

Using Multiple Data Sources and State-of-the-Art Estimation Methods in Federal Statistics: Frameworks, Methods, and Assessment

Committee

Robert M. Groves

Chair

Robert M. Groves (NAS, NAM) is the provost and Gerard Campbell professor, Department of Mathematics and Statistics and Sociology at Georgetown University. Dr. Groves is a social statistician who studies the impact of social cognitive and behavioral influences on the quality of statistical information. His research has focused on the impact of mode of data collection on responses in sample surveys, the social and political influences on survey participation, the use of adaptive research designs to improve the cost and error properties of statistics, and public concerns about privacy affecting attitudes toward statistical agencies. Prior to joining Georgetown as provost, he was director of the U.S. Census Bureau (presidential appointment with Senate confirmation), a position he assumed after being director of the University of Michigan Survey Research Center, professor of sociology, and research professor at the Joint Program in Survey Methodology at the University of Maryland. Dr. Groves is an elected member of the National Academy of Sciences, an elected member of the National Academy of Medicine, an elected member of the American Academy of Arts and Sciences, an elected fellow of the American Statistical Association, and an elected member of the International Statistical Institute. Groves has authored or co-authored seven books and scores of peer-reviewed articles. His 1989 book, *Survey Errors and Survey Costs*, was named one of the 50 most influential books in survey research by the American Association of Public Opinion Research. Groves has a bachelor's degree from Dartmouth College and master's degrees in statistics and sociology from the University of Michigan. He also earned his doctorate at Michigan.

Michael E. Chernew

Member

Michael E. Chernew (NAM) is a professor of health care policy in the Department of Health Care Policy at Harvard Medical School. His research examines several areas related to controlling health care spending growth while maintaining or improving the quality of care. His work on consumer incentives focuses on Value Based Insurance Design (VBID), which aligns patient cost sharing with clinical value. Several large companies have adopted these approaches, and Dr. Chernew's ongoing work includes evaluations and design of such programs. His work on payment reform involves evaluation of bundled payment initiatives, including global payment models that include pay-for-performance components. Related research examines the effects of changes in Medicare Advantage payment rates. Additional research explores the causes and consequences of rising health care spending and geographic variation in spending, spending growth, and quality. He is the co-editor of the American Journal of Managed Care and senior associate editor of Health Services Research. He has served on the editorial boards of Health Affairs and Medical Care Research and Review. He is also a research associate of the National Bureau of Economic Research, a member of the Medicare Payment Advisory Commission (MedPAC), which is an independent agency established to advise the U.S. Congress on issues affecting the Medicare program, a member of the Congressional Budget Office's Panel of Health Advisors, and a member of the Commonwealth Foundation's Commission on a High Performance Health Care System. In 1998, he was awarded the John D. Thompson Prize for Young Investigators by the Association of University Programs in Public Health. In 1999, he received the Alice S. Hersch Young Investigator Award from the Association of Health Services Research. He is serving on the NAM Committee on Determination of Essential Health Benefits and previously served on the Committee on Disability in America: A New Look. He is a member of the Committee on National Statistics. Dr. Chernew received his B.A. from the University of Pennsylvania, and his Ph.D. in economics from Stanford University.

Piet Daas

Member

Piet Daas is a senior methodologist in the Department of Project Development, IT and Methodology of Statistics Netherlands. He has a background in biochemistry and bioinformatics. Over the years, the data sets he analyzed continued to increase in size. In 2000, Piet started to work at Statistics Netherlands. Here he became an expert in the use of secondary data (non-survey data) for official statistical purposes. His first studies focused on the re-use of administrative data, but since 2007 he has been involved in pioneering studies in which Internet and other Big Data sources were used for official statistics. Piet has been the project leader of the research theme Big Data ever since the initialization of the topic at Statistics Netherlands in 2011. He is a member of the coordination group on Big Data which oversees all Big Data activities of Statistics Netherlands, covering production, IT, research, management and training. Piet is and has been involved in various European and UN/UNECE Big Data initiatives and is an instructor of the European training course on Big Data. He was a key note speaker at the European Big Data in Official Statistics event and the first speaker at the Dutch Data Science meetup. He has written numerous papers on the use of Big Data in official statistics and statistics in general and presented his work at various workshops and conferences, and at a number of National Statistical Offices, e.g. in Sweden, Finland, and Canada. Together with a colleague, he is writing a book with the title 'Statistical Analysis of Big Data: A Practical Approach in R' that will be published by Wiley in 2016. Dr. Daas has a Ph.D. in the natural sciences with honors.

