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Autore	Hollar David W
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Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Longitudinal Data in Health Care: Opportunities and Necessity.-The Problem of Recidivism in Health Care Intervention Studies -- Current Epidemiological Methods -- Longitudinal Data Analysis Methods -- Linearity Versus Nonlinearity in Variable Associations and Time -- Stability and Reversibility/Irreversibility of Health Conditions -- Chaos Theory and Sensitive Dependence on Initial Conditions -- Poincare Return Maps -- Health Conditions and Behaviors as Topological Surfaces -- Applying Jacobian Matrices to Health Trajectories -- The Lyapunov Exponent -- Phase Transitions in Health and Health Behaviors -- Applications in Cardiology and Neuroscience -- Applications in Health Monitoring and Geographic Systems -- Causality and Inference -- Health Care Interventions for Long-Term Positive Results -- Appendix A. Mathematical Background -- Appendix B. Sample Programming Code for Examples.

Sommario/riassunto

This innovative volume introduces Trajectory Analysis, a new systems-based approach to measuring nonlinear dynamics in continuous change, to public health and epidemiology. It synthesizes influential strands of statistical and probability science (including chaos theory and catastrophe theory) to complement existing methods and models used in the health fields. The computational framework featured here pinpoints complex cause-and-effect processes in behavioral change as individuals and populations adjust to health interventions, with examples from neuroscience and cardiology. But this is no mere academic exercise, as the author illustrates how these methods can be harnessed toward finding real-world answers to longstanding public health problems, starting with treatment recidivism. Included in the coverage: · The universality of physical principles in the analysis of health and disease · The problem of recidivism in healthcare intervention studies · Stability and reversibility/irreversibility of health conditions · Chaos theory and sensitive dependence on initial conditions · Applications in health monitoring and geographic systems · Simulations, applications, and the challenge for public health A stimulating new take on statistics with powerful implications for future study, practice, and policy, Trajectory Analysis in Health Care should interest public health epidemiologists, researchers, clinicians, and policymakers. .