

## Statistical Methods In Epidemiologic Research

Essential Statistical Methods for Medical Statistics presents only key contributions which have been selected from the volume in the Handbook of Statistics: Medical Statistics, Volume 27 (2009). While the use of statistics in these fields has a long and rich history, the explosive growth of science in general, and of clinical and epidemiological sciences in particular, has led to the development of new methods and innovative adaptations of standard methods. This volume is appropriately focused for individuals working in these fields. Contributors are internationally renowned experts in their respective areas. · Contributors are internationally renowned experts in their respective areas · Addresses emerging statistical challenges in epidemiological, biomedical, and pharmaceutical research · Methods for assessing Biomarkers, analysis of competing risks · Clinical trials including sequential and group sequential, crossover designs, cluster randomized, and adaptive designs · Structural equations modelling and longitudinal data analysis

The basis for much of medical public health practice comes from epidemiological research. This text describes current statistical tools that are used to analyze the association between possible risk factors and the actual risk of disease. Beginning with a broad conceptual framework on the disease process, it describes commonly used techniques for analyzing proportions and disease rates. These are then extended to model fitting, and the common threads of logic that bind the two analytic strategies together are revealed. Each chapter provides a descriptive rationale for the method, a worked example using data from a published study, and an exercise that allows the reader to practice the technique. Each chapter also includes an appendix that provides further details on the theoretical underpinnings of the method. Among the topics covered are Mantel-Haenszel methods, rates, survival analysis, logistic regression, and generalized linear models. Methods for incorporating aspects of study design, such as matching, into the analysis are discussed, and guidance is given for determining the power or the sample size requirements of a study. This text will give readers a foundation in applied statistics and the concepts of model fitting to develop skills in the analysis of epidemiological data.

Handbook of Statistical Methods for Case-Control Studies is written by leading researchers in the field. It provides an in-depth treatment of up-to-date and currently developing statistical methods for the design and analysis of case-control studies, as well as a review of classical principles and methods. The handbook is designed to serve as a reference text for biostatisticians and quantitatively-oriented epidemiologists who are working on the design and analysis of case-control studies or on related statistical methods research. Though not specifically intended as a textbook, it may also be used as a backup reference text for graduate level courses. Book Sections Classical designs and causal inference, measurement error, power, and small-sample inference Designs that use full-cohort information Time-to-event data Genetic epidemiology About the Editors Ørnulf Borgan is Professor of Statistics, University of Oslo. His book with Andersen, Gill and Keiding on counting processes in survival analysis is a world classic. Norman E. Breslow was, at the time of his death, Professor Emeritus in Biostatistics, University of Washington. For decades, his book with Nick Day has been the authoritative text on case-control methodology. Nilanjan Chatterjee is Bloomberg Distinguished Professor, Johns Hopkins University. He leads a broad research program in statistical methods for modern large scale biomedical studies. Mitchell H. Gail is a Senior Investigator at the National Cancer Institute. His research includes modeling absolute risk of disease, intervention trials, and statistical methods for epidemiology. Alastair Scott was, at the time of his death, Professor Emeritus of Statistics, University of Auckland. He was a major contributor to using survey sampling methods for analyzing case-control data. Chris J. Wild is Professor of Statistics, University of Auckland. His research includes nonlinear regression and methods for fitting models to response-selective data. This straightforward primer in basic statistics emphasizes its practical use in epidemiology and public health, providing an understanding of essential topics such as study design, data analysis and statistical methods used in the execution of medical research.

Integrating the Ideas, Theories, Principles, and Methods of Epidemiology

Statistical Methods for Global Health and Epidemiology

Handbook of Statistical Methods for Case-Control Studies

Statistics in Epidemiology

Handbook Of Medical Statistics

**Spatial epidemiology is the description and analysis of the geographical distribution of disease. It is more important now than ever, with modern threats such as bio-terrorism making such analysis even more complex. This second edition of Statistical Methods in Spatial Epidemiology is updated and expanded to offer a complete coverage of the analysis and application of spatial statistical methods. The book is divided into two main sections: Part I introduces basic definitions and terminology, along with map construction and some basic models. This is expanded upon in Part II by applying this knowledge to the fundamental problems within spatial epidemiology, such as disease mapping, ecological analysis, disease clustering, bio-terrorism, space-time analysis, surveillance and infectious disease modelling. Provides a comprehensive overview of the main statistical methods used in spatial epidemiology. Updated to include a new emphasis on bio-terrorism and disease surveillance. Emphasizes the importance of space-time modelling and outlines the practical application of the method. Discusses the wide range of software available for analyzing spatial data, including WinBUGS, SaTScan and R, and features an accompanying website hosting related software. Contains numerous data sets, each representing a different approach to the analysis, and provides an insight into various modelling techniques. This text is primarily aimed at medical statisticians, researchers and practitioners from public health and epidemiology. It is also suitable for postgraduate students of statistics and epidemiology, as well professionals working in government agencies.**

