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Infant Mortality in Denmark 1931-1960

By
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On the background of the rapid decline in infant mortality in Denmark during the past 30 years, it has been found desirable to undertake a statistical analysis of this decline, with particular reference to the incidence of the different causes of death and the relative mortality of live-born males and females born in and out of wedlock.

In the analysis a statistical model has been used, which was developed primarily in connexion with a study of the proficiency in reading etc. of school children. The development of the model is due to Professor, dr. phil. G. Rasch, who has been kind enough to go through the section dealing with this subject.

The analysis has been undertaken and this paper written by Mr. P. C. Matthiessen, assistant professor of mathematical statistics in the University of Copenhagen, who is attached to the section for vital statistics in The Statistical Department.

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ANDELSBOGTRYKKERIET I ODENSE

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Explanation of Symbols

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A. General Statement

1. Introduction

In demographic studies of mortality much attention has always been devoted to infant mortality, i.e., the mortality among children between 0 and 1 year of age. One reason is that infant mortality has always been considerable compared with the mortality in other age groups, both in relative and absolute terms. Another reason is that the mortality in this age group seems to have been particularly influenced by the hygienic and medical progress made over the last 100–150 years.

The aim of the present study is to analyse the development during the period 1931–60. This period has been chosen because after 1930 infant mortality began to fall rapidly after having remained at an almost constant level throughout the 1920's. As will be mentioned in the section on the causes of death (A.4), also the nature of the statistical material available has influenced the choice of period.

One of the first questions which will be studied is whether the mentioned fall occurred equally in the case of males and females in and out of wedlock, i.e. whether a distinction by sex and by the marital status of the mother is relevant. Besides, the study will concentrate on the development in the different causes of death in order to ascertain the diseases which have been combated most successfully. In this connexion it is natural to study whether the sex of the infant and the marital status of the mother have any influence on the relative incidence of the different causes of death. Finally, the study will be concerned with the change in the distribution of deaths by age and its dependence on the sex of the infant and marital status of the mother.

In the present chapter A the definitions and classifications used will be explained in relation to the statistical material; at the same time a preliminary investigation of the above-mentioned questions will be carried out by means of index calculations and graphs.

However, a more detailed and exact analysis of the mortality in four groups of live births cannot be carried out exhaustively by these simple aids, for one thing because in many cases a breakdown of the material will yield so few observations in the individual groups that the random variations will begin to dominate strongly. We are therefore forced to assess whether the differences found are *systematic* or *random*. Such an assessment can only be made by analysing the observations on the basis of a suitable statistical model, which can form the basis for creating the necessary criteria for a distinction between *systematic* and *random* deviations.

Such a model has recently been developed and presented in "Probabilistic Models for Some Intelligence and Attainment Tests" by G. Rasch[1]). As indicated by the title, this model was developed primarily in connexion with observations derived from reading tests, etc. Nevertheless, the model may be modified and interpreted in such a way as to render it useful in connexion with an analysis of infant mortality. As will be shown, we shall thus be able to reveal and optimally quantify the constant relations which are to be found in this field. In section B.1. the model with the necessary changes has been described.

In sections B.2 and B.3 the relation between males and females born in and out of wedlock has been analysed by means of this model with reference to the crude infant mortality and the distribution by causes of death.

[1]) Published by Danmarks Pædagogiske Institut. Copenhagen 1960.

2. Problems of definition

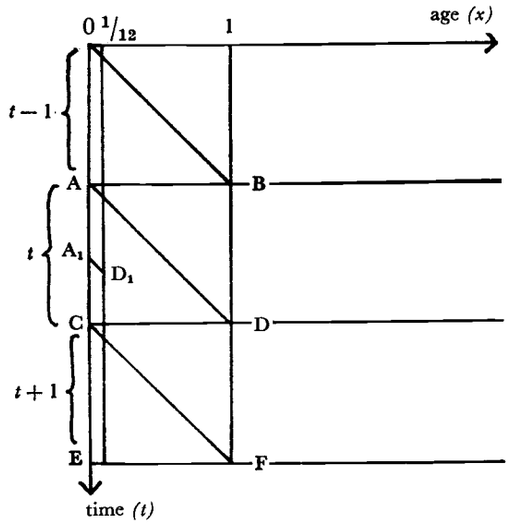
The crude cohort mortality for live births in year t, q_0^t, where the subscript denotes the age, is defined as the fraction of the cohort who die before the completion of their first year, i.e.

$$q_0^t = \frac{\text{number of deaths between 0 and 1 year of the cohort from year } t}{\text{number of live births in year } t}$$

While the denominator requires only a registration of the number of live births in year t, the registration of deaths between 0 and 1 year must be extended to include year $t + 1$, because in year $t + 1$ deaths occur among persons between 0 and 1 year of age, who were born in year t.

The easiest way of illustrating this relation is by means of a Lexis schedule, which gives a graphical registration of live births and the course of life between 0 and 1 year of age.

Lexis Schedule



This schedule consists of two axes, an age and a time axis. Any live birth can be registered in this schedule by marking a point on the vertical time axis for $x = 0$ in accordance with the time at which the birth took place. If we consider year t, points A and C represent 1st January and 31st December, respectively, while the middle point, A_1, corresponds to the transition from the first to the second halfyear. If, e.g., the number of live births was constant throughout the year, the result would be an evenly distributed number of points along the line segment AC.

The life of each of the live births from year t can now be described by drawing a line from the relevant point on the AC line with an inclination of −45 degrees (assuming the same unit of subdivision on the two axes). If an infant born on 1st January in year t completes its first year, this will mean that the line will be carried through to intersect the vertical time axis for $x = 1$ (the life-line AD), whereas a death, e.g., one month after birth for a live birth from 1st July in year t will cause the line to go only as far as to the vertical time axis for $x = {}^1/_{12}$ (the life-line A_1D_1). As regards the first year of life all live-births from the year t will be represented by the life-lines in the parallelogram ADFC and thus cover both years t and $t + 1$, since the parallelogram will consist of unbroken as well as broken life-lines.

The crude cohort mortality for live births from year t can be defined, on the basis of this schedule, as the ratio of the number of broken life-lines in the parallelogram ADFC to the total number of life-lines starting from AC. Thus q_0^t becomes a result of the mortality situation in year t as well as in year $t + 1$.

In connexion with the crude cohort mortality it should be noted that there is full agreement between numerator and denominator in the sense that all deaths in the numerator occurred among persons who are to be found in the denominator, and moreover that all deaths among persons included in the denominator are found in the numerator. The frequency is thus a "correct" expression of the relative mortality level in the population considered in the given period.

By means of the Lexis Schedule we can now determine the frequencies which are to be calculated in connexion with the introduction of the causes of death (cause-of-death frequencies) and the age at death (age-at-death frequencies) for the generation from year t.

A given cause-of-death frequency can be determined as the ratio of the number of broken life-lines in the parallelogram attributed to the given cause of death to the total number of life-lines starting from AC. The classification of the broken life-lines by cause of death is undertaken on the basis of a cause-of-death nomenclature. (In connexion with the discussion of causes of death in section A.4 an account will be given of the cause-of-death nomenclatures used during the period[1]).

A given age-at-death frequency, such as the frequency of deaths within one month after birth, can be defined as the ratio of the number of life-lines from AC which are broken before they reach the vertical time axis for $x = {}^1/_{12}$ to the total number of life-lines from AC.

While the available statistical material permits of an estimate of the crude infant mortality and the age-at-death frequencies on a cohort basis, this is not true in the case of the cause-of-death frequencies. The tabulation of deaths by cause includes only information on year of death and age at death, but not year of birth. This means, e.g., that in the case of infants between 0 and 1 year of age who died of pneumonia in year t, it cannot be seen whether they were born in year t or in year $t - 1$, i.e. whether the life-line belongs to the triangle ADC (born in year t) or the triangle ABD (born in year $t - 1$).

The difficulty can be overcome by computing the frequency on a calendar-year basis; it will then be identical with the ratio of life-lines broken in the rectangle ABDC attributed to the given cause of death to all life-lines starting from AC. In this computation full correspondence between numerator and denominator is not achieved because the numerator includes deaths from the cohort from year $t - 1$ (triangle ABD), whereas the deaths occurring among the persons included in the denominator in year $t + 1$ are not included in the numerator. In periods with wide fluctuations in the annual number of live births this frequency may give a somewhat distorted picture of the relative mortality level.

While in the case of the cohort frequency the deaths occurred both in year t and in year $t + 1$, the calendar-year frequency includes only deaths from year t.

Differences may thus occur between the two frequencies because both the live births and the deaths do not refer to the same period.

This holds good, of course, in the case of cause-of-death frequencies, age-at-death frequencies as well as crude infant mortality.

To create greater comparability it was decided to calculate all the frequencies by the calendar-year principle, which means that all the deaths which form the basis of the calculation of crude infant mortality, cause-of-death and age-at-death frequencies will refer to the same period.

The disturbing influence from the lack of correspondence between numerator and denominator depends not only on the variation in the number of live births from year to year, but also on how large a share of the deaths occurring in a year originates in the cohort of the year, i.e. the relation between broken life-lines in triangle ADC and rectangle ABDC. The larger this share, the closer the correspondence between numerator and denominator.

About these two factors it may be mentioned that while the relative change in the number of live births from year to year has not exceeded 10 per cent, except in some war-years, two-thirds of the persons under 1 year dying in the course of 1931 had been born in that year, and by 1960 this ratio had reached almost nine-tenths.

The disturbing influence from the incomplete correspondence between numerator and denominator will therefore be of minor importance.

3. Crude infant mortality

Fig. 1 shows the development for the number of live-born males and females in and out of wedlock during the period 1931–1960. As will be seen, the number of live births rose very rapidly for all four groups during the war-years after a slower development during the 1930's and remained at a high level during the first post-war years. During the latter part of the period births stabilized at a considerably lower level although the number of live births in wedlock was higher than before the war in contradistinction to infants born out of wedlock. From the figure it will be seen that the developments for males and females in each of the two groups are very similar owing to the constant sex ratio.

Fig. 2 and table I give a picture of the crude infant mortality during the period 1921–60. During the 1920's crude infant mortality was just over 8 per cent for all live births, but from the beginning of the 1930's a fall set in so that by the end of the period the mortality had dropped to just over 2 per cent, i.e. a fall of approx. 75 per cent.

Fig. 3 and 4 and tables II and III contain data on the development in crude infant mor-

[1]) Properly the word *nomenclature* means in this connexion a medical list of diseases, while a *classification* denotes a grouping of these diseases into homogeneous categories for statistical purposes, so in this case we should be talking about classification. However, in view of the linguistic tradition in this field, we shall use the word nomenclature.

tality for males and females born in and out of wedlock. In 1931 the mortality for males and females born in wedlock was 9.0 and 6.6 per cent compared with 12.1 and 9.3 per cent for males and females born out of wedlock, while the corresponding figures in 1960 were 2.3, 1.9, 3.6 and 2.4 per cent. Throughout the period infants born in wedlock had a lower mortality than infants born out of wedlock, and males within each of the groups had a higher mortality than females.

However, fig. 4 shows that the relative fall in mortality did not, at any rate, occur in the same way for live births in and out of wedlock. While the decline seemed to be of the same order during the 1930's, a marked difference set in at the beginning of the period 1942–47, when the fall stopped in the case of infants born in wedlock, and at the same time there was an increase for infants born out of wedlock. With the end of the period there was again a fall for all groups, greatest for infants born out of wedlock, who thus to some extent recovered lost ground.

A somewhat brighter light is shed on these relations in table IV and fig. 5. The table presents a computation of the relation between crude infant mortality for males and females born in and out of wedlock, and these relations have been plotted in fig. 5. From fig. 5A and 5B it will be seen that the size of the male excess mortality seems to be constant throughout the period in both groups of live births. (The wider fluctuations in fig. 5B are due to the far smaller numbers of observations.) On the other hand, there were great differences between infants born in and out of wedlock (fig. 5C), so that the periods 1931–41, 1942–47 and 1948–60 seem to have each their constant level.

To quantify the relation between the crude infant mortality for males and females as well as for infants born in and out of wedlock, we have calculated a simple average of the annual relations for each of the three periods (table 1).

The table shows that throughout the period male mortality was about one-third higher than female mortality, although excess mortality for males was somewhat higher among live births in wedlock. Comparing mortality for infants born in and out of wedlock, we find that live births out of wedlock during the first period showed an excess mortality of 40 per cent. During the period 1942–47 the excess mortality rose steeply to 73 per cent after which it fell again to 56 per cent, i.e. somewhat higher than the pre-war level.

Table 1. The relation between males and females born in and out of wedlock as regards the crude infant mortality during the period 1931–60.

Period	Born in wedlock: $\frac{\text{Males}}{\text{Females}} \times 100$	Born out of wedlock: $\frac{\text{Males}}{\text{Females}} \times 100$	Born out of wedlock: $\frac{\text{Born out of wedlock}}{\text{Born in wedlock}} \times 100$
	1	2	3
1931–41 average	131	127	140
1942–47 average	132	126	173
1948–60 average	135	127	156

In the following section we shall examine the decline of infant mortality with special reference to the incidence of the different causes of death and try to find those causes of death which contribute particularly to the excess mortality of males and the higher mortality for infants born out of wedlock. We shall also try to illustrate the difference in the excess mortality of males in the case of live births in and out of wedlock.

Calculations have shown that changes in the composition of live births by number of pregnancy, age of mother, single and multiple births during the period do not go far towards explaining the decline in crude infant mortality, nor do differences from one group to another as regards the composition by these criteria contribute to the difference in mortality among the four groups of live births. These factors, therefore, have not been taken up for treatment in this study.

4. Causes of death

As previously mentioned, the classification of deaths by causes is based on a cause-of-death nomenclature which contains a numbered list of diseases, which are then collected into uniform groups so that after diagnosis a death can be placed in a certain group.

In the grouping of the causes of death in the present study (see table V) various considerations had to be taken into account. Firstly, the grouping chosen should render possible an analysis of the "infants' diseases proper" ("malformations", "prematurity", "congenital debility", "injuries at birth", and "other infants' diseases"), i.e. diseases which in the definition of the nomenclature only occur among newborn babies. Secondly, it has been deemed important to distinguish between infectious and non-infectious diseases because the development is quite different for these two groups. Thirdly, a further breakdown has been made within each of these two groups in order to bring to light diseases which are important, and the development of which shows particularly characteristic features. Thus pneumonia has been separated from non-infectious diseases, while the infectious diseases have been subdivided into influenza, cholerine, whooping cough, and other infectious diseases.

In table V a complete list has been given of the diseases classified under "other infectious diseases". This list has been compiled on the basis of the Inter-Scandinavian Cause-of-Death Nomenclature of 1926, which was used from 1931–40.

As will also be seen from table V, three different cause-of-death nomenclatures have been used during the period. As a result, difficulties arise when it is desired to maintain cause-of-death groups with the same content. When a new nomenclature replaces the one previously used, the new grouping will often cut across the old one because old groups are split up into subgroups, are merged or disappear. Therefore the situation may arise where groups from the previous nomenclature cannot be carried on. When a new nomenclature is introduced, it usually means that we go from less to more detailed classifications, for which reason it is usually easiest to carry on given groups if they are defined on the basis of the earliest nomenclature. This fact is the reason why we have chosen to define infectious diseases in accordance with the nomenclature of 1926.

As the Inter-Scandinavian Cause-of-Death Nomenclature of 1926 (the period 1931–40) and the International Cause-of-Death Nomenclature of 1938 (the period 1941–50) only differ very slightly, it has been possible to retain the original cause-of-death classification up to 1950. The introduction in 1951 of the WHO classification of 1948 brought great changes, especially as regards "infants' diseases", this nomenclature indicating a more medically defined cause of death in those cases where, e.g., the term "prematurity" had previously been used. This made it impossible to continue using the group of "infants' diseases proper", so that only pneumonia could be kept apart from non-infectious diseases. The term "infants' diseases proper" in this survey is used in accordance with the nomenclature of 1926. In table V have been shown the nomenclature numbers included in the different cause-of-death groups.

Owing to the constant progress of medical science, changes may occur in the real content of the cause-of-death groups over a long period of time. Unlike changes in nomenclature, these changes generally occur very slowly and are therefore extremely difficult to discover. This means that in surveys covering a long period of time the subdivision should not be carried too far.

In figures 6–7 and tables VI–IX have been shown the distribution of deaths by cause and the development in cause-of-death frequencies. To gain a more summary impression of the size

Table 2. Number of deaths among infants under 1 year by cause per 1000 live births in 1931, 1940, 1950, and 1960.

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)							
	Malformations	Prematurity	Congenital debility	Injury at birth	Other	Total (1–5)				Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	6.1	12.6	5,3	2.6	1.4	28.1	14.8	42.9	22.9	2.0	6.7	3.3	3.7	15.6	81.4
1940 ...	6.3	10.9	5.8	2.6	1.3	26.9	5.9	32.8	10.6	0.7	2.8	1.1	2.2	6.8	50.2
1950 ...	4.6	9.9	1.2	2.2	1.9	19.8	3.6	23.3	5.2	0.1	0.9	0.1	1.1	2.2	30.7
1960 ...	...	...	...	...	...	...	...	19.2	1.4	0.0	0.4	0.1	0.4	1.0	21.5

Table 3. Number of deaths among infants under 1 year by cause per 1000 live births in 1931, 1940, 1950, and 1960 (1931 = 100)

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injury at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1940 ...	103	86	109	99	93	96	40	76	46	35	42	35	59	44	62
1950 ...	75	78	23	82	136	70	24	54	23	7	12	4	29	14	38
1960 ...	...	...	...	...	...	...	...	45	6	2	6	4	12	6	26

Table 4. Number of deaths among infants under 1 year by cause in 1931, 1940, 1950, and 1960 (Relative distribution).

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injury at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	per cent														
1931 ...	7.5	15.5	6.6	3.2	1.8	34.6	18.1	52.7	28.1	2.4	8.2	4.0	4.6	19.2	100.0
1940 ...	12.6	21.6	11.6	5.2	2.6	53.6	11.7	65.3	21.1	1.4	5.5	2.3	4.4	13.6	100.0
1950 ...	14.9	32.1	3.9	7.0	6.3	64.2	11.6	75.8	17.1	0.4	2.7	0.4	3.6	7.1	100.0
1960 ...	...	...	...	...	...	...	...	89.0	6.4	0.2	1.8	0.6	2,0	4.6	100.0

and development of the various cause-of-death frequencies these frequencies have been shown in table 2 for the years 1931, 1940, 1950, and 1960.

At the beginning of the period the three main groups, non-infectious diseases (except pneumonia), pneumonia and infectious diseases accounted for 43, 23 and 16 deaths per 1000 live births, respectively.

