary artery bypass grafting surgery. *Annals of Thoracic Surgery* 2009; 88:S2-22.
171. O'Brien SM, Shahian DM, Filardo G, Ferraris VA, Haan CK, Rich JB, **Normand S-LT**, DeLong ER, Shewan CM, Dokholyan RS, Peterson ED, Edwards FH, Anderson RP. The Society of Thoracic Surgeons 2008 cardiac surgery risk models: Part 2 – isolated valve surgery. *Annals of Thoracic Surgery* 2009; 88:S23-42.
172. Shahian DM, O'Brien SM, Filardo G, Ferraris VA, Haan CK, Rich JB, **Normand S-LT**, DeLong ER, Shewan CM, Dokholyan RS, Peterson ED, Edwards FH, Anderson RP. The Society of Thoracic Surgeons 2008 cardiac surgery risk models: Part 3 – valve plus coronary artery bypass grafting surgery. *Annals of Thoracic Surgery* 2009; 88:S43-62.
173. Teixeira-Pinto A, Siddique J, Gibbons R, **Normand S-L**. Statistical approaches to modeling multiple outcomes in psychiatric studies. *Psychiatric Annals* 2009; 39(7):729-735. PMC2798811

174. Stuart EA, Marcus SM, Horvitz-Lennon MV, Gibbons RD, **Normand S-LT**, Brown H. Using non-experimental data to estimate treatment effects. *Psychiatric Annals*, 2009; 39(7):719-728. PMC2886294.
175. Mulvey GK, Wang Y, Lin Z, Wang OJ, Chen J, Keenan PS, Drye EE, Rathore SS, **Normand S-LT**, Krumholz HM. Mortality and readmission for patients with heart failure among *U.S. News & Report's* top heart hospitals. *Circulation: Cardiovascular Quality and Outcomes*, 2009; 2:558-565.
176. Krumholz HM, Merrill AR, Schone RM, Schreiner GC, Chen J, Bradley EH, Wan Y, Wang YF, Lin Z, Straube BM, Rapp MT, **Normand S-LT**, Drye EE. Patterns of hospital performance in acute myocardial infarction and heart failure 30-day mortality and readmission. *Circulation: Cardiovascular Quality and Outcomes*, 2009; 2(5):407-413.
177. Krumholz HM, Wang Y, Chen J, Drye EE, Radford MJ, Havranek DP, Masoudi FA, Nallamothu BK, Spertus JA, Ross JS, Lichtman JH, Curtis JP, Han LF, Rapp MT, Straube BM, **Normand S-LT**. Reduction in acute myocardial infarction mortality in the United States: Risk-Standardized mortality rates from 1995-2006. *Journal of the American Medical Association*, 2009; 302(7):767-773.
178. Horvitz-Lennon MV, Frank RG, Thompson W, Baik SH, Alegria M, Rosenheck RA, **Normand S-LT**. An investigation of racial and ethnic disparities in service utilization among homeless adults with severe mental illness. *Psychiatric Services*, 2009; 60:1032-1038. PMC2898183
179. Busch AB, Huskamp HA, Neelon B, Manning T, **Normand S-LT**, McGuire TG. Longitudinal racial/ethnic disparities in antimanic medication use in bipolar-I disorder. *Medical Care*, 2009; 47(12):1217-1228. PMC2787883
180. Castellanos LR, **Normand S-L T**, Ayanian JZ. Racial and Ethnic Disparities in Access to Higher and Lower Quality Cardiac Surgeons For Coronary Artery Bypass Grafting. *American Journal of Cardiology*, 2009;103:1682-1686.
181. Skeer MR, McCormick MC, **Normand S-LT**, Mimiaga MJ, Buka SL, Gilman SE. A prospective study of familial conflict, psychological stress, and the development of substance use disorders in adolescence. *Drug and Alcohol Dependence*, 2009; 104(1-2):65-72. PMC2728005
182. Ross JS, Chen J, Qiu Lin Z, Bueno H, Curtis JP, Keenan PS, **Normand S-LT**, Schreiner G, Spertus J, Vidan MT, Wang YF, Wang Y, Krumholz HM. Recent national trends in readmission rates after heart failure hospitalization. *Circulation: Heart Failure*, 2010; 3:97-1.03. PMC2830811
183. Shahian DM, O'Brien SM, **Normand S-LT**, Peterson ED, Edwards FH. Association of hospital coronary artery bypass volume with processes of care, mortality, morbidity, and the Society of Thoracic Surgeons composite quality score. *Journal of Thoracic and Cardiovascular Surgery*, 2010; 139: 273-282.
184. Chen J, Krumholz HM, Wang Y, Curtis JP, Rathore SS, Ross JS, **Normand S-LT**, Schreiner G, Mulvey G, Nallamothu BK. Differences in patient survival after acute myocardial infarction by hospital capability of performing percutaneous coronary intervention: implications for regionalization. *Archives of Internal Medicine*, 2010; 170(5):433-439.
185. Ross JS, **Normand S-LT**, Wang Y, Ko DT, Chen J, Drye EE, Keenan PS, Lichtman JH, Bueno H, Schreiner GC, Krumholz, HM. Hospital volume and 30-day mortality for three common medical admissions. *New England Journal of Medicine*, 2010; 362: 1110-1118. PMC2880468
186. Chen J, **Normand S-LT**, Wang Y, Drye EE, Schreiner GC, Krumholz HM. Recent declines in hospitalizations for acute myocardial infarction for fee-for-service beneficiaries: progress and continuing challenges. *Circulation*, 2010; 121:1322-1328.

187. Hummel SL, Pauli NP, Krumholz HM, Wang Y, Chen J, **Normand S-LT**, Nallamothu BK. Thirty-day outcomes in Medicare patients with heart failure at heart transplant centers. *Circulation Heart Failure*, 2010; 3:244-252.
188. Nasir K, Lin Z, Bueno H, **Normand S-LT**, Drye EE, Keenan PS, Krumholz HM. Is same-hospital readmission rate a good surrogate for all-hospital readmission rate? *Medical Care*, 2010; 48(5):477-481.
189. Sedrakyan A, Marinac-Dabic D, **Normand S-LT**, Mushlin A, Gross T. A framework for evidence evaluation and methodological issues in implantable device studies. *Medical Care*, 2010; 48:S121-S128.
190. **Normand S-LT**, Marinac-Dabic D, Sedrakyan A, Kaczmarek R. Rethinking analytical strategies for surveillance of medical devices: the case of hip arthroplasty. *Medical Care*; 2010; 48:S58-S67.
191. Bueno H, Ross JS, Wang Y, Chen J, Vidan W, **Normand S-LT**, Curtis JP, Drye EE, Lichtman J, Keenan PS, Kosiborod M, Krumholtz HM. Trends in length of stay and short-term outcomes among Medicare patients hospitalized for heart failure, 1993-2006. *Journal of the American Hospital Association* 2010; 303(21):2141-2147. PMC3020983.
192. Ross JS, Maynard C, Krumholz HM, Sun H, Rumsfeld JS, **Normand S-LT**, Wang Y, Fihn SD. Use of administrative claims models to assess 30-day mortality among veterans' health administration hospitals. *Medical Care* 2010; 48:652-658. PMC3020977.
193. Bernheim SM, Grady JN, Lin A, Wang Y, Wang Y, Savage SV, Bhat KR, Ross JS, Desai MM, Merrill AR, Han LF, Rapp MT, Drye EE, **Normand S-LT**, Krumholz HM. National patterns of risk-standardized mortality and readmission for acute myocardial infarction and heart failure: Update on publicly reported outcomes measures based on the 2010 release. *Circulation Cardiovascular Quality and Outcomes* 2010; 3:459-467. PMC3027304.
194. Concannon TW, Kent DM, **Normand S-LT**, Newhouse JP, Griffith JL, Cohen J, Beshansky JR, Wong JB, Aversano T, Selker HP. Comparative effectiveness of ST-segment-elevation myocardial infarction regionalization strategies. *Circulation: Cardiovascular Quality and Outcomes* 2010; 3(5):506-513. PMC2967250.
195. Meyer RE, Salzman C, Youngstrom EA, Clayton PJ, Mann JJ, Goodwin FK, Alphas LD Broich K, Goodman WK, Greden JF, Meltzer HY, **Normand S-LT** Posner K, Shaffer D, Trivedi M, Turecki G, Beasley Jr. CM, Beautrais AL, Bridge JA, Brown GK, Oquendo MA, Revicki D, Ryan N, Sheehan DV, Stanley B. Suicidality and risk of suicide: Definition, drug safety concerns and a necessary target for drug development: a consensus statement. *Journal of Clinical Psychiatry* 2010; 71(8):1040-1046.
196. Lidenauer PK, Bernheim SM, Grady JN, Lin Z, Wang Y, Wang Y, Merrill AR, Han LF, Rapp MR, Drye EE, **Normand S-LT**, Krumholz HM. The performance of US hospitals as reflected in risk-standardized 30-day mortality and readmission rates for Medicare beneficiaries with pneumonia. *Journal of Hospital Medicine* 2010; 5(6):E12-E18.
197. Bradley EH, Herrin J, Curry L, Cherlin EJ, Wang Y, Webster TR, Drye EE, **Normand S-LT**, Krumholz HM. Variation in hospital mortality rates for patients with acute myocardial infarction. *Journal of the American College of Cardiology* 2010; 106:1108-1112.
198. Neelon B, O'Malley AJ, **Normand S-LT**. A Bayesian model for repeated measures zero-inflated count data with application to outpatient psychiatric service use. *Statistical Modeling* 2010; 10:421-439. PMC3039917.



