Ebook free Multiphase flow analysis using population balance modeling bubbles drops and particles Full PDF

although i feel honored to write a foreword for this important book it is a task that i approach with some trepidation the topics covered in the book summarize the current state of the art in technical demography however my knowledge and expertise with respect to technical demography are limited to the most fundamental and intermediate level methods hence critical commentary on the contents of this volume is beyond my scope in this fore word since i have some understanding of the logic and substantive aspects of the methods rather than the complicated mathematics used in describing them my comments will necessarily be restricted to the book s general or ganization and content to date most texts published on technical demography have been limited to traditional demographic methods sources and limitations of data life table construction and applications standardization techniques various methods for preparing population estimates and forecasts etc however population specialists have in recent years been developing and successfully applying a variety of sophisticated techniques not covered in the more standard intro ductory texts in addition many traditional methods that are unique to the demographic discipline have been improved and extended concentrates on both applied demographic and planning techniques which rely upon geographical aspects of population data describes methods used to assess the impact of population change on facility demand school enrollment changes in product market transportation and recreation demand forecasting applied problems expose students to hands on planning problems questions and solutions use actual data this book offers an ideal introduction to the analysis of demographic data inside readers of all quantitative skill levels will find the information they need to develop a solid understanding of the methods used to study human populations and how they change over time due to such factors as birth death and migration the comprehensive systematic coverage defines basic concepts and introduces data sources champions the use of lexis diagrams as a device for visualizing demographic measures highlights the importance of making comparisons whether over time or between populations at a point in time that control for differences in population composition describes approaches to analyzing mortality fertility and migration and details approaches to the important field of population projection throughout the author makes the material accessible for readers through careful exposition the use of examples and other helpful features this book s thorough coverage of basic concepts and principles lays a firm foundation for anyone contemplating undertaking demographic research whether in a university setting or in a professional employment that takes on a demographic dimension requiring in house training first published in 1968 demographic analysis was written to provide a comprehensive account of demographic methods for those with a need to understand population movements the book provides an

introduction to some of the key tools used by demographers and the principal sources of population data beginning with an overview of the scope content and use of the population census it then examines methods for measuring births deaths and migration before setting out the methodology for determining the contributions of these elements to population change and estimating past or future changes the book also explores sickness as a population characteristic and a way of better understanding mortality variations this book provides an up to date overview of demographic analysis and methods including recent developments in demography concepts and methods from the nature of demographic information through data collection and the basics of statistical measures and on to demographic analysis itself are succinctly explained measures and analyses of fertility mortality life tables migration and demographic events such as marriage education and labour force are described while later chapters cover multiple decrement tables population projections the importance of testing and smoothing demographic data the stable population model and demographic software an emphasis on practical aspects and the use of real life examples based on data from around the globe make this book accessible whilst comprehensive references and links to data and other resources on the internet help readers to explore further the text is concise and well written making it ideally suited to a wider audience from students to academics and teachers students of demography geography sociology economics as well as professionals academics and students of marketing human resource management and public health who have an interest in population issues will all find this book useful in the 50 years that have passed since alfred latka s death in 1949 his position as the father of mathematical demography has been secure with his first demographic papers in 1907 and 1911 the latter co authored with f r sharpe he laid the foundations for stable population theory and over the next decades both largely completed it and found convenient mathematical approximations that gave it practical applica tions since his time the field has moved in several directions he did not foresee but in the main it is still his despite latka s stature however the reader still needs to hunt through the old journals to locate his principal works as yet no exten sive collections of his papers are in print and for his part he never as sembled his contributions into a single volume in english he did so in french in the two part theorie analytique des associations biologiques 1934 1939 drawing on his elements of physical biology 1925 and most of his mathematical papers latka offered french readers insights into his biological thought and a concise and mathematically accessible summary of what he called recent contributions in demographic analy sis we would be accurate in also calling it latka s contributions in demographic analysis sampling of populations fourth edition continues to serve as an all inclusive resource on the basic and most current practices in population sampling maintaining the clear and accessible style of the previous edition this book outlines the essential statistical methods for survey design and analysis while also exploring techniques that have developed over the past decade the fourth edition guides the reader through the basic concepts and procedures that accompany real world sample surveys such as sampling designs problems of missing data statistical analysis of multistage sampling data and nonresponse and poststratification adjustment procedures rather than employ a heavily mathematical approach the authors present illustrative examples that demonstrate the rationale behind common steps in the sampling process from creating effective surveys to analyzing collected data book jacket population analysis and models presents a discussion of demographic analysis and models this book has been translated from

french to provide access to an integrated textbook aimed at the french equivalent of undergraduates the book is organized into two parts part i is devoted to analysis and is subdivided into two sections the first section deals with elementary analysis or the steps that must precede an analysis of any complexity it comprises three chapters after an introduction it presents the analysis of the results of one census followed by a summary of the analysis of population change during a year the second section focuses on the analysis of demographic phenomena nuptiality fertility mortality mobility migration and on the population change that is their result part ii deals with models namely models of population dynamics models of family formation following marriage and nuptiality models this book has been written for students with very diverse backgrounds some of whom may have scarcely more than an elementary knowledge of algebra bayesian statistics has exploded into biology and its sub disciplines such as ecology over the past decade the free software program winbugs and its open source sister openbugs is currently the only flexible and general purpose program available with which the average ecologist can conduct standard and non standard bayesian statistics comprehensive and richly commented examples illustrate a wide range of models that are most relevant to the research of a modern population ecologist all winbugs openbugs analyses are completely integrated in software r includes complete documentation of all r and winbugs code required to conduct analyses and shows all the necessary steps from having the data in a text file out of excel to interpreting and processing the output from winbugs in r this book introduces and applies the stochastic modeling techniques and the first exit time theory in demography through describing the theory related to the health state of a population and the introduced health state function the book provides the derivation and classification of the human development stages the data fitting techniques and related programs are also presented many new and old terms are explored and quantitatively estimated especially the health state or vitality of a population the deterioration and related functions as well as healthy life expectancy the book provides the appropriate comparative applications and statistics as connecting tools accompanied by the existing literature and as such it will be a valuable source to demographers health scientists statisticians economists and sociologists this book focuses on the methodology and analysis of state and local population projections it describes the most commonly used data sources and application techniques for four types of projection methods cohort component trend extrapolation structural models and microsimulation it covers the components of population growth sources of data the formation of assumptions the development of evaluation criteria and the determinants of forecast accuracy it considers the strengths and weaknesses of various projection methods and pays special attention to the unique problems that characterize small area projections the authors provide practical guidance to demographers planners market analysts and others called on to construct state and local population projections they use many examples and illustrations and present suggestions for dealing with special populations unique circumstances and inadequate or unreliable data they describe techniques for controlling one set of projections to another for interpolating between time points for sub dividing age groups and for constructing projections of population related variables e g school enrollment households they discuss the role of judgment and the importance of the political context in which projections are made they emphasize the utility of projections or their usefulness for decision making in a world of competing demands and limited resources this comprehensive book will provide

