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AGE AND SEX PATTERNS OF MORTALITY

MODEL LIFE-TABLES FOR UNDER-DEVELOPED COUNTRIES

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FOREWORD

Mortality data on more than one-third of the world's population is lacking and much of the demographic analysis needed in order to formulate plans for social and economic development is therefore seriously hampered. During recent years the combined efforts at the international and the national levels have resulted in significant improvements in remedying this situation. Estimates of mortality levels and of trends, however, are bound to remain the only recourse, as long as some countries have not developed efficient systems of census taking and of vital registration.

This report, which has been prepared in partial implementation of the recommendation of the Population Commission to intensify demographic studies of under-developed countries, is believed to offer a useful tool in this respect. The series of forty model life-tables, which cover the entire range of mortality variations that can be found today, provide a time- and labour-saving method of approximating the most probable mortality level, by sex and age groups, for any population for which the infant or, better still, the early childhood mortality rate is known with a certain degree of accuracy.

TABLE OF CONTENTS

Introduction

Ideally, death should occur at the end of a more or less lengthy period of life when the biological energy vested in each individual has been spent and the continuing function of the body's vital organs has reduced them to a state of general deterioration. Under this pattern of mortality, deaths would tend to accumulate in the terminal period, probably at the ages between 70 and 90 years, with only a few exceptions of premature deaths at younger ages, besides those due to congenital conditions of purely genetic origin, and of delayed deaths at the terminal ages of senescence which may extend a little beyond 100 years.

The typical mortality curve throughout the life span of a human population departs radically from this ideal. Usually, it is not the old ages that claim most of the deaths of a generation, but rather the very young ones and especially those during the formative stage which extends from a few months before birth to approximately the fifth year after birth. The number of lives lost during this period, which is often termed "reproductive wastage", by far exceeds the number of deaths in any other interval of equal length in the life span.[1] Furthermore, risks to life are close to the individual at all ages; no age is or can be entirely free from mortality.

The typical variation of mortality with advance in age during the life span may be represented by a "U" shaped curve, which starts high at birth, declines rapidly towards a minimum around the twelfth year of age, and then increases slowly through adolescence and maturity until it reaches the second catastrophic maximum at the terminal period of senescence. Both sexes share this pattern with only slight variations, the mortality rates for females being, in most populations and age intervals, somewhat lower than the corresponding rates for males.

In modern nations improvements in conditions of living and standards of health are reflected in gradual shifting of mortality from earlier to later periods of life—a postponement of premature deaths—which brings the actual pattern of mortality closer to the ideal. Relative to their earlier levels the risks of mortality during infancy and childhood are reduced most substantially, but smaller relative improvements are also made during maturity and even at later ages. Thus the curve describing mortality risks by age sinks to a lower level, but its shape is not fundamentally affected. Quite generally, the relationships between the mortality rates of adjacent age groups retain a notable consistency at all levels of general mortality.

The purpose of the present report is to establish, as far as possible, relatively simple patterns of changes in mortality rates in different age groups during the transition from high to low mortality levels. The ultimate aim is chiefly to facilitate mortality estimates for countries and regions of the world in which no adequate mortality statistics have so far been developed.

[1] United Nations, *Foetal, infant and early childhood mortality.* Document ST/SOA/Series A. Population Studies No. 13 (2 parts); see also V. Valaoras, "Fœtal, perinatal and infant mortality", paper presented to the World Population Conference, Rome, 30 August-10 September 1954 (United Nations document E/CONF. 13/101).

I. The Material and its Limitations

(1) *The life-table concept of mortality.* Two main systems of mortality measurements are in use; the first includes crude and age (and sex) specific death rates, and the second is derived from the life-table concept and its various functions. Each has its advantages and limitations and only consideration of the characteristics of each of the two systems can offer a satisfactory answer to the questions of "how fast" and "in what way" a given population is being depleted by death. When the problem is set in a national frame alone and attention is restricted to the situation within a limited period of time, crude and specific death rates, in combination with the corresponding crude and specific birth rates, usually suffice for an understanding of the depletion and replenishment of the population during the given period. However, comparisons of crude and/or specific vital rates are not generally satisfactory for a clear understanding of long term trends and international differences.

The principal limitation of crude rates is their dependence upon the age and sex composition of the population to which they relate. A similarity of crude death rates in two populations which differ markedly in their age structure fails to demonstrate the true difference in the mortality risks to which the two populations are exposed. By the same token, two dissimilar crude death rates may correspond to nearly the same mortality experience, if the age stratifications of the two populations diverge accordingly.[2]

In the life-table the single measure of mortality derived from the age-specific death-rates of a popula-

[2] See also: *United Nations Demographic Yearbook, 1951,* introductory chapter, pp. 9–12 (United Nations publication, Sales No. 1952.XIII.1).

tion is the expectation of life at birth or its reciprocal, the life-table death rate. Since this measure is not dependent upon the existing age distribution of the population, it is totally devoid of the weaknesses of the crude rate. Basically, the life-table traces, through successive ages, the survivors of a cohort of births on the assumption that the age-specific mortality observed in the population during a given period remains unchanged. The average lifetime of this cohort is the expectation of life at birth. For the computation of the life-table, the age-specific death rates must first be converted to corresponding age-specific probabilities of dying.[3]

Since the intention of this report is to give an undisturbed picture of the successive levels of mortality as observed in various populations during the last fifty years, the life-table concepts of expectation of life and of mortality are used here instead of the crude death rate. It may be added that the momentous decline in mortality which occurred during this relatively short time period was by far the greatest ever recorded in demographic history.

(2) *The basic material and its preparation.* A sizeable number of national life-tables for the first half of this century, covering roughly the period between 1900 and 1950, have been officially published[4] and assembled, in a condensed form, in the series of the *United Nations Demographic Yearbooks, 1949-1954.* From this material a selection of 158 life-tables was made for this study, the selection aiming to satisfy the following objectives:

(i) The widest possible geographic coverage;
(ii) An adequate spacing in time;
(iii) The exclusion, as far as possible, of periods with abnormally high mortality (such as that due to war losses, the influenza epidemic of 1918-1919, etc.); and
(iv) A uniform scale of age intervals.

The material included here is distributed by continents and time intervals as shown in table 1. This material is not evenly distributed in space or time.

Some of the continents and the decades prior to 1920 are conspicuously under-represented. In spite of this limitation, the material seems to meet the requirement of representing satisfactorily the variation of levels of mortality experience throughout the world during the period under consideration. In fact, this body of 158 life-tables seems to cover nearly the entire range of present-day variations of human mortality in at least those populations of the world where the annual rate of growth is above zero.

The data suggest for example, that the very high mortality experienced in India prior to 1920 and especially during the decade 1911-1921 lies near the maximum mortality with which a population, even of high fertility, can sustain its numbers. The average increase of the Indian population between 1911 and 1921 amounted to only 0.09 per cent per year, which is indeed insignificant. The expectation of life at birth for this period, according to Davis's table, was in the neighbourhood of 20 years,[5] and if this unofficial life-table were included here, it could be taken to represent the approximate maximum level of mortality experience.

The lower limit of mortality experience during this fifty-year period is represented by a group of countries (Netherlands, Norway, Denmark, Sweden, New Zealand, Australia, etc.) in which mortality has reached a very low mark indeed. Obviously, it would be wrong to suppose that these are the lowest attainable levels of human mortality, but the work of several demographers[6] implies that the present levels of mortality in these countries are not very far from the minimum that can be expected to be reached in the foreseeable future under the most favourable conditions.

With the broad generalization in mind that the material roughly describes the total range within which the mortality experience of the world's peoples is comprised today and can be expected to be comprised in the near future, the processing of the basic data proceeded as follows:

First, the life-table mortality rate for each quinquennial age group, that is, the probability that a

[3] See: L. J. Reed and M. Merrell, "A short method of constructing an abridged life-table", *American Journal of Hygiene*, vol. 30, p. 33, Sept. 1934; J. N. Greville, "Short methods of constructing abridged life-tables", *Record of the American Institute of Actuarians*, vol. 32, p. 29, June 1943.

[4] With the single exception of the life-tables for Greece 1940, which were computed in 1942 by Dr. V. G. Valaoras on the basis of the population census of 1940 and data on deaths for the same year.

[5] Kingsley Davis, *The population of India and Pakistan.* Princeton University Press, 1951, p. 240.

[6] See for example: Jean Bourgeois-Pichat, "Essai sur la mortalité 'biologique' de l'homme". *Population*, 7e année, 1952, No 3, juillet-septembre, pp. 381–394.

TABLE 1. THE GEOGRAPHIC AND TIME DISTRIBUTION OF THE MATERIAL

Continent	*No. of countries*	*No. of tables*	*Period to which the life-tables refer (central-year)* Prior to 1909	1910–1919	1920–1929	1930–1939	1940 and after
Africa	3	6	—	—	2	2	2
America, North	6	17	1	2	2	3	9
America, South	5	11	—	2	2	2	5
Asia	7	21	3	1	5	3	9
Europe	27	95	16	11	20	22	26
Oceania	2	8	2	1	1	2	2
TOTAL	50	158	22	17	32	34	53

person just attaining age x will die before attaining age $x + 5$ (${}_5q_x$), was computed on the basis of the number of persons surviving at the beginning of each age interval (l_x) in accordance with the formula:

$$ {}_5q_x = \frac{l_x - l_{x+5}}{l_x} $$

For the first quinquennial age group, (${}_5q_0$), two more values were computed, namely those for q_0 and for ${}_4q_1$ in order to parallel the series of age-specific death rates presented in the statistical yearbooks of many countries.

Separate series of age-specific mortality rates (expressing the number of deaths occurring in the age interval per 1,000 living at the beginning of the interval) were computed for each sex and also for the two sexes combined. A simple technique was used for reconstructing the life-tables for both sexes combined, on the basis of the data given for each sex. In each case the corresponding sex ratio at birth was used to compute the radix of the male life-table. For example, when the sex ratio for a given country and period was 105 male per 100 female births, the starting population of the male life-table (l_0) was set at 105,000, that of the female table being 100,000. By exposing this population to the male mortality rates at successive ages, a new series of the numbers dying within each age interval (${}_5d_x$) was derived. These ${}_5d_x$ values for males were then added to the corresponding figures for females and the l_x values for both sexes combined were constituted by successive additions of the ${}_5d_x$ values, backward from the highest age with values for ${}_5d_x$, including as the last value the survivors at age 85. Finally, the l_x values for both sexes, as derived above, were brought back to the conventional radix of 100,000 (in this example, by dividing each value by 2.05) and the mortality rates (${}_5q_x$) for the two sexes combined were computed by the formula given above.

The results of this phase of the work, that is, the series of quinquennial life-table mortality rates for males, females, and both sexes, together with the corresponding values of expectation of life at birth and their reciprocal numbers, are shown in the appendix. The values given approximate closely the corresponding age-specific death rates for the given countries and periods when these rates are multiplied by the number of years contained in each age interval.

II. The Mortality Patterns

(1) *Preliminary considerations.* In the attempt to derive the patterns of transition from high to low mortality levels, attention will be focused on the relation between the variation in a particular age-specific rate and the mortality variations of another age-group with which it is to be compared. The particular age-specific rate thus chosen as the index should be not only readily available for many areas and time periods but also sensitive enough to reflect mortality changes as they occur in the other age groups.

A close examination of the material presented in the appendix reveals a remarkable consistency of the various functions, both within each life-table where mortality is compared by age groups and between different life-tables which represent many levels of general mortality. The familiar "U" shape in the curve of mortality by age is faithfully maintained at all levels of general mortality, from the situation corresponding to an expectation of life at birth of about twenty-two years—representing the maximum mortality included in the series—to those situations corresponding to an expectation of life around seventy years—representing the minimum mortality so far attained. High mortality rates of course are associated with low expectation of life at birth and vice versa. The range of the age-specific mortality rates, between the maximum and the minimum levels observed in the experiences included in this study, is shown in table 2.

The widest relative range of variation is observed in the brackets between the first and the fifteenth year of age; it is particularly wide in the age group 1–4. In contrast, mortality in old age differs little between countries with high and low general mortality. Since mortality improvements towards the end of life proceed at the slowest and most irregular pace, the rates for these ages are hardly a sensitive index of the general decline in mortality.

An appropriate measure of the general transition from high to low mortality must therefore be sought in the lower age brackets, where the variations of mortality are relatively large. At the younger ages, the first year of life possesses several features which qualify it for this purpose. Infant mortality is easy to compute because of the readiness of the requisite data (the numbers of births and of infant deaths) which are routinely collected in very many countries. Furthermore, this index can be established by means of a sample survey in countries where vital statistics are not as yet adequately developed. But the main feature of the infant mortality rate is the sensitivity with which it reflects the social and economic improvements and the advances in public health and medicine upon which declines in general mortality mostly depend.

On the other hand, the recorded infant mortality rate frequently understates the true infant mortality for the area. In many less advanced countries, it is likely that infant deaths escape registration to a greater extent than deaths of adults. Unless this under-registration is balanced by a corresponding under-registration of births, the result is an erroneously low infant death rate. Many such examples can be cited in the series of life-tables used for this study. The same examples demonstrate the fact that a mortality rate covering the first five years of age usually yields more

TABLE 2. MINIMUM AND MAXIMUM MORTALITY RATE (BOTH SEXES) BY AGE-GROUPS

Age group	*Minimum mortality*		*Maximum mortality*		*Ratio of maximum to minimum rate*
	Country and year	*Rate*	*Country and year*	*Rate*	
0–1	....New Zealand, 1951–52	22 5	India, 1901–11	287 4	12 8
1–4	.... " "	5 0	" "	215 1	43 0
5–9	.... " "	2 8	" 1891–1901	95 4	34 1
10–14	....England-Wales, 1950	2 4	" "	64 0	26 7
15–19	....Netherlands, 1947–49	4 1	" 1901–11	71 8	17 5
20–24	.... " "	5 4	" "	87 8	16 3
25–29	....New Zealand, 1951–52	6 2	" "	102 6	16 5
30–34	.... " "	7 2	" "	118 2	16 4
35–39	....Netherlands, 1947–49	9 4	" "	136 3	14 5
40–44	.... " "	13 9	" 1921–31	157 8	11 4
45–49	.... " "	20 8	" "	179 4	8 6
50–54	.... " "	32 6	" 1901–11	202 7	6 2
55–59	....Norway, 1945–48	45 4	Mauritius, 1942–46	247 1	5 4
60–64	.... " "	71 5	" "	320 3	4 5
65–69	.... " "	112 6	" "	402 3	3 5
70–74	.... " "	180 1	" "	500 6	2 8
75–79	....United States, 1950	322 6	India, 1901–11	644 7	2 0
80–84	.... " "	429 9	" "	800 9	1 9
$^{o}e_{o}$	......Netherlands, 1947–49	70 45	" 1901–11	22 95	3 1

consistent results than the infant mortality rate alone.

For these reasons the rate of infant mortality, later supplemented by the mortality rate for the first quinquennial age group ($_5q_0$), was selected as the key index for this study. The rate for both sexes was selected in preference to that for either sex alone in view of its greater stability.

The relationship which exists between the mortality rates of these two age groups (q_0 and $_5q_0$) and the general mortality ($^{o}e_{o}$ or its reciprocal $1/^{o}e_{o}$) is shown in table 3.

In spite of the rather erratic interrelationship which is observed between the percentage decline in infant (q_0) or early childhood mortality ($_5q_0$) and the corresponding gains in life expectancy, there are two indications which clearly emerge from this comparison. First, the gain in life expectancy corresponding to a one per cent decline of infant or early childhood mortality seems to become smaller as the level of general mortality declines; and second, this relationship seems to be more consistent when the comparison is made with mortality in the first quinquennial age group than with infant mortality alone.

The foregoing considerations may be summarized as follows: first, life-table mortality rates for successive age groups are interrelated fairly consistently at the various levels of general mortality; second, infant and early childhood mortality may serve as a satisfactory index to express this relationship. The next step is to develop the mathematical formulae for the relationship.

TABLE 3. DISTRIBUTION OF LIFE-TABLES (OBSERVATIONS) AND APPROXIMATE MORTALITY RELATIONSHIPS AT THE VARIOUS LEVELS OF LIFE EXPECTANCY (BOTH SEXES)

$^{o}e_{o}$ in years	*Number of observations*[a]	*Average*			*Years of life added to $^{o}e_{o}$ for each one per cent decline in*	
		$1/^{o}e_{o}$	*q_0*	*$_5q_0$*	*q_0*	*$_5q_0$*
Under 30 0	3	40 8	267 0	417 8	—	—
30 – 34 9	8	30 4	204 5	332 9	0 36	0 41
35 – 39 9	7	26 5	189 0	318 8	0 63	1 13
40 – 44 9	14	23 6	164 1	261 6	0 35	0 26
45 – 49 9	14	21 1	138 9	208 7	0 33	0 25
50 – 54 9	24	19 2	111 8	164 5	0 24	0 22
55 – 59 9	34	17 4	81 4	113 8	0 19	0 17
60 – 64 9	23	16 0	63 5	77 7	0 23	0 16
65 and over... ..	23	14 8	38 9	48 4	0 13	0 13

[a] Eight tables, in which expectation of life at birth is not given, are omitted.

(2) *The derivation of the mortality patterns.* In a series of spot diagrams, the age-specific mortality rates for the 158 life-tables were plotted in successive pairs, with the lower age group on the x axis and the next higher age group on the y axis. To the observations for each pair of successive age groups, a second degree parabola of the type $y = a + bx + cx^2$ was fitted, by the method of least-squares. For the computation of the constants a, b and c the observations were grouped and summed at regular intervals of the x axis, and the average xy values thus obtained were used as the guiding points for fitting the appropriate curve in each case. The series was begun with the pair of mortality rates for the ages 0-1 and 0-4. From this point on, all comparisons were made for quinquennial age groups, namely, ${}_5q_0$ with ${}_5q_5$, ${}_5q_5$ with ${}_5q_{10}$, and so forth to the final pair of ${}_5q_{75}$ and ${}_5q_{80}$.

The results of this treatment are shown in figures 1-7. In general, the curve fitting on the seventeen pairs of mortality rates seems quite adequate, being in some cases very satisfactory and in others less conclusive. Up to about the twentieth year of age, the correlation is not as close as at the older ages; there is either too great a dispersion of the rates at the higher levels of mortality or a spurious deviation of the observations towards unrealistic levels of mortality. This latter phenomenon is particularly obvious in the upper part of the first diagram, where many observations, departing towards the left side of the theoretical curve, seem to indicate an impossibly low infant mortality rate for the given level of mortality in the age group under 5. The usual under-estimation of the mortality of the first year of life due to weaknesses in the registration of infant deaths, which is known to occur especially in countries of high mortality, may account for these irregularities.

A similar explanation may be given for the rather abnormal dispersion of the observations which is observed again in the upper part of the next three diagrams. Failure to state the exact age of the deceased, lack of accuracy in the census record of age composition of the population, and delayed or incomplete registration of deaths, all of which are apt to occur more often in countries with high than with low mortality, may be blamed.

The remaining diagrams, from the age group of 20-24 to the ages beyond 70 years, show a remarkable consistency of observations, with an arrangement throughout pointing to unmistakable patterns of transition from one mortality level and age group to the next level and group of the series. Only the last three diagrams, and particularly that of the age groups 75-79 and 80-84, contain evidence of spurious deviations with some unexpectedly low mortality values. But here again an under-estimation of mortality in old age is known to occur in many places, even in some countries that have good registration systems, and where levels of general mortality are not necessarily high.

Another factor to which some of the discrepancies observed may be attributed is the random error of observations. Most if not all of the life-tables which were computed on a total population of less than 5 millions show evidence of instability in the mortality changes from one age group to another. Such divergences are most frequently found in the ages of late childhood, adolescence and early maturity, where the absolute numbers of deaths involved are of a low order of magnitude. The difference in stability of data derived from very large or relatively small populations is exemplified by the erratic data of some of the life-tables based on small populations (Cyprus, Malta, Israel, Finland) and the rather good consistency of the life-tables constructed for large populations like those of India, the United States, etc. The use of graduation methods in deriving the mortality curve in some life-tables and the absence of such adjustments in other life-tables account for only part of the observed differences.

Notwithstanding the various limitations mentioned above, the bulk of the observations do suggest definite mortality patterns, which in this study are arithmetically expressed in the formulae given at the bottom of each diagram. They are all equations of a second-degree parabola, the three constants a, b and c of which denote, respectively:

(a) The xy values at the point of origin of the curve, which point was set arbitrarily at convenient values of x in each case;
(b) The increment on the y axis for each unit of increment on the x axis, which is always positive; and,
(c) A modifying factor of the b quantity, which is positive in certain age-groups and negative in others.

The point of origin of each regression curve was chosen at a level a little below but not very far from the lowest mortality rate observed in each pair of age groups. In view of the large representation of countries with low mortality, it was felt that such a practice would certainly cover the lowest limits of mortality among the populations of the world during the last fifty years. When these equations are converted to the natural scale of x_0 (with origin at zero instead of the arbitrary origins), the constants of the seventeen equations become comparable, thus permitting comparisons of changing mortality in passing through the successive ages of the life span. The results are shown in table 4.

Naturally the major interest here is directed towards the series of B values, the variation of which offers a good generalization of the manner in which mortality changes with advancing age in view of the low values of C. For example, the mortality rate of age 0-1 is multiplied by about 1.316 in order to arrive at the approximate mortality rate for the age group 0-4. From this point on the comparisons are made between quinquennial age groups, and the numerical values of the

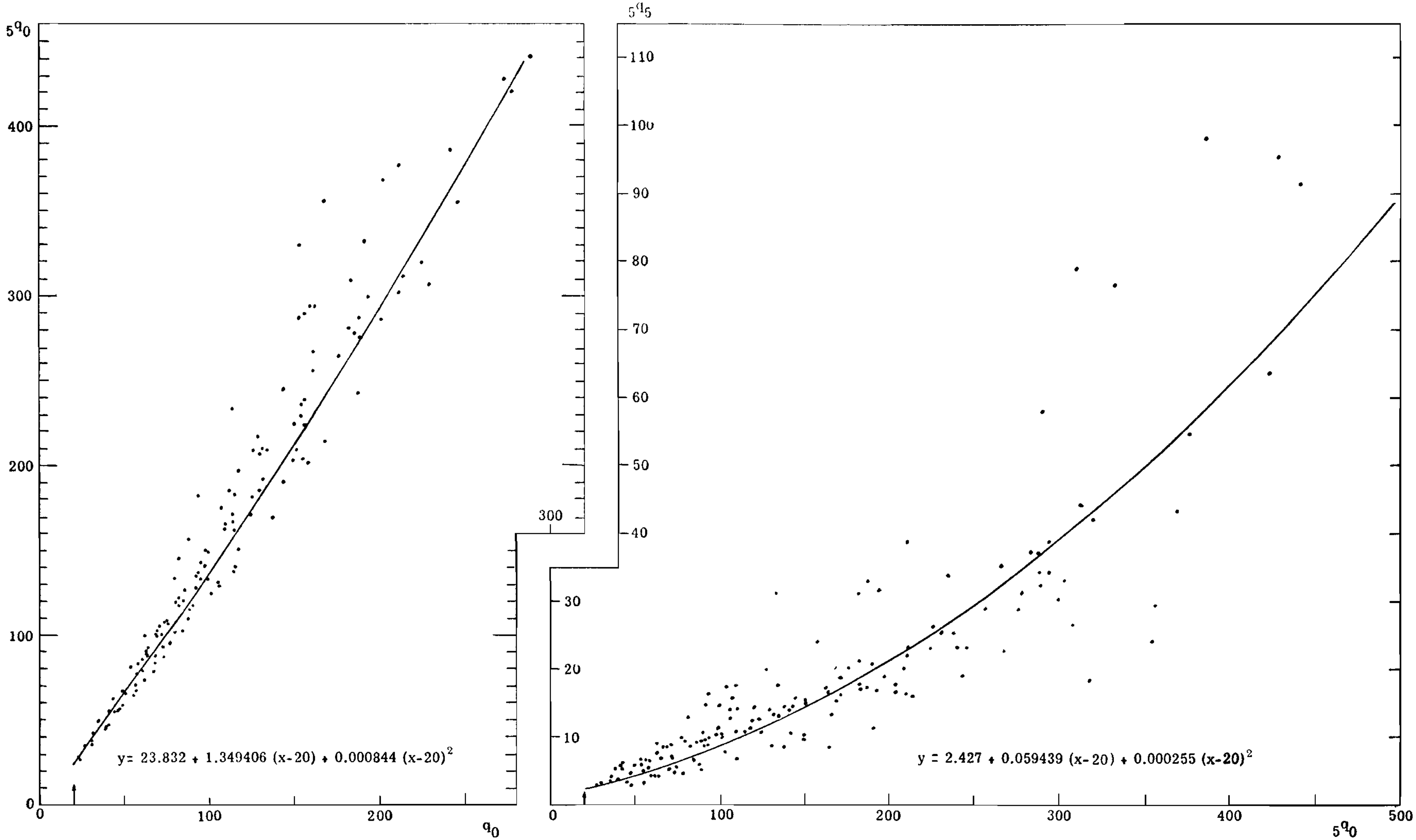

FIGURE 1. RELATION OF LIFE-TABLE MORTALITY RATES FOR CONSECUTIVE AGE-GROUPS AND THE CORRESPONDING SECOND-DEGREE PARABOLAS

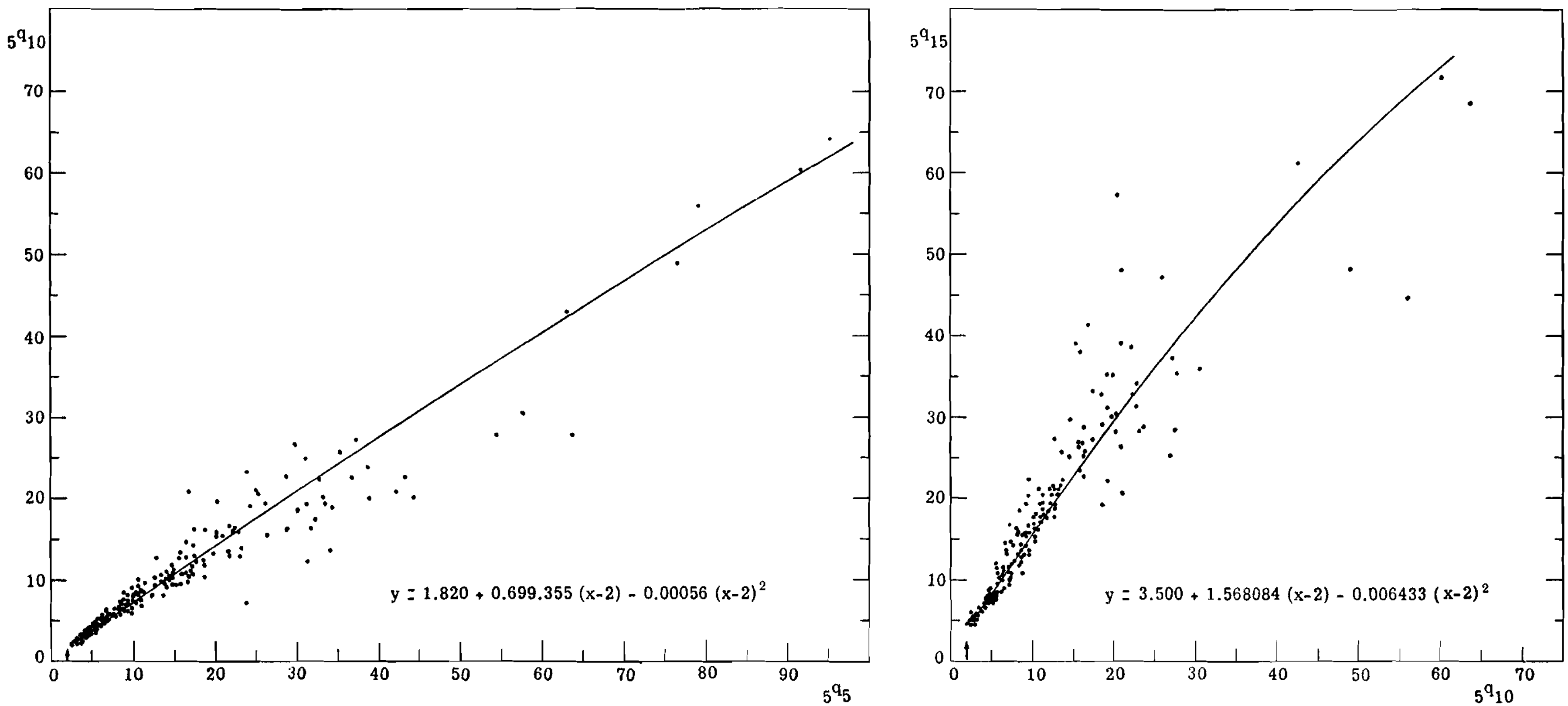

FIGURE 2. RELATION OF LIFE-TABLE MORTALITY RATES FOR CONSECUTIVE AGE-GROUPS AND THE CORRESPONDING SECOND-DEGREE PARABOLAS

