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Titolo	Longitudinal Data Analysis : Autoregressive Linear Mixed Effects Models // by Ikuko Funatogawa, Takashi Funatogawa
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Descrizione fisica	1 online resource (X, 141 p. 27 illus.)
Collana	JSS Research Series in Statistics, , 2364-0057
Disciplina	519.5
Soggetti	Statistics Statistical Theory and Methods Statistics for Engineering, Physics, Computer Science, Chemistry and Earth Sciences Statistics and Computing/Statistics Programs
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 1. Linear mixed effects model -- Chapter 2. Autoregressive linear mixed effects model -- Chapter 3. Bivariate longitudinal data -- Chapter 4. State-space representation -- Chapter 5. Missing data, time dependent covariate -- Chapter 6. Pretest-Posttest data.
Sommario/riassunto	This book provides a new analytical approach for dynamic data repeatedly measured from multiple subjects over time. Random effects account for differences across subjects. Auto-regression in response itself is often used in time series analysis. In longitudinal data analysis, a static mixed effects model is changed into a dynamic one by the introduction of the auto-regression term. Response levels in this model gradually move toward an asymptote or equilibrium which depends on covariates and random effects. The book provides relationships of the autoregressive linear mixed effects models with linear mixed effects models, marginal models, transition models, nonlinear mixed effects models, growth curves, differential equations, and state space representation. State space representation with a modified Kalman filter provides log likelihoods for maximum likelihood estimation, and this representation is suitable for unequally spaced longitudinal data. The extension to multivariate longitudinal data analysis is also provided. Topics in medical fields, such as response-dependent dose

modifications, response-dependent dropouts, and randomized controlled trials are discussed. The text is written in plain terms understandable for researchers in other disciplines such as econometrics, sociology, and ecology for the progress of interdisciplinary research.
