

## CURRICULUM VITAE

**Rebecca A. Hubbard, PhD**

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Web page: <https://rhubb.github.io>

### EDUCATION

1999	BS, Ecology & Evolution, Summa Cum Laude, University of Pittsburgh, Pittsburgh, PA
2001	MSc, Epidemiology, University of Edinburgh, Edinburgh, UK
2002	MSc, Applied Statistics, with Honors, Oxford University, Oxford, UK
2007	PhD, Biostatistics, University of Washington, Seattle, WA

### ACADEMIC APPOINTMENTS

2009 – 2014	Affiliate Assistant Professor, Department of Biostatistics, University of Washington
2014 – 2017	Affiliate Associate Professor, Department of Biostatistics, University of Washington
2014 – 2020	Associate Professor, Department of Biostatistics, Epidemiology & Informatics, Perelman School of Medicine, University of Pennsylvania
2014 – Present	Senior Scholar, Center for Clinical Epidemiology & Biostatistics, Perelman School of Medicine, University of Pennsylvania
2018 – Present	Senior Fellow, Institute for Biomedical Informatics, Perelman School of Medicine, University of Pennsylvania
2020 – Present	Professor, Department of Biostatistics, Epidemiology & Informatics, Perelman School of Medicine, University of Pennsylvania
2020 – 2022	Deputy Director, Division of Biostatistics, Department of Biostatistics, Epidemiology & Informatics, Perelman School of Medicine, University of Pennsylvania
2020 – Present	Member, Abramson Cancer Center, Perelman School of Medicine, University of Pennsylvania
2022 – Present	Vice Chair for Faculty Professional Development, Department of Biostatistics, Epidemiology & Informatics, Perelman School of Medicine, University of Pennsylvania

## EMPLOYMENT

2002 – 2007	Graduate Research Assistant, Department of Biostatistics, University of Washington
2007 – 2008	Senior Fellow, National Alzheimer's Coordinating Center, University of Washington
2008 – 2013	Assistant Investigator, Group Health Research Institute
2013 – 2014	Associate Investigator, Group Health Research Institute

## AWARDS AND HONORS

1999	Phi Beta Kappa
2000 – 2002	Marshall Scholar
2004	Donovan J. Thompson Award, University of Washington Department of Biostatistics
2006 – 2007	Magnuson Scholar, University of Washington School of Public Health
2007	Outstanding Student Award, University of Washington Department of Biostatistics
2007	Best Oral Presentation, Western North American Region (WNAR) of the International Biometric Society Student Paper Competition, Irvine, CA
2007	Best Paper, Western North American Region (WNAR) of the International Biometric Society Student Paper Competition, Irvine, CA
2008	David P. Byar Young Investigator Award, Biometrics Section of the American Statistical Association, Joint Statistical Meetings, Denver, CO
2011	NCI Epidemiology and Genomics Research Program Top Publication for Hubbard RA, et al. 2011. The cumulative risk of a false-positive recall or biopsy recommendation after 10 years of screening mammography: a cohort study. <i>Annals of Internal Medicine</i> . 155: 481-492.
2019	Penn Fellow, University of Pennsylvania
2019	Fellow, American Statistical Association
2019	Excellence in Teaching Award, Master of Science in Health Policy Research Program, University of Pennsylvania
2019	Samuel L. Martin Health Evaluation Sciences Award, University of Pennsylvania
2020	American Statistical Association Health Policy Statistics Section Mid-Career Award
2021	Jane M. Glick Graduate Student Teaching Award, Perelman School of Medicine, University of Pennsylvania
2023	Gertrude M. Cox Award, Washington Statistical Society
2024	Research Excellence Award, ASA Philadelphia Chapter

## PROFESSIONAL ORGANIZATIONS

2005 – Present	Member, American Statistical Association
2005 – Present	Member, International Biometric Society

## PROFESSIONAL ACTIVITIES

### International

Reviewer	Dutch Cancer Society, 2012, 2015 Netherlands Organisation for Scientific Research, 2015, 2019 Canadian Institute for Health Research SPOR Innovative Clinical Trials, 2017, 2019 French National Cancer Institute, 2018
Conferences	Scientific Organizing Committee, International Conference on Health Policy Statistics, 2018
Editorial	Editorial Advisory Committee, International Biometric Society, 2018 – Present

### National

Leadership	Chair-elect (2017), Chair (2018), Past Chair (2019), American Statistical Association Biometrics Section Council of Sections Representative to the Board of Directors, American Statistical Association, 2020 – 2022 Chair, Elizabeth L. Scott Award Selection Committee, Committee of Presidents of Statistical Societies, 2021 – 2022 Chair, Committee of Presidents of Statistical Societies, 2025 – 2027
Reviewer	NIH Resource Centers for Minority Aging Research Special Emphasis Panel, 2012 Cancer Research Network Research Scholars Program, 2014 PCORI Assessment of Prevention, Treatment, and Diagnosis Options panel, 2014 NIH Health Services Organization and Delivery Study Section <i>Ad Hoc Reviewer</i> , 2014, 2016, 2018 NIH Healthcare Delivery and Methodologies Member Conflicts Special Emphasis Panel, 2015 – 2017 NIH Health Services Research on Minority Health and Health Disparities Special Emphasis Panel, 2016 PCORI Improving Methods for Conducting PCOR Review Panel, 2018 NCI Clinical and Translational Exploratory/Developmental Studies Special Emphasis Panel, 2018 NCI Biostatistics Branch Site Visit Team, 2018 NIH Biomedical Computing and Health Informatics Member Conflicts Special Emphasis Panel, 2019 NIH Community Influences on Health Behavior Study Section <i>Ad Hoc Reviewer</i> , 2020 NIH Interdisciplinary Clinical Care in Specialty Care Settings Study Section, Standing Panel Member, 2021 - Present
Conferences	Program committee, JSM (WNAR representative), 2010 – 2011 Program committee, JSM (Biometrics section representative), 2013 – 2015 Program committee, ENAR (ASA Health Policy Statistics Section Representative), 2018