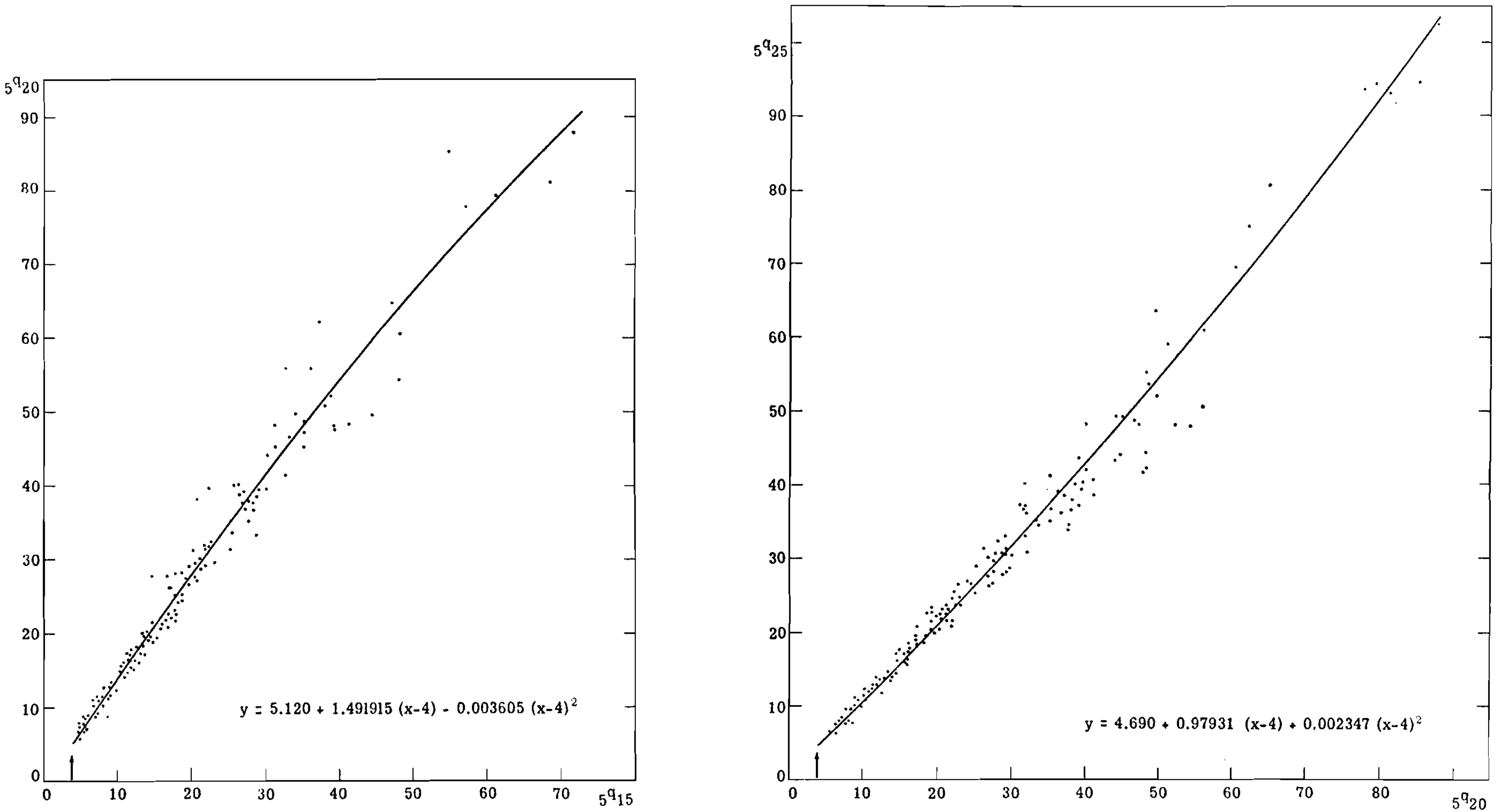

FIGURE 3. RELATION OF LIFE-TABLE MORTALITY RATES FOR CONSECUTIVE AGE-GROUPS AND THE CORRESPONDING SECOND-DEGREE PARABOLAS

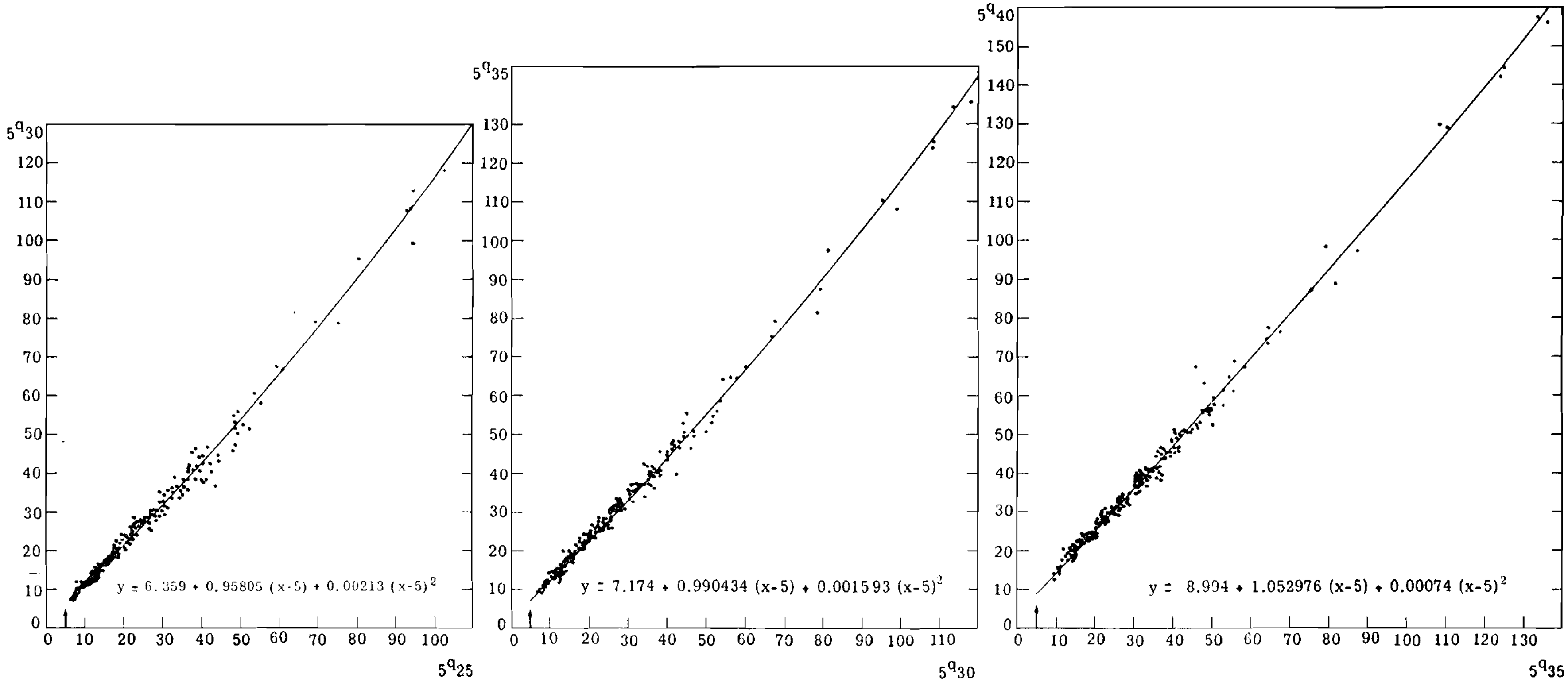

FIGURE 4. RELATION OF LIFE-TABLE MORTALITY RATES FOR CONSECUTIVE AGE-GROUPS AND THE CORRESPONDING PARABOLAS

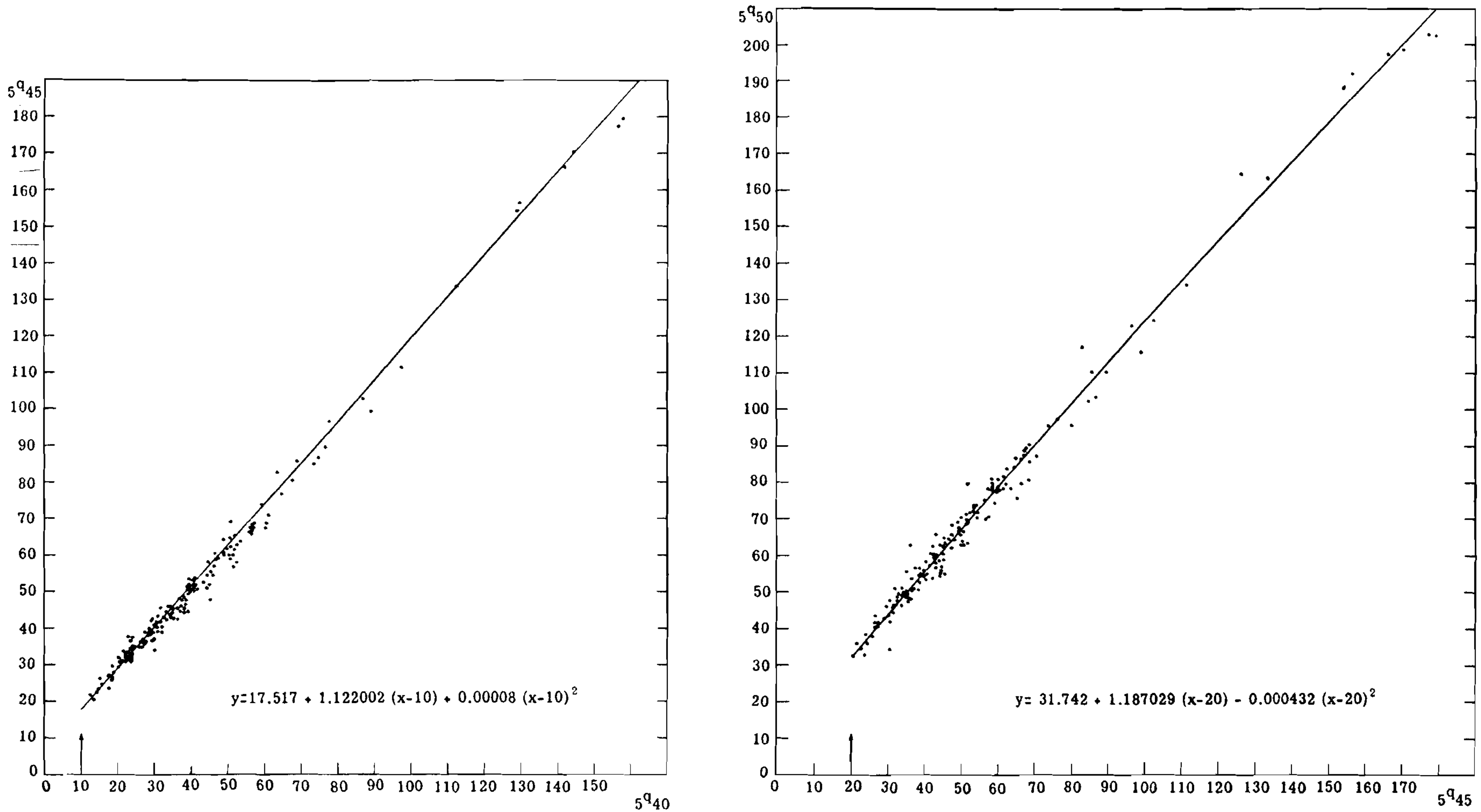

FIGURE 5. RELATION OF LIFE-TABLE MORTALITY RATES FOR CONSECUTIVE AGE-GROUPS AND THE CORRESPONDING PARABOLAS

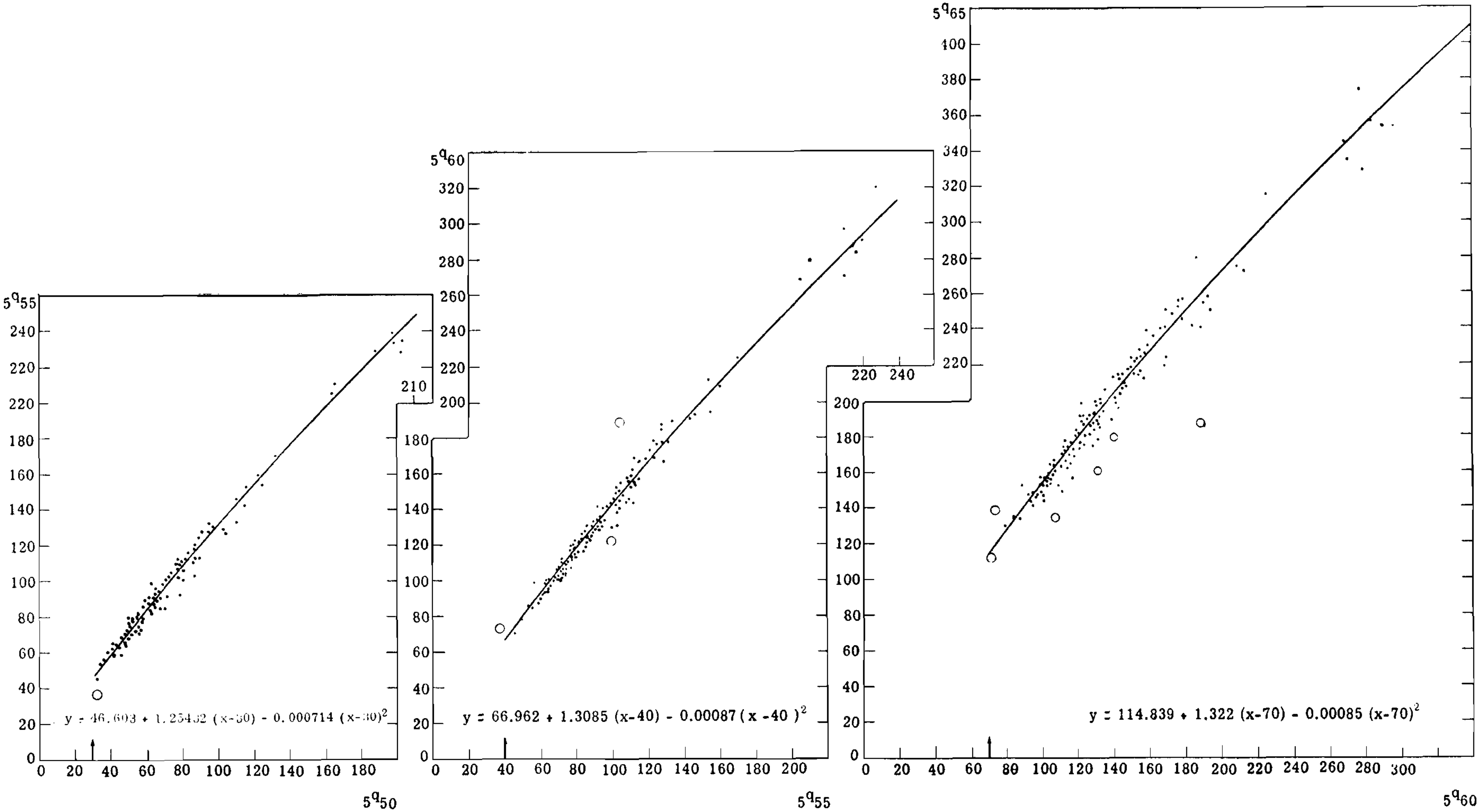

FIGURE 6. RELATION OF LIFE-TABLE MORTALITY RATES FOR CONSECUTIVE AGE-GROUPS AND THE CORRESPONDING PARABOLAS
(Circles denote obviously erratic observations)

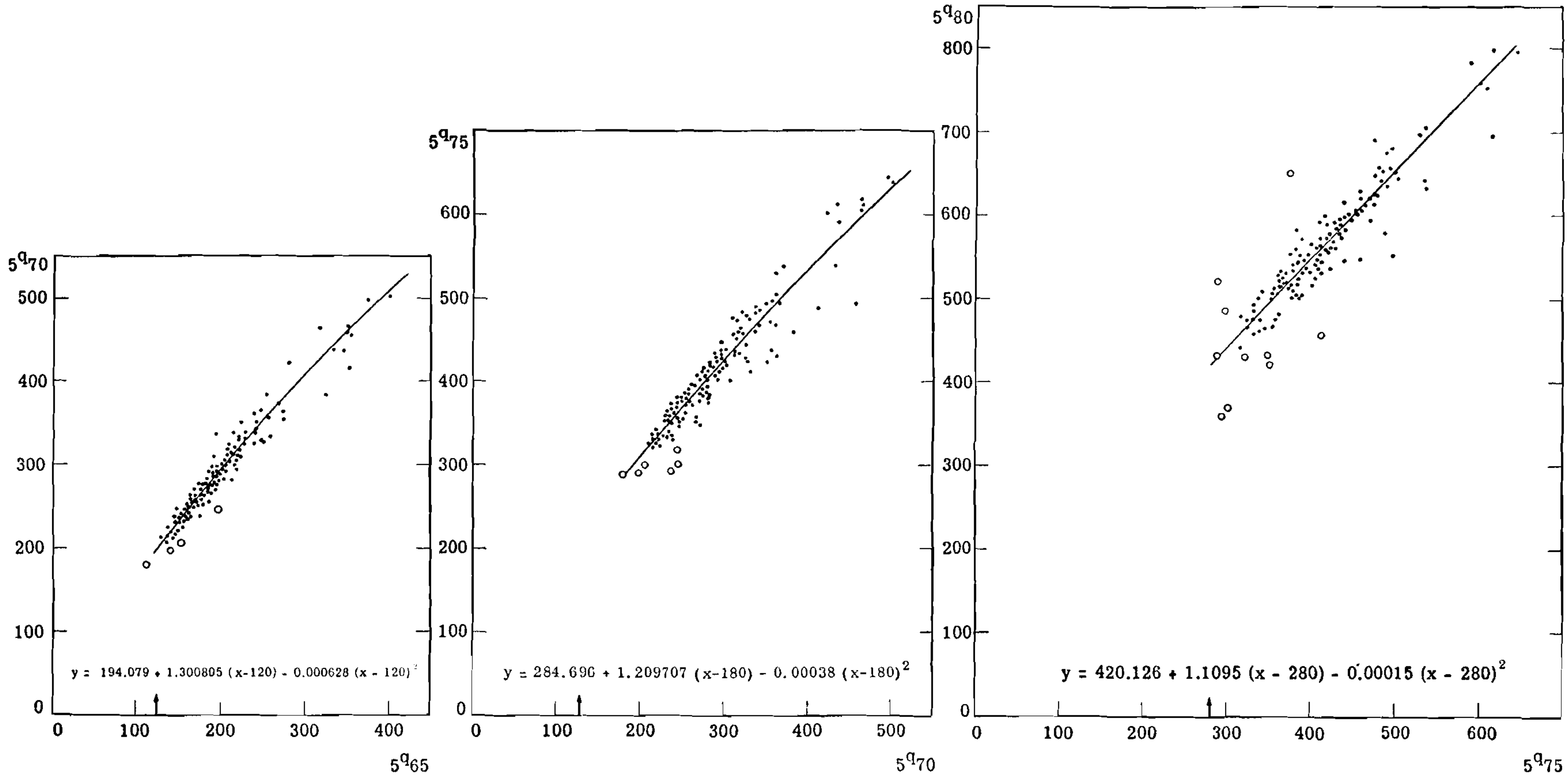

FIGURE 7. RELATION OF LIFE-TABLE MORTALITY RATES FOR CONSECUTIVE AGE-GROUPS AND THE CORRESPONDING PARABOLAS

(Circles denote obviously erratic observations)

TABLE 4. THE PARAMETERS OF THE REGRESSION CURVES AT THE NATURAL SCALE (ARBITRARY ORIGIN ELIMINATED)

Age groups	*Arbitrary origin*	*The three constants converted to the natural origin at x_0*		
		A	*B*	*C*
0–1 / 0–4	20	2 818	1 315646	+0 000844
0–4 / 5–9	20	1 340	0 049239	+0 000255
5–9 /10–14	2	0 419	0 701595	−0 000560
10–14/15–19	2	0 338	1 593816	−0 006433
15–19/20–24	4	0 905	1 520755	−0 003605
20–24/25–29	4	0 810	0 960534	+0 002347
25–29/30–34	5	1 622	0 936750	+0 002130
30–34/35–39	5	2 262	0 974504	+0 001593
35–39/40–44	5	3 748	1 045576	+0 000740
40–44/45–49	10	6 305	1 120402	+0 000080
45–49/50–54	20	7 829	1 204309	−0 000432
50–54/55–59	30	8 331	1 297160	−0 000714
55–59/60–64	40	13 230	1 378100	−0 000870
60–64/65–69	70	18 134	1 441000	−0 000850
65–69/70–74	120	28 939	1 451525	−0 000628
70–74/75–79	180	54 637	1 346507	−0 000380
75–79/80–84	280	97 706	1 193500	−0 000150

B constant describe a violently inflected curve for the first five or six age groups. The B constant declines sharply to levels below unity for the next two age groups, the lowest mortality of all ages being reached in the age group 10-14. Then the B constant increases to a maximum level when passing from the mortality of the 10-14 age group to that of 15-19 years and remains high for the next age group. The value then falls a little below unity for the next three age groups (up to the age of about 35 years), describing the familiar "plateau" of mortality at the ages of early maturity. From this age on, the B constant rises slowly, reaching a second maximum at an age around 65 and declines afterwards, approaching the level of unity at the terminal ages of the life span.

A similar but rather inverse variation is observed in the values of the C constant, the course of which alternates between positive and negative values. The constant is positive in the comparison of the first two age groups, pointing to additional mortality risks, over and above those indicated by the B constant. It is negative during the latter part of childhood and also during puberty and becomes positive in early adulthood. From the age of 50 onwards, the C constant again becomes negative with its greatest deviation from zero at about the 60th year of age.

The systematic sequence of the numerical values of the B and C constants may be taken as additional evidence of the adequacy of the seventeen parabolas computed to express the patterns of mortality change between the successive age groups. These patterns are based on a world-wide experience of 158 life-tables representing practically all levels of general mortality and, by inference, all major variations of living conditions; they may now be used for the development of a series of model life-tables covering almost the entire range in which the mortality of populations of the world may vary today.

III. The Development of Model Life-Tables

In attempts to estimate the approximate mortality of a population with scanty or unreliable mortality data, use has sometimes been made of a life-table computed for the population of another country, where mortality levels and living conditions were presumed to resemble those of the population under consideration. This approach seldom if ever yields the desired results. As experience has repeatedly shown, differences in age-specific mortality rates are found even between countries with the same level of general mortality. Each population has its own peculiar age-specific death rates which will not necessarily apply to another population where mortality determinants of a different nature may be in operation. In this situation it is reasonable to seek an average mortality pattern, more or less free of individual pecularities, which roughly but generally corresponds to a given level of general mortality. Even so the result may not correctly express the actual mortality risks to which any particular population at the given level of general mortality is exposed. However, until a systematic study of the mortality of the particular population can be made, the average pattern may be used as an unbiased approximation.

This is the purpose for which the following series of model life-tables has been developed. Based on the previously computed typical patterns of mortality for the various age groups, this series of regularly spaced

TABLE 5. LIFE-TABLE MORTALITY RATES FOR SPECIFIED AGE INTERVALS

Model No.	$\mathring{e}_0$	$1/\mathring{e}_0$	*Mortality rate for specified age group*							
			0	*1–4*	*0–4*	*5–9*	*10–14*	*15–19*	*20–24*	*25–29*
1	71 71	13 95	20 00	3 91	23 83	2 66	2 28	3 94	5 03	5 70
2	70 88	14 11	25 00	5 74	30 60	3 08	2 57	4 39	5 70	6 36
3	69 99	14 29	30 00	7 64	37 41	3 54	2 90	4 91	6 48	7 13
4	69 16	14 46	35 00	9 60	44 26	4 01	3 22	5 40	7 20	7 85
5	68 25	14 65	40 00	11 63	51 16	4 53	3 59	5 98	8 06	8 70
6	67 38	14 84	45 00	13 71	58 09	5 05	3 95	6 53	8 87	9 52
7	66 42	15 06	50 00	15 86	65 07	5 62	4 35	7 15	9 78	10 43
8	65 52	15 26	55 00	18 08	72 09	6 21	4 75	7 76	10 68	11 34
9	64 52	15 50	60 00	20 38	79 16	6 84	5 19	8 44	11 67	12 34
10	63 58	15 73	65 00	22 74	86 26	7 48	5 64	9 12	12 67	13 36
11	62 63	15 97	70 00	25 17	93 41	8 16	6 11	9 84	13 71	14 42
12	61 70	16 21	75 00	27 68	100 60	8 88	6 60	10 58	14 78	15 52
13	60 69	16 48	80 00	30 27	107 85	9 61	7 11	11 35	15 89	16 67
14	59 73	16 74	85 00	32 91	115 11	10 40	7 65	12 16	17 05	17 87
15	58 73	17 03	90 00	35 63	122 42	11 19	8 20	12 98	18 23	19 10
16	57 75	17 31	95 00	38 43	129 78	12 03	8 78	13 84	19 45	20 38
17	56 72	17 63	100 00	41 31	137 18	12 90	9 38	14 72	20 70	21 70
18	54 73	18 27	110 00	47 31	152 11	14 74	10 64	16 57	23 30	24 46
19	52 73	18 96	120 00	53 65	167 21	16 70	11 98	18 51	26 01	27 38
20	50 76	19 70	130 00	60 31	182 47	18 81	13 42	20 57	28 85	30 48
21	48 76	20 51	140 00	67 34	197 91	21 09	14 97	22 76	31 84	33 77
22	46 81	21 36	150 00	74 72	213 51	23 49	16 59	25 01	34 87	36 88
23	44 83	22 31	160 00	82 48	229 28	26 03	18 30	27 35	37 99	40 69
24	42 91	23 30	170 00	90 63	245 22	28 75	20 13	29 81	41 22	44 39
25	41 04	24 37	180 00	99 18	261 33	31 64	22 06	32 37	44 54	48 25
26	39 22	25 50	190 00	108 16	277 61	34 66	24 06	34 96	47 85	52 15
27	37 36	26 77	200 00	117 58	294 06	37 86	26 18	37 66	51 55	56 56
28	35 67	28 03	210 00	127 43	310 67	41 24	28 40	40 41	54 66	60 33
29	33 97	29 44	220 00	137 77	327 46	44 80	30 73	43 24	58 11	64 55
30	32 32	30 94	230 00	148 58	344 41	48 55	33 16	46 12	61 56	68 84
31	30 73	32 54	240 00	159 91	361 53	52 50	35 71	49 03	64 99	73 15
32	29 19	34 26	250 00	171 76	378 82	56 59	38 33	51 98	68 40	77 49
33	27 71	36 09	260 00	184 16	396 28	60 89	41 06	54 92	71 74	81 80
34	26 28	38 05	270 00	197 14	413 91	65 44	43 93	57 89	75 05	86 12
35	24 91	40 14	280 00	210 69	431 70	70 11	46 85	60 89	78 33	90 45
36	23 59	42 39	290 00	224 89	449 67	75 04	49 91	63 86	81 51	94 71
37	22 32	44 80	300 00	239 71	467 80	80 19	53 08	66 81	84 60	98 87
38	21 10	47 39	310 00	255 23	486 11	85 58	56 36	69 73	87 61	102 98
39	19 95	50 13	320 00	271 44	504 58	91 13	59 70	72 56	90 46	106 91
40	18 83	53 11	330 00	288 39	523 22	96 93	63 16	75 34	93 20	110 72

model life-tables attempts to cover the entire range of mortality variations that are to be met in the world today. The series includes forty models, the first of which (No. 1) corresponds to a mortality level a little lower than the best so far attained by any population (both sexes) of an adequate magnitude. The next sixteen models in the series are spaced at intervals of five units along an increasing scale of life-table infant-mortality rates from 20 to 100 infant deaths per 1,000 live born. The last twenty-three models are spaced at intervals of ten units of infant mortality rates from 100 to the rather catastrophic rate of 330 infant deaths per 1,000 live births. This last mortality experience, labeled in the series as model No. 40, represents an extremely heavy toll, requiring a fertility of about seven live births per woman in the reproductive ages, if the population is to survive and maintain its numbers. It is rather doubtful that such extreme mortality experience can be found today in any sufficiently large population except for short periods of time when major epidemics or famines are prevailing.

The technique used for the construction of these model life-tables is very simple. It is entirely based on the series of equations which were developed in fitting the seventeen second-degree parabolae to the original observations. In the first equation, in which the mortality of the age group 0-4 is related to mortality at age zero, values of ${}_5q_0$ were computed to correspond to the values of $q_0 = 20, 25, 30$, etc., up to $q_0 = 100$ and thereafter for every tenth value beginning with $q_0 = 110$ and ending at $q_0 = 330$. From these two parallel series of q_0 and ${}_5q_0$, the intermediate mortality of the age group ${}_4q_1$ was easily derived by computing the survivors at age one (l_1), to which the remaining numbers of deaths, corresponding to the age group 1-4, were referred.