199. Resnic FS, Gross TP, Marinac-Dabic D, Loyo-Berrios N, Donnelly S, **Normand S-LT**, Matheny ME. Automated surveillance to detect postprocedure safety signals of approved cardiovascular devices. *Journal of the American Medical Association* 2010; 304(18):2019-2027.
200. Mauri L, Kereiakes DJ, **Normand S-LT**, Wiviott SD, Cohen DJ, Holmes DR, Bangalore S, Cutlip DE, Pencina M, Massaro JM. Rationale and design of the dual antiplatelet therapy study, a prospective, multicenter, randomized, double-blind trial to assess the effectiveness and safety of 12 versus 30 months of dual antiplatelet therapy in subjects undergoing percutaneous coronary intervention with either drug-eluting stent or bare metal stent placement for the treatment of coronary artery lesions. *American Heart Journal* 2010; 160:1035-1041.
201. Shahian DM, Wolf RE, Iezzoni LI, Kirle L, **Normand S-LT**. Variability in the measurement of hospital-wide mortality rates. *New England Journal of Medicine* 2010; 363:2530-9.
202. Holmboe ES, Weng W, Arnold G, Kaplan SH, **Normand S-LT**, Greenfield S, Hood S, Lipner R. The comprehensive care project: measuring physician performance in ambulatory practice. *Health Services Research* 2010; 45(6):1912-1933.
203. He Y, Wolf RE, **Normand S-LT**. Assessing geographical variations in hospital processes of care using multilevel item response theory models. *Health Services and Outcomes Research Methodology* 2010; 10:111-133.
204. Spertus JA, Bonow RO, Chan P, Diamond GA, Drozda JP, Kaul S, Krumholz HM, Masoudi FA, **Normand S-LT**, Peterson ED, Radford MJ, Rumsfeld JS, Writing Committee Members. "ACCF/AHA New Insights Into the Methodology of Performance Measurement: A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Performance Measures." *Circulation* 2010; 122(20): 2091-2106.
205. Barringhaus KG, Zelevinsky K, Lovett A, **Normand S-LT**, Ho KK. Impact of independent data adjudication on hospital-specific estimates of risk-adjusted mortality following percutaneous coronary interventions in Massachusetts. *Circulation Cardiovascular Quality and Outcomes* 2011; 4:92-98.
206. Azzone V, Frank RG, **Normand S-LT**, Burman AM. Effect of insurance parity on substance abuse treatment. *Psychiatric Services* 2011; 62(2):129-134. PMC3250065.
207. Charytan DM, Varma MR, Silbaugh TS, Lovett AF, **Normand S-L**, Mauri L. Long-term clinical outcomes following drug-eluting or bare-metal stent placement in patients with severely reduced GFR: Results of the Massachusetts Data Analysis Center (Mass-DAC) State Registry. *Am J Kidney Dis.* 2011; 57(2):202-11.
208. Resnic FS, **Normand S-LT**, Piemonte TC, Shubrooks SJ, Zelevinsky K, Lovett A, Ho KKL. Improvement in mortality risk prediction following percutaneous coronary intervention through addition of a "compassionate use" variable to the National Cardiovascular Data Registry CathPCI Dataset: A study from the Massachusetts angioplasty registry. *Journal of the American College of Cardiology* 2011; 57:904-911. PMC3061352
209. Neelon B, O'Malley AJ, **Normand S-LT**. A Bayesian two-part latent class model for longitudinal medical expenditure data: Assessing the impact of mental health and substance abuse parity. *Biometrics* 2011; 67:280-289. NIHMS ID: 197107
210. Krumholz HM, Lin Z., Drye EE, MD; Desai MM, Han HF; Rapp MT, Matterna JA, **Normand S-LT**. An administrative claims measure suitable for profiling hospital performance based on 30-day all-cause readmission rates among patients with acute myocardial infarction. *Circulation Cardiovascular Quality and Outcomes* 2011; 4: 243-252. PMC3350811

211. Baudendistel TE, Lindenauer PK, Normand SL, Drye EE, Lin Z, Goodrich K, Desai MM, Bratzler DW, O'Donnell WJ, Metersky ML, Krumholz HM. Continuing medical education program in the journal of hospital medicine. *J Hosp Med.* 2011; 6(3):141.
212. Teixeira-Pinto A, **Normand, S-L**. Missing data in regression models for non-commensurate multiple outcomes. *RevStat – Statistical Journal* 2011; 9(1): 37–55. PMC3595565
213. Bratzler DW, **Normand S-LT**, Wang Y, O'Donnell WJ, Metersky M, et al. An administrative claims model for profiling hospital 30-Day mortality rates for pneumonia patients. *PLoS ONE* 2011; 6(4): e17401. PMC3075250
214. Tyler KM, **Normand S-LT**, Horton NJ. The use and abuse of multiple outcomes in randomized controlled depression trials. *Contemporary Clinical Trials* 2011; 32:299-304. PMC3071542.
215. O'Malley AJ, Frank RG, **Normand S-LT**. Estimating cost-offsets of new medications: use of new antipsychotics and mental health costs for schizophrenia. *Statistics in Medicine* 2011; 30(16):1971-1988. PMC2150217.
216. Lindenauer PK, **Normand S-LT**, Drye EE, Lin Z, Goodrich K, Desai MM, Bratzler DW, O'Donnell WJ, Metersky ML, Krumholz HM. Development, validation, and results of a measure of 30-day readmission following hospitalization for pneumonia. *J Hosp Med* 2011; 6:142-150.
217. Landon BE, Rosenthal MB, **Normand S-LT**, Spettell C, Lessler A, Underwood HR, Newhouse JP. Incentive formularies: spending and utilization for 3 common drug classes. *American Journal of Pharmacy Benefits* 2011; 3(3):152-164.
218. Horvitz-Lennon M, Zhou D, **Normand S-LT**, Alegria M, Thompson W. Racial and ethnic service use disparities among homeless adults with severe mental illnesses receiving ACT. *Psychiatric Services* 2011; 62(6):598-604.
219. Yoon FB, Fitzmaurice GM, Lipsitz SR, Horton NJ, Laird NM, **Normand S-LT**. Alternative methods for testing treatment effects on the basis of multiple outcomes: simulation and case study. *Statistics in Medicine* 2011; 30(16):1917-1932. PMC3116112.
220. Yoon FB, Huskamp HA, Busch AB, **Normand S-LT**. Using multiple control groups and matching to address unobserved biases in comparative effectiveness research: An observational study of the effectiveness of mental health parity. *Statistics in Biosciences* 2011; 3:63-78. PMC3182124.
221. Cook B, McGuire T, Alegria M, **Normand S-LT**. Crowd-out and exposure effects of physical comorbidities on mental health care use: Implications for racial-ethnic disparities in access. *Health Services Research* 2011; 46(4):1259-80. PMC3130831.
222. Skeer MR, McCormick MC, **Normand S-LT**, Mimiaga MJ, Buka SL, Gilman SE. Gender differences in the association between family conflict and adolescent substance use disorders. *J Adolesc Health* 2011; 49(2):187-92.
223. Shahian DM, Edwards FH, Jacobs JP, Prager RL, **Normand S-LT**, Shewan CM, O'Brien SM, Peterson ED, Grover FL. Public reporting of cardiac surgery performance: Part 1--history, rationale, consequences. *Ann Thorac Surg.* 2011; 92(3 Suppl):S2-11.
224. Shahian DM, Edwards FH, Jacobs JP, Prager RL, **Normand S-LT**, Shewan CM, O'Brien SM, Peterson ED, Grover FL. Public reporting of cardiac surgery performance: Part 2--implementation. *Ann Thorac Surg.* 2011; 92(3 Suppl):S12-23.