**The Encyclopedia of Epidemiology presents state-of-the-art information from the field of epidemiology in a less technical and accessible style and format. With more than 600 entries, no single reference provides as comprehensive a resource in as focused and appropriate manner. The entries cover every major facet of epidemiology, from risk ratios to case-control studies to mediating and moderating variables, and much more. Relevant topics from related fields such as biostatistics and health economics are also included.**

**This book examines statistical methods and models used in the fields of global health and epidemiology. It includes methods such as innovative probability sampling, data harmonization and encryption, and advanced descriptive, analytical and monitory methods. Program codes using R are included as well as real data examples. Contemporary global health and epidemiology involves a myriad of medical and health challenges, including inequality of treatment, the HIV/AIDS epidemic and its subsequent control, the flu, cancer, tobacco control, drug use, and environmental pollution. In addition to its vast scales and telescopic perspective; addressing global health concerns often involves examining resource-limited populations with large geographic, socioeconomic diversities. Therefore, advancing global health requires new epidemiological design, new data, and new methods for sampling, data processing, and statistical analysis. This book provides global health researchers with methods that will enable access to and utilization of existing data. Featuring contributions from both epidemiological and biostatistical scholars, this book is a practical resource for researchers, practitioners, and students in solving global health problems in research, education, training, and consultation.**

**Environmental epidemiology is the study of the environmental causes of disease in populations and how these risks vary in relation to intensity and duration of exposure and other factors like genetic susceptibility. As such, it is the basic science upon which governmental safety standards and compensation policies for environmental and occupational exposure are based. Profusely illustrated with examples from the epidemiologic literature on ionizing radiation and air pollution, thistext provides a systematic treatment of the statistical challenges that arise in environmental health studies and the use epidemiologic data in formulating public policy, at a level suitable for graduate students and epidemiologic researchers.After a general overview of study design and statistical methods for epidemiology generally, the book goes on to address the problems that are unique to environmental health studies, special-purpose designs like two-phase case-control studies and countermatching, statistical methods for modeling exposure-time-response relationships, longitudinal and time-series studies, spatial and ecologic methods, exposure measurement error, interactions, and mechanistic models. It also discusses studiesaimed at evaluating the public health benefits of interventions to improve the environment, the use of epidemiologic data to establish environmental safety standards and compensation policy, and concludes with emerging problems in reproductive epidemiology, natural and man-made disasters like globalwarming, and the global burden of environmentally caused disease. No other book provides such a broad perspective on the methodological challenges in this field at a level accessible to both epidemiologists and statisticians.**

**Statistical Tools for Epidemiologic Research**

**Methods, Techniques and Applications**

**A Practical Guide**

**Statistical Methods in Epidemiology**

**Statistical Thinking in Epidemiology**

Based on Kahn's An Introduction to Epidemiological Methods (Oxford, 1983), this book contains a wealth of new material, including a substantially expanded discussion of the statistical concepts and methods fundamental to epidemiology.

This unique volume focuses on the "tools" of medical statistics. It contains over 500 concepts or methods, all of which are explained very clearly and in detail. Each chapter focuses on a specific field and its applications. There are about 20 items in each chapter with each item independent of one another and explained within one page (plus references). The structure of the book makes it extremely handy for solving targeted problems in this area. As the goal of the book is to encourage students to learn more combinatorics, every effort has been made to provide them with a not only useful, but also enjoyable and engaging reading. This handbook plays the role of "tutor" or "advisor" for teaching and further learning. It can also be a useful source for "MOOC-style teaching".

Biostatistics and Epidemiology/A Primer for Health Professionals offers practical guidelines and gives a concise framework for research and interpretation in the field. In addition to major sections covering statistics and epidemiology, the book includes a comprehensive exploration of scientific methodology, probability, and the clinical trial. The principles and methods described in this book are basic and apply to all medical subspecialties, psychology and education. The primer will be especially useful to public health officials and students looking for an understandable treatment of the subject.