The second equation in which the mortality of the age group 5-9 is related to that of ages 0-4, gave the values of ${}_5q_5$ corresponding to those of ${}_5q_0$ computed from the first equation. Similarly, the newly computed mortality rates for each successive age group were used as the x factors, in order to arrive at the

q_0, $_4q_1$ and $_5q_x$ IN FORTY THEORETICAL MODELS. BOTH SEXES

Mortality rate for specified age group										
30–34	*35–39*	*40–44*	*45–49*	*50–54*	*55–59*	*60–64*	*65–69*	*70–74*	*75–79*	*80–84*
7 03	9 21	13 43	21 33	33 28	50 73	80 86	129 10	205 86	315 73	459 65
7 67	9 81	14 07	22 12	34 23	51 86	82 41	131 11	208 44	318 79	462 95
8 43	10 61	14 91	23 02	35 30	53 23	84 12	133 34	211 45	322 35	466 90
9 11	11 26	15 60	23 80	36 25	54 41	85 62	135 28	213 81	325 15	569 97
9 93	12 12	16 45	24 76	37 43	55 85	87 48	137 69	216 88	328 79	473 91
10 71	12 87	17 31	25 71	38 49	57 21	89 22	139 93	219 77	332 24	477 63
11 64	13 83	18 37	26 95	39 97	59 08	91 64	143 05	223 67	336 79	482 66
12 53	14 74	19 33	27 96	41 21	60 56	93 55	145 50	226 84	340 53	486 81
13 52	15 71	20 35	29 20	42 63	62 29	95 71	148 27	230 26	344 54	491 17
14 51	16 73	21 47	30 43	44 04	64 02	97 89	151 05	233 80	348 68	495 62
15 55	17 80	22 59	31 67	45 57	66 00	100 40	154 24	237 84	353 45	500 75
16 65	18 93	23 83	33 02	47 10	67 84	102 72	157 19	241 60	357 77	505 54
17 81	20 11	25 06	34 48	48 86	70 06	105 51	160 71	245 98	362 88	511 05
19 02	21 35	26 41	35 94	50 55	72 08	108 07	163 94	250 02	367 51	516 06
20 29	22 70	27 86	37 63	52 50	74 46	111 07	167 70	254 70	372 94	522 01
21 62	24 05	29 32	39 20	54 37	76 78	113 94	171 29	259 13	378 05	527 42
22 95	25 47	30 84	40 89	56 36	79 22	116 92	175 00	263 72	383 31	533 24
25 80	28 46	34 09	44 60	60 68	84 44	123 40	183 01	273 54	394 60	545 30
28 89	31 76	37 69	48 66	65 45	90 17	130 46	191 66	284 00	406 40	557 97
32 17	35 24	41 52	52 94	70 37	96 11	137 63	200 36	294 61	418 34	570 81
35 66	39 03	45 71	57 67	75 88	102 67	145 59	209 91	305 95	431 09	584 32
39 09	42 80	49 85	62 36	81 30	109 07	153 23	218 98	316 71	443 07	597 07
43 28	47 45	55 03	68 17	87 95	116 90	162 44	229 78	329 34	456 95	611 81
47 41	52 03	60 18	74 04	94 63	124 66	171 55	240 32	341 60	470 26	625 79
51 78	57 02	65 75	80 32	101 75	132 93	181 05	251 17	353 94	483 68	639 89
56 27	62 12	71 53	86 82	109 11	141 36	190 70	262 02	366 13	496 71	653 51
61 40	68 10	78 38	94 64	117 93	151 34	201 87	274 39	379 96	511 40	668 83
65 91	73 40	84 48	101 55	125 67	160 11	211 56	284 95	391 62	523 66	681 56
70 96	79 42	91 43	109 38	134 41	169 78	222 15	296 30	403 90	536 28	694 62
76 21	85 77	98 85	117 84	143 74	180 04	233 14	307 89	416 23	549 23	707 93
81 54	92 33	106 64	126 65	153 42	190 52	244 21	319 35	428 50	561 85	720 87
87 01	99 10	114 63	135 75	163 35	201 18	255 29	330 61	440 18	575 36	734 78
92 50	106 03	122 95	145 27	173 69	212 12	266 39	341 68	451 61	585 23	744 77
98 07	113 13	131 53	155 02	184 11	222 95	277 24	352 30	462 38	596 02	755 75
103 78	120 58	140 62	165 42	195 20	234 35	288 41	363 03	473 10	606 62	766 49
109 43	128 00	149 70	175 82	206 19	245 46	299 12	373 12	483 19	616 55	776 59
115 03	135 46	158 94	186 36	217 30	256 51	309 47	382 67	492 47	625 61	785 65
120 70	143 09	168 52	197 37	228 72	267 67	319 80	392 04	501 45	634 35	794 49
126 10	150 48	177 86	208 16	239 83	278 35	329 42	400 60	509 66	642 20	802 31
131 42	157 81	187 16	218 85	250 69	288 68	338 58	408 58	517 20	649 41	809 50

rates for the next higher quinquennial age group.

Having now the new series of estimated q_x values for all age groups corresponding to each successive level of q_0, the next step is to compute the expectation of life at birth ($^{\circ}e_{o}$) for each of the forty models. Several generalizations were adopted in order to expedite this phase of work, the most important of which were as follows:

(i) The years of life pertaining to each quinquennial age group, with the exception of the first (0-4) and the aggregated last age group of 85 years and over, were taken to equal the average of the two marginal l_x values multiplied by five, according to the formula:

$$_5L_x = 2.5\ [l_x + l_{x+5}]$$

(ii) The years of life pertaining to the age group of 85 years and over were assumed to equal the product obtained by multiplying the number of survivors at age 85, by a factor varying between 4.4 and 3.0 depending on the size of l_{85}, in the following order:

l_{85}	*Factor*
15,000 and over......	4.4
10,000—14,999.......	4.0
5,000— 9,999.......	3.5
Less than 5,000......	3.0

This assumption is based upon a survey of actual expectations of life at age 85 ($^{\circ}e_{85}$), which shows that the average years of remaining life at the various levels of l_{85} are approximately in accordance with the above distribution.

(iii) At all levels of mortality, uniform factors of separation were assumed in order to divide the deaths of infants and of children 1-4 years old into the parts occurring in the first half and in the second half of the time interval: namely, 75 per cent for the age 0-1 and slightly over 50 per cent for the age group 1-4 years. Consequently, the number of years of life pertaining to the survivors during the first year of life was computed from: $L_0 = l_1 + 0.25\ (d_0)$, and the number of years lived by the survivors within the age group 1-4 from: ${}_4L_1 = 1.9\ l_1 + 2.1\ l_5$.

Under these assumptions, the approximate expectation of life at birth, which was independently computed for each of the forty model life-tables, varies from a minimum of 18.8 years to a maximum of 71.7. A parallel series of life-table general mortality rates ($1/{}^oe_o$), which is also included in the table, varies between about 53 and 14 deaths per 1,000 total life-table population. The sequence in the series of these ${}^oe_o$ values, though not perfect, is nevertheless indicative of the general trend of life expectancy at progressively declining infant mortality rates. In this example, the average gains in life expectancy at successive levels of infant mortality may be summarized as follows:

Level of infant mortality	*Approximate increase in ${}^oe_o$ per 10 units of decline in infant mortality(q_0) (years)*
300........	1 25
250........	1 50
200........	1 75
150........	2 00
100........	2 00
50........	1 80
20........	1 60 (extrapolated)

Thus, at a level of infant mortality between 100 and 150 per 1,000, a decline of 10 per 1,000 produces a greater increase in expectation of life at birth than at either higher or lower levels of infant mortality. The mortality rates of the forty model life-tables computed for both sexes are shown in table 5.

IV. Model Life-Tables for Males and Females

Sex differentials in mortality are well known to follow a fairly typical pattern. If only because more boys than girls are born in the world every year and because all must eventually die, the annual number of male deaths would normally always exceed the number of female deaths. The actual excess of male mortality is all the greater because age-specific death rates are, as a rule, higher among males than among females and this difference produces a greater life expectancy of the female sex. With very few exceptions, this is the common finding throughout the world.

However, the question arises, whether the sex differentials at the various levels of mortality are constant or not and, if not, whether any patterns of changing differentials can be observed. This information could be used to estimate life-tables for each sex from the model life-tables of both sexes combined. In order to answer this question the life-table mortality rates shown in the appendix were averaged separately for each of the two sexes and also for both sexes in four groups according to the level of the expectation of life at birth for both sexes.

The result of this grouping[7] is shown in table 6. It appears that the sex differentials do differ at the various levels of general mortality. The approximate pattern of these differences is shown by the ratios of the male and female rates to the rate for both sexes, taken as 100, as given in the last two columns of each group in table 6. These ratios are plotted in figure 10, where three supplementary values, produced from the averaging of intermediate cumulative summations, are also included.

The patterns thus derived, though not absolutely regular, can nevertheless be taken as indicative of the manner in which the sex differential in mortality changes as life expectancy at birth increases. They confirm the already known fact that sex differentials in mortality widen as life expectancy grows longer. With this generalization in mind, free-hand curves were drawn to illustrate the approximate trends. These indications were then used for the computation of parallel series of model life-tables for males and for females corresponding to the forty models previously prepared for both sexes combined. Appropriate values of sex-differential ratios were read from the curves at regular intervals of expectation of life at birth for both sexes combined, namely, at ${}^oe_o$ = 67.5, 62.5, 57.5, 52.5, 47.5, 42.5 and at 35.0 and 25.0. Each of these readings was used for all the model life-tables with a life expectancy in the neighbourhood of the given value in accordance with the following scheme:

Value of ${}^oe_o$ for which sex differences were read from the curve	*Values of ${}^oe_o$ (both sexes) in the model life-tables to which the sex-difference readings were applied*
67 5..................	65 0 and over
62 5..................	60 0 — 64 9
57 5..................	55 0 — 59 9
52 5..................	50 0 — 54 9
47 5..................	45 0 — 49 9
42 5..................	40 0 — 44 9
35 0..................	30 0 — 39 9
25 0..................	less than 30 0

Finally, in order to eliminate the slightly disturbed sequence of ${}^oe_o$ values in the model life-tables, by sex, at the merging points of the above groupings, the adjacent values were smoothed by the method of moving averages. The net result of these manipulations is

[7] *Group A* includes 21 life-tables with an expectation of life at 65 years and over. *Group B* includes 51 life-tables with an expectation of life between 55 and 64.9 years. *Group C* includes 34 life-tables with an expectation of life between 45 and 54.9 years. *Group D* includes 23 life-tables with an expectation of life below 45 years. A few life-tables with erratic q_x functions were omitted.

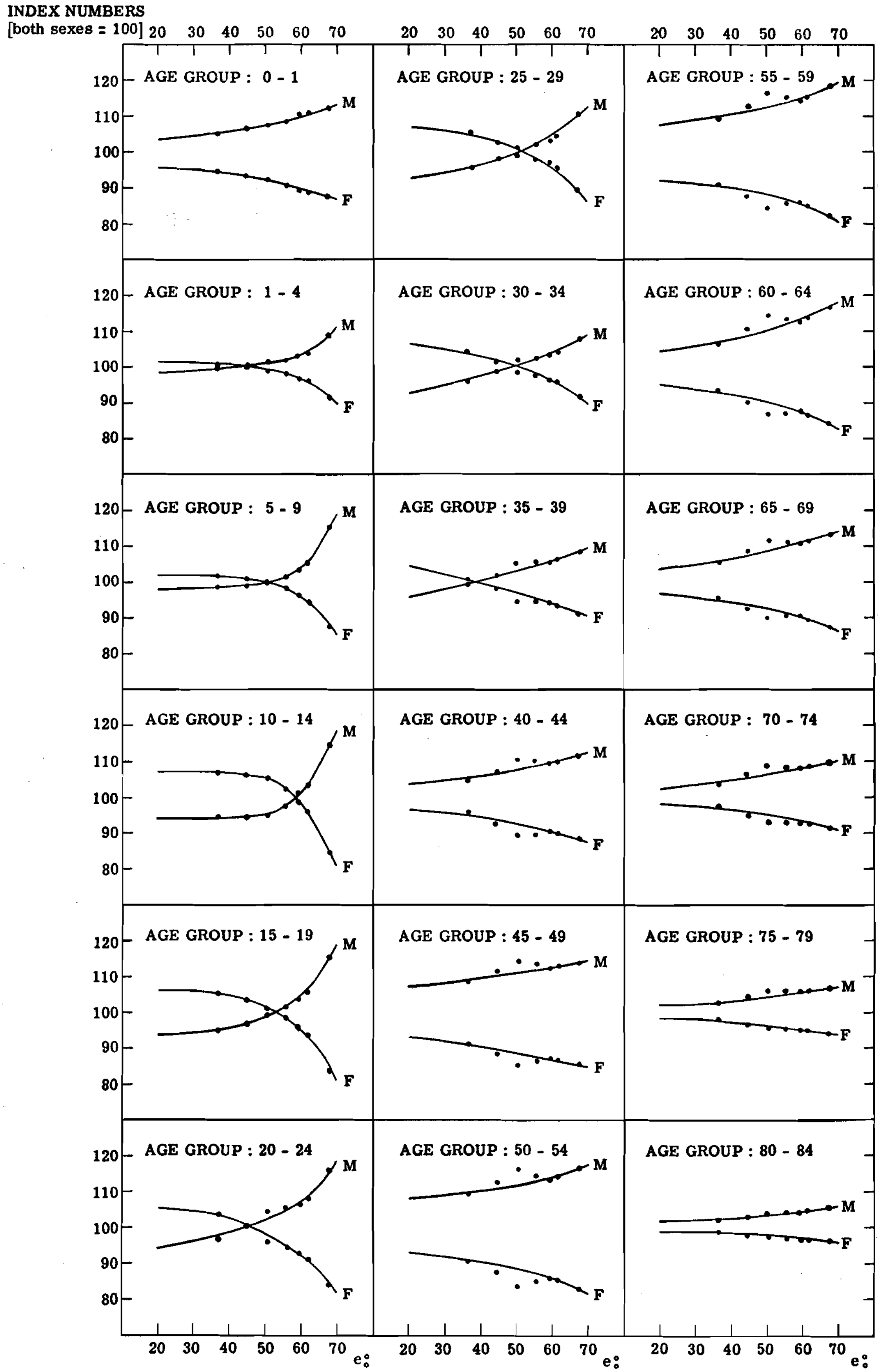

FIGURE 8. THE WIDENING SEX DIFFERENTIALS IN MORTALITY AT INCREASING EXPECTATION OF LIFE

TABLE 6. AVERAGE LIFE-TABLE MORTALITY RATES BY SEX AND AGE AND SEX DIFFERENTIALS BY
(*For life-tables included*

Age group	Average rate			Ratio to rate for both sexes (= 100)		Average rate			Ratio to rate for both sexes (= 100)	
	Both sexes	Male	Female	Male	Female	Both sexes	Male	Female	Male	Female
	Group A					Group B				
0	37 57	42 08	32 78	112 0	87 2	73 51	81 23	65 36	110 5	88 9
1–4	9 32	10 12	8 50	108 6	91 2	28 04	28 90	27 13	103 1	96 7
5–9	4 62	5 32	4 03	115 1	87 2	10 71	11 06	10 29	103 3	96 1
10–14.........	3 83	4 39	3 24	114 6	84 6	8 25	8 33	8 13	101 0	98 5
15–19.........	6 61	7 64	5 54	115 5	83 8	14 12	14 66	13 56	103 8	96 0
20–24.........	9 40	10 90	7 83	116 0	83 2	19 64	20 92	18 20	106 5	92 7
25–29.........	10 29	11 35	9 19	110 3	89 3	20 81	21 43	20 18	103 0	97 0
30–34.........	11 50	12 41	10 56	107 9	91 8	22 37	23 10	21 62	103 3	96 7
35–39.........	14 19	15 40	12 94	108 6	91 2	25 88	27 39	24 35	105 8	94 1
40–44.........	19 33	21 53	17 07	111 4	88 3	31 62	34 64	28 54	109 6	90 3
45–49.........	28 44	32 39	24 36	113 9	85 6	41 27	46 58	35 91	112 9	87 0
50–54.........	42 67	49 80	35 44	116 7	83 0	57 05	64 62	48 99	113 3	85 9
55–59.........	63 37	74 84	51 96	118 1	82 0	80 38	91 95	69 15	114 4	86 0
60–64.........	96 48	112 79	81 31	116 9	84 3	117 63	132 95	103 18	113 0	87 7
65–69.........	148 56	168 60	130 14	113 5	87 6	175 71	194 52	158 76	110 7	90 4
70–74.........	230 65	252 90	211 39	109 6	91 7	264 56	286 35	245 85	108 2	92 9
75–79.........	350 18	373 92	330 60	106 8	94 4	389 25	413 33	369 75	106 2	95 0
80–84.........	505 60	531 94	485 95	105 2	96 1	543 90	567 64	525 18	104 4	96 6
$^{o}e_{o}$(yrs.).......	67 63	65 63	69 37	—	—	59 50	57 91	61 16	—	—

TABLE 7. MALE LIFE-TABLE MORTALITY RATES FOR THE

Model No.	$^{o}e_{o}$	$1/^{o}e_{o}$	Mortality rate for specified age group: 0	1–4	0–4	5–9	10–14	15–19	20–24	25–29
1	69 25	14 40	22 50	4 24	26 57	3 06	2 60	4 53	5 78	6 27
2	68 48	14 60	28 12	6 23	34 12	3 54	2 93	5 05	6 56	7 00
3	67 66	14 78	33 75	8 29	41 71	4 07	3 31	5 65	7 45	7 84
4	66 88	14 95	39 37	10 42	49 35	4 61	3 67	6 21	8 28	8 63
5	66 04	15 14	45 00	12 62	57 04	5 21	4 09	6 88	9 27	9 57
6	65 22	15 33	50 62	14 87	64 77	5 81	4 50	7 51	10 20	10 47
7	64 33	15 54	56 25	17 21	72 55	6 46	4 96	8 22	11 25	11 47
8	63 59	15 73	61 57	19 41	79 60	6 95	5 27	8 72	12 08	12 38
9	62 55	15 99	66 77	21 63	86 89	7 44	5 59	9 24	12 94	13 32
10	61 67	16 22	72 15	23 88	94 02	7 93	5 92	9 76	13 81	14 30
11	60 77	16 46	77 70	26 42	101 82	8 65	6 41	10 53	14 94	15 43
12	59 91	16 69	83 25	29 06	109 65	9 41	6 93	11 32	16 11	16 61
13	58 90	16 98	88 23	31 46	116 79	10 07	7 32	11 97	17 17	17 62
14	58 06	17 22	92 99	33 89	123 91	10 74	7 72	12 63	18 24	18 64
15	57 11	17 51	98 10	36 34	130 99	11 41	8 12	13 30	19 32	19 67
16	56 20	17 79	103 55	39 20	138 86	12 27	8 69	14 19	20 62	20 93
17	55 20	18 12	108 45	42 00	146 08	13 13	9 20	15 00	21 75	22 24
18	53 36	18 74	119 62	48 04	161 22	14 92	10 33	16 72	24 24	24 90
19	51 47	19 43	129 60	54 19	176 41	16 78	11 50	18 51	26 79	27 65
20	49 58	20 21	139 93	60 91	191 58	18 89	12 87	20 46	29 56	30 62
21	47 68	20 97	150 08	67 89	206 79	21 08	14 28	22 46	32 37	33 57
22	45 82	21 82	160 06	75 05	221 68	23 36	15 76	24 35	35 00	36 46
23	43 93	22 76	169 95	82 73	236 93	25 87	17 36	26 46	37 88	39 68
24	42 10	23 75	180 20	90 63	252 58	28 46	19 02	28 62	40 81	43 06
25	40 30	24 81	190 17	99 14	268 30	31 31	20 83	30 97	43 77	46 47
26	38 57	25 93	199 89	107 93	284 09	34 25	22 69	33 36	46 83	50 02
27	36 76	27 20	210 00	116 99	299 94	37 29	24 61	35 78	50 00	53 73
28	35 14	28 46	220 50	126 79	316 88	40 62	26 70	38 39	53 02	57 31
29	33 50	29 85	231 00	137 08	334 01	44 13	28 89	41 08	56 37	61 32
30	31 90	31 35	241 50	147 84	351 30	47 82	31 17	43 81	59 71	65 40
31	30 35	32 95	251 17	158 99	368 19	51 66	33 53	46 42	62 58	69 24
32	28 86	34 65	260 52	170 49	385 16	55 61	35 93	49 02	65 39	73 07
33	27 40	36 50	270 40	182 32	402 22	59 67	38 39	51 62	68 15	76 89
34	26 02	38 43	280 80	195 17	420 12	64 13	41 07	54 42	71 30	80 95
35	24 68	40 52	291 20	208 58	438 18	68 71	43 80	57 24	74 41	85 02
36	23 39	42 75	301 60	222 64	456 41	73 54	46 67	60 03	77 43	89 03
37	22 15	45 15	312 00	237 31	474 82	78 59	49 63	62 80	80 37	92 94
38	20 95	47 73	322 40	252 68	493 40	83 87	52 70	65 55	83 23	96 80
39	19 82	50 45	332 80	268 72	512 15	89 31	55 82	68 20	85 94	100 50
40	18 74	53 36	343 20	285 51	531 07	94 99	59 05	70 82	88 54	104 08

AGE, OBSERVED IN FOUR GROUPS OF LIFE-TABLES, AT VARIOUS LEVELS OF LIFE EXPECTANCY AT BIRTH
in each group, see text)

Age group	Group C: Average rate: Both sexes	Group C: Average rate: Male	Group C: Average rate: Female	Group C: Ratio to rate for both sexes (= 100): Male	Group C: Ratio to rate for both sexes (= 100): Female	Group D: Average rate: Both sexes	Group D: Average rate: Male	Group D: Average rate: Female	Group D: Ratio to rate for both sexes (= 100): Male	Group D: Ratio to rate for both sexes (= 100): Female
0	125 16	134 58	115 22	107 5	92 1	199 34	209 57	188 47	105 1	94 5
1–4	68 78	69 55	67 99	101 1	98 8	149 55	149 15	149 96	99 7	100 3
5–9	19 29	19 29	19 29	100 0	100 0	44 70	44 12	45 33	98 7	101 4
10–14.........	13 48	12 77	14 22	94 8	105 5	28 18	26 73	30 11	94 7	106 9
15–19.........	21 81	21 65	21 97	99 3	100 7	38 79	36 86	40 76	95 0	105 1
20–24.........	29 85	31 15	28 51	104 4	95 5	51 11	49 29	52 97	96 4	103 7
25–29.........	30 76	31 09	30 44	101 1	99 0	54 60	52 07	52 97	95 4	105 2
30–34.........	33 05	33 71	32 40	102 0	98 1	59 78	57 50	62 28	96 2	104 2
35–39.........	37 41	39 39	35 43	105 3	94 7	67 11	66 68	67 68	99 4	100 9
40–44.........	44 27	49 00	39 48	110 7	89 2	77 07	80 35	73 82	104 3	95 8
45–49.........	54 42	62 39	46 38	114 7	85 2	90 54	98 46	82 42	108 7	91 1
50–54.........	72 32	84 09	80 00	116 3	83 9	111 70	122 44	100 86	109 6	90 3
55–59.........	98 99	115 14	83 46	116 3	84 3	143 90	157 29	130 84	109 3	90 9
60–64.........	142 88	163 28	124 03	114 3	86 8	194 77	207 93	182 62	106 8	93 8
65–69.........	205 70	229 37	184 90	111 5	90 0	266 84	281 06	254 55	105 3	95 4
70–74.........	304 47	330 68	283 16	108 6	93 0	373 41	385 69	363 71	103 3	97 4
75–79.........	433 87	460 70	413 93	106 2	95 4	492 18	506 68	482 63	102 9	98 1
80–84.........	584 98	608 24	569 59	104 0	97 4	633 05	645 76	625 92	102 0	98 9
$^\circ e_0$ (yrs.)......	50 30	48 70	51 59	—	—	36 77	36 15	37 39	—	—

SPECIFIED AGE INTERVALS IN FORTY THEORETICAL MODELS

Mortality rate for specified age group: 30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84
7 56	9 99	14 97	24 32	38 77	60 12	94 61	146 53	225 42	337 83	482 63
8 25	10 64	15 69	25 22	39 88	61 45	96 42	148 81	228 24	341 11	486 10
9 06	11 51	16 62	26 24	41 12	63 08	98 42	151 34	231 54	344 91	490 25
9 79	12 22	17 39	27 13	42 23	64 48	100 18	153 54	234 12	347 91	493 47
10 67	13 15	18 34	28 23	43 61	66 18	102 35	156 28	237 48	351 80	497 60
11 51	13 96	19 30	29 31	44 84	67 79	104 39	158 82	240 65	355 50	501 51
12 51	15 00	20 48	30 72	46 57	69 30	107 22	162 36	244 92	360 36	506 79
13 39	15 93	21 47	31 86	47 87	71 11	108 91	164 52	247 71	363 31	510 40
14 30	16 90	22 53	33 09	49 23	72 76	110 70	166 79	250 63	366 31	514 08
15 23	17 90	23 62	34 39	50 65	74 26	112 57	169 18	253 67	369 60	517 92
16 33	19 05	24 85	35 79	52 41	76 56	115 46	172 75	258 06	374 66	523 28
17 48	20 25	26 21	37 31	54 17	78 69	118 13	176 05	262 14	379 24	528 29
18 56	21 40	27 52	38 84	55 91	80 83	120 53	179 07	265 93	383 26	533 01
19 67	22 59	28 91	40 45	57 72	83 02	122 99	182 15	269 83	387 38	537 88
20 80	23 84	30 37	42 15	59 59	85 26	125 51	185 31	273 80	391 59	542 89
22 16	25 25	31 96	43 90	61 71	87 91	128 75	189 27	278 56	396 95	548 52
23 46	26 68	33 60	45 79	63 94	90 46	131 74	192 72	282 87	401 48	553 95
26 25	29 69	37 04	49 11	68 62	96 01	138 39	200 59	292 43	411 84	565 48
29 18	32 87	40 68	54 01	73 63	101 89	145 46	208 91	302 46	422 66	577 50
32 38	36 38	44 81	58 74	79 13	108 49	153 02	218 00	313 00	434 64	590 04
35 62	39 98	49 03	63 60	84 81	115 25	160 72	227 20	323 56	446 61	602 54
38 93	43 80	53 53	68 79	90 81	122 30	168 32	236 35	334 24	458 47	614 64
42 59	48 04	58 49	74 54	97 47	130 10	176 98	246 50	346 21	471 20	627 84
46 46	52 55	63 79	80 70	104 57	138 37	186 13	257 14	358 68	484 37	641 43
50 41	57 21	69 53	87 48	112 16	147 14	195 89	267 88	370 97	497 23	654 63
54 57	62 17	75 70	94 81	120 35	156 51	206 15	279 11	383 77	510 50	668 23
58 94	67 42	82 30	102 68	129 13	166 47	217 01	290 85	397 06	524 18	682 21
63 27	72 67	88 70	110 18	137 61	176 12	227 43	302 05	409 24	536 75	695 19
68 12	78 63	96 00	118 68	147 18	186 76	238 81	314 08	422 08	549 69	708 51
73 16	84 91	103 79	127 86	157 40	198 04	250 63	326 36	434 96	562 96	722 09
78 03	91 15	111 66	137 29	167 54	208 97	261 68	337 34	446 84	575 24	734 39
82 94	97 48	119 68	146 97	177 89	220 02	272 71	348 14	458 48	586 56	745 68
87 88	103 91	127 87	156 89	188 45	231 21	283 71	358 76	469 67	596 93	755 94
93 17	110 87	136 79	167 42	199 76	243 02	295 26	369 92	480 88	607 94	767 09
98 59	118 17	146 24	178 65	211 79	255 44	307 16	381 18	492 02	618 75	777 99
103 96	125 44	155 69	189 89	223 72	267 55	318 56	391 78	502 52	628 88	788 24
109 28	132 75	165 30	201 27	235 77	279 60	329 59	401 80	512 17	638 12	797 43
114 66	140 23	175 26	213 16	248 16	291 76	340 59	411 64	521 51	647 04	806 74
119 80	147 47	184 97	224 81	260 22	303 40	350 83	420 63	530 05	655 04	814 34
124 85	154 65	194 65	236 36	272 00	314 66	360 59	429 01	537 89	662 40	821 64

TABLE 8. FEMALE LIFE-TABLE MORTALITY RATES FOR THE

Model No.	°e₀	1/°e₀	Mortality rate for specified age group: 0	1–4	0–4	5–9	10–14	15–19	20–24	25–29
1	73 98	13 52	17 50	3 58	21 09	2 26	1 96	3 35	4 28	5 13
2	73 09	13 68	21 88	5 25	27 08	2 62	2 21	3 73	4 85	5 72
3	72 14	13 86	26 25	6 99	33 11	3 01	2 49	4 17	5 51	6 42
4	71 24	14 04	30 63	8 78	39 17	3 41	2 77	4 59	6 12	7 06
5	70 28	14 23	35 00	10 64	45 28	3 85	3 09	5 08	6 85	7 83
6	69 34	14 42	39 38	12 54	51 41	4 29	3 40	5 55	7 54	8 57
7	68 32	14 64	43 75	14 51	57 59	4 78	3 74	6 08	8 31	9 39
8	67 36	14 85	48 43	16 80	64 47	5 50	4 25	6 84	9 34	10 36
9	66 30	15 08	53 13	19 17	71 44	6 25	4 79	7 64	10 41	11 37
10	65 30	15 31	57 85	21 60	78 50	7 03	5 36	8 48	11 53	12 42
11	64 29	15 55	62 30	23 91	85 00	7 67	5 80	9 15	12 48	13 41
12	63 31	15 80	66 75	26 30	91 55	8 35	6 27	9 84	13 45	14 43
13	62 24	16 07	71 77	29 10	98 91	9 19	6 92	10 75	14 65	15 75
14	61 22	16 33	76 82	31 98	106 35	10 06	7 59	11 69	15 88	17 12
15	60 17	16 62	81 90	34 92	113 85	10 97	8 28	12 66	17 14	18 53
16	59 13	16 91	86 45	37 66	120 70	11 79	8 87	13 49	18 28	19 71
17	58 04	17 23	91 37	40 75	128 39	12 76	9 60	14 53	19 73	21 26
18	55 93	17 88	100 87	46 25	143 11	14 64	11 00	16 48	22 43	24 12
19	53 83	18 58	110 40	53 11	158 01	16 62	12 46	18 51	25 23	27 11
20	51 76	19 32	120 07	59 94	173 48	18 85	14 05	20 77	28 24	30 47
21	49 67	20 13	129 77	67 02	189 13	21 18	15 70	23 10	31 34	33 85
22	47 63	21 00	140 03	74 61	205 79	23 70	17 48	25 72	34 80	37 45
23	45 57	21 94	149 90	82 49	221 74	26 31	19 32	28 32	38 17	41 36
24	43 57	22 95	159 80	90 63	237 86	29 04	21 24	31 00	41 63	45 72
25	41 63	24 02	169 83	99 50	254 47	32 06	23 34	33 79	45 30	50 06
26	39 74	25 16	179 90	108 68	271 24	35 19	25 51	36 64	49 12	54 62
27	37 81	26 45	190 00	118 17	288 18	38 43	27 75	39 54	53 10	59 39
28	36 06	27 73	199 50	128 07	304 46	41 86	30 10	42 43	56 30	63 35
29	34 31	29 15	209 00	138 46	320 91	45 47	32 57	45 40	59 85	67 78
30	32 61	30 67	218 50	149 32	337 52	49 28	35 15	48 43	63 41	72 28
31	30 97	32 29	228 83	161 17	354 99	53 43	37 94	51 67	67 39	77 08
32	29 39	34 03	239 20	173 40	372 59	57 71	40 80	54 93	71 36	81 89
33	27 88	35 87	249 60	186 00	390 33	62 11	43 73	58 22	75 33	86 71
34	26 43	37 84	259 20	199 11	407 70	66 75	46 78	61 36	78 80	91 29
35	25 02	39 97	268 80	212 80	425 22	71 51	49 90	64 54	82 25	95 88
36	23 68	42 23	278 40	227 14	442 92	76 54	53 15	67 69	85 59	100 39
37	22 39	44 66	288 00	242 11	460 78	81 79	56 53	70 82	88 83	104 80
38	21 15	47 28	297 60	257 78	478 82	87 29	60 02	73 91	91 99	109 16
39	19 97	50 08	307 20	274 15	497 01	92 95	63 58	76 91	94 98	113 32
40	18 84	53 08	316 80	291 27	515 37	98 87	67 27	79 86	97 86	117 36

shown in the series of models given for each sex in tables 7 and 8. These two tables together with the one (No. 5) giving model life-tables for both sexes combined may now be compared with the original body of life-tables from which they were derived in order to test their efficiency in representing *average* variations of mortality by age-groups at the various levels of general mortality.