In the first main group "infants' diseases proper" dominated with about two-thirds of the deaths, slightly less than half of which were due to "prematurity". Among the deaths caused by infectious diseases almost half were attributed to "cholerine".

In 1960 the picture was completely changed. The first main group of causes of death now accounted for 19 deaths per 1000 live births, while only 1 death per 1000 live births was attributed to pneumonia and infectious diseases, respectively. It will also be seen that the reduction in connexion with the first main group – at any rate up to 1950 – is due especially to the fall outside "infants' diseases proper". If we consider the development of infectious diseases, we shall find that "influenza" and "whooping cough" have almost disappeared.

A clearer picture of the development in the different causes of death is given in table 3, in which has been calculated an index of the development in each of the frequencies (1931 = 100).

The mentioned picture of the mortality at the end of the period is a result of a decline of 55 per cent in the case of the first main group, while pneumonia and infectious diseases both fell by 94 per cent. In the first main group the decline in "infants' diseases proper" and "other diseases" during the period 1931–50 was 30 and 76 per cent, respectively, the decline in "infants' diseases proper" beginning only after 1940.

This development caused a violent change in the relative distribution of deaths among infants under 1 year by cause (table 4).

In 1931 the three main groups accounted for 53, 28, and 19 per cent, respectively, of all deaths among infants under 1 year. In 1960 the shares were 89, 6 and 5 per cent. Pneumonia and infectious diseases in 1960 thus accounted for 11 per cent of all deaths among infants under 1 year compared with 47 per cent in 1931.

We shall now relate the cause-of-death frequencies to the sex of the infant and the marital status of the mother. In tables X–XVII deaths have been distributed by cause of death combined with the calculation of the cause-of-death frequencies for the 4 groups of live births, after which these frequencies have been shown in figures 8A–8N.

Taken over the period *as a whole* the development runs parallel for all 4 groups of live births from one cause of death to the other, for which reason the development for all live births described above will roughly be found again in each of the four groups, i.e., a halving of the first main group of causes of death and a heavy fall in pneumonia and infectious diseases.

To ascertain whether the higher crude mortality for infants born out of wedlock is due to the fact that all or only some causes of death occur more frequently in this group, we have undertaken, for each of the two groups, a computation of all the cause-of-death frequencies in each of the years, these frequencies being thereafter related to each other year for year (table XVIII). The table thus reflects the relation between the mortalities for the two groups from one cause of death to the other for each of the years.

In figure 9 a graphical representation has been made, on the basis of this table, for the three main groups of causes of death. All three are higher for infants born out of wedlock. Further, it should be noted that the above-mentioned change during the period 1942–47 is found again in all three main groups, by far the greatest change occurring in the group of infectious diseases. Except in this period, the greatest excess mortality for infants born out of wedlock is to be found in the first main group, while the difference seems to be of more or less the same order in the case of pneumonia and influenza. It should be noted, also, that in neither of these three main groups is the change from 1931–41 to 1948–60 of the same magnitude as the crude mortality. We shall revert to this question later.

As this tripartition of the period thus seems to manifest itself also in the case of the individual causes of death, a simple average of the relation between the annual cause-of-death frequencies for each of the three periods has been calculated in table 5. The reason why the individual periods are summarized in this manner is that it is desired to eliminate the wide fluctuations characterizing these relations and rendering an evaluation difficult. These considerable fluctuations must, of course, be seen on the background of the limited number of observations.

In the period 1931–41 excess mortality for infants born out of wedlock in the three main groups of causes of death was 60, 14 and 17 per cent, respectively. Within each of the causes o

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Table 5. The ratio between cause-of-death frequencies for infants born out of and in wedlock during the period 1931–60.

Period	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injury at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931–41 average	0.99	2.22	1.46	1.14	0.85	1.58	1.67	1.60	1.14	1.08	1.30	1.00	1.15	1.17	1.40
1942–47 average	1.13	2.32	1.84	1.20	1.02	1.76	1.88	1.79	1.34	...[2]	3.03	...[2]	1.60	2.04	1.73
1948–60 average	1.03[1]	2.21[1]	1.34[1]	1.06[1]	0.95[1]	1.62[1]	1.51[1]	1.63	1.19	...[2]	1.66	...[2]	...[2]	1.36	1.56

[1] Comprises only the period 1948–50.
[2] The number of observations being very small in some years of these periods, these frequencies are subject to wide random fluctuations, for which reason a simple average has not been calculated.

death even greater differences are to be found. In the first main group "prematurity" accounts for an excess mortality of 120 per cent, while "congenital debility" and "other diseases" account for 46 and 67 per cent. On the other hand, "malformations" and "other infants' diseases" seem to show the same frequency in the two groups of live births. Among the infectious diseases it is particularly "cholerine" and "other infectious diseases" which cause differences.

From the first to the second period there was an increase of excess mortality for all three main groups; this increase was particularly steep in the case of infectious diseases where the ratio rose from 1.17 to 2.04, an increase of 74 per cent, while the first and second main groups rose by only 12 and 18 per cent, respectively.

For the individual causes of death the last period (1948–60) represents by and large a return to conditions in the first period, a fact which does not, as already mentioned, apply to the crude excess mortality. To explain these different movements it is necessary to clarify the connexion between the excess mortality for the individual main groups and total excess mortality.

Let us denote the number of deaths among infants under one year born out of and in wedlock from causes I, II and III as, respectively:

a_{11}, a_{12}, a_{13} and a_{21}, a_{22}, a_{23}

because

$a_{11} + a_{12} + a_{13} = a_{10}$ and $a_{21} + a_{22} + a_{23} = a_{20}$.

If the number of live births out of and in wedlock is denoted as $\mathcal{N}_1$ and $\mathcal{N}_2$, the ratio between the crude infant mortality for the two groups is as follows:

$$(4.1)\quad \varepsilon_0 = \frac{(a_{11}+a_{12}+a_{13})\frac{1}{\mathcal{N}_1}}{(a_{21}+a_{22}+a_{23})\frac{1}{\mathcal{N}_2}} = \frac{\frac{a_{11}}{\mathcal{N}_1}+\frac{a_{12}}{\mathcal{N}_1}+\frac{a_{13}}{\mathcal{N}_1}}{\frac{a_{21}}{\mathcal{N}_2}+\frac{a_{22}}{\mathcal{N}_2}+\frac{a_{23}}{\mathcal{N}_2}}$$

If we introduce the terms ε_1, ε_2, and ε_3 for the ratio between infants out of and in wedlock as regards each of the causes of death I, II, and III, the result will be:

$$(4.2)\quad \varepsilon_1 = \frac{\frac{a_{11}}{\mathcal{N}_1}}{\frac{a_{21}}{\mathcal{N}_2}};\quad \varepsilon_2 = \frac{\frac{a_{12}}{\mathcal{N}_1}}{\frac{a_{22}}{\mathcal{N}_2}} \quad \text{og} \quad \varepsilon_3 = \frac{\frac{a_{13}}{\mathcal{N}_1}}{\frac{a_{23}}{\mathcal{N}_2}}$$

$$\frac{a_{11}}{\mathcal{N}_1} = \varepsilon_1 \cdot \frac{a_{21}}{\mathcal{N}_2};\ \frac{a_{12}}{\mathcal{N}_1} = \varepsilon_2 \cdot \frac{a_{22}}{\mathcal{N}_2} \text{ and } \frac{a_{13}}{\mathcal{N}_1} = \varepsilon_3 \cdot \frac{a_{23}}{\mathcal{N}_2}$$

If (4.2) is introduced into (4.1), we have:

$$(4.3)\quad \varepsilon_0 = \frac{\varepsilon_1 \cdot \frac{a_{21}}{\mathcal{N}_2} + \varepsilon_2 \cdot \frac{a_{22}}{\mathcal{N}_2} + \varepsilon_3 \cdot \frac{a_{23}}{\mathcal{N}_2}}{\frac{a_{21}}{\mathcal{N}_2} + \frac{a_{22}}{\mathcal{N}_2} + \frac{a_{23}}{\mathcal{N}_2}} = \frac{\varepsilon_1 \cdot a_{21} + \varepsilon_2 \cdot a_{22} + \varepsilon_3 \cdot a_{23}}{a_{21} + a_{22} + a_{23}} = \varepsilon_1 \cdot \frac{a_{21}}{a_{20}} + \varepsilon_2 \cdot \frac{a_{22}}{a_{20}} + \varepsilon_3 \cdot \frac{a_{23}}{a_{20}}$$

where $\frac{a_{21}}{a_{20}}$, $\frac{a_{22}}{a_{20}}$ and $\frac{a_{23}}{a_{20}}$ is the relative distribution of deaths of infants under 1 year born in wedlock by the three main groups of causes of death. This distribution will be found in table XIX. In table XX the same distribution will be found for infants born out of wedlock.

The ratio between the crude infant mortality for the two groups thus appears as a weighted average of the ratio between the three main groups of causes of death.

If we consider the period 1931–41 as a whole, the ratio 1.40 is found as a weighted average of 1.60, 1.14 and 1.17 and is thus more or less the same distance from main group I and the average of II and III, the first main group accounting for just over half of all deaths.

The increase in the crude excess mortality from 1931–41 to 1942–47 is due to an increase for all three main groups.

On the other hand, the increase from 1931–41 to 1948–60 cannot be explained in the same way by the movement within each of the three main groups, since there does not seem to be any actual increase except in the case of main group III; however, this increase is not of much importance since infectious diseases do not now weigh much in the average $\left(\frac{a_{23}}{a_{20}}\right)$ owing to the particularly strong decline for these diseases. While during the first period these diseases accounted for 15–20 per cent of all deaths, this share fell to 5–10 per cent during the last period.

The introduction of the weights, i.e. $\left(\frac{a_{21}}{a_{20}}, \frac{a_{22}}{a_{20}}\right.$ and $\left.\frac{a_{23}}{a_{20}}\right)$ for the three main groups explains directly the change in the level.

The far greater decline for pneumonia and infectious diseases compared with the first main group has meant that $\frac{a_{21}}{a_{20}}$ is substantially greater in the last than in the first period. The result is that the first main group, in which the excess mortality (ε_1) between the two groups of live births is greatest, now weighs far more, forcing up the average.

The shift in the ratio between the figures for the crude infant mortality against infants born out of wedlock thus is not due, to any appreciable degree, to an actual shift in the relation between the individual causes of death, but to a general shift in the relative distribution of deaths by cause on account of the different rates of decline to which the individual causes of death have been subject.

We shall now examine male excess mortality.

In table XXI the ratios between the frequencies in the individual years for the different causes of death for males and females have been calculated in the same way as above; these ratios for the three main groups have then been plotted in figure 10. It will be seen clearly that male excess mortality is at fairly the same level in all three main groups, unlike the excess mortality of infants born out of wedlock. Besides, there does not seem to be any change of level for any of the three main groups corresponding to the previously mentioned tripartition of the period; therefore a simple average has been calculated of the ratios between the individual cause-of-death frequencies for the *whole* period (table 6).

The crude excess mortality for males of 32 per cent is a result of an excess mortality in the first main group of 35 per cent and 25 and 26 per cent in the other two groups. It will also be seen that apart from "whooping cough" all the individual causes of death contribute to excess mortality. The highest excess mortality is found in connexion with "injuries at birth" and "congenital debility" (73 and 49 per cent).

As in the case of the ratio between the mortality for infants born in and out of wedlock, an appreciable change in the ratio between the crude infant mortality might be expected also in this case, because the first main group with the somewhat higher male mortality weighs most in the last period. Owing to the slight difference from one main group to the other (i.e., between ε_1, ε_2, and ε_3) this change will not be felt very much.

In table 1 we found that male excess mortality was slightly lower among the group of live births out of wedlock. This is due, among other things, to the fact that "prematurity", where male excess mortality is below average, occurs especially among live births out of wedlock (compare tables XIX and XX), reducing male excess mortality for this group.

Table 6. The ratio between cause-of-death frequencies for males and females during the period 1931–60.

Period	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)							
	Malformations	Prematurity	Congenital debility	Injury at birth	Other	Total (1–5)				Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931–60 average	1.22[1]	1.28[1]	1.49[1]	1.73[1]	1.44[1]	1.33[1]	1.36[1]	1.35	1.25	1.18[2]	1.45	0.90[2]	1.29	1.26	1.32

[1]) Comprises only the period 1931–50.
[2]) The number of observations for the years 1948–60 being very small, these frequencies are subject to wide random fluctuations and are therefore not included in the calculation of the simple averages for the whole period.

5. Distribution of deaths by age at death

In this section we shall study the changes which have occurred in the distribution of deaths among infants under one year by age at death. In the following we shall only distinguish between deaths within one month after birth and deaths within the remaining part of the first year of life. A further breakdown of deaths during the first month would be desirable, so that e.g. all deaths within 24 hours after birth would be distinguished since the number of deaths in this short period is great. This breakdown has not been made firstly, because owing to inadequate information on the death

certificate, we have to allocate persons born and dying within the same day and night to this group in the statistics of deaths and thereby exclude all live births in the case of which birth and death occur on separate calendar days but less than 24 hours apart. This group will thus be rather loosely defined. Secondly, we cannot, on the basis of the existing tables, distinguish the number of deaths within 24 hours after birth by the individual causes of death, for which reason an interpretation of the development as regards the relative number of these deaths cannot be related to the development in causes of death.

In tables XXII to XXIV deaths have been distributed by the marital status of the mother, the sex and age at death of the infant. In figure 11A the two age-at-death frequencies have been plotted for all live births. At the beginning of the period approx. 30 deaths occur in the first month of life per 1000 live births, while in the remaining part of the first year of life 52 deaths occur per 1000 live births. However, the decline in the latter frequency is far heavier, so that the two frequencies cross each other in 1942, when each of them accounts for 23–24 deaths per 1000 live births. At the end of the period only 5 deaths occur per 1000 live births after the first month of life, while the corresponding figure for deaths in the first month of life was 16.

Corresponding to this development there is a complete change of the relative distribution of deaths by age at death (fig. 11B). While just over 35 per cent of all deaths occurred in the first month after birth in 1931, this percentage had reached 75 by 1960.

The explanation of this development is easily found if we consider, for a moment, table 7, in which deaths during the period 1945–49 have been distributed by cause and age at death.

While 73 per cent of deaths in the first main group of causes of death occurred in the first month after birth, the corresponding figures for pneumonia and infectious diseases are 7 and 18 per cent, so that deaths after the first month can be attributed particularly to these two causes. Since precisely these two main groups of causes of death have fallen very much, this is the explanation of the different developments in the two cause-of-death frequencies and the consequent shift in the distribution of deaths among infants under 1 year by age at death

The distribution of deaths among infants born in and out of wedlock has been shown in table XXV and fig. 12A. During the period before and after 1942–47 a larger share of infants born out of wedlock die within one month after birth. As mentioned in the section on causes of death, this is due to the fact that during the periods 1931–41 and 1948–60 a larger share of infants born out of wedlock die from the causes under the first main group, which occur chiefly during the first month after birth. The approximation between the two distributions in the period 1942–47 is due to the great increase in infectious diseases, particularly "cholerine", among infants born out of wedlock, causing the relative number of deaths after the first month of life to increase, because these diseases occur especially after the first month.

In table XXV and fig. 12B a comparison has been made of the ratio between males and females. During the period as a whole, males have a somewhat greater share of deaths within the first month. This is due to the fact that the first main group of causes of death occurs relatively more frequently among males than the second and third main groups. Since the male excess mortality within the first main group deviates only slightly from the crude excess mortality, the difference between the distributions becomes very limited.

Table 7. The relative distribution of all deaths among infants under 1 year from 1945–49 by cause of death and age at death.

	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injury at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	per cent														
Under 1 month	57.1	95.7	81.5	95.8	92.8	85.7	14.8	73.1	7.2	4.2	18.2	4.0	25.1	17.9	53.1
1 month–1 year	42.9	4.3	18.5	4.2	7.2	14.3	85.2	26.9	92.8	95.8	81.8	96.0	74.9	82.1	46.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100·0	100.0	100.0	100.0	100.0

B. Comparative Analyses

1. The statistical model.

1.1. Derivation of the general model

In the following an account will be given of the model to be used in the analysis of the material. The presentation of the model will follow the demographic approach so that the symbols used are at once interpreted in demographic terms. Concretely, the model will be developed with a view to a comparison of the crude infant mortality for females and males.

If, in a given year, t, we have $\mathcal{N}_{t_1}$ and $\mathcal{N}_{t_2}$ live-born females and males, respectively, each of these will be subject to a certain risk of dying during the first year of life. We say that there is a certain probability of dying. Let us denote the probabilities of the two groups θ_{t_1} and θ_{t_2}, assuming that the probability within each of the groups is the same for all live births. Let us also assume that there is no connexion between the deaths, thus disregarding epidemics.

Under these assumptions the probability of a given number of deaths among females (a_{t_1}) and males (a_{t_2}) will be given through the binomial laws:

$$(1.1)\quad p\{a_{t_1}\} = \binom{\mathcal{N}_{t_1}}{a_{t_1}} \theta_{t_1}{}^{a_{t_1}} (1-\theta_{t_1})^{\mathcal{N}_{t_1}-a_{t_1}},$$

$$0 \leq a_{t_1} \leq \mathcal{N}_{t_1}$$

$$(1.2)\quad p\{a_{t_2}\} = \binom{\mathcal{N}_{t_2}}{a_{t_2}} \theta_{t_2}{}^{a_{t_2}} (1-\theta_{t_2})^{\mathcal{N}_{t_2}-a_{t_2}},$$

$$0 \leq a_{t_2} \leq \mathcal{N}_{t_2}$$

the estimate of θ being derived from

$$\frac{a_{t_1}}{\mathcal{N}_{t_1}} \approx \theta_{t_1} \quad \text{og} \quad \frac{a_{t_2}}{\mathcal{N}_{t_2}} \approx \theta_{t_2}$$

The ratio of the actual number of deaths to the number of live births in all the years being less than 0.1 for both groups, Poisson's laws with the mean values $\alpha_{t_1} = \mathcal{N}_{t_1} \cdot \theta_{t_1}$ and $\alpha_{t_2} = \mathcal{N}_{t_2} \cdot \theta_{t_2}$ will give a satisfactory approximation to the binomial laws, so (1.1) and (1.2) can be replaced by the following:

$$(1.3)\quad p\{a_{t_1}\} = \frac{\alpha_{t_1}{}^{a_{t_1}}}{a_{t_1}!} e^{-\alpha_{t_1}}, \quad a_{t_1} = 0, 1, 2, \ldots$$

$$(1.4)\quad p\{a_{t_2}\} = \frac{\alpha_{t_2}{}^{a_{t_2}}}{a_{t_2}!} e^{-\alpha_{t_2}}, \quad a_{t_2} = 0, 1, 2, \ldots$$

where e is the basic figure in the natural logarithm. The parameter in the Poisson's law (α), which is identical with the mean value of the distribution, is estimated by means of the actual number of deaths, i.e.

$$a_{t_1} \approx \alpha_{t_1} \quad \text{og} \quad a_{t_2} \approx \alpha_{t_2}$$

It will be noted that in this case the distribution law is completely determined by *one* parameter (α) while the binomial law requires *two* parameters ($\mathcal{N}$, θ).