readers with an understanding not only of the mechanics of the most commonly used population projection methods but also of the many complex issues affecting their construction interpretation evaluation and use the nature of demography rates and rations accuracy and error the life table the study of mortality measurement of fertility growth of population migration and the distribution of population manpower and working activities the central aim of many studies in population research and demography is to explain cause effect relationships among variables or events for decades population scientists have concentrated their efforts on estimating the causes of effects by applying standard cross sectional and dynamic regression techniques with regression coefficients routinely being understood as estimates of causal effects the standard approach to infer the effects of causes in natural sciences and in psychology is to conduct randomized experiments in population studies experimental designs are generally infeasible in population studies most research is based on non experimental designs observational or survey designs and rarely on quasi experiments or natural experiments using non experimental designs to infer causal relationships i e relationships that can ultimately inform policies or interventions is a complex undertaking specifically treatment effects can be inferred from non experimental data with a counterfactual approach in this counterfactual perspective causal effects are defined as the difference between the potential outcome irrespective of whether or not an individual had received a certain treatment or experienced a certain cause the counterfactual approach to estimate effects of causes from quasi experimental data or from observational studies was first proposed by rubin in 1974 and further developed by james heckman and others this book presents both theoretical contributions and empirical applications of the counterfactual approach to causal inference a synthesis of contemporary analytical and modeling approaches in population ecology the book provides an overview of the key analytical approaches that are currently used in demographic genetic and spatial analyses in population ecology the chapters present current problems introduce advances in analytical methods and models and demonstrate the applications of quantitative methods to ecological data the book covers new tools for designing robust field studies estimation of abundance and demographic rates matrix population models and analyses of population dynamics and current approaches for genetic and spatial analysis each chapter is illustrated by empirical examples based on real datasets with a companion website that offers online exercises and examples of computer code in the r statistical software platform fills a niche for a book that emphasizes applied aspects of population analysis covers many of the current methods being used to analyse population dynamics and structure illustrates the application of specific analytical methods through worked examples based on real datasets offers readers the opportunity to work through examples or adapt the routines to their own datasets using computer code in the r statistical platform population ecology in practice is an excellent book for upper level undergraduate and graduate students taking courses in population ecology or ecological statistics as well as established researchers needing a desktop reference for contemporary methods used to develop robust population assessments population control requires that the birth rate equal to the death rate if it is too low population will decline if it is too high population will increase if either condition persists long enough the population will diminish towards zero or increase towards infinity fortunately the birth trajectory does not have to be set once and for all but can be adjusted within limits since birth and death rates determine whether we are heading for population extinction or explosion they are

well designated vital statistics their understanding and use are a central theme of demographic analysis demographic analysis presents those techniques that are often called for in the study of demographic problems such techniques permit researchers to fill the gap between the large amounts of data made available by censuses and the theoretical and practical questions that need to be answered the techniques of this book effectively bring the data into confrontation with the problems in his treatment of population projection pressat applies methods developed in earlier sections for mortality arid fertility the emphasis is on population projection and accords with its usefulness in demographic analysis the meaning of a demographic rate or trend is brought out by seeing to what condition it would lead if continued no assumption is made that the concrete future will follow either path the substance of the book is devoted to the main themes of mortality and fertility underlying these as well as nearly every other kind of data with which the demographer deals is the problem of location in time the relation of vital events to the calendar and also to the age of the persons undergoing them pressat s detailed attention to this problem forms a solid basis for how current methodology accounts of demographic changes this book focuses on the methodology and analysis of state and local population projections it describes the most commonly used data sources and application techniques within each of three classes of projection methods cohort component trend extrapolation and structural models and covers the components of population growth the formation of assumptions the development of evaluation criteria and the determinants of forecast accuracy it considers the strengths and weaknesses of various projection methods paying special attention to the unique problems of making projections for small areas and closes with an examination of technological and methodological changes affecting the production of small area population projections the authors provide practical guidance to demographers planners and other analysts called on to construct state and local population projections they use many examples and illustrations and present suggestions for dealing with special populations unique circumstances and inadequate or unreliable data they also describe techniques for controlling one set of projections to another and for interpolating between two projections they discuss the role of judgment and the importance of the political context in which projections are made they emphasize the utility of projections or their usefulness for decision making in a world of competing demands and limited resources this comprehensive book will provide readers with an understanding not only of the mechanics of commonly used population projection methods but also of the many complex issues affecting their construction interpretation evaluation and use demographic analysis selected concepts tools and applications presents basic definitions practical techniques and methods as well as examples of studies based on the usage of demographic analysis in various institutions and economic entities the volume covers studies related to population distribution urbanization migration population change and dynamics aging longevity population theories and population projections it is an asset to academic and professional communities interested in advancing knowledge on diverse populations in various contexts such as public policies public services education and labor markets the book aims to help students of demography as well as practitioners of other fields of social sciences and people in government business and nonprofit organizations this book is the result of several years of experience in teaching principles and methods of demographic analysis at the department of demography of the university of louvain chapters 1 and 2 deal with the basic principles and methods involved in the two