Committees	Panelist, NIH Pathways to Prevention: Total Worker Health, 2015
	Byar Award Selection Committee, American Statistical Association Biometrics Section 2015 – 2019
	Committee on Care Interventions for Individuals with Dementia and Their Caregivers, National Academies of Science, Engineering, and Medicine, 2018
	Elizabeth L. Scott Award Selection Committee, Committee of Presidents of Statistical Societies, 2019 – 2021
	Committee on Scientific Freedom and Human Rights, American Statistical Association, 2019 – 2022
	Committee on Applied and Theoretical Statistics, National Academies of Science, Engineering, and Medicine, 2021 – Present
	Executive Committee for Oncology Quality Characteristics and Assessment of Real-world Data (QCARD) Initiative, Reagan-Udall Foundation for the FDA, 2021 – 2023
DSMB	Committee on Review of Evidence on Alcohol and Health, National Academies of Science, Engineering, and Medicine, 2023 – Present
	Systematic Multidomain Alzheimer's Risk Reduction Trial, 2018 – 2021
Editorial	Associate Editor, Pharmacoepidemiology & Drug Safety, 2017 – 2021
	Editorial Board, Journal of Clinical Oncology 2020 – 2022
	Associate Editor, Observational Studies, 2021 – 2022
	Statistical Editor, New England Journal of Medicine, 2021 – Present
	Associate Editor, Statistics in Medicine, 2021 – 2022
Ad hoc reviewer	Associate Editor, Journal of the American Statistical Association: Applications and Case Studies, 2022 – Present
	Editor-in-chief, Biostatistics, 2023 – Present
	Academic Radiology (2011 – 2014); Alzheimer's & Dementia (2016); American Journal of Epidemiology (2012 – Present); American Journal of Managed Care (2014 – Present); Annals of Applied Statistics (2016 – Present); Annals of Internal Medicine (2013 – Present); Biometrics (2019 - Present); BMC Health Services Research (2015 – Present); BMC Medical Research Methodology (2014 – Present); BMJ (2012 – Present); BMJopen (2016 – Present); Bayesian Analysis (2017 – Present); Cancer Epidemiology (2011 – Present); Cancer Epidemiology, Biomarkers & Prevention (2011 – Present); Clinical Trials (2015 – Present); Communications in Statistics - Simulation and Computation (2015 – Present); Computational Statistics & Data Analysis (2015 – Present); Health Services Outcomes and Research Methodology (2014 – Present); JAMA (2013 – Present); JAMA Oncology (2019 – Present); Journal of the American Statistical Association (2011 – Present); Journal of Applied Statistics (2013 – Present); Journal of Clinical Oncology (2013 – Present); Journal of Dental Research (2009 – Present); Journal of General Internal Medicine (2012 – Present); Journal of Medical Screening (2016 – Present); Journal of the National Cancer Institute (2013 – Present); Journal of the Royal Statistical Society, Series C (2018); Nature (2021 – Present); Nature Medicine (2019 – Present); New England Journal of Medicine (2013); Pharmacoepidemiology & Drug Safety (2014 – Present); PLOS One (2013 – Present); Preventive Medicine (2017 – Present); Statistics in Medicine (2009 – Present); Statistical Methods in Medical Research (2009)

## University of Pennsylvania

Leadership	Chair, Academic Advising & Review Committee, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, 2017-2020
	Executive Committee, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, 2018-2022
	Leadership Advisory Council, Department of Biostatistics, Epidemiology & Informatics, 2019-2020
	Chair, Faculty Recruitment Committee, Biostatistics Division, Department of Biostatistics, Epidemiology & Informatics, 2019-Present
	Executive Committee, Center for Pharmacoepidemiology Research & Training, Department of Biostatistics, Epidemiology & Informatics, 2021-Present
	Chair, Health Evaluation Sciences Awards Committee, Perelman School of Medicine, 2021-Present
Committees	Admissions Committee, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, 2015-2017
	Examinations Committee, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, 2016-2018
	Awards Committee, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, 2016-2018
	Faculty Recruitment Committee, Biostatistics Division, Department of Biostatistics, Epidemiology & Informatics, 2016-2019
	Biostatistics Division Director Recruitment Committee, Biostatistics Division, Department of Biostatistics & Epidemiology, 2017-2019
	Vice Provost for Education's Fellowship Selection Committee, 2018-2021
	Health Evaluation Sciences Awards Committee, Perelman School of Medicine, 2020
	Faculty Senate Committee on Academic Freedom and Responsibility, 2021-Present
	Epidemiology Division Director Recruitment Committee, Epidemiology Division, Department of Biostatistics & Epidemiology, 2021-2022
	Curriculum Committee, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, 2021-Present
	IT Council, Perelman School of Medicine, 2021-2022
	Institute for Biomedical Informatics, Director Search Committee, Perelman School of Medicine, 2021
	Department of Medical Ethics and Health Policy Chair Search Committee, Perelman School of Medicine, 2021-2022