The probability of a certain *sum* of a_{t_1} and a_{t_2} ($a_{t_1} + a_{t_2} = a_{t_0}$), viz. the total number of deaths among infants under one year, according to the additivity theorem for two Poisson's laws, will be given through a new Poisson's law, the parameter of which is $\alpha_{t_1} + \alpha_{t_2} = \alpha_{t_0}$. This parameter is estimated from a_{t_0}.

I.e.

$$(1.5)\quad p\{a_{t_1} + a_{t_2} = a_{t_0}\} = \frac{\alpha_{t_0}{}^{a_{t_0}}}{a_{t_0}!} e^{-\alpha_{t_0}},$$

$$a_{t_0} = 0, 1, 2, \ldots$$

The probability of a certain *coincidence* of a_{t_1} and a_{t_2} according to the multiplication theorem of probability calculus for two stochastically independent variables will be

$$(1.6)\quad p\{a_{t_1}, a_{t_2}\} = p\{a_{t_1}\} \cdot p\{a_{t_2}\}$$

$$= \frac{\alpha_{t_1}{}^{a_{t_1}}}{a_{t_1}!} e^{-\alpha_{t_1}} \cdot \frac{\alpha_{t_2}{}^{a_{t_2}}}{a_{t_2}!} e^{-\alpha_{t_2}}$$

$$= e^{-\alpha_{t_0}} \frac{\alpha_{t_1}{}^{a_{t_1}} \cdot \alpha_{t_2}{}^{a_{t_2}}}{a_{t_1}! \cdot a_{t_2}!}$$

We shall now try to find the probability for a certain coincidence of a_{t_1} and a_{t_2} for a *given* value of a_{t_0}, i.e. the probability for a certain total number of deaths among females and males within a given total number of deaths. If the number of females among a given number of deaths was known, the number of males would also be known. For a given value of a_{t_0} a certain coincidence of a_{t_1} and a_{t_2} will therefore be fully determined through the value of a_{t_1}.

This conditional probability will be arrived at, in accordance with the general rules of probability calculus, by dividing the marginal probability (1.5) into the simultaneous probability (1.6). $e^{-\alpha_{t_0}}$ being thus cancelled and further $\alpha_{t_2} = \alpha_{t_0} - \alpha_{t_1}$ we have

$$(1.7)\quad p\{a_{t_1} \mid a_{t_0}\} = \frac{p\{a_{t_1}, a_{t_2}\}}{p\{a_{t_0}\}} = \binom{a_{t_0}}{a_{t_1}} \left(\frac{\alpha_{t_1}}{\alpha_{t_0}}\right)^{a_{t_1}} \left(1 - \frac{\alpha_{t_1}}{\alpha_{t_0}}\right)^{a_{t_0} - a_{t_1}}$$

$$0 \leq a_{t_1} \leq a_{t_0}$$

I.e. that this probability is determined by a binomial law with the parameters a_{t_0} and $\frac{\alpha_{t_1}}{\alpha_{t_0}}$, which formally corresponds to $\mathcal{N}$ and θ in (1.1) and (1.2). The estimate of $\frac{\alpha_{t_1}}{\alpha_{t_0}}$ is derived from $\frac{a_{t_1}}{a_{t_0}}$.

The setting up and the derivation of these equations does not *per se* lead to new knowledge, nor does it render possible a test of the assumptions underlying the model. Equation 1.7, e.g., gives the probability of a certain number of female deaths, conditioned by a given total number of deaths. However, since in a given year, t, we have only one set of observations available as a basis for the estimate of the parameters, the set of observations of that year will always fit the model chosen. Only when more assumptions concerning mortality are introduced will it make any sense to examine whether the observations fit the model chosen. This will be done in the following.

The preliminary investigations in chapter A seem to show that the excess mortality of the males remained constant throughout the period. It will therefore be relevant to incorporate such an assumption in the present model. In other words, we are interested in studying whether the observations fit the model on the assumption that

$$(1.8)\quad \frac{\theta_{t_1}}{\theta_{t_2}} = \delta$$

for all values of t, δ being a constant factor.

To introduce this assumption in the model we split up parameters θ_{t_1} and θ_{t_2} into a product of two factors

$$(1.9)\quad \theta_{t_1} = \xi_t \cdot \delta_1$$

$$(1.10)\quad \theta_{t_2} = \xi_t \cdot \delta_2$$

where ξ_t describes the general situation with regard to the infant mortality in year t, while δ_1 and δ_2 are specific for females and males, respectively, and independent of t.

If (1.9) is divided by (1.10) we have

$$(1.11)\quad \frac{\theta_{t_1}}{\theta_{t_2}} = \frac{\xi_t \cdot \delta_1}{\xi_t \cdot \delta_2} = \frac{\delta_1}{\delta_2}$$

Let

$$(1.12)\quad \frac{\delta_1}{\delta_2} = \delta$$

and $\frac{\theta_{t_1}}{\theta_{t_2}} = \delta$,

that is, precisely the assumption from (1.8).

The splitting of the parameters in (1.9) and (1.10) is in this connexion tantamount to assuming that the relation between the crude infant mortality for females and males is constant, apart from random deviations, which can now be determined by means of the model.

We shall now introduce the assumptions from (1.9) and (1.10) into (1.7)

$$(1.13)\quad p\{a_{t_1} \mid a_{t_0}\} = \binom{a_{t_0}}{a_{t_1}} \left(\frac{\mathcal{N}_{t_1} \cdot \xi_t \cdot \delta_1}{\mathcal{N}_{t_1} \cdot \xi_t \cdot \delta_1 + \mathcal{N}_{t_2} \cdot \xi_t \cdot \delta_2}\right)^{a_{t_1}} \left(\frac{\mathcal{N}_{t_2} \cdot \xi_t \cdot \delta_2}{\mathcal{N}_{t_1} \cdot \xi_t \cdot \delta_1 + \mathcal{N}_{t_2} \cdot \xi_t \cdot \delta_2}\right)^{a_{t_0} - a_{t_1}}$$

$$= \binom{a_{t_0}}{a_{t_1}} \left(\frac{\frac{\mathcal{N}_{t_1}}{\mathcal{N}_{t_2}} \cdot \delta}{\frac{\mathcal{N}_{t_1}}{\mathcal{N}_{t_2}} \cdot \delta + 1}\right)^{a_{t_1}} \left(\frac{1}{\frac{\mathcal{N}_{t_1}}{\mathcal{N}_{t_2}} \cdot \delta + 1}\right)^{a_{t_2}}$$

as $\alpha_{t_1} = \mathcal{N}_{t_1} \cdot \theta_{t_1} = \mathcal{N}_{t_1} \cdot \xi_t \cdot \delta_1$ and $\alpha_{t_2} = \mathcal{N}_{t_2} \cdot \theta_{t_2} = \mathcal{N}_{t_2} \cdot \xi_t \cdot \delta_2$

If

$$(1.14)\quad \beta_t = \frac{\mathcal{N}_{t_1}}{\mathcal{N}_{t_2}} \quad \text{we have}$$

$$(1.13a)\quad p\{a_{t_1} \mid a_{t_0}\} = \binom{a_{t_0}}{a_{t_1}} \left(\frac{\beta_t \cdot \delta}{1 + \beta_t \cdot \delta}\right)^{a_{t_1}} \left(\frac{1}{1 + \beta_t \cdot \delta}\right)^{a_{t_2}} = \binom{a_{t_0}}{a_{t_1}} \frac{(\beta_t \cdot \delta)^{a_{t_1}}}{(1 + \beta_t \cdot \delta)^{a_{t_0}}}$$

a_{t_1} thus follows a binomial distribution with the parameters a_{t_0}, $\frac{\beta_t \cdot \delta}{1 + \beta_t \cdot \delta}$, providing that the hypothesis is true.

The formulation of the model has taken its point of departure in a comparison of the crude infant mortality for females and males. This comparison can, of course, be made among live births in as well as out of wedlock. However, the model also allows of an examination and testing of other hypotheses if only the interpretation of the parameters is changed. Beyond a comparison of the crude infant mortality for females and males, the mortality of live births out of and in wedlock can be compared. In this case $\mathcal{N}_{t_1}$ and $\mathcal{N}_{t_2}$ will comprise these two categories of live births, while a_{t_1} and a_{t_2} will denote the same two categories of deaths under 1 year.

In the same way it can also be examined whether the relation between given cause-of-death frequencies has been constant in a given period for two groups of live births, a_{t_1} and a_{t_2} now denoting the number of deaths from the given cause of death. The value of δ can be assumed constant for the whole period 1931–60 or only in selected periods. The former alternative would be chosen in connexion with a comparison of the mortality of females and males, while the latter would be used in a comparison of live births in and out of wedlock.

1.2. Testing the model on the assumption of a constant relation between the groups

If the relation between $\mathcal{N}_{t_1}$ and $\mathcal{N}_{t_2}$ is constant for all values of t, i.e.

$$(1.14a)\quad \frac{\mathcal{N}_{t_1}}{\mathcal{N}_{t_2}} = \beta_t = \beta$$

all values of a_{t_1} in the period of constant value of δ must, according to (1.13a), follow a binomial law with the same probability parameter, viz.

$$\frac{\beta \cdot \delta}{1 + \beta \cdot \delta}$$

In a comparison of the mortality of live-born females and males the value of β_t is almost constant from year to year for live births in as well as out of wedlock (see table IV).

In this case we can therefore analyse the validity of the model by examining whether the values of a_{t_1} in question may originate in binomial distributions with the same probability parameter $\left(\frac{\beta \cdot \delta}{1 + \beta \cdot \delta}\right)$ and with each their value of a_{t_0}.

Since

$$(1.15)\quad \frac{a_{t_1}}{a_{t_0}} \approx \frac{\beta \cdot \delta}{1 + \beta \cdot \delta}$$

we have

$$(1.15a)\quad a_{t_1} \approx \frac{\beta \cdot \delta}{1 + \beta \cdot \delta} \cdot a_{t_0}$$

which is the equation for the straight line through origo with the gradient $\frac{\beta \cdot \delta}{1 + \beta \cdot \delta}$

A first testing of the hypothesis of the same probality parameter for all observations can thus be obtained by entering the individual corresponding values of a_{t_1} and a_{t_0} on the ordinate and the abscissa axis, respectively, and examine whether the points thus obtained for all values of t group around a straight line through origo with the gradient $\frac{\beta \cdot \delta}{1 + \beta \cdot \delta}$.

If this is so the estimate of this probability parameter can be formed by utilizing all the observations. If the t-binomial laws with the same probability parameter are added, the result will be a new binomial law with the parameters Σa_{t_0}, $\frac{\beta \cdot \delta}{1 + \beta \cdot \delta}$. By analogy with the pro-

cedure adopted in connexion with the individual binomial laws the estimated is calculated by means of

$$(1.16)\quad \frac{\Sigma a_{t_1}}{\Sigma a_{t_0}} = \frac{a_{01}}{a_{00}} = \frac{\beta \cdot d}{1+\beta \cdot d} \approx \frac{\beta \cdot \delta}{1+\beta \cdot \delta}$$

where

$$d \approx \delta.$$

It must now be examined whether the dispersal of the points around the line is in accordance with the model, i.e. how the values of a_{t_1} are distributed over the interval covered by the individual binomial distributions. In order to measure the location of a_{t_1} a fraction value $P\{a_{t_1} \mid a_{t_0}\}$, is calculated for each of them, indicating as per cent the probability of getting observations below the value of a_{t_1} in question.

These fraction values must then be distributed *evenly* from 0 to 100 per cent, so that e.g. only one out of twenty values on an average is below or above the $2\frac{1}{2}$ and the $97\frac{1}{2}$ per cent fraction values, respectively.

The calculation of $P\{a_{t_1} \mid a_{t_0}\}$ can be made by means of the u distribution (the normal standard distribution) if the variance of the binomial distribution exceeds 9, i.e.

$$(1.17)\quad \mathcal{V}\{a_{t_1} \mid a_{t_0}\} = a_{t_0}\left(\frac{\beta \cdot \delta}{1+\beta \cdot \delta}\right) \cdot \left(1 - \frac{\beta \cdot \delta}{1+\beta \cdot \delta}\right) = a_{t_0} \frac{\beta \cdot \delta}{(1+\beta \cdot \delta)^2} > 9$$

Since for all mortality relations between females and males $\frac{\beta \cdot d}{1+\beta \cdot d}$ is between 0.35 and 0.51 (1.17) will be fulfilled for $a_{t_0} > 39$. Where this is the case, the corresponding u value is to be computed for each value of a_{t_1} in accordance with the following equation:

$$(1.18)\quad u \simeq \frac{a_{t_1} - a_{t_0} \cdot \frac{a_{01}}{a_{00}}}{\sqrt{a_{t_0} \cdot \frac{a_{01}}{a_{00}}\left(1 - \frac{a_{01}}{a_{00}}\right)}}$$

after which $P\{a_{t_1} \mid a_{t_0}\}$ will be found by means of a table of $\Phi(u)$[1].

Where $a_{t_0} \leq 39$, $P\{a_{t_1} \mid a_{t_0}\}$ can be found direct by looking up the value in a set of tables, since there exists a comparatively complete tabulation of the binomial distribution for $a_{t_0} \leq 50$. Consequently for $a_{t0} \leq 50$ reference has everywhere been made direct to this tabulation[2][3].

If the model proves valid, all observations from the period can be used in an estimate of δ through (1.16):

$$(1.16a)\quad \frac{1}{\beta} \cdot \frac{a_{01}}{a_{02}} = d \approx \delta$$

where $\beta = \frac{\Sigma \mathcal{N}_{t_1}}{\Sigma \mathcal{N}_{t_2}} = \frac{\mathcal{N}_{01}}{\mathcal{N}_{02}}$

1.3. Testing the model on the assumption of a change in the relation between the groups

The testing of the model along the lines described in section B.1.2. assumed a constant relation between the two groups of live births which were compared. As it was demonstrated, this method could be used in comparisons of female and male mortalities owing to the constant sex ratio.

If, on the other hand, it is desired to compare the crude mortality or the different cause-of-death frequencies for infants born out of and in wedlock, the comparison must be made along other lines because the ratio between these two groups of live births changes substantially during the period. From table IV it will be seen that the number of live births out of wedlock per 1000 live births in wedlock range from 70 to 120.

As it is our hypothesis that

$$(1.8)\quad \frac{\theta_{t_1}}{\theta_{t_2}} = \delta$$

for all values of t in the period in question (e.g. 1942–47), it follows that

$$(1.19)\quad \frac{\frac{a_{t_1}}{\mathcal{N}_{t_1}}}{\frac{a_{t_2}}{\mathcal{N}_{t_2}}} \approx \delta$$

[1]) For this distribution has been used: A. Hald. Statistiske metoder. Tabel og Formelsamling. Copenhagen 1948.
[2]) For this distribution has been used: Tables of the Cumulative Binomial Probability Distribution. Harvard University Press 1955.
[3]) Since this table gives the fraction values for values of the probability parameter from 0 to 50 per cent, we have, in order to facilitate direct reference to tables, defined δ as the ratio of female to male probability of death, causing the estimate of the probability parameter to assume values under 50 per cent in almost all cases. For the same reason, in studying the relative mortalities of infants born in and out of wedlock (in the next section), we shall define δ as the ratio of the probability of death of live births out of wedlock to those in wedlock.

for the same values of t, since

$$\frac{a_{t_1}}{\mathcal{N}_{t_1}} \approx \theta_{t_1} \text{ and } \frac{a_{t_2}}{\mathcal{N}_{t_2}} \approx \theta_{t_2}$$

In this case θ_{t_1} and θ_{t_2} denote the probability of death in year t for live births out of and in wedlock, respectively, while a_{t_1}, a_{t_2} and $\mathcal{N}_{t_1}$, $\mathcal{N}_{t_2}$ denote the same categories of deaths and live births.

By introducing the logarithm on either side in (1.19) the following equation is obtained:

$$(1.19a)\quad \log_{10} \frac{a_{t_1}}{\mathcal{N}_{t_1}} \approx \log_{10} \frac{a_{t_2}}{\mathcal{N}_{t_2}} + \log_{10} \delta$$

This equation means that if $\log_{10} \frac{a_{t_1}}{\mathcal{N}_{t_1}}$ is plotted against $\log_{10} \frac{a_{t_2}}{\mathcal{N}_{t_2}}$, these points must be grouped in a random manner around a straight line with the ordinate value $\log_{10}\delta$ and the gradient 1.

If this is the case, the next stage of the analysis will be to derive an estimate of δ on the basis of all the observations for the period in question and to examine, with the point of departure in this estimate, whether the variation of the points around the line is in agreement with the model.

The estimation formula for δ is derived in the following way:

The probability for a_{t_1}, given a_{t_0}, is, as previously shown:

$$(1.13a)\quad p\{a_{t_1} \mid a_{t_0}\} = \binom{a_{t_0}}{a_{t_1}} \frac{(\beta_t \cdot \delta)^{a_{t_1}}}{(1+\beta_t \cdot \delta)^{a_{t_0}}}$$

The mean value of a_{t_1} is

$$(1.20)\quad \mathcal{M}\{a_{t_1} \mid a_{t_0}\} = \frac{\beta_t \cdot \delta}{1+\beta_t \cdot \delta} \cdot a_{t_0}$$

The mean value of $\sum_{t=T}^{T+k} a_{t_1} \mid a_{t_0}$, where $T \leq t \leq T+k$ denote the period in which δ is postulated to remain constant, will be:

$$(1.21)\quad \mathcal{M}\{\sum_{t=T}^{T+k} a_{t_1} \mid a_{t_0}\} = \mathcal{M}\{a_{T,1} \mid a_{T,0}\} + \mathcal{M}\{a_{T+1,1} \mid a_{T+1,0}\} + \ldots + \mathcal{M}\{a_{T+k,1} \mid a_{T+k,0}\}$$

On the assumption of the correctness of the hypothesis this expression may be written as follows:

$$(1.21a)\quad \mathcal{M}\{\sum_{t=T}^{T+k} a_{t_1} \mid a_{t_0}\} = \frac{\beta_T \cdot \delta}{1+\beta_T \cdot \delta} a_{T,0} + \frac{\beta_{T+1} \cdot \delta}{1+\beta_{T+1} \cdot \delta} a_{T+1,0} + \ldots + \frac{\beta_{T+k} \cdot \delta}{1+\beta_{T+k} \cdot \delta} a_{T+k,0} = \sum_{t=T}^{T+k} \frac{\beta_t \cdot \delta}{1+\beta_t \cdot \delta} \cdot a_{t_0}$$

An estimate of this mean value is obtained from the sum of deaths among infants born out of wedlock in the period in question $(\sum_{t=T}^{T+k} a_{t_1} \mid a_{t_0})$.

