BIOGRAPHICAL SKETCH

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NAME: Fitzmaurice, Garrett, M.

eRA COMMONS USER NAME (credential, e.g., agency login): GDF123

POSITION TITLE: Professor of Psychiatry (Biostatistics)

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
National University of Ireland	B.A.	05/1983	Psychology
National University of Ireland	M.A.	05/1987	Psychology
University of London	M.Sc.	08/1986	Quantitative Methods
Harvard University	Sc.D.	05/1993	Biostatistics

A. Personal Statement

Dr. Fitzmaurice serves as Director of BERD for the Harvard Catalyst (Clinical and Translational Science Award), a Biostatistics Program that provides support to Harvard clinical and translational investigators. In this capacity, he directs Harvard Catalyst's biostatistical consulting service, a team of highly skilled biostatisticians from the Harvard academic and hospital community, that offers consultations on a range of topics as well as software tools to researchers as they design new studies. In addition, he directs a program of seminars, lectures, and workshops that promote the intellectual and professional development of Harvard Catalyst biostatisticians. Dr. Fitzmaurice's research and teaching interests are in statistical methods for analyzing longitudinal and repeated measures data. His research and teaching interests in longitudinal analysis over the past 20 years culminated in the publication of a leading textbook on “Applied Longitudinal Analysis”. A major focus of his methodological research has been on the development of new and improved statistical methods for analyzing data from longitudinal studies and for handling problems of missing data and dropout. A major focus of his collaborative research is on mental health broadly defined, working with investigators on a wide variety of clinical and basic research projects in psychiatry and neuroscience. He has previously served as PI of a T32 training grant from NIMH, which trains pre- and post-doctoral students and physician scientists in psychiatric epidemiology and biostatistics.

a. Fitzmaurice GM, Davidian M, Verbeke G, Molenberghs G. (Eds.) Longitudinal Data Analysis: A Handbook of Modern Statistical Methods. London: Chapman & Hall/CRC Press, 2008. PMCID: N/A (Book)
b. Fitzmaurice GM, Laird NM, Ware JH. Applied Longitudinal Analysis, 2nd Edition. New Jersey: Wiley, 2011. PMCID: N/A (Book)
c. Fitzmaurice GM, Laird NM. Linear mixed models. In: Smelser N, Baltes P, eds. International Encyclopedia of the Social and Behavioral Sciences, 2nd Ed. New York: Elsevier, 2015. PMCID: N/A (Book)

B. Positions and Honors

Positions and Employment

1986–1989	Statistician, Department of Psychology, New York University
1993–1994	Post–doctoral Research Fellow, Department of Biostatistics, Harvard TC Chan SPH
1994–1997	Research Fellow, Nuffield College, Oxford University, United Kingdom
1997–1999	Assistant Professor of Biostatistics, Harvard TH Chan School of Public Health
1999–2008	Associate Professor of Biostatistics, Harvard TH Chan School of Public Health
2004–2007	Biostatistician, Division of Women's Health, Brigham and Women's Hospital, Boston
2004–2007	Associate Professor of Medicine (Biostatistics), Harvard Medical School
2006–2012	Foreign Adjunct Professor of Biostatistics, Karolinska Institute, Sweden
2007–	Director of Laboratory of Psychiatric Biostatistics, McLean Hospital
2007–2008	Associate Professor of Psychiatry (Biostatistics), Harvard Medical School
2008–	Professor of Psychiatry (Biostatistics), Harvard Medical School
2008–	Professor of Biostatistics, Harvard TH Chan School of Public Health

Honors

1991	Harvard School of Public Health Alumni Scholarship
1992	Biometrics Society (ENAR) Student Paper Award
1992	ASA Biometrics Section Student Paper Award
1998–2013	Statistics Editor: Nutrition
1998–2003	Associate Editor: Journal of the Royal Statistical Society, Series B
1999–2002	Associate Editor: Biostatistics
2002	Elected Member of the International Statistical Institute
2003	Elected Fellow of the American Statistical Association
2005–2007	Associate Editor: Biometrics
2006, 2014	American Statistical Association "Excellence in Continuing Education" Award
2007–	Editor: Wiley Series in Probability and Statistics
2007–	Editor: Chapman & Hall/CRC Press Handbooks of Modern Statistical Methods
2011	Ronald R. Hocking Endowed Lecture
2016	Roger L. Nichols Faculty Teaching Award, Harvard TH Chan School of Public Health

C. Contributions to Science

A key and increasingly important component of a successful research project is the application of biostatistical methodology of the highest caliber, from study design through analysis of results. As a senior academic biostatistician, my principal achievements in statistical research have been to develop methodology for longitudinal analysis, for handling missing data, and for measurement problems in psychiatric research.