## University of Washington

Leadership	Chair, Affiliate and Adjunct Faculty Committee, Department of Biostatistics, 2009-2012
	Chair, Applied Statistics Qualifying Exam Committee, Department of Biostatistics, 2013-2014
Committees	Applied Statistics Qualifying Exam Committee, Department of Biostatistics, 2012
	Distinguished Alumni Selection Committee, School of Public Health, 2012-2014

Admissions Committee, Department of Biostatistics, 2013

### **Group Health Research Institute**

Leadership Chair, Scientific Policy Committee, 2010-2012

Committees New faculty Orientation Committee, 2009

Data Governance Council, 2012-2014

Scientific Policy Committee, 2013-2014

### **DIVERSITY, EQUITY AND INCLUSION ACTIVITIES**

Chair and Head Judge, Section on Physical and Quantitative Sciences, Annual Biomedical Research Conference for Minority Students, 2010 – 2012.

Diversity Search Advisor, Biostatistics Division, Department of Biostatistics, Epidemiology & Informatics, 2016 – 2022.

Mentor, JSM Diversity Mentoring Program, American Statistical Association, 2018 – Present.

Member, Combatting Racial Inequities Committee, Biomedical Graduate Studies, Perelman School of Medicine, University of Pennsylvania, 2020-2021.

Presenter, Memorial Sloan Kettering Cancer Center, Bridge2Biostat, July 2021.

Chair, ASA Board of Director's Task Force on Increasing Diversity in Editorial Positions, 2021.

Presenter, Quantitative Approaches to Understand Diseases with Electronic Health Record Data, Society for Advancement of Chicanos/Hispanics and Native Americans in Science, October 2021.

Workgroup Leader, African Diaspora Joint Working Group (ADJOINT) Program, Mathematical Sciences Research Institute, 2022 – 2023.

### **TEACHING ACTIVITIES**

Courses BIOST 571: Statistical Methodology: Regression Models for Dependent Data, Department of Biostatistics, University of Washington, Graduate Teaching Assistant, Winter 2005.

BIOST 511: Medical Biometry I, Department of Biostatistics, University of Washington, Graduate Teaching Assistant, Summer 2006, Summer 2007.

Linear Regression and ANOVA, Summer Institute in Statistical Genetics. Department of Biostatistics, University of Washington, Course Director, Summer 2009 – Summer 2023.

BIOST 579: Data Analysis and Report Writing, Department of Biostatistics, University of Washington, Course Director, Spring 2011, Summer 2013.

HPR 608: Applied Regression Analysis for Health Policy Research, Division of General Internal Medicine, Perelman School of Medicine, University of Pennsylvania, Course Director, Spring 2016, Spring 2018, Spring 2019.

EPID 600: Data Science for Biomedical Informatics, Department of Biostatistics & Epidemiology, Perelman School of Medicine, University of Pennsylvania, Guest Lecturer, Fall 2016, Fall 2017, Fall 2018.

Introduction to Grant Writing, Graduate Group in Epidemiology & Biostatistics, Perelman School of Medicine, University of Pennsylvania, Course Director, Summer 2017, Summer 2018, Fall 2019.

Bayesian Methods for Clinical Research - Introduction, Summer Institute in Statistics for

Clinical Research. Department of Biostatistics, University of Washington, Course Director, July 2017.

Bayesian Methods for Clinical Research - Computation and Applications, Summer Institute in Statistics for Clinical Research. Department of Biostatistics, University of Washington, Course Director, July 2017.

Biostatistical Concepts in Pharmacoepidemiology: Linear and Logistic Regression, Food and Drug Administration, Instructor, December 2016, December 2018, December 2019, December 2020.

Practical Solutions for Working with Electronic Health Records Data, ENAR Short Course, March 2020.

Analysis of Big Healthcare Databases, ASA Council of Chapters Traveling Short Course, Instructor, ASA Nebraska Chapter April 2019, ASA Princeton/Trenton Chapter September 2019, ASA Connecticut Chapter October 2019, ASA Twin Cities Chapter October 2019, ASA San Francisco Chapter November 2019, University of California Davis November 2019, ASA Kentucky Chapter October 2020, ASA Cincinnati Chapter October 2020, ASA Philadelphia Chapter November 2020, ASA Houston Area Chapter December 2020.

BSTA 660: Design of Observational Studies, Department of Biostatistics, Epidemiology & Informatics, Perelman School of Medicine, University of Pennsylvania, Course Director, Spring 2018, Fall 2019, Fall 2020, Fall 2021, Fall 2022, Fall 2023.

Case Studies in Generating Real World Evidence from Real World Data, ENAR Short Course, March 2021.

MS Students

Victoria Ding, 2011 – 2012, Chair, Department of Biostatistics, University of Washington.

Jian Hu, 2017 – 2018, Chair, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Joanna Harton, 2017 – 2018, Chair, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

PhD Students

Amy Laird, 2010 – 2013, Member PhD committee, Department of Biostatistics, University of Washington.

Jane Lange, 2011 – 2014, Member PhD committee, Department of Biostatistics, University of Washington.

Greg Calip, 2013 – 2014, Member PhD committee, Department of Epidemiology, University of Washington.

Willa Brenowitz, 2013 – 2016, Member PhD committee, Department of Epidemiology, University of Washington.

