THE
REGISTRAR GENERAL'S
DECENNIAL SUPPLEMENT

ENGLAND & WALES

1951

OCCUPATIONAL MORTALITY

PART II

Volume 1

COMMENTARY

LONDON: HER MAJESTY'S STATIONERY OFFICE

Price £7 7 0 Net
for two volumes.

THE
REGISTRAR GENERAL'S
DECENNIAL
SUPPLEMENT

ENGLAND & WALES

1951

OCCUPATIONAL MORTALITY

PART II

Volume 1

COMMENTARY

Decennial Supplement, England and Wales, 1951

Occupational Mortality Part II
Volume 1: Commentary

Errata

Page 156, Table EY, Congenital malformations, 1930-32.
for 3·0 1·4 2·2 2·9 3·3 3·8
read 5·5 5·0 5·4 5·6 5·7 5·4

Volume 2: Tables

Page 248 Sub-heading *should read* SOCIAL CLASS I.
Professional, etc., Occupations.

Page 264 Sub-heading *should read* SOCIO-ECONOMIC
GROUP 3. Higher administrative, professional and
managerial.

TABLE OF CONTENTS

CHAPTER V: MORTALITY OF OCCUPATIONAL GROUPS OF MEN AND WOMEN 91

CHAPTER VI: INFANT MORTALITY AND STILLBIRTHS

ADDENDA

NOTE : The symbol ∝, where used in these volumes to express the value of a standardised or a proportionate mortality ratio, indicates that one or more deaths were registered whereas none was expected (i.e. the calculated number of expected deaths was less than 0·5).

Page 302-303. Table 5. Add note to this table :—
The figures in this table are percentage ratios of the 1949-53 mortality rates of Males to the corresponding rates for Married Women of the same social class or occupation (husband's) group. For the purpose of the standardised comparisons in columns **j** to **au** both male and married women's experiences have been standardised on the basis of 1949-53 mortality for all males (including unoccupied).

Page 346. Table 8A. Note (2) delete and substitute :—
Standardised Maternal Mortality Ratio (S.M.M.R.). The Maternal Mortality Ratios shown in this table have been standardised by age of mother. In addition, figures for ' All Maternal Causes ' have been repeated (bottom of table) showing Maternal Mortality Ratios standardised by age and parity of mother. The standard figure distribution of deaths used for the calculation of these latter ratios, was that of maternal deaths (all classes) registered in 1949.

Page 424. Table 16C. This table deals with deaths of legitimate infants only.

Page 428. Table 18. Add to heading :—
' classified by maternal age and parity '.

GENERAL EXPLANATORY NOTES

(1) Deaths.—The deaths upon which the investigation is founded are, with certain exceptions, the deaths registered in England and Wales in the five calendar years 1949 to 1953 inclusive and their analyses are based upon the particulars of age, occupation and cause of death recorded at registration. In this connection it should be noted that in the Married Women's experience the occupation characteristic used is that of the husband, the woman's own occupation, if she had one, being entirely disregarded.

The exceptions are:—

(a) Deaths from *Malignant neoplasm, cervix uteri* and from *Malignant neoplasm, other parts of uterus* (Tables 3B, 3C, 4, 6, 7, AH-AL, AQ and DN-DQ) relate to the four calendar years 1950 to 1953 inclusive, because enquiries concerning deaths where the part of uterus was not specified, were not made prior to 1950.

(b) Deaths from Accidental Causes (Table 12) and from Violent Causes (Table 13) also relate to the four years 1950 to 1953 inclusive. Information relating to place of accident or nature of injury for years prior to 1950 is not available.

(c) Deaths from Aneurysm of aorta, with mention of syphilis and without mention of syphilis (Tables 3A, B, C, (iii)) relate to the two years 1952, 1953. Information as to whether syphilis was, or was not, mentioned on death certificate is not available for years prior to 1952.

(d) Non-civilian deaths for 1949 were not classified by area and have been omitted from Tables 9 and 11.

(2) Exposed to Risk.—The appropriate population exposed to risk, to which the deaths have been related in the calculation of death rates, is generally the corresponding census population multiplied by 5, the date of the census, viz., 8th April, 1951, being regarded as sufficiently close to the centre of the 5 years 1949-1953 to be accepted as a satisfactory mean without adjustment, and the age and occupation analysis being based on the census record.

But the following modifications and exceptions are to be noted, viz:—

(a) Married Women's experience.—In this section the deaths are drawn from the whole married women population, numbering 11,091,938 at the census. But the population analysable by occupation of husband was limited to those married women who were enumerated with their husbands, numbering 10,260,173 only, leaving 831,765 whose ages were known but not their husband's occupation. At the same time 734,766 husbands were enumerated apart from their wives, and in respect of these, occupation was available but not age of wife. The "exposed to risk" was obtained by increasing the 10,260,173, first in respect of 734,766 by rateable additions at each wife's age in an occupation group aggregating to the number of husbands in that occupation group not enumerated with their wives, and then in respect of the balance, viz. 96,099, by rateable distributions over all occupations aggregating to the numbers required to make up the total enumerated married women in successive age groups.

(b) Infant Mortality.—Following customary practice the deaths are related to births in preference to a population aged 0-1. In the case of deaths of legitimate infants the "exposed to risk" are the legitimate registered births of 1951 multiplied by 5, the occupation characteristics being those of the father as respectively recorded in the death and birth registers. Deaths of illegitimate infants are related to illegitimate births of 1951 and occupation of mother.

(c) Stillbirths.—The "exposed to risk" are the total births (live and still) of 1951 multiplied by 5. Legitimacy and occupation characteristics of parents are treated as for Infant Mortality.

(3) Occupations.—The occupation groups identified throughout the investigation embrace the active, out of work and retired. The unoccupied, where shown, are accordingly exclusive of the out of work and the retired. All groups are based upon the *Census 1951, Classification of Occupations,** which contains the detailed allocations of the many thousands of recognized occupational descriptions to the unit groups, together with an alphabetical index of these terms and their code numbers. The introductory matter includes notes on the principles followed in the classification and on its detailed application in practice. The complete list of orders, sub-orders and unit occupational groups is given in Table 1.

(4) Social Class.—Since the 1911 Census it has been customary to arrange the very large number of unit groups of the Occupational Classification into a small number of broad categories (traditionally called Social Classes) as an aid to certain kinds of statistical analysis. Each occupational unit group has been assigned as a whole to an appropriate class; this framework is not based on a separate classification of individuals.

There are five social classes. A proper appreciation of their content can only be had by a study of the detailed allocation of the occupational unit groups to each category but their general nature is sufficiently described as follows:—

Class I—Professional, etc., Occupations
Class II—Intermediate Occupations
Class III—Skilled Occupations

*Census 1951, England and Wales, Classification of Occupations. H.M.S.O. reprinted 1956.

Class IV—Partly Skilled Occupations
Class V—Unskilled Occupations

For the purpose of this investigation, Classes III, IV and V have been functionally sub-divided as follows:—

Class III
- (a) Mineworkers
- (b) Transport Workers
- (c) Clerical Workers
- (d) Armed Forces
- (e) Others

Class IV
- (a) Agricultural Workers
- (b) Others

Class V
- (a) Building and Dock Labourers
- (b) Others

The specific assignment to these Classes and Sub-Classes of the occupational unit groups is shown in Table 1.

(5) **Socio-economic Group.**—For certain investigations it has been felt that the social class grading described in the preceding paragraph is not entirely adequate, and that a different arrangement of the occupational unit groups (each taken as a whole) into a somewhat larger number of slightly more sharply defined groups would be more useful. There are thirteen of these groups which are called socio-economic groups; their structure is discussed on page 15.

(6) **Areas identified in the Tables:**

Standard Regions.—The geographical regions into which England and Wales was divided for purposes of statistical analysis in the 1931 Occupational Mortality report* have been superseded by the Standard Regions; these were the areas standardised in 1946 for various administrative purposes. The constitution of the Standard Regions is as follows:—

REGION I *Northern*	REGION IV *Eastern*	REGION VI *Southern*	Wales II (Remainder)
Cumberland	Bedfordshire	Berkshire	Anglesey
Durham	Cambridgeshire	Buckinghamshire	Caernarvonshire
Northumberland	Ely, Isle of	Dorset	Cardiganshire
Westmorland	Essex, Part of²	Oxfordshire	Denbighshire
Yorkshire, North Riding	Hertfordshire, Part of³	Southampton	Flintshire
	Huntingdonshire	Wight, Isle of	Merionethshire
REGION II	Norfolk		Montgomeryshire
East and West Ridings	Suffolk, East		Pembrokeshire
Yorkshire, East Riding	Suffolk, West	REGION VII	Radnorshire
Yorkshire, West Riding		*South Western*	
	REGION V	Cornwall	
	London and South	Devon	REGION IX
REGION III	*Eastern*	Gloucestershire	*Midland*
North Midland	Essex, Part of⁴	Somerset	Herefordshire
Derbyshire, Part of¹	Hertfordshire, Part of⁵	Wiltshire	Shropshire
Leicestershire	Kent		Staffordshire
Lincolnshire—	London Admin. County		Warwickshire
Parts of Holland	Middlesex	REGION VIII	Worcestershire
Parts of Kesteven	Surrey	*Wales I (South East)*	
Parts of Lindsey	Sussex, East	Brecknockshire	
Northamptonshire	Sussex, West	Carmarthenshire	REGION X
Nottinghamshire		Glamorganshire	*North Western*
Peterborough, Soke of		Monmouthshire	Cheshire
Rutland			Derbyshire, Part of⁶
			Lancashire

1. All except Buxton M.B., Glossop M.B., New Mills U.D., Whaley Bridge U.D., and Chapel en le Frith R.D.
2. All except East Ham C.B., West Ham C.B., Chingford M.B., Wanstead and Woodford M.B., Leyton M.B., Walthamstow M.B., Ilford M.B., Barking M.B., Dagenham M.B., Waltham Holy Cross U.D. and Chigwell U.D.
3. All except Barnet U.D., Bushey U.D., Cheshunt U.D., East Barnet U.D., and Elstree R.D.
4. All areas stated in 2 above.
5. All areas stated in 3 above.
6. All areas stated in 1 above.

Regional Groups.—In certain tables, where a full regional analysis is not shown analyses have been made for groups of regions; these are constituted as follows:—

North Regional Group	Northern
	East and West Ridings
	North Western
Midland and East Regional Group	North Midland
	Midland
	Eastern
South Regional Group	London and South Eastern
	Southern
	South Western
Wales	Wales
Wales I	The counties of Brecknock, Carmarthen,
	Glamorgan and Monmouth
Wales II	Remainder

*The Registrar General's Decennial Supplement, England and Wales, 1931, Part IIA. Occupational Mortality. H.M.S.O. 1938.

2

Conurbations.—The conurbation areas used in this volume are those which were agreed in 1950, under the aegis of the Interdepartmental Committee on Social and Economic Research and the Central Statistical Office, for the presentation of official statistics generally.* They each consist of an aggregation of entire local authority areas and are constituted as follows:—

Tyneside

Durham		*Northumberland*	
Gateshead C.B.	Felling U.D.	Newcastle upon Tyne C.B.	Longbenton U.D.
South Shields C.B.	Hebburn U.D.	Tynemouth C.B.	Newburn U.D.
	Jarrow M.B.		Wallsend M.B.
	Whickham U.D.	Gosforth U.D.	Whitley Bay M.B.

West Yorkshire

Yorkshire, West Riding

Bradford C.B.	Aireborough U.D.	Heckmondwike U.D.	Ossett M.B.
Dewsbury C.B.	Baildon U.D.	Holmfirth U.D.	Pudsey M.B.
Halifax C.B.	Batley M.B.	Horbury U.D.	Queensbury and Shelf U.D.
Huddersfield C.B.	Bingley U.D.	Horsforth U.D.	
Leeds C.B.	Brighouse M.B.	Keighley M.B.	Ripponden U.D.
Wakefield C.B.			Rothwell U.D.
	Colne Valley U.D.	Kirkburton U.D.	Shipley U.D.
	Denby Dale U.D.	Meltham U.D.	Sowerby Bridge U.D.
	Denholme U.D.	Mirfield U.D.	Spenborough M.B.
	Elland U.D.	Morley M.B.	Stanley U.D.

South East Lancashire

Cheshire	*Lancashire*		
Stockport C.B.	Bolton C.B.	Horwich U.D.	Urmston U.D.
	Bury C.B.	Irlam U.D.	Wardle U.D.
Alderley Edge U.D.	Manchester C.B.	Kearsley U.D.	Westhoughton U.D.
Altrincham M.B.	Oldham C.B.	Lees U.D.	Whitefield U.D.
Bowdon U.D.	Rochdale C.B.	Littleborough U.D.	Whitworth U.D.
Bredbury and Romiley U.D.	Salford C.B.	Little Lever U.D.	Worsley U.D.
Cheadle and Gatley U.D.	Ashton under Lyne M.B.	Middleton M.B.	
Dukinfield M.B.	Audenshaw M.B.	Milnrow U.D.	
Hale U.D.	Chadderton U.D.	Mossley M.B.	
Hazel Grove and Bramhall U.D.	Crompton U.D.	Prestwich M.B.	
Hyde M.B.	Denton U.D.	Radcliffe M.B.	
Marple U.D.	Droylsden U.D.	Royton U.D.	
Sale M.B.	Eccles M.B.	Stretford M.B.	
Stalybridge M.B.	Failsworth U.D.	Swinton and Pendlebury M.B.	
Wilmslow U.D.	Farnworth M.B.	Tottington U.D.	
	Heywood M.B.		
Disley R.D.			

Merseyside

Cheshire		*Lancashire*	
Birkenhead C.B.	Ellesmere Port M.B.	Bootle C.B.	Huyton with Roby U.D.
Wallasey C.B.	Hoylake U.D.	Liverpool C.B.	Litherland U.D.
	Neston U.D.		
Bebington M.B.	Wirral U.D.	Crosby M.B.	

West Midlands

Staffordshire		*Warwickshire*	*Worcestershire*
Smethwick C.B.	Darlaston U.D.	Birmingham C.B.	Dudley C.B.
Walsall C.B.	Rowley Regis M.B.		
West Bromwich C.B.	Sedgley U.D.	Solihull M.B.	Halesowen M.B.
Wolverhampton C.B.	Tettenhall U.D.	Sutton Coldfield M.B.	Oldbury M.B.
	Tipton M.B.		Stourbridge M.B.
Aldridge U.D.			
Amblecote U.D.	Wednesbury M.B.		
Bilston M.B.	Wednesfield U.D.		
Brierley Hill U.D.	Willenhall M.B.		
Coseley U.D.			

*See *Census 1951, England and Wales, Preliminary Report*, page xxii, H.M.S.O. 1951; also *Census 1951, England and Wales, Report on Greater London and Five Other Conurbations*, page xv, H.M.S.O. 1956.

3

London (whole county)	Kent	Essex
Middlesex (whole county)	Beckenham M.B.	East Ham C.B.
	Bexley M.B.	West Ham C.B.
Surrey	Bromley M.B.	
Croydon C.B.	Chislehurst and Sidcup	Barking M.B.
	Kingston upon Thames M.B.	Chigwell U.D.
Banstead U.D.	Crayford U.D.	Chingford M.B.
Barnes M.B.	Malden and Coombe M.B.	Dagenham M.B.
Beddington and Wallington M.B.	Erith M.B.	Ilford M.B.
	Merton and Morden U.D.	Orpington U.D.
Carshalton U.D.	Mitcham M.B.	Penge U.D.
	Richmond M.B.	Leyton M.B.
	Surbiton M.B.	Waltham Holy Cross U.D.
Coulsdon and Purley U.D.	Hertfordshire	Walthamstow M.B.
Epsom and Ewell M.B.	Sutton and Cheam M.B.	Wanstead and Woodford M.B.
Esher U.D.	Wimbledon M.B.	
	Barnet U.D.	
	Bushey U.D.	
	Cheshunt U.D.	
	East Barnet U.D.	
	Elstree R.D.	

(7) **Causes of death.**—The causes of death used throughout the investigation are those set out in the 1948 edition of the International Statistical Classification of Diseases, Injuries and Causes of Death* and may be precisely identified therewith by the code numbers which appear with the descriptive titles.

(8) **Expected Deaths, S.M.R., P.M.R.**—Full descriptions of the meaning of these terms and methods used in their calculation will be found on pages 17–18.

(9) **Significance.**—Throughout these tables, rates and indices calculated upon less than 50 deaths are distinguished in italics and those calculated upon less than 10 deaths are enclosed in brackets.

*Manual obtainable from Her Majesty's Stationery Office.

CHAPTER I: INTRODUCTION

Scope and purpose of enquiry

"... the professions and occupations of men open a new field of inquiry, on which we are now prepared to enter, not unconscious, however, of the peculiar difficulties that beset all inquiries into the mortality of limited, fluctuating, and sometimes ill-defined sections of the population."

(Registrar General's Report, 1851).

THIS passage introduced the first in the series of decennial occupational mortality reports published in England and Wales during the past hundred years. The present report (with Part I published in 1954) is the tenth in the series. It deals with deaths registered in 1949–53, classified according to occupation, and relates these deaths to the number of persons enumerated within these occupations at the Census of 1951.

The wide interest stimulated by these successive reports and the demands for more detailed information have led to increases in the size and complexity of the analyses on each occasion. The principal change in the present volume has been the extension of the period of years covered to five, compared with the three years on which previous studies have been based from 1880–82 until 1930–32. Like the decennial report for 1931 the present report analyses the occupational mortality, at ages 16 and over, of men, of married women (classified by occupation of husband), and of single women. It also analyses the deaths of infants under 1 year of age according to father's occupation. In addition it analyses stillbirths by father's occupation, continuing in greater detail the stillbirth analysis by social classes and sub-classes introduced in Part I published in 1954.

Deaths in the various occupational groups have been tabulated in considerable detail of cause, but, despite the increased number of years covered, it has not been judged advisable to carry this analysis by cause much further than in previous reports. As in the 1931 report, however, special tables have been given for deaths from cancer and from maternal complications, and in addition a special tabulation of fatal accidents has been introduced.

The greater part of this volume, like its predecessor, is taken up with the statistical presentation of death rates of persons in various occupations and groups of occupations. The aim of the analysis is to reveal such mortality differences as there may be among these various groups; and so, on the one hand draw attention to occupations in which death rates are high, and on the other hand indicate diseases where mortality shows some association with occupational or related circumstances, in the belief that clues about the causation of diseases contribute to their prevention.

For the reasons given in detail below, however, the reader must not assume that the mortality statistics in this volume in all cases reflect the true mortality risks of a particular occupation or occupational group. A high, or low, death rate recorded against an occupation should be regarded as an indication for consideration of all the circumstances whereby such a rate might arise. Only if none of the special limitations discussed below is relevant is it justifiable to accept a particular figure as indicating the presence, or absence, of special occupational mortality risk.

Previous reports in this series have shown, as it is again shown in the present volume, that high mortality rates genuinely associated with particular occupations do not always arise from adverse circumstances directly associated with the occupation itself or with the immediate conditions under which it is carried on. Often the socio-environmental circumstances of an occupation, its locality, the standard of living of those engaged in the occupation, their housing, clothing, education, dietary habits, opportunities for recreation, and attitudes towards healthy living determine, much more than the occupation itself, the mortality rates of the men in that occupation and, *ipso facto*, of their wives and children. Accordingly, the grouping of occupations into the traditional "Social Classes" and for the first time into "Socio-economic Groups" (see page 15) and the comparison of the mortality rates of these various groups is an important part of this report.

These comparisons show, as they did in 1921 and 1931, that some causes of death have much higher rates among unskilled workers (composing Social Class V) than among other persons. But they also show that there are many important diseases that elect as their principal victims people who, on account of their professional or managerial occupation, are classified to Social Class I.

The Method of Analysis and its Limitations

With the exception of mortality ratios for individual causes at ages 65 and over and of stillbirth, infant, and maternal mortality rates, the method of calculation of the rates in this volume has been to set the deaths of persons classified to various occupations, as recorded in the death registers for the years 1949–53, against the numbers of persons in these occupations enumerated at the national population census on 8th April, 1951.

The occupational death rates so obtained and presented in this volume are subject to a number of limita-

tions of which the reader should be aware before he attempts to use the rates and which it is convenient to state at the outset in order to avoid unnecessary repetition. These limitations fall broadly into three classes (a) rates calculated from small numbers of deaths (b) errors in occupational statements and (c) difficulties in interpretation of the rates.

(a) Rates calculated from small numbers of deaths

Although the mortality experience analysed covers a period of five years, the breakdown of the data in many of the tables to deaths by individual causes in fairly small occupational groups means that a proportion of the statistics presented are subject to errors of a random character due wholly to the small numbers involved. As is explained on page 18, rates based on very small numbers are specially distinguished in the tables, and in addition some suggestions are made as to how the statistical significance of any particular rate or index can be approximately assessed.

(b) Errors in occupational statements

These are of various kinds and varying degrees of importance. The most serious are those that lead to the setting of too many, or too few, deaths in any particular occupation against the number of persons assigned to that occupation at the census. Mis-statements of occupation are unlikely to have serious effects if the same mis-statement is made both at the census and at death registration, or if individual discrepancies tend in the long run to balance out as between one occupation and another. In this last category can be included those inconsistencies resulting from change of an individual's occupation between the time of the census and of death. It is improbable, too, that any serious error arises from assuming that the number of persons enumerated in various occupations on one particular day, a few months from the mid-point of the five-year period of mortality experience, will give a reasonable estimate of the average number of persons at risk of death in those occupations during that period. ✳

Difficulties of more serious consequence arise from the fact that the quite different circumstances of census reporting and of death registration may lead to different descriptions of the same individual's occupation on the two records, and that these differences may not be free from occupational bias, i.e. the errors may affect some occupations more than others. On the census schedule the individual is asked to record his present occupation, or, if retired, his occupation prior to retirement. He should be in a position to give a correct statement, but, through misunderstanding or otherwise, may not do so. At death registration the Registrar asks the informant for the deceased's occupation *at the time of death*, or, if retired, his last occupation. The Registrar is able to explain to the informant what is required, but the informant, either through ignorance of the deceased's actual occupation or for other reasons, may fail to make a correct statement.

A special example of this type of error is the tendency to omit mention (on census schedules much more than in the death registers) of a former occupation or to use the description "unoccupied" instead of "retired" from a particular occupation, particularly at ages 65 and over. The number of men at various ages enumerated at the 1951 Census who described themselves as having no gainful occupation (excluding students and men occupied abroad) per cent of all males is shown in the following table:

16–	20–	25–	35–	45–	55–	65–	70 and over
0·88	0·78	0·69	0·66	0·84	1·78	6·73	12·96

It seems probable, from these percentages, that the true proportion of men aged 20 and over never gainfully employed in 1951 was no higher than 0·7 per cent, and that the higher proportions at later ages are made up largely of men who have described themselves wrongly as unoccupied instead of retired. Re-assignment of the excess over 0·7 per cent from the "unoccupied" to the whole group of all occupied and retired males would have the effect of increasing the apparent population and of reducing the apparent mortality rate of the latter by 2 per cent at ages 55-64, by 7 per cent at ages 65-69, and by 13 per cent at ages 70 and over. As it cannot be assumed that the corrections would be even approximately the same for each occupation or social class, the expedient has been adopted in this, as in previous reports, of restricting the main analysis of deaths in relation to census populations to ages under 65.

To enable the discrepancies between census and death registration statements to be more thoroughly examined, a special investigation was carried out in the General Register Office in which, in a sample of 10,000 deaths registered some three weeks after the census on 8th April, 1951, various details were compared with the corresponding details about those same persons in the census schedules. The results of this investigation will be published in the 1951 Census General Report. The tables dealing with occupational discrepancies are, however, of special relevance to this report and extracts from these are given in this volume. These extracts do not relate to the whole of the 10,000 deaths.

In Table A the matched occupational records from the census returns and death registers have been distributed by social class, together with a group "not allocated" to any social class. The table does not show the distribution of individual discrepancies, i.e. the net results.

In addition to the numbers actually assigned on the basis of the census and the death register statements the table shows the percentage differences between them, together with an adjustment of the percentages, on

Table A. Occupations recorded (a) at Census (b) at Death, in sample of 10,000 deaths registered 3 weeks after census; by social class at certain ages, males, married and single women

	Social Class						
	I	II	III	IV	V	Not allocated	Total
Males aged 20-64							
(a) At Census	32	175	618	224	262	79	1,390
(b) At Death	46	211	632	218	264	19	1,390
Excess of (b)/(a) per cent of (a) ..	+44	+21	+2	−3	+1	−76	
Adjusted difference ..	+38	+16	−2	−7	−3	—	
Males aged 65 and over							
(a) At Census	64	410	1,025	376	345	423	2,643
(b) At Death	91	486	1,229	445	367	25	2,643
Excess of (b)/(a) per cent of (a) ..	+42	+19	+20	+18	+6	−94	
Adjusted difference ..	+21	+1	+2	—	−10	—	
Married Women aged 16-64							
(a) At Census	22	91	273	92	95	22	595
(b) At Death	16	93	305	91	86	4	595
Excess of (b)/(a) per cent of (a) ..	−27	+2	+12	−1	−9	−82	
Adjusted difference ..	−30	—	+8	−4	−13	—	
Married Women aged 65 and over							
(a) At Census	21	114	293	114	88	83	713
(b) At Death	27	138	345	120	80	3	713
Excess of (b)/(a) per cent of (a) ..	+29	+21	+18	+5	−9	−96	
Adjusted difference ..	+13	+8	+5	−7	−20	—	
Single Women aged 20-64							
(a) At Census	1	23	42	26	6	59	157
(b) At Death	2	23	53	28	5	46	157
Excess of (b)/(a) per cent of (a) ..	+100	—	+26	+8	−17	−22	
Adjusted difference ..	+50	−11	+12	—	−30	—	
Single Women aged 65 and over							
(a) At Census	4	58	43	29	7	225	366
(b) At Death	5	73	76	56	8	148	366
Excess of (b)/(a) per cent of (a) ..	+25	+26	+77	+93	+14	−34	
Adjusted difference ..	−20	−19	+14	+25	−28	—	

the assumption that the "not allocated" can be distributed *pro rata* to the social classes, an assumption which is almost certainly untenable in fact, but which allows a clearer indication of the main tendencies.

For males aged 20-64, there is evidence of a strong tendency to report occupations assignable to Social Classes I and II more often at death registration than on the census schedules, with a compensatory under-reporting of occupations classifiable to Social Classes IV and V. At ages 65 and over, this tendency is repeated, but involves only Social Classes I and V.

The numbers of deaths of single women in the sample investigated was small, a high proportion were "not allocated" and no clear pattern of social class discrepancies can be discerned.

Married women are classified by husband's occupation and since the husband would often fill up the census schedule and act as informant at the registration of the death of his wife, a closer consistency between the occupational statements on the two records might be expected. Discrepancies are, however, just as frequent as for males. They follow no particular pattern in relation to social class at ages 16-64, but at 65 and over they show very close correspondence with the tendencies displayed by males in that an excess of deaths assigned to Social Classes I and II is balanced by a deficit in Social Classes IV and V.

The broad conclusion to be drawn is that there are discrepancies between the occupational descriptions given on census schedules and in the death registers, that these discrepancies do not balance out but leave a net error which tends, in males at least, to exaggerate the apparent mortality ascribed to Social Class I and to diminish that of Social Class V, intermediate classes being affected in lesser degree. For women the evidence is less conclusive.

Table B makes similar comparisons of the census and death registration records in relation to socio-economic groups, and Table C allocates the same series of individuals by Occupational Orders. For most, but not all, of the Occupational Orders there is reasonably good comparability between the numbers assigned on the basis of the census and on the basis of the death registration record. It is unlikely that there are serious errors in the calculated mortality rates of most of the Occupational Orders arising from discrepancies in occupational description.

As regards individual occupational groups the chances of discrepancy are greater, and may in some instances have produced appreciable distortion of the true situation. In particular there is evidence of this in respect of coal-mining occupations, where a special enquiry instituted after the publication of Part I of this report* has suggested that errors of occupational description have led to substantial over-statement of the mortality experience of some coal-mining occupations and under-statement of others.

(c) Difficulties of Interpretation

Even when the mortality rate of a particular occupation is based on sufficient numbers of deaths for its

*The Registrar General's Decennial Supplement, England and Wales, 1951, Occupational Mortality, Part I. H.M.S.O. 1954.

Table B. Occupations recorded (a) at Census (b) at Death, in a sample of 10,000 deaths registered 3 weeks after census; by socio-economic groups, at ages 16-64, 65 and over, males, married and single women

Socio-economic Group	Males Aged 16-64		Males Aged 65 and over		Married Women Aged 16-64		Married Women Aged 65 and over		Single Women Aged 16-64		Single Women Aged 65 and over	
	at Census	at Death	at Census	at Death	at Census	at Death	at Census	at Death	at Census	at Death	at Census	at Death
1. Farmers	25	31	83	95	12	13	24	27	1	—	2	2
2. Agricultural workers	37	45	143	165	17	23	43	41	1	—	1	3
3. Higher administrative, etc.	32	45	64	91	20	16	22	28	1	2	5	6
4. Other administrative, etc.	107	130	194	243	63	60	63	74	20	19	45	60
5. Shopkeepers	51	54	139	165	20	22	31	38	4	8	13	13
6. Clerical workers	84	89	95	115	36	38	26	30	15	20	6	8
7. Shop assistants	32	26	57	72	11	13	20	19	5	5	1	4
8. Personal services	27	35	70	78	14	14	17	19	15	21	30	62
9. Foremen	47	49	68	96	24	24	21	35	1	3	1	—
10. Skilled workers	437	443	732	847	186	214	214	245	17	26	24	44
11. Semi-skilled workers	171	156	222	267	69	62	62	73	18	12	9	12
12. Unskilled workers	258	259	333	364	93	81	88	80	3	3	4	4
13. Armed forces (other ranks)	7	13	18	20	5	8	1	3	—	—	—	—
Not allocated	80	20	425	25	22	4	83	3	66	48	225	148
Total	**1,395**	**1,395**	**2,643**	**2,643**	**592**	**592**	**715**	**715**	**167**	**167**	**366**	**366**

sampling error to be small, and when there is no reason to believe that there is any serious over-estimate or under-estimate either of the assigned deaths or population at risk, it does not follow that a high mortality rate must result from some unfavourable aspect of the occupation itself; conversely, a low mortality rate does not necessarily imply a "healthy" occupation. Several occupations have low mortality rates because the persons who enter them have to be of good physique, and either, as for example with the armed forces and the police, a medical examination is held to ensure that the unfit do not get in, or, as in some other occupations, the recruits select themselves in the knowledge that they are fit for an arduous job. Low death rates can therefore be expected, particularly from chronic diseases, among young men actively engaged in such occupations. Conversely, higher than average death rates are to be found among young men in several occupations which require no great physical effort, for example, watch repairing and piano tuning, to which men may be attracted because they are physically unfit for more robust work.

In the same way that recruitment to an occupation may be by selection, so may discharge from the occupation, and many men, as a result of failing health or from ageing, have to give up their accustomed work and seek something less exacting. As it is with the latest occupation that the analyses in this volume deal, it must happen that a proportion of the mortality allocated to an occupation may rightly belong elsewhere. The calculated death rates of some occupations that have an increased mortality risk may in this way not represent the full risk, whereas other occupations may show elevated rates not because of a special mortality risk in that occupation itself but because it is carrying something of the mortality load of men who have transferred from more dangerous occupations.

Apart from medical reasons, some men change their job from time to time during their working life. Even if, as is probable, these changes largely cancel themselves out over the whole range of occupations, the effect must be to make the mortality analyses based on latest occupation less sensitive than they ought to be to real occupational mortality differences. Some occupations, particularly the professions, doctors, clergymen, etc., are little affected in this way, and members of these occupations remain actively in them, or are in retirement from them, until they die.

Groups of the Population Studied

This volume deals with the occupational and social class mortality experience during 1949-53 of (a) males (b) married women (c) single women (d) infants dying under one year of age, and (e) stillborn children.

Males

The mortality of males has been analysed from age 16 upwards in the following age groups: 16-19, 20-24, 25-34, 35-44, 45-54, 55-64, 65-70, 70-74, 75 and over.

The first age group, 16-19, is subject to special limitations in that a proportion of the population are still at school or college, a few have been unable to take up an occupation on medical grounds, and a large proportion are engaged in National Service in this country or abroad. The deaths of members of the Armed Forces, as of other persons, are included in the tables only when they have been registered in England and Wales. Deaths occurring outside this area are excluded.

At ages 65 and over, the high proportion of men returned as unoccupied on the census schedule (see previous section) makes mortality rates related to the census population at those ages unreliable, and for

Table C. Occupations recorded (a) at Census (b) at Death in a sample of 10,000 deaths registered 3 weeks after census; by Occupation Orders, at ages 16-64, 65 and over, males, married and single women

Occupation Orders	Males 16-64		Married Women 16-64		Single Women 16-64	
	at Census	at Death	at Census	at Death	at Census	at Death
1. Fishermen	3	2	—	—	—	—
2. Agricultural, Horticultural and Forestry	58	69	29	32	2	—
3. Mining and Quarrying	67	61	33	35	—	—
4. Treatment of non-Metalliferous Mining Products	7	7	1	1	—	—
5. Coal Gas-Coke	10	9	6	5	—	—
6. Metal Manufacture, Engineering	188	195	71	81	3	6
7. Textile Manufacture	20	18	8	9	8	10
8. Leather	14	13	6	6	2	3
9. Textile goods	7	6	3	5	2	3
10. Foods, drinks and tobacco	19	17	8	8	3	5
11. Wood, Cane and Cork	39	39	19	23	—	—
12. Paper and paperboard, Bookbinders, etc.	14	16	8	8	—	1
13. Products (not elsewhere specified)	7	6	2	2	1	—
14. Builders	80	73	32	25	—	—
15. Painters and Decorators	20	22	17	18	—	—
16. Administrators, etc.	26	37	28	22	1	1
17. Transport and Communications	144	151	56	54	1	1
18. Finance and Insurance	110	101	42	46	9	9
19. Professional and Technical	45	42	27	21	15	16
20. Defence Services	36	38	14	20	—	—
21. Entertainment and Sport	7	6	4	2	—	—
22. Personal Service	55	61	27	26	18	17
23. Clerks, Typists	104	123	37	41	17	18
24. Warehousemen, Storekeepers, etc.	34	42	15	12	1	1
25. Stationary Engine Drivers	22	22	10	12	—	—
26. Unskilled (not elsewhere specified)	170	172	57	51	7	3
27. Other and undefined	25	14	11	6	2	1
Total	**1,331**	**1,331**	**572**	**572**	**93**	**93**
	65 and over		65 and over		65 and over	
1. Fishermen	6	6	1	1	—	—
2. Agricultural, Horticultural and Forestry	226	223	67	64	2	2
3. Mining and Quarrying	157	152	32	30	—	—
4. Treatment of non-Metalliferous Mining Products	6	7	1	1	—	—
5. Coal Gas-Coke	6	8	2	2	—	—
6. Metal Manufacture, Engineering	220	209	68	71	—	—
7. Textile Manufacture	57	54	11	12	5	5
8. Leather	21	20	9	8	—	—
9. Textile goods	35	34	5	9	9	10
10. Foods, drinks and tobacco	29	32	9	9	1	1
11. Wood, Cane and Cork	75	81	31	30	—	—
12. Paper and paperboard, Bookbinders, etc.	20	22	9	6	—	—
13. Products (not elsewhere specified)	5	4	—	1	—	—
14. Builders	146	136	35	40	—	—
15. Painters and Decorators	43	41	15	17	—	—
16. Administrators, etc.	50	60	18	20	1	2
17. Transport and Communications	218	214	76	75	3	3
18. Finance and Insurance	244	263	64	66	8	9
19. Professional and Technical	76	82	29	32	34	35
20. Defence Services	81	80	10	10	—	—
21. Entertainment and Sport	16	13	—	—	1	1
22. Personal Service	98	88	28	26	28	28
23. Clerks, Typists	99	94	30	30	5	3
24. Warehousemen, Storekeepers, etc.	40	45	17	16	—	—
25. Stationary Engine Drivers	32	39	10	12	—	—
26. Unskilled (not elsewhere specified)	187	183	50	41	6	3
27. Other and undefined	10	13	3	3	—	—
Total	**2,203**	**2,203**	**630**	**630**	**103**	**103**

individual causes of death, rates have been calculated in proportion to deaths from all causes instead of in relation to the stated population.

The main analysis of mortality of adult men in relation to census population has been made for ages 20-64, at which ages omission of statement of occupation on the census schedule is relatively infrequent and where some of the difficulties of interpretation of the statistics due to change of occupation are less serious than at older ages. Death rates for the combined age group 20-64 are greatly influenced by the fact that in most occupations more than half of the total deaths in that age group occur between the ages 55 and 64. Although it is convenient and usually sufficient to consider the group 20-64 as a whole, in any detailed examination of the mortality experience of any occupational group it will sometimes be found advisable to look at the death rates not only at 20-64 but at the five constituent age groups separately. Details of these, either by cause or for all causes, are to be found, for a large number of occupations, in Table 3A.

Married Women

The practice, introduced for the first time in the 1931 Report, of tabulating the mortality of married women according to husband's occupation has been repeated in the present volume.

Since the populations of married women were classified to husband's occupation by means of the same census schedules as were used for married males, they must be subject to almost the same degree of error due to omissions of statements of occupation. The proportions of married women enumerated with a husband for whom no occupation was stated compare closely with the proportions for all males stated to be of no gainful occupation (page 6). These proportions are shown in the following table (per cent of all married women enumerated with their husband at the 1951 Census):

25–	35–	45–	55–	65–	70 and over
0·4	0·3	0·7	2·5	6·6	10·7

The effect of transferring these wives of "unoccupied" men to the "occupied and retired" groups would be to decrease the apparent mortality of the latter by some 2 per cent at 55-64, 7 per cent at 65-69, and 11 per cent at 70 and over. There are as good reasons therefore, in respect of married women as of men, for restricting the detailed analysis of mortality in relation to census populations to ages under 65.

At the registration of the death of a married woman a statement of occupation of husband is made by the informant, and as it is only rarely that the informant is unable to supply this information, the proportion without a statement of occupation is small.

At the census, information about the occupation of the husband of a married woman is obtainable only in respect of married women who are enumerated along with their husbands, and these, in 1951, contributed 93 per cent of the total married women enumerated. As in 1931, it has been necessary to construct the total population of married women for each occupation by first raising the number enumerated with their husbands, classified by age, to the total of married men in the occupation, and then adjusting each age group by a factor, common to all occupations at that age, to produce the correct total of married women as ascertained at the census. This adjustment, however, probably does not wholly eliminate some artificial exaggeration of the mortality rates of married women whose husbands are in occupations having a specially high proportion of members abroad at the time of the census, e.g. the Armed Forces and Merchant Navy.

In 1931 it was considered that because of imperfect statements of their occupation in the death registers no useful purpose would be served by attempting any analysis of married women by their *own* occupation. Only about 10 per cent of married women were recorded as gainfully occupied at the 1931 census, but of these about one third were employed in textiles and dressmaking and about one third in domestic and personal services. It was believed that the wives' own employment was unlikely to affect the validity of their mortality rates classified by husband's occupation except in the case of textile workers. At the 1951 Census the situation had greatly changed, and 22·5 per cent of married women were recorded as gainfully occupied. Of these 28 per cent were employed in domestic and personal service, 15 per cent in textiles and dressmaking, 14 per cent as clerks, typists, etc., and 13 per cent in commerce, finance and insurance. The remaining 30 per cent were employed in a wide variety of other occupations. This much larger proportion of married women now engaged in an occupation of their own renders more complex the comparison of their mortality rates with those of their husbands.

Comparison between the mortality rates of men, classified by their own occupation, and of married women, classified by husband's occupation, is designed to facilitate recognition of special mortality features that are of direct occupational origin as distinct from those that derive not from the occupation itself but from the general mode of life of the persons engaged therein. It is assumed that men are subjected to both these influences, their wives only to the latter. On the basis of this assumption we are entitled to conclude that in an occupation in which high mortality rates from a non-transmissible disease occur, both among men and their wives, there is a *prima facie* case for believing that no direct occupational hazard can be responsible; the high mortality risk more probably arises either from social causes that affect men and their wives together, or in some instances from a statistical discrepancy in the occupational assignment either of the deaths or census population, again involving both the men and their wives. Where a high mortality is experienced by men, but not by their wives, it is probable that a direct occupational influence has been responsible.

Such an interpretation of differences in mortality between men and their wives is based on the assumption that the wives are free not only of the husband's direct occupational risk, if any exists, but also are not subject to any direct occupational risk of their own.

On the whole this assumption is reasonable since the majority of women abandon their occupation on marriage and only exceptionally thereafter are likely to suffer any special mortality as a result of their pre-marital employment. But in occupations where large numbers of women continue in employment after marriage, it cannot be assumed that the mortality rates of married women are free from occupational influences. Some married women may be engaged in occupations similar to their husbands, and therefore show similar occupational risks, while other married women may be exposed to occupational risks quite different from those of their husbands. The much larger proportion of married women in gainful employment,

as revealed by the 1951 Census, increases the possibility that the mortality of these women even when uninfluenced directly by the husband's occupation may be influenced by the occupation of the married woman herself.

Single Women

An analysis of the mortality of single women aged 16 and over has been included in this volume in continuance of the practice introduced in the report for 1931. As on the previous occasion, it is necessary to warn the reader that these mortality rates of single women must be treated with special reserve.

The figures are subject to two important limitations: (a) both the census and the death records include large proportions returned as unoccupied or without statements of occupation, and (b) occupation of spinsters is less permanent than that of men, and is a less accurate indicator of social class.

The single women who remain unoccupied consist on the one hand of those who suffer from some medical disability that prevents them from taking up gainful employment, and on the other hand of those for whom there is no necessity or opportunity, for social or economic reasons, to follow a gainful occupation. By reason of their physical selection the mortality of the first group may be expected to be above average, whereas that of the second group may be somewhat below. At the 1951 Census 17·6 per cent of single women aged 20-64 were classed as unoccupied, compared with 22 per cent in 1931. The proportion of single women similarly classified in the death registers for the period 1949-53 was 37 per cent, an increase of 3 per cent over 1930-32.

The higher proportion of unoccupied single women recorded in the death registers than in the census returns is to be explained on the basis of (a) the genuinely increased mortality of those who have been physically selected for this class, or (b) the possibility that statements of occupation of single women are erroneously omitted at death registration more frequently than at the census.

For reasons detailed in the 1931 report it was considered that the factor of physical selection was the more important in creating the apparent high mortality of the unoccupied class, and there seems no reason on this occasion to dissent from this view. It is probable, in fact, that with a greater proportion of single women gainfully occupied in 1951 than in 1931, the effect of physical selection will have become still more important, the medically unfit being little more likely than before to enter employment. It is probable therefore that the increased mortality disadvantage of unoccupied single women revealed in the present analysis, compared with its predecessor, portrays a real situation.

Because of the special limitations to which the mortality rates for single women are subject, it has been questionable whether a repetition of the 1931 analysis of this group would be justified. It has been decided to include them in the present analysis partly in order that a further opportunity might be given for their validity to be assessed, and partly because, for certain individual occupations, the mortality details may be found to be of some interest and usefulness. In general, however, the figures should be accepted with caution.

To correspond with the analyses for men and for married women, the main analysis of the mortality of single women by cause, in relation to census populations, has been restricted to ages 20-64. For ages 65 and over mortality by cause has been summarised in proportion to deaths from all causes.

Infants dying under one year of age

The deaths during 1949-53 of legitimate infants, classified according to the occupation of the father as stated in the death register, have been related to five times the number of legitimate live births registered in 1951, classified according to the father's occupation as stated in the birth register. The resulting infant

Deaths of Single Legitimate Infants Born in 1949

Social Class and Occupation Group of father		Deaths under 4 weeks		Deaths at 4 weeks—1 year	
		No. in group at death	No. in group at birth	No. in group at death	No. in group at birth
I	Professional	300	306	117	117
II	Farmers	183	184	93	97
II	Costing, etc., Clerks	139	139	56	63
	Others in Social Class II	870	851	344	348
III(a)	Hewers and Getters	339	342	370	350
III(a)	Others in Mines	23	24	22	25
III(b)	Transport	946	945	616	616
III(c)	Clerks	363	367	157	168
III(a)	H.M. Forces	305	306	225	219
III(e)	Cotton Workers	27	25	11	8
III(e)	Foremen, etc. in Metal Manufacture, etc.	45	47	15	18
	Others in Social Class III	4,119	4 123	2,661	2,686
IV(a)	Agricultural Workers	388	392	214	220
IV(b)	Cotton Workers	4	4	10	7
IV(b)	Mineworkers (coal)	348	353	336	360
	Others in Social Class IV	1,165	1,187	935	925
V(a)	Building Labourers	312	309	292	327
V(a)	Dock Labourers	57	57	60	60
	Others in Social Class V	1,084	1,072	980	916
	Not stated	52	36	30	15

mortality rates have been analysed by cause, occupation and social class, and geographical area. Deaths under four weeks (neonatal mortality) have been distinguished from deaths between four weeks and one year (postneonatal mortality). No sex distinction has been made.

The deaths of illegitimate infants have been similarly analysed, but in less detail. These deaths in 1949-53 were classified according to the mother's occupation and related to five times the number of illegitimate births registered in 1951, similarly classified.

In an Enquiry conducted in 1949 jointly by the Social Medical Research Unit of the Medical Research Council and the General Register Office, the death registration details of children born in 1949 and dying under one year were matched with the corresponding birth registration entries. The table on page 11 shows, for the social classes and sub-classes, the numbers of deaths of single legitimate infants assigned to each class according to the occupation of the father given at registration of birth and death. The differences indicated by this examination are not so significant as to detract from the general usefulness of an occupational analysis in respect of legitimate infants deaths.

Less than 1 per cent of birth and death certificates of legitimate infants lack a statement of father's occupation. In contrast, approximately half of the births of illegitimate infants, and almost as high a proportion of deaths, are registered without a statement of mother's occupation; the occupational and social class analysis of illegitimate infant mortality is therefore necessarily of limited validity. The figures are, moreover, affected by the fact that a proportion of infants classified as illegitimate on the basis of the information recorded in the birth register, who subsequently die, are not indicated as being illegitimate in the death register. Some other infants, classified at birth as illegitimate, subsequently become legitimated on the marriage of their parents and if they die are classified accordingly. The effect of this is to cause an understatement of illegitimate mortality and an overstatement of legitimate mortality. As the number of legitimate births greatly outnumbers the illegitimate, it is only in the latter class that the error, which is likely to have occupational and social class bias, is of importance.

Stillbirths

The Births and Deaths Registration Act, 1926, which came into operation on 1st July, 1927, now superseded by the Births and Deaths Registration Act, 1953, requires all stillbirths in England and Wales to be registered, and gives the following definition: " 'Stillborn' and 'stillbirth' shall apply to any child which has issued forth from its mother after the twenty-eighth week of pregnancy and which did not, at any time after being completely expelled from its mother, breathe or show any other sign of life". The causes of stillbirth are not registered. Apart from a limited analysis in Part I of this report, stillbirths have not been previously studied in this series of occupational mortality reports; but tabulations of stillbirths by social class were made in the 1931 Occupational Fertility volume,* and in the Medical Text Volume of the Statistical Review for 1948-49.†

Stillbirths registered during the period 1949-53 have been classified by occupation of father, or, in the case of illegitimate stillbirths, by occupation of mother, and these have been related to the total number of births, live and still, registered in 1951 and similarly classified. No distinction of sex has been made. The stillbirth rates have been analysed by occupation, and social class, geographical area, and mother's age and parity.

As almost half of the illegitimate stillbirths were registered without any statement of mother's occupation, these rates must be treated with particular caution.

Occupational and Social Classification

The Classification of Occupations used in this occupational mortality analysis is the one used in connection with the 1951 Census.

Prior to 1921, the series of decennial occupational mortality studies had been based on classifications that were industrial rather than occupational. At the census of 1921 a classification was brought into use that was more properly occupational in character, and this course was followed again in 1931 and 1951.

The occupation of any person is the kind of work which he or she performs, due regard being paid to the conditions under which it is performed; and this alone determines the particular group in an occupation classification to which the person is assigned. The nature of the factory, business or service in which the person is employed has no bearing upon the classification of his occupation, except to the extent that it enables the nature of his duties to be more clearly defined.

It is a person's occupation, i.e. the nature of his work, which determines the type and degree of the strains, physical or mental, to which he is subjected, and in the conditions generally under which his working life is lived. These are, in the main, independent of his industrial association, i.e. of the industry or service which affords him employment. Hence it follows that a satisfactory occupational classification must ignore the irrelevant consideration of industry, grouping together e.g. all clerks, whether employed in insurance, trade, or railway transport, etc.

The main purpose of the classification of occupations has been to provide groups with at least one common characteristic. The basic common factor of all groups is the kind of work done and the nature of the operation performed. But if, by reason of the material worked in, the degree of skill involved, the physical

*The Registrar General's Decennial Supplement, England and Wales, 1931, Part IIB. Occupational Fertility, 1931 and 1939. H.M.S.O. 1953.
†The Registrar General's Statistical Review of England and Wales for the Two Years 1948-1949 Text, Medical. H.M.S.O. 1953.

energy required, the environmental conditions, the social and economic status associated with the occupation, or any combination of these factors, unit groups based solely on kind of work done seemed too comprehensive, they were further broken down on the basis of these other factors in order to identify what are substantially separate occupations.

The unit groups have been further grouped into sub-orders and orders, these larger groups, like the unit groups, having certain broad features of occupation in common. But these orders and sub-orders have been introduced into the Classification as a convenience in arranging the occupations in an orderly list, and only to a limited extent do they provide any information of a practical value as to the occupation of the individuals comprised.

The complete list of orders, sub-orders, and unit occupational groups is given in Table 1, together with a population and mortality summary for men, married women, and single women aged 20-64, legitimate infants and stillbirths. In this list a small number of groups have been broken down further than in the Classification of Occupation in order, for example, to distinguish coal mining occupations according to the principal coalfields, and to distinguish various occupations of textile workers according to whether the work was in cotton, wool, or other substances.

For more detailed mortality analysis than that in Table 1, certain occupations or groups of occupations have been selected and tabulated in Table 3. The mortality of 110 occupational groups of men, 9 occupational groups of married women (classified by occupation of husband) and 12 occupational groups of single women, has been analysed by age and cause of death; and the mortality of a further 315 groups of men, 99 groups of married women and 66 groups of single women have been analysed by cause but with less detail of age. The occupational groupings adopted for men in Tables 3A(i) and (ii) have been given special group numbers, from Group No. 1 to Group No. 425, and these numbers should not be confused with the 3 digit numbers of each occupational unit in the main classification.

For married women [Tables 3B(i) and (ii)] occupational groups corresponding to those in the male tables have been given the same group numbers as for men.

The Social Classes

Continuing the practice followed in the reports for 1921 and 1931, the unit groups of the Occupational Classification have been arranged into a small number of broad categories, traditionally called Social Classes. The occupations included in each category have been selected so as to secure that, so far as is possible in practice, the category is homogeneous in relation to the basic criterion of *the general standing within the community* of the occupations concerned. The criterion is naturally correlated with (and the application of the criterion conditioned by) other factors, such as education and economic environment, but has no direct relationship to the average level of remuneration commanded by particular occupations in the labour market.

Each occupational unit group has been assigned as a whole to an appropriate social class, although there may be individuals just falling within the margin of a group by virtue of their occupation for whom the social class grading may seem less appropriate. As the social class framework is not based on a separate classifica-

(Occupied and Retired) Males	Total	Social Class				
		I	II	III	IV	V
		thousands				
1931 Census	14,050	336	1,855	6,848	2,552	2,459
Per cent	100	2·4	13·2	48·7	18·2	17·5
Major increases in numbers between 1931 and 1951		+164	+416	+2,010	+428	+257
Major decreases in numbers between 1931 and 1951		− 6	−125	−817	−547	−458
Major increases due to changes in classification in 1951 from 1931		+ 38	+345	+710	+581	+ 31
Major decreases due to changes in classification in 1951 from 1931		− 25	−252	−628	−541	−259
Other changes		+ 3	+ 4	+ 38	+ 17	− 5
1951 Census	15,429	510	2,243	8,161	2,490	2,025
Per cent	100	3·3	14·5	52·9	16·1	13·1

tion of individuals but only on a broad aggregation of unit groups, such marginal difficulties of allocation are inescapable; looked at in their proper context, however, they are relatively insignificant.

The Social Classes are as follows:

I Professional, etc. occupations   III Skilled occupations

II Intermediate occupations   IV Partly skilled occupations

V Unskilled occupations

Though in general structure the five social classes remained the same in 1951 as in 1931, certain changes occurred in the distribution of the population to these classes, partly by reason of growth or reduction of individual occupations within one or another of the classes or by reason of reassignment of occupational unit groups from one class to another. Particulars of these changes, so far as they affect the social class distribution of occupied and retired men of all ages, are set out in the 1951 Census Occupation Tables volume*, Table D, from which the summary on page 13 indicates in which direction the changes have occurred and how they have come about.

The overall net effect of these changes is to have reduced the proportion of the population in Social Classes IV and V, with a corresponding proportionate increase in Social Classes I, II and III.

Some occupations that underwent particularly large changes in numbers occupied (excluding retired) are shown in the next table.

Occupation No. (1951)	Social Class (1951)	Name	Change
189	III	Fitters and machine erectors....	+289,000
659, 913	III	Lorry and civil engineering plant drivers	+159,000
823	III	Army—other ranks	+130,000
825	III	R.A.F.—other ranks	+162,000
890, 895	III	Clerks	+133,000
019, 029	IV	Agricultural Workers	−155,000
654	IV	Drivers of horse-drawn vehicles	−116,000
706	V	Messengers	−123,000
730-739	III	Shop assistants, salesmen	−190,000
935-950	V	Labourers and unskilled workers	−148,000

The numerically largest changes arising from the assignment of a whole occupational group to a different social class in 1951 from that of 1931 were the following (occupied men only):

Occupation No. (1951)	Name	No. involved (1951)	Social Class From	To
015	Other gardeners	126,000	III	IV
019	Farmers sons, etc., agricultural pupils	51,000	II	IV
104, 109	Fillers of explosives, other skilled chemical workers	53,000	III	IV
173, 176, 177	Turners, millers, machine setters	164,000	IV	III
477, 479	Sawyers, woodcutting machinists	56,000	IV	III
715	Commercial travellers	104,000	II	III
823	Army—other ranks....	224,000	IV	III
895	Book-keepers	215,000	III	II
930-932	Assemblers	125,000	V	IV

*Census 1951, England and Wales, Occupation Tables. H.M.S.O. reprinted 1956.

14

In so far as it has been practicable to do so, the effect of these changes upon the comparability of the mortality experience of the social classes in 1951 with that of 1931 has been estimated in Chapter II (page 20).

Social Sub-classes

For the purpose of more detailed mortality investigation the Social Classes have been functionally sub-divided as follows:

Class III	(a)	Mineworkers
	(b)	Transport Workers
	(c)	Clerical Workers
	(d)	Armed Forces
	(e)	Others
Class IV	(a)	Agricultural Workers
	(b)	Others
Class V	(a)	Building and Dock Labourers
	(b)	Others

These sub-divisions, called for convenience "social sub-classes" have been introduced for the first time in the 1951 Census, and are distinguished in the majority of the tables in this volume.

Socio-economic Groups

For the purpose of certain tabulations of the 1951 Census results, notably those relating to the social and economic characteristics of private households and to fertility, it was felt that the social class grading was inadequate, and a new socio-economic allocation was therefore developed, this being no more than a special re-arrangement of the occupational unit groups in a somewhat different way from that adopted to construct the Social Classes.

Although not devised particularly for the purpose of mortality analysis, the Socio-economic Groups would seem to have possibilities in this field as a supplement to, and possibly even as a substitute for, the Social Classes and Sub-classes. For this reason it has been considered advisable to display mortality rates by socio-economic groups in several of the main tables in this volume.

The Socio-economic Groups are shown below:

Agricultural

1. Farmers
2. Agricultural workers

Non-Agricultural

I. Non-Manual

3. Higher administrative, professional and managerial
4. Other administrative, professional and managerial
5. Shopkeepers (including proprietors and managers of wholesale businesses)
6. Clerical workers
7. Shop assistants
8. Personal service

II. Manual

9. Foremen
10. Skilled workers
11. Semi-skilled workers
12. Unskilled workers

Special group not included elsewhere

13. Armed Forces (other ranks)

Though the Social Classes and the Socio-economic Groups have both been constructed on the basis of the unit groups in the Classification of Occupations, the methods of allocation have been such that no exact comparability between the two systems is possible. For the purpose of *approximate* comparison, however, it may be roughly assumed that Social Class I corresponds with Socio-economic Group 3; that Social Class II corresponds with Socio-economic Groups 1, 4 and 5; that Social Class III corresponds with Socio-economic Groups 6, 7, 8, 9, 10, 13; that Social Class IV corresponds with Socio-economic Groups 2 and 11, and that Social Class V corresponds with Socio-economic Group 12.

Classification of Causes of Death

All the deaths analysed in this report were classified in accordance with the Sixth (1948) Revision of the International Statistical Classification of Diseases, Injuries, and Causes of Death. This Revision came into operation in England and Wales in 1950, but the records for 1949 had been coded both by the 5th and by the 6th Revisions, for the purpose of maintaining comparability during the change from the one revision to the other. Records classified by 6th Revision were therefore available for the full period 1949-53.

15

The previous occupational mortality analysis in 1930-32 had been carried out on the basis of the 4th Revision of the International List of Causes of Death. Apart from a revised Classification, however, a much more important change took place between the 1931 and 1951 reports affecting cause of death classification. From 1940 onwards, whenever more than one cause of death has been reported on a death certificate, the particular cause to which the death should be assigned for statistical purposes has been selected not on the basis of certain arbitrary rules of priority but in accordance with the certifying medical practitioner's indication of the underlying cause, as shown by the order in which he has arranged the various causes of death upon the certificate.

The change in classification and in the basis of selection has meant that many of the causes of death distinguished in the present report are not strictly comparable with those tabulated in the 1931 report. However, as the changes that have been introduced are likely to affect the various occupational groups in much the same way, comparison of the 1951 experience with that of previous periods is still practicable for the majority of the causes distinguished.

For the main analysis of mortality by Social Classes, Sub-classes, Socio-economic groups, and special occupational groups, two lists of 38 causes have been adopted, as set out in Table 3A, B, C, (i) and (ii), the one list for men and a slightly modified version for women.

Two further lists of 22 causes for men and 24 causes for women are tabulated in Table 3A, B, C (iii) for analysis by social class only. Standard death rates for 1949-53 for men and women, by age, for each of the causes in those main lists are set out in Table 2.

Considerable economy in machine tabulation was achieved by selecting for tabulation, whenever it was appropriate to do so, cause groups that appear in the two special lists of Tables 20 and 21 of the Registrar General's Statistical Review of England and Wales, Part I, Tables, Medical, these cause groups having already been gang-punched upon the machine cards.

In addition to these causes of death, detailed tabulation of deaths from cancer of a large number of individual sites is made in Tables 6 and 7; deaths from maternal conditions are analysed in five groups of causes in Table 8A; deaths from accidental causes are analysed by external cause of accident in Table 12, and both by external cause and by nature of injury in Table 13.

The diminishing number of infant deaths now being recorded has limited the amount of detailed analysis by cause that it would be profitable to attempt; hence the analysis of infant mortality in Tables 14, 15 and 16 has been restricted to 14 main causes of infant death. The causes of stillbirths are not registrable in England and Wales, and therefore no analysis by cause can be made.

Area Classification

The majority of the tables in this report are concerned with England and Wales, as a whole, but in Tables 9, 10 and 11 the mortality of adults is tabulated by standard regions, conurbations, national and/or regional urban/rural aggregates. In Tables 16 and 17 infant mortality and stillbirths, and in Table 8 maternal mortality, in less detail, are subjected to similar geographical analysis.

For the constitution of the Standard Regions, as used in this and in other publications of the General Register Office, see page 2.

The conurbation areas used in this report are those which were agreed in 1950, under the aegis of the Interdepartmental Committee on Social and Economic Research and the Central Statistical Office, for the presentation of official statistics generally. The conurbations each consist of an aggregation of entire local authority areas, and are constituted as shown on page 3.

National urban/rural aggregates are the aggregation, for England and Wales as a whole, of individual local areas into the five following categories:

1. Conurbations

Areas outside the conurbations:
2. Urban areas with populations of 100,000 and over
3. Urban areas with populations of 50,000 and under 100,000
4. Urban areas with populations under 50,000
5. Rural districts

For the purpose of cross-tabulation of mortality both by geographical area and by density of area, the Standard Regions have been condensed into four regional groups, which are composed as shown on page 2: (1) North Regional Group (2) Midlands and East Regional Group (3) South Regional Group (4) Wales; and two aggregates within each of these regional groups have been composed, viz., (1) urban areas outside the conurbations and (2) rural districts.

In all tables in which deaths have been classified by area, assignment has been based upon the area of usual residence of the deceased or, in the case of infants and stillborn children, of the parents. The definition of usual residence for this purpose was modified in 1953, the main change being that persons dying in hospitals for the chronic sick and in mental and mental deficiency hospitals were in that year regarded as having been resident in the hospital. Such a change with regard to persons dying in accommodation provided under Parts III and IV of the National Assistance Act, 1948, had already been brought into effect during

1952. It is improbable that these changes in area assignment have had any important effects upon the figures presented in this volume.

Summarisation of death rates

As in the 1931 Report the mortality experience of each occupational group has been summarised by means of a **Standardised Mortality Ratio (S.M.R.)** for the age range 20-64 years. The S.M.R. can be defined, e.g. for males, as the number of deaths registered in 1949-53 of men within a given occupational group at ages 20-64, per cent of the number that would have occurred if the death rates in each separate age group within the occupation had been the same as in a standard population consisting of all males in England and Wales.

The method of calculation of an S.M.R. (all causes, males) is indicated in the following arithmetical example for Occupational Group No. 1 (Occupational Code 010), Farmers and Farm Managers:

Ages	Census Population, 1951	Standard rates per million (deaths from all causes)	Standard deaths $\left(\dfrac{5 \times (2) \times (3)}{1,000,000}\right)$
	(Table 3A.(i))	(Table 2)	
20–	7,989	1,383	55
25–	37,030	1,594	295
35–	60,838	2,868	872
45–	68,087	8,212	2,796
55–64	55,565	22,953	6,377
Total standard deaths 20–64			10,395
Total registered deaths 20–64 (Table 3A (i))			7,320

$$\text{S.M.R.} = \frac{7,320 \times 100}{10,395}$$
$$= 70$$

Standardised Mortality Ratios at ages 20-64 have been calculated in this way not only for men but also for married women and single women. The standard rates in the last two cases are based upon the deaths of all married women and all single women, respectively.

As explained in an earlier section, occupational death rates at ages 65 and over based on census populations, tend to become unreliable due to the omission of statement of occupation. Their interpretation, moreover, is rendered difficult by the fact that elderly men may change from their usual occupation to a lighter one, and that occupational differences in mortality must, in any case, be to some extent swamped by the high death rates to which elderly men are subject, whatever their occupation. Nevertheless, it has been considered advisable to devote more attention to the death rates at 65 and over than has been done previously. The principal tables include, therefore, a summarisation of mortality from individual causes of death at ages 65 and over by means of a **Proportionate Mortality Ratio (P.M.R.)**. This may be defined, e.g. for males, as the number of deaths registered in 1949-53 from a given cause and within a given occupational group, at ages 65 and over, per cent of the number that would have been registered if the proportion of deaths from the selected cause out of the total of deaths from all causes had been the same as in a standard population of all males aged 65 and over.

The method of calculation of a P.M.R. for males aged 65 and over for cancer (all forms) is shown in the following arithmetical example for Occupational Group No. 1 (Occupation code 010), Farmers and Farm Managers:

Occupation Group No. 1:
Deaths from all causes at 65 and over (Table 3A.(i)) 27,965
Deaths from cancer (all forms) at 65 and over (Table 3A.(i)) 3,591
Death rate from cancer per 10,000 all causes 1,284
Standard (all males, 65 and over):
Death rate from cancer per 10,000 all causes (Table 2) 1,512

$$\text{P.M.R.} = \frac{1,284 \times 100}{1,512}$$
$$= 85$$

Proportionate Mortality Ratios at ages 65 and over have been calculated in this way for individual

causes of death not only of men but also of married women and single women. It is not possible to calculate a proportionate mortality rate in this way for deaths from all causes.

The P.M.R's as described above are unstandardised indices of mortality, and, before adopting them for inclusion in the volume, consideration was given to the question of whether it might be preferable to use an age standardised index. A few tests were made, for selected causes of death and selected occupational groups, of the differences between unstandardised and standardised indices; and on the evidence of these tests (below) it was decided that the gain in accuracy obtained by standardising by age groups at ages 65 and over did not justify the extra work required.

Males aged 65 and over

	Social Class III		Occupation Code 183		Occupation Code 609	
	P.M.R. Unstandardised	P.M.R. Standardised	P.M.R. Unstandardised	P.M.R. Standardised	P.M.R. Unstandardised	P.M.R. Standardised
Tuberculosis	102	102	93	85	148	137
Coronary Disease ..	101	101	111	109	93	91
Accidents in the Home	102	102	128	133	122	127

Life Tables

Whenever age-specific death rates are available for any population group it is possible to present this mortality experience in the form of a Life Table showing how a hypothetical cohort of persons would die off if they were subjected at successive ages to the given mortality experience. From the Life Table can be derived the Expectation of Life, namely, the average number of years of life that will be lived by this hypothetical cohort if subject to the given mortality experience.

Though the data presented in this and previous reports is sufficient for the calculation of Life Tables for occupational groups, this method of presentation has seldom been attempted, partly because of the extra work involved and partly because the Life Table concept, difficult enough to accept in relation to relatively stable total national populations, becomes still more difficult to accept in relation to occupational groups in which considerable inward and outward movements are taking place at all ages. Nevertheless, the basic limitations are no different from those that apply to ordinary death rates. If, therefore, it is justifiable to present age-specific occupational death rates and to summarise these into, say, an S.M.R. at ages 20-64, there is no valid reason why the data should not be presented alternatively in the form of an abridged Life Table for the same age-range, and be summarised by an appropriate derived function.

For the benefit of readers who may be interested in the Life Table expression of mortality, but without implying that it has any advantage over the method conventionally followed in these reports, abridged Life Tables for a few occupational groups of men aged 20-65 are given in an Appendix. For the simple comparison of one occupational group with another, the function l_{65}, interpreted as the proportion of persons starting in a given occupation at age 20 and surviving to age 65, may be found useful, though essentially it can be no more informative about mortality in an occupational group than a standardised mortality ratio.

In addition, for a small number of occupations whose members tend to remain within the occupation, either active or retired, until they die, e.g. farmers and doctors, and for whom the same occupational description is likely to be made, at any age, upon the census schedule and in the death register, it has seemed reasonable to carry the Life Table beyond aged 65, thus making it possible to derive a complete Expectation of Life at age 25, or at a later age if desired.

Statistical Significance

In mortality analyses as detailed as those presented in this report, many of the rates and ratios are based on small numbers of deaths and are on that account liable to be unstable. In order that such rates or ratios can be immediately recognised and can be treated with special caution, the convention has been followed throughout this report of distinguishing in italics all rates and indices calculated upon less than 50 deaths (or still-births), enclosing within brackets those calculated upon less than 10 deaths.

For a more formal assessment of the significance of any given rate or ratio the reader is referred to the detailed discussion of this question in the 1931 Report, the general substance of which is given in the following paragraphs.

Assuming that deaths are independent of one another, and that the probability of dying is small, as it is at all but advanced ages, then if R be the number of deaths registered in respect of a given occupational group, the standard error of R may be taken as approximating $\sqrt{R}$. If the corresponding number of deaths in the standard population be S, then the Standard Mortality Ratio can be expressed as 100 R/S and its standard error as approximately $100\sqrt{R}/S$. This formula may also be used to assess the significance of P.M.R's at ages 65 and over, though the element of approximation is somewhat larger.

The use of the above formula to test the significance of a given S.M.R. is illustrated in the following hypothetical example:

No. of deaths registered (R)	=	210
No. of standard deaths (S)	=	180
S.M.R. 100 R/S	=	117
Standard Error of S.M.R., $100\sqrt{R}/S$	=	8·05

18

The difference between the S.M.R. and 100, viz. 17, is slightly greater than twice the standard error, and is therefore "significant at the 5 per cent level"; if there was, in fact, no abnormal mortality in the occupation under consideration, an S.M.R. differing by 17 from 100 would be expected to occur by chance not oftener than once in twenty times (i.e. 5 per cent). This 5 per cent level of significance is widely accepted as an appropriate convention in many medical and other statistical studies, but the reader is always free to adopt any other level of significance that he may judge more appropriate.

The following further expressions relating to the significance of an S.M.R. may be found useful:

(1) Significant values of an S.M.R., at the 5 per cent level, lie outside the range of $\dfrac{100\sqrt{R}}{\sqrt{R}\pm 2}$

Example. In a given occupational group there are 25 deaths from a selected cause. The S.M.R. will be significant, at the 5 per cent level, only if it is more than $\dfrac{100\sqrt{25}}{\sqrt{25}-2}$ or less than $\dfrac{100\sqrt{25}}{\sqrt{25}+2}$, i.e. if more than 167 or less than 71.

(2) The 5 per cent limits of a given S.M.R. are
S.M.R.$\pm$2 S.E., i.e. S.M.R.$\pm 2 \times$ S.M.R.$/\sqrt{R}$
Example: Given an S.M.R. of 120, based on 400 registered deaths, the 5 per cent limits of this S.M.R. will be $120\pm 2\times 120/20 = 132$ and 108.

(3) A given S.M.R. is significant at the 5 per cent level when
$$R \geq \left\{\frac{2\times\text{S.M.R.}}{\sqrt{\text{S.M.R.}-100}}\right\}^2$$

Examples:
(i) An S.M.R. of 125 will be significant at the 5 per cent level provided
$$R \geq \left\{\frac{250}{25}\right\}^2$$
$$\geq 100$$

(ii) An S.M.R. of 90 will be significant at the 5 per cent level provided
$$R \geq \left\{\frac{180}{-10}\right\}^2$$
$$\geq 324$$

(4) The standard error of the difference between two independent S.M.R.'s, the first based on R_1 deaths and the second on R_2 deaths, is
$$\sqrt{\frac{(\text{First SMR})^2}{R_1}+\frac{(\text{Second SMR})^2}{R_2}}$$

Example: In occupation 1 there were 200 deaths (R_1) yielding an S.M.R. of 105, and in occupation 2 there were 600 deaths yielding an S.M.R. of 95. The differences between the S.M.R.'s is 10. The S.E. of the differences $=\sqrt{\dfrac{105^2}{200}+\dfrac{95^2}{600}}$
$$=\sqrt{70}$$
$$= 8\cdot 4$$

The difference (10) is considerably less than twice its standard error (2.S.E.=16·8). At the 5 per cent level there is no significant difference between the two S.M.R.'s.

19

CHAPTER II. MORTALITY FROM ALL CAUSES

Social Class Mortality

Standardised Mortality Ratios (S.M.R's) from all causes, at ages 20-64, are summarised in Table D, comparison being made between the results in 1921-23, 1930-32, 1950 and 1949-53.

For males the 1921-23 and 1930-32 analyses revealed a uniform gradient of mortality from Social Class I to Social Class V, the S.M.R's ranging from 82 to 125 in the first period, and from 90 to 111 in the second. The figures for 1949-53 show a substantial departure from this uniform type of gradient; though highest mortality continued to be recorded in Social Class V (S.M.R. 118) the lowest was in Social Class II (S.M.R. 86) followed by Social Class IV (94) with Social Class I in third place (98).

Table D. All causes: S.M.R's (20-64) by social class, 1949-53 compared with previous analyses

	Males S.M.R. 20-64				Married Women S.M.R. 20-64			Single Women S.M.R. 20-64	
	1921-23*	1930-32	1950	1949-53	1930-32	1950	1949-53	1930-32	1949-53
All Occupied and Retired	100	100	100	100	100	100	100	92	85
Social class I	82	90	97	98	81	96	96	100	82
,, ,, II	94	94	86	86	89	84	88	64	73
,, ,, III	95	97	102	101	99	101	101	95	89
,, ,, IV	101	102	94	94	103	104	104	102	89
,, ,, V	125	111	118	118	113	117	110	112	92
Unoccupied	†	135	†	124	134	†	95	122	142

*Excluding non-civilians.   †Not available.

These remarkable changes in social class mortality were foreshadowed closely in the preliminary analysis of deaths in 1950, and some possible reasons for them are considered in the next two paragraphs and again, in relation to particular causes of death, in Chapter III, page 29.

To estimate the effect that may have been produced upon the 1949-53 figures in comparison with 1930-32 as a result of changes in the constitution of the various social classes, either by reason of increases or decreases in the numbers in particular occupations or by classificational transfer of occupations from one social class to another (see page 14), an attempt has been made to adjust approximately the 1949-53 social class S.M.R's in order to take account of these occupational changes. It has been possible to make this adjustment only on the basis of the tabulated details about *occupied* males as shown in Table D of the Census 1951, Occupation Tables, the assumption being that the major social class changes relating to all males aged 20-64 to which the S.M.R's refer, will not be very different, in their net effects, from the changes relating to occupied men of all ages. The result of this approximate adjustment of the 1949-53 figures is shown below.

Social Class	S.M.R. 1949-53 (as shown throughout this volume)	S.M.R. 1949-53 (Approximately adjusted to 1931 Classification)
I	98	100
II	86	90
III	101	101
IV	94	104
V	118	118

This adjustment has had the important effect of raising the S.M.R. of Social Class IV from 94, where it was second lowest, to 104, where it occupies the second highest position, as it did in 1921-23 and 1930-32. There is reason to believe, therefore, that the apparent improvement in mortality in Social Class IV in relation

to the other classes can be explained largely by changes in the occupations that constitute this social class. The rough adjustment that has been made has, on the other hand, done nothing to change the relative positions of the other four classes: Social Class II retains the lowest S.M.R., increased only from 86 to 90; Social Class I follows with an S.M.R. of 100 instead of 98; and the S.M.R.'s for Social Classes III and V are unchanged. It is to be presumed therefore that the advantageous mortality position that has been reached by Social Class II in 1949-53 in contrast with earlier periods, and the less advantageous mortality position now occupied by Social Class I, are not likely to have been brought about simply as a result of changes in the size of various occupations or in their social classification.

For married women the S.M.R's in 1949-53 were likewise forecast with considerable accuracy in the preliminary analysis. The main change since 1930-32 was, as for men, an improvement in the relative position of Social Class II (S.M.R. 89 in 1930-32 and 88 in 1949-53). Social Class I, which in 1930-32 occupied the leading place with an S.M.R. of 81, had an S.M.R. of 96 in 1949-53 and came second. In contrast with men the S.M.R's for Social Classes III, IV and V formed a uniform gradient, viz: 101, 104 and 110, figures that were close to those of 1930-32. The only important difference in social class mortality between men and married women in 1949-53 was therefore in Social Class IV, where the married women showed no corresponding relative mortality improvement, despite the fact that their rates were subject to the same influences of occupational changes as the men.

For single women, for whom no preliminary rates were calculated in 1950, and whose social class S.M.R's are particularly subject to artificial distortion (see page 11), Social Class II (S.M.R. 73) occupied the lowest position, as in 1930-32, followed in order by Social Class I (82), Social Classes III and IV (each 89), and Social Class V (92). The social class mortality gradient was therefore very little altered from that of 1930-32, but there was an improvement in the mortality of all of the Social Classes relative to the unoccupied, whose S.M.R. rose from 122 to 142.

The death rates of men of various ages in each of the Social Classes in 1930-32 and 1949-53 are compared in Table E, with the rates in the latter period expressed as a percentage of the earlier rates. For all males the

Table E. All causes: Mean annual death rates per 100,000 males by social class and age at death, 1930-32 and 1949-53, with 1949-53 rate per cent of that of 1930-32

		20-	25-	35-	45-	55-	65-	70-74
All Males	1930-32	328	346	559	1,114	2,355	4,654	7,441
	1949-53	138	159	287	821	2,295	4,438	6,807
	Per cent	42	46	51	74	97	95	91
Social class I	1930-32	334	288	439	984	2,237	4,549	6,883
	1949-53	208	162	230	756	2,347	4,839	7,614
	Per cent	62	56	52	77	105	106	111
Social class II	1930-32	283	283	468	1,021	2,347	4,816	7,948
	1949-53	111	114	225	704	2,050	4,324	7,047
	Per cent	39	40	48	69	87	90	89
Social class III	1930-32	308	333	533	1,070	2,318	4,689	7,705
	1949-53	122	148	276	812	2,396	4,917	7,815
	Per cent	40	44	52	76	103	105	101
Social class IV	1930-32	330	360	609	1,158	2,340	4,638	7,823
	1949-53	135	156	290	779	2,103	4,365	7,180
	Per cent	41	43	48	67	90	94	92
Social class V	1930-32	336	374	667	1,302	2,535	5,105	8,581
	1949-53	156	214	386	1,027	2,567	4,868	7,631
	Per cent	46	57	58	79	101	95	89
Unoccupied	1930-32	776	1,018	1,137	1,380	1,829	1,719	1,708
	1949-53	314	594	1,037	1,328	1,449	857	922
	Per cent	40	58	91	96	79	50	54

percentage reduction in rates ranged from 58 per cent at ages 20-24 to 3 per cent at ages 55-64, with a somewhat larger reduction again at ages over 65. At each age the reduction in Social Class I was less than that of all males combined, and at ages 55 and over the mortality of this class rose instead of diminishing, as it did also in Social Class III. Rates in each class expressed as a percentage of the all males rate for the corresponding age-group are given in Table F. The 1949-53 figures indicate a particularly high rate at ages 20-24 in Social Class I, and a relative worsening of the rates for this class at every age, in contrast with the relative improvement at every age in the rates for Social Classes II and IV. In 1930-32 each of the age-groups from 25 to 54 showed almost uniform gradients of mortality from Social Class I to Social Class V. In 1949-53 the gradient at these ages was still obvious, with the notable difference that the gradient commenced from Social Class II instead of Social Class I.