225. Nunez Smith M, Bradley EH, Herrin J, Santana C, Curry LA, **Normand S-LT**, Krumholz HM. Quality of Care in the US Territories. *Archives of Internal Medicine* 2011; 171:1528-1540. PMC3251926.
226. Yeh RW, **Normand S-LT**, Wolf RE, Jones PG, Ho KK, Cohen DJ, Cutlip DE, Mauri L, Kugelmass AD, Amin AP, Spertus JA. Predicting the restenosis benefit of drug-eluting versus bare metal stents in percutaneous coronary intervention. *Circulation* 2011; 124(14):1557-64.
227. Chen J, **Normand, S-LT**, Wang Y, Krumholz HM. National and Regional Trends in Heart Failure Hospitalization and Mortality Rates for Medicare Beneficiaries, 1998-2008. *JAMA* 2011; 306(15):1669-1678.
228. Matheny ME, **Normand S-LT**, Gross TP, Marinac-Dabic D, Loyo-Berrios N, Vidi V, Donnelly S, Resnic RS. Evaluation of an automated safety surveillance system using risk adjusted sequential probability ratio testing. *BMC Medical Informatics and Decision Making* 2011; 11:75. PMC3262755
229. Fullerton CA, Busch AB, **Normand S-LT**, McGuire TG, Epstein AM. Ten-year trends in quality of care and spending for depression: 1996 through 2005. *Archives of General Psychiatry* 2011; 68(12):1218-26.
230. Mauri L, **Normand S-L**, Pencina M, Cutlip DE, Jeon C, Dreyer P, Kuntz RE, Baim DS, Jacobs AK. Rationale and design of the MASS COMM trial: A randomized trial to compare percutaneous coronary intervention between MASSachusetts hospitals with cardiac surgery on-site and COMMunity hospitals without cardiac surgery on-site. *American Heart Journal* 2011; 162(5):826-831.
231. Sedrakyan A, **Normand S-LT**, Dabic S, Jacobs S, Graves S, Marinac-Dabic D. Comparative assessment of implantable hip devices with bearing surfaces: systematic appraisal of evidence. *British Medical Journal* 2011; 343:d7434. PMC3226583.
232. Pinto DS, Ogbonnaya A, Sherman SA, Tung P, **Normand S-L**. Bivalirudin therapy is associated with improved clinical and economic outcomes in ST-elevation myocardial infarction patients undergoing percutaneous coronary intervention: results from an observational database. *Circ Cardiovasc Qual Outcomes* 2012; 5(1):52-61.
233. Chen J, Ross JS, Carlson MD, Lin Z, **Normand S-L**, Bernheim SM, Drye EE, Ling SM, Han LF, Rapp MT, Krumholz HM. Skilled nursing facility referral and hospital readmission rates after heart failure or myocardial infarction. *Am J Med.* 2012; 125(1):100.e1-9.
234. Shahian DM, Iezzoni LI, Meyer GS, Kirle L, **Normand S-LT**. Hospital-wide mortality as a quality metric: conceptual and methodological considerations. *American Journal of Medical Quality* 2012; 27(2):112-23.
235. Drye E, **Normand S-LT**, Wang Y, Ross JS, Schreiner GC, Han L, Rapp M, Krumholz HM. Comparison of hospital-risk-standardized mortality rates using in-hospital and 30-day models: implications for hospital profiling. *Annals of Internal Medicine* 2012; 156:19-26.
236. Fullerton CA, Epstein AM, Frank RG, **Normand S-L**, Fu CX, McGuire TG. Medication use and spending trends among children with ADHD in Florida's Medicaid program, 1996-2005. *Psychiatric Services* 2012; 63(2):115-21.
237. Busch AB, Neelon B, Zelevinsky K, He Y, **Normand S-LT**. Accurately predicting bipolar mood outcomes – implications for the use of electronic databases. *Medical Care* 2012; 50(4):311-9.

238. Goldman HH, Barry CL, **Normand S-LT**, Azzone V, Busch AB, Huskamp HA. Economic grand rounds: the price is right? Changes in the quantity of services used and prices paid in response to parity. *Psychiatric Services* 2012; 63(2):107-9.
239. Yeh RW, **Normand S-LT**, Wang Y, Barr CD, Dominici F. Geographical disparities in the incidence and outcomes of hospitalized myocardial infarction: does a rising tide lift all boats? *Circulation Cardiovascular Quality and Outcomes* 2012; 5(2):197-204. PMC3310945.
240. Hu S, Zheng Z, Yuan X, Wang Y, **Normand S-LT**, Ross JS, Krumholz HM. Coronary artery bypass graft surgery: Contemporary heart surgery center performance in China. *Circulation Cardiovascular Quality and Outcomes Research* 2012; 5(2):214-21. PMC3509783
241. Shahian DM, Nordberg P, Meyer GS, Blanchfield BB, Mort DF, **Normand S-LT**. Contemporary performance of US teaching hospitals. *Academic Medicine* 2012; 87(6):701-8.
242. Stamou SC, Robich M, Wolf RE, Lovett A, **Normand S-LT**, Selke FW. Effects of gender and ethnicity on outcomes after aortic valve replacement. *Journal of Thoracic and Cardiovascular Surgery* 2012; 144(2):486-492.
243. Bhaumik DK, Amatya A, **Normand S-LT**, Greenhouse J, Kaizar E, Neelon B, Gibbons RD. Meta-analysis of rare binary adverse event data. *Journal of the American Statistical Association* 2012; 107(498):555-567. PMC3665366
244. Amin AP, Spertus JA, Cohen DJ, Chhatrwalla A, Kennedy KF, Vilain K, Salisbury AC, Venkitachalam L, Lai SM, Mauri L, **Normand SL**, Rumsfeld JS, Messenger JC, Yeh RW. Use of drug-eluting stents as a function of predicted benefit: clinical and economic implications of current practice. *Arch Intern Med.* 2012; 172(15):1145-52.
245. Kulkarni VT, Shah SJ, Bernheim SM, Wang Y, **Normand S-LT**, Han LF, Rapp MT, Krumholz HM. Regional associations between Medicare Advantage penetration and administrative claims-based measures of hospital outcomes. *Medical Care* 2012; 50(5):406-409.
246. Vidi VD, Matheny ME, Govindarajulu US, **Normand S-LT**, Robbins SL, Agarwal VV, Bangalore S, Resnic FS. Vascular closure device failure in contemporary practice. *JACC Cardiovasc Interv.* 2012; 5(8):837-44. PMC3427601.
247. Ross JS, Bernheim SM, Lin ZQ, Drye EE, Chen J, **Normand S-LT**, Krumholz HM. Based on key measures, care quality for Medicare enrollees at safety-net and non-safety-net hospitals was almost equal. *Health Affairs* 2012; 31(8):1739-1748. PMC3527010
248. Partovian C, Gleim S, Mody PS, Li SX, Wang H, Strait KM, Allen LA, Lagu TC, **Normand S-LT**, Krumholz HM. Hospital patterns of use of positive inotropic agents in patients with heart failure. *Journal of the American College of Cardiology* 2012; 60(15):1402-1409.
249. Venkatesan DV, Matheny ME, Govindarajulu US, **Normand S-LT**, Robbins SL, Agarwal VV, Bangalore S, Resnic FS. Vascular Closure Devices in Contemporary Practice. *Journal of the American College of Cardiology: Cardiovascular Interventions* 2012; 5(8):837-844.
250. Yeh RW, Rosenfield K, Zelevinsky K, Mauri L, Sakhuja R, Shivapour D, Lovett A, Weiner B, Jacobs AK, **Normand S-LT**. Sources of hospital variation in short term readmission rates after percutaneous coronary intervention. *Circulation Interventions* 2012; 5(2):227-236.
251. Normand SL. Registry studies for improving the quality of cardiovascular care: the role of variance components. *Circ Cardiovasc Qual Outcomes.* 2012; 5(5):e42-3.

252. Horvitz-Lennon M, Alegria M, **Normand S-LT**. The effect of race-ethnicity and geography on adoption of innovations in the treatment of schizophrenia. *Psychiatric Services* 2012; 63(12):1171-1177. PMC3666934
253. Marinac-Dabic D, **Normand S-LT**, Sedrakyan A, Gross T. Epidemiologic studies of medical devices: Methodologic considerations for implantable device. In: *Pharmacoepidemiology*. 5 ed. Strom BL, Kimmel SE, Hennessy S, editors. Hoboken, NJ: Wiley-Blackwell; 2012. Chapter 27, pp.469-486.
254. Horvitz-Lennon M, Donohue J, Lave JR, Alegria M, **Normand S-LT**. The effect of race-ethnicity on the comparative effectiveness of clozapine among Medicaid beneficiaries. *Psychiatric Services* 2013; 64(3):230-7. PMC3713199
255. Jacobs AK, Kushner FG, Ettinger SM, Guyton RA, Anderson JL, Ohman EM, Albert NM, Antman EM, Arnett DK, Bertollet M, Bhatt DL, Brindis RG, Creager MA, DeMets DL, Dickersin K, Fonarow GC, Gibbons RJ, Halperin JL, Hochman JS, Koster MA, **Normand S-LT**, Ortiz E, Peterson ED, Roach WH Jr, Sacco RL, Smith SC Jr, Stevenson WG, Tomaselli GF, Yancy CW, Zoghbi WA. ACCF/AHA clinical practice guideline methodology summit report: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *Circulation*. 2013; 127(2):268-310.
256. Busch A, Yoon F, Barry C, Azzone V, **Normand S-L**, Goldman H, Huskamp H. The effects of mental health parity on spending and utilization for bipolar, major depression and adjustment disorders. *The American Journal of Psychiatry* 2013;170:180-187. PMC4169195
257. Krumholz HM, Lin Z, Keenan PS, Chen J, Ross JS, Drye EE, Bernheim SM, Wang Y, Bradley EH, Han LF, **Normand S-LT**. Relationship between hospital readmission and mortality rates for patients hospitalized with acute myocardial infarction, heart failure, or pneumonia. *Journal of the American Medical Association* 2013; 309(6):587-593. PMC3621028
258. Barry CL, Chien AT, **Normand S-LT**, Busch AB, Azzone V, Goldman HH, Huskamp HA. Parity and out-of-pocket spending for children with high mental health or substance abuse expenditures. *Pediatrics* 2013; 131(3):2012-1491. PMC3581843
259. Bittl JA, He Y, Jacobs AK, Yancy CW, **Normand S-LT**. Bayesian methods affirm use of percutaneous coronary angiography intervention to improve survival in patients with unprotected left main coronary artery disease. *Circulation* 2013;127(22):2177-85.
260. Kramer DB, Kennedy KF, Noseworthy PA, Buxton AE, Josephson ME, **Normand S-L**, Spertus JA, Zimetbaum PJ, Reynolds MR, Mitchell SL. Characteristics and outcomes of patients receiving new and replacement implantable cardioverter-defibrillators: results from the NCDR. *Journal of the American College of Cardiology* 2013; 6:488-497. PMC4001927
261. Rochon PA, Gruneir A, Gill SS, Wu W, Fisher HD, Bronskill SE, **Normand S-LT**, Austin PC, Seitz DP, Bell CM, Fu L, Lipscombe L, Anderson GM, Gurwitz JH. Older men with dementia are at greater risk than women of serious events after initiating antipsychotic therapy. *Journal of the American Geriatrics Society* 2013; 61:55–61.
262. Kulkarni VT, Ross JS, Wang Y, Nallamotheu BK, Spertus JA, **Normand S-LT**, Masoudi FA, Krumholz HM. Regional density of cardiologists and rates of mortality for acute myocardial infarction and heart failure. *Circulation: Cardiovascular Quality and Outcomes* 2013; 6(3):352-9.
263. Peterson PN, Varosy PD, Heidenreich PA, Wang Y, Dewland TA, Curtis JP, Go AS, Greenlee RT, Magid DJ, **Normand S-LT**, Masoudi FA. Association of single versus dual chamber ICDs with