Lu Chen, 2015, Member PhD committee, Department of Biostatistics & Epidemiology, University of Pennsylvania

Lu Wang, 2016 – 2019, Chair PhD committee, Department of Biostatistics & Epidemiology, University of Pennsylvania

Darcy Ellis, 2016 – 2021, Chair PhD committee, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Marzieh Golmakani, 2017 – 2019, Member PhD committee, Department of Public Health Sciences, UC Davis

Lingjiao Zhang, 2018 – 2020, Member PhD committee, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Sondra Lavigne, 2018 – 2020, Chair PhD committee, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Sherrie Xie, 2018 – 2021, Member PhD committee, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Joanna Harton, 2018 – 2022, PhD Co-Supervisor (with Nandita Mitra), Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Arielle Anglin, 2020 – 2021, Chair PhD committee, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Jiayi Tong, 2021 – Present, Chair PhD committee, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Jenny Shen, 2021 – Present, PhD Co-Supervisor (with Kristin Linn), Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Danielle Kellier, 2022 – Present, Member PhD committee, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Dane Isenberg, 2023 – Present, Member PhD committee, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Sarah Hegarty, 2023 – Present, Chair PhD committee, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

#### Post-doctoral

Yue Zhang, 2012 – 2013, Post-doctoral fellowship supervisor, Group Health Research Institute

Jane Lange, 2014, Post-doctoral fellowship supervisor, Group Health Research Institute

Noah Hoffman, 2015 – 2016, MSHP Biostatistics advisor, Department of Biostatistics & Epidemiology, University of Pennsylvania

Therese Bittermann, 2015 – 2017, MSCE Biostatistics advisor, Department of Biostatistics & Epidemiology, University of Pennsylvania

Gary Weissman, 2016 – 2017, MSHP Biostatistics advisor, Department of Biostatistics & Epidemiology, University of Pennsylvania

Juan Lado, 2016 – 2017, MSHP Biostatistics advisor, Department of Biostatistics & Epidemiology, University of Pennsylvania

Krisda Chaichati, 2016 – 2018, MSHP Biostatistics advisor, Department of Biostatistics & Epidemiology, University of Pennsylvania

Megan Noe, 2015 – 2018, MSCE Biostatistics advisor, Department of Biostatistics & Epidemiology, University of Pennsylvania

Sherif Elhanafi, 2016 – 2018, MSCE Biostatistics advisor, Department of Biostatistics & Epidemiology, University of Pennsylvania

Whitney Cabey, 2016 – 2018, MSHP Biostatistics advisor, Department of Biostatistics & Epidemiology, University of Pennsylvania

Joanna Rhodes, 2018 – 2019, MSCE Biostatistics advisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania

Nadim Mahmud, 2018 – 2019, MSCE Biostatistics advisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania



Natasha Vedage, 2018 – 2020, MSCE Biostatistics advisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania

Lova Sun, 2019 – 2021, MSCE Biostatistics advisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania

Shun Yu, 2019 – 2021, MSCE Biostatistics advisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania

Mohsin Shah, 2019 – 2021, MSCE Biostatistics advisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania

Daniel Vader, 2020 – 2022, Post-doctoral fellowship supervisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania

Hilary Whitworth, 2020 – 2023, MSCE Biostatistics advisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania

Nicole Ferrante, 2021 – 2023, MSCE Biostatistics advisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania

Jeffrey Shevach, 2021 – 2023, MSCE Biostatistics advisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania

Hanxi (Molly) Zhang, 2022 – 2023, Post-doctoral fellowship supervisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania

Chenxi (Chelsea) Yuan, 2022 – Present, Post-doctoral fellowship supervisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania

Ernesto Ulloa, 2022 – Present, Post-doctoral fellowship supervisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania

Jacob Reibel, 2023 – Present, MSCE Biostatistics advisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania

Pedro Ochoa-Allemant, 2023 – Present, MSCE Biostatistics advisor, Department of Biostatistics, Epidemiology & Informatics, University of Pennsylvania

Other advising Elisa Sheng, 2009 – 2013, Academic advisor, Department of Biostatistics, University of Washington.

Dana Canfield, 2010, Summer undergraduate internship supervisor, Group Health Research Institute.

Willa Brenowitz, 2011, Summer MPH practicum supervisor, Department of Health Services, University of Washington.

David Benkeser, 2014, Graduate research assistantship supervisor, Department of Biostatistics, University of Washington.

LaNae Schaal, 2014, Summer independent study supervisor, Department of Biostatistics, University of Washington.

Le Wang, 2015, Biostatistics in Practice II supervisor, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Carrie Caswell, Fall 2015, Lab rotation supervisor, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Carrie Caswell, 2015 – 2016, Academic advisor, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Rui Duan, 2016, Biostatistics in Practice II supervisor, Biostatistics Program, Graduate

Group in Epidemiology & Biostatistics, University of Pennsylvania

Grace Choi, Fall 2016, Lab rotation supervisor, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Joanna Milton, Fall 2016, Lab rotation supervisor, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Arman Oganisian, Spring 2016, Lab rotation supervisor, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Victoria Arthur, 2016 – 2017, Academic advisor, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Grace Choi, Summer 2017, Lab rotation supervisor, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Carolyn Lou, Spring 2018, Lab rotation supervisor, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Lanair Lett, Spring 2019, Fall 2019, Lab rotation supervisor, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Emily Getzen, 2019 – Present, Academic advisor, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Kylie Getz, Spring 2020 - Spring 2021, Lab rotation supervisor, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Jevaughn Henry, Summer 2020, Mentor, American Physician Scientist Association Virtual Summer Research Program

Melissa Martin, Fall 2021, Lab rotation supervisor, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

Yuqing Lei, Fall 2023, Lab rotation supervisor, Biostatistics Program, Graduate Group in Epidemiology & Biostatistics, University of Pennsylvania