Death rates of men, married women and single women by age and social class in 1949-53 are shown in Table G. In Table H the rates for married and single women are expressed as a percentage of the corresponding rates for men. The death rates of all married women range between 51 per cent and 74 per cent of the rates for men of the same age, and within the social classes the only large departure from the average was brought about by the relatively high mortality of men aged 20-24 in Social Class I. The death rates of all

Table F. All causes: Death rates in each social class per cent of All Males of corresponding age, 1930-32 and 1949-53

	20-	25-	35-	45-	55-	65-	70-74
All Males 1930-32	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Social class I	102	83	79	88	95	98	93
,, ,, II	86	82	84	92	100	103	107
,, ,, III	94	96	95	96	98	101	104
,, ,, IV	101	104	109	104	99	100	105
,, ,, V	102	108	119	117	108	110	115
Unoccupied	237	294	203	124	78	37	23
All males 1949-53	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Social class I	151	102	80	92	102	109	112
,, ,, II	80	72	78	86	89	97	104
,, ,, III	88	93	96	99	104	111	115
,, ,, IV	98	98	101	95	92	98	105
,, ,, V	113	135	134	125	112	110	112
Unoccupied	228	374	361	162	63	19	14

Table G. All causes: Death rates per 100,000 males, married and single women, by age and social class, 1949-53

		20-	25-	35-	45-	55-	65-	70-74
All Classes	Males	**138**	**159**	**287**	**821**	**2,295**	**4,438**	**6,807**
	Married Women	**78**	**117**	**203**	**482**	**1,173**	**2,480**	**4,213**
	Single Women	**112**	**193**	**330**	**607**	**1,259**	**2,474**	**4,199**
Social class I	Males	208	162	230	756	2,347	4,839	7,614
	Married Women	52	89	183	470	1,179	2,564	4,508
	Single Women	95	87	225	512	1,189	3,022	5,089
Social class II	Males	111	114	225	704	2,050	4,324	7,047
	Married Women	61	84	167	419	1,082	2,466	4,336
	Single Women	52	92	198	434	1,099	2,607	5,104
Social class III	Males	122	148	276	812	2,396	4,917	7,815
	Married Women	75	114	201	480	1,203	2,695	4,753
	Single Women	83	140	264	543	1,342	3,528	7,516
Social class IV	Males	135	156	290	779	2,103	4,365	7,180
	Married Women	87	128	215	499	1,213	2,673	4,761
	Single Women	117	168	283	524	1,123	2,958	6,423
Social class V	Males	156	214	386	1,027	2,567	4,868	7,631
	Married Women	92	161	242	529	1,239	2,632	4,515
	Single Women	124	208	307	515	1,114	2,950	6,275
Unoccupied	Males	314	594	1,037	1,328	1,449	857	922
	Married Women	187	415	946	909	675	528	646
	Single Women	368	559	687	944	1,369	2,033	3,123

Table H. All causes: Death rates for married and single women, per cent of corresponding rates for males, by age and social class, 1949-53

		20-	25-	35-	45-	55-	65-	70-74
All Classes	Males	**100**	**100**	**100**	**100**	**100**	**100**	**100**
	Married Women	**57**	**74**	**71**	**59**	**51**	**56**	**62**
	Single Women	**81**	**121**	**115**	**74**	**55**	**56**	**62**
Social class I	Males	100	100	100	100	100	100	100
	Married Women	25	55	80	62	50	53	59
	Single Women	46	54	98	68	51	62	67
Social class II	Males	100	100	100	100	100	100	100
	Married Women	55	74	74	60	53	57	62
	Single Women	47	81	88	62	54	60	72
Social class III	Males	100	100	100	100	100	100	100
	Married Women	61	77	73	59	50	55	61
	Single Women	68	95	96	67	56	72	96
Social class IV	Males	100	100	100	100	100	100	100
	Married Women	64	82	74	64	58	61	66
	Single Women	87	108	98	67	53	68	89
Social class V	Males	100	100	100	100	100	100	100
	Married Women	59	75	63	52	48	54	59
	Single Women	79	97	80	50	43	61	82
Unoccupied	Males	100	100	100	100	100	100	100
	Married Women	60	70	91	68	47	62	70
	Single Women	117	94	66	71	94	237	339

single women ranged between 55 per cent (at ages 55-64) and 121 per cent (at ages 25-34) of the rates for all men, but with only one exception (Social Class IV at ages 25-34) the single women's rates within the social classes were less than those of men, particularly at ages 20-24 and 25-34 in Social Class I. The statistical limitations of the figures relating to single women have been explained in Chapter I, page 11.

In Table J the rates for men, married women and single women in each Social Class have been expressed as percentages of the total rates. For men a gradient of mortality at ages 20 to 44 rising from Social Class II to Social Class V was replaced at older ages by a pattern similar to that for the S.M.R. at 20-64. For married women at ages from 25 to 64 there was a uniform social class mortality gradient from Social Class II to V,

Table J. All causes: Death rates for males, married and single women, by age and social class, per cent of corresponding All Classes rates, 1949-53

		20-	25-	35-	45-	55-	65-	70-74
Males	Social class I	151	102	80	92	102	109	112
	,, ,, II	80	72	78	86	89	97	104
	,, ,, III	88	93	96	99	104	111	115
	,, ,, IV	98	98	101	95	92	98	105
	,, ,, V	113	135	134	125	112	110	112
	Unoccupied	228	374	361	162	63	19	14
Married Women	Social class I	67	76	90	98	101	103	107
	,, ,, II	78	72	82	87	92	99	103
	,, ,, III	96	97	99	100	103	109	113
	,, ,, IV	112	109	106	104	103	108	113
	,, ,, V	118	138	119	110	106	106	107
	Unoccupied	240	355	466	189	58	21	15
Single Women	Social class I	85	45	68	84	94	122	121
	,, ,, II	46	48	60	72	87	105	122
	,, ,, III	74	73	80	89	107	143	179
	,, ,, IV	104	87	86	86	89	120	153
	,, ,, V	111	108	93	85	88	119	149
	Unoccupied	329	290	208	156	109	82	74

Social Class I coming between Social Classes II and III. At ages 20-24, in contradistinction to men, the rate for Social Class I was low, and was the starting point of a uniform gradient to Social Class V. At ages 65 and over there was no social class gradient of mortality.

For single women there was a mortality gradient from Social Class I to V at ages 25-34, and from Social Class II to V at ages 20-24 and 35-44. At other ages no systematic Social Class pattern is detectable in the figures.

Mortality in Social Sub-classes and Socio-economic Groups

Standardised Mortality Ratios, at ages 20-64, for men, married women and single women are given in Table K for the nine Social Sub-classes and in Table L for twelve Socio-economic Groups.

Table K. All causes: S.M.R's (20-64) by social sub-class, 1949-53

Social sub-class	Males	Married Women	Single Women
III (a) Mineworkers	135	135	—
(b) Transport workers	100	102	93
(c) Clerical workers	111	91	75
(d) Armed forces	163	132	*60*
(e) Others	96	99	97
IV (a) Agricultural workers	78	98	66
(b) Others	99	106	90
V (a) Building and Dock labourers	87	95	*333*
(b) Others	129	115	91

Within Social Class III (S.M.R. 101) the S.M.R.'s of *men* ranged from 163 in Sub-class IIId, Armed forces, to 96 for the residual Sub-class IIIe, Others. Within Social Class IV (S.M.R. 94), Sub-class IVa, male Agricultural workers had an S.M.R. of 78 in contrast with the remainder of the class with an S.M.R. of 99. The Sub-class Va, Building and Dock labourers had a combined S.M.R. of 87, contrasting with 129 for the remainder of Social Class V.

In a general way mortality of *married women*, classified to the Social Sub-classes by husband's occupation, resembled that of men.

Several of these social sub-classes contain only very small numbers of *single women* and the S.M.R.'s for these sub-classes are therefore liable to considerable random error. Low S.M.R.'s were recorded for Sub-classes IIIc (clerical workers) (75), IIId (armed forces) (60) and IVa (agricultural workers) (66).

Table L. All causes: S.M.R's (20-64) by socio-economic group, 1949-53

Socio-economic Group	Males	Married Women	Single Women
1. Farmers	70	93	72
2. Agricultural workers ..	75	95	64
3. Higher administrative, etc. ..	98	96	82
4. Other administrative, etc. ..	84	81	70
5. Shopkeepers	100	99	97
6. Clerical workers	109	91	75
7. Shop assistants	84	79	82
8. Personal service	113	101	84
9. Foremen	84	91	86
10. Skilled workers	102	105	109
11. Semi-skilled workers ..	97	108	99
12. Unskilled workers ..	118	111	103
All occupied and retired ..	100	100	85
Unoccupied ..	124	95	142

Within the Socio-economic Groups (Table L), the mortality of men aged 20-64 was lowest in the two agricultural groups, Group 1 (S.M.R. 70) and Group 2 (S.M.R. 75). Among the non-manual groups, mortality substantially below the average was recorded in Group 4 (Other administrative, etc. 84), and Group 7 (Shop assistants: 84). On the other hand, Group 6 (Clerical workers) and Group 8 (Personal service) had S.M.R.'s of 109 and 113. Among the four groups of manual workers the S.M.R.'s went from 84 for Group 9 (foremen) to 118 for Group 12 (unskilled).

Broadly the S.M.R.'s of married women classified by husband's socio-economic group followed a similar pattern. However, the S.M.R.'s for the agricultural Groups 1 and 2 were not quite as favourable as those of men; the wives of clerical workers (Group 6) had an S.M.R. of 91 in contrast with a male S.M.R. of 109; and in Group 11 (wives of semi-skilled manual workers) the S.M.R. was 108, i.e. intermediate between Groups 10 and 12, in contrast with 97 for men.

The S.M.R. for all occupied or retired single women, i.e. excluding the unoccupied, was 85 (Table 1 page 2), and the S.M.R.'s for the various socio-economic groups ranged from 64 in Group 2 (Agricultural workers) to 109 in Group 10 (skilled manual workers). In contrast with men, single women in Group 6 (clerical workers) had an S.M.R. considerably below the average, i.e. 75.

Table M. All causes: Death rates per 100,000 population, males, married and single women, by age and social sub-class, 1949-53

Social sub-class		20–	25–	35–	45–	55–	65–	70–74
III (a) Mineworkers	Males	177	184	343	986	3,448	5,809	8,207
	Married Women	111	161	259	608	1,686	3,465	6,127
	Single Women	—	—	—	—	—	—	—
III (b) Transport workers	Males	152	171	288	807	2,296	5,150	8,204
	Married Women	91	138	207	472	1,169	2,810	4,625
	Single Women	(149)	184	290	512	1,189	2,857	10,769
III (c) Clerical workers	Males	133	175	347	1,015	2,414	4,348	6,719
	Married Women	62	100	197	464	1,036	2,174	3,737
	Single Women	67	124	237	509	1,078	2,454	4,718
III (d) Armed forces	Males	104	237	425	2,466	9,150	11,317	14,339
	Married Women	92	150	277	675	1,568	2,493	3,553
	Single Women	51	132	(197)	(462)	(10,000)	(5,000)	—
III (e) Others	Males	122	134	261	771	2,318	4,839	7,764
	Married Women	71	108	196	475	1,198	2,689	4,771
	Single Women	97	154	281	563	1,441	3,846	8,152
IV (a) Agricultural workers	Males	146	162	249	612	1,695	3,518	5,867
	Married Women	79	101	192	474	1,164	2,461	4,212
	Single Women	92	91	126	480	1,222	4,151	9,231
IV (b) Others	Males	130	154	301	822	2,225	4,749	7,961
	Married Women	89	134	220	505	1,228	2,773	5,073
	Single Women	119	175	291	525	1,122	2,942	6,395
V (a) Building and Dock labourers	Males	93	143	282	742	1,945	3,932	6,552
	Married Women	94	139	212	436	1,078	2,405	3,989
	Single Women	(1,414)	(1,500)	(282)	(1,250)	(1,379)	(8,000)	(20,000)
V (b) Others	Males	190	247	431	1,137	2,767	5,173	8,001
	Married Women	92	171	254	563	1,291	2,706	4,699
	Single Women	120	204	307	513	1,113	2,943	6,248

Death rates by age, marital status and social sub-class are given in Table M, and are expressed as percentages of the corresponding rates for All Classes in Table N. High rates for men and married women in

24

Table N. All causes: Death rates for males, married and single women, by age and social sub-class, per cent of corresponding rates for All Classes, 1949-53

	Social sub-class		20–	25–	35–	45–	55–	65–	70–74
Males									
III	(a) Mineworkers	..	128	116	120	120	150	131	121
	(b) Transport workers	..	110	108	100	98	100	116	121
	(c) Clerical workers	..	96	110	121	124	105	98	99
	(d) Armed forces	..	75	149	148	300	399	255	211
	(e) Others in Social class III	..	88	84	91	94	101	109	114
IV	(a) Agricultural workers	..	106	102	87	75	74	79	86
	(b) Others in Social class IV	..	94	97	105	100	97	107	117
V.	(a) Building and Dock labourers	..	67	90	98	90	85	89	96
	(b) Others in Social class V	..	138	155	150	138	121	117	118
Married Women									
III	(a) Mineworkers	..	142	138	128	126	144	140	145
	(b) Transport workers	..	117	118	102	98	100	113	110
	(c) Clerical workers	..	79	85	97	96	88	88	89
	(d) Armed forces	..	118	128	136	140	134	101	84
	(e) Others in Social class III	..	91	92	97	99	102	108	113
IV	(a) Agricultural workers	..	101	86	95	98	99	99	100
	(b) Others in Social class IV	..	114	115	108	105	105	112	120
V	(a) Building and Dock labourers	..	121	119	104	90	92	97	95
	(b) Others in Social class V	..	118	146	125	117	110	109	112
Single Women									
III	(a) Mineworkers	..	—	—	—	—	—	—	—
	(b) Transport workers	..	(133)	95	88	84	94	115	257
	(c) Clerical workers	..	60	64	72	84	86	99	112
	(d) Armed forces	..	46	68	(60)	(76)	(794)	(202)	—
	(e) Others in Social class III	..	87	80	85	93	114	155	194
IV	(a) Agricultural workers	..	82	47	38	79	97	168	220
	(b) Others in Social class IV	..	106	91	88	87	89	119	152
V	(a) Building and Dock labourers	..	(1,263)	(777)	(85)	(206)	(110)	(323)	(476)
	(b) Others in Social class V	..	107	106	93	85	88	119	149

Sub-class IIIa (Mineworkers) occur at each age. In Sub-class IIId (Armed forces) a low male mortality at 20-24 gives place to a very high mortality at later ages, explainable in part by the inclusion within this class of pensioners retired from active service on account of disabilities, and who were not described at death registration as having since entered any other occupation. In Sub-class Va the wives of building and dock labourers tended to have high mortality at ages under 45 but rates somewhat below average at higher ages. Single women in Sub-class IIIc (clerical workers) enjoyed a very favourable mortality experience at younger ages, gradually giving way to higher rates at older ages.

Similar death rates and percentage comparisons in respect of the socio-economic groups are given in Tables O and P. Male clerical workers (Group 6) had increased mortality at ages 35-54. Men in personal service (Group 8) who had high rates at each age up to 64 showed improvement thereafter, in complete contrast with the manual workers in Groups 9 (foremen) and 11 (semi-skilled).

Among married women, Group 8 (wives of men in personal service) and Group 9 (wives of foremen) showed the same age-changes as men. In contrast with men, the married women in Group 11 (wives of semi-skilled manual workers) had elevated death rates at each age.

In several of the socio-economic groups, viz. Nos. 1, 2, 3 and 9, the number of single women employed was small and the death rates, particularly when broken down by age, are unstable. In all the socio-economic groups the tendency was for rates to be below average at ages under 65 (counterbalanced by high rates for the unoccupied) and to be above average at ages 65-74. But the special limitations of these mortality data as regards single women (page 11) seriously complicate their interpretation and render their significance uncertain.

25

Socio-economic Group		20–	25–	35–	45–	55–	65–	70–74
All Occupied and Retired	Males	**130**	**153**	**280**	**816**	**2,312**	**4,709**	**7,529**
	Married Women	**77**	**115**	**201**	**478**	**1,188**	**2,635**	**4,631**
	Single Women	**88**	**140**	**254**	**508**	**1,194**	**3,014**	**6,210**
1. Farmers	Males	205	145	223	545	1,570	3,428	5,894
	Married Women	*93*	*89*	*172*	*440*	*1,134*	*2,536*	*4,189*
	Single Women	*(139)*	*(76)*	*185*	*306*	*1,181*	*2,425*	*5,982*
2. Agricultural workers	Males	130	144	228	587	1,661	3,511	5,881
	Married Women	76	94	184	458	1,141	2,467	4,260
	Single Women	91	94	117	447	1,153	4,040	9,067
3. Higher administrative etc.	Males	208	162	230	756	2,347	4,839	7,614
	Married Women	52	89	183	470	1,179	2,564	4,508
	Single Women	95	87	225	512	1,189	3,022	5,089
4. Other administrative etc.	Males	96	104	210	701	2,014	4,265	7,061
	Married Women	53	79	158	393	997	2,303	4,099
	Single Women	50	86	192	428	1,049	2,497	4,962
5. Shopkeepers	Males	163	142	262	798	2,389	4,973	7,787
	Married Women	79	103	187	463	1,219	2,697	4,780
	Single Women	*122*	*213*	*249*	*485*	*1,398*	*3,264*	*5,843*
6. Clerical workers	Males	129	170	331	979	2,388	4,361	6,770
	Married Women	60	101	191	460	1,030	2,181	3,830
	Single Women	67	123	236	509	1,081	2,522	4,703
7. Shop assistants	Males	106	123	243	708	1,938	4,025	6,012
	Married Women	61	88	163	386	926	2,126	3,577
	Single Women	94	159	231	475	1,132	2,655	5,447
8. Personal service	Males	158	202	388	999	2,433	4,395	6,595
	Married Women	*91*	*123*	*218*	*490*	*1,148*	*2,231*	*3,851*
	Single Women	94	145	274	495	1,093	2,874	6,280
9. Foremen	Males	102	108	212	635	2,092	4,966	8,896
	Married Women	*63*	*92*	*167*	*434*	*1,121*	*2,740*	*5,242*
	Single Women	*110*	*139*	*250*	*478*	*1,237*	*3,195*	*7,215*
10. Skilled workers	Males	131	145	277	817	2,461	5,030	7,920
	Married Women	77	119	209	497	1,265	2,823	4,949
	Single Women	98	166	321	644	1,638	4,353	9,001
11. Semi-skilled workers	Males	130	151	295	802	2,210	4,854	8,332
	Married Women	89	134	221	512	1,249	2,917	5,364
	Single Women	137	192	297	551	1,252	3,681	8,493
12. Unskilled workers	Males	156	213	385	1,028	2,578	4,921	7,719
	Married Women	92	162	243	530	1,248	2,653	4,570
	Single Women	121	228	349	565	1,251	3,287	6,679
Unoccupied	Males	314	594	1,037	1,328	1,449	857	922
	Married Women	187	415	946	909	675	528	646
	Single Women	368	559	687	944	1,369	2,033	3,123

In several of the socio-economic groups, viz. Nos. 1, 2, 3 and 9, the number of single women employed was small and the death rates, particularly when broken down by age, are unstable. In all the socio-economic groups the tendency was for the below average rates at ages under 65 to be influenced by high rates for the unoccupied) and to be above average at ages 65-74. But the special limitations of these mortality data as regards single women (page 11) seriously complicate their interpretation and render their significance uncertain.

Socio-economic Group		20–	25–	35–	45–	55–	65–	70–74
Males								
1. Farmers	..	149	91	78	66	68	77	87
2. Agricultural workers	..	94	91	79	72	72	79	86
3. Higher administrative, etc.	..	151	102	80	92	102	109	112
4. Other administrative, etc.	..	70	65	73	85	88	96	104
5. Shopkeepers	..	118	89	91	97	104	112	114
6. Clerical workers	..	93	107	115	119	104	98	99
7. Shop assistants	..	77	77	85	86	84	91	88
8. Personal service	..	115	127	135	122	106	99	97
9. Foremen	..	74	68	74	77	91	112	131
10. Skilled workers	..	95	91	97	100	107	113	116
11. Semi-skilled workers	..	94	95	103	98	96	109	122
12. Unskilled workers	..	113	134	134	125	112	111	113
Married Women								
1. Farmers	..	*119*	76	85	91	97	102	99
2. Agricultural workers	..	97	80	91	95	97	99	101
3. Higher administrative, etc.	..	67	76	90	98	101	103	107
4. Other administrative, etc.	..	68	68	78	82	85	93	97
5. Shopkeepers	..	101	88	92	96	104	109	113
6. Clerical workers	..	77	86	94	95	88	83	91
7. Shop assistants	..	78	75	80	80	78	90	86
8. Personal service	..	*117*	105	107	102	98	96	91
9. Foremen	..	81	79	82	90	96	110	124
10. Skilled workers	..	99	102	103	103	108	114	117
11. Semi-skilled workers	..	114	115	109	106	106	118	127
12. Unskilled workers	..	118	138	120	110	106	107	108
Single Women								
1. Farmers	..	*(124)*	*(39)*	56	50	80	64	143
2. Agricultural workers	..	81	49	*35*	74	92	163	216
3. Higher administrative, etc.	..	85	45	68	84	94	122	121
4. Other administrative, etc.	..	45	45	56	71	83	101	118
5. Shopkeepers	..	*109*	110	75	80	111	132	139
6. Clerical workers	..	60	64	72	84	86	102	112
7. Shop assistants	..	84	82	70	78	90	107	130
8. Personal service	..	84	75	83	82	87	116	150
9. Foremen	..	*98*	*72*	*76*	*79*	*98*	*129*	*172*
10. Skilled workers	..	88	86	97	106	130	176	214
11. Semi-skilled workers	..	122	99	90	91	99	149	202
12. Unskilled workers	..	108	118	106	93	99	133	159
All Occupied and Retired	..	79	73	77	84	95	122	148
Unoccupied	..	329	290	208	156	109	82	74

CHAPTER III. MORTALITY FROM SELECTED CAUSES

Social Class relationships in general

STANDARDISED Mortality Ratios at ages 20-64 for men, married women and single women in the five Social Classes are summarised in Table DN for each of the causes analysed in the first section of Table 3. The purpose of this summarised table is to provide a conspectus of the relationships between the Social Classes and a number of important causes of deaths.

These relationships allow the selected causes to be grouped broadly in four ways: (a) causes showing a rising gradient of mortality from Social Class I to V, (b) causes showing a falling gradient of mortality from Social Class I to V, (c) causes showing some other, apparently systematic, relationship with Social Class, (d) causes showing no evidence of a social class relationship.

Table Q sets out the selected causes of death arranged in these groups. Not every one of these causes follows completely the type of arrangement to which it has been assigned, particularly among single women, where, for many of the causes, the social class relationships are irregular or confused. The individual causes are further discussed in the next section.

One point of the greatest significance that emerges from a scrutiny of these Social Class relationships is that, whereas the mortality from a number of important individual causes of death shows the usual rising gradient of mortality from the professional and managerial occupations of Social Classes I and II to the semi-skilled and unskilled occupations of Social Classes IV and V, there are a considerable number of other causes of death, including the numerically very important coronary heart disease, in which there are unmistakeable indications that the burden of mortality falls heaviest upon the professional and managerial

Table Q. Causes of death of males, married and single women, summarised to show relationship between Standardised Mortality Ratios and Social Class at Ages 20-64

Males	Married Women	Single Women
(a) Causes of death for which a mortality gradient tends to rise from Social Class I to V		
Tuberculosis, respiratory (001-008)	Tuberculosis, respiratory (001-008)	Tuberculosis, respiratory (001-008)
Tuberculosis, non-respiratory (010-019)	Tuberculosis, non-respiratory (010-019)	Tuberculosis, non-respiratory (010-019)
Syphilitic disease (020-029)	Syphilitic disease (020-029)	Syphilitic disease (020-029)
Malignant neoplasms, all sites (140-205)	Malignant neoplasm, stomach (151)	Malignant neoplasm, cervix uteri (171)
Malignant neoplasm, stomach (151)	Malignant neoplasm, cervix uteri (171)	Chronic endocarditis (421)
Malignant neoplasm, lung, bronchus (162, 163)	Diabetes (260)	Other myocardial degeneration (422)
Chronic rheumatic heart disease (410-416)	Hypertension (440-447)	Influenza (480-483)
Chronic endocarditis (421)	Chronic rheumatic heart disease (410-416)	Pneumonia (490-493)
Other myocardial degeneration (422)	Chronic endocarditis (421)	Bronchitis (500-502)
Influenza (480-483)	Other myocardial degeneration (422)	Gastritis, enteritis and diarrhoea (543, 571, 572)
Pneumonia (490-493)	General arteriosclerosis (450)	
Bronchitis (500-502)	Influenza (480-483)	Hernia of abdominal cavity (560,561)
Chronic interstitial pneumonia (525)	Pneumonia (490-493)	Intestinal obstruction without mention of hernia (570)
Ulcer of stomach (540)	Bronchitis (500-502)	
Ulcer of duodenum (541)	Ulcer of stomach (540)	
Hernia of abdominal cavity (560,561)	Nephritis and nephrosis (590-594)	
Intestinal obstruction without mention of hernia (570)	Pregnancy, childbirth, abortion (640-689)	
Appendicitis (550-553)	Appendicitis (550-553)	
Motor vehicle accidents (E810-835)	Hernia of abdominal cavity (560,561)	
	Cholelithiasis, cholecystitis (584, 585)	
(b) Causes of death for which a mortality gradient tends to fall from Social Class I to V		
Acute poliomyelitis (080)	Acute poliomyelitis (080)	Acute poliomyelitis (080)
Leukaemia, aleukaemia (204)	Malignant neoplasms, all sites (140-205)	Malignant neoplasms, all sites (140-205)
Vascular lesions of nervous system (330-334)	Malignant neoplasm, lung, bronchus (162,163)	Malignant neoplasm, breast (170)
Coronary disease, angina (420)	Malignant neoplasm, breast (170)	Malignant neoplasm, other parts of uterus (172-174)
Hypertension (440-447)	Leukaemia, aleukaemia (204)	
Gastritis, enteritis and diarrhoea (543, 571, 572)	Cirrhosis of liver (581)	
Hyperplasia of prostate (610)	Motor vehicle accidents (E810-835)	
Appendicitis (550-553)	Suicide (E963, 970-979)	
Cirrhosis of liver (581)		
Cholelithiasis, cholecystitis (584, 585)		

28

Table Q.—continued

Males	Married Women	Single Women
(c) Causes of death for which mortality shows some other relationship to Social Class		
Diabetes (260)	Malignant neoplasm, other parts of uterus (172-174)	Malignant neoplasm, stomach (151)
(falls from I to IV, then rises)	(high in I, III and V)	(high in I, IV and V)
Psychoses (300-309)	Psychoses (300-309)	Malignant neoplasm, lung, bronchus (162, 163)
(high in I and V)	(high in I and V)	(high in III)
Accidents in the home (E870.0-936.0)	Intestinal obstruction without mention of hernia (570)	Leukaemia, aleukaemia (204)
(high in I and V)	(high in I and V)	(high in I)
Other accidents (Remr. of E800-962)	Accidents in the home (E870.0-936.0)	Diabetes (260)
(high in I, IV and V)	(high in I and V)	(high in I)
Suicide (E963, 970-979)		Hypertension (440-447)
(high in I, II and V)		(high in I, III and V)
Tuberculosis, respiratory with occ. dis. of lung (001)		Chronic rheumatic heart disease (410-416)
(high in III and IV)		(low in I and II)
Pneumoconiosis (523, 524)		Ulcer of stomach (540)
(high in III and IV)		(high in I and V)
General arteriosclerosis (450)		Ulcer of duodenum (541)
(high in V)		(low in III)
		Appendicitis (550-553)
		(high in I)
		Motor vehicle accidents (E810-835)
		(high in I and V)
		Accidents in the home (E870.0-936.0)
		(high in I and V)
		Other accidents (Remr. of E800-962)
		(high in V)
(d) Causes of death for which mortality shows no relationship to Social Class		
Nephritis and nephrosis (590-594)	Vascular lesions of nervous system (330-334)	
	Coronary disease, angina (420)	
	Ulcer of duodenum (541)	
	Gastritis, enteritis and diarrhoea (543, 571, 572)	

classes. Traditionally we have come to look upon excessive mortality as one of the concomitants of the lower standard of living of unskilled workers. It is important to recognise that a high standard of living likewise brings with it its own series of mortality risks.

Proportionate Mortality Ratios at ages 65 and over in the five Social Classes are summarised in Table DN; and S.M.R.'s at 20-64 and P.M.R.'s at 65 and over in the thirteen Socio-economic Groups are summarised in Tables DP and DQ respectively.

Contribution of selected causes to social class mortality differences between 1930-32 and 1949-53

In Chapter II it was observed that, compared with the uniform social class gradient of mortality (all causes) recorded in 1930-32, important differences have emerged in the 1949-53 analysis, differences that cannot be accounted for completely by changes in the occupational structure of the various social classes. For men aged 20-64 the standardised mortality ratios (all causes) in 1930-32 and 1949-53 were:

	Social Class				
	I	II	III	IV	V
1930-32	90	94	97	102	111
1949-53	98	86	101	94	118
1949-53 (adjusted)*	100	90	101	104	118

*i.e. adjusted to conform approximately with the social class occupational structure of 1931 (see page 20).

To make it easier to see to what extent certain major causes of death may have contributed to the changes in the relative position of the various social classes, Table DM sets out for 1930-32 and 1949-53 the registered and the expected numbers of deaths of men aged 20-64, the differences between these and, in order to facilitate comparison, the differences that would have occurred if the total number of expected deaths from all causes had in each instance been 10,000; these last will be referred to as "adjusted differences".

In Social Class I an adjusted difference of —975 deaths for all causes in 1930-32 (corresponding to an S.M.R. of 90) had changed to —237 in 1949-53 (S.M.R. 98). On this basis of comparison mortality in Social

29

Class I increased by *738* deaths, of which over 400 came from coronary disease, 200 each from tuberculosis and from accidents, about 100 each from cancer, vascular lesions of the central nervous system, and chronic endocarditis, and 50 or thereabout from myocarditis, pneumonia, and suicide; but in counter-action to these increases, there was a relative decrease in mortality from bronchitis in Social Class I by over 200 deaths and from "other causes" by over 300 deaths.

In Social Class II an adjusted difference of −*637* in 1930-32 (S.M.R. 94) was replaced in 1949-53 by one of −*1,368* deaths (S.M.R. 86). Relative mortality in Social Class II declined therefore by *731* deaths. Contributing to this reduction were some 200 deaths each from cancer and bronchitis, 80 from suicide, less than 50 from accidents, and about 400 from "other causes", while there was a relative increase of about 100 deaths from tuberculosis and less than 50 each from coronary disease and pneumonia.

Social Class III worsened its relative position by *386* deaths, an adjusted difference of −*330* deaths in 1930-32 (S.M.R. 97) being converted to +*56* deaths in 1949-53 (S.M.R. 101). There was a relative increase of about 100 deaths from cancer, an increase of about 100 deaths from coronary disease, about 40 from pneumonia, and 100 from "other causes".

In Social Class IV an adjusted total difference of +*244* in 1930-32 (S.M.R. 102) was replaced by one of −*608* (S.M.R. 94) in 1949-53, relative mortality having thus declined by *852* deaths, all the causes listed in Table DM contributing to this decline with the exception of accidents. Deaths from coronary disease decreased by over 250, from tuberculosis, cancer, and "other causes" by about 100 each, and vascular lesions of the central nervous system, endocarditis, pneumonia, and bronchitis by 50 or more each.

Social Class V suffered a worsening in its relative position to the extent of *657* deaths, an adjusted difference of +*1,137* in 1930-32 (S.M.R. 111) becoming +*1,794* in 1949-53 (S.M.R. 118). Coronary disease and pneumonia each decreased to the extent of about 100 deaths each, and tuberculosis by some 60 deaths, but these reductions were more than counterbalanced by increases of 350 deaths from bronchitis, 100 each from cancer and accidents, 75 from suicide, and 300 from "other causes".

Tuberculosis

In this volume deaths from tuberculosis have been classified as respiratory or non-respiratory. Among the deaths from respiratory tuberculosis are a number in which occupational disease of the lung has also been recorded on the death certificate. In the tables for men this group of deaths has been shown separately, as well as being included with respiratory tuberculosis. During 1949-53 there were 33,358 deaths from tuberculosis among men aged 20-64. Of these, 31,237 were classified as respiratory, including 991 deaths with mention of occupational disease, and 2,121 deaths were classified as non-respiratory.

Table R. Tuberculosis: S.M.R's (20-64), mortality ratios at ages 20-64, and P.M.R's (65 and over) by social class, 1949-53

	Social Class	S.M.R. 20-64	Mortality ratios at ages					P.M.R 65 and over
			20-	25-	35-	45-	55-64	
Respiratory tuberculosis								
Males	I	58	(26)	40	59	65	65	71
	II	63	56	57	66	65	61	66
	III	102	88	100	101	101	106	102
	IV	95	107	93	94	92	96	95
	V	143	135	143	148	148	137	140
Married Women	I	52	(26)	40	65	54	72	87
	II	56	45	47	65	57	64	78
	III	99	98	101	99	99	96	95
	IV	113	115	112	111	113	120	113
	V	156	145	171	156	143	148	125
Single Women	I	60	(35)	(32)	101	(81)	(115)	(120)
	II	43	23	40	57	57	62	114
	III	80	75	77	84	86	127	88
	IV	111	128	111	99	96	76	107
	V	116	139	137	70	69	98	(114)
Non-respiratory tuberculosis								
Males	I	69	(31)	(53)	79	77	87	100
	II	84	83	75	86	77	100	86
	III	95	83	91	93	106	103	106
	IV	103	122	103	93	103	103	87
	V	108	117	116	121	103	97	106
Married Women	I	82	—	(52)	(113)	120	(68)	(100)
	II	73	(100)	57	80	70	86	110
	III	98	90	100	93	100	95	100
	IV	113	81	105	113	113	120	94
	V	128	190	143	127	120	118	107
Single Women	I	(60)	—	(73)	—	(80)	(151)	(100)
	II	55	62	54	(53)	(38)	80	94
	III	87	74	85	94	118	77	89
	IV	105	133	93	69	120	(66)	120
	V	100	148	(90)	(25)	(93)	(103)	(300)

At ages 20-64 the S.M.R's for 1949-53 for men, married women and single women each indicated a steep, and for the most part uniform, gradient of mortality, both from respiratory and non-respiratory tuberculosis, increasing from Social Class I to V (Table R). For men and for married women the risk of dying from respiratory tuberculosis was about three times as high in Social Class V as in Social Class I. For single women, where mortality was lower in Social Class II than I, the risk in Social Class II was about a third of that of Social Class V.

The social class gradient of respiratory tuberculosis mortality among men and married women was greatest among young adults (5 or 6 times as high in Social Class V as in Social Class I at ages 20-24) and tended to become less with advancing age (about twice as high in Social Class V as in Social Class I at 55-64). For single women this gradient was well marked at ages 20-24 and 25-34 but was indiscernible at older ages.

At ages 65 and over the P.M.R's indicate a high proportionate risk of death from respiratory tuberculosis among men and married women in Social Class V, but otherwise no definite social class differences.

Table S. Tuberculosis: S.M.R's (20-64), by social class, 1949-53 compared with previous analyses

Social Class	Males			Married Women		Single Women	
	1921–23	1930–32	1949–53	1930–32	1949–53	1930–32	1949–53
Respiratory tuberculosis							
I	49	61	58	52	52	112	60
II	81	70	63	67	56	53	43
III	95	100	102	99	99	91	80
IV	97	104	95	106	113	119	111
V	137	125	143	132	156	113	116
Non-respiratory tuberculosis							
I	70	43	69	66	82		(60)
II	95	86	84	93	73	not	55
III	94	96	95	96	98	available	87
IV	93	114	103	112	113		105
V	103	97	108	110	128		100

Comparison between the Social Class S.M.R's for 1949-53, 1930-32 and 1921-23 (Table S) reveals no changes of any significance. Mortality from tuberculosis has fallen dramatically, particularly during recent years, and the figures show that the various Social Classes have each shared to much the same extent in the improvement that has occurred.

Table T. Respiratory Tuberculosis: S.M.R's (20-64) by socio-economic group, 1949-53

Socio-economic Group	Males	Married Women	Single Women
1. Farmers	42	52	(50)
2. Agricultural workers	54	74	52
3. Higher administrative, etc.	58	52	60
4. Other administrative, etc.	64	54	43
5. Shopkeepers	72	65	52
6. Clerical workers	117	75	61
7. Shop assistants	92	69	92
8. Personal service	139	191	82
9. Foremen	62	80	70
10. Skilled workers	101	106	103
11. Semi-skilled workers	102	122	144
12. Unskilled workers	143	157	132
13. Armed Forces (other ranks)	220	140	55

Respiratory tuberculosis S.M.R's for the Socio-economic Groups are summarised in Table T. Among men the two socio-economic groups with lowest mortality were Groups 1 (42) and 2 (54), farmers and other agricultural workers, respectively. Low rates were also recorded in Groups 3 (58) and 4 (64) (administrative, professional and managerial), Group 5 (72) (shopkeepers), and Group 9 (62) (foremen in manual trades). High mortality was recorded by Group 6 (117) (clerical workers), Group 8 (139) (personal service), Group 12 (143) (unskilled manual workers), and Group 13 (220) (armed forces).

In Socio-economic Group 8 (personal service) male occupations with notably high tuberculosis mortality included proprietors and managers of hotels, publicans, etc. (S.M.R. at 20-64, 178), barmen (255), waiters and stillroom hands (204), restaurant counter hands (240), hospital and ward orderlies (134), barbers (142), and indoor domestic servants (131). Persons in such occupations are in frequent contact with other people and thus run some increased risk of acquiring tuberculous infection, though this may not be the main reason for their high mortality. More serious is the fact that they are in a position to spread infection to others.

Among married women the pattern was practically the same as for men, the only important differences being a relatively low S.M.R. for Group 6 (wives of clerical workers). For single women rates were low in

the agricultural and non-manual groups and high among semi-skilled and unskilled manual workers (Groups 11 and 12).

In contrast with respiratory tuberculosis, mortality from non-respiratory tuberculosis tended to be less favourable in the two agricultural groups (1 and 2), both for men and for married and single women (Table DP).

Respiratory tuberculosis with occupational disease of lung

The social class arrangement of S.M.R's at 20-64 for men dying from this cause was:

Social Class

I	II	III	IV	V
9	12	123	183	71

The figures do no more than indicate that the particular occupations, e.g. coalmining, in which association of tuberculosis and occupational lung disease tends to occur, are, for the most part, to be found in Social Classes III and IV.

Syphilitic Disease

Included under this title are deaths from syphilis and from its various sequelae, such as tabes dorsalis and general paralysis of the insane. Also included are deaths from aneurysm of aorta, not only when described as of syphilitic origin but also when without any other indication of cause. For the years 1952-53 these last two categories have been separately distinguished in part (iii) of Table 3A, B, and C, which also includes deaths from aortic aneurysm described as non-syphilitic.

Table U. Syphilitic disease: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	67	(36)	—	110	(62)	—
II	63	57	(20)	90	78	96
III	103	101	90	100	97	117
IV	98	98	107	88	98	129
V	143	137	257	117	131	(150)

At ages 20-64 the S.M.R's for 1949-53 (Table U) indicate a strong association between syphilis mortality and social class, the ratios for men, married women and single women increasing from Social Classes I and II to Social Class V, more steeply among married women than men, and steepest of all among single women. Evidence of this gradient appears in each age group from 20-24 to 55-64 (Table 4) and is also a feature of the proportionate mortality at ages 65 and over, particularly in women.

Table V. Syphilitic disease: S.M.R's (20-64) by social class, 1949-53 compared with previous analyses

	Males			Married Women	
	1921-23	1930-32	1949-53	1930-32	1949-53
Social Class I	69	73	67	48	(36)
II	86	67	63	55	57
III	90	101	103	91	101
IV	90	100	98	98	98
V	129	136	143	147	137

Comparison of the S.M.R's at 20-64 in 1949-53 for men and for married women with those for earlier years (Table V), indicates no important change in the social class relationships. For single women deaths from syphilis have not previously been tabulated by social class.

In 1949-53 deaths from aneurysm of aorta constituted about 40 per cent of the total deaths of males assigned to syphilitic disease. In Table W, social class S.M.R's and P.M.R's for men dying from aortic aneurysm classified as syphilitic, specified or not, are compared with those described as non-syphilitic. The S.M.R's at 20-64 for syphilitic and for unspecified aortic aneurysm display almost identical social class tendencies, with lowest ratios in Social Class I and highest ratios in Social Class III. In contrast aneurysms specified non-syphilitic have highest mortality in Social Class I and lowest in Social Classes IV and V. The

Table W. Aneurysm of aorta: S.M.R's (20-64) and P.M.R's (65 and over) males, by social class, 1952-53

	Aortic aneurysm specified as syphilitic	Aortic aneurysm unspecified	Aortic aneurysm specified as non-syphilitic
S.M.R. 20-64			
Social Class I	(50)	(56)	148
II	(64)	89	101
III	116	111	112
IV	91	86	63
V	100	112	96
P.M.R. 65 and over			
Social Class I	(75)	131	205
II	100	135	116
III	95	88	101
IV	113	100	66
V	113	92	86

P.M.R's at ages 65 and over, on the other hand, suggest that the "unspecified" aneurysms tend somewhat to follow the pattern of the non-syphilitic rather than the syphilitic group. It is to be noted, however, that the number of deaths analysed are insufficient to permit firm conclusions to be drawn.

Among the socio-economic groups those with particularly high mortality from syphilis were Groups 8 (personal service), 12 (unskilled manual workers) and 13 (armed forces).

Acute Poliomyelitis

During 1949-53 deaths from acute poliomyelitis at ages 20-64 numbered: men 602; married women 343; single women 88. The numbers were therefore sufficient to justify analysis by social class and to some extent by occupation. At ages 65 and over, however, only 8 deaths of men, none of married women, and 2 of single women were registered.

Table X. Acute poliomyelitis: S.M.R's (20-64) by social class, 1949-53

	Males	Married Women	Single Women
Social Class I	295	250	(200)
II	171	154	162
III	90	87	83
IV	63	92	56
V	42	46	(75)

The S.M.R's at ages 20-64 by Social Class, summarised in Table X, indicate a striking preponderance of mortality in Social Classes I and II, and relatively low mortality in Social Class V. In men, mortality in Social Class I was 7 times as high, and in married women 6 times as high, as in Social Class V.

The analysis by separate age groups in Table 4 indicates that this pattern was reproduced at each age.

Table Y. Acute poliomyelitis: S.M.R's (20-64) by socio-economic group, 1949-53

Socio-economic Group	Males	Married Women	Single Women
1. Farmers	433	200	∞
2. Agricultural workers	119	138	(100)
3. Higher administrative, etc.	295	250	(200)
4. Other administrative, etc.	128	149	129
5. Shopkeepers	135	167	(200)
6. Clerical workers	167	131	79
7. Shop assistants	150	108	(100)
8. Personal service	(45)	(117)	(73)
9. Foremen	(41)	(58)	—
10. Skilled workers	81	78	77
11. Semi-skilled workers	54	82	(67)
12. Unskilled workers	43	43	(67)
13. Armed Forces (other ranks)	52	(83)	—

Analysis by socio-economic groups indicates, for men, high mortality in the agricultural (Groups 1 and 2) and the first five of the non-manual groups, (Groups 3 to 7) with particularly high mortality among farmers (Group 1) (433) and persons in professional or managerial occupations (Group 3) (295). In contrast Groups 8 to 13 all had ratios well below average.

With minor variations the same pattern of mortality was presented by married women.

In so far as individual occupations are concerned it may be noted that at ages 20-64 medical practitioners

had 8 deaths compared with 1 expected, and their wives had 4 deaths compared with 1 expected. Single women occupied as nurses had 10 deaths compared with 5 expected.

Judges, barristers and solicitors (male) aged 20-64 had seven deaths compared with one expected, but coal-mining workers below ground had only one death compared with twenty expected.

Malignant Neoplasms (Cancer)

The list of causes of death tabulated in detail in Table 3 of this volume includes malignant neoplasms, all sites (synonymous with cancer, all sites) (I.S.C. Nos. 140-205); cancer of stomach; cancer of lung and bronchus; cancer of breast (women only); cancer of cervix uteri; cancer of other parts of uterus; and leukaemia, aleukaemia.

In addition, the two special cancer tables, Tables 6 and 7, give details by age, social class, and selected occupations, of deaths from cancer of a large number of other individual sites.

Table Z. Cancer, all sites: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	94	116	116	98	114	119
II	86	97	97	96	104	111
III	104	102	107	102	101	108
IV	95	96	90	97	95	100
V	113	98	89	105	97	115

Mortality from cancer, all sites, in 1949-53 is summarised in Table Z. For men, the S.M.R's at 20-64 indicate that there was no strong social class differential though mortality was highest in Social Class V (113). Among women, on the other hand, both married and single, mortality was somewhat elevated in Social Class I (married, 116; single 116). In a general way, a similar pattern emerged from the P.M.R's at 65 and over.

As is shown in Table 4, the social class pattern of male mortality tended to vary at different ages between 20 and 64, depending upon the particular social class tendencies of those forms of cancer that predominated at each age. At ages 20-24 mortality of men was higher in Social Class I (124); at 25-34, Social Classes I and V were equal (107); at 35-44 and at 45-54 there was a steep gradient of mortality from about 80 in Social Class I and II to over 120 in Social Class V; and at 55-64 no definite gradient appeared.

Among married and single women the general tendency was for mortality to be higher in Social Class I at every age.

Table AA. Cancer, all sites; S.M.R's (20-64) by social class, 1949-53 compared with previous analyses

	Males			Married Women		Single Women	
	1923-23	1930-32	1949-53	1930-32	1949-53	1930-32	1949-53
Social Class I	80	83	94	96	116	111	116
II	92	92	86	97	97	78	95
III	99	99	104	101	102	108	107
IV	97	102	95	95	96	104	90
V	123	115	113	106	98	111	89

Comparison with the results of previous analyses (Table AA) indicates, for men, no change in the social class gradient at 20-64 compared with the two previous periods, other than some lessening of its slope. This lessening cannot be explained by the inclusion, for the first time in 1949-53, of deaths from leukaemia. If these are excluded, the social class S.M.R's for men in 1949-53 remain very little altered, viz:

	Social Class				
	I	II	III	IV	V
	93	86	104	95	113

Among married women, however, the high mortality of Social Class I in 1949-53 was absent in 1930-32, the tendency then being for mortality to be slightly higher in Social Class V. With single women, Social Class V occupied a less favourable position in 1930-32 than it has come to do in the present analysis.

Among the socio-economic groups the mortality of men aged 20-64 was somewhat below average in Groups 1 and 2 (agricultural), 3 and 4 (professional and managerial), 7 (shop assistants) and 9 (foremen).

At 65 and over the two agricultural groups had favourable proportionate ratios, but the other groups showed no significant departures from the general average.

Among married women aged 20-64, Socio-economic Group 3 had the high ratio of 116 (cf. Social Class I), and the lowest group was No. 7 (wives of shop assistants).

Cancer of Stomach

At 20-64 and again at 65 and over the mortality ratios for men and for married women indicate a strong gradient of mortality increasing from Social Class I to Social Class V. Among single women the pattern was slightly different, in that both at 20-64 and 65 and over, this gradient commenced from Social Class II, mortality being above average in Social Class I (Table AB).

Table AB. Cancer of stomach: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	57	68	*108*	68	77	*116*
II	70	80	77	90	92	90
III	101	102	96	102	101	113
IV	112	110	107	107	109	108
V	130	119	132	110	107	163

Table AC. Cancer of stomach: S.M.R's by social class, 1949-53 compared with previous analyses

	Males			Married Women	
	1921-23 (20-64)	1930-32 (35-64)	1949-53 (20-64)	1930-32 (35-64)	1949-53 (20-64)
Social Class I	60	55	57	49	68
II	82	83	70	77	80
III	100	98	101	105	102
IV	112	112	112	106	110
V	130	122	130	121	119

These indications of strong correlation between social class and mortality from cancer of stomach were reproduced at most age groups between 20 and 64 (Table 4). They also resembled very closely the social class distributions observed in earlier studies (Table AC), practically no change having occurred in these S.M.R's since 1921-23 and 1930-32.

Within the socio-economic groups (Tables DP and DQ) the S.M.R's at 20-64, and less uniformly the P.M.R's at 65 and over, for men and for married women, divide into a series of low mortality ratios in the agricultural and non-manual groups (plus foremen and their wives), and high ratios in the groups of manual workers. In conformity with the social class S.M.R's, however, those for single women were high in Socio-economic Groups 1, 2, and 3 as well as in Groups 10, 11 and 12.

Cancer of Lung and bronchus

During the period 1949-53 deaths of men aged 20-64 from cancer of lung and bronchus numbered 35,316, (about 7,000 per annum) compared with 3,014 (about 1,000 per annum) in 1930-32 and 873 (about 300 per annum) in 1921-23.

Table AD. Cancer of lung and bronchus: S.M.R's (20-64) and P.M.R's (65 and over) by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	81	119	(75)	104	130	*111*
II	82	95	101	92	106	121
III	107	102	112	105	106	101
IV	91	98	100	82	79	99
V	118	96	*91*	117	94	*125*

At ages 20-64 the male S.M.R's (Table AD) indicate a definite social class gradient increasing from Social Class I to Social Class V; but, except that Social Class V had the highest proportionate ratio, the distribution of the P.M.R's at 65 and over shows no similarity. Among married women high mortality was recorded in Social Class I at ages 20-64, but there were no other indications of systematic social class variation. Likewise no clear association with social class is discernible in the ratios for single women.

Apart from minor irregularities, the social class gradient of S.M.R's of men aged 20-64 was also present in each age group between 20 and 64 (Table 4).

Table AE. Cancer of lung and bronchus: S.M.R's (20-64), 1949-53 compared with previous analyses

	Males			Married Women	
	1921–23	1930–32	1949–53	1930–32	1949–53
Social Class I	*100*	107	81	*95*	119
II	109	95	82	100	95
III	97	100	107	108	102
IV	79	92	91	81	98
V	124	114	118	94	96

The definite social class gradient for men aged 20-64 has not been a feature of the two previous analyses, (Table AE) though both of these showed high mortality in Social Class V. A point to note, though there is the possibility that it is merely coincidental, is the resemblance between the male S.M.R's at 20-64 in 1930-32 and the P.M.R's at 65 and over in 1949-53, viz:

	Social Class				
	I	II	III	IV	V
S.M.R's (20-64) 1930-32	107	95	100	92	114
P.M.R's (65 and over) 1949-53	104	92	105	82	117

For married women aged 20-64 the high mortality in Social Class I in 1949-53 did not appear in the 1930-32 analysis.

Men in the agricultural groups, Socio-economic Groups 1 and 2, had exceptionally low S.M.R's at 20-64 and P.M.R's at 65 and over, mortality in these groups being in the neighbourhood of half the expected rates; and their wives also enjoyed relatively low mortality from this form of cancer (Tables DP and DQ). Other male groups with S.M.R's below average at 20-64 were Nos. 3 and 4 (professional and managerial) and 9 (foremen), while high ratios were recorded in Groups 5 (shopkeepers), 8 (personal service), 10 and 12 (skilled and unskilled manual workers). In group 13 the S.M.R. (190), though outstandingly high compared with other groups, was only slightly above the "all causes" S.M.R. for this group (163).

For married women, socio-economic groups with high S.M.R's at 20-64 were Group 3 (wives of men in professional and managerial occupations) and Group 8 (wives of men in personal service).

Cancer of Breast

This cause of death has been analysed in Table 3 in respect of women only. For men the breast is one of the cancer sites distinguished in Tables 6A and 7A and in Table AQ.

Table AF. Cancer of breast: S.M.R's (20-64) and P.M.R's (65 and over) married and single women, by social class, 1949-53

	S.M.R. 20-64		P.M.R. 65 and over	
	Married Women	Single Women	Married Women	Single Women
Social Class I	137	116	131	*116*
II	110	105	116	120
III	104	113	102	113
IV	84	83	86	91
V	85	84	84	*80*

Both among married and single women the social class S.M.R's at 20-64 and P.M.R's at 65 and over indicate a strong correlation with social class (Table AF), with mortality highest in Social Classes I and II and lowest in Social Classes IV and V. This gradient was more pronounced in married than single women and, as is shown in Table 4, was present in each age group between 20 and 65, apart from some random irregularities mainly affecting the ratios for single women.

In comparison with 1930-32 (Table AG) the social class gradients of mortality among married and single women, have remained unchanged, with mortality of married women aged 20-64 almost 60 per cent higher in Social Class I than Social Class V.

It has been demonstrated from time to time that there is a correlation between cancer of the breast and infertility, mortality being higher among women who have not borne children. There is also a correlation between social class and infertility. The fact, however, that the cancer of breast mortality gradient is present among single women as well as married makes it unlikely that fertility status by itself can be the principal factor responsible for the social class differential, though it may be a contributory one.

Table AG. Cancer of breast: S.M.R's (20-64) married and single women by social class, 1930-32, 1949-53

	Married Women		Single Women	
	1930–32	1949–53	1930–32	1949–53
Social Class I	136	137	*129*	116
II	116	110	93	105
III	103	104	105	113
IV	84	84	86	83
V	82	85	*82*	84

Within the socio-economic groups (Tables DP and DQ) high mortality at 20-64 was recorded by wives in Groups 3 to 6 (professional and managerial; shopkeepers; clerical workers) but was below average in Groups 1 and 2 (farmers and agricultural workers) and in most of the manual groups. At 65 and over the pattern of proportionate mortality was broadly similar.

Single women aged 20-64 had low mortality in Groups 1 and 2, high in Groups 3 to 6 and Group 10, and particularly high (S.M.R. 170) in Group 9 (forewomen in manual occupations). In the semi-skilled and unskilled manual groups, Nos. 11 and 12, mortality was just below average. At ages 65 and over the P.M.R's were again high in most of the non-manual groups, particularly Group 6 (clerical workers) (168), but were above 100 in most of the manual groups also.

Cancer of Uterus

Since 1950 arrangements have been made, in respect of deaths from cancer of uterus, to distinguish the following categories: cervix uteri (I.S.C. No. 171), corpus uteri (I.S.C. No. 172), other parts of uterus, including chorionepithelioma (I.S.C. No. 173), and uterus unspecified (I.S.C. No. 174). Prior to 1950 the distinction of these categories was incomplete, and about half of the deaths from cancer of uterus were classified as unspecified. The analyses in this volume have therefore been restricted to the years 1950-53 only. During these four years total deaths at all ages from cancer of the uterus numbered 16,166, comprising: cervix 10,287 (63·6 per cent), corpus 4,782 (29·6 per cent), other parts 134 (0·8 per cent), unspecified 963 (6·0 per cent). In Table 3 deaths from cancer of uterus have been tabulated as (a) cancer of cervix (No. 171), (b) cancer of other parts of uterus (No. 172-174), this second group consisting mainly of cancer of the corpus. Cancer of the corpus is separately distinguished in Tables 6 and 7.

Table AH. Cancer of cervix: S.M.R's (20-64) and P.M.R's (65 and over) by social class, 1950-53

	S.M.R. 20-64		P.M.R. 65 and over	
	Married Women	Single Women	Married Women	Single Women
Social Class I	64	(40)	81	(167)
II	75	61	89	111
III	98	87	100	98
IV	105	121	97	98
V	134	115	125	(175)

Social Class S.M.R's at 20-64 and P.M.R's at 65 and over for *cancer of cervix* are shown in Table AH. In both of these age groups the ratios for married women gave strong evidence of a steep social class gradient, with low mortality in Social Class I rising systematically to a high level in Social Class V. At 20-64 the S.M.R. in Social Class V was double that of Social Class I, and at 65 and over the P.M.R. was 50 per cent higher.

Among single women the gradient at 20-64, even though some of the ratios were calculated on small numbers of deaths, seemed to be largely the same as for married women, but at 65 and over the indications were quite uncertain.

As with cancer of the breast, but in the opposite direction, a correlation has frequently been demonstrated between cancer of cervix and fertility, and this presumably contributes something to the social class differences in mortality. Since, however, these social class differences are apparently as great in single as in

Table AJ. Cancer of cervix: Mortality ratios at ages 25-34 and 55-64, by social class, 1950-53

	Married Women	
	25–34	55–64
Social Class I	(38)	69
II	75	82
III	94	100
IV	119	103
V	175	128

married women, differences in social class fertility cannot be an important factor in the production of the mortality gradient.

The mortality ratios at separate age groups between 20 and 64 (Table 4 and Table AJ) show that for married women the social class gradient of mortality was steepest at 25-34, and less steep, though clearly in evidence, at successively older ages. For single women the figures are too erratic for firm conclusions to be drawn.

Within the socio-economic groups (Table DP) the S.M.R.'s for married women aged 20-64 were low in all the agricultural and non-manual groups except No. 8 (wives of men in personal service) and high in each of the manual groups except No. 9 (wives of foremen). Single women aged 20-64 had high S.M.R.'s in Group 2 (agricultural workers), Group 8 (personal service) and Group 11 (semi-skilled manual workers).

Table AK. Cancer of uterus (other than cervix): S.M.R.'s (20-64) and P.M.R.'s (65 and over) by social class, 1950-53

	S.M.R. 20-64		P.M.R. 65 and over	
	Married Women	Single Women	Married Women	Single Women
Social Class I	103	(180)	83	167
II	93	93	96	128
III	106	125	111	110
IV	92	59	93	91
V	99	61	85	138

Table AK gives S.M.R.'s and P.M.R.'s by social class for cancer of other parts of uterus (mainly corpus) and indicates complete absence of correlation between social class and mortality from this cause. The separate figures for corpus (I.S.C. No. 172) and for the remainder of uterus (I.S.C. Nos. 173, 174) shown in Table 6 and summarised in Table AQ suggest, in married women aged 20-64, a gradient of rising mortality from Social Class I to Social Classes IV and V in the residual group, possibly caused by the presence within the group of a number of cases of cancer of cervix not specified as such.

Table AL. Cancer of uterus (I.S.C. Nos. 171-174): S.M.R.'s (20-64) by social class, 1930-32, 1950-53

	Married Women		Single Women	
	1930-32	1950-53	1930-32	1950-53
Social Class I	64	75	(100)	110
II	78	80	63	78
III	98	101	110	106
IV	105	102	93	88
V	132	124	167	86

Comparison with the social class mortality distributions of 1930-32 is possible only in respect of cancer of uterus as a whole. This is done in Table AL and indicates no change of note between the two periods.

Leukaemia, aleukaemia

Mortality from leukaemia, with which is included aleukaemia, is strongly correlated with social class. Though the social class gradient was not quite regular the S.M.R.'s in 1949-53 (Table AM) gave clear evidence of relatively high mortality in Social Class I both in men and in married and single women, and low mortality in Social Class V. The P.M.R.'s at 65 and over for men and for married women presented a very similar pattern, but among single women the number of deaths were insufficient to establish any definite trend.

Table AM. Leukaemia, aleukaemia: S.M.R.'s (20-64) and P.M.R.'s (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	123	145	(225)	202	183	(100)
II	98	92	94	115	113	146
III	104	102	98	101	97	100
IV	93	104	93	78	82	109
V	89	87	94	74	93	(100)

Although the male S.M.R.'s at 20-64 show an unmistakeable mortality gradient downward from Social Class I to V, the gradient at individual age groups between 20 and 64 is in this downward direction only at 55-64, though at 45-54 a high ratio occurred in Social Class I. At ages 20-24 and 25-34 there are indications of an equally definite gradient in the opposite direction and no gradient at all at 35-44 (Table 4 and

38

Table AN). Some suggestion of a similar tendency is discernible in the rates for married and single women at ages 20-24.

Table AN. Leukaemia, aleukaemia: Mortality ratios for males, aged 20-24, 35-44 and 55-64 by social class, 1949-53

	Males 1949-1953		
	20-24	35-44	55-64
Social Class I	(55)	107	144
II	(85)	79	112
III	100	103	108
IV	120	107	91
V	110	100	72

The social class distributions of S.M.R.'s at 20-64 in 1930-32 and 1949-53 are compared in Table AO. Both in men and married women relative improvement has taken place in mortality in Social Class II, but otherwise no important changes are shown. Deaths from Hodgkin's disease were included with leukaemia in the 1930-32 classification, but since the two diseases are correlated in the same way with social class (see Table AQ) it is unlikely that the comparison with 1949-53 is impaired.

Table AO. Leukaemia, aleukaemia: S.M.R.'s (20-64) by social class, 1930-32, 1949-53

	Males		Married Women	
	1930-32	1949-53	1930-32	1949-53
Social Class I	153	123	167	145
II	125	98	118	92
III	96	104	107	102
IV	94	93	76	104
V	85	89	76	87

Among the socio-economic groups, Group 3 (professional and managerial) had a high S.M.R. at 20-64 both for men and for married and single women. A high S.M.R. was also recorded for men in Group 13 (armed forces).

Other forms of cancer

In addition to the sites already discussed, deaths from cancer of a number of other sites are tabulated by social class, sub-class, and socio-economic group in Table 6 and by selected occupations in Table 7.

The Social Class S.M.R.'s at 20-64 and P.M.R.'s at 65 and over for these sites are summarised in Table AQ. Some of these have been calculated upon small numbers of deaths, particularly in the case of single women, and their interpretation is in some cases difficult. In other cases, very definite social class correlations are readily apparent, this being especially so in the table for men aged 65 and over, where, for almost every one of the listed sites, the P.M.R.'s give indication of a social class gradient, viz:—

Upwards from Social Class I to V	Downwards from Social Class I to V
Lip	Small intestine
Tongue	Large intestine
Mouth	Biliary passage and liver
Oral mesopharynx	Liver (secondary or unspecified)
Remainder of pharynx	Pancreas
Oesophagus	Peritoneum etc.
Stomach	Mediastinum
Rectum	Prostate
Larynx	Testis
Other male genital organs	Kidney
Skin	Malignant melanoma
	Brain
	Thyroid
	Lymphosarcoma and reticulosarcoma
	Hodgkin's disease
	Other lymphoma
	Multiple myeloma
	Leukaemia

39

Table AP. Leukaemia, aleukaemia: S.M.R's (20-64) by socio-economic groups, 1949-53

Socio-economic Group	Males	Married Women	Single Women
1. Farmers	102	87	(100)
2. Agricultural workers ..	100	116	(100)
3. Higher administrative, etc. ..	123	145	(225)
4. Other administrative, etc. ..	101	102	94
5. Shopkeepers	92	77	(88)
6. Clerical workers	110	101	109
7. Shop assistants	83	109	72
8. Personal service	91	92	89
9. Foremen	110	86	(33)
10. Skilled workers	104	103	107
11. Semi-skilled workers	92	101	93
12. Unskilled workers	88	87	108
13. Armed Forces (other ranks) ..	126	136	(100)

Table AQ (i). Cancer by site: S.M.R's (20-64) and P.M.R's (65 and over) males, by social class, 1949-53

	Standardised Mortality Ratios by Social Class :—					Proportionate Mortality Ratios by Social Class :—				
	I	II	III	IV	V	I	II	III	IV	V
All sites	**94**	**86**	**104**	**95**	**113**	**98**	**96**	**102**	**97**	**105**
Lip (140)	(33)	(60)	103	136	107	(36)	64	64	203	148
Tongue (141)	106	104	101	89	102	51	65	100	105	146
Salivary gland (142)	(150)	89	101	133	58	110	85	95	116	115
Mouth (143, 144)	127	93	94	113	106	53	63	99	119	130
Oral mesopharynx (145)	186	95	102	67	118	68	70	102	116	122
Remainder of pharynx (146-148) ..	100	102	97	113	95	91	85	95	95	134
Oesophagus (150)	132	92	91	98	130	84	85	96	106	126
Stomach (151)	57	70	101	112	130	68	90	102	107	110
Small intestine (152)	122	120	96	86	108	130	116	98	71	108
Large intestine except rectum (153)	121	101	102	92	99	108	107	102	97	91
Rectum (154)	86	86	108	94	104	79	93	102	102	103
Biliary passages and of liver (stated to be primary site) (155)	112	89	101	90	112	121	104	96	103	94
Liver (secondary and unspecified) (156)	94	98	100	92	116	126	111	101	91	90
Pancreas (157)	120	101	101	93	103	116	103	102	91	94
Peritoneum and unspecified digestive organs (158, 159)	121	113	100	76	103	164	104	108	85	83
Nose, nasal cavities, middle ear and accessory sinuses (160)	(90)	91	104	86	117	92	87	112	96	93
Larynx (161)	91	84	100	92	126	97	82	101	92	126
Lung, bronchus and trachea (162, 163)	81	82	107	91	118	104	92	105	82	117
Mediastinum (164)	91	119	105	81	98	130	116	92	102	97
Breast (170)	(80)	118	101	119	68	186	70	115	81	100
Prostate (177)	128	99	102	93	102	129	114	101	91	84
Testis (178)	164	121	92	98	90	(117)	121	87	108	96
Other and unspecified male genital organs (179)	(75)	60	116	97	114	62	88	106	95	107
Kidney (180)	134	100	106	96	82	135	109	108	69	93
Bladder and other urinary organs (181)	106	77	109	96	107	112	95	105	95	95
Malignant melanoma of skin (190) ..	145	98	107	81	85	(114)	112	104	77	97
Other malignant neoplasm of skin (191) ..	(57)	87	108	69	126	57	80	92	129	126
Brain and other parts of nervous system (193)	133	96	104	88	99	136	112	105	90	71
Thyroid gland (194)	(100)	119	98	97	88	(170)	105	109	89	57
Bone (including jaw bone) (196) ..	130	89	108	86	96	103	99	98	102	108
Connective tissue (197)	(78)	113	104	83	91	(100)	117	99	107	80
Lymphosarcoma and reticulosarcoma (200)	138	104	103	86	91	152	110	97	86	99
Hodgkin's disease (201)	142	110	109	93	87	131	97	105	74	98
Other forms of lymphoma (reticulosis) (202)	(113)	134	102	70	91	333	131	90	80	(57)
Multiple myeloma (plasmocytoma) (203)	188	101	104	92	76	156	132	105	79	63
Leukaemia and aleukaemia (204) ..	123	98	104	93	89	202	115	101	78	74
Remainder of 140-205 (i.e. 165, 192, 195, 198, 199, 205)	130	83	105	95	103	95	95	101	96	112

Table AQ (ii). Cancer by site: S.M.R's (20-64) and P.M.R's (65 and over) married women, by social class, 1949-53

	Standardised Mortality Ratios by Social Class :—					Proportionate Mortality Ratios by Social Class :—				
	I	II	III	IV	V	I	II	III	IV	V
All sites	**116**	**97**	**102**	**96**	**98**	**114**	**104**	**101**	**95**	**97**
Lips (140)	—	—	(300)	—	(100)	—	100	(71)	200	(50)
Tongue (141)	200	85	97	117	86	80	81	86	168	111
Salivary gland (142)	—	92	108	164	(40)	200	100	100	117	60
Mouth (143, 144)	(200)	94	79	143	100	(50)	106	87	124	136
Oral mesopharynx (145)	(100)	(88)	127	(57)	(71)	(200)	(83)	113	(83)	(100)
Remainder of pharynx (146-148) ..	67	77	104	127	97	100	118	100	93	92
Oesophagus (150)	96	99	97	87	126	110	117	89	116	93
Stomach (151)	68	80	102	110	119	77	92	101	109	107
Small intestine including duodenum (152)	(100)	114	99	100	86	(133)	94	88	107	125
Large intestine except rectum (153)	115	106	99	101	96	128	102	100	98	98
Rectum (154)	107	93	104	105	93	99	96	106	90	100
Biliary passages and of liver (stated to be primary site) (155)	127	90	104	105	95	113	107	104	85	96
Liver (secondary and unspecified) (156)	132	82	96	115	117	140	121	98	78	92
Pancreas (157)	109	97	101	99	105	147	108	97	94	94
Peritoneum and unspecified digestive organs (158, 159)	115	103	100	91	79	57	91	103	116	92
Nose, nasal cavities, middle ear and accessory sinuses (160)	(120)	88	91	114	137	(100)	107	103	62	120
Larynx (161)	(73)	91	111	87	102	(50)	106	109	96	79
Lung, bronchus and trachea (162, 163)	119	95	102	98	96	130	106	106	79	94
Mediastinum (164)	(167)	129	105	(38)	91	(150)	118	89	(80)	125
Breast (170)	137	110	104	84	85	131	116	102	86	84
Cervix uteri (171) (1950/53 only) ..	64	75	98	105	134	81	89	100	97	125
Corpus uteri (172) (1950/53 only) ..	110	93	110	85	79	83	96	113	90	80
Remainder of uterus (173, 174) (1950/53 only)	79	93	95	118	117	83	97	101	107	100
Ovary, fallopian tube and broad ligament (175)	157	106	106	80	82	153	124	100	81	79
Other and unspecified female genital organs (176)	71	108	103	95	91	124	117	101	96	79
Kidney (180)	158	103	100	95	86	100	94	105	88	98
Bladder and other urinary organs (181) ..	76	99	106	104	92	127	95	102	84	114
Malignant melanoma of skin (190) ..	145	111	104	71	95	133	87	87	150	100
Other malignant neoplasm of skin (191) ..	(86)	81	95	113	141	(89)	89	102	110	103
Brain and other parts of nervous system (193)	127	104	102	91	82	240	130	98	71	61
Thyroid gland (194)	(64)	93	105	104	100	(144)	139	95	100	57
Bone (including jaw bone) (196) ..	135	112	91	101	112	175	109	93	90	115
Connective tissue (197)	(80)	117	100	105	82	(250)	110	112	67	63
Lymphosarcoma and reticulosarcoma (200)	182	111	100	95	74	143	116	100	88	72
Hodgkin's disease (201)	174	95	104	95	74	50	114	115	84	63
Other forms of lymphoma (reticulosis) (202)	400	106	96	(57)	92	200	67	113	(60)	150
Multiple myeloma (plasmocytoma) (203) ..	190	90	101	107	75	125	120	98	100	80
Leukaemia and aleukaemia (204) ..	145	92	102	104	87	183	113	97	82	93
Remainder of 140-205 (i.e. 165, 192, 195, 198, 199, 205) ..	105	94	105	94	97	116	117	98	91	93

Table AQ (iii). Cancer by site: S.M.R's (20-64) and P.M.R's (65 and over) single women, by social class, 1949-53

	Standardised Mortality Ratios by Social Class:—					Proportionate Mortality Ratios by Social Class:—				
	I	II	III	IV	V	I	II	III	IV	V
All sites	**116**	**95**	**107**	**90**	**89**	**119**	**111**	**108**	**100**	**115**
Lip (140)	—	—	—	—	—	—	—	(200)	—	—
Tongue (141)	—	(63)	133	(100)	—	—	170	91	130	(400)
Salivary gland (142)	—	—	(100)	(200)	—	—	(160)	(67)	(75)	—
Mouth (143, 144)	—	(67)	(80)	(100)	(200)	(100)	(83)	(86)	(133)	—
Oral mesopharynx (145)	—	(33)	(175)	(33)	—	—	(167)	(100)	(33)	—
Remainder of pharynx (146-148)	(100)	50	103	142	(100)	—	(69)	107	158	(100)
Oesophagus (150)	(33)	96	89	100	(46)	(80)	92	98	88	200
Stomach (151)	108	77	96	107	132	116	90	113	108	163
Small intestine (152)	—	(133)	(100)	(67)	(100)	—	(113)	(63)	(71)	(100)
Large intestine except rectum (153)	125	100	111	87	84	135	110	102	93	91
Rectum (154)	(114)	89	109	94	74	(69)	107	119	103	83
Biliary passages and of liver (stated to be primary) (155)	(150)	90	105	76	(114)	(133)	124	90	110	(225)
Liver (secondary and unspecified) (156)	(100)	77	87	85	(67)	(233)	115	93	103	(100)
Pancreas (157)	(100)	84	92	100	119	157	111	120	122	150
Peritoneum and unspecified digestive organs (158, 159)	(300)	128	96	94	(50)	(200)	(73)	108	118	—
Nose, nasal cavities, middle ear and accessory sinuses (160)	—	(67)	(56)	(80)	(200)	—	(160)	(100)	(150)	—
Larynx (161)	(200)	(50)	106	118	(67)	(100)	108	114	(67)	—
Lung, bronchus and trachea (162, 163)	(75)	101	112	100	91	111	121	101	99	125
Mediastinum (164)	—	(125)	(100)	(75)	—	—	(133)	(25)	(67)	—
Breast (170)	116	105	113	83	84	116	120	113	91	80
Cervix uteri (171) (1950/53 only)	(40)	61	87	121	115	(67)	111	98	98	(175)
Corpus uteri (172) (1950/53 only)	(150)	99	127	53	58	(180)	126	109	93	(100)
Remainder of uterus (173, 174) (1950/53 only)	(300)	65	113	81	(75)	(100)	127	117	(90)	(400)
Ovary, fallopian tube and broad ligament (175)	124	107	108	91	81	130	125	117	104	77
Other and unspecified female genital organs (176)	—	76	100	75	(75)	(100)	98	102	111	(150)
Kidney (180)	(300)	96	106	105	(117)	(200)	119	89	92	(50)
Bladder and other urinary organs (181)	(50)	94	105	100	(13)	(60)	101	107	91	(100)
Malignant melanoma of skin (190)	(100)	89	132	100	(60)	—	157	(67)	167	—
Other malignant neoplasm of skin (191)	—	(57)	82	100	(133)	—	129	66	116	—
Brain and other parts of nervous system (193)	(100)	102	107	80	81	—	(100)	111	(63)	—
Thyroid gland (194)	(100)	83	112	106	(100)	—	138	94	120	(100)
Bone (including jaw bone) (196)	(300)	86	106	69	(71)	(400)	71	132	156	—
Connective tissue (197)	—	(67)	91	(100)	(400)	—	(60)	(100)	(100)	(100)
Lymphosarcoma and reticulosarcoma (200)	(100)	88	104	96	(133)	(200)	121	93	92	(200)
Hodgkin's disease (201)	(50)	109	109	59	(78)	—	100	100	(88)	(200)
Other forms of lymphoma (reticulosis) (202)	—	(100)	(100)	(60)	—	—	(100)	(100)	(100)	—
Multiple myeloma (plasmocytoma) (203)	—	127	119	(70)	(67)	—	214	(114)	(50)	(100)
Leukaemia and aleukaemia (204)	(225)	94	98	93	94	(100)	146	100	109	(100)
Remainder of 140-205 (i.e. 165, 192, 195, 198, 199, 205)	(100)	84	127	51	146	(133)	124	108	109	(80)

Diabetes mellitus

In men mortality from diabetes, both under and over 65, showed a strong, but not completely regular association with social class. At 20-64 the S.M.R. was highest in Social Class I (134) and diminished steadily to Social Class IV (85), but rose abruptly again in Social Class V (105). At ages 65 and over proportional mortality was highest in Social Class II (147) followed by Social Class I (121). Thereafter the gradient was uniformly downwards to Social Class V. In married women, both at 20-64 and 65 and over, an entirely different pattern presented, with mortality lowest in Social Class I and rising steeply to Social Classes IV and V. The ratios for single women showed no special tendencies at either age.

Table AR. Diabetes: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	134	60	(100)	121	78	(100)
II	100	80	78	147	90	103
III	99	100	82	99	100	113
IV	85	122	77	78	110	101
V	105	119	75	67	112	120

At individual ages within the 20-64 range (Table 4 and Table AS) the male mortality ratios were high in Social Classes I and V at 25-34, 35-44, and 45-54, and only at 55-64 did a regular gradient downwards from Social Class I to IV and V develop.

Table AS. Diabetes: Mortality ratios for males aged 25-34, 45-54 and 55-64, by social class, 1949-53

	Males		
	25-34	45-54	55-64
Social Class I	(144)	119	147
II	(44)	87	119
III	100	97	105
IV	100	84	80
V	156	113	81

Table AT. Diabetes: Mortality ratios for single women aged 45-54 and 55-64, by social class, 1949-53

	Single Women	
	45-54	55-64
Social Class I	(160)	(108)
II	69	105
III	62	88
IV	96	71
V	(56)	(61)

Among married women, apart from some erratic and uncertain ratios at younger ages, the tendency at each age was for a gradient of mortality upwards from Social Class I to V. Single women, whose S.M.R's at 20-64 and P.M.R's at 65 showed no clear trends, had well defined gradients of mortality downwards from Social Class I to V at ages 45-54 and 55-64 (Table AT).

Table AU. Diabetes: S.M.R's (20-64) by social class, 1949-53 compared with previous analyses

	Males			Married Women		Single Women	
	1921-23	1930-32	1949-53	1930-32	1949-53	1930-32	1949-53
Social Class I	129	122	134	56	60	(125)	(100)
II	149	155	100	89	80	76	78
III	93	95	99	104	100	93	82
IV	75	82	85	108	122	90	77
V	66	69	105	106	119	156	75

Comparison with the S.M.R's for earlier periods is made in Table AU, and shows that the elevated mortality of men in Social Class V is a new feature. There is a striking parallel between the male S.M.R's at 20-64 in 1921-23 and 1930-32 and the P.M.R's at 65 and over in 1949-53, all three displaying a steep downward gradient, but with mortality higher in Social Class II than in Social Class I.

For married women the upward gradient for Social Classes I to V recorded in 1949-53 was present also in 1930-32, and for single women the tendencies were as uncertain in the earlier as in the more recent analysis.

Mortality in the socio-economic groups is summarised in Tables DP and DQ, and, as would be expected from the social class statistics, shows a number of large differences in particular groups between men and married women, e.g. in Socio-economic Group 3 (professional and managerial), S.M.R. of men, 134; S.M.R. of wives 60. In Socio-economic Group 11 (semi-skilled manual workers) S.M.R. of men 79; S.M.R. of wives 124.

Psychoses

As for other causes of death, deaths classified to psychoses for the purposes of mortality statistics are those where the certifier of the cause of death has stated some form of psychoses either as the sole cause or, more commonly, as the underlying cause of some other complication or condition leading directly to death. Mention of psychoses upon the certificate as an associated condition does not lead to its assignment as the cause of death.

Table AV summarises S.M.R's and P.M.R's by Social Class. It includes the unoccupied, who as a class have high mortality rates from psychoses, the men and the single women either because they had never been able to take up an occupation or because of a special liability for occupation not to be stated at death registration; and married women because the husband's occupation was not stated. At ages 65 and over the number of married women assigned to this category was sufficient to cause the P.M.R's for each of the Social Classes to be below 100.

Table AV. Psychoses: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	*107*	*117*	—	*102*	*71*	*(50)*
II	89	82	*55*	88	94	95
III	88	95	70	95	98	*71*
IV	86	94	117	103	92	92
V	127	102	*91*	110	80	*(83)*
Unoccupied	*486*	*520*	177	*237*	*513*	115

Among men aged 20-64 an S.M.R. above 100, but of doubtful significance, in Social Class I was followed by low ratios in Social Classes II, III, and IV and a high ratio in Social Class V; and at 65 and over the pattern of proportionate mortality was similar. At 20-64 married women also had elevated ratios in Social Classes I and V, but not at ages 65 and over. In single women no social class correlation appeared.

Table AW. Psychoses: Mortality ratios at certain ages by social class, 1949-53

	Males		Married Women	
	35-44	55-64	45-54	55-64
Social Class I	*(100)*	*(141)*	*(175)*	*(40)*
II	*80*	*94*	*100*	*70*
III	*100*	*100*	*113*	*95*
IV	*(40)*	*82*	*88*	*95*
V	*140*	*106*	*88*	*110*

Table AX. Psychoses: S.M.R's (20-64) by social class, 1930-32, 1949-53

	Males		Married Women	
	1930-32	1949-53	1930-32	1949-53
Social Class I	*64*	*107*	*104*	*117*
II	*75*	89	87	82
III	*96*	88	96	95
IV	*91*	86	85	94
V	*135*	127	104	102

In individual age groups between 20 and 64, male mortality was high in Social Class V at ages 20-44, and high in Social Class I at ages 45-54 and 55-64 (Table AW and Table 4). Married women had high mortality ratios in Social Class I at ages 25-54, and a complete reversal at 55-64. Many of these ratios have, however, been calculated upon small numbers of deaths.

