

Shailaja Deshmukh

Multiple Decrement Models in Insurance

An Introduction Using R

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**Shailaja R. Deshmukh, Akanksha S.
Kashikar**



Multiple Decrement Models In Insurance An Introduction Using R:

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Introduction to Stochastic Processes Using R Sivaprasad Madhira, Shailaja Deshmukh, 2023-11-03 This textbook presents some basic stochastic processes mainly Markov processes It begins with a brief introduction to the framework of stochastic processes followed by the thorough discussion on Markov chains which is the simplest and the most important class of stochastic processes The book then elaborates the theory of Markov chains in detail including classification of states the first passage distribution the concept of periodicity and the limiting behaviour of a Markov chain in terms of associated stationary and long run distributions The book first illustrates the theory for some typical Markov chains such as random walk gambler's ruin problem Ehrenfest model and Bienayme Galton Watson branching process and then extends the discussion when time parameter is continuous It presents some important examples of a continuous time Markov chain which include Poisson process birth process death process birth and death processes and their variations These processes play a fundamental role in the theory and applications in queuing and inventory models population growth epidemiology and engineering systems The book studies in detail the Poisson process which is the most frequently applied stochastic process in a variety of fields with its extension to a renewal process The book also presents

important basic concepts on Brownian motion process a stochastic process of historic importance It covers its few extensions and variations such as Brownian bridge geometric Brownian motion process which have applications in finance stock markets inventory etc The book is designed primarily to serve as a textbook for a one semester introductory course in stochastic processes in a post graduate program such as Statistics Mathematics Data Science and Finance It can also be used for relevant courses in other disciplines Additionally it provides sufficient background material for studying inference in stochastic processes The book thus fulfils the need of a concise but clear and student friendly introduction to various types of stochastic processes

Probability Theory Shailaja R. Deshmukh, Akanksha S. Kashikar, 2024-08-06 This book introduces Probability Theory with R software and explains abstract concepts in a simple and easy to understand way by combining theory and computation It discusses conceptual and computational examples in detail to provide a thorough understanding of basic techniques and develop an enjoyable read for students seeking suitable material for self study It illustrates fundamental concepts including fields sigma fields random variables and their expectations various modes of convergence of a sequence of random variables laws of large numbers and the central limit theorem Computational exercises based on R software are included in each Chapter Includes a brief introduction to the basic functions of R software for beginners in R and serves as a ready reference Includes Numerical computations simulation studies and visualizations using R software as easy tools to explain abstract concepts Provides multiple choice questions for practice Incorporates self explanatory R codes in every chapter This textbook is for advanced students professionals and academic researchers of Statistics Biostatistics Economics and Mathematics

Computational Actuarial Science with R Arthur Charpentier, 2014-08-26 A Hands On Approach to Understanding and Using Actuarial Models Computational Actuarial Science with R provides an introduction to the computational aspects of actuarial science Using simple R code the book helps you understand the algorithms involved in actuarial computations It also covers more advanced topics such as parallel computing and C C embedded codes After an introduction to the R language the book is divided into four parts The first one addresses methodology and statistical modeling issues The second part discusses the computational facets of life insurance including life contingencies calculations and prospective life tables Focusing on finance from an actuarial perspective the next part presents techniques for modeling stock prices nonlinear time series yield curves interest rates and portfolio optimization The last part explains how to use R to deal with computational issues of nonlife insurance Taking a do it yourself approach to understanding algorithms this book demystifies the computational aspects of actuarial science It shows that even complex computations can usually be done without too much trouble Datasets used in the text are available in an R package CASdatasets

Actuarial Sciences and Quantitative Finance Jaime A. Londoño, José Garrido, Daniel Hernández-Hernández, 2015-08-01 Featuring contributions from industry and academia this volume includes chapters covering a diverse range of theoretical and empirical aspects of actuarial science and quantitative finance including portfolio management derivative valuation risk theory and the economics

of insurance Developed from the First International Congress on Actuarial Science and Quantitative Finance held at the Universidad Nacional de Colombia in Bogot in June 2014 this volume highlights different approaches to issues arising from industries in the Andean and Carribean regions Contributions address topics such as Reverse mortgage schemes and urban dynamics modeling spot price dynamics in the electricity market and optimizing calibration and pricing with SABR models