I.e.

$$(1.22)\quad \sum_{t=T}^{T+k} a_{t_1} \mid a_{t_0} \approx \sum_{t=T}^{T+k} \frac{\beta_t \cdot \delta}{1+\beta_t \cdot \delta} \cdot a_{t_0}$$

The best estimate of δ will then be the value of which satisfies the above equation.

Since, however, the equation cannot be solved in such a way that d is isolated on the left-hand side of the equation mark, the value must be found by introducing different values until the left-hand and the right-hand sides agree.

The estimation of the d value can be carried out by equating for all the years the relation between live births out of and in wedlock with the total relation in the period $\left(\frac{\mathcal{N}_{01}}{\mathcal{N}_{02}}\right)$.

Equation 1.22 can now be solved and we have

$$(1.23)\quad d_0 = \frac{\mathcal{N}_{02}}{\mathcal{N}_{01}} \cdot \frac{a_{01}}{a_{02}}$$

after which the value of d_0 is found.

The value of d_0 is now introduced in (1.22), and the value of the right-hand side is calculated. If, e.g., the right-hand side becomes smaller than the left-hand side, a somewhat higher value must be tried, since the expression on the right-hand side is an increasing function of d. This is continued until the equation balances.

By means of this algebraic estimate of δ (the ordinate value of the line) we can analyse the dispersal of the points around the line by reverting to equation 1.13a, which indicates the distribution of a_{t_1} for given a_{t_0}.

(1.13a) $p\{a_{t_1} \mid a_{t_0}\} = \binom{a_{t_0}}{a_{t_1}} \frac{(\beta_t \cdot \delta)^{a_{t_1}}}{(1 + \beta_t \cdot \delta)^{a_{t_0}}}$

This equation indicates in this case that the individual values of a_{t_1} follow a binomial distribution with the parameters a_{t_0} and $\frac{\beta_t \cdot \delta}{1 + \beta_t \cdot \delta}$, i.e. that a change occurs in both parameters from year to year. The value of d being estimated, we can calculate estimates of the probability parameter for all values of t, by introducing this value.

This is thus a slightly different situation from that in section B.1.2, in which there was only a change in a_{t_0}, the probability parameter being the same for all values of t owing to the constant sex ratio.

With regard to the calculation of the fraction values $P\{a_{t_1} \mid a_{t_0}\}$, there is also a change compared with the procedure adopted in section B.1.2. This is due to the fact that $\frac{\beta_t \cdot d}{1 + \beta_t \cdot d}$ can assume values from just over 0.20 to slightly below 0.10. Since the use of the u distribution as an approximation to the binomial distribution presupposes that $\mathscr{V}\{a_{t_1} \mid a_{t_0}\} > 9$, a_{t_0} must be at least 100 to ensure sufficient variance in all cases. The calculation of $P\{a_{t_1} \mid a_{t_0}\}$ has therefore been made by reference to, and interpolation in, tables for $a_{t_0} \leq 100$.

After the calculation of the fraction values the model is tested as described in section B.1.2.

2. *The relation between the mortality of live-born males and females.*

Our preliminary inquiries in chapter A pointed to a constant excess mortality for males which seemed to be greater for live births in wedlock. Taking this as our point of departure, we shall now make a comparison of the mortality of females and males on the basis of the model in section B.1.1, the comparison being undertaken for live births in and out of wedlock. The test of the hypothesis is therefore based on a constant value of δ for each group and cause of death in the whole period 1931–60. As previously mentioned, the analysis can be made along the lines described in section B.1.2 owing to the constancy of the sex ratio.

An initial testing of the hypothesis of constant δ value has been carried out by plotting the annual number of deaths among females (a_{t_1}) against the annual total number of deaths (a_{t_0}). This has been done for each cause of death in connexion with both groups of live births. All graphs show that the points are grouped randomly around a straight line through origo. By way of illustration the graphical representation of "cholerine" has been included as fig. 13.

To examine the dispersal of the points around the line the fraction values $P\{a_{t_1} \mid a_{t_0}\}$ for all causes of death have been calculated, and the final results have been given in tables XXVIII and XXIX. The values of $P\{a_{t_1} \mid a_{t_0}\}$ have then been plotted on figures 14 and 15. The technique adopted in calculating the fraction values has been shown in tables XXVI and XXVII for "cholerine".

From figures 14 and 15 it will be seen that these fraction values for both groups and all causes of death are distributed fairly *evenly* over the interval. In connexion with causes of death where there are few observations, there will of course be an accumulation of fraction values.

As the model seems valid against a testing as outlined here, we can form estimates of the individual δ values from equation 1.16a in section B.1.2. The material from the whole period can be used in forming these estimates, account being taken of the varying number of observations in the individual years so as to reduce the variance of the estimate to a minimum.

These estimates have been given in col. 6, table XXX.

We shall now examine whether the difference between the d values from one cause of death to the other between the two groups of live births can be regarded as random, thus indicating a common δ value.

For preliminary guidance the corresponding values of d for the two groups of live births for each cause of death have been plotted in fig. 16, and the identity line, i.e. a line through origo with a gradient of 45°, has been marked in. The ordinate values for the points above and below the identity line will then be larger and smaller, respectively, than the corresponding abscissa values.

The figure shows that the d values are higher for live births out of wedlock for all causes of death in the first two main groups, apart from "congenital debility". With regard to infectious diseases the situation is the other way round, apart from "influenza".

This bias indicates that the difference cannot be considered random.

In order to undertake a numerical comparison of the d values it is necessary to know the variance of d or a function of it, e.g. $\log_{10} d$

Since according to (1.16a) from section B.1.2

$$(2.1) \quad d = \frac{\frac{a_{01}}{\mathscr{N}_{01}}}{\frac{a_{02}}{\mathscr{N}_{02}}} = \frac{a_{01}}{a_{02}} \cdot \frac{\mathscr{N}_{02}}{\mathscr{N}_{01}}$$

it follows that

$$(2.1a) \quad \log_{10} d = \log_{10} \frac{a_{01}}{a_{02}} + \log_{10} \frac{\mathscr{N}_{02}}{\mathscr{N}_{01}}$$

In this connection $\log_{10} \frac{\mathscr{N}_{02}}{\mathscr{N}_{01}}$ is a constant, for which reason the variation of $\log_{10} d$ is derived solely from the variance of $\log_{10} \frac{a_{01}}{a_{02}}$, where a_{01} follows a binomial distribution with the parameters:

$$a_{01} + a_{02} = a_{00}, \frac{\beta \cdot \delta}{1 + \beta \cdot \delta}$$

By means of this approximative relation:

$$(2.2) \quad \mathscr{V}\{f(x)\} \simeq [f'(\xi)]^2 \cdot \mathscr{V}\{x\}^{1})$$

we obtain

$$(2.3) \quad \mathscr{V}\{\log_{10} d\} = \mathscr{V}\left\{\log_{10} \frac{a_{01}}{a_{02}}\right\} \simeq \frac{0{,}4343^2}{a_{00} \frac{\beta \cdot d}{(1 + \beta \cdot d)^2}}{}^{2})$$

These variances have been shown in col. 8 table XXX.

If the difference between two d values can be considered random, the difference between the logarithms of these values will, with approximation, be normally distributed around zero with a variance which is the sum of the variances of the individual values of $\log_{10} d$.

This assumption can be tested by calculating

$$(2.4) \quad \Phi\left(u \simeq \frac{\log_{10} d^{(1)} - \log_{10} d^{(2)}}{\sqrt{\mathscr{V}\{\log_{10} d^{(1)}\} + \mathscr{V}\{\log_{10} d^{(2)}\}}}\right)$$

$d^{(1)}$: In wedlock
$d^{(2)}$: Out of wedlock.

$\Phi(u)$ being found by means of the calculated u value through reference to the table of the normal standard distribution.

The values of $\Phi(u)$ will be found in col. 9 table XXX.

These values fall outside the conventional $2\frac{1}{2}$ and $97\frac{1}{2}$ per cent test limits as regards total mortality and the first and the third main groups. On the other hand, no significance can be ascertained with regard to the individual causes of death, even though "prematurity" and "other infant's diseases" as well as "other non-infectious diseases (except pneumonia)" and "cholerine" come close to these limits.

A further illustration is achieved by calculating the d values in each of the periods 1931–41, 1942–47, and 1948–60(50). It then appears that, apart from small deviations, the differences ascertained between the d values occur in the same way in each of the three periods.

We must therefore conclude that the differences found between the d values from one cause of death to the other cannot be regarded as random, for which reason the values of d cannot be reduced to a common value for the mortality ratio between females and males irrespective of legitimacy.

In table 8 on the next page we have shown for both groups of live births the estimates of male excess mortality in connexion with the individual causes of death. These estimates are obtained by computing the reciprocal value of d.

A graphical illustration has been given in fig. 1*, see the next page.

The lower excess mortality for males born out of wedlock in connexion with the crude infant mortality is thus not only due to the fact that "prematurity", where male excess mortality in both groups is below average, occurs especially among children born out of wedlock, but also to a systematic difference in the excess mortality in the first and second main groups.

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[1]) This relation only means that for functions which can, with approximation, be considered linear in the interval of variation concerned, the variance can be computed as the product of the square of the differential coefficient of the function for a value in the middle of the interval of variation and the variance of the independent variable.

[2]) $\log_{10} e = 0.4343$.

Table 8. **The relation between the mortality for live-born males and females $\left(\frac{1}{d}\right)$ in and out of wedlock in the period 1931–60**

	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Live births in wedlock..	1.22	1.29	1.43	1.70	1.47	1.34	1.37	1.36	1.28	1.13	1.40	0.92	1.28	1.24	1.32
Live births out of wedlock ..	1.14	1.20	1.51	1.59	1.16	1.26	1.25	1.26	1.20	1.12	1.60	0.95	1.30	1.38	1.26

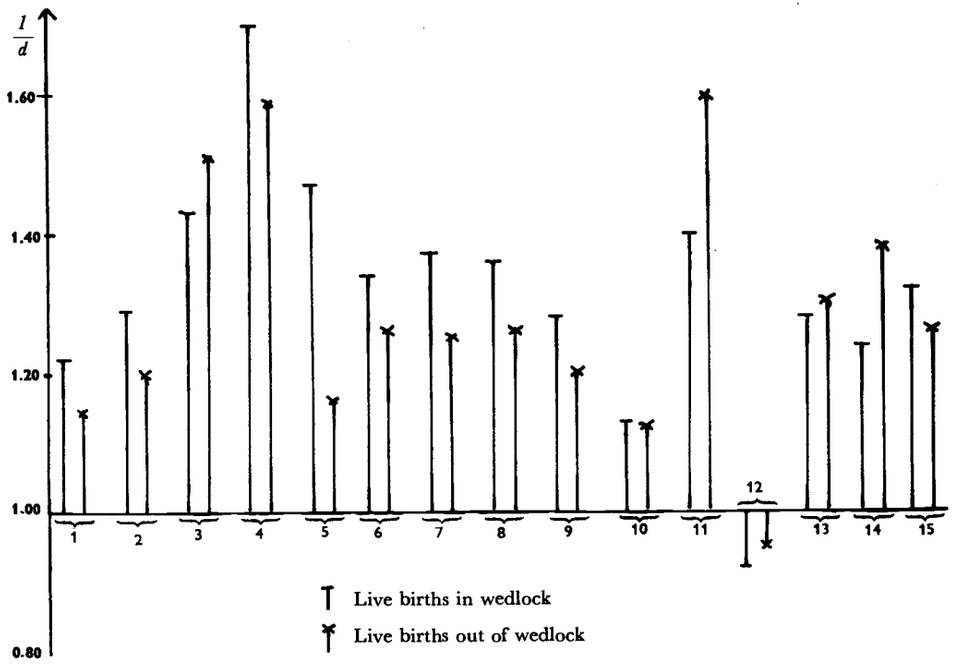


Fig. 1*. Graphical illustration of male excess mortality among live births in and out of wedlock.

3. The relation between the mortality for live births out of and in wedlock.

The analysis of the relation between the mortality of these groups is also based on the model in section B.1.1, but is carried out along the lines described in section B.1.3. Owing to the constant excess mortality for males in the two groups of live births which we revealed in section B.1.2 and the constant sex ratio, we need here only compare the whole group of live births out of wedlock and all live births in wedlock.

On the background of the analyses in chapter A a tripartition of the period 1931–60 appears to be relevant in this connexion. We shall therefore for each cause of death test the model on the assumption of a constant value of δ in each of the periods 1931–41, 1942–47, and 1948–60 (50).

This hypothesis has first been tested by plotting for each cause of death the logarithm of the cause-of-death frequencies for the two groups of live births against each other. For all causes of death these points in each of the three periods seem to be grouped in a random manner around straight lines with the gradient 1 and the ordinate value $\log_{10}\delta$ in accordance with the equation 1.19a from section B.1.3.

I.e.

$$(3.1)\quad \log_{10}\frac{a_{t_1}}{\mathcal{N}_{t_1}} \approx \log_{10}\frac{a_{t_2}}{\mathcal{N}_{t_2}} + \log_{10}\delta,$$

where a_{t_1} and a_{t_2} denote the number of deaths among infants born out of and in wedlock, while $\mathcal{N}_{t_1}$ and $\mathcal{N}_{t_2}$ denote the number of live births in the two groups.

By way of illustration the graphical treatment of "cholerine" has been shown in fig. 17.

It now has to be analysed whether the dispersal of the points around the line is in accordance with the model. To examine this question an estimate is first formed of all δ values[1]) by means of equation 1.22; this estimate is then used in connexion with the calculation of the fraction values for the individual observation values of a_{t_1}.

In col. 6 table XXXIII will be found the estimates of the δ values, while the fraction values $P\{a_{t_1} \mid a_{t_0}\}$ have been shown in table XXXII. To illustrate the calculation technique, the calculation of $P\{a_{t_1} \mid a_{t_0}\}$ for "cholerine" has been shown in table XXXI. In fig. 18 the values of $P\{a_{t_1} \mid a_{t_0}\}$ for all causes of death have been plotted.

This figure shows a fairly *even* distribution of the fraction values over the interval; we can therefore accept the model and consider the δ values as constant within each of the three periods.

We shall now examine whether there has been a change with regard to the size of δ for all causes of death from 1931–41 to 1942–47 and from 1931–41 to 1948–60(50)., i.e. whether the difference in the d values from the first to the second period and from the first to the third period can be regarded as random.

A preliminary guidance is obtained by plotting the d values from the second and the third period, respectively, against the d values of the first period and at the same time entering the identity line (see fig. 19).

With regard to the comparison of the first and the second period it will be seen that, apart from one point ("whooping cough"), all the points are above the line. This means that there has been an increase for all causes of death except one. We can therefore beforehand reject any assumption that the difference between the d values from the two periods can be regarded as random. This is thus a general increase.

By contrast the points for the first and the third period are grouped around the identity line in a random manner, so that the causes of death from the first and the third main group occur both above and below the line, for which reason a hypothesis about common values for these two periods cannot be rejected beforehand. The acceptance or rejection of the hypothesis must depend on whether the difference between the d values can be considered random.

This testing is carried out both for the second and the third period. Also the second period is dealt with because it is desired to evaluate the difference between the d values with reference to the number of observations.

By analogy with section B.2 it is also here necessary to know the variance of the d values of the individual periods or a function of these values.

Owing to the variation concerning the relation between $\mathcal{N}_{t_1}$ and $\mathcal{N}_{t_2}$ we have to proceed in a somewhat different way from the one described in section B.2.

[1]) These estimates have been computed on a Gier electronic computer.

Since

$$(3.1)\quad d_t = \frac{\frac{a_{t1}}{\mathcal{N}_{t1}}}{\frac{a_{t2}}{\mathcal{N}_{t2}}}$$

we have

$$(3.1a)\quad \log_{10} d_t = \log_{10}\frac{a_{t1}}{a_{t2}} + \log_{10}\frac{\mathcal{N}_{t2}}{\mathcal{N}_{t1}}$$

Along the same lines as in section B.2 the approximative relation

$$(3.2)\quad \mathcal{V}\{f(x)\} \simeq [f'(\xi)]^2 \cdot \mathcal{V}\{x\}$$

gives us the variance of $\log_{10} d_t$.

$$(3.3)\quad \mathcal{V}\{\log_{10} d_t\} = \mathcal{V}\left\{\log_{10}\frac{a_{t1}}{a_{t2}}\right\} \simeq \frac{0{,}4343^2}{a_{t0}\frac{\beta_t \cdot d_t}{(1+\beta_t \cdot d_t)^2}}$$

However, we are not directly interested in the variance of $\log_{10} d_t$, but are trying to find the variance of the d value of the individual period, which is obtained by using all the observations in the period concerned (e.g. 1942–47) by means of equation 1.22.

If the relation between $\mathcal{N}_{t1}$ and $\mathcal{N}_{t2}$ was constant in the individual periods, it would be possible to compute the d value of the period by means of formula 1.16a, and as in the situation in section B.2. the variance would therefore only be dependent on a_{01} and a_{00}, and the computation could be made according to equation 2.3. While in the computation of the d values we took into account the variation in the relation between $\mathcal{N}_{t1}$ and $\mathcal{N}_{t2}$ by using equation 1.22, the variance will be computed according to formula 2.3, where a_{00} in this case denotes the total number of deaths in the period owing to the cause of death in question, while the relation between a_{01} (deaths among infants born out of wedlock) and a_{00} is introduced as an estimate of $\frac{\beta \cdot d}{1+\beta \cdot d}$. The reason why we disregard changes in the relation between the groups in computing the variance is, firstly, that the standard deviation is relatively insensitive to changes in the relation between a_{t1} and a_{t0}, brought about by changes in the relation between $\mathcal{N}_{t1}$ and $\mathcal{N}_{t2}$. Further, the changes within each of the three periods are far smaller than in the period as a whole.

The value of the variance of $\log_{10} d$ for all causes of death in each of the three periods has been shown in col. 8 table XXXIII.

If the difference between the d values of the two periods can be considered random, the difference between the logarithms of these values will, with approximation, be normally distributed around zero with a variance which is the sum of the variances of the individual values of $\log_{10} d$.