V. Test of Reliability of the Model Life-Tables

The three series, each containing forty model life-tables for both sexes, males, and females, are intended to approximate averages of life-table mortality rates by sex and age at the various levels of general mortality. They are not intended to represent exactly the life-table of any population for the simple reason that individual peculiarities in mortality, which occur in most if not all of the countries of the world, are eradicated from these series by the smoothing effect of the curve fittings. The only information conveyed by these models is the general form of the mortality curve by age and the most probable expectation of life at birth which corresponds to a given level of infant mortality, or better, early childhood mortality.

In this respect, these series of model life-tables appear satisfactory. A good test of their efficiency is offered by figures 9 and 10. Figure 9 shows the mortality rates of ten life-tables selected at about equal intervals from the series of models for both sexes, while figure 10 illustrates the average mortality rates by age, again for both sexes, obtained in the four groups of actual life-tables presented in table 6. When these diagrams are superimposed, a striking similarity in the general course of the curves becomes evident. This check provides assurance that any misjudgements in fitting the seventeen curves of figures 1 to 7 to the actual observations are not cumulative; for, if they were all in the same direction, they would have produced an increasing divergence of the model from the observed mortality curves.

Mortality rate for specified age group										
30–34	*35–39*	*40–44*	*45–49*	*50–54*	*55–59*	*60–64*	*65–69*	*70–74*	*75–79*	*80–84*
6 50	8 43	11 88	18 34	27 79	41 34	67 11	111 67	186 30	293 63	436 67
7 09	8 98	12 45	19 02	28 58	42 27	68 40	113 41	188 64	296 47	439 80
7 80	9 71	13 20	19 80	29 48	43 38	69 82	115 34	191 36	299 78	443 55
8 43	10 30	13 81	20 47	30 27	44 34	71 06	117 02	193 50	302 39	446 47
9 19	11 09	14 56	21 29	31 25	45 52	72 61	119 10	196 28	305 77	450 21
9 91	11 78	15 32	22 11	32 14	46 63	74 05	121 04	198 89	308 98	453 75
10 77	12 65	16 26	23 18	33 37	48 15	76 06	123 74	202 42	313 21	458 53
11 73	13 58	17 23	24 21	34 67	49 94	78 35	126 69	206 13	317 92	463 36
12 74	14 55	18 25	25 31	36 03	51 82	80 74	129 75	209 97	322 77	468 29
13 78	15 56	19 32	26 47	37 43	53 78	83 21	132 92	213 93	327 76	473 32
14 77	16 55	20 33	27 55	38 73	55 44	85 34	135 73	217 62	332 24	478 22
15 82	17 60	21 45	28 73	40 04	56 99	87 31	138 33	221 06	336 30	482 79
17 09	18 86	22 68	30 12	41 77	59 16	90 34	142 16	225 80	342 18	488 75
18 41	20 18	23 98	31 58	43 56	61 38	93 44	146 08	230 65	348 18	494 87
19 78	21 56	25 35	33 11	45 41	63 66	96 63	150 09	235 60	354 29	501 13
21 08	22 85	26 68	34 50	47 03	65 65	99 13	153 30	239 70	359 15	506 32
22 57	24 41	28 26	36 26	49 09	68 28	102 52	157 75	245 10	365 75	513 08
25 51	27 44	31 36	39 66	53 04	73 21	108 80	165 86	255 08	377 70	525 52
28 60	30 65	34 66	43 31	57 27	78 45	115 46	174 41	265 54	390 14	538 44
32 10	34 30	38 46	47 44	62 00	84 14	122 76	183 29	276 71	402 58	552 02
35 66	38 07	42 36	51 71	67 22	89 98	130 08	192 30	287 96	415 06	565 59
39 76	42 39	46 87	56 69	72 94	96 79	139 19	202 76	300 43	428 93	580 82
43 93	46 81	51 55	61 85	78 79	103 66	147 84	212 88	312 23	442 32	595 27
48 36	51 51	56 57	67 38	84 69	110 95	156 97	223 50	324 52	456 15	610 15
53 23	56 90	62 11	73 30	91 50	118 83	166 34	234 46	336 80	469 87	624 83
58 40	62 66	68 07	79 71	98 85	127 25	176 26	245 94	349 58	484 03	639 93
63 86	68 78	74 46	86 60	106 73	136 21	186 73	257 93	362 86	498 62	655 45
68 55	74 13	80 26	92 92	113 73	144 10	195 69	267 85	374 00	510 57	667 93
73 80	80 21	86 86	100 08	121 64	152 80	205 49	278 52	385 72	522 87	680 73
79 26	86 63	93 91	107 82	130 08	162 04	215 65	289 42	397 50	535 50	693 77
85 14	93 65	101 75	116 20	139 47	172 19	226 75	301 23	409 76	549 05	707 99
91 10	100 83	109 79	124 81	149 08	182 52	237 89	312 96	421 78	561 73	721 27
97 13	108 15	118 03	133 65	158 93	193 03	249 07	324 60	433 55	573 53	733 60
102 97	115 39	126 27	142 62	168 46	202 88	259 22	334 69	443 88	584 10	744 41
108 97	122 99	135 00	152 19	178 61	213 26	269 66	344 88	454 18	594 49	754 99
114 90	130 56	143 71	161 75	188 66	223 37	279 68	354 46	463 86	604 22	764 94
120 78	138 17	152 58	171 45	198 83	233 42	289 35	363 54	472 77	613 10	773 87
126 73	145 95	161 78	181 58	209 28	243 58	299 01	372 44	481 39	621 66	782 57
132 40	153 49	170 75	191 51	219 44	253 30	308 01	380 57	489 27	629 36	790 28
137 99	160 97	179 67	201 34	229 38	262 70	316 57	388 15	496 51	636 42	797 36

Similar as may be the two sets of mortality curves shown in figures 9 and 10, they are not identical in every respect. For example, the curve of model life-table No. 5, which in its initial course is very close to the curve of group A, appears to under-estimate slightly the mortality experience of later ages. The reverse situation is observed in the model life-tables Nos. 17 and 22, which fall a little below the levels indicated by group life-tables B and C at the young ages, but correspond rather closely at the older ages. Finally, the course of model life-table No. 27 duplicates almost exactly the mortality curve of Group D.

Another check of the accuracy of the model life-tables, in estimating average mortality levels, is offered in the comparison shown in figure 11. In this spot diagram, actual observations are plotted as dots, the actual trend of the relation between the life-table functions ${}_5q_0$ and ${}^{\circ}e_0$, as shown in the average of groups, is represented by a broken line, and the theoretical trend of the same relation, as independently computed from the forty model life-tables (both sexes), is shown by a solid line. The two trends seem to agree fairly well for levels of expectation of life at birth below 55 years but diverge at higher values for expectation of life. A closer look at the data reveals a rather atypical disruption of continuity in the observations at about this point, the course of early childhood mortality rates (${}_5q_0$) falling below the expected values for the model life-tables.

To what extent this discontinuity is due to shortcomings of the method used[8] or is simply the result of inadequate representation of observations, is hard to say. In any case the rather simple formulae and the broad generalizations which were used for the preparation of these model life-tables permit only the description of an average and more or less general pattern of observations over the whole range of variations represented. Finer variations in the pattern, as well as peculiarities that may occur in individual populations, are necessarily glossed over.

[8] The fitting of a third degree parabola to the observations relating the ${}_5q_0$ and ${}^{\circ}e_0$ functions produces a slightly smoother result.

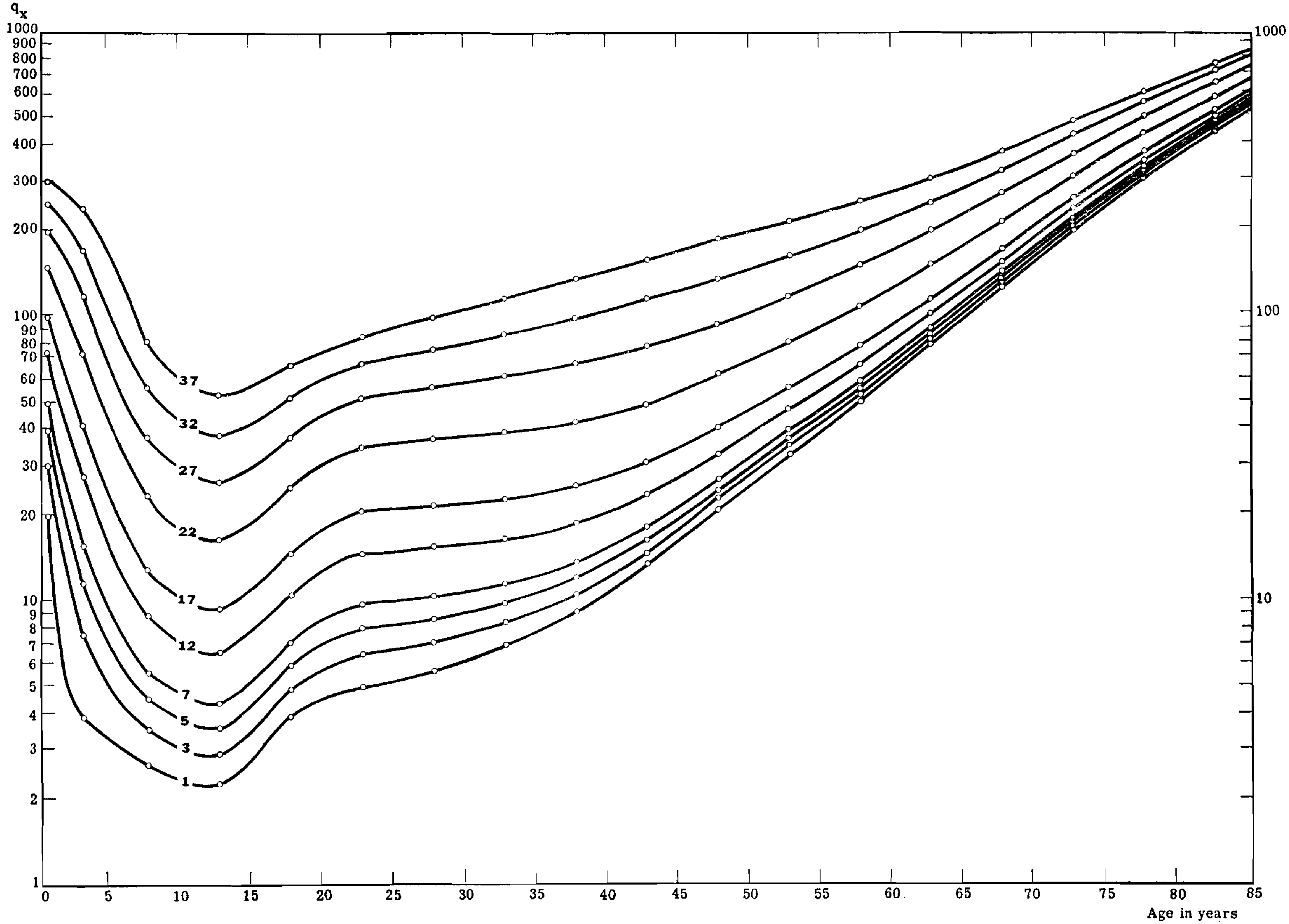

FIGURE 9. MODEL LIFE-TABLES. MORTALITY RATES BY AGE-GROUPS AT SELECTED LEVELS OF GENERAL MORTALITY

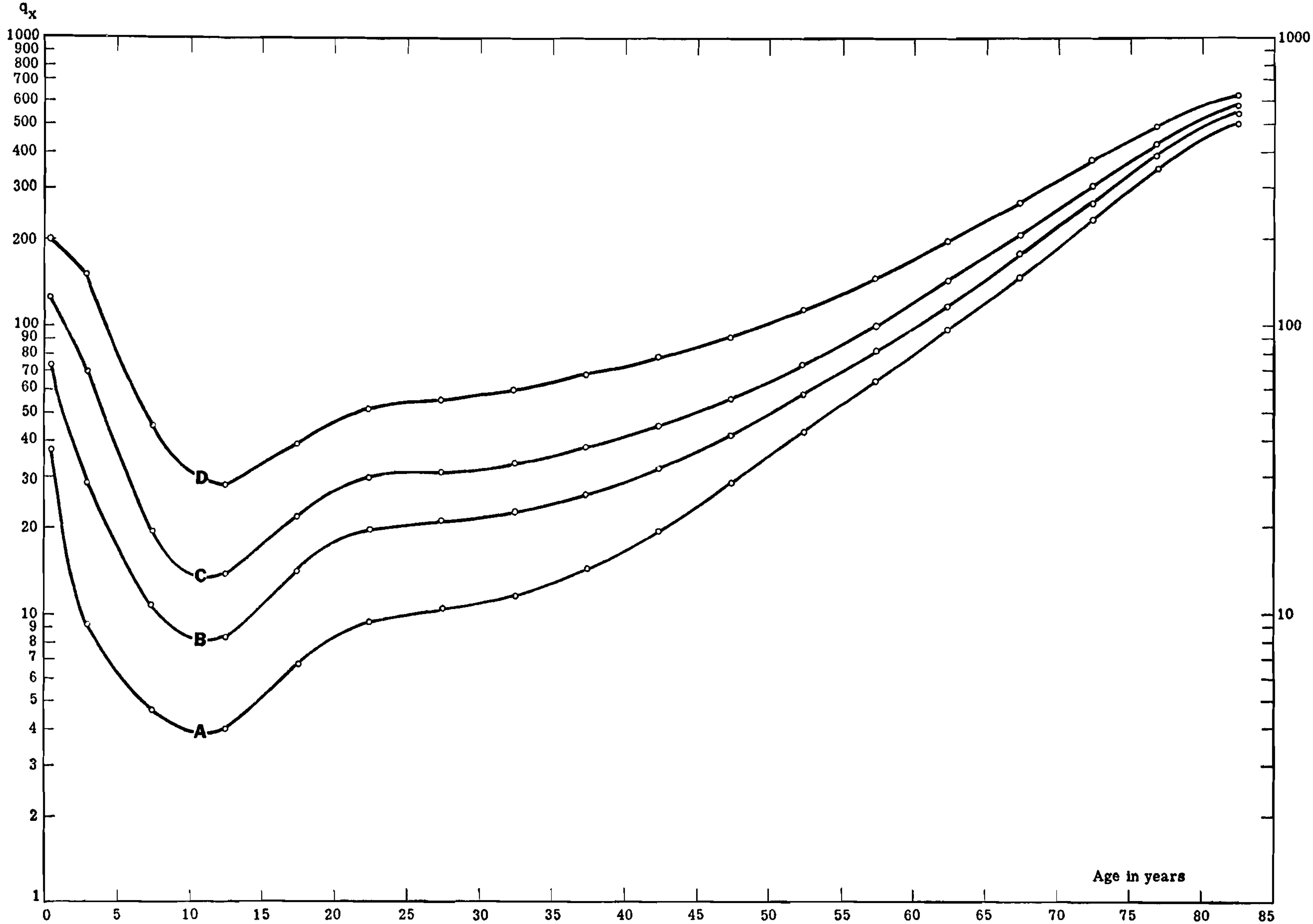

FIGURE 10. AVERAGE LIFE-TABLE MORTALITY RATES BY AGE IN GROUPS OF ORIGINAL OBSERVATIONS

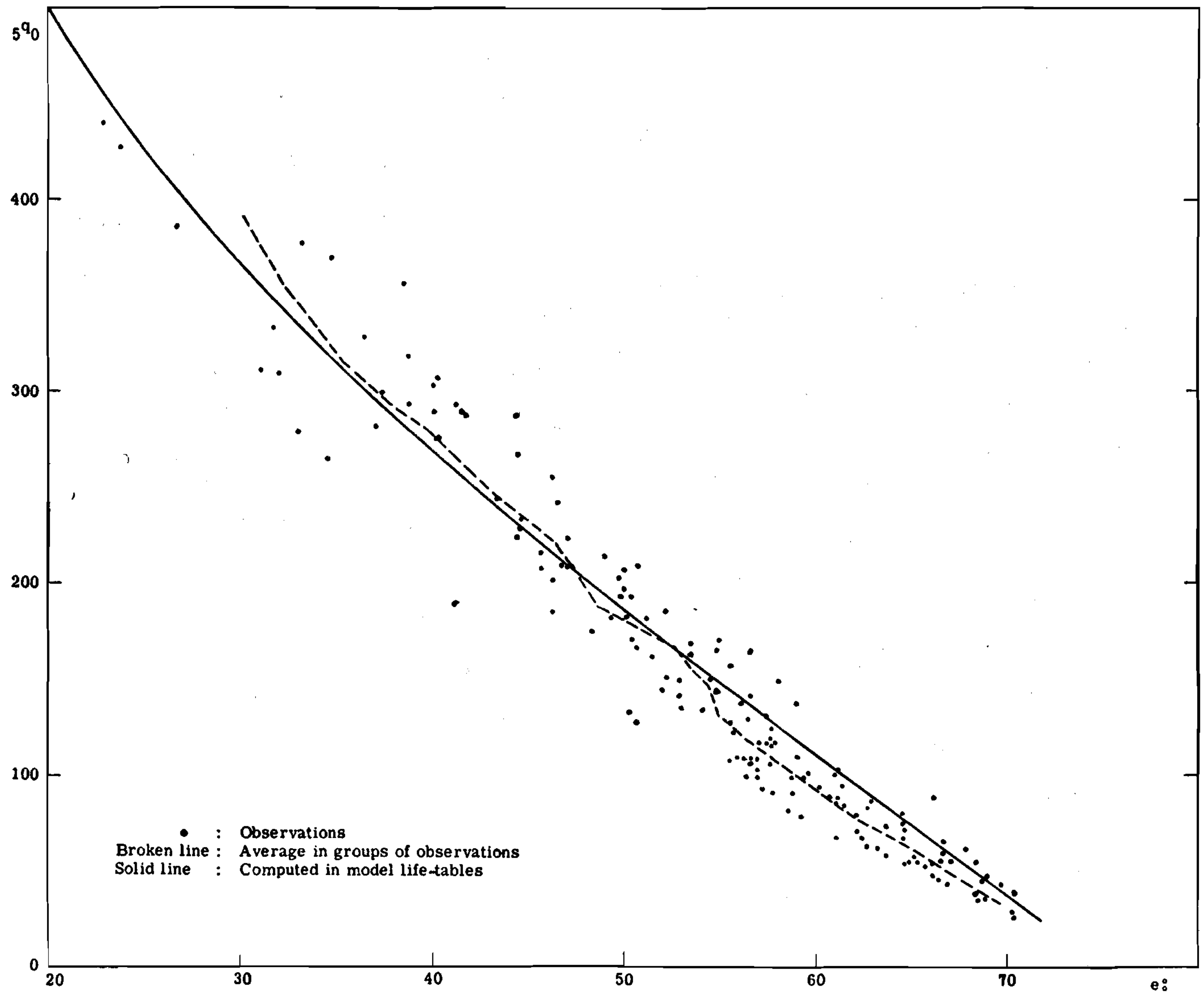

FIGURE 11. RELATION BETWEEN LIFE-TABLE MORTALITY RATE OF AGE-GROUP UNDER FIVE (q_{0-4}) AND COMPLETE EXPECTATION OF LIFE AT BIRTH

VI. Use of the Model Life-Tables

The main object of this study is to provide a tool with the aid of which the mortality level and its probable age variation in a population with scanty or unreliable mortality data can be estimated approximately. Such estimation can be based either on existing fragmentary mortality data, or data that can be collected in a special survey. The mortality of the first year of life, or better, that of the first quinquennial age group, may adequately serve as the starting point for this work because of its sensitivity in reflecting changes in general mortality levels.

In most countries of the world data on births and deaths are now compiled and annual series of crude birth and death rates and also infant mortality rates are published. With a critical analysis it is possible to scrutinize these data as to their degree of completeness and accuracy and make appropriate corrections to strengthen their validity. Where the mortality rate during early childhood (up to the fifth year of age) is also available, it can advantageously be included in the information which then can be used to estimate approximately the life-table functions of the population by means of the model life-tables presented here.

For a first approximation, the model life-table with the nearest infant or early childhood mortality rate may be taken as an indication of the mortality rates by sex and age and also of the life expectancy pertaining to the population in question. Better results may be obtained by interpolating the values between two adjacent model life-tables or even by computing new values on the basis of the equations given in table 4, starting with the observed data on infant or early childhood mortality. Though the findings are not expected or intended to be exact, they will normally approximate, in the sense of an over-all pattern, the mortality conditions of the particular population. This approximation might appear rather crude compared to a conventional life-table, based on correct population and mortality data for the particular country, but as long as such correct data are lacking, approximations of the nature suggested here can be used advantageously. With proper use of these sets of model life-tables, mortality conditions, as they are reflected by life-table functions, may be estimated for most if not all of the major populations of the world today.

A secondary but also useful application of the model life-tables consists in the comparative study of the validity of existing life-tables. Among the many dozens of life-table mortality rates given in the appendix, there are examples in which the mortality rates depart sharply from the expected levels and the general shape of the age-mortality curve is conspicuously distorted. In some cases the mortality of the very young ages is in complete disaccordance with the mortality given for later ages; in others the sequence of the age-specific mortality rates is erratic and the minimum rate is found not at the usual age, around the twelfth year, but in another age group.

Although there is some variability in life-tables, due to peculiar conditions affecting various populations, it may very well be surmised that at least the major discrepancies shown by the four life-tables taken as examples in figure 12 are spurious. In fact, the small populations on which two of these life-tables are based and the known inadequacy of vital registration in the countries of the other two examples allow considerable doubt as to whether these life-tables reflect faithfully the true mortality risks by age to which the respective populations were exposed.

The series of model life-tables can also be utilized to make population projections, provided that, for the country and period in question, the appropriate life-tables can be secured, either by direct observation or by interpolation among the corresponding models. The life-tables quinquennial mortality rates can easily be transformed into survival rates (${}_5P_x$) with the aid of which the census population in each five-year age group may be projected to the next age group five years later. There are, however, two main problems to be solved before the projection is attempted. The first consists in predicting the fertility rates for the period to be covered. The second difficulty springs from the fact that successive models, referring to successive levels of declining mortality (reading the tables from the bottom up), do not necessarily correspond to equal time intervals. A country with mortality corresponding to, say model No. 20 may need five years to bring its mortality into conformity with model No. 19, while some other country, with higher mortality at present, may achieve an equal improvement in a much shorter time.

It is difficult to define an exact scale of mortality declines per unit of time which would fit past trends and future expectations. Past experience has been far from uniform, the declines in mortality being different in various countries depending on the rate at which measures of public health and social development have been introduced. The future, on the other hand, is more or less unpredictable. Nevertheless, the existing body of knowledge, when submitted to a detailed and critical analysis, may offer valuable hints with respect to probable future developments.

The problem of making population projections is discussed in other reports[9] and very little needs to be said here. During the period of about fifty years (1900-1950) which is covered by this report, there have been substantial declines in mortality, as may be seen in all countries for which the appendix contains two or more life-tables. In these countries the annual gains

[9] See, for example, United Nations, *The population of Central America (including Mexico), 1950–1980.* Document ST/SOA/Series A. Population Studies No. 16; *The population of South America 1950–1980.* Document ST/SOA/Series A. Population Studies No. 21.

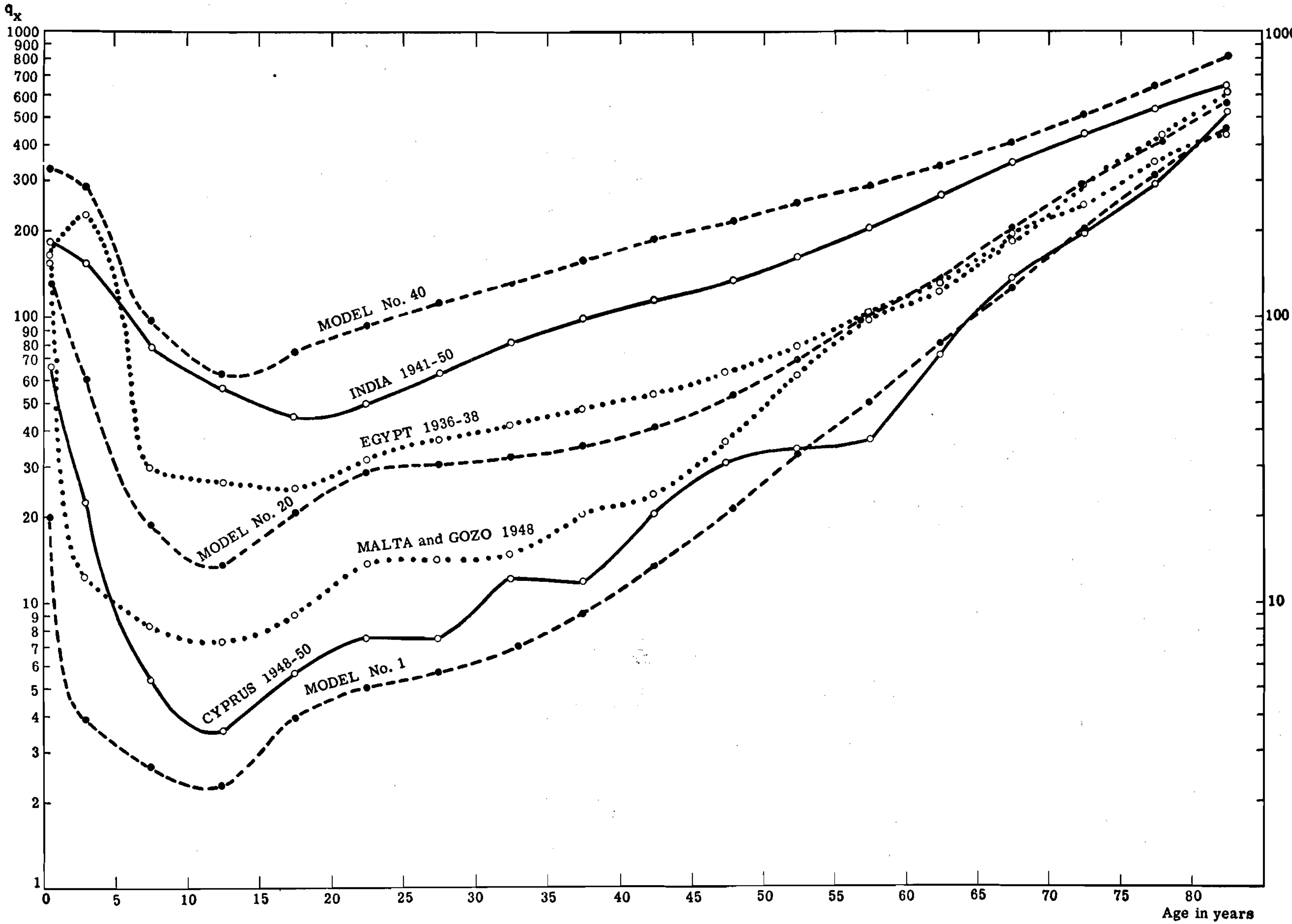

FIGURE 12. COMPARISON OF LIFE-TABLE MORTALITY RATES IN SELECTED COUNTRIES AND CERTAIN MODEL LIFE-TABLES

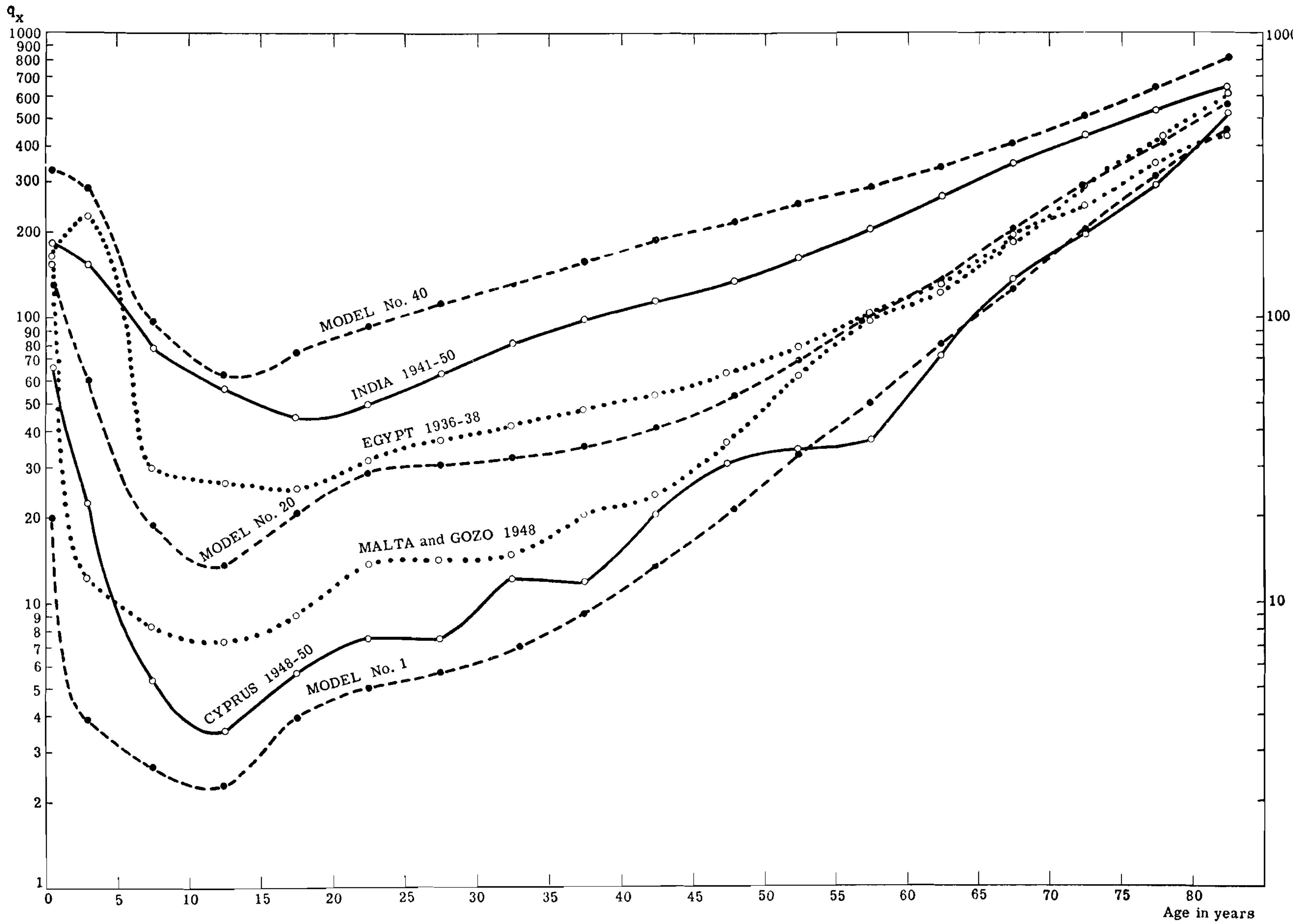

FIGURE 12. COMPARISON OF LIFE-TABLE MORTALITY RATES IN SELECTED COUNTRIES AND CERTAIN MODEL LIFE-TABLES

in years of expectation of life at birth for both sexes have been as follows:

	Annual gain in $^{\circ}e_0$ (years)		
	Average	*Minimum*	*Maximum*
Twenty years around:			
1910	0 32	nil	0 59
1920	0 38	nil	0 66
1930	0 37	0 14	0 66
1940	0 37	0 13	0 56

Two countries, namely, Ceylon and Japan, were left out of this comparison because of their unusually large gains in life expectancy immediately after the years of World War II. The contrast in the trend of the expectation of life at birth between countries with initially low and high mortality is better illustrated in figure 13.

