1. Record Nr. UNINA9910824520903321

Autore	Kenett Ron
Titolo	Modern industrial statistics : with applications in R, MINITAB and JMP / / Ron S. Kenett, Shelemyahu Zacks ; with contributions from Daniele Amberti
Pubbl/distr/stampa	Chichester, England : , : Wiley, , 2014 ©2014
ISBN	1-118-76369-6 1-118-76366-1 1-118-76368-8
Edizione	[Second edition.]
Descrizione fisica	1 online resource (587 p.)
Collana	Statistics in practice
Altri autori (Persone)	ZacksShelemyahu <1932-> AmbertiDaniele
Disciplina	658.5/62
Soggetti	Quality control - Statistical methods Reliability (Engineering) - Statistical methods R (Computer program language)
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 and indexes.
Nota di contenuto	Cover; Title Page; Copyright; Contents; Preface to Second Edition; Preface to First Edition; Abbreviations; Part I Principles of Statistical Thinking and Analysis; Chapter 1 The Role of Statistical Methods in Modern Industry and Services; 1.1 The different functional areas in industry and services; 1.2 The quality-productivity dilemma; 1.3 Fire-fighting; 1.4 Inspection of products; 1.5 Process control; 1.6 Quality by design; 1.7 Information quality and practical statistical efficiency; 1.8 Chapter highlights; 1.9 Exercises; Chapter 2 Analyzing Variability: Descriptive Statistics 2.1 Random phenomena and the structure of observations2.2 Accuracy and precision of measurements; 2.3 The population and the sample; 2.4 Descriptive analysis of sample values; 2.4.1 Frequency distributions of discrete random variables; 2.4.2 Frequency distributions of continuous random variables; 2.4.3 Statistics of the ordered sample; 2.4.4 Statistics of location and dispersion; 2.5 Prediction intervals; 2.6 Additional techniques of exploratory data analysis; 2.6.1 Box and

whiskers plot; 2.6.2 Quantile plots; 2.6.3 Stem-and-leaf diagrams; 2.6.4 Robust statistics for location and dispersion
2.7 Chapter highlights2.8 Exercises; Chapter 3 Probability Models and Distribution Functions; 3.1 Basic probability; 3.1.1 Events and sample spaces: Formal presentation of random measurements; 3.1.2 Basic rules of operations with events: Unions, intersections; 3.1.3 Probabilities of events; 3.1.4 Probability functions for random sampling; 3.1.5 Conditional probabilities and independence of events; 3.1.6 Bayes formula and its application; 3.2 Random variables and their distributions; 3.2.1 Discrete and continuous distributions; 3.2.2 Expected values and moments of distributions
3.2.3 The standard deviation, quantiles, measures of skewness and kurtosis3.2.4 Moment generating functions; 3.3 Families of discrete distribution; 3.3.1 The binomial distribution; 3.3.2 The hypergeometric distribution; 3.3.3 The Poisson distribution; 3.3.4 The geometric and negative binomial distributions; 3.4 Continuous distributions; 3.4.1 The uniform distribution on the interval (a, b), a < b; 3.4.2 The normal and log-normal distributions; 3.4.3 The exponential distribution; 3.4.4 The gamma and Weibull distributions; 3.4.5 The Beta distributions
3.5 Joint, marginal and conditional distributions3.5.1 Joint and marginal distributions; 3.5.2 Covariance and correlation; 3.5.3 Conditional distributions; 3.6 Some multivariate distributions; 3.6.1 The multinomial distribution; 3.6.2 The multi-hypergeometric distribution; 3.6.3 The bivariate normal distribution; 3.7 Distribution of order statistics; 3.8 Linear combinations of random variables; 3.9 Large sample approximations; 3.9.1 The law of large numbers; 3.9.2 The Central Limit Theorem; 3.9.3 Some normal approximations; 3.10 Additional distributions of statistics of normal samples
3.10.1 Distribution of the sample variance

Sommario/riassunto

Fully revised and updated, this book combines a theoretical background with examples and references to R, MINITAB and JMP, enabling practitioners to find state-of-the-art material on both foundation and implementation tools to support their work. Topics addressed include computer-intensive data analysis, acceptance sampling, univariate and multivariate statistical process control, design of experiments, quality by design, and reliability using classical and Bayesian methods. The book can be used for workshops or courses on acceptance sampling, statistical process control, design of experime