Asymptotic Statistical Inference Shailaja Deshmukh, Madhuri Kulkarni, 2021-07-05 The book presents the fundamental concepts from asymptotic statistical inference theory elaborating on some basic large sample optimality properties of estimators and some test procedures The most desirable property of consistency of an estimator and its large sample distribution with suitable normalization are discussed the focus being on the consistent and asymptotically normal CAN estimators It is shown that for the probability models belonging to an exponential family and a Cramer family the maximum likelihood estimators of the indexing parameters are CAN The book describes some large sample test procedures in particular the most frequently used likelihood ratio test procedure Various applications of the likelihood ratio test procedure are addressed when the underlying probability model is a multinomial distribution These include tests for the goodness of fit and tests for contingency tables The book also discusses a score test and Wald s test their relationship with the likelihood ratio test and Karl Pearson s chi square test An important finding is that while testing any hypothesis about the parameters of a multinomial distribution a score test statistic and Karl Pearson s chi square test statistic are identical Numerous illustrative examples of differing difficulty level are incorporated to clarify the concepts For better assimilation of the notions various exercises are included in each chapter Solutions to almost all the exercises are given in the last chapter to motivate students towards solving these exercises and to enable digestion of the underlying concepts The concepts from asymptotic inference are crucial in modern statistics but are difficult to grasp in view of their abstract nature To overcome this difficulty keeping up with the recent trend of using R software for statistical computations the book uses it extensively for illustrating the concepts verifying the properties of estimators and carrying out various test procedures The last section of the chapters presents R codes to reveal and visually demonstrate the hidden aspects of different concepts and procedures Augmenting the theory with R software is a novel and a unique feature of the book The book is designed primarily to serve as a text book for a one semester introductory course in asymptotic statistical inference in a post graduate program such as Statistics Bio statistics or Econometrics It will also provide sufficient background information for studying inference in stochastic processes The book will cater to the need of a concise but clear and student friendly book introducing conceptually and computationally basics of asymptotic inference

Статистический анализ и визуализация данных с помощью R Сергей Мостицкий, Владимир Шитиков, 2022-01-29 R R R R R <http://r-analytics.blogspot.com> R [Introduction to Modern Cryptography](#) Jonathan Katz, Yehuda Lindell, 2007-08-31 Cryptography plays a key role in ensuring the privacy and integrity of data and the security of computer networks Introduction to Modern Cryptography provides a rigorous yet accessible

treatment of modern cryptography with a focus on formal definitions precise assumptions and rigorous proofs The authors introduce the core principles of modern cryptography including the modern computational approach to security that overcomes the limitations of perfect secrecy An extensive treatment of private key encryption and message authentication follows The authors also illustrate design principles for block ciphers such as the Data Encryption Standard DES and the Advanced Encryption Standard AES and present provably secure constructions of block ciphers from lower level primitives The second half of the book focuses on public key cryptography beginning with a self contained introduction to the number theory needed to understand the RSA Diffie Hellman El Gamal and other cryptosystems After exploring public key encryption and digital signatures the book concludes with a discussion of the random oracle model and its applications Serving as a textbook a reference or for self study *Introduction to Modern Cryptography* presents the necessary tools to fully understand this fascinating subject

Fundamentals of Actuarial Mathematics S. David Promislow, 2011-01-06 This book provides a comprehensive introduction to actuarial mathematics covering both deterministic and stochastic models of life contingencies as well as more advanced topics such as risk theory credibility theory and multi state models This new edition includes additional material on credibility theory continuous time multi state models more complex types of contingent insurances flexible contracts such as universal life the risk measures VaR and TVaR Key Features Covers much of the syllabus material on the modeling examinations of the Society of Actuaries Canadian Institute of Actuaries and the Casualty Actuarial Society SOA CIA exams MLC and C CSA exams 3L and 4 Extensively revised and updated with new material Orders the topics specifically to facilitate learning Provides a streamlined approach to actuarial notation Employs modern computational methods Contains a variety of exercises both computational and theoretical together with answers enabling use for self study An ideal text for students planning for a professional career as actuaries providing a solid preparation for the modeling examinations of the major North American actuarial associations Furthermore this book is highly suitable reference for those wanting a sound introduction to the subject and for those working in insurance annuities and pensions

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