In the upper part of the diagram, the expectation of life at birth for fifteen countries with relatively low mortality levels (Australia, Belgium, Canada, Denmark, England-Wales, Finland, France, the Netherlands, New Zealand, Norway, Scotland, Sweden, Switzerland, Union of South Africa and the United States) was plotted separately for each sex, at the central year of the period to which the life-tables referred. A trend line was drawn among these observations by averaging the readings in the trend line of each individual country, at five-year intervals, with the following result:

	Average expectation of life at birth in fifteen countries of low mortality										
	1900	*1905*	*1910*	*1915*	*1920*	*1925*	*1930*	*1935*	*1940*	*1945*	*1950*
Male	49 6	51 0	52 5	54 0	55 6	57 2	58 9	60 6	62 4	64 2	66 0
Female	52 6	54 0	55 5	57 0	58 6	60 3	62 1	64 0	66 0	68 1	70 1
Difference	3 0	3 0	3 0	3 0	3 0	3 1	3 2	3 4	3 6	3 9	4 1

The familiar widening of the sex differentials in mortality is clearly evident in this presentation. The decennial increments in life expectancy, by sex, take the following approximate form:

Time period	*Decennial increase in $^{\circ}e_0$ (years)*	
	Male	*Female*
1900–1909	2 9	2 9
1910–1919	3 1	3 1
1920–1929	3 3	3 3
1930–1939	3 5	3 9
1940–1949	3 6	4 1

An acceleration of the improvement in mortality experience is evident in this rather crude comparison of unweighted averages, which are based on a small and unequally distributed sample of observations. At most this comparison suggests that gains in life expectancy among countries with relatively low mortality are proceeding rather smoothly and favour, for the time being, the female sex. However, the picture shown in the lower part of figure 13 is quite different. Here, the increase in life expectancy, which was proceeding at a very slow rate during most of the period under consideration, assumed spectacular proportions towards the end of the period, in two of the three countries shown in the figure. Naturally, two examples are not enough to support any kind of generalization. However, they should make it very clear that countries with presently moderate or high mortality levels may now achieve a transition to lower mortality in a much shorter time interval than would previously have been feasible.[10]

The difference in life expectancy between successive model life-tables presented in this report averages roughly one year for model Nos. 1 to 17 and about two years for Nos. 18 to 40. Past experience has shown that countries with relatively moderate or low mortality levels were adding on the average about one-third to one-half of one year to their expectation of life at birth per calendar year. With this basic information and the use of collateral data, this series of model life-tables may serve a good purpose in making population projections. However, the main function of these models is to define levels of average mortality rates by sex and age, for countries lacking complete or accurate mortality data.

[10] See also: George J. Stolnitz, "A century of international mortality trends: I", *Population Studies*, vol. IX, No. 1, July 1955, pp. 24–55.

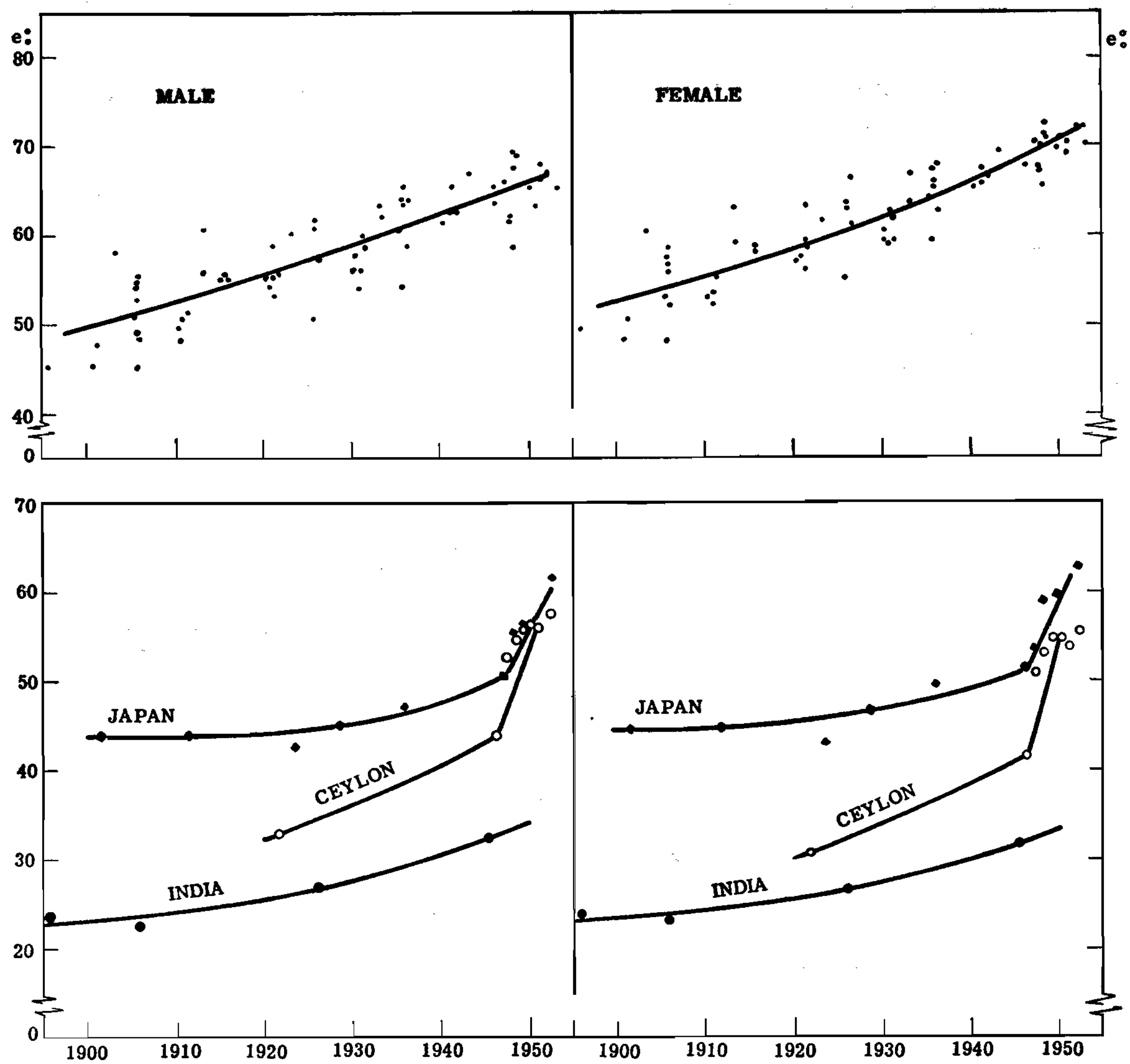

FIGURE 13. TRENDS IN THE EXPECTATION OF LIFE AT BIRTH IN CERTAIN COUNTRIES OF LOW MORTALITY (UPPER PART) AND IN THREE COUNTRIES OF MODERATE OR HIGH MORTALITY (LOWER PART)

Summary

This report presents a series of patterns of life-tables in transition from high to low levels of mortality. These are based upon 158 national life-tables covering the period from 1900 to 1950. The life-table functions ${}_5q_x$ (probability that a person just attaining age x will die within the ensuing five years) was computed for each life-table contained in the appendix, separately for each sex and also for both sexes. For each pair of adjacent ${}_5q_x$ values (both sexes) a second degree parabola was fitted to the observed values. The results were used to build up a series of forty model life-tables, covering, at about equal intervals, the entire range of mortality variations encountered in the world today.

The first series of models, constructed for both sexes combined, was used, with data on sex differentials in mortality at the various age groups, to prepare corresponding series of model life-tables for males and for females separately. Finally, each of the three series was supplemented by the corresponding values of expectation of life at birth, (^oe_o) computed separately for each model life-table.

The results are consistent with average levels and trends of human mortality as observed in the various countries of the world during the past fifty years. They may be used for various purposes, the most important of which are: (*a*) to estimate the most probable life expectancy and the life-table sex-and-age-specific mortality rates of populations for which only fragmentary mortality data exist, (*b*) to test the accuracy of existing sex-and-age-specific mortality rates, and (*c*) to give a systematic sequence of mortality changes for making population projections.

APPENDIX

Life-Table Mortality Rates by Sex and Age Groups

Number of deaths during specified age interval per 1000 persons alive at the beginning of each age interval. Expectation of life at birth and (its reciprocal) total life-table mortality rate, for all ages.

Source: U.N. Demographic Yearbooks 1953 and 1954.

Note: Number of deaths and death rates reconstructed from the l_x values; those for both sexes reconstructed on the basis of the corresponding sex ratio at birth. Expectation of life and total death rate for both sexes is the average of the two sexes.

			Expectation of life at birth		*Mortality rates by age groups*																		
Country	*Years*	*Sex*	$\mathring{e}_0$	$1/\mathring{e}_0$	*0-1*	*1-4*	*0-4*	*5-9*	*10-14*	*15-19*	*20-24*	*25-29*	*30-34*	*35-39*	*40-44*	*45-49*	*50-54*	*55-5*	*60-64*	*65-69*	*70-74*	*75-79*	*80-84*
Africa																							
Egypt	1936–1938	BS	38 56	25 93	166 51	227 21	355 89	29 51	26 88	25 12	31 50	36 84	41 79	47 13	53 22	63 76	78 35	102 44	130 55	186 95	290 63	434 85	617 09
		M	35 65	28 05	174 71	222 22	358 11	38 73	40 63	29 65	40 77	45 68	49 45	54 80	63 18	78 47	97 95	129 65	168 24	234 52	348 46	497 33	674 25
		F	41 48	24 11	157 64	232 49	353 48	19 60	12 38	20 50	22 10	28 05	34 32	39 75	43 80	50 10	60 73	78 95	99 82	151 10	251 33	397 90	588 94
Union of South Africa (Europeans)	1920–1922	BS	57 39	17 42	81 06	39 12	117 01	11 13	9 86	13 86	19 68	22 36	26 66	31 74	39 24	49 91	62 78	86 92	123 35	180 79	263 31	374 23	522 92
		M	55 61	17 98	87 84	39 24	123 63	11 95	10 44	14 83	21 03	22 80	27 23	35 30	45 26	59 06	72 97	100 45	139 96	197 06	288 84	392 09	530 47
		F	59 18	16 90	73 88	39 01	109 93	10 28	9 26	12 86	18 28	21 91	26 06	28 04	33 08	40 67	52 66	73 75	107 68	166 01	240 97	359 60	517 11
	1925–1927	BS	59 63	16 77	68 75	33 59	100 03	10 38	8 51	11 77	16 35	18 52	22 52	28 79	33 83	43 51	58 99	83 39	117 56	173 82	256 65	376 70	511 49
		M	57 78	17 31	74 44	33 86	105 78	11 45	9 04	12 65	18 39	19 45	23 75	32 59	39 20	52 02	68 34	96 63	134 53	188 36	277 44	400 77	536 58
		F	61 48	16 26	62 76	33 30	93 97	9 26	7 95	10 86	14 24	17 56	21 25	24 88	28 39	34 95	49 74	70 55	101 60	160 63	238 42	356 68	492 05
	1935–1937	BS	61 00	16 39	60 11	26 81	85 31	9 52	7 36	10 36	15 53	16 05	18 40	24 19	31 38	45 34	64 82	85 86	121 58	177 53	255 90	374 38	520 55
		M	58 95	16 96	66 41	27 79	92 35	9 76	7 78	12 04	18 06	17 18	19 37	25 89	35 14	52 87	73 37	102 02	140 28	199 31	284 93	406 52	544 64
		F	63 06	15 86	53 48	25 80	77 90	9 27	6 93	8 63	12 91	14 89	17 40	22 45	27 56	37 76	51 24	70 20	104 05	157 95	231 10	348 82	503 11
	1945–1947	BS	66 04	15 14	37 18	11 84	48 58	5 84	4 36	6 54	8 96	10 16	12 27	16 72	24 38	37 54	56 14	79 88	113 95	162 34	235 32	339 20	475 50
		M	63 78	15 68	41 27	12 49	53 24	6 52	4 75	7 49	10 48	10 82	13 35	18 17	27 11	43 17	66 64	97 43	139 97	194 30	269 91	378 27	525 08
		F	68 31	14 64	32 91	11 18	43 72	5 14	3 94	5 55	7 18	9 47	11 15	15 23	21 59	31 83	45 58	62 67	89 34	133 81	206 60	309 33	441 36
Mauritius[a]	1942–1946	BS	33 04	30 27	183 99	115 38	278 14	31 04	24 99	54 94	85 40	94 66	99 91	108 11	129 71	156 23	192 09	247 05	320 32	402 32	500 64	538 38	635 60
		M	32 25	31 01	195 76	110 25	284 43	30 93	25 52	47 16	72 36	86 98	99 46	115 56	149 70	190 13	236 48	305 43	387 15	470 32	550 01	641 78	702 41
		F	33 83	29 56	171 97	120 45	271 71	31 16	24 45	62 74	98 67	102 70	100 39	100 17	108 74	122 30	151 09	198 55	272 20	361 10	475 75	493 61	615 50
America, North																							
Canada[b]	1930–1932	BS	61 05	16 38	78 35	23 58	100 08	9 90	7 85	12 10	16 31	17 91	19 05	22 58	26 97	34 68	48 89	71 08	103 95	157 19	238 59	362 05	507 53
		M	60 00	16 67	86 95	24 88	109 67	10 82	8 05	12 50	16 34	16 85	17 68	21 65	26 89	35 63	52 07	75 43	110 12	167 08	251 44	374 48	520 34
		F	62 10	16 10	69 31	22 23	90 00	8 95	7 63	11 70	16 27	19 00	20 44	23 55	27 06	33 70	45 61	66 64	97 68	147 30	226 04	350 27	495 86
	1940–1942	BS	64 62	15 47	56 09	15 26	70 49	7 15	5 62	8 53	11 41	12 44	13 75	17 46	22 78	31 62	46 32	68 70	101 82	155 30	234 39	355 83	501 14
		M	62 95	15 89	62 50	16 37	77 85	7 91	6 39	9 76	12 74	12 67	13 77	17 81	24 32	34 66	52 08	77 32	115 29	171 92	256 81	380 00	526 85
		F	66 29	15 08	49 31	14 10	62 71	6 16	4 82	7 26	10 03	12 21	13 72	17 10	21 19	28 50	40 42	60 00	88 45	139 27	213 57	334 58	479 95
	1947	BS	67 11	14 90	46 15	9 23	54 95	4 88	4 21	7 02	8 80	9 37	10 51	13 78	20 19	29 28	42 49	63 87	98 26	148 11	219 57	324 01	469 73
		M	65 18	15 34	51 98	10 15	61 60	5 78	4 93	7 84	9 71	10 35	11 28	15 04	21 66	34 01	49 71	75 64	114 78	169 99	242 51	347 85	490 88
		F	69 05	14 48	40 03	8 44	48 13	3 96	3 48	6 17	7 87	8 37	9 74	12 48	18 69	24 46	35 21	52 17	82 27	127 69	199 23	304 05	453 26
	1951	BS	68 58	14 58	38 87	7 27	45 86	3 96	3 48	5 42	7 04	7 36	8 70	11 62	17 47	27 20	41 67	63 71	95 88	140 33	212 98	325 22	470 95
		M	66 33	15 08	43 25	7 95	50 86	4 60	4 20	6 87	9 11	9 01	10 11	12 94	19 77	31 78	50 80	78 23	115 91	164 02	239 64	354 77	499 50
		F	70 83	14 12	34 23	6 56	40 57	3 31	2 74	3 89	4 90	5 65	7 26	10 26	15 10	22 52	32 44	49 26	76 59	118 49	189 65	300 98	449 29
El Salvador	1949–1951	BS	51 17	19 54	92 26	97 07	180 37	31 33	12 20	19 66	29 04	33 03	39 05	40 11	51 09	56 65	69 98	85 10	131 44	161 34	246 01	301 64	372 92
		M	49 94	20 02	97 62	98 96	186 92	30 66	12 57	21 19	33 57	36 51	39 56	43 07	53 49	62 18	77 13	92 18	130 09	162 66	257 87	314 00	387 92
		F	52 40	19 08	86 63	95 11	173 50	32 01	11 82	18 09	24 37	29 48	38 56	37 10	48 69	51 10	62 90	78 19	132 73	160 05	234 63	290 16	359 43
Guatemala (Department of Guatemala only)	1939–1941	BS	36 53	27 37	153 08	208 44	329 61	42 07	20 94	26 24	40 10	48 21	54 87	64 31	77 63	96 46	122 79	159 27	209 12	275 80	362 35	470 28	596 56
		M	35 97	27 80	159 54	207 29	333 76	42 82	19 77	26 28	38 92	47 52	55 51	66 64	81 90	102 98	131 69	170 45	221 81	288 52	372 61	473 97	595 79
		F	37 09	26 96	146 28	209 61	325 23	41 29	22 15	26 19	41 30	48 90	54 19	61 87	73 20	89 74	113 76	148 19	196 82	263 84	352 96	466 77	596 60
Mexico	1930	BS	33 25	30 07	210 62	210 98	377 16	54 67	27 79	35 31	48 69	53 74	60 41	67 72	76 22	89 37	110 13	133 45	189 76	240 85	362 61	428 03	593 78
		M	32 44	30 83	223 69	207 98	385 15	54 55	28 56	36 44	50 59	55 87	62 53	71 12	84 22	98 83	117 29	141 14	187 52	230 43	345 23	416 12	581 23
		F	34 07	29 35	196 75	214 06	368 69	54 79	26 98	34 12	46 75	51 57	58 26	64 27	68 15	80 01	103 18	126 11	191 85	250 70	379 50	440 25	607 22
	1940	BS	38 85	25 74	158 50	160 53	293 59	38 79	20 03	30 15	44 19	49 37	56 18	64 27	74 57	86 70	103 08	127 06	184 21	241 66	350 17	424 33	564 37
		M	37 92	26 37	166 39	158 83	298 79	38 93	20 80	30 46	45 47	53 20	61 78	71 39	83 63	98 02	115 59	141 81	190 17	250 26	349 70	419 30	542 78
		F	39 79	25 13	150 12	162 31	288 06	38 64	19 23	29 81	42 87	45 37	50 38	57 00	65 49	75 55	91 04	113 23	178 76	233 91	350 44	428 51	582 85
United States[c]	1900–1902	BS	49 29	20 29	124 48	65 65	181 96	21 42	13 60	21 83	31 99	36 45	41 16	46 15	52 42	62 82	79 67	109 67	146 73	208 28	291 14	410 76	552 59
		M	47 88	20 89	135 74	68 01	194 52	22 01	13 89	21 85	33 06	37 09	42 33	48 78	55 83	67 59	84 55	116 37	155 99	219 92	302 51	426 65	571 42
		F	50 70	19 72	112 67	63 27	168 81	20 80	13 31	21 82	31 01	35 80	39 94	43 37	48 75	57 80	74 60	102 90	137 75	197 13	280 15	394 69	533 15
	1909–1911	BS	51 55	19 40	114 62	52 53	161 13	17 03	11 55	17 57	25 33	29 05	35 00	42 19	49 70	61 61	78 53	111 49	155 34	217 11	303 52	417 80	562 35
		M	49 86	20 06	124 95	54 71	172 82	17 76	12 16	18 30	26 87	29 96	37 16	46 32	55 33	68 20	85 63	120 56	167 12	229 51	316 22	437 04	576 37
		F	53 24	18 78	103 77	50 28	148 83	16 32	10 93	16 85	23 79	28 11	32 73	37 81	43 66	54 60	70 91	102 10	143 62	205 05	291 50	400 42	550 38

[a] Excluding dependencies.
[b] Excluding Yukon, Northwest Territories and Newfoundland.

[c] 1900–1911 data relate to the death registration area of 1900; 1919–1921 data relate to the registration area of 1920. Figures for BS 1900–1902, 1909–1911 and 1950 based on official life-tables for both sexes.

Life-Table Mortality Rates by Sex and Age Groups *(Continued)*

Number of deaths during specified age interval per 1000 persons alive at the beginning of each age interval. Expectation of life at birth and (its reciprocal) total life-table mortality rate, for all ages.

Source: U.N. Demographic Yearbooks 1953 and 1954.

Note: Number of deaths and death rates reconstructed from the l_x values; those for both sexes reconstructed on the basis of the corresponding sex ratio at birth. Expectation of life and total death rate for both sexes is the average of the two sexes.

Country	Years	Sex	*Expectation of life at birth*		*Mortality rates by age groups*																		
			°e₀	1/°e₀	0-1	1-4	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
United States[a] *(continued)*	1919–1921	BS	56 45	17 71	74 59	33 77	105 84	14 08	11 16	19 55	26 92	30 22	32 99	36 48	40 91	49 93	65 34	91 56	129 18	187 04	276 33	384 46	525 77
		M	55 50	18 02	82 55	35 32	114 95	14 93	11 79	19 92	25 91	28 72	32 24	37 28	42 83	51 81	67 92	96 05	135 27	194 03	286 18	395 11	537 60
		F	57 40	17 42	66 17	32 16	96 20	13 21	10 53	19 16	27 97	31 76	33 76	35 65	38 90	48 00	62 68	86 96	123 02	180 04	266 65	374 27	514 86
	1929–1931	BS	59 35	16 85	59 33	21 75	79 79	9 42	7 87	14 33	20 48	22 58	25 59	30 69	39 56	51 47	69 36	96 12	134 90	194 59	278 33	394 79	538 80
		M	57 71	17 33	65 60	22 97	87 06	10 38	8 69	14 97	21 09	23 31	26 92	33 12	43 79	57 51	77 42	107 18	148 62	212 11	298 56	416 55	560 54
		F	60 99	16 40	52 72	20 47	72 11	8 42	7 00	13 66	19 84	21 85	24 24	28 20	35 23	45 36	61 28	85 23	121 48	178 31	260 27	376 36	521 64
	1939–1941	BS	63 74	15 69	47 10	11 24	57 81	5 41	5 08	8 59	11 95	13 81	16 75	21 76	29 80	42 46	60 80	86 97	123 05	175 91	258 05	374 50	513 44
		M	61 60	16 23	52 38	12 01	63 76	6 09	5 87	9 63	13 45	15 22	18 40	24 32	34 14	49 58	71 91	103 06	143 78	200 59	285 37	403 87	542 35
		F	65 89	15 18	41 52	10 43	51 52	4 70	4 26	7 52	10 41	12 35	15 05	19 13	25 38	35 27	49 74	71 34	103 57	153 75	234 88	351 23	492 37
	1950	BS	68 40	14 62	29 23	5 54	34 61	3 05	2 92	5 39	7 25	7 95	9 90	14 03	21 65	33 48	50 41	74 77	109 26	152 36	224 16	322 56	429 87
Jamaica [U.K.]	1910–1912	BS	40 22	24 86	188 14	107 28	275 24	28 75	22 79	31 05	48 37	55 37	58 03	64 51	73 24	84 92	102 42	128 32	166 50	219 62	294 16	405 62	526 15
		M	39 04	25 61	198 21	109 26	285 81	27 74	20 36	27 83	48 63	58 32	59 50	64 64	76 27	95 11	117 53	141 19	182 45	252 03	338 43	445 38	561 29
		F	41 41	24 15	177 91	105 33	264 50	29 75	25 20	34 26	48 09	52 43	56 57	64 37	70 26	74 90	87 88	116 32	152 04	191 32	258 42	376 94	503 62
	1920–1922	BS	37 04	26 70	181 75	121 70	281 33	37 07	27 40	37 22	62 10	75 22	78 75	81 96	89 01	99 00	115 97	143 83	190 27	254 92	384 77	460 05	549 12
		M	35 89	27 86	187 27	122 05	286 46	36 86	25 14	34 26	62 67	79 30	84 16	91 50	100 80	111 62	130 79	165 60	217 74	279 30	374 10	500 74	598 48
		F	38 20	26 18	176 05	121 35	276 04	37 29	29 69	40 24	61 52	71 07	73 25	72 37	77 40	86 88	102 15	124 18	166 52	235 19	329 52	431 06	516 72
	1945–1947	BS	52 91	18 90	96 13	48 81	140 25	14 19	10 05	17 83	28 65	30 79	34 14	42 48	50 87	64 80	86 83	112 63	143 24	194 96	275 52	409 78	562 68
		M	51 25	19 51	102 02	50 93	147 75	14 48	9 05	14 92	25 61	29 40	34 82	46 07	57 43	73 29	102 08	135 94	173 49	231 49	324 56	470 01	615 76
		F	54 58	18 32	90 11	46 70	132 60	13 92	11 06	20 76	31 73	32 21	33 44	38 81	44 24	56 32	71 88	90 52	115 97	164 19	237 54	368 46	530 28
America, South																							
Argentina	1914	BS	46 35	21 57	148 28	63 81	202 63	16 67	21 04	20 62	38 11	38 11	46 29	46 30	67 10	67 06	108 19	104 86	189 18	188 28	335 48		
		M	45 20	22 12	155 80	63 63	209 52	17 39	19 84	19 06	36 45	36 47	44 19	44 18	73 25	73 25	121 35	121 73	213 12	212 62	361 46		
		F	47 50	21 05	140 20	64 00	195 23	15 91	22 30	22 29	39 89	39 86	48 53	48 55	60 48	60 48	94 41	87 74	165 77	165 80	312 87		
	1947	BS	59 15	16 91	86 23	25 03	109 10	6 94	5 89	11 42	14 89	16 24	17 04	22 02	30 96	43 14	65 69	89 26	132 86	185 61	273 91	383 28	573 43
		M	56 90	17 57	92 87	25 42	115 93	7 40	6 01	11 22	15 28	15 87	17 95	23 50	35 89	53 38	81 93	111 89	163 19	221 52	314 92	441 24	618 30
		F	61 40	16 29	79 28	24 63	101 96	6 46	5 77	11 62	14 50	16 61	16 12	20 50	25 90	32 77	49 60	67 60	105 19	154 96	241 66	342 13	546 39
Brazil	1920	BS	37 43	26 72	193 02	130 24	298 12	30 12	18 55	32 93	56 00	61 07	67 00	75 37	86 94	102 77	124 43	154 02	194 70	250 60	326 94	429 50	561 68
(Figures for 1920, relate to the Federal District and 13 cities. Figures for 1949–1950 relate to the Federal District only.)	1949–1951	BS	52 88	18 91	97 19	57 28	148 90	10 19	7 24	16 87	26 19	31 54	35 58	39 83	48 99	64 36	83 91	114 83	156 88	212 10	282 32	379 90	508 19
		M	49 80	20 08	105 66	56 77	156 43	10 82	8 04	16 84	27 81	34 11	41 06	47 72	60 76	80 79	106 71	147 72	202 15	271 67	351 95	449 43	581 18
		F	55 96	17 87	88 23	57 80	140 93	9 52	6 42	16 90	24 50	28 86	29 96	31 83	37 23	48 36	62 43	85 34	119 07	167 03	236 27	340 84	473 98
Chile	1930	BS	36 55	27 36	245 89	144 79	355 08	24 03	19 14	35 13	47 26	48 40	53 48	58 79	67 53	80 18	95 52	133 53	169 41	224 96	309 72	402 06	517 98
		M	35 40	28 25	257 10	146 60	366 01	24 34	17 90	32 79	46 33	46 97	52 73	60 94	71 83	93 46	107 38	154 68	185 97	249 11	327 31	416 01	533 42
		F	37 70	26 52	234 00	142 92	343 48	23 72	20 44	37 54	48 22	49 88	54 26	56 54	63 09	66 57	83 72	113 03	154 09	203 48	294 95	390 88	506 18
	1940	BS	38 85	25 74	224 45	121 06	318 34	18 38	17 31	33 29	46 75	48 78	51 91	54 90	64 88	76 36	97 59	131 42	178 07	246 15	329 38	424 55	539 52
		M	37 90	26 38	226 99	123 91	322 77	18 72	16 46	32 19	46 86	48 15	53 39	57 36	72 58	88 01	110 06	148 84	197 63	268 19	358 11	438 06	555 91
		F	39 80	25 13	221 79	118 10	313 70	18 04	18 19	34 44	46 64	49 42	50 37	52 35	56 93	64 55	85 22	114 11	159 95	226 64	305 37	414 10	527 36
Colombia[d]	1939–1941	BS	Data not		155 00	100 00	239 50	23 01	12 92	18 68	28 21	32 46	35 02	40 74	50 61	59 19	74 17	102 51	139 58	189 77	266 58	358 01	476 41
		M	available																				
		F	at the U.N.																				
British Guiana[e]	1910–1912	BS	31 15	32 10	212 96	124 01	310 56	44 28	20 44	57 34	77 77	94 01	108 31	124 09	141 92	166 04	197 55	239 08	290 68	354 62	459 44	492 81	552 26
		M	29 90	33 44	218 79	124 05	315 70	45 08	26 03	48 10	71 39	95 44	119 08	143 46	168 99	197 72	232 70	278 37	339 26	415 01	489 51	519 84	609 08
		F	32 40	30 86	206 87	123 96	305 19	43 45	14 70	66 72	84 38	92 51	97 02	104 33	115 46	136 97	167 58	208 17	255 88	316 17	412 13	479 78	527 36
	1920–1922	BS	34 65	28 86	177 53	105 41	264 23	35 15	25 78	47 06	64 94	80 65	95 26	110 42	128 99	154 19	188 19	229 99	297 01	353 48	416 81	489 22	581 08
		M	33 50	29 85	186 18	106 10	272 53	33 66	25 45	38 05	59 22	82 03	104 74	126 92	151 22	179 99	217 40	261 52	343 75	396 92	458 20	543 39	635 27
		F	35 80	27 93	168 50	104 70	255 56	36 66	26 13	56 28	70 88	79 20	85 27	93 43	106 95	129 86	162 26	203 84	261 06	323 86	391 53	459 83	556 28
	1930–1931	BS	41 45	24 12	142 36	54 43	189 04	20 73	15 64	38 16	50 91	59 25	67 88	79 45	98 36	126 48	164 98	210 19	279 53	329 11	434 49	616 21	694 49
		M	40 30	24 81	150 34	56 55	198 39	19 67	18 01	31 14	42 69	54 61	69 24	88 15	114 30	149 20	194 55	250 55	322 86	372 10	469 97	533 55	721 41
		F	42 60	23 47	134 23	52 31	179 52	21 78	13 27	45 13	59 18	63 98	66 46	70 48	82 23	104 27	137 54	175 20	245 35	298 68	412 08	663 34	673 16

[a] 1900–1911 data relate to the death registration area of 1900; 1919–1921 data relate to the registration area of 1920. Figures for BS 1900–1902, 1909–1911 and 1950 based on official life-tables for both sexes.