- mortality, readmissions and complications among patients receiving an ICD for primary prevention. *JAMA* 2013; 309(19):2025. PMC3752924
264. Wasfy JH, Rosenfeld K, Zelevinsky K, Sakhuja R, Lovett A, Spertus JA, Winner NJ, Mauri L, **Normand S-LT**, Yeh RW. A prediction model to identify patients at high risk for 30-day readmission after percutaneous coronary intervention. *Circulation: Cardiovascular Quality and Outcomes* 2013; 6(4):429-35.
265. Jacobs AK, **Normand SL-T**, Massaro JM, Cutlip DE, Carozza JP, Marks AD, Murphy NM, Romm, IK, Biondolillo, Mauri L. Nonemergency PCI at hospitals with or without on-site cardiac surgery. *New England Journal of Medicine* 2013; 368(16):1498-508.
266. **Normand S-LT**. Strengthening our capability to analyse big data streams in health systems: The challenges. In: OECD. *ICTs and the Health Sector: Towards Smarter Health and Wellness Models*, OECD Publishing, 2013:129-140.
267. McGuire TG, Glazer J, Newhouse JP, **Normand S-L**, Shi J, Sinaiko AD, Zevekas S. Integrating risk adjustment and enrollee premiums in health plan payment. *Journal of Health Economics* 2013, 32(6): 1263-77. PMC3855655
268. Alegría M, Roter DL, Valentine A, Chen CN, Li X, Lin J, Rosen D, Lapatin S, **Normand S-LT**, Larson S, Shrout PE. Patient-clinician ethnic concordance and communication in mental health intake visits. *Patient Educ Couns.* 2013; 93(2):188-96. PMC3800470.
269. Jacobs AK, **Normand S-LT**, Mauri L. PCI at hospitals with or without on-site cardiac surgery. *New England Journal of Medicine* 2013; 25;369(4):392-3.
270. He Y, Selck F, **Normand S-LT**. On the accuracy of classifying hospitals on their performance measures. *Statistics in Medicine* 2014; 333(7): 1081-1103.
271. Wasfy JH, Strom JB, O'Brien C, Zai AH, Luttrell J, Kennedy KF, Spertus JA, Zelevinsky K, **Normand S-LT**, Mauri L, Yeh RW. Causes of short-term readmission after percutaneous coronary intervention. *Circ Cardiovasc Interv.* 2014; 7(1):97-103.
272. Barreto-Filho JA, Wang Y, Rathore SS, Spatz ES, Ross JS, Curtis JP, Nallamotheu BK, **Normand S-LT**, Krumholz HM. Transfer Rates from Nonprocedure Hospitals after Initial Admission and Outcomes among Elderly Patients with Acute Myocardial Infarction. *JAMA Internal Medicine* 2014; 174(2): 213-222.
273. Kramer DB, Kennedy KF, Noseworthy PA, Buxton AE, Josephson ME, **Normand S-LT**, Spertus JA, Zimetbaum PJ, Mitchell SL, and Reynolds MR. Mortality Risk Following Replacement Implantable Cardioverter-Defibrillator Implantation at End of Battery Life: Results from the NCDR®. *Heart Rhythm* 2014; 11(2):255-261.
274. Shahian DM, Xiu S, Meyer GS, **Normand S-LT**. Comparing teaching versus nonteaching hospitals: the association of patient characteristics with teaching intensity for three common medical conditions. *Academic Medicine* 2014; 89:94-106.
275. Shahian DM, Xiu S, Meyer GS, **Normand S-LT**. Hospital teaching intensity and mortality for acute myocardial infarction, heart failure, and pneumonia. *Medical Care* 2014; 52:38-46.
276. Betancourt T, Yang F, Bolton P, **Normand S-LT**. Developing an African youth psychosocial assessment: an application of item response theory. *International Journal of Methods in Psychiatric Research* 2014; 23(2):142-160. PMC4098666

277. Alameddine A, Visintainer P, **Normand S-LT**, Wolf RE, Alameddine Y. Cancer rates in adults after cardiac interventions: a preliminary observational report. *American Journal of Clinical Oncology*. Epub 2014 Sep 5.
278. Matteau A, Yeh RW, Kereiakes D, Orav EJ, Massaro J, Steg PG, **Normand S-LT**, Cutlip DE, Mauri L. Frequency of the use of low- versus high-dose aspirin in dual antiplatelet therapy after percutaneous coronary intervention (from the Dual Antiplatelet Therapy Study). *American Journal of Cardiology* 2014; 113(7):1146-1152.
279. Li J, Dharmarajan K, Li X, Lin Z, **Normand S-LT**, Krumholz HM, Jiang L (China PEACH Collaborative Group). Protocol for the China PEACH (Patient-centered evaluative assessment of cardiac events) retrospective study of coronary catheterization and percutaneous coronary intervention. *British Medical Journal Open* 2014; 4: e004595.
280. Horvitz-Lennon M, Volya R, Donohue J, Lave JR, Stein B, **Normand S-LT**. Disparities in quality of care among publicly insured adults with schizophrenia in four large US states: 2002–2008. *Health Services Research* 2014; 49(4):1121-1144. PMC4111783
281. McGuire TG, Newhouse JP, **Normand S-LT**, Shi J, Zuvekas S. Assessing incentives for service-level selection in private health insurance exchanges. *Journal of Health Economics* 2014; 35:47-63. PMC4040329.
282. Amatya A, Bhaumik D, **Normand S-LT**, Greenhouse J, Kaizar E, Neelon B, Gibbons RD. Likelihood-based random effect meta-analysis of binary events. *Journal of Biopharmaceutical Statistics* 2015; 25(5):984-1004.
283. Albert MA, Ayanian JZ, Silbaugh TS, Lovett A, Resnic F, Jacobs A, **Normand S-LT**. Early results of Massachusetts health care reform on racial, ethnic, and socioeconomic disparities in cardiovascular care. *Circulation* 2014;129:2528-2538.
284. Xu X, Li S-X, Lin H, **Normand S-LT**, Kim N, Ott LS, Lagu T, Duan M, Kroch EA, Krumholz HM. “Phenotyping” hospital value of care for patients with heart failure. *Health Services Research* 2014;49(6):2000-2016. PMC4254136
285. Yeh RW, Vasaiwala S, Forman DE, Silbaugh TS, Zelevinski K, Lovett A, **Normand S-LT**, Mauri L. Instrumental variable analysis to compare effectiveness of stents in the extremely elderly. *Circulation Cardiovascular Quality Outcomes Research* 2014; 7:1 18-124.
286. Krumholz HM, **Normand S-LT**, Wang Y. Trends in hospitalizations and outcomes for acute cardiovascular disease and stroke: 1999 – 2011. *Circulation* 2014; 130: 966-975. PMC4171056
287. Wasfy JH, Strom JB, Waldo SW, O'Brien C, Wimmer NJ, Zai AH, Luttrell J, Spertus JA, Kennedy KF, **Normand S-LT**, Mauri L, Yeh RW. Clinical preventability of 30-day readmission after percutaneous coronary intervention. *Journal of the American Heart Association* 2014, 3(5):e001290. PMC4323776
288. Mauri L, Kereiakes DJ, Yeh RW, Driscoll-Shempp P, Cutlip DE, Steg PG, **Normand S-LT**, Braunwald E, Wiviott SD, Cohen DJ, Holmes DR, Krucoff MW, Hermiller J, Dauerman HL, Simon DI, Kandzari DE, Garratt KN, Lee DP, Pow TK, Lee PV, Rinaldi MJ, Massaro JM, for the DAPT Study Investigators. Twelve or 30 months of dual antiplatelet therapy after drug-eluting stents. *New England Journal of Medicine* 2014; 371(23): 2155-2166.
289. He Y, Bittle JA, Wouhib A, **Normand S-LT**. Case study in cardiovascular medicine. In: *Network Meta-Analysis: Evidence Synthesis with Mixed Treatment Comparison*. Biondi-Zoccai, editor. Hauppauge, NY: Nova Science Publishers, Inc.; 2014. Chapter 17.