This book combines applied and theoretical approaches to the analysis of epidemiologic issues. It goes beyond elementary material to deal with real problems generated by disease data, and delves into less usual areas such as the analysis of spatial distributions, survival data, proportional hazards regression, and "computer-intensive" approaches to statistical estimation. Each method discussed in the text is illustrated with examples which include complete sets of data. Using actual data demonstrates the strengths and weaknesses of different analytic approaches in describing a disease process. The goal of the book is to allow the reader to develop a clear understanding of analytic approaches to problems in epidemiologic data analysis without relying on sophisticated mathematics and advanced statistical theory. For the Second Edition a new chapter on the analysis of matched data has been added. This covers both discrete and continuous outcomes and explains both the classic analytic approach and the conditional logistic regression model. New sections have also been added on contingency table data, misclassification, and additive models underlying tabular data. In all the chapters there are new applications and other revisions that make this Second Edition a clearer and more helpful exposition of the way statistical tools are used to analyze epidemiologic data.

Applying Quantitative Bias Analysis to Epidemiologic Data

Epidemiological Research

A Practical Interactive Guide to Epidemiology and Statistics

Concepts of Epidemiology

Teaching Epidemiology

Occupational epidemiology has emerged as a distinct subdiscipline of epidemiology and occupational medicine, addressing fundamental public health and scientific questions relating to the specification of exposure-response relationships, assessment of the adequacy of occupational exposure guidelines, and extrapolation of hazardous effects to other settings. This book reviews the wide range of principles and methods used in epidemiologic studies of working populations. It describes the historical development of occupational epidemiology, the approaches to characterizing workplace exposures, and the methods for designing and implementing epidemiologic studies. The relative strengths and limitations of different study designs are emphasized. Also included are more advanced discussions of statistical analysis, the estimation of doses to biological targets, and applications of the data derived from occupational epidemiology studies to disease modeling and risk assessment. The volume will serve both as a textbook in epidemiology and occupational medicine courses and as a practical handbook for the design, implementation, and interpretation of research in this field.

This self-contained account of the statistical basis of epidemiology has been written for those with a basic training in biology. No previous knowledge of the subject is assumed and mathematics is deliberately kept at a manageable level. Based on a highly successful course, this book explains the essential statistics for all epidemiologists.

Epidemiologic studies provide research strategies for investigating public health and scientific questions relating to the factors that cause and prevent ailments in human populations. Statistics in Epidemiology: Methods, Techniques and Applications presents a comprehensive review of the wide range of principles, methods and techniques underlying prospective, retrospective and cross-sectional approaches to epidemiologic studies. Written for epidemiologists and other researchers without extensive backgrounds in statistics, this new book provides a clear and concise description of the statistical tools used in epidemiology. Emphasis is given to the application of these statistical tools, and examples are provided to illustrate direct methods for applying common statistical techniques in order to obtain solutions to problems. Statistics in Epidemiology: Methods, Techniques and Applications goes beyond the elementary material found in basic epidemiology and biostatistics books and provides a detailed account of techniques:

Analytic procedures suitable for the study of human disease are scattered throughout the statistical and epidemiologic literature. Explanations of their properties are frequently presented in mathematical and theoretical language. This well-established text gives readers a clear understanding of the statistical methods that are widely used in epidemiologic research without depending on advanced mathematical or statistical theory. By applying these methods to actual data, Selvin reveals the strengths and weaknesses of each analytic approach. He combines techniques from the fields of statistics, biostatistics, demography and epidemiology to present a comprehensive overview that does not require computational details of the statistical techniques described. For the Third Edition, Selvin took out some old material (e.g. the section on rarely used cross-over designs) and added new material (e.g. sections on frequently used contingency table analysis). Throughout the text he enriched existing discussions with new elements, including the analysis of multi-level categorical data and simple, intuitive arguments that exponential survival times cause the hazard function to be constant. He added a dozen new applied examples to illustrate such topics as the pitfalls of proportional mortality data, the analysis of matched pair categorical data, and the age-adjustment of mortality rates based on statistical models. The most important new feature is a chapter on Poisson regression analysis. This essential statistical tool permits the multivariable analysis of rates, probabilities and counts.