## RESEARCH PROGRAM

### Present Funding

<b>R01 HL162354 (MPI: Himes/Hubbard)</b>	09/01/2022-06/30/2027	10%
NHLBI	Role: MPI	
Precision Approaches to Reduce Asthma Disparities with Electronic Health Record Data		
<b>N/A (PI: Hubbard)</b>	10/01/2023-09/30/2025	10%
FDA	Role: PI	
Expert statistical advisor to the Division of Biometrics V on methods for assessing quality and fit-for-purpose of Real World Data to support regulatory decision making		
<b>P01 CA154292 (PI: Miglioretti/Kerlikowske/Tosteson)</b>	09/16/2022-05/31/2027	15%
NCI	Role: Site PI	
Advancing Equitable Risk-based Breast Cancer Screening and Surveillance in Community Practice		
<b>P30 AG059302 (PI: Werner)</b>	09/01/2023-08/30/2028	10%
NIA	Role: Analysis Core Co-Director	
Center for Improving CAre Delivery for the Aging (CICADA)		
<b>U19 AG066567 (PI: Larson/Crane)</b>	05/01/2021-04/30/2026	10%

NIA Adult Changes in Thought (ACT) Research Program	Role: Site PI	
<b>R01 LM013519 (PI: Chen)</b> NLM PheBC: Bias Correction Methods for EHR Derived Phenotype	09/01/2021-05/31/2025 Role: Co-Investigator	7%
<b>P30 CA016520 (PI: Vonderheide/Long)</b> NCI Abramson Cancer Center Support Grant (Biostatistics Core)	12/01/2020-11/30/2025 Role: Co-Investigator	5%
<b>N/A (PI: Ky)</b> AHA Understanding and Reducing Racial Disparities in High Risk Cardio-Oncology Communities	08/01/2021-07/31/2026 Role: Co-Investigator	5%
<b>N/A (PI: Gelfand)</b> PCORI A Pragmatic Trial of Home Versus Office Based Narrow Band Ultraviolet B Phototherapy for the Treatment of Psoriasis	04/01/2018-03/31/2024 Role: Co-Investigator	5%
<b>K08 DK124577 (PI: Mahmud)</b> NIDDK Improving Surgical Risk Prediction in Patients with Cirrhosis	07/01/2021-03/31/2026 Role: Co-Investigator	2%

#### Past Funding as PI

<b>R21 CA227613 (MPI: Linn/Hubbard)</b> NIA Informatics Methods for Leveraging Clinical Data Sources to Study Risk Factors for Alzheimer's Disease	02/15/2022-01/31/2024 Role: MPI	10%
<b>R21 CA227613 (PI: Hubbard)</b> NCI Improving Confounder Control in EHR-based Studies of Cancer Epidemiology	01/01/2019-12/31/2021 Role: PI	10%
<b>ME-1511-32666 (PI: Hubbard)</b> PCORI Statistical Methods for Phenotype Estimation and Analysis Using Electronic Health Records	09/01/2016-08/31/2020 Role: PI	20%
<b>R03 CA182986 (PI: Hubbard)</b> NCI Statistical Methods for Estimation of Benefits & Harms of Repeat Cancer Screening	01/01/2014-12/31/2016 Role: PI	20%
<b>261201100031C (PI: Hubbard)</b> NCI Breast Cancer Surveillance Consortium Data Resource	01/01/2013-10/31/2014 Role: PI	10%
<b>R03 CA150007 (PI: Hubbard)</b> NCI Estimating the Cumulative Risk of a False-positive Screening Mammogram	06/01/2010-5/31/2012 Role: PI	20%