With regard to the relation between e.g. the first and the second period we must accordingly compute for each cause of death

$$(3.4)\quad \Phi\left(u \simeq \frac{\log_{10} d^{(II)} - \log_{10} d^{(I)}}{\sqrt{\mathcal{V}\{\log_{10} d^{(II)}\} + \mathcal{V}\{\log_{10} d^{(I)}\}}}\right)$$

$d^{(I)}$: 1931–41
$d^{(II)}$: 1942–47

The values of $\Phi(u)$ will be found in col. 9 table XXXIII.

As regards the relation between the first and the second period the fraction values for all three main groups of causes of death and the crude infant mortality fall outside the conventional $2\frac{1}{2}$ and $97\frac{1}{2}$ per cent test limits, all four values being between 99 and 100 per cent. Among the individual causes of death fraction values of the same order occur in the case of "congenital debility", "cholerine", and "other infectious diseases".

These test results therefore decisively support our previous conclusions with regard to these two periods.

If, on the other hand, we consider the distribution of the fraction values with regard to the relation between the first and the third period, none of the values exceed these test limits, whether we consider the main groups or the individual causes of death, for which reason the difference between the d values of these two periods can be considered random. The two d values can therefore be included in the estimate of the common δ value that fits both periods.

The systematic change in crude infant mortality from the first to the third period is thus due not to systematic changes with regard to the individual causes of death, but to changes in the weights in the average owing to the different developments for the different causes of death.

In table 9 and fig. 2* on the following page have been shown the common estimates of δ for the first and the third period together with d values for the second period.

Table 9. The relation between the mortality for infants born out of and in wedlock *(d)* in the period 1931–60

	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)							
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)				Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931–41	0.98	2.21	1.44	1.11	0.88	1.58	1.62	1.60	1.15	1.03	1.35	0.99	1.14	1.19	1.39
1942–47	1.12	2.32	1.86	1.19	1.01	1.77	1.86	1.78	1.34	1.06	2.94	0.89	1.62	2.05	1.73
1948–60(50)..	0.98	2.21	1.44	1.11	0.88	1.58	1.62	1.60	1.15	1.03	1.35	0.99	1.14	1.19	1.54

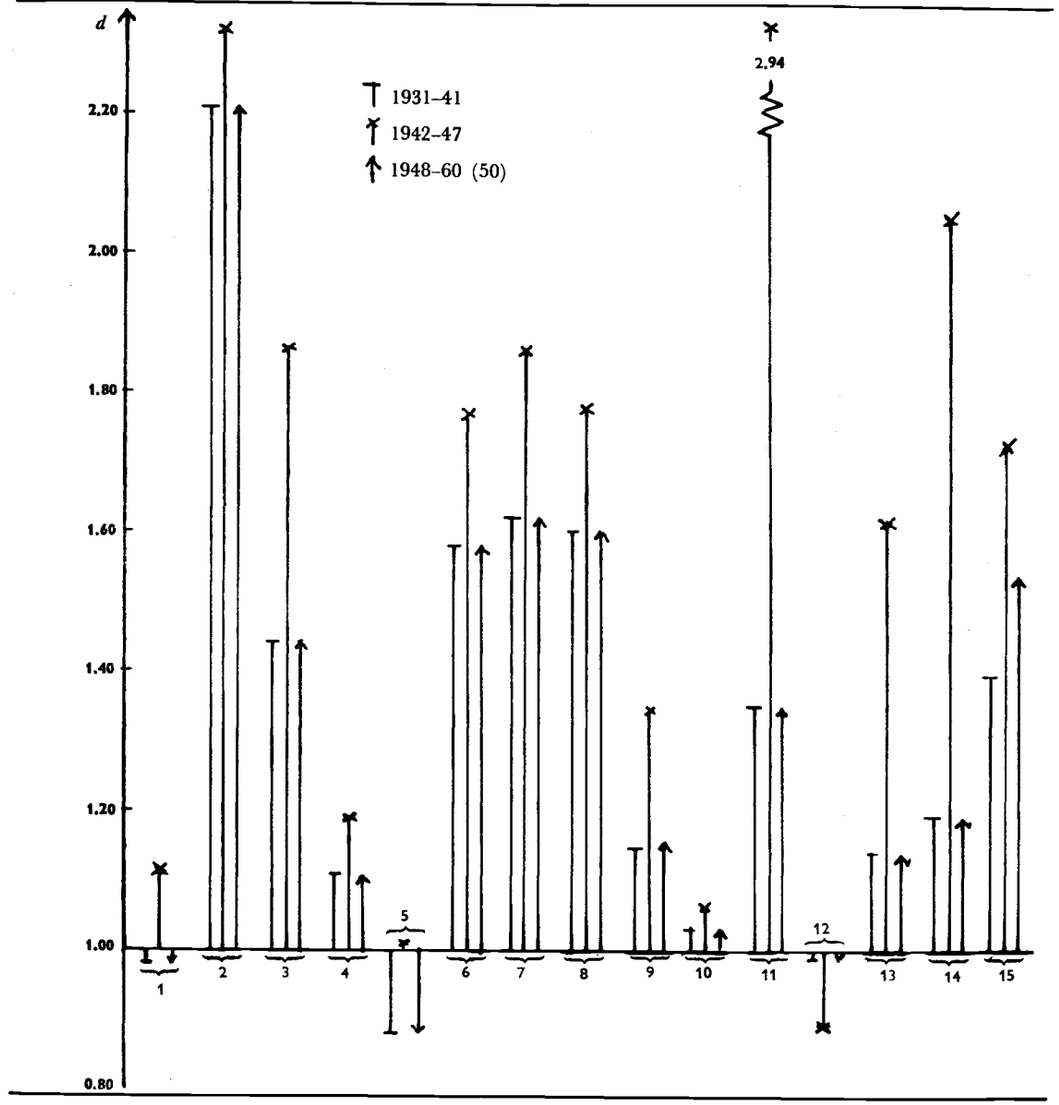


Fig. 2. Graphical illustration of the excess mortality for live births out of wedlock within the different causes of death in the period 1931–60.

C. Summary

In demographic studies of mortality much attention has always been devoted to infant mortality, i.e., the mortality among children between 0 and 1 year of age. One reason is that infant mortality has always been high compared with the mortality in other age groups, both in relative and absolute terms. Another reason is that the mortality in this age group seems to have been particularly influenced by the hygienic and medical progress during the past 100–150 years.

In this study the development of infant mortality during the period 1931–60 has been analysed, the mortality in a certain calendar-year being measured by the ratio of the number of deaths among infants under 1 year of age to the number of live births during the year.

While infant mortality remained at a fairly constant level of approx. 8 per cent during the 1920's, there was a fall after 1930, which brought the mortality down to just over 2 per cent in 1960.

This fall was due primarily to the decline in deaths from pneumonia and infectious diseases[1]). In 1931 these two main groups accounted for 22.9 and 15.6 per thousand live births against only 1.4 and 1.0 per thousand in 1960. Among the individual causes of death within the group of infectious diseases the number of deaths from whooping cough fell from 3.3 to 0.1 per thousand, while influenza recorded a decline from 1.9 to less than 0.1 per thousand.

If we consider the remaining causes of death, i.e., the main group consisting of non-infectious diseases (excluding pneumonia), they record a far smaller decline, viz. from 42.9 to 19.1 per thousand. Here, it is especially the "infants' diseases proper" (malformations, prematurity, congenital debility, injuries at birth, etc.) which have shown a more moderate decline.

The different rates of decline in the various causes of death bring about a change in the relative distribution of deaths by cause. Thus it may be mentioned that while 47 per cent of all deaths among infants under one year in 1931 was due to pneumonia or infectious diseases, the corresponding figure in 1960 was 11 per cent.

As deaths from pneumonia and infectious diseases occur chiefly after the first month after birth, the great reduction in these deaths has had the result that only 25 per cent of all deaths in 1960 occurred after the first month after birth against 64 per cent in 1931.

Also the relation between the mortality for males and females born in and out of wedlock has been analysed to ascertain whether the excess mortality for infants born out of wedlock and for males have changed in connexion with the above-mentioned fall in infant mortality.

However, a detailed comparison of these groups necessitates a detailed breakdown of the statistical material with the consequent small numbers of observations and increase in the influence of random variation. This renders it difficult to judge whether the given excess mortality is constant throughout the period or during parts of the period. We also lack a precept indicating how all the observations in such periods should be summarized to ensure the best quantification.

Only when a suitable statistical model is introduced does it become possible to undertake an exact comparison and quantification. Such a model has been introduced in section B.1 and applied to the material in sections B.2 and B.3.

By means of this model it is possible to ascertain, in a rational and well-defined way, the periods in which the relation between the mortalities for the groups can be considered constant. Further, the model indicates how all the observations in these periods are to be summarized to reduce the uncertainty of the numerical estimates to a minimum.

In this way it is possible to give an exhaustive description of infant mortality among these groups throughout the period by means of a limited number of estimates, the uncertainty of which can be stated.

In the following the most important results will be given.

As regards live births in and out of wedlock, the latter record a considerable excess mortality, which changes, however, in the course of the period.

In the period 1931–41 this excess mortality of 39 per cent appears as an average of 15, 19 and 60 per cent for pneumonia, infectious diseases, and all other causes of death, respectively. In the last mentioned main group the excess mortality is particularly high in connexion with "prematurity" (121 per cent).

From 1931–41 to 1942–47 the total excess mortality rose to 73 per cent owing to an increase for all three main groups, which was particularly steep for infectious diseases.

In the period 1948–60 the excess mortality for all three main groups of causes of death fell back to the pre-war level unlike the total excess mortality, which stabilized at a higher level, viz. 54 per cent. This was due to the rapid decline in the mortality from pneumonia and infectious diseases, which caused the main group with the highest excess mortality (60 per cent) to become more dominant in the latter part of the period and to bring up the average.

The analysis of the excess mortality for males shows that throughout the period the males have a constant excess mortality of 32 and 26 per cent, respectively, for infants born in and out of wedlock.

Also the excess mortality for males in connexion with the individual causes of death is constant. In this case the variation as regards male excess mortality from one cause of death to the other is far smaller than in the case of the relative mortality of infants born in and out of wedlock. For pneumonia, infectious diseases, and all other causes of death, males born in wedlock show an excess mortality of 28, 24 and 36 per cent, respectively. For infants born out of wedlock male excess mortality is 20, 38 and 26 per cent, respectively. Irrespective of legitimacy, male excess mortality is particularly high in connexion with the following causes of death: cholerine, congenital debility, and injuries at birth.

[1]) The definition of infectious diseases is based on the Inter-Scandinavian Cause of Death Nomenclature of 1926.

D. Graphs

Number of live-born males
and females in wedlock

A

..... Males born in wedlock
——— Females born in wedlock

Number of live-born males
and females out of wedlock

B

-·-·-·- Males born out of wedlock
– – – – – Females born out of wedlock

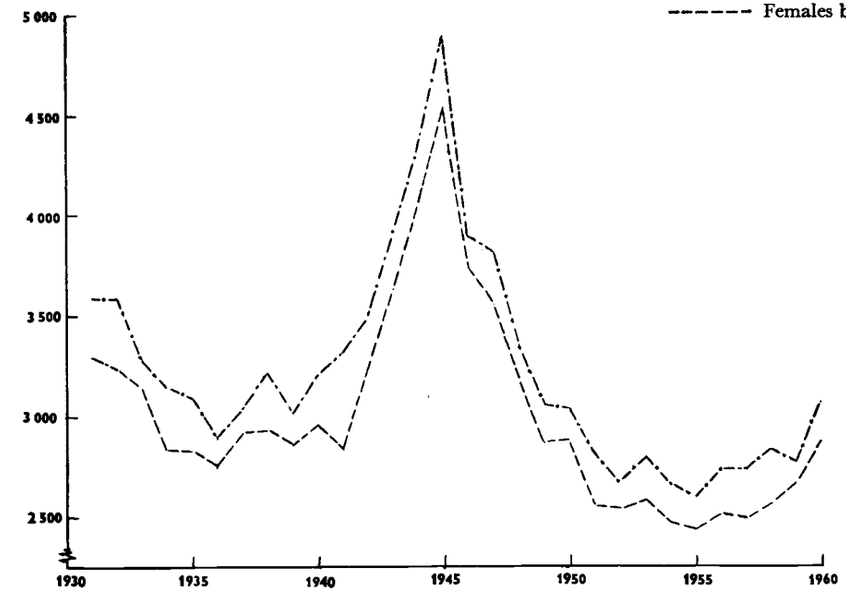


Fig. 1. Number of live births in the period 1931–60.

Number of deaths among infants
under 1 year per 100 live births

A

Number of deaths among infants
under 1 year per 100 live births (1931 = 100)

B

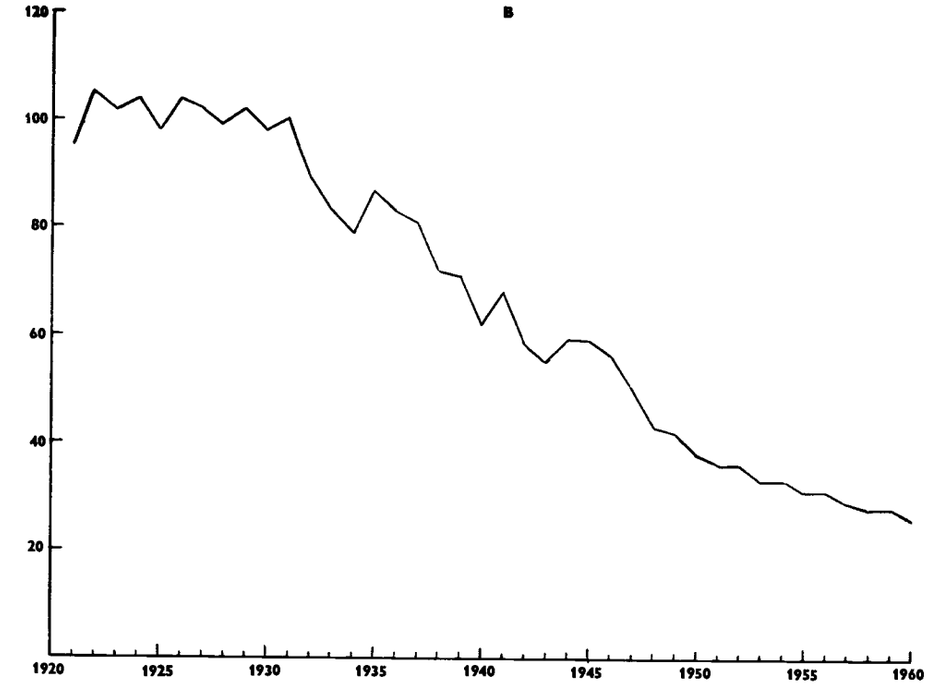


Fig. 2. Crude infant mortality for all live births in the period 1921–60.

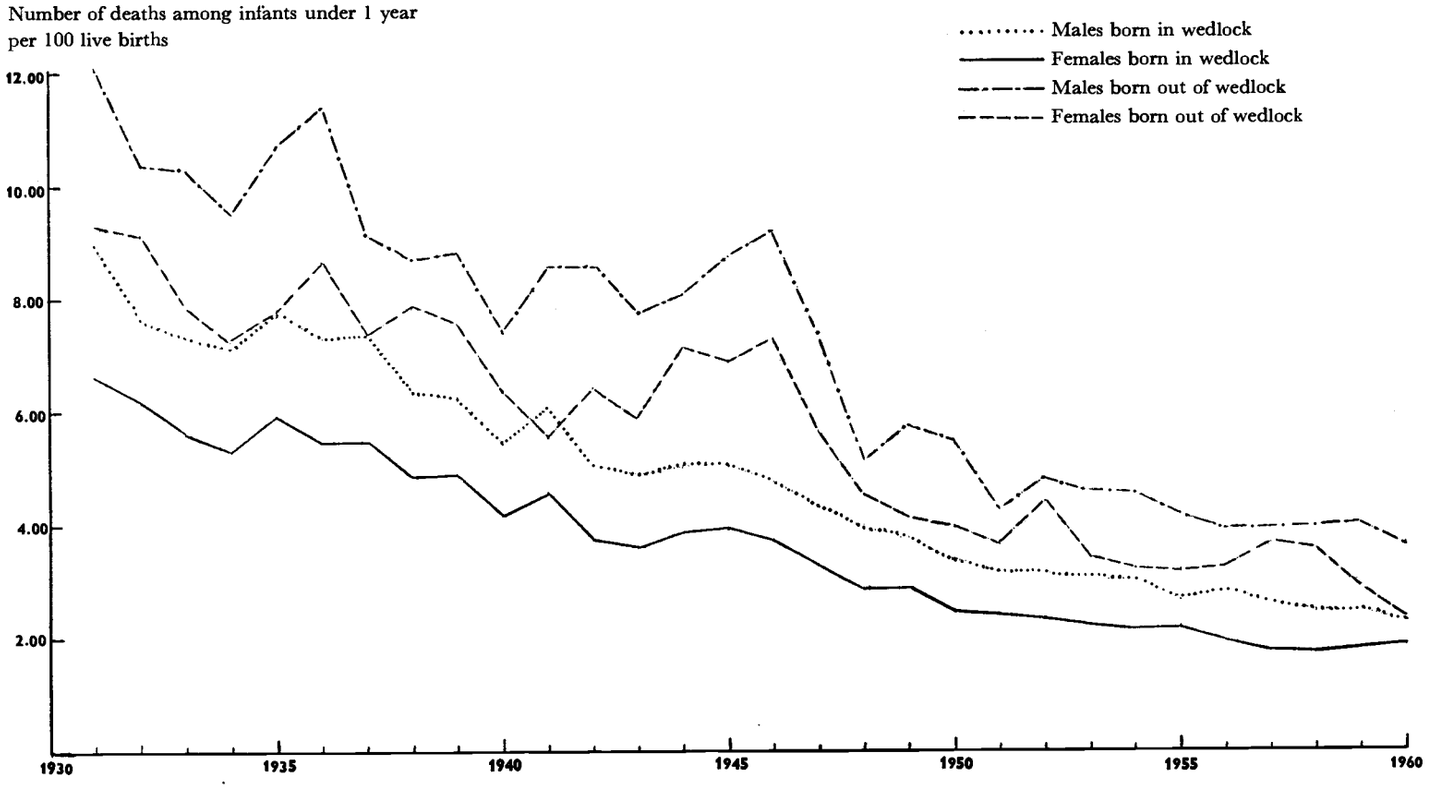


Fig. 3. Crude infant mortality for males and females born in and out of wedlock in the period 1931–60.

