Contents

Preface			xi
Acknowledgements			iv
		5.5	
			4
1 Some Demographic Fundamentals			1
1.1 Introduction			1
1.2 The basic demographic equation and the basic methodeless and the basic demographic equation and the basic demographis			1
1.3 Demographic processes as transitions between states			2
1.4 Demographic rates not entrait stells most selded elid themen			3
1.5 Population structure			4
1.6 Data sources			4
Further reading			7
Exercises			7
2 The Measurement of Mortality			8
2 The Measurement of Mortality			0
2.1 Introduction			8
2.2 The crude death rate			8
2.3 Age-specific death rates			9
2.4 The two types of mortality rate			10
80 2.5 The Lexis chart glavlans Isvivus agian willing			12
2.6 The relationship between the two types of mortality rate			13
2.7 Advantages and disadvantages of the two types of mortalit	ty rate		15
Exercises			16
3 Comparing Mortality Experiences		1	19
3.1 Introduction			19
3.2 Single-figure indices	1		19
3.3 The standardized death rate	Introduction		21
3.4 The standardized mortality ratio			22
2.5 771 11-14 - 6-4 - 4 - 41-41-4			23
3.6 Other problems commonly encountered when comparing n	nortality	3.5	
	The average upe at man	200	25
Further reading			26
Exercises Exercises			26
Season all all the state of the			

vi Contents

4	The Life Table	30
	4.1 Introduction	30
	4.2 The theory of the life table	30
	4.3 Abridged life tables	33
	4.4* The force of mortality	35
	4.5 The calculation of life tables for specific populations	37
	4.6 English Life Table 14	39
	4.7 Using the life table in practical work	39
	4.8 The general shape of life table quantities	43
	Further reading	45
	Exercises	45
5	Multiple-Decrement Life Tables	49
1X	stormente	49
	5.1 Introduction	49
	Life tolelo	50
	5 A Comp examples	34
	5.5 Dependent and independent death rates	54
	The relationship between dependent and independent rates of decrement	54
	5.7 Concerns	58
	5.7 Censoring multiple-decrement life tables from data in the form of m-type rates	59
	Everying Silvering	60
	Data sources.	
	rther reading	62
6	Survival Analysis	(0
	6.1 Introduction	62
	6.2 A model of mortality willshold to memory see the second secon	62
	6.2* The oursiver function	03
	6.4* The probability density function	64
	6.5* The hazard function	65
	C.* The relationships between the three functions	66
	6.7 Censoring	68
	6.8* The estimation of mortality using survival analysis	73
	6.9 Using survival analysis to estimate a life table	74
	6.10 Advantages of survival analysis	
	Further reading	75
	Exercises	
	mparing Mortality Experiences	
7	The Analysis of Marriage	77
	7.1 Introduction	77
	STRI IDEGO DOMONOMO ON A	78
	7.2 The marriage process 7.3 Marriage rates 7.3 moits: branch to a finite of recentions	79
	1 1 1 1 lunio of maggioge	83
	7.4 Period and cohort analysis of marriage 7.5 Death and marriage combined	86
	7.6 The average age at marriage	
	7.7 The analysis of marriage using current status data	
	7.8 The analysis of other transitions in the marriage process	92
	7.9 Cohabitation and separation	9:
	Further reading	9:
	Exercises	,