## PUBLICATIONS and PRESENTATIONS

### Publications

#### Peer-Reviewed Papers

\*Denotes trainee mentored by Dr. Hubbard

†Denotes equal contribution

1. Cagle AJ and **Hubbard RA**. 2005. Cold-related cardiac mortality in King County, WA, USA, 1980-2001. *Annals of Human Biology*, 32(4): 525 - 537.
2. Sullivan J, **Hubbard RA**, Shepherd K, Trenga C, Liu L-JS, Koenig JQ, Chandler WL, Kaufman J. 2007. Effect of particulate matter on blood measures of inflammation and thrombosis in an elderly population. *BMC Environmental Health*. 6:3.
3. **Hubbard RA**, Inoue LYT, Fann JR. 2008. Modeling non-homogeneous Markov processes via time transformation. *Biometrics*. 64(3): 843 - 850.
4. **Hubbard RA**, Inoue LYT, Diehr P. 2009. Joint modeling of self-rated health and functional status. *Journal of the American Statistical Association*. 104(487): 873-885. PMCID:PMC2819480
5. **Hubbard RA**, Miglioretti DL, Smith RA. 2010. Modelling the cumulative risk of a false-positive screening test. *Statistical Methods in Medical Research*. 19: 429-449. PMCID: PMC2916076
6. Burn A, Herring S, **Hubbard RA**, Rafferty K, Duncan K, Lieberman D. 2010. Dietary consistency and midline sutures: A study in growing pigs. *Orthodontics & Craniofacial Research*. 13: 106 - 113.
7. Horne DJ, **Hubbard RA**, Narita M, Exarchos A, Park DR, Goss CH. 2010. Factors associated with mortality in patients with tuberculosis. *BMC Infectious Diseases*. 10:258.
8. Gill DP, Koepsell TD, **Hubbard RA**, Kukull WA. 2011. Risk of decline in functional activities in dementia with Lewy bodies and Alzheimer disease. *Alzheimer's Disease and Associated Disorders*. 25(1):17-23.
9. Fann JR, **Hubbard RA**, Alfano C, Roth-Roemer, S, Katon WJ, Syrjala KL. 2011. Pre - and post-transplantation risk factors for delirium onset and severity in patients undergoing hematopoietic stem cell transplantation. *Journal of Clinical Oncology*. 29(7): 895-901. PMCID: PMC3068062.
10. **Hubbard RA** and Zhou XH. 2011. A non-homogeneous Markov regression model for mild cognitive impairment and Alzheimer's disease progression. *Journal of Applied Statistics*. 38(10): 2313-2326. PMCID: PMC3299197.
11. Scholes D, **Hubbard RA**, Ichikawa L, LaCroix A, Spangler L, Beasley J, Reed S, Ott S. 2011. Oral contraceptive use and bone density change in adolescent and young adult women: a prospective study of age, hormone dose, and discontinuation. *Journal of Clinical Endocrinology & Metabolism*. 96(9):E1380-E1387.
12. Simon GE, Ding V, **Hubbard RA**, Fishman P, Ludman E, Morales L, Operskalski B, Savarino J. 2011. Early dropout from psychotherapy for depression with group- and network-model therapists. *Administration and Policy in Mental Health and Mental Health Services Research*. 39(6): 440-447. PMCID: PMC3708590
13. **Hubbard RA**, Kerlikowske K, Flowers C, Yankaskas B, Zhu W, Miglioretti DL. 2011. The cumulative risk of a false-positive recall or biopsy recommendation after 10 years of screening mammography: a cohort study. *Annals of Internal Medicine*. 155: 481-492.
14. Kerlikowske K, **Hubbard RA**, Miglioretti D, Geller BM, Yankaskas BC, Lehman C, Taplin S, Sickles EA. 2011. Comparative effectiveness of digital versus film-screen mammography in community practice in the United States: a cohort study. *Annals of Internal Medicine*. 155: 493-502.
15. Fishman P, Ding V, **Hubbard RA**, Ludman E, Morales L, Operskalski B, Pabiniak C, Stewart C, Savarino J, Simon GE. 2012. Impact of cost sharing on initiation and continuation of psychotherapy for treatment of depression. *Health Services Research*. 47(4): 1561-1579. PMCID: PMC3371095.
16. Chubak J, Anderson ML, Saunders KW, **Hubbard RA**, Tuzzio L, Liss D, Morales LS, Reid RJ. 2012. Predictors of one-year change in patient activation among older adults with diabetes and heart disease. *Journal of the American Geriatric Society*. 60(7):1316-21.
17. Chaudhari M, **Hubbard RA**, Inge R, Reid RJ, Newton KM, Spangler L, Barlow WE. 2012. Evaluating components of dental utilization among adults with diabetes and matched controls via hurdle models. *BMC Oral Health*. 12: 20.

18. Fenton JJ, Zhu W, Balch S, Smith-Bindman R, Lindfors K, **Hubbard RA**. 2012. External validation of Medicare claims codes for digital mammography and computer-aided detection. *Cancer Epidemiology, Biomarkers & Prevention*. 21(8): 1344-1347.
19. Yasmeen S, **Hubbard RA**, Miglioretti DM, Zhu W, Kerlikowske K, Geller BM, Onega T, Yankaskas BC, Romano P. 2012. Mammography use and breast cancer rates among older women with comorbidities. *Cancer Epidemiology, Biomarkers & Prevention*. 12(9):1510-1519.
20. **Hubbard RA**, Zhu W, Onega T, Fishman P, Henderson LM, Tosteson ANA, Buist D. 2012. Effects of digital mammography uptake on downstream breast-related care among older women. *Medical Care*. 50(12): 1053-1059.
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9. Moore JH, Barnett I, Boland MR, Chen Y, Demiris G, Gonzalez-Hernandez G, Herman DS, Himes BE, **Hubbard RA**, Kim D, Mowery DL, Ritchie MD, Shen L, Urbanowicz R, Holmes JH. 2020. [Editorial] Ideas for how informaticians can get involved with COVID-19 research. *BioData Mining*. 13:1-16.



10. **Hubbard RA.** 2021. [Invited commentary] Commentary on Professor Austin Bradford Hill's Alfred Watson Memorial Lecture. *Statistics in Medicine*. 40(1):29-31.
11. VanderBeek BL, **Hubbard RA**, Ying GS. 2020. [Letter] Survival analysis vs. longitudinal modeling with multiple imputation, a false dichotomy. *JAMA Ophthalmology*. 39(5):588.
12. Mamtani R, Lund J, **Hubbard RA.** 2021. [Editorial] Considering the totality of evidence: Combining real-world data with clinical trial results to better inform decision-making. *Pharmacoeconomics & Drug Safety*. 30:814-816.