Statistical Methods in Spatial Epidemiology

Application of Statistical Methods to Problems in Epidemiological Research

Bayesian Methods in Epidemiology

Statistics for Epidemiology

For more information about the book, and to download STATA outputs for the case studies presented in each chapter, please visit [www.oup.com/us/statisticaltools](http://www.oup.com/us/statisticaltools). --Book Jacket.

Anyone who attempts to read genetics or epidemiology research literature needs to understand the essentials of biostatistics. This book, a revised new edition of the successful Essentials of Biostatistics has been written to provide such an understanding to those who have little or no statistical background and who need to keep abreast of new findings in this fast moving field. Unlike many other elementary books on biostatistics, the main focus of this book is to explain basic concepts needed to understand statistical procedures. This Book: Surveys basic statistical methods used in the genetics and epidemiology literature, including maximum likelihood and least squares. Introduces methods, such as permutation testing and bootstrapping, that are becoming more widely used in both genetic and epidemiological research. Is illustrated throughout with simple examples to clarify the statistical methodology. Explains Bayes' theorem pictorially. Features exercises, with answers to alternate questions, enabling use as a course text. Written at an elementary mathematical level so that readers with high school mathematics will find the content accessible. Graduate students studying genetic epidemiology, researchers and practitioners from genetics, epidemiology, biology, medical research and statistics will find this an invaluable introduction to statistics.

Routine applications of advanced statistical methods on real data have become possible in the last ten years because desktop computers have become much more powerful and cheaper. However, proper understanding of the challenging statistical theory behind those methods remains essential for correct application and interpretation, and rarely seen in the medical literature. Modern Methods for Epidemiology provides a concise introduction to recent development in statistical methodologies for epidemiological and biomedical researchers. Many of these methods have become indispensable tools for researchers working in epidemiology and medicine but are rarely discussed in details by standard textbooks of biostatistics or epidemiology. Contributors of this book are experienced researchers and experts in their respective fields. This textbook provides a solid starting point for those who are new to epidemiology, and for those looking for guidance in more modern statistical approaches to observational epidemiology. Epidemiological and biomedical researchers who wish to overcome the mathematical barrier of applying those methods to their research will find this book an accessible and helpful reference for self-learning and research. This book is also a good source for teaching postgraduate students in medical statistics or epidemiology.

Bias analysis quantifies the influence of systematic error on an epidemiology study's estimate of association. The fundamental methods of bias analysis in epidemiology have been well described for decades, yet are seldom applied in published presentations of epidemiologic research. More recent advances in bias analysis, such as probabilistic bias analysis, appear even more rarely. We suspect that there are both supply-side and demand-side explanations for the scarcity of bias analysis. On the demand side, journal reviewers and editors seldom request that authors address systematic error aside from listing them as limitations of their particular study. This listing is often accompanied by explanations for why the limitations should not pose much concern. On the supply side, methods for bias analysis receive little attention in most epidemiology curriculums, are often scattered throughout textbooks or absent from them altogether, and cannot be implemented easily using standard statistical computing software. Our objective in this text is to reduce these supply-side barriers, with the hope that demand for quantitative bias analysis will follow.

Basic Biostatistics for Geneticists and Epidemiologists

Quantitative Methods for Health Research

Statistical Methods in Genetic Epidemiology

A Practical Approach

Statistical Methods for Epidemiologic Studies of the Health Effects of Air Pollution

The second edition of Robust Statistical Methods with R provides a systematic treatment of robust procedures with an emphasis on new developments and on the computational aspects. There are many numerical examples and notes on the R environment, and the updated chapter on the multivariate model contains additional material on visualization of multivariate data in R. A new chapter on robust procedures in measurement error models concentrates mainly on the rank procedures, less sensitive to errors than other procedures. This book will be an invaluable resource for researchers and postgraduate students in statistics and mathematics. Features · Provides a systematic, practical treatment of robust statistical methods · Offers a rigorous treatment of the whole range of robust methods, including the sequential versions of estimators, their moment convergence, and compares their asymptotic and finite-sample behavior · The extended account of multivariate models includes the admissibility, shrinkage effects and unbiasedness of two-sample tests · Illustrates the small sensitivity of the rank procedures in the measurement error model · Emphasizes the computational aspects, supplies many examples and illustrations, and provides the own procedures of the authors in the R software on the book's website The concepts of epidemiology, the science that uses statistical methods to investigate associations between risk factors and disease outcomes in human populations, are developed using examples involving real data from published studies. The relevant statistical methods are developed systematically to provide an integrated approach to observational and experimental studies. After covering basic measurement, study design, and study credibility issues, the author continues with basic statistical methods and techniques for adjusting risk estimates for confounders. Statistical models including logistic regression and the proportional hazards model for survival analysis are explained in detail in the following chapters, concluding with an explanation of the general methods for determining the sample size and power requirements for an epidemiological study. Taking advantage of the power, accessibility and user-friendliness of modern computer packages, the author uses a variety of interesting data sets and graphical displays to illustrate the methods. Epidemiological Research Methods will be of interest to students and research workers who need to learn and appreciate modern approaches to the subject. Without unnecessary emphasis on mathematics or theory, the book will enable the reader to gain a greater level of understanding of the underlying methods than is normally provided in books on epidemiology.