[d] Data relate to seven Departments comprising approximately 60 per cent of the population. Official life-table for both sexes.

[e] Excluding aborigines, 1920–1947.

Life-Table Mortality Rates by Sex and Age Groups *(Continued)*

Number of deaths during specified age interval per 1000 persons alive at the beginning of each age interval. Expectation of life at birth and (its reciprocal) total life-table mortality rate, for all ages.

Source: U.N. Demographic Yearbooks 1953 and 1954.

Note: Number of deaths and death rates reconstructed from the l_x values; those for both sexes reconstructed on the basis of the corresponding sex ratio at birth. Expectation of life and total death rate for both sexes is the average of the two sexes.

			Expectation of life at birth		Mortality rates by age groups																		
Country	Years	Sex	°e₀	1/°e₀	0-1	1-4	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
British Guiana[e] (*continued*)	1945–1947	BS	50 68	19 73	91 95	39 66	127 96	14 39	9 41	20 33	31 06	37 32	40 96	47 94	63 04	82 90	116 97	153 11	212 71	273 46	356 17	439 00	546 71
		M	49 32	20 28	98 22	41 60	135 73	14 06	8 31	17 11	25 91	32 22	36 60	48 00	71 78	98 34	136 02	183 24	258 35	333 27	422 52	505 41	580 97
		F	52 05	19 21	85 45	37 68	119 91	14 73	10 53	23 62	36 37	42 61	45 55	47 88	53 75	66 82	97 79	124 09	171 72	225 35	310 25	400 51	530 26
Asia																							
Ceylon	1920–1922	BS	31 69	31 56	189 21	178 23	333 72	76 54	48 92	48 26	60 42	69 75	79 25	87 21	97 14	111 21	133 96	170 23	225 46	316 31	464 74	610 29	753 26
		M	32 72	30 56	194 91	165 72	328 33	72 86	46 34	45 57	50 70	58 15	68 04	81 01	97 41	120 43	146 96	171 70	212 47	300 15	437 44	588 29	729 73
		F	30 67	32 60	183 28	191 04	339 31	80 43	61 83	51 13	70 88	82 53	91 92	94 40	96 80	100 36	118 97	168 61	239 85	334 85	497 70	639 91	789 54
	1945–1947	BS	45 75	21 86	127 48	101 93	216 42	23 95	23 46	27 89	35 22	41 17	46 92	50 91	57 35	68 78	85 39	110 24	152 15	215 84	298 71	416 56	602 41
		M	46 79	21 37	132 94	93 10	213 66	21 11	21 27	23 65	26 97	31 67	38 09	46 08	57 10	73 98	94 23	117 81	157 68	221 37	303 14	416 31	570 97
		F	44 72	22 36	121 82	110 98	219 28	26 91	25 75	32 36	44 00	51 45	56 65	56 36	57 62	62 86	75 44	101 89	146 15	209 94	294 02	416 82	635 16
	1950	BS	55 59	17 99	86 33	76 70	156 41	24 16	7 26	11 10	17 27	20 74	23 31	25 39	29 37	36 66	50 03	71 78	105 29	159 19	244 12	378 84	651 02
		M	56 36	17 74	93 82	70 62	157 81	20 80	6 78	9 51	12 23	14 75	18 24	22 70	28 86	38 02	53 30	76 13	110 05	161 62	243 92	369 05	675 52
		F	54 83	18 24	78 55	82 92	154 96	27 64	7 76	12 77	22 56	27 10	28 75	28 32	29 93	35 16	46 47	67 07	100 21	156 63	244 35	389 12	624 36
China (Formosa)	1936–1940	BS	43 40	23 04	142 86	118 09	244 08	23 12	13 72	22 22	31 64	37 34	45 57	55 67	68 77	85 65	110 31	146 01	193 22	258 61	356 12	473 65	615 09
		M	41 08	24 34	155 58	112 40	250 49	23 46	14 10	23 35	33 80	41 08	50 28	61 47	82 30	107 75	139 43	183 51	239 68	317 16	419 33	539 67	671 62
		F	45 73	21 87	129 39	123 94	237 29	22 79	13 34	21 02	29 39	33 47	40 75	49 78	55 21	64 17	83 32	113 38	156 00	216 30	314 68	438 44	590 36
India[f]	1891–1901	BS	23 79	42 03	272 59	212 52	427 18	95 35	64 03	68 55	81 39	93 40	108 12	125 10	144 73	170 37	198 54	234 41	288 48	374 28	495 95	644 68	796 66
		M	23 63	42 32	285 38	215 23	439 19	89 99	56 94	61 65	74 95	86 77	105 79	127 48	152 59	180 23	210 22	247 01	301 29	386 29	504 65	649 31	799 13
		F	23 96	41 74	258 79	209 71	414 23	100 88	71 43	75 88	88 35	100 65	110 73	122 42	138 05	159 63	186 14	221 37	275 65	362 77	488 00	640 42	794 33
	1901–1911	BS	22 95	43 57	287 38	215 07	440 64	91 64	60 42	71 78	87 83	102 64	118 19	136 25	156 51	177 49	202 74	235 59	284 65	356 99	465 10	617 26	800 91
		M	22 59	44 27	289 98	221 04	446 92	92 14	59 73	71 59	88 06	103 62	120 01	138 97	160 08	181 86	207 55	240 46	288 27	358 48	466 35	618 06	800 96
		F	23 31	42 90	284 60	208 72	433 92	91 12	61 15	71 96	87 60	101 61	116 32	133 41	152 81	173 04	197 88	230 70	280 97	355 55	463 90	616 48	800 69
	1921–1931	BS	26 73	37 41	240 86	190 70	385 63	58 21	42 84	61 34	79 44	94 64	113 58	134 93	157 78	179 44	202 31	229 98	270 72	335 15	437 99	591 73	783 94
		M	26 91	37 16	248 74	199 20	398 39	61 40	41 71	53 76	66 71	80 69	101 75	124 12	148 25	172 93	200 10	233 26	278 58	346 89	453 10	606 55	791 28
		F	26 56	37 65	232 34	181 71	371 83	54 89	44 00	69 14	92 76	109 68	126 75	147 27	168 95	187 25	204 95	225 90	261 09	321 07	420 40	575 37	774 98
	1941–1950	BS	32 05	31 20	182 85	154 29	308 93	79 04	56 14	44 53	49 51	63 86	81 67	97 36	112 01	133 14	163 13	205 35	269 12	345 79	436 11	537 74	644 58
		M	32 45	30 82	190 00	135 21	299 52	74 62	58 35	50 46	54 19	62 15	73 93	88 13	104 32	130 54	168 36	217 59	284 97	367 96	466 00	576 00	690 80
		F	31 66	31 59	175 00	174 85	319 25	84 01	53 61	37 79	44 29	65 77	90 28	107 80	120 90	136 23	156 91	191 01	251 22	321 78	405 99	503 03	609 08
Israel[g]	1926–1927	BS	Data not available at the U.N.				190 00	11 11	8 74	10 08	15 27	23 26	13 23	20 11	27 36	35 16	58 31	78 95	121 01	174 00	252 31		
		M					194 00	11 17	12 55	11 44	17 99	19 63	14 69	17 62	33 10	39 94	62 41	93 50	136 36	190 28	280 00		
		F					185 00	12 27	4 97	7 49	12 58	28 02	11 80	22 55	21 71	30 51	54 36	62 03	106 45	155 23	224 36		
	1936–1938	BS					93 00	8 82	6 67	8 96	13 56	13 75	12 78	15 29	21 51	32 97	49 24	74 37	107 60	135 05	223 05		
		M					100 00	10 00	7 86	10 18	18 29	17 46	14 22	16 83	25 67	33 88	48 05	76 40	109 31	147 59	245 14		
		F					86 00	6 56	5 51	6 64	10 03	11 26	10 25	13 81	17 50	32 07	50 31	72 35	104 46	121 31	201 77		
	1942–1944	BS	Data not available at the U.N.				65 00	6 92	6 46	8 67	8 74	11 03	12 26	12 42	18 30	26 78	43 06	65 00	100 27	144 13	237 84		
		M					66 00	7 49	7 55	9 78	9 88	9 98	12 32	11 34	18 35	30 37	46 99	74 59	109 29	161 04	243 14		
		F					63 00	6 40	5 37	7 56	6 53	10 95	12 18	12 33	17 03	23 09	39 01	56 58	91 26	127 69	233 55		
	1950	BS	67 90	14 73	47 00	14 69	61 00	4 26	3 19	5 36	8 63	7 62	7 68	9 94	12 28	21 47	35 80	56 28	98 98	152 11	232 56	316 02	481 01
		M	66 30	15 08	51 00	14 75	65 00	5 35	4 30	7 56	9 79	8 79	7 76	8 94	12 40	23 97	40 94	63 41	114 58	175 00	240 64	330 99	533 33
		F	69 50	14 39	42 00	15 66	57 00	3 18	2 13	4 26	6 42	5 39	7 58	9 83	12 13	17 86	30 68	48 07	83 74	130 38	225 66	305 39	433 91
Japan[h]	1899–1903	BS	44 41	22 52	149 06	88 09	224 02	26 34	19 58	35 07	45 20	44 00	44 83	49 66	55 76	66 18	86 44	118 37	168 05	240 18	337 53	460 57	607 09
		M	43 97	22 74	156 86	88 09	231 13	25 96	17 21	31 14	42 15	39 65	39 94	45 65	55 87	72 50	97 02	133 89	188 92	265 55	364 98	488 50	633 60
		F	44 85	22 30	140 92	88 11	216 61	26 73	21 99	39 11	48 37	48 57	49 97	53 93	55 62	59 40	75 22	102 30	147 22	216 07	313 10	437 53	587 16
	1909–1913	BS	44 49	22 48	152 93	89 80	229 00	25 23	20 88	39 26	48 12	44 45	43 33	46 49	51 86	61 53	81 12	111 45	156 94	224 57	318 35	433 02	573 14
		M	44 25	22 60	160 50	89 82	235 90	24 16	17 10	33 33	44 04	39 96	38 33	42 20	51 65	66 85	90 47	125 88	177 33	249 54	345 47	464 85	606 34
		F	44 73	22 36	145 04	89 81	221 82	26 32	24 75	45 40	52 40	49 20	48 65	51 11	52 10	55 75	71 04	96 24	136 15	200 31	293 66	406 14	547 91
	1921–1925	BS	42 63	23 46	153 20	98 69	236 77	25 04	20 92	48 01	54 41	48 11	45 88	49 80	55 94	67 08	88 61	124 80	176 98	253 39	357 69	495 70	656 94
		M	42 06	23 77	162 04	98 20	244 33	24 06	17 36	43 23	50 84	43 47	40 75	45 82	56 91	74 94	102 01	146 70	207 73	294 83	405 22	546 37	699 28
		F	43 20	23 15	144 00	99 18	228 90	26 04	24 58	52 92	58 14	52 95	51 30	54 06	54 90	58 60	74 42	102 31	146 92	215 80	318 91	459 59	631 71

[e] Excluding aborigines, 1920–1947.

[f] Up to 1931 pre-partition India, i.e., including Burma. Male and female rates for 1941–1950 come from official life-tables which begin with a radix of 142,759 males and 148,896 females. The data have been corrected so that the initial cohort of each sex is 100,000. 1941–1950 expectation of life data relate to an area with 294,749,000 inhabitants at the census in 1951.

[g] Based on data for survivors out of 1000 born alive. Data relate to Jewish population only; prior to 1948, Jewish population of Palestine. Prior to 1949, reliability of figures affected by deficiencies in basic data for periods far from census year (1931). Data for older ages are unreliable.

[h] Figures relate to territory as of period specified and refer to Japanese nationals only. Figures for 1899–1903 and 1909–1913 are less reliable than for later periods.

Life-Table Mortality Rates by Sex and Age Groups *(Continued)*

Number of deaths during specified age interval per 1000 persons alive at the beginning of each age interval. Expectation of life at birth and (its reciprocal) total life-table mortality rate, for all ages.

Source: U.N. Demographic Yearbooks 1953 and 1954.

Note: Number of deaths and death rates reconstructed from the l_x values; those for both sexes reconstructed on the basis of the corresponding sex ratio at birth. Expectation of life and total death rate for both sexes is the average of the two sexes.

Country	Years	Sex	Expectation of life at birth °e₀	1/°e₀	0-1	1-4	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
Japan[h] (*continued*)	1926–1930	BS	45 68	21 89	132 30	87 86	208 54	21 98	16 81	41 38	48 48	42 41	40 27	43 56	50 85	62 12	83 62	115 82	167 52	240 04	340 11	469 47	623 72
		M	44 82	22 31	140 10	87 60	215 43	21 30	14 10	37 75	46 39	39 52	36 52	40 31	52 40	70 32	97 48	137 98	200 29	281 19	390 56	522 04	667 80
		F	46 54	21 49	124 14	88 14	201 34	22 70	19 60	45 14	50 68	45 43	44 22	47 01	49 19	53 36	69 10	93 30	135 88	203 29	299 42	432 64	597 70
	1935–1936	BS	48 27	20 72	106 27	77 00	175 09	20 07	15 33	39 11	47 84	41 84	38 49	40 48	46 65	58 76	80 62	110 83	157 34	226 72	325 34	458 72	623 03
		M	46 92	21 31	113 03	77 89	182 12	20 14	12 99	36 80	48 60	42 01	37 33	39 00	48 71	66 74	94 73	134 01	189 97	270 14	376 75	510 11	660 64
		F	49 63	20 15	99 17	76 08	167 71	20 00	17 74	41 50	47 05	41 66	39 70	42 04	44 49	50 42	66 18	87 83	126 59	188 79	284 90	423 50	601 14
	1947	BS	52 01	19 23	81 44	68 14	144 03	15 99	9 53	22 43	39 85	40 33	38 50	39 06	43 60	52 66	71 74	102 03	153 90	223 01	316 05	436 61	582 77
		M	50 06	19 98	85 98	68 73	148 80	16 75	9 37	22 23	42 88	44 32	41 87	42 93	48 28	60 42	83 55	122 41	185 20	266 43	367 36	487 45	619 96
		F	53 96	18 53	76 64	67 53	138 99	15 19	9 72	22 65	36 69	36 19	35 03	35 10	38 85	44 87	60 10	82 41	125 07	185 80	276 43	402 27	561 25
	IV 1949–III 1950	BS	56 40	17 73	61 77	40 05	99 35	11 01	6 92	14 52	27 77	30 82	29 08	30 51	34 55	42 94	59 53	89 08	133 29	198 79	280 21	390 23	534 47
		M	56 19	17 80	65 76	40 54	103 63	11 46	6 35	13 86	29 05	33 24	30 73	32 91	37 49	48 33	67 69	106 11	155 25	234 70	320 74	431 20	574 38
		F	56 61	17 66	57 58	39 56	94 86	10 55	7 49	15 21	26 46	28 31	27 38	28 05	31 54	37 45	51 32	72 25	112 38	166 26	246 52	359 53	507 87
Thailand	1947–1948	BS	50 30	19 88	79 45	58 27	133 09	31 08	19 36	22 08	31 81	40 27	44 60	53 26	61 34	70 97	87 65	103 58	140 60	179 68	267 33		
		M	48 70	20 53	81 70	61 35	138 04	32 02	20 30	23 73	32 98	41 67	45 99	56 95	67 78	83 13	104 12	118 47	158 95	199 35	296 43		
		F	51 90	19 27	77 00	54 93	127 70	30 07	18 34	20 31	30 55	38 79	43 11	49 34	54 57	58 37	71 06	89 10	123 35	161 93	242 21		
Cyprus [U.K.]	1948–1950	BS	66 20	15 11	67 20	22 58	88 26	5 39	3 53	5 61	7 53	7 56	12 12	11 94	20 60	30 41	34 05	37 35	73 45	139 57	199 25	290 20	522 03
		M	63 60	15 72	68 67	24 81	91 78	6 13	3 89	7 00	9 28	9 04	16 90	11 79	28 69	43 33	44 80	44 80	83 23	208 00	208 00	315 44	543 19
		F	68 80	14 53	65 63	20 21	84 51	4 59	3 14	4 16	5 68	5 98	7 11	12 10	12 22	17 22	23 37	30 13	64 10	75 43	192 21	270 34	506 39
Europe																							
Austria[i]	1901–1905	BS	40 10	24 94	211 73	114 87	302 28	33 32	20 10	28 02	37 24	38 53	41 52	48 14	56 37	67 70	89 61	123 96	178 62	257 83	363 69	504 71	645 56
		M	39 14	25 55	232 28	111 42	317 82	32 64	17 06	25 73	37 33	36 34	38 84	47 28	59 79	75 96	99 33	133 28	185 72	261 41	365 21	507 27	651 63
		F	41 06	24 35	189 85	118 36	285 74	34 01	23 20	30 39	37 14	40 78	44 30	49 06	52 78	59 16	79 74	114 68	171 68	254 40	362 25	502 36	639 76
	1930–1933	BS	56 50	17 70	104 27	27 71	129 09	13 63	8 09	13 33	18 44	19 66	22 27	26 66	33 89	45 78	63 12	90 19	131 67	198 68	298 20	435 37	597 15
		M	54 50	18 35	115 40	28 57	140 67	13 98	8 18	14 18	19 77	20 96	24 55	29 76	39 52	52 84	74 02	104 60	149 44	216 28	315 19	455 67	616 68
		F	58 50	17 09	92 45	26 82	116 79	13 28	7 99	12 46	17 07	18 31	19 94	23 50	28 17	38 71	52 38	76 29	115 06	182 86	283 59	418 66	582 10
	1949–1951	BS	64 45	15 52	67 05	11 97	78 22	4 57	3 76	6 74	9 44	10 11	11 23	14 17	20 06	30 61	47 55	70 38	106 37	164 96	253 98	383 14	543 56
		M	61 90	16 15	75 18	12 35	86 60	5 12	4 37	8 24	11 53	11 70	13 02	16 23	23 16	36 80	59 53	89 41	131 21	193 20	284 34	411 72	572 09
		F	67 00	14 92	58 38	11 58	69 28	3 99	3 12	5 17	7 26	8 45	9 40	12 04	16 90	24 31	35 51	51 72	82 99	139 78	228 62	360 97	523 20
Belgium	1891–1900	BS	47 11	21 23	155 72	80 35	223 56	21 98	13 10	20 50	29 67	31 69	35 33	42 14	50 37	58 59	80 07	106 54	148 18	218 23	329 82	444 47	604 39
		M	45 39	22 03	168 86	81 94	236 96	21 57	12 24	20 75	30 22	31 57	36 07	44 63	57 13	68 71	95 05	123 01	167 28	238 83	352 65	467 89	629 96
		F	48 84	20 47	142 01	78 74	209 57	22 39	13 98	20 24	29 11	31 82	34 59	39 65	43 59	48 60	65 61	91 11	130 92	200 42	311 03	426 34	588 28
	1928–1932	BS	57 90	17 27	89 89	29 48	116 72	10 94	8 12	15 28	19 59	19 97	22 14	25 70	31 57	41 21	57 00	82 54	123 41	187 29	283 52	419 43	591 99
		M	56 02	17 85	100 75	31 48	129 06	11 53	8 07	15 43	20 21	20 59	23 36	27 83	35 04	46 58	65 00	94 04	139 18	207 55	306 94	442 14	607 43
		F	59 79	16 72	78 55	27 45	103 84	10 33	8 16	15 13	18 98	19 34	20 89	23 55	28 10	35 87	49 10	71 38	108 49	168 82	263 11	400 87	580 20
	1946–1949	BS	64 65	15 47	56 86	10 95	67 19	5 21	4 27	7 19	11 59	12 93	14 60	16 87	23 45	34 13	50 26	71 79	106 76	158 37	245 39	368 04	526 87
		M	62 00	16 13	64 03	11 80	75 07	5 89	4 68	8 13	14 02	14 98	17 33	20 20	28 99	43 02	63 19	89 12	127 47	182 11	272 46	400 85	560 66
		F	67 30	14 86	49 27	10 07	58 84	4 51	3 84	6 20	9 06	10 80	11 80	13 48	17 83	25 17	37 52	55 19	87 63	137 41	222 72	342 31	502 74
Bulgaria (Excluding Southern Dobruja, 1925–1928)	1899–1902	BS	40 16	24 90	154 84	158 88	289 12	57 80	30 56	36 07	55 71	50 73	52 69	55 82	60 74	68 55	80 79	100 01	129 87	175 55	238 34	293 12	361 21
		M	39 99	25 01	165 23	164 12	302 23	58 40	28 74	33 80	50 21	45 54	48 14	52 10	58 12	67 26	81 12	101 96	132 96	178 30	238 18	288 62	349 82
		F	40 33	24 79	143 90	153 51	275 32	57 18	32 40	38 39	61 33	56 07	57 45	59 73	63 54	69 91	80 45	97 92	126 57	172 62	238 53	297 88	373 38
	1925–1928	BS	46 28	21 61	160 46	113 76	255 97	28 95	16 37	26 90	39 10	32 31	33 11	36 51	41 78	50 19	63 52	84 63	117 96	169 10	250 29	350 40	424 32
		M	45 92	22 21	171 45	112 75	264 87	28 51	15 39	25 44	35 52	26 34	29 37	34 04	41 07	51 78	67 93	92 13	128 23	180 12	254 11	348 23	430 20
		F	46 64	21 44	148 79	114 80	246 51	29 41	17 41	28 43	42 85	38 59	37 09	39 17	42 55	48 46	58 76	76 63	107 19	157 85	246 50	352 57	418 47
Czechoslovakia[j]	1899–1902	BS	40 30	24 81	229 52	100 25	306 76	26 43	15 51	26 37	38 69	40 10	42 65	48 26	56 06	67 04	87 49	120 11	173 09	248 81	366 01	493 79	638 19
		M	38 89	25 71	248 17	99 89	323 27	25 28	13 43	25 54	39 60	38 95	41 72	50 74	62 90	78 11	101 05	134 08	183 72	258 87	369 05	500 99	648 97
		F	41 71	23 97	209 54	100 62	289 08	27 60	17 63	27 21	37 75	41 29	43 61	45 72	49 05	55 85	74 13	106 71	163 21	239 68	363 35	487 51	628 99
	1929–1932	BS	53 55	18 74	136 99	36 74	168 70	15 04	9 45	15 95	21 40	21 82	23 82	28 13	34 44	45 05	62 71	88 26	131 14	199 30	299 62	430 90	586 47
		M	51 92	19 26	148 69	37 55	180 66	14 99	9 18	16 29	22 44	22 03	24 51	30 02	38 76	51 51	71 83	99 47	144 01	211 40	312 99	449 38	606 85
		F	55 18	18 12	124 57	35 90	156 00	15 09	9 74	15 61	20 34	21 59	23 12	26 19	30 02	38 52	53 59	77 28	118 84	188 09	287 55	414 85	569 79

[h] Figures relate to territory as of period specified and refer to Japanese nationals only. Figures for 1899–1903 and 1909–1913 are less reliable than for later periods.

[i] Figures for 1901–1905 for territory of Austria under the Empire.

[j] Figures for 1899–1902 are for Bohemia and Moravia-Silesia. Figures for 1929–1932 including area ceded to U.S.S.R. in 1947; excluding territory ceded by Hungary in 1947.

Life-Table Mortality Rates by Sex and Age Groups *(Continued)*

Number of deaths during specified age interval per 1000 persons alive at the beginning of each age interval. Expectation of life at birth and (its reciprocal) total life-table mortality rate, for all ages.

Source: U.N. Demographic Yearbooks 1953 and 1954.

Note: Number of deaths and death rates reconstructed from the l_x values; those for both sexes reconstructed on the basis of the corresponding sex ratio at birth. Expectation of life and total death rate for both sexes is the average of the two sexes.