1. My methodological research over the past 25 years has focused primarily on methods for analyzing longitudinal data. This began in the early 1990s with the development of a novel approach for analyzing longitudinal binary data based on the method of maximum likelihood (ML), a method that makes full use of the entire relevant information available about longitudinal change. In related work I established close relationships between the ML method and an alternative method of estimation known as generalized estimating equations (GEE); the latter method is known for its robustness when secondary aspects of the data (e.g., correlation) have not been correctly modeled. Additional work comparing ML versus GEE has led to greater clarity on the potential gains in precision of the former over the latter. The importance of this work is that it highlighted a subtle, but often overlooked, point: the precision with which change over time can be measured depends upon both the magnitude of correlation among repeated measures and the study (or covariate) design.
    a. Fitzmaurice GM, Laird NM. A likelihood-based method for analysing longitudinal binary responses. Biometrika 1993; 80, 141-151.
    b. Fitzmaurice GM. A caveat concerning independence estimating equations with multivariate binary data. Biometrics 1995; 51, 309-317.
    c. Fitzmaurice GM, Laird NM, Ware JH. Applied Longitudinal Analysis, 2nd Edition. New Jersey: Wiley, 2011. PMCID: N/A (Book)

2. A complementary aspect of my research on methods for longitudinal analysis has been my focus on missing data, in particular, the thorny issue of “nonignorable” missingness. Early work on this topic compared both maximum likelihood and non-likelihood (GEE) regression models for longitudinal binary data when there is dropout that is related to the unobserved responses. This revealed how the specific choice of model for the missing data mechanism can drive the results of the analysis, emphasizing the need for sensitivity analysis when missingness is thought to be nonignorable. Recognizing that modeling assumptions have an inordinate influence on the results when there are missing data, I have devoted much of my research to developing methods that make assumptions about missing data completely transparent (e.g., pattern-mixture models), and therefore open to critique; a secondary goal of this research has been to develop methods that are computationally tractable, thereby moving the methods into the mainstream.
    a. Fitzmaurice GM, Laird NM. Generalized linear mixture models for handling nonignorable dropouts in longitudinal studies. Biostatistic 2000;1:141-156.
    b. Fitzmaurice GM, Lipsitz SR, Ibrahim JG, Gelber R, Lipshultz S. Estimation in regression models for longitudinal binary data with outcome-dependent follow-up. Biostatistics 2006; 7:469-485.
    c. Molenberghs G, Fitzmaurice GM, Kenward MG, Tsiatis A, Verbeke G. Handbook of Missing Data Methodology. London: Chapman & Hall/CRC Press, 2014. PMCID: N/A (Book
3. For over 20 years I have been engaged in methodological research that has focused on statistical issues in psychiatric epidemiology and mental health research. Many of these statistical issues relate to the problems of measurement of psychopathology. Assessments of psychopathology are often collected using “multiple sources” and a key methodological challenge is how they should best be represented in statistical models. I have developed a general multivariate regression approach that treats the multiple sources as providing either conceptually different information or the same information measured with error. This methodology allows researchers in psychiatry to systematically study often-disparate reports on a construct (e.g., psychopathology) that is inherently difficult to measure. The methodology has also been extended in several important ways to handle more complex study designs, e.g., longitudinal study designs and complex sample survey designs.
    a. Fitzmaurice GM, Laird NM, Zahner GEP, Daskalakis C. Bivariate logistic regression analysis of childhood psychopathology ratings using multiple informants. Amer. J. Epidemiology 1995; 142, 1194-1203.
    b. Horton NJ, Fitzmaurice GM. Regression analysis of multiple source data from complex survey samples. Statistics in Medicine 2004; 23, 2911-2933.
    c. Yoon FB, Fitzmaurice GM, Lipsitz SR, Horton NJ, Laird NM, Normand, SLT. Alternative methods for testing treatment effects on the basis of multiple outcomes: Simulation and case study. Statistics in Medicine. 2011; 30:1917-1932. PMCID: PMC3116112