	Co	ntents	vii
8	The Measurement of Fertility		95
	8.1 Introduction the special growth and exponential growth		95
	8.2 Some simple single-figure indices of fertility		95
	8.3 Age-specific fertility rates		97
	8.4 Standardization applied to fertility rates		99
	8.5 The total fertility rate		100
	 8.6 Period and cohort analysis of fertility 8.7 Advantages and disadvantages of the period approach 		101 102
	8.8 Advantages and disadvantages of the cohort approach		102
	Further reading was also against the content approach by against the content approach of the content approach and the con		104
	Exercises bioosi Isolitotelif a an outbuilte ase bina san sili		104
9	Parity Progression and all and a support against the support of th		107
87	Julime of a proof that a stable population has a constant age structure asset		107
	9.1 Introduction 9.2 Order-specific birth rates 9.3 Order-specific birth rates		107
	9.3 Parity progression ratios		100
	0.4 Pariad annitar annuarian astina		110
	9.5 Age-based and parity-based decomposition of total fertility		117
	Further reading		118
	Exercises vioent noitslugo9 eldat2 to enoits.		118
	ntroduction		
10	The Determinants of Fertility noisely and a stable population of Fertility		121
	10.1 Introduction symplet a company's workforce		121
	10.2 The effects of marriage on fertility		122
	10.3 Measures of fertility specific to marital status		123
	10.4 The effects of breastfeeding and abstinence from sexual intercourse after bit	th	124
	10.5 Birth control 10.6 Quantifying the effects of the proximate determinants of fertility 2 anibrary		125 125
	10.7 Reproductive histories		129
	Further reading		130
	Exercises		130
11	Birth Interval Analysis molbuborin		133
	iome preliminary issues notation 11.1 Introduction		133
	11.2 Birth intervals 11.2 Both for the analysis of high intervals 11.3 Data for the analysis of high intervals		133
	11.3 Data for the analysis of birth intervals		135
	11.4 The components of birth intervals		138
	11.5 Life table analysis 11.6 Survival analysis		140 141
	11.7 Covariates		144
	11.8* Estimating the parameters		145
	11.9 Extensions using survival analysis		147
	Further reading noisosborn		
	Exercises standard notification of the part of the par		
12	Population Growth The mathematical method		150
	12.1 Introduction bodiem isolatement and to solution before the solution bodiem isolatement and to solution bodiem isolatement and the solution become and the solution b		150
	12.2 Fertility and population growth		151

	0	
V111	Content	S

	12.3 The net reproduction rate villing 10 momentumes M	152
	12.4 Geometric and exponential growth	154
	12.5 The annual rate of growth and the net reproduction rate	157
	Exercises estat villing officege on A	157
13	Models of Population Structure	159
	Advantages and disadvantages of the period approach and established and all and a second approach a second approach and a second approach and a second approach a second approach and a second approach and a second approach a second approach and a second approach a second app	159
	13.2 The age and sex structure of a population to esgetne rheath bins esgetne when	8.8 159
	13.3 The demographic determinants of the shape of the population pyramid	162
	13.4 The age and sex structure as a historical record	163
	13.5 Stationary and stable populations	164
	13.6 Fertility, mortality and the age structure in stable populations	165
	13.7* Outline of a proof that a stable population has a constant age structure	167
	13.8* The rate of growth	
	13.9 The length of a generation	
	Further reading	
	Exercises Age-based and parity-based decomposition of total fartility	
811		176
14	Applications of Stable Population Theory	176
	14.1 Introduction villing to stable perulation villing to stable perulation	
	14.2 General features of a stable population	170
	14.3 Example: a company's workforce	180
	14.4 Demographic reconstruction willing no system to storillo edil	181
	14.5 Model life tables 14.6 Demographic reconstruction with two censuses	183
		186
	14.7 Some useful approximations Further reading with a manimum of the standard and to startly and anythrough	187
	Exercises especial evaluations A	187
	Exercises parbner is	
		100
15	The Analysis of Migration	190
	15.1 Introduction	
	15.2 Some preliminary issues neglection	191
	15.3 Data for the analysis of migration: moves and transitions	192 193
	Data for the analysis of birth intervals	194
	15.5 Indirect estimation of net migration	196
	15.6 Migration streams	197
	Further reading siaylang lavivrus	
16	Introducing Population Projection	198
	The Period and solver analysis of manager and analysis and mathematical	198
	16.1 Introduction	199
	16.2 The need for population projection	199
	16.3 Approaches to population projection 16.4 The general procedure	200
	16.4 The general procedure 16.5* The mathematical method	201
	166 The limitations of the mathematical method	20.
	Exercise	204

		Contents ix
17	The Component Method of Population Projection	205
	17.1 Introduction	205
	17.2 Principles of the method	206
	17.3 The details of the method	207
	17.4 The use of broader age groups	210
	17.5 Data requirements	211
	17.6 More complex component projections	215
	17.7 Population projections for subnational units	216
	Further reading	217
	Exercises	217
18	Population Projection and Population Dynamics	219
	18.1 Introduction	219
	18.2 The United Kingdom national population projections	219
	18.3 The impact of uncertainty about fertility	220
	18.4 Replacement level and population momentum	223
	18.5 A cautionary tale of population projection	224
	Further reading	225
App	pendix	226
Sol	utions to Exercises	228
	emilations ignalized can be extensive, and because the influre of	the data with which
Ref	erences	292
Inde	ex	297