Country	Years	Sex	*Expectation of life at birth*		*Mortality rates by age groups*																		
			$°e_0$	$1/°e_0$	0-1	1-4	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
Denmark (excluding Faroe Islands)[k]	1901–1905[l]	BS	54 55	18 33	117 80	36 50	150 00	15 41	12 79	17 91	22 55	23 58	27 38	31 86	38 67	47 50	61 70	84 44	119 42	179 57	270 27	391 20	547 53
		M	52 90	18 90	130 70	37 27	163 10	15 41	11 77	17 07	23 49	22 90	26 84	32 83	41 74	53 14	70 99	97 54	134 05	197 25	290 19	411 42	574 31
		F	56 20	17 79	104 10	35 83	136 20	15 40	13 99	18 72	21 63	24 22	27 88	30 90	35 54	41 61	52 33	71 57	105 50	163 26	252 61	374 22	526 34
	1911–1915	BS	57 70	17 33	100 26	26 60	124 19	10 73	8 52	14 47	19 05	20 36	23 45	28 04	32 54	42 85	56 76	78 37	114 99	172 43	260 66	396 64	556 70
		M	56 20	17 79	111 22	27 88	136 00	10 89	8 11	14 31	19 57	20 30	23 23	28 51	34 02	47 83	63 49	89 47	129 42	186 44	273 18	409 88	565 55
		F	59 20	16 89	88 77	25 28	111 81	10 58	8 93	14 63	18 51	20 42	23 68	27 57	31 03	37 77	50 00	67 36	101 00	159 29	249 28	385 00	549 22
	1921–1925	BS	61 10	16 37	83 30	20 33	101 94	7 71	6 73	11 76	15 43	16 14	17 21	20 64	25 61	34 54	48 64	69 35	106 17	164 80	250 40	379 72	552 93
		M	60 30	16 58	93 64	21 69	113 30	7 91	6 83	11 48	15 79	15 82	15 92	18 95	24 31	33 43	48 71	70 91	111 78	167 78	252 24	387 56	562 16
		F	61 90	16 15	72 38	18 93	89 94	7 50	6 63	12 06	15 06	16 47	18 53	22 38	26 97	35 70	48 58	67 72	100 35	161 74	248 53	371 80	543 83
	1931–1935	BS	62 90	15 90	72 54	15 16	86 60	5 87	4 79	9 08	12 23	13 84	14 94	18 27	23 27	32 14	46 66	69 04	104 81	164 04	257 46	391 17	548 91
		M	62 00	16 13	81 47	16 67	96 78	6 24	5 32	9 60	13 02	13 21	14 04	16 94	22 27	32 03	48 20	71 64	109 26	169 95	261 09	395 20	551 42
		F	63 80	15 67	63 08	13 59	75 81	5 47	4 24	8 54	11 42	14 49	15 86	19 65	24 30	32 24	45 06	66 34	100 23	158 00	253 80	387 20	546 43
	1941–1945	BS	66 66	15 00	48 71	10 12	58 34	4 38	3 82	6 70	10 05	10 73	11 40	14 14	18 62	27 04	40 04	59 99	93 15	148 99	236 22	359 48	529 61
		M	65 62	15 24	55 25	10 85	65 50	4 84	4 29	7 54	11 45	11 61	11 46	14 23	19 20	27 91	41 89	64 08	97 33	154 57	240 65	365 70	536 80
		F	67 70	14 77	41 75	9 36	50 72	3 91	3 31	5 83	8 58	9 81	11 34	14 04	18 02	26 13	38 10	55 77	88 88	143 35	231 79	353 34	522 64
	1946–1950	BS	68 95	14 50	40 20	7 42	47 32	2 94	2 58	4 49	6 80	7 74	9 09	11 41	15 66	24 36	35 62	53 88	86 32	136 46	220 61	337 88	503 22
		M	67 80	14 75	45 34	7 94	52 84	3 59	3 04	5 25	8 13	8 67	9 49	11 63	16 62	25 95	39 02	59 40	93 06	143 75	228 87	347 58	515 41
		F	70 10	14 26	34 70	6 86	41 32	2 25	2 09	3 69	5 39	6 77	8 68	11 19	14 66	22 69	32 09	48 17	79 44	129 12	212 43	328 47	491 73
Finland[m]	1901–1910	BS	46 71	21 41	124 13	97 56	209 58	38 81	23 92	28 72	33 43	35 38	36 12	40 66	45 93	54 13	74 16	101 04	146 50	208 17	311 63	455 20	605 19
		M	45 33	22 06	134 50	100 74	221 69	38 18	21 21	26 69	35 67	35 19	36 35	40 62	48 81	61 34	87 37	116 38	168 66	231 22	333 36	478 16	621 89
		F	48 10	20 79	113 10	94 27	196 71	39 48	26 71	30 83	31 11	35 58	35 88	40 70	42 94	46 70	60 76	85 90	125 39	187 32	293 02	436 65	592 70
	1911–1920	BS	46 26	21 62	111 54	83 49	185 72	32 77	22 35	38 56	52 33	48 48	47 08	49 83	55 95	66 31	79 43	108 31	145 86	211 36	316 24	453 81	607 62
		M	43 41	23 04	120 90	84 80	195 45	32 39	20 32	44 50	67 12	57 72	54 20	58 68	67 98	81 88	99 13	136 93	175 02	241 41	342 20	479 32	621 79
		F	49 12	20 36	101 60	82 15	175 40	33 15	24 45	32 37	37 13	39 27	40 13	41 30	44 60	51 97	61 82	83 76	122 27	188 53	297 77	436 79	598 89
	1921–1930	BS	52 91	18 90	91 57	47 14	134 39	17 41	16 39	26 80	37 74	34 73	33 47	37 23	43 65	54 21	70 45	97 43	140 70	199 46	290 72	412 34	545 39
		M	50 68	19 73	99 83	48 79	143 75	17 98	15 18	26 75	44 04	37 63	35 19	41 15	49 29	64 41	85 21	123 54	169 36	231 71	317 57	431 37	537 97
		F	55 14	18 14	82 82	45 42	124 48	16 81	17 65	26 86	31 21	31 75	31 71	33 23	37 99	44 06	56 07	72 81	115 15	172 48	269 86	398 55	550 45
	1931–1940	BS	57 00	17 54	69 85	31 87	99 49	14 70	11 98	21 09	28 81	28 05	28 43	32 52	39 07	49 63	67 70	92 63	131 03	189 14	274 30	386 91	504 20
		M	54 45	18 36	76 65	33 25	107 35	15 47	11 90	22 34	32 73	30 16	31 40	37 81	48 34	61 88	85 79	117 60	160 02	220 90	300 92	399 45	495 20
		F	59 55	16 79	62 65	30 44	91 18	13 90	12 07	19 80	24 75	25 89	25 40	27 14	29 76	37 56	50 35	69 56	105 66	163 01	253 91	377 92	510 44
	1941–1945	BS	57 88	17 28	63 60	28 76	90 53	14 71	11 24	20 50	27 04	26 49	27 01	30 22	37 28	47 39	63 94	91 10	132 34	191 96	281 66	407 94	542 45
		M	54 62	18 31	69 52	29 80	97 25	15 92	12 25	22 88	31 92	29 71	31 05	37 05	47 57	61 90	85 88	122 25	172 16	238 62	327 60	447 35	556 35
		F	61 14	16 36	57 30	27 66	83 38	13 44	10 18	18 02	21 98	23 18	22 88	23 30	27 02	33 23	43 14	62 91	98 56	155 62	249 38	383 14	534 59
	1950–51	BS	Data not		38 80	8 22	46 70	4 63	3 76	6 41	11 05	12 75	15 24	17 35	24 88	35 00	55 77	81 65	123 47	186 02	277 60	412 65	562 73
		M	available		43 61	8 72	51 95	5 62	4 16	7 72	13 87	15 77	18 84	21 55	32 88	47 09	76 78	111 73	163 52	233 00	319 65	451 35	591 34
		F	at the U.N.		33 57	7 68	40 99	3 55	3 33	5 00	8 04	9 52	11 46	12 94	16 56	22 64	34 81	52 98	87 64	147 49	246 57	386 85	545 68
France[n]	1898–1903	BS	47 00	21 28	150 22	69 67	209 42	22 92	16 10	25 45	35 36	36 67	40 01	45 42	51 91	65 28	75 84	104 88	150 95	218 68	329 66	478 16	626 19
		M	45 31	22 07	163 26	71 49	223 08	22 50	14 83	24 99	37 26	36 69	41 59	49 32	58 53	72 63	89 45	118 46	166 69	237 04	351 36	507 49	653 86
		F	48 69	20 54	136 49	67 80	195 04	23 36	17 40	25 92	33 41	36 63	38 41	41 47	45 24	57 99	62 55	92 03	136 47	202 39	311 25	454 72	606 15
	1908–1913	BS	50 45	19 82	123 02	54 03	170 40	16 31	12 63	21 86	31 75	33 09	36 48	41 46	48 98	60 07	77 94	102 14	145 77	215 54	320 45	463 12	611 16
		M	48 49	20 62	133 99	54 85	181 49	15 87	11 48	21 45	34 43	34 33	39 19	46 61	56 96	70 76	92 28	120 88	167 51	239 04	349 64	492 85	645 62
		F	52 41	19 08	111 56	53 19	158 82	16 75	13 82	22 26	29 00	31 83	33 75	36 28	41 04	49 57	64 20	84 84	126 38	195 58	297 01	440 99	587 88
	1920–1923	BS	54 14	18 47	98 49	38 58	133 27	13 45	10 78	21 26	30 19	30 56	31 39	35 73	41 47	51 88	68 70	94 70	134 77	194 28	297 31	449 72	596 60
		M	52 19	19 16	108 23	39 46	143 42	13 57	10 01	20 65	32 66	31 69	33 18	39 65	47 24	59 56	80 78	111 79	156 11	218 94	328 39	482 12	640 81
		F	56 09	17 83	88 21	37 66	122 55	13 32	11 59	21 88	27 63	29 40	29 55	31 75	35 63	44 20	56 83	78 32	115 04	172 53	271 44	424 85	566 03
	1928–1933	BS	56 66	17 65	81 09	29 68	108 36	10 79	8 96	18 50	25 36	25 50	27 61	32 65	40 40	51 92	79 72	92 81	132 05	194 82	291 63	429 69	593 83
		M	54 30	18 42	90 18	30 97	118 36	10 93	8 64	17 90	26 02	26 86	31 15	38 16	48 54	62 89	83 31	112 58	157 95	226 29	329 27	474 25	637 72
		F	59 02	16 94	71 62	28 36	97 95	10 64	9 29	19 10	24 70	24 12	24 01	27 08	32 28	41 17	53 89	74 44	108 97	168 34	262 17	398 01	566 55

[k] Prior to 1921, excluding South Jutland.
[l] Figures based on survivors out of 10,000 born alive.

[m] Prior to 1921, territory of Grand Duchy of Finland. Including war losses, 1911–1950. Excluding war losses, 1931–1945.
[n] Excluding Alsace-Lorraine, 1898–1913.

Life-Table Mortality Rates by Sex and Age Groups *(Continued)*

Number of deaths during specified age interval per 1000 persons alive at the beginning of each age interval. Expectation of life at birth and (its reciprocal) total life-table mortality rate, for all ages.

Source: U.N. Demographic Yearbooks 1953 and 1954.

Note: Number of deaths and death rates reconstructed from the l_x values; those for both sexes reconstructed on the basis of the corresponding sex ratio at birth. Expectation of life and total death rate for both sexes is the average of the two sexes.

Country	Years	Sex	Expectation of life at birth		Mortality rates by age groups																		
			$^\circ e_0$	$1/^\circ e_0$	0-1	1-4	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
France[n] (*continued*)	1933–1938	BS	58 79	17 01	67 91	24 48	90 73	8 84	7 36	14 68	21 53	22 44	25 64	31 20	38 84	50 65	67 11	91 10	128 57	187 25	278 11	407 01	563 27
		M	55 94	17 88	76 17	25 88	100 08	9 20	7 26	14 91	22 93	24 59	30 34	38 52	48 45	62 90	84 01	113 76	158 07	223 83	321 47	457 82	615 22
		F	61 64	16 22	59 32	23 06	81 01	8 49	7 45	14 43	20 10	20 25	20 92	23 87	29 38	38 85	51 23	70 51	103 04	157 53	245 65	372 79	533 05
	1946–1949	BS	64 65	15 47	61 50	12 78	73 49	4 67	4 03	7 31	11 03	12 59	14 22	16 93	22 81	32 94	47 20	67 53	100 66	152 28	238 17	360 64	518 20
		M	61 90	16 15	68 72	13 60	81 39	5 17	4 53	8 20	12 48	14 04	15 98	19 65	27 97	41 64	59 78	85 16	125 47	184 77	280 34	412 36	574 29
		F	67 40	14 84	53 87	11 92	65 15	4 17	3 51	6 39	9 55	11 11	12 41	14 15	17 55	24 18	34 78	50 56	77 63	123 68	203 65	322 38	482 20
	1950–1951[1]	BS	66 45	15 05	46 30	9 24	55 11	3 24	3 04	5 03	7 74	9 53	11 86	15 33	21 95	33 10	49 07	69 92	101 12	152 77	238 87	366 33	528 13
		M	63 60	15 72	52 10	9 81	61 40	3 62	3 53	5 90	9 07	11 00	13 66	17 98	27 29	41 62	63 31	89 73	128 18	188 38	285 48	423 03	594 41
		F	69 30	14 43	40 20	8 65	48 50	2 84	2 53	4 12	6 37	8 01	10 01	12 61	16 52	24 52	35 01	50 91	76 20	121 83	201 45	325 59	487 38
Germany[o]	1901–1910	BS	46 55	21 48	186 83	68 69	242 69	18 94	11 94	18 28	24 16	26 90	30 34	36 97	45 19	57 36	78 39	109 55	158 68	231 57	337 24	474 73	627 04
		M	44 80	22 32	202 34	69 64	257 89	18 65	11 26	18 89	25 00	25 97	29 63	38 49	51 01	68 43	93 13	127 11	176 41	247 87	351 93	488 97	642 59
		F	48 30	20 70	170 48	67 73	226 66	19 25	12 63	17 67	23 31	27 85	31 05	35 40	39 31	46 32	64 00	92 96	142 58	217 32	324 90	463 27	615 16
	1910–1911	BS	49 04	20 39	167 62	55 62	213 92	15 82	10 84	17 18	22 07	24 65	27 67	33 53	40 62	53 11	73 25	105 01	155 14	228 92	339 56	482 79	643 81
		M	47 41	21 09	181 45	56 71	227 87	15 92	10 46	18 05	23 05	23 64	26 69	33 82	45 13	61 50	85 24	120 72	171 97	243 43	353 69	497 57	660 49
		F	50 68	19 73	153 05	54 52	199 23	15 75	11 24	16 31	21 08	25 69	28 65	33 24	36 00	44 66	61 38	89 87	139 44	215 90	327 34	470 53	630 69
	1924–1926	BS	57 39	17 42	104 99	28 22	130 25	8 65	6 82	13 28	20 01	20 19	20 94	23 44	28 98	38 47	54 61	81 20	123 95	192 67	293 55	432 75	588 36
		M	55 97	17 87	115 38	29 47	141 45	9 14	7 06	14 22	22 09	20 47	20 70	23 02	29 89	40 87	58 98	88 82	134 16	205 05	308 02	445 96	603 45
		F	58 82	17 00	93 92	26 92	118 31	8 13	6 57	12 30	17 86	19 91	21 19	23 87	28 04	36 00	50 13	73 47	113 79	180 61	279 91	420 74	575 26
	1932–1934	BS	61 33	16 30	77 14	18 65	94 35	9 09	5 76	9 69	13 42	14 74	16 71	19 99	24 95	34 49	49 90	73 85	112 95	177 51	276 03	413 48	576 95
		M	59 86	16 71	85 35	19 80	103 46	9 60	6 18	10 72	14 50	15 31	17 48	21 06	26 95	37 37	54 70	81 14	123 50	190 12	288 57	428 84	595 65
		F	62 81	15 92	68 39	17 45	84 65	8 54	5 32	8 64	12 29	14 15	15 89	18 88	22 87	31 52	44 99	66 47	102 45	165 24	264 21	399 47	560 72
Germany—Federal Republic	1949–1951	BS	66 55	15 03	55 65	9 36	64 49	4 13	3 14	5 62	8 28	9 26	10 57	13 00	17 49	26 60	40 70	60 43	92 94	148 03	237 67	370 41	533 90
		M	64 60	15 48	61 77	10 05	71 20	4 69	3 75	6 85	10 22	11 19	12 18	14 99	20 21	31 57	49 44	72 68	107 79	163 16	251 76	383 14	549 07
		F	68 50	14 60	49 09	8 63	57 30	3 53	2 51	4 33	6 26	7 25	8 89	10 92	14 67	21 48	31 80	48 19	78 47	133 75	224 85	359 20	521 03
Greece[p]	1920	BS	44 69	22 38	113 03	136 05	233 70	33 60	19 31	31 28	45 39	49 46	50 03	50 66	52 40	57 74	70 21	94 51	136 26	200 96	292 58	410 55	547 97
		M	42 90	23 31	113 80	137 07	235 27	34 40	18 84	30 81	48 23	53 67	54 03	54 57	57 26	65 19	82 65	115 33	169 70	252 20	366 91	511 76	673 88
		F	46 49	21 51	112 20	135 00	232 05	32 74	19 80	31 81	42 29	44 94	45 75	46 48	47 30	50 01	57 48	73 75	104 37	155 74	234 45	345 08	487 31
	1926–1930	BS	49 99	20 00	94 15	109 63	193 46	31 58	16 45	22 60	32 27	35 91	38 51	41 20	45 04	51 71	63 51	83 61	116 06	165 69	237 75	336 32	461 68
		M	49 09	20 37	95 09	109 98	194 61	31 87	16 52	22 93	32 22	34 78	37 52	41 55	47 95	58 24	74 47	99 31	135 73	187 19	257 08	347 63	458 67
		F	50 89	19 65	93 12	109 24	192 19	31 26	16 37	22 23	32 31	37 13	39 58	40 82	41 89	44 62	51 78	67 23	96 25	144 96	220 06	326 43	464 18
	1940[q]	BS	54 94	18 20	112 00	66 28	170 86	18 85	10 47	16 10	21 40	23 69	26 07	28 45	32 02	38 52	50 44	71 11	104 92	156 68	231 36	332 55	460 20
		M	52 97	18 88	112 98	67 18	172 57	19 40	11 95	17 86	22 66	24 92	27 68	31 18	36 74	46 24	62 26	88 10	128 35	187 16	268 92	376 00	506 57
		F	56 92	17 57	110 92	65 30	168 98	18 25	8 86	14 20	20 05	22 35	24 34	25 54	27 01	30 40	38 20	53 96	82 15	128 53	199 00	298 37	427 76
Hungary[r]	1920–1921	BS	Data not available at the U.N.		200 24	108 06	286 66	36 74	22 44	32 65	41 39	38 60	38 48	41 55	46 47	56 87	75 26	102 10	152 00	222 99	350 28	496 23	680 62
		M			215 27	109 74	301 39	36 89	20 84	31 50	42 11	37 09	36 87	42 04	48 88	61 59	81 50	110 88	158 49	230 89	356 96	499 39	691 61
		F			184 28	106 35	271 03	36 59	24 06	33 81	40 26	40 15	40 13	41 05	43 99	52 05	68 97	93 35	145 64	215 40	343 98	493 33	670 67
	1930–1931	BS			156 98	52 92	201 59	17 51	12 44	21 96	29 29	28 12	28 01	33 31	38 13	48 00	64 68	93 11	135 09	207 65	316 05	474 07	690 67
		M			170 73	53 91	215 44	17 03	11 70	20 47	28 72	26 84	28 19	35 62	42 35	54 22	72 09	105 50	153 04	225 05	342 08	504 98	730 15
		F			142 38	51 90	186 89	18 00	13 20	23 49	29 88	29 42	27 84	30 92	33 77	41 65	57 23	80 85	117 76	191 55	292 92	448 59	661 26
	1941	BS	56 57	17 68	115 42	28 45	140 59	10 51	10 22	16 80	21 98	20 71	20 21	23 60	29 01	38 89	54 94	77 64	115 20	176 38	275 37	413 61	592 83
		M	54 92	18 21	125 37	29 88	151 50	11 24	10 12	17 13	23 34	21 32	20 42	24 85	32 31	44 48	62 27	89 59	128 21	188 56	287 57	430 87	609 64
		F	58 22	17 18	104 85	26 98	129 00	9 75	10 32	16 46	20 58	20 08	19 99	22 31	25 65	33 18	47 56	65 80	102 66	164 94	264 24	398 35	578 80
Iceland	1901–1910[1]	BS	50 70	19 72	112 95	59 93	166 11	20 05	19 62	30 07	39 65	43 86	36 86	39 27	48 77	50 03	70 38	84 51	125 16	190 59	282 15	377 74	502 49
		M	48 30	20 70	120 80	60 74	174 20	19 13	17 16	33 79	46 67	52 50	42 17	44 48	60 39	64 27	82 99	98 89	134 20	231 75	293 52	404 42	564 58
		F	53 10	18 83	104 60	59 08	157 50	21 01	22 19	26 16	32 34	35 00	31 50	34 07	37 31	36 34	58 60	71 43	117 18	154 93	273 19	357 31	458 48
	1911–1920[1]	BS	55 35	18 07	72 56	36 81	106 70	15 77	13 59	25 90	40 10	42 31	42 51	39 95	45 85	47 67	68 28	75 33	117 27	157 54	245 13	354 86	500 25
		M	52 70	18 97	82 40	38 47	117 70	15 75	10 59	27 82	46 33	50 09	47 18	43 41	56 55	59 32	85 12	90 00	135 99	180 79	261 44	384 38	525 61
		F	58 00	17 24	62 00	35 07	94 90	15 80	16 73	23 86	33 68	34 25	37 72	36 47	35 14	36 28	52 19	61 81	100 54	137 59	231 82	331 69	481 94

[1] Figures based on survivors out of 10,000 born alive.
[n] Excluding Alsace-Lorraine, 1898–1913.
[o] Figures for 1901–1911 for territory prior to World War I. Figures for 1924–1934 for territory of 1937, i.e. excluding the Saar.
[p] Figures for 1920 probably for territory as of that date. Figures for 1926–1930 excluding the Dodecanese.
[q] See footnote [4].
[r] Including territory ceded to Czechoslovakia in 1947.

Life-Table Mortality Rates by Sex and Age Groups *(Continued)*

Number of deaths during specified age interval per 1000 persons alive at the beginning of each age interval. Expectation of life at birth and (its reciprocal) total life-table mortality rate, for all ages.

Source: U.N. Demographic Yearbooks 1953 and 1954.

Note: Number of deaths and death rates reconstructed from the l_x values; those for both sexes reconstructed on the basis of the corresponding sex ratio at birth. Expectation of life and total death rate for both sexes is the average of the two sexes.

			Expectation of life at birth		Mortality rates by age groups																		
Country	Years	Sex	$°e_0$	$1/°e_0$	0-1	1-4	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
Iceland (*continued*)	1921–1930[1]	BS	58 60	17 06	53 02	28 64	80 14	12 98	12 71	27 48	37 84	34 09	36 17	37 42	38 01	45 25	54 90	72 11	111 53	149 36	247 14	316 46	443 47
		M	56 20	17 79	56 60	29 57	84 50	14 31	10 75	30 25	44 70	39 78	42 19	41 15	39 63	53 97	65 80	83 04	130 37	168 15	284 46	351 94	488 97
		F	61 00	16 39	49 20	27 66	75 50	11 57	14 77	24 55	30 63	28 19	29 98	33 64	36 36	36 53	44 17	61 61	93 84	132 43	214 89	288 51	410 79
	1931–1940	BS	63 25	15 81	43 65	19 47	62 27	9 20	8 15	16 32	27 85	26 79	25 92	25 96	30 01	33 37	46 06	59 78	89 51	153 33	205 17	297 00	487 28
		M	60 90	16 42	48 85	20 05	67 92	10 76	7 92	18 60	31 04	31 05	27 16	26 03	34 83	40 70	56 37	63 30	104 03	196 06	232 42	334 03	527 22
		F	65 60	15 24	38 16	18 87	56 31	7 57	8 37	13 95	24 56	22 42	24 67	25 90	25 12	26 01	35 84	56 36	75 53	113 47	182 11	267 59	458 44
Ireland (Republic of Ireland)	1925–1927	BS	57 65	17 35	70 51	37 80	105 64	12 64	9 37	16 78	22 89	26 53	28 54	32 37	38 33	46 77	64 47	93 25	131 13	178 72	253 65	361 17	484 67
		M	57 37	17 43	77 16	37 83	112 07	12 14	8 37	15 53	21 74	24 85	27 24	31 29	37 49	46 32	64 38	93 50	132 41	181 93	261 63	377 49	508 90
		F	57 93	17 26	63 46	37 77	98 83	13 14	10 40	18 10	24 10	28 32	29 91	33 54	39 23	47 27	64 59	92 97	129 77	175 32	245 24	344 38	460 95
	1935–1937	BS	58 91	16 97	71 64	29 32	98 86	11 33	8 69	13 33	20 02	22 13	24 68	27 79	34 17	44 97	62 84	88 84	131 77	194 93	268 75	351 94	467 35
		M	58 20	17 18	79 52	30 39	107 49	10 82	8 27	13 07	19 27	20 28	23 05	26 93	34 54	46 97	65 91	92 22	136 21	201 61	278 56	365 74	485 36
		F	59 62	16 77	63 27	28 20	89 69	11 85	7 61	13 61	20 80	24 07	26 39	28 68	33 81	42 84	59 64	85 33	127 18	188 10	258 89	338 42	450 43
	1940–1942	BS	60 01	16 66	72 93	21 41	92 78	9 09	6 99	13 44	19 67	20 54	22 55	25 15	30 89	40 47	58 67	84 23	126 38	181 96	267 39	387 49	505 36
		M	59 01	16 95	81 47	22 92	102 52	9 66	6 57	13 10	18 90	19 80	22 18	25 08	30 92	42 79	59 86	88 46	131 72	190 34	280 19	406 35	531 06
		F	61 02	16 39	63 87	19 83	82 43	8 51	7 42	13 80	20 46	21 31	22 95	25 21	30 86	38 03	57 44	79 86	120 89	173 48	254 67	369 39	482 16
	1945–1947	BS	61 45	16 27	68 37	16 73	83 96	6 51	5 68	11 85	17 09	18 15	19 11	21 99	28 33	38 20	54 84	78 70	118 21	180 72	268 34	408 51	534 78
		M	60 50	16 53	75 34	17 42	91 45	6 57	5 76	11 30	15 93	17 15	17 88	21 57	28 62	40 66	57 01	85 50	127 89	194 18	287 99	432 34	565 69
		F	62 40	16 03	60 96	16 03	76 01	6 45	5 60	12 42	18 30	19 19	20 40	22 43	28 02	35 62	52 57	71 63	108 28	167 20	249 24	386 58	508 45
Italy (Probably territory as of period specified)	1901–1911	BS	44 53	22 46	160 16	126 52	266 42	22 36	16 45	25 63	33 61	34 85	35 57	38 43	44 17	50 67	66 62	91 48	142 58	215 75	338 07	490 99	675 03
		M	44 24	22 60	167 71	125 11	271 84	20 48	14 88	23 98	33 19	33 11	33 47	37 01	45 37	55 53	73 63	99 04	149 30	218 94	337 62	489 98	678 04
		F	44 83	22 31	152 11	128 01	260 65	24 33	18 10	27 38	34 05	36 70	37 81	39 95	42 93	45 45	59 21	83 62	135 68	212 55	338 51	491 98	671 98
	1921–1922	BS	50 01	19 20	128 67	89 76	206 88	19 78	13 15	21 12	29 40	28 32	28 72	31 30	35 17	42 97	57 66	79 66	122 36	192 94	310 71	476 10	647 88
		M	49 27	20 30	135 63	91 44	214 67	19 57	12 60	20 43	31 26	27 67	28 04	30 61	36 07	46 40	62 27	86 46	128 98	197 41	312 34	477 06	656 30
		F	50 75	19 70	121 28	88 01	198 62	20 00	13 73	21 83	27 45	29 01	29 42	32 01	34 23	39 39	52 90	72 68	115 68	188 50	309 58	475 18	639 66
	1930–1932	BS	54 88	18 22	108 95	63 35	165 40	13 16	9 68	15 84	20 79	21 88	23 14	26 56	31 08	38 98	52 38	74 75	112 18	174 51	274 34	415 29	575 18
		M	53 76	18 60	115 32	63 55	171 54	13 37	9 81	15 65	20 77	21 75	23 99	28 06	33 87	43 75	58 94	83 55	122 69	186 36	288 43	429 78	592 21
		F	56 00	17 86	102 25	63 14	158 93	12 94	9 54	16 04	20 83	22 03	22 25	25 00	28 20	34 06	45 69	65 91	101 82	163 12	261 16	402 24	560 51
Luxembourg	1946–1948[1]	BS	63 72	15 69	61 57	12 81	73 59	5 57	5 45	7 44	10 15	12 40	12 89	15 05	22 65	37 71	50 52	78 04	112 49	173 82	259 87	376 22	555 64
		M	61 69	16 21	67 60	12 01	78 80	6 95	4 92	7 91	11 07	11 64	14 61	21 27	28 07	46 77	59 34	94 35	129 19	200 65	282 66	407 45	588 03
		F	65 75	15 21	55 00	13 65	67 90	4 08	6 03	6 94	9 17	13 22	11 05	11 96	16 91	28 24	41 49	61 63	96 25	148 72	239 85	350 31	531 14
Netherlands[a]	1900–1909	BS	52 20	19 16	129 38	64 64	185 66	17 01	11 31	17 70	22 82	23 69	25 68	30 32	36 46	45 19	60 60	85 62	127 35	193 01	288 84	418 35	570 45
		M	51 00	19 61	140 46	66 44	197 57	17 36	10 65	17 92	25 17	23 79	24 03	29 02	37 02	49 10	65 72	94 00	135 65	203 53	300 17	430 97	585 52
		F	53 40	18 73	117 69	62 80	173 10	16 64	11 97	17 48	20 41	23 60	27 39	31 65	35 90	41 18	55 39	77 19	119 16	182 84	278 18	406 82	557 28
	1910–1920	BS	56 10	17 82	92 46	50 15	137 97	14 26	10 56	17 72	21 77	23 31	24 79	27 52	31 91	40 18	55 18	79 52	119 91	183 05	278 20	407 35	561 37
		M	55 10	18 15	101 84	51 51	148 10	14 67	9 80	17 66	23 17	23 03	23 46	25 61	31 01	41 10	58 74	86 18	128 21	192 01	289 39	420 01	574 32
		F	57 10	17 51	82 56	48 73	127 27	13 83	11 34	17 77	20 33	23 58	26 15	29 49	32 85	39 23	51 50	72 68	110 90	174 17	267 33	395 46	549 69
	1921–1930	BS	62 70	15 95	58 15	26 14	82 77	8 65	6 41	10 97	14 01	14 46	15 72	18 98	23 13	31 40	45 82	68 89	106 37	167 28	259 71	388 84	544 08
		M	61 90	16 15	65 28	27 94	91 40	9 40	6 51	11 13	14 67	13 96	14 47	17 13	21 22	30 55	46 01	71 10	110 24	172 66	266 02	397 76	558 06
		F	63 50	15 75	50 62	24 28	73 67	7 85	6 31	10 81	13 32	14 99	17 00	20 89	25 10	32 29	45 63	66 60	102 34	161 73	253 29	379 94	530 49
	1931–1940	BS	66 15	15 12	40 60	14 14	54 17	6 11	4 55	7 39	9 25	10 01	11 68	14 64	18 73	26 76	40 73	62 27	99 16	157 38	248 83	378 17	538 00
		M	65 70	15 22	45 67	15 23	60 20	6 81	4 86	7 89	10 05	10 14	11 36	13 95	18 37	26 70	40 56	64 30	101 98	163 29	255 49	386 81	550 56
		F	67 20	14 88	35 21	13 01	47 76	5 38	4 22	6 87	8 42	9 88	12 01	15 37	19 10	26 82	40 92	60 13	96 21	151 29	242 04	369 49	525 76
	1947–1949	BS	70 45	14 19	30 20	8 09	38 05	3 71	2 86	4 08	5 40	6 37	7 59	9 41	13 86	20 75	32 57	49 04	78 98	130 04	213 84	333 33	491 75
		M	69 40	14 41	33 46	8 93	42 09	4 46	3 41	4 92	6 21	7 12	7 96	9 84	14 75	22 56	36 46	53 77	84 57	136 56	219 67	341 18	503 88
		F	71 50	13 99	26 73	7 21	33 75	2 93	2 27	3 20	4 54	5 58	7 20	8 96	12 93	18 86	28 50	44 16	73 26	123 47	208 06	325 64	480 14
Norway	1901/02–1910/11	BS	56 26	17 77	74 36	37 26	108 85	17 86	16 41	28 83	38 66	36 84	35 77	37 00	39 68	44 45	55 44	71 58	99 41	148 58	218 09	332 43	477 84
		M	54 82	18 24	81 45	38 25	116 58	17 72	15 12	31 14	45 11	40 40	36 30	37 13	40 17	47 56	60 03	77 27	107 62	160 51	229 88	345 51	497 98
		F	57 70	17 33	66 79	36 22	100 59	18 02	17 75	26 40	31 92	33 17	35 22	36 88	39 17	41 26	50 79	65 87	91 27	136 93	206 89	320 37	460 00

[1] Figures based on survivors out of 10,000 born alive.

[a] Including Elten and Tuddern. Figures for 1931–1940 include war losses.

Life-Table Mortality Rates by Sex and Age Groups (*Continued*)

Number of deaths during specified age interval per 1000 persons alive at the beginning of each age interval. Expectation of life at birth and (its reciprocal) total life-table mortality rate, for all ages.

Source: U.N. Demographic Yearbooks 1953 and 1954.

Note: Number of deaths and death rates reconstructed from the l_x values; those for both sexes reconstructed on the basis of the corresponding sex ratio at birth. Expectation of life and total death rate for both sexes is the average of the two sexes.