290. Yeh RW, Mauri L, Wolf RE, Romm IK, Lovett A, Shahian D, **Normand S-LT**. Population trends in rates and outcomes of coronary revascularization. *JAMA Internal Medicine* 2015; 175(3): 454-456.. PMC4385321
291. Bangalore S, Silbaugh TS, **Normand S-LT**, Lovett AF, Welt FGP, Resnic FS. Drug eluting stents versus bare metal stents prior to noncardiac surgery. *Catheterization and Cardiovascular Interventions* 2015; 85:533-541.
292. Kumar A, Matheny ME, Ho KK, Yeh RW, Piemonte TC, Waldman H, Shah PB, Cope R, **Normand SLT**, Donnelly S, Robbins S, Resnic FS. The data extraction and longitudinal trend analysis network study of distributed automated postmarket cardiovascular device safety surveillance. *Circ Cardiovasc Qual Outcomes* 2015 Jan;8(1):38-46.
293. Yeh RW, Czarny MJ, **Normand S-LT**, Kereiakes DJ, Holmes DR, Brindis RG, Weaver WD, Rumsfeld JS, Rose MT, Kim S, Driscoll-Shempp P, Mauri L. Evaluating the generalizability of a large streamlined cardiovascular trial. Comparing hospitals and patients in the dual antiplatelet therapy study versus the national cardiovascular data registry. *Circulation Cardiovascular Quality Outcomes Research* 2015; 8: 96-102.
294. Dharmarajan K, Hsieh AF, Kulkarni VT, Lin Z, Ross JS, Horwitz LI, Kim N, Suter LG, Lin H, **Normand S-LT**, Krumholz HM. Trajectories of risk after hospitalization for heart failure, acute myocardial infarction, or pneumonia: retrospective cohort study. *BMJ* 2015; 350: h411. PMC4353309
295. Shahian DM, **Normand SL**. What is a performance outlier? *BMJ Qual Saf.* 2015; 24(2):95-9.
296. Kunz L, Rose S, Spiegelman D, **Normand S-LT**. An overview of approaches to causal inference. In C. Gatsonis, S. Morton, eds. In: *Methods in Comparative Effectiveness Research*. Boca Raton: Chapman and Hall/CRC. 2015.
297. Kunz L, **Normand S-LT**, Sedrakyan A. Meta-analysis of rate ratios with differential follow-up by treatment arm: Inferring comparative effectiveness of medical devices. *Statistics in Medicine*, 2015; DOI: 10.1002/sim.6530. PMC4523415
298. Horvitz-Lennon M, Volya R, Garfield R, Donohue JM, Lave JR, **Normand S-LT**. Where you live matters: quality and racial/ethnic disparities in schizophrenia care in four state Medicaid programs. *Health Services Research* 2015; 50(5):1710-29. PMC4600368
299. Rose S, Shi J, McGuire TG, **Normand S-LT**. Matching and imputation methods for risk adjustment in the health insurance marketplaces. *Statistics in Biosciences (Special Issue on Big Data)*. 2017 Dec;9(2):525-542. doi: 10.1007/s12561-015-9135-7. PMC5824732
300. Anderson TS, Huskamp H, Epstein AJ, Barry CL, Men A, Berndt EN, Horvitz-Lennon M, **Normand S-LT**, Donohue J. Antipsychotic Prescribing: Do conflict of interest policies make a difference? *Medical Care* 2015; 53(4):338-45. PMC4360919
301. Nallamothu BK, **Normand S-LT**, Wang Y, Hofer TP, Brush JE, Messenger JC, Rumsfeld JS, Krumholz HM. Relation between door-to-balloon times and mortality after primary percutaneous coronary intervention over time: a retrospective study. *The Lancet* 2015; 385(9973):1114-22. PMC4409657
302. Kramer DB, Mitchell SL, Monteiro J, Jones PW, **Normand S-LT**, Hayes DL, Reynolds MR. Patient Activity and Survival Following Implantable Cardioverter-Defibrillator Implantation: The ALTITUDE Activity Study. *J Am Heart Assoc.* 2015; 4(5). PMC4599410



303. Shahian DM, He X, Jacobs JP, Kurlansky PA, Badhwar V, Cleveland JC Jr, Fazzalari FL, Filardo G, **Normand S-L-T**, Furnary AP, Magee MJ, Rankin JS, Welke KF, Han J, O'Brien SM. The Society of Thoracic Surgeons Composite Measure of Individual Surgeon Performance for Adult Cardiac Surgery: A Report of The Society of Thoracic Surgeons Quality Measurement Task Force. *Ann Thorac Surg.* 2015;100(4): 1315-24.
304. Krumholz HM, Nuti SV, Downing NS, **Normand S-LT**, Wang Y. Mortality, hospitalizations, and expenditures for the Medicare population age 65 and older, 1999-2013. *JAMA* 2015; 314(4):355-65.
305. Krucoff, MW, Sedrakyan, A, **Normand S-LT**. Bridging unmet medical device ecosystem needs with strategically coordinated registry networks. *JAMA* 2015; 314(16):1691-2.
306. Akar JG, Bao, H, Jones P, Wang Y, Varosy P, Masoudi FA, Stein K, Saxon LA, **Normand S-LT**, Curtis JP. Use of remote monitoring is associated with lower risk of adverse outcomes among patients with implanted cardiac defibrillators. *Circulation: Arrhythmia and Electrophysiology* 2015; 8(5):1173-80.
307. Busch AB, Epstein AM, McGuire TG, **Normand S-LT**, Frank RG. Thirty-day hospital readmission for Medicaid enrollees with schizophrenia: The role of local health care systems. *J Ment Health Policy Econ.* 2015; 18(3):115-24. PMC4764135
308. Bucholz EM, Ma S, **Normand S-LT**, Krumholz HM. Race, Socioeconomic status, and life expectancy after acute myocardial infarction. *Circulation* 2015;132(14):1338-46.
309. The Atlantic Divide In Coronary Heart Disease: Health Technologies Use In The Us And Portugal. Lobo MF, Azzone V, Melica B, Bacelar-Nicolau L, Nisa C, Freitas A, Azevedo LF, Rocha-Gonçalves FN, Resnic FS, Teixeira-Pinto A, Pereira-Miguel J, **Normand S-LT**, Costa-Pereira A. *Value Health.* 2015 Nov;18(7):A402. doi: 10.1016/j.jval.2015.09.930. Epub 2015 Oct 20.
310. Dehmer GJ, Jennings J, Madden RA, Malenka DJ, Masoudi FA, McKay CR, Ness DL, Rao SV, Resnic FS, Ring ME, Rumsfeld JS, Shelton ME, Simanowith MC, Slattery LE, Weintraub WS, Lovett A, **Normand S-LT**. The National Cardiovascular Data Registry voluntary public reporting program: An interim report from the NCDR Public Reporting Advisory Group. *Journal of the American College of Cardiology* 2016; 67(2):205-15.
311. Horvitz-Lennon M, Braun D, **Normand S-LT**. Challenges in the use of administrative data for heart failure services research. *Journal of Cardiac Failure* 2016; 22(1):61-3.
312. Nuti SV, Qin L, Rumsfeld JS, Ross JS, Masoudi FA, **Normand S-LT**, Murugiah K, Bernheim SM, Suter LG, Krumholz HM. Association of admission to Veterans Affairs hospitals vs non-Veterans Affairs hospitals with mortality and readmission rates among older men hospitalized with acute myocardial infarction, heart failure, or pneumonia. *JAMA* 2016; 315(6):582-92.
313. Yeh RW, Secemsky EA, Kereiakes DJ, **Normand S-LT**, Gershlick AH, Cohen DJ, Spertus JA, Steg PG, Cutlip DE, Rinaldi MJ, Camnzind E, Wijns W, Apruzzese PK, Song Y, Massaro JM, Mauri L, on behalf of the DAPT study investigators. Development and validation of a prediction rule for benefit and harm of dual antiplatelet therapy beyond one year after percutaneous coronary intervention. *JAMA.* 2016 Apr 26;315(16):1735-49. doi: 10.1001/jama.2016.3775.
314. Shahian DM, **Normand S-LT**, Friedberg MW, Hutter MM, Pronovost PJ. Rating the raters: The inconsistent quality of health care performance measurement. *Annals of Surgery* 2016;264(1):36-8.