Comparison between the S.M.R's at 20-64 in 1930-32 and 1949-53 is made in Table AX. Apart from the elevated mortality in the latter period among men in Social Class I, no changes took place in the social class mortality relationships.

The social class distribution of mortality in 1949-53 can be compared with mental hospital admissions of men of various ages in 1951 with a diagnosis of psychoses (Table AY) (from the Registrar General's Statistical Review for 1952-53, Supplement on Mental Health). At ages 20-54 rates were predominantly high in Social Class V and lowest in Social Classes I and II. At 55-64 the differences were less, and at 65 and over the rates for the various classes were all practically equal.

Table AY. Psychoses: Mental Hospital admission rates, per million males, by social class and age, 1953

	Age at admission						
	20-	25-	35-	45-	55-	65 and over	All ages over 20
Social Class I	276	652	595	723	1,051	1,732	843
II	472	635	522	694	979	1,401	795
III	602	943	802	877	1,203	1,626	972
IV	874	1,072	995	953	1,200	1,409	1,081
V	1,984	2,996	2,196	1,793	1,725	1,657	2,058

Within the socio-economic groups (Tables DP and DQ), Group 9 (foremen) had a notably low S.M.R. for men aged 20-64 (*33*), and at 65 and over, low P.M.R's were recorded for Group 1 (farmers) (*84*) and Group 8 (personal service) (*84*). At both ages mortality was above average for Group 3 (higher administrative etc.), and Group 12 (unskilled).

Vascular Lesions of the Central Nervous System

At ages 20-64 mortality from this cause (Table AZ) was highest, for men, in Social Class I (124) and lowest in Social Class IV (88). At ages 65 and over a gradient of proportionate mortality downwards from Social Class I to Social Class V occurred among men and married women, and from Social Class II to Social Class V among single women.

Table AZ. Vascular lesions of central nervous system: S.M.R's (20-64) and P.M.R's (65 and over) by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	124	101	*82*	107	114	96
II	104	96	90	104	105	109
III	101	101	99	100	101	100
IV	88	102	87	100	96	94
V	101	101	85	94	94	85

At individual age groups between 20 and 64 male mortality changed progressively with increasing age, highest ratios in Social Class V at ages 20-24 and 25-34 (based on very few deaths) being replaced at age 55-64 by an unmistakeable social class mortality gradient downwards from Social Class I to Social Classes IV and V (Table BA and Table 4).

Table BA. Vascular lesions of C.N.S.: mortality ratios of males at certain ages by social class, 1949-53

	Males		
	20-24	25-34	55-64
Social Class I	*(89)*	*109*	*125*
II	*(68)*	*78*	*102*
III	*89*	*100*	*104*
IV	*95*	*81*	*87*
V	*126*	*125*	*99*

A downward gradient of mortality from Social Class I to Social Classes IV and V, similar but more definite than that for 1949-53, occurred among men aged 20-64 in 1930-32, the pattern being entirely different from that of 1921-23, when the S.M.R. was lowest in Social Class I, highest in Social Class V (Table BB). In contrast with the lack of social class correlation in 1949-53, married and single women in 1930-32 both had fairly steep mortality gradients upwards from Social Class I to Social Class V.

Table BB. Vascular lesions of central nervous system: S.M.R's (20-64), by social class, 1949-53 compared with previous analyses

	Males			Married Women		Single Women	
	1921-23	1930-32	1949-53	1930-32	1949-53	1930-32*	1949-53
Social Class I	88	112	124	75	101	71	82
II	103	106	104	90	96	65	90
III	100	100	101	101	101	105	99
IV	94	96	88	107	102	98	87
V	108	97	101	109	101	132	85

*Including arteriosclerosis

Within the socio-economic groups (Tables DP and DQ), male mortality at 20-64 was low in Groups 1 and 2 (agricultural), high in Groups 3 (administrative), 5 (shopkeepers), and 6 (clerical workers), but these tendencies were not confirmed by the proportionate mortality ratios at ages 65 and over.

Coronary Disease

From a position of relative unimportance as a certified cause of death two or three decades ago, coronary disease has emerged in recent years to become one of the most frequent conditions reported on death certificates. It was not one of the causes of death separately tabulated in the 1921-23 report, but received full attention in 1930-32 by which time its death rate had been observed to be rising rapidly. Since then the increase has continued. A large part of this has been due to changes in diagnosis and in fashions of death certification; but there is a general feeling that in addition to this there has probably been a real increase in the incidence of coronary disease, associated in some way, not as yet clearly defined, with weight, diet, fat metabolism, and sedentary occupations.

Table BC. Coronary disease: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	147	102	97	144	131	102
II	110	96	93	115	108	118
III	105	101	100	101	100	103
IV	79	104	91	87	93	99
V	89	105	82	84	90	90

In 1949-53 the mortality of men was strongly correlated with social class, the S.M.R's at 20-64 and the P.M.R's at 65 and over (Table BC) both showing a steep gradient downwards from Social Class I to Social Classes IV and V. At 20-64 the S.M.R. was lowest at Social Class IV, at 65 and over the P.M.R. was lowest in Social Class V. At both ages mortality in Social Class I was nearly 50 per cent higher than the general average.

In contrast with these striking mortality gradients the S.M.R's for married women aged 20-64 gave no indications of any correlation whatsoever, an observation that is all the more surprising by reason of the presence again at ages 65 and over of an unmistakeable proportionate mortality gradient in the same direction and almost as steep as that for men.

The mortality of single women likewise showed no clear evidence of social class correlation at ages 20-64, but again, though less distinctly than for men and married women, there was some downward trend of proportionate mortality at ages 65 and over.

Table BD. Coronary disease: Mortality ratios at ages 20-64 by social class, 1949-53

	Mortality ratios				
	20–24	25–34	35–44	45–54	55–64
Males					
Social Class I	—	81	108	144	154
II	(150)	86	104	110	111
III	83	97	100	102	108
IV	(133)	100	84	80	78
V	(83)	128	108	93	86
Married Women					
Social Class I	—	(67)	120	83	107
II	—	83	66	91	99
III	(150)	100	94	95	103
IV	—	100	117	117	99
V	—	(117)	154	111	102
Single Women					
Social Class I	—	—	70	138	94
II	—	(100)	75	75	102
III	(100)	(63)	63	80	112
IV	(100)	(63)	104	93	90
V	—	—	167	94	73

Mortality ratios in individual age groups between 20 and 64 are shown in Table BD and Table 4. In men the ratios at 20-24 were erratic but at 25-34 indicated an *upward* gradient of mortality from Social Class I to Social Class V contrasting with strong *downward* gradients at 45-54 and 55-64. In married women the only age group showing signs of a systematic social class relationship was 45-54, at which age mortality increased progressively from Social Class I (83) to Social Class IV (117) and V (111).

In single women no systematic tendencies were detectable in any of the age groups.

Table BE compares S.M.R's at 20-64 in 1930-32 and 1949-53, and shows that in the former period the downward mortality gradient from Social Class I to Social Classes IV and V was considerably steeper, for

46

Table BE. Coronary disease: S.M.R's (20-64) by social class, 1930-32 and 1949-53

	Males		Married Women	
	1930–32	1949–53	1930–32	1949–53
Social Class I	237	147	157	102
II	147	110	126	96
III	96	105	93	101
IV	67	79	85	104
V	67	89	88	105

men, than in the recent period; and that for married women, who gave no evidence of social class correlation in 1949-53, a steep downward gradient, similar to that of men, was strongly in evidence in 1931-32. In making these comparisons between 1930-32 and 1949-53 it should be remembered that important changes were introduced, during the intervening period, in the methods of selecting and classifying causes of death (see page 15), and that the cardio-vascular diseases were among those whose statistics were considerably disturbed as a result. It is conceivable that some of the differences between the 1930-32 and 1949-53 mortality distributions may have been brought about by these classificational changes, but it is unlikely that they could have been a factor of much importance.

Table BF. Coronary disease: S.M.R's (20-64) and P.M.R's (65 and over), by socio-economic groups, 1949-53

Socio-economic Group	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
1. Farmers	62	93	(80)	90	87	79
2. Agricultural workers	55	93	92	84	88	84
3. Higher administrative, etc.	147	102	97	144	131	102
4. Other administrative, etc.	116	90	86	125	116	121
5. Shopkeepers	123	109	135	115	110	105
6. Clerical workers	132	86	91	124	110	148
7. Shop assistants	96	74	93	114	106	96
8. Personal service	105	96	87	102	102	101
9. Foremen	99	95	86	109	103	132
10. Skilled workers	102	107	117	97	99	96
11. Semi-skilled workers	84	109	92	86	94	86
12. Unskilled workers	89	105	84	84	90	77
13. Armed Forces (other ranks)	229	118	(100)	94	99	—

Mortality by socio-economic groups is summarised in Table BF and in Tables DP and DQ. At ages 20-64 mortality of males was low in both agricultural groups (1 and 2), high in all the non-manual groups except 7 (shop assistants), and low in groups 11 and 12 (semi-skilled and unskilled manual workers). At 65 and over the difference between manual and non-manual occupations was even more consistent with low P.M.R's for the two agricultural groups, three manual groups, and the armed forces; high P.M.R's for each of the non-manual groups and for foremen in manual occupations.

A simple explanation would be that manual work protects against coronary disease in men, and non-manual work conduces to it; but some doubt about the adequacy of this explanation arises from the fact that the proportionate mortality rates of married women aged 65 and over, classified as they were by *husband's* occupation, presented precisely the same pattern of differentiation between the manual and the non-manual groups. In married women aged 20-64, on the other hand, the pattern was very different, and though mortality was below average in wives belonging to the two agricultural groups (Groups 1 and 2), it was high in the three main non-manual groups (Groups 10, 11 and 12).

For single women aged 20-64, many of whose S.M.R's were of doubtful significance, the only two socio-economic groups with high ratios were No. 5 (shopkeepers) and No. 10 (skilled workers). At 65 and over, the same systematic pattern of proportionate mortality given by men and by married women once more appeared, with P.M.R's low in the agricultural and manual groups, and high in each of the non-manual groups, the only exception being Group 7 (shop assistants).

Hypertension

Mortality from hypertension has not been separately analysed in previous reports in this series. The number of deaths assigned to this head have increased greatly during the past two decades, partly as a result of large classificational changes and partly as a result of an increasing tendency on the part of medical practitioners

47

to mention some form of hypertension on death certificates. The number of deaths (all ages) assigned to hypertension in selected years is shown below:

Year	International Classification	Number of deaths	
		M	F
1931	4th Revision (102)	107	118
1939	4th Revision (102)	695	622
1939	5th Revision (102)	879	850
1949	5th Revision (102)	3,022	3,179
1949	6th Revision (440-447)	8,011	8,746
1953	6th Revision (440-447)	9,237	10,186

At ages 20-64 mortality of men was highest in Social Class I (123) and declined steeply to 83 in Social Class IV, followed by a rise to 101 in Social Class V (Table BG). In married women aged 20-64 the pattern was entirely different with a definite upward gradient from Social Class I to Social Class V. Among single women the figures were erratic.

Table BG. Hypertension: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	123	83	131	90	96	79
II	106	84	84	99	98	107
III	103	100	104	102	99	109
IV	83	110	79	95	98	105
V	101	115	107	104	107	116

At 65 and over the P.M.R's for men, for married women, and for single women all suggested an upward gradient of mortality from Social Class I to V.

The mortality ratios for separate age groups (Table 4) show that the downward gradient of the male S.M.R. at 20-64 from Social Class I to IV, rising again in Social Class V, was reproduced at ages 35-44, 45-54, and 55-64; whereas in the same age groups the mortality ratios of married women were consistently graded in the opposite direction, mortality rising from Social Class I to V.

Within the socio-economic groups (Table BH and Tables DP and DQ) mortality of men at 20-64 and at 65 and over was low in the two agricultural groups, and, with several exceptions, tended to be above average in non-manual occupations. Among married women, on the other hand, there was a tendency to high mortality in the manual groups (Groups 10, 11, and 12).

Table BH. Hypertension: S.M.R's (20-64) and P.M.R's (65 and over), by socio-economic groups, 1949-53

	S.M.R. 20-64		P.M.R. 65 and over	
Socio-economic Group	Males	Married Women	Males	Married Women
1. Farmers	70	84	85	90
2. Agricultural workers	60	93	87	88
3. Higher administrative, etc.	123	83	90	96
4. Other administrative, etc. ..	109	75	104	103
5. Shopkeepers ..	118	106	102	98
6. Clerical workers	117	86	104	94
7. Shop assistants	93	83	104	117
8. Personal services	114	106	102	112
9. Foremen	90	90	105	99
10. Skilled workers	102	105	101	99
11. Semi-skilled workers	87	117	98	103
12. Unskilled workers ..	102	116	104	106
13. Armed Forces (other ranks)	268	139	105	87

Chronic Rheumatic Heart Disease, and Chronic Endocarditis not specified as rheumatic

The social class mortality ratios from these two causes are summarised in Tables BJ and BK respectively, and indicate for both of them a clear cut upward gradient of mortality at ages 20-64 from Social Class I to

Social Class V, in men and in married women. Among single women an exception to this regular correlation was the below average mortality from rheumatic heart disease in Social Class V (S.M.R. 88).

Table BJ. Chronic rheumatic heart disease: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	59	60	68	96	97	92
II	84	69	55	110	99	103
III	100	104	94	98	100	110
IV	97	114	90	100	104	108
V	129	122	88	95	97	97

Table BK. Chronic endocarditis not specified as rheumatic: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	76	70	(25)	106	104	(89)
II	80	79	67	111	105	87
III	101	101	74	98	100	116
IV	107	115	91	94	97	103
V	118	116	106	100	94	146

In contrast with these unmistakeable indications of social class correlation at ages 20-64, the proportionate mortality ratios at 65 and over gave little suggestion of similar tendencies.

The mortality ratios at separate ages (Table 4) indicate that the gradient of increasing mortality from Social Class I to Social Class V was present at each age, but, provided numbers of deaths were sufficient to establish a trend, was steepest in the younger age groups.

Comparison between the S.M.R's at 20-64 for these two causes of death and the roughly comparable group " Valvular disease of heart ", which was tabulated in 1921-23 and 1930-32, is made in Table BL and shows that no important change in the strong social class correlation has taken place, except apparently in respect of single women in Social Class V.

Table BL. Chronic rheumatic heart disease: S.M.R's (20-64) by social class, 1949-53 compared with previous analyses

Social Class	Males			Married Women			Single Women		
	Valvular disease of the heart	Chronic rheumatic heart disease	Chronic endo- carditis	Valvular disease of the heart	Chronic rheumatic heart disease	Chronic endo- carditis	Valvular disease of the heart	Chronic rheumatic heart disease	Chronic endo- carditis
	1921-23	1930-32	1949-53	1930-32	1949-53		1930-32	1949-53	
I	59	65	59	76	56	60	70	65	68	(25)
II	90	92	84	80	82	69	79	64	55	67
III	96	97	100	101	99	104	101	94	94	74
IV	106	111	97	107	114	114	115	104	90	91
V	126	112	129	118	119	122	116	126	88	106

Within the socio-economic groups (Tables DP and DQ) mortality of men aged 20-64 was low for both causes in the agricultural and non-manual groups, except Groups 6 (clerical) and 8 (personal service); Group 9 (foremen) also had low rates. Among married women the general pattern was similar, except that Group 6 (wives of clerical workers) had low ratios.

At ages 65 and over, a notable difference was the relatively high proportionate mortality, both of men and married women in Groups 1 and 2.

Other Myocardial Degeneration

Mortality from this cause at ages 20-64 was strongly correlated with social class, the S.M.R's for men and for married women showing a steep upward gradient from Social Class I to Social Class V (Table BM), and the S.M.R's for single women showing something of a similar tendency. At 65 and over, on the other hand,

the pattern of the P.M.R's was much less definite, and gave little indication of any social class mortality association.

Table BM. Other myocardial degeneration: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20–64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	68	65	*59*	88	80	*112*
II	82	70	51	100	95	91
III	94	98	74	98	99	96
IV	101	119	91	110	108	102
V	135	125	83	98	100	99

In individual age groups between 20 and 64, in the younger of which very few deaths occurred, the mortality ratios for men and married women showed, with few exceptions, the same steep gradient as for the S.M.R's at 20-64.

Table BN. Other myocardial degeneration: S.M.R's (20-64) by social class, 1930-32, 1949-53

	Males		Married Women		Single Women	
	1930–32	1949–53	1930–32	1949–53	1930–32	1949–53
Social Class I	77	68	54	65	*61*	*59*
II	92	82	75	70	50	51
III	94	94	99	98	104	74
IV	105	101	110	119	121	91
V	122	135	129	125	167	83
Unoccupied					108	159

Comparison with the S.M.R's for 1930-32 (Table BN) records no changes between then and 1949-53, other than in single women, whose social class mortality gradient was steeper in 1930-32 than that for men and married women.

At ages 20-64 mortality was low (Table BO) for men in Socio-economic Groups 1 and 2 (agricultural), 3 and 4 (administrative, etc.), 6 (clerical), 7 (shop assistants) and 9 (foremen), whereas for married women it was not particularly low in the agricultural groups but below average in all of the non-manual groups and in Group 9 (wives of foremen).

At 65 and over men and married women in the two agricultural groups had high proportionate ratios, and all the non-manual groups had low ratios.

Table BO. Other myocardial degeneration: S.M.R's (20-64) and P.M.R's (65 and over), by socio-economic groups, 1949-53

Socio-economic Group	S.M.R. 20–64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
1. Farmers	82	97	*(67)*	125	112	100
2. Agricultural workers	92	102	*92*	125	117	96
3. Higher administrative, etc. ..	68	65	*59*	88	80	*112*
4. Other administrative, etc. ..	71	59	46	91	90	91
5. Shopkeepers	102	77	85	97	93	90
6. Clerical workers	87	67	41	86	88	67
7. Shop assistants	77	55	59	92	91	92
8. Personal service	106	94	87	91	96	102
9. Foremen	71	91	*48*	97	99	78
10. Skilled workers	98	108	110	99	100	101
11. Semi-skilled workers	102	127	89	104	104	98
12. Unskilled workers	135	127	*85*	98	100	98
13. Armed Forces (other ranks) ..	358	*187*		104	94	*(200)*

General Arteriosclerosis

For men aged 20-64 (Table BP) there was no suggestion of any social class mortality gradient; but the S.M.R. in Social Class V (128) was much higher than in the other social classes. Married women, on the other hand, displayed a gradient of mortality rising steeply from Social Class I (61) to Social Class V (129). For single

women the S.M.R's at 20-64 were all of doubtful significance, and gave no indication of social class correlation.

Table BP. General arteriosclerosis: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20–64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	96	*61*	*(50)*	89	96	92
II	88	67	*60*	98	92	88
III	99	105	*74*	97	100	87
IV	86	111	*89*	106	98	93
V	128	129	*(44)*	105	111	97

At ages 65 and over there was a tendency for the P.M.R's for men and for married and single women to increase towards Social Class V.

In separate age groups between 20 and 64 (Table 4) numbers of deaths were small, but the ratios tended, in the oldest of the five age groups, to conform with the social class distributions of the S.M.R's at 20-64.

Both for men and for married women at 20-64 this social class distribution was much the same in 1949-53 as in 1930-32 (Table BQ). In 1921-23, on the other hand, male mortality was very high (156) in Social Class I, a difference that can be accounted for, at least in part, by the assignment in 1921-23 to arteriosclerosis of a considerable number of deaths that in subsequent periods have been assigned to vascular lesions of the central nervous system.

Table BQ. General arteriosclerosis: S.M.R's (20-64) by social class, 1949-53 compared with previous analyses

	Males			Married Women	
	1921–23	1930–32	1949–53	1930–32	1949–53
Social Class I	156	100	96	*94*	*61*
II	109	90	88	89	67
III	93	97	99	96	105
IV	85	98	86	86	111
V	114	118	128	128	129

Within the socio-economic groups (Tables DP and DQ) there were a number of discrepancies at ages 20-64 between the mortality of men and of married women, but many of these S.M.R's and still more those of single women, were of doubtful significance. At ages 65 and over, the P.M.R's of men were high in the two agricultural groups (Groups 1 and 2), low in all the non-manual groups (Groups 3 to 8), in foremen (Group 9), and in the armed forces (Group 13). With several exceptions the P.M.R's of married and of single women displayed broadly similar tendencies.

Influenza, Pneumonia, Bronchitis, and Bronchiectasis

Though clinically, pathologically and epidemiologically distinct, these four conditions have much in common as causes of death. They are often reported in association upon death certificates, and the assignment of death to one condition rather than another may depend much upon the nosological preference of the certifying practitioner. All four show a strong and similar correlation with social class.

About half of the influenza deaths tabulated occurred in a severe epidemic early in 1951, and can be assumed to have been due to epidemic virus influenza. In non-epidemic years the relationship between virus influenza and deaths assigned to influenza is less certain.

Unlike the first three conditions, which appear in the main tabulations, deaths from bronchiectasis have been analysed only by social class (Table 3 part (iii)).

S.M.R's at 20-64 and P.M.R's at 65 and over for each of the four causes are summarised in Table BR.

At ages 20-64 each of the four causes gave a steep mortality gradient upwards to Social Class V in men, in married, and in single women, this gradient being steeper for bronchitis and bronchiectasis than for influenza and pneumonia. At ages 65 and over a gradient of proportionate mortality from each cause was present in respect of men and married women, though less steep than at 20-64 and with a few irregularities; but for single women only bronchitis showed a uniform gradient.

Analysis of mortality by separate age groups between 20 and 64 (Table 4) reveals no significant departures from the pattern for the whole 20-64 age range.

Comparison of the social class distributions in 1949-53 with previous periods for influenza, pneumonia and bronchitis is made in Table BS.

Table BR. Influenza, pneumonia, bronchitis and bronchiectasis: S.M.R's (20-64) and P.M.R's, (65 and over) by social class, 1949-53

	Social Class	S.M.R. 20-64			P.M.R. 65 and over		
		Males	Married Women	Single Women	Males	Married Women	Single Women
Influenza	I	58	64	(44)	87	71	117
	II	70	70	64	102	98	85
	III	97	105	77	98	99	98
	IV	102	113	93	108	110	112
	V	139	116	88	100	106	90
Pneumonia	I	53	61	43	86	84	87
	II	64	73	43	87	87	84
	III	92	96	64	97	98	101
	IV	105	113	89	103	105	115
	V	150	132	84	118	114	94
Bronchitis	I	34	35	(25)	51	47	62
	II	53	49	41	73	74	78
	III	98	101	86	103	103	115
	IV	101	123	100	106	110	115
	V	171	154	126	130	130	142
Bronchiectasis	I	43	40	(20)	78	(50)	(150)
	II	63	60	34	91	108	85
	III	98	102	77	100	90	117
	IV	100	122	78	91	116	68
	V	154	131	106	121	121	(100)

Table BS. Influenza, pneumonia and bronchitis: S.M.R's (20-64), by social class, 1949-53 compared with previous analyses

	Social Class	Males			Married Women		Single Women	
		1921–23	1930–32	1949–53	1930–32	1949–53	1930–32	1949–53
Influenza	I	85	95	58	102	64	133	(44)
	II	93	101	70	101	70	75	64
	III	93	94	97	97	105	93	77
	IV	112	107	102	100	113	94	93
	V	118	105	139	104	116	89	88
Pneumonia	I	85	71	53	72	61	107	43
	II	84	80	64	77	73	53	43
	III	90	91	92	96	96	94	64
	IV	107	109	105	105	113	115	89
	V	150	139	150	133	132	134	84
Bronchitis	I	26	31	34	27	35	(67)	(25)
	II	55	57	53	56	49	43	41
	III	94	91	98	99	101	93	86
	IV	121	124	101	119	123	130	100
	V	177	156	171	155	154	148	126

The social class correlation in respect of influenza deaths became stronger, but there was little significant change in the previously very strong correlations in respect of pneumonia and bronchitis.

Table BT. Influenza, pneumonia and bronchitis: S.M.R's (20-64), by socio-economic groups, 1949-53

Socio-economic Group	Influenza			Pneumonia			Bronchitis		
	Males	Married Women	Single Women	Males	Married Women	Single Women	Males	Married Women	Single Women
1. Farmers	74	83	(133)	50	77	(29)	31	52	(20)
2. Agricultural workers ..	98	130	(71)	86	103	59	53	82	(44)
3. Higher administrative, etc.	58	64	(44)	53	61	43	34	35	(25)
4. Other administrative, etc.	65	61	57	60	70	41	48	43	36
5. Shopkeepers	77	86	110	78	80	67	76	59	84
6. Clerical workers	112	83	54	95	78	46	88	65	43
7. Shop assistants	67	86	78	73	66	61	65	70	71
8. Personal service	109	102	90	120	105	85	117	96	83
9. Foremen	66	74	(50)	68	85	(10)	70	93	(29)
10. Skilled workers	102	115	112	96	102	90	108	112	141
11. Semi-skilled workers ..	100	108	85	108	117	83	114	138	143
12. Unskilled workers ..	139	115	74	150	133	93	172	155	148
13. Armed Forces (other ranks)	104	120	(100)	152	129	(67)	234	128	(100)

S.M.R's in the socio-economic groups are given in Table DP and summarised in Table BT. There was a close general agreement between the three causes and between men, married and single women. Mortality was generally low in Groups 1 and 2 (agricultural), particularly in respect of bronchitis, but married women in Group 2 (wives of agricultural workers) had above average mortality for influenza and pneumonia. Rates were low in Groups 3 and 4 (administrative, professional etc.), Group 5 (shopkeepers) and Group 7 (shop assistants). Men in Group 6 (clerical) had elevated mortality from influenza and men in Group 8 (personal service) had above average mortality from each cause. Mortality was generally low for Group 9 (foremen) and high for the three other manual groups, Groups 10, 11 and 12, particularly the last, and in the armed forces (Group 13).

Mortality from bronchitis in men and single women was almost six times as high among the unskilled manual workers of Group 12 as among farmers (Group 1) and professional people (Groups 3 and 4). It is evident, though, from the similar tendencies displayed by married women (classified by *husband's* occupation) that these large differences in mortality owe little to direct occupational effects, and must be attributed to more general socio-economic or environmental factors.

At ages 65 and over (Table DQ) the wives of farmers and other agricultural workers had high P.M.R's for influenza, but the proportionate ratios for pneumonia and bronchitis showed, in a general way, the same difference as in the younger age group. One feature of note is the much lower male proportionate mortality ratios at 65 and over in the armed forces (Group 13) from pneumonia and bronchitis than the S.M.R. at ages 20-64.

Pneumoconiosis, Other Chronic Interstitial Pneumonia

These two conditions were analysed in combination in the two previous reports, but have been separated in the present report. On this, as on the two previous occasions, only the deaths of men have been examined.

The social class distribution of mortality at 20-64 and of proportionate mortality at 65 and over is shown in Table DN and Table BU. For comparison the corresponding ratios for respiratory tuberculosis with mention of occupational lung disease have been added to Table BU.

Table BU. Pneumoconiosis, etc.: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	Males					
	S.M.R. 20-64			P.M.R. 65 and over		
Social Class	Pneumoconiosis	Other Chronic Interstitial Pneumonia	Respiratory Tuberculosis with occ. dis. of lung	Pneumoconiosis	Other Chronic Interstitial Pneumonia	Respiratory Tuberculosis with occ. dis. of lung
I	(5)	(47)	(9)	(4)	150	(6)
II	9	81	12	(7)	94	(10)
III	149	89	123	156	101	139
IV	123	110	183	134	87	148
V	66	155	71	43	105	71

Mortality from pneumoconiosis, and for respiratory tuberculosis associated therewith, presented very similar patterns, with mortality heaviest in Social Classes III and IV.

Mortality from other, i.e. non-occupational, chronic interstitial pneumonia presented a quite different arrangement, graded steeply upwards at ages 20-64 from Social Class I to Social Class V, akin to pneumonia and bronchitis, but showing no evidence of social class correlation at ages 65 and over.

Table BV. Pneumoconiosis and chronic interstitial pneumonia: S.M.R's (20-64), by social class, 1930-32 and 1949-53

	Males	
	1930–32	1949–53
Social Class I	(47)	15
II	44	26
III	118	135
IV	136	120
V	76	86

Combining pneumoconiosis and other chronic interstitial pneumonia, gives a distribution which is a compromise between two quite different component patterns. Comparison with the combined cause in 1930-32 (Table BV) reveals little change in the social class distribution between the two periods.

In the form of anthracosis, siderosis, silicosis, byssinosis, asbestosis, etc., pneumoconiosis is a hazard in a number of different occupations, some of which are listed in Table BW, with corresponding S.M.R's for respiratory tuberculosis reported in association with occupational lung disease.

Table BW. Pneumoconiosis, respiratory tuberculosis with occupational disease of lung: S.M.R's (20-64) in selected occupational groups, 1949-53

Occupational group No.		Males S.M.R. 20-64	
		Pneumoconiosis	Respiratory tuberculosis with occ. dis. of lung
	Coal mining		
118	Subordinate superintending staff	929	875
4	Coal cutters, hewers, getters	3,790	2,754
5	Other workers below ground	620	878
10	Workers above ground	317	371
	Mining (not coal) and quarrying		
175	Getters—not coal	4,100	(¹)
177	Getters—open quarries	500	2,000
178	Others in mining (not coal) and quarrying	(300)	1,400
	Bricks and Pottery etc.		
180	Makers of bricks, refractories	(300)	(400)
182	Kiln and oven men	1,500	(700)
11	Potters, etc.	3,600	1,800
60	Masons	950	1,900
	Textiles		
46	Strippers etc. (cotton)	(700)	(100)
250	Various other textile workers	275	(200)
	Sandblasting		
422	Sandblasters	(²)	(³)

[1] 32 deaths registered, none expected. [2] 3 deaths registered, none expected. [3] 5 deaths registered, none expected.

Ulcer of Stomach, Ulcer of Duodenum

At ages 20-64 male mortality from both of these conditions, and in particular ulcer of stomach (Table BX), was strongly associated with social class, mortality rising steeply from Social Class I to Social Class V. Married women, and less definitely single women, displayed a similar tendency as regards ulcer of stomach, but gave no evidence of systematic social class correlation as regards ulcer of duodenum. At ages 65 and over the male proportionate mortality ratios for ulcer of stomach again indicated the same social class correlation, but a completely reversed association was suggested for ulcer of duodenum, the male P.M.R's displaying a gradient *downwards* from Social Class I. The P.M.R's for married and single women indicated no special tendencies.

Table BX. Ulcer of stomach, duodenum: S.M.R's (20-64) and P.M.R's (65 and over) by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
	Ulcer of stomach					
Social Class I	53	85	(100)	91	87	(40)
II	71	74	71	92	91	94
III	98	101	90	103	108	119
IV	104	115	89	93	96	103
V	144	121	109	111	87	(57)
	Ulcer of duodenum					
Social Class I	81	100	(200)	135	108	(50)
II	80	89	111	103	105	150
III	103	106	79	103	103	81
IV	94	94	107	87	75	103
V	125	100	(129)	94	115	(67)

Table BY. Ulcer of stomach, duodenum: S.M.R's (20-64) males, by social class, 1921-23, 1930-32 and 1949-53

	Ulcer of stomach			Ulcer of duodenum		
	1921-23	1930-32	1949-53	1921-23	1930-32	1949-53
Social Class I	72	55	53	126	101	81
II	87	76	71	109	106	80
III	96	99	98	91	99	103
IV	105	109	104	93	93	94
V	127	127	144	113	107	125

At separate ages between 20 and 64 the male mortality ratios for both diseases (Table 4) all presented the same pattern of upward graded mortality from Social Class I to Social Class V, one point of note being the lack of any tendency, towards age 65, for the gradient for ulcer of duodenum to reverse its direction to conform with that of the P.M.R's at ages 65 and over.

In comparison with 1921-23 and 1930-32 the social class distribution of male mortality at 20-64 in 1949-53 from ulcer of stomach remained largely unchanged, but the similar though less steep gradient for ulcer of duodenum is a feature that has appeared for the first time.

Table BZ. Ulcer of stomach and duodenum: S.M.R's (20-64) married and single women, by social class, 1930-32, 1949-53

	Married Women		Single Women	
	1930-32	1949-53	1930-32	1949-53
Social Class I	58	91	(167)	(140)
II	96	80	83	86
III	100	103	116	86
IV	98	107	84	96
V	118	114	108	117

In 1930-32 the two forms of ulcers were combined in the tables for women, and the S.M.R's recorded on that occasion are compared in Table BZ with those for 1949-53. For married women the social class distribution changed little, and for single women no definite social class pattern emerged on either occasion.

Table CA. Ulcer of stomach, duodenum: S.M.R's (20-64) males and married women, by socio-economic groups, 1949-53

	Males		Married Women	
Socio-economic Group	Ulcer of stomach	Ulcer of duodenum	Ulcer of stomach	Ulcer of duodenum
1. Farmers	50	54	95	(75)
2. Agricultural workers	95	68	106	78
3. Higher administrative, etc.	53	81	85	100
4. Other administrative, etc.	67	82	63	90
5. Shopkeepers	89	88	85	91
6. Clerical workers	100	119	76	117
7. Shop assistants	76	91	65	108
8. Personal service	150	126	143	92
9. Foremen	74	76	69	77
10. Skilled workers	102	105	109	108
11. Semi-skilled workers	101	98	117	102
12. Unskilled workers	144	126	120	102
13. Armed Forces (other ranks)	224	131	(200)	(150)

Table CA summarises the mortality ratios for socio-economic groups. Farmers (Group 1) enjoyed low rates for both conditions at 20-64, but other agricultural workers (Group 2) and their wives showed this favourable position only as regards ulcer of duodenum. Group 6 (clerical workers) and their wives gave high mortality rates from ulcer of duodenum, but not of stomach. Men in Group 8 (personal service) and Group 12 (unskilled manual workers) had high mortality from both forms of ulcer; their wives only from gastric ulcer.

Gastritis, enteritis and diarrhoea

Tabulated together under this heading are a mixed group of gastro-intestinal disorders comprising conditions such as gastritis, enteritis, gastro-enteritis, colitis, ulcerative colitis (but not mucous colitis), ileitis, regional ileitis, diverticulitis, and diarrhoea.

Table CB. Gastritis, enteritis and diarrhoea: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	124	98	(75)	140	97	(80)
II	111	99	67	116	99	116
III	97	103	84	96	97	100
IV	93	96	88	91	109	100
V	88	102	94	93	105	(100)

Mortality of men aged 20-64 and proportionate mortality at ages 65 and over was strongly correlated with social class, with highest mortality in Social Class I and a fairly steep gradient downward to Social Class V (Table CB). In contrast with these definite indications, the ratios for married women and for single women provided no suggestion at all of social class correlation.

Table CC. Gastritis, enteritis and diarrhoea: S.M.R's (20-64) and P.M.R's (65 and over), by socio-economic groups, 1949-53

	S.M.R. 20–64			P.M.R. 65 and over		
Socio-economic Group	Males	Married Women	Single Women	Males	Married Women	Single Women
1. Farmers	137	96	—	91	81	—
2. Agricultural workers	108	100	—	101	107	(500)
3. Higher administrative, etc.	124	98	(75)	140	97	(80)
4. Other administrative, etc.	109	92	72	124	107	119
5. Shopkeepers	100	116	(50)	121	98	118
6. Clerical workers	119	97	84	108	90	138
7. Shop assistants	86	103	94	89	125	(120)
8. Personal service	113	76	87	111	120	96
9. Foremen	98	98	(100)	88	109	(150)
10. Skilled workers	96	107	82	95	95	85
11. Semi-skilled workers	79	95	104	82	106	110
12. Unskilled workers	88	102	(67)	94	107	(67)
13. Armed Forces (other ranks)	(62)	(88)	—	113	(80)	—

Within the socio-economic groups (Table CC) men had high ratios at 20-64 (but not at 65 and over) in the two agricultural groups (1 and 2), and high ratios in both age groups in each of the non-manual groups (3 to 8) with the exception of group 7 (shop assistants). The mortality distribution for women displayed no special features.

Nephritis and Nephrosis

This group of diseases comprises acute, subacute, and chronic nephritis, nephrosis, interstitial nephritis, and renal sclerosis. A number of related conditions, such as arteriosclerosis of kidney, nephrosclerosis, and chronic nephritis due to arteriosclerosis, are not included but are classified to hypertension.

During the period since 1930-32 mortality from this group of diseases has declined considerably; but the trend of the figures has been complicated by large classificational and tabulational changes, the effects of which are shown in the following statement of numbers of deaths (all ages) in various years and in accordance with successive revisions of the classification:

Year	Classification No.	Revision	No. of deaths	
			M	F
1931	130–132	4th	8,284	7,840
1939	"	4th	6,568	6,521
1939	"	5th	7,394	7,368
1949	"	5th	5,656	5,517
1949	590–594	6th	3,400	3,321
1953	"	6th	2,802	2,627

The social class distribution of S.M.R's and P.M.R's is summarised in Table CD, and suggests a descending gradient of mortality from Social Class I to Social Class V for men aged 65 and over, and an upward gradient from Social Class I to V for married women aged 20-64 and possibly at 65 and over. For single women no systematic tendencies were in evidence.

Table CD. Nephritis and nephrosis: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20–64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	102	65	(75)	118	66	(69)
II	98	86	65	119	107	107
III	100	100	92	99	99	103
IV	94	110	95	93	100	85
V	105	116	88	84	104	88

Table CE. Nephritis and nephrosis: Mortality ratios at certain ages, by social class, 1949-53

	Males				Married Women			Single Women	
	20–24	25–34	35–44	55–64	25–34	35–44	55–64	35–44	55–64
Social Class I	(33)	59	88	132	(31)	67	67	(74)	(108)
II	67	76	92	109	76	73	88	28	96
III	102	103	98	100	100	98	105	91	109
IV	82	97	99	89	100	122	107	104	95
V	127	115	117	99	152	118	107	133	80

The details by separate age groups between 20-64 given in Table 4, of which a selection of ratios are shown in Table CE, indicate that the absence of social class correlation suggested by the S.M.R's for men aged 20-64 is misleading, and that there was a strong upward gradient of mortality from Social Class I to V at ages 20 to 44, which gave place to a strong gradient in the opposite direction at ages 55-64, this later pattern being repeated in the P.M.R's at 65 and over. Single women showed a similar, though less definite, reversal of the social class correlation, but among married women a gradient of increasing mortality from Social Class I to V persisted strongly up to ages 55-64. At these ages nephritis would appear to be a different type of disease, or at any rate has a different social class distribution, from that found among men and single women.

Table CF. Nephritis and nephrosis: S.M.R's (20-64) by social class, 1949-53 compared with previous analyses

	Males			Married Women		Single Women	
	1921–23	1930–32	1949–53	1930–32	1949–53	1930–32	1949–53
Social Class I	97	119	102	74	65	92	(75)
II	111	119	98	92	86	58	65
III	96	96	100	99	100	94	92
IV	89	90	94	102	110	97	95
V	105	97	105	115	116	132	88

Comparison with the social class distribution revealed on previous occasions (Table CF) for the nominally corresponding cause group, shows that in 1921-23 and 1949-53 there was no social class correlation for men aged 20-64, whereas in 1930-32 mortality was elevated in Social Classes I and II. For married women the 1949-53 gradient was much the same as in 1930-32, and for single women the indications on both occasions were inconclusive.

Table CG. Nephritis and nephrosis: S.M.R's (20-64) by socio-economic groups, 1949-53

	S.M.R. 20–64		
Socio-economic Group	Males	Married Women	Single Women
1. Farmers	85	101	(133)
2. Agricultural workers	77	105	(73)
3. Higher administrative, etc.	102	65	(75)
4. Other administrative, etc.	92	78	55
5. Shopkeepers	113	96	133
6. Clerical workers	125	77	79
7. Shop assistants	83	71	86
8. Personal service	115	100	83
9. Foremen	78	92	(82)
10. Skilled workers	100	106	113
11. Semi-skilled workers	94	115	118
12. Unskilled workers	105	116	82
13. Armed Forces (other ranks)	78	130	—

Standardised Mortality Ratios at 20-64 in the socio-economic groups are given in Table CG. Among men the ratios suggested a high mortality among clerical workers (Group 6, S.M.R. 125), not shared by their wives (S.M.R. 77) or by single women (79). The wives of manual workers (Groups 10, 11, and 12) had high ratios and single women likewise in Groups 10 and 11.

Hyperplasia of Prostate

Of the total deaths attributed to this condition in 1949-53, 7 were at ages under 45, 1,670 at ages 45-64, and 21,095 at ages 65 and over. Mortality was strongly correlated with social class. Both the S.M.R's at 20-64 and still more the P.M.R's at 65 and over displayed steep gradients downwards from Social Class I, the proportion of deaths at 65 and over in this class being two-thirds greater than in Social Class V. The

Table CH. Hyperplasia of prostate: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	Males	
	S.M.R. 20–64	P.M.R. 65 and over
Social Class I	118	127
II	107	123
III	102	99
IV	87	94
V	97	76

distribution was similar to that of cancer of prostate, for which the P.M.R.'s at 65 and over were:

Social Class				
I	II	III	IV	V
129	114	101	91	84

The social class distributions in the two previous analyses are given in Table CJ and show that no particular change has taken place.

Within the socio-economic groups (Tables DP and DQ) high ratios both at 20-64 and 65 and over were given by the two agricultural groups (1 and 2) and by the majority of the non-manual groups (3 to 8), rates in the manual groups being correspondingly low.

Table CJ. Hyperplasia of prostate: S.M.R's (20-64) by social class, 1921-23, 1930-32, 1949-53

	Males		
	1921–23	1930–32	1949–53
Social Class I	114	133	118
II	122	115	107
III	102	97	102
IV	80	95	87
V	91	90	97

Maternal Causes

Deaths from pregnancy, childbearing, and abortion are tabulated in this volume in two ways; first, in relation to the population of married and of single women, as are the other causes of death analysed in the main tables, particularly Table 3; and secondly, since the risks of childbearing in the various population groups depend also upon the frequency of childbearing in these groups, in relation to numbers of births, so providing what are conventionally called maternal mortality rates (Table 8). Deaths classified to maternal causes are those in which childbearing, or some complication thereof, was the direct or the underlying cause; deaths where some maternal complication was mentioned on the death certificate only as an associated or contributory condition (associated maternal deaths) are excluded. In assigning deaths to maternal causes the rules in force required that no regard should be paid to the interval between the occurrence or onset of the maternal complication and death consequent thereto; as a result the tables include the deaths of twelve married women aged 55-64 and two married women aged 75 and over.

Table CK. Maternal mortality: Deaths of married women and death rates per million, by age, 1930-32 and 1949-53

	20–24	25–34	35–44	45–54	All ages 16 and over
Number of deaths, 1930-32	1,028	3,886	2,352	90	7,482
Mean annual death rate	743	588	353	16	
Number of deaths, 1949-53	385	1,276	919	64	2,699
Mean annual death rate	107	99	66	5	

Numbers of maternal deaths of married women and death rates per million population at ages 16 and over, and in age groups between 20 and 54, are shown in Table CK, the five years 1949-53 being compared

with 1930-32, a comparison which shows how greatly deaths from this cause declined during these twenty years. S.M.R.'s at ages 20-64 (Table CL) indicated in both periods a strong correlation with social class, the ratios increasing steeply to Social Class V. This correlation appeared in each age group between 20 and 44.

Table CL. Maternal mortality: S.M.R's (20-64) 1930-32, 1949-53 and mortality ratios by age, 1949-53

	Married Women					Single Women
	1930–32	1949–53				1949–53
	S.M.R.	S.M.R.	Mortality ratios			S.M.R.
	20–64	20–64	20–24	25–34	35–44	20–64
Social Class I	79	90	(58)	96	89	—
II	85	90	98	88	91	52
III	97	93	98	91	97	84
IV	107	106	96	116	97	92
V	115	137	121	151	132	188

Among single women, whose deaths in 1949-53 numbered altogether 211, (31 at 16-19, 178 at 20-44, and 2 at 45-54), the S.M.R.'s displayed an even stronger tendency than married women for mortality to be elevated in Social Class V compared with the other social classes.

Table CM. Maternal mortality: S.M.R's (20-64) by social sub-class and socio-economic groups, 1949-53

Social sub-class	Married Women S.M.R. 20–64	Socio-economic group	Married Women S.M.R. 20–64
IIIa Mineworkers	131	1. Farmers	177
IIIb Transport workers	109	2. Agricultural workers	106
IIIc Clerical workers	81	3. Higher administrative, etc...	90
IIId Armed Forces	139	4. Other administrative, etc.	74
IIIe Others	89		
		5. Shopkeepers	96
IVa Agricultural workers	107	6. Clerical workers	79
IVb Others	106	7. Shop assistants	86
Va Building and Dock labourers	121	8. Personal service	96
Vb Others	144		
		9. Foremen	67
		10. Skilled workers	96
		11. Semi-skilled workers	106
		12. Unskilled workers	138
		13. Armed Forces (other ranks)	139

Within the social sub-classes and socio-economic groups (Table CM) the most notable S.M.R. was one of 177 for the wives of farmers, even higher than the S.M.R. of 135 recorded for the wives of farmers in 1930-32.

Table CN. Maternal mortality: Death rates per 1,000 legitimate births and mortality ratios of married women by social class, 1949-53

	Death rate	Crude ratio	Age Standardised ratio	Age-Parity Standardised ratio
All Classes	0·82	100	100	100
Social Class I	0·63	77	68	66
II	0·85	104	93	90
III	0·76	93	96	96
IV	0·82	100	102	105
V	1·08	132	132	136
Unoccupied	3·03	370	471	275

Summarising details given in Table 8, maternal mortality rates of married women per 1,000 legitimate births in each of the Social Classes are shown in Table CN, along with crude and standardised maternal mortality ratios, namely, the percentage ratio of the rates in each class to that of all classes. Standardisation has been done in two ways, first by age only and secondly by age and parity, utilising information obtained by special enquiry, in 1949, about the parity of women dying from maternal causes. The crude ratios showed a pronounced upward gradient of maternal mortality from Social Class I to Social Class V, but with higher

mortality in Social Class II than in Social Classes III and IV. Standardising for age eliminated this irregularity and increased the gradient somewhat; and standardising also by parity increased it a little more. Allowing for differences in age and parity, maternal mortality was twice as high in married women in Social Class V than in Social Class I, but even if no allowance be made for age and parity the differences in the crude maternal mortality rate between these two classes was almost as much. Particularly high maternal mortality was recorded for the wives of unoccupied men, a finding which may to some extent reflect increased mortality within this class but which arises mainly from the fact that a considerable proportion of deaths from maternal causes, particularly abortion, are reported by coroners and that information about husband's occupation is less often recorded (*cf.*, deaths from psychoses and from violent causes).

Table CO. Maternal mortality: Age standardised mortality ratios, married women, by cause and social class, 1949-53

	Social Class				
	I	II	III	IV	V
All maternal causes ..	68	93	96	102	132
Abortion	(44)	102	90	88	166
Sepsis	(50)	96	93	104	149
Toxaemia	68	95	99	113	101
Haemorrhage ..	75	82	96	97	154
Other	87	93	97	99	124

Age-standardised maternal mortality ratios for the most important complications of pregnancy and childbearing are shown in Table CO, and indicate for each a more or less strong association with social class, similar to that for maternal mortality as a whole.

As is demonstrated by the social class age analysis in Table 8B, maternal mortality was low in Social Class I and high in Social Class V in each age group from 16 to 44, but there was evidence, albeit based on small numbers, of a reversal of this pattern at ages 45 and over, viz:

Age Standardised Maternal Mortality Rate per 1,000 births:

	Social Class	
Ages	I	V
16-24	0·24	0·49
25-34	0·51	1·09
35-44	1·28	2·18
45 and over	14·63	8·24

Table CP. Maternal mortality: Death rates, per 1,000 legitimate births, married women, by social class, England and Wales and four regional groups, 1949-53

	Social Class					
	Total	I	II	III	IV	V
England and Wales	0·82	0·63	0·85	0·76	0·82	1·08
North of England..	0·85	0·53	0·94	0·77	0·92	1·07
Midlands and Eastern Regions ..	0·74	0·53	0·79	0·68	0·79	0·90
South of England	0·79	0·73	0·82	0·76	0·63	1·08
Wales (including Monmouthshire) ..	1·13	(0·51)	0·93	1·06	1·16	1·65

Table 8C contains an analysis of maternal mortality rates by social class in four regional groups, and three density groups. The regional summary in Table CP shows that maternal mortality was strongly correlated with social class in each of the four geographical areas, most of all in Wales, where the rates in Social Classes III, IV, and V were much higher than in the other areas. Women in Social Classes I and II in Wales, on the other hand, had rates comparable with those elsewhere.

Analysis by urban-rural aggregates (Table CQ) revealed lowest rates in the conurbations, highest in rural areas. The conurbations had almost equal rates in Social Classes I to IV, rising a little in Social Class V; in the other urban and the rural areas, the upward social class gradient from Social Class I to Social Class V was steeper.

Table CQ. Maternal mortality: Death rates, per 1,000 legitimate births, married women, by social class, England and Wales, Urban/Rural aggregates, 1949-53

	Total	Social Class				
		I	II	III	IV	V
England and Wales	0·82	0·63	0·85	0·76	0·82	1·08
Conurbations	0·74	0·74	0·74	0·71	0·71	0·90
Urban areas outside conurbations ..	0·85	0·56	0·82	0·80	0·88	1·15
Rural Districts	0·89	0·55	1·07	0·79	0·85	1·39

Appendicitis

Among men mortality from appendicitis, at 20-64 and at 65 and over, showed evidence of correlation with social class, S.M.R's and P.M.R's being highest in Social Class I and declining towards Social Classes IV and V (Table CR). On the other hand, the S.M.R's for married women aged 20-64 suggested a quite different social class relationship, with mortality lowest in Social Class I and highest in Social Class IV. At 65 and over, however, the distribution for married women was much more akin to that of men, with mortality proportionately higher in Social Class I. For single women the mortality ratios gave no indications of any social class relationship.

Table CR. Appendicitis: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	119	78	(100)	114	164	(200)
II	118	97	86	110	118	91
III	98	99	96	100	97	117
IV	88	112	89	97	71	110
V	92	100	(78)	90	114	(250)

The gradient of mortality of men aged 20-64 descending from Social Class I was discernible at most of the separate age groups between 20 and 64 (Table 4) and was a prominent feature of the two previous analyses (Table CS). It was also the pattern presented in 1930-32 by the mortality ratios of married women aged 20-64, and the changed social class relationship which they showed in the 1949-53 analysis is unexpected.

Table CS. Appendicitis: S.M.R's (20-64) by social class, 1949-53 compared with previous analyses

	Males			Married Women	
	1921-23	1930-32	1949-53	1930-32	1949-53
Social Class I	180	181	119	140	78
II	143	140	118	117	97
III	92	98	98	103	99
IV	83	80	88	82	112
V	73	76	92	83	100

Table CT. Appendicitis: S.M.R's (20-64) and P.M.R's (65 and over), by socio-economic groups, 1949-53

	S.M.R. 20-64		P.M.R. 65 and over	
Socio-economic Group	Males	Married Women	Males	Married Women
1. Farmers	149	119	118	142
2. Agricultural workers ..	89	92	80	71
3. Higher administrative, etc. ..	119	78	114	164
4. Other administrative, etc. ..	104	79	107	119
5. Shopkeepers	128	123	111	105
6. Clerical workers	107	91	121	109
7. Shop assistants	130	84	62	(100)
8. Personal service	89	88	119	(100)
9. Foremen	89	100	87	92
10. Skilled workers	95	102	101	94
11. Semi-skilled workers ..	86	116	107	69
12. Unskilled workers ..	91	101	87	117
13. Armed Forces (other ranks) ..	65	(140)	111	—

Within the socio-economic groups (Table CT) a feature of note, appearing both in men and married women and in both age-groups, was the excess mortality of Group 1 (farmers) over Group 2 (other agricultural workers). Among men most of the non-manual groups had high ratios, whereas in married women aged 20-64 the only non-manual group with high mortality was No. 5 (wives of shopkeepers). This contrast between men and married women appeared again in the three manual groups Nos. 10, 11, and 12, in each of which male mortality at 20-64 was below average and that of married women average or above.

Hernia, Intestinal Obstruction

The first of these conditions displayed a fairly regular social class gradient of mortality increasing from Social Class I to Social Class V in men and married women aged 20-64 (Table CU). At 65 and over, however, proportionate mortality reached its peak in both sexes not in Social Class V but in Social Class IV. Among single women the ratios were based on small numbers of deaths but tended to present the same social class pattern as for the two other groups.

Table CU. Hernia and intestinal obstruction: S.M.R's (20-64) and P.M.R's (65 and over) by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Hernia						
Social Class I	61	48	(50)	78	71	(40)
II	103	69	47	99	85	96
III	93	96	98	99	97	107
IV	102	121	103	110	127	117
V	123	148	(86)	100	105	(117)
Intestinal obstruction						
Social Class I	72	168	(50)	141	184	(125)
II	89	78	69	106	104	116
III	96	101	83	99	97	110
IV	98	105	69	97	90	96
V	116	99	(90)	82	96	(160)

Males at ages 20-64 showed a similar social class distribution in respect of deaths from intestinal obstruction, but in men aged 65 and over, and in married women at both ages, a very different pattern emerged, with mortality consistently highest in Social Class I. For single women no systematic social class relationship appeared.

The detailed age-analysis in Table 4 shows that high mortality from intestinal obstruction in Social Class I was a feature in each age group of married women; it also reveals a particularly steep mortality gradient in respect of hernia in married women aged 35-44 viz:

	Social Class				
	I	II	III	IV	V
	33	33	83	133	233

Table CV. Hernia and intestinal obstruction: S.M.R's (20-64) by social class, 1949-53 compared with previous analyses

	Males			Married Women	
	1921-23	1930-32	1949-53	1930-32	1949-53
Hernia					
Social Class I	58	55	61	36	48
II	81	85	103	63	69
III	97	98	93	95	96
IV	115	119	102	123	121
V	129	112	123	157	148
Intestinal obstruction					
Social Class I	122	164	72	127	168
II	106	104	89	107	78
III	85	94	96	102	101
IV	102	98	98	101	105
V	112	99	116	74	99

Comparison with the social class distributions recorded in previous analyses (Table CV) indicates that no important change had taken place as regards mortality from hernia; but that the type of social class association with intestinal obstruction in men aged 20-64 in 1949-53, an upward gradient from Social Class I to Social Class V, is quite different from the situation portrayed by the previous analyses, in which mortality was highest in Social Class I.

Table CW. Hernia and Intestinal obstruction: S.M.R's (20-64) and P.M.R's (65 and over), by socio-economic groups, 1949-53

	Hernia				Intestinal obstruction			
	S.M.R. 20-64		P.M.R. 65 and over		S.M.R. 20-64		P.M.R. 65 and over	
Socio-economic Group	Males	Married Women	Males	Married Women	Males	Married Women	Males	Married Women
1. Farmers	123	79	114	87	103	63	107	91
2. Agricultural workers	112	128	119	112	102	76	110	89
3. Higher administrative, etc.	61	48	78	71	73	168	141	184
4. Other administrative, etc.	81	47	86	84	82	79	114	91
5. Shopkeepers	137	111	108	87	97	90	93	133
6. Clerical workers	84	71	89	79	107	68	103	135
7. Shop assistants	100	72	92	140	84	106	92	(70)
8. Personal service	129	90	124	105	108	88	85	92
9. Foremen	74	70	103	50	72	100	88	145
10. Skilled workers	96	105	99	103	97	102	100	89
11. Semi-skilled workers	94	118	102	130	101	114	88	86
12. Unskilled workers	124	150	99	107	114	100	82	96
13. Armed Forces (other ranks)	(75)	(167)	91	(140)	(100)	367	147	(100)

Within the socio-economic groups (Table CW) mortality from hernia at ages 20-64 was high in men, in Group 1 (farmers), Group 5 (shopkeepers), Group 8 (personal service), and Group 12 (unskilled manual workers). In married women, Group 2 (wives of other agricultural workers) had elevated mortality but not Group 1, and high ratios occurred also in all three Groups 10, 11, and 12 (wives of manual workers), particularly the last, with mortality three times that of women with husbands in professional or administrative occupations. In striking contrast was the S.M.R. of 168 at 20-64 for intestinal obstruction in married women in Group 3 (wives of higher professional and administrative workers), 37 deaths having been registered instead of an expected total of 22.

Cirrhosis of Liver, Cholelithiasis and Cholecystitis

In men mortality from each of these diseases was strongly correlated with social class, with mortality ratios two to three times higher in Social Class I than in Social Class IV (Table CX). Married women displayed the same kind of correlation in respect of cirrhosis of liver, but their mortality from cholelithiasis and cholecystitis was quite different; here there was a regular mortality gradient upwards from Social Class II to V at ages 20-64 and from Social Class I to IV at 65 and over. For single women the indications were indefinite.

Table CX. Cirrhosis of liver, cholelithiasis and cholecystitis: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Cirrhosis of liver						
Social Class I	207	134	179	158	(100)	
II	152	114	76	149	110	90
III	84	100	112	88	96	127
IV	70	81	78	60	91	111
V	96	97	(100)	95	98	(50)
Cholelithiasis and cholecystitis						
Social Class I	243	97	(100)	155	97	(67)
II	136	87	71	134	99	141
III	89	93	98	95	102	110
IV	73	117	93	85	107	72
V	82	126	(86)	77	89	(75)

The detailed age-analysis at Table 4 suggests that high mortality from cirrhosis of liver, in men and married women of Social Classes I and II, was a feature only of later years. At younger adult ages, despite the uncertainties produced by small numbers of deaths, there were suggestive indications that the social class gradient of mortality was in the opposite direction (Table CY).

	Males		Married Women	
	25-34	55-64	35-44	55-64
Social Class I	(80)	235	(50)	(110)
II	(100)	166	113	125
III	80	88	75	104
IV	140	62	113	83
V	140	77	175	85

Comparison between the S.M.R.'s at 20-64 in 1949-53 and previous periods (Table CZ) shows that little change in the social class distributions has taken place, the only point of note being that in 1930-32 mortality of married women from cholelithiasis and cholecystititis scarcely suggested the strong association with Social Class V that has appeared in the present analysis.

Table CZ. Cirrhosis of liver, cholelithiasis and cholecystitis: S.M.R's (20-64) by social class, 1949-53 compared with previous analyses

	Males			Married Women	
	1921–23	1930–32	1949–53	1930–32	1949–53
		Cirrhosis of liver			
Social Class I	158	184	207	177	134
II	183	195	152	147	114
III	66	70	84	87	100
IV	69	78	70	82	81
V	86	75	96	76	97
		Cholelithiasis and cholecystitis			
Social Class I	160	243	102	102	97
II	159	136	100	100	87
III	91	89	97	97	93
IV	81	73	109	109	117
V	69	82	102	102	126

Analysis by socio-economic groups, summarised in Table DA, indicates that for men, and largely, for their wives, the groups at particular risk from cirrhosis of liver were Nos. 3 and 4 (administrative and professional), 5 (shopkeepers) and 8 (personal service).

Table DA. Cirrhosis of liver, cholelithiasis and cholecystitis: S.M.R's (20-64) and P.M.R's (65 and over), by socio-economic groups, 1949-53

	Cirrhosis of liver				Cholelithiasis, cholecystitis			
	S.M.R. 20–64		P.M.R. 65 and over		S.M.R. 20–64		P.M.R. 65 and over	
Socio-economic Group	Males	Married Women	Males	Married Women	Males	Married Women	Males	Married Women
1. Farmers	96	82	91	(46)	112	93	134	64
2. Agricultural workers	37	85	37	91	59	91	77	97
3. Higher administrative, etc.	207	134	179	158	243	97	155	97
4. Other administrative, etc.	156	117	174	143	143	78	141	104
5. Shopkeepers	165	127	143	95	145	98	126	122
6. Clerical workers	84	95	116	131	152	98	87	113
7. Shop assistants	75	77	117	(86)	69	63	100	91
8. Personal service	157	114	116	(112)	61	136	94	96
9. Foremen	65	95	100	71	81	73	92	109
10. Skilled workers	81	100	84	95	82	98	95	100
11. Semi-skilled workers	74	81	63	78	77	122	90	117
12. Unskilled workers	97	97	93	100	83	126	78	90
13. Armed Forces (other ranks)	288	(200)	110	(200)	(250)	(125)	(58)	(71)

Several occupations connected with the sale of alcoholic drinks had strikingly high mortality rates, particularly proprietors and managers of hotels, publicans, etc. (Group 102 in Table 3A(i)), who had 111 deaths at 20-64 compared with 12 expected, yielding an S.M.R. of 925. Among barmen there were five deaths at 20-64, compared with one expected (S.M.R. (500). The two agricultural groups (1 and 2) and the manual groups (9 to 12) all had mortality below the average.

The socio-economic groups with elevated male mortality from cholelithiasis and cholecystitis were Group 1 (farmers) (but not Group 2, other agricultural workers), Groups 3, 4, and 5 (administrators, professional people and shopkeepers) and, at 20-64 only, Group 6 (clerical workers). Married women aged 20-64 on the

other hand, presented a rather different picture, the groups with high mortality being No. 8 (wives of men in personal service) and Nos. 11 and 12 (wives of semi-skilled and unskilled manual workers).

Accidents

In the main tables in this study deaths from accidental causes have been classified under three heads:

(a) Motor Vehicle Accidents, comprising accidents in which a motor vehicle (bus, motor car, motor cycle, etc.) was involved and in which an occupant, road user or pedestrian was killed. Pedestrian victims constitute about one-third of the total at all ages, but a much higher proportion at older ages.

(b) Accidents in the Home, comprising accidents in and about the deceased person's home but excluding accidents in residential institutions.

(c) Other Accidents.

In addition to these broad categories Table 12 gives details of deaths from a small number of particular accidental causes, including poisoning, falls, and burns, classified as having occurred at work, at home, or elsewhere; and Table 13 relates external causes of injury (e.g. motor vehicle accidents) to the nature of the injuries sustained (e.g. fracture of skull), advantage being taken of the dual (E and N) system of classification of injuries introduced at the Sixth Revision of the International Statistical Classification.

Table DB. Accidents: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
	Males	Married Women	Single Women	Males	Married Women	Single Women
Motor Vehicle Accidents						
Social Class I	94	168	(80)	91	71	(25)
II	84	107	105	93	104	82
III	104	90	88	95	101	98
IV	98	98	87	101	60	68
V	107	91	144	117	117	233
Accidents in the Home						
Social Class I	144	159	(100)	96	98	80
II	86	100	69	97	107	73
III	92	95	67	102	100	62
IV	92	86	80	94	87	59
V	136	104	111	105	92	79
Other Accidents						
Social Class I	168	156	(80)	66	127	(100)
II	47	99	80	76	91	83
III	96	89	92	89	92	65
IV	139	92	77	122	107	86
V	126	108	117	137	98	100
All Accidents						
Social Class I	137	161	86	84	101	79
II	64	102	86	88	103	77
III	96	92	76	96	98	67
IV	120	92	81	106	88	67
V	119	101	125	120	97	104

The social class distribution of mortality from the three main groups of accidents is in Table DN and is summarised in Table DB. Mortality from motor vehicle accidents was highest in men in Social Class V, both at 20-64 and at 65 and over, but though there was evidence of some systematic social class gradient, particularly as regards proportionate mortality in elderly men, this gradient was not steep and there was comparatively little difference between mortality in Social Classes I and II on the one hand and Social Class V on the other. Among married women aged 20-64 an entirely different pattern was presented, with mortality much higher in Social Class I than in the other classes; this special susceptibility of wives in Social Class I was, however, absent at ages 65 and over where, as for men, Social Class I had the lowest and Social Class V the highest proportionate death rate. Single women, too, followed the male distribution, but with much stronger evidence of high mortality in Social Class V.

Mortality from accidents in the home for men aged 20-64 was high in both Social Classes I and V and low in the intermediate classes. Married women and single women showed some slight tendency towards this U-shaped type of distribution but much less symmetrically; mortality of married women being greatly elevated in Social Class I, whereas in single women Social Class V had the highest ratio. At ages 65 and over no definite social class correlation appeared.

In married women aged 20-24 and 55-64 (Table DC) a U-shaped distribution similar to that of men was in evidence.

Mortality from other accidents (Table DB) was very high at ages 20-64 in Social Class I, both among men and their wives; men had high ratios also in Social Classes IV and V, married women average mortality in Social Class V, the class in which mortality was highest among single women. At 65 and over

the ratios for men indicated a steep regular gradient of proportionate mortality, lowest in Social Class I and rising to double in Social Class V. Nothing similar appeared for married or for single women.

Table DC. Accidents: Mortality ratios at certain ages, by social class, 1949-53

	Males		Married Women		Single Women	
	20–24	55–64	20–24	55–64	20–24	55–64
Motor Vehicle Accidents						
Social Class I	107	92	(345)	140	(116)	(154)
II	102	83	(117)	100	128	81
III	109	94	100	88	93	99
IV	98	101	(78)	115	63	97
V	64	140	(39)	93	(79)	(122)
Accidents in the Home						
Social Class I	—	143	(133)	140	(63)	(70)
II	(79)	97	(133)	87	(50)	76
III	100	90	100	97	75	83
IV	(57)	98	(78)	82	(50)	76
V	186	124	(133)	105	(138)	(126)
Other Accidents						
Social Class I	549	60	(109)	133	—	(75)
II	62	48	(109)	109	81	99
III	84	91	82	93	92	61
IV	105	163	(73)	98	50	75
V	103	116	(109)	105	(108)	(118)

Mortality from the group 'other accidents' was particularly high in young men aged 20-24 in Social Class I. In this class 214 deaths were registered compared with 39 expected, 192 of these being among officers (active) of the armed forces.

Deaths from 'other accidents', Males, 1949-53

	16–	20–	25–	35–44
Social Class I	53	214	286	90
Officers (active) of armed forces	41	192	246	36

Comparison between the social class distribution of all fatal accidents in 1949-53 with 1921-23 and 1930-32 is made in Table DD, and draws attention to the recent appearance, in men and married women, of greatly elevated mortality in Social Class I. In the two previous analyses male mortality was highest in Social Class IV, and although the S.M.R. for married women in 1930-32 was highest in Social Class I (S.M.R. 113) the excess was slight compared with 1949-53 (S.M.R. 161, based on 176 deaths registered).

Table DD. All accidental causes: S.M.R's (20-64) by social class, 1949-53 compared with previous analyses

	Males			Married Women		Single Women	
	1921–23	1930–32	1949–53	1930–32	1949–53	1930–32	1949–53
Social Class I	76	95	137	113	161	(114)	86
II	69	74	64	93	102	69	86
III	83	102	96	96	92	105	76
IV	127	116	120	98	92	75	81
V	119	96	108	106	101	124	125

Standardised mortality ratios for men and married women aged 20-64 by social sub-classes and socio-economic groups are summarised in Table DE. They reveal high male mortality from motor vehicle accidents among mine workers, transport workers, armed forces, farmers and other agricultural workers. Except for the wives of transport workers, married women in these groups also had high rates as did the wives of professional and administrative workers (Group 3) and men in personal service (Group 8).

Accidents in the home took their highest toll among men in unskilled occupations (social sub-class Vb), in personal service (Group 8) and administrative occupations (Group 3), the wives of the latter also experiencing elevated mortality together with wives of miners and of members of the armed forces. The male groups principally involved in 'other' accidents were mine workers, armed forces, administrators, foremen, semi-skilled and unskilled manual workers; and for married women, wives of farmers, administrators, mine workers, members of the armed forces, and men in personal service.

Table DE. Accidents: S.M.R's (20-64) by social sub-classes and socio-economic groups, 1949-53

	Males			Married Women		
	Motor Vehicle Accidents	Accidents in the home	Other Accidents	Motor Vehicle Accidents	Accidents in the home	Other Accidents
Social sub-class						
IIIa Mineworkers	120	103	422	126	165	147
IIIb Transport workers	145	94	118	81	84	75
IIIc Clerical workers	72	111	37	76	119	108
IIId Armed Forces	126	100	194	144	214	200
IIIe Others	99	89	69	89	88	85
IVa Agricultural workers ..	152	66	82	141	97	128
IVb Others	82	100	156	86	82	83
Va Building and Dock labourers	77	91	115	55	53	66
Vb Others	120	154	130	105	122	123
Unoccupied	71	168	162	354	235	367
Socio-economic group						
1. Farmers	120	69	99	132	86	150
2. Agricultural workers ..	144	73	79	133	95	119
3. Higher administrative, etc.	94	144	168	168	159	156
4. Other administrative, etc.	71	88	46	97	105	85
5. Shopkeepers	101	90	37	120	98	100
6. Clerical workers	75	108	37	87	113	100
7. Shop assistants	67	79	24	81	52	76
8. Personal service	83	136	73	132	86	136
9. Foremen	88	69	136	79	74	73
10. Skilled workers	112	91	92	89	96	89
11. Semi-skilled workers ..	83	97	165	84	83	75
12. Unskilled workers	107	136	126	89	105	107
13. Armed Forces (other ranks)	126	100	194	144	214	200

Table DF. Accidents: S.M.R's (20-64) for certain types of accidents by social class, 1950-53

	Males				
	Social Class				
	I	II	III	IV	V
Motor vehicle accidents ..	93	84	105	97	107
Other transport accidents ..	500	55	85	110	90
Accidental poisoning	166	98	89	86	134
Accidental falls	68	47	100	101	166
Accident caused by machinery ..	(19)	20	88	181	174
Accidental burns and scalds ..	76	26	90	214	93
Accidental drowning	80	61	82	115	151
All other accidental causes ..	38	45	91	178	120
Fractures	117	58	100	122	119
Head injuries (exc. fracture) ..	137	77	97	103	124

The special analysis made in Table 12 deals with deaths in 1950-53 only, and the social class distribution of mortality from the causes additionally tabulated there are summarised in Table DF. Mortality from 'other transport accidents' (i.e. in air, rail, water transport) was five times greater than average in Social Class I; accidental poisoning had its highest mortality in Social Classes I and V; falls, and drowning were highest in Social Class V; and Social Class IV had the highest rates for burning accidents and for the miscellaneous residual group, and just exceeded Social Class V in respect also of machinery accidents.

Table DG. Accidents: Percentage of deaths due to certain accidental causes, occurring 'at work' or 'at home', by social class, 1950-53

	At work				At home			
	Social Class				Social Class			
	I and II	III	IV and V	Total	I and II	III	IV and V	Total
Motor vehicle accidents	15	14	13	14				
Other transport accidents ..	66	58	65	61				
Accidental poisoning	7	14	28	16	63	61	52	58
Accidental falls	24	64	59	57	36	16	20	19
Accident caused by machinery..	87	98	98	98	(4)	(0)	—	(0)
Accidental burns and scalds ..	48	78	80	75	45	18	14	19
Accidental drowning	(4)	7	7	6	(4)	(1)	(2)	2

The proportion of accidental poisoning deaths occurring at work (Table DG) was very much lower, and

those occurring at home correspondingly greater in Social Classes I and II than in Social Classes IV and V; and some large differences between the social classes occurred also in fatal burning accidents.

Table DH. Accidents: Percentage of deaths, due to fracture of skull, among all deaths from accidental causes, by social class, 1950-53

	Males Ages 20-64			
	Motor Vehicle Accidents	Other Transport Accidents	Accidental Falls	Other Accidents
All Classes	**62**	**36**	**58**	**15**
Social Class I	58	28	*51*	*6*
II	53	31	46	8
III	63	37	61	16
IV	65	44	116	20
V	60	42	60	14

The proportion of deaths in which fracture of the skull had been sustained (Table DH) was highest in Social Class IV for motor vehicle accidents, for other transport accidents, and other accidents except falls.

Suicide

At ages 20-64 mortality by suicide was highest, both for men, married and single women, in Social Class I, but whereas the ratio for men in this class was 40 per cent above average and that for married women 63 per cent above average, there was practically no difference among single women, between the ratios in the various classes. High ratios for men were recorded also in Social Classes II and V. At ages 65 and over high proportionate mortality in Social Class I continued for married women, but for men Social Class V had the highest ratio.

Table DJ. Suicide: S.M.R's (20-64) and P.M.R's (65 and over), by social class, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
Social Class	Males	Married Women	Single Women	Males	Married Women	Single Women
Social Class I	140	163	*93*	98	181	*(133)*
II	113	100	88	89	100	130
III	89	101	86	102	102	*76*
IV	92	84	69	87	76	*57*
V	117	83	92	120	84	*(150)*

The pattern of mortality at separate ages between 20 and 64 (Table 4) suggested no special differences from that of the S.M.R.'s at 20-64.

Table DK. Suicide: S.M.R's (20-64) by social class, 1949-53 compared with previous analyses

	Males			Married Women		Single Women	
	1921-23	1930-32	1949-53	1930-32	1949-53	1930-32	1949-53
Social Class I	113	120	140	128	163	*(83)*	*93*
II	125	137	113	109	100	84	88
III	89	95	89	101	101	97	86
IV	87	87	92	82	84	96	69
V	96	87	117	92	83	*100*	92

High ratios in the professional and managerial social classes have been a characteristic of suicide in previous analyses (Table DK), with, for men, Social Class II predominating over Social Class I. In the 1949-53 analysis the principal changes are the more disadvantageous position of Social Class I, both in men and married women, and the elevated male mortality of Social Class V.

Within the socio-economic groups, mortality at 20-64 was high in Groups 1 and 2 (farmers and other agricultural workers) for men but not for their wives, in Group 3 (professional, etc.) in both men and married women, in Group 5 (shopkeepers) men, and single but not married women, Group 8 (men in personal service), and Group 12 (unskilled manual workers), men and single women. At ages 65 and over, proportionate mortality was excessive in wives of professional and administrative men (Group 3), wives of clerical workers (Group 6), and men in Group 13 (armed forces).

Table DL. Suicide: S.M.R's (20-64) and P.M.R's (65 and over), by socio-economic groups, 1949-53

	S.M.R. 20-64			P.M.R. 65 and over		
Socio-economic Group	Males	Married Women	Single Women	Males	Married Women	Single Women
1. Farmers	138	97	*(75)*	86	59	*(100)*
2. Agricultural workers	115	66	*(45)*	87	63	—
3. Higher administrative, etc. ..	140	163	*93*	98	181	*(133)*
4. Other administrative, etc. ..	96	102	79	81	112	128
5. Shopkeepers	139	100	*146*	104	120	*143*
6. Clerical workers	112	129	91	95	171	*(100)*
7. Shop assistants	90	77	68	94	127	*(167)*
8. Personal service	141	98	68	109	71	50
9. Foremen	59	94	*100*	74	74	—
10. Skilled workers	88	100	95	105	96	78
11. Semi-skilled workers	76	87	65	84	85	*(100)*
12. Unskilled workers	116	82	*132*	120	82	*(200)*
13. Armed Forces (other ranks) ..	109	145	*(50)*	146	*(133)*	—

Other Causes

In addition to the causes of death analysed in detail in the main tables a short list of other causes has also been analysed, in relation only to the five Social Classes, in the third section of Tables III A, B, and C. The Standardised Mortality Ratios at ages 20-64 and Proportionate Mortality Ratios at ages 65 and over are summarised in Table DR. Many of these ratios, particularly for single women, are based on small numbers of deaths and are of doubtful significance. Several of the diseases listed, viz: aortic aneurysm, syphilis, bronchiectasis, have been discussed earlier in this chapter.

Infectious hepatitis

In men, and to a much less degree in married women, mortality was strongly correlated with social class, male mortality in Social Class I being more than twice the average for all classes, both at 20-64 and, proportionately, at ages 65 and over.

Uterine fibromyoma

There was no social class mortality correlation among married women aged 20-64, but some indication of a downward gradient of proportionate mortality at 65 and over from Social Class I to Social Class V.

Benign neoplasm of ovary

Single women aged 20-64 gave a gradient of increasing mortality from Social Class I (no deaths) to Social Class V. In married women aged 65 and over, the ratios were suggestive of a gradient in the opposite direction.

Benign neoplasm of brain, etc.

At ages 20-64 mortality of men and of single, but not married, women increased steeply from Social Class I to Social Class V. At 65 and over the P.M.R.'s for men and married women were graded in the opposite direction, i.e. were highest in Social Class I.

Unspecified neoplasms of brain, etc.

'Unspecified' here implies that the information supplied on the death certificate did not permit assignment of the tumour as malignant or as benign.

In each group there were indications of social class correlation, with mortality highest in Social Class I and declining towards Social Class V.

Thyrotoxicosis

At ages 20-64 the S.M.R.'s for single women suggested a higher incidence in Social Class V than Social Class I, but the numbers of deaths involved were very small:

	Deaths Registered	Deaths Expected	S.M.R.
Social Class I	1	4	*(25)*
Social Class V	11	10	*110*

At ages 65 and over some evidence of social class correlation in the opposite direction appeared in respect of men and married women, with proportionate mortality declining towards Social Class V.

Pernicious anaemia, etc.

Of the deaths assigned to this rubric some 90 per cent were certified as due to pernicious anaemia, 5 per cent to subacute combined degeneration, and 5 per cent to other forms of hyperchromic anaemia. Mortality at ages 20-64 in men and married women was strongly correlated with social class, low in Social Class I and rising steeply to Social Class V. This tendency was absent among men aged 65 and over, though discernible in the proportionate mortality ratios of women.

Multiple or disseminated sclerosis

There was no evidence of correlation between this condition and social class among men aged 20-64; but at ages 65 and over, and in married women of both age groups, there was a steep mortality gradient, with high ratios in Social Class I diminishing to very much lower ratios in Social Class V.

Paralysis agitans

In men of both age groups, mortality was highest in Social Class I and diminished towards Social Class V. Married women displayed a similar tendency at ages 65 and over.

Epilepsy

Mortality from this cause was very strongly correlated with social class, the ratios rising steeply from a low level in Social Class I to a high level in Social Class V.

Motor neurone disease and Muscular atrophy

Included under this title are deaths from progressive muscular atrophy and amyotrophic lateral sclerosis. At ages 20-64 the male social class distribution suggested a weak gradient of increasing mortality from Social Class I to Social Class V, but at ages 65 and over, and in married women of both age groups the indications were of a strong correlation in the opposite direction, with mortality decreasing towards Social Class V.

Otitis media and mastoiditis

In men of both age groups mortality was strongly correlated with social class, with rates increasing steeply from low values in Social Class I towards high values in Social Class V. Married women showed a similar tendency at ages 20-64.

Rheumatic fever

Mortality of married women was strongly correlated with social class, with ratios in Social Class V three times as high at 20-64, and four times as high at 65 and over as in Social Class I. The figures for men and for single women gave no indication of any similar tendency.

Acute and Subacute Endocarditis

The main constituent of this category is subacute bacterial endocarditis. In men and married women mortality at ages 20-64 increased from Social Class I to Social Class V, but at 65 and over the P.M.R's were suggestive of a social class correlation in the opposite direction, with mortality proportionately highest in Social Class I.

Diseases of Veins

Included in this group are deaths from varicose veins, haemorrhoids, and thrombophlebitis. At ages 20-64 mortality of men was highest in Social Class I and diminished towards Social Classes IV and V, whereas among married women there was a weak gradient of mortality sloped in the opposite direction.