Cynthia Dwork

Member

Cynthia Dwork (NAS, NAE) is distinguished scientist at Microsoft Research and is renowned for placing privacy-preserving data analysis on a mathematically rigorous foundation. A cornerstone of this work is differential privacy, a strong privacy guarantee frequently permitting highly accurate data analysis. Dr. Dwork has also made seminal contributions in cryptography and distributed computing, and is a recipient of the Edsger W. Dijkstra Prize, recognizing some of her earliest work establishing the pillars on which every fault-tolerant system has been built for decades. Her contributions in cryptography include Non-Malleable Cryptography, the first lattice-based cryptosystem, which was also the first public-key cryptosystem for which breaking a random instance is as hard as solving the hardest instance of the underlying mathematical problem ("worst-case/average-case equivalence"), and the idea of, and a technique for, combating e-mail spam by requiring a proof of computational effort, also known as Proof-of-work. This is the technology underlying hashcash and bitcoin. Dr. Dwork is a recipient of the PET Award for Outstanding Research in Privacy Enhancing Technologies. She is a member of the National Academy of Sciences and the National Academy of Engineering, and a fellow of the American Academy of Arts and Sciences. Dr. Dwork received her B.S.E. from Princeton University, and the Charles Ira Young Award for Excellence in Independent Research. She received her Ph.D. from Cornell University.

Ophir Frieder

Member

Ophir Frieder holds the Robert L. McDevitt, K.S.G., K.C.H.S. and Catherine H. McDevitt L.C.H.S. Chair in Computer Science and Information Processing and previously served as the Chair of the Department of Computer Science at Georgetown University. He is also Professor of Biostatistics, Bioinformatics and Biomathematics in the Georgetown University Medical Center. His research interests focus on scalable information retrieval systems spanning search and retrieval and communications issues in multiple domains. He frequently consults for industry and government and for key intellectual property litigation; his systems are deployed in commercial and governmental production environments worldwide. He is the recipient of the 2007 ASIS&T Research in Information Science Award and a recipient of the 2008 IEEE Technical Achievement Award. He is a Fellow of the AAAS, ACM, IEEE, and NAI. Dr. Frieder received his Ph.D. in computer science and engineering from University of Michigan.

Hosagrahar V. Jagadish

Member

HOSAGRAHAR V. (H.V.) JAGADISH is Bernard A. Galler collegiate professor of electrical engineering and computer science and distinguished scientist at the Institute for Data Science at the University of Michigan, Ann Arbor. Previously, he was head of the Database Research Department at AT&T Labs in Florham Park, New Jersey. He is well known for his broad-ranging research on information management, big data, and data science, and he has authored approximately 200 major papers and owns 37 patents. He is a fellow of the Association for Computing Machinery (ACM), and has served as an associate editor for the ACM Transactions on Database Systems (TODS) and as program chair of ACM's SIGMOD (Special Interest Group on Management of Data) Annual Conference. He has served as trustee of Very Large Data Base (VLDB) Endowment Inc., where he was the founding editor-in-chief of the Proceedings of the Very Large Database Endowment (PVLDB) and program chair of the organization's VLDB Conference. He also serves on the board of the Computing Research Association and has served as program chair of the International Society for Computational Biology's (ISCB) Annual International Conference on Intelligent Systems for Molecular Biology (ISMB). He has won many awards, including the ACM SIGMOD Contributions Award in 2013, the Herbert Kopf Service Excellence Award from University of Michigan in 2011, and the David E. Liddle Research Excellence Award from the University of Michigan in 2008. He has a Bachelor of Technology degree from the Indian Institute of Technology Delhi in India and an M.S. and Ph.D. in electrical engineering from Stanford University.

