

Preface

Statistics and demography share important common roots, yet as academic disciplines they have grown apart. Even a casual survey of leading journals shows that cross-references are rare. This is unfortunate, because many social problems call for a multi-disciplinary approach. Both statistics and demography are necessary ingredients in any serious analysis of the sustainability of pension or health care systems in the aging societies, in the assessment of potential inequities of formula-based allocations to local governments, in the estimation of the size of elusive populations such as drug users, in the investigation of the consequences of social ills such as unemployment, and so forth. This book was written to bring together much of the basic statistical theory and methodology for estimating and forecasting population growth and its components of births, deaths, and migration. Although relatively simple mathematical methods have traditionally been used to assess demographic trends and their role in the society, use of modern statistical methods offers significant advantages for more accurately measuring population and vital rates, for forecasting the future, and for assessing the uncertainty of the demographic estimates and forecasts.

For statisticians the book provides a unique introduction to demographic problems in a familiar language. For demographers, actuaries, epidemiologists, and professionals in related fields the book presents a unified statistical outlook on both classical methods of demography and recent developments. The book provides a self-contained introduction to the statistical theory of demographic rates (births, deaths, migration) in a multi-state setting. The book has a dual character. On the one hand, it is a monograph that can be consumed by a lone reader. There are many results that have appeared in journals or working papers only. Some appear here for the first time. The book is also useful as a classroom text, and includes exercises and complements to explore special topics in detail without interrupting the flow of the text. More than half of the book is readily accessible to undergraduates, but to fully benefit from the complete text may require more maturity.

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