315. Xu X, Li S-X, Lin H, **Normand S-LT**, Lagu T, Desai N, Duan M, Kroch EA, Krumholz HM. Hospital phenotypes in the management of patients admitted for acute myocardial infarction. *Medical Care* 2016;54(10):929-36.
316. **Normand S-LT**, Ash AS, Fienberg SE, Stukel TA, Utts J, Louis TA. League tables for hospital comparisons. *Annual Review of Statistics and Its Applications* 2016;3(1):21-50.
317. Krumholz H, Bucholz EM, Butala N, **Normand S-LT**, Yun. Association of guideline-based admission treatments and life expectancy after myocardial infarction in elderly Medicare beneficiaries. *J Am Coll Cardiol*. 2016; 67(20):2378-2391.
318. Hill EV, Wake M, Carapinha R, **Normand S-LT**, Wolf RE, Norris K, Reede JY. Rationale and design of the Women and Inclusion in Academic Medicine Study. *Ethn Dis*. 2016; 26(2):245-54. PMC4836906
319. Gomes M, Hatfield L, **Normand S-LT**. Handling incomplete correlated continuous and binary outcomes in meta-analysis of individual participant data. *Stat Med*. 2016 Apr 18; 35(21):3676-89.
320. Donohue JM, **Normand S-LT**, Horvitz-Lennon M, Men A, Berndt ER, Huskamp HA. Regional variation in physician adoption of antipsychotics: Impact on US Medicare expenditures. *J Ment Health Policy Econ* 2016; 19:69-78.
321. Kramer DB, Reynolds MR, **Normand S-LT**, Parzynski CS, Spertus JA, Mor V, Mitchell SL. Hospice use following implantable cardioverter-defibrillator implantation in older patients: Results from the National Cardiovascular Data Registry. *Circulation* 2016; 133(21):2030-7.
322. Dharmarajan K, Qin L, Lin Z, Horwitz LI, Ross JS, Drye EE, Keshawarz A, **Normand S-LT**, Krumholz HM, Bernheim SM. Declining admission rates And thirty-day readmission rates positively associated even though patients grew sicker over time. *Health Aff* 2016; 35(7):1294-130.
323. Wang Y , Eldridge N, Metersky ML, Sonnenfeld N, Fine JM, Pandolfi MM, Eckenrode S, Bakullari A, Galusha DH, Jaser L, Verzier NR, Nuti SV, Hunt D, **Normand S-LT**, Krumholz HM. Association between Hospital Performance on Patient Safety and 30-day Mortality and Unplanned Readmission for Medicare Fee-for-Service Patients with Acute Myocardial Infarction. *J Am Heart Assoc*. 2016 Jul 12;5(7).
324. Xu X, Li SX, Lin H, **Normand S-LT**, Lagu T, Desai N, Duan M, Kroch EA, Krumholz HM. Hospital phenotypes in the management of patients admitted for acute myocardial infarction. *Med Care*. 2016 Oct;54(10):929-36.
325. Bernheim SM, Parzynski CS, Horwitz L, Lin Z, Araas MJ, Ross JS, Drye EE, Suter LG, **Normand S-LT**, Krumholz HM. Accounting For Patients' Socioeconomic Status Does Not Change Hospital Readmission Rates. *Health Aff* 2016; 35(8):1461-70.
326. Wimmer NJ, Robbins S, Ssemaganda H, Yang E, **Normand S-LT**, Matheny ME, Herz N, Rising JP, Resnic FS. Assessing the Cost Burden of United States FDA-mandated Post-Approval Studies for Medical Devices. *J Health Care Finance*. 2016 Summer;2016(Spec Features).
327. Yeh RW, Secemsky EA, Kereiakes DJ, **Normand S-LT**, Gershlick AH, Cohen DJ, Spertus JA, Steg PG, Cutlip DE, Rinaldi MJ, Camenzind E, Wijns W, Apruzzese PK, Song Y, Massaro JM, Mauri L; DAPT Study Investigators. Development and Validation of a Prediction Rule for Benefit and Harm of Dual Antiplatelet Therapy Beyond 1 Year After Percutaneous Coronary Intervention. *JAMA*. 2016 Apr 26;315(16):1735-49.

328. Hatfield LA, Kramer DB, Voyla R, Reynolds MR, **Normand S-LT**. Geographic and Temporal Variation in Cardiac Implanted Electric Devices to Treat Heart Failure. *J Am Heart Assoc*. 2016 Jul 28;5(8).
329. Bucholz EM, Butala NM, Ma S, **Normand S-LT**, Krumholz HM. Life Expectancy after Myocardial Infarction, According to Hospital Performance. *N Engl J Med*. 2016 Oct 6; 375(14):1332-1342.
330. Spertus JV, **Normand S-LT**, Wolf RE, Cioffi M, Lovett A, Rose S. Assessing Hospital Performance Following Percutaneous Coronary Intervention Using Big Data. *Circ Cardiovasc Qual Outcomes*. 2016 Nov 8 ; 9(6):659-669.
331. Hatfield LA, Baugh CM, Azzone V, **Normand S-L T**. Regulator Loss Functions and Hierarchical Modeling for Safety Decision Making. *Med Decis Making*. 2017 Jul;37(5):512-522.
332. Chughtai B, Barber MD, Mao J, Forde JC, **Normand S-L T**, Sedrakyan A. Association Between the Amount of Vaginal Mesh Used With Mesh Erosions and Repeated Surgery After Repairing Pelvic Organ Prolapse and Stress Urinary Incontinence. *JAMA Surg*. 2017 Mar 1;152(3):257-263.
333. Resnic FS, Majithia A, Marinac-Dabic D, Robbins S, Ssemaganda H, Hewitt K, Ponirakis A, Loyo-Berrios N, Moussa I, Drozda J, **Normand S-L T**, Matheny ME. Registry-Based Prospective, Active Surveillance of Medical-Device Safety. *N Engl J Med*. 2017 Feb 9;376(6):526-535.
334. Kunz LM, Rose S, Spiegelman D, **Normand S-L T**. Methods in Comparative Effectiveness Research. Gatsonis C, Morton SC, editors. Boca Raton, FL: Chapman & Hall/CRC Biostatistics Series; 2017. Chapter 1, pp.3-38.
335. Dharmarajan K, Lin Z, **Normand S-L T**. Hospitals' Role In Readmissions. *Health Aff (Millwood)*. 2017 Feb 1;36(2):382.
336. Tang Y, Horvitz-Lennon M, Gellad WF, Lave JR, Chang CH, **Normand S-L T**, Donohue JM. Prescribing of Clozapine and Antipsychotic Polypharmacy for Schizophrenia in a Large Medicaid Program. *Psychiatr Serv*. 2017 Jun 1;68(6):579-586.
337. Kramer DB, Reynolds MR, **Normand S-L T**, Parzynski CS, Spertus JA, Mor V, Mitchell SL. Nursing Home Use After Implantable Cardioverter-Defibrillator Implantation in Older Adults: Results from the National Cardiovascular Data Registry. *J Am Geriatr Soc*. 2017 Feb;65(2):340-347.
338. Alameddine AK, Visintainer P, **Normand S-L T**, Wolf RE, Alameddine YA. Cancer Rates in Adults After Cardiac Interventions: A Preliminary Observational Report. *Am J Clin Oncol*. 2017 Apr;40(2):122-124.
339. Newhouse JP, **Normand S-L T**. Health Policy Trials. *N Engl J Med*. 2017 Jun 1;376(22):2160-2167. doi: 10.1056/NEJMra1602774.
340. Zheng Z, Zhang H, Yuan X, Rao C, Zhao Y, Wang Y, **Normand S-L T**, Krumholz HM, Hu S. Comparing Outcomes of Coronary Artery Bypass Grafting Among Large Teaching and Urban Hospitals in China and the United States. *Circ Cardiovasc Qual Outcomes*. 2017 Jun;10(6).
341. Mulcahy AW, **Normand S-L T**, Newcomer J, Colaiaco B, Donohue JM, Lave JR, Keeler E, Sorbero M, Horvitz-Lennon M. Simulated Effects of Policies to Reduce Diabetes Risk among Adults with Schizophrenia Receiving Antipsychotics. *Psychiatr Serv*. 2017 Dec 1;68(12):1280-1287. doi: 10.1176/appi.ps.201500485. Epub 2017 Sep 1.

342. Dharmarajan K, Wang Y, Lin Z, **Normand S-L T**, Ross JR, Horwitz LI, Desai NR, Suter LG, Drye EE, Bernheim SM, Krumholz HM. Association of changing hospital readmission rates with mortality rates after hospital discharge. *JAMA*. 2017;318(3):270-278.
343. Ross JS, Bates J, Parzynski CS, Akar J, Curtis JP, Desai NR, Freeman JV, Gamble GM, Kuntz R, Li SX, Marinac-Dabic D, Masoudi FA, **Normand S-L T**, Ranasinghe I, Shaw RE, Krumholz H. Can machine learning complement traditional medical device surveillance? A case-study of dual-chamber implantable cardioverter-defibrillators. *Med Devices (Auckl)*. 2017 Aug 16;10:165-188. PubMed Central PMCID: PMC5566316.
344. Shahian DM, Liu X, Rossi LP, Mort EA, **Normand S-LT**. Safety culture and mortality after acute myocardial infarction: a study of Medicare beneficiaries at 171 hospitals. *Health Serv Res*. 2018 Apr;53(2):608-631. doi: 10.1111/1475-6773.12725. Epub 2017 Oct 9.
345. Chien A, Newhouse J; Iezzoni L, Petty C, **Normand S-L T**, Schuster M. Socioeconomic Background and Commercial Health Plan Spending. *Pediatrics*. 2017 Nov;140(5). pii: e20171640. doi: 10.1542/peds.2017-1640. Epub 2017 Oct 3.
346. Lobo MF, Azzone V, Azevedo LF, Melica B, Freitas A, Bacelar-Nicolau L, Rocha-Gonçalves FN, Nisa C, Teixeira-Pinto A, Pereira-Miguel J, Resnic FS, Costa-Pereira A, **Normand S-L T**. A comparison of in-hospital acute myocardial infarction management between Portugal and the United States: 2000–2010. *Int J Qual Health Care*. 2017 Oct 1;29(5):669-678. doi: 10.1093/intqhc/mzx092.
347. Lobo MF, Azzone V, Resnic FS, Melica B, Teixeira-Pinto A, Azevedo LF, Freitas A, Nisa C, Bacelar-Nicolau L, Rocha-Gonçalves FN, Pereira-Miguel J, Costa-Pereira A, **Normand S-L T**. The Atlantic divide in coronary heart disease: Epidemiology and patient care in the US and Portugal. *Rev Port Cardiol*. 2017 Sep;36(9):583-593. doi: 10.1016/j.repc.2016.09.021. Epub 2017 Sep 6. English, Portuguese.
348. Bacelar-Nicolau L, Rodrigues T, Fernandes E, Lobo M, Fernandes Nisa C, Azzone V, Teixeira-Pinto A, Costa-Pereira A, **Normand S-LT**, Pereira-Miguel J. Picturing inequities for health impact assessment: linked electronic records, mortality and regional disparities in Portugal. *Impact Assessment and Project Appraisal*. 2018/01/02 2018;36(1):90-104.
349. Välimäki M, Yang M, **Normand S-LT**, Lorig KR, Anttila M, Lantta T, Pekurinen V, Adams CE. Study protocol for a cluster randomised controlled trial to assess the effectiveness of user-driven intervention to prevent aggressive events in psychiatric services. *BMC Psychiatry*. 2017 Apr 4;17(1):123.
350. Krumholz HM, Wang K, Lin Z, Dharmarajan K, Horwitz LI, Ross JS, Drye EE, Bernheim SM, **Normand S-LT**. Hospital-Readmission Risk - Isolating Hospital Effects from Patient Effects. *N Engl J Med*. 2017 Sep 14;377(11):1055-1064. doi: 10.1056/NEJMsa1702321.
351. Nuti, SV, Wang Y, Masoudi FA, Nunez-Smith, M, **Normand, S-LT**, Murugiah, K, Rodríguez-Vilá O, Ross JS, Krumholz HM. Quality of Care in the United States Territories, 1999–2012. *Medical Care*. 2017 Oct; 55(10):886-892. doi: 10.1097/MLR.0000000000000797
352. Peterson PN, Greenlee RT, Go AS, Magid DJ, Cassidy-Bushrow A, Garcia-Montilla R, Glenn KA, Gurwitz JH, Hammill SC, Hayes J, Kadish A, Reynolds K, Sharma P, Smith DH, Varosy PD, Vidaillet H, Zeng CX, **Normand S-LT**, Masoudi FA. Comparison of Inappropriate Shocks and Other Health Outcomes Between Single- and Dual-Chamber Implantable Cardioverter-Defibrillators for Primary Prevention of Sudden Cardiac Death: Results From the Cardiovascular Research Network Longitudinal Study of Implantable Cardioverter-Defibrillators. *J Am Heart Assoc*. 2017 Nov 9;6(11). PMC5721776.