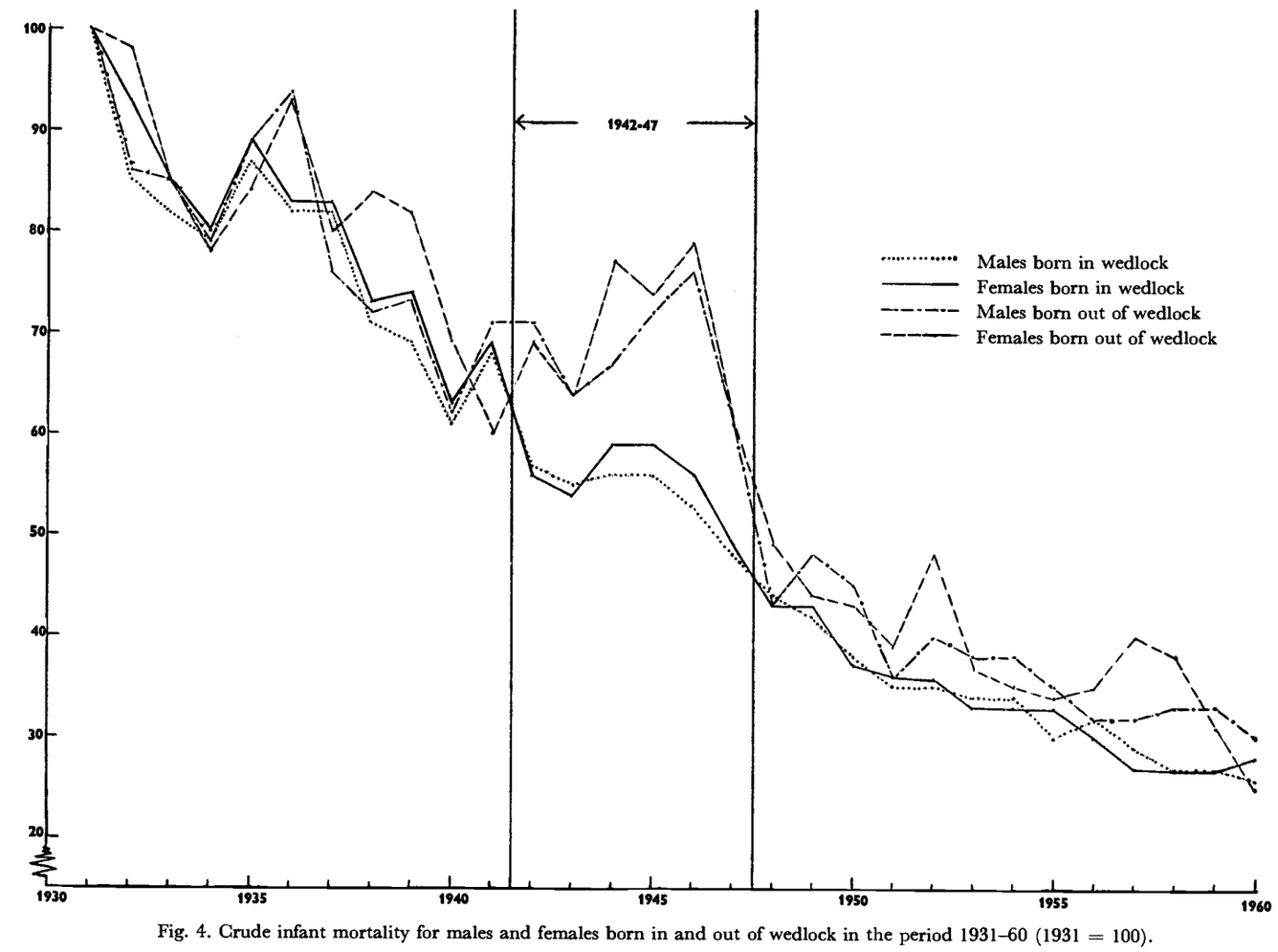


Fig. 4. Crude infant mortality for males and females born in and out of wedlock in the period 1931–60 (1931 = 100).

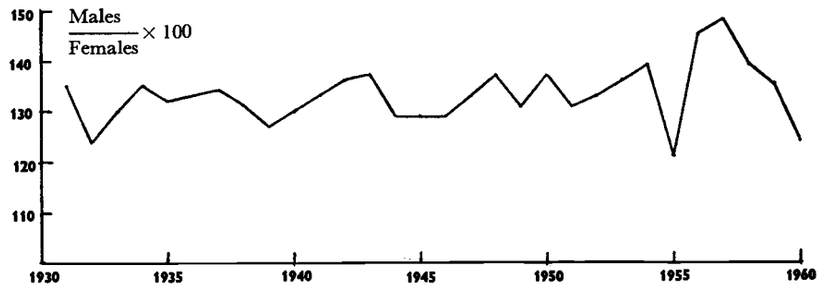


Fig. 5A. The relation between the crude infant mortality for live-born males and females in wedlock.

Fig. 5B. The relation between the crude infant mortality for live-born males and females out of wedlock.

Fig. 5C. The relation between the crude infant mortality for live births in and out of wedlock.

Number of deaths among infants under 1 year per 100,000 live births

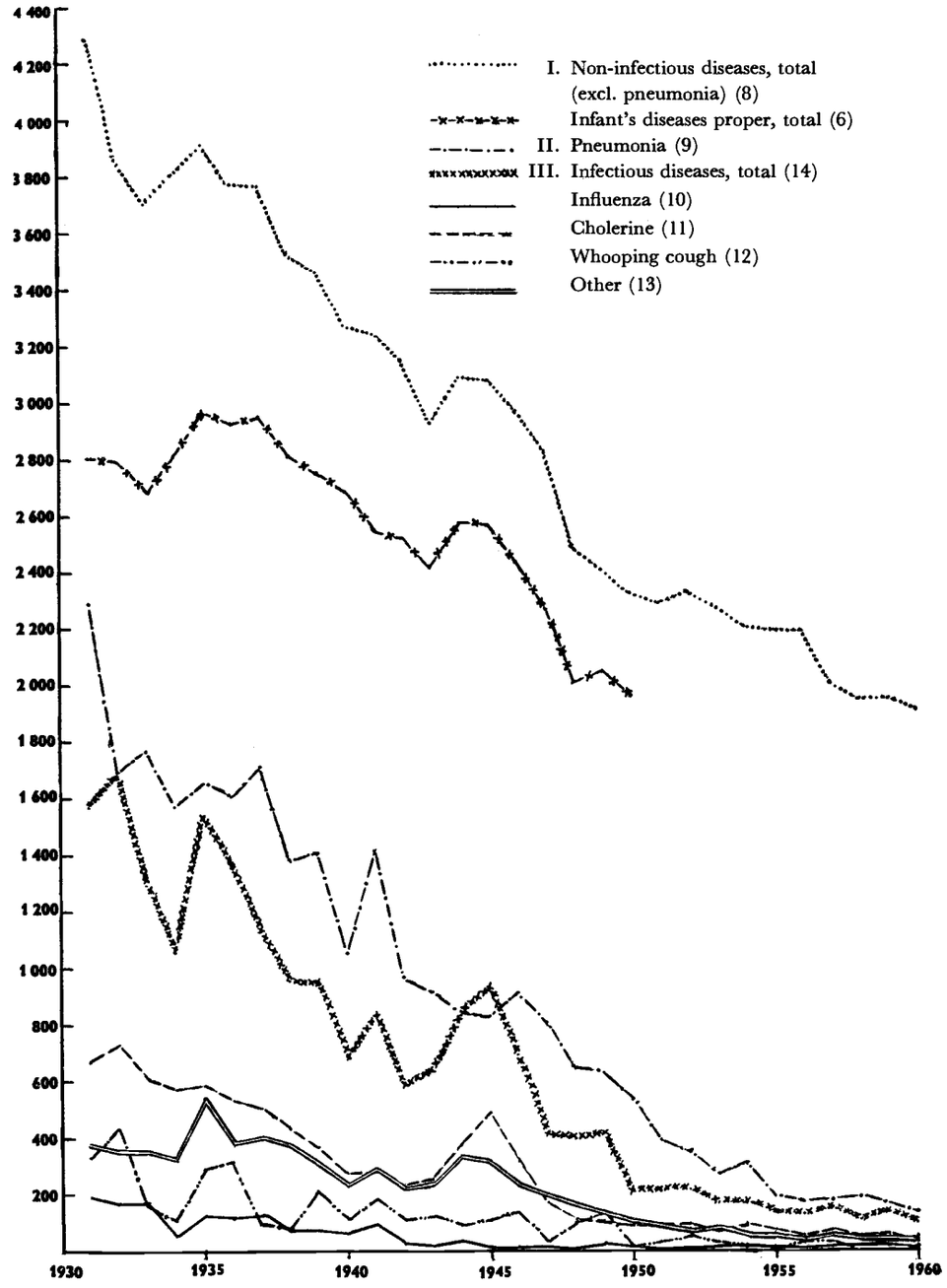


Fig. 6A. The development in the causes of death in the period 1931–60.

Number of deaths among infants under 1 year
per 100,000 live births

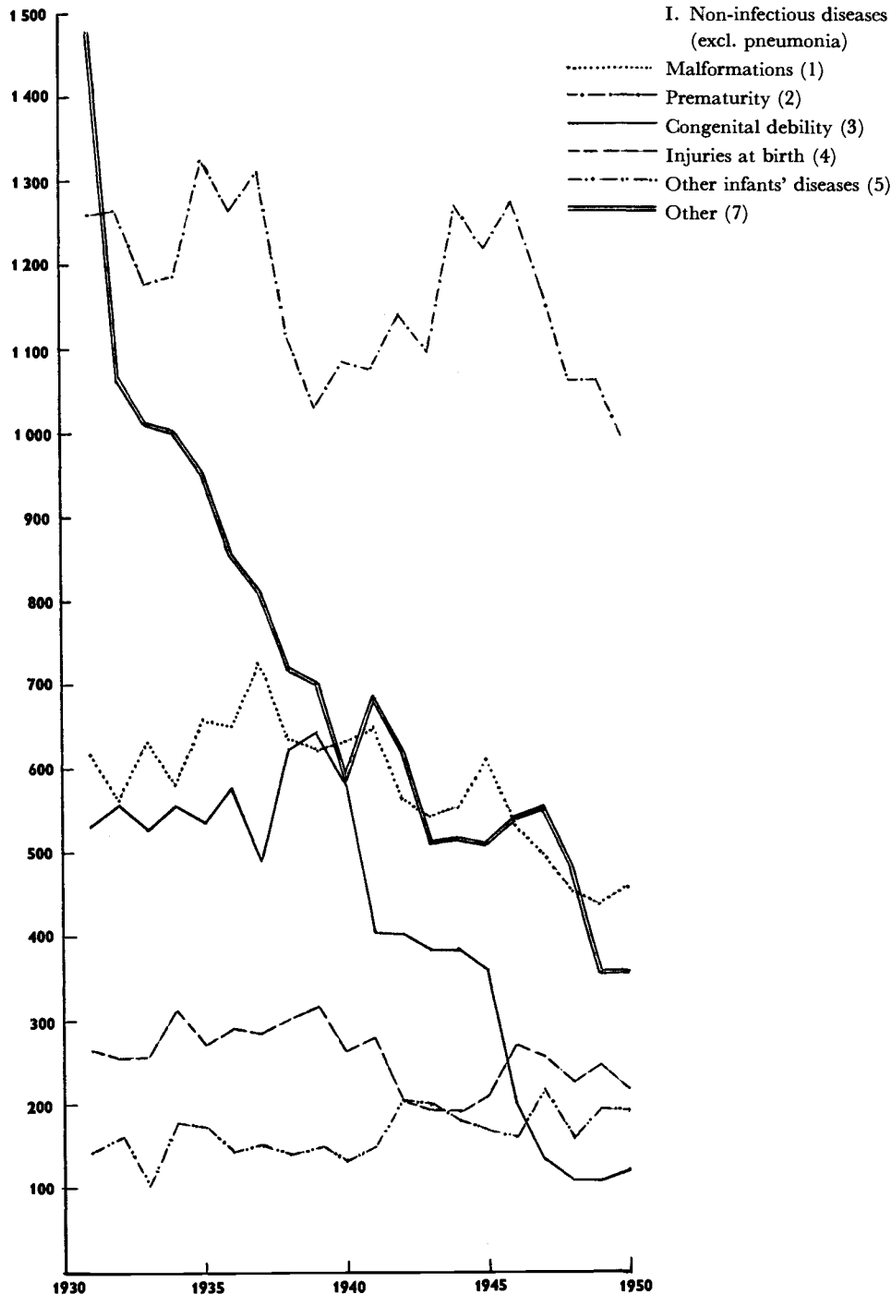


Fig. 6B. The development in the causes of death in the period 1931–50.

Deaths among infants under 1 year
by cause of death

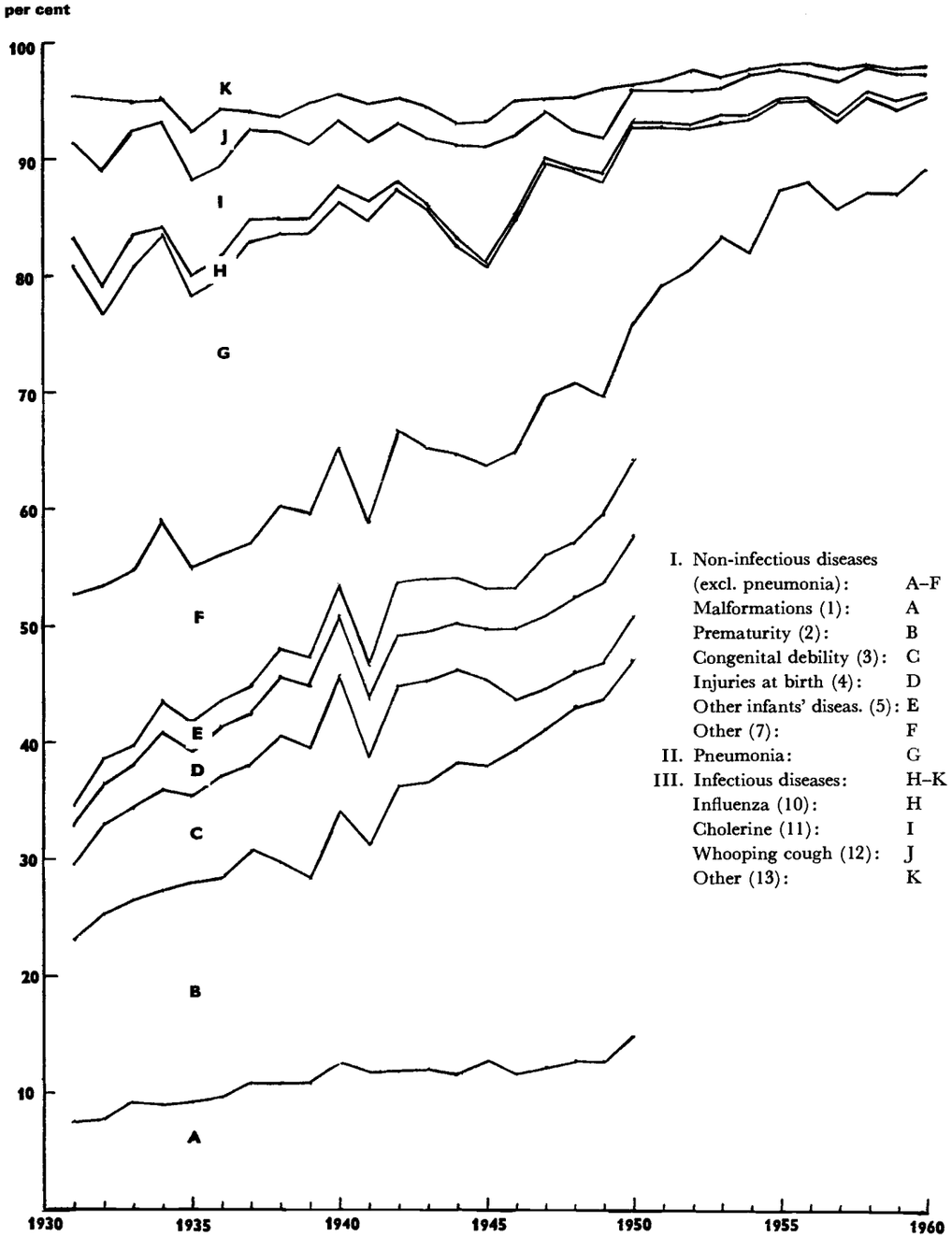


Fig. 7. Number of deaths among infants under 1 year by cause of death in the period 1931–60.

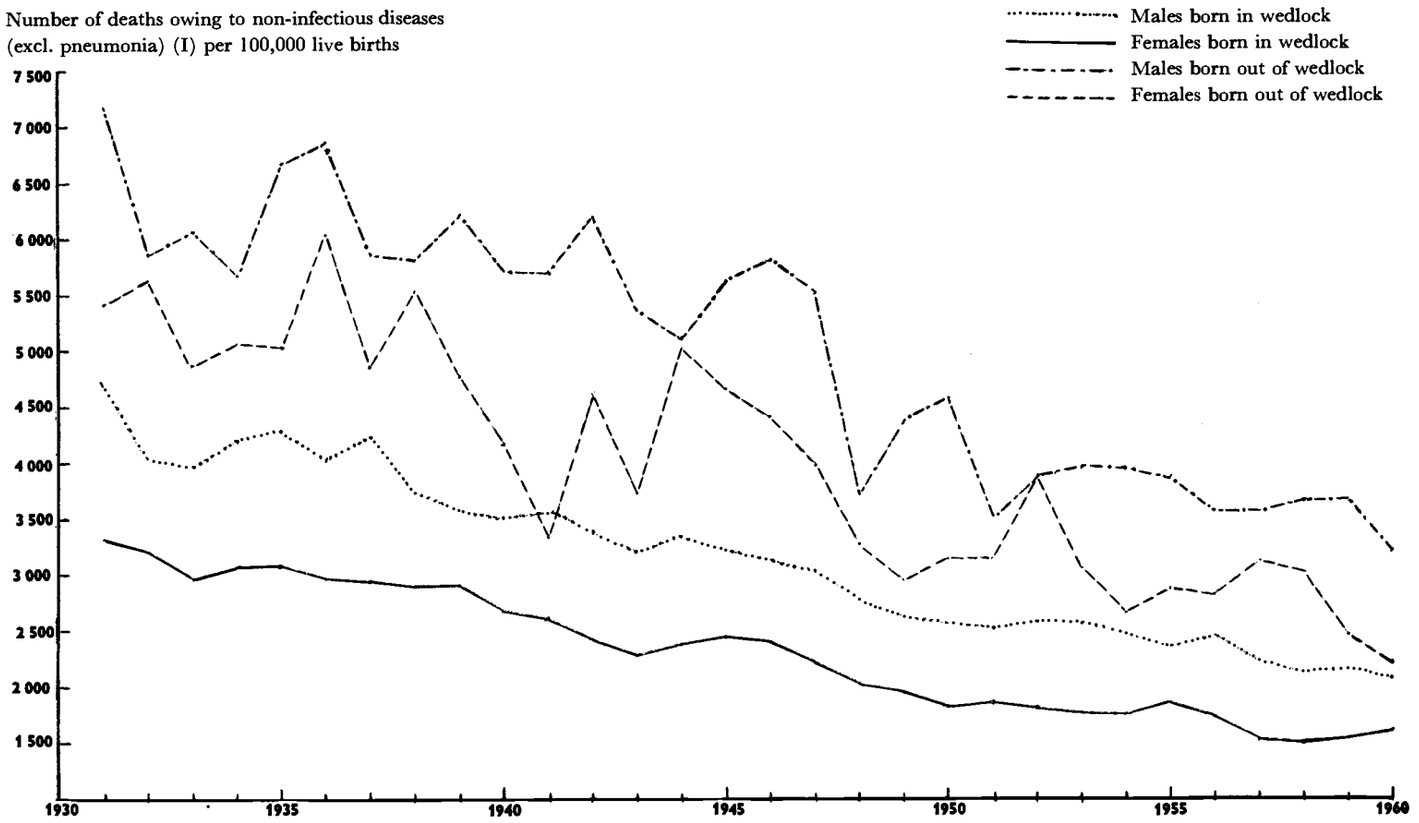


Fig. 8A. Deaths owing to non-infectious diseases (excl. pneumonia) among males and females born in and out of wedlock in the period 1931–60.

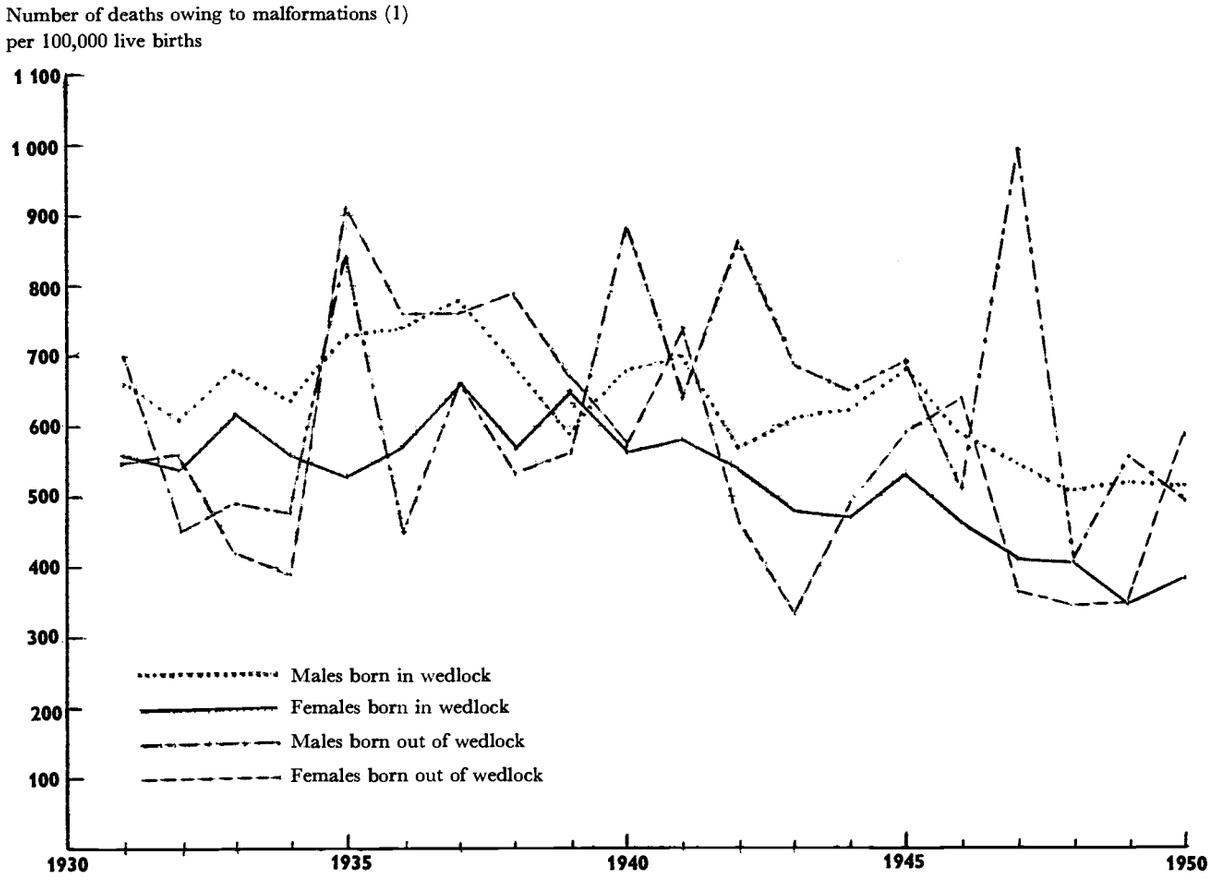


Fig. 8B. Deaths owing to malformations among males and females born in and out of wedlock in the period 1931–50.

Number of deaths owing to prematurity (2)
per 100,000 live births

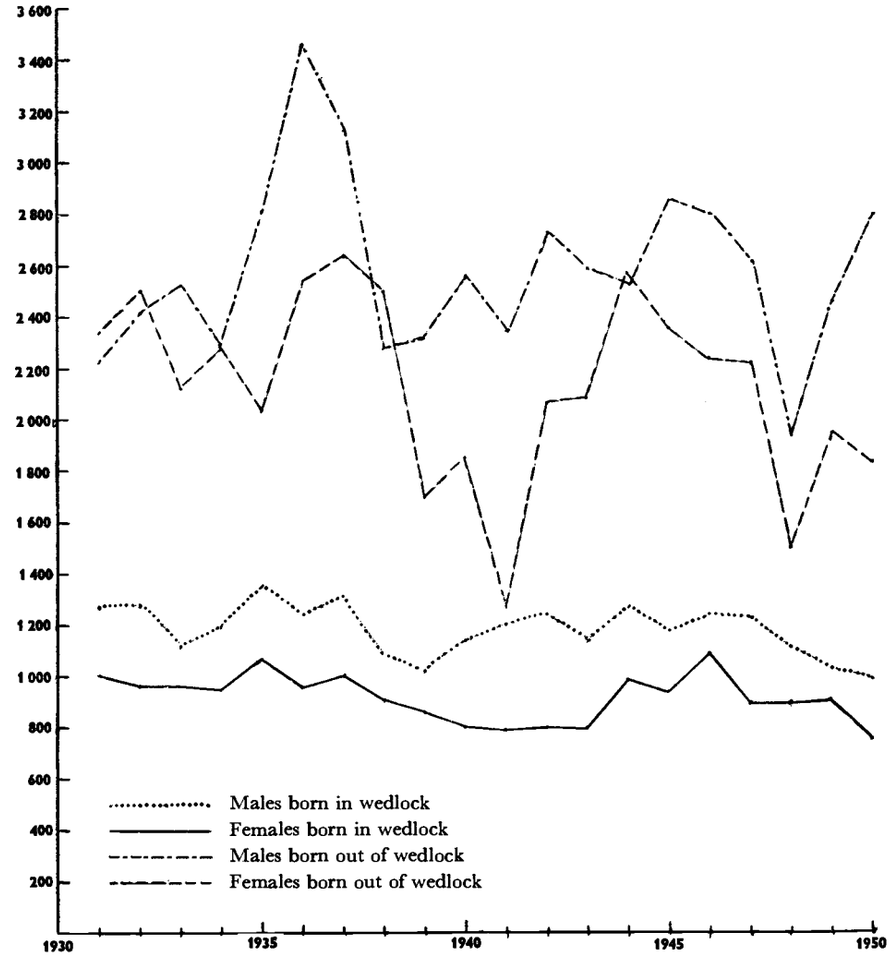


Fig. 8C. Deaths owing to prematurity among males and females born in and out of wedlock in the period 1931–50.

Number of deaths owing to congenital debility (3)
per 100,000 live births

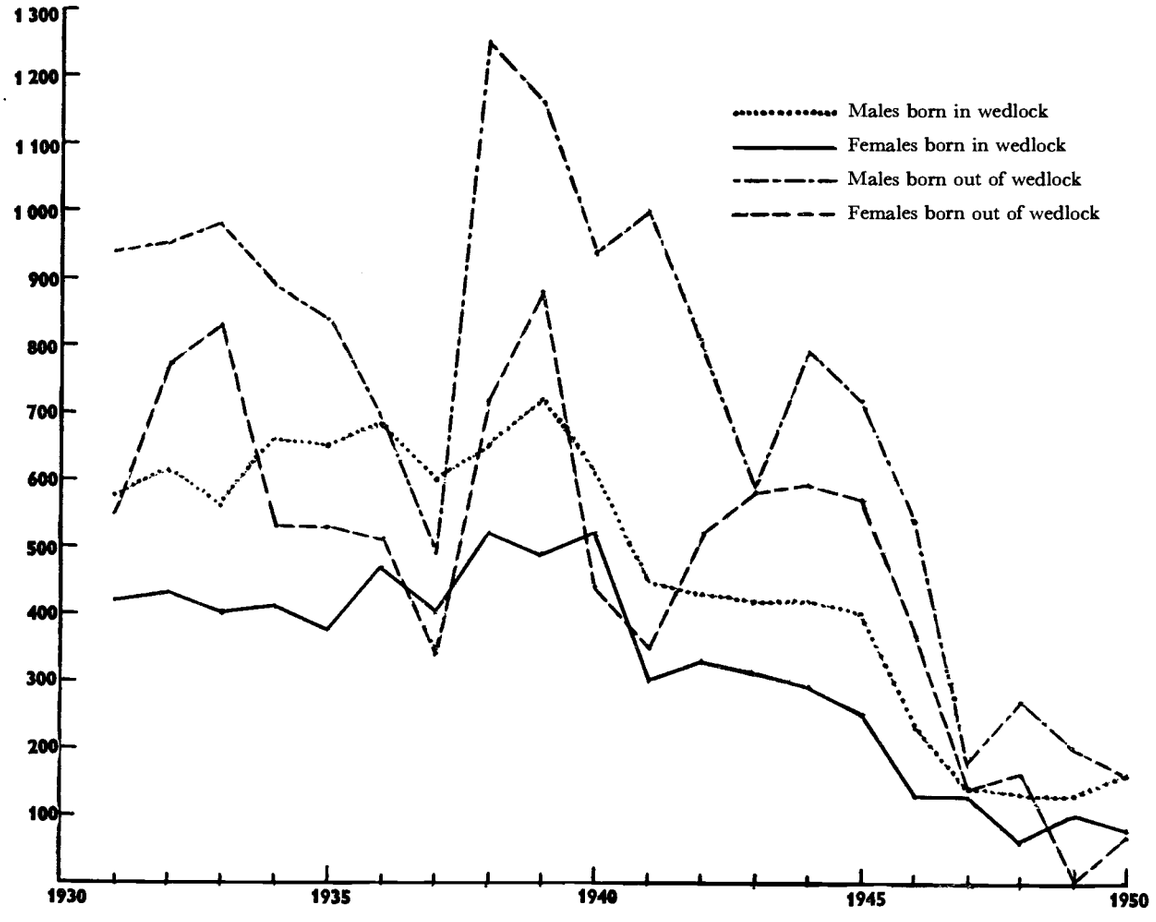


Fig. 8D. Deaths owing to congenital debility among males and females born in and out of wedlock in the period 1931–50.

Number of deaths owing to injuries at birth (4)
per 100,000 live births

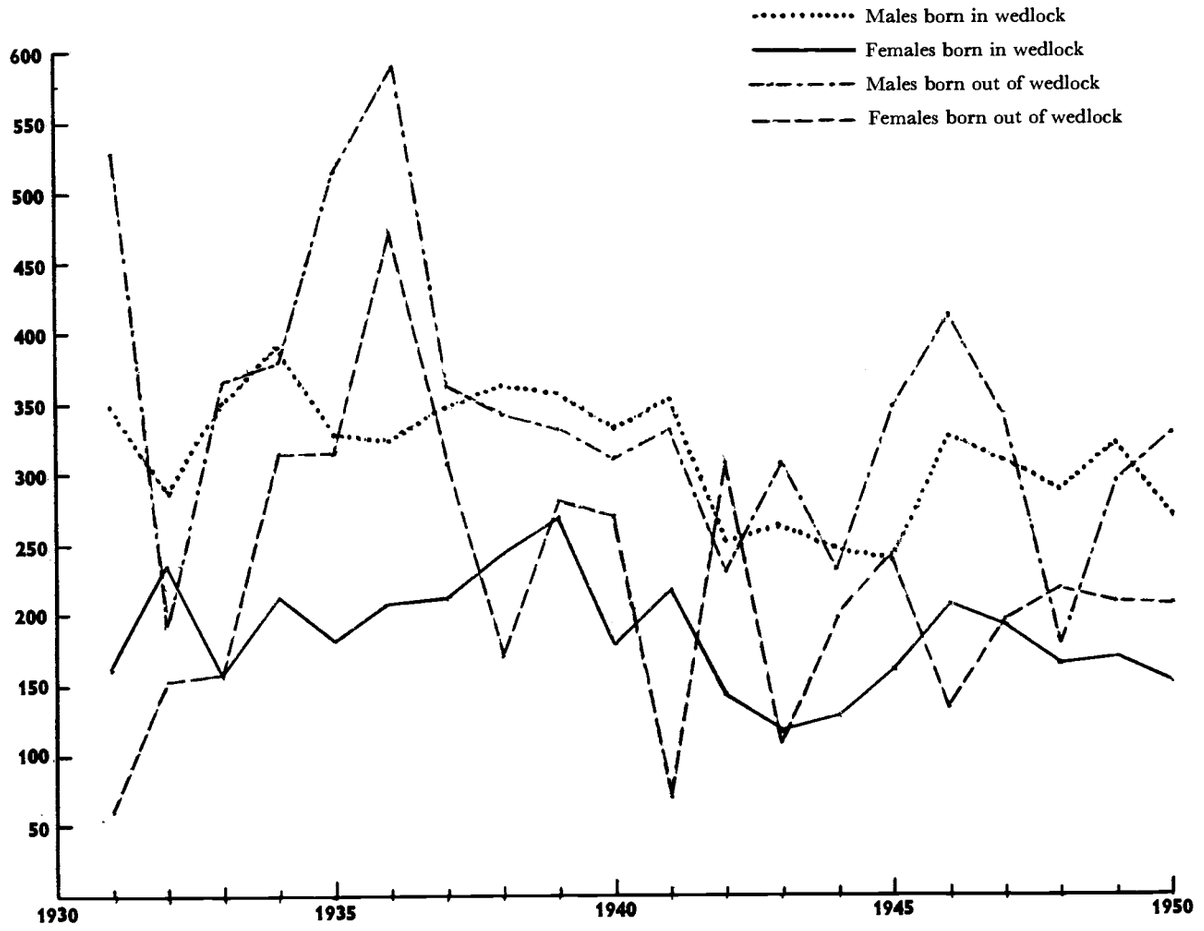


Fig. 8E. Deaths owing to injuries at birth among males and females born in and out of wedlock in the period 1931–50.

Number of deaths owing to other infants' diseases (5)
per 100,000 live births

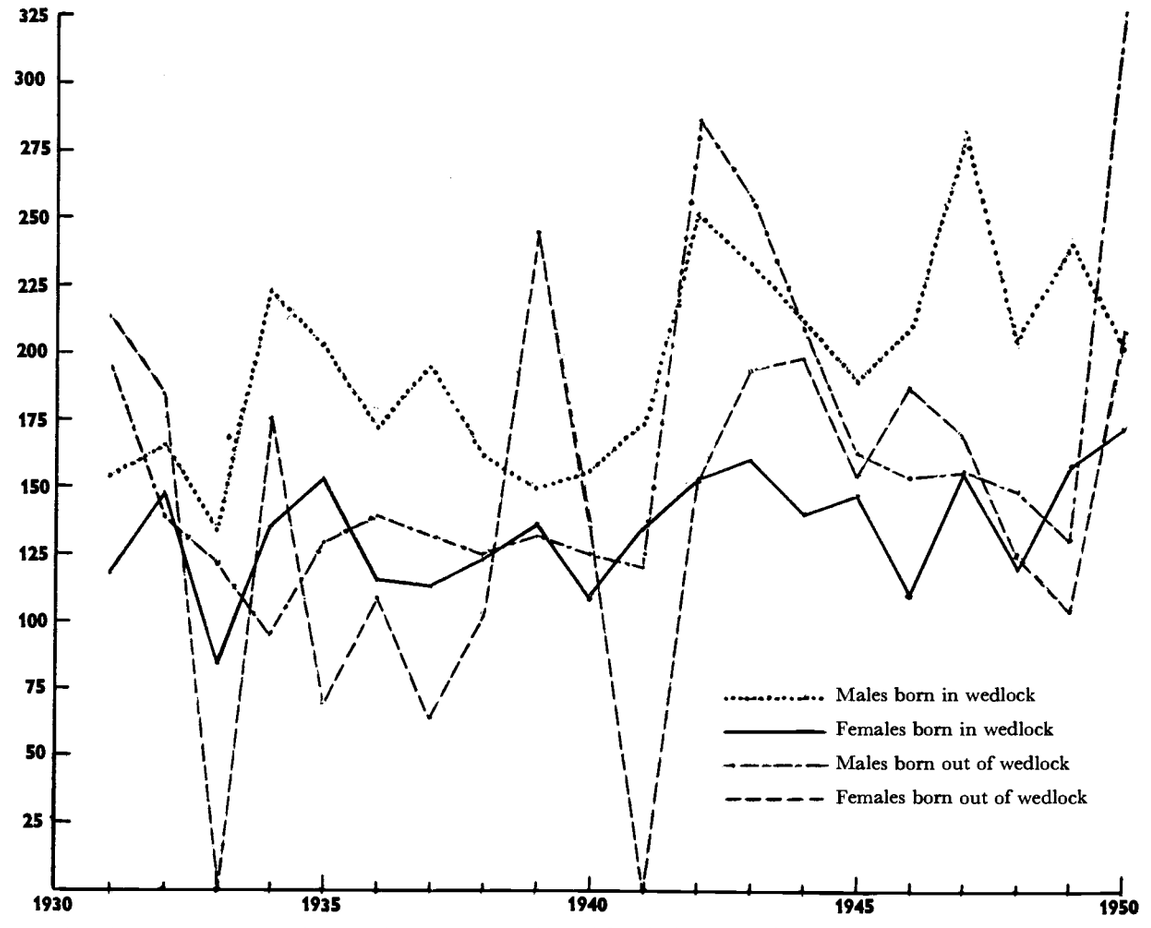


Fig. 8F. Deaths owing to other infants' diseases among males and females born in and out of wedlock in the period 1931–50.

Number of deaths owing to "infants' diseases proper" (6)
per 100,000 live births

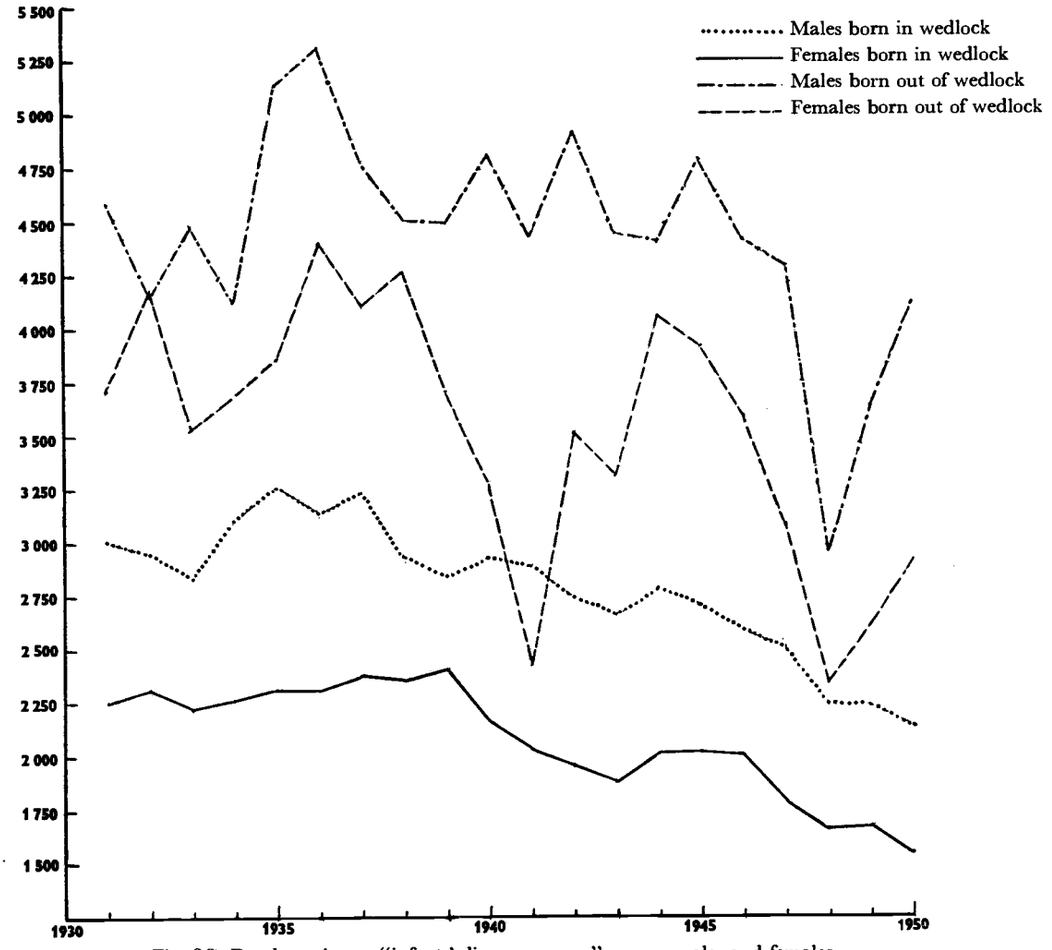


Fig. 8G. Deaths owing to "infants' diseases proper" among males and females born in and out of wedlock in the period 1931–50.

Number of deaths owing to other non-infectious diseases
(excl. pneumonia) (7) per 100,000 live births

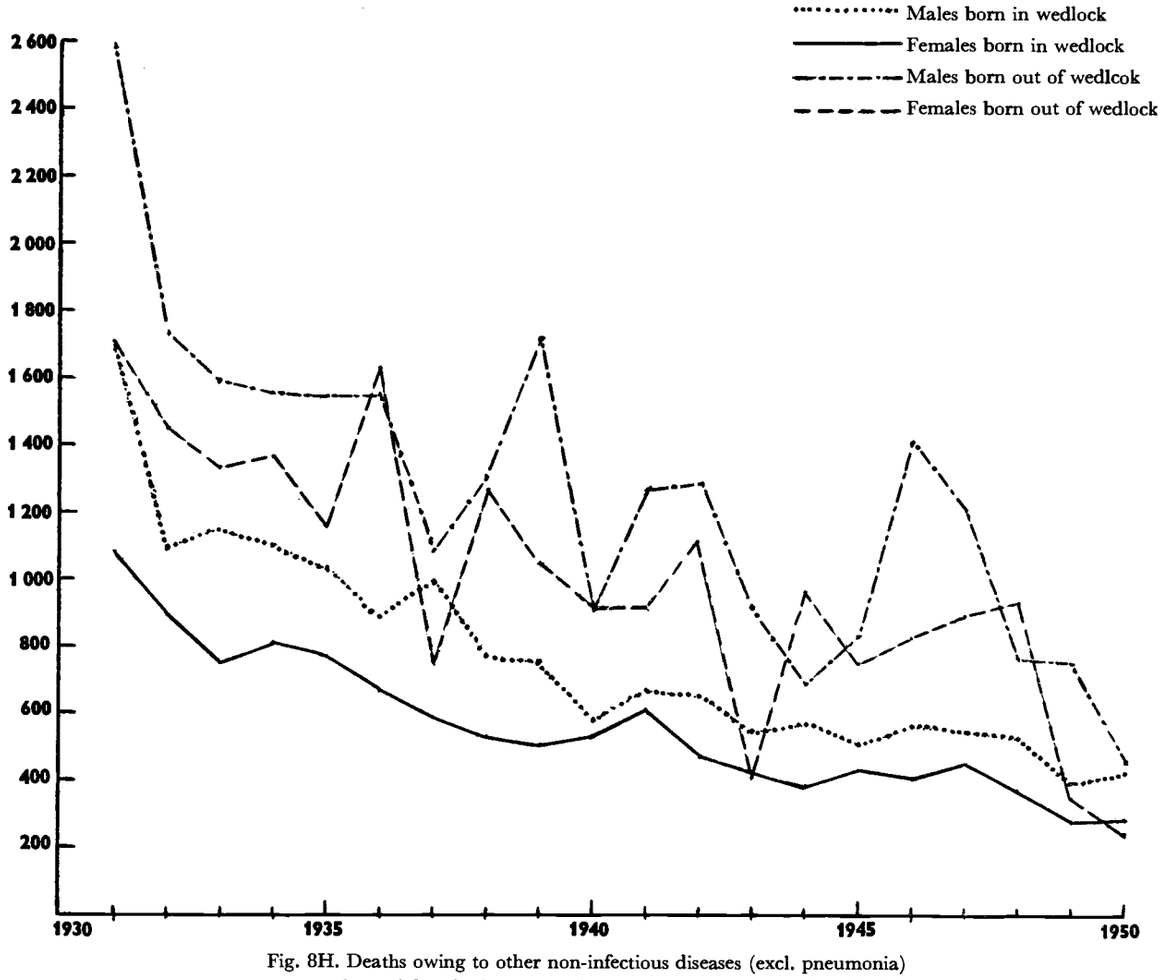


Fig. 8H. Deaths owing to other non-infectious diseases (excl. pneumonia) among males and females born in and out of wedlock in the period 1931–50.

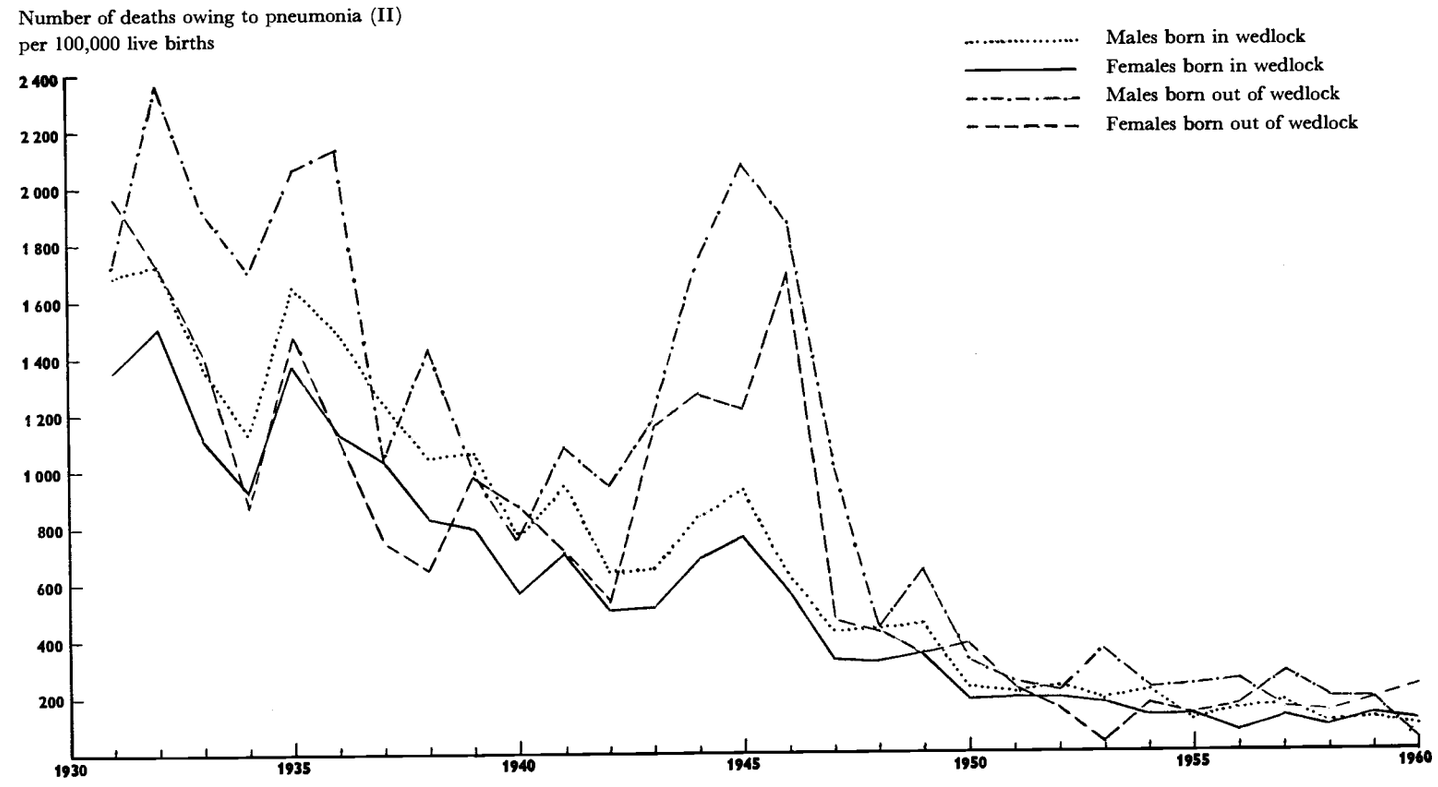


Fig. 8I. Deaths owing to pneumonia among males and females born in and out of wedlock in the period 1931–60.

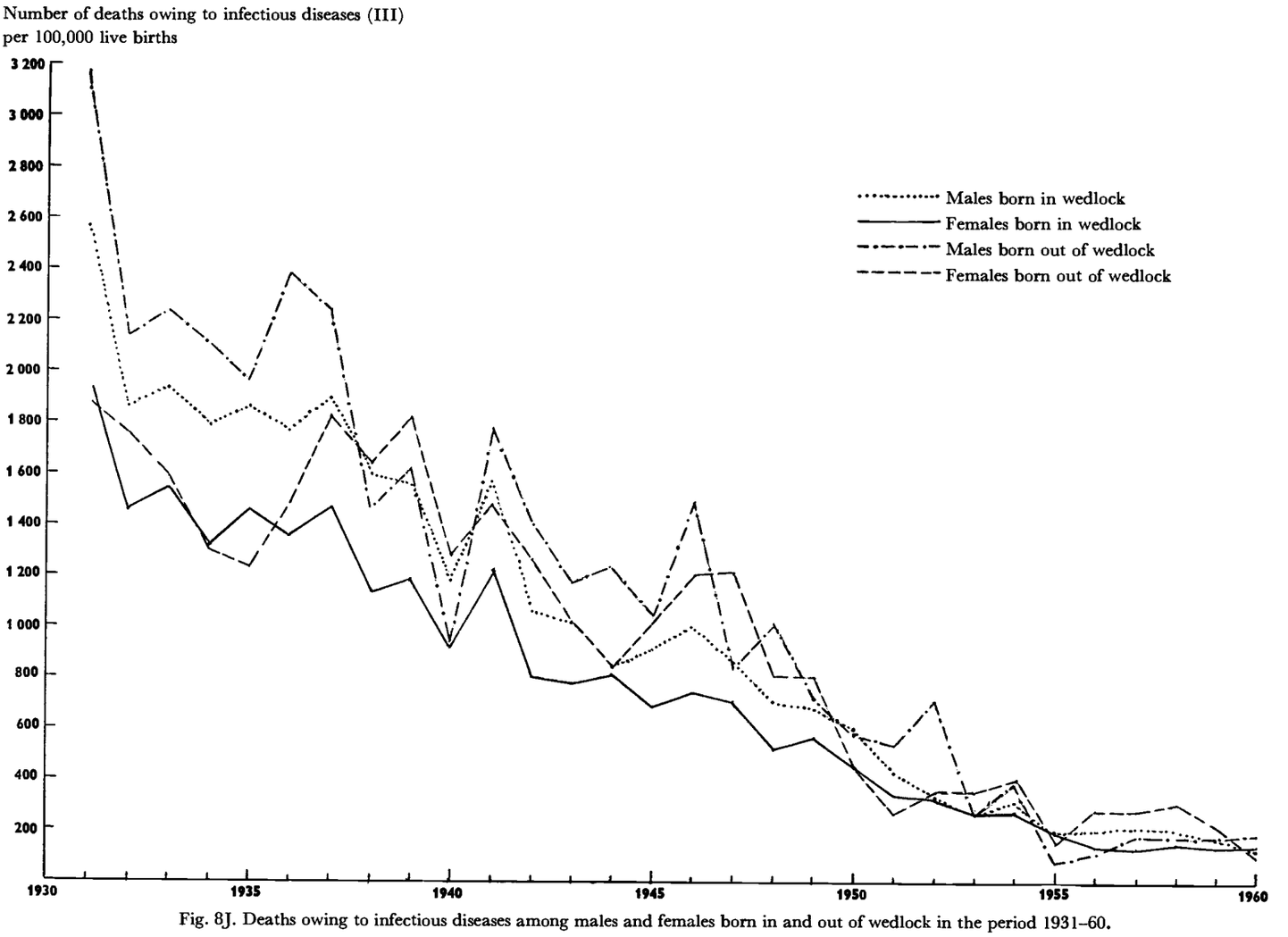


Fig. 8J. Deaths owing to infectious diseases among males and females born in and out of wedlock in the period 1931–60.

Number of deaths owing to influenza (10)
per 100,000 live births

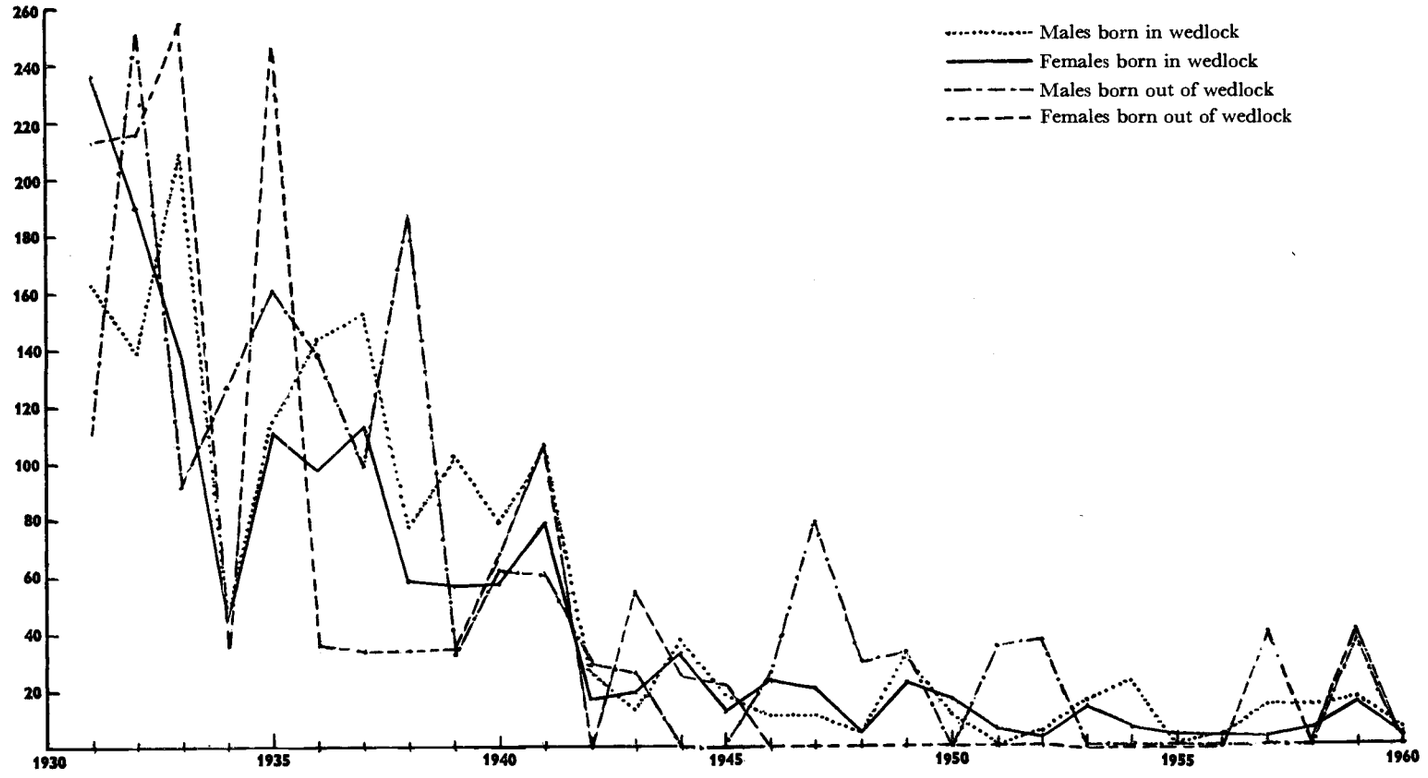


Fig. 8K. Deaths owing to influenza among males and females born in and out of wedlock in the period 1931–60.

Number of deaths owing to cholerine (11)
per 100,000 live births

