

1. Record Nr.	UNINA9910789481603321
Autore	Chernick Michael R.
Titolo	An introduction to bootstrap methods with applications to R // Michael R. Chernick, Robert A. LaBudde
Pubbl/distr/stampa	Hoboken, New Jersey : , : Wiley, , 2011 2011
ISBN	1-118-62541-2 1-118-62545-5
Edizione	[1st edition]
Descrizione fisica	1 online resource (236 p.)
Collana	New York Academy of Sciences
Classificazione	MAT029000
Disciplina	519.5/4
Soggetti	Bootstrap (Statistics) R (Computer program language)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover ; Title Page ; Copyright ; Contents ; Preface ; Acknowledgments ; List of Tables ; 1: INTRODUCTION ; 1.1 Historical Background ; 1.2 Definition and Relationship to the Delta Method and Other Resampling Methods ; 1.2.1 Jackknife ; 1.2.2 Delta Method ; 1.2.3 Cross Validation ; 1.2.4 Subsampling ; 1.3 Wide Range of Applications ; 1.4 The Bootstrap and the R Language System ; 1.5 Historical Notes ; 1.6 Exercises ; References ; 2: ESTIMATION; 2.1 Estimating Bias ; 2.1.1 Bootstrap Adjustment ; 2.1.2 Error Rate Estimation in Discriminant Analysis 2.1.3 Simple Example of Linear Discrimination and Bootstrap Error Rate Estimation 2.1.4 Patch Data Example ; 2.2 Estimating Location ; 2.2.1 Estimating a Mean ; 2.2.2 Estimating a Median ; 2.3 Estimating Dispersion ; 2.3.1 Estimating an Estimate's Standard Error ; 2.3.2 Estimating Interquartile Range ; 2.4 Linear Regression ; 2.4.1 Overview ; 2.4.2 Bootstrapping Residuals ; 2.4.3 Bootstrapping Pairs (response and Predictor Vector) ; 2.4.4 Heteroscedasticity of Variance: the Wild Bootstrap ; 2.4.5 a Special Class of Linear Regression Models: Multivariable Fractional Polynomials 2.5 Nonlinear Regression 2.5.1 Examples of Nonlinear Models ; 2.5.2 a Quasi Optical Experiment ; 2.6 Nonparametric Regression ; 2.6.1 Examples of Nonparametric Regression Models ; 2.6.2 Bootstrap Bagging ; 2.7 Historical Notes ; 2.8 Exercises ; References ; 3:

CONFIDENCE INTERVALS ; 3.1 Subsampling, Typical Value Theorem, and Efron's Percentile Method ; 3.2 Bootstrap-t ; 3.3 Iterated Bootstrap ; 3.4 Bias Corrected (BC) Bootstrap ; 3.5 Bca and Abc ; 3.6 Tilted Bootstrap ; 3.7 Variance Estimation with Small Sample Sizes ; 3.8 Historical Notes ; 3.9 Exercises ; References ; 4: HYPOTHESIS TESTING 4.1 Relationship to Confidence Intervals 4.2 Why Test Hypotheses Differently? ; 4.3 Tendril Dx Example ; 4.4 Klingenberg Example: Binary Dose-response ; 4.5 Historical Notes ; 4.6 Exercises ; References ; 5: TIME SERIES; 5.1 Forecasting Methods ; 5.2 Time Domain Models ; 5.3 Can Bootstrapping Improve Prediction Intervals? ; 5.4 Model Based Methods ; 5.4.1 Bootstrapping Stationary Autoregressive Processes ; 5.4.2 Bootstrapping Explosive Autoregressive Processes ; 5.4.3 Bootstrapping Unstable Autoregressive Processes ; 5.4.4 Bootstrapping Stationary Arma Processes 5.5 Block Bootstrapping for Stationary Time Series 5.6 Dependent Wild Bootstrap (DWB) ; 5.7 Frequency-based Approaches for Stationary Time Series ; 5.8 Sieve Bootstrap ; 5.9 Historical Notes ; 5.10 Exercises ; References ; 6: BOOTSTRAP VARIANTS; 6.1 Bayesian Bootstrap ; 6.2 Smoothed Bootstrap ; 6.3 Parametric Bootstrap ; 6.4 Double Bootstrap ; 6.5 the M-out-of-n Bootstrap ; 6.6 the Wild Bootstrap ; 6.7 Historical Notes ; 6.8 Exercise ; References ; 7: CHAPTER SPECIAL TOPICS; 7.1 Spatial Data ; 7.1.1 Kriging ; 7.1.2 Asymptotics for Spatial Data ; 7.1.3 Block Bootstrap on Regular Grids 7.1.4 Block Bootstrap on Irregular Grids

Sommario/riassunto

A comprehensive introduction to bootstrap methods in the R programming environment Bootstrap methods provide a powerful approach to statistical data analysis, as they have more general applications than standard parametric methods. An Introduction to Bootstrap Methods with Applications to R explores the practicality of this approach and successfully utilizes R to illustrate applications for the bootstrap and other resampling methods. This book provides a modern introduction to bootstrap methods for readers who do not have an extensive background in advanced mathematics. Emphasis throughout is