Pulmonary embolism and infarction

This group comprises only those deaths from pulmonary embolism and infarction for which no underlying cause was reported on the death certificate. Mortality in men and in married women of both age groups was above average in Social Class I and tended to decrease somewhat erratically in the direction of Social Class V.

Rheumatoid arthritis

Along with rheumatoid arthritis and its synonyms this category includes deaths from ankylosing spondylitis. At ages 20-64 mortality of men and married women was strongly correlated with social class, with low rates in Social Class I, high in Social Class V and, for men, high also in Social Class III.

Osteo-arthritis

The distribution of the mortality ratios was erratic and gave no clear indications of correlation with social class.

Table DM. Differences in mortality from certain causes, 1930-32 compared with 1949-53, males, aged 20-64 by social class

	1930–32				1949–53			
	Registered deaths	Expected deaths	(a)-(b)	Adjusted difference	Registered deaths	Expected deaths	(e)-(f)	Adjusted difference
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Social Class I								
Tuberculosis	684	1,145	−461	−547	668	1,131	−463	−318
Cancer	1,107	1,303	−196	−232	3,089	3,294	−205	−141
Vascular lesions of C.N.S.	528	473	+ 55	+ 65	1,240	1,001	+ 239	+164
Coronary disease	500	211	+289	+343	3,438	2,334	+1,104	+758
Chronic endocarditis	326	498	−172	−204	307	488	−181	−124
Myocarditis	469	613	−144	−171	332	487	−155	−106
Pneumonia	423	596	−173	−205	234	440	−206	−142
Bronchitis	82	266	−184	−218	340	1,002	−662	−455
Accidents	412	432	− 20	− 24	1,086	791	+295	+203
Suicide	304	253	+ 51	+ 60	481	344	+137	+ 94
Other causes	2,777	2,644	+133	+158	2,997	3,245	−248	−170
All causes	**7,612**	**8,434**	**−822**	**−975**	**14,212**	**14,557**	**−345**	**−237**
Social Class II								
Tuberculosis	4,629	6,484	−1,855	−386	3,391	5,305	−1,914	−262
Cancer	6,899	7,453	−554	−115	14,458	16,809	−2,351	−322
Vascular lesions of C.N.S.	2,862	2,700	+162	+ 34	5,367	5,184	+183	+ 25
Coronary disease	1,786	1,211	+575	+120	13,303	12,104	+1,199	+164
Chronic endocarditis	2,606	2,841	−235	− 49	1,982	2,380	−398	− 55
Myocarditis	3,212	3,502	−290	− 60	2,087	2,550	−463	− 63
Pneumonia	2,719	3,415	−696	−145	1,415	2,227	−812	−111
Bronchitis	870	1,527	−657	−137	2,762	5,230	−2,468	−338
Accidents	1,794	2,426	−632	−131	2,218	3,454	−1,236	−169
Suicide	1,977	1,448	+529	+110	1,861	1,643	+218	+ 30
Other causes	15,694	15,106	+588	+122	14,185	16,131	−1,946	−267
All causes	**45,048**	**48,113**	**−3,065**	**−637**	**63,029**	**73,017**	**−9,988**	**−1,368**
Social Class III								
Tuberculosis	21,907	21,950	− 43	− 3	16,765	16,561	+204	+ 10
Cancer	18,033	18,225	−192	− 14	47,213	45,288	+1,925	+ 95
Vascular lesions of C.N.S.	6,371	6,347	+ 24	+ 2	13,739	13,552	+187	+ 9
Coronary disease	2,755	2,881	−126	− 10	33,336	31,651	+1,685	+ 83
Chronic endocarditis	7,239	7,475	−236	− 18	6,912	6,914	− 2	0
Myocarditis	7,848	8,335	−487	− 37	6,128	6,521	−393	− 19
Pneumonia	8,703	9,604	−901	− 68	5,557	6,068	−511	− 25
Bronchitis	3,479	3,820	−341	− 26	13,298	13,510	−212	− 10
Accidents	8,582	8,395	+187	+ 14	11,888	12,376	−488	− 24
Suicide	3,915	4,142	−227	− 17	4,438	4,986	−548	− 27
Other causes	39,269	41,299	−2,030	−153	44,757	45,462	−705	− 35
All causes	**128,101**	**132,473**	**−4,372**	**−330**	**204,031**	**202,889**	**+1,142**	**+ 56**
Social Class IV								
Tuberculosis	8,304	7,955	+349	+ 70	5,029	5,277	−248	− 35
Cancer	7,160	7,056	+104	+ 21	15,144	15,859	−715	−102
Vascular lesions of C.N.S.	2,404	2,500	− 96	− 19	4,270	4,875	−605	− 87
Coronary disease	747	1,121	−374	− 75	8,964	11,329	−2,365	−338
Chronic endocarditis	3,144	2,844	+300	+ 60	2,290	2,297	− 7	− 1
Myocarditis	3,439	3,262	+177	+ 35	2,407	2,394	+ 13	+ 2
Pneumonia	3,893	3,565	+328	+ 66	2,222	2,115	+107	+ 15
Bronchitis	1,815	1,461	+354	+ 71	4,960	4,902	+ 58	+ 8
Accidents	3,572	3,073	+499	+100	4,462	3,729	+733	+105
Suicide	1,341	1,537	−196	− 39	1,478	1,610	−132	− 19
Other causes	15,310	15,535	−225	− 45	14,408	15,495	−1,087	−156
All causes	**51,129**	**49,909**	**+1,220**	**+244**	**65,634**	**69,882**	**−4,248**	**−608**
Social Class V								
Tuberculosis	9,132	7,424	+1,708	+346	6,431	4,575	+1,856	+283
Cancer	8,205	7,223	+982	+199	16,978	15,053	+1,925	+294
Vascular lesions of C.N.S.	2,503	2,592	− 89	− 18	4,825	4,754	+ 71	+ 11
Coronary disease	773	1,157	−384	− 78	9,791	10,967	−1,176	−180
Chronic endocarditis	3,202	2,849	+353	+ 72	2,616	2,075	+541	+ 83
Myocarditis	4,099	3,368	+731	+148	3,208	2,380	+828	+126
Pneumonia	4,855	3,497	+1,358	+275	3,003	2,003	+1,000	+153
Bronchitis	2,319	1,485	+834	+169	8,217	4,812	+3,405	+520
Accidents	2,750	2,860	−110	− 22	3,676	3,078	+598	+ 91
Suicide	1,309	1,500	−191	− 39	1,650	1,414	+236	+ 36
Other causes	15,802	15,384	+418	+ 85	16,846	14,381	+2,465	+376
All causes	**54,949**	**49,339**	**+5,610**	**+1,137**	**77,241**	**65,492**	**+11,749**	**+1,794**

Table DN (i). S.M.R's (20-64) and P.M.R's (65 and over) for certain causes of death, males, by social class, 1949-53

CAUSE OF DEATH and International Classification No.	Standardised Mortality Ratios by Social Class:—					Proportionate Mortality Ratios by Social Class:—				
	I	II	III	IV	V	I	II	III	IV	V
Tuberculosis (001–019)	59	64	101	95	141	73	67	102	95	138
Tuberculosis, respiratory (001–008)	58	63	102	95	143	71	66	102	95	140
Tuberculosis, respiratory with occ. dis. of lung (001)	(9)	12	123	183	71	(6)	(10)	139	148	71
Tuberculosis, non-respiratory (010-019)	69	84	95	103	108	100	86	106	87	106
Syphilitic disease (020-029)	67	63	103	98	143	110	90	100	88	117
Acute poliomyelitis (080)	295	171	90	63	*42*	∞	(100)	(75)	(100)	(100)
Malignant neoplasms, all sites (140-205)	94	86	104	95	113	98	96	102	97	105
Malignant neoplasm, stomach (151)	57	70	101	112	130	68	90	102	107	110
Malignant neoplasm, lung, bronchus (162, 163)..	81	82	107	91	118	104	92	105	82	117
Leukaemia, aleukaemia (204)	123	98	104	93	89	202	115	101	78	74
Diabetes (260)	134	100	99	85	105	121	147	99	78	67
Psychoses (300-309)	107	89	88	86	127	*102*	88	95	103	110
Vascular lesions of nervous system (330-334)	124	104	101	88	101	107	104	100	100	94
Coronary disease, angina (420)	147	110	105	79	89	144	115	101	87	84
Hypertension (440-447)	123	106	103	83	101	90	99	102	95	104
Chronic rheumatic heart disease (410-416)	59	84	100	97	129	96	110	98	100	95
Chronic endocarditis not spec. as rheumatic (421)	76	80	101	107	118	106	111	98	94	100
Other myocardial degeneration (422)	68	82	94	101	135	88	100	98	110	98
General arteriosclerosis (450)	96	88	99	86	128	89	98	97	106	105
Influenza (480-483)	58	70	97	102	139	87	102	98	108	100
Pneumonia (490-493)	53	64	92	105	150	86	87	97	103	118
Bronchitis (500-502)	34	53	98	101	171	51	73	103	106	130
Pneumoconiosis, occupational (523, 524)	(5)	9	149	123	66	(4)	7	156	134	43
Other chronic interstitial pneumonia (525)	(47)	81	89	110	155	*150*	94	101	87	105
Ulcer of stomach (540)	53	71	98	104	144	91	92	103	93	111
Ulcer of duodenum (541)	81	80	103	94	125	135	103	103	87	94
Gastritis, enteritis and diarrhoea (543, 571, 572)	124	111	97	93	88	140	116	96	91	93
Nephritis and nephrosis (590-594)	102	98	100	94	105	118	119	99	93	84
Hyperplasia of prostate (610)	118	107	102	87	97	127	123	99	94	76
Appendicitis (550-553)	119	118	98	88	92	*114*	110	100	97	90
Hernia of abdominal cavity (560, 561)	61	103	93	102	123	78	98	99	110	100
Intestinal obstruction without mention of hernia (570)	72	89	96	98	116	141	106	99	97	82
Cirrhosis of liver (581)	207	152	84	70	96	179	149	88	60	95
Cholelithiasis, cholecystitis (584, 585)	243	136	89	73	82	155	134	95	85	77
Motor vehicle accidents (E810-835)	94	84	104	98	107	91	93	95	101	117
Accidents in the home (E870.0-936.0)	144	86	92	92	136	96	97	102	94	105
Other accidents (Remr. E800-962)	168	47	90	139	126	66	76	89	122	137
Suicide (E963, 970-979)	140	113	89	92	117	98	89	102	87	120
Other causes (Remainder)	84	83	96	94	122	100	102	99	104	95
All causes	**98**	**86**	**101**	**94**	**118**	**100**	**100**	**100**	**100**	**100**

Table DN (ii). S.M.R's (20-64) and P.M.R's (65 and over) for certain causes of death, married women, by social class, 1949-53

CAUSE OF DEATH and International Classification No.	Standardised Mortality Ratios by Social Class:—					Proportionate Mortality Ratios by Social Class:—				
	I	II	III	IV	V	I	II	III	IV	V
Tuberculosis (001-019)	54	58	99	113	153	88	82	96	111	123
Tuberculosis, respiratory (001-008)	52	56	99	113	156	87	78	95	113	125
Tuberculosis, non-respiratory (010-019)	82	73	98	113	128	(100)	110	100	94	107
Syphilitic disease (020-029)	(36)	57	101	98	137	(62)	78	97	98	131
Acute poliomyelitis (080)	250	154	87	92	*46*	—	—	—	—	—
Malignant neoplasms, all sites (140-205)..	116	97	102	96	98	114	104	101	95	97
Malignant neoplasm, stomach (151)	68	80	102	110	119	77	92	101	109	107
Malignant neoplasm, lung, bronchus (162, 163)..	119	95	102	98	96	130	106	106	79	94
Malignant neoplasm, breast (170)	137	110	104	84	85	131	116	102	86	84
Malignant neoplasm, cervix uteri (171) (1950/53 only)	64	75	98	105	134	*81*	89	100	97	125
Malignant neoplasm, other parts of uterus (172-174) (1950/53 only)	103	93	106	92	99	83	96	111	93	85
Leukaemia, aleukaemia (204)	145	92	102	104	87	183	113	97	82	93
Diabetes (260)	60	80	100	122	119	78	90	100	110	112
Psychoses (300-309)	117	82	95	94	*102*	71	94	98	92	80
Vascular lesions of nervous system (330-334)	101	96	101	102	101	114	105	101	96	94
Coronary disease, angina (420)	102	96	101	104	105	131	108	100	93	90
Hypertension (440-447)	83	84	100	110	115	96	98	99	98	107
Chronic rheumatic heart disease (410-416)	60	69	104	114	122	97	99	100	104	97
Chronic endocarditis not spec. as rheumatic (421)	70	79	101	115	116	104	105	100	97	94
Other myocardial degeneration (422)	65	70	98	119	125	80	95	99	108	100
General arteriosclerosis (450)	61	67	105	111	129	96	92	100	98	111
Influenza (480-483)	64	70	105	113	116	71	98	99	110	106
Pneumonia (490-493)	61	73	96	113	132	84	87	98	105	114
Bronchitis (500-502)	35	49	101	123	154	47	74	103	110	130
Ulcer of stomach (540)	85	74	101	115	121	87	91	108	96	87
Ulcer of duodenum (541)	*100*	89	106	94	100	108	105	103	*75*	115
Gastritis, enteritis and diarrhoea (543, 571, 572)..	98	99	103	96	102	97	99	97	109	105
Nephritis and nephrosis (590-594)	65	86	100	110	116	66	107	99	100	104
Pregnancy, childbirth, abortion (640-689)..	90	90	93	106	137	—	—	(100)	∞	100
Appendicitis (550-553)	78	97	99	112	100	164	118	97	*71*	*114*
Hernia of abdominal cavity (560, 561)	48	69	96	121	148	71	85	97	127	105
Intestinal obstruction without mention of hernia (570)	*168*	78	101	105	99	*184*	104	97	90	96
Cirrhosis of liver (581)	134	114	100	81	97	158	110	96	91	98
Cholelithiasis, cholecystitis (584, 585)	97	87	93	117	126	97	99	102	107	89
Motor vehicle accidents (E810-835)	168	107	90	98	91	71	104	101	60	117
Accidents in the home (E870.0-936.0)	159	100	95	86	104	98	107	100	87	92
Other accidents (Remr. of E.800-962)	156	99	90	92	98	127	91	92	107	98
Suicide (E963, 970-979)	163	100	101	84	83	181	100	102	76	98
Other causes (Remainder)	100	90	98	108	109	95	104	99	102	99
All causes	**96**	**88**	**101**	**104**	**110**	**100**	**100**	**100**	**100**	**100**

CAUSE OF DEATH and International Classification No.	Standardised Mortality Ratios by Social Class:—					Proportionate Mortality Ratios by Social Class:—				
	I	II	III	IV	V	I	II	III	IV	V
Tuberculosis (001-019)	*60*	44	80	110	115	*(117)*	110	89	109	*138*
Tuberculosis, respiratory (001-008) ..	*60*	43	80	111	116	*(120)*	114	88	107	*(114)*
Tuberculosis, non-respiratory (010-019) ..	*(60)*	55	87	105	100	*(100)*	94	89	120	*(300)*
Syphilitic disease (020-029)	—	*(20)*	90	107	257	—	96	117	129	*(150)*
Acute poliomyelitis (080)	*(200)*	*162*	*83*	*56*	*(75)*	—	∞	..	..	∞
Malignant neoplasms, all sites (140-205)..	116	95	107	90	89	119	111	108	100	115
Malignant neoplasm, stomach (151) ..	*108*	77	96	107	132	*116*	90	113	108	163
Malignant neoplasm, lung, bronchus (162, 163)	*(75)*	101	112	100	*91*	*111*	121	121	99	*125*
Malignant neoplasm, breast (170) ..	116	105	113	83	84	*116*	120	113	91	*80*
Malignant neoplasm, cervix uteri (171) (1950/53 only)	*(40)*	61	87	121	*115*	*(167)*	*111*	98	98	*(175)*
Malignant neoplasm, other parts of uterus (172-174) (1950/53 only)	*(180)*	93	125	59	*61*	*167*	128	110	91	*138*
Leukaemia, aleukaemia (204)	*(225)*	94	98	93	*94*	*(100)*	146	*100*	109	*(100)*
Diabetes (260)	*(100)*	78	82	77	*75*	*(100)*	103	113	101	*120*
Psychoses (300-309)	—	*55*	70	117	*91*	*(50)*	95	71	92	*(83)*
Vascular lesions of nervous system (330-334)	82	90	99	87	85	96	109	100	94	85
Coronary disease, angina (420)	97	93	100	91	82	102	118	103	99	90
Hypertension (440-447)	131	84	104	79	107	79	107	109	105	116
Chronic rheumatic heart disease (410-416)	68	55	94	90	88	92	103	110	108	97
Chronic endocarditis not spec. as rheumatic (421)	*(25)*	67	74	91	*106*	*(89)*	87	116	103	*146*
Other myocardial degeneration (422) ..	59	51	74	91	83	112	91	96	102	99
General arteriosclerosis (450)	*(50)*	60	*74*	89	*(44)*	92	88	87	93	97
Influenza (480-483)	*(44)*	64	77	93	*88*	*117*	85	98	112	*90*
Pneumonia (490-493)	43	43	64	89	84	87	84	101	115	94
Bronchitis (500-502)..	*(25)*	41	86	100	126	62	78	115	115	142
Ulcer of stomach (540)	*(100)*	71	90	89	109	*(40)*	94	119	103	*(57)*
Ulcer of duodenum (541)	*(200)*	*111*	*79*	*107*	*(129)*	*(50)*	150	*81*	*103*	*(67)*
Gastritis, enteritis and diarrhoea (543, 571, 572)	*(75)*	67	84	88	*94*	*(80)*	116	100	100	*(100)*
Nephritis and nephrosis (590-594) ..	*(75)*	65	92	95	*88*	*(69)*	107	103	85	*88*
Pregnancy, childbirth, abortion (640-689)..	—	52	84	92	188	—	—	—	—	—
Appendicitis (550-553)	*(100)*	86	96	89	*(78)*	*(200)*	91	117	110	*(250)*
Hernia of abdominal cavity (560, 561) ..	*(50)*	47	*89*	103	*(86)*	*(40)*	96	107	117	*(117)*
Intestinal obstruction without mention of hernia (570)	*(50)*	69	83	69	*(90)*	*(125)*	116	110	96	*(160)*
Cirrhosis of liver (581)	—	76	112	78	*(100)*	*(100)*	90	127	111	*(50)*
Cholelithiasis, cholecystitis (584, 585) ..	*(100)*	71	98	93	*(86)*	*(67)*	141	110	72	*(75)*
Motor vehicle accidents (E810-835) ..	*(80)*	105	88	87	144	*(25)*	82	98	68	*233*
Accidents in the home (E870.0-936.0) ..	*(100)*	69	67	80	*111*	80	73	62	59	*79*
Other accidents (Remr. of E800-962) ..	*(80)*	80	69	77	*117*	*(100)*	83	65	86	*100*
Suicide (E963, 970-979)	93	88	86	69	92	*(133)*	130	76	57	*(150)*
Other causes (Remainder)	66	59	74	79	79	97	96	94	100	93
All causes	**82**	**73**	**89**	**89**	**92**	**100**	**100**	**100**	**100**	**100**

CAUSE OF DEATH and International Classification No.	Standardised Mortality Ratios by Social sub-class:—								
	III(a) Mineworkers	III(b) Transport workers	III(c) Clerical workers	III(d) Armed Forces	III(e) Others	IV(a) Agricultural workers	IV(b) Others	V(a) Building and Dock labourers	V(b) Others
Tuberculosis (001-019)	142	102	123	205	93	64	104	98	157
Tuberculosis, respiratory (001-008) ..	145	103	121	220	93	59	105	100	159
Tuberculosis, respiratory with occ. dis. of lung (001)	2,253	*(8)*	*(9)*	—	37	*(11)*	231	*33*	84
Tuberculosis, non-respiratory (010-019) ..	95	94	151	*91*	89	123	97	73	122
Syphlitic disease (020-029)	140	136	95	290	95	59	109	120	152
Acute poliomyelitis (080)	*(8)*	100	167	*52*	88	95	*54*	*(36)*	*45*
Malignant neoplasms, all sites (140-205) ..	105	109	104	170	103	79	100	93	120
Malignant neoplasm, stomach (151) ..	159	104	81	217	100	91	118	107	138
Malignant neoplasm, lung, bronchus (162, 163) ..	79	114	104	190	99	61	99	99	125
Leukaemia, aleukaemia (204)	126	119	111	*126*	100	98	92	67	97
Diabetes (260)	67	100	122	*123*	97	87	84	81	113
Psychoses (300-309)	*(67)*	63	*120*	233	86	*94*	84	*(41)*	159
Vascular lesions of nervous system (330-334)	113	90	121	215	99	74	91	75	111
Coronary disease, angina (420)	95	105	134	229	101	55	86	66	97
Hypertension (440-447)	97	101	118	268	100	60	89	75	110
Chronic rheumatic heart disease (410-416) ..	114	81	148	50	97	79	103	80	147
Chronic endocarditis not spec. as rheumatic (421)	182	99	107	*231*	95	106	107	86	128
Other myocardial degeneration (422)	158	88	87	358	90	98	101	96	148
General arteriosclerosis (450)	*123*	80	98	*325*	100	85	86	101	137
Influenza (480-483)	126	94	118	*104*	93	108	101	109	149
Pneumonia (490-493)	127	85	98	152	89	95	108	106	165
Bronchitis (500-502)..	156	99	90	234	95	56	114	118	189
Pneumoconiosis, occupational (523, 524) ..	2,945	*(2)*	16	—	36	*(7)*	155	*19*	82
Other chronic interstitial pneumonia (525) ..	*140*	69	*100*	*(300)*	85	*78*	119	*105*	172
Ulcer of stomach (540)	98	94	104	224	97	100	105	115	155
Ulcer of duodenum (541)	84	98	124	*131*	102	70	100	100	135
Gastritis, enteritis and diarrhoea (543, 571, 572) ..	90	81	120	*(62)*	98	121	85	*53*	101
Nephritis and nephrosis (590-594)	114	98	129	78	95	78	98	75	116
Hyperplasia of prostate (610)	*130*	96	91	467	101	110	81	87	100
Appendicitis (550-553)	97	106	106	65	95	92	87	88	94
Hernia of abdominal cavity (560, 561) ..	89	100	89	*(75)*	93	*125*	96	*83*	137
Intestinal obstruction without mention of hernia (570)	100	85	110	*(100)*	95	90	101	64	134
Cirrhosis of liver (581)	57	121	88	288	76	*34*	80	70	106
Cholelithiasis, cholecystitis (584, 585) ..	*(75)*	55	*163*	*(250)*	83	59	77	*48*	94
Motor vehicle accidents (E810-835) ..	120	145	72	126	99	152	82	77	120
Accidents in the home (E870.0-936.0) ..	*103*	94	111	*100*	89	66	100	91	154
Other accidents (Remr. of E800-962) ..	422	118	37	194	69	82	156	115	130
Suicide (E963, 970-979)	124	74	111	109	86	123	83	68	135
Other causes (Remainder)	110	89	124	116	92	96	93	82	137
All causes	**135**	**100**	**111**	**163**	**96**	**78**	**99**	**87**	**129**

CAUSE OF DEATH and International Classification No.	III(a) Mineworkers	III(b) Transport workers	III(c) Clerical workers	III(d) Armed Forces	III(e) Others	IV(a) Agricultural workers	IV(b) Others	V(a) Building and Dock labourers	V(b) Others
	Standardised Mortality Ratios by Social sub-class:—								
Tuberculosis (001-019)	156	118	77	138	94	85	120	139	159
Tuberculosis, respiratory (001-008)	156	120	74	140	94	81	120	142	161
Tuberculosis, non-respiratory (010-019)	167	93	112	109	93	121	111	112	135
Syphilitic disease (020-029)	93	108	52	(200)		42	114	108	147
Acute poliomyelitis (080)	(50)	65	143	(83)	87	133	83	(60)	40
Malignant neoplasms, all sites (140-205)	113	103	101	129	101	92	97	85	103
Malignant neoplasm, stomach (151)	159	96	80	152	102	86	117	105	124
Malignant neoplasm, lung, bronchus (162, 163)	93	96	103	143	103	73	104	83	101
Malignant neoplasm, breast (170)	93	109	115	121	102	86	84	76	89
Malignant neoplasm, cervix uteri (171) (1950/53 only)	124	128	80	168	94	81	111	122	138
Malignant neoplasm, other parts of uterus (172-174)	112	106	95	183	107	105	89	70	109
Leukaemia, aleukaemia (204) (1950/53 only)	109	89	97	136	103	124	99	95	84
Diabetes (260)	205	113	78	133	98	137	118	100	125
Psychoses (300-309)	(57)	63	120	(100)	98	(82)	98	117	97
Vascular lesions of nervous system (330-334)	139	96	93	122	101	105	102	88	105
Coronary disease, angina (420)	149	103	85	118	100	97	105	93	109
Hypertension (440-447)	163	98	86	139	99	97	113	104	119
Chronic rheumatic heart disease (410-416)	154	102	90	99	103	77	124	102	128
Chronic endocarditis not spec. as rheumatic (421)	173	85	84	(80)	102	112	116	109	119
Other myocardial degeneration (422)	200	101	65	187	95	109	122	105	132
General arteriosclerosis (450)	115	119	74	(150)	106	104	113	100	138
Influenza (480-483)	121	117	82	120	106	133	108	84	127
Pneumonia (490-493)	126	106	78	129	105	107	115	110	139
Bronchitis (500-502)	167	94	66	128	102	91	132	126	164
Ulcer of stomach (540)	125	115	79	(200)	98	96	120	128	119
Ulcer of duodenum (541)	122	112	115	(150)	103	80	98	112	96
Gastritis, enteritis and diarrhoea (543, 571, 572)	104	93	90	(88)	106	108	93	76	110
Nephritis and nephrosis (590-594)	162	104	78	130	98	106	111	105	119
Pregnancy, childbirth, abortion (640-689)	131	109	81	139	89	107	106	121	144
Appendicitis (550-553)	129	100	82	(140)	90	90	117	83	106
Hernia of abdominal cavity (560, 561)	207	97	77	(167)	91	146	114	115	158
Intestinal obstruction without mention of hernia (570)	154	72	59	367	103	76	113	57	114
Cirrhosis of liver (581)	129	89	89	(200)	100	81	81	73	106
Cholelithiasis, cholecystitis (584-585)	186	96	107	(125)	86	103	121	97	135
Motor vehicle accidents (E810-835)	126	81	76	144	89	141	86	55	105
Accidents in the home (E870.0-936.0)	165	84	119	214	88	97	82	53	122
Other accidents (Remr. of E800-962)	147	75	108	200	85	128	83	66	123
Suicide (E963, 970-979)	109	87	132	145	98	70	88	57	92
Other causes (Remainder)	126	99	93	131	96	109	108	98	114
All causes	**135**	**102**	**91**	**132**	**99**	**98**	**106**	**95**	**115**

CAUSE OF DEATH and International Classification No.	III(b) Transport workers	III(c) Clerical workers	III(d) Armed Forces	III(e) Others	IV(a) Agricultural workers	IV(b) Others	V(a) Building and Dock labourers	V(b) Others
	Standardised Mortality Ratios by Social sub-class:—							
Tuberculosis (001-019)	138	62	55	95	60	114	(600)	113
Tuberculosis, respiratory (001-008)	157	61	55	94	55	115	(500)	115
Tuberculosis, non-respiratory (010-019)	—	68	(50)	102	(117)	104	∞	96
Syphilitic disease (020-029)	—	(29)	—	123	—	111	—	257
Acute poliomyelitis (080)	—	79	—	87	(100)	(53)	∞	(50)
Malignant neoplasms, all sites (140-205)	154	106	(75)	108	85	90	(200)	89
Malignant neoplasm, stomach (151)	(200)	70	∞	109	(150)	106	—	132
Malignant neoplasm, lung, bronchus (162, 163)	(100)	79	∞	129	(125)	99	—	91
Malignant neoplasm, breast (170)	(133)	117	(100)	112	65	83	∞	84
Malignant neoplasm, cervix uteri (171) (1950/53 only)	∞	67	∞	95	(200)	119	—	115
Malignant neoplasm, other parts of uterus (172-174) (1950/53 only)	∞	114	—	128	(100)	58	—	61
Leukaemia, aleukaemia (204)	(100)	110	(100)	90	(67)	94	—	94
Diabetes (260)	∞	66	—	92	(100)	76	—	75
Psychoses (300-309)	—	53	∞	78	(100)	118	—	91
Vascular lesions of nervous system (330-334)	(25)	91	—	104	100	87	(200)	84
Coronary disease, angina (420)	(50)	88	(100)	105	100	91	—	82
Hypertension (440-447)	100	84	—	114	(40)	80	—	107
Chronic rheumatic heart disease (410-416)	(60)	67	—	112	42	92	(200)	87
Chronic endocarditis not spec. as rheumatic (421)	—	61	—	80	(200)	87	—	106
Other myocardial degeneration (422)	—	40	—	90	100	91	—	83
General arteriosclerosis (450)	—	(50)	—	84	—	92	—	(44)
Influenza (480-483)	—	54	(100)	91	(67)	94	—	88
Pneumonia (490-493)	—	46	(67)	74	(60)	90	—	84
Bronchitis (500-502)	—	44	(100)	108	(50)	102	∞	123
Ulcer of stomach (540)	—	50	—	111	—	91	—	109
Ulcer of duodenum (541)	—	(60)	—	89	—	112	—	(129)
Gastritis, enteritis and diarrhoea (543, 571, 572)	—	84	—	85	—	91	—	94
Nephritis and nephrosis (590-594)	—	80	—	100	(80)	96	—	88
Pregnancy, childbirth, abortion (640-689)	∞	49	(100)	111	(33)	97	—	188
Appendicitis (550-553)	—	74	—	110	(150)	86	—	(78)
Hernia of abdominal cavity (560, 561)	—	(47)	—	124	—	107	—	(86)
Intestinal obstruction without mention of hernia (570)	—	52	∞	98	—	71	—	(90)
Cirrhosis of liver (581)	∞	83	—	124	—	81	—	(100)
Cholelithiasis, Cholecystitis (584, 585)	—	(62)	—	115	—	96	—	(86)
Motor vehicle accidents (E810-835)	(200)	80	(350)	89	(67)	88	∞	140
Accidents in the home (E870.0-936.0)	—	72	—	64	(33)	82	—	111
Other accidents (Remr. of E800-962)	(100)	62	(100)	74	(60)	78	∞	113
Suicide (E963, 970-979)	(50)	91	(50)	82	(50)	70	—	88
Other causes	(55)	62	(47)	81	50	77	(50)	79
All causes	**93**	**75**	**60**	**97**	**66**	**90**	**333**	**91**

Table DP (i). S.M.R's (20-64) for certain causes of death, males, by socio-economic groups, 1949-53

CAUSE OF DEATH and International Classification No.	Standardised Mortality Ratios by Socio-economic Group and Unoccupied:—													
	1. Farmers	2. Agricultural workers	3. Higher administrative, etc.	4. Other administrative, etc.	5. Shopkeepers	6. Clerical workers	7. Shop assistants	8. Personal service	9. Foremen	10. Skilled Workers	11. Semi-skilled workers	12. Unskilled workers	13. Armed Forces (other ranks)	Un-occupied
Tuberculosis (001-019)	45	57	59	64	73	119	93	138	62	101	102	141	205	211
Tuberculosis, respiratory (001-008)	42	54	58	64	72	117	92	139	62	101	102	143	220	200
Tuberculosis, respiratory with occ. dis. of lung (001)	(15)	(10)	(9)	11	(13)	(8)	(8)	(30)	102	160	257	71	—	(13)
Tuberculosis, non-respiratory (010-019)	93	108	69	76	94	141	107	120	63	91	95	109	91	361
Syphilitic disease (020-029)	26	58	67	66	78	95	73	166	68	108	103	144	290	92
Acute poliomyelitis (080)	433	119	295	128	135	167	150	(45)	(41)	81	54	43	52	200
Malignant neoplasms, all sites (140-205)	70	77	94	83	101	102	86	110	91	108	99	113	170	62
Malignant neoplasm, stomach (151)	81	87	57	62	83	79	66	108	96	108	119	132	217	54
Malignant neoplasm, lung, bronchus (162, 163)	46	61	81	79	108	102	91	112	86	113	98	119	190	42
Leukaemia, aleukaemia (204)	102	100	123	101	92	110	83	91	110	104	92	88	126	100
Diabetes (260)	98	82	134	91	124	126	113	120	86	95	79	104	123	157
Psychoses (300-309)	110	90	107	82	106	114	100	118	(33)	86	84	124	233	486
Vascular lesions of nervous system (330-334)	76	73	124	104	117	118	86	108	88	102	89	102	215	85
Coronary disease, angina (420)	62	55	147	116	123	132	96	105	99	101	89	102	229	60
Hypertension (440-447)	70	60	123	109	118	117	93	114	90	102	87	102	268	71
Chronic rheumatic heart disease (410-416)	78	74	59	79	100	138	92	137	70	100	98	129	50	130
Chronic endocarditis not spec. as rheumatic (421)	87	98	76	72	93	103	98	123	79	104	104	118	231	96
Other myo-cardial degeneration (422)	82	93	68	71	102	87	77	106	71	98	102	135	358	166
General arteriosclerosis (450)	105	80	96	78	99	95	100	89	82	103	86	129	325	115
Influenza (480-483)	74	98	58	65	77	112	67	109	66	102	100	139	104	196
Pneumonia (490-493)	50	86	53	60	78	95	73	120	68	96	108	150	152	300
Bronchitis (500-502)	31	53	34	48	76	88	65	117	70	108	114	172	234	76
Pneumoconiosis, occupational (523, 524)	(18)	(7)	(5)	7	(8)	16	(5)	42	104	200	171	67	—	(11)
Other chronic interstitial pneumonia (525)	115	82	(47)	80	65	96	77	107	(36)	93	118	157	(300)	(100)
Ulcer of stomach (540)	50	95	53	67	89	100	76	150	74	102	101	144	224	109
Ulcer of duodenum (541)	54	68	81	82	88	119	91	126	76	105	98	126	131	93
Gastritis, enteritis and diarrhoea (543, 571, 572)	137	108	124	109	100	119	86	113	98	96	79	88	(62)	226
Nephritis and nephrosis (590-594)	85	77	102	92	113	125	83	115	78	100	94	105	78	139
Hyperplasia of prostate (610)	115	108	118	102	109	94	100	106	99	101	80	96	467	97
Appendicitis (550-553)	149	89	119	104	128	107	130	89	89	95	86	91	65	136
Hernia of abdominal cavity (560, 561)	123	112	61	81	137	84	100	129	74	96	94	124	(75)	106
Intestinal obstruction without mention of hernia (570)	103	102	73	82	97	107	84	108	72	97	101	114	(100)	281
Cirrhosis of liver (581)	96	37	207	156	165	84	75	157	65	81	74	97	288	127
Cholelithiasis, cholecystitis (584, 585)	112	59	243	143	145	152	69	61	81	82	77	83	(250)	150
Motor vehicle accidents (E810-835)	120	144	94	71	101	75	67	83	88	112	83	107	126	71
Accidents in the home (E870.0-936.0)	69	73	144	88	90	108	79	136	69	91	97	136	100	168
Other accidents (Remr. of E800-962)	99	79	168	46	37	79	24	73	136	92	165	126	194	162
Suicide (E963, 970-979)	138	115	140	96	139	112	90	141	59	88	76	116	109	159
Other causes (Remainder)	83	90	84	76	98	120	91	116	76	95	92	122	116	304
All causes	**70**	**75**	**98**	**84**	**100**	**109**	**84**	**113**	**84**	**102**	**97**	**118**	**163**	**124**

Table DP (ii). S.M.R's (20-64) for certain causes of death, married women, by socio-economic groups, 1949-53

CAUSE OF DEATH and International Classification No.	Standardised Mortality Ratios by Socio-economic Group and Unoccupied:—													
	1. Farmers	2. Agricultural workers	3. Higher administrative, etc.	4. Other administrative, etc.	5. Shopkeepers	6. Clerical workers	7. Shop assistants	8. Personal service	9. Foremen	10. Skilled workers	11. Semi-skilled workers	12. Unskilled workers	13. Armed Forces (other ranks)	Un-occupied
Tuberculosis (001-019)	59	77	54	54	67	77	70	109	83	106	121	155	138	199
Tuberculosis, respiratory (001-008)	52	74	52	54	65	75	69	111	80	106	122	157	140	200
Tuberculosis, non-respiratory (010-019)	130	105	82	59	85	107	84	90	108	97	114	130	109	189
Syphilitic disease (020-029)	58	45	(36)	43	91	57	74	147	88	109	113	136	(200)	350
Acute poliomyelitis (080)	200	138	250	149	167	131	108	(117)	(58)	78	82	43	(83)	(250)
Malignant neoplasms, all sites (140-205)	96	91	116	94	106	100	85	102	93	105	97	99	129	83
Malignant neoplasm, stomach (151)	98	86	68	74	81	80	71	99	89	110	119	120	152	67
Malignant neoplasm, lung, bronchus (162, 163)	73	72	119	97	102	101	96	109	84	106	102	96	143	114
Malignant neoplasm, breast (170)	97	86	137	107	122	113	91	97	90	105	82	86	121	71
Malignant neoplasm, cervix uteri (171) (1950/53 only)	73	76	65	71	84	79	63	106	89	105	112	135	168	167
Malignant neoplasm, other parts of uterus (172-174) (1950/53 only)	110	108	105	88	92	95	83	92	104	110	86	100	183	70
Leukaemia, aleukaemia (204)	87	116	145	102	77	101	109	92	86	103	101	87	136	100
Diabetes (260)	127	131	60	72	70	75	79	85	85	107	124	119	133	40
Psychoses (300-309)	122	79	117	53	112	129	(67)	133	81	93	100	100	(100)	520
Vascular lesions of nervous system (330-334)	103	105	101	88	108	92	75	93	96	106	104	101	122	74
Coronary disease, angina (420)	93	93	102	90	109	86	74	96	95	107	109	105	118	50
Hypertension (440-447)	84	93	83	75	106	86	83	106	90	105	117	116	139	68
Chronic rheumatic heart disease (410-416)	56	76	60	65	85	89	80	105	93	111	125	123	99	86
Chronic endocarditis not spec. as rheumatic (421)	88	106	70	72	90	86	76	118	100	107	117	115	(80)	63
Other myocardial degeneration (422)	97	102	65	59	77	67	55	94	91	108	127	127	187	125
General arteriosclerosis (450)	68	110	61	51	103	71	82	110	123	109	110	131	(150)	(41)
Influenza (480-483)	83	130	64	61	86	81	86	102	74	115	108	115	120	81
Pneumonia (490-493)	77	103	61	70	80	78	66	105	85	102	117	133	129	169
Bronchitis (500-502)	52	82	35	43	59	65	70	96	93	112	138	155	128	63
Ulcer of stomach (540)	95	106	85	63	85	76	65	143	69	109	117	120	(200)	79
Ulcer of duodenum (541)	(75)	78	100	90	91	117	108	92	77	108	102	102	(150)	(86)
Gastritis, enteritis and diarrhoea (543, 571, 572)	96	100	98	92	116	97	103	76	98	107	95	102	(88)	(41)
Nephritis and nephrosis (590-594)	101	105	65	78	96	77	71	100	92	106	115	116	130	98
Pregnancy, childbirth, abortion (640-689)	177	106	90	74	96	79	86	96	67	96	106	138	139	283
Appendicitis (550-553)	119	92	78	79	123	91	84	88	100	102	116	101	(140)	100
Hernia of abdominal cavity (560, 561)	79	128	48	47	111	71	72	90	70	105	118	150	(167)	(57)
Intestinal obstruction without mention of hernia (570)	63	76	168	79	90	68	106	88	100	102	114	100	367	130
Cirrhosis of liver (581)	82	85	134	117	127	95	77	114	95	100	81	97	(200)	79
Cholelithiasis, cholecystitis (584, 585)	93	91	97	78	98	98	63	136	73	98	122	126	(125)	90
Motor vehicles accidents (E810-835)	132	133	168	97	120	87	81	132	79	89	84	89	144	354
Accidents in the home (E870.0-936.0)	86	95	159	105	98	113	52	86	74	96	83	105	214	235
Other accidents (Remr. of E800-962)	150	119	156	85	100	100	82	136	73	89	75	107	200	367
Suicide (E963, 970-979)	97	66	163	102	100	129	77	98	94	100	87	82	145	262
Other causes (Remainder)	106	104	100	80	104	90	84	98	86	102	110	110	131	108
All causes	**93**	**95**	**96**	**81**	**99**	**91**	**79**	**101**	**91**	**105**	**108**	**111**	**132**	**95**

Table DP (iii). S.M.R's (20-64) for certain causes of death, single women, by socio-economic groups, 1949-53

CAUSE OF DEATH and International Classification No.	1. Farmers	2. Agricultural workers	3. Higher administrative, etc.	4. Other administrative, etc.	5. Shopkeepers	6. Clerical workers	7. Shop assistants	8. Personal service	9. Forewomen	10. Skilled workers	11. Semi-skilled workers	12. Unskilled workers	13. Armed Forces (other ranks)	Unoccupied
Tuberculosis (001-019)	(55)	58	60	44	51	62	93	83	70	102	141	131	55	201
Tuberculosis, respiratory (001-008)	(50)	52	60	43	52	61	92	82	70	103	144	132	55	205
Tuberculosis, non-respiratory (010-019)	(100)	(114)	(60)	58	(38)	69	109	91	(75)	100	110	127	(50)	171
Syphilitic disease (020-029)	—	—	—	(23)	—	(29)	(50)	137	(100)	159	120	(200)	—	144
Acute poliomyelitis (080)	∞	(100)	(200)	129	(200)	79	(100)	(73)	—	77	(67)	(67)	—	170
Malignant neoplasms, all sites (140-205)	86	80	116	94	107	106	90	89	118	118	96	94	(75)	103
Malignant neoplasm, stomach (151)	(160)	(129)	108	75	75	69	72	104	(75)	130	123	126	—	109
Malignant neoplasm, lung, bronchus (162, 163)	—	(150)	(75)	100	121	80	115	106	(129)	129	107	71	∞	90
Malignant neoplasm, breast (170)	86	59	116	105	107	116	99	83	170	119	85	99	(100)	96
Malignant neoplasm, cervix uteri (171) (1950/53 only)	100	(133)	(40)	61	(55)	65	63	128	(40)	92	133	(100)	∞	127
Malignant neoplasm, other parts of uterus (172-174) (1950/53 only)	(200)	(100)	(180)	90	108	111	94	78	(150)	129	59	(56)	—	110
Leukaemia, aleukaemia (204)	(100)	(100)	(225)	94	(88)	109	72	89	(33)	107	93	(100)	(100)	109
Diabetes (260)	(100)	(100)	(100)	75	(90)	66	83	69	(25)	114	77	(100)	—	158
Psychoses (300-309)	—	(100)	—	63	(20)	50	(73)	128	(50)	83	67	(100)	∞	177
Vascular lesions of nervous system (330-334)	106	88	82	86	113	90	85	84	106	117	90	97	—	117
Coronary disease, angina (420)	(80)	92	97	86	135	91	93	87	86	117	92	84	(100)	112
Hypertension (440-447)	(50)	(33)	131	82	97	85	67	86	108	126	101	114	—	116
Chronic rheumatic heart disease (410-416)	(20)	52	68	51	93	66	82	76	79	137	119	99	—	155
Chronic endocarditis not spec. as rheumatic (421)	(100)	(250)	(25)	58	138	64	(54)	71	(67)	87	124	(129)	—	158
Other myocardial degeneration	(67)	92	59	46	85	41	59	87	48	110	89	85	—	159
General arteriosclerosis (450)	—	—	(50)	51	(100)	(56)	(83)	75	(100)	95	100	(67)	—	153
Influenza (480-483)	(133)	(71)	(44)	57	110	54	78	90	(50)	112	85	74	(100)	164
Pneumonia (490-493)	(29)	59	43	41	67	46	61	85	(10)	90	83	93	(67)	200
Bronchitis (500-502)	(20)	(44)	(25)	36	84	43	71	83	(29)	141	143	148	(100)	151
Ulcer of stomach (540)	—	—	(100)	69	(83)	50	(89)	93	(250)	115	100	(100)	—	133
Ulcer of duodenum (541)	—	—	(200)	100	(175)	(60)	(60)	100	—	125	(100)	(167)	—	100
Gastritis, enteritis and diarrhoea (543, 571, 572)	—	—	(75)	72	(50)	84	94	87	(100)	82	104	(67)	—	162
Nephritis and nephrosis (590-594)	(133)	(73)	(75)	55	133	79	86	83	(82)	113	118	82	—	148
Pregnancy, childbirth, abortion (640-689)	—	(33)	—	59	—	51	108	100	(200)	104	111	200	(100)	214
Appendicitis (550-553)	—	(150)	(100)	81	(500)	74	(89)	82	(200)	100	93	(120)	—	130
Hernia of abdominal cavity (560, 561)	(100)	—	(50)	52	(25)	(47)	(67)	129	(100)	106	111	(67)	—	137
Intestinal obstruction without mention of hernia (570)	(100)	—	(40)	73	(60)	50	(89)	82	(100)	104	67	(80)	∞	166
Cirrhosis of liver (581)	(100)	—	—	64	(150)	83	(100)	84	(100)	158	(82)	(67)	—	123
Cholelithiasis, cholecystitis (584, 585)	—	—	(100)	71	(75)	(62)	(180)	89	(100)	107	125	(67)	—	127
Motor vehicle accidents (E810-835)	—	(83)	(80)	117	(22)	79	83	91	(25)	97	87	157	(350)	123
Accidents in the home (E870.0-936.0)	(100)	(33)	(100)	62	(113)	70	(56)	80	(133)	88	85	175	—	178
Other accidents (Remr. of E800-962)	(300)	(80)	(80)	69	120	65	69	90	(50)	67	52	177	(100)	186
Suicide (E963, 970-979)	(75)	(45)	93	79	146	91	68	68	100	95	65	132	(50)	157
Other causes (Remainder)	57	49	66	56	75	62	72	74	67	92	76	89	(47)	195
All causes	72	64	82	70	97	75	82	84	86	109	99	103	60	142

80

Table DQ (i). P.M.R's (65 and over) for certain causes of death, males, by socio-economic groups, 1949-53

CAUSE OF DEATH and International Classification No.	1. Farmers	2. Agricultural workers	3. Higher administrative, etc.	4. Other administrative, etc.	5. Shopkeepers	6. Clerical workers	7. Shop assistants	8. Personal service	9. Foremen	10. Skilled workers	11. Semi-skilled workers	12. Unskilled workers	13. Armed Forces (other ranks)	Unoccupied
Tuberculosis (001-019)	40	53	73	76	71	113	104	142	83	102	116	138	146	159
Tuberculosis, respiratory (001-008)	38	52	71	75	70	110	105	145	81	102	116	139	144	161
Tuberculosis, respiratory with occ. dis. of lung (001)	(27)	(8)	(6)	(6)	(4)	(7)	—	(30)	133	175	247	72	—	(17)
Tuberculosis, non-respiratory (010-019)	80	65	100	100	75	160	(87)	(80)	113	101	100	107	(200)	(129)
Syphilitic disease (020-029)	41	61	110	111	91	127	113	155	96	93	96	116	265	129
Acute poliomyelitis (080)	—	—	∞	(100)	—	—	—	∞	—	(67)	(100)	(100)	—	∞
Malignant neoplasms, all sites (140-205)	85	89	98	101	96	105	102	107	102	101	100	105	104	87
Malignant neoplasm, stomach (151)	104	100	68	85	88	90	81	105	104	105	111	110	96	72
Malignant neoplasm, lung, bronchus (162, 163)	40	51	104	109	102	126	129	125	102	102	97	116	81	76
Leukaemia, aleukaemia (204)	113	85	205	118	117	143	121	127	111	93	69	73	(75)	117
Diabetes (260)	132	79	121	150	149	120	136	106	108	92	76	67	141	92
Psychoses (300-309)	84	122	102	85	93	95	87	84	96	94	98	110	110	237
Vascular lesions of nervous system (330-334)	107	99	107	104	101	98	100	93	104	101	102	94	93	91
Coronary disease, angina (420)	90	84	144	125	115	124	114	102	109	97	86	84	94	88
Hypertension (440-447)	85	87	90	104	102	104	104	102	105	101	98	104	105	102
Chronic rheumatic heart disease (410-416)	130	117	96	103	106	100	99	103	97	98	90	94	78	97
Chronic endocarditis not spec. as rheumatic (421)	104	105	106	108	118	114	96	104	101	95	86	100	134	86
Other myocardial degeneration (422)	125	125	88	91	97	86	92	91	97	99	104	98	104	107
General arteriosclerosis (450)	118	117	89	92	94	86	90	93	93	100	102	104	88	118
Influenza (480-483)	132	128	87	94	98	96	90	91	97	98	99	100	93	88
Pneumonia (490-493)	75	103	86	88	93	106	111	109	86	97	100	118	93	155
Bronchitis (500-502)	59	79	51	71	84	86	91	107	99	108	122	130	81	76
Pneumoconiosis, occupational (523, 524)	(5)	(6)	(4)	11	(1)	(9)	(4)	(23)	136	196	227	44	(10)	—
Other chronic interstitial pneumonia (525)	80	50	150	91	108	113	100	140	73	104	92	107	(133)	(100)
Ulcer of stomach (540)	67	91	91	101	95	110	102	128	100	101	89	111	143	91
Ulcer of duodenum (541)	68	81	135	118	103	145	116	119	96	98	85	93	143	93
Gastritis, enteritis and diarrhoea (543, 571, 572)	91	101	140	124	121	108	89	111	88	95	82	94	113	86
Nephritis and nephrosis (590-594)	142	96	117	114	114	95	117	96	98	96	92	85	148	92
Hyperplasia of prostate (610)	147	107	126	115	120	109	105	97	101	97	87	76	106	98
Appendicitis (550-553)	118	80	114	107	111	121	62	119	87	101	107	87	111	76
Hernia of abdominal cavity (560, 561)	114	119	78	86	108	89	92	124	103	99	102	99	91	95
Intestinal obstruction without mention of hernia (570)	107	110	141	114	93	103	92	85	88	100	88	82	147	172
Cirrhosis of liver (581)	97	37	179	174	143	116	117	116	100	84	63	93	110	153
Cholelithiasis, cholecystitis (584, 585)	134	77	155	141	126	87	100	94	92	95	90	78	(58)	118
Motor vehicle accidents (E810-835)	87	127	91	95	92	123	83	109	99	94	81	115	64	155
Accidents in the home (E870.0-936.0)	94	82	96	92	104	91	81	105	97	104	103	105	114	113
Other accidents (Remr. of E800-962)	100	121	65	66	76	85	69	102	77	93	121	136	97	176
Suicide (E963, 970-979)	86	87	98	81	104	95	94	109	74	105	84	120	146	118
Other causes (Remainder)	116	116	100	97	100	92	97	96	94	100	98	95	101	122
All causes	100	100	100	100	100	100	100	100	100	100	100	100	100	100

81

Table DQ (ii). P.M.R's (65 and over) for certain causes of death, married women, by socio-economic groups, 1949-53

CAUSE OF DEATH and International Classification No.	1. Farmers	2. Agricultural workers	3. Higher administrative, etc.	4. Other administrative, etc.	5. Shop-keepers	6. Clerical workers	7. Shop-assistants	8. Personal service	9. Foremen	10. Skilled workers	11. Semi-skilled workers	12. Unskilled workers	13. Armed Forces (other ranks)	Un-occupied
Tuberculosis (001-019)	81	102	88	81	83	94	89	117	82	96	114	123	234	135
Tuberculosis, respiratory (001-008)	78	106	87	78	78	90	81	125	88	94	114	126	260	147
Tuberculosis, non-respiratory (010-019)	(100)	(71)	(100)	100	(114)	(125)	(150)	(67)	(40)	105	110	107	(160)	(50)
Syphilitic disease (020-029)	(50)	80	(57)	70	104	86	(86)	156	87	100	97	133	(150)	243
Acute poliomyelitis (080)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Malignant neoplasms, all sites (140-205)	94	91	114	108	105	117	100	101	98	100	97	97	107	76
Malignant neoplasm, stomach (151)	97	93	77	88	94	112	86	97	100	101	119	107	115	62
Malignant neoplasm, lung, bronchus (162, 163)	59	62	130	116	121	152	106	107	91	103	88	93	(70)	73
Malignant neoplasm, breast (170)	100	90	131	121	120	122	97	101	99	99	83	85	112	77
Malignant neoplasm, cervix uteri (171) (1950/53 only)	53	75	81	96	101	110	104	112	83	100	107	127	138	83
Malignant neoplasm, other parts of uterus (172-174) (1950/53 only)	100	80	81	109	79	122	89	117	83	113	100	85	(117)	76
Leukaemia, aleukaemia (204)	147	97	183	95	123	121	100	100	86	94	71	94	(100)	(100)
Diabetes (260)	82	99	78	88	99	71	92	81	113	103	120	113	71	62
Psychoses (300-309)	100	132	71	102	83	88	(78)	127	95	98	73	78	(67)	513
Vascular lesions of nervous system (330-334)	105	98	113	103	108	101	102	100	102	101	95	95	92	78
Coronary disease, angina (420)	87	88	131	116	110	110	106	102	103	99	94	90	99	76
Hypertension (440-447)	90	88	96	103	98	94	117	112	99	99	103	106	87	99
Chronic rheumatic heart disease (410-416)	113	114	97	100	89	99	97	100	89	102	99	96	96	90
Chronic endocarditis not spec. as rheumatic (421)	121	99	104	111	86	108	93	115	109	100	91	94	(63)	100
Other myocardial degeneration (422)	112	117	80	90	93	88	91	96	99	100	104	100	94	154
General arteriosclerosis (450)	114	101	96	86	85	87	102	88	101	102	98	112	117	122
Influenza (480-483)	132	120	71	86	97	94	115	88	106	96	110	106	124	60
Pneumonia (490-493)	88	100	84	86	87	99	116	100	96	98	108	114	120	157
Bronchitis (500-502)	78	85	47	72	76	86	85	107	103	108	123	130	91	64
Ulcer of stomach (540)	87	143	87	97	88	100	156	105	118	102	75	87	(100)	127
Ulcer of duodenum (541)	85	105	108	103	130	133	167	(100)	77	100	58	113	—	(67)
Gastritis, enteritis and diarrhoea (543, 571, 572)	81	107	97	107	98	90	125	120	109	95	106	107	(80)	(60)
Nephritis and nephrosis (590-594)	116	103	66	106	105	93	85	122	102	98	100	103	100	82
Pregnancy, childbirth, abortion (640-689)	—	∞	—	—	—	∞	—	—	—	—	—	—	—	—
Appendicitis (550-553)	142	71	164	119	105	109	(100)	(100)	92	94	69	117	—	(50)
Hernia of abdominal cavity (560, 561)	87	112	71	84	87	79	140	105	50	103	130	107	(140)	93
Intestinal obstruction without mention of hernia (570)	91	89	184	91	133	135	(70)	92	145	89	86	96	(100)	100
Cirrhosis of liver (581)	(46)	91	158	143	95	131	(86)	(112)	71	95	78	100	(200)	(100)
Cholelithiasis, cholecystitis (584, 585)	64	97	97	104	122	113	91	96	109	100	117	90	(71)	79
Motor vehicle accidents (E810-835)	87	52	71	112	100	129	172	(100)	87	97	64	119	(100)	314
Accidents in the home (E870.0-936.0)	100	74	100	111	103	98	97	73	105	101	97	93	118	216
Other accidents (Remr. of E800-962)	113	124	127	77	97	122	92	93	88	90	93	96	(75)	291
Suicide (E963, 970-979)	59	63	181	112	120	171	127	71	74	96	85	82	(133)	230
Other causes (Remainder)	112	113	94	103	99	92	95	98	101	98	97	100	117	90
All causes	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Table DQ (iii). P.M.R's (65 and over) for certain causes of death, single women, by socio-economic groups, 1949-53

CAUSE OF DEATH and International Classification No.	1. Farmers	2. Agricultural workers	3. Higher administrative, etc.	4. Other administrative, etc.	5. Shop-keepers	6. Clerical workers	7. Shop assistants	8. Personal service	9. Fore-women	10. Skilled workers	11. Semi-skilled workers	12. Unskilled workers	13. Armed Forces (other ranks)	Un-occupied
Tuberculosis (001-019)	—	(200)	(117)	107	131	167	(160)	106	(150)	71	145	—	—	96
Tuberculosis, respiratory (001-008)	—	(200)	(120)	109	150	186	(150)	103	(100)	70	133	—	—	96
Tuberculosis, non-respiratory (010-019)	—	—	(100)	100	(67)	(100)	(200)	118	∞	(73)	(200)	—	—	96
Syphilitic disease (020-029)	—	—	—	111	(33)	(100)	—	152	—	120	(67)	(100)	—	88
Acute poliomyelitis (080)	—	—	—	∞	—	—	—	∞	—	—	—	—	—	—
Malignant neoplasm, all sites (140-205)	110	93	119	111	108	145	110	101	120	103	103	106	—	93
Malignant neoplasm, stomach (151)	(70)	(171)	116	87	111	108	103	109	123	118	103	167	—	94
Malignant neoplasm, lung, bronchus (162, 163)	—	(50)	111	116	158	223	150	100	(50)	84	112	(100)	—	93
Malignant neoplasm, breast (170)	133	(78)	116	122	108	168	108	91	125	107	104	81	—	92
Malignant neoplasm, cervix uteri (171) (1950/53 only)	(200)	—	(167)	108	(114)	(120)	(167)	113	(100)	77	(17)	(250)	—	95
Malignant neoplasm, other parts of uterus (172-174) (1950/53 only)	—	—	157	122	169	156	(100)	106	(250)	88	127	(67)	—	88
Leukaemia, aleukaemia (204)	—	—	(100)	159	100	(225)	(200)	97	—	83	(120)	(300)	—	84
Diabetes (260)	(50)	(50)	(100)	101	118	158	(129)	107	(67)	105	87	(125)	—	94
Psychoses (300-309)	—	(100)	(50)	102	(70)	(129)	(100)	100	—	58	(33)	—	—	115
Vascular lesions of nervous system (330-334)	94	110	96	110	107	101	101	93	97	101	94	93	(50)	100
Coronary disease, angina (420)	79	84	102	121	105	148	96	101	132	96	86	77	—	94
Hypertension (440-447)	89	100	79	107	110	113	127	105	148	105	116	112	—	94
Chronic rheumatic heart disease (410-416)	163	(100)	92	98	119	127	142	104	127	106	116	114	—	94
Chronic endocarditis not spec. as rheumatic (421)	(167)	(200)	(89)	89	67	157	(89)	116	(150)	102	67	(180)	—	97
Other myocardial degeneration (422)	100	96	112	91	90	67	92	102	78	101	98	98	(200)	103
General arteriosclerosis (450)	127	127	92	87	90	67	84	92	80	89	96	122	—	110
Influenza (480-483)	186	(160)	117	79	104	67	95	107	(80)	106	102	77	—	102
Pneumonia (490-493)	68	86	87	82	97	72	105	100	69	102	100	89	∞	101
Bronchitis (500-502)	105	136	62	71	111	71	88	109	100	126	172	140	—	97
Ulcer of stomach (540)	(50)	—	(40)	89	117	200	(100)	119	(100)	102	(55)	(33)	—	98
Ulcer of duodenum (541)	—	—	(50)	154	(160)	(50)	(50)	85	(100)	96	(140)	(200)	—	92
Gastritis, enteritis and diarrhoea (543, 571, 572)	—	(500)	(80)	119	118	138	(120)	96	(150)	85	110	(67)	—	95
Nephritis and nephrosis (590-594)	(200)	—	(69)	112	76	115	92	84	(180)	105	104	(100)	—	102
Pregnancy, childbirth, abortion (640-689)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Appendicitis (550-553)	—	—	(200)	106	(33)	(400)	—	109	(100)	93	(167)	(200)	—	90
Hernia of abdominal cavity (560, 561)	—	(100)	(40)	86	155	(86)	(60)	133	—	100	(100)	(67)	—	95
Intestinal obstruction without mention of hernia (570)	(100)	—	(125)	115	122	234	(125)	92	(100)	97	125	(250)	—	92
Cirrhosis of liver (581)	∞	∞	(100)	94	—	(200)	—	114	—	136	(100)	—	—	94
Cholelithiasis, cholecystitis (584, 585)	—	—	(67)	150	(114)	(100)	(100)	79	(300)	97	(133)	—	—	94
Motor vehicle accidents (E810-835)	—	(100)	(25)	84	(89)	(100)	(50)	75	(200)	(85)	(75)	(400)	—	111
Accidents in the home (E870.0-936.0)	(114)	(140)	80	73	65	59	(40)	54	(78)	67	66	108	—	133
Other accidents (Remr. of E800-962)	(167)	(200)	(100)	82	71	71	(56)	83	(25)	69	(50)	(100)	∞	121
Suicide (E963, 970-979)	(100)	—	(133)	128	143	(100)	(167)	50	—	78	85	82	(200)	110
Other causes (Remainder)	102	79	97	96	95	90	93	101	102	92	95	101	—	103
All causes	100	100	100	100	100	100	100	100	100	100	100	100	(100)	100

Table DR (i). S.M.R's (20-64) and P.M.R's (65 and over) for certain causes of death, males, by social class, 1949-53

CAUSE OF DEATH and International Classification No.	Standardised Mortality Ratios by Social Class:—					Proportionate Mortality Ratios by Social Class:—				
	I	II	III	IV	V	I	II	III	IV	V
Aneurysm of aorta without mention of syphilis (022.0) (1952/3 only)	(56)	89	111	86	112	131	135	88	100	92
Aneurysm of aorta with mention of syphilis (022.1) (1952/3 only)	(50)	(64)	116	91	100	(75)	100	95	113	113
Syphilitic disease excl. aneurysm of aorta without mention of syphilis (020-029 less 022.0)	68	60	102	99	146	107	82	103	86	122
Infectious hepatitis (092)	236	104	90	94	98	271	156	86	84	52
Benign neoplasm of brain and other parts of nervous system (223)	(41)	87	98	105	113	(150)	118	95	87	79
Unspecified neoplasm of brain and other parts of nervous system (237)	117	93	109	80	96	145	124	103	70	74
Asthma (241)	79	86	101	95	121	113	99	104	97	92
Thyrotoxicosis with or without goitre (252)	(88)	105	98	92	106	(120)	148	96	100	(39)
Pernicious and other hyperchromic anaemias (290)	(45)	83	95	84	145	93	108	104	97	89
Multiple sclerosis (345)	104	89	111	73	96	155	137	96	84	62
Paralysis agitans (350)	133	72	118	73	87	149	124	103	80	70
Epilepsy (353)	37	37	48	90	189	(55)	71	94	118	121
Motor neurone disease and muscular atrophy (356)	73	96	97	101	103	127	116	106	87	65
Otitis media and mastoiditis (391-393)	(35)	50	98	114	160	(50)	106	79	69	187
Rheumatic fever (400-402)	100	81	101	97	113	(150)	81	89	121	123
Acute and subacute endocarditis (430)	79	95	93	107	115	333	93	92	93	76
Aortic aneurysm specified as non-syphilitic, and dissecting aneurysm (451)	148	101	112	63	96	205	116	101	66	86
Diseases of veins (460-464)	130	104	104	87	90	108	110	97	88	109
Pulmonary embolism and infarction (465)	139	100	103	79	104	117	113	99	108	79
Bronchiectasis (526)	43	63	98	100	154	78	91	100	91	121
Rheumatoid arthritis and allied conditions (722)	(18)	70	110	91	106	104	95	107	110	77
Osteo-arthritis (arthrosis) and allied conditions (723)	(100)	53	96	150	112	146	87	91	139	90

Table DR (ii). S.M.R's (20-64) and P.M.R's (65 and over) for certain causes of death, married women, by social class, 1949-53

CAUSE OF DEATH and International Classification No.	Standardised Mortality Ratios by Social Class:—					Proportionate Mortality Ratios by Social Class:—				
	I	II	III	IV	V	I	II	III	IV	V
Aneurysm of aorta without mention of syphilis (022.0) (1952/53 only)	—	(89)	139	(38)	(71)	(50)	92	94	127	(100)
Aneurysm of aorta with mention of syphilis (022.1) (1952/53 only)	—	(33)	(113)	(67)	(167)	—	(200)	(100)	(50)	—
Syphilitic disease excl. aneurysm of aorta without mention of syphilis (020-029 less 022.0)	(39)	55	98	103	142	(64)	75	97	92	137
Infectious hepatitis (092)	167	120	94	86	97	(100)	130	88	(100)	(113)
Uterine fibromyoma (214)	100	108	100	100	87	(150)	(100)	90	(100)	(67)
Benign neoplasm of ovary (216)	(86)	97	95	130	92	(167)	125	98	73	108
Benign neoplasm of brain and other parts of nervous system (223)	121	101	94	108	102	(150)	(113)	86	(129)	(67)
Unspecified neoplasm of brain and other parts of nervous system (237)	100	115	102	82	92	(160)	130	97	81	76
Asthma (241)	111	93	102	102	100	133	108	104	87	89
Thyrotoxicosis with or without goitre (252)	96	107	94	112	106	100	137	93	107	75
Pernicious and other hyperchromic anaemias (290)	(20)	74	93	128	139	69	99	99	106	108
Multiple sclerosis (345)	176	111	99	88	75	(120)	188	95	57	50
Paralysis agitans (350)	100	97	105	75	109	118	120	103	90	76
Epilepsy (353)	(53)	67	89	132	156	(50)	(75)	90	127	144
Motor neurone disease and muscular atrophy (356)	175	111	101	98	76	(114)	167	86	85	74
Otitis media and mastoiditis (391-393)	(57)	61	103	124	117	—	(100)	(82)	(150)	(133)
Rheumatic fever (400-402)	(50)	66	97	113	155	(33)	71	111	100	130
Acute and subacute endocarditis (430)	87	83	93	122	126	(150)	(89)	104	(63)	(114)
Aortic aneurysm specified as non-syphilitic, and dissecting aneurysm (451)	122	107	110	85	81	(73)	105	109	70	100
Diseases of veins (460-464)	83	98	97	101	111	131	90	101	105	100
Pulmonary embolism and infarction (465)	141	91	96	115	96	109	89	101	108	91
Bronchiectasis (526)	40	60	102	122	131	(50)	108	90	116	121
Rheumatoid arthritis and allied conditions (722)	79	82	105	105	111	96	93	104	114	86
Osteo-arthritis (arthrosis) and allied conditions (723)	(50)	167	104	(88)	(112)	(140)	115	96	96	86

Table DR (iii). S.M.R's (20-64) and P.M.R's (65 and over) for certain causes of death, single women, by social class, 1949-53

CAUSE OF DEATH and International Classification No.	Standardised Mortality Ratios by Social Class:—					Proportionate Mortality Ratios by Social Class:—				
	I	II	III	IV	V	I	II	III	IV	V
Aneurysm of aorta without mention of syphilis (022.0) (1952/3 only)	—	(50)	(100)	—	∞	—	(140)	(80)	(120)	(100)
Aneurysm of aorta with mention of syphilis (022.1) (1952/3 only)	—	—	(100)	(100)	—	—	(100)	(200)	—	—
Syphilitic disease excl. aneurysm of aorta without mention of syphilis (020-029 less 022.0)	—	(18)	89	115	243	—	83	126	131	(100)
Infectious hepatitis (092)	—	120	87	(56)	(50)	—	(160)	(100)	(60)	(100)
Uterine fibromyoma (214)	(100)	90	118	(40)	(60)	—	(200)	(60)	(50)	—
Benign neoplasm of ovary (216)	—	71	78	108	(133)	—	100	100	(90)	(100)
Benign neoplasm of brain and other parts of nervous system (223)	(50)	74	107	92	(117)	∞	—	(100)	(100)	—
Unspecified neoplasm of brain and other parts of nervous system (237)	(200)	100	78	86	(78)	—	138	122	(38)	—
Asthma (241)	(70)	80	94	65	63	(67)	128	94	72	(88)
Thyrotoxicosis with or without goitre (252)	(25)	85	73	82	110	(50)	93	84	139	(67)
Pernicious and other hyperchromic anaemias (290)	(100)	(27)	84	63	(100)	(60)	113	107	69	200
Multiple sclerosis (345)	(38)	67	94	73	46	(100)	133	100	79	(100)
Paralysis agitans (350)	(50)	75	80	85	(71)	(100)	132	95	93	111
Epilepsy (353)	(11)	7	26	58	65	(100)	(35)	72	75	(250)
Motor neurone disease and muscular atrophy (356)	—	110	100	83	(60)	(100)	107	125	71	—
Otitis media and mastoiditis (391-393)	(100)	(22)	60	(80)	(200)	∞	(67)	(33)	(50)	—
Rheumatic fever (400-402)	(50)	50	86	74	(71)	—	(67)	(150)	(80)	—
Acute and sub-acute endocarditis (430)	(150)	55	83	117	(150)	—	240	(60)	(60)	∞
Aortic aneurysm specified as non-syphilitic and dissecting aneurysm (451)	(100)	108	84	92	(167)	(100)	123	96	154	(50)
Diseases of veins (460-464)	—	97	112	90	(75)	(250)	85	95	131	(100)
Pulmonary embolism and infarction (465)	—	58	83	122	(100)	(200)	109	120	110	(150)
Bronchiectasis (526)	(20)	34	77	78	106	(150)	85	117	68	(100)
Rheumatoid arthritis and allied conditions (722)	(33)	59	74	63	(38)	(140)	101	116	100	(71)
Osteo-arthritis (arthrosis) and allied conditions (723)	—	(100)	(114)	(20)	—	(100)	74	70	94	—

CHAPTER IV. GEOGRAPHICAL VARIATIONS

SOCIAL class and occupational analysis of mortality, by geographical area and population density, are given in Tables 9, 10, and 11, for all causes and for three major cause groups.

For men and for married women aged 20-64 mortality from all causes was highest in the Northern and North Western regions of England and in Wales, and lowest in the Eastern and Southern regions (Table DS). In a general way social class differences within the regions corresponded with the national pattern, though in the Northern and North Western regions (each sex), the East and West Ridings (men), and Wales (married women), mortality was higher in Social Class II than Social Class I. Among married women, mortality in the London and South Eastern region was much higher in Social Class I than in any of the other classes, and well above the national average. In Wales men and married women in Social Class III had particularly high mortality, the S.M.R. for each sex being two units higher than the corresponding S.M.R's for Social Class V. Mortality in Social Class V was conspicuously high in the Northern and North Western regions, with East and West Ridings coming close behind. In these three regions male mortality in Social Class V was some 40 to 50 per cent higher than in the Eastern and Southern regions.

Table DS. All causes: S.M.R's (20-64), males, married women, by social class, England and Wales, Regions, Conurbations and Urban/Rural aggregates 1949-53

	Males						Married Women					
	All Classes	Social Class					All Classes	Social Class				
		I	II	III	IV	V		I	II	III	IV	V
England and Wales	**100**	**97**	**86**	**101**	**94**	**118**	**100**	**96**	**88**	**101**	**104**	**110**
Regions:												
Northern	112	94	97	110	107	136	114	82	92	113	125	131
East and West Ridings	106	92	93	109	98	129	104	92	89	104	110	117
North Western	115	101	103	114	107	137	114	90	99	113	119	128
North Midland	91	99	81	93	82	106	97	91	84	96	102	105
Midland	102	96	85	101	99	122	101	89	86	102	102	110
Eastern	82	95	76	82	76	93	88	89	85	87	90	95
London and South Eastern ..	95	96	80	95	92	110	92	105	81	93	93	94
Southern	86	97	80	87	81	89	89	98	84	89	88	93
South Western	92	95	79	94	83	108	94	88	87	97	101	109
Wales (including Monmouthshire) ..	113	103	95	123	101	121	111	93	99	118	108	116
Conurbations:												
Greater London	97	94	80	96	97	113	91	105	80	92	94	91
South East Lancashire	120	104	105	118	111	145	115	89	94	116	117	134
West Midlands	109	97	89	106	114	132	102	95	87	103	105	109
West Yorkshire	112	92	97	111	110	137	108	96	94	107	121	121
Merseyside	124	101	107	122	121	149	117	93	100	117	137	127
Tyneside	122	84	106	119	117	147	127	100	101	129	129	145
Urban/Rural Aggregates:												
Conurbations	106	95	89	105	107	128	102	101	86	102	108	110
Areas outside conurbations:												
Urban areas with populations of 100,000 and over	107	91	96	106	105	124	105	93	94	105	111	116
Urban areas with populations of 50,000 and under 100,000	100	98	88	98	95	120	98	97	86	98	103	112
Urban areas with populations under 50,000	98	95	91	98	93	111	101	92	92	101	106	112
Rural Districts	84	105	74	87	77	93	93	90	85	93	96	101

Within the six separate conurbations, mortality for each sex was below the national average at ages 20-64 in Greater London, and above the average in each of the others. With minor irregularities a social class gradient of mortality increasing from Social Class I to Social Class V was present in each area with the one notable exception of married women in Greater London; in this conurbation, as foreshadowed by the figures for the London and South Eastern region as a whole, mortality was high in Social Class I, low in Social Class II, and more or less equal (and well below the corresponding national levels) in Social Classes III, IV, and V. Men in Social Class V in the South East Lancashire, Merseyside and Tyneside conurbations, and married women in the last of these, had mortality ratios almost 50 per cent higher than those of the standard national population.

Within the national density aggregates, the ratios for the combined conurbations represent a compromise between the relatively low mortality in the Greater London conurbation and the relatively high mortality in the five other conurbations. Both for men and married women, mortality was a little higher in

the aggregation of urban areas with a population of 100,000 and over than in the aggregated conurbations. S.M.R's close to the national average were recorded by the two classes of smaller towns, and the aggregated rural districts had mortality well below average. In most of these aggregates the social class distribution was similar, for each sex, to that for the country as a whole; but in contrast to the general pattern, men in the aggregated rural districts had their highest mortality in Social Class I, with an S.M.R. of 105 compared with an S.M.R. of 84 for all classes in rural districts.

Table DT. All causes: S.M.R's (20-64) males, by social class, Urban/Rural aggregates (excluding conurbations) within regional groups, 1949-53

		All Classes	Social Class				
			I	II	III	IV	V
North of England	Urban areas	111	94	101	108	103	132
	Rural Districts	91	106	83	95	87	101
Midlands and Eastern	Urban areas	95	90	88	93	91	109
	Rural Districts	78	109	68	82	71	88
South of England	Urban areas	93	95	85	94	89	103
	Rural Districts	79	103	72	80	75	88
Wales I (South East)	Urban areas	119	103	105	127	107	125
	Rural Districts	106	113	86	121	95	108
Wales II (Remainder)	Urban areas	108	101	101	111	101	117
	Rural Districts	99	94	81	113	87	115

Analysis of mortality in five geographical areas, separated into their urban (excluding conurbations) and rural components, has been carried out for males only (Table 9A), and the S.M.R.'s are shown in Table DT. In each area total mortality in the urban areas was substantially higher than in the rural districts, and this relationship was regularly maintained in Social Classes II to V. In Social Class I, however, in each of the geographical areas except Wales II, mortality was much higher in rural than in urban areas. Moreover, as for the national aggregate of rural areas, in each of these regional groups except Wales I and II, mortality in the rural areas was higher in Social Class I than in the other social classes. The high Social Class III rate of mortality noted above (Table DS) for Wales is shown by Table DT to have occurred both in Wales I (South East) and in Wales II (Remainder), and in both their urban and rural districts. Particularly high, in comparison with the other social classes and with rural districts elsewhere, was the Social Class III S.M.R. in the rural districts of South East Wales, attributable to the location of much of the Welsh coal mining industry within these districts (but see page 94 for a discussion of the effect of incorrect recording of occupation in the mining industry).

Cardio-vascular diseases

Mortality from cardio-vascular causes is tabulated in Table 9A, B, as cause group A. The national distribution, of mortality from cardio-vascular diseases at ages 20-64, by Social Class differed between men and

Table DU. Cardio-vascular diseases: S.M.R's (20-64) by social class, England and Wales and Urban/Rural aggregates, 1949-53

	All Classes	Social Class				
		I	II	III	IV	V
(a)Males						
England and Wales	100	121	102	102	86	103
Conurbations	105	123	107	105	97	104
Greater London	93	120	93	93	85	89
Areas outside conurbations:						
Urban areas with populations of 100,000 and over	106	113	114	107	93	108
Urban areas with populations of 50,000 and under 100,000	103	127	106	104	89	107
Urban areas with populations under 50,000	101	120	108	102	87	103
Rural Districts	84	118	83	89	71	85
(b) Married women						
England and Wales	100	86	86	101	108	111
Conurbations	100	89	83	102	110	107
Greater London	84	90	73	87	89	84
Areas outside conurbations:						
Urban areas with populations of 100,000 and over	105	82	93	103	114	118
Urban areas with populations of 50,000 and under 100,000	95	87	85	98	102	116
Urban areas with populations under 50,000	103	85	90	104	114	116
Rural Districts	95	82	83	96	101	104

married women, mainly because of sex differences in the social class gradients of coronary disease and of vascular lesions of the central nervous system, which, for this analysis, have been included in the group. For men, mortality was highest in Social Class I, lowest in Social Class IV, more or less equal in the others; for married women, mortality was highest in Social Classes IV and V, and lowest in Social Classes I and II.

Mortality by social class within the national urban/rural aggregates is shown in Table DU. For men and for married women, mortality was highest in the aggregate of urban areas with population 100,000 and over, and lowest in the rural districts, though for married women a still lower mortality ratio occurred in Greater London. In each class of area, mortality of men was highest in Social Class I or II and lowest in Social Class IV; and for married women, mortality was consistently highest in Social Class V, except for the aggregated conurbations. There mortality was highest in Social Class IV. In some of the individual conurbations, however, it was highest in Social Class V, and in Greater London, quite exceptionally, the ratio was highest in Social Class I.

Table DV. Cardio-vascular diseases: S.M.R's (20-64) males, by social class, England and Wales, Urban/Rural aggregates within regional groups, 1949-53

| | | All Classes | Social Class | | | | |
			I	II	III	IV	V
England and Wales		**100**	**121**	**102**	**102**	**86**	**103**
North of England	Urban areas	115	129	125	116	99	123
	Rural Districts	97	125	103	102	86	96
Midlands and Eastern	Urban areas	93	111	101	95	78	91
	Rural Districts	77	117	77	82	66	81
South of England	Urban areas	96	116	100	97	83	96
	Rural Districts	76	114	75	80	65	79
Wales (including Monmouthshire)		109	134	108	120	88	110
Wales I (South East)	Urban areas	114	129	129	123	91	112
	Rural Districts	103	156	99	113	87	93
Wales II (Remainder)	Urban areas	110	134	115	107	98	112
	Rural Districts	98	105	78	129	72	112

For men only, mortality from the group of cardio-vascular diseases has been analysed in Table 9A by urban and rural components of broad geographical areas (Table DV). In each of the areas distinguished, mortality for All Classes was higher in the urban than the rural districts, and with one exception was highest in Social Class I and lowest in Social Class IV. The exception was in the rural districts of Wales II where, in strong contrast with urban areas in the same sub-region and in contrast also with rural districts of Wales I, mortality was highest in Social Class III, with Social Class I coming third after Social Class V.