This practical guide to survival data and its analysis for readers with a minimal background in statistics shows why the analytic methods work and how to effectively analyze and interpret epidemiologic and medical survival data with the help of modern computer systems. The introduction presents a review of a variety of statistical methods that are not only key elements of survival analysis but are also central to statistical analysis in general. Techniques such as statistical tests, transformations, confidence intervals, and analytic modeling are presented in the context of survival data but are, in fact, statistical tools that apply to understanding the analysis of many kinds of data. Similarly, discussions of such statistical concepts as bias, confounding, independence, and interaction are presented in the context of survival analysis and also are basic components of a broad range of applications. These topics make up essentially a 'second-year', one-semester biostatistics course in survival analysis concepts and techniques for non-statisticians. Quantitative Research Methods for Health Professionals: A Practical Interactive Course is a superb introduction to epidemiology, biostatistics, and research methodology for the whole health care community. Drawing examples from a wide range of health research, thispractical handbook covers important contemporary health researchmethods such as survival analysis, Cox regression, andmeta-analysis, the understanding of which go beyond introductoryconcepts. The book includes self-assessment exercises throughout to helpstudents explore and reflect on their understanding and a clear distinction is made between a knowledge and concepts that allstudents should ensure they understand and b those that can beperused by students who wish to do so. The authors incorporate a program of practical exercises in SPSSusing a prepared data set that helps to consolidate the theory anddevelop skills and confidence in data handling, analysis andinterpretation.

Multivariate Methods in Epidemiology

Encyclopedia of Epidemiology

Statistical Models in Epidemiology

Survival Analysis for Epidemiologic and Medical Research

A Primer for Health Professionals

Written by a biostatistics expert with over 20 years of experience in the field, *Bayesian Methods in Epidemiology* presents statistical methods used in epidemiology from a Bayesian viewpoint. It employs the software package WinBUGS to carry out the analyses and offers the code in the text and for download online. The book examines study designs that while biomedical researchers may be able to follow instructions in the manuals accompanying the statistical software packages, they do not always have sufficient knowledge to choose the appropriate statistical methods and correctly interpret their results. *Statistical Thinking in Epidemiology* examines common methodological and statistical problems. *Statistical Methods in Epidemiologic Research* Jones & Bartlett Publishers *Methods in Epidemiologic Research* Statistical Methods in Epidemiology Oxford University Press, USA Statistics are a vital skill for epidemiologists and form an essential part of clinical medicine. This textbook introduces students to statistical epidemiology methods in a carefully structured and accessible format with clearly defined learning outcomes and suggested chapter orders that can be tailored to the needs of students at both undergraduate and graduate level from a range of academic backgrounds. The book covers study design, disease measuring, bias, error, analysis and modelling and is illustrated with figures, focus boxes, study questions and examples applicable to everyday clinical problems. Drawing on the authors' extensive teaching experience, the text provides an introduction to core statistical epidemiology that will be a valuable resource for students and lecturers in health and medical sciences and applied statistics, health staff, clinical researchers and data managers.

Robust Statistical Methods with R, Second Edition

Encyclopedia of Epidemiologic Methods

Epidemiological Research Methods

Epidemiology

International Encyclopedia of Statistical Science

This book provides an introduction to epidemiological research and statistical methods covering key concepts and all the main types of epidemiological study. It elicits a critical understanding of the purpose and context of quantitative research including the basis for selecting appropriate research designs from a thorough grounding in the uses and methods of epidemiology; key statistical concepts and techniques needed for the basic analysis of data; critical evaluation of statistical and epidemiological techniques in health research. The book has been designed around a number of core published information dealing with various topics from the United Kingdom, Europe and the low- and middle-income countries. These studies have been chosen to introduce you to a wide range of study methods. The main intriguing aspects of their design provide examples which are used to help you understand the fundamental principles of good research, and to practise these techniques yourself. The topics covered in this book include the following: scientific method and introductory concepts; routine data sources and descriptive epidemiology; surveys; cohort studies; case-control studies; and critical appraisal of research evidence. This book will be a valuable resource to health professionals, researchers, statisticians, data scientists, health programmers, policymakers, medical students, graduate and postgraduate students in public health and related disciplines.