approaches demographers usually take i e cohort and period analysis chapters 3 6 are devoted to applying these principles and methods to the particular phenomena with which the demog rapher is especially concerned mortality nuptiality natality and spatial mobility in order to maintain coherence examples have been placed at the end of each major section instead of being dispersed throughout the text this should enable the reader to grasp both the theory and the example as a whole rather than envisaging the theory as a particular reply to a specific problem finally each chapter ends with a list of references to which is added a selection of major books and articles in population analysis drawn mainly from the american british and french demographic literature a unique accessible guide to current practices in population sampling now in its third edition this popular sampling text continues to provide a highly readable practical treatment of the subject keeping the mathematics to a minimum it walks the reader through real world sample surveys from sampling designs to problems of missing data and nonresponse to estimation procedures this expanded and updated edition reflects the many developments in the field since the publication of the second edition including the latest methods of multistage sampling analysis of sample survey data and software manipulation sampling of populations third edition offers a wealth of examples illustrating key statistical issues with data sets available for downloading over the internet an emphasis on the most widely used sampling designs today including completely revised chapters on cluster sampling designs a new chapter devoted to telephone sampling and interviewing techniques contributed by robert casady and james m lepkowski who have made many important contributions in the area of telephone surveys illustrative examples detailing how statistical analysis can be performed by means of software now available for use on personal computers and designed specifically for analysis of sample survey data many new and updated practice exercises this book provides new theories applications and quantitative methods in demography population studies and statistics it presents and applies data analysis statistics and stochastic modeling techniques focusing on demography population aging mortality and health sciences the book describes diverse stochastic processes as well as markov and semi markov models in demography and population studies along with chapters on statistical models and methods in biostatistics and epidemiology as such the book will be a valuable source to demographers health scientists statisticians economists and sociologists providing a unified and comprehensive treatment of the theory and techniques of sub national population estimation this much needed publication does more than collate disparate source material it examines hitherto unexplored methodological links between differing types of estimation from both the demographic and sample survey traditions and is a self contained primer that combines academic rigor with a wealth of real world examples that are useful models for demographers between censuses which are expensive administratively complex and thus infrequent demographers and government officials must estimate population using either demographic modeling techniques or statistical surveys that sample a fraction of residents these estimates play a central role in vital decisions that range from funding allocations and rate setting to education health and housing provision they also provide important data to companies undertaking market research however mastering small area and sub national population estimation is complicated by scattered incomplete and outdated academic sources an issue this volume tackles head on rapidly increasing population mobility is making inter census estimation ever more important to strategic planners this book will make the theory and techniques

involved more accessible to anyone with an interest in developing or using population estimates virtual population analysis vpa is a widely used model for the analysis of fished populations while there are many vpa techniques they vary in the way they use data and fit the model rather than in the form of the model itself this manual describes the common vpa model and the assumptions on which it is based together with descriptions of associated diagnostic procedures and common reference points there has been increased interest in studying cancer patient survival in recent years which has prompted advances in methods for estimating and modeling cancer patient survival this book is the first focused on this topic and uses real data and software to illustrate the methods involved the supporting website provides code to enable readers to reproduce the analysis top illustrate the examples included in the book the book presents methods for population based cancer survival analysis that is the analysis of patient survival using data collected by population based cancer registries the primary focus will be on the statistical methods but non statistical issues that arise in population based studies of cancer patient survival such as registration coding and classification and follow up procedures are also discussed demography is the study of population structure and change as modern society becomes ever more complex it becomes increasingly important to be able to measure accurately all aspects of change in the population and estimate what its future size and composition might be this book describes and explains the methods demographers use to analyse population data looking at mortality and fertility population dynamics and population projection nuptiality and migration hinde demonstrates that most demographic methods are applications of certain fundamental principles this book covers material taught in introductory courses in population analysis while also including more advanced topics such as parity progression ratios survival analysis and birth interval analysis most chapters are followed by a range of exercises and a comprehensive set of solutions to these exercises is provided at the end of the book quattro and excel spreadsheet files containing data for all the numerical exercises plus some additional files of data from recent census and surveys are available via the internet written by leading multiphase flow and cfd experts this book enables engineers and researchers to understand the use of pbm and cfd frameworks population balance approaches can now be used in conjunction with cfd effectively driving more efficient and effective multiphase flow processes engineers familiar with standard cfd software including ansys cfx and ansys fluent will be able to use the tools and approaches presented in this book in the effective research modeling and control of multiphase flow problems builds a complete understanding of the theory behind the application of population balance models and an appreciation of the scale up of computational fluid dynamics cfd and population balance modeling pbm to a variety of engineering and industry applications in chemical pharmaceutical energy and petrochemical sectors the tools in this book provide the opportunity to incorporate more accurate models in the design of chemical and particulate based multiphase processes enables readers to translate theory to practical use with cfd software population genomics is a recently emerged discipline which aims at understanding how evolutionary processes influence genetic variation across genomes today in the era of cheaper next generation sequencing it is no longer as daunting to obtain whole genome data for any species of interest and population genomics is now conceivable in a wide range of fields from medicine and pharmacology to ecology and evolutionary biology however because of the lack of reference genome and of enough a priori data on the polymorphism

