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Autore	Brown Jonathon D
Titolo	Linear Models in Matrix Form : A Hands-On Approach for the Behavioral Sciences / / by Jonathon D. Brown
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Descrizione fisica	1 online resource (XIX, 536 p. 77 illus., 28 illus. in color.)
Disciplina	150.1519535
Soggetti	Social sciences - Statistical methods Psychometrics Statistics Statistics in Social Sciences, Humanities, Law, Education, Behavioral Sciences, Public Policy Statistical Theory and Methods
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Matrix Properties and Operations -- Simple Linear Regression -- Maximum Likelihood Estimation -- Multiple Regression -- Matrix Decompositions -- Problematic Observations -- Errors and Residuals -- Linearizing Transformations and Nonparametric Smoothers -- Cross-Product Terms and Interactions -- Polynomial Regression -- Categorical Predictors -- Factorial Designs -- Analysis of Covariance -- Moderation -- Mediation.
Sommario/riassunto	This textbook is an approachable introduction to statistical analysis using matrix algebra. Prior knowledge of matrix algebra is not necessary. Advanced topics are easy to follow through analyses that were performed on an open-source spreadsheet using a few built-in functions. These topics include ordinary linear regression, as well as maximum likelihood estimation, matrix decompositions, nonparametric smoothers and penalized cubic splines. Each data set (1) contains a limited number of observations to encourage readers to do the calculations themselves, and (2) tells a coherent story based on statistical significance and confidence intervals. In this way, students will learn how the numbers were generated and how they can be used

to make cogent arguments about everyday matters. This textbook is designed for use in upper level undergraduate courses or first year graduate courses. The first chapter introduces students to linear equations, then covers matrix algebra, focusing on three essential operations: sum of squares, the determinant, and the inverse. These operations are explained in everyday language, and their calculations are demonstrated using concrete examples. The remaining chapters build on these operations, progressing from simple linear regression to mediational models with bootstrapped standard errors.