Respiratory Diseases

Table DW. Respiratory diseases: S.M.R's (20-64) by social class, England and Wales and aggregate summary, 1949-53

| | All Classes | Social Class | | | | |
		I	II	III	IV	V
		(a) Males				
England and Wales	**100**	**57**	**66**	**102**	**97**	**142**
Conurbations	118	62	74	115	127	172
Greater London	106	60	68	106	115	152
Areas outside conurbations:						
Urban areas with populations of 100,000 and over..	115	61	82	111	123	154
Urban areas with populations of 50,000 and under 100,000	95	57	60	93	100	137
Urban areas with populations under 50,000	92	59	70	92	93	118
Rural Districts	65	44	52	73	59	86
		(b) Married women				
England and Wales	**100**	**62**	**65**	**100**	**113**	**137**
Conurbations	112	73	66	110	135	156
Greater London	95	74	62	97	109	123
Areas outside conurbations:						
Urban areas with populations of 100,000 and over..	114	62	79	110	134	152
Urban areas with populations of 50,000 and under 100,000	95	68	60	94	107	130
Urban areas with populations under 50,000	92	48	63	90	103	120
Rural Districts	77	52	60	77	89	94

For the purpose of the analysis in Table 9A, B, the group of respiratory diseases, Group B includes respiratory tuberculosis and malignant neoplasms of the respiratory system in addition to influenza, bronchitis, pneumonia and the other diseases customarily classified as of the respiratory system.

Among both men and married women the national social class distribution indicated a steep gradient of increasing mortality from Social Class I to Social Class V. Within the national urban/rural aggregates, (Table DW) mortality (all classes) for each sex was highest in the conurbations and other large urban areas, lower in the smaller towns, and very much lower in the aggregated rural districts. In Greater London male mortality (S.M.R. 106) was above the national average, though less high than in the other conurbations and largest towns, but the mortality of married women (S.M.R. 95) was below the national average.

In each class of area there was a very steep gradient of increasing mortality, both for men and married women, from Social Class I to Social Class V. In Social Class I, mortality of men was level in all the urban areas but lower in rural districts. For married women mortality was low also in the small towns. In the other Social Classes differences between one area and another tended to be wider, the disparity increasing from Social Class II up to Social Class V where mortality of males in the conurbations was precisely double that in the rural areas.

Table DX. Respiratory diseases: S.M.R's (20-64) males, by social class, England and Wales, Urban/Rural aggregates within regional groups, 1949-53

| | | All Classes | Social Class | | | | |
			I	II	III	IV	V
England and Wales		**100**	**57**	**66**	**102**	**97**	**142**
North of England	Urban areas	108	50	77	103	103	154
	Rural Districts	70	45	51	76	68	93
Midlands and Eastern	Urban areas	94	60	71	90	103	126
	Rural Districts	57	37	40	64	49	80
South of England	Urban areas	88	62	65	90	90	110
	Rural Districts	62	49	51	64	62	81
Wales (including Monmouthshire)		113	57	69	133	107	131
Wales I (South East)	Urban areas	129	70	87	139	121	146
	Rural Districts	106	37	55	148	87	118
Wales II (Remainder)	Urban areas	95	53	65	111	94	107
	Rural Districts	80	42	54	101	81	90

For men only, Table DX summarises S.M.R's for the group of respiratory diseases by urban and rural components of selected geographical areas, and indicates that all three of the factors differentiated in the table—geographical area, urban-rural environment, and social class—exerted an important effect upon levels of mortality. In each area mortality for all classes was substantially higher in the urban than the rural districts, and, with one exception, this urban disadvantage showed itself in each social class. The exception was in Social Class III in the rural districts of Wales I (South East) where, with an S.M.R. of 148, mortality was higher than in the corresponding urban areas; it was also 25 per cent higher than for Social Class V within the same area, and four times as high as for Social Class I.

Within Social Classes I and II geographical differences were relatively small, in contrast with larger geographical differences in the mortality ratios for Social Classes III, IV, and V. Thus, within Social Class V, urban mortality ranged from 154 in the North of England to 110 in the South; and rural mortality in Social Class V ranged from 118 in Wales I (South East) to 81 in the South of England.

Selected occupational groups

Table 10 analyses the mortality, from all causes, of men in nine selected occupational groups by urban and rural areas within four regional groups. The S.M.R's at 20-64 are set out in Table DY.

For men in *agricultural* occupations S.M.R's in each area were below the general national average (all men=100), and also below the all males S.M.R's for each area. The ratios were higher in urban areas than in rural districts, and a little higher in the North of England and Wales than in the South of England.

The mortality of *coal miners* showed little urban-rural variation. In the rural districts, and in the Welsh urban areas, S.M.R's were somewhat higher than the corresponding S.M.R's for all males in the same areas, with greatly elevated mortality in Wales.

Chemical workers had mortality ratios substantially below the national average in all areas except rural districts of Wales, where the S.M.R. (105) was based on only 88 deaths. Only in this area was the rural S.M.R. higher than the urban S.M.R.

Men employed in *building and contracting*, with all S.M.R's below 100, had somewhat higher ratios in the Northern regions than elsewhere.

Table DY. All causes: S.M.R's (20-64) males, in selected occupational groups, Urban/Rural aggregates within regional groups, 1949-53

	Order and sub-order	England and Wales	North of England		Midlands and Eastern		South of England		Wales (including Monmouth-shire)	
			Urban areas	Rural districts	Urban areas	Rural districts	Urban areas	Rural districts	Urban areas	Rural districts
Agricultural, etc. Occupations ..	II	73	91	67	82	62	78	63	87	73
Coal Miners	III. 1	112	98	101	90	79	85	106	146	139
Workers in Chemical and Allied Trades	V. 2	85	89	76	77	56	66	48	67	105
Workers in Building and Contracting	XIV	88	96	78	83	66	74	66	75	71
Railway Transport Workers ..	XVII. 1	96	98	94	84	80	79	71	96	84
Road Transport Workers ..	XVII. 2	101	110	90	94	77	85	72	117	95
Dock Labourers	Occ. Gp. 681	119	134	55	103	74	100	97	117	133
Commercial Occupations ..	XVIII. 1	94	98	90	84	78	76	73	103	93
Clerks, Typists, etc. ..	XXIII	101	108	102	93	88	86	78	104	126
All Males		100	111	91	95	78	93	79	117	102

Railway transport workers also had S.M.R's below the national average, but higher in the North of England and in Wales than in the two other regional groups.

Urban mortality among *road transport workers* was above the national average in the North of England and in Wales, but rural S.M.R's in each regional group were rather lower than the corresponding ratio for all men.

In the Northern group of regions there was a very wide disparity between the urban (134) and the rural (55) mortality of *Dock labourers*. In the Welsh region, on the other hand, the rural S.M.R. (133) exceeded that for the urban districts (117).

Men engaged in *commercial* occupations (mainly shopkeepers, travellers and shop assistants) tended to have ratios somewhat below average, and with a small, regular excess of urban over rural mortality.

Clerical workers in the Northern and Welsh regional groups had S.M.R's above the national average. The high S.M.R's in the rural districts of Wales (126) reversed the normal urban/rural trend in this region, as did the S.M.R's for chemical workers and dock labourers.

CHAPTER V. MORTALITY OF OCCUPATIONAL GROUPS OF MEN AND WOMEN

THE ensuing chapter is concerned with a study of mortality from all and certain important individual causes of death, from the point of view of a person's occupation. Except where otherwise stated discussion is concerned with population and deaths of males aged 20-64.

Occupations are considered in the order given in the Classification of Occupations* and for each group discussed the more important features of mortality are pointed out, together with warnings as to the validity of the data presented, where they are thought to be suspect.

Certain general limitations of the data have been discussed in Chapter I and it will suffice to enumerate them here:

(a) Rates based on small numbers (page 6)
(b) Errors in occupational statements (page 6)
(c) Difficulties of interpretation (page 7)
(d) Limitations in analysis of mortality of married women (page 10)
(e) Limitations in analysis of mortality of single women (page 11).

In amplification of (a) above it should be pointed out that, with about 600 different occupational groups (men, and married and single women) and 40 causes of death, formal tests of significance can be carried out 24,000 times. If the data had been distributed at random, a level of statistical significance of P=.05 would have been reached in something over 1,000 occasions purely by chance, and therefore it is probable that on some occasions a high or low figure which has been described as "significant" in this commentary has arisen as a result of chance fluctuation.

Further to (b) above, there is a difficulty of interpretation particularly relevant to a study of mortality of some occupational groups. Normally, errors in occupational statements are fairly evenly distributed over all age groups. In certain occupations, however, a large error may arise in one age group only. This will affect not only the figures returned for general mortality but also S.M.R's for individual causes of death to a degree depending on the importance of a particular cause in a particular age group. An example will help to clarify this point. It is thought that the comparatively early retirement age of police constables has resulted in considerable discrepancy in the occupational statement at death of retired policemen above 55 years of age. The informant at death registration often regards such a man as a retired policeman and will give this as his occupation. At census the man, having to give his employer's address, etc., will be more likely to give his occupation at the time. Thus, there results a discrepancy between numerator and denominator used in the calculation of death rates which affects the older age groups only, for at the younger ages there is little cause for such errors to arise.

In those occupations where it is suspected that errors in the recording of occupations have resulted in a misleading S.M.R. being returned, the use of the ratio $\dfrac{\text{S.M.R. for individual cause of death at ages 20-64}}{\text{S.M.R. for all causes at ages 20-64}}$ will provide a means of comparison of mortality from individual causes between different occupations. It will be seen that such a ratio is, in effect, a proportional mortality rate which has been standardised for age differences, and, because of this, is liable to the special difficulties of interpretation inherent in all proportional rates. Difficulties also arise when the errors in occupational recordings are not evenly distributed over all age groups. Table ER (page 151) shows such ratios for the 110 occupations given in Table 3A(i) and for the numerically important causes of death.

Index of occupations

An index of occupations on page 164 gives details of the pages on which mortality data for any given occupation can be found both for the commentary and the tabular matter.

"Other" Accidents

The term "other" accidents includes all accidents not occurring in the home and not caused by motor vehicles and therefore is mainly an indication of the amount of mortality likely to occur as a result of risks connected with a person's occupation.

Further Information

Details in respect of occupations (of males only) not fully analysed in this volume may be available on repayment at the General Register Office.

*Census 1951, Classification of Occupations, H.M.S.O., reprinted 1956.

I. Fishermen

There were 14,052 fishermen between the ages of 20 and 64 enumerated at the census. During 1949-53 there were 563 deaths in the same age group with 458 expected, giving an S.M.R. of 123. Table 3A(ii) shows that they had significantly high S.M.R.'s from malignant neoplasms in general (137) and from cancer of stomach *206* in particular. The table below gives details of cancer deaths registered and expected at various sites among fishermen.

Cause of death	Number of deaths of males aged 20-64	
	Registered	Expected
Cancer of:		
Pharynx-oesophagus	4	3
Tongue and mouth	1	1
Stomach	37	18
Large intestine and rectum	10	13
Biliary passages liver and pancreas ..	8	4
Nose, etc. and larynx	3	1
Lung	48	37
Genito-urinary organs	14	8
Other malignant neoplasms	14	14
Leukaemia	1	3
Cancer (all sites)	140	102

The excessive cancer mortality was not limited to cancer of stomach, but was also found in the respiratory tract and in the genito-urinary organs, though possibly not to the same extent.

As might be expected from the hazardous nature of their occupation, deaths from "other" accidents were more frequent than in the average male population, the S.M.R. for this cause being returned as 336.

The mortality experience of fishermen's wives was unfavourable when compared with that of all married women. The S.M.R. was returned as 126.

II. Agricultural, Horticultural and Forestry Occupations

The S.M.R. of 73 for this order of occupations was identical with that recorded in 1930-32. The relative position to that of all males of 20-64 enumerated in rural areas was also almost unchanged; the S.M.R. in 1930-32 was 81, and in 1949-53 it was 84 (Table 9A).

The table below gives age-specific death rates for the two agricultural socio-economic groups, and for all males in rural areas for the same period.

Occupation group	Code No.	Death rates per 100,000 population per annum					S.M.R.
		20-	25-	35-	45-	55-64	
Farmers (Socio-economic Group 1)	010, 011, 020	205	145	223	545	1,570	70
Agricultural Workers (Socio-economic Group 2)	Remainder of 010-030	130	144	228	587	1,661	75
All males in rural areas 1949-53	—	145	167	255	667	1,844	84
All males in rural areas 1930-32	—	313	457	842	1,908	81 (1931 Standard)	

This table shows that for all causes of death over the age of 35 years, the farmers had a slightly more favourable mortality experience than other agricultural workers. Agricultural workers showed lower death rates for each age group, and farmers for each group except 20-24, when compared with the death rates of all males in rural areas. This was probably due both to the healthy conditions of work and to selection of the fitter members of the rural population for the agricultural industry. The high death rate of farmers in the 20-24 year age group is due to an abnormally large number of motor vehicle and other accidental causes. The general improvement in the death rate of males in rural areas since 1930-32 is also shown for comparison in the table above. This is particularly noticeable at the younger ages. It is impossible to compare the individual occupation groups with those for 1930-32 owing to changes in the occupational classification. One of these was the re-allocation of farmers' relatives to other agricultural workers (019) instead of being classified with farmers as was the case in 1930-32.

A study of the individual causes of death of the two agricultural socio-economic groups (1 and 2) reveals that for most causes the mortality experience of the farming industry was extremely favourable. With non-respiratory tuberculosis the S.M.R.'s of *93* and 108 for the Socio-economic Groups 1 and 2 respectively were relatively less favourable than with the respiratory type with S.M.R.'s of 42 and 54.

There were 39 deaths from acute poliomyelitis among farmers as against 9 expected, (S.M.R. 433). Even with the small number involved this result is, statistically, highly significant. Interpretation of this figure should take into account the high figures observed for many of the occupations of Social Classes I and II. For the wives of farmers the corresponding S.M.R. was *200* (12 deaths registered against 6 expected). Among agricultural workers there were 32 deaths registered and 27 expected (S.M.R. *119*) and for their wives, 18 deaths registered against 13 expected (S.M.R. *138*). In neither of the last two cases was the departure from expectation statistically significant.

Deaths from motor vehicle accidents gave a S.M.R. of 144 for agricultural workers and 120 for farmers. The high death rate from this cause for the young farmer has already been mentioned. Farm workers are exposed to danger of injury by farm tractors in addition to their normal exposure to motor vehicle accidents on the public highway.

Both farmers and agricultural workers showed a greater tendency to commit suicide than is general in the male population aged 20-64, the respective S.M.R.'s being 138 and 115.

Farmers (Occupation Code 010) formed 94 per cent of Socio-economic Group 1, and the mortality experience of the two groups was therefore very similar.

Deaths and S.M.R.'s for *farm bailiffs and farm foremen* (Occupation Code 011) are shown in Table 3A(ii). The all causes S.M.R. for this occupation was 55. For individual causes numbers of deaths were mostly small, but for the more common causes of death the S.M.R. was low in each case, with the exception of deaths from motor vehicle accidents. It is possible that there was some under-recording of the occupation of farm foremen on death certificates resulting in an abnormally low S.M.R. The individual occupations included under this code were similar in some respects to those in the *land agent and estate manager* group (Occupation Code 020) which, although very small, showed an excessive S.M.R. of 150. (The latter may have been affected by difficulties in separation of agricultural and non-agricultural estate agents.) In view of certain similarities in the work involved it appears unlikely that the mortality experience of the two groups would be so widely different.

Another occupation in which the S.M.R. was abnormally low is that of *agricultural machine owners and drivers* (Occupation Code 022). The S.M.R. of 38 is probably an underestimate of the true position.

Other agricultural occupations, including *shepherds and foresters*, all showed basically similar mortality experiences to that for Socio-economic Group 2.

In general the wives of men in the agricultural industry showed S.M.R.'s above those of their husbands, and more nearly approaching the standard for the country as a whole.

The S.M.R. for all causes for Socio-economic Groups 1 and 2 were 93 and 95, respectively. Of the individual causes of death, that which commands attention is the S.M.R. of 177 for wives of farmers for deaths resulting from pregnancy, childbirth and abortion, there being 78 such deaths in 1949-53 instead of 44 expected. The S.M.R. for this cause in Socio-economic Group 2 was 106. The reason for the high figure for farmers' wives is not clear. Their experience in 1931 was somewhat similar, though the difference then was not quite so marked.

Single women in farming also showed a favourable general mortality. The S.M.R.'s for Socio-economic Groups 1 and 2 were 72 and 64 respectively. In both groups deaths assigned to respiratory tuberculosis were significantly fewer than expected.

III. Mining and Quarrying Occupations

In 1951 males aged 20-64 engaged in, or retired from, mining and quarrying occupations numbered 547,107; of these 508,728 were engaged in coal mining.

The table below shows the population of coal miners by age at each Census since 1911.

	Population of coal miners (occupied and retired) at each census							
	16-	20-	25-	35-	45-	55-	65 and over	20-64
1911	114,530*	132,074	225,966	170,817	105,485	56,938	26,389	691,280
1921	134,793	136,613	221,410	176,744	134,734	71,699	36,133	741,200
1931	89,979	109,596	214,090	161,656	134,568	100,255	58,379	720,165
1951	27,905	39,924	124,055	134,369	126,405	83,975	91,788	508,728

*Estimated number, the total at ages 15-20 being 143,162.

This table shows clearly that the failure of young men to enter the coal mining industry, which was commented on in the Decennial Supplement for 1931,[†] was continued in the years between the censuses in 1931 and 1951. At the older ages the tendency to move away from the industry has not been marked.

In addition to a move away from the industry there was also a fall in the number of men employed in getting the coal as shown by the following table.

[†] The Registrar General's Decennial Supplement, England and Wales, 1931, Part IIA. Occupational Mortality. H.M.S.O. 1938

	Year	Occupation Code	Population of males aged 20-64 at census	Percentage fall in population since 1931
Coal cutting-machine men, Hewers and Getters	1931	042	404,647	
	1951	041, 042	197,948	51·1
Other workers underground	1931	043–047	239,848	
	1951	043–047	213,753	10·9
Workers above ground	1931	049	75,670	
	1951	049	60,361	20·2
Total (other than subordinate superintending staff)	1931	042–049	720,165	
	1951	041–049	472,062	34·4

The larger decline in the number of face workers was due partly to falling recruitment and partly to the increasing amount of machinery used for getting coal which reduces the number of men required at the coal face.

A recent study, sponsored by the National Coal Board and carried out at the London School of Hygiene and Tropical Medicine with the co-operation of the General Register Office, has shown that at registration of death there is a considerable tendency for the occupation of a former miner to be incorrectly recorded.

Although all the results of this investigation are not yet available, they are sufficient to show that a study of the mortality of individual mining occupations based solely on census and registration data could be misleading, and it has therefore been decided to devote herein the main discussion on mortality of coal miners to that of the whole group, other than subordinate superintending staff, rather than to discuss individual mining occupations as has been done in the past. Analysis of the individual mortality in occupations has been carried out in Tables 3A(i) and (ii) and for miners' wives in Tables 3B(i) and (ii). Great care should be taken in drawing conclusions from such an analysis.

Subordinate superintending staff in coal mines returned a S.M.R. of 88 significantly below the normal figure.

There were significant excesses of deaths from cancer of stomach (S.M.R. 132) and of "other" accidents (S.M.R. 468) but with the exception of occupational lung disease, the mortality for other causes of death was relatively favourable.

There were 35 deaths assigned to respiratory tuberculosis with occupational disease of lung (4 expected) and 65 to industrial pneumoconiosis (7 expected).

Table DZ (page 95) shows details of the mortality of coal miners (excluding subordinate superintending staff). Between 1949 and 1953 there were 18,783 deaths registered of males aged 20-64 in these occupations; 16,377 were expected which yields a S.M.R. of 115, significantly above expectation.

The death rate of miners at different ages is compared with that for all males in 1930-32 and 1949-1953 in the table below:

				Death rate per 100,000 population				
				20–	25–	35–	45–	55–64
Coal miners (excluding superintending staff)	..	..		381	417	645	1,146	2,373
All Males	..	..	}1930–32	328	346	559	1,114	2,355
Ratio of death rate to that of all males ..	..	..		116	121	115	103	101
Coal miners (excluding superintending staff)	..	..		170	186	345	912	2,640
All Males	..	..	}1949–53	138	159	287	821	2,295
Ratio of death rate to that of all males ..	..	..		123	117	120	111	115

The position of miners' mortality in relation to that of all males has somewhat worsened in the two older age groups over the past 20 years. It is well recognised that in mining, by comparison with other occupations, the risk of death from accidental causes is great. The table below compares the ratio of miners' death rates to those of all males after deaths from accidental causes have been excluded.

	Ratio of mortality rates of miners to that of all males after deaths from accidental causes have been excluded				
	Age at death				
	20–	25–	35–	45–	55–64
1930–32	111	106	102	96	98
1949–53	105	90	101	103	112

This shows that accidental deaths are responsible for a large part of the excess in the death rate of miners over that of all males except at the 55-64 age group. The excess in this age group can be partly explained by

94

CAUSE OF DEATH and International Classification No.	16–19 a	20–24 b	25–34 c	35–44 d	45–54 e	55–64 f	65–69 g	70–74 h	75 and over j	Aggregate 20–64 k	Aggregate 65 and over l	Expected Deaths 20–64 m	S.M.R. 20–64 n	P.M.R. 65 and over o
Tuberculosis (001-019)	13	62	187	239	446	554	266	143	84	1,488	493	1,258	118	119
Tuberculosis, respiratory (001-008)	6	53	171	227	429	528	258	128	76	1,408	462	1,180	119	117
Tuberculosis, respiratory with occ. dis. of lung (001)	—	—	9	76	192	265	110	56	23	542	189	38	1,426	900
Tuberculosis, non-respiratory (010-019)	7	9	16	12	17	26	8	15	8	80	31	78	103	148
yphilitic disease (020-029)	—	—	6	16	31	77	35	29	19	130	83	115	113	58
Acute poliomyelitis (080)	—	—	1	—	—	—	1	—	—	1	1	22	(5)	∞
Malignant neoplasms, all sites (140-205)	14	26	111	344	1,062	1,978	1,481	1,699	2,331	3,521	5,511	3,721	95	85
Malignant neoplasm, stomach (151)	—	—	19	99	309	542	407	465	503	969	1,375	652	149	111
Malignant neoplasm, lung, bronchus (162, 163)	—	1	17	80	297	555	285	186	153	950	624	1,347	71	59
Leukaemia, aleukaemia (204)	2	9	11	14	20	35	11	15	10	89	36	97	92	47
Diabetes (260)	2	2	3	2	13	27	26	42	64	47	132	64	73	64
Psychoses (300-309)	—	—	3	—	2	8	5	21	76	13	102	17	76	159
Vascular lesions of nervous system (330-334)	4	5	18	61	253	762	984	1,663	3,632	1,099	6,279	1,132	97	108
Coronary disease, angina (420)	—	—	18	147	655	1,392	1,141	1,357	1,861	2,212	4,359	2,645	84	75
Hypertension (440-447)	1	—	9	17	77	271	259	383	858	374	1,500	477	78	85
Chronic rheumatic heart disease (410-416)	5	6	49	88	150	164	101	104	123	457	328	414	110	82
Chronic endocarditis not spec. as rheumatic (421)	—	—	2	19	68	102	58	65	68	191	191	131	146	78
Other myocardial degeneration (422)	—	1	6	26	139	531	823	1,670	5,977	703	8,470	552	127	110
General arteriosclerosis (450)	—	—	—	1	20	64	142	250	1,145	85	1,537	82	104	114
Influenza (480-483)	4	1	4	17	45	132	85	153	323	199	561	192	104	105
Pneumonia (490-493)	3	2	18	36	160	340	249	336	661	556	1,246	495	112	79
Bronchitis (500-502)	—	1	5	58	364	1,112	924	1,137	2,305	1,540	4,366	1,137	135	130
Pneumoconiosis, occupational (523, 524)	—	—	2	60	282	676	364	282	138	1,020	784	63	1,619	1,225
Other chronic interstitial pneumonia (525)	—	—	—	2	9	16	11	15	9	27	35	19	142	167
Ulcer of stomach (540)	1	3	5	23	59	86	44	47	51	176	142	186	95	53
Ulcer of duodenum (541)	—	—	9	43	66	61	60	33	54	179	147	207	86	63
Gastritis, enteritis and diarrhoea (543, 571, 572)	1	1	1	8	11	23	17	20	36	44	73	56	79	77
Nephritis and nephrosis (590-594)	7	12	36	59	86	98	74	80	201	291	355	284	102	88
Hyperplasia of prostate (610)	—	—	—	—	5	64	95	228	633	69	956	63	110	85
Appendicitis (550-553)	8	2	6	11	17	20	18	7	24	56	49	58	97	86
Hernia of abdominal cavity (560, 561)	—	—	—	2	12	20	17	30	72	34	119	38	89	83
Intestinal obstruction without mention of hernia (570)	—	1	7	5	19	26	22	19	35	58	76	52	112	77
Cirrhosis of liver (581)	—	—	1	6	10	16	16	20	6	33	42	66	50	66
Cholelithiasis, cholecystitis (584, 585)	—	—	—	—	3	13	17	13	39	16	69	23	70	91
Motor vehicle accidents (E810-835)	14	45	76	60	62	44	23	28	63	287	114	339	85	71
Accidents in the home (E870.0-936.0)	—	2	6	11	23	17	24	49	178	59	251	65	91	109
Other accidents (Remr. of E800-962)	61	111	357	460	476	380	83	63	151	1,784	297	466	383	140
Suicide (E963, 970-979)	3	19	41	80	109	169	83	53	92	418	228	383	109	102
Other causes (Remainder)	18	33	122	231	455	775	544	722	2,427	1,616	3,693	1,555	104	113
All causes	159	335	1,109	2,132	5,189	10,018	8,092	10,761	23,736	18,783	42,589	16,377	115	100
Census Population	27,755	39,500	119,310	123,583	113,788	75,881	31,387	26,382	27,517	472,062	85,286			
Mean Annual Death Rate from All Causes (per 100,000)	115	170	186	345	912	2,640	5,156	8,158	17,252	796	9,987			
Ratio of Death Rate to that of All Males (Taken as 100)	112	123	117	120	111	115	116	120	121	117	123			

Occupation Codes 041-049 Mining and Quarrying Occupations (excluding Subordinate Superintending Staffs)—In coal mines

Number of Deaths registered in the five years 1949-1953 at ages:—

the tendency of miners' relatives to state the occupation at death registration as a miner although the man may have left the industry some time before and taken another occupation in the intervening period. It is unlikely that any excess of this nature is counterbalanced by any great number of men coming into mining at a late age and having their occupation at death recorded as a non-miner.

Mining is an industry where there is a considerable risk of occupational lung disease. In 1949-53 there were 731 deaths of males over 20 assigned to tuberculosis with occupational disease of the lung and a further 1,804 assigned to pneumoconiosis. Deaths of males aged 20-64 assigned to respiratory tuberculosis as a whole were significantly in excess of expectation, the excess being more than accounted for by tuberculosis with occupational disease of the lung.

Only one death was assigned to acute poliomyelitis although 22 were expected.

Deaths from carcinoma of the stomach showed a highly significant excess. Those of the lung and bronchus were significantly below expectation.

The S.M.R. for coronary artery disease was significantly below expectation. On the other hand a S.M.R. of 146 (191 deaths registered and 131 expected) was returned for chronic endocarditis not specified as rheumatic. Other myocardial degeneration also showed a significant excess of deaths with a S.M.R. of 127. There were 556 deaths assigned to pneumonia and 495 expected, a just significant excess. Deaths assigned to bronchitis showed a highly significant departure from expectation, 1,540 being registered and 1,137 expected, a S.M.R. of 135.

Deaths from cirrhosis of liver were below expectation, only 33 being registered with 66 expected.

The high death rate from accidents has already been referred to above.

It has been suggested in the introduction to this chapter that, where S.M.R's for individual occupations are thought to be seriously in error, it is occasionally possible to compare groups by means of the ratio of the S.M.R. for individual causes to that of all causes. This has been done in the table below for some of the more important causes of death among coal miners.

Cause of death	Ratio of S.M.R. for individual causes to that of All causes		
	Coal cutters, hewers and getters	Other workers below ground	Workers above ground
	Occ. Code 041-042	Occ. Code 043-047	Occ. Code 049
Respiratory tuberculosis	109	95	96
Cancer of stomach	113	144	143
Cancer of lung..	59	66	60
Vascular lesions of nervous system	78	88	94
Coronary disease, angina	61	81	87
Other myocardial degeneration	124	94	128
Pneumonia	98	98	100
Bronchitis	135	100	122
Other accidents	279	439	192
Suicide	98	92	82

Comparing the three occupational groups in this table, the high relative mortality from accidents of other workers below ground is immediately obvious. Other points of interest are the high mortality from cancer of stomach, counterbalanced by the comparative rarity of death from cancer of lung, vascular lesions of nervous system and coronary disease. The comparatively low mortality from bronchitis and other myocardial degeneration among other workers underground is surprising and may be artificial.

The wives of coal miners have also been considered as a group as there is evidence that their mortality, classified by individual occupation of husband, is also artificially affected by incorrect classification in the same way as the males though possibly not to the same extent. The mortality of coal miners' wives is shown in Table EA (page 97). They had a mortality experience significantly in excess of normal and indeed comparatively worse than for males. The S.M.R. was 130 for married women as against 115 for males.

The table below shows the ratio of death rate for wives of miners to that of all married women for various age groups compared with the similar ratio for men both for all causes and for all causes other than accidental deaths.

	Ratio of death rate to that of all married women or all men at ages				
	20–	25–	35–	45–	55–64
All causes					
Coal miners	123	117	120	111	115
Coal miners wives	155	136	127	122	135
All causes except accidental causes					
Coal miners	105	90	101	103	112
Coal miners wives	161	138	128	121	135

Table EA. Deaths by cause and age, S.M.R's (20-64) and P.M.R's (65 and over) in Occupation Codes 041-049, married women, England and Wales, 1949-53

Occupation Codes 041-049 Mining and Quarrying Occupations (excluding Subordinate Superintending Staff)—In coal mines

CAUSE OF DEATH and International Classification No.	Number of Deaths registered in the five years 1949-1953 at ages:											Expected Deaths	S.M.R.	P.M.R.
	16–	20–	25–	35–	45–	55–	65–	70–	75 and over	Aggregate 20–64	Aggregate 65 and over	20–64	20–64	65 and over
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Tuberculosis (001-019)	2	75	255	143	113	78	27	16	7	664	50	456	146	106
Tuberculosis, respiratory (001-008)	1	71	238	139	91	68	25	13	6	607	44	418	145	*107*
Tuberculosis, non-respiratory (010-019)	1	4	17	4	22	10	2	3	1	57	6	38	150	*(100)*
Syphilitic disease (020-029)	—	—	—	1	15	14	8	1	1	30	10	28	*107*	53
Acute poliomyelitis (080)	—	2	4	1	2	—	—	—	—	9	—	14	*(64)*	—
Malignant neoplasms, all sites (140-205)	—	14	111	388	810	1,109	643	549	417	2,432	1,609	2,291	106	92
Malignant neoplasm, stomach (151)	—	—	9	33	113	203	162	133	117	358	412	233	154	125
Malignant neoplasm, lung, bronchus (162, 163)	—	—	9	17	41	47	21	16	8	114	45	134	85	*53*
Malignant neoplasm, breast (170)	—	2	20	114	161	185	81	66	52	482	199	559	86	73
Malignant neoplasm, cervix uteri (171)	—	—	5	39	92	82	42	32	11	218	85	177	123	125
Malignant neoplasm, other parts of uterus (172-174)	—	1	1	8	21	42	36	15	10	73	61	67	109	122
Leukaemia, aleukaemia (204)	—	—	8	19	16	23	8	12	3	66	23	60	110	*88*
Diabetes (260)	—	—	11	11	26	100	66	62	47	148	175	74	200	127
Psychoses (300-309)	—	—	1	2	4	3	6	9	13	10	28	13	77	*117*
Vascular lesions of nervous system (330-334)	1	4	21	61	298	749	548	711	747	1,133	2,006	856	132	101
Coronary disease, angina (420)	—	1	3	36	160	490	406	392	272	690	1,070	488	141	87
Hypertension (440-447)	—	—	3	18	98	233	167	190	142	352	499	248	142	95
Chronic rheumatic heart disease (410-416)	1	17	104	175	214	195	69	51	39	705	159	444	159	80
Chronic endocarditis not spec. as rheumatic (421)	—	1	1	10	36	31	21	16	13	79	50	49	161	71
Other myocardial degeneration (422)	—	—	4	15	112	380	439	677	983	511	2,099	263	194	113
General arteriosclerosis (450)	—	—	—	—	4	23	43	87	140	27	270	26	*104*	108
Influenza (480-483)	—	1	9	14	19	48	43	61	65	91	169	80	114	95
Pneumonia (490-493)	—	1	19	27	64	111	76	104	103	222	283	167	133	84
Bronchitis (500-502)	—	2	11	28	59	227	201	222	275	327	698	187	175	131
Ulcer of stomach (540)	—	—	1	1	17	18	7	2	5	37	14	30	*123*	*34*
Ulcer of duodenum (541)	—	—	1	4	8	6	1	2	3	19	6	18	*106*	*(35)*
Gastritis, enteritis and diarrhoea (543, 571, 572)	—	1	3	7	14	21	8	14	7	46	29	46	100	69
Nephritis and nephrosis (590-594)	—	2	32	55	64	122	39	54	28	275	121	165	167	97
Pregnancy, childbirth and abortion (640-689)	—	16	70	53	4	—	—	—	—	143	—	104	138	—
Appendicitis (550-553)	—	4	2	8	8	13	2	4	1	35	7	25	*140*	*(44)*
Hernia of abdominal cavity (560, 561)	—	—	—	6	11	32	20	17	13	49	50	27	181	125
Intestinal obstruction without mention of hernia (570)	1	—	2	6	8	12	10	4	8	28	22	24	*117*	*81*
Cirrhosis of liver (581)	—	—	3	2	10	14	9	4	2	29	15	31	*94*	88
Cholelithiasis, cholecystitis (584, 585)	—	—	2	6	17	42	25	21	20	67	66	39	172	120
Motor vehicle accidents (E810-835)	—	1	3	5	12	14	4	7	4	35	15	42	*83*	79
Accidents in the home (E870.0-936.0)	—	1	5	8	21	22	12	22	57	57	91	42	136	99
Other accidents (Remr. of E800-962)	—	1	6	2	15	13	7	7	11	37	25	35	*106*	*81*
Suicide (E963, 970-979)	1	2	6	26	26	41	11	6	2	101	19	137	74	66
Other causes (Remainder)	1	39	112	222	374	479	245	296	404	1,226	945	931	132	104
All causes	**7**	**185**	**805**	**1,341**	**2,643**	**4,640**	**3,163**	**3,608**	**3,829**	**9,614**	**10,600**	**7,380**	**130**	**100**
Census Population	3,211	30,508	101,150	104,318	90,279	58,605	18,920	11,954	6,901	384,860	37,775			
Mean Annual Death Rate from all causes (per 100,000)	44	121	159	257	586	1,583	3,344	6,036	11,097	500	5,612			
Ratio of Death Rate to that of all Married Females (taken as 100)	66	155	136	127	122	135	135	143	129	128	133			

This table, and especially the figures calculated after removal of the accidental causes, emphasises the unfavourable position of the miner's wife in relation to her husband. This is more marked at the younger ages.

For the individual causes of death the number of deaths assigned to both forms of tuberculosis was significantly in excess of those expected.

Deaths assigned to carcinoma of the stomach (358 registered and 233 expected) were sufficient to account for almost all excess deaths assigned to cancer of all sites, although deaths from cancer of cervix uteri were also significantly in excess of expectation. Cancer of the breast with 482 deaths registered was significantly below the 559 expected.

All forms of heart disease showed a significant excess of deaths, as also did pneumonia and bronchitis.

Other causes of death in which there were significant excess of deaths were nephritis and nephrosis, pregnancy, etc., hernia, cholecystitis and accidents in the home. On the other hand suicides were significantly below the number expected.

Table EB shows S.M.R's from all causes for each coalfield compared with similar figures for 1930-32. Also given are the number of coal miners aged 20-64 in these coalfields. Those areas with the largest rise in S.M.R's are in the South Wales, Monmouthshire, Gloucestershire and Somerset coalfields and it will be noted that with the exception of Cumberland these are the areas with the largest percentage fall in coal mining population. In assessing the effect on mortality of working in a particular coalfield the following factors should be borne in mind:

(a) The fall in population in the industry over the preceding period. It is probable that it is the fitter men who move their homes to a new area.

(b) The availability of alternative employment in the district. A man who has been awarded a pension as a result of ill-health, or who has retired from mining, is less likely to enter a fresh occupation elsewhere if there is none available in the district.

It appears probable that Kent and Cumberland coalfields, although showing trends opposite to those suggested by (a) and (b) above, may, in reality, support the contentions contained therein. In 1930-32 Kent was a coalfield that had been opened comparatively recently and was still being developed. Fit men had migrated there from the other coalfields in the British Isles and the S.M.R. of 76 in 1930-32 supports this. Between 1931 and 1951 immigration had almost ceased and a normal mortality was returned in 1949-53. Cumberland, however, was a coalfield which was almost worked out in 1931 and its population had fallen considerably between 1921 and 1931, (for those years the S.M.R. for underground workers rose from 109 in 1921-23 to 116 in 1930-32). Between 1931 and 1951, as a result of the development of other industries in the area, men were not compelled to become coal miners to the same extent as before and thus more self-selection was practised, and the effect of this was reflected in the S.M.R. which fell (for all miners) from 119 to 101.

Table EB. Standardised Mortality of Coal Miners from All causes in each coalfield in 1930-32 and 1949-53 together with population of miners at ages 20-64

| | S.M.R. at ages 20–64 | | Population aged 20–64 | |
	1930–32	1949–53	1931	1951
England and Wales ..	**107**	**115**	720,165	472,062
Brecknockshire, Carmarthenshire and Pembrokeshire (including anthracite mines) ..	124	176	15,967	7,930
Glamorganshire (including anthracite mines) ..	118	168	108,871	52,672
Monmouthshire ..	107	127	42,282	21,503
Cumberland ..	119	101	8,504	4,302
Durham ..	103	111	113,014	81,296
Northumberland ..	102	111	38,330	32,078
Yorks, West Riding ..	105	98	135,880	98,671
Cheshire and Lancashire ..	114	117	70,648	39,332
Derbyshire (excluding S. Derbyshire) ..	94	89	41,703	29,554
Leicestershire. Warwickshire and S. Derbyshire ..	85	85	24,232	21,483
Nottinghamshire ..	103	95	42,168	34,243
N. Staffordshire ..	113	121	22,374	14,275
Staffordshire (not North), Shropshire and Worcestershire ..	100	99	27,714	17,524
Kent ..	76	101	4,060	4,648
Gloucestershire and Somerset ..	102	147	9,348	5,000

Table EC (page 99) shows, for all miners, the deaths, registered and expected, and the S.M.R's for individual causes of death in each coalfield as in Table 3A(ii). Some difficulties arose in the classification of miners in South Wales between workers in anthracite and other mines. At census, anthracite miners were classified according to the mine in which they worked. As such detail was not available on death registration, anthracite miners were classified according to the district in which they died. Data from the London School of Hygiene study (referred to earlier) shows that many anthracite miners die in hospitals in non-anthracite areas. This has resulted in a discrepancy between numerator and denominator of these men and consequently great care should be exercised in drawing conclusions from data on these groups.

There were large differences in the number of deaths assigned to pneumoconiosis and tuberculosis with occupational diseases of the lung in the different coalfields. The South Wales areas returned the highest mortality in this respect but there was also considerable variation in other areas. Care should be taken, when analysing differences in occupational mortality in the different areas, to make allowances for differences in the death rate which may exist in the corresponding general populations.

Table EC. Deaths by cause, S.M.R's (20-64) in Mining and Quarrying Occupations (Codes 041-049) in each coalfield, 1949-53

CAUSE OF DEATH and International Classification No.	Brecknockshire, Carmarthenshire and Pembrokeshire (anthracite)			Brecknockshire Carmarthenshire and Pembrokeshire (other)			Glamorganshire (anthracite)			Glamorganshire (other)			Monmouthshire		
	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.
Tuberculosis (001-019)	26	19	137	10	5	200	34	14	243	229	132	173	106	58	183
Tuberculosis, respiratory (001-008)	25	19	132	8	4	(200)	33	14	236	218	124	176	103	56	184
Tuberculosis, respiratory with occ. dis. of lung (001)	22	0	∞	6	0	∞	26	0	∞	139	4	3,475	63	2	3,150
Tuberculosis, non-respiratory (010-019)	1	0	∞	2	0	∞	1	0	∞	11	8	138	3	2	(150)
Syphilitic disease (020-029)	1	2	(50)	—	0	—	1	0	∞	23	14	164	7	6	(117)
Acute poliomyelitis (080)	—	0	—	—	0	—	—	0	—	—	2	—	1	1	(100)
Malignant neoplasms, all sites (140-205)	31	58	53	21	14	150	45	46	98	469	407	115	160	180	89
Malignant neoplasm, stomach (151)	14	10	140	10	2	500	13	8	163	142	71	200	46	31	152
Malignant neoplasm, lung, bronchus (162, 163)	2	19	(11)	3	4	(75)	9	14	(64)	111	148	75	37	65	57
Leukaemia, aleukaemia (204)	2	2	(100)	—	0	—	1	1	(100)	14	10	140	3	5	(60)
Diabetes (260)	—	0	—	—	0	—	1	0	∞	12	7	171	1	3	(33)
Psychoses (300-309)	—	0	—	—	0	—	—	0	—	1	2	(50)	1	0	∞
Vascular lesions of nervous system (330-334)	15	17	88	7	5	(140)	20	13	154	156	126	124	50	56	89
Coronary disease, angina (420)	22	43	51	13	9	144	61	33	185	303	291	104	109	128	85
Hypertension (440-447)	5	7	(71)	3	2	(150)	9	5	(180)	71	54	131	13	24	54
Chronic rheumatic heart disease (410-416)	6	6	(100)	1	2	(50)	7	4	(175)	73	44	166	19	19	100
Chronic endocarditis not spec. as rheumatic (421)	8	2	(400)	2	0	∞	6	1	(600)	31	14	221	13	6	217
Other myocardial degeneration (422)	7	8	(88)	11	2	550	16	6	267	119	62	192	34	27	126
General arteriosclerosis (450)	2	2	(100)	2	0	∞	3	0	∞	10	9	111	3	4	(75)
Influenza (480-483)	—	2	—	2	0	∞	3	2	(150)	33	21	157	10	9	111
Pneumonia (490-493)	6	8	(75)	3	2	(150)	8	5	(160)	93	55	169	29	24	121
Bronchitis (500-502)	21	17	124	17	5	340	33	13	254	263	127	207	99	56	177
Pneumoconiosis, occupational (523, 524)	126	0	∞	57	0	∞	61	0	∞	337	7	4,814	75	4	1,875
Other chronic interstitial pneumonia (525)	—	0	—	—	0	—	8	0	∞	8	2	(400)	2	0	∞
Ulcer of stomach (540)	—	2	—	4	0	∞	3	2	(150)	25	20	125	18	9	200
Ulcer of duodenum (541)	—	2	—	3	0	∞	2	3	(67)	14	22	64	12	9	133
Gastritis, enteritis and diarrhoea (543, 571, 572)	—	0	—	—	0	—	—	0	—	4	6	(67)	2	2	(100)
Nephritis and nephrosis (590-594)	2	4	(50)	4	1	(400)	5	3	(167)	44	31	142	14	14	100
Hyperplasia of prostate (610)	—	0	—	4	0	∞	1	0	∞	14	7	200	7	4	(175)
Appendicitis (550-553)	—	0	—	1	0	∞	—	0	—	7	6	(117)	3	2	(150)
Hernia of abdominal cavity (560, 561)	—	0	—	2	0	∞	—	0	—	7	4	(175)	4	2	(200)
Intestinal obstruction without mention of hernia (570)	—	0	—	1	0	∞	—	0	—	6	6	(100)	3	2	(150)
Cirrhosis of liver (581)	—	1	—	—	0	—	1	0	∞	4	7	(57)	2	4	(50)
Cholelithiasis, cholecystitis (584, 585)	—	0	—	—	0	—	—	0	—	1	2	(50)	—	1	—
Motor vehicle accidents (E810-835)	1	4	(25)	5	2	(250)	1	4	(25)	28	34	82	9	16	(56)
Accidents in the home (E870.0-936.0)	3	1	(300)	—	0	—	—	0	—	7	7	(100)	2	3	(67)
Other accidents (Remr. of E800-962)	20	6	333	16	2	800	44	5	880	197	48	410	92	22	418
Suicide (E963, 970-979)	4	6	(67)	—	2	—	3	4	(75)	35	40	88	12	19	63
Other causes (Remainder)	18	24	75	12	5	240	23	19	121	273	166	164	89	74	120
All causes	**324**	**241**	**134**	**201**	**58**	**347**	**399**	**182**	**219**	**2,897**	**1,782**	**163**	**1,001**	**788**	**127**

	Census popn.	Regd. deaths	Death rate	Census popn.	Regd. deaths	Death rate	Census popn.	Regd. deaths	Death rate	Census popn.	Regd. deaths	Death rate	Census popn.	Regd. deaths	Death rate
20–24	450	3	(133)	88	3	(682)	346	3	(173)	3,501	27	154	1,593	17	213
25–34	1,492	11	147	343	14	816	1,234	15	243	11,633	127	218	5,294	58	219
35–44	1,751	39	445	350	17	971	1,306	42	643	12,305	288	468	5,620	100	356
45–54	1,611	83	1,030	381	68	3,570	1,155	105	1,818	11,401	744	1,305	5,147	256	995
55–64	1,173	188	3,205	291	99	6,804	900	234	5,200	8,891	1,711	3,849	3,849	570	2,962

Table EC—continued.

CAUSE OF DEATH and International Classification No.	Cumberland			Durham			Northumberland			Yorks, West Riding			Cheshire and Lancashire		
	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.
Tuberculosis (001-019)	16	10	160	220	215	102	70	86	81	284	261	109	112	103	109
Tuberculosis, respiratory (001-008)	15	10	150	203	201	101	66	81	81	271	245	111	108	96	113
Tuberculosis, respiratory with occ. dis. of lung (001)	3	0	∞	45	6	750	7	2	(350)	70	8	875	53	3	1,767
Tuberculosis, non-respiratory (010-019)	1	0	∞	17	14	121	4	5	(80)	13	16	81	4	7	(57)
Syphilitic disease (020-029)	—	0	—	23	19	121	6	7	(86)	30	23	130	7	9	(78)
Acute poliomyelitis (080)	—	0	—	—	4	—	—	2	—	—	5	—	—	2	—
Malignant neoplasms, all sites (140-205)	24	34	71	603	643	94	297	251	118	653	760	86	285	299	95
Malignant neoplasm, stomach (151)	11	6	183	169	112	151	83	45	184	175	133	132	75	52	144
Malignant neoplasm, lung, bronchus (162, 163)	4	11	(36)	167	232	72	89	91	98	181	275	66	79	109	72
Leukaemia, aleukaemia (204)	—	0	—	12	16	75	6	6	(100)	18	19	95	3	8	(38)
Diabetes (260)	—	0	—	9	12	(75)	1	4	(25)	9	12	(75)	6	5	(120)
Psychoses (300-309)	—	0	—	2	2	(100)	1	1	(100)	3	4	(75)	—	2	—
Vascular lesions of nervous system (330-334)	6	10	(60)	217	197	110	87	77	113	185	231	80	105	90	117
Coronary disease, angina (420)	21	24	88	448	457	98	201	177	114	380	539	71	203	209	97
Hypertension (440-447)	3	4	(75)	60	83	72	31	33	94	54	98	55	39	38	103
Chronic rheumatic heart disease (410-416)	4	3	(133)	99	71	139	33	28	118	83	85	98	35	33	106
Chronic endocarditis not spec. as rheumatic (421)	—	1	—	24	22	109	13	9	144	28	27	104	20	11	182
Other myocardial degeneration (422)	5	5	(100)	102	97	105	44	38	116	123	111	111	86	43	200
General arteriosclerosis (450)	—	0	—	13	14	93	3	5	(60)	23	17	135	6	6	(100)
Influenza (480-483)	—	2	—	39	33	118	12	13	92	35	40	88	25	16	156
Pneumonia (490-493)	1	5	(20)	90	86	105	22	33	67	109	101	108	57	40	143
Bronchitis (500-502)	7	9	(78)	217	196	111	98	77	127	309	231	134	132	90	147
Pneumoconiosis, occupational (523, 524)	3	0	∞	58	11	527	9	4	(225)	44	13	338	44	5	880
Other chronic interstitial pneumonia (525)	—	0	—	2	3	(67)	1	1	(100)	4	4	(100)	—	2	—
Ulcer of stomach (540)	2	2	(100)	23	32	72	16	12	133	19	38	50	10	16	63
Ulcer of duodenum (541)	1	2	(50)	36	35	103	13	15	87	36	43	84	16	16	100
Gastritis, enteritis and diarrhoea (543, 571, 572)	—	0	—	59	9	(100)	1	4	(25)	9	11	(82)	5	5	(100)
Nephritis and nephrosis (590-594)	5	2	(250)	53	49	108	15	19	79	55	58	95	22	24	92
Hyperplasia of prostate (610)	—	0	—	13	11	118	3	4	(75)	5	13	(38)	3	5	(60)
Appendicitis (550-553)	—	0	—	8	10	(80)	3	4	(75)	12	12	100	7	5	(140)
Hernia of abdominal cavity (560, 561)	—	0	—	5	6	(83)	3	3	(100)	6	8	(75)	2	3	(67)
Intestinal obstruction without mention of hernia (570)	—	0	—	12	9	133	3	4	(75)	15	10	150	7	4	(175)
Cirrhosis of liver (581)	1	0	∞	8	12	(67)	1	4	(25)	4	15	(27)	3	5	(60)
Cholelithiasis, cholecystitis (584, 585)	—	0	—	3	4	(75)	1	2	(50)	4	5	(80)	3	2	(150)
Motor vehicle accidents (E810-835)	6	3	(200)	32	59	54	19	23	83	59	70	84	32	28	114
Accidents in the home (E870.0-936.0)	3	0	∞	6	10	(60)	2	5	(40)	17	14	121	4	6	(67)
Other accidents (Remr. of E800-962)	13	3	433	355	81	438	101	32	316	304	98	310	123	38	324
Suicide (E963, 970-979)	—	2	—	86	66	130	34	25	136	76	79	96	31	31	100
Other causes (Remainder)	16	15	107	263	267	99	86	106	81	318	321	99	116	125	93
All causes	137	136	101	3,138	2,825	111	1,230	1,108	111	3,295	3,357	98	1,546	1,316	117

	Census popn.	Regd. deaths	Death rate	Census popn.	Regd. deaths	Death rate	Census popn.	Regd. deaths	Death rate	Census popn.	Regd. deaths	Death rate	Census popn.	Regd. deaths	Death rate
20–24	374	3	(160)	7,406	76	205	2,578	20	155	7,964	73	183	3,723	25	134
25–34	1,158	16	276	20,510	180	176	8,123	78	192	25,122	232	185	10,273	76	148
35–44	1,217	22	362	21,078	388	368	8,742	147	336	26,800	385	287	9,727	175	360
45–54	974	32	657	18,961	872	920	7,474	362	969	23,475	901	922	9,800	452	922
55–64	579	64	2,211	13,341	1,622	2,432	5,161	623	2,414	15,310	1,704	2,226	5,809	818	2,816

TABLE EC—continued.

CAUSE OF DEATH and International Classification No.	Derbyshire (excluding S. Derbyshire)			Leicestershire, Warwickshire and S. Derbyshire			Nottinghamshire			North Staffordshire			Staffordshire (not North) Shropshire and Worcestershire		
	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.
Tuberculosis (001-019)	56	77	73	51	58	88	84	89	94	63	36	175	45	50	90
Tuberculosis, respiratory (001-008)	54	72	75	46	54	85	74	83	89	59	34	174	44	48	92
Tuberculosis, respiratory with occ. dis. of lung (001)	6	2	(300)	6	2	(300)	2	2	(100)	32	1	3,200	18	2	900
Tuberculosis, non-respiratory (010-019)	2	5	(40)	5	4	(125)	10	6	167	4	2	(200)	1	2	(50)
Syphilitic disease (020-029)	5	7	(71)	3	6	(50)	13	8	163	7	3	(233)	3	5	(60)
Acute poliomyelitis (080)	—	2	—	—	2	—	—	2	—	—	0	—	—	0	—
Malignant neoplasms, all sites (140-205)	182	229	79	133	171	78	234	250	94	85	96	89	139	153	91
Malignant neoplasm, stomach (151)	47	40	118	23	29	79	59	44	134	23	17	135	40	26	154
Malignant neoplasm, lung, bronchus (162, 163)	38	83	46	42	63	67	64	90	71	37	35	106	41	55	75
Leukaemia, aleukaemia (204)	3	6	(50)	5	5	(100)	12	6	200	1	3	(33)	4	4	(100)
Diabetes (260)	5	4	(125)	—	3	—	1	4	(25)	—	0	—	2	2	(100)
Psychoses (300-309)	2	1	(200)	—	0	—	2	1	(200)	—	2	—	—	0	—
Vascular lesions of nervous system (330-334)	49	70	70	47	52	90	63	73	86	22	28	79	27	45	60
Coronary disease, angina (420)	92	162	57	77	123	63	95	175	54	48	66	73	57	109	52
Hypertension (440-447)	19	29	66	12	23	52	27	32	84	12	12	100	7	19	(37)
Chronic rheumatic heart disease (410-416)	17	26	65	14	19	74	27	29	93	12	12	100	10	16	63
Chronic endocarditis not spec. as rheumatic (421)	7	8	(88)	8	6	(133)	5	9	(56)	4	3	(133)	6	5	(120)
Other myocardial degeneration (422)	43	33	130	15	26	58	29	36	81	17	13	131	30	22	136
General arteriosclerosis (450)	3	5	(60)	1	4	(25)	7	5	(140)	3	3	(100)	1	3	(33)
Influenza (480-483)	6	11	(55)	1	9	(11)	12	12	100	3	5	(60)	9	7	(129)
Pneumonia (490-493)	19	31	61	24	23	104	31	32	97	11	13	85	21	20	105
Bronchitis (500-502)	56	70	80	48	52	92	83	73	114	33	28	118	57	46	124
Pneumoconiosis, occupational (523, 524)	7	4	(175)	13	3	433	7	4	(175)	35	2	1,750	41	3	1,367
Other chronic interstitial pneumonia (525)	—	0	—	—	0	—	1	1	(100)	1	0	∞	—	0	—
Ulcer of stomach (540)	13	11	118	7	9	(78)	5	12	(42)	2	5	(40)	13	7	186
Ulcer of duodenum (541)	9	12	(75)	8	9	(89)	11	15	73	3	5	(60)	8	8	(100)
Gastritis, enteritis and diarrhoea (543, 571, 572)	2	4	(50)	2	2	(100)	3	4	(75)	2	2	(100)	3	2	(150)
Nephritis and nephrosis (590-594)	8	18	(44)	17	13	131	23	20	115	10	7	143	5	11	(45)
Hyperplasia of prostate (610)	2	4	(50)	—	3	—	6	4	(150)	3	2	(150)	5	3	(167)
Appendicitis (550-553)	5	4	(125)	1	2	(50)	2	4	(50)	2	2	(100)	1	2	(50)
Hernia of abdominal cavity (560, 561)	1	2	(50)	1	2	(50)	1	3	(33)	—	0	—	1	2	(50)
Intestinal obstruction without mention of hernia (570)	1	4	(25)	1	2	(50)	2	4	(50)	1	2	(50)	1	2	(50)
Cirrhosis of liver (581)	2	4	(50)	2	3	(67)	1	4	(25)	1	2	(50)	1	3	(33)
Cholelithiasis, cholecystitis (584, 585)	—	2	—	—	0	—	2	2	(100)	1	0	∞	—	0	—
Motor vehicle accidents (E810-835)	15	21	71	19	16	119	25	25	100	12	10	120	14	13	108
Accidents in the home (E870.0-936.0)	4	4	(100)	3	3	(100)	4	4	(100)	2	2	(100)	1	2	(50)
Other accidents (Remr. of E800-962)	153	29	528	56	22	255	121	33	367	74	14	529	65	16	406
Suicide (E963, 970-979)	32	24	133	27	18	150	34	27	126	13	12	108	12	14	86
Other causes (Remainder)	83	96	86	53	72	74	92	107	86	40	43	93	64	63	102
All causes	898	1,009	89	644	754	85	1,053	1,103	95	522	430	121	649	653	99

	Census popn.	Regd. deaths	Death rate	Census popn.	Regd. deaths	Death rate	Census popn.	Regd. deaths	Death rate	Census popn.	Regd. deaths	Death rate	Census popn.	Regd. deaths	Death rate
20–24	2,500	22	176	1,948	10	103	3,104	17	110	1,190	12	202	1,369	11	161
25–34	7,548	60	159	5,380	50	186	9,323	74	159	4,111	45	219	3,919	34	174
35–44	7,647	131	343	5,289	70	265	8,910	136	303	3,910	62	317	4,371	60	275
45–54	7,318	243	664	5,375	174	647	8,071	302	748	3,368	144	855	4,809	200	832
55–64	4,541	442	1,947	3,491	340	1,948	4,756	524	2,204	1,696	259	3,054	3,056	344	2,251

Table EC—continued

CAUSE OF DEATH and International Classification No.	Kent			Gloucestershire and Somerset			Remainder		
	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.
Tuberculosis (001-019)	20	13	154	19	14	136	43	21	205
Tuberculosis, respiratory (001-008)	20	12	167	18	13	138	42	19	221
Tuberculosis, respiratory with occ. dis. of lung (001) ..	14	0	∞	8	0	∞	21	0	∞
Tuberculosis, non-respiratory (010-019)	—	1	—	1	1	(100)	1	2	(50)
Syphilitic disease (020-029)	—	1	—	—	1	—	1	2	(50)
Acute poliomyelitis (080)	—	0	—	—	0	—	—	0	—
Malignant neoplasms, all sites (140-205)	33	37	89	58	49	118	69	67	103
Malignant neoplasm, stomach (151)	7	6	(117)	13	8	163	18	12	150
Malignant neoplasm, lung, bronchus (162, 163)	10	12	83	19	16	119	17	24	71
Leukaemia, aleukaemia (204)	2	0	∞	1	1	(100)	2	2	(100)
Diabetes (260)	—	0	—	—	0	—	—	1	—
Psychoses (300-309)	—	0	—	—	0	—	1	0	∞
Vascular lesions of nervous system (330-334) ..	5	10	(50)	16	14	114	22	19	116
Coronary disease, angina (420)	16	26	62	15	36	42	49	50	98
Hypertension (440-447)	1	4	(25)	5	6	(83)	4	8	(50)
Chronic rheumatic heart disease (410-416)	5	4	(125)	4	5	(80)	8	7	(114)
Chronic endocarditis not spec. as rheumatic (421)	2	1	(200)	9	2	(450)	5	2	(250)
Other myocardial degeneration (422)	3	5	(60)	8	7	(114)	11	10	110
General arteriosclerosis (450)	—	0	—	3	1	(300)	2	2	(100)
Influenza (480-483)	1	2	(50)	4	2	(200)	4	3	(133)
Pneumonia (490-493)	7	4	(175)	18	6	300	7	9	(78)
Bronchitis (500-502)	12	10	120	26	15	173	29	20	145
Pneumoconiosis, occupational (523, 524)	10	0	∞	48	0	∞	45	0	∞
Other chronic interstitial pneumonia (525)	—	0	—	—	0	—	—	0	—
Ulcer of stomach (540)	2	2	(100)	6	2	(300)	6	3	(200)
Ulcer of duodenum (541)	1	2	(50)	4	2	(200)	2	4	(50)
Gastritis, enteritis and diarrhoea (543, 571, 572) ..	—	0	—	—	0	—	1	0	∞
Nephritis and nephrosis (590-594)	2	2	(100)	4	3	(133)	3	5	(60)
Hyperplasia of prostate (610)	—	0	—	—	0	—	3	0	∞
Appendicitis (550-553)	—	0	—	2	0	∞	2	0	∞
Hernia of abdominal cavity (560, 561)	—	0	—	—	0	—	3	0	∞
Intestinal obstruction without mention of hernia (570) ..	—	0	—	1	0	∞	4	0	∞
Cirrhosis of liver (581)	1	0	∞	—	1	—	1	2	(50)
Cholelithiasis, cholecystitis (584, 585)	—	0	—	—	0	—	1	0	∞
Motor vehicle accidents (E810-835)	3	4	(75)	2	3	(67)	5	6	(83)
Accidents in the home (E870.0-936.0)	2	0	∞	—	0	—	1	2	(50)
Other accidents (Remr. of E800-962)	9	5	(180)	18	6	300	22	7	314
Suicide (E963, 970-979)	4	4	(100)	6	5	(120)	9	7	(129)
Other causes (Remainder)	13	15	87	17	20	85	41	27	152
All causes	**152**	**151**	**101**	**293**	**200**	**147**	**404**	**284**	**142**

	Census popn.	Regd. deaths	Death rate	Census popn.	Regd. deaths	Death rate	Census popn.	Regd. deaths	Death rate
20–24	367	5	(272)	337	3	(178)	662	5	(151)
25–34	1,172	9	(154)	1,008	7	(139)	1,667	23	276
35–44	1,363	17	249	1,212	20	330	1,906	33	346
45–54	1,094	53	969	1,458	83	1,139	1,916	115	1,200
55–64	652	68	2,086	985	180	3,655	1,400	228	3,257

102

Miners (Other than Coal)

In mining (not coal) and quarrying occupations, there were 38,379 men aged 20-64 enumerated in 1951. As a whole, the sub-order returned a mortality not significantly different from that of all males (S.M.R. 104). The picture of mortality among the individual mining occupations is probably confused by incorrect statements of occupation at death, as with the coal miner, but it is unlikely to be to the same extent, for, out of 6,432 men stated as employed below ground, 4,571 (71 per cent) were classified as getters, whereas in coal mining only 42 per cent were similarly classified.

Although there were only 373 men aged 20-64 returned as underground workers in tin and copper mines there were 74 deaths registered with only 14 expected. Among underground workers in other mines there were 299 deaths registered and 192 expected.

The table below gives details of the deaths assigned to some of the more important individual causes for tin and copper miners, other miners working below ground and for the group as a whole.

| Cause of death | Deaths of males aged 20-64 | | | | | |
| | Tin and copper Miners | | Other Miners (Not Coal) | | Total | |
	Reg.	Exp.	Reg.	Exp.	Reg.	Exp.
Respiratory tuberculosis with occ. disease of lung ..	8	0	26	0	34	0
Respiratory tuberculosis without occ. disease of lung ..	8	1	13	15	21	16
Cancer of stomach	3	0	6	8	9	8
Cancer of lung	4	1	21	16	25	17
Vascular lesions of central nervous system	5	1	7	13	12	14
Coronary disease, angina	3	2	43	31	46	33
Other myocardial degeneration	4	1	7	6	11	7
Bronchitis	1	1	19	12	20	13
Occupational pneumoconiosis	18	0	26	1	44	1
"Other" accidents	2	0	45	6	47	6
All other causes	18	7	86	84	104	91
Total	**74**	**14**	**299**	**192**	**373**	**206**

Tin and copper mining has always been regarded as one of the most dangerous occupations and these figures give no cause for dissent from this view, although, because it is now a dying industry in this country, it is probable that one of the reasons for the extremely high S.M.R. is that a number of men who retired from the industry were registered at death as tin and copper miners, although they had not given this occupation at census. To a lesser extent this probably also holds good for other non-coal miners. Nevertheless, there is no doubt that the risk of dying from occupational lung disease in the non-coal mining industry was very great indeed. There were, in all, 78 deaths from industrial lung disease compared with 1 expected. Deaths from most other causes were also much higher than expected, even after allowing for some overstatement.

Wives of underground workers in mines (not coal) returned a S.M.R. of 136, which may have been slightly exaggerated. There were 20 deaths assigned to vascular lesions of the nervous system and 11 expected, and 11 to coronary disease and angina with 6 expected.

Getters in open quarries, etc. returned a S.M.R. of 109, just significantly above the average level. They also ran risks from occupational lung disease, 30 deaths being assigned and 3 expected. This, together with a high death rate from other respiratory tuberculosis and from "other" accidents, was more than enough to account for the excessive number of deaths from all causes. The only other cause for which mortality was significantly above expectation was that of cancer of stomach to which 35 deaths were assigned and 21 expected. Mortality from coronary disease was relatively favourable.

Other workers in mines (not coal) or quarries returned a favourable and probably underestimated S.M.R. of 75. There were 20 deaths assigned to occupational disease of the lung and 3 expected. The only other major cause of death for which mortality was excessive was "other" accidents with 33 deaths registered and 16 expected.

IV. Workers in Ceramics, Glass, Cement, etc.

In 1951, 74,005 males aged 20-64 were enumerated as workers in ceramics, glass, cement, etc. Between 1949-53 there were 1,804 deaths as against 1,971 expected, giving an S.M.R. of 92.

Makers of *bricks*, *pottery*, *etc.*, returned a S.M.R. of 98, but for the individual occupations within the industry, the S.M.R's varied considerably, as is shown in Table ED. This industry is one in which certain groups of workers are exposed to a risk of industrial lung diseases and deaths assigned to these diseases entirely account for the excess general mortality in individual occupations. This is well shown in Table ED. Also shown in this Table are the S.M.R's for the comparable occupations in 1930-32. It will be seen that there was little change in the relative positions of the various occupations both among themselves and when compared with the experience for all males. The one exception was the improvement in the position of kiln and oven men, etc., whose S.M.R. shows a fall from 119 in 1930-32 to 96 in 1949-53. It is probable that a certain amount of job transference within the industry accounts for some deaths from pneumoconiosis in occupations in which the disease was not contracted.

103

Numbers were too small for any firm conclusions to be drawn from a study of individual disease groups for each occupation with the exception of deaths from pneumoconiosis, etc., discussed above. After amalgamating the various occupations, the number of deaths from cancer of the lung (108) is found to be significantly greater than expected (82). Deaths from bronchitis, too, approach a significant excess. On the other hand deaths from coronary disease, angina were significantly below expectation showing a S.M.R. of 59.

The wives of makers of bricks, pottery, etc., had a S.M.R. of 107. In no individual occupation, with the possible exception of the wives of potters' mill workers, did the mortality experience depart significantly from expectation.

There were 555 deaths of men aged 20-64 who were classified as *makers of glass and glassware* against 594 expected giving a S.M.R. of 93. Among the individual occupations, that of *glass blowers* showed a S.M.R. of 189, (100 deaths being registered and 53 expected). It is difficult to assess the importance of this high S.M.R. for examination of Table 3A(ii) shows that almost without exception the registered deaths from each cause were in excess of the expected and it is possible that there was an over-estimation of the number of deceased men assigned to the occupation thus giving a false S.M.R. This might be caused by the assignment of worker (glass) to the occupation of glass blower. Should this have been the case it is still probable that the number of deaths from bronchitis was excessive.

Foremen, teazers, founders, etc. had normal general mortality. They have 19 deaths assigned to cancer of lung and 11 expected.

Table ED. Mortality from various causes at age 20-64, of makers of bricks, pottery, etc., 1949-53

Occupation	Occ. Code No.	All Causes S.M.R.	Respiratory Tuberculosis with Occupational Disease of Lung		Other Respiratory Tuberculosis		Total Respiratory Tuberculosis		Occupational Pneumoconiosis		All Other Causes		All Causes S.M.R. of comparable group in 1930-32
			Reg.	Exp.	Reg.	Exp.	Reg.	Exp.	Reg.	Exp.	Reg.	Exp.	
Foremen, Overlookers	060	85	0	0	1	6	1	6	—	0	69	76	80
Brick, etc. Moulders, etc. refractory goods makers	061-2	81	4	1	10	18	14	19	3	1	147	182	86
Potters' mill workers, slip makers	063	102	2	0	1	4	3	4	8	0	40	46	120
Potters, pottery makers and casters	064	133	18	1	7	12	25	13	36	1	157	150	135
Pottery finishers and decorators	065	121	5	0	4	5	9	5	6	0	76	70	119
Kiln and oven men, setters and placers	066	96	7	1	17	32	24	33	15	1	341	360	119
Other skilled workers	069	73	1	0	4	7	5	7	1	0	56	78	116

Other skilled workers in glass and glassware had a favourable mortality experience returning a S.M.R. of 82. The only disease from which the number of deaths was significantly in excess of expectation was chronic rheumatic heart disease (20 deaths registered, 11 expected).

Wives of makers of glass and glassware exhibited a mortality experience which was not significantly different from that of all wives (S.M.R. 96).

The S.M.R. of *makers of other non-metalliferous mining products* was 66, that of their wives 95. Among the males there was no significant departure from expectation for any individual cause of death, with the exception of suicides for which only one death was recorded and 9 expected.

V. Coal Gas, etc., Makers, Workers in Chemicals

Table 1 shows that 16,929 men aged 20-64 were enumerated as *makers of coal gas and coke*. They returned a S.M.R. of 84 and their wives one of 95.

Mortality from individual causes was generally favourable with the exception of deaths assigned to cancer. The table below gives details of such deaths registered and expected from some of the principal sites and compares them with similar figures for labourers in coke ovens and gas works (Occ. Code No. 938).

Cause of death	Number of deaths of males aged 20-64			
	Makers of coal gas and coke		Labourers in coke ovens and gas works	
	Registered	Expected	Registered	Expected
Cancer of:				
Stomach	30	24	52	36
Large intestine and rectum	17	17	24	25
Pancreas	10	6	11	7
Larynx	4	2	2	3
Lung and bronchus	63	49	98	73
Leukaemia	11	4	4	5
Other malignant neoplasms	26	32	66	52
Cancer (all sites)	**161**	**133**	**257**	**201**

Deaths assigned to cancer of stomach were more than expected in both groups but only reached the level of statistical significance with the labourers. For both occupations combined, deaths from cancer of pancreas and lung were significantly in excess of expectation. The large excess of deaths from leukaemia among the skilled workers is also very noticeable.

Workers in chemical and allied trades returned a S.M.R. of 85. The enumerated population of 74,135 men aged 20-64 consisted mainly of a group of other skilled workers with a S.M.R. of 83.

Mortality from cancer generally was in accordance with expectation. The table below gives details of some of the more important sites in this occupational group.

Cause of death	Deaths of males aged 20-64	
	Registered	Expected
Cancer of:		
Pharynx and oesophagus	18	15
Stomach	111	92
Large intestine and rectum	46	65
Lung and bronchus	201	192
Kidney	8	9
Bladder	27	16
Leukaemia	16	14
Other malignant neoplasms	112	126
Cancer (all sites)	**539**	**529**

Deaths from cancer of stomach and bladder were in excess of expectation, just on the borderline of statistical significance. On the other hand deaths from cancer of large intestine and rectum were fewer than expected.

There were two small trades within the industry with a high mortality experience; the *furnacemen and kilnmen* with a S.M.R. of *154* and *fillers of explosives* with a S.M.R. of *142*. The population at risk in both these groups is very small (751 furnacemen and 435 fillers) and only in the former does the excess of deaths registered over those expected reach statistical significance. Bearing in mind the small numbers involved the following table may nevertheless be of some interest.

Occupation	Occ. Code No.	Deaths of males aged 20-64					
		Cancer all forms		Heart Disease		Other Diseases	
		Reg.	Exp.	Reg.	Exp.	Reg.	Exp.
Furnacemen, Kilnmen	103	14	6	2	7	21	11
Fillers of explosives	104	4	6	9	5	14	8

Of the 14 deaths assigned to cancer, registered among furnacemen, 6 were of the stomach (1 expected) and 5 of the lung and bronchus (2 expected).

VI. Workers in Metal Manufacture, Engineering

Workers in metal manufacturing and engineering formed the largest occupation order at the 1951 Census with 2,021,186 occupied and retired men enumerated at ages 20-64, or 16 per cent of all males of this age in England and Wales. The order was composed almost entirely of occupations in Social Classes III and IV, and in Socio-economic Groups 10 and 11 (the skilled and semi-skilled manual workers). S.M.R.'s for the order and for the whole of each of the relevant social classes and socio-economic groups are shown for comparison in the table below, together with S.M.R.'s for single and married women.

	S.M.R.		
	Men 20-64	Married Women 20-64	Single Women 20-64
Workers in Metal Manufacture and Engineering	98	101	93
Social Class III	101	101	89
Social Class IV	94	104	89
Socio-economic Group 10 (skilled manual workers)	102	105	109
Socio-economic Group 11 (semi-skilled manual workers)	97	108	99

Foremen and overlookers numbered 119,618 at ages 20 to 64 in 1951. Their mortality experience was a favourable one, 3,071 deaths being registered and 4,493 expected, giving a S.M.R. of 68. Cholelithiasis, with 7 deaths registered and 6 expected, is the only cause of death with a S.M.R. above 100. All other causes

were below the normal, many significantly so. These include tuberculosis, cancer (all forms), heart disease (all forms), pneumonia and bronchitis. Among the individual groups of foremen there is considerable variation in S.M.R.'s, with 'other and undefined' foremen showing the highest ratio (99). It would appear probable that there is a considerable amount of incomplete description of occupation. At death, the more general terms are probably used, whereas at census, the statement of industry enables a more accurate classification to be made.

The S.M.R. of *furnacemen* (not annealing or foundry) was 118, (1,001 deaths being registered and 846 expected). Their wives also showed an excess mortality with a S.M.R. of 132. The causes of death in which there was a significant excess among men were cancer (all forms, stomach and lung), influenza, bronchitis and pneumonia and "other" accidents.

Table EE shows for comparison, deaths registered and expected for several causes in a group of occupations carried on in close proximity to furnaces. In all the occupations shown there was a tendency towards excessive mortality from cancer of lung and bronchitis. Mortality from coronary artery disease was either normal or below for the groups shown.

Rolling and tube mill workers and wire drawers had an average mortality experience. There was considerable variation of S.M.R. in the individual occupations of the sub-order but it is probable that this was due to the small numbers involved and to a certain amount of minor inaccuracy in job description. Among the individual causes, deaths from bronchitis and tuberculosis were significantly increased.

Among males aged 20-64 who were classified as *foundry workers* there were 3,507 deaths registered; 3,338 were expected giving a S.M.R. of 105. The S.M.R. for wives of these men was 109.

Iron and steel moulders with a S.M.R. of 116 was one of the occupations for which there was a pneumoconiosis risk, 12 deaths being registered and 5 expected. There was excessive mortality from other respiratory diseases, tuberculosis and carcinoma of the lung. Deaths from accidents, on the other hand, fell significantly below expectation. *Non-ferrous moulders* showed a normal mortality experience but with significant excess in the number of deaths from bronchitis and tuberculosis. The wives of the two groups of metal moulders had an all causes S.M.R. of 115; there were 39 deaths assigned to bronchitis and 18 expected, giving a S.M.R. of *217*.

Iron or steel foundry furnacemen had a S.M.R. of 70. This figure is probably an understatement owing to confusion on death certification with non-foundry furnacemen. Despite this there was an excessive mortality from cancer of lung (17 registered, 12 expected), see also Table EE. *Iron foundry labourers* (all causes S.M.R. 112) had highly significant increased mortality from pneumonia and bronchitis (S.M.R's 212 and 177 respectively). The number of deaths among *steel foundry labourers* was small, only 119 being registered and 174 expected. The registered number is probably understated—the occupations are very similar and classification at death will depend on a statement of whether the man worked in an iron or steel foundry. Where this was not given he will have been classified to an iron foundry. This error should not arise at census as the man's industry is more fully recorded. It is unlikely that the error will seriously affect the figures given for iron foundry labourers owing to their much larger numbers.

The possibility of error described above may also have affected description of the mortality of *non-ferrous foundry furnacemen and labourers* though possibly not to the same extent, owing to some individual occupations being specific to the relevant rubric in the Occupational Classification. The S.M.R's for these last furnacemen was 104 and for labourers 68 and again there is evidence of an increased risk of death due to bronchitis, the respective S.M.R's being *186* and *123* (the last being not statistically significant).

For all foundry workers' occupations the number of deaths assigned to coronary disease and angina was below that expected.

Details of mortality among *smiths and forgemen* are shown in Table 3A(i). Ratios of registered to expected deaths tended to rise with increasing age. As with the foundrymen described above there was mortality greater than expected from respiratory diseases. There were also excessive numbers of deaths from cancer of stomach and lung. Reference to Table 3A(ii) does not show any very clear differences in the mortality pattern of blacksmiths and forgemen.

Annealers', etc. and picklers' mortality did not show any large departure from normality either for all causes of death or for individual causes (where the number of deaths was very small).

Coppersmiths, likewise, had a normal mortality experience, as did *sheet metal workers*. With the latter, numbers were somewhat larger, but in none of the causes shown in Table 3A(ii) was there any significant departure from expectation with the exception of "other" accidents (17 deaths registered and 54 expected).

Metal spinners had normal general mortality but a tendency to high death rates from respiratory disease.

There were 68,901 *platers, riveters and shipwrights* between the ages of 20 and 64 enumerated in 1951. Of these, 29,906 were platers, for whom a S.M.R. of 109 was returned, 1,199 deaths being registered and 1,097 expected. There was a significant excess of deaths assigned to cancer, all forms, and cancer of lung and pneumonia.

Riveters and caulkers showed a significant excess of deaths from all causes, the S.M.R. being 146. This excess was due in part to an excess of deaths assigned to cancer of lung (74 registered and 39 expected), pneumonia and bronchitis (94 registered and 47 expected). Deaths assigned to coronary disease, vascular lesions of the central nervous system and myocardial degeneration were also more than expected. Deaths from "other" accidents were also significantly greater than expectation.

It does not appear likely that the number of riveters' deaths registered was much inflated by informants "promoting" a riveter's labourer when registering his death, as the number of riveters' labourers was small in comparison with the number of riveters and a transfer from the former to the latter would have to be large

106

Table EE. Deaths of males aged 20-64 from certain causes among furnacemen and stokers

Occupation	Occupation Code No.	Deaths of males 20-64																	
		Tuberculosis		Cancer (all forms)		Cancer of lung		Coronary Disease		Bronchitis and Pneumonia		Pneumoconiosis		All Other Causes		All Causes		
		Reg.	Exp.	Reg.	Exp.	Reg.	Exp.	Reg.	Exp.	Reg.	Exp.	Reg.	Exp.	Reg.	Exp.	Reg.	Exp.	S.M.R.
Kiln and oven men (bricks and pottery)	066	26	35	95	86	39	31	39	59	42	37	15	1	124	145	380	394	96
Furnacemen, kilnmen (chemical and allied trades)	103	7	2	14	6	5	2	2	4	3	3	1	0	5	7	37	24	*154*
Furnacemen (not annealing or foundry)	121, 122/5	61	68	270	192	108	70	136	134	145	83	2	3	279	296	1,001	846	118
Iron or steel foundry furnace or cupola men ..	134	9	12	34	32	17	12	14	23	16	15	—	1	16	56	106	151	70
Non-ferrous foundry furnacemen	137	18	10	26	25	13	9	11	16	17	10	2	0	24	37	111	107	104
Boiler firemen and stokers	915	131	209	790	725	296	268	425	531	365	326	3	13	834	1,025	2,844	3,097	92

before affecting the mortality of the riveters appreciably. On the other hand, riveters' wives returned a S.M.R. of 125 suggesting that there may have been some slight exaggeration in this S.M.R. or alternatively that some adverse social factors were operating.

