
Foreword

How should life expectancy be calculated? More generally, how should life tables be estimated? Since John Graunt's pioneering contribution, read before the Royal Society of London at 6 p.m. on the 27th of February 1661, demographers have developed better and better methods. Some concerns were raised, including concerns about how to deal with heterogeneous populations published in an article in *Demography* in 1979 that I wrote with Kenneth Manton and Eric Stallard. Yet, a few years ago nearly all demographers believed that as long as the underlying population and death counts were accurate, then lifetables could be reliably estimated.

John Bongaarts and Griff Feeney launched a revolutionary assault on this dogma. Two key contributions by them are reprinted in Part I of this monograph. Some very good demographers agreed, as least in part, with Bongaarts' and Feeney's radical argument that when death rates are changing, then tempo effects distort conventional calculations of life expectancy. Other very good demographers disagreed. So John Bongaarts and I brought some leading demographers together in a research meeting, co-sponsored by the Max Planck Institute for Demographic Research and the Population Council and held in New York City on November 18 and 19, 2004. Many of the papers discussed at the workshop, generally after considerable revision, were published in *Demographic Research* in 2005 and 2006. Nine of these articles, in some cases somewhat revised, are published in this monograph: they are the first seven chapters in Part II and the two chapters in Part III. Some provide support for the importance of tempo effects; others raise doubts, either about the general concept or about methods proposed to remove the alleged distortions.

Five additional contributions are published in this monograph. The Introduction, by Elisabetta Barbi, provides an overview of the monograph-and thinking about tempo effects on mortality. The final chapter in Part II, by Marc Luy, is a considerably expanded version of a shorter article published in *Demographic Research*; it applies tempo methods to study the convergence of death rates in East vs. West Germany following unification in 1989. The two

chapters in Part IV are both new. In the first, John Bongaarts and Griff Feeney share their afterthoughts. In the second, I present four simple examples that demonstrate how and why mortality change can roil lifetable calculations. Finally, an Appendix by Jutta Gampe and Anatoli Yashin provides two proofs of a formula developed by Griff Feeney; this material was previously published in *Demographic Research*.

The chapters in this monograph are competently written, but nearly all of them are difficult to read. The material is complicated, controversial, and difficult to explain. I finally began to understand tempo effects, and the more general concept of turbulence in demographic rates, when I worked through some stylized examples. Some readers of this monograph might, therefore, want to start with my concluding chapter. Others may find it more satisfying to experience the developments of ideas by reading the book through from the beginning.

The series of Demographic Research Monographs is under the editorial supervision of the Max Planck Institute for Demographic Research. I am Editor-in-Chief. I am advised by an Editorial Board that currently consists of Prof. Elisabetta Barbi (Messina University, Italy), Prof. Gabriele Doblhammer (Rostock University, Germany), Dr. Jutta Gampe (Max Planck Institute), Prof. Joshua Goldstein (Max Planck Institute), and Prof. Bernard Jeune (University of Southern Denmark). Additional members of the Editorial Board will be appointed as needed to review manuscripts submitted for possible publication. The current manuscript was reviewed and accepted by James Vaupel, Elisabetta Barbi and Joshua Goldstein. The Editors thank Tobias Strauss for helping prepare the manuscript for publication.

The Demographic Research Monographs series can be considered the successor to the series called Odense Monographs on Population Aging, edited by Bernard Jeune and James Vaupel. The volumes in this now-terminated series were first published as hardcover books by an academic publisher, Odense University Press, and subsequently made available online at www.demogr.mpg.de/books/odense. The nine Odense Monographs on Population Aging include two collections of research articles that focus on specific subjects on the frontier of demographic research, three volumes by senior researchers that present path-breaking findings, a review of research on a topic of emerging interest, a presentation of a new method for analysis of demographic data, an outstanding doctoral dissertation, and a unique collection of important demographic data on non-human species.

The series of Demographic Research Monographs will continue this mix, with books that are often under 200 pages in length, that have a clear focus, and that significantly advance demographic knowledge. Research related to population aging will continue to be a focus on the series, but it will not be the only one. The series will embrace all of demography, broadly defined. As indicated by the first volume in the series, an important subject will be historical demography. We also plan to publish research on fertility and family dynamics. Mathematical demography is the core of the population sciences

and we will strive to foster monographs, such as this one, that use mathematics and statistics to further develop the theories and methods of demography. Biodemography is a small but rapidly growing and particularly innovative branch of demography: we will seize opportunities to publish monographs at the intersection of biology and demography, pertaining both to humans and other species, and including demographic research with ties to such fields as epidemiology, genetics, evolutionary biology, life-history biology, experimental demography, and paleodemography. The previous monograph in the series, *Inevitable Aging?* by Annette Baudisch, combines mathematical demography and biodemography.

Each volume in the Demographic Research Monograph series will have a substantial link to the Max Planck Institute for Demographic Research. As well as being published as hardcover books by Springer-Verlag, the volumes of the Max Planck series of Demographic Research Monographs will subsequently be available at www.demogr.mpg.de/books/drm. The online version may include color graphs, supplemental analyses, databases and other ancillary or enhanced material. Parallel publication online and in print is a significant innovation that will make the monograph series particularly useful to scholars and students around the world.

James W. Vaupel
Editor-in-Chief