### Invited Presentations (last five years)

1. Department of Biostatistics, Johns Hopkins University, Baltimore, MD. February 2019. Estimation and Analysis of EHR-derived Phenotypes: A Presentation in Three Acts.
2. ENAR International Biometric Society, Philadelphia, PA. March 2019. Accounting for Differential Misclassification in EHR-Derived Phenotypes.
3. Great Plains IDEA-CTR, Omaha, NE. April 2019. Considering Data Provenance in the Analysis of EHR Data.
4. Atlanta Workshop on Biostatistics and Bioinformatics, Atlanta, GA. May 2019. Real World Data, Real World Problems: Accounting for Data Provenance in EHR-based Analyses.
5. Vanderbilt University Department of Biostatistics, Nashville, TN. May 2019. A Statistical Perspective on Challenges and Opportunities in Research Using Real World Data.
6. ASA Princeton-Trenton Chapter Spring 2019 Symposium, New Brunswick, NJ. May 2019. Fit for Use? A Statistical Perspective on Opportunities and Challenges in Research Using Real World Data.
7. International Chinese Statistical Association China Meeting, Tianjin, China. July 2019. An Unsupervised Approach to the Development and Analysis of Electronic Medical Records-based Phenotypes.
8. ASA Biopharmaceutical Statistics Section Regulatory-Industry Statistics Workshop. Washington, DC. September 2019. Fit for Use? The Role of Statistics in Transforming Electronic Health Records into Clinical Evidence.
9. iBRIGHT, Houston, TX. November 2019. Bias Reduction Approaches for Cancer Outcomes Research Conducted Using Electronic Health Records.
10. International Conference on Health Policy Statistics, San Diego, CA. January 2020. Challenges and Opportunities in Statistical Methods for Studies of Aging and Dementia.
11. Biostatistics Division, Department of Pharmacology and Experimental Therapeutics, Thomas Jefferson University, Philadelphia, PA. January 2020. A Statistician's Perspective on Transforming Real World Data into Real World Evidence.
12. Department of Health Outcomes and Biomedical Informatics, University of Florida, Gainesville, FL. January 2020. Statistical Tools to Overcome the Challenges in Transforming Real World Data into Evidence.
13. Center for Bioinformatics and Computational Biology, University of Delaware, Newark, DE. February 2020. An Introduction to Extraction and Analysis of EHR-derived Phenotypes.
14. WebENAR, June 2020, *virtual presentation*. The Role of Statistics in Transforming EHR Data into Knowledge.
15. Value Institute, Christiana Care Health System, *virtual presentation*, October 2020. Bias and Error in Research Using EHR-derived Phenotypes.
16. Center for Health Incentives and Behavioral Economics, University of Pennsylvania, *virtual presentation*, October 2020. Phenotyping and Analysis of EHR data Using Bayesian Clustering.
17. Open Insights in Data Science Seminar Series, University of Pennsylvania, *virtual presentation*, October 2020. The Role of Data Provenance in EHR Phenotyping and Analysis.
18. Department of Biostatistics & Bioinformatics and Department of Statistics Joint Seminar, Duke University, *virtual presentation*, November 2020. The Role of the Statistician in Extracting Knowledge from Healthcare Data
19. Sixth Seattle Symposium in Biostatistics, *virtual presentation*, November 2020. Grappling with Bias and Error in the Analysis of EHR-derived Phenotypes.

20. 13th International Conference of the European Research Consortium for Informatics and Mathematics Working Group on Computational and Methodological Statistics 2020 (CMStatistics 2020), *virtual presentation*, December 2020. Accelerating Health Research with Electronic Health Records Data.
21. Real World Evidence in Gastrointestinal and Liver Disease Conference, University of Pennsylvania, *virtual presentation*, January 2021. Methods to Address the Complexity of Real World Data.
22. Quantitative Sciences Grand Rounds, Moffitt Cancer Center, *virtual presentation*, January 2021. Tackling Real-World Challenges in the Analysis of EHR Data.
23. Department of Biostatistics, Columbia University, *virtual presentation*, February 2021. Accounting for Data Provenance in EHR-based Phenotyping.
24. ENAR International Biometric Society, *virtual presentation*. March 2021. Using EHR to Quantify the Gap Between Effectiveness of a Treatment in a Trial and Routine Clinical Practice.
25. Department of Mathematics & Statistics, Villanova University, *virtual presentation*. April 2021. Harnessing the Power of Real World Data to Study Pediatric Health.
26. Keynote presentation, Ohio Joint Biostatistics Symposium, *virtual presentation*. April 2021. Using Statistical Science to Transform Real World Data into Real World Evidence.
27. CANSI-NISS Health Data Science Workshop, *virtual presentation*. May 2021. Expediting Longitudinal Cohort Studies Using Electronic Health Records with Bayesian Clustering and Trajectory Analysis.
28. Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, *virtual presentation*. May 2021. Using EHR to Extend Understanding of Treatment Effectiveness Beyond Clinical Trials.
29. WNAR International Biometric Society, *virtual presentation*. June 2021. Meeting the Mandate of the 21st Century Cures Act: Overcoming the Challenges of Real World Data to Improve Cancer Care and Outcomes.
30. Sub-Saharan African Network International Biometric Society, *virtual presentation*. September 2021. An Introduction to Extraction and Analysis of EHR-derived Phenotypes.
31. Weill Cornell Medicine - Qatar, Population Health and Well-being Seminar Series, *virtual presentation*. September 2021. Considering the Totality of Evidence: Integrating Real World Data with Clinical Trial Data to Improve Decision Making.
32. New York University, Ethics and Real-World Evidence Working Group, *virtual presentation*. September 2021. Using EHR to Extend Understanding of Treatment Effectiveness Beyond Clinical Trials.
33. ASA Biopharmaceutical Statistics Section, Regulatory Industry Statistics Workshop, *virtual presentation*. September 2021. Principled Approaches to the Practical Challenges of Real-World Data.
34. University of Tennessee Health Science Center, Department of Preventive Medicine, *virtual presentation*. October 2021. Principled Approaches to the Practical Challenges of Real-World Data.
35. National Institute of Allergy and Infectious Diseases, Biostatistics Research Branch, *virtual presentation*. November 2021. Principled Approaches to the Practical Challenges of Real-World Data.
36. Michigan Data Science Institute, *virtual presentation*. January 2022. Leveraging Scientific Knowledge to Improve Learning from Real-World Data.
37. University of Michigan, Department of Biostatistics, *virtual presentation*. January 2022. Something Old, Something New: Classical and Modern Approaches to Addressing Missingness in Real-World Data.
38. Data Science Applied Research and Education Seminar Series, University of Toronto, Department of Biostatistics, *virtual presentation*. February 2022. Using Electronic Health Records to Accelerate Research Without Sacrificing Scientific Rigor.
39. School of Nursing, Case Western Reserve University, *virtual presentation*. February 2022. Extending Evidence from Clinical Trials to Underrepresented Populations Using Real-World Data.
40. Dana-Farber Cancer Center, Frontiers in Biostatistics, *virtual presentation*. March 2022. Considerations for Extracting Real-World Evidence from Real-World Data.
41. McGill University, Department of Biostatistics, Epidemiology and Occupational Health, *virtual presentation*. March 2022. Merging Content-area Knowledge and Biostatistical Principles to Transform Real-World Data into Real-World Evidence.
42. American Society for Preventive Oncology, Tucson, AZ. March 2022. Statistical Approaches for Bias Reduction in Cancer Outcomes Research Using Electronic Health Records Data.
43. University College London, Department of Statistical Science, *virtual presentation*. April 2022. Considerations for Deriving Timely and Valid Evidence from Electronic Health Records.