Country	Years	Sex	Expectation of life at birth		Mortality rates by age groups																		
			$^{o}e_{o}$	$1/^{o}e_{o}$	0-1	1-4	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
Norway (*continued*)	1911/12–1920/21	BS	57 16	17 49	63 88	30 87	92 78	16 50	14 88	29 75	41 18	40 72	37 37	36 72	38 61	44 03	54 11	72 21	100 77	147 53	222 45	337 06	486 48
		M	55 62	17 98	70 28	32 22	100 24	17 04	13 76	31 95	47 45	45 07	40 26	37 75	39 87	47 15	58 43	79 51	110 16	159 35	235 76	355 95	508 45
		F	58 71	17 03	57 05	29 46	84 83	15 94	16 07	27 43	34 63	36 26	34 42	35 69	37 32	40 88	49 76	64 94	91 55	136 18	210 03	320 02	467 66
	1921/22–1930/31	BS	62 41	16 02	49 75	17 94	66 80	8 74	8 98	19 30	27 44	26 92	25 18	26 24	29 68	36 71	47 94	64 85	94 97	141 10	214 80	324 14	473 63
		M	60 98	16 40	55 10	19 12	73 17	9 44	8 71	19 68	30 35	29 07	26 91	27 57	31 32	39 09	51 36	71 16	105 33	151 68	229 81	340 52	493 20
		F	63 84	15 66	44 10	16 71	60 07	8 02	9 28	18 90	24 42	24 69	23 39	24 86	28 00	34 29	44 47	58 49	84 69	130 84	200 59	309 20	456 63
	1931/32–1940/41	BS	65 85	15 19	42 13	12 34	52 95	6 61	6 07	11 39	17 17	18 40	18 86	20 38	23 64	30 24	41 72	58 55	87 27	134 19	208 47	325 38	475 25
		M	64 10	15 60	47 27	13 36	60 00	7 34	6 52	12 70	20 23	20 99	21 46	22 90	26 76	33 11	45 12	64 66	96 62	147 82	221 76	339 27	492 25
		F	67 60	14 79	36 68	11 27	47 54	5 83	5 59	10 03	13 99	15 73	16 18	17 81	20 45	27 34	38 32	52 46	78 04	121 05	196 04	312 81	460 46
	1945–1948	BS	69 75	14 34	32 07	10 26	42 00	5 58	4 23	7 62	11 01	12 43	12 76	13 98	17 88	23 47	32 75	45 38	71 50	112 64	180 08	287 03	431 68
		M	67 80	14 75	35 85	11 75	47 18	6 81	5 28	9 09	13 62	15 31	15 72	16 32	20 29	27 05	38 06	51 81	80 04	122 89	194 59	305 32	447 53
		F	71 70	13 95	28 03	8 68	36 47	4 29	3 12	6 07	8 26	9 43	9 68	11 58	15 39	19 82	27 35	38 94	63 03	102 68	166 30	270 26	417 86
Poland[4]	1931–1932[1]	BS	49 80	20 08	155 25	56 19	202 72	17 61	12 98	19 21	26 85	27 95	30 05	33 87	38 95	49 26	69 59	99 30	143 52	212 96	311 25	437 77	589 92
		M	48 20	20 75	169 20	57 66	217 10	17 63	12 22	19 09	27 91	27 19	28 38	32 86	40 92	56 05	80 90	113 25	161 28	234 75	337 37	465 83	617 12
		F	51 40	19 45	140 40	54 68	187 40	17 60	13 78	19 31	25 77	28 72	31 75	34 92	36 91	42 28	58 12	85 48	126 47	192 91	288 44	414 92	569 72
	1948[1]	BS	59 05	16 93	114 19	26 21	137 41	8 66	7 03	11 25	16 63	17 60	18 83	21 53	26 35	36 17	53 07	77 10	110 27	163 68	250 14	354 57	
		M	55 60	17 99	125 70	25 51	148 00	9 62	7 70	13 02	20 81	21 13	21 97	25 04	31 91	44 58	67 28	97 91	133 55	197 33	291 59	383 29	
		F	62 50	16 00	101 90	26 95	126 10	7 67	6 34	9 40	12 30	14 00	15 64	17 96	20 78	27 83	39 22	57 41	89 20	134 71	217 03	333 80	
Portugal	1939–1942	BS	50 70	19 72	130 69	90 81	209 63	16 09	11 29	17 39	22 98	24 66	27 25	31 56	37 48	45 47	58 95	83 49	122 75	188 73	295 75	435 11	582 41
		M	48 60	20 58	136 94	92 36	216 65	16 28	11 08	17 79	24 32	26 33	30 74	36 80	45 36	56 51	73 00	102 69	147 94	223 91	339 72	481 12	622 38
		F	52 80	18 94	124 05	89 18	202 17	15 89	11 51	16 96	21 57	22 93	23 64	26 16	29 46	34 42	45 21	65 27	99 81	158 39	260 77	402 44	557 83
	1949–1952	BS	58 01	17 24	98 80	55 27	148 61	9 89	6 23	10 16	15 58	17 32	18 66	21 46	27 18	35 28	47 86	67 40	101 27	157 41	254 76	374 81	542 08
		M	55 52	18 01	104 64	55 98	154 76	10 20	6 57	10 86	17 53	19 72	21 71	25 69	33 91	44 91	61 11	85 29	124 13	189 16	294 81	425 04	580 20
		F	60 50	16 53	92 51	54 52	141 99	9 56	5 86	9 41	13 51	14 80	15 47	17 05	20 25	25 48	34 64	50 03	79 93	129 14	221 58	337 11	517 28
Spain	1900	BS	34 80	28 74	201 13	209 98	368 88	43 15	22 62	34 09	49 87	52 26	51 95	53 28	57 12	68 11	90 43	127 98	187 16	280 40	424 37	601 65	758 76
		M	33 90	29 50	210 45	211 50	377 44	42 49	21 22	33 03	53 71	56 14	53 34	54 34	61 49	75 89	100 70	139 18	197 47	288 15	429 46	605 75	761 31
		F	35 70	28 01	190 84	208 34	359 42	43 85	24 11	35 23	45 73	48 12	50 46	52 17	52 52	59 98	79 86	116 71	177 05	272 97	419 63	597 89	756 56
	1910	BS	41 75	23 95	151 04	159 14	286 14	32 15	17 44	27 18	36 83	36 47	38 10	45 44	51 53	59 95	77 97	112 73	169 44	251 99	371 30	538 58	706 27
		M	40 90	24 45	160 24	159 74	294 38	32 20	16 31	27 00	38 26	35 24	35 72	45 37	54 88	66 16	86 64	123 79	182 24	263 23	375 92	538 27	703 77
		F	42 60	23 47	140 93	158 49	277 08	32 08	18 65	27 36	35 29	37 81	40 66	45 51	47 91	53 27	68 77	101 22	156 47	240 93	366 86	538 82	708 38
	1920	BS	41 20	24 27	161 13	157 47	293 23	34 28	18 83	29 06	39 48	39 58	40 44	44 82	50 64	59 89	77 14	107 77	158 40	239 42	364 47	530 73	699 73
		M	40 30	24 81	167 13	157 29	298 13	34 42	17 35	29 84	40 92	38 02	39 47	45 74	54 96	68 46	89 46	122 55	174 61	257 52	387 47	557 57	722 66
		F	42 10	23 75	154 54	157 68	287 85	34 12	20 41	28 23	37 92	41 29	41 51	43 81	45 94	50 69	64 15	92 59	142 32	222 14	343 53	507 91	682 18
	1930	BS	50 00	20 00	116 53	90 71	196 67	18 66	12 41	20 40	27 31	28 05	30 18	34 41	40 77	49 90	66 01	94 27	140 54	213 20	324 87	482 71	659 67
		M	48 40	20 66	123 55	92 09	204 26	19 33	11 84	21 38	28 40	27 71	31 02	37 07	46 42	59 23	79 34	111 82	162 34	238 49	351 10	506 11	677 09
		F	51 60	19 38	108 99	89 26	188 52	17 94	13 01	19 36	26 18	28 40	29 30	31 61	34 87	40 28	52 56	77 04	119 98	190 49	302 70	464 28	646 99
	1940	BS	50 15	19 94	114 80	76 05	182 12	17 35	11 07	19 60	29 29	31 48	31 35	37 75	46 64	58 97	78 34	109 25	155 50	221 28	315 85	459 01	633 53
		M	47 10	21 23	118 27	76 74	185 93	18 01	10 46	22 14	36 13	41 00	39 86	46 36	59 33	78 17	105 35	144 06	197 46	270 29	371 85	515 88	680 06
		F	53 20	18 80	111 10	75 33	178 06	16 64	11 73	16 93	22 08	21 60	22 72	29 14	34 21	40 64	53 55	79 07	121 68	185 17	278 90	426 35	611 04
Sweden	1901–1910	BS	55 75	17 94	84 50	45 74	126 38	20 05	15 66	23 07	29 71	30 10	30 07	32 90	37 65	44 57	56 03	73 94	104 31	154 49	236 69	364 12	529 23
		M	54 53	18 34	92 55	46 88	135 09	19 99	14 50	22 69	31 86	30 59	29 86	32 75	39 60	48 49	62 42	82 03	115 09	167 07	250 79	380 34	548 73
		F	56 98	17 55	75 98	44 55	117 15	20 12	16 88	23 47	27 52	29 58	30 30	33 04	35 62	40 53	49 50	65 78	93 63	142 33	223 46	346 44	512 38
	1911–1920	BS	56 99	17 55	69 00	35 55	102 10	17 40	14 51	25 27	35 09	35 08	34 13	33 96	36 68	42 30	53 84	72 49	102 40	153 98	238 56	361 38	524 67
		M	55 60	17 99	76 43	36 39	110 04	17 58	13 73	25 47	39 67	37 26	35 55	34 86	37 60	45 43	58 84	80 28	112 14	165 63	251 67	377 67	543 47
		F	58 38	17 13	61 12	34 68	93 68	17 20	15 32	25 05	30 32	32 83	32 67	33 04	35 74	39 10	48 77	64 71	92 81	142 73	226 26	346 58	508 35
	1921–1930	BS	62 06	16 11	57 82	21 02	77 62	9 88	9 00	16 36	21 93	21 60	21 89	23 61	27 89	35 48	47 34	65 53	96 71	147 65	227 63	353 33	514 11
		M	60 97	16 40	64 72	22 29	85 57	10 17	8 69	16 55	23 29	22 29	22 13	23 90	28 56	37 06	49 48	70 57	104 43	155 86	237 74	362 16	526 83
		F	63 16	15 83	50 52	19 69	69 22	9 58	9 32	16 17	20 50	20 88	21 65	23 30	27 19	33 83	45 13	60 38	88 93	139 47	217 79	344 93	502 37

[1] Figures based on survivors out of 10,000 born alive.

[4] Figures for 1931–1932 pertain to territory of 1923–1938.

Life-Table Mortality Rates by Sex and Age Groups *(Continued)*

Number of deaths during specified age interval per 1000 persons alive at the beginning of each age interval. Expectation of life at birth and (its reciprocal) total life-table mortality rate, for all ages.

Source: U.N. Demographic Yearbooks 1953 and 1954.

Note: Number of deaths and death rates reconstructed from the l_x values; those for both sexes reconstructed on the basis of the corresponding sex ratio at birth. Expectation of life and total death rate for both sexes is the average of the two sexes.

Country	Years	Sex	Expectation of life at birth		Mortality rates by age groups																		
			$^{\circ}e_0$	$1/^{\circ}e_0$	0-1	1-4	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
Sweden (*continued*)	1931–1940	BS	65 23	15 33	44 96	13 18	57 55	6 87	6 31	11 63	16 02	15 69	16 23	18 71	23 51	31 80	44 59	63 59	95 72	148 98	234 12	363 56	529 01
		M	63 76	15 68	50 80	14 37	64 44	7 54	6 60	12 10	17 18	16 22	16 58	19 44	24 91	36 67	48 04	68 75	103 44	157 76	243 11	373 51	540 20
		F	66 13	15 12	38 78	11 95	50 27	6 17	6 03	11 15	14 82	15 14	15 85	17 96	22 07	29 89	41 05	58 27	87 94	140 30	225 39	354 15	518 73
	1941–1945	BS	68 38	14 62	30 25	8 71	38 70	5 11	4 33	8 29	12 60	11 76	12 12	14 07	18 25	25 81	37 61	55 85	84 95	133 91	214 39	337 88	498 88
		M	67 06	14 91	34 15	9 51	43 34	5 98	4 96	9 18	15 27	12 94	12 83	15 35	19 38	27 94	41 19	61 94	92 64	142 76	222 40	349 89	512 66
		F	69 71	14 34	26 11	7 88	33 78	4 20	3 67	7 34	9 82	10 54	11 38	12 75	17 09	23 61	33 93	49 65	77 22	125 15	206 62	326 46	486 26
	1946–1950	BS	70 31	14 22	23 67	5 56	29 10	3 32	2 77	5 04	7 72	7 89	8 82	10 94	14 49	22 45	34 86	53 21	84 13	134 31	216 59	342 23	510 44
		M	69 04	14 48	26 63	6 26	32 72	4 17	3 08	6 13	9 33	9 06	9 81	11 60	15 45	24 40	38 68	59 58	93 41	146 30	226 16	354 10	521 83
		F	71 58	13 97	20 53	4 84	25 27	2 43	2 45	3 88	6 02	6 67	7 80	10 26	13 49	20 45	30 91	46 68	74 76	122 43	207 35	331 07	500 11
Switzerland	1910–1911	BS	52 27	19 13	116 56	38 04	150 17	14 72	11 32	18 93	24 42	26 67	30 19	35 70	44 38	58 01	79 18	111 95	162 06	236 68	343 64	486 58	656 73
		M	50 65	19 74	128 31	38 53	161 90	15 05	10 32	17 90	23 61	26 78	31 61	38 91	50 04	66 89	92 07	129 33	183 70	260 46	364 16	495 97	646 88
		F	53 89	18 56	104 27	37 54	137 90	14 40	12 33	19 98	25 25	26 54	28 74	32 43	38 66	49 12	66 54	95 38	142 20	215 92	326 72	479 27	664 17
	1920–1921	BS	55 99	17 86	80 67	31 00	109 17	14 42	10 73	16 81	20 90	23 36	26 42	31 28	39 06	51 48	71 17	102 25	150 55	223 69	330 40	475 35	649 56
		M	54 48	18 35	90 51	31 58	119 23	14 49	10 88	16 69	20 09	22 76	26 88	33 28	43 13	58 40	81 74	117 06	169 66	245 45	350 38	485 89	643 27
		F	57 50	17 39	70 16	30 39	98 42	14 35	10 59	16 92	21 76	24 00	25 92	29 20	34 80	44 34	60 42	87 52	132 16	203 66	312 96	466 64	654 62
	1929–1932	BS	61 11	16 36	50 30	17 10	66 54	8 82	6 90	12 44	18 12	18 77	20 45	23 53	29 78	42 50	62 73	91 66	133 38	201 34	301 71	440 71	600 16
		M	59 17	16 90	56 19	17 65	72 85	9 22	7 37	13 09	19 42	19 31	22 36	26 43	34 77	50 33	75 32	108 56	154 16	225 47	324 00	465 60	618 44
		F	63 05	15 86	44 12	16 53	59 92	8 41	6 40	11 77	16 77	18 22	18 49	20 57	24 70	34 63	50 26	75 40	114 06	179 94	283 05	421 07	586 80
	1933–1937	BS	62 65	15 96	46 76	16 03	62 04	7 91	5 96	10 78	15 69	16 03	17 47	20 88	27 24	38 32	56 32	83 15	125 35	191 10	285 83	421 37	580 02
		M	60 70	16 47	52 42	17 37	68 88	8 57	6 38	11 97	17 05	16 79	18 70	23 41	31 50	45 24	67 31	99 14	145 72	213 59	309 35	449 20	607 10
		F	64 60	15 48	40 83	14 65	54 88	7 24	5 53	9 54	14 30	15 25	16 20	18 30	22 89	31 33	45 39	67 60	106 23	170 93	265 84	399 09	560 16
	1939–1944	BS	64 82	15 43	41 74	12 92	54 12	6 47	5 38	8 75	12 69	13 65	13 96	16 32	22 06	32 20	48 22	72 65	112 64	174 54	272 07	402 54	567 35
		M	62 68	15 95	46 96	13 98	60 28	7 24	6 05	10 28	15 00	15 31	15 31	18 12	25 50	38 32	56 97	87 09	132 44	199 77	299 74	439 27	602 44
		F	66 96	14 93	36 27	11 82	47 66	5 67	4 71	7 17	10 32	11 95	12 59	14 50	18 59	26 06	39 53	58 56	93 94	151 71	248 43	373 32	542 36
U.K.: England and Wales	1901–1910	BS	50 45	19 82	131 14	70 48	192 38	16 93	10 34	14 80	18 96	22 52	28 86	36 56	46 04	60 05	80 67	112 74	154 94	214 96	316 80	434 07	562 85
		M	48 53	20 61	144 34	72 08	206 02	16 56	10 07	15 32	20 59	24 21	31 19	39 79	50 81	67 37	91 28	126 22	174 21	238 81	339 29	462 99	590 03
		F	52 38	19 09	117 43	68 88	178 22	17 30	10 62	14 29	17 33	20 83	26 52	33 36	41 35	52 91	70 48	100 07	137 40	194 15	298 25	411 58	543 65
	1910–1912	BS	53 42	18 72	109 28	59 27	162 07	16 67	9 71	13 57	17 06	19 65	24 37	31 37	40 45	53 62	73 18	103 26	145 34	207 32	301 40	423 96	561 86
		M	51 50	19 42	120 44	60 58	173 72	16 79	9 55	13 93	18 58	21 15	26 29	34 30	44 84	60 27	82 71	116 96	164 79	231 88	329 22	456 28	593 37
		F	55 35	18 07	97 67	57 94	149 95	16 55	9 86	13 20	15 52	18 14	22 43	28 44	36 07	47 07	63 94	90 22	127 38	185 61	278 19	398 94	539 75
	1920–1922	BS	57 65	17 35	79 95	43 10	119 60	14 39	9 33	13 35	17 30	19 14	22 18	26 80	33 06	42 53	60 13	85 26	127 24	188 57	282 96	409 25	556 04
		M	55 62	17 98	89 96	44 49	130 45	14 51	9 08	13 74	18 16	20 11	23 77	29 76	37 46	47 93	68 01	97 56	145 38	213 49	314 20	445 35	591 35
		F	59 68	16 76	69 42	41 65	108 18	14 27	9 58	12 97	16 12	18 14	20 54	23 77	28 62	37 13	52 34	73 31	110 04	165 89	256 17	380 73	531 02
	1930–1932	BS	60 81	16 44	63 40	28 14	89 76	10 93	7 35	12 05	15 14	15 81	17 36	21 52	28 07	39 30	54 97	79 46	119 07	182 39	278 50	411 68	563 23
		M	58 74	17 02	71 86	29 58	99 31	11 61	7 45	12 62	16 29	16 41	18 14	23 53	31 85	45 47	63 55	91 67	137 08	210 17	315 86	453 94	606 33
		F	62 88	15 90	54 55	26 66	79 76	10 24	7 27	11 47	13 98	15 22	16 58	19 48	24 26	33 09	46 46	67 55	101 96	157 06	246 58	378 90	533 80
	1950[1]	BS	68 85	14 52	29 97	5 62	35 42	3 03	2 35	4 54	6 25	7 45	8 24	10 67	15 36	26 51	41 36	65 65	103 64	157 58	240 75	367 07	523 70
		M	66 50	15 04	33 70	5 69	39 20	3 75	2 72	5 13	6 95	8 06	8 77	11 54	17 46	31 56	51 02	83 61	132 23	195 22	285 25	414 94	576 07
		F	71 20	14 04	26 00	5 54	31 40	2 27	1 97	3 94	5 52	6 80	7 69	9 77	13 19	21 30	31 43	47 58	75 96	123 37	203 60	331 22	489 40
Northern Ireland	1925–1927	BS	55 76	17 93	82 09	43 58	122 09	12 51	10 40	16 90	22 42	25 70	28 21	31 59	39 58	53 05	73 32	101 33	144 29	204 55	283 60	382 40	504 41
		M	55 42	18 04	90 94	45 21	132 04	12 42	9 33	15 19	20 48	23 08	25 28	28 86	37 32	51 82	72 95	101 73	146 55	209 78	294 76	402 98	536 27
		F	56 11	17 82	72 71	41 89	111 55	12 61	11 50	18 67	24 43	28 45	31 28	34 48	41 98	54 36	73 70	100 91	141 87	198 96	271 85	361 44	474 05
Scotland	1920–1922	BS	54 71	18 28	94 57	54 10	143 55	14 72	10 50	15 09	19 32	22 64	26 84	31 61	37 02	47 73	65 97	96 94	141 12	202 56	297 93	429 31	570 43
		M	53 08	18 84	105 97	55 79	155 85	14 72	10 56	15 24	19 34	22 50	26 40	31 88	39 10	51 96	72 20	107 18	158 70	227 06	333 44	468 81	601 01
		F	56 35	17 75	82 66	52 36	130 69	14 71	10 45	14 94	19 30	22 78	27 31	31 34	34 92	43 45	59 74	86 83	124 12	179 81	266 81	397 90	548 94
	1930–1932	BS	57 75	17 32	83 48	38 55	118 81	12 42	8 27	12 82	16 17	17 70	20 91	26 48	33 59	44 09	58 70	86 26	128 12	193 97	294 40	429 87	582 62
		M	56 00	17 86	93 46	39 89	129 62	13 25	8 42	12 83	16 99	17 86	20 91	28 34	37 26	48 98	64 12	95 04	142 88	219 93	326 44	468 11	618 84
		F	59 50	16 81	73 04	37 19	107 51	11 56	8 13	12 80	15 35	17 55	20 91	24 59	29 87	39 19	53 32	77 64	113 90	169 77	266 29	399 11	556 82

[1] Figures based on survivors out of 10,000 born alive.

Life-Table Mortality Rates by Sex and Age Groups *(Continued)*

Number of deaths during specified age interval per 1000 persons alive at the beginning of each age interval. Expectation of life at birth and (its reciprocal) total life-table mortality rate, for all ages.

Source: U.N. Demographic Yearbooks 1953 and 1954.

Note: Number of deaths and death rates reconstructed from the l_x values; those for both sexes reconstructed on the basis of the corresponding sex ratio at birth. Expectation of life and total death rate for both sexes is the average of the two sexes.

Country	Years	Sex	*Expectation of life at birth*		*Mortality rates by age groups*																		
			$^{\circ}e_0$	$1/^{\circ}e_0$	0-1	1-4	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
Scotland (*continued*)	1950[1]	BS	66 40	15 06	38 24	7 14	45 11	3 41	2 59	6 17	8 88	11 04	11 15	14 00	20 38	31 74	51 07	77 43	112 83	172 83	273 29	379 44	528 63
		M	64 50	15 50	42 70	8 04	50 40	3 90	3 07	6 47	8 11	9 90	9 67	14 05	22 93	38 39	64 21	97 35	144 18	199 44	306 24	406 02	567 81
		F	68 30	14 64	33 50	6 21	39 50	2 92	2 09	5 86	9 68	12 22	12 70	13 95	17 68	24 75	37 49	57 41	93 34	148 66	245 14	358 58	500 17
Malta and Gozo [U.K.]	1948[1]	BS	56 70	17 64	152 99	12 17	163 30	8 46	7 21	9 07	13 51	14 03	14 95	20 14	23 75	36 31	62 55	98 85	122 09	199 17	247 14	347 25	432 03
		M	55 69	17 96	155 70	14 09	167 60	11 29	8 38	9 80	14 48	14 06	13 88	16 79	24 17	37 15	76 47	103 39	130 34	205 79	255 44	341 10	438 47
		F	57 72	17 32	150 10	10 12	158 70	5 47	5 98	8 30	12 49	14 00	16 06	23 66	23 33	35 43	47 88	95 22	113 75	192 62	239 02	353 06	425 72
U.S.S.R. (European part only) (Probably territory as of date specified)	1896–1897	BS	32 39	30 87	276 56	200 90	421 90	63 62	27 53	28 44	36 62	39 09	44 35	50 21	59 76	73 75	95 84	128 11	177 37	257 47	333 76	413 01	457 01
		M	31 43	31 82	294 18	204 17	438 29	64 07	27 24	27 63	35 98	37 53	42 89	49 32	60 98	79 12	101 20	129 67	176 98	255 39	334 83	413 70	469 28
		F	33 36	29 98	258 00	197 64	404 65	63 17	27 83	29 23	37 26	40 65	45 81	51 09	58 54	68 36	90 55	126 59	177 71	259 54	332 67	412 33	445 17
	1926–1927	BS	44 36	22 54	187 01	123 38	287 32	34 05	13 65	19 13	27 42	29 81	32 40	36 92	45 03	54 57	72 79	92 67	129 06	184 50	272 08	349 07	469 94
		M	41 93	23 85	201 02	127 46	302 86	35 24	13 81	19 90	29 07	31 02	33 68	39 98	51 92	67 67	92 30	114 78	152 96	213 63	302 60	382 82	508 53
		F	46 79	21 37	172 14	119 21	270 83	32 86	13 50	18 34	25 74	28 60	31 11	33 87	38 17	41 72	54 19	72 41	108 17	160 33	248 40	324 68	444 55
Oceania Australia[u]	1901–1910	BS	57 02	17 54	87 53	31 07	115 88	10 49	9 20	14 19	19 18	23 41	27 65	33 55	41 08	50 48	63 51	86 25	126 27	189 87	290 29	410 46	537 98
		M	55 20	18 12	95 10	32 10	124 15	11 00	9 62	15 11	20 01	23 65	27 67	34 60	44 91	58 75	74 96	100 23	142 86	213 58	321 70	448 04	581 65
		F	58 84	16 99	79 53	30 01	107 15	9 97	8 78	13 24	18 32	23 16	27 63	32 46	37 15	42 05	52 07	72 61	110 53	168 21	263 16	380 61	507 07
	1920–1922	BS	61 23	16 33	63 70	26 05	88 09	9 49	7 03	10 26	14 91	17 90	20 41	25 16	30 74	40 54	53 95	75 88	111 35	166 05	252 70	383 99	585 21
		M	59 15	16 91	71 32	27 84	97 17	9 90	7 88	11 14	15 72	18 25	20 66	26 26	34 14	47 54	62 96	89 94	134 10	192 29	280 18	416 69	574 73
		F	63 31	15 79	55 68	24 19	78 52	9 05	6 14	9 33	14 08	17 53	20 16	24 04	27 08	33 46	44 95	62 08	89 71	142 29	229 26	356 37	517 19
	1932–1934	BS	65 31	15 31	41 04	15 33	55 74	6 70	5 44	7 86	11 16	12 75	14 76	18 86	24 00	34 07	49 14	71 60	104 51	159 11	239 11	357 47	514 14
		M	63 48	15 75	45 43	16 45	61 13	7 39	6 27	8 77	11 83	12 62	14 72	19 37	26 15	38 15	56 22	85 67	123 77	182 83	269 50	392 62	561 18
		F	67 14	14 89	36 42	14 17	50 07	5 99	4 59	6 92	10 47	12 88	14 82	18 35	21 76	29 86	41 92	57 46	85 70	136 92	212 18	328 63	479 22
	1946–1948	BS	68 35	14 63	28 68	7 20	35 67	3 75	3 43	5 25	6 98	7 87	9 55	12 58	18 46	29 23	45 96	69 05	103 92	157 41	237 73	352 95	502 66
		M	66 07	15 13	31 99	7 89	39 63	4 35	4 21	6 87	8 54	8 39	10 01	13 18	20 52	33 87	55 03	85 76	129 45	191 97	277 47	396 23	537 77
		F	70 63	14 16	25 19	6 46	31 49	3 12	2 61	3 57	5 36	7 32	9 08	11 95	16 33	24 46	36 71	52 32	79 27	125 88	204 21	319 77	478 74
New Zealand[v]	1901–1905	BS	59 32	16 86	75 98	25 02	99 10	10 71	8 47	13 65	19 01	21 59	23 73	28 64	34 03	43 79	59 77	80 30	115 85	170 26	262 73	385 51	524 52
		M	58 09	17 21	83 06	25 66	106 59	11 32	8 98	14 09	19 47	20 69	23 83	28 58	34 74	48 33	65 02	86 30	124 81	184 03	284 69	408 02	552 79
		F	60 55	16 51	68 54	24 36	91 23	10 08	7 94	13 20	18 54	22 53	23 64	28 69	33 30	39 12	54 43	74 26	106 95	156 84	242 02	365 48	501 10
	1911–1915	BS	62 22	16 07	53 94	17 75	70 73	8 85	7 56	11 14	14 56	17 31	21 23	26 08	31 94	41 11	54 99	77 61	107 87	161 86	263 73	399 04	534 09
		M	60 96	16 40	60 50	18 16	77 56	8 90	8 29	12 54	15 39	17 31	20 89	26 43	33 52	44 43	59 06	83 30	118 34	173 87	272 99	418 73	571 60
		F	63 48	15 75	47 05	17 31	63 55	8 80	6 79	9 69	13 71	17 30	21 57	25 71	30 32	37 70	50 83	71 88	97 45	150 17	254 98	380 86	496 39
	1934–1938	BS	66 95	14 94	32 69	10 56	42 90	6 09	4 72	7 54	10 32	11 36	12 61	16 25	22 63	30 36	43 58	63 86	100 24	153 80	238 71	359 46	519 12
		M	65 46	15 28	36 53	11 78	47 88	6 68	5 36	9 06	11 38	11 63	12 41	17 66	24 74	33 03	49 02	71 56	113 51	169 36	258 99	381 21	541 44
		F	68 45	14 61	28 70	9 30	37 73	5 48	4 06	5 99	9 24	11 08	12 80	14 80	20 43	27 66	38 06	56 15	87 35	139 00	220 06	340 45	500 82
	1951–1952	BS	70 36	14 21	22 54	4 99	27 42	2 75	2 48	4 88	6 01	6 21	7 50	10 16	14 20	23 99	38 66	61 88	94 21	144 39	218 85	334 69	480 58
		M	68 29	14 64	24 99	5 35	30 21	3 29	3 39	6 70	8 25	7 55	8 84	11 76	15 69	26 67	44 65	73 89	112 14	173 16	251 72	369 36	514 97
		F	72 43	13 81	19 95	4 61	24 47	2 16	1 53	2 97	3 68	4 81	6 10	8 50	12 67	21 22	32 52	49 75	76 57	117 15	189 72	306 30	454 99

[1] Figures based on survivors out of 10,000 born alive.
[u] Excluding full-blooded aborigines.
[v] Excluding Maoris.