1.	Record Nr.	UNINA9910438034103321
	Autore	Nair N. Unnikrishnan
	Titolo	Quantile-Based Reliability Analysis / / by N. Unnikrishnan Nair, P.G. Sankaran, N. Balakrishnan
	Pubbl/distr/stampa	New York, NY : , : Springer New York : , : Imprint : Birkhäuser, , 2013
	ISBN	0-8176-8361-5
	Edizione	[1st ed. 2013.]
	Descrizione fisica	1 online resource (411 p.)
	Collana	Statistics for Industry and Technology, , 2364-6241
	Disciplina	519.287
	Soggetti	Statistics
		Probabilities
		Mathematical models
		Statistical Theory and Methods
		Probability Theory and Stochastic Processes
		Statistics for Engineering, Physics, Computer Science, Chemistry and Earth Sciences
		Statistics for Business, Management, Economics, Finance, Insurance
		Statistics for Life Sciences, Medicine, Health Sciences
		Mathematical Modeling and Industrial Mathematics
	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 (pages 361-383) and index.
	Nota di contenuto	Preface -- Chapter I Quantile Functions -- Chapter II Quantile-Based Reliability Concepts -- Chapter III Quantile Function Models -- Chapter IV Ageing Concepts -- Chapter V Total Time on Test Transforms (TTT) -- Chapter VI L-Moments of Residual Life and Partial Moments -- Chapter VII Nonmonotone Hazard Quantile Functions -- Chapter VIII Stochastic Orders in Reliability -- IX Estimation and Modeling. - References -- Index.
	Sommario/riassunto	Quantile-Based Reliability Analysis presents a novel approach to reliability theory using quantile functions in contrast to the traditional approach based on distribution functions. Quantile functions and distribution functions are mathematically equivalent ways to define a probability distribution. However, quantile functions have several advantages over distribution functions. First, many data sets with non-elementary distribution functions can be modeled by quantile functions

with simple forms. Second, most quantile functions approximate many of the standard models in reliability analysis quite well. Consequently, if physical conditions do not suggest a plausible model, an arbitrary quantile function will be a good first approximation. Finally, the inference procedures for quantile models need less information and are more robust to outliers. Quantile-Based Reliability Analysis's innovative methodology is laid out in a well-organized sequence of topics, including: ·   Definitions and properties of reliability concepts in terms of quantile functions; ·   Ageing concepts and their interrelationships; ·   Total time on test transforms; ·   L-moments of residual life; ·   Score and tail exponent functions and relevant applications; ·   Modeling problems and stochastic orders connecting quantile-based reliability functions. An ideal text for advanced undergraduate and graduate courses in reliability and statistics, Quantile-Based Reliability Analysis also contains many unique topics for study and research in survival analysis, engineering, economics, and the medical sciences. In addition, its illuminating discussion of the general theory of quantile functions is germane to many contexts involving statistical analysis. .