The mortality of riveters' and platers' labourers was in accordance with expectation. Assignments to bronchitis and pneumonia together were more than expected.

It is noticeable that platers, riveters and their labourers all had a rather large number of deaths assigned to ulcer of duodenum; in all there were 34 deaths registered and 25 expected.

Shipwrights had a normal mortality experience and the low bronchitis and pneumonia mortality (48 registered deaths, 58 expected) is noticeable when compared with that for other occupations of the sub-order. The S.M.R. of *187* for "other" accidents was significantly above expectation.

Sub-order 9, *metal machinists*, of which there were 204,309 males aged 20-64 enumerated in 1951, gave a S.M.R. of 82, and their wives one of 87.

Press tool and machine setters and setter operators had a S.M.R. of 70. This is an occupation group in which there is a risk of contracting pneumoconiosis and there were 6 deaths assigned to pneumoconiosis, 13 to respiratory tuberculosis with occupational lung disease and 5 to other chronic interstitial pneumonia. These deaths probably occurred mostly among metal grinders who are included in this occupation group. All other causes of death gave normal or below normal S.M.R.'s.

Brass turners returned a S.M.R. of 133 and *other turners* one of 95. For the individual causes of death, in the case of the former, numbers were too small for any conclusions to be drawn. In the case of the latter there was a just significant excess of deaths assigned to tuberculosis, and a significant deficiency in "other" accidental deaths.

Drillers returned an all causes S.M.R. of 85. Coronary disease showed a favourable mortality and pneumonia and bronchitis an unfavourable one.

Fitters and machine erectors returned a S.M.R. of 101. Of the individual occupations within the sub-order, *other fitters* had a S.M.R. of 176. This is almost certainly an overestimate and is due, firstly, to deaths of fitters (so-called) being classified under this heading and secondly to a tendency for relatives to "promote" fitters' mates, etc. to fitters when registering their deaths. It can be seen in Table I that the mortality of married women largely parallels the men in the occupational sub-order. This is supporting evidence for the contention that the differences are apparent rather than real. Table 3A(i) gives details of the mortality of precision fitters and gunsmiths etc. in one section and for other fitters in another. It is difficult to decide on the extent of the transfer of deaths from one occupation to the other, but it is possible that such transference accounted for the fact that the S.M.R.'s of precision fitters was below that for other fitters for almost every cause. Motor vehicle accidents showed a S.M.R. of 172 for machine erectors, etc., fitters. Reference to Table 3A(ii) shows that this increase was not solely due to a high mortality from this cause among motor mechanics for machine erectors and maintenance engineers showed a similar picture.

The all causes S.M.R. for *fitters'*, etc., *mates* was returned as 73. This was probably an underestimate for reasons stated above.

Metal finishers returned a S.M.R. of 107, their wives one of 104. The men's S.M.R. was just significantly above expectation.

Galvanizers and tinners with a S.M.R. of 125 (110 deaths registered, 88 expected) showed high figures for tuberculosis, pneumonia and bronchitis.

Glazers, polishers and buffers had a S.M.R. of 111. They had a mortality above expectation for cancer which could be entirely accounted for by an excessive number of deaths attributed to carcinoma of the lung (70 registered, 42 expected). Pneumonia and bronchitis together also showed significantly high S.M.R.'s. These high figures were not repeated for married women who had an all causes S.M.R. of 105.

Electro and nickel platers had a normal S.M.R. of 102 for all causes. For individual causes numbers of deaths were small but it is worth noting that 15 deaths were assigned to carcinoma of stomach and only 7 expected.

There were 120,134 men between ages 20 and 64 enumerated as *plumbers and pipe fitters*. The largest occupation, *plumbers* (other than chemical plumbers) returned a S.M.R. of 94. The only two individual causes in which mortality was significantly in excess were carcinoma of lung (177 deaths registered and 142 expected) and chronic endocarditis not specified as rheumatic (23 registered, 14 expected). In the other occupations of this sub-order the only finding worthy of note is the high mortality from cancer of lung in *gas and pipe fitters*—in the two groups combined there were 124 deaths registered and 89 expected from this cause.

Lead burners and chemical plumbers formed a very small group with normal general mortality. There were 7 deaths assigned to tuberculosis and 3 expected.

Vehicle makers and repairers returned an all causes S.M.R. of 73 with low mortality for tuberculosis, coronary disease and "other" accidents.

Mortality of *watch, clock, and instrument makers* is analysed together in Table 3A(i). They returned a S.M.R. of 96 and significantly low S.M.R's for cancer of stomach and "other" accidents and significantly high S.M.R's for vascular lesions of the central nervous system and chronic rheumatic heart disease. This last was probably due to self-selection of relatively unfit members of the community for this group of occupations; watch repairing, where the majority of deaths occurred, is a job which can be carried on at home. It is noticeable that of the 46 deaths from chronic rheumatic heart disease registered between the ages of 20 and 64, 24 occurred among men under 35 years of age.

Workers in precious metals and gem setters formed a small group of skilled workmen—6,700 were

108

Occupation Codes 231-249 Electrical apparatus Makers and Fitters (not elsewhere specified) and Electricians

CAUSE OF DEATH and International Classification No.	Number of Deaths registered in the five years 1949-1953 at ages:—													
	16–19	20–24	25–34	35–44	45–54	55–64	65–69	70–74	75 and over	Aggregate 20–64	Aggregate 65 and over	Expected Deaths 20–64	S.M.R. 20–64	P.M.R. 65 and over
	a	b	c	d	e	f	g	h	j	k	l	m	n	o
Tuberculosis (001-019)	20	41	127	124	145	106	35	23	11	543	69	604	90	117
Tuberculosis, respiratory (001-008)	12	36	119	117	137	103	35	22	9	512	66	560	91	118
Tuberculosis, respiratory with occ. dis. of lung (001) ..	—	—	—	—	—	—	—	—	—	—	—	13	—	—
Tuberculosis, non-respiratory (010-019) ..	8	5	8	7	8	3	—	1	2	31	3	44	70	(100)
Syphilitic disease (020-029) ..	—	1	2	5	16	20	19	4	7	44	30	40	110	150
Acute poliomyelitis (080)	2	2	11	2	—	—	—	—	—	15	—	16	94	—
Malignant neoplasms, all sites (140-205) ..	12	25	102	195	567	714	410	333	343	1,603	1,086	1,362	118	119
Malignant neoplasm, stomach (151) ..	1	—	6	24	77	138	82	67	55	245	204	229	107	117
Malignant neoplasm, lung, bronchus (162-163) ..	1	1	12	53	239	271	119	80	44	576	243	475	121	161
Leukaemia, aleukaemia (204)	5	6	12	11	12	12	10	2	1	53	13	44	120	118
Diabetes (260)	1	3	1	6	4	7	5	8	8	21	21	25	84	72
Psychoses (300-309)	—	2	1	1	—	3	—	1	2	7	3	8	(88)	(33)
Vascular lesions of nervous system (330-334) ..	—	4	11	33	128	236	198	227	327	412	752	388	106	92
Coronary disease, angina (420)	—	1	20	93	401	650	379	318	342	1,165	1,039	906	129	126
Hypertension (440-447)	—	1	6	10	51	105	76	80	99	173	255	164	105	103
Chronic rheumatic heart disease (410-416) ..	3	4	30	33	50	38	20	16	28	155	64	184	84	112
Chronic endocarditis not spec. as rheumatic (421)	—	—	1	6	12	23	8	8	12	42	28	45	93	80
Other myocardial degeneration (422) ..	—	—	4	5	35	121	144	213	515	165	872	179	92	80
General arteriosclerosis (450) ..	—	—	1	1	4	26	26	44	87	32	157	25	128	82
Influenza (480-483)	—	2	4	7	20	29	17	14	29	62	60	72	86	80
Pneumonia (490-493)	4	3	7	15	59	83	51	59	93	167	203	188	89	91
Bronchitis (500-502)	—	—	2	10	76	211	155	142	175	299	472	379	79	99
Pneumoconiosis, occupational (523, 524) ..	—	—	—	—	2	—	1	—	—	2	1	22	(9)	(11)
Other chronic interstitial pneumonia (525) ..	—	—	1	2	2	1	—	—	2	5	2	7	(71)	(67)
Ulcer of stomach (540)	1	—	1	16	19	38	19	12	26	74	57	68	109	150
Ulcer of duodenum (541)	—	1	4	15	24	32	30	13	15	76	58	82	93	176
Gastritis, enteritis and diarrhoea (543, 571, 572) ..	2	4	10	6	10	10	2	3	3	40	8	24	167	(62)
Nephritis and nephrosis (590-594) ..	4	11	27	24	36	33	16	11	23	131	50	129	102	88
Hyperplasia of prostate (610) ..	—	—	—	—	1	19	21	40	81	20	142	20	100	90
Appendicitis (550-553)	2	1	4	5	3	5	2	4	2	18	8	27	67	(100)
Hernia of abdominal cavity (560, 561) ..	—	—	2	1	3	8	2	3	7	14	12	12	117	60
Intestinal obstruction without mention of hernia (570)	—	—	—	1	8	8	5	5	3	17	13	21	81	93
Cirrhosis of liver (581)	—	1	—	3	8	11	4	1	—	23	5	26	88	(56)
Cholelithiasis, cholecystitis (584-585) ..	—	—	—	1	1	5	3	3	—	7	6	7	(100)	(55)
Motor vehicle accidents (E810-835) ..	35	92	84	43	29	15	4	3	13	263	20	218	121	87
Accidents in the home (E870.0-936.0)	2	3	7	8	5	9	4	7	24	32	35	31	103	109
Other accidents (Remr. of E800-962)	29	37	85	46	46	26	4	5	12	240	21	261	92	70
Suicide (E963, 970-979)	3	8	27	36	54	29	11	6	8	154	25	178	87	78
Other causes (Remainder)	17	35	80	120	177	224	141	119	184	636	444	660	96	96
All causes	137	282	661	873	1,996	2,845	1,812	1,725	2,481	6,657	6,018	6,378	104	100
Census Population	34,775	46,281	90,934	65,548	45,288	22,082	6,379	3,811	2,892	270,133	13,082			
Mean Annual Death Rate from all Causes (per 100,000)	79	122	145	266	881	2,577	5,681	9,053	17,158	493	9,200			
Ratio of Death Rate to that of All Males (Taken as 100)	77	88	91	93	107	112	128	133	120	73	113			

enumerated at the 1951 Census. The all causes S.M.R. of 109 was not significantly different from normal. The group is analysed as a whole in Table 3A(ii) and showed a significantly high mortality from tuberculosis.

There were 270,133 *electrical apparatus makers, etc.* between the ages of 20 and 64 enumerated at the 1951 Census and the whole sub-order returned a S.M.R. of 104, and their wives one of 107. Of the individual occupations, *radio and radar mechanics* (S.M.R.82), "*others*" *in electrical communications* (S.M.R. 78) and *other skilled electrical workers* (S.M.R. 70) all returned significantly better than average mortality while *electrical fitters* (S.M.R. 133) returned significantly worse. The high mortality among the electrical fitters is likely to be apparent rather than real for the group contained the non-professional electrical engineers (so-called)—a term commonly used to describe and thereby "promote" electricians in many different industries. The effect of this "promotion" will be to lower artificially the S.M.R.'s for the occupations from which the "promoted" men were drawn. Because of this all electrical apparatus makers, etc. are shown together in Table EF, with registered and expected deaths and S.M.R.'s for each of the individual causes in Table 3A(i). The ratios of age-specific death rates to those for England and Wales tended to rise with increasing age. It will be seen that the sub-order as a whole has a better than average mortality for tuberculosis, chronic rheumatic heart disease and bronchitis. There was a high mortality from cancer, particularly of the lung, coronary disease, gastritis, and motor vehicle accidents.

Inspectors, viewers and testers returned a S.M.R. of 88. For two individual occupations, machine shop and fitting shop inspectors, the S.M.R.'s were *21* and *19* respectively. It should be assumed that these were artificially low. For the group as a whole, there were 99 deaths due to chronic rheumatic heart disease with 67 expected. This is probably due to the fact that relatively unfit men can perform this occupation satisfactorily.

Among the other skilled workers (sub-order 18), *oxy-acetylene or electric welders* are the largest group. They show an S.M.R. of 110. For the individual causes, deaths assigned to pneumonia numbered 70 against 31 expected, a S.M.R. of 226, whereas deaths assigned to bronchitis (60 registered, 55 expected) yield a S.M.R. of 109.

It is unusual for the ratio $\frac{\text{S.M.R. Pneumonia}}{\text{S.M.R. Bronchitis}}$ to be so high (2·07). In the occupations shown in Table 3A(i) only one occupation, that of steel foundry labourers, gave a higher ratio (2·40) (this is only true of ratios with high S.M.R.'s for pneumonia; there is a group, mainly from Social Class I, where the ratio was high owing to an abnormally low bronchitis S.M.R.) and in this case numbers of deaths are too small for any conclusions to be drawn.

The table below shows that the extra risk from pneumonia was apparently constant almost throughout the working life as compared with the all male risk. On the other hand mortality from bronchitis does not become excessive until over 55 years of age. *Prima facie* this apparently excessive risk of dying from pneumonia suggests the possibility of a real occupational hazard and merits further study.

| | Assigned Cause of death | | | |
| Age Group | Pneumonia | | Bronchitis | |
	Registered	Expected	Registered	Expected
20–	0	1	0	0
24–	11	4	1	2
35–	14	7	3	6
45–	27	10	22	21
55–64	18	9	34	26

Textile machinery fitting makers had a normal general mortality with no special features.

Constructional engineers, etc. returned a S.M.R. of 147, significantly above the average. The liability to death from "other" accidents (presumably mostly falls) was seven times greater than in the population at large, there being 156 deaths registered and 22 expected. There were also significantly high death rates from cancer (S.M.R. 154), tuberculosis (S.M.R. 147), coronary disease (S.M.R. 134), motor vehicle accidents (S.M.R. *165*), and gastric ulcer (S.M.R. *240*, 12 deaths registered, 5 expected). The inclusion of constructional engineer (so-called) in this occupation may have resulted in a slight elevation of death rates, and some confirmation of this is given by the S.M.R. for married women, which was returned as 137.

The number of deaths of *cutlers* was too small for any conclusions to be drawn from individual causes of death but the following may be worthy of note: there were 10 deaths assigned to cancer of lung and 5 expected and 9 deaths assigned to tuberculosis with 4 expected. The all causes S.M.R. was 121.

Filers with an all causes S.M.R. of 148 (80 deaths registered and 54 expected) showed 11 deaths assigned to bronchitis and only 4 expected. For tuberculosis 10 deaths were registered and 4 expected.

The mortality of *edge tool grinders* is shown in Table 3A(i). The all causes S.M.R. was 149. With these men occupational disease of the lung is a known risk, and between 1949 and 1953 there were 4 deaths assigned to pneumoconiosis and a further 7 to tuberculosis with occupational disease of the lung. Apart from this there was an increased mortality from other respiratory tuberculosis and from bronchitis. Coronary disease also showed a significantly high number of deaths.

Lock and keymakers and locksmiths had a normal general mortality. There were 10 deaths assigned to tuberculosis and 9 to cancer of lung with only 5 expected in each case.

Press workers and stampers returned a S.M.R. of 79, significantly below the normal figures for England

and Wales. As far as diseases of the cerebro- and cardio-vascular systems were concerned mortality experience was generally favourable. For other causes, the numbers of deaths assigned were in accordance with expectation. Deaths from "other" accidents were relatively rare. Single women in this occupation also had a favourable general mortality with a S.M.R. for all causes of 85.

Solderers and brazers formed a very small group who returned a normal mortality both for all and individual causes of death.

Wire weavers also had a normal mortality experience with too few deaths to enable any conclusions to be drawn from a study of individual causes.

Other skilled workers in metal trades returned a S.M.R. of 104, not significantly different from that expected. The only two causes of death for which the numbers of deaths were significantly increased were tuberculosis (79 registered, 60 expected) and "other" accidents (37 registered, 23 expected).

VII. Textile Workers

There were 177,554 males between the ages 20-64 enumerated as textile workers. They returned a S.M.R. of 103, just significantly above the standard level. Married women returned a S.M.R. of 113, somewhat higher than that for their husbands.

Males employed in the earlier stages of textile work, i.e. *openers, sorters, blenders, carders, etc.*, numbered 21,099. As a whole they returned a S.M.R. of 108, significantly above expectation. It was only in the 55-64 year age group that the over-all death rate was well above the normal level. The table below shows the registered and expected number of deaths from all causes, and some of the more important individual causes at ages 45-54 and 55-64.

| | Number of deaths of males at ages | | | |
| Cause of death | 45–54 | | 55–64 | |
	Registered	Expected	Registered	Expected
Tuberculosis	11	19	13	21
Cancer of lung	24	24	32	42
Vascular lesions of nervous system	15	14	49	43
Coronary disease, angina	42	41	104	92
Other myocardial degeneration..	8	5	51	24
Pneumonia	10	7	15	16
Bronchitis	17	15	75	44
All causes	242	238	566	482

This table shows that much of the excessive mortality in the older age group is caused by the larger number of deaths assigned to bronchitis and other myocardial degeneration. In addition to those discussed above there were six deaths assigned to pneumoconiosis (2 at 45-54 and 4 at 55-64) instead of three expected. Industrial pneumoconiosis includes byssinosis.

Before dealing with the mortality of individual occupations in the textile group, it should be noted that there is a possibility of discrepancies between numerator and denominator in the cotton, wool and "other" industrial groups. At census, industrial assignments were made on the basis of the major product of the establishment in which a person worked, whereas, at death, assignments were necessarily based on the individual occupation of, for example, "cotton weaver" or "rayon weaver" as returned. Thus, a cotton weaver working in an establishment the major product of which is rayon would have been assigned at death to "cotton" and at census to "other". Also the term "cotton weaver" will often continue to be used by a person using cotton weaving machinery to weave synthetic materials. It is probable that, while cotton and "other" industries have a fairly large overlap, this does not occur to the same extent in the woollen industry.

General mortality among the individual occupations in the group of openers and sorters, etc. was very variable. The mortality for "other" textile industries was high, and may have been artificially so. Deaths from tuberculosis were fewer than expected in all occupations, although the numbers were very small. The table below gives details of the registered and expected deaths among cotton and wool occupations in the initial stages of the textile industry (Occ. Code Nos. 280-284). Rag and wool carbonisers are included in the woollen industry.

| | Number of deaths of males aged 20-64 | | | |
| Cause of death | Cotton openers, etc. | | Wool openers, etc. | |
	Registered	Expected	Registered	Expected
Cancer of lung	6	14	43	49
Vascular lesions of nervous system	7	12	53	41
Coronary disease, angina ..	29	33	100	99
Other myocardial degeneration ..	9	6	41	21
Pneumonia	5	6	24	17
Bronchitis	20	12	61	42
All causes	178	175	592	570

There was slightly higher general mortality among wool rather than cotton workers in this group of occupations. This is the reverse of the position existing in 1930-32. The numbers employed in the cotton group were small but the cardio-respiratory group of diseases (pneumonia, bronchitis and myocardial degeneration) appeared to affect the wool workers almost equally. Three deaths of cotton workers were assigned to pneumoconiosis.

In the group of textile occupations concerned with *spinning and doubling*, the mortality experience was relatively favourable, the S.M.R. being given as 92. Data concerning cotton and wool spinners are given separately in Table 3A(i). In both industries mortality experiences were favourable at all age groups under 65 years. For the individual causes, the number of deaths assigned to tuberculosis and cancer of lung were fewer than expected in both cotton and wool industries. Cerebro- and cardio-vascular mortality was normal or below for each of the constituent causes with the exception of "other myocardial degeneration". The number of deaths assigned to this last group and to pneumonia and bronchitis, together with those expected, are shown in the table below.

| Cause of death | Deaths of spinners, etc. aged 20-64 | | | |
| | Cotton | | Wool | |
	Registered	Expected	Registered	Expected
Other myocardial degeneration..	31	25	17	9
Pneumonia	16	21	5	9
Bronchitis	71	51	17	19

Although numbers were small, deaths due to pneumonia were less frequent than expected in both industries. Bronchitis and myocardial degeneration were both responsible for excessive mortality among cotton spinners. On the other hand, among wool spinners there was an excess of deaths assigned only to the heart condition. Numbers were too small for any reliability to be placed on this finding.

The general mortality experience of *doublers, twisters and silk throwsters* was in accordance with expectation. For no individual cause was the number of deaths significantly different from that expected although the figures for bronchitis (19 deaths registered, 13 expected) are possibly suggestive of a high death rate from this disease.

The sub-order of textile occupations which included *winders, warpers, sizers and drawers-in* had a normal general mortality. *Drawers-in* and *twisters-in* returned a S.M.R. of 144. For their wives, mortality also apparently increased, it is possible that there has been some over-recording of deaths in this occupation although the mortality picture is not entirely in agreement with this hypothesis; nor is it easy to see how such over-statement occurred. The number of deaths from vascular lesions of nervous system was 22, with 9 expected. In addition there were 39 deaths assigned to coronary disease and only 22 expected. In 1930-32 the S.M.R. for this occupation was returned as 133. There were 13 deaths from cerebro-vascular lesions (8 expected) and 46 from disease of the heart (25 expected). Drawing-in is an occupation requiring concentration and steadiness of hand, but no specific industrial hazard is known.

Table I shows that *foremen weavers* returned a S.M.R. of 154, and those in cotton weaving one of 253. This is an artificially high figure due to the appearance of the term "loom overlooker" in both the foremen group (Occ. Code 310) and that of strippers, grinders, tacklers, etc. (Occ. Code 343) in the 1951 edition of the Classification of Occupations. Although this error was realised by the time the census schedules were coded, deaths of loom overlookers occurring in 1949-51 were probably coded to Occupation Code No. 310 instead of the more correct Code No. 343.

The error discussed above has resulted in some exaggeration of the mortality picture of *cotton weavers* as shown in Table 3A(i). Despite this, cotton weavers had an apparently less favourable mortality experience than wool weavers. It is probable that this is due to the difficulties of classifying weavers into their correct industry as mentioned on page 111, especially as weaving is the occupation most likely to deal with mixed (e.g. wool and cotton) thread. In support of this hypothesis is the fact that the apparently unfavourable position of the cotton weaver has developed since publication of the 1931 Occupational Mortality report, and it is this period that has seen the vast increase in the use of synthetic yarns. Caution is therefore urged

| Cause of death | Ratios of S.M.R. for individual causes to that of all causes | |
	Cotton weavers	Wool weavers
Tuberculosis..	110	94
Cancer of lung	55	(46)
Vascular lesions of nervous system	114	143
Coronary disease, angina	101	124
Chronic rheumatic heart disease ..	212	174
Pneumonia	62	(30)
Bronchitis	112	74
All causes S.M.R.	136	82

in drawing conclusions from the study of the mortality of weavers. It is suggested that it would be advisable to compare the mortality of cotton and wool weavers by a study of the ratios of the S.M.R. for any individual cause of death to that for all causes, as has been done in the previous table for some of the principal causes of death.

Considering the small number of deaths involved the mortality pattern is essentially similar, with chronic rheumatic heart disease standing out as an important, if relatively rare, cause of death among weavers. Wool weavers had, if anything, a somewhat worse relative mortality from cerebro-vascular disease and a more favourable one from bronchitis.

Data for *weavers* (Occ. Code 311) are shown as a whole in Table 3A(ii). Their general mortality was slightly above expectation with a significant excess of deaths from coronary disease, chronic rheumatic heart disease and other myocardial degeneration.

Carpet weavers, a small group with a normal S.M.R. of 99 had no significant departure from expectation among individual causes of death.

Knitters returned a S.M.R. of 84, significantly below normal. There was a favourable mortality from cancer, while the number of deaths assigned to hypertension and chronic rheumatic heart disease were just significantly in excess of expectation.

Workers in bleaching, dyeing and finishing (not dyehouse workers) had a normal general mortality experience. Although there was a small deficiency of deaths from cancer (all sites), those assigned to cancer of stomach were above the number expected (65 registered, 51 expected), and to cancer of lung, below (77 registered, 106 expected). Mortality from cardio- and cerebro-vascular disease in general was above that for all males and significantly so for vascular lesions of the nervous system.

Dyehouse workers (including all "dyers and cleaners" so returned) had apparently excessive mortality, returning a S.M.R. of 123, similar to that of their wives. There was excessive mortality from cancer of all forms, cancer of stomach (36 deaths registered and 25 expected) coronary disease, (144 deaths registered, 102 expected) and bronchitis (63 deaths registered and 45 expected). There were 5 deaths from hernia and only 1 expected. A small part of the excess mortality of this group may have been due to confusion with dry cleaners (page 138) who returned a very low S.M.R.

Other skilled textile workers returned a normal S.M.R. for all causes. They had fewer deaths from cancer of lung than expected. There were 13 deaths (2 with tuberculosis) assigned to occupational disease of the lung and 5 expected. Of these, 8 occurred among *strippers, grinders, jobbers and tacklers (cotton)*. The general mortality for this last group was below expectation, the S.M.R. being returned as 74. A large part of the deficiency of deaths in this group is explained by the inclusion of loom overlookers both with foremen, as well as in the group under discussion, as referred to earlier (page 112). Bearing this in mind it is probable that deaths from tuberculosis and cancer of lung were fewer than expected.

Wives of textile workers very often work in the same mill as their husbands, but not necessarily at the same job. It is probably preferable therefore to treat the cotton and wool industries separately as far as the mortality of married women is concerned but to group the various occupations of husbands within each industry together. Data concerning deaths of these women from some of the more important causes as shown in Table 3B(ii) have been grouped accordingly and are shown below.

| Cause of death | Deaths of married women aged 20-64 | | | |
| | Husband's occupation in cotton industry | | Husband's occupation in woollen industry | |
	Registered	Expected	Registered	Expected
Tuberculosis..	22	28	28	15
Cancer of stomach ..	27	18	9	9
Cancer of lung	4	10	3	5
Cancer of breast	41	44	25	22
Vascular lesions of nervous system	87	65	31	34
Coronary disease, angina	34	38	22	19
Chronic rheumatic heart disease ..	46	31	22	17
Other myocardial degeneration ..	38	20	18	10
Pneumonia	10	12	9	7
Bronchitis	45	14	16	7
Pregnancy, childbirth, abortion ..	7	6	3	3
All causes	605	538	298	283

Wives of cotton workers have somewhat the worse general mortality experience, although the difference is not statistically significant. The pattern of mortality is very similar, with the numbers of deaths assigned to chronic rheumatic heart disease, other myocardial degeneration and bronchitis being excessive in both industry groups. There was a higher mortality from cancer of stomach and vascular lesions of nervous system in cotton workers' than in wool workers' wives.

The textile industry is one in which women play a large part, and data concerning the mortality of single women for various occupations are shown in Tables 3C(i) and (ii). The S.M.R. for single women in the whole occupation order of textile workers was returned as 121. One of the reasons for this comparatively unfavourable mortality experience may be that in areas where the work of single women is, in many ways, traditional, it may be surmised that when registering a death the informant is more likely to record the past occupation

than in other areas where the occupations of women are not so restricted. In view of these possibilities together with those already enumerated in Chapter I great care should be exercised in drawing conclusions from the data presented in this volume. *Carders, combers and other preparing room workers* returned a S.M.R. of 108. There were 13 deaths assigned to bronchitis and only 5 expected. *Spinners and piecers* had an apparently unfavourable mortality experience returning a S.M.R. 26 per cent above the standard. There were 11 deaths from bronchitis (3 expected) and 28 from tuberculosis (16 expected). *Doublers, twisters, etc.* did not show the high mortality from bronchitis found in other women's textile trades. On the other hand deaths from heart disease were relatively frequent. *Winders and reelers* with a S.M.R. of 119 also had high mortality from bronchitis (25 deaths registered, 9 expected). *Weavers* (not carpet) in addition to high bronchitis mortality also had an excessive number of deaths from heart diseases. *Hosiery frame tenters* showed a rather high tuberculosis mortality, 25 deaths being registered and 15 expected. *Lookers, examiners, burlers and menders* returned a S.M.R. of 115. In addition to the usual high bronchitis and rheumatic disease mortality there were 4 deaths assigned to leukaemia and 1 expected.

VIII. Leather Workers, Fur Dressers

There were 4,338 deaths of males aged 20-64 who were classified as leather workers and fur dressers. The deaths expected at standard rates were 3,920, giving a S.M.R. of 111, significantly above expectation. Deaths of the wives of these men numbered 1,774 as against 1,788, giving a S.M.R. of 99, which was within the limits of normality.

The first sub-order, that of *leather tanners and dressers and fur dressers* returned a similar S.M.R. for males, 110. Among the individual occupations of this sub-order, that of *curriers and leather dressers* returned the highest mortality, 329 deaths being registered and 221 expected, giving a S.M.R. of 149. The inclusion of leather workers (so-called) under this heading may be responsible for this excess mortality, rendering the increase largely an apparent one. Nevertheless, mortality for tuberculosis, bronchitis and chronic rheumatic heart disease was excessive, even on the assumption that the given S.M.R. of 149 was not a true one. The wives of curriers and leather dressers returned a S.M.R. of 135, which may also have been artificially inflated for the same reason. Numbers were very small, but the excess for tuberculosis, etc. noted among the husbands was not present for the wives.

Lime and tan yard workers and enamellers, japanners, dyers-finishers both returned normal S.M.R's. In the latter occupation 10 deaths were assigned to cancer of lung and 5 expected. Other skilled leather workers had a favourable and possibly artificially low S.M.R. of 75.

Boot and shoe makers, with a S.M.R. of 111 consist of two main groups, the factory workers and the shoe makers and repairers who do not work in a factory. Both groups are analysed in detail in Table 3A(i). The *factory workers* returned a S.M.R. of 89, significantly below expectation. Among individual causes of death there were 160 deaths assigned to tuberculosis, and 112 expected. Recent work has tended to discount the theory that boot and shoe making is a "dangerous" occupation, and has suggested that the excessive mortality from tuberculosis is largely due to increased reservoirs of infection that result from the self-selection of tuberculous individuals choosing a light occupation, such as is to be found in the boot and shoe industry. The same self-selection of the unfit, probably accounts for the high mortality from chronic rheumatic heart disease. Single women in this occupation, who returned a S.M.R. of 112, also had a high mortality from tuberculosis, 34 deaths being assigned to this cause and 22 expected.

There were 1,912 deaths of males aged 20-64 registered among the *non-factory boot and shoe makers and repairers* with 1,366 expected; this gave a S.M.R. of 140. The fact that the wives of these men returned a S.M.R. of only 115 is evidence that the high mortality rate for men may have been to some extent real. Examination of S.M.R's for the individual causes of death shows that, almost without exception, they were above 100. The most likely explanation for this general effect lies in the selection of this occupation by many men who are not fit enough for a more strenuous one.

Makers of leather or substitute goods returned a S.M.R. of 108. Among the individual occupations the only one with a significantly high S.M.R. was that of *saddlers and harness makers* with 123 deaths registered and 89 expected, giving a S.M.R. of 138. This is a dying occupation; there were only 1,507 men enumerated in 1951 between the ages of 20 and 64. (In 1931 there were 5,289). It appears probable that the "migration" from the occupation in the intercensal years has largely taken place among the fitter men. This will result in the production of relatively high mortality rates among the less fit who were left behind.

The sub-order of makers of leather and substitute goods is analysed as a whole in Table 3A(ii). There was significantly high mortality from tuberculosis, chronic rheumatic heart disease and bronchitis which as with other leather workers may be due to selection of the less fit men for these occupations.

114

IX. Makers of Textile Goods and Articles of Dress

Both the men and their wives in this occupation order showed normal mortality experience in 1949-53.

Garment workers, of which there were 62,534 males between 20 and 64 enumerated at the census, returned a S.M.R. of 106, slightly greater than expectation. This excess was almost entirely due to the high mortality among tailors, who returned a S.M.R. of 126. This high death rate may have been due to the inclusion of a certain number of men who were described at death as tailors and outfitters. The term "tailor and outfitter" is very commonly used by shopkeepers, and as such should be correctly classified as " proprietor or manager of a retail business". An error of this nature is unlikely to occur at census as the schedule required details of employer and employer's business. On the death certificate these last details are not required. A further possible source of error which is more liable to occur at census than at death registration is the very wide use of the term "tailor".

Garment workers are analysed as a whole in Table 3A(i). They returned a significantly high S.M.R. for coronary disease (149) and for chronic rheumatic heart disease (146), this last being due, in all probability, to the tendency for the less fit to take on the light work involved in these occupations. The high death rate from coronary disease may be due to the sedentary nature of the work.

Tailors are also analysed separately in Table 3A(i). Bearing in mind the possible limitations of these data mentioned above, the general pattern of mortality by cause was somewhat similar to that for garment workers as a whole.

The mortality of *garment cutters*, analysed in Table 3A(ii) showed a S.M.R. of *192* for deaths from chronic rheumatic heart disease, 23 deaths registered and 12 expected.

The next sub-order, that of *hat and cap makers and milliners*, was a small group of 4,281 men aged between 20 and 64. They returned a normal S.M.R. of 102. None of the individual occupations showed any departure from normal. The sub-order is analysed as a whole in Table 3A(i). Numbers are too small for any conclusions to be drawn from this analysis but three causes of death deserve mention. These are cancer of lung (23 deaths registered, 15 expected) bronchitis (19 registered, 13 expected) and ulcer of duodenum (8 registered and 2 expected).

Upholsterers and bedding makers returned a S.M.R. of 89, significantly below expectation. The sub-order (other than foremen) is analysed in Table 3A(ii).

Among other makers of textile goods, *artificial flower and feather makers* returned a S.M.R. of *175*, the only individual occupation with an excessive mortality rate. This occupation is performed by many permanently disabled men.

Mortality of *furriers, canvas goods makers and other makers of textile goods* is analysed in Table 3A(ii). They are all small occupations and examination of the data concerning their mortality shows no outstanding features.

The S.M.R's returned for single women in the individual occupations in the codes show considerable variation and little reliance can be placed on their accuracy. However, after taking this into consideration, among those women returned as tailoresses and machinists there appears to have been increased risk of mortality from tuberculosis and bronchitis.

X. Makers of Foods, Drinks and Tobacco

Males aged 20-64 engaged in the manufacture of food, drinks and tobacco numbered 136,165 in 1951. With a S.M.R. of 93 their mortality experience was slightly below expectation. The S.M.R. for the wives of these men was 101.

The largest sub-order in this group consists of those engaged in the manufacture of food. They numbered 113,109 in 1951 and returned a S.M.R. of 91.

Bakers, pastry cooks, oven men, etc., had a normal mortality experience. The only cause of death for which mortality was excessive was cancer of lung. There were 244 deaths assigned to this cause and 178 expected yielding a S.M.R. of 137.

Among the other individual occupations the only one whose mortality was significantly above expectation was that of *meat and fish curers and smokers* who returned a S.M.R. of 134. Although the number of deaths assigned to individual causes are very small, two points are worth noting. Firstly, the number of deaths assigned to cancer of the lung was 10, with 5 expected. Secondly, only one other occupation (*slaughterhouse workers*), connected with the manufacture of food, showed a mortality from tuberculosis above average; in neither case was this excess a significant one. With other occupations in this sub-order the all causes S.M.R. was either normal or below. Tuberculosis, as noted above, is not a frequent cause of mortality among food manufacturers, no doubt because sufferers from this disease are not retained in the industry, owing to the danger of transmitting it.

Makers of alcoholic drinks are analysed as a group in Table 3A(i), and differentiating *foremen* and *cellarmen* in Table 3A(ii). The mortality of the group as a whole was just significantly above normal with a S.M.R. of 109. None of the individual occupations had sufficiently large populations at risk to show significant departure from all male mortality with the exception of that for *skilled workers in ale, etc.*, *brewing*, among whom there were 60 deaths registered and 43 expected. For the sub-order as a whole the following individual causes of death are of interest. Deaths assigned to vascular lesions of nervous system (53 registered, 31 expected) and hypertension (20 registered and 13 expected) showed a high mortality but other cardio-vascular disease showed normal or low mortality. Another disease showing a high death rate was cancer of lung (55 registered and 37 expected). There were 5 deaths from cirrhosis of the liver and two expected. The high mortality from cancer of lung was repeated in each of the three groups analysed in Table 3A(ii) although

115

only in the case of cellarmen did it reach statistical significance. Cellarmen also had a high mortality from tuberculosis which was just on the borderline of statistical significance.

Makers of non-alcoholic drinks formed a small sub-order, who, with a S.M.R. of *105*, had a normal mortality experience.

Makers of tobacco, cigars and cigarettes numbered 6,630 (aged 20-64). There were 191 deaths registered and 238 expected, a mortality experience significantly better than the average. The group is too small for a study of individual causes of death to be very productive.

XI. Workers in Wood, Cane and Cork

Men aged 20-64 who were workers in wood, cane and cork numbered 359,045 in 1951. Of these, 56 per cent were carpenters and joiners. The mortality of the order as a whole was 91 per cent of that for males of similar age in England and Wales.

Foremen and overlookers returned a S.M.R. of 66. Mortality from separate causes of death was also generally low.

Cabinet makers, with an all causes S.M.R. of 106, returned a significant excess of deaths from cancer of lung.

Carpenters and joiners returned a S.M.R. of 91, the same as that for the whole order. Their mortality is analysed in detail in Table 3A(i). For individual causes mortality was either normal or below. The only significant exception was deaths from motor vehicle accidents, where 196 were registered and 154 expected. The wives of carpenters had a normal mortality experience; it is analysed by cause in Table 3B(i).

Coopers, hoop makers and benders, with a S.M.R. of 135, had a mortality experience significantly above normal. Despite the small numbers of deaths from individual causes there appears to be an increased risk of death from tuberculosis, pneumonia and bronchitis. This occupation also showed a high mortality risk in 1921-23 and 1930-32. The mortality of wives of men in this occupation was normal.

The only other occupation in this order that had a significantly high S.M.R. was that of the *basket makers, etc.* This is one of the occupations that is taught to the physically handicapped person and it is possible that as a result of this selection of the less fit, with their greater risk of death, the mortality rate for the occupation as a whole was increased.

Other occupations in the wood, cane and cork order had either a normal or better than normal mortality experience.

The mortality of *sawyers* is analysed in Table 3A(i). Deaths assigned to coronary disease numbered 174 with 227 expected. Another cause of death with a S.M.R. significantly below expectation was "other" accidents. On the other hand, deaths from ulcer of stomach and duodenum were both significantly above expectation.

XII. Makers of and Workers in Paper: Printers

Makers of paper and paper board aged 20-64 numbered 14,015 in 1951, just over 10 per cent of the whole occupation order. They returned a S.M.R. of 85, significantly below expectation. Of the individual occupations, none returned a S.M.R. significantly above average, and *foremen, breakers, etc.* and *paper finishers* were significantly below. The sub-order is analysed in Table 3A(ii). The only cause which had an excessive number of deaths assigned is cancer of stomach with 24 deaths registered and 17 expected.

Workers in paper and paper board were a group of similar size to that of the makers of the same materials. The S.M.R. of the sub-order was very low, 57, with 219 deaths registered and 386 expected.

Of the 134,905 males aged 20-64 in the occupational order, 108,620 were enumerated as *printers and bookbinders*. There were 3,238 deaths registered and 3,690 expected, yielding a S.M.R. of 88, significantly below expectation.

Compositors returned a S.M.R. of 81. No attempt has been made to separate hand or machine operatives in this occupation. The S.M.R. for the same occupation in 1930-32 was 92. Deaths are analysed in detail in Table 3A(i). For no cause of death shown was mortality significantly high. Deaths from cancer of both stomach and lung were below expectation. Other important causes showing favourable mortality were bronchitis and all accidental causes.

Printing machine minders and their assistants, printers, and machine rulers form a group of occupations within which there appears to have been considerable incorrect reporting of occupation and little reliance can be placed on S.M.R.'s for individual occupations. The group is analysed in Table 3A(i) from which it will be seen that they had a normal mortality experience. Deaths from ulcer of stomach and duodenum were probably excessive and deaths from other accidental causes significantly below expectation.

Mortality of *bookbinders* and *other skilled printing workers* is analysed in detail in Table 3A(ii). The former returned normal S.M.R. from all causes but the latter showed significantly low numbers of deaths from all causes, tuberculosis, pneumonia and bronchitis.

The table below suggests an excessive mortality from leukaemia among the sub-order of printers and bookbinders as a whole, which was not present among their wives, but numbers of deaths are too small for any definite conclusions to be drawn about the possible existence of any occupational risk.

In the three occupation groups of single women analysed in Table 3C(ii) there appears to have been excessive mortality from chronic rheumatic heart disease. In all, 36 deaths from this cause were registered

Deaths from Leukaemia

Occupation	Deaths of males aged 20–64		Deaths of wives aged 20–64	
	Registered	Expected	Registered	Expected
Compositors	7	6	2	4
Printing machine minders, printers, etc.	14	9	5	6
Bookbinders	2	1	not available	
Other skilled printing workers	10	6	4	4
Total	33	22	11	14
Makers of and workers in paper, etc.	4	5	not available	

and 18 expected. In two of the groups, makers of paper, etc. and printing machine minders, the tuberculosis death rate was above the normal.

XIII. Makers of Products (not elsewhere specified)

This is a rather heterogeneous group of occupations and includes workers in rubber and plastics, and makers of musical instruments and other products. None of the individual occupations, with possible exception of hair, etc., drafters and brush makers, returned a S.M.R. significantly above the average.

There were 606 deaths registered among *workers in rubber* and 759 expected in 1949-53 yielding a S.M.R. of 80. Mortality from malignant neoplasms of all sites and "other" accidents was lower than would be expected by chance.

Workers in plastics returned 199 deaths, with 255 registered, giving a S.M.R. of 78. Among the individual causes of deaths, one that may be worthy of note is nephritis. There were 10 deaths assigned to this cause and only 5 expected.

Makers of musical instruments had a normal mortality experience and with the exception of an increased number of deaths from vascular lesions of nervous system, there was no departure from normality among the individual causes of death.

Hair, etc. drafters and brush makers, with an all causes S.M.R. of 125 owe some of this slightly excessive mortality to tuberculosis (15 registered, 7 expected) and bronchitis (15 registered and 7 expected).

Dental mechanics returned a S.M.R. of 90 not significantly different from expectation. Mortality from bronchitis was low.

XIV. Workers in Building and Contracting

There were 769,807 men aged 20-64 enumerated as workers in building and contracting in 1951. Between 1949-53 there were 23,160 deaths registered of men in the same age group and 26,297 deaths expected, giving a significantly low S.M.R. of 88.

Foremen and Gangers (building and contracting) returned a S.M.R. of 84. Mortality from individual causes of death was generally favourable with the exception of deaths from motor vehicle accidents (45 registered 29 expected) and "other" accidents (151 registered 46 expected). Deaths from tuberculosis, vascular lesions of the central nervous system, pneumonia and bronchitis were among those significantly below expectation.

Clerks of Works were a much smaller group than foremen whose work in many respects is similar. The all causes S.M.R. was 82. No individual cause of death gave significantly high figures. Mortality from pneumonia and bronchitis was low.

There was probably considerable movement of men in the labouring occupations in the building industry which together with difficulties in identification make it possible that the high S.M.R. returned for *builders' labourers* is one that has been artificially inflated. For this reason mortality of builders', bricklayers', plasterers' and masons' labourers has been analysed as a group in Table 3A(i). The S.M.R. for all causes was 145. It is likely, however, that this combination has not resulted in a complete matching of numerator and denominator in the calculation of death rates, owing to the omission of *other workers* (mainly navvies) in building and contracting who returned a low S.M.R. of 56. Addition of these predominantly labouring occupations gave a S.M.R. of 81, with 11,710 deaths being registered and 14,400 expected. Table EG (page *118*) combines for builders' labourers and navvies the details given separately in Table 3A(i) but there was probably further confusion with labourers and other unskilled workers (Occ. Code 950). No individual cause of death showed a significant excess. On the other hand, mortality was well below expectation for tuberculosis, poliomyelitis, cancer of lung, leukaemia, heart disease, nephritis and suicide.

Table EH (page *119*) gives details of the mortality of the wives of builders' labourers and navvies. Their S.M.R. for all causes was returned at 91, significantly below the standard but not as low as for their husbands, for which a certain amount of self-selection of fitter men must operate. There was a significant excess of deaths assigned to tuberculosis, carcinoma of uterus (cervix) and bronchitis.

Table EG. Deaths by cause and age, S.M.R's (20-64) and P.M.R's (65 and over) in Occupation Codes (582, 584, 586, 591 and 599) males, England and Wales, 1949-53

Occupation Codes 582, 584, 586, 591 and 599 Builders' labourers and Navvies

Number of Deaths registered in the five years 1949-53 at ages:

CAUSE OF DEATH and International Classification No.	16–19	20–24	25–34	35–44	45–54	55–64	65–69	70–74	75 and over	Aggregate 20–64	Aggregate 65 and over	Expected Deaths 20–64	S.M.R. 20–64	P.M.R. 65 and over
	a	b	c	d	e	f	g	h	j	k	l	m	n	o
Tuberculosis (001-019)	15	40	138	191	276	287	114	62	35	932	211	1,075	87	103
Tuberculosis, respiratory (001-008)	9	36	126	184	261	275	110	60	34	882	204	1,007	88	106
Tuberculosis, respiratory with occ. dis. of lung (001)	—	—	—	—	4	6	7	—	—	10	7	32	*31*	*(64)*
Tuberculosis, non-respiratory (010-019)	6	4	12	7	15	12	4	2	1	50	7	68	74	*(64)*
Syphilitic disease (020-029)	—	—	6	9	34	66	31	32	14	115	77	102	113	108
Acute poliomyelitis (080)	—	3	2	—	—	2	1	—	—	7	1	19	*(37)*	∞
Malignant neoplasms, all sites (140-205)	12	16	75	245	897	1,602	1,075	1,007	1,197	2,835	3,279	3,263	87	104
Malignant neoplasm, stomach (151)	—	—	9	37	202	329	228	224	211	577	663	572	101	109
Malignant neoplasm, lung, bronchus (162-163)	—	4	11	91	365	585	277	161	96	1,056	534	1,181	89	102
Leukaemia, aleukaemia (204)	2	3	6	8	17	18	20	6	8	52	34	84	62	*89*
Diabetes (260)	1	4	7	8	10	19	15	16	25	48	56	56	*86*	55
Psychoses (300-309)	—	—	2	2	1	1	7	5	23	6	35	14	*(43)*	*109*
Vascular lesions of nervous system (330-334)	1	3	12	34	191	483	516	829	1,468	723	2,813	1,011	72	99
Coronary disease, angina (420)	—	—	11	96	395	925	691	765	939	1,427	2,395	2,343	61	83
Hypertension (440-447)	—	3	4	18	67	196	176	267	453	288	896	424	68	104
Chronic rheumatic heart disease (410-416)	2	8	27	42	76	115	63	58	82	268	203	354	76	103
Chronic endocarditis not spec. as rheumatic (421)	1	1	4	4	30	61	48	28	49	100	125	114	88	104
Other myocardial degeneration (422)	—	—	4	13	71	368	502	785	2,567	456	3,854	500	91	101
General arteriosclerosis (450)	—	—	—	2	9	49	91	145	506	60	742	74	81	112
Influenza (480-483)	3	2	6	17	47	104	70	77	136	176	283	169	104	108
Pneumonia (490-493)	2	5	10	44	104	260	197	227	463	423	887	436	97	115
Bronchitis (500-502)	—	1	5	47	286	741	573	605	989	1,080	2,167	1,018	106	131
Pneumoconiosis, occupational (523, 524)	—	—	—	2	3	7	5	—	—	12	5	56	*21*	*(16)*
Other chronic interstitial pneumonia (525)	—	—	1	3	3	12	3	2	5	19	10	17	*112*	*91*
Ulcer of stomach (540)	—	1	4	19	53	89	48	44	44	166	136	162	102	104
Ulcer of duodenum (541)	—	4	11	20	62	76	33	31	27	173	91	178	97	79
Gastritis, enteritis and diarrhoea (543, 571, 572)	—	1	3	4	7	12	9	17	21	27	47	48	*56*	100
Nephritis and nephrosis (590-594)	5	13	24	27	43	63	44	30	78	170	152	246	69	76
Hyperplasia of prostate (610)	—	—	—	—	4	46	51	99	229	50	379	59	85	69
Appendicitis (550-553)	1	4	3	8	15	12	8	8	10	42	26	50	84	*93*
Hernia of abdominal cavity (560, 561)	—	1	2	3	6	17	18	16	34	29	68	33	*88*	97
Intestinal obstruction without mention of hernia (570)	—	—	—	4	7	17	4	11	15	28	30	44	*64*	61
Cirrhosis of liver (581)	—	1	2	6	14	16	14	5	12	39	31	58	*67*	97
Cholelithiasis, cholecystitis (584-585)	—	—	—	1	3	6	6	7	13	10	26	21	*48*	68
Motor vehicle accidents (E810-835)	9	23	69	39	51	64	24	9	25	246	58	309	80	73
Accidents in the home (E870.0-936.0)	3	6	13	8	13	10	4	20	54	50	78	57	*88*	69
Other accidents (Remr. of E800-962)	15	44	95	101	94	82	35	27	55	416	117	408	102	113
Suicide (E963, 970-979)	3	10	33	51	67	65	53	28	27	226	108	328	69	98
Other causes (Remainder)	14	56	98	162	284	463	329	362	879	1,063	1,570	1,354	79	98
All causes	**87**	**250**	**671**	**1,230**	**3,223**	**6,336**	**4,858**	**5,624**	**10,474**	**11,710**	**20,956**	**14,400**	**81**	**100**
Census Population	16,596	53,752	97,122	90,498	93,304	70,818	27,189	18,701	15,385	405,494	61,275			
Mean Annual Death Rate from All Causes (per 100,000)	105	93	138	272	691	1,789	3,574	6,015	13,616	578	6,840			
Ratio of Death Rate to that of All Males (Taken as 100)	102	67	87	95	84	78	81	88	95	85	84			

Table EH. Deaths by cause, S.M.R's (20-64) in Occupation Codes (582, 584, 586, 591 and 599) married women, England and Wales, 1949-53

Occupation codes 582, 584, 586, 591, and 599, Builders labourers, etc., Navvies

CAUSE OF DEATH and International Classification No.	Registered deaths	Expected deaths	S.M.R.
Tuberculosis (001-019)	398	313	127
Tuberculosis, respiratory (001 008)	367	286	128
Tuberculosis, non-respiratory (010-019)	31	27	*115*
Syphilitic disease (020-029)	20	22	*91*
Acute poliomyelitis (080)	5	9	*(56)*
Malignant neoplasms, all sites (140-205)	1,488	1,828	81
Malignant neoplasm, stomach (151)	183	189	97
Malignant neoplasm, lung, bronchus (162, 163)	78	107	73
Malignant neoplasm, breast (170)	324	440	74
Malignant neoplasm, cervix uteri (171)	170	139	122
Malignant neoplasm, other parts of uterus (172-174)	39	55	*71*
Leukaemia, aleukaemia (204)	44	45	*98*
Diabetes (260)	58	61	95
Psychoses (300-309)	11	10	*110*
Vascular lesions of nervous system (330-334)	604	711	85
Coronary disease, angina (420)	369	413	89
Hypertension (440-447)	203	205	99
Chronic rheumatic heart disease (410-416)	329	334	99
Chronic endocarditis not spec. as rheumatic (421)	43	40	*108*
Other myocardial degeneration (422)	233	222	105
General arteriosclerosis (450)	22		*100*
Influenza (480-483)	55	64	86
Pneumonia (590-493)	126	133	95
Bronchitis (500-502)	185	156	119
Ulcer of stomach (540)	27	24	*113*
Ulcer of duodenum (541)	15	14	*107*
Gastritis, enteritis and diarrhoea (543, 571, 572)	27	34	79
Nephritis and nephrosis (590-594)	137	127	108
Pregnancy, childbirth, abortion (640-689)	81	67	121
Appendicitis (550-553)	19	20	*95*
Hernia of abdominal cavity (560, 561)	26	22	*118*
Intestinal obstruction without mention of hernia (570)	13	19	*68*
Cirrhosis of liver (581)	18	25	*72*
Cholelithiasis, cholecystitis (584, 585)	28	32	*88*
Motor vehicle accidents (E810-835)	16	31	*52*
Accidents in the home (E870.0-936.0)	18	32	*56*
Other accidents (Remr. of E800-962)	19	27	*70*
Suicide (E963, 970-979)	56	104	*54*
Other causes (Remainder)	698	724	96
All causes	**5,347**	**5,845**	**91**

Census Population Deaths registered (1949-53) and mean annual Death rate per 100,000 at ages:	Census popn.	Regd. deaths	Death rate
20–24	23,578	109	92
25–34	59,387	397	134
35–44	67,741	698	206
45–54	70,366	1,478	420
55–64	51,529	2,665	1,034

It is probable that the same lack of correspondence between statement of occupation at census and death registration has also occurred in the skilled building trades but probably not to the same extent. This factor should be borne in mind when considering the analysis of these occupations.

Bricklayers returned a S.M.R. of 94 significantly below expectation. Mortality from individual causes of death is analysed in Table 3A(i). Among S.M.R's significantly low, were those for coronary disease, vascular lesions of the central nervous system and "other" accidents. No cause of death showed a significantly high S.M.R.

Plasterers returned a S.M.R. of 100 with significantly high mortality from cancer of the lung and stomach.

Glaziers with 178 deaths registered and 124 expected returned a S.M.R. of 144, significantly above expectation. No particular cause or group of causes appear to be responsible for this high S.M.R. Numbers of deaths for the individual causes were small. The S.M.R. returned for the wives of these men was 116.

Slaters and Tilers form another small occupation in the building industry. Their S.M.R. of 109 was not significantly different from the average. There were 39 deaths from "other" accidents with only ten expected. No other individual cause of death was significantly above or below expectation with the possible exception of coronary disease (26 deaths registered and 41 expected).

Masons and stone cutters returned a mortality 22 per cent above the average at 20-64 years of age. The

119

excess mortality is found in the age groups above 35. Among males aged 20-64 there were 19 deaths assigned to tuberculosis with occupational disease of the lung and a further 19 assigned to occupational pneumoconiosis. Mortality from carcinoma of the stomach was also above expectation, 39 deaths being registered and 25 expected.

In Table 3A(ii) the masons have been divided into groups according to whether they worked chiefly in limestone, sandstone or other materials. Whereas in 1930-32, sandstone masons were shown to have the least favourable mortality among the three groups, in 1949-53 they had the most favourable as shown by the table below:—

| Occupation | Deaths at 20-64 and S.M.R. | | | | | |
| | 1930-32 | | | 1949-53 | | |
	Regd.	Exp.	S.M.R.	Regd.	Exp.	S.M.R.
Limestone Masons ..	237	242	98	91	63	144
Sandstone Masons ..	423	235	180	104	107	97
Other Masons ..	560	534	105	573	459	125

It is difficult to assess the reasons for this change as there was an alteration in classification between 1931 and 1951. Quarry masons and architectural sculptors, who were previously classified as masons are now classified with other workers in quarries, etc., and painters, sculptors and engravers respectively. All these types of masons are liable to contract industrial lung disease as the following table shows. This may be due to there being a considerable overlap in the material worked.

| Occupation | Tuberculosis with occupational disease of lung | | Occupational Pneumoconiosis | |
	Registered	Expected	Registered	Expected
Limestone Masons ..	2	0	1	0
Sandstone Masons ..	10	0	4	0
Other Masons ..	7	1	14	2

The classification of a man's occupation according to the stone in which he works depends on the area in which he resides, e.g. limestone masons are those masons enumerated in Cumberland, Durham, Derbyshire, Nottinghamshire, Lincolnshire, Staffordshire, Warwickshire, Kent, Dorset, Somerset and Devon and sandstone masons were those enumerated in Cheshire, Lancashire and West Riding of Yorkshire.

Slate workers (*not elsewhere specified*) and *Slate masons* formed a very small group of workers who returned a S.M.R. of *467* (28 deaths registered and 6 expected). It is probable that there was a considerable lack of correspondence between the population at census and statement of occupation at death, because of possible confusion with workers in slate quarries (Occ. Codes 056 and 059).

Platelayers returned an average mortality experience from all causes of death. Deaths from "other" accidents resulted in a S.M.R. of 598 (239 registered and 49 expected). This high ratio is due in all probability to the comparatively high risk of death run by workers on the permanent way. It results in the age-specific death rates for the younger age groups being higher than normal. Among other causes, deaths from tuberculosis, coronary disease and chronic rheumatic heart disease were significantly below expectation.

Paviors, street masons and asphalters with 335 deaths registered and 373 expected, returned a mortality experience just significantly below the average. No individual cause of death occurred in sufficient numbers to be worthy of comment, with the exception of cancer of lung (42 deaths registered, 31 expected).

Well and mine sinkers and borers were a small group of men with an average mortality. There were 8 deaths from "other" accidents and 1 expected.

Tunnel miners were another small group of workers with a high risk of death by "other" accidents (9 registered 1 expected). The all causes S.M.R. was *225* (27 deaths registered, 12 expected).

Builders (*so-called*) and other skilled workers formed a heterogeneous group with a S.M.R. of 95. Mortality from tuberculosis was lower, and from cancer of lung it was higher, than expected.

XV. Painters and Decorators

There were 265,803 men aged 20-64 enumerated as painters and decorators in 1951. Between 1949-1953 there were 9,215 deaths of men in this age group. With 8,807 expected they returned a S.M.R. of 105, slightly above the average for all males. Their wives returned an average mortality.

Foremen and overlookers gave a ratio of 75 with no important excess from any cause of death with the possible exception of motor vehicle and "other" accidents.

Aerographers and Paint sprayers with a normal S.M.R. of 102 had an excessive number of deaths from cancer of stomach (27 registered and 13 expected). Mortality from cancer of lung was also high, but not significantly so.

The table below gives details of deaths registered and expected at different age groups from malignant neoplasms.

| Cause of death | Deaths registered and expected at ages | | | | | |
| | 20– | | 45– | | 55-64 | |
	Regd.	Exp.	Regd.	Exp.	Regd.	Exp.
Cancer of stomach	9	3	10	5	8	6
Cancer of lung, bronchus ..	7	5	11	11	18	11
Other malignant neoplasms ..	12	12	11	11	20	14
All malignant neoplasms ..	28	20	32	27	46	31

As far as the small numbers allow conclusions, there appears to be a high risk of death from cancer of stomach in the younger age groups. The excess deaths from cancer of lung and other sites is almost limited to the 55-64 year age group. This excess mortality was not present among the wives of these men.

French Polishers returned a mortality experience just significantly in excess of expectation. There was excess mortality from bronchitis and pneumonia, there being 79 deaths registered from the two causes and 45 expected.

Sign writers returned a S.M.R. of 115 which was not significantly in excess of expectation. There were 21 deaths assigned to cancer of lung and 13 expected.

Other painters and decorators of whom there were 221,941 aged 20-64 in 1951, formed 83 per cent of the occupational order of painters and decorators. Their S.M.R. was 106, and was significantly high. Deaths assigned to cancer of stomach and lung were both more than expected as also were those assigned to bronchitis, respiratory tuberculosis and ulcer of stomach and duodenum.

The table below gives details for malignant neoplasms among "other painters" etc., similar to those given above for aerographers.

| Cause of death | Deaths registered and expected at ages | | | | | |
| | 20– | | 45– | | 55-64 | |
	Regd.	Exp.	Regd.	Exp.	Regd.	Exp.
Cancer of stomach	43	34	96	88	221	173
Cancer of lung ..	94	63	297	202	518	344
Other malignant neoplasms ..	150	150	215	209	458	428
All malignant neoplasms ..	287	247	608	499	1,197	945

The high death rate from cancer of stomach and lung is evenly spread over all three age groups in contradistinction to the aerographers where cancer of stomach deaths occurred relatively more frequently at the younger, and cancer of the lung at the older, ages. Whether this difference is of any importance is impossible to tell owing to the small size of the aerographers occupation group. In addition to the cancer sites mentioned above, other painters, etc., had 10 deaths assigned to malignant melanoma of skin (6 expected) and 14 to other malignant neoplasms of skin (7 expected).

The wives of other painters, etc., repeated the high tuberculosis mortality of their husbands but the deaths from cancer of all sites (and individual sites) were in accordance with expectation.

Single women returned as painters had a S.M.R. of 174 (73 deaths registered, 42 expected). There were 17 deaths assigned to tuberculosis and 7 expected, 18 to cancer (all sites) and 8 expected. None of the cancer sites shown in Table 3C(ii) had excessive mortality, with the possible exception of cancer of lung (3 deaths registered, 1 expected).

XVI. Administrators, Directors, Managers

(Not elsewhere specified)

There were 389,390 occupied and retired men between the ages of 20-64 enumerated as *administrators, directors or managers* in 1951. Their mortality experience and that of their wives were both 70 per cent of the respective standards for England and Wales.

Of the eleven occupations within the order, all returned mortality experiences significantly below normal and varying between a S.M.R. of 55 for heads or managers in office departments, to one of 82 for managers in mining, ceramics, glass, cement, etc. It is possible that in all occupations there existed a slight tendency to over estimation of the number of men in that occupation, as a result of difficulty of assignment of proprietors between this group and Orders III to XV. It is unlikely that the amount of this over-estimation was large.

Table 3A(i) gives details of the mortality of *civil service and local authority officers* down to and including the executive grades. The all causes S.M.R. of the combined groups was returned as 70. With the possible exception of cholelithiasis, coronary disease was the only cause from which mortality was significantly above the average for the country. The following table shows the registered and expected deaths from this cause at

different ages, compared with those for secretaries and managers and Social Class II (from which most men in this occupation group are drawn).

Coronary Disease

Age	Civil Service and Local Authority Administrative and Executive Officers			Secretaries of companies, etc., Managers of office departments and industrial undertakings			Social Class II		
	Deaths Registered	Deaths Expected	Ratio	Deaths Registered	Deaths Expected	Ratio	Deaths Registered	Deaths Expected	Ratio
20–	2	2	*(100)*	9	10	*(90)*	64	72	89
35–	30	26	115	135	139	97	774	741	104
45–	233	178	131	711	631	113	3,838	3,501	110
55–64	491	482	102	1,395	1,211	115	8,627	7,790	111
Total at ages 20–64	756	688	110	2,250	1,991	113	13,303	12,104	110

The civil service and local authority executive officer appeared to be more liable to death from coronary thrombosis at 45-54 than other males in Social Class II.

Mortality from most other causes of death was low compared with that of the male population as a whole. *Secretaries of companies and managers of office departments and industrial undertakings* returned a S.M.R. of 70. There were 8,330 deaths registered and 11,973 expected. The ratios for individual causes of death were very similar to those for the higher civil servants, etc. described above. There was a significantly greater number of deaths from coronary disease than expected. The increase occurred both in the 45-54 and 55-64 year age groups and is reflected in the table above. The only cause of death which showed a large difference between the two groups was cirrhosis of liver. There were 53 deaths registered and 50 expected among the managers etc. and only 8 registered against 16 expected among the higher civil servants.

The wives of men in the two groups also had very favourable mortality experiences. For no individual cause of death in either group was the number of deaths registered significantly above that expected.

Single women returned a S.M.R. of 58 with again, no individual cause of death giving excessive mortality.

XVII. Persons Employed in Transport, etc.

In 1951 there were 1,331,334 men aged 20-64 employed in transport. There were 48,369 deaths among these men, which with 45,569 expected gave a S.M.R. of 106. Their wives returned a similar mortality ratio of 104.

Railway Transport

Railway transport workers numbered 262,676 and returned a S.M.R. of 96.

Table EJ. Death rates per 100,000 population of males by age and occupation, among railway transport workers, 1949-53

Occupation	Occ. Code No.	Death rates per 100,000 of males at ages					S.M.R.
		25–	35–	45–	55–64	20–64	
Railway Officials	630	*194*	*193*	739	2,230		95
Engine Drivers, etc.	631, 632	*125*	248	729	2,232		93
Firemen	633	122	406	705	2,904		86
Guards	635	102	230	692	2,049		86
Signalmen	636	*137*	244	681	1,893		83
Shunters, etc.	637	162	315	855	2,335		103
Ticket Collectors	638	*146*	541	1,253	2,883		135
Porters	639	155	322	873	2,347		104
Running Shed and Other Railway Workers	634, 649	167	280	773	2,202		95

Railway officials, station masters, etc. returned a S.M.R. of 95 not significantly below the standard for all males. Deaths assigned to coronary disease were above expectation, 273 being registered and 193 expected. There were 11 deaths assigned to leukaemia and 5 expected. The following table compares leukaemia deaths among men engaged in railway transport occupations.

Deaths from pneumonia and bronchitis among station masters, etc., were significantly below expectation.

Locomotive engine drivers and motormen returned a S.M.R. of 93 which was below that expected on the basis of England and Wales standard rates. Causes of death that produced a greater number of deaths than expected were coronary diseases and "other" accidents.

Locomotive engine firemen returned a S.M.R. of 86, also below expectation. Firemen are, on the whole, young men, many of whom will later be promoted to engine drivers, and consequently, although the popula-

Occupation	Occ. Code No.	Deaths of Males aged 20-64 from leukaemia		S.M.R.
		Registered	Expected	
Railway Officials	630	11	5	*220*
Engine Drivers, etc.	631, 632	22	13	*169*
Engine Firemen	633	5	4	*(125)*
Guards	635	6	6	*(100)*
Signalmen	636	7	6	*(117)*
Shunters, etc.	637	5	5	*(100)*
Ticket Collectors	638		1	
Porters	639	16	14	*114*
Running Shed and other Railway Workers	634, 649	2	5	*(40)*
Total		74	59	125

tion in the group was comparatively large, it would not be expected to yield many deaths. The only cause of death which was significantly above expectation was "other" accidents where there were 48 deaths registered and only 33 expected. The all causes death rate at age 35-44 for these men was 406 per 100,000 compared with 287 per 100,000 for all males. This high rate was based on only 28 deaths. An examination of the individual causes of death showed that no individual cause of death was responsible for this high figure. In the 55-64 year age group mortality was also excessive. This may have resulted from relatively unfit men who failed to gain promotion to engine driver on health grounds, and thereby increased the mortality rate of the group as a whole.

Guards had below average mortality, their S.M.R. being returned as 86. The only cause of death for which the numbers were significantly high was "other" accidents with a S.M.R. of 212 (53 deaths registered, 25 expected). There was a significantly low number of deaths assigned to tuberculosis.

Signalmen returned a mortality rate 83 per cent of the average. There were 10 deaths from diabetes and only 4 expected. The number of deaths was not excessive from any other cause, and from tuberculosis, cancer, pneumonia and bronchitis they were significantly below the average.

Shunters, pointsmen and level crossing men had an average mortality from all causes. The only cause of death from which there was a significant excess was "other" accidents where 123 deaths were registered and only 27 expected. There is no doubt that this high risk of death from accident is due to the potentially dangerous work that these men perform.

Ticket Collectors and examiners were the only occupations in the railway transport sub-order to return a mortality significantly above the average for all males. Their wives had an average mortality. Table EJ (page *122*) shows that the male excess mortality was relatively greatest in the 35-44 year age group, where it was almost double that of all males in the same group. This occupation is lighter than most other in railway transport and there is probably a certain amount of selection of the less fit men as is suggested by the mortality from chronic rheumatic heart disease. Self-selection may also account for the occurrence of more deaths than expected from respiratory tuberculosis and bronchitis. On the other hand, their increased contact with the public may have increased the possibility for cross-infection to occur.

There were 2,718 deaths of men aged 20-64 who were classified as *porters*. With 2,610 expected this yielded a S.M.R. of 104. There was excessive mortality from cancer of stomach (S.M.R. 128) and bronchitis (S.M.R. 140). The S.M.R. of 88 from coronary disease was below expectation.

Running shed and other railway workers had a normal mortality experience with deaths from bronchitis significantly more than expected.

Road Transport

In 1951 there were 680,862 men aged 20-64 who were classified as road transport workers. They and their wives had an average mortality.

Among the individual occupations there appears to have been considerable discrepancy between the recording of occupation at census and at death (see page *6*). It must be remembered that the census schedule not only contains details of a man's occupation, but also of his industry, place of work and status. This enables coders to place a man in the correct occupation with a minimum of error. On death certification, only the occupation is required and error is thus more likely to occur.

Bus and tramway managers form a small group whose S.M.R. of 119 was just on the borderline of statistical significance. There were 42 deaths assigned to coronary disease and 19 expected, an excess sufficient to account for the excess of deaths from all causes.

Car and coach hire proprietors returned a S.M.R. of 427. This is obviously artificial, and is probably due to a large number of owner-drivers of taxis having been registered at death as proprietors of taxis. They are correctly classified under this head on the information available, but at census, if the additional data was sufficient to suggest that the man was an owner-driver, he was classified as a driver of an "other" passenger goods vehicle. A further source of error exists in the possible confusion between taxi and garage proprietors, many of whom fall into both categories. Analysis of mortality of these last two groups is shown in Table 3A(ii). Mortality was excessive for cancer of lung, vascular lesions of nervous system, coronary disease and motor vehicle accidents.

Haulage contractors and managers, with an all causes S.M.R. of 175, show an artificially increased mortality, for a similar reason, to coach and car hire proprietors. Deaths assigned to cirrhosis of liver, nephritis and motor vehicle accidents were excessive, even allowing for this artificially high S.M.R.

Inspectors and foremen returned a mortality 89 per cent of that for all males. There was a significant excess of deaths from coronary disease, 179 being registered and 136 expected.

Drivers of horse-drawn vehicles formed another group where the S.M.R. of 189 was probably artificially high. The excess in this case may have been due to the difficulty of deciding whether a man drives mechanical or horse-drawn vehicles. An excessive number of deaths (137) were assigned to bronchitis: only 44 were "expected", giving an apparent S.M.R. of 311.

Table EK gives details of deaths registered and expected among various road transport occupations for various causes of death. Of those occupations shown, drivers of buses, coaches and other self propelled vehicles apparently had the more favourable mortality with an all causes S.M.R. of 90. This is possibly an artificially low figure owing to difficulties in assignment of occupation discussed above. If the assumption is made that car, etc. proprietors, haulage contractors and drivers of horse-drawn vehicles all had average mortality, and that the excess shown for their occupations be transferred to drivers of bus, coach and other vehicles, the number of registered deaths would be increased from 11,982 to 13,464 giving a re-calculated S.M.R. of 101.

Table EK. Deaths registered and expected from various causes among workers aged 20-64 in road transport occupations 1949-53

Occupation	Occupation Code No.	Respiratory tuberculosis without occupational diseases of lung		Cancer of lung		Coronary disease; angina		Bronchitis		All causes		
		Regd.	Exp.	Regd.	Exp.	Regd.	Exp.	Regd.	Exp.	Regd.	Exp.	S.M.R.
Drivers of trams, trolleybuses	655, 6	30	26	31	32	84	64	47	28	430	378	114
Drivers of buses, coaches and other self-propelled vehicles	657, 8, 9	1,042	1,106	1,227	1,042	1,730	1,960	797	802	11,982	13,275	90
Drivers of buses and coaches	657	135	208	192	197	360	368	138	150	2,020	2,450	82
Lorry drivers' mates, etc.	660	46	27	21	25	54	48	20	20	370	338	109
Bus and tram conductors	661	149	130	106	104	171	195	107	80	1,385	1,430	97

Bearing the above reservations in mind, we find in Table EL (page *125*) details of the mortality of (i) bus and coach drivers, (ii) drivers of other passenger vehicles, and (iii) drivers of goods vehicles, separately. It would appear unlikely that bus and coach drivers were affected as much as the other two groups with respect to the discrepancy between numerator and denominator. Among the occupational groups of *drivers and conductors of buses, trolleybuses and trams*, the most favourable mortality was experienced by the bus drivers with a S.M.R. of 82. Tram and trolley bus drivers had the worst mortality experience. This may have been due to the fact that trams were being fast replaced in 1949-53 by buses, and many of those men returned as tram drivers were probably either already retired or unable to stand the strain of conversion to a new mode of transport. Comparison of the bus drivers with conductors shows a lower S.M.R. from tuberculosis and bronchitis among drivers. On the other hand conductors showed a lower S.M.R. from coronary disease than did drivers, the respective figures being returned as 88 and 98. Motor vehicle accidents in both groups were in accordance with expectation on the basis of all male rates.

Drivers of other passenger vehicles returned an apparent normal mortality (see above). Deaths assigned to tuberculosis were more than expected, but the excess did not quite reach the level of statistical significance. There were 219 deaths assigned to cancer of lung, significantly more than the 175 deaths expected.

Drivers of goods vehicles, whose mortality was apparently below normal returned an excessive number of deaths from cancer of lung (816 registered and 670 expected) and motor vehicle accidents (513 registered and 269 expected).

Wives of both drivers of buses, etc. and goods vehicles and conductors both returned significantly high S.M.R.'s for tuberculosis.

Lorry drivers' mates returned a S.M.R. of 109, significantly above that for all males. There was high mortality from tuberculosis among these men, but no signs of the high death rate from cancer of lung that was noted among the drivers of passenger and goods vehicles.

Horse foremen, grooms, etc. also returned a significantly high mortality. The number of men in this occupation was greater in older age groups, and suggests that the high S.M.R. is due to the fact that there was a large number of retired or unfit men who would be liable to contribute excessively to the high mortality.

124

CAUSE OF DEATH and International Classification No.	Drivers of buses and coaches			Drivers of other passenger vehicles			Drivers of goods vehicles		
	657		S.C. III b	658		S.C. III b	659		S.C. III b
	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.	Regd. deaths	Expected deaths	S.M.R.
Tuberculosis (001-019)	147	222	66	176	152	116	795	845	95
Tuberculosis, respiratory (001-008)	135	208	65	165	143	115	745	786	95
Tuberculosis, respiratory with occ. dis. of lung (001)	2	6	(33)	—	5	—	1	20	(5)
Tuberculosis, non-respiratory (010-019)	12	14	86	11	9	122	50	59	85
Syphilitic disease (020-029)	9	16	(56)	19	15	127	67	56	120
Acute poliomyelitis (080)	3	4	(75)	1	2	(50)	19	20	95
Malignant neoplasm, all sites (140-205)	519	546	95	534	480	111	2,016	1,897	106
Malignant neoplasm, stomach (151)	72	94	77	81	85	95	322	321	100
Malignant neoplasm, lung, bronchus (162-163)	192	197	97	219	175	125	816	670	122
Leukaemia, aleukaemia (204)	19	16	119	15	12	125	66	61	108
Diabetes (260)	6	10	(60)	6	8	(75)	32	36	89
Psychoses (300-309)	2	3	(67)	1	2	(50)	3	11	(27)
Vascular lesions of nervous system (330-334)	132	152	87	119	147	81	382	518	74
Coronary disease, angina (420)	360	368	98	341	345	99	1,029	1,242	83
Hypertension (440-447)	48	65	74	65	62	105	189	223	85
Chronic rheumatic heart disease (410-416)	35	71	49	57	51	112	214	262	82
Chronic endocarditis not spec. as rheumatic (421)	14	19	74	17	17	100	71	66	108
Other myocardial degeneration (422)	59	69	86	55	72	76	164	230	71
General arteriosclerosis (450)	4	10	(40)	4	11	(36)	26	33	79
Influenza (480-483)	21	28	75	18	25	72	74	99	75
Pneumonia (490-493)	39	73	53	50	64	78	209	255	82
Bronchitis (500-502)	138	150	92	147	148	99	512	504	102
Pneumoconiosis, occupational (523, 524)	—	9	—	—	8	—	1	29	(3)
Other chronic interstitial pneumonia (525)	—	3	—	—	2	—	8	10	(80)
Ulcer of stomach (540)	27	28	96	22	24	92	86	97	89
Ulcer of duodenum (541)	30	33	91	23	27	85	101	117	86
Gastritis, enteritis and diarrhoea (543, 571, 572)	6	9	(67)	4	7	(57)	23	34	68
Nephritis and nephrosis (590-594)	38	48	79	35	35	100	167	180	93
Hyperplasia of prostate (610)	7	7	(100)	3	8	(38)	25	23	109
Appendicitis (550-553)	13	10	130	6	7	(86)	33	37	89
Hernia of abdominal cavity (560, 561)	5	5	(100)	2	5	(40)	19	18	106
Intestinal obstruction without mention of hernia (570)	6	8	(75)	9	6	(150)	18	29	62
Cirrhosis of liver (581)	9	11	(82)	12	9	133	38	38	100
Cholelithiasis cholecystitis (584-585)	—	3	—	3	3	(100)	3	11	(27)
Motor vehicle accidents (E810-835)	57	59	97	38	37	103	513	269	191
Accidents in the home (E870.0-936.0)	7	11	(64)	7	9	(63)	42	43	98
Other accidents (Remr. of E800-962)	25	84	30	13	53	25	178	349	51
Suicide (E963, 970-979)	47	67	70	44	47	94	155	250	62
Other causes (Remainder)	207	249	83	210	194	108	711	913	78
All causes	**2,020**	**2,450**	**82**	**2,039**	**2,081**	**98**	**7,923**	**8,744**	**91**

Census Population, Deaths registered (1949-53) and mean annual death rate per 100,000 at ages:—	Census popn.	Regd. deaths	Mean annual death rate per 100,000	Census popn.	Regd. deaths	Mean annual death rate per 100,000	Census popn.	Regd. deaths	Mean annual death rate per 100,000
20–24	2,897	14	97	2,289	18	157	38,851	270	139
25–34	25,046	161	129	10,811	96	178	114,316	901	158
35–44	32,114	364	227	15,976	244	305	115,026	1,537	267
45–54	21,257	727	684	14,896	591	794	72,830	2,756	757
55–64	7,819	754	1,929	9,917	1,090	2,198	25,493	2,459	1,929

Water Transport

There were 177,831 men between the ages of 20-64 enumerated as *water transport workers*. The S.M.R. for this sub-order is given in Table I as 140. This is an artificially high figure, owing to the nature of several occupations within the sub-order necessitating frequent absence from England and Wales. Men in the British

125

Table EM. Deaths by cause and age, S.M.R's (20-64), P.M.R's (65 and over) in Occupation Codes 673-678, males, England and Wales, 1949-53

Merchant Navy (Occn. Codes 673—678)

CAUSE OF DEATH and International Classification No.	Number of deaths registered in the five years 1949-1953 at ages:— 16–19	20–24	25–34	35–44	45–54	55–64	65–69	70–74	75 and over	Aggregate 20–64	Aggregate 65 and over	Expected deaths 20–64	S.M.R. 20–64	P.M.R. 65 and over
	a	b	c	d	e	f	g	h	j	k	l	m	n	o
Tuberculosis (001-019)	6	31	89	103	162	146	51	25	24	531	100	178	298	145
Tuberculosis, respiratory (001-008)	5	28	86	100	156	141	49	25	22	511	96	165	310	145
Tuberculosis, respiratory with occ. dis. of lung (001)												5		
Tuberculosis, non-respiratory (010-019)	1	3	3	3	6	5	2	—	2	20	4	12	167	(100)
Syphilitic disease (020-029)	—	—	6	3	28	46	31	19	15	83	65	15	553	271
Acute poliomyelitis (080)	1	—	3	3	—	—	—	—	—	6	—	4	(150)	—
Malignant neoplasms, all sites (140-205)	6	10	26	75	275	431	293	335	495	817	1,123	477	171	104
Malignant neoplasm, stomach (151)			3	13	51	77	65	68	94	144	227	83	173	110
Malignant neoplasm, lung, bronchus (162-163)	1	—	2	21	102	150	84	64	46	275	194	171	161	109
Leukaemia, aleukaemia (204)	2	2	7	3	4	5	4	4	1	21	9	14	150	(69)
Diabetes (260)	—	1	—	—	7	9	6	10	18	17	34	9	189	100
Psychoses (300-309)	—	1	1	1	4	2	2	3	10	9	15	2	(450)	136
Vascular lesions of nervous system (330-334)	—	1	1	13	50	159	155	228	553	224	936	143	157	97
Coronary disease, angina (420)	—	—	8	34	180	323	225	279	380	545	884	334	163	91
Hypertension (440-447)	—	—	4	5	25	71	68	79	157	105	304	60	175	104
Chronic rheumatic heart disease (410-416)	2	—	8	8	12	18	17	15	14	46	46	56	82	69
Chronic endocarditis not spec. as rheumatic (421)	—	—	1	3	14	22	18	11	19	40	48	17	235	117
Other myocardial degeneration (422)	—	—	1	5	27	80	123	250	1,005	113	1,378	69	164	107
General arteriosclerosis (450)	—	—	—	1	—	10	17	35	168	11	220	10	110	98
Influenza (480-483)	1	—	2	8	10	18	8	18	29	38	55	25	152	62
Pneumonia (490-493)	3	3	10	13	38	65	51	60	162	129	273	64	202	104
Bronchitis (500-502)	—	—	—	7	42	130	139	144	244	179	527	143	125	94
Pneumoconiosis, occupational (523, 524)	—	—	—	—	—	—	1	1	—	—	2	8	—	(18)
Other chronic interstitial pneumonia (525)	—	—	—	—	1	3	1	1	1	4	3	2	(200)	(75)
Ulcer of stomach (540)	—	1	2	5	12	18	12	10	17	38	39	24	158	87
Ulcer of duodenum (541)	—	1	3	7	21	14	11	7	16	46	34	27	170	87
Gastritis, enteritis and diarrhoea (543, 571, 572)	—	1	1	2	3	5	2	7	8	12	17	8	150	106
Nephritis and nephrosis (590-594)	—	1	7	9	18	29	9	17	46	64	72	40	160	106
Hyperplasia of prostate (610)	—	—	—	—	3	11	18	35	128	14	181	8	175	97
Appendicitis (550-553)	1	2	1	2	2	2	2	2	2	9	6	8	(113)	(67)
Hernia of abdominal cavity (560, 561)	—	—	—	—	2	4	1	5	13	6	19	5	(120)	79
Intestinal obstruction without mention of hernia (570)	—	1	1	3	1	2	1	7	10	8	18	7	(114)	106
Cirrhosis of liver (581)	—	—	1	6	14	13	6	3	5	34	14	9	378	127
Cholelithiasis, cholecystitis (584-585)	—	—	—	1	—	3	—	5	9	4	14	3	(133)	108
Motor vehicle accidents (E810-835)	4	15	18	6	13	8	6	5	5	60	16	57	105	59
Accidents in the home (E870.0-936.0)	1	4	5	5	3	5	6	12	28	22	46	9	244	121
Other accidents (Remr. of E800-962)	24	54	81	77	75	53	17	9	21	340	47	72	472	134
Suicide (E963, 970-979)	—	1	12	22	24	17	12	13	10	76	35	53	143	95
Other causes (Remainder)	11	9	27	60	90	134	73	128	339	320	540	211	152	99
All causes	**60**	**137**	**319**	**487**	**1,156**	**1,851**	**1,382**	**1,778**	**3,951**	**3,950**	**7,111**	**2,157**	**183**	**100**
Census Population	7,164	11,880	20,478	16,063	14,936	9,312	3,886	3,388	4,263	72 669	11,537			
Mean Annual Death Rate from All Causes (per 100,000)	168	231	312	606	1,548	3,976	7,113	10,496	18,536	1,087	12,327			
Ratio of Death Rate to that of All Males (taken as 100)	163	167	196	211	189	173	160	154	130	160	151			

Merchant Navy and those in foreign ships were enumerated at the census only if they were within British territorial waters on census night. Men of the merchant navy who are likely to die are more likely to do so at home than abroad, and consequently the mortality figure for these occupations will be artificially inflated. Mortality data for these men are shown in Table EM but great care should be taken in drawing conclusions from them.