Frauke Kreuter

Member

Frauke Kreuter is professor at the Joint Program in Survey Methodology at the University of Maryland and professor of statistics and methodology at the University of Mannheim, Germany. She has additional affiliations with the Maryland Population Research Center, the Institute for Social Research in Michigan, and the German Institute for Employment Research, where she heads the statistical methods group. Prior positions included the Institute for Statistics at the Ludwig-Maximilians University in Munich, Germany and the Department of Statistics at the University of California, Los Angeles. Frauke Kreuter is an elected fellow of the American Statistical Association and a recipient of the Gertrude Cox Award, from the Washington Statistical Society. She is a frequent recipient of grant funding from the National Science Foundation and the National Institutes of Health, and has recently been awarded a 1.5 million dollar grant from the German government to build an international professional education program in Survey Practice and Data Science. Her research focuses on nonresponse errors, paradata and responsive designs, record linkage, and, recently, issues of linkage consent and generalizability for nonprobability samples. She has over hundred publications, including eight books and monographs. Frauke Kreuter just finished her term as Standards Chair of the American Association of Public Opinion Research, serves as associate editor for the Journal of Official Statistics, Survey Research Methods, and the Journal of Statistical Software, and is on the editorial board for the American Sociological Review and Sociological Methods and Research. In addition she serves on the advisory boards of Statistics Canada, Statistics Sweden, the U.S Bureau of Labor Statistics, the Energy Information Association, and the ad-hoc committee for the Germany 2021 Census. Up to now she has chaired twelve dissertation committees and is teaching tens of thousands of students through her Massive Open Online Courses. Dr. Kreuter received her BA and MA in Sociology in 1996 and her Ph.D from the University of Konstanz in 2001.

Sharon Lohr

Member

Sharon Lohr joined Westat in 2012 as a vice president and senior statistician after a 25-year academic career, most recently as Dean's distinguished professor of statistics at Arizona State University. She is the author of the book Sampling: Design and Analysis and has published numerous articles in leading journals on survey sampling, hierarchical models, small area estimation, missing data, and design of experiments. She is a fellow of the American Statistical Association, an elected member of the International Statistical Institute, the inaugural recipient of the Gertrude M. Cox Statistics Award for contributions to the practice of statistics, and the 2009 recipient of the Morris Hansen Lecture Award. In 2014 she was selected to present the Deming Lecture at the Joint Statistical Meetings. Dr. Lohr received her Ph.D. from the University of Wisconsin-Madison.

James P. Lynch

Member

James P. Lynch is professor and chair of the Department of Criminology and Criminal Justice at the University of Maryland. Lynch joined the department after serving as the director of the Bureau of Justice Statistics (BJS) in the United States Department of Justice. Previously, he was a distinguished professor in the Department of Criminal Justice at John Jay College, City University of New York. He was a professor in the Department of Justice, Law and Society at American University from 1986 to 2005 and chair of that department from 2003 to 2005. Lynch's research focuses on victim surveys, victimization risk, the role of coercion in social control, and crime statistics. He has published four books and numerous articles, many of them dealing with crime statistics. He was vice president of the American Society of Criminology (ASC) and served on the Committee on Law and Justice Statistics of the American Statistical Association. From 2008 to 2010 he was co-editor of the Journal of Quantitative Criminology. Lynch received his B.A. degree from Wesleyan University and his M.A. and Ph.D. in sociology from the University of Chicago.