This well-organized and clearly written text has a unique focus on methods of identifying the joint effects of genes and environment on disease patterns. It follows the natural sequence of research, taking readers through the study designs and statistical analysis techniques for determining whether a trait runs in families, testing hypotheses about whether a familial tendency is due to genetic or environmental factors or both, estimating the parameters of a genetic model, localizing and ultimately isolating the responsible genes, and finally characterizing their effects in the population. Examples from the literature on the genetic epidemiology of breast and colorectal cancer, among other diseases, illustrate this process. Although the book is oriented primarily towards graduate students in epidemiology, biostatistics and human genetics, it will also serve as a comprehensive reference work for researchers. Introductory chapters on molecular biology, Mendelian genetics, epidemiology, statistics, and population genetics will help make the book accessible to those coming from one of these fields without a background in the others. It strikes a good balance between epidemiologic study designs and statistical methods of data analysis.

Featuring articles from the prestigious Encyclopedia of Biostatistics, many of which have been revised and updated to include recent developments, the Encyclopedia of Epidemiologic Methods also includes newly commissioned articles reflecting the latest thinking in Cancer Registries Birth Defect Registries Meta Analysis of Epidemiologic Studies Epidemiology Overview Sample Size Sex Ratio at Birth Software Design and Analysis Featuring contributions from leading experts in academia, government and industry, the Encyclopedia of Epidemiologic Methods has been designed to complement existing texts on the subject by providing further extensive, up-to-date coverage of specialised topics and by introducing the reader to the research literature. Offering a wealth of information in a single resource, the Encyclopedia of Epidemiologic Methods Offers an excellent introduction to a vast array of specialised topics Includes in-depth coverage of the statistical underpinnings of contemporary epidemiologic methods Provides concise definitions and introductions to numerous concepts found in the current literature Uses extensive cross-references, helping to facilitate further research, and enabling the reader to locate definitions and related concepts In addition to featuring extensive articles in the areas of descriptive and analytic epidemiology, the Encyclopedia also provides the reader with articles on case-control design and offers substantial coverage of allied statistical methods.

The goal of this book is multidimensional: a) to help reviving Statistics education in many parts in the world where it is in crisis. For the first time authors from many developing countries have an opportunity to write together with the most prominent world authorities. The editor has spent several years searching for the most reputable statisticians all over the world. International contributors are either presidents of the local statistical societies, or head of the Statistics department at the main university, or the most distinguished statisticians in their countries. b) to enable any non-statistician to obtain quick and yet comprehensive and highly understandable view on certain statistical term, method or application c) to enable all the researchers, managers and practitioners to refresh their knowledge in Statistics, especially in certain controversial fields. d) to revive interest in statistics among students, since they will see its usefulness and relevance in almost all branches of Science.

Principles, Methods and Applications

Statistical Methods in Epidemiologic Research

Statistical Methods in Environmental Epidemiology

Modern Methods for Epidemiology

Basic Statistics and Epidemiology

**Epidemiology is a population science that underpins health improvement and health care, by exploring and establishing the pattern, frequency, trends, and causes of a disease. Concepts of Epidemiology comprehensively describes the application of core epidemiological concepts and principles to readers interested in population health research, policy making, health service planning, health promotion, and clinical care. The book provides an overview of study designs and practical framework for the geographical analysis of diseases, including accounting for error and bias within studies. It discusses the ways in which epidemiological data are presented, explains the distinction between association and causation, as well as relative and absolute risks, and considers the theoretical and ethical basis of epidemiology both in the past and the future. This new edition places even greater emphasis on interactive learning. Each chapter includes learning objectives, theoretical and numerical exercises, questions and answers, a summary of the key points, and exemplar panels to illustrate the concepts and methods under consideration. Written in an accessible and engaging style, with a specialized glossary to explain and define technical terminology, Concepts of Epidemiology is ideal for postgraduate students in epidemiology, public health, and health policy. It is also perfect for clinicians, undergraduate students and researchers in medicine, nursing and other health disciplines who wish to improve their understanding of fundamental epidemiological concepts.**