Ship-owners, managers, brokers and agents form a small group of occupations in Social Class I. This S.M.R. was just significantly below that for all males at 87. There were 8 deaths assigned to tuberculosis and 17 expected. In addition, although 28 deaths were expected from pneumonia and bronchitis, only 6 were reported.

Harbour, etc. officials: piermasters, another small group returned a normal mortality experience. The only cause with an excessive number of deaths was coronary disease and angina, with 63 deaths registered and 36 expected.

Wharfingers and stevedores returned a mortality 40 per cent above the average. It appears probable that there was a certain amount of "promotion" of dock labourers, etc. at death registration. The number of deaths from tuberculosis and "other" accidents was excessive after allowing for the possible "promotion" effect.

Bargemen, boatmen and tugmen had a significantly high S.M.R. of 128. There were 52 deaths from "other" accidents and 12 expected, and this excess accounts for a large part of that from all causes. No other cause of death, with the possible exception of syphilitic disease (10 deaths registered, 3 expected), showed a significant departure from normality.

Lock keepers etc. had an average mortality experience with no individual cause of death showing either excess or deficiency with the exception of "other" accidents to which 8 deaths were assigned and 3 expected.

Details of mortality of *dock labourers* is shown in Table 3A(i). There were 3,289 deaths registered and 2,772 expected giving a significantly high S.M.R. of 119, which was probably slightly understated (see above). This excess occurs at all age groups except 20-24, where only 18 deaths occurred. Among the individual causes of death there were 317 assigned to tuberculosis with only 196 expected, a S.M.R. of 162.

The table below gives details of the age at death together with the expected number of deaths in each age group, compared with similar figures for Social Class V.

Number of deaths from tuberculosis in each age group, and ratio of registered to expected deaths

Occupation	20–			35–			45–			55–64			20–64		
	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	Regd.	Exp.	S.M.R.
Dock Labourers	31	26	1·19	56	38	1·47	116	63	1·84	114	69	1·65	317	196	162
Social Class V	1,071	775	1·38	1,087	745	1·46	1,962	1,345	1·46	2,311	1,710	1·35	6,431	4,575	141

This table shows that the risk of death from tuberculosis is greater at ages over 45 than it is for men in Social Class V to which dock labourers belong. Up to 45 years of age the risk is about equal to that of the social class as a whole.

Mortality among dockers from cancer of oesophagus, stomach and lung was well above expectation. Mortality from coronary disease was relatively favourable, but for deaths assigned to other myocardial degeneration the S.M.R. was 122, just significantly above expectation. This last may have been a reflection of the high mortality from bronchitis (S.M.R. 176). The S.M.R. for pneumonia was also significantly above the average.

Although the number of deaths assigned to ulcer of duodenum was approximately equal to that expected, the number assigned to ulcer of stomach was greatly in excess of expectation. Mortality from "other" accidents was almost double the average for all males.

Details of mortality among dockers' wives is shown in Table 3B(ii). There were 1,363 deaths registered in 1949-53: with 1,217 expected the S.M.R. was returned as 112, significantly above the average for all wives of occupied and retired men. They also showed a greatly increased mortality from tuberculosis, cancer of stomach, pneumonia and bronchitis.

Air Transport

There were 5,915 males aged 20-64 returned as workers in *air transport*. For similar reasons to those for men in the merchant navy, the overall S.M.R. is unreliable due to the absence abroad of many aircrew on census night.

Table 3A(ii) gives details of mortality of non-managerial and non-aircrew air transport workers. The all causes S.M.R. was *70*, significantly below expectation. The only individual cause of death requiring comment is that of "other" accidents to which 9 deaths were assigned with 3 expected.

Other Transport Communications

Other workers in communications, etc. consist of a heterogeneous group of 204,050 men aged 20-64. Of these, 83,948 were returned as postmen and post office sorters, 16,048 as telephone operators, 25,002 as messengers, and 37,993 as porters.

Managers and Directors in communications returned a normal general mortality experience with an excessive number of deaths from coronary disease (153 registered and 103 expected).

Foremen and Supervisors also showed an increased number of deaths from coronary disease, but the S.M.R. for all causes was slightly lower than could be accounted for by chance.

Radio and telegraph operators had a mortality experience not significantly above normal. There was a larger number of deaths from coronary disease and angina than could be accounted for by chance.

Telephone operators returned a S.M.R. of 124, significantly higher than the standard for all males. Mortality from vascular lesions of the central nervous system, coronary disease, and chronic rheumatic heart disease was significantly above expectation. In the case of rheumatic heart disease it is probably the result of a certain amount of selection of unfit members of the community for a sedentary occupation. The mortality of single women described as telephone operators is shown in Table 3C(i). Their general mortality was below that expected.

There were 3,202 deaths registered among *postmen and post office sorters* in 1949-53 with an expected number of 3,435, the S.M.R. was returned as 93, significantly better than expectation. The only two causes of death from which mortality was significantly above the average for all males were cancer of lung and bronchitis. Deaths from other causes, with one exception, were either approximately equal to or just below the number expected. The exception was deaths from "other" accidents, where only 39 deaths were registered and 84 expected. Wives of these men had normal general mortality and did not show increased numbers of deaths from bronchitis and cancer of lung. The only cause for which the number of deaths was markedly increased was vascular lesions of the nervous system.

Mortality of *messengers, lift attendants and porters (not elsewhere specified)* is shown for the group as a whole in Table 3A(i). The S.M.R. was returned as 118, significantly above the average for all males. Mortality was excessive from tuberculosis, cancer of stomach and lung, hypertension, chronic rheumatic heart disease, bronchitis and ulcer of stomach and duodenum. There was probably a certain preponderance of unfit members of the community in this group of occupations, particularly as lift attendants are one of the occupations often performed by disabled persons employed under the Disabled Persons (Employment) Act, 1944. The table below gives some support to this by showing that the abnormally high mortality of lift attendants is not repeated among their wives, whose mortality approaches that of other members of the group.

Occupation	Occ. Code	S.M.R. of Males 20–64	S.M.R. of Married Women 20–64
Messengers	706	114	88
Lift attendants ..	707	160	89
Porters (n.e.s.) ..	708	113	104

The mortality of the wives in this group of occupations is analysed as a whole in Table 3B(ii). Their general mortality was slightly, but not significantly, below the standard for all married women. There were 90 deaths assigned to tuberculosis and 58 expected, giving a S.M.R. of 155. No other cause of death had numbers significantly above expectation, other myocardial degeneration was slightly below.

XVIII. Commercial, Finance and Insurance (excluding Clerical)

With the exception of the metal manufacturing and engineering and the transport and communication orders, commercial, finance, etc., occupations form the largest group of occupations. In 1951, there were 1,119,872 males aged 20-64 enumerated as either occupied in, or retired from, these occupations. They returned a S.M.R. of 96, and their wives returned one of 93, both more favourable than for the corresponding standard populations.

Proprietors and Managers of wholesale businesses had a favourable mortality experience and returned a S.M.R. of 86. Causes of death from which there was an excessive number of deaths were coronary disease (732 registered, 590 expected) and cirrhosis of liver (34 registered, 14 expected). Mortality was low from diseases such as tuberculosis, cancer of stomach, myocardial degeneration, pneumonia and bronchitis.

Brokers, agents and factors (not elsewhere specified) returned a S.M.R. of 121. This is a figure which may have been artificially increased by a lack of correspondence between occupational recording at census and death. It is impossible to assess the amount of the discrepancy owing to the large number of occupations included in the group together with a possible confusion with commercial travellers (see below). There appears to have been a high mortality from coronary disease, hypertension, cirrhosis of liver, and suicide, after allowing for the possible inflation of all causes S.M.R.

Buyers, advertising agents and managers returned a S.M.R. of 85 significantly below expectation. They showed a high mortality from coronary disease and hypertension and a low mortality from bronchitis.

Sales managers (manufacturers') returned an extremely low S.M.R. of 53 (394 deaths being registered against 744 expected). At death, difficulty in deciding whether a man worked for a manufacturer or in the wholesale or retail trades has probably resulted in underestimating this S.M.R.

Commercial travellers and canvassers had a mortality experience significantly better than that for all males, returning a S.M.R. of 85. Confusion in assignment with brokers, etc., will not have affected this figure greatly owing to the greater numbers of commercial travellers. The only cause of death for which the number of deaths were significantly above expectation was coronary disease. There was a low mortality from tuberculosis, cancer and bronchitis. The small number of deaths from cancer of stomach (80 registered and 166 expected) is specially notable. Wives of these men also showed this, though not to the same extent (39 deaths registered and 62 expected). In men, deaths from cancer of oesophagus, larynx and lung were also fewer than expected. The reason for these low figures is not immediately obvious.

Proprietors and managers of retail businesses form the largest part of Socio-economic Group 5 (shopkeepers and other small employers) and *shop assistants* form practically the whole of Socio-economic Group 6. Unfortunately both for the Socio-economic Group and the individual occupations there have probably been some errors of classification of particular occupations at census and even more at death. The examples which are given below will give some indication of the difficulties appertaining to correct classification.

I. Difficulties at census.
  (a) There is an innate desire in many persons to give an occupation in a higher class than that to which they actually belong.
  (b) Many owners and managers of chemists shops are also qualified pharmacists and classification will depend on the term used by the head of household.
  (c) Confectioners in parts of the country are sweet shop keepers, in other parts they are bakers and confectioners, and although considerable care is taken over classification, mistakes are bound to be made.
  (d) It is thought probable that many costermongers who sell greengrocery will describe themselves as greengrocers.

II. Difficulties at death registration (those given for census also apply here).
  (a) At death registration in many cases correct classification into the "owner" or "assistant" group is almost impossible.
  (b) Trade terms such as butcher, fishmonger, bookseller, are not entirely incorrect when used to describe an assistant.

With difficulties of this nature in mind, it appears probable that the mortality figures for shopkeepers etc. are somewhat overstated and for assistants somewhat understated. The amount of this discrepancy will vary according to the trade terms used in the individual occupations. In some trades, e.g. grocery, meat and fish, addition of the data for shopkeepers and assistants will probably give a reliable figure for the trade as a whole ; with others, e.g. greengrocery, chemists, this will not be the case owing to the likelihood of the discrepancy between numerator and denominator being affected by a number of persons from other occupations being included or excluded.

In view of the difficulties of interpretation described above, it is probably easier to study mortality from individual causes of death by using the ratio

$$\frac{\text{S.M.R. of individual cause of death}}{\text{S.M.R. for all causes}}$$

Table EN gives details of this ratio for the important causes of death for shopkeepers and shop assistants in various trades. This table shows that the shop owner as a general rule had a relatively lower mortality from tuberculosis than his assistant when considered against mortality from all causes. For cancer there was apparently little difference between the groups. Vascular lesions of the central nervous system, coronary disease and suicide affect the owner more than the assistant. There was also little difference in the relative mortality from pneumonia and bronchitis, with perhaps a slight advantage in favour of the owner.

Among individual trades, the mortality pattern of the shopowners was essentially similar with the exception of the shopowner of the general and mixed business, whose mortality was relatively higher from tuberculosis, pneumonia and bronchitis and lower from suicide.

Mortality from suicide, although generally low among shop assistants, was high for those in the non-food trades. Vascular lesions of the central nervous system on the other hand were relatively less frequent among this last group of occupations.

Among single women returned as shop assistants or owners of shops the same difficulties enumerated apply, though probably to a much smaller extent. Of these groups analysed in Table 3C(ii), the owners of confectionery, tobacco and newspaper businesses stand out as the one group with an apparently excessive mortality. Assistants in this group of businesses also had a slightly raised S.M.R. but not significantly so.

Roundsmen and van salesmen returned a S.M.R. of 82. Although it is probable that there was some discrepancy between numerator and denominator of a similar nature to that discussed above, it would appear unlikely that it was of the same extent. For the individual causes of death mortality was significantly high from cancer of lung. On the other hand, deaths assigned to vascular lesions of the central nervous system and coronary disease and angina were fewer than would have been expected.

Coal carmen returned a S.M.R. similar to that expected. There were 64 deaths assigned to cancer of lung and 36 expected, giving a S.M.R. of 178. The S.M.R. for coronary disease and angina was significantly low with 40 deaths registered and 68 expected.

Deaths of *costermongers, other hawkers, and newspaper sellers* are analysed together in detail in Table 3A(i). They suffered an unfavourable mortality experience and returned a S.M.R. of 115. The death rate

Cause of death	Socio-economic Group 5	Socio-economic Group 7	Grocery	Greengrocery	Meat	Fish, Poultry	Other Food goods	Chemists ware, Photographic goods	Confectionery, Tobacco, Newspapers	General and Mixed businesses	Other non-food goods	Grocery	Meat	Greengrocery, Meat, Fish, Poultry, Other Food goods	In Variety chain-stores, in General & mixed businesses, Other non-food goods
Occ. Code No.	—	—	720	721	722	723	724	725	726	728	729	730	732	731-734	737-739
Tuberculosis	0·73	1·11	0·66	0·92	0·78	0·85	0·65	(0·68)	0·89	1·04	0·67	1·29	1·44	1·39	1·24
Cancer, all forms	1·01	1·02	0·94	1·07	0·96	1·04	1·03	1·19	0·94	0·88	1·04	0·99	1·13	1·08	1·01
Cancer of stomach	0·83	0·79	0·96	0·96	0·74	0·76	0·99	(0·93)	0·59	0·92	0·84	0·89	0·99	0·99	0·73
Cancer of lung	1·08	1·08	0·93	1·14	1·14	1·34	1·27	1·13	1·13	0·88	1·02	0·94	1·23	1·27	1·04
Vascular lesions of C.N.S.	1·17	1·02	1·32	1·08	1·23	1·22	1·27	1·38	1·15	1·01	1·06	1·27	1·16	1·01	0·87
Coronary disease, angina	1·23	1·14	1·28	0·90	1·06	0·89	1·07	1·07	1·20	1·10	1·33	0·99	0·81	0·77	1·07
Pneumonia	0·78	0·87	0·73	1·03	0·76	0·57	0·55	(1·28)	0·64	1·31	0·77	0·94	1·00	1·06	0·68
Bronchitis	0·76	0·77	0·74	1·16	0·72	0·87	0·89	(0·22)	0·85	1·12	0·67	0·92	0·95	1·14	0·71
Suicide	1·39	1·07	1·18	1·52	1·80	1·44	1·33	2·42	1·17	0·90	1·59	0·70	0·48	0·52	1·51

was relatively highest in the 35-44 and 45-54 year age groups. Among individual causes, deaths assigned to tuberculosis, pneumonia and bronchitis were more numerous than would have been expected by chance.

Newspaper sellers in particular returned a very high S.M.R. of 192, although that for their wives was normal. This was due, no doubt, to the self-selection of relatively unfit men for the occupation.

Persons employed in *finance and insurance* returned a S.M.R. of 106. This relatively high figure is almost entirely due to the large number of men whose occupation at death was registered as company director. At census only directors of more than one company were classified under this rubric. At death all company directors were similarly classified unless the nature of the company was stated. It is possible that this artefact may have had some effect in producing the relatively high S.M.R. for Social Class I.

Bankers, bank and insurance managers and inspectors had a favourable mortality record from most causes of death and for all causes together. For the latter, they returned a S.M.R. of 78. The only common cause for which the number of deaths was excessive was coronary disease. To this cause there were 376 deaths assigned with 312 deaths expected giving a S.M.R. of 121. Mortality was especially low from tuberculosis, pneumonia and bronchitis and accidental causes. For pneumonia and bronchitis together, although 189 deaths would have been expected in the standard population, only 51 were assigned to these two causes.

Stockbrokers and stock jobbers returned a normal mortality. Although deaths from vascular lesions of the central nervous system and coronary disease were more numerous than might have been expected the excess was not statistically significant. There was apparently a high risk of suicide, 14 deaths being assigned to this cause with only 4 expected.

Insurance brokers, agents and canvassers returned a S.M.R. of 81. The brokers alone had a more favourable mortality, their S.M.R. being returned as 68. Although mortality from coronary disease was greater than expected (365 deaths registered, 332 expected) the excess was not significant. The number of deaths from tuberculosis, pneumonia and bronchitis was significantly below the number expected.

The all causes S.M.R. for *auctioneers, etc.* was significantly below normal, as were the mortality ratios for tuberculosis, pneumonia and bronchitis.

XIX. Professional and Technical (excluding Clerical)

In 1951, there were 658,585 men aged 20-64 enumerated in this occupation order. They returned a S.M.R. of 80, and their wives a similar one of 81.

Of those in holy orders, clergymen of the Church of England and ministers of other religious bodies, with S.M.R.'s of 81 and 78 respectively, had relatively favourable mortality experience when compared with Roman Catholic priests and monks who returned a S.M.R. of 107, although this last was not significantly in excess of that for all males. All these groups had low numbers of deaths from tuberculosis and cancer of lung, and Church of England clergymen in addition had a low mortality from cancer of stomach. The following table gives details of deaths from various forms of heart disease among the clergy.

Ministers of all types had high mortality from vascular lesions of the nervous system and from coronary disease. In addition, although the numbers of deaths were not large, Roman Catholic clergy appeared to have

---

Cause of death	Church of England clergymen			Roman Catholic priests—monks			Ministers of other religious bodies		
	Regd.	Exp.	S.M.R.	Regd.	Exp.	S.M.R.	Regd.	Exp.	S.M.R.
Vascular lesions of C.N.S.	57	48	119	27	13	208	34	27	126
Coronary disease, angina	168	110	153	58	30	193	82	63	130
Hypertension	21	20	105	9	5	(180)	9	11	(82)
Other myocardial degeneration	17	25	68	8	6	(133)	8	13	(62)

an even greater risk of dying from heart disease, not only from the two diseases mentioned above but also from hypertension and myocardial degeneration. Deaths from bronchitis, pneumonia and suicide were few in all these denominations.

Owing to a large proportion of Roman Catholic priests being employed full-time as teachers, there is a possibility that they will record their occupation as such at census. If this is so the recorded population will be smaller and estimates of mortality larger than was in fact the case.

Wives of Church of England clergymen and ministers of other denominations had similar general mortality to their husbands. No individual cause of death calls for comment.

Mission workers and itinerant preachers are analysed together with *social welfare workers* in Table 3A(ii). They also returned a low S.M.R. of 76. There was a just significantly greater number of deaths assigned to coronary thrombosis than expected.

Judges, barristers, etc., and solicitors had a favourable mortality experience 88 per cent of that for all males. Although the number of deaths in the younger age groups is small there was a tendency for the ratio of the death rate to that of all males to increase with age from 47 per cent at 20-24 to 98 per cent at 55-64. For the individual causes of death the S.M.R.'s were significantly low for tuberculosis, cancer of stomach and lung, and bronchitis. They were just significantly above average for coronary thrombosis (123 deaths registered, 102 expected) and suicide (28 deaths registered and 15 expected). In addition there were 7 deaths assigned to acute poliomyelitis (1 expected) and 7 to cirrhosis of liver (3 expected).

Mortality of *medical practitioners, radiologists* is shown in detail in Table 3A(i). There were 34,120 medical practitioners, etc., between the ages of 20-64 enumerated at the census. Between 1949 and 1953 there were 1,008 deaths, instead of 1,129 as would have been expected at all males rates. This gave a S.M.R. of 89, significantly below the average, and relatively better than in 1930-32 when the S.M.R. was returned as 106. Of the causes of death for which the S.M.R. was higher than 100, the following are of special interest:— there were 8 deaths assigned to poliomyelitis and 1 expected. While this excess may have been due to increased contact with the disease, it should be noted that the deaths of seven members of the legal profession were assigned to poliomyelitis with only one expected. There were 10 deaths assigned to leukaemia and 7 expected. This is not a significant excess but it is worth noting that there were a further 9 deaths of doctors over 65 years of age from the same cause, which gave a proportionate mortality ratio 225 per cent of the average for these men. There was a highly significant excess mortality from coronary thrombosis. This is discussed in more detail below. Mortality was also significantly high from vascular lesions of nervous system, cirrhosis of liver and suicide. There were 61 deaths from this last cause with only 27 expected. The table below gives details of deaths from suicide by age at death, comparing them with the number expected and showing similar figures for Social Class I.

	20-			35-			45-			55-64			20-64		
	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	Regd.	Exp.	S.M.R.
Medical Practitioners, Radiologists	16	4	400	17	6	283	19	9	211	9	8	(113)	61	27	226
Social Class I	81	54	150	107	75	143	153	106	144	140	109	128	481	344	140

Although numbers are small, there appears to be a tendency among medical practitioners, etc., for the suicide rate to fall with increasing age. This was not present to the same degree among members of Social Class I generally.

Despite increased contact with the disease, mortality from tuberculosis was low, and lower than among Social Class I as a whole. The numbers of deaths assigned to cancer of stomach and lung, pneumonia and accidental causes were fewer than expected, and there were only 18 deaths assigned to bronchitis with 76 expected, giving a S.M.R. for this disease of 24.

The high death rate from coronary disease among medical practitioners, etc., has given rise to much comment in recent years. The following table compares the mortality experience from forms of cardio- and cerebro-vascular disease among medical practitioners, etc., ministers of religion, and judges, barristers, etc.

Cause of death	Deaths of males aged 20-64								
	Medical Practitioners, Radiologists			Ministers of Religion			Judges, Barristers, etc.		
	766, 767			760, 761, 762			764, 765		
	Regd.	Exp.	S.M.R.	Regd.	Exp.	S.M.R.	Regd.	Exp.	S.M.R.
Coronary thrombosis, angina	287	180	159	308	203	152	123	102	121
Vascular lesions of nervous system ..	106	76	140	118	88	134	52	44	118
Hypertension	37	32	116	39	36	108	25	18	139
Chronic endocarditis not specified as rheumatic	2	9	(22)	3	9	(33)	5	5	(100)
Other myocardial degeneration	21	37	57	33	44	75	14	21	67
General arteriosclerosis	10	5	200	4	7	(57)	4	3	(133)
Total	463	339	137	505	387	130	223	193	116

The table shows that of the three professions considered, medical practitioners, etc., and clergymen are similar with regard to mortality from heart disease, and both groups are unfavourably placed when compared with members of the legal profession. Death from myocardial degeneration is less common in all three groups than in the average male. This is probably a reflection of the low mortality from bronchitis among the professions.

The table below gives details of deaths registered and expected from coronary thrombosis, in various age groups among the three professional groups just considered.

	Occ. Code No.	35–			45–			55-64			35-64		
		Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio
Medical Practitioners, Radiologists ..	766, 7	22	13	169	81	58	140	183	106	173	286	177	162
Clergymen	760-2	17	13	131	49	49	141	221	141	157	307	203	151
Judges, Barristers, etc.	764, 5	11	9	122	31	26	119	79	65	122	121	100	121

There is a suggestion in this table that death from coronary disease is relatively more likely to occur in men aged 55-64 in the medical than in the other two professions considered. The excess at 35-44 years should also be noted, but may be due to the small numbers.

There were 8 deaths of men whose occupation was given as *radiologist* compared with 12 expected. In view of the current interest in the effect of ionising radiations, details of these deaths are given below. As there is considerable doubt whether all radiologists will be classified as such by the informant at death registration (instead of the more general term of medical practitioner) it is possible that the table is an underestimate of the true position.

Cause of death	Age at death		
	35–	45–	55-64
Respiratory tuberculosis	—	—	1
Cancer of lung	—	—	1
Leukaemia	—	—	1
Coronary disease	—	1	—
General arteriosclerosis	—	—	1
Influenza	1	—	—
Other causes	—	—	2

The mortality from all causes for wives of medical practitioners, etc., was similar to that of their husbands, 84 per cent of that for all married women. There was significantly high mortality from cancer of breast (52 deaths registered, 40 expected) and suicide (25 deaths registered and 10 expected). There were 4 deaths from poliomyelitis and 1 expected.

Dental practitioners had average mortality during 1949-53. There were 125 deaths assigned to coronary thrombosis and 90 expected giving a significant excess. The only other cause of death for which there was significantly high mortality was suicide (27 deaths registered, 10 expected). There were only 11 deaths assigned to bronchitis with 41 expected.

Veterinary surgeons also returned normal mortality. Numbers were insufficient for any individual cause of death to show significant differences from the average.

Male nurses returned a S.M.R. of 97, not significantly different from expectation. There is a possibility that the death rate was slightly in excess of expectation in the 55-64 age group. There were no individual causes of death with excessive mortality. Nurses mortality experience was favourable with regard to deaths from bronchitis and "other" accidents. Female nurses (single women) and midwives returned a S.M.R. of 79, significantly below that for all single women. Three diseases showed mortality above the average—polio-

myelitis (10 deaths registered and 5 expected), cancer of breast (187 deaths registered, 156 expected), and motor vehicle accidents (42 deaths registered, 25 expected). Deaths from tuberculosis, pneumonia, bronchitis or chronic rheumatic heart disease were fewer than expected.

The S.M.R. for all causes of death of *pharmacists* was returned as 124. This is probably an exaggeration of the true picture owing to confusion between pharmacists and owners, managers or assistants in chemists' shops.

Addition of the deaths registered and expected as in the table below produces a combined S.M.R. of 94, which is not significantly different from normal.

Occupation	Occ. Code No.	Deaths of males aged 20-64		S.M.R.
		Registered	Expected	
Owners of chemists', etc. shops ..	725	189	274	69
Assistants in chemists', etc. shops ..	735	92	128	72
Pharmacists	774	413	333	124
Total		694	735	94

After allowing for the probable artificial excess of deaths among pharmacists there was high mortality for both vascular lesions of the central nervous system, coronary disease and possibly hypertension.

Physiotherapists, radiographers, opticians and chiropodists (male), analysed together in Table 3A(ii) returned a mortality below that expected. There were 4 deaths from leukaemia and 2 expected. Of these only one was of a radiographer, in the 35-44 age group. Mortality from bronchitis was significantly low.

Other medical auxiliaries had a normal mortality experience among men. In the case of single women deaths were fewer than expected, particularly those assigned to tuberculosis and respiratory diseases.

Teachers of music had a normal general mortality. There was one death assigned to bronchitis and 8 expected.

The mortality of *other teachers* (male) is analysed in detail in Table 3A(i). The number of deaths from all causes was significantly lower than normal for all age groups and the S.M.R. for 20-64 was returned as 66. The only cause of death for which there were significantly more deaths than expected was acute poliomyelitis with 16 registered and 6 expected. This may have been due to the amount of contact with young persons, but in view of the strong social class gradient shown by this disease such a conclusion is not the only one possible. There were 97 deaths assigned to tuberculosis, instead of 309 expected on all male rates. This gives an encouragingly low S.M.R. of 31. It is worth noting that the ratio of registered to expected deaths at ages 20-54 was 27 per cent and for men of 55-64 it was 41 per cent, which although low suggests nevertheless that there may be more undetected tuberculosis among older teachers. In 1930-32 the S.M.R. for tuberculosis among teachers was returned as 54 per cent. Mortality from cancer of all forms (S.M.R. 63) was low and also for cancer of stomach (S.M.R. 56) and lung (S.M.R. 37). The number of deaths from vascular lesions of the nervous system were fewer than expected, the deficiency being on the border line of significance.

Mortality from coronary disease was somewhat higher than expected but not significantly so. On the other hand deaths from all other forms of heart disease were fewer than normal. Mortality from pneumonia and bronchitis was extremly low as also were deaths from ulcer of stomach and accidental causes.

The wives of teachers also returned a significantly low mortality. The S.M.R. for all causes was 77 compared with the men's 66. Deaths from poliomyelitis numbered 11 with 4 expected giving a S.M.R. of 275, almost identical with that of the men. The only other cause of death for which numbers were significantly increased was cancer of breast with a S.M.R. of 123. Single women teachers also had a very favourable mortality experience returning a S.M.R. of 69. For no cause of death were the numbers significantly above those expected and for tuberculosis, pneumonia and bronchitis they were well below.

Mortality of *professional engineers and surveyors* as a group is analysed in Table 3A(i). The S.M.R. for all causes of death was returned as 73. For the individual occupations there was wide variation in the S.M.R. as shown in Table I, from electrical engineers with a S.M.R. of 42 to mining engineers with a S.M.R. of 161. There is little doubt that there have been considerable differences in recording of occupation at census and at death registration but it would appear probable that the mortality data for the whole group is not far removed from the true position. The numbers of deaths from poliomyelitis, coronary disease and chole-lithiasis were all significantly in excess of expectation. Mortality was low from other forms of cardiac and respiratory disease, including tuberculosis and also from accidental causes. Deaths from cancer of stomach and lung were significantly lower than expected. Wives of engineers, etc., returned a S.M.R. of 83. For no individual cause was the number of deaths significantly high.

Architects, town planners, ship designers returned a favourable mortality experience which was on the borderline of statistical significance. There was an excessive number of deaths from coronary disease, and fewer than expected assigned to tuberculosis and bronchitis.

Industrial designers and draughtsmen returned a S.M.R. of 80. There was no individual cause with a significant excess of deaths although the numbers assigned to vascular lesions of the nervous system and coronary disease did approach that level. Mortality from tuberculosis, cancer, pneumonia, bronchitis and "other" accidents was significantly lower than expected.

Chemists (not pharmaceutical) had a favourable mortality experience, and the pattern of their mortality was similar to that of other professions with an excess of deaths from coronary thrombosis and a deficiency from tuberculosis and bronchitis.

Metallurgists, a small group with a S.M.R. of 113, presented no special features except a possible excess of deaths from coronary thrombosis. Mortality from tuberculosis and bronchitis was low.

Other scientists, with a favourable general mortality (S.M.R. 75), did not show a significant excess of deaths from any cause. Mortality from tuberculosis and bronchitis was low.

Laboratory assistants returned a S.M.R. of 65 significantly below expectation. Features of note were 7 deaths from gastritis and enteritis with 3 expected and the low mortality from tuberculosis, cancer and bronchitis.

Qualified accountants with a S.M.R. of 77 had favourable mortality. Mortality from most causes is similar to that to be found among the professions with the possible exception of suicide, which, with 18 deaths registered and 20 expected, was lower than was found with the legal and medical professions.

Authors, etc. showed normal mortality with a significant excess of deaths from coronary disease and suicide. Mortality was low from cancer of stomach and bronchitis, but unlike many other occupations in Social Class I, the number of deaths from tuberculosis was more than expected, but not significantly so.

Librarians also had a normal mortality with no special features.

Officials of trade, etc. associations returned a S.M.R. of 77 with excessive mortality from coronary disease and fewer deaths from tuberculosis and bronchitis than expected.

Painters, sculptors and engravers returned a S.M.R. of 97, within the limits of normality. There were 15 suicides with 7 expected, otherwise no cause of death departed significantly from expectation.

XX. Persons Employed in Defence Services

In 1951 there were 470,869 men aged 20-64 enumerated as being employed in one or other of the defence services. Of these 321,398 were either in, or retired from, the armed forces.

A study of the mortality of the armed forces using data presented in this volume is difficult and the following reservations should be considered carefully before drawing conclusions:—

Population. The population enumerated at the census consists of those men who were present in England and Wales on census night in 1951. The active component therefore comprised men who were stationed in this country, were on leave, or had been invalided home from overseas for treatment of some disability. The retired population consisted of those men retired from active service who had not taken up further work, together with a relatively small number of men invalided from the armed services who were unfit for employment, and had a high risk of dying. With most occupations the population enumerated at census was unlikely to be greatly different from that over the years considered in the occupational mortality study. This is known to be untrue in the case of the armed services. The table below gives details of the strength of the three services for each of the years 1949-53.

Strength of Armed Services (*Thousands*)

	1949	1950	1951	1952	1953
Royal Navy	136·9	129·4	135·8	141·2	138·0
Army..	395·4	354·0	426·8	445·0	435·1
Royal Air Force ..	205·1	182·7	241·4	262·2	268·2

Extracted from Annual Abstract of Statistics 1954, H.M.S.O.

In addition to the errors introduced by wide fluctuations in the active population at all ages, varying policies of recruitment and retention of men in the armed services may have had considerable effects on the age structure of the services over the years, so that the age distribution given at census may bear little resemblance to that over the period 1949-53, from which the deaths for study were drawn.

Deaths. Men in the armed services abroad who were likely to die were probably brought home where possible. In addition better treatment facilities necessitated the invaliding home of unfit men. Thus, there is in the active armed services at home a population whose risk of dying would be considerably higher than that in the similar population overseas, were it not more than counterbalanced by the invaliding out of the service of those men unlikely to become fit enough to return to duty. The latter will be affected by any treatment schemes organised by the armed forces. The time interval between diagnosis and death,—obviously extremely variable—will, to a certain extent, decide whether a man dies while he is on the active or retired lists.

The retired population, as has been explained, will be heavily overweighted by persons with a high risk of dying. In addition, the number of persons invalided from the services and unfit for further work will be related to the strength of the services at the time of retirement and not at the time of census. If the armed services have altered their strength at different rates and at different times (as was the case) then any inter-service comparisons will be largely invalidated. Although this last difficulty will affect mortality rates of retired men to a greater extent, it must also affect those of active servicemen to some extent because of retention of certain men for treatment. Any sudden changes in defence commitments abroad may also upset the inter-service balance of mortality rates.

There is one other factor which must be taken into account at this stage. Retired servicemen often take up a further occupation and consequently, at census, because of the need for statement of industry, will record their occupation at that time. When registering a death informants may, quite naturally, give the deceased's occupation as retired serviceman, thus upsetting the relationship between numerator and denominator necessary for correct calculation of death rates.

For various purposes it may be necessary or advisable to calculate death rates in the services using the total population, instead of only that at home. In the table below figures are therefore given of the strengths by age groups of the different armed forces overseas on census night.

Population of Armed Services overseas at Census 1951

	15–	20–	25–	35–	45–	55–	65 and over
Royal Navy	5,446	12,966	8,123	2,351	239	14	1
Army..	59,562	65,533	30,308	13,657	2,149	119	2
Royal Air Force ..	8,033	14,865	9,716	4,167	676	12	—

In view of the impracticability of predicting the relative effect of any or each of the possible discrepancies mentioned above, the mortality of the armed services is not discussed. It cannot be emphasised too strongly that, should any analysis be made, very great care and a considerable knowledge of the factors involved will be necessary before any firm conclusions can be drawn.

With regard to the wives of men in the armed services, the difficulties of interpretation are not so great, but they do exist. As was explained in Chapter I, the population of married women enumerated with their husbands at census has been corrected to allow for separation on that night. All corrections of this nature are based on the total number of married men in the occupation concerned in *England and Wales*. Owing to the large number of married men overseas the correction will still result in an underestimate of the number of married women. When these women die, their husbands' occupation will be given regardless of whether he is at home or abroad and as a result the S.M.R. and the death rates of wives of men in the armed services (Social Sub-class IIId) will be exaggerated. In addition, as with the men, it is probable that unfit women will return home thus increasing the death rate. These reasons probably account for the high S.M.R. of 132 given in Table 3B(i). Bearing this in mind, the only disease for which mortality appeared to be excessive was other myocardial degeneration to which 43 deaths were assigned and 23 expected.

Policemen (other ranks) returned a S.M.R. of 112, apparently significantly in excess of the normal for all males. The reason for this high figure is probably to be found in the early age of retirement among policemen. The 55-64 year age group contained retired policemen not fit enough to take any further job. In addition, here is probably a tendency, similar to that of retired members of the armed services, to give the occupation of a retired policeman as such at death registration ignoring any other occupation that he might have held since retirement. The following table gives details of registered and expected deaths at different ages among policemen.

		Age at death														
	Occ. Code	20–			25–			35–			45–			55–64			S.M.R.
		Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	
Chief constables etc.	830			1	—	15	21	71	190	95	115	161	143	113	110
Police (other ranks)	831	19	62	31	81	193	42	225	285	79	512	565	91	1,353	851	159	112

The sudden rise in the ratio of registered to expected deaths of other ranks in the 55-64 year age group provides confirmation of the views expressed above. At all other ages the ratio was below normal. For chief constables and inspectors the rise in the ratio is not so dramatic, partly due to the tendency among these men to retire at an older age.

Because of the unreliability of data for the 55-64 age group the following table shows the deaths registered and expected at 20-54 years for some of the more important causes of death among police (other ranks).

The numbers of deaths were less than expected for all causes shown with the exception of coronary disease. The excess in the last-mentioned disease was not statistically significant.

Fire Brigade officers and men had a favourable mortality experience returning a S.M.R. of 81. Deaths from tuberculosis were significantly fewer than expected.

Watchmen returned a significantly raised S.M.R. of 163. As an occupation they are of unusual composition. Of 28,031 men between 20-64 who were so enumerated, 15,592 (56 per cent) were in the 55-64 age group. Men in this age group consists largely of those who have retired from, or are unfit for, other occupations. It is possible that the mortality data returned were slightly exaggerated, but it is not thought that the effect of

Cause of death	Deaths of police (other ranks) at 20-54		
	Registered	Expected	Ratio
Tuberculosis	61	139	44
Cancer of stomach	25	36	69
Cancer of lung	67	78	86
Vascular lesions of nervous system	32	49	65
Coronary disease	147	129	114
Bronchitis	10	45	22
All causes	837	1,105	76

such an exaggeration would have been large. In support of this is the normal S.M.R. returned for their wives, suggesting that occupational recording at death is fairly accurate. Although numbers of deaths from most causes were greater than expected, S.M.R.'s for tuberculosis (232), pneumonia (232), bronchitis (270), ulcer of stomach (232) and intestinal obstruction *250* were all more than double those for all males.

XXI. Persons Engaged in Entertainment and Sport

There were 72,722 men aged 20-64 enumerated in 1951 as engaged in entertainment and sport. Between 1949-53, there were 2,846 deaths registered and 2,520 expected, giving a S.M.R. of 113. Wives of these men had a mortality of 3 per cent above the average. Details of the mortality of individual occupation groups are given in Table 3A(ii).

Managers and producers in entertainment and sport returned a S.M.R. of 111, just significantly above the normal. Among those causes to which were assigned more deaths than expected were cancer of lung, coronary disease, nephritis, and suicide. There were 21 deaths from this last cause; 10 were expected.

Deaths of *showmen, fair and roundabout workers* in 1949-53 numbered 217, which with 153 expected gave a S.M.R. of 142. There were 6 deaths assigned to syphilitic disease and 1 expected. Other causes of excessive mortality were cancer of lung, bronchitis and motor vehicle accidents.

Actors, variety artists, entertainers returned a S.M.R. of 128. There was significantly high mortality from syphilitic disease (7 deaths registered and 1 expected), vascular diseases of nervous system, coronary disease and suicide (16 deaths registered and 5 expected). Mortality from tuberculosis was also high but not significantly so.

Musicians with a S.M.R. of 127 showed a high mortality from vascular disease of nervous system, coronary disease, hypertension, diabetes (5 deaths registered, 1 expected) and cirrhosis of liver (7 deaths registered, 1 expected). Wives of actors and musicians also returned a comparatively high S.M.R. of 114. Among the individual causes of death with excessive mortality were syphilitic disease, cancer of breast and cervix uteri, and bronchitis.

Actresses and musicians (single women) had normal general mortality. There were 5 deaths assigned to cancer of lung and 1 expected and 11 to cancer of breast with 6 expected.

Stage hands and cinematograph operators had a significantly high general mortality, returning a S.M.R. of 126. Among individual causes there were 15 deaths from chronic rheumatic heart disease with 6 expected, and 10 deaths from nephritis with 4 expected. These are occupations performed by younger persons and there is probably a tendency towards the self-selection of unfit men for these jobs.

Surveying the group of *professional entertainers* discussed above there are certain mortality features which are common to all, or nearly all, individual occupations. They have a high mortality from syphilitic disease (20 deaths registered, 9 expected), vascular lesions of nervous system (133 deaths registered, 93 expected), coronary disease (296 deaths registered, 216 expected), ulcer of stomach (31 deaths registered, 15 expected), nephritis and nephrosis (46 deaths registered, 25 expected). It is noticeable that the high mortality from ulcer of stomach was not repeated with ulcer of duodenum (21 deaths registered, 18 expected). Suicide was high among the managers, producers, actors and musicians, but not among the showmen and stage hands.

Trainers, jockeys and kennel attendants, had a normal general mortality. Although numbers of deaths were small it is interesting to note that there were 11 deaths assigned to vascular lesions of nervous system and 7 expected, which is in contrast to the 9 deaths assigned to coronary disease and 17 expected. It is unusual for mortality from these causes to exhibit opposite tendencies of such a marked degree.

Bookmakers had a mortality experience significantly in excess of expectation, returning a S.M.R. of 117. They suffered a high mortality from tuberculosis, cancer of lung, hypertension, pneumonia, duodenal ulcer and suicide.

Cricketers, footballers and other professional sportsmen, had an apparently high mortality, returning a S.M.R. of 124. It is possible that mortality in the older age groups has been artificially increased by a tendency for the occupation given at death registration to be that of a professional sportsman, whereas increasing age had forced him to take other work many years previously. High mortality from coronary disease and tuberculosis could be explained by this hypothesis. There were 11 deaths from motor vehicle accidents and 4 expected.

XXII. Persons Engaged in Personal Service

There were 423,174 males aged 20-64 enumerated at the 1951 Census as engaged in personal service, and between 1949-53 they suffered a mortality experience 13 per cent in excess of the average for all males in England and Wales. The group was composed of workers in hotels, restaurants, public houses, etc., persons employed as photographers, barbers, etc., and other domestic servants.

Game keepers had a favourable mortality returning a S.M.R. of 88. Mortality from individual causes was generally low but numbers were too small for any definite conclusions to be drawn.

Proprietors and managers of restaurants had mortality slightly below that of all males. There are 17 deaths assigned to cirrhosis of liver and 7 expected. Other causes for which the number of deaths was greater than expected were cancer of lung and hypertension. Mortality from coronary disease was high but not significantly so. On the other hand, deaths from bronchitis were significantly fewer than were expected. Single women in this occupation together with boarding house keepers had a favourable general mortality but there were 16 deaths from cancer of lung and 8 expected.

Details of deaths of *proprietors and managers of hotels, etc.* and *publicans* are shown in Table 3A(i) and similar details for the wives of these men are given in Table 3B(i). Men in these occupations, together with barmen, had a mortality experience which was among the worst. There was no excess mortality up to the age of 35. Above this age, both for men and their wives, the death rate was increased over that of the standard population. Men returned a S.M.R. of 150 and their wives one of 116.

The numbers of deaths from most causes were greatly increased and the table below gives S.M.R.'s for the most important causes both for hotel owners and their wives (many of whom take an active part in their husband's livelihood) and for barmen.

Cause of death	Standardised Mortality Ratio 20-64		
	Proprietors and managers of hotels; publicans, etc.		Barmen
	Males Occ. Code 864–5	Married women	Males Occ. Code 866
Tuberculosis	178	95	255
Cancer of stomach	94	98	164
Cancer of lung	144	104	117
Vascular lesions of nervous system	212	165	208
Coronary disease, angina	123	144	97
Hypertension	241	149	320
Other myocardial degeneration	171	95	133
Pneumonia	118	85	191
Bronchitis	111	55	164
Ulcer of stomach	206	(100)	(100)
Ulcer of duodenum	170	(233)	200
Cirrhosis of liver	925	483	(500)
Suicide	263	112	167
All causes	150	116	152

Comparing mortality of males in the two occupations, the picture is essentially similar, with very high death rates from tuberculosis, vascular lesions of the central nervous system, hypertension, cirrhosis of liver and suicide. Deaths from cancer of stomach, pneumonia and bronchitis were significantly more than expected among barmen but not among publicans etc. On the other hand coronary disease was apparently more prevalent among the publicans, etc. than barmen.

Deaths registered and expected from various forms of cancer among publicans, etc., and barmen are shown in the table below:

Cause of death	Deaths of males aged 20-64			
	Proprietors and managers of hotels; publicans, etc.		Barmen	
	Registered	Expected	Registered	Expected
Malignant Neoplasm of:—				
Pharynx	22	6	5	1
Oesophagus	38	16	4	2
Tongue	12	4	3	0
Mouth	7	3	3	0
Stomach	119	126	23	14
Large intestine and rectum	114	88	14	10
Biliary passages and liver	10	7	1	1
Pancreas	34	25	4	1
Larynx	35	11	3	2
Lung, bronchus	376	261	35	30
Prostate	26	17	3	4
Kidney, bladder and other urinary organs	50	36	4	3
Other malignant neoplasms	127	104	15	15
Malignant Neoplasms (all forms)	970	704	119	83

A high death rate from malignant neoplasms of the upper part of the alimentary and respiratory tracts is well shown in this table. The smaller numbers of deaths among barmen makes it difficult to assess the importance of differences between the two groups shown, but the impression is gained that publicans, etc. have a high mortality from almost all forms of cancer shown with the exception of cancer of stomach and "other" neoplasms, whereas the high mortality noted among barmen is restricted to the upper part of the alimentary and respiratory tracts including the stomach.

Wives of publicans had high death rates from cardio- and cerebro-vascular diseases and cirrhosis of liver, but were not affected to the same relative extent as their husbands by tuberculosis, cancer of lung, respiratory disease and suicide. Their overall mortality was also considerably less. Wives of barmen had a normal mortality experience with no excess of deaths from cancer.

Waiters and still-room hands had a mortality experience significantly above normal, returning a S.M.R. of 118. The ratio of registered to expected deaths was highest under 55 years of age. A large part of this excess was due to the large number of deaths (98) assigned to tuberculous conditions; only 48 were expected giving a S.M.R. of 204. It is difficult to say to what extent this high rate is due to increased opportunity for infection, poor social conditions, or a tendency for certain men with a high tuberculosis prevalence or low resistance to take up this occupation. Probably all play a part. Their wives also have a high S.M.R. for tuberculosis 153. Other causes for which the numbers of deaths were excessive were chronic rheumatic heart disease and ulcer of stomach. There is no evidence of increased mortality from cardio- and cerebro-vascular conditions, or cirrhosis of liver as was the case with those occupations more intimately associated with the sale of alcoholic drinks. Waitresses (single women) had a normal general mortality. There was an excessive death rate from tuberculosis, 90 deaths being registered and 56 expected giving a S.M.R. of 161.

Restaurant counter hands returned a S.M.R. of 114 but owing to the small number of deaths the excess was not statistically significant. The small numbers assigned to each individual cause prevents any firm conclusions being drawn but there appears to have been excessive mortality from tuberculosis (12 deaths registered, 5 expected) and pneumonia (6 deaths registered, 2 expected).

Hall and hotel porters and doorkeepers had a high general mortality with a S.M.R. of 118. The number of deaths was significantly greater than expectation for tuberculosis, cancer (all forms), chronic rheumatic heart disease, bronchitis and suicide.

Stewards in institutions, etc., a small group, had a normal mortality, but a high risk of death from coronary disease (27 deaths registered, 16 expected).

Hospital and ward orderlies, etc. had significantly more deaths than expected and returned a S.M.R. of 116. There was a significant excess of deaths assigned to tuberculosis, cancer of stomach and lung and suicide. In addition, although only 6 deaths from syphilitic disease were expected, 13 were registered.

Barbers, etc. returned a S.M.R. of 113, significantly above that for all males. With the exception of the 25-34 age group (and the under 20 age group where the number of deaths was very small), the excess of registered over expected mortality is approximately constant at each age group. As with many other occupations in the group engaged in personal service, there was a higher number of deaths from tuberculosis than expected. Deaths from coronary disease and angina were also more common than expected. Mortality from bronchitis was significantly above expectation. Wives of barbers had a normal general mortality.

Photographers had a normal mortality experience, and, with the possible exception of deaths from "other" accidents, which were below expectation, no individual cause of death showed a significant departure from the average.

Caretakers and officekeepers also had a normal general mortality. They showed low S.M.R's for all accidental causes but a high figure for chronic rheumatic heart disease. There were 30 deaths assigned to syphilitic diseases and 17 expected.

Office cleaners had a mortality slightly below that of all males, and fewer deaths than expected from vascular lesions of nervous system and coronary disease. Also with a low mortality on the borderline of statistical significance was tuberculosis. Chronic bronchitis, on the other hand, caused more deaths than expected. Charwomen (single women) returned a S.M.R. of 78, with no significant excess from any single cause.

Laundry workers also had a low—all causes—mortality, generally distributed throughout the individual causes and with no disease showing a significant excess. Single women, on the other hand, returned a S.M.R. of 113. A large part of the registered excess of deaths was due to tuberculosis and bronchitis.

Dry cleaners and carpet cleaners, a small group, returned a S.M.R. of 61. This low mortality was not confined to any particular group of causes. As recorded it may have been artificially lowered by the registration at death of some persons as dyers and cleaners (Occ. Code 332).

Window cleaners returned a mortality experience significantly in excess of that expected, the S.M.R. being given as 112. The number of deaths from tuberculosis, cancer of lung and respiratory disease were all greatly in excess of expectation. On the other hand mortality from coronary thrombosis (82 deaths registered, 142 expected) was extremely low. Accidents at work will have been classified under both accidents in the home and "other" accidents and to these two causes 98 deaths were assigned; 34 were expected, giving a S.M.R. of 288. This excessive death rate from accidents is almost sufficient to account for the high general mortality observed for the occupation.

There were more deaths than expected among chimney sweeps. Although a small group, there would appear to be a relatively high mortality risk from cancer of all sites and of lung, bronchitis and vascular

lesions of central nervous system. The excessive number of deaths from the last mentioned cause was repeated among the wives of chimney sweeps, 19 deaths being registered and 10 expected.

Funeral directors and assistants were a small group who returned a S.M.R. of 88 which was not significantly below normal. There was a low number of deaths from tuberculosis (3 registered 10 expected) and a high number from vascular lesions of nervous system (20 registered 11 expected).

Mortality of indoor domestic servants as a group is analysed in Table 3A(i). They returned a S.M.R. of 115, significantly above that for all males. Among the individual occupations, chefs and cooks returned a S.M.R. of 129, kitchen hands one of 124 and remaining male domestic servants one of 85. The age-specific death rate was 45 per cent above the national average for the 35-44 age group. For other age groups (with the exception of 16-20 age group) mortality was not more than 18 per cent above the national average. No specific cause plays a predominant part in the excessive rate at 35-44 as the following table shows.

Cause of death	No. of deaths of males aged 35–44		Ratio
	Registered	Expected	
Tuberculosis..	47	33	142
Cancer all forms	56	45	124
Coronary diseases, angina	32	22	145
Chronic rheumatic heart disease ..	15	11	136
Suicide	22	10	220
Other causes	161	108	149
All causes	333	229	145

At ages 20-64 mortality was high from tuberculosis, chronic rheumatic heart disease, pneumonia, gastric ulcer, cirrhosis of liver (21 deaths registered, 9 expected) and suicide.

The four groups of single women enumerated as indoor domestic servants all returned favourable S.M.R.'s. The only cause of death for which the S.M.R. was high in all groups was cancer of cervix uteri to which 72 deaths were assigned and 62 expected.

XXIII. Clerks, Typists, etc.

There were 780,220 males aged 20-64 enumerated in this occupational order. The majority were enumerated under clerks (not elsewhere specified) a very heterogeneous group which includes such occupations as barristers' clerks, civil service clerical officers and office boys. The other large occupational group was that of the costing, estimating and accounting clerks. Clerks (not elsewhere specified) returned a S.M.R. of 112, costing clerks one of 70. It is unlikely that there would be such a difference in the mortality risks of the two occupations and it would appear that a better estimate would be obtained by combining the two sets of mortality data, as has been done in the table below for age specific general mortality.

Occupation	Deaths at ages:															S.M.R.
	20–			25–			35–			45–			55–64			
	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	Regd.	Exp.	Ratio	
Clerks (not elsewhere specified) ..	467	483	97	1,311	1,180	111	2,050	1,665	123	5,654	4,532	125	11,249	10,581	106	112
Costing etc. clerks	123	236	52	319	547	58	526	776	68	1,297	1,745	74	2,342	3,256	72	70
Total	590	719	82	1,630	1,727	94	2,576	2,441	106	6,951	6,277	111	13,591	13,837	98	101

This table shows that mortality among clerks was relatively highest in the 35-54 age groups. In other age groups mortality risks were either normal or low.

The following table gives registered and expected deaths and S.M.R. for some of the more important causes of death after combining data for the two occupations.

There was significantly high mortality from tuberculosis, poliomyelitis, vascular lesions of central nervous system, coronary disease, hypertension and chronic rheumatic heart disease. On the other hand, deaths assigned to cancer, respiratory diseases and myocardial degeneration were considerably fewer than expected on the basis of all male death rates in England and Wales.

Mortality data for the whole occupational order is shown in Table 3A(i). It is of similar pattern to that of the combined clerks occupation discussed above.

The mortality of wives of clerks, etc. as a combined group is shown in Table 3B(ii). They returned a S.M.R. of 85, relatively better than their husbands and that of all married women. Mortality from individual causes was, in general, low. The only causes to which the number of deaths assigned were significantly greater than

	Deaths of male clerks (costing, etc. and not elsewhere specified) aged 20–64		S.M.R.
	Registered	Expected	
Tuberculosis..	2,130	1,945	110
Acute poliomyelitis..	54	38	142
Cancer (all sites)	5,330	5,598	95
Cancer of stomach	729	975	75
Cancer of lung	1,891	2,007	94
Vascular lesions of nervous system	1,952	1,725	113
Coronary disease, angina	4,945	3,977	124
Hypertension	801	724	111
Chronic rheumatic heart disease	838	630	133
Other myocardial degeneration	690	850	81
Pneumonia	668	753	89
Bronchitis	1,378	1,728	80
Suicide	582	586	99
Other causes	3,350	3,464	97
All causes	25,338	25,000	101

expected was cancer of breast (S.M.R. 113) and suicide (S.M.R. 126). The high tuberculosis death rate noted for male clerks was not repeated among their wives whose S.M.R. for this cause was significantly low. Mortality risks from cardio- and cerebro-vascular and respiratory diseases were for nearly all individual causes well below expectation.

Single women engaged in these occupations returned a favourable mortality, both generally and for most individual causes of death. One exception was cancer of breast with 542 deaths assigned and 486 expected, a significant excess.

XXIV. Warehousemen, Storekeepers, Packers, etc.

During 1949-53 there were 12,280 deaths of males aged 20-64 registered as warehousemen, storekeepers, packers, etc. With 12,685 deaths expected the S.M.R. was returned as 97 significantly below that of all males. The wives of these men returned a similar S.M.R. of 97.

Warehouse and storekeepers' assistants returned a very low S.M.R. of 44, there being 699 deaths registered and 1,586 expected. As a considerable number of these men were probably registered at death and census (but more at the former) as warehousemen and storekeepers, it is likely that the calculated S.M.R. was considerably lower than the true figure. A study of the individual causes of death suggests that diabetes was the only cause from which mortality may have been excessive.

Warehousemen and storekeepers. Mortality was probably over-estimated for the reason given above, but owing to the greater number of these men, the net effect is not so large. Combining all three groups of men aged 20-64, 10,037 deaths were registered, and 10,245 expected between 1949-53, giving a S.M.R. of 98. Warehousemen and storekeepers mortality is analysed together in Table 3A(i) and separately (as is also that of their assistants) in Table 3A(ii). The mortality pattern among these groups, after allowing for the possible errors in S.M.R., was essentially similar. The three groups have been combined in Table EO (page 141). For each age group the death rate approximates to that expected. Among the individual causes of death the numbers of deaths assigned to cancer of stomach, chronic rheumatic heart disease and bronchitis were in excess of those expected. On the other hand deaths from tuberculosis and other accidents were less than expected.

Packers and bottlers, showed divergent, but probably unimportant, variations in the S.M.R's of the individual occupations. The mortality of the combined group is shown in Table 3A(ii). The all causes S.M.R. was returned as 92, just significantly below that of all males. The numbers of deaths assigned to chronic rheumatic heart disease and probably also bronchitis were significantly in excess of those expected. Mortality from vascular lesions of nervous system and coronary disease was below expectation. Single women enumerated in this occupation, although returning normal general mortality, had an excessive number of deaths assigned to tuberculosis, chronic rheumatic heart disease and nephritis.

XXV. Stationary Engine Drivers, Stokers, etc.

The males aged 20-64 in this occupation order numbered 216,078 at the 1951 Census. They had a normal mortality experience, but that of their wives was slightly in excess of expectation.

Stationary engine drivers (underground in mines) returned a S.M.R. of 126. It is probable that this is an artificially high figure, owing to the likelihood of a discrepancy occurring between the numerator and denominator involved in this ratio. This is most likely to be the result of difficulty in assigning engine drivers in mines to occupation codes 043, 910 or 911. Nevertheless, it is interesting to compare the ratio of the S.M.R.

Occupation Codes 900, 901, 902 Warehousemen, Storekeepers, etc.

CAUSE OF DEATH and International Classification No.	Number of Deaths registered in the five years 1949-1953 at ages:—									Aggregate 20-64	Aggregate 65 and over	Expected Deaths 20-64	S.M.R. 20-64	P.M.R. 65 and over
	16-19	20-24	25-34	35-44	45-54	55-64	65-69	70-74	75 and over					
	a	b	c	d	e	f	g	h	j	k	l	m	n	o
Tuberculosis (001-019)	7	30	74	119	196	243	81	26	19	662	126	720	92	102
Tuberculosis, respiratory (001-008)	6	24	68	111	191	231	79	25	16	625	120	677	92	103
Tuberculosis, respiratory with occ. dis. of lung (001)	—	—	—	1	2	3	—	1	—	6	1	24	(25)	(17)
Tuberculosis, non-respiratory (010-019)	1	6	6	8	5	12	2	1	3	37	6	43	86	(100)
Syphilitic disease (020-029)	—	—	1	5	19	49	14	17	15	74	46	74	100	107
Acute poliomyelitis (080)	1	1	3	1	2	—	—	—	—	7	—	11	(64)	—
Malignant neoplasms, all sites (140-205)	5	15	38	184	717	1,444	768	671	676	2,398	2,115	2,364	101	111
Malignant neoplasm, stomach (151)	—	1	2	27	139	303	150	137	140	472	427	418	113	117
Malignant neoplasm, lung, bronchus (162-163)	—	2	7	63	289	516	219	131	68	877	418	863	102	132
Leukaemia, aleukaemia (204)	2	4	3	11	17	13	12	4	6	48	22	57	84	96
Diabetes (260)	—	3	7	5	10	20	12	12	22	45	46	40	113	75
Psychoses (300-309)	—	—	1	—	3	8	2	6	10	12	18	10	120	95
Vascular lesions of nervous system (330-334)	—	1	8	41	168	559	391	435	828	777	1,654	740	105	96
Coronary disease, angina (420)	—	—	7	84	516	1,122	736	554	670	1,729	1,960	1,718	101	113
Hypertension (440-447)	—	1	5	14	74	198	141	153	246	292	540	310	94	104
Chronic rheumatic heart disease (410-416)	1	7	29	62	100	90	46	37	49	288	132	243	119	111
Chronic endocarditis not spec. as rheumatic (421)	—	—	1	11	16	48	23	29	26	76	78	83	92	107
Other myocardial degeneration (422)	1	1	1	8	54	280	285	446	1,275	344	2,006	367	94	87
General arteriosclerosis (450)	—	—	—	—	7	49	35	75	212	56	322	55	102	80
Influenza (480-483)	1	1	—	5	37	72	45	35	70	115	150	122	94	95
Pneumonia (490-493)	1	1	10	16	62	177	135	126	220	266	481	314	85	103
Bronchitis (500-502)	—	—	3	36	229	602	369	300	444	870	1,113	749	116	112
Pneumoconiosis, occupational (523, 524)	—	—	—	2	7	11	1	2	—	20	3	41	49	(16)
Other chronic interstitial pneumonia (525)	—	—	1	1	6	5	3	3	2	12	8	12	100	(133)
Ulcer of stomach (540)	—	—	1	10	51	64	39	22	26	126	87	117	108	110
Ulcer of duodenum (541)	—	—	6	20	31	71	30	32	22	128	84	128	100	122
Gastritis, enteritis and diarrhoea (543, 571, 572)	—	—	5	5	8	19	12	5	14	37	31	33	112	111
Nephritis and nephrosis (590-594)	2	11	24	27	46	55	34	27	36	163	97	168	97	80
Hyperplasia of prostate (610)	—	—	—	—	2	30	43	71	188	32	302	43	74	91
Appendicitis (550-553)	1	1	3	4	9	16	6	5	5	33	16	33	100	94
Hernia of abdominal cavity (560, 561)	—	—	—	—	4	16	6	15	30	20	51	24	83	121
Intestinal obstruction without mention of hernia (570)	—	—	—	8	4	15	14	5	12	27	31	32	84	107
Cirrhosis of liver (581)	—	—	4	5	12	14	7	9	4	35	20	41	85	105
Cholelithiasis, cholecystitis (584-585)	—	—	—	—	3	7	1	7	5	10	13	15	67	59
Motor vehicle accidents (E810-835)	2	11	25	16	40	29	18	15	27	121	60	180	67	128
Accidents in the home (E870.0-936.0)	—	2	2	5	6	17	9	12	48	32	69	38	84	101
Other accidents (Remr. of E800-962)	7	12	24	24	26	46	16	8	26	132	50	255	52	81
Suicide (E963, 970-979)	2	7	16	25	59	66	27	15	17	173	59	223	78	89
Other causes (Remainder)	13	19	68	124	261	453	241	211	409	925	861	942	98	89
All causes	**44**	**124**	**366**	**867**	**2,785**	**5,895**	**3,590**	**3,386**	**5,653**	**10,037**	**12,629**	**10,245**	**98**	**100**
Census Population	9,462	20,899	49,951	60,667	67,751	52,729	15,601	8,975	6,724	251,997	31,300			
Mean Annual Death Rate from all Causes (per 100,000)	93	119	147	286	822	2,236	4,602	7,545	16,814	797	8,070			
Ratio of Death Rate to that of All Males (Taken as 100)	90	86	92	100	100	97	104	111	118	118	99			

for certain of the more important causes of death, to that of all causes for those working in coal mines (Occ. Code 041-049) with this occupation. This has been done in the table below:—

	Ratio of S.M.R. for individual causes to that of all causes of death	
	Workers in coal mines Occ. Code 041-049	Stationary engine drivers underground in mines Occ. Code 910
Tuberculosis..	103	47
Cancer of stomach	130	133
Cancer of lung	62	53
Vascular lesions of nervous system	84	104
Coronary disease and angina ..	73	133
Bronchitis	117	102
Other accidents	333	179
All causes	100	100

This table shows that the death rate from tuberculosis and accidents was relatively lower among engine drivers than other miners. In contrast, deaths from cardio- and cerebro-vascular lesions are more frequent among the engine drivers.

In this occupation order there are two further small groups of men who work underground in mines; switchboard attendants and oilers and greasers of machinery. These two groups, together with the underground stationary engine drivers, work mainly in coal mines. The registered and expected number of deaths of men aged 20-64 in these three groups is shown in Table I for each coal mining area. The numbers in each case were small, but the same reservations are made with regard to their interpretation as were made for coal miners (page 98). In addition, it is possible that local variation in job description may have altered the number of men classified in this group relative to the total number of coal miners in the same area.

Details of *other stationary engine drivers (not underground in mines) crane drivers and drivers of civil engineering plant (not elsewhere specified)* are shown in Table 3A(i). Their S.M.R. of 96 is just significantly below that of all males. Owing to the high number of motor vehicle and "other" accidents in the under 25 age groups, mortality ratios of death rates to that of all males are high in these groups. At other ages the ratios are either just below or just above the normal. There were 165 deaths due to motor vehicle accidents and 186 due to "other" accidents, compared with expected figures of 71 and 101 respectively. There was no other cause with a significantly increased number of deaths assigned to it. Mortality from pneumonia and tuberculosis was lower than expected.

Slingers and riggers had a mortality experience apparently 25 per cent worse than that of all males aged 20-64. It is possible that there was some inflation of this figure due to the excessive use of the non-specific description of rigger on death certificates compared with census schedules. Despite the possibility of the increased mortality being apparent, deaths from "other" accidents were considerably more numerous than the normal, 65 being registered and 15 expected. Pneumonia and bronchitis death rates were also increased. On the other hand, the number of deaths assigned to coronary diseases were fewer than expected.

Boiler firemen and stokers returned a S.M.R. of 92, better than that for all males. Their mortality experience was relatively favourable from tuberculosis and cerebro-vascular and heart diseases. Deaths from cancer of stomach and bronchitis were more frequent than expected, both figures being on the borderline of statistical significance. There were 22 deaths assigned to cirrhosis of liver and 13 expected. The wives of these men had a normal mortality experience with an excessive number of deaths from bronchitis. Boiler firemen and stokers form apparently a relatively healthy occupation, due partly to the strenuous work involved allowing only fit men to take it up. See also Table EE (page 107).

Boiler scalers returned a S.M.R. of 113 from all causes, significantly above that expected. Numbers of deaths assigned to any one cause were small but mortality from the following diseases was probably excessive (the S.M.R's are given in brackets): tuberculosis (165), cancer of lung (200), pneumonia (200), bronchitis (165). Reference to Table 7A shows that there was no other cancer with any suggestion of an excessive mortality other than that of the lung. There were 2 deaths of men with occupational disease of the lung (1 expected).

Cause of death	Deaths of oilers and greasers (not underground in mines) aged 20-64	
	Registered	Expected
Tuberculosis	10	22
Cancer of lung	15	38
Influenza	2	4
Pneumonia	4	10
Bronchitis	25	25

Gas producer men had a normal general mortality. Among individual causes, cancer of lung had 23 deaths assigned to it and 10 expected. This excess of deaths was responsible for almost the whole excess for cancer of all forms. There were 6 deaths assigned to ulcer of stomach and duodenum and 2 expected.

Switchboard attendants form a small occupation group who returned a S.M.R. of 75 which was significantly below that of all males.

Oilers and greasers had a favourable general mortality experience, returning a S.M.R. of 75. Numbers of deaths were small, but the previous table shows a remarkably favourable mortality experience from affections of the respiratory system, with the exception of bronchitis.

The only cause for which deaths were excessive was "other" accidents, 15 being registered and 7 expected.

XXVI. Workers in Unskilled Occupations
(Not elsewhere specified)

In 1951 there were 1,000,794 men aged 20-64 enumerated as engaged in, or retired from, these occupations. They returned a S.M.R. of 132. Owing to probable discrepancies in job description at death registration and census, it is probable that this figure is too high. The largest part of the error is likely to occur with labourers in all other undertakings (Occ. Code. 950) who returned a S.M.R. of 186. Men registered at death as "labourers" would be classified under this heading unless there was a statement of industry (e.g. building). At census, statement of industry would have allowed more precise classification.

Assemblers returned a S.M.R. of 85, significantly below that expected. The only cause of death for which numbers were significantly in excess was chronic rheumatic heart disease with 38 deaths registered and 16 expected. Mortality was less from coronary disease and vascular lesions of the nervous system.

Machine minders in engineering and allied trades had a mortality experience slightly less favourable than that of all males, returning a S.M.R. of 109. A large part of the excess of deaths was due to tuberculosis, chronic rheumatic heart disease and nephritis. These are diseases which often force a man to take up a less arduous occupation. This self-selection of unfit men for certain occupations in this group may have been the cause of the high general mortality.

Other machine minders returned a S.M.R. of 160. This is almost certainly the result of a number of deaths being wrongly assigned to this group of occupations, owing to insufficient description on the death certificate by the use of such terms as "machine minder".

The mortality of *labourers* in various industries is shown in Table 3A(ii). Owing to the possibility of discrepancies occurring between numerator and denominator used in the calculation of S.M.R's, it would be advisable to treat the figures given with considerable caution. In order to assist in the interpretation of the data, Table EP has been prepared giving the ratios of the S.M.R's for important individual causes of death to that of all causes. Similar figures for the wives of all these groups together are also shown.

Labourers in the glass industry had the worst relative mortality experience from tuberculosis. Except for a possible high rate among glass blowers this was not repeated among other occupations in this industry. Labourers in all other industrial and commercial undertakings also had a high relative mortality from tuberculosis, very similar to that of the wives of all labourers.

Mortality from cancer of stomach was relatively high among all classes of labourers (except those in the asbestos making industry) but particularly so with the glass and cement industries.

Cancer of lung was not far removed from average mortality in the labouring occupations under consideration, with the exception of those involved in the making of asbestos goods. Registered deaths in this group were 13; only 8 were expected.

Relative mortality from vascular lesions of the nervous system and coronary disease, angina, was less for all occupation groups with the exception of labourers in the cement who returned a high figure for vascular lesions of the nervous system. The number of deaths recorded in this last instance was not large (41) and it is possible that this high ratio was due to chance.

Pneumonia and bronchitis showed a generally high mortality. The high ratio for bronchitis among textile labourers contrasted strongly with the relatively low figure for pneumonia.

The ratio for "other" accidents was particularly high among labourers in coke ovens and gas works (36 deaths registered, 21 expected).

In certain of the industries from which these labourers were drawn there existed risks of industrial lung disease. The table on page 145 gives details of the deaths registered and expected among this group. In interpreting this table two facts should be remembered, (a) the expected figures, based on rates for all males in England and Wales, may be misleading owing to possible discrepancies mentioned earlier and (b) occupational lung disease is not necessarily contracted in the industry to which any particular death is allotted.

The wives of labourers returned a S.M.R. of 124, significantly in excess of that expected. The ratio of the registered to expected death rate was high at each age group but there was a definite tendency for it to fall off with increasing age. For most individual causes the numbers of deaths were in excess of expectation and particularly so for tuberculosis, cancer of stomach, chronic rheumatic heart disease, bronchitis, pregnancy, etc., hernia, and accidents in the home.

Single women engaged in unskilled occupations had high death rates from tuberculosis, cancer of the stomach and bronchitis, probably as a result of social influences. In addition women engaged in assembling and machine minding had a high risk of death from chronic rheumatic heart disease. In these two groups 62 deaths from this cause were registered and 34 expected. In the group of other unskilled occupations mortality from this cause was in accordance with expectation.

Table EP. Ratios of S.M.R's (20-64) for certain causes of death to that for all causes of death for labourers, etc. in various industries, England and Wales, 1949-53

| Cause of death | Ratio of S.M.R. for individual cause to that for all causes of death | | | | | | | | | Wives of labourers and unskilled workers |
| | Labourers and unskilled workers in:— | | | | | | | | All other industrial and commercial undertakings | |
	Making of bricks, tiles and pottery 935	Making of glass and glassware 936	Chemical and Allied trades 937	Coke ovens and gas works 938	Making of asbestos goods 939	Metal manufacture, Engineering, etc. 940	Textiles (not textile goods) 941	Cement, etc. 942	950	935–950
Tuberculosis	95	147	107	98	(89)	108	78	105	135	134
Cancer of stomach	109	152	111	119	(57)	114	117	145	106	113
Cancer of lung	113	99	100	111	185	110	77	96	91	85
Vascular lesions of nervous system	65	64	97	93	(76)	85	86	125	85	90
Coronary disease and angina ..	71	64	83	81	(64)	80	87	67	67	94
Pneumonia	124	149	131	119	(38)	131	91	67	128	119
Bronchitis	126	194	162	138	(98)	156	164	156	139	142
Other accidents	102	(69)	63	141	(38)	91	69	161	119	107
S.M.R. for All causes	**98**	**101**	**90**	**121**	**88**	**100**	**106**	**84**	**186**	**124**

144

Occupation	Occ. Code No.	Deaths of males aged 20–64			
		Respiratory tuberculosis with occupational disease of lung		Occupational pneumoconiosis	
		Registered	Expected	Registered	Expected
Labourers and unskilled workers in:—					
Making of bricks, tiles and pottery	935	11	2	13	3
Making of glass, glassware	936	—	1	—	1
Chemical and Allied trades	937	2	4	3	7
Coke ovens and gas works	938	1	2	1	3
Making of asbestos goods	939	1	0	1	0
Metal manufacture and engineering	940	26	35	45	61
Textiles (not textile goods)	941	—	4	4	7
Cement, etc.	942	6	1	3	2
All other commercial and industrial undertakings ..	950	41	33	72	58

XXVII. Other and Undefined Workers

Male workers in distribution of gas and water, etc. aged 20-64 numbered 27,831 in 1951. Both they and their wives had normal mortality over the period 1949-53. *Inspectors, etc.* in these undertakings had a slightly higher death rate than *other workers*. Mortality from coronary disease was above expectation for inspectors—below for other workers. For other causes, the number of deaths were small and no conclusions can be drawn from them.

Managers (*not elsewhere specified*) were a very small group who returned a S.M.R. of 155. It would be inadvisable to draw conclusions of any sort from this or from the mortality analysis in Table 3A(ii).

Foremen (*not elsewhere specified*) returned a S.M.R. of 92. This is in keeping with S.M.R's for foremen in most industries throughout the Occupational Classification.

Sandblasters are in an occupation well-known for the nature of its industrial hazards. Deaths occurring between 1949 and 1953, although small in number, proved no exception to this. There were 90 deaths registered and 52 expected, giving a S.M.R. of 173. There were 19 deaths assigned to tuberculosis (5 with occupational disease of the lung) and 4 expected. There were a further 3 deaths from pneumoconiosis and 1 from chronic interstitial pneumonia. There were 10 deaths assigned to cancer of lung and 4 expected, and a further 11 deaths assigned to pneumonia and bronchitis and 5 expected. In addition to this excessive number of deaths it should be noted that the population at ages 55-64 is only half that at 45-54. Probably many men leave the occupation at an early age after having contracted pneumoconiosis. Useful comparison with the figures for 1930-32 is difficult to make, but it may be an encouraging sign that the S.M.R. then for sand-blasters was 304. The fact that it has now dropped to 173 can perhaps be regarded as the result of increasing awareness of the risks involved, leading to better preventive measures. On the other hand, full employment such as existed in 1949-53 allowed men to change their occupations easily. The amount of ill-health caused by sandblasting may as a result be underestimated.

Rag, bone and bottle sorters formed a very small occupation group with normal general mortality. There were 14 deaths assigned to cancer of lung and 7 expected.

Other civil service officials (*not clerks*) returned a S.M.R. of 79. The group consists of very heterogeneous occupations such as prison officers and inspectors of horses in mines. Mortality was not significantly high from any individual cause of death.

Other local authority officials (*not clerks*) constitute a similar group of occupations to that of civil servants just discussed. They returned a normal general mortality experience with no individual cause of death calling for special comment.

Male Occupations of Highest Mortality from Various Causes

In the following lists, the occupations (which are included within the 425 specified in the Index to Chapter V and in Tables 3A(i) and (ii)) registering the highest Standardised Mortality Ratios at ages 20-64 are shown, in descending order, for some important causes of death. Conventions regarding ratios based on small numbers are similar to those used throughout the volume. *It should be emphasised that the highest ratios have been included whether they are regarded as representing a true picture of the situation or not.* It is advisable therefore for this table to be used only after taking into account relevant passages in the commentary. The whereabouts of such passages are indicated in the index (page 165).