Complete List of Published Work in MyBibliography:
http://www.ncbi.nlm.nih.gov/sites/myncbi/garrett.fitzmaurice.1/bibliography/43927771/public/?sort=date&direction=ascending

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support

R33 DA042847 Fitzmaurice (PI) 02/01/19-01/31/22
NIH/NIDA
Reduction in frequency of drug use as a primary outcome and its relation to changes in health-related and other functional outcomes in stimulant trials
The major goal of the proposed research is to establish that within-treatment reduction in frequency of use, as determined from urine screens, is (i) a far more sensitive endpoint for assessing treatment effects in stimulant use disorder trials, and (ii) predictive of longer term post-treatment follow-up measures of drug use and functioning.

UL1 TR002541 Nadler (PI) 10/01/18-04/30/23
NIH/NCATS
Harvard Clinical and Translational Science Center (UL1)
The Harvard Catalyst Biostatistics Program supports Harvard clinical and translational investigators. Drawing on a team of highly skilled biostatisticians from the Harvard academic and hospital community, the program offers consultations on a range of topics to researchers as they design new studies.
Role: Lead, Biostatistics Program

U10 DA015831 Weiss (PI) 09/01/15-05/31/20
NIH/NIDA
The National Drug Abuse Treatment Clinical Trials Network
The purpose of this grant is to conduct drug abuse research studies in community treatment programs.
Role: Biostatistician

R21 DA046937 McHugh (PI) 09/01/18-08/31/20
NIH/NIDA
Behavioral strategies to reduce stress reactivity in opioid use disorder
This project aims to test the impact of behavioral interventions to reduce stress reactivity in adults with opioid use disorder, with the potential to inform the development of novel treatment strategies for improving outcomes for those with opioid use disorder.
Role: Co-Investigator

R03 AG060247 Ding (PI) 09/30/18-05/31/20
NIH/NIA
Examining Trajectories of Lifestyle Factors Associated with Longevity Using a Novel Mixture Model
The goal of this project is to develop a novel mixture model for trajectory analysis with high flexibility and apply this method to examine trajectories of lifestyle factors from early adulthood to old age associated with healthy aging and longevity.
Role: Co-Investigator

R01 MH117012 Lewandowski (PI) 05/01/19-01/31/24
NIH/NIMH
Neuroprogression across the Psychosis Spectrum in the Early Course of Illness
The aim of this study is characterization of neuroprogressive trajectories through the first 8 years of illness using an accelerated longitudinal design.
Role: Co-Investigator

1P50MH115874-01A1 Carlezon (PI) 04/01/19-02/28/24
NIH/NIMH
Silvio O. Conte Center for Stress Peptide Advanced Research, Education, & Dissemination (SPARED) at McLean Hospital
Admin Core: SPARED Center Carlezon (PI)
The Administrative Core of the SPARED Center will support and complement the comprehensive qualities of the science and will also support a broad range of training and educational activities, including expansion of already piloted outreach programs as well as new approaches to engage both scientists and lay-persons.

R01 DA045632 McHugh (PI) 09/30/19-07/31/23
NIH/NIDA
Affective and Inflammatory Reactivity to Pain in Opioid Use Disorder
The goal of this project is to quantify the association between pain-induced negative affect and peripheral inflammation and opioid use disorder outcomes.
Role: Co-Investigator

Completed Research Support

R21 DA042847 Fitzmaurice (PI) 09/15/16-11/30/18 (NCE)
NIH/NIDA
Reduction in frequency of drug use as a primary outcome and its relation to changes in health-related ad other functional outcomes in stimulant use disorder trials
The proposed research will assess whether reduction in frequency of drug use can replace abstinence as a more sensitive and clinically relevant endpoint in stimulant use disorder trials.
Role: Principal Investigator

R01 AG057505 Goldstein (PI) 09/01/18-03/31/20
NIH/NIA
Aging of Emotion Circuitry: Impact of Sex, Depression, and Fetal Immune Origins.
Study linking fetal immune pathway disruptions with sex differences in adult deficits in negative emotion processing and mood symptomatology/depression 60 years later, identifying impact of immune pathophysiology on aging of negative emotion processing.
Role: Co-Investigator