Colm A. O'Muircheartaigh

Member

Colm A. O'Muircheartaigh is professor and former dean of the University of Chicago's Harris School of Public Policy Studies and a senior fellow at NORC at the University of Chicago. He is one of the nation's leading experts in the design and implementation of social investigations. An applied statistician, he has focused his research on the design of complex surveys across a wide range of populations and topics, and on fundamental issues of data quality, including the impact of errors in responses to survey questions, cognitive aspects of question wording, and latent variable models for non-response. He joined the Harris School faculty in 1998 from the London School of Economics and Political Science, where he was the first director of the Methodology Institute and a faculty member of the Department of Statistics since 1971. A fellow of the Royal Statistical Society and the American Statistical Association, and an elected member of the International Statistical Institute, he has served as a consultant to a wide range of public and commercial organizations around the world, including the Organization for Economic Co-operation and Development (OECD) and the United Nations. He served on the NRC Panel on Residence Rules in the Decennial Census, and is a member of the Committee on National Statistics. He received his undergraduate education at University College Dublin, and his graduate education at the London School of Economics.

Trivellore Raghunathan

Member

Trivellore Raghunathan is the director of the Survey Research Center and research professor at the Institute for Social Research and a professor of biostatistics in the School of Public Health at the University of Michigan. He is a research professor in the Joint Program in Survey Methodology at the University of Maryland. He served as the chair of the Department of Biostatistics from 2010 to 2014. He is an associate director of the Center for Research on Ethnicity, Culture and Health (CRECH). Before joining the University of Michigan in 1994, Dr. Raghunathan was on the faculty in the Department of Biostatistics at the University of Washington. His research interests are in the analysis of incomplete data, multiple imputation, Bayesian methods, design and analysis of sample surveys, combining information from multiple data sources, small area estimation, confidentiality and disclosure limitation, longitudinal data analysis, and statistical methods for epidemiology. He has developed SAS-based software for imputing the missing values for a complex data set. He received his Ph.D. in statistics from Harvard University in 1987.

Roberto Rigobon

Member

Roberto Rigobon is the Society of Sloan Fellows professor of management and professor of applied economics at the MIT Sloan School of Management. He is also a visiting professor at the Instituto de Estudios Superiores de Administración (Institute of Advanced Studies in Administration, IESA) in Venezuela and a research associate of the National Bureau of Economic Research. Dr. Rigobon is a Venezuelan economist whose areas of research are international economics, monetary economics, and development economics. His research has addressed the causes of balance-of-payments crises, financial crises, and the propagation of them across countries—the phenomenon that has been identified in the literature as contagion. Currently, he is studying the properties of international pricing practices and how to produce alternative measures of inflation. He is one of the two founding members of the Billion Prices Project as well as a co-founder of PriceStats. He is a member of the Census Bureau's Scientific Advisory Committee and president of the Latin American and Caribbean Economic Association. He has been an associate editor for the Review of Economics and Statistics, *Economia*, and *Emerging Markets Review*, and an editor for *Economía Panel*. Dr. Rigobon received a B.S. in electrical engineering from Universidad Simón Bolívar (Venezuela), an M.B.A. from IESA, and a Ph.D. in economics from MIT.

Marc Rotenberg

Member

Marc Rotenberg is President of the Electronic Privacy Information Center (EPIC), an independent, non-profit research center in Washington, DC. He teaches information privacy and open government law at Georgetown University Law Center and frequently testifies before Congress and files amicus briefs in the US Supreme Court on emerging privacy issues. He has served on expert panels for the ABA, the AAAS, the IOM, the ITU, the IWGDPT, the OECD, and UNESCO. He is coauthor (with Anita Allen) of "Privacy Law and Society" (West 2016) and "Privacy in the Modern Age: The Search for Solutions" (The New Press 2015). He is a life fellow of the American Bar Foundation and the Council on Foreign Relations, and the recipient of several awards including the World Technology Award in Law and the Norbert Weiner Award for Social and Professional Responsibility. Mr. Rotenberg is a graduate of Harvard College and Stanford Law School, and received an LLM in International and Comparative Law from Georgetown.