population genomics analyses of populations will still involve higher constraints for researchers working on non model organisms as regards the choice of the genotyping sequencing technique or that of the analysis methods therefore data production and analysis in population genomics purposely puts emphasis on protocols and methods that are applicable to species where genomic resources are still scarce it is divided into three convenient sections each one tackling one of the main challenges facing scientists setting up a population genomics study the first section helps devising a sampling and or experimental design suitable to address the biological question of interest the second section addresses how to implement the best genotyping or sequencing method to obtain the required data given the time and cost constraints as well as the other genetic resources already available finally the last section is about making the most of the generally huge dataset produced by using appropriate analysis methods in order to reach a biologically relevant conclusion written in the successful methods in molecular biologytm series format chapters include introductions to their respective topics lists of the necessary materials and reagents step by step readily reproducible protocols advice on methodology and implementation and notes on troubleshooting and avoiding known pitfalls authoritative and easily accessible data production and analysis in population genomics serves a wide readership by providing guidelines to help choose and implement the best experimental or analytical strategy for a given purpose in this book new mathematical and statistical techniques that permit more sophisticated analysis are refined and applied to questions of current concern in order to understand the forces that are driving the recent dramatic changes in family patterns the areas examined include the impact of the evolving second demographic transition where complex patterns of gender dynamics and social change are re orienting family life new analyses of marriage cohabitation union dynamics and union dissolution provide a fresh look at the changing family life cycle emerging patterns of partner choice and the impact of union dissolution on the life course the demography of kinship is explored and the importance of parity progression to the generation of the kinship web is highlighted the methodology of population projections by family status is examined and new results presented that demonstrate how recognizing family status advances long term policy objectives especially with regard to children and the elderly this book applies up to date methods to examine the demography of the family and will be of value to sociologists demographers and all those who are interested in the family this book is a selection of papers explaining a variety of techniques used in the analysis of historical demographic data the papers come from experts in the field of systematic analysis of past population patterns the papers are divided into five groups the first tackles the issues andchallenges of time series analysis and other approaches to population reconstruction the second group deals with different methods of family reconstitution and the problems of following life scholars and students of politics political theory philosophy sociology and jurisprudence anyoneinterested in nation building nationalism and self determination each topic starts with an explanation of the theoretical background necessary to allow full understanding of the technique and to facilitate future learning of more advanced or new methods and software explanations are designed to assume as little background in mathematics and statistical theory as possible except that some knowledge of calculus is necessary for certain parts sas commands are provided for applying the methods proc reg proc mixed and proc genmod all sections contain real life examples mostly from epidemiologic research first chapter

includes a sas refresher this volume is devoted to some of the most biologically significant control problems governed by continuous age dependent population dynamics it investigates the existence uniqueness positivity and asymptotic behaviour of the solutions of the continuous age structured models some comparison results are also established in the optimal control problems the emphasis is on first order necessary conditions of optimality these conditions allow the determination of the optimal control or the approximation of the optimal control problem the exact controllability for some models with diffusion and internal control is also studied these subjects are treated using new concepts and techniques of modern optimal control theory such as clarke s generalized gradient ekeland s variational principle hamilton jacobi equations and carleman estimates a background in advanced calculus and partial differential equations is required audience this work will be of interest to students in mathematics biology and engineering and researchers in applied mathematics control theory and biology this open access volume presents state of the art inference methods in population genomics focusing on data analysis based on rigorous statistical techniques after introducing general concepts related to the biology of genomes and their evolution the book covers state of the art methods for the analysis of genomes in populations including demography inference population structure analysis and detection of selection using both model based inference and simulation procedures last but not least it offers an overview of the current knowledge acquired by applying such methods to a large variety of eukaryotic organisms written in the highly successful methods in molecular biology series format chapters include introductions to their respective topics pointers to the relevant literature step by step readily reproducible laboratory protocols and tips on troubleshooting and avoiding known pitfalls authoritative and cutting edge statistical population genomics aims to promote and ensure successful applications of population genomic methods to an increasing number of model systems and biological questions like the original two volume work this work attempts to present a systematic and comprehensive exposition with illustrations of the methods used by technicians and research workers in dealing with demographic data the book is concerned with how data on population are gathered classified and treated to produce tabulations and various summarizing measures that reveal the significant aspects of the composition and dynamics of populations it sets forth the sources limitations underlying definitions and bases of classification as well as the techniques and methods that have been developed for summarizing and analyzing the data this book provides a review of methods for obtaining and analysing data from stage structured biological populations the topics covered are sam pling designs chapter 2 the estimation of parameters by maximum likelihood chapter 3 the analysis of sample counts of the numbers cif individuals in different stages at different times chapters 4 and 5 the analysis of data using leslie matrix types of model chapter 6 and key factor analysis chapter 7 there is also some discussion of the approaches to modelling and estimation that have been used in five studies of particular populations chapter 8 there is a large literature on the modelling of biological populations and a multitude of different approaches have been used in this area the various approaches can be classified in different ways southwood 1978 ch 12 but for the purposes of this book it is convenient to think of the three categories mathematical statistical and predictive modelling mathematical modelling is concerned largely with developing models that capture the most important qualitative features of population dynamics in this case the models that are developed do not have to be

compared with data from natural populations as representations of idealized systems they can be quite informative in showing the effects of changing parameters indicating what factors

are most important in promoting stability and so on highly recommended by the journal of official statistics the american statistician and other journals applied survey data analysis second

edition provides an up to date overview of state of the art approaches to the analysis of complex sample survey data building on the wealth of material on practical approaches to

descriptive analysis and regression modeling from the first edition this second edition expands the topics covered and presents more step by step examples of modern approaches to the

analysis of survey data using the newest statistical software designed for readers working in a wide array of disciplines who use survey data in their work this book continues to provide a

useful framework for integrating more in depth studies of the theory and methods of survey data analysis an example driven guide to the applied statistical analysis and interpretation of

survey data the second edition contains many new examples and practical exercises based on recent versions of real world survey data sets although the authors continue to use stata

for most examples in the text they also continue to offer sas spss sudaan r wesvar iveware and mplus software code for replicating the examples on the book s updated website

Advanced Techniques of Population Analysis 2013-06-29

although i feel honored to write a foreword for this important book it is a task that i approach with some trepidation the topics covered in the book summarize the current state of the art in technical demography however my knowledge and expertise with respect to technical demography are limited to the most fundamental and intermediate level methods hence critical commentary on the contents of this volume is beyond my scope in this fore word since i have some understanding of the logic and substantive aspects of the methods rather than the complicated mathematics used in describing them my comments will necessarily be restricted to the book s general or ganization and content to date most texts published on technical demography have been limited to traditional demographic methods sources and limitations of data life table construction and applications standardization techniques various methods for preparing population estimates and forecasts etc however population specialists have in recent years been developing and successfully applying a variety of sophisticated techniques not covered in the more standard intro ductory texts in addition many traditional methods that are unique to the demographic discipline have been improved and extended

The Geographical Analysis of Population *1994-02-16*

concentrates on both applied demographic and planning techniques which rely upon geographical aspects of population data describes methods used to assess the impact of population change on facility demand school enrollment changes in product market transportation and recreation demand forecasting applied problems expose students to hands on planning problems questions and solutions use actual data