Highly praised for its broad, practical coverage, the second edition of this popular text incorporated the major statistical models and issues relevant to epidemiological studies. *Epidemiology: Study Design and Data Analysis, Third Edition* continues to focus on the quantitative aspects of epidemiological research. Updated and expanded, this edition shows students how statistical principles and techniques can help solve epidemiological problems. New to the Third Edition New chapter on risk scores and clinical decision rules New chapter on computer-intensive methods, including the bootstrap, permutation tests, and missing value imputation New sections on binomial regression models, competing risk, information criteria, propensity scoring, and splines Many more exercises and examples using both Stata and SAS More than 60 new figures After introducing study design and reviewing all the standard methods, this self-contained book takes students through analytical methods for both general and specific epidemiological study designs, including cohort, case-control, and intervention studies. In addition to classical methods, it now covers modern methods that exploit the enormous power of contemporary computers. The book also addresses the problem of determining the appropriate size for a study, discusses statistical modeling in epidemiology, covers methods for comparing and summarizing the evidence from several studies, and explains how to use statistical models in risk forecasting and assessing new biomarkers. The author illustrates the techniques with numerous real-world examples and interprets results in a practical way. He also includes an extensive list of references for further reading along with exercises to reinforce understanding. Web Resource A wealth of supporting material can be downloaded from the book's CRC Press web page, including: Real-life data sets used in the text SAS and Stata programs used for examples in the text SAS and Stata programs for special techniques covered Sample size spreadsheet

Teaching epidemiology requires skill and knowledge, combined with a clear teaching strategy and good pedagogic skills. The general advice is simple: if you are not an expert on a topic, try to enrich your background knowledge before you start teaching. Teaching

Epidemiology, third edition helps you to do this, and by providing the world-expert teacher's advice on how best to structure teaching gives a unique insight into what has worked in their hands. The book will help you plan your own tailored teaching program. The book is a guide to new teachers in the field at two levels; those teaching basic courses for undergraduates, and those teaching more advanced courses for students at postgraduate level. Each chapter provides key concepts and a list of key references. Subject specific methodology and disease specific issues (from cancer to genetic epidemiology) are dealt with in details. There is also a focused chapter on the principles and practice of computer-assisted learning.

Statistical ideas have been integral to the development of epidemiology and continue to provide the tools needed to interpret epidemiological studies. Although epidemiologists do not need a highly mathematical background in statistical theory to conduct and interpret such studies, they do need more than an encyclopedia of "recipes." Statistics for Epidemiology achieves just the right balance between the two approaches, building an intuitive understanding of the methods most important to practitioners and the skills to use them effectively. It develops the techniques for analyzing simple risk factors and disease data, with step-by-step extensions that include the use of binary regression. It covers the logistic regression model in detail and contrasts it with the Cox model for time-to-incidence data. The author uses a few simple case studies to guide readers from elementary analyses to more complex regression modeling. Following these examples through several chapters makes it easy to compare the interpretations that emerge from varying approaches. Written by one of the top biostatisticians in the field, Statistics for Epidemiology stands apart in its focus on interpretation and in the depth of understanding it provides. It lays the groundwork that all public health professionals, epidemiologists, and biostatisticians need to successfully design, conduct, and analyze epidemiological studies.

Biostatistics and Epidemiology

Methods in Epidemiologic Research

Statistical Epidemiology

Study Design and Data Analysis, Third Edition

Statistical Analysis of Epidemiologic Data

In this innovative new book, Steve Selvin provides readers with a clear understanding of intermediate biostatistical methods without advanced mathematics or statistical theory (for example, no Bayesian statistics, no causal inference, no linear algebra and only a slight hint of calculus). This text answers the important question: After a typical first-year course in statistical methods, what next? Statistical Tools for Epidemiologic Research thoroughly explains not just how statistical data analysis works, but how the analysis is accomplished. From the basic foundation laid in the introduction, chapters gradually increase in sophistication with particular emphasis on regression techniques (logistic, Poisson, conditional logistic and log-linear) and then beyond to useful techniques that are not typically discussed in an applied context. Intuitive explanations richly supported with numerous examples produce an accessible presentation for readers interested in the analysis of data relevant to epidemiologic or medical research.

Essential Statistical Methods for Medical Statistics

Research Methods in Occupational Epidemiology