353. Keating NL, Huskamp HA, Schrag D, McWilliams JM, McNeil BJ, Landon BE, Chernew ME, **Normand S-LT**. Diffusion of Bevacizumab Across Oncology Practices: An Observational Study. *Med Care*. 2018 Jan;56(1):69-77. doi: 10.1097/MLR.0000000000000840. PMID: PMC5726588
354. Krumholz HM, **Normand S-LT**, Wang Y. Geographical Health Priority Areas For Older Americans. *Health Aff (Millwood)*. 2018 Jan;37(1):104-110. doi: 10.1377/hlthaff.2017.0744.
355. Spertus JV, Horvitz-Lennon M, Abing H, **Normand S-L T**. Risk of weight gain for specific antipsychotic drugs: a meta-analysis. *NPJ Schizophr*. 2018 Jun 27;4(1):12. doi: 10.1038/s41537-018-0053-9. PMID: PMC6021430
356. Rochon PA, Gruneir AG, Gill SS, Wu W, Zhu L, Herrmann N, Bell CM, Austin PC, Stall NM, McCarthy L, Giannakeas V, Alberga A, Seitz DP, **Normand S-L T**, Gurwitz JH, Bronskill SE. Initial Cholinesterase Inhibitor Therapy Dose and Serious Events in Older Women and Men. *J Am Geriatr Soc*. 2018 Sep;66(9):1692-1699.
357. Spertus JV, **Normand S-L T**. Bayesian propensity scores for high-dimensional causal inference: A comparison of drug-eluting to bare-metal coronary stents. *Biom J*. 2018 Apr 23. doi: 10.1002/bimj.201700305. [Epub ahead of print]
358. Krumholz HM, Dharmarajan K, **Normand S-LT**. Evaluating Readmission-Need for More Clarity on Methods. *JAMA Cardiol*. 2018 Mar 1;3(3):265. doi: 10.1001/jamacardio.2017.5321.
359. Wilcox MA, Savitz AJ, Addington AM, Gray GS, Guinan EC, Jackson JW, Lehner T, **Normand S-L T**, Ranu H, Senthil G, Spertus J, Valeri L, Ross JS. The Open Translational Science in Schizophrenia (OPTICS) project: an open-science project bringing together Janssen clinical trial and NIMH data. *NPJ Schizophr*. 2018 Jun 27;4(1):14. doi: 10.1038/s41537-018-0055-7. Review.
360. Rose S, **Normand S-L T**. Double Robust Estimation for Multiple Unordered Treatments and Clustered Observations: Evaluating Drug-Eluting Coronary Artery Stents. *Biometrics*. 2019 Mar;75(1):289-296. doi: 10.1111/biom.12927. Epub 2018 Jul 13.
361. Zhou X, Liao X, Kunz LM, **Normand S-LT**, Wang M, Spiegelman D. A maximum likelihood approach to power calculations for stepped wedge designs of binary outcomes. *Biostatistics*. 2018 Aug 1. doi.org/10.1093/biostatistics/kxy031 [Epub ahead of print]
362. Jiang LX, Krumholz HM, Meng QY, Cheng KK, Yip W, Maeseneer J, Mossialos EA, Chunharas S, Dzau VJ, Gao X, Guerra R, Ji HJ, Ke Y, Li C, Li LM, Mensah GA, **Normand S-L T**, Pan ZG, Peto R, Wu XP, Xiao SY, Xie XY, Xu DR, Zhang YJ, Zhu J, Zhu SZ, Zhang QL, Li X, JP Lu, Su M, Hu SS. The Lancet Commission on Primary Health Care in China. *The Lancet*, 2018 [in press].
363. Downing NS, Wang C, Gupta A, Wang YF, Nuti SV, Ross JS, Bernheim SM, Lin ZQ, **Normand S-L T**, Krumholz HM. Association of Racial and Socioeconomic Disparities With Outcomes Among Patients Hospitalized With Acute Myocardial Infarction, Heart Failure, and Pneumonia An Analysis of Within- and Between-Hospital Variation. *JAMA Network Open*. 2018;1(5):e182044. doi:10.1001/jamanetworkopen.2018.2044
364. Wang Y, Li J, Zheng X, Jiang ZH, Hu S, Wadhwa RK, Bai XK, Lu JP, Wang QY, Li YT, Wu CQ, Xing C, Normand S-LT, Krumholz HM, Jiang LX. Risk Factors Associated With Major Cardiovascular Events 1 Year After Acute Myocardial Infarction. *JAMA Network Open*. 2018;1(4):e181079. doi:10.1001/jamanetworkopen.2018.1079
365. Rochon PA, Gruneir A, Bell CM, Savage R, Gill SS, Wu W, Giannakeas V, Stall NM, Seitz DP, **Normand S-L T**, Zhu L, Herrmann N, McCarthy L, Faulkner C, Gurwitz JH, Austin PC, Bronskill SE. Comparison of prescribing practices for older adults treated by female versus male physicians:

A retrospective cohort study. *PLoS ONE*. 2018;13(10): e0205524.  
<https://doi.org/10.1371/journal.pone.0205524>

366. Haneuse S, Dominici F, **Normand S-L T**, Schrag D. Assessment of Between-Hospital Variation in Readmission and Mortality After Cancer Surgical Procedures. *JAMA Netw Open*. 2018 Oct 5;1(6):e183038. doi: 10.1001/jamanetworkopen.2018.3038.
367. Anoke SC, **Normand S-L T**, Zigler CM. Approaches to treatment effect heterogeneity in the presence of confounding. *Stat Med*. 2019 Jul 10;38(15):2797-2815. doi: 10.1002/sim.8143. Epub 2019 Mar 31.
368. Majithia A, Matheny ME, Paulus JK, Marinac-Dabic D, Robbins S, Ssemaganda H, Hewitt K, Ponirakis A, Loyo-Berrios N, Moussa I, Drozda J, **Normand S-LT**, Resnic FS. Comparative Safety of Aspiration Thrombectomy Catheters Utilizing Prospective, Active Surveillance of the NCDR CathPCI Registry. *Circ Cardiovasc Qual Outcomes*. 2019 Feb;12(2):e004666.
369. Gillis JC, Chang SC, Wang W, Simon NM, **Normand S-L T**, Rosner BA, Blacker D, DeVivo I, Okereke OI.. The relation of telomere length at mid-life to subsequent 20-year depression trajectories among women. *Depress Anxiety*. 2019 Jun;36(6):565-575. doi: 10.1002/da.22892. Epub 2019 Apr 8.
370. Krumholtz HM, **Normand S-L T**, Wang Y. Twenty-Year Trends in Outcomes for Older Adults With Acute Myocardial Infarction in the United States. *JAMA Netw Open*. 2019;2(3):e191938. doi:10.1001/jamanetworkopen.2019.1938
371. Shahian DM, Torchiana DF, Engelman DT, Sundt TM, D'Agostino RS, Lovett AF, Cioffi MJ, Rawn JD, Birjiniuk V, Habib RH, **Normand S-L T**. Mandatory public reporting of cardiac surgery outcomes: The 2003 to 2014 Massachusetts experience. *J Thorac Cardiovasc Surg*. 2018 Dec 31. pii: S0022-5223(18)33516-5. doi: 10.1016/j.jtcvs.2018.12.072. [Epub ahead of print]
372. Shang P, Liu GG, Zheng X, Ho M, Hu S, Li J, Jiang ZH, Li X, Bai XK, Gao Y, Xing C, Wang Y, **Normand S-L T**, Krumholz HM. Association Between Medication Adherence and 1-year Major Cardiovascular Adverse Events After Acute Myocardial Infarction in China. *J Am Heart Assoc*. 2019 May 7;8(9):e011793. doi: 10.1161/JAHA.118.011793.