Fundamentals of Demographic Analysis: Concepts, Measures and Methods *2015-11-04*

this book offers an ideal introduction to the analysis of demographic data inside readers of all quantitative skill levels will find the information they need to develop a solid understanding of the methods used to study human populations and how they change over time due to such factors as birth death and migration the comprehensive systematic coverage defines basic concepts and introduces data sources champions the use of lexis diagrams as a device for visualizing demographic measures highlights the importance of making comparisons whether over time or between populations at a point in time that control for differences in population composition describes approaches to analyzing mortality fertility and migration and details approaches to the important field of population projection throughout the author makes the material accessible for readers through careful exposition the use of examples and other

helpful features this book s thorough coverage of basic concepts and principles lays a firm foundation for anyone contemplating undertaking demographic research whether in a university setting or in a professional employment that takes on a demographic dimension requiring in house training

Demographic Analysis *2021-12-17*

first published in 1968 demographic analysis was written to provide a comprehensive account of demographic methods for those with a need to understand population movements the book provides an introduction to some of the key tools used by demographers and the principal sources of population data beginning with an overview of the scope content and use of the population census it then examines methods for measuring births deaths and migration before setting out the methodology for determining the contributions of these elements to population change and estimating past or future changes the book also explores sickness as a population characteristic and a way of better understanding mortality variations

Methods of Demographic Analysis *2013-10-22*

this book provides an up to date overview of demographic analysis and methods including recent developments in demography concepts and methods from the nature of demographic information through data collection and the basics of statistical measures and on to demographic analysis itself are succinctly explained measures and analyses of fertility mortality life tables migration and demographic events such as marriage education and labour force are described while later chapters cover multiple decrement tables population projections the importance of testing and smoothing demographic data the stable population model and demographic software an emphasis on practical aspects and the use of real life examples based on data from around the globe make this book accessible whilst comprehensive references and links to data and other resources on the internet help readers to explore further the text is concise and well written making it ideally suited to a wider audience from students to academics and teachers students of demography geography sociology economics as well as professionals academics and students of marketing human resource management and public health who have an interest in population issues will all find this book useful

Analytical Theory of Biological Populations 2013-06-29

in the 50 years that have passed since alfred latka s death in 1949 his position as the father of mathematical demography has been secure with his first demographic papers in 1907 and

1911 the latter co authored with f r sharpe he laid the foundations for stable population theory and over the next decades both largely completed it and found convenient mathematical approximations that gave it practical applica tions since his time the field has moved in several directions he did not foresee but in the main it is still his despite latka s stature however the reader still needs to hunt through the old journals to locate his principal works as yet no exten sive collections of his papers are in print and for his part he never as sembled his contributions into a single volume in english he did so in french in the two part theorie analytique des associations biologiques 1934 1939 drawing on his elements of physical biology 1925 and most of his mathematical papers latka offered french readers insights into his biological thought and a concise and mathematically accessible summary of what he called recent contributions in demographic analy sis we would be accurate in also calling it latka s contributions in demographic analysis

Sampling of Populations *1999-02-26*

sampling of populations fourth edition continues to serve as an all inclusive resource on the basic and most current practices in population sampling maintaining the clear and accessible style of the previous edition this book outlines the essential statistical methods for survey design and analysis while also exploring techniques that have developed over the past decade the fourth edition guides the reader through the basic concepts and procedures that accompany real world sample surveys such as sampling designs problems of missing data statistical analysis of multistage sampling data and nonresponse and poststratification adjustment procedures rather than employ a heavily mathematical approach the authors present illustrative examples that demonstrate the rationale behind common steps in the sampling process from creating effective surveys to analyzing collected data book jacket

Population *2013-10-22*

population analysis and models presents a discussion of demographic analysis and models this book has been translated from french to provide access to an integrated textbook aimed at the french equivalent of undergraduates the book is organized into two parts part i is devoted to analysis and is subdivided into two sections the first section deals with elementary analysis or the steps that must precede an analysis of any complexity it comprises three chapters after an introduction it presents the analysis of the results of one census followed by a summary of the analysis of population change during a year the second section focuses on the analysis of demographic phenomena nuptiality fertility mortality mobility migration and on the population change that is their result part ii deals with models namely models of population dynamics models of family formation following marriage and nuptiality models this book has been written for students with very diverse backgrounds some of whom may have scarcely more than an elementary knowledge of algebra

Bayesian Population Analysis Using WinBUGS *2012*

bayesian statistics has exploded into biology and its sub disciplines such as ecology over the past decade the free software program winbugs and its open source sister openbugs is currently the only flexible and general purpose program available with which the average ecologist can conduct standard and non standard bayesian statistics comprehensive and richly commented examples illustrate a wide range of models that are most relevant to the research of a modern population ecologist all winbugs openbugs analyses are completely integrated in software r includes complete documentation of all r and winbugs code required to conduct analyses and shows all the necessary steps from having the data in a text file out of excel to interpreting and processing the output from winbugs in r

Techniques of Population Analysis *1958*

this book introduces and applies the stochastic modeling techniques and the first exit time theory in demography through describing the theory related to the health state of a population and the introduced health state function the book provides the derivation and classification of the human development stages the data fitting techniques and related programs are also presented many new and old terms are explored and quantitatively estimated especially the health state or vitality of a population the deterioration and related functions as well as healthy life expectancy the book provides the appropriate comparative applications and statistics as connecting tools accompanied by the existing literature and as such it will be a valuable source to demographers health scientists statisticians economists and sociologists