44. Women in Data Science Blacksburg, Virginia Tech, *virtual presentation*. April 2022. Accelerating Medical Research with Real-World Data and Scientific Insight.
45. Colorado School of Public Health, Department of Biostatistics & Informatics, *virtual presentation*. May 2022. Considerations for Deriving Timely and Valid Evidence from Electronic Health Records.
46. International Biometric Conference, Riga, Latvia. July 2022. Combining EHR and Clinical Trial Data to Improve Validity and Generalizability of Treatment Effectiveness Estimates.
47. Joint Statistical Meetings, Washington, DC. August 2022. Evaluation of Propensity Score-Calibration and Multiple Imputation for Missing Confounder Data in EHR-Based Comparative Effectiveness Research.
48. Penn Big Data in Biomedical and Health Data Science, Philadelphia, PA. September 2022. Deriving Complementary Evidence on Cancer Care and Outcomes from Clinical Trials and Real-World Data.
49. Institute of Healthcare Delivery Science, Icahn School of Medicine, Mt Sinai, *virtual presentation*. October 2022. Extending Evidence from Clinical Trials Using Real-World Data.
50. Stanford Biomedical Informatics Research Colloquia, Stanford University, *virtual presentation*. October 2022. Leveraging Modern Statistical and Machine Learning Approaches to Address Missingness in Real-World Data.
51. Modern Statistical and Machine Learning Methods for Big Data, University of Michigan, Ann Arbor, Michigan. October 2022. Too Big to Fail: Bias, Fairness and Ethics of Conducting Medical Research in the Era of Big Data.
52. Biostatistics Branch, Division of Cancer Epidemiology & Genetics, National Cancer Institute, *virtual presentation*. October 2022. Advancing Cancer Research Using Modern Approaches to Missingness in Real-World Data.
53. Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, Stockholm, Sweden. January 2023. Fair and Valid Learning with RWD.
54. Inaugural Black History/Heritage Month Statistics Colloquium Lecture, Rice University, Houston, Texas. March 2023. Advancing Timely and Valid Medical Research with Real-World Data and Medical Science.
55. Kaiser Permanente Washington Health Research Institute, Seattle, WA. April 2023. Something Old, Something New: Classical and Modern Approaches to Missingness in Real-World Data.
56. Plenary session, International Society for Pharmacoeconomics and Outcomes Research, Boston, MA. May 2023. Informative Presence Bias in Analyses of EHR Data.
57. Washington Statistical Society Gertrude M Cox Lecture, Washington, DC. June 2023. Too Big to Fail: Bias, Fairness and Ethics of Conducting Medical Research in the Era of Big Data.
58. Keynote presentation, Michigan Big Data Summer Institute, Ann Arbor, MI. July 2023. Advancing Timely and Valid Medical Research with Real-World Data and Medical Science.
59. Joint Statistical Meetings, Toronto, ON. August 2023. Expanding the Evidence-Base for Medically Underserved Populations by Integrating Evidence from RCTs And Electronic Health Records.
60. Sentinel Innovation and Methods Seminar Series, *virtual presentation*. August 2023. Leveraging Missing Data and Measurement Error Approaches in Propensity Score-Based Analyses of Real-World Data.
61. Center on Population & Aging Science. University of Texas Austin, Austin, TX. September 2023. Opportunities and Challenges for Advancing Health Equity Through Electronic Health Records-based Research.
62. Department of Biostatistics & Computational Biology, University of Rochester, Rochester, NY. September 2023. Accounting for Differential Data Quality in Analyses of Data from Electronic Health Records.
63. Women in Statistics and Data Science, Bellevue, WA. October 2023. Identifying and Mitigating Disparities in Health Care Use and Outcomes Arising Due to Differential EHR Data Quality.
64. Institute for Mathematical Statistics-Asia Pacific Rim Meeting, Melbourne, Australia. January 2024. Classical And Machine Learning Imputation Approaches to Missing Data In Electronic Health Records-Based Studies.