### **Reviews and Editorials [Peer-Reviewed]**

1. **Normand SL**. Discussion of "Linear dependencies represented by chain graphs" by D.R. Cox and R.G. Cowell and "Bayesian Analysis in Expert Systems" by D.J. Spiegelhalter, A.P. Dawid, S.L. Lauritzen, and R.G. Cowell. *Statistical Science* 1993,8(3):263-265.
2. **Normand SL**. Meta-Analysis software: A comparative review. *American Statistician* 1995; 49(3):298-309.
3. **Normand SL**. Discussion of "Computation on Bayesian Graphical Models". In: Bernardo JM, Berger JO, Dawid AP, Smith AFM, editors. *Bayesian Statistics 5*. Oxford: Clarendon Press, 1996:420-1.
4. **Normand SL**. Discussion of "League tables and their limitations: Statistical issues in comparisons of institutional performance" by H. Goldstein and D.J. Spiegelhalter. *Journal of the Royal Statistical Society* 1996(Series A – Statistics in Society);159:385-444.
5. **Normand SL**. Discussion of "Utilization of diagnostic tests: Assessing appropriateness" *Academic Radiology* 1999;6(suppl. 1):S47-S51.

6. Krumholz HM, Brass LM, Every NR, Spertus JA, Bazzarre T, Cohen DJ, Hlatky MA, Petersen ED, Radford MJ, Weintraub WS, Cannon CP, Ellerbeck EF, McNeil BJ, Ryan TJ, Smith SC, Baker DW, Ashton CM, Dunbar SB, Friesinger GC, Harvranek EP, Komstam M, Ordin DL, Pina IL, Pitt B, DeLong ER, Eagle KA, **Normand SL**, Mark DB, McAllister BD, Thomas JW, Duncan PW, Goldstein LB, Gorlick PB, Hinchey JA, Matchar DB, Nilasena D, Wennberg D, Williams LS, Wolf PA. Measuring and Improving Quality of Care: A Report from the American Heart Association/American College of Cardiology First Scientific Forum on Assessment of Healthcare Quality in Cardiovascular Disease and Stroke. *Circulation* 2000;101(12):1483-1493 and *Stroke* 2000;31(4):1002-1012.
7. **Normand S-LT**. Meta-analysis: Formulating, evaluating, combining, and reporting. In: *Tutorials in Biostatistics, Vol 2 - Statistical Modeling of Complex Medical Data*, RB D'Agostino (ed), Wiley, Chichester, 2004, 2004,249-288.
8. **Normand S-LT**. Quality of Care. In: *Encyclopedia of Biostatistics, Vol 6*, P Armitage and T Colton (eds), 2<sup>nd</sup> Edition, John Wiley & Sons Ltd., Chichester, UK. 2005:4348-4352.
9. Kuntz RE, **Normand S-LT**. Measuring percutaneous coronary intervention quality by simple case volume. *Circulation*, 2005;112:1088-1091.
10. Krumholz HM, Anderson JL, Brooks NH, Fesmire FM, Lambrew CT, Landrum MB, Weaver WD, Whyte J, Bonow RO, Bennett SJ, Burke G, Eagle KA, Linderbaum J, Masoudi FA, **Normand S-LT**, Pina IL, Radford MJ, Rumsfeld JS, Ritchie JL, Spertus JA. ACC/AHA Clinical performance measures for adults with ST-elevation and non-ST-elevation myocardial infarction. *Circulation*, 2006;113:732-761.
11. **Normand S-LT**. Evaluating the optimal timing of angiography: Landmark or off the mark? *Circulation* 2007;116:2656-2657.
12. Mauri L, **Normand S-LT**. Studies of drug-eluting stents: to each his own. *Circulation* 2008;117:2047-2050.
13. Shahian DM, **Normand S-LT**. Low volume coronary artery bypass surgery – measuring and optimizing performance. *The Journal of Thoracic and Cardiovascular Surgery* 2008;135:1202-1209.
14. Chen J, **Normand S-LT**. Myocardial infarction and quality of care. *Canadian Medical Association Journal* 2008;179(9):875-876. PMC2565734
15. Teixeira-Pinto A, **Normand S-LT**. Comments on “The BUGS project: Evolution, critique, and future directions.” *Statistics in Medicine* 2009;28(25):3075-3078. **PMC in Process**
16. **Normand S-LT**. Missing data and convenient assumptions. *Circulation: Cardiovascular Quality and Outcomes* 2010; 3:2-3.
17. Wears RL, **Normand S-LT**. When less is more: using shrinkage to increase accuracy. *Annals of Emergency Medicine* 2010; 55:553-555.
18. **Normand S-LT**, McNeil BJ. What is evidence? *Statistics in Medicine* 2010; 29:1985-1988. PMC2917254
19. **Normand S-LT**. Large data streams and the power of numbers, in *Redesigning the Clinical Effectiveness Paradigm: Innovation and Practice-based Approaches*, eds LA Olsen and M McGinnis. The National Academies Press, Washington, DC. 2010; 269-275

20. **Normand S-LT**. Multiple outcomes and multiple sources of evidence: best statistical practices. *Circulation: Cardiovascular Quality and Outcomes* 2011; 4(6):579-580.
21. Berger ML, Dreyer N, Anderson F, Towse A, Sedrakyan A, **Normand S-LT**. Prospective observational studies to assess comparative effectiveness: ISPOR Good Research Practices Task Force report. *Value in Health* 2012; 15:217-230.
22. Shahian DM and **Normand S-LT**. Autonomy, beneficence, justice, and the limits of provider profiling. *Journal of the American College of Cardiology* 2012; 59(12):2383-2386.
23. Resnic F, **Normand S-LT**. Postmarketing surveillance of Medical Devices – Filling in the Gaps. *New England Journal of Medicine* 2012; 366(10):875-877.
24. Gabriel SE, **Normand S-LT**. Getting the methods right – the foundation of patient-centered outcomes research. *New England Journal of Medicine* 2012;367(9):787-790.
25. Kunz L, Yeh R, **Normand S-LT**. Comparative effectiveness research: does one size fit all? *Statistics in Medicine* 2012; 31: 3062–3065.
26. **Normand SLT**, Hatfield L, Drozda J, Resnic FS. Postmarket surveillance for medical devices: America's new strategy. *British Medical Journal* 2012; 345:e6848.
27. Krumholz HM, Lin Z, **Normand S-LT**. Measuring hospital clinical outcomes: methods matter. *British Medical Journal* 2013; 346:f620.
28. Kramer DB, Hatfield LA, **Normand S-LT**. Comparative effectiveness of cardiac implantable electrical devices. *Heart* 2015; 101(22):1773-5.
29. Haneuse S, Zubizarreta J, **Normand S-L T**. Discussion on “Time-Dynamic Profiling with Application to Hospital Readmission among Patients on Dialysis,” by Jason P. Estes, Danh V. Nguyen, Yanjun Chen, Lorien S. Dalrymple, Connie M. Rhee, Kamyar Kalantar-Zadeh, and Damla Senturk. *Biometrics*. 2018 Dec;74(4):1395-1397. doi: 10.1111/biom.12909.

#### **Proceedings of Meetings & Briefs [Non-Peer Reviewed]**

1. **Normand SL**, Trichler D. Kalman filtering in a Bayesian network. In: *Proceedings of the Statistical Computing Section*. American Statistical Association, 1989:259-64.
2. **Normand SL**, Trichler D. Computation in multi-process dynamic linear models: A network approach. In: *Proceedings of the Statistical Computing Section*. American Statistical Association, 1991:129-32.
3. **Normand SL**, Trichler D. A network representation of the multiprocess dynamic linear model. In: *Computing Science and Statistics, 23<sup>rd</sup> Symposium on the Interface*. 1991:168-71.
4. O'Malley J, **Normand SL**, Kuntz RE. Power calculation for historically-controlled clinical trials. In: *2000 Proceedings of the Section on Bayesian Statistical Science*, American Statistical Association, 2000:72-77.
5. **Normand, SL**. Methodological issues in health services and outcomes research: 2001 international conference on health policy research. *AMSTAT News*, 2001;290:18-21.
6. **Normand SL**. Propensity scores for causal inference. *ISPOR News*. 2001;7(4):1213.



7. O'Malley J, **Normand S-L T**. Likelihood methods for accounting for all-or-nothing treatment non-compliance and subsequent non-response in randomized clinical trials. In: 2003 Proceedings of the Biometrics Section, American Statistical Association, 3087-3106.

## **Dissertation**

1. **Normand SL**. Some statistical applications of Bayesian networks [PhD Dissertation]. University of Toronto, Department of Preventive Medicine and Biostatistics, 1990.

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. In terms of methodological research, Dr. Normand is currently leading an NIGMS-funded 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. Dr. Normand also currently serves as the Director of the FDA's Medical Device Epidemiology Network's (MDEpiNet) Methodology Center where statistical methodology for assessing medical device safety and effectiveness is developed and applied. The 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. Methodology for monitoring the safety of medical devices using clustered observational data are a focus.

Dr. Normand served as the 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, for 15 years (2002-2017). 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. She is Co-PI of two NIH-funded grants to examine the value of Medicaid care and another to examine disparities in care for those with serious mental illness.

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 also supervised statistics postdoctoral fellows, economics fellow, graduate students in the areas of biostatistics, health policy, and psychiatric epidemiology.