Preface

We have added several new models to the discussion of extended generalized linear models (GLM)s. Included are new software, discussion of Poisson inverse Gaussian and zero-inflated Poisson, an enhanced generalized Poisson command, a new zero-inflated generalized Poisson command, an "econometric" or traditional censored Poisson command, and a generalized negative binomial (NB-P). The NB-P command is a three-parameter negative binomial where the exponent term of the NB-1 and NB-2 models is itself parameterized. We have also provided more information on the AIC and BIC statistics, including a command that provides the foremost postestimation fit statistics for nonnested models. We include many examples using synthetically created models to illustrate estimation results, and we also show readers how to construct synthetic Monte Carlo models for binomial and major count models. The codes for creating synthetic Poisson, negative binomial, zero-inflated, hurdle, and finite mixture models are provided and explained. We have also added a discussion of marginal effects and discrete change for GLMs.

This third edition of *Generalized Linear Models and Extensions* is written for the active researcher as well as for the theoretical statistician. Our goal has been to clarify the nature and scope of GLMs and to demonstrate how all the families, links, and variations of GLMs fit together in an understandable whole.

In a step-by-step manner, we detail the foundations and provide working algorithms that readers can use to construct and better understand models that they wish to develop. In a sense, we offer readers a workbook or handbook of how to deal with data using GLM and GLM extensions.

This text is intended as a textbook on GLMs and as a handbook of advice for researchers. We continue to use this book as the required text for a web-based short course through *Statistics.com* (also known as the *Institute for Statistical Education*); see http://www.statistics.com. The students of this six-week course include university professors and active researchers from hospitals, government agencies, research institutes, educational concerns, and other institutions across the world. This latest edition reflects the experiences we have had in communicating to our readers and students the relevant materials over the past decade.

Many people have contributed to the ideas presented in the new edition of this book. John Nelder has been the foremost influence. Other important and influential people include Peter Bruce, David Collett, David Hosmer, Stanley Lemeshow, James Lindsey, J. Scott Long, Roger Newson, Scott Zeger, Kung-Yee Liang, Raymond J. Car-

roll, H. Joseph Newton, Henrik Schmiediche, Norman Breslow, Berwin Turlach, Gordon Johnston, Thomas Lumley, Bill Sribney, Vince Wiggins, Mario Cleves, Roberto Gutierrez, William Greene, Andrew Robinson, Heather Presnal, and many others. We also thank William Gould, president of StataCorp, for his encouragement in this project. His statistical computing expertise and his contributions to statistical modeling have had a deep impact on this book.

We also thank StataCorp's editorial staff for their equanimity in reading and editing our manuscript, especially Wes Eddings, Patricia Branton, and Lisa Gilmore for their insightful and patient contributions in this area. Finally, we thank Kristin MacDonald and Isabel Canette, Stata statisticians, for their expert assistance on various programming issues.

Stata Press allowed us to dictate some of the style of this text. In writing this material in other forms for short courses, we have always included equation numbers for all equations rather than only for those equations mentioned in text. Although this is not the standard editorial style for textbooks, we enjoy the benefits of students being able to communicate questions and comments more easily (and efficiently). We hope that readers find this practice as beneficial as our short-course participants have found it.

Errata, datasets, and supporting Stata programs (do-files and ado-files) may be found at the publisher's site http://www.stata-press.com/books/glmext3.html.

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