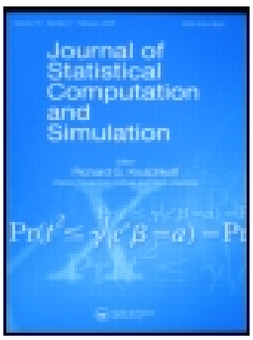

Journal of Statistical Computation and Simulation

ISSN: 0094-9655 (Print) 1563-5163 (Online) Journal homepage: https://www.tandfonline.com/loi/gscs20

Small area estimation and microsimulation modeling

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To cite this article: Ramalingam Shanmugam (2019): Small area estimation and microsimulation modeling, Journal of Statistical Computation and Simulation, DOI: 10.1080/00949655.2019.1628900

To link to this article: https://doi.org/10.1080/00949655.2019.1628900

Published online: 13 Jun 2019.

JOURNAL OF STATISTICAL COMPUTATION AND SIMULATION

BOOK REVIEW

Small area estimation and microsimulation modeling, by Azizur Rahman and Ann Harding, Boca Raton, FL, CRC Press, 2017, 495 + xxvi pp., $54.95 (hardback), ISBN: 13:978-1-4822-6072-4

What is small area estimation (SAE)? Small area estimation is a collection of various statistical techniques which are intended to address small sub-populations incorporated in a larger survey. Microsimulation methodology centres around robustness for socioeconomic policy analysis. It is used to model spatial microdata. The authors describe theories and provide practical applications in economics, behavioural sciences, health sciences, business, psychology, environmental sciences, transportation problems, urban planning, and computational issues in this book. The readers should have basic knowledge of statistics (in particular principles of linear modelling and statistical estimation) as requirement to comprehend the contents of the book.

There are ten chapters covering the topics *aims, guidance for the readers, definition and advantages of SAE concepts, several estimators (including Horwitz-Thompson, generalized regression, modified direct, design based model assisted, synthetic, composite, demographic, explicit models based, empirical best linear unbiased, hierarchical Bayes, microsimulation based), statistical data matching (fusion), iterative proportional fitting, repeated weighting, annealing methods, multivariate data handling, model accuracy, Lorenz curve, index of dissimilarity, SAE in capital cities like Sydney, Melbourne, Brisbane, Perth, Adelaide, Canberra, Hobart, Darwin, validation measures of statistical reliability, computing codes* among others. There are six appendices illustrating Newton-Raphson iteration, survey of income and housing, housing stress, and SAS programming. The concluding remarks at the end of every chapter could have been critical type rather than what it is now as summative of the chapter.

Some unique features of this book are the following. The historical quotes from early time as far as fifth century are amusing. The references related to SAE are not only thorough but also up to date. The guidance for the readers does ease the readability.

I enjoyed reading this comprehensively written book. I recommend this book to sociologists, economists, geographers, statistics and computing professionals.

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https://doi.org/10.1080/00949655.2019.1628900