Table EQ. Occupational groups with the highest S.M.R's (20-64) for selected causes of death, males, 1949-53

All Causes

Group No.	Highest of 425	S.M.R.
98	Royal Navy—other ranks—retired	826
96	Army—other ranks—retired	556
100	Royal Air Force—other ranks—retired	485
298	Slate workers (not elsewhere specified); slate masons	467
301	Tunnel miners	225
175	Getters—mines (not coal)	222
94	Armed forces—commissioned officers—retired	189
185	Makers of glass and glassware—Blowers (not machine hands or bench glass workers)	186
314	Drivers of horse-drawn vehicles	189
417	Labourers and other Unskilled Workers in—All other industrial and commercial undertakings	186
312	Haulage contractors and managers	175
422	Sand blasters (excluding shot blasters)	173
408	Machine minders—others	160
420	Managers (not elsewhere specified)	155
188	Workers in chemical and allied trades—Furnacemen, kilnmen	154
120	In coal mines—Hewers and getters (by hand)—below ground	153
114	Land agents, estate managers	150
102	Publicans, owners etc., of hotels, inns	150
252	Curriers, leather dressers	149
4	Coal mines—coal face coal getters, loaders	148

Tuberculosis without occupational disease of the lung (002–008)

Group No.	Highest of 425	S.M.R.
98	Royal Navy—other ranks—retired	3,950
96	Army—other ranks—retired	3,082
100	Royal Air Force—other ranks—retired	2,650
298	Slate workers (not elsewhere specified); slate masons	(500)
422	Sand blasters (excluding shot blasters)	325
382	Restaurant counter hands	300
188	Workers in chemical and allied trades—Furnacemen, kilnmen	(300)
189	Workers in chemical and allied trades—Fillers of explosives	(300)
103	Barmen	285
417	Labourers and other Unskilled Workers in—All other industrial and commercial undertakings	260
228	Filers	250
371	Curriers, leather dressers	247
94	Armed forces—commissioned officers—retired	245
210	Galvanizers and tinners	243
314	Drivers of horse-drawn vehicles	229
225	Cutlers	(225)
39	Edge tool grinders	225
185	Makers of glass and glassware—Blowers (not machine hands or bench glass workers)	217
321	Wharfingers and stevedores	212

Tuberculosis, respiratory (001–008)

Group No.	Highest of 425	S.M.R.
98	Royal Navy—other ranks—retired	3,950
96	Army—other ranks—retired	2,825
100	Royal Air Force—other ranks—retired	2,650
298	Slate workers (not elsewhere specified); slate masons	(800)
175	Getters—mines (not coal)	464
422	Sand blasters (excluding shot blasters)	450
188	Workers in chemical and allied trades—Furnacemen, kilnmen	(350)
189	Workers in chemical and allied trades—Fillers of explosives	(300)
382	Restaurant counter hands	300
39	Edge tool grinders	283
296	Masons, stone cutters—Sandstone	275
103	Barmen	274
417	Labourers and other Unskilled Workers in—All other industrial and commercial undertakings	255
228	Filers	250
210	Galvanizers and tinners	243
94	Armed forces—commissioned officers—retired	237
371	Watchmen	236
252	Curriers, leather dressers	231
225	Cutlers	(225)
314	Drivers of horse-drawn vehicles	222

Acute poliomyelitis (080)

Group No.	Highest of 425	S.M.R.
89	Registered medical practitioners, radiologists	(800)
88	Judges, barristers etc., solicitors	(700)
1	Farmers, farm managers	488
83	Bankers, bank and insurance managers, underwriters, etc.	(400)
364	Qualified accountants	(400)
370	Fire brigade officers and men	(400)
56	Compositors (hand or machine)	(300)
93	Armed forces—commissioned officers—active	(300)
230	Press workers and stampers, drawers	(300)
284	Other skilled printing workers (not comps. or printing machine room workers)	(300)
360	Chemists (not pharmaceutical)	(300)
368	Painters, sculptors, engravers	(300)
85	Clergymen (Church of England)	(300)
91	Teachers (not music)	267
339	Proprietors, Managers of Retail Businesses for the sale of Other non-food goods	260
92	Professional engineers, surveyors	240
343	Salesmen, shop assistants selling:—in variety chain stores, other general and mixed businesses, etc.	200
80	Salesmen, shop assistants selling grocery and provisions	(200)
57	Printing machine minders, setters, assistants; printers (so returned) machine rulers	(200)
84	Insurance brokers, agents and canvassers	(200)

N.B. See introductory note on page 145.

Malignant neoplasms, all sites (140–205)

Group No.	Highest of 425	S.M.R.
98	Royal Navy—other ranks—retired	687
100	Royal Air Force—other ranks—retired	286
96	Army—other ranks—retired	274
188	Workers in chemical and allied trades—Furnacemen, kilnmen	233
185	Makers of glass and glassware—Blowers (not machine hands, or bench glass workers)	208
175	Getters—mines (not coal)	194
94	Armed forces—commissioned officers—retired	191
314	Drivers of horse-drawn vehicles	189
312	Haulage contractors and managers	176
203	Riveters, caulkers	169
417	Labourers and other Unskilled Workers in—All other industrial and commercial undertakings	165
423	Rag, bone, bottle, etc., sorters	165
422	Sand blasters (excluding shot blasters)	164
403	Gas producer men	159
58	Builders,' bricklayers,' plasterers,' masons' labourers	158
392	Chimney sweeps	158
373	Showmen; fair and roundabout workers	156
268	Makers of Alcoholic Drinks—Foremen, overlookers	155
33	Electrical fitters	150
298	Slate workers (not elsewhere specified); slate masons	(150)

Malignant neoplasm, stomach (151)

Group No.	Highest of 425	S.M.R.
98	Royal Navy—other ranks—retired	3,300
188	Workers in chemical and allied trades—Furnacemen, kilnmen	(600)
100	Royal Air Force—other ranks—retired	(300)
237	Openers, blenders, rag grinders (cotton)	(300)
96	Royal Navy—other ranks—retired	280
251	Lime and tan yard workers (skilled)	(250)
314	Drivers of horse-drawn vehicles	233
423	Rag, bone, bottle, etc., sorters	(233)
293	Glaziers	220
211	Electro-platers, nickel platers	214
63	Aerographers, paint sprayers	208
111	Fishermen	206
181	Makers of bricks, pottery, etc.—Potters' mill workers, slip makers	(200)
185	Makers of glass and glassware—Blowers (not machine hands or bench glass workers)	(200)
263	Sugar and sweet boilers	(200)
315	Drivers of trams and trolley buses	200
422	Sand blasters (excluding shot blasters)	(200)
417	Labourers and other Unskilled Workers in—All other industrial and commercial undertakings	198
58	Builders,' bricklayers,' plasterers,' masons' labourers	185
95	Army—other ranks—active	185

Malignant neoplasm, lung, bronchus (162, 163)

Group No.	Highest of 425	S.M.R.
98	Royal Navy—other ranks—retired	500
100	Royal Air Force—other ranks—retired	(450)
188	Workers in chemical and allied trades—Furnacemen, kilnmen	(250)
422	Sand blasters (excluding shot blasters)	250
96	Army—other ranks—retired	240
403	Gas producer men	230
314	Drivers of horse-drawn vehicles	222
373	Showmen; fair and roundabout workers	215
185	Makers of glass and glassware—Blowers (not machine hands or bench glass workers)	(200)
225	Cutlers	200
227	File cutters (machine or hand)	(200)
253	Enamellers, japanners, dyers, finishers	(200)
266	Meat and fish curers and smokers	(200)
293	Glaziers	200
402	Boiler scalers	200
423	Rag, bone, bottle, etc., sorters	200
175	Getters—mines (not coal)	192
203	Riveters, caulkers	190
312	Haulage contractors and managers	184
229	Lock, latch and keymakers, locksmiths	(180)

Vascular lesions of nervous system (330–334)

Group No.	Highest of 425	S.M.R.
98	Royal Navy—other ranks—retired	790
96	Army—other ranks—retired	378
300	Well and mine sinkers and borers	(250)
245	Drawers-in, twisters-in	244
420	Managers (not elsewhere specified)	(233)
354	Pharmacists	223
94	Armed forces—commissioned officers—retired	221
102	Publicans, Owners etc., of hotels, inns	212
86	Roman Catholic priests, monks	208
103	Barmen	208
270	Makers of Alcoholic Drinks—Maltsters, skilled workers in ale, etc., brewing, bottlers	206
100	Royal Air Force—other ranks—retired	(200)
185	Makers of glass and glassware—Blowers (not machine hands or bench glass workers)	(200)
188	Workers in chemical and allied trades—Furnacemen, kilnmen	(200)
189	Workers in chemical and allied trades—Fillers of explosives	(200)
216	Lead burners and chemical plumbers	(200)
264	Sugar confectionery makers, etc.	(200)
280	Basket makers, other cane workers	190
312	Haulage contractors and managers	185
393	Funeral directors and assistants	182

N.B. See introductory note on page 145.

N.B. See introductory note on page 145.

Coronary disease, angina (420)

Group No.	Highest of 425	S.M.R.
98	Royal Navy—other ranks—retired	496
96	Army—other ranks—retired	312
100	Royal Air Force—other ranks—retired	250
94	Armed forces—commissioned officers—retired	239
310	Bus and tramway managers, etc.	221
114	Land agents, estate managers	214
327	Radio and telegraph operators (not elsewhere specified)	207
312	Haulage contractors and managers	204
369	Chief constables, inspectors, etc.	204
301	Tunnel miners	(200)
86	Roman Catholic priests, monks	193
354	Pharmacists	193
50	Tailors	184
338	Proprietors, Managers of Retail businesses for the sale of—General and mixed businesses	181
245	Drawers-in, twisters-in	177
320	Harbour, etc. officials; pier masters	175
295	Masons, stone cutters:—Limestone	173
379	Cricketers, footballers, golfers, etc.	173
360	Chemists (not pharmaceutical)	169
384	Stewards (not hospital)	169

Other myocardial degeneration (422)

Group No.	Highest of 425	S.M.R.
98	Royal Navy—other ranks—retired	860
96	Army—other ranks—retired	560
185	Makers of glass and glassware—Blowers (not machine hands or bench glass workers)	(300)
189	Workers in chemical and allied trades—Fillers of explosives	(300)
236	Wool sorters, rag and wool carbonisers and washers	260
12	Pottery finishers and decorators	(250)
228	Filers	(250)
251	Lime and tan yard workers (skilled)	(250)
266	Meat and fish curers and smokers	(250)
295	Masons, stone cutters:—Limestone	(250)
314	Drivers of horse-drawn vehicles	236
417	Labourers and other Unskilled Workers in—All other industrial and commercial undertakings	227
245	Drawers-in, twisters-in	220
280	Basket makers, other cane workers	220
40	Openers, sorters, blenders, carders, etc.	203
175	Getters—mines (not coal)	200
379	Cricketers, footballers, golfers, etc.	(200)
422	Sand blasters (excluding shot blasters)	(200)
100	Royal Air Force—other ranks—retired	(200)
227	File cutters (machine or hand)	(200)

Pneumonia (490–493)

Group No.	Highest of 425	S.M.R.
98	Royal Navy—other ranks—retired	600
96	Army—other ranks—retired	586
100	Royal Air Force—other ranks—retired	(300)
382	Restaurant counter hands	(300)
422	Sand blasters (excluding shot blasters)	(300)
314	Drivers of horse-drawn vehicles	244
417	Labourers and other Unskilled Workers in—All other industrial and commercial undertakings	239
210	Galvanizers and tinners	(233)
371	Watchmen	232
37	Oxy-acetylene or electric welders, etc.	226
280	Basket makers, other cane workers	(225)
338	Proprietors, Managers of Retail Businesses for the sale of—General and mixed businesses	215
19	Iron foundry labourers	212
401	Slingers and riggers	200
402	Boiler scalers	200
20	Steel foundry labourers	200
276	Coopers, hoop makers and benders	200
408	Machine minders—others	200
245	Drawers-in, twisters-in	(200)
232	Wire weavers, wire rope makers	(200)

Bronchitis (500–502)

Group No.	Highest of 425	S.M.R.
96	Army—other ranks—retired	537
98	Royal Navy—other ranks—retired	440
185	Makers of glass and glassware—Blowers (not machine hands or bench glass workers)	350
314	Drivers of horse-drawn vehicles	311
228	Filers	275
371	Watchmen	270
237	Openers, blenders, rag grinders (cotton)	(267)
417	Labourers and other Unskilled Workers in—All other industrial and commercial undertakings	259
201	Metal spinners	(250)
227	File cutters (machine or hand)	(250)
39	Edge tool grinders	230
210	Galvanizers and tinners	217
288	Hair, etc. drafters; brush makers	214
293	Glaziers	214
308	Ticket collectors and examiners	214
120	In coal mines—Hewers and getters (by hand)—below ground	210
276	Coopers, hoop makers and benders	209
203	Riveters, caulkers	206
191	Iron or steel moulders and core makers	201
196	Forgemen, pressmen	200

N.B. See introductory note on page 145.

Pneumoconiosis, occupational (523, 524)

Group No.	Highest of 425	S.M.R.
120	In coal mines—Hewers and getters (by hand)—below ground	4,105
4	Coal mines—coal face coal getters, loaders	3,790
11	Potters, pottery makers and casters	3,600
182	Makers of bricks, pottery, etc.—Kiln and oven men, setters and placers	1,500
60	Masons, stone cutters	950
118	In coal mines—subordinate superintending staff	929
7	Coal mines—developing workings in rock (below ground)	843
119	In coal mines—Coal cutting, etc. machine men—below ground	800
46	Grinders, jobbers, tacklers, etc.—cotton	(700)
297	Masons, stone cutters:—Others	700
5	Coal mines—Workers below ground (not coal face)	620
9	Coal mines—other workers below ground	589
6	Coal mines—conveying material to the shaft (below ground)	529
8	Coal mines—repairing and maintaining roads (below ground)	529
177	Getters in open quarries, pits, etc.	500
175	Getters—mines (not coal)	410
20	Steel foundry labourers	(400)
39	Edge tool grinders	(400)
10	Coal mines—other workers above ground	317
178	Other workers in mines (not coal), quarries, brine pits and oil wells	(300)

Motor Vehicle accidents (E810–835)

Group No.	Highest of 425	S.M.R.
408	Machine minders—other	480
312	Haulage contractors and managers	309
251	Lime and tan yard workers (skilled)	(300)
380	Game keepers, game watchers	(300)
404	Switchboard attendants, etc., not underground in mines	(300)
311	Car hire, and garage proprietors, etc.	285
379	Cricketers, footballers, golfers, etc.	275
373	Showmen; fair and roundabout workers	(267)
316	Lorry drivers' mates, van guards, etc.	257
109	Drivers of stationary engines (not underground in mines) cranes and civil engineering plant	232
417	Labourers and other Unskilled Workers in—All other industrial and commercial undertakings	227
421	Foremen, overlookers (not elsewhere specified)	225
94	Armed forces—commissioned officers—retired	220
117	Foresters and woodmen	207
39	Edge tool grinders	(200)
98	Royal Navy—other ranks—retired	(200)
176	Other workers below ground—mines (not coal)	(200)
185	Makers of glass and glassware—Blowers (not machine hands or bench glass workers)	(200)
228	Filers	(200)
323	Dock keepers; bridge, stage, pier men	(200)

Other accidents (Remr. of E800–962)

Group No.	Highest of 425	S.M.R.
93	Armed forces—commissioned officers—active	1,268
301	Tunnel miners	(900)
175	Getters—miners (not coal)	875
300	Well and mine sinkers and borers	800
38	Constructional engineers, erectors	709
119	Coal cutting, etc. machine men—below ground	605
420	Managers (not elsewhere specified)	(600)
176	Other workers below ground—mines (not coal)	600
61	Platelayers	598
7	Coal mines—developing workings in rock (below ground)	482
118	In coal mines—subordinate superintending staff	468
307	Shunters, pointsmen, level crossing men	456
401	Slingers and riggers	433
9	Coal mines—other workers below ground	418
177	Getters in open quarries, pits, etc.	414
4	Coal mines—coal face coal getters, loaders	413
8	Coal mines—repairing and maintaining roads below ground	410
5	Coal mines—Workers below ground (not coal face)	408
294	Slaters and tilers	390
120	In coal mines—Hewers and getters (by hand)—below ground	390

Suicide (E963, 970–979)

Group No.	Highest of 425	S.M.R.
185	Makers of glass and glassware—Blowers (not machine hands or bench glass workers)	(700)
98	Royal Navy—other ranks—retired	700
408	Machine minders—other	420
347	Stockbrokers, stock jobbers	350
96	Army—other ranks—retired	350
293	Glaziers	333
374	Actors, variety artistes, entertainers	320
422	Sand blasters (excluding shot blasters)	(300)
420	Managers (not elsewhere specified)	(300)
350	Moneylenders, pawnbrokers	(300)
229	Lock, latch and keymakers, locksmiths	(300)
352	Dental practitioners	270
94	Armed forces—commissioned officers—retired	270
102	Publicans, Owners etc., of hotels, inns	263
417	Labourers and other Unskilled Workers in—All other industrial and commercial undertakings	258
357	Teachers of music	(250)
353	Veterinary surgeons and practitioners	(250)
333	Proprietors, managers of Retail Businesses for the sale of:—Meat	246
378	Bookmakers	229
89	Registered medical practitioners, radiologists	226

N.B. See introductory note on page 145.

TABLE ER. S.M.R's (20-64) for selected causes, expressed as a ratio of that for All Causes, males, within Occupational Groups, 1949-53

No.	Occupational groups	Tuberculosis, respiratory	Malignant neoplasms, all sites	Malignant neoplasm, stomach	Malignant neoplasms, lung, bronchus	Vascular lesions of nervous system	Coronary disease, angina	Hypertension	Chronic rheumatic heart disease	Other myocardial degeneration	Pneumonia	Bronchitis	Nephritis and nephrosis	Motor vehicle accidents	Accidents in the home	Other accidents	Suicide
1.	Farmers, farm managers	61	100	117	66	110	89	104	113	120	71	46	123	166	97	144	200
2.	Gardeners, market gardeners, nurserymen, etc.	85	110	103	101	96	82	84	123	110	97	77	95	114	110	65	149
3.	Other workers in agriculture	70	97	122	67	96	64	78	89	134	130	67	108	218	83	121	166
4.	Coal mines—coal face coal getters, loaders	109	75	113	59	78	61	70	80	124	98	135	79	82	78	279	98
5.	Coal mines—workers below ground (not coal face)	95	89	144	66	88	81	65	92	94	98	100	92	65	65	439	92
6.	Coal mines—conveying material to the shaft (below ground)	94	83	133	55	81	74	82	109	100	99	124	100	44	(40)	354	95
7.	Coal mines—developing workings in rock (below ground)	106	103	159	89	92	84	62	81	87	70	84	111	46	(82)	450	65
8.	Coal mines—repairing and maintaining roads (below ground)	77	87	154	66	65	87	49	61	72	70	85	75	97	(54)	672	43
9.	Coal mines—other workers below ground	94	84	134	55	90	81	63	103	104	131	103	74	89	(71)	398	137
10.	Coal mines—other workers above ground	96	89	143	60	94	87	75	151	128	100	122	110	49	112	192	82
11.	Potters, pottery makers and casters	144	110	126	133	89	38	(45)	(75)	(105)	(135)	75	(50)	(38)	(75)	(13)	(56)
12.	Pottery finishers and decorators	(149)	78	(138)	(69)	(66)	(57)	(165)	(248)	(207)	(165)	(149)	(165)	—			(41)
13.	Makers of coal gas and coke	96	144	149	154	95	94	77	87	106	80	87	(60)	(87)	(60)	164	(60)
14.	Workers in chemical and allied trades	71	120	142	124	93	109	111	82	92	79	114	118	81	(59)	114	71
15.	Furnacemen (not annealing or foundry)	77	119	127	131	85	86	85	73	97	143	150	62	66	(85)	146	48
16.	Rolling and tube mill workers, wire drawers	136	116	112	130	96	75	94	63	170	108	154	116	89	(31)	66	(50)
17.	Moulders and core makers	133	110	110	133	98	79	88	89	91	138	173	72	53	(89)	40	54
18.	Iron or steel foundry turnacemen	(117)	151	(96)	203	(129)	87	(71)	(36)	(171)	143	(96)	—	—	(86)	—	
19.	Iron foundry labourers	116	99	102	119	86	64	101	93	142	189	158	141	66	(36)	84	55
20.	Steel foundry labourers	193	131	(104)	168	(49)	60	(29)	(29)	(74)	294	122	(99)	(37)	—	(29)	(37)
21.	Smiths, forgemen	91	107	120	116	103	97	104	88	118	128	115	99	65	(36)	66	81
22.	Platers	106	118	117	121	104	95	89	68	89	142	111	87	76	(115)	73	44
23.	Turners (not brass) machine setters etc. shipyard metal machinists	123	109	125	114	111	98	86	114	80	120	116	104	79	(32)	35	84
24.	Drillers (hand or machine)	108	104	146	121	73	93	113	108	133	146	154	72	59	(59)	44	104
25.	Precision fitters tool makers etc., gunsmiths, etc.	115	109	94	111	103	115	122	95	83	84	83	90	120	82	30	72
26.	Machine erectors, maintenance engineers, motor mechanics, fitters	92	110	92	117	99	110	105	102	84	86	86	90	155	88	72	95
27.	Machine erectors', fitters', etc., mates	77	105	89	114	97	100	99	74	81	121	119	111	115	(78)	156	75
28.	Glazers, polishers, buffers and moppers	106	113	77	150	79	88	132	90	118	143	131	(74)	74	(120)	(21)	68
29.	Plumbers (not chemical plumbers)	94	110	107	133	114	103	104	76	101	80	95	127	94	(106)	84	89
30.	Watch, clock, instrument makers (not elsewhere specified)	107	94	58	93	140	109	104	192	90	70	77	86	93	(52)	(22)	104
31.	Radio and radar mechanics	100	129	(55)	174	79	104	(105)	132	(157)	(37)	(46)	(107)	144	(183)	(37)	(40)
32.	Others in electrical communications	71	129	101	129	105	135	160	71	99	60	79	64	85	(26)	54	81
33.	Electrical fitters	88	113	102	102	123	126	108	77	74	90	62	100	131	129	50	99
34.	Electricians (house, ship, factory)	97	108	111	110	90	124	79	83	92	95	69	105	122	103	97	86
35.	Linesmen and cable jointers	68	101	92	119	71	102	98	(49)	97	70	139	100	92	(138)	30	73
36.	Inspectors, viewers, testers in metal manufacture, engineering	94	97	86	98	109	114	95	168	77	102	102	80	128	(80)	43	69
37.	Oxy-acetylene or electric welders, etc.	105	105	123	107	104	102	69	106	47	205	99	98	111	(75)	111	70
38.	Constructional engineers, erectors	103	88	72	105	52	91	68	73	63	68	119	80	112	(46)	482	46
39.	Edge tool grinders	190	83	(79)	109	74	103	(34)	(84)	(94)	(40)	154	(112)	(134)	(67)	—	(67)
40.	Openers, sorters, blenders, carders, etc.	50	85	109	76	105	101	133	125	188	118	144	93	(44)	(247)	57	113
41.	Spinners, piecers—cotton	77	111	125	65	107	80	102	93	141	86	158	(93)	(51)	(76)	(20)	(53)
42.	Spinners, piecers—wool	71	93	205	65	131	106	(48)	179	236	(70)	111	(100)	(63)	—	(16)	(54)
43.	Weavers—cotton	106	77	95	55	114	101	119	213	133	63	112	171	(13)	(221)	(65)	120
44.	Weavers—wool	99	63	(73)	(46)	143	124	(122)	174	(122)	(30)	74	(122)	(61)	(122)	—	(122)
45.	Dye house workers	100	104	117	102	102	115	99	87	115	111	114	106	(45)	(163)	(43)	81
46.	Grinders, jobbers, tacklers, etc.	81	103	124	73	141	96	150	(119)	147	(105)	130	—	(23)	—	(34)	(19)
47.	Boot and shoe makers (factory) (not foremen)	164	91	137	82	115	82	102	152	117	85	102	138	58	(93)	(24)	109
48.	Boot and shoe makers and repairers (not factory)	116	94	86	113	106	92	94	106	121	137	112	104	101	59	143	123
49.	Garment workers	100	94	87	88	91	146	101	138	70	84	74	132	43	105	27	110
50.	Tailors	94	94	92	88	103	146	94	116	71	67	70	155	46	(99)	33	130
51.	Hat and cap makers, milliners (makers)	133	93	(84)	150	90	95	(39)	(123)	(126)	(78)	143	(130)	—	—	(49)	(172)
52.	Bakers, pastrycooks, dough mixers, ovenmen (bread, biscuits, cakes, etc.)	64	120	118	138	113	101	125	105	89	72	100	109	68	134	35	103
53.	Makers of alcoholic drinks	118	115	86	137	157	70	141	92	80	71	101	150	(61)	(229)	76	(37)
54.	Carpenters, joiners	99	110	105	114	105	96	88	91	97	86	86	101	140	84	90	103
55.	Sawyers, wood cutting machinists	108	108	119	98	102	83	97	130	98	115	103	72	90	(72)	60	84
56.	Compositors (hand or machine)	99	94	62	85	127	116	89	109	80	106	85	153	64	(62)	(26)	96
57.	Printing machine minders, setters, assistants; printers (so returned); machine rulers	118	109	113	103	92	101	112	93	81	81	110	88	53	(86)	36	95
58.	Builders', bricklayers', plasterers', masons' labourers	123	109	128	121	80	71	78	90	110	114	123	80	91	142	115	95
59.	Bricklayers	104	107	110	120	87	85	112	89	127	100	122	120	105	93	86	90
60.	Masons, stone cutters	152	94	128	99	76	87	108	88	119	65	100	127	82	(82)	111	58
61.	Platelayers	76	101	123	97	85	78	85	58	111	93	97	95	95	(17)	592	96
62.	Other workers in building and contracting (mainly navvies)	84	105	123	102	98	80	91	93	118	125	141	88	93	68	125	70
63.	Aerographers, paint sprayers	82	133	204	130	108	98	(66)	107	108	125	98	(112)	107	—	(52)	(20)
64.	French polishers	114	107	95	95	111	93	83	113	72	141	166	(79)	90	(45)	(19)	90
65.	Other painters and decorators	103	117	115	141	95	86	106	104	88	90	111	92	86	163	86	85
66.	Civil Service and Local Authority administrative and executive officers	64	107	61	97	119	157	129	83	64	61	43	90	53	(51)	16	63
67.	Secretaries of companies, etc., managers of office departments and industrial undertakings	50	101	69	101	124	161	120	90	74	69	49	123	101	93	41	96
68.	Railway officials	56	100	78	84	126	148	102	87	71	58	59	155	(47)	—	105	63
69.	Locomotive engine drivers and motormen	70	109	102	105	94	125	110	73	84	70	92	116	48	(60)	159	82
70.	Signalmen	60	86	73	70	107	135	101	86	127	63	78	(57)	141	—	145	127
71.	Porters (including lampmen)	97	105	123	104	97	85	104	86	100	112	135	94	65	(75)	121	75
72.	Drivers of self-propelled passenger and goods vehicles	102	117	106	131	86	98	96	89	83	84	110	102	186	97	49	76
73.	Dock labourers	140	107	115	125	77	76	94	84	103	129	148	90	52	92	165	52
74.	Postmen, post office sorters	91	113	103	122	91	95	102	94	96	92	123	119	102	91	49	76
75.	Messengers, lift attendants, porters (not elsewhere specified)	131	98	103	108	81	87	103	114	77	133	142	97	69	(54)	50	86

Table ER—continued.

Table ER—continued.

Occupational groups	Tuberculosis, respiratory	Malignant neoplasms, all sites	Malignant neoplasm, stomach	Malignant neoplasms, lung, bronchus	Vascular lesions of nervous system	Coronary disease, angina	Hypertension	Chronic rheumatic heart disease	Other myocardial degeneration	Pneumonia	Bronchitis	Nephritis and nephrosis	Motor vehicle accidents	Accidents in the home	Other accidents	Suicide
76. Owners, etc., of wholesale businesses	55	107	76	112	119	144	124	76	80	73	57	106	127	(53)	38	124
77. Commercial travellers, canvassers	82	96	56	94	115	144	126	88	85	74	51	101	95	96	34	125
78. Proprietors, etc., of retail businesses for the sale of grocery and provisions	62	94	96	93	132	128	132	128	112	73	74	112	54	(77)	22	118
79. Proprietors, etc., of retail businesses for the sale of greengrocery, meat, fish, poultry and other food goods	80	102	84	118	119	99	132	92	126	79	89	101	98	55	30	161
80. Salesmen, shop assistants selling grocery and provisions	124	99	89	94	127	99	106	138	106	94	92	116	41	(42)	(110)	70
81. Salesmen, shop assistants selling greengrocery, meat, fish, poultry and other food goods	139	108	99	127	101	77	100	97	115	106	114	96	71	(16)	(11)	52
82. Costermongers, newspaper sellers and other hawkers	145	73	73	77	97	84	92	90	130	150	155	91	96	(174)	58	111
83. Bankers, bank and insurance managers, underwriters, etc.	64	109	68	104	142	155	114	65	62	32	36	88	72	(55)	47	126
84. Insurance brokers, agents and canvassers	81	100	80	86	110	136	101	77	91	68	73	95	133	(123)	40	128
85. Clergymen (Church of England)	48	74	59	38	147	189	130	107	84	(49)	(12)	(111)	164	(62)	(36)	(57)
86. Roman Catholic priests, monks	(13)	84	(93)	(44)	194	180	(168)	(75)	(124)	(93)	(43)	(250)	(70)	(93)	—	(19)
87. Ministers of other religious bodies	51	103	128	(33)	162	167	(105)	(42)	(79)	(35)	(9)	(171)	(150)	—	(56)	(64)
88. Judges, barristers, etc., solicitors	66	92	(36)	69	134	138	158	67	76	72	30	114	81	(190)	84	213
89. Registered medical practitioners, radiologists	55	78	45	56	157	179	130	54	64	66	27	135	58	22	69	254
90. Trained nurses, assistant nurses, student nurses	116	102	93	92	93	120	127	118	99	116	59	103	146	(172)	41	81
91. Teachers (not music)	44	95	85	56	130	162	121	86	88	50	32	162	85	(67)	61	136
92. Professional engineers, surveyors	58	112	75	107	116	159	151	60	64	67	38	104	97	(63)	75	84
93. Armed forces—commissioned officers—active	22	66	35	49	70	75	52	(11)	(37)	(15)	(50)	43	122	(118)	857	129
94. Armed forces—commissioned officers—retired	125	101	69	79	117	126	113	48	76	42	41	146	116	(212)	73	143
95. Army—other ranks—active	77	128	223	169	73	192	(84)	(10)	206	92	(48)	40	158	(107)	100	147
96. Army—other ranks—retired	508	49	50	43	68	56	95	112	101	105	97	126	(30)	(72)	50	63
97. Royal Navy—other ranks—active	60	99	(50)	(75)	106	174	(63)	(6)	(63)	(73)	(41)	(51)	155	(25)	198	108
98. Royal Navy—other ranks—retired	478	83	400	61	96	60	124	73	104	73	53	97	(24)	—	(24)	85
99. Royal Air Force—other ranks—active	30	99	110	110	60	80	(98)	(3)	(55)	(35)	(9)	(35)	131	(95)	371	58
100. Royal Air Force—other ranks—retired	546	59	(62)	(93)	(41)	52	(62)	(62)	(41)	(62)	(10)	—	(206)	—	(70)	(206)
101. Police—other ranks	52	114	103	96	121	129	160	55	131	81	65	85	77	(60)	44	76
102. Publicans, Owners, etc., of hotels, inns	120	92	63	96	141	82	161	83	114	79	74	102	74	220	39	175
103. Barmen	180	94	108	77	137	64	211	73	88	126	108	(99)	91	(329)	(54)	110
104. Waiters, still room hands	168	91	81	83	89	76	69	153	63	105	81	108	67	(197)	94	169
105. Barbers, hairdressers, manicurists	127	83	72	102	100	119	113	100	112	84	108	110	58	(53)	(12)	123
106. Domestic servants, indoor	116	92	86	89	97	92	101	123	107	123	93	90	79	125	77	136
107. Clerks, typists, etc.	106	94	73	92	112	123	109	131	79	86	78	112	64	90	33	100
108. Warehousemen, storekeepers	93	105	114	104	107	103	98	118	96	86	116	98	70	90	49	78
109. Drivers of stationary engines (not underground in mines) cranes and civil engineering plant	79	99	119	97	107	107	90	90	82	74	101	102	242	(49)	192	50
110. Boiler firemen and stokers	66	118	132	120	85	87	90	85	98	115	124	91	138	118	95	84

CHAPTER VI. INFANT MORTALITY AND STILLBIRTHS

Infant Mortality (legitimate)

INFANT mortality relates to deaths under one year of age, expressed in this volume as a rate per 1,000 live births. Deaths occurring at ages under 4 weeks constitute neonatal mortality, and deaths between 4 weeks and 1 year constitute postneonatal mortality. Detailed analyses of infant mortality by social class and selected occupational groups are given in Tables 1 and 14 (legitimate), Table 15 (illegitimate) and Table 16 (legitimate and illegitimate separately).

In 1949-53 infant mortality (legitimate infants) was, as in previous analyses, strongly correlated with social class (Table ES), the rates rising from 18·7 in Social Class I (37 per cent below the general average) to 40·8 in Social Class V (38 per cent above the general average). In the postneonatal period this social class gradient was appreciably steeper than in the neonatal period.

Table ES. Infant mortality, Neonatal and Postneonatal mortality rates (per 1,000 live births), of legitimate infants, by social class, and ratios of rates to that for All Classes, 1949-53

	All Classes	Social Class				
		I	II	III	IV	V
Infant mortality	29·5	18·7	21·6	28·6	33·8	40·8
	100	63	73	97	115	138
Neonatal mortality	18·6	14·0	15·6	18·3	20·0	22·8
	100	75	84	98	108	123
Postneonatal mortality	11·0	4·7	6·0	10·4	13·7	18·0
	100	43	55	95	125	164

Table ET. Infant mortality, Neonatal and Postneonatal mortality rates (per 1,000 live births) of legitimate infants, by social class, and ratios of rates to that for All Classes, 1921, 1930-32 and 1949-53

	All Classes	Social Class				
		I	II	III	IV	V
Total under 1 year						
1921	79·1	38·4	55·5	76·8	89·4	97·0
	100	49	70	97	113	123
1930-32	61·6	32·7	45·0	57·6	66·8	77·1
	100	53	73	94	108	125
1949-53	29·5	18·7	21·6	28·6	33·8	40·8
	100	63	73	97	115	138
Under 4 weeks						
1921	33·9	23·4	28·3	33·7	36·7	36·9
	100	69	83	99	108	109
1930-32	30·2	21·7	27·2	29·4	31·9	32·5
	100	72	90	97	106	108
1949-53	18·6	14·0	15·6	18·3	20·0	22·8
	100	75	84	98	108	123
4 weeks-1 year						
1921	45·2	15·0	27·2	43·1	52·7	60·1
	100	33	60	95	117	133
1930-32	31·4	11·0	17·8	28·2	34·9	44·6
	100	35	57	90	111	142
1949-53	11·0	4·7	6·0	10·4	13·7	18·0
	100	43	55	95	125	164

Table EU. Infant mortality, Neonatal and Postneonatal mortality rates (per 1,000 live births) of legitimate infants by social class, 1949-53, per cent of corresponding rates in 1921

	All Classes	Socal Class				
		I	II	III	IV	V
Total under 1 year	37	49	39	37	38	42
Under 4 weeks	55	60	55	54	54	62
4 weeks-1 year	24	31	22	24	26	30

Table EV. Infant mortality, Neonatal and Postneonatal mortality rates (per 1,000 live births) of legitimate infants by socio-economic groups and ratios of rates to that for All Groups, 1949-53

Socio-economic Group	Under 1 year		Under 4 weeks		4 weeks to 1 year	
	Rate	Ratio	Rate	Ratio	Rate	Ratio
All Groups	**29·5**	**100**	**18·6**	**100**	**11·0**	**100**
1. Farmers	23·4	79	16·8	90	6·7	61
2. Agricultural workers	28·4	96	18·5	99	9·9	90
3. Higher administrative, etc.	18·7	63	14·0	75	4·7	43
4. Other administrative, etc.	20·0	68	14·8	80	5·2	47
5. Shopkeepers	24·4	83	16·8	90	7·7	70
6. Clerical workers	22·4	76	16·2	87	6·2	56
7. Shop assistants	24·9	84	17·1	92	7·8	71
8. Personal service	31·8	108	20·9	112	10·9	99
9. Foremen	28·2	96	18·7	101	9·5	86
10. Skilled workers	29·6	100	18·5	99	11·1	101
11. Semi-skilled workers	34·8	118	20·2	109	14·6	133
12. Unskilled workers	40·8	138	22·8	123	18·0	164
13. Armed Forces (other ranks)	30·0	102	18·8	101	11·2	102

Table EW. Infant mortality rates (per 1,000 live births) of legitimate infants, All Causes, by occupational and social classification of father, 1949-53

		All Classes	Social Class				
			I	II	III	IV	V
	All occupations	**29·5**	**18·7**	**21·6**	**28·6**	**33·8**	**40·8**
I	Fishermen	55·1					55·1
II	Agricultural etc. occupations	26·8		23·4	25·2	29·3	(16·0)
III	Mining and quarrying occupations	43·8			45·5	42·3	
IV	Workers in ceramics, glass, cement etc.	30·3			30·0	31·0	
V	Coal gas etc. makers, workers in chemicals	28·4			23·2	29·6	
VI	Workers in metal manufacture, engineering	28·1			27·5	34·1	51·4
VII	Textile workers	31·0			28·6	35·5	
VIII	Leather workers, fur dressers	28·9			28·9		
IX	Makers of textile goods and articles of dress	27·9			27·6	30·0	
X	Makers of foods, drinks and tobacco	30·3			30·5	29·2	
XI	Workers in wood, cane and cork	27·1			26·9	36·8	
XII	Makers of, workers in, paper; printers	23·2			23·4	22·4	
XIII	Makers of products (not elsewhere specified)	28·5			28·5		
XIV	Workers in building and contracting	33·5		17·5	29·0	37·2	37·4
XV	Painters and decorators	30·2			30·7	24·6	
XVI	Administrators, directors, managers (not elsewhere specified)	19·6	18·5	19·7			
XVII	Persons employed in transport, etc.	32·1	22·4	22·0	31·9	34·4	33·7
XVIII	Commercial, finance, etc. (exc. clerical)	24·6	22·3	23·8	24·5	31·5	39·9
XIX	Professional and technical (exc. clerical)	18·6	17·9	19·2	18·8		
XX	Persons employed in defence services	27·5	20·0	(37·2)	28·4		32·4
XXI	Persons engaged in entertainment and sport	26·4		23·5	26·8	(26·7)	
XXII	Persons engaged in personal service	31·0		27·8	27·9	34·6	49·2
XXIII	Clerks, typists, etc.	21·4		18·9	22·4		
XXIV	Warehousemen, storekeepers, packers, etc.	28·6			28·0	28·5	35·1
XXV	Stationary engine drivers, stokers, etc.	36·9			36·9	36·6	
XXVI	Workers in unskilled occupations (not elsewhere specified)	41·5			20·8	29·0	44·2
XXVII	Other and undefined workers	26·6	(13·2)	(23·5)	20·8	35·4	31·5

154

Comparison between the situation in 1949-53 and in the two previous analyses, 1921 and 1930-32 is made in Table ET. During a period of thirty years, in which the national infant mortality rate of legitimate infants declined from 79·1 to 29·5 per 1,000 live births, there was little change in the slope of the social class gradient. The relative improvements that have taken place have occurred to much the same extent in one social class as in another, not only for infant mortality as a whole but also in the neonatal and postneonatal periods. Table EU shows rates in 1949-53 expressed as a percentage of corresponding rates in 1921. Improvement was least in Social Class I, followed by Social Class V, but the differences between the classes were not large, the relative reductions being between 38 and 46 per cent in neonatal mortality, and between 70 and 78 per cent in postneonatal mortality.

Infant mortality rates (legitimate) in the socio-economic groups are set out in Table 14B, and for convenience are summarised in Table EV.

In addition to the Social Classes, Table 14A analyses infant mortality by occupational orders, and by social class groupings of occupations within the orders. As the summary at Table EW shows, lowest rates were recorded in Orders XVI (administrative), XIX (professional and technical), and XXIII (clerks, typists, etc.), and the highest in Orders I (fishermen) and III (mining and quarrying).

Infant Mortality by Cause

Of the causes of infant deaths selected for analysis in Table 14, almost all showed evidence of correlation with social class, with mortality least in Social Class I and rising to a maximum in Social Class V (Table EX). Causes displaying a notably steep gradient were whooping cough, pneumonia, bronchitis, gastro-enteritis and accidental mechanical suffocation. Rather less steep, but definite, gradients were displayed by congenital malformations, birth injury, and asphyxia, atelectasis. The only two causes for which evidence of social class correlation was weak were tuberculosis and haemolytic disease; none the less, mortality from the former was lower than average in Social Classes I and II, and from the latter somewhat above average in Social Class V.

Table EX. Infant mortality rates (per 1,000 live births) of legitimate infants, by cause and social class, and rates per cent of All Classes, 1949-53

Cause of Death and International Classification No.	All Classes	Social Class				
		I	II	III	IV	V
All causes	**29·5**	**18·7**	**21·6**	**28·6**	**33·8**	**40·8**
	100	63	73	97	115	138
Tuberculosis (001–019)	0·2	(0·0)	0·1	0·2	0·2	0·2
	100		50	100	100	100
Whooping cough (056)	0·4	0·1	0·2	0·3	0·5	0·7
	100	25	50	75	125	175
Meningitis, except tuberculous (057, 340)	0·4	0·2	0·2	0·4	0·4	0·6
	100	50	50	100	100	150
Pneumonia (490–493, 763)	4·9	1·9	2·7	4·6	6·2	8·2
	100	39	55	94	127	167
Bronchitis (500–502)	0·7	0·2	0·3	0·6	0·9	1·1
	100	29	43	86	129	157
Gastro-enteritis (571, 764)	1·5	0·5	0·7	1·4	1·9	2·9
	100	33	47	93	127	193
Congenital malformations (750–759)	4·5	3·6	3·6	4·5	4·8	5·1
	100	80	80	100	107	113
Birth injury (760, 761)	2·7	2·1	2·4	2·7	3·0	3·0
	100	78	89	100	111	111
Asphyxia, atelectasis (762)	3·5	2·7	3·0	3·5	3·7	4·4
	100	77	86	100	106	126
Haemolytic disease (770)	0·7	0·7	0·7	0·7	0·7	0·8
	100	100	100	100	100	114
Immaturity (774, 776)	5·8	3·9	4·6	5·7	6·4	7·6
	100	67	79	98	110	131
Suffocation by food (E.921)	0·4	0·2	0·2	0·4	0·4	0·6
	100	50	50	100	100	150
Accidental suffocation in bed or cradle (E.924)	0·4	0·2	0·2	0·4	0·4	0·7
	100	50	50	100	100	175
Other causes (Remainder)	3·6	2·3	2·8	3·5	4·1	4·8
	100	64	78	97	114	133

Comparison between 1921, 1930-32 and 1949-53 for eight causes is made in Table EY, and indicates that for the majority of these no important changes in the social class distribution have taken place. However, in respect of tuberculosis the weak evidence of social class correlation revealed in 1949-53 contrasts with the fairly steep gradients existing previously; and in respect of birth injury the upward gradient of mortality from Social Class I to Social Classes IV and V that has appeared in the 1949-53 analysis was not present either in 1921 or in 1930-32.

Among the various "socio-occupational" groups included in Table 14A, those with high rates for infant mortality from all causes had particularly high rates for the causes that are most strongly correlated with social class (whooping cough, pneumonia, bronchitis, and gastro-enteritis). Thus the pneumonia

155

death rate among the infant children of fishermen, 15·7 per thousand, contrasted with a rate of 1·8 per thousand for the children of men in professional and technical occupations and of clerks in Social Class II (Table EZ.)

Table EY. Infant mortality rates (per 1,000 live births) of legitimate infants, by cause and social class, 1921, 1930-32, 1949-53

Cause of death		All Classes	Social Class				
			I	II	III	IV	V
Tuberculosis	1921	1·5	(0·6)	1·0	1·4	1·9	1·7
	1930-32	1·0	(0·3)	0·6	0·9	1·1	1·3
	1949-53	0·2	(0·0)	0·1	0·2	0·2	0·2
Whooping cough	1921				Not available		
	1930-32	1·8	0·3	1·0	1·6	2·2	2·7
	1949-53	0·4	0·1	0·2	0·3	0·5	0·7
Pneumonia	1921	9·2	2·6	4·9	8·9	10·6	12·4
	1930-32	9·6	2·2	4·7	8·4	9·7	14·4
	1949-53	4·9	1·9	2·7	4·6	6·2	8·2
Bronchitis	1921	5·2	(0·7)	2·8	5·1	6·5	6·5
	1930-32	3·1	(0·8)	2·0	2·8	3·6	4·0
	1949-53	0·7	0·2	0·3	0·6	0·9	1·1
Gastro-enteritis	1921	13·1	4·2	7·7	12·4	14·8	18·5
	1930-32	5·2	2·0	2·6	4·6	5·4	7·9
	1949-53	1·5	0·5	0·7	1·4	1·9	2·9
Congenital malformations	1921	4·0	3·9	3·8	4·0	4·0	4·0
	1930-32	3·0	1·4	2·2	2·9	3·3	3·8
	1949-53	4·5	3·6	3·6	4·5	4·8	5·1
Birth injury	1921	1·3	1·8	1·3	1·3	1·2	1·1
	1930-32	2·1	2·0	2·5	2·1	2·0	2·0
	1949-53	2·7	2·1	2·4	2·7	3·0	3·0
Immaturity	1921	18·8	11·9	15·3	18·5	20·5	21·1
	1930-32	17·3	10·5	14·4	16·8	18·6	19·6
	1949-53	5·8	3·9	4·6	5·7	6·4	7·6

Table EZ. Infant mortality rates (per 1,000 live births) of legitimate infants, by cause and certain "socio-occupational" groups, 1949-53

Cause of death	Professional and technical (exc. clerical) Social Class I	Clerks, typists, etc. Social Class II	Mining and quarrying Social Class III	Agricultural etc. Social Class III	Fishermen Social Class IV	Unskilled workers (n.e.s.) Social Class V
All causes	17·9	18·9	45·5	25·2	55·1	44·2
Tuberculosis	(0·0)	(0·0)	0·2	(0·0)	—	0·2
Whooping cough	(0·1)	(0·1)	0·6	(0·3)	(1·7)	0·7
Meningitis, except tuberculous	0·2	(0·2)	0·7	(0·3)	(0·8)	0·7
Pneumonia	1·8	1·8	9·6	3·7	15·7	9·1
Bronchitis	0·2	0·3	1·8	(0·3)	(1·7)	1·2
Gastro-enteritis	0·5	0·4	3·0	1·4	4·7	5·5
Congenital malformations	3·6	3·6	5·7	4·2	5·1	5·5
Birth injury	2·0	2·2	3·2	2·4	3·6	3·1
Asphyxia, atelectasis	2·8	2·5	3·6	2·9	6·2	4·5
Haemolytic disease	0·6	0·8	0·6	0·7	(0·6)	0·9
Immaturity	3·5	4·2	8·4	5·3	8·1	8·1
Suffocation by food	0·2	(0·2)	0·8	(0·3)	(1·1)	0·7
Accidental suffocation in bed or cradle	0·2	(0·2)	0·9	(0·1)	(1·1)	0·8
Other causes	2·3	2·4	6·4	3·3	4·9	5·5

Infant Mortality by Geographical Area and by Urban/Rural Aggregates

Table 16, which gives details of infant mortality by social class and geographical area, is in three parts. Table 16A presents infant mortality, neonatal and postneonatal mortality rates by cause (legitimate) and by all causes (illegitimate); Table 16B expresses these rates as percentages of the corresponding rates for the country as a whole; and Table 16C, which is concerned only with all causes of infant mortality, (legitimate) expresses the rate for each social class as a percentage of the rate for all classes in the corresponding geographical area.

Infant mortality rates (all causes) in standard regions, expressed per cent of national rates, are summarised in Table FA(a). Of the ten standard regions, the three northern regions (Northern, East and West Ridings, North Western) and Wales had rates (all classes) considerably above the national average, and this relative disadvantage was shared by each of the Social Classes (with the exception of Social Class I in the Northern (100) and North Western regions (101)). In contrast, each of the social classes in the Eastern, London and

South Eastern, Southern and, to a lesser degree, South Western regions had rates mostly well below the corresponding national rates.

Table FA. Infant mortality rates (per 1,000 live births) of legitimate infants, by social class in Regions of England, Wales (a) per cent of England and Wales (b) per cent of All Classes, 1949-53

	All Classes	Social Class				
		I	II	III	IV	V
(a) Per cent of England and Wales						
England and Wales	100	100	100	100	100	100
Northern	124	100	113	119	123	125
East and West Ridings	111	108	108	109	112	109
North Western	117	101	109	117	112	112
North Midland	102	93	101	102	104	99
Midland	106	112	100	106	101	116
Eastern	82	92	95	85	78	72
London and South Eastern	80	99	86	82	78	78
Southern	83	94	102	84	78	78
South Western	90	98	99	90	89	91
Wales	120	115	123	122	115	115
(b) Per cent of All Classes						
England and Wales	100	63	73	97	115	138
Northern	100	51	67	94	114	125
East and West Ridings	100	62	71	95	115	135
North Western	100	55	68	97	110	132
North Midland	100	58	73	97	117	134
Midland	100	67	69	97	109	152
Eastern	100	71	85	100	108	122
London and South Eastern	100	78	79	99	112	135
Southern	100	89	98	98	107	130
South Western	100	69	81	97	113	139
Wales	100	60	75	98	109	132

Looked at from the other angle, as in Table FA.(b), the social class gradients in the various regions were broadly similar, the steepest gradient (51 increasing to 139) being in the Northern region and the shallowest in the Eastern Region (71 to 122), closely followed by London and the South Eastern (78 to 135).

Within the six conurbations, whose rates are summarised in Table FB, infant mortality was well below the national average in Greater London and above the average in each of the others, particularly the Merseyside and Tyneside conurbations. Differences between the conurbations were small in Social Class I, much greater in the other social classes where the London rates were notably low. A social class gradient was evident (Table FB(b)) in each of the six areas, steepest in the West Midlands conurbation, and shallowest in Greater London.

Table FB. Infant mortality rates (per 1,000 live births) of legitimate infants, by social class, in Conurbations (a) per cent of England and Wales (b) per cent of All Classes, 1949-53

	All Classes	Social Class				
		I	II	III	IV	V
(a) Per cent of England and Wales						
England and Wales	100	100	100	100	100	100
Greater London	79	95	84	80	77	78
South East Lancashire	114	93	105	114	114	116
West Midlands	107	91	93	107	104	122
West Yorkshire	106	97	108	103	108	109
Merseyside	126	99	113	125	121	108
Tyneside	123	105	106	117	136	122
(b) Per cent of All Classes						
England and Wales	100	63	73	97	115	138
Greater London	100	76	78	99	112	137
South East Lancashire	100	52	67	97	114	140
West Midlands	100	54	64	97	112	158
West Yorkshire	100	58	75	95	117	142
Merseyside	100	50	66	96	110	119
Tyneside	100	54	62	92	126	136

The national urban/rural aggregates (Table FC) displayed only small differences in the levels of infant mortality in the various social classes and in the social class gradients. The favourable position occupied

by the aggregated conurbations was largely due to Greater London, which contains about half of the total conurbation population.

Table FC. Infant mortality rates (per 1,000 live births) of legitimate infants, by social class, in Urban/Rural aggregates (a) per cent of England and Wales (b) per cent of All Classes, 1949-53

	All Classes	Social Class				
		I	II	III	IV	V
(a) Per cent of England and Wales						
England and Wales	100	100	100	100	100	100
Conurbations	98	95	93	98	100	100
Areas outside conurbations:						
Urban areas with populations of 100,000 and over	107	96	102	104	110	109
Urban areas with populations of 50,000 and under 100,000	104	111	106	102	105	100
Urban areas with populations under 50,000	103	103	101	104	102	100
Rural Districts	96	105	108	97	93	91
(b) Per cent of All Classes						
England and Wales	100	63	73	97	115	138
Conurbations	100	62	70	97	117	141
Areas outside conurbations:						
Urban areas with populations of 100,000 and over	100	57	70	94	118	141
Urban areas with populations of 50,000 and under 100,000	100	67	75	96	116	134
Urban areas with populations under 50,000	100	64	72	98	113	134
Rural Districts	100	69	82	98	111	132

The last of the geographical analyses contained in Table 16 is by four regional groups excluding conurbations, each group divided into its urban and rural components. This analysis, which is summarised in

Table FD. Infant mortality rates (per 1,000 live births) of legitimate infants, by social class in Urban/Rural aggregates within Regional Groups, (a) per cent of England and Wales (b) per cent of All Classes, 1949-53

	All Classes	Social Class				
		I	II	III	IV	V
(a) Per cent of England and Wales						
England and Wales	100	100	100	100	100	100
North of England						
Urban areas ..	119	109	110	116	115	116
Rural Districts ..	113	107	114	114	111	112
Midlands and Eastern						
Urban areas ..	99	102	98	99	99	95
Rural Districts ..	91	97	102	92	88	84
South of England						
Urban areas ..	88	99	99	88	86	85
Rural Districts ..	84	106	98	84	81	79
Wales (inc. Monmouthshire)						
Urban areas ..	121	106	109	121	117	119
Rural Districts ..	119	135	139	122	110	109
(b) Per cent of All Classes						
England and Wales	100	63	73	97	115	138
North of England						
Urban areas ..	100	58	68	95	111	135
Rural Districts ..	100	60	74	99	113	137
Midlands and Eastern						
Urban areas ..	100	66	73	97	115	133
Rural Districts ..	100	67	82	98	111	128
South of England						
Urban areas ..	100	71	82	98	113	134
Rural Districts ..	100	80	85	98	110	130
Wales (inc. Monmouthshire)						
Urban areas ..	100	55	66	97	110	136
Rural Districts ..	100	72	85	99	106	127

Table FD, in addition to confirming findings already made above, shows that the high rates of infant mortality in the northern part of England and in Wales occurred both in urban areas and rural districts; that within each social class there were considerable differences between one geographical area and another but little difference between urban and rural parts of the same geographical area; and that, despite the geographic variations in levels of infant mortality, the social class gradients from Social Class I to Social Class V were fairly similar in each area but were steepest in the urban areas of Wales (55 increasing to 136) and shallowest in the rural districts of the South of England.

Area differences by cause

In addition to infant mortality from all causes Table 16 gives area rates by social class for selected causes, four of which, pneumonia, congenital malformations, birth injury, and immaturity are shown in Table FE to illustrate area differences between the rates for Social Class I and Social Class V.

Table FE. Infant mortality rates (per 1,000 live births) of legitimate infants in Social Classes I and V, for selected causes, England and Wales, Urban/Rural aggregates within regional groups, Conurbations and Greater London, 1949-53

	Pneumonia		Congenital Malformations		Birth Injury		Immaturity	
	Social Class		Social Class		Social Class		Social Class	
	I	V	I	V	I	V	I	V
England and Wales	1·9	8·2	3·6	5·1	2·1	3·0	3·9	7·6
North of England								
Urban areas	1·81	10·36	4·72	5·31	1·91	2·86	6·17	9·18
Rural Districts	(1·54)	8·94	3·73	5·83	3·51	3·01	2·20	10·00
Midland and Eastern								
Urban areas	2·33	7·41	3·70	5·07	2·14	2·92	? 40·2	7·46
Rural Districts	1·44	6·59	2·65	4·50	2·29	2·81	3·25	6·53
South of England								
Urban areas	2·11	7·33	4·03	4·83	1·87	2·93	4·42	6·68
Rural Districts	1·96	6·22	2·45	4·82	2·75	2·75	5·14	5·74
Wales (inc. Monmouthshire)								
Urban areas	2·65	9·37	2·65	5·06	(2·17)	3·62	5·30	10·87
Rural Districts	(3·61)	7·31	6·02	5·30	(2·41)	2·92	(3·61)	8·77
All Conurbations	1·76	8·05	3·64	5·21	2·04	3·18	3·16	6·87
Greater London	1·96	5·48	3·78	4·49	2·13	2·73	3·04	5·56

Infant Mortality (Illegitimate)

The infant mortality rates of illegitimate infants are much less accurate than those of legitimate infants, partly because a proportion of the infants who are registered at birth as illegitimate and subsequently die are not indicated as illegitimate at death registration (see page 12), and partly because in a large proportion of instances no occupation of the mother is given in the registers. The first source of error has the effect, it is believed, of understating the total infant mortality of all children born illegitimate by approximately 16 per cent; and the second reduces the reliability of the rates calculated for social class and occupation of the mother. In continuation of the practice in the two previous reports, however, it has been decided to include in this volume, as in Table 15, a detailed analysis of the mortality of illegitimate infants by social class and selected occupations of mother and by cause of death.

Table FF. Infant mortality, Neonatal and Postneonatal mortality rates (per 1,000 live births) of illegitimate infants, by social class and ratios of rates to that for All Classes, 1949-53

	All Classes	Social Class					Unoccupied or Not Stated
		I	II	III	IV	V	
Total under 1 year	40·0	(31·1)	46·5	41·2	47·0	59·9	34·5
	100	(78)	116	103	118	150	86
Under 4 weeks	26·9	(13·3)	34·9	28·9	31·0	38·2	22·7
	100	(49)	130	107	115	142	84
4 weeks—1 year	13·2	(17·8)	11·6	12·4	16·0	21·7	11·8
	100	(135)	88	94	121	164	89

The illegitimate infant mortality rate, and the neonatal and postneonatal rates, in the social classes are shown in Table FF and indicate much the same kind and degree of social class correlation as for legitimate

infants, though the sparsity of births and deaths assigned to Social Class I greatly reduces the significance of the rates calculated for that class.

Table FG. Infant mortality rates (per 1,000 live births) of illegitimate infants, by social class and ratio of rates to All Classes, 1930-32, 1949-53

| | | All Classes | Social Class | | | | | Unoccupied or Not Stated |
			I	II	III	IV	V	
1930–32	.. .. ..	110	(200)	151	106	118	132	111
		100	(183)	139	97	108	121	102
1949–53	.. .. ..	40·0	(31·1)	46·5	41·2	47·0	59·9	34·5
		100	(78)	116	103	118	150	86

In 1921 illegitimate infant mortality was tabulated only by selected occupations, not by social class, and thus the 1949-53 social class distribution can be compared only with that of 1930-32 (Table FG). In so far as confidence can be placed in the figures for either period, they suggest that the upward gradient of mortality from Social Class I to Social Class V in 1949-53 is a new appearance and that in 1930-32 correlation with social class, if it existed at all, was tending to produce a U-shaped distribution, highest in Social Classes I and II. It would be unwise, however, to attach much significance to these indications in view of their inherent unreliability.

Table FH. Infant mortality rates for illegitimate infants, per cent of legitimate infant rates, by social class, 1930-32, 1949-53

| | All Classes | Social Class | | | | |
		I	II	III	IV	V
1930–32	179	(612)	336	184	177	171
1949–53	136	(166)	216	144	139	147

In 1930-32 the calculated illegitimate infant mortality rate (all classes) was 79 per cent higher than the legitimate rate but in 1949-53 the excess was only 36 per cent. Illegitimate rates per cent of legitimate for each of the social classes are shown in Table FH; the ratio was highest in 1949-53 in Social Class II, but in this social class as in each of the others there has been a substantial decline since 1930-32.

Rates from selected causes are set out in detail in Table 15, and are summarised for the five social classes in Table FJ. The majority of the rates are based on small numbers of deaths and are of doubtful significance, and only a few of the causes, e.g. pneumonia, display unequivocally the regular social class mortality gradients found among legitimate infants.

Table FJ. Infant mortality rates (per 1,000 live births) of illegitimate infants, by social class for certain causes, 1949-53

| Cause of death | All Classes | Social class | | | | |
		I	II	III	IV	V
All causes	**40·0**	(31·1)	46·5	41·2	47·0	59·9
Tuberculosis	0·1	—	—	(0·1)	(0·2)	(0·3)
Whooping cough	0·2	—	—	(0·2)	(0·2)	(0·4)
Meningitis, except tuberculous ..	0·4	—	(0·5)	0·4	0·5	—
Pneumonia	6·1	(4·4)	4·6	5·8	7·2	9·4
Bronchitis	0·7	—	(1·1)	0·6	1·0	1·3
Gastro-enteritis	2·4	—	3·2	2·1	3·0	4·1
Congenital malformations ..	4·1	(8·9)	5·1	4·4	4·8	7·2
Birth injury	3·5	(4·4)	4·8	4·4	4·4	5·8
Asphyxia, atelectasis	4·6	—	7·0	—	5·4	7·0
Haemolytic disease	0·6	—	—	0·3	0·7	(1·0)
Immaturity	8·9	(4·4)	14·6	11·3	11·0	12·9
Suffocation by food	0·6	—	(0·4)	0·4	0·5	(1·1)
Accidental suffocation in bed or cradle ..	0·5	—	(0·2)	0·4	0·6	(0·5)
Other causes	7·3	(8·9)	5·1	5·5	7·5	8·9

160

Stillbirths

Stillbirths were made registrable in England and Wales in 1928, but were not tabulated in the 1930-32 occupational mortality analysis. Prior to the present analysis for 1949-53 the only tabulations of stillbirth rates by social class were for the single years 1939, 1949, and 1950.

Stillbirth rates in 1949-53 by social class for England and Wales as a whole and its main geographical components are shown in Table 17; and rates by social class and socio-economic group and by maternal age and parity are given in Table 18. The rate for legitimate stillbirths was lowest in Social Class I (16·3 per 1,000) and increased progressively to Social Class V (27·4 per 1,000) (Tables 1 and 17) indicating a degree of social class correlation almost the same as that for neonatal infant mortality. For illegitimate stillbirths the social class gradient was similar, at any rate from Social Class II to Social Class V. A high rate, of uncertain significance, was recorded in Social Class I.

Table FK. Stillbirth rates, per 1,000 total births, by social class, and rates per cent of All Classes, 1939, 1949-53

| | | All Classes | Social Class | | | | | Unoccupied |
			I	II	III	IV	V	
1949–53	Legitimate Rate	22·8	16·3	19·9	22·5	24·5	27·4	24·5
	Percentage	100	71	87	99	107	120	107
	Illegitimate Rate	31·0	46·8	31·1	32·4	35·5	37·8	27·8
	Percentage	100	151	100	105	115	122	90
1939	Legitimate Rate	36·2	24·4	33·4	35·6	37·6	39·7	
	Percentage	100	67	92	98	104	110	

Comparison of the rate for legitimate stillbirths in 1949-53 with that for 1939 (Table FK) shows that the total stillbirth rate declined from 36·2 to 22·8 but that the social class gradient was practically the same in both periods.

Table FL. Stillbirth rates (legitimate) per 1,000 total births, by socio-economic groups and rates per cent of All groups, 1949-53

Socio-economic Group	Rate	Percentage of Total
All Groups	**22·8**	**100**
1. Farmers	21·6	95
2. Agricultural Workers ..	23·6	104
3. Higher administrative, etc. ..	16·3	72
4. Other administrative, etc. ..	18·9	83
5. Shopkeepers ..	21·1	93
6. Clerical workers ..	21·3	93
7. Shop assistants ..	20·1	88
8. Personal service ..	23·4	103
9. Foremen	25·1	110
10. Skilled workers ..	23·2	102
11. Semi-skilled workers ..	24·4	107
12. Unskilled workers ..	27·4	120
13. Armed Forces (other ranks) ..	18·2	80

Within the socio-economic groups (Table FL) rates were low in Groups 3 and 4 (administrative, professional, etc.) and 13 (armed forces), and high in Groups 9 (foremen), 11 (semi-skilled) and 12 (unskilled manual workers).

Geographical differences in the social class distribution of stillbirth rates are summarised in Table FM. Rates were lowest in the Southern, London and South Eastern and Eastern regions and highest in Wales, the Northern, and North Western regions. All regions displayed much the same pattern of social class variation, but the slope of the gradient was rather less in the three regions with lowest rates and in the East and West Ridings than elsewhere.

The three national aggregates, conurbations, other urban areas and rural districts showed little difference either in the levels of stillbirth rates or in their social class distribution (Table FM(b)). Among the conurbations Greater London had the lowest stillbirth rate; here, and in the West Yorkshire conurbation, differences between the social classes were less than in the other conurbations.

There were no differences of note between the urban and the rural parts of the four main regional groups (Table FM(d)) either in respect of the level of the stillbirth rates or of their social class distribution.

161

Table FM. Stillbirth rates, per 1,000 total births, by social class per cent of All Classes, England and Wales, Regions, Urban/Rural aggregates, Conurbations, and Urban/Rural aggregates within regional groups, 1949-53

	All Classes		Social Class				
	Rate		I	II	III	IV	V
England and Wales	22·8	100	71	87	99	107	120
(a) Regions of England, Wales							
Northern	24·7	100	63	83	98	108	118
East and West Ridings	23·7	100	75	88	99	104	113
North Western	25·2	100	70	87	98	107	117
North Midland	23·0	100	64	90	98	104	129
Midland	23·5	100	64	87	99	105	129
Eastern	21·1	100	82	90	99	112	109
London and South Eastern	20·1	100	80	89	101	107	114
Southern	19·6	100	82	88	100	103	127
South Western	21·7	100	67	95	99	103	129
Wales (including Monmouthshire)	27·4	100	69	85	98	109	119
(b) Urban/Rural Aggregate							
Conurbations	22·2	100	76	85	99	106	119
Urban areas outside conurbations	23·6	100	68	87	98	108	120
Rural Districts	22·0	100	72	93	97	109	124
(c) Conurbations							
Greater London	20·0	100	83	88	101	104	116
South East Lancashire	25·1	100	68	84	98	105	125
West Midlands	23·4	100	68	84	99	105	128
West Yorkshire	23·1	100	85	88	100	103	111
Merseyside	24·1	100	69	92	96	105	112
Tyneside	25·3	100	63	76	101	104	115
(d) Regional Groups							
North of England							
Urban areas	25·3	100	67	87	98	105	115
Rural Districts	23·5	100	74	87	95	114	124
Midlands and Eastern							
Urban areas	22·7	100	70	86	98	105	121
Rural Districts	22·1	100	71	95	96	110	125
South of England							
Urban areas	21·2	100	69	91	99	112	120
Rural Districts	19·6	100	79	94	100	103	126
Wales (inc. Monmouthshire)							
Urban areas	27·5	100	73	83	97	111	120
Rural Districts	27·0	100	60	90	101	107	115

Maternal age and parity

The risk of stillbirth is closely related to the age of the mother and the number of previous children she has borne. At each age it is relatively high at the first birth, lowest at the second, and thereafter increases progressively as the birth order rises; and at each birth order it is lowest among mothers under 25 and increases with increasing maternal age. This is illustrated by the following national stillbirth rates selected from the 1949-53 experience (rates per 1,000 births):

	Maternal age		
Order of birth	Under 25	25-29	30 and over
0	21	26	41
1 and 2	13	15	23
3 and over	17	20	34

A similar analysis of stillbirth rates in each of the social classes and socio-economic groups is made in Table 18, and reveals (a) that these age and parity differences occurred more or less similarly in each class, and (b) that, allowing for the sparsity of births in some of the age-parity groups, the distribution of stillbirths was broadly similar in each of these age-parity groups, as is indicated by the uniform gradients shown in Table FN.

In view of the variations in the stillbirth rates between the various maternal age-parity groups, the distribution of maternities over these groups in different social classes will have had some effect in determining the level of the total stillbirth rate of each class. However, this has been of little importance in producing the

social class differences that have been registered, as is shown by the standardised stillbirth rates in Table 18 and Table FN, where the process of standardisation has eliminated the effects of different age-parity distributions. The close resemblance between the social class distribution of the standardised rates (Table FN) and the crude rates (Table FK) indicates that the social class gradient of stillbirths does not depend, in any significant degree, upon the characteristic age-parity patterns of the various social classes.

Table FN. Stillbirth rates (legitimate) per 1,000 total births, by social class, by age and parity of mother; and standardised rate All ages, All parities, 1949-53

		All Classes	Social Class				
			I	II	III	IV	V
Parity 0	Under 25	20·7	14·1	17·0	20·6	21·7	24·1
		100	68	82	100	105	116
	25-29	26·0	17·9	22·2	26·5	30·0	33·0
		100	69	85	102	115	127
	30 and over	41·3	28·9	35·6	42·4	47·8	50·4
		100	70	86	103	116	122
Parity 1 and 2	Under 25	12·9	9·7	11·2	12·4	13·3	15·1
		100	75	87	96	103	117
	25-29	15·1	10·3	11·5	14·9	17·4	19·3
		100	68	76	99	115	128
	30 and over	22·6	15·0	18·8	23·1	25·6	29·1
		100	66	83	102	113	129
Parity 3 and over	Under 25	16·5	(35·3)	13·3	15·9	19·4	15·1
		100	214	81	96	118	92
	25-29	20·2	19·0	19·4	19·8	19·7	22·0
		100	94	96	98	98	109
	30 and over	33·8	18·6	26·7	32·8	36·1	39·9
		100	55	79	97	107	118
Total (standardised for age and parity)		22·8	15·5	19·0	22·8	24·8	27·2
		100	68	83	100	109	119

Perinatal Mortality

The expression "perinatal mortality" has come into use to imply a combination of stillbirths with mortality of newborn children; and in particular, in recent official statistics, a combination of stillbirths with deaths during the first week of life, expressed as a rate per 1,000 total births (live and still).

Table FO. Stillbirth, Infant mortality under one week and Perinatal mortality rates, by social class and rates per cent of All Classes, 1950

	All Classes	Social Class					Not Stated
		I	II	III	IV	V	
Stillbirth Rate per 1,000 total births	22·6	16·7	19·6	22·1	24·7	26·1	26·0
Percentage	100	74	87	98	109	115	115
Infant Mortality Rate, under 1 week per 1,000 live births	15·2	10·4	13·5	14·7	16·7	18·1	19·2
Percentage	100	68	89	97	110	119	126
Perinatal Mortality Rate per 1,000 total births	37·4	27·0	32·8	36·5	41·0	43·7	44·7
Percentage	100	72	88	98	110	117	120

Deaths during the first week of life have not been separately tabulated in this analysis for 1949-53, but were tabulated by social class in the preliminary analysis of the 1950 mortality. This has permitted the calculation of perinatal mortality rates for that year (Table FO). These indicate precisely the same kind and degree of social class correlation as has been demonstrated in respect of stillbirths and of neonatal infant mortality.

OCCUPATIONAL GROUP	Occupation Code No.	Volume 1 Page on which mortality is discussed	Volume 2 Page on which data for MALES is shown	Page on which data for MARRIED WOMEN is shown	Page on which data for SINGLE WOMEN is shown
XI—continued					
Packing case makers	475		176	237	288
Pattern makers (wood or undefined)	476		176	237	288
Sawyers, wood cutting machinists	477, 479	116	104	237	288
Wheelwrights	478		176	237	288
Basket makers, other cane workers	480	116	176	237	288
XII MAKERS OF AND WORKERS IN PAPER AND PAPERBOARD; BOOKBINDERS, PRINTERS	**500–539**	116			
Makers of paper, paperboard	500–4, 509	116	177	237	
Workers in paper and paperboard	510–4, 519	116	177		288
Other skilled printing workers (not compositors or printing machine room workers)	520, 523–5, 531–3, 539	116	177	237	288
Compositors (hand or machine)	521	116	105	237	
Printing machine minders, setters, assistants; printers (so returned); machine rulers	526–9	116	106		288
Bookbinders	530	116	177		288
XIII MAKERS OF PRODUCTS NOT ELSEWHERE SPECIFIED	**540–579**	117			
Workers in rubber	540–2, 549	117	177c	237	288
Workers in plastics moulding, manipulating	550–1, 559	117	177c	237	
Makers of musical instruments	560–2, 569	117	177	177	
Hair, etc. drafters; brush makers	571	117	177	177	
Dental mechanics	573	117	177		
XIV WORKERS IN BUILDING AND CONTRACTING	**580–599**	117			
Foremen, gangers (building and contracting)	580	117	177		
Clerks of Works	581	117	178		
Builders', bricklayers', plasterers', masons' labourers	582, 584, 586, 591	117	107c	230	
Bricklayers	583	119	108	237	288
Plasterers	585	119	178	238	
Glaziers	587	119	178		
Slaters and tilers	588	119	178		
Masons, stone cutters	589	119	109	238	
Masons, stone cutters—limestone	589		178		
Masons, stone cutters—sandstone	589		178		
Masons, stone cutters—others	589		178		
Slate workers (n.e.s.); slate masons	592	120	178		
Platelayers	593	120	110	238	
Paviors, street masons and asphalters	594	120	178c		
Well and mine sinkers and borers	595	120	178		
Tunnel miners	596	120	179		
Builders and other skilled workers	597–8	120	179	238	
Other workers in building and contracting (mainly navvies)	599		111	238	
XV PAINTERS AND DECORATORS	**600–609**	120			
Foremen, overlookers (painters and decorators)	600	120	179		288
Aerographers, paint sprayers	601	120	112c	238	288
French polishers	602	121	113c	238	288
Sign writers	603	121	179		288
Other painters and decorators	609	121	114c	238	288
XVI ADMINISTRATORS, DIRECTORS, MANAGERS (NOT ELSEWHERE SPECIFIED)	**610–629**	121			
Civil Service and Local Authority administrative and executive officers	610–2	121	115	238	288
Secretaries of companies, etc., managers of office departments and industrial undertakings	614–5, 620–4, 629	122	116	238	288
XVII PERSONS EMPLOYED IN TRANSPORT AND COMMUNICATIONS	**630–709**	122			
Railway officials	630	122	117	239	
Locomotive engine drivers and motormen	631–2	122	118	239	
Locomotive engine firemen	633	122	179	239	
Running shed and other railway workers	634, 649	123	179		
Guards	635	123	179	239	
Signalmen	636	123	119	239	
Shunters, pointsmen, level crossing men	637	123	179		
Ticket collectors and examiners	638	123	179		
Porters (including lampmen)	639	123	120		
Bus and tramway managers, etc.	650	123	179		
Car hire, and garage proprietors, etc.	651, 663	123	180c		

OCCUPATIONAL GROUP	Occupation Code No.	Volume 1 Page on which mortality is discussed	Volume 2 Page on which data for MALES is shown	Page on which data for MARRIED WOMEN is shown	Page on which data for SINGLE WOMEN is shown
XVII—continued					
Haulage contractors and managers	652	124	180	239	
Inspectors and foremen (not horse)	653	124	180	239	
Drivers of horse-drawn vehicles	654	124	180	239	
Drivers of trams and trolleybuses	655–6	124	180		
Drivers of self-propelled passenger and goods vehicles	657–9	124	121c	239	
Lorry drivers' mates, van guards, etc.	660	124	180	239	
Bus and tram conductors	661	124	180c	240	289
Horse foremen, grooms and horse-keepers	662	124	180		
Ship-owners, managers, brokers, agents	670	127	180		
Harbour, etc., officials; piermasters	671	127	180		
Wharfingers and stevedores	672	127	181c		
Bargemen, boatmen, tugmen	679	127	181c	240	
Lock keepers; bridge, stage, pier men	680	127	181		
Dock labourers	681	127	122c	240	
Air transport workers (not managerial or aircrew)	692–3, 699	127	181		
Managers and directors (communications)	700	128	181		
Foremen, supervisors	701	128	181		
Postmen, post office sorters	702	128	123	240	
Radio and telegraph operators (n.e.s.)	703–4	128	181		
Telephone operators	705	128	181		281
Messengers, lift attendants, porters (n.e.s.)	706–8	128	124	240	
XVIII COMMERCIAL, FINANCE AND INSURANCE OCCUPATIONS (EXCLUDING CLERICAL STAFF)	**710–759**	128			
Owners, etc., of wholesale businesses	710	128	125		
Brokers, agents, factors (n.e.s.)	711	128	181		
Buyers, advertising agents and managers	712, 714	128	181		
Sales managers (manufacturers')	713	128	182		
Commercial travellers, canvassers	715	129	126c	240	
Proprietors, etc. of retail businesses for the sale of:—					
Grocery and provisions	720		182	240	289
Greengrocery	721		182	240	289
Meat	722		182	240	289
Fish, poultry	723		182	240	289
Other food goods	724		182	240	289
Greengrocery, meat, fish, poultry and other food goods	721–4		128c	240	289
Chemists' wares, photographic goods	725		182		289
Confectionery, tobacco, newspapers	726		182		289
General and mixed businesses	728	129	182		289
Other non-food goods	729		182		289
Salesmen, shop assistants selling :—					
Grocery and provisions	730		129		289
Greengrocery, meat, fish, poultry and other food goods	731–4		130c	240	289
Meat	732		182	240	289
Chemists' ware, photographic goods	735		183		289
Confectionery, tobacco, newspapers	736		183		289
In variety chain stores, other general and mixed businesses, other non-food goods	737–9		183		289
Roundsmen, van salesmen	741	129	183		
Coal carmen, coal hawkers	742	129	183		
Costermongers, newspaper sellers and other hawkers	743–4	129	131	240	
Bankers, bank managers, inspectors	751	130	183	240	
Stock brokers, stock jobbers	752	130	183		
Insurance managers, underwriters	753	130	183	240	
Bankers, bank and insurance managers, underwriters, etc.	751, 753	130	132	240	
Insurance brokers, agents and canvassers	754–5	130	133	241	
Auctioneers, estate agents, valuers	756	130	183	241	
Moneylenders, pawnbrokers	757	130	183		
XIX PROFESSIONAL AND TECHNICAL OCCUPATIONS (EXCLUDING CLERICAL STAFF)	**760–819**	130			
Clergymen (Church of England)	760	130	134c	241	
Roman Catholic priests, monks	761	130	135c		
Ministers of other religious bodies	762	130	136	241	
Itinerant preachers, mission and social welfare workers	763, 814	131	184		
Judges, barristers, etc., solicitors	764–5	131	137	241	
Registered medical practitioners, radiologists	766–7	131	138c	241	
Dental practitioners	768	132	184		
Veterinary surgeons and practitioners	769	132	184		
Trained nurses, assistant nurses, student nurses	770–2	132	139	241	282
Pharmacists	774	133	184		
Physiotherapists, radiographers, opticians, chiropodists	775–8	133	184		290
Other medical auxiliaries	779	133	184		290
Teachers of music	780	133	184		

N.B. 'n.e.s.' means 'not elsewhere specified'.

5

① S [42(HA161)
② 42(R159)

THE
REGISTRAR GENERAL'S
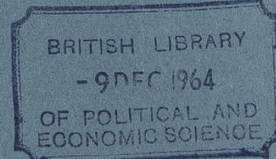# DECENNIAL SUPPLEMENT

ENGLAND & WALES

1951

OCCUPATIONAL MORTALITY

PART II

Volume 2

TABLES

LONDON: HER MAJESTY'S STATIONERY OFFICE
1957

Price £7 7 0 Net
for two volumes.