Exploring the Health State of a Population by Dynamic Modeling Methods *2017-10-10*

this book focuses on the methodology and analysis of state and local population projections it describes the most commonly used data sources and application techniques for four types of projection methods cohort component trend extrapolation structural models and microsimulation it covers the components of population growth sources of data the formation of assumptions the development of evaluation criteria and the determinants of forecast accuracy it considers the strengths and weaknesses of various projection methods and pays special attention to the unique problems that characterize small area projections the authors provide practical guidance to demographers planners market analysts and others called on to construct state and local population projections they use many examples and illustrations and present suggestions for dealing with special populations unique circumstances and

inadequate or unreliable data they describe techniques for controlling one set of projections to another for interpolating between time points for sub dividing age groups and for constructing projections of population related variables e g school enrollment households they discuss the role of judgment and the importance of the political context in which projections are made they emphasize the utility of projections or their usefulness for decision making in a world of competing demands and limited resources this comprehensive book will provide readers with an understanding not only of the mechanics of the most commonly used population projection methods but also of the many complex issues affecting their construction interpretation evaluation and use

A Practitioner's Guide to State and Local Population Projections *2013-12-16*

the nature of demography rates and rations accuracy and error the life table the study of mortality measurement of fertility growth of population migration and the distribution of population manpower and working activities

Techniques of Population Analysis *1958*

the central aim of many studies in population research and demography is to explain cause effect relationships among variables or events for decades population scientists have concentrated their efforts on estimating the causes of effects by applying standard cross sectional and dynamic regression techniques with regression coefficients routinely being understood as estimates of causal effects the standard approach to infer the effects of causes in natural sciences and in psychology is to conduct randomized experiments in population studies experimental designs are generally infeasible in population studies most research is based on non experimental designs observational or survey designs and rarely on quasi experiments or natural experiments using non experimental designs to infer causal relationships i e relationships that can ultimately inform policies or interventions is a complex undertaking specifically treatment effects can be inferred from non experimental data with a counterfactual approach in this counterfactual perspective causal effects are defined as the difference between the potential outcome irrespective of whether or not an individual had received a certain treatment or experienced a certain cause the counterfactual approach to estimate effects of causes from quasi experimental data or from observational studies was first proposed by rubin in 1974 and further developed by james heckman and others this book presents both theoretical contributions and empirical applications of the counterfactual approach to causal inference

Causal Analysis in Population Studies *2009-05-05*

a synthesis of contemporary analytical and modeling approaches in population ecology the book provides an overview of the key analytical approaches that are currently used in demographic genetic and spatial analyses in population ecology the chapters present current problems introduce advances in analytical methods and models and demonstrate the applications of quantitative methods to ecological data the book covers new tools for designing robust field studies estimation of abundance and demographic rates matrix population models and analyses of population dynamics and current approaches for genetic and spatial analysis each chapter is illustrated by empirical examples based on real datasets with a companion website that offers online exercises and examples of computer code in the r statistical software platform fills a niche for a book that emphasizes applied aspects of population analysis covers many of the current methods being used to analyse population dynamics and structure illustrates the application of specific analytical methods through worked examples based on real datasets offers readers the opportunity to work through examples or adapt the routines to their own datasets using computer code in the r statistical platform population ecology in practice is an excellent book for upper level undergraduate and graduate students taking courses in population ecology or ecological statistics as well as established researchers needing a desktop reference for contemporary methods used to develop robust population assessments

Population Analysis in Geography *1979*

population control requires that the birth rate equal to the death rate if it is too low population will decline if it is too high population will increase if either condition persists long enough the population will diminish towards zero or increase towards infinity fortunately the birth trajectory does not have to be set once and for all but can be adjusted within limits since birth and death rates determine whether we are heading for population extinction or explosion they are well designated vital statistics their understanding and use are a central theme of demographic analysis demographic analysis presents those techniques that are often called for in the study of demographic problems such techniques permit researchers to fill the gap between the large amounts of data made available by censuses and the theoretical and practical questions that need to be answered the techniques of this book effectively bring the data into confrontation with the problems in his treatment of population projection pressat applies methods developed in earlier sections for mortality arid fertility the emphasis is on population projection and accords with its usefulness in demographic analysis the meaning of a demographic rate or trend is brought out by seeing to what condition it would lead if continued no assumption is made that the concrete future will follow either path the substance of the book is devoted to the main themes of mortality and fertility underlying these as well as nearly

every other kind of data with which the demographer deals is the problem of location in time the relation of vital events to the calendar and also to the age of the persons undergoing them pressat s detailed attention to this problem forms a solid basis for how current methodology accounts of demographic changes

Population Ecology in Practice *2019-12-20*

this book focuses on the methodology and analysis of state and local population projections it describes the most commonly used data sources and application techniques within each of three classes of projection methods cohort component trend extrapolation and structural models and covers the components of population growth the formation of assumptions the development of evaluation criteria and the determinants of forecast accuracy it considers the strengths and weaknesses of various projection methods paying special attention to the unique problems of making projections for small areas and closes with an examination of technological and methodological changes affecting the production of small area population projections the authors provide practical guidance to demographers planners and other analysts called on to construct state and local population projections they use many examples and illustrations and present suggestions for dealing with special populations unique circumstances and inadequate or unreliable data they also describe techniques for controlling one set of projections to another and for interpolating between two projections they discuss the role of judgment and the importance of the political context in which projections are made they emphasize the utility of projections or their usefulness for decision making in a world of competing demands and limited resources this comprehensive book will provide readers with an understanding not only of the mechanics of commonly used population projection methods but also of the many complex issues affecting their construction interpretation evaluation and use

Demographic Analysis *2020-10-11*

demographic analysis selected concepts tools and applications presents basic definitions practical techniques and methods as well as examples of studies based on the usage of demographic analysis in various institutions and economic entities the volume covers studies related to population distribution urbanization migration population change and dynamics aging longevity population theories and population projections it is an asset to academic and professional communities interested in advancing knowledge on diverse populations in various contexts such as public policies public services education and labor markets the book aims to help students of demography as well as practitioners of other fields of social sciences and people in government business and nonprofit organizations

State and Local Population Projections *2001-04-30*

this book is the result of several years of experience in teaching principles and methods of demographic analysis at the department of demography of the university of louvain chapters 1 and 2 deal with the basic principles and methods involved in the two approaches demographers usually take i e cohort and period analysis chapters 3 6 are devoted to applying these principles and methods to the particular phenomena with which the demog rapher is especially concerned mortality nuptiality natality and spatial mobility in order to maintain coherence examples have been placed at the end of each major section instead of being dispersed throughout the text this should enable the reader to grasp both the theory and the example as a whole rather than envisaging the theory as a particular reply to a specific problem finally each chapter ends with a list of references to which is added a selection of major books and articles in population analysis drawn mainly from the american british and french demographic literature

Introduction to Data Analysis *1985*

a unique accessible guide to current practices in population sampling now in its third edition this popular sampling text continues to provide a highly readable practical treatment of the subject keeping the mathematics to a minimum it walks the reader through real world sample surveys from sampling designs to problems of missing data and nonresponse to estimation procedures this expanded and updated edition reflects the many developments in the field since the publication of the second edition including the latest methods of multistage sampling analysis of sample survey data and software manipulation sampling of populations third edition offers a wealth of examples illustrating key statistical issues with data sets available for downloading over the internet an emphasis on the most widely used sampling designs today including completely revised chapters on cluster sampling designs a new chapter devoted to telephone sampling and interviewing techniques contributed by robert casady and james m lepkowski who have made many important contributions in the area of telephone surveys illustrative examples detailing how statistical analysis can be performed by means of software now available for use on personal computers and designed specifically for analysis of sample survey data many new and updated practice exercises

Demographic Analysis *2021-11-03*

this book provides new theories applications and quantitative methods in demography population studies and statistics it presents and applies data analysis statistics and stochastic modeling techniques focusing on demography population aging mortality and health sciences the book describes diverse stochastic processes as well as markov and semi markov models in demography and population studies along with chapters on statistical models and methods in biostatistics and epidemiology as such the book will be a valuable source to demographers health scientists statisticians economists and sociologists

Advanced Techniques of Population Analysis *1992*

providing a unified and comprehensive treatment of the theory and techniques of sub national population estimation this much needed publication does more than collate disparate source material it examines hitherto unexplored methodological links between differing types of estimation from both the demographic and sample survey traditions and is a self contained primer that combines academic rigor with a wealth of real world examples that are useful models for demographers between censuses which are expensive administratively complex and thus infrequent demographers and government officials must estimate population using either demographic modeling techniques or statistical surveys that sample a fraction of residents these estimates play a central role in vital decisions that range from funding allocations and rate setting to education health and housing provision they also provide important data to companies undertaking market research however mastering small area and sub national population estimation is complicated by scattered incomplete and outdated academic sources an issue this volume tackles head on rapidly increasing population mobility is making inter census estimation ever more important to strategic planners this book will make the theory and techniques involved more accessible to anyone with an interest in developing or using population estimates

Introduction to Demographic Analysis *1978-03*

virtual population analysis vpa is a widely used model for the analysis of fished populations while there are many vpa techniques they vary in the way they use data and fit the model rather than in the form of the model itself this manual describes the common vpa model and the assumptions on which it is based together with descriptions of associated diagnostic procedures and common reference points

Sampling of Populations, Solutions Manual *2003-08-11*

there has been increased interest in studying cancer patient survival in recent years which has prompted advances in methods for estimating and modeling cancer patient survival this book is the first focused on this topic and uses real data and software to illustrate the methods involved the supporting website provides code to enable readers to reproduce the analysis top illustrate the examples included in the book the book presents methods for population based cancer survival analysis that is the analysis of patient survival using data collected by population based cancer registries the primary focus will be on the statistical methods but non statistical issues that arise in population based studies of cancer patient survival such as registration coding and classification and follow up procedures are also discussed

Demography and Health Issues *2018-05-28*

demography is the study of population structure and change as modern society becomes ever more complex it becomes increasingly important to be able to measure accurately all aspects of change in the population and estimate what its future size and composition might be this book describes and explains the methods demographers use to analyse population data looking at mortality and fertility population dynamics and population projection nuptiality and migration hinde demonstrates that most demographic methods are applications of certain fundamental principles this book covers material taught in introductory courses in population analysis while also including more advanced topics such as parity progression ratios survival analysis and birth interval analysis most chapters are followed by a range of exercises and a comprehensive set of solutions to these exercises is provided at the end of the book quattro and excel spreadsheet files containing data for all the numerical exercises plus some additional files of data from recent census and surveys are available via the internet

Problems in Stable Population Theory *2012-03-01*

written by leading multiphase flow and cfd experts this book enables engineers and researchers to understand the use of pbm and cfd frameworks population balance approaches can now be used in conjunction with cfd effectively driving more efficient and effective multiphase flow processes engineers familiar with standard cfd software including ansys cfx and ansys fluent will be able to use the tools and approaches presented in this book in the effective research modeling and control of multiphase flow problems builds a complete understanding of the theory behind the application of population balance models and an appreciation of the scale up of computational fluid dynamics cfd and population balance modeling pbm to a variety

of engineering and industry applications in chemical pharmaceutical energy and petrochemical sectors the tools in this book provide the opportunity to incorporate more accurate models in the design of chemical and particulate based multiphase processes enables readers to translate theory to practical use with cfd software

Subnational Population Estimates *2012-05-23*

population genomics is a recently emerged discipline which aims at understanding how evolutionary processes influence genetic variation across genomes today in the era of cheaper next generation sequencing it is no longer as daunting to obtain whole genome data for any species of interest and population genomics is now conceivable in a wide range of fields from medicine and pharmacology to ecology and evolutionary biology however because of the lack of reference genome and of enough a priori data on the polymorphism population genomics analyses of populations will still involve higher constraints for researchers working on non model organisms as regards the choice of the genotyping sequencing technique or that of the analysis methods therefore data production and analysis in population genomics purposely puts emphasis on protocols and methods that are applicable to species where genomic resources are still scarce it is divided into three convenient sections each one tackling one of the main challenges facing scientists setting up a population genomics study the first section helps devising a sampling and or experimental design suitable to address the biological question of interest the second section addresses how to implement the best genotyping or sequencing method to obtain the required data given the time and cost constraints as well as the other genetic resources already available finally the last section is about making the most of the generally huge dataset produced by using appropriate analysis methods in order to reach a biologically relevant conclusion written in the successful methods in molecular biologytm series format chapters include introductions to their respective topics lists of the necessary materials and reagents step by step readily reproducible protocols advice on methodology and implementation and notes on troubleshooting and avoiding known pitfalls authoritative and easily accessible data production and analysis in population genomics serves a wide readership by providing guidelines to help choose and implement the best experimental or analytical strategy for a given purpose

Virtual Population Analysis 2001

in this book new mathematical and statistical techniques that permit more sophisticated analysis are refined and applied to questions of current concern in order to understand the forces that are driving the recent dramatic changes in family patterns the areas examined include the impact of the evolving second demographic transition where complex patterns of gender dynamics and social change are re orienting family life new analyses of marriage cohabitation union dynamics and union dissolution provide a fresh look at the changing family life cycle

emerging patterns of partner choice and the impact of union dissolution on the life course the demography of kinship is explored and the importance of parity progression to the generation of the kinship web is highlighted the methodology of population projections by family status is examined and new results presented that demonstrate how recognizing family status advances long term policy objectives especially with regard to children and the elderly this book applies up to date methods to examine the demography of the family and will be of value to sociologists demographers and all those who are interested in the family

Population-based Cancer Survival Analysis *2022-12-27*

this book is a selection of papers explaining a variety of techniques used in the analysis of historical demographic data the papers come from experts in the field of systematic analysis of past population patterns the papers are divided into five groups the first tackles the issues andchallenges of time series analysis and other approaches to population reconstruction the second group deals with different methods of family reconstitution and the problems of following life scholars and students of politics political theory philosophy sociology and jurisprudence anyoneinterested in nation building nationalism and self determination

Demographic Methods *2014-05-12*

each topic starts with an explanation of the theoretical background necessary to allow full understanding of the technique and to facilitate future learning of more advanced or new methods and software explanations are designed to assume as little background in mathematics and statistical theory as possible except that some knowledge of calculus is necessary for certain parts sas commands are provided for applying the methods proc reg proc mixed and proc genmod all sections contain real life examples mostly from epidemiologic research first chapter includes a sas refresher

Multiphase Flow Analysis Using Population Balance Modeling *2013-08-19*

this volume is devoted to some of the most biologically significant control problems governed by continuous age dependent population dynamics it investigates the existence uniqueness positivity and asymptotic behaviour of the solutions of the continuous age structured models some comparison results are also established in the optimal control problems the emphasis is

on first order necessary conditions of optimality these conditions allow the determination of the optimal control or the approximation of the optimal control problem the exact controllability for some models with diffusion and internal control is also studied these subjects are treated using new concepts and techniques of modern optimal control theory such as clarke s generalized gradient ekeland s variational principle hamilton jacobi equations and carleman estimates a background in advanced calculus and partial differential equations is required audience this work will be of interest to students in mathematics biology and engineering and researchers in applied mathematics control theory and biology

Data Production and Analysis in Population Genomics *2012-06-06*

this open access volume presents state of the art inference methods in population genomics focusing on data analysis based on rigorous statistical techniques after introducing general concepts related to the biology of genomes and their evolution the book covers state of the art methods for the analysis of genomes in populations including demography inference population structure analysis and detection of selection using both model based inference and simulation procedures last but not least it offers an overview of the current knowledge acquired by applying such methods to a large variety of eukaryotic organisms written in the highly successful methods in molecular biology series format chapters include introductions to their respective topics pointers to the relevant literature step by step readily reproducible laboratory protocols and tips on troubleshooting and avoiding known pitfalls authoritative and cutting edge statistical population genomics aims to promote and ensure successful applications of population genomic methods to an increasing number of model systems and biological questions

Analytical Family Demography *2018-09-12*

like the original two volume work this work attempts to present a systematic and comprehensive exposition with illustrations of the methods used by technicians and research workers in dealing with demographic data the book is concerned with how data on population are gathered classified and treated to produce tabulations and various summarizing measures that reveal the significant aspects of the composition and dynamics of populations it sets forth the sources limitations underlying definitions and bases of classification as well as the techniques and methods that have been developed for summarizing and analyzing the data

Old and New Methods in Historical Demography *1993*

this book provides a review of methods for obtaining and analysing data from stage structured biological populations the topics covered are sam pling designs chapter 2 the estimation of parameters by maximum likelihood chapter 3 the analysis of sample counts of the numbers cif individuals in different stages at different times chapters 4 and 5 the analysis of data using leslie matrix types of model chapter 6 and key factor analysis chapter 7 there is also some discussion of the approaches to modelling and estimation that have been used in five studies of particular populations chapter 8 there is a large literature on the modelling of biological populations and a multitude of different approaches have been used in this area the various approaches can be classified in different ways southwood 1978 ch 12 but for the purposes of this book it is convenient to think of the three categories mathematical statistical and predictive modelling mathematical modelling is concerned largely with developing models that capture the most important qualitative features of population dynamics in this case the models that are developed do not have to be compared with data from natural populations as representations of idealized systems they can be quite informative in showing the effects of changing parameters indicating what factors are most important in promoting stability and so on

Quantitative Methods in Population Health *2003-08-05*

highly recommended by the journal of official statistics the american statistician and other journals applied survey data analysis second edition provides an up to date overview of state of the art approaches to the analysis of complex sample survey data building on the wealth of material on practical approaches to descriptive analysis and regression modeling from the first edition this second edition expands the topics covered and presents more step by step examples of modern approaches to the analysis of survey data using the newest statistical software designed for readers working in a wide array of disciplines who use survey data in their work this book continues to provide a useful framework for integrating more in depth studies of the theory and methods of survey data analysis an example driven guide to the applied statistical analysis and interpretation of survey data the second edition contains many new examples and practical exercises based on recent versions of real world survey data sets although the authors continue to use stata for most examples in the text they also continue to offer sas spss sudaan r wesvar iveware and mplus software code for replicating the examples on the book s updated website

Analysis and Control of Age-Dependent Population Dynamics *2000-10-31*

Statistical Population Genomics *2020-09-18*

The Methods and Materials of Demography *1976-10-28*

Stage-Structured Populations *2013-03-09*

Methods of Demographic Analysis *2013-11-30*

Applied Survey Data Analysis *2017-07-12*

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