

1. Record Nr.	UNINA9910999790103321
Autore	Zinilli Antonio
Titolo	Elements of Network Science : Theory, Methods and Applications in Stata, R and Python / / by Antonio Zinilli
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2025
ISBN	3-031-84712-1
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (XVI, 242 p. 89 illus., 77 illus. in color.)
Collana	Statistics and Computing, , 2197-1706
Disciplina	300.727
Soggetti	Social sciences - Statistical methods Mathematical statistics - Data processing Social sciences - Network analysis Statistics - Computer programs Statistics Statistics in Social Sciences, Humanities, Law, Education, Behavioral Sciences, Public Policy Statistics and Computing Network Research Statistical Software Statistics in Business, Management, Economics, Finance, Insurance Statistical Theory and Methods
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	- 1. Introduction -- 2. Network Science: concepts and definitions -- 3. Network Metrics -- 4. Theoretical models of networks -- 5. Statistical social network models.
Sommario/riassunto	This book provides readers with a comprehensive guide to designing rigorous and effective network science tools using the statistical software platforms Stata, R, and Python. Network science offers a means to understand and analyze complex systems that involve various types of relationships. This text bridges the gap between theoretical understanding and practical application, making network science more accessible to a wide range of users. It presents the statistical models pertaining to individual network techniques, followed by empirical

applications that use both built-in and user-written packages, and reveals the mathematical and statistical foundations of each model, along with demonstrations involving calculations and step-by-step code implementation. In addition, each chapter is complemented by a case study that illustrates one of the several techniques discussed. The introductory chapter serves as a roadmap for readers, providing an initial understanding of network science and guidance on the required packages, the second chapter focuses on the main concepts related to network properties. The next two chapters present the primary definitions and concepts in network science and various classes of graphs observed in real contexts. The final chapter explores the main social network models, including the family of exponential random graph models. Each chapter includes real-world data applications from the social sciences, using at least one of the platforms Stata, R, and Python, providing a more comprehensive understanding of the availability of network science methods across different software platforms. The underlying computer code and data sets are available online. The book will appeal to graduate students, researchers and data scientists, mainly from the social sciences, who seek theoretical and applied tools to implement network science techniques in their work.
