1. Record Nr. UNINA9910812267903321

Autore	McCool John <1936->
Titolo	Using the Weibull distribution : reliability, modeling, and inference / / John I. McCool
Pubbl/distr/stampa	Hoboken, N.J., : John Wiley & Sons, c2012
ISBN	9786613883803 9781283571357 1283571358 9781118351994 1118351991 9781118351987 1118351983 9781118351963 1118351967
Edizione	[1st ed.]
Descrizione fisica	1 online resource (368 p.)
Collana	Wiley series in probability and statistics
Disciplina	519.2/4
Soggetti	Weibull distribution Probabilities
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 index.
Nota di contenuto	Using the Weibull Distribution; Contents; Preface; CHAPTER 1: Probability; 1.1 SAMPLE SPACES AND EVENTS; 1.2 MUTUALLY EXCLUSIVE EVENTS; 1.3 VENN DIAGRAMS; 1.4 UNIONS OF EVENTS AND JOINT PROBABILITY; 1.5 CONDITIONAL PROBABILITY; 1.6 INDEPENDENCE; 1.7 PARTITIONS AND THE LAW OF TOTAL PROBABILITY; 1.8 RELIABILITY; 1.9 SERIES SYSTEMS; 1.10 PARALLEL SYSTEMS; 1.11 COMPLEX SYSTEMS; 1.12 CROSSLINKED SYSTEMS; 1.13 RELIABILITY IMPORTANCE; REFERENCES; EXERCISES; CHAPTER 2: Discrete and Continuous Random Variables; 2.1 PROBABILITY DISTRIBUTIONS; 2.2 FUNCTIONS OF A RANDOM VARIABLE 2.3 JOINTLY DISTRIBUTED DISCRETE RANDOM VARIABLES2.4 CONDITIONAL EXPECTATION; 2.5 THE BINOMIAL DISTRIBUTION; 2.5.1 Confidence Limits for the Binomial Proportion p; 2.6 THE POISSON DISTRIBUTION; 2.7 THE GEOMETRIC DISTRIBUTION; 2.8 CONTINUOUS

RANDOM VARIABLES; 2.8.1 The Hazard Function; 2.9 JOINTLY DISTRIBUTED CONTINUOUS RANDOM VARIABLES; 2.10 SIMULATING SAMPLES FROM CONTINUOUS DISTRIBUTIONS; 2.11 THE NORMAL DISTRIBUTION; 2.12 DISTRIBUTION OF THE SAMPLE MEAN; 2.12.1 P[X < Y] for Normal Variables; 2.13 THE LOGNORMAL DISTRIBUTION; 2.14 SIMPLE LINEAR REGRESSION; REFERENCES; EXERCISES
CHAPTER 3: Properties of the Weibull Distribution3.1 THE WEIBULL CUMULATIVE DISTRIBUTION FUNCTION (CDF), PERCENTILES, MOMENTS, AND HAZARD FUNCTION; 3.1.1 Hazard Function; 3.1.2 The Mode; 3.1.3 Quantiles; 3.1.4 Moments; 3.2 THE MINIMA OF WEIBULL SAMPLES; 3.3 TRANSFORMATIONS; 3.3.1 The Power Transformation; 3.3.2 The Logarithmic Transformation; 3.4 THE CONDITIONAL WEIBULL DISTRIBUTION; 3.5 QUANTILES FOR ORDER STATISTICS OF A WEIBULL SAMPLE; 3.5.1 The Weakest Link Phenomenon; 3.6 SIMULATING WEIBULL SAMPLES; REFERENCES; EXERCISES; CHAPTER 4: Weibull Probability Models; 4.1 SYSTEM RELIABILITY
4.1.1 Series Systems4.1.2 Parallel Systems; 4.1.3 Standby Parallel; 4.2 WEIBULL MIXTURES; 4.3 P(Y < X); 4.4 RADIAL ERROR; 4.5 PRO RATA WARRANTY; 4.6 OPTIMUM AGE REPLACEMENT; 4.6.1 Age Replacement; 4.6.2 MTTF for a Maintained System; 4.7 RENEWAL THEORY; 4.7.1 Block Replacement; 4.7.2 Free Replacement Warranty; 4.7.3 A Renewing Free Replacement Warranty; 4.8 OPTIMUM BIDDING; 4.9 OPTIMUM BURN-IN; 4.10 SPARE PARTS PROVISIONING; REFERENCES; EXERCISES; CHAPTER 5: Estimation in Single Samples; 5.1 POINT AND INTERVAL ESTIMATION; 5.2 CENSORING; 5.3 ESTIMATION METHODS; 5.3.1 Menon's Method
5.3.2 An Order Statistic Estimate of x0.105.4 GRAPHICAL ESTIMATION OF WEIBULL PARAMETERS; 5.4.1 Complete Samples; 5.4.2 Graphical Estimation in Censored Samples; 5.5 MAXIMUM LIKELIHOOD ESTIMATION; 5.5.1 The Exponential Distribution; 5.5.2 Confidence Intervals for the Exponential Distribution-Type II Censoring; 5.5.3 Estimation for the Exponential Distribution-Interval Censoring; 5.5.4 Estimation for the Exponential Distribution-Type I Censoring; 5.5.5 Estimation for the Exponential Distribution-The Zero Failures Case; 5.6 ML ESTIMATION FOR THE WEIBULL DISTRIBUTION; 5.6.1 Shape Parameter Known
5.6.2 Confidence Interval for the Weibull Scale Parameter-Shape Parameter Known, Type II Censoring

Sommario/riassunto

Understand and utilize the latest developments in Weibull inferential methods While the Weibull distribution is widely used in science and engineering, most engineers do not have the necessary statistical training to implement the methodology effectively. Using the Weibull Distribution: Reliability, Modeling, and Inference fills a gap in the current literature on the topic, introducing a self-contained presentation of the probabilistic basis for the methodology while providing powerful techniques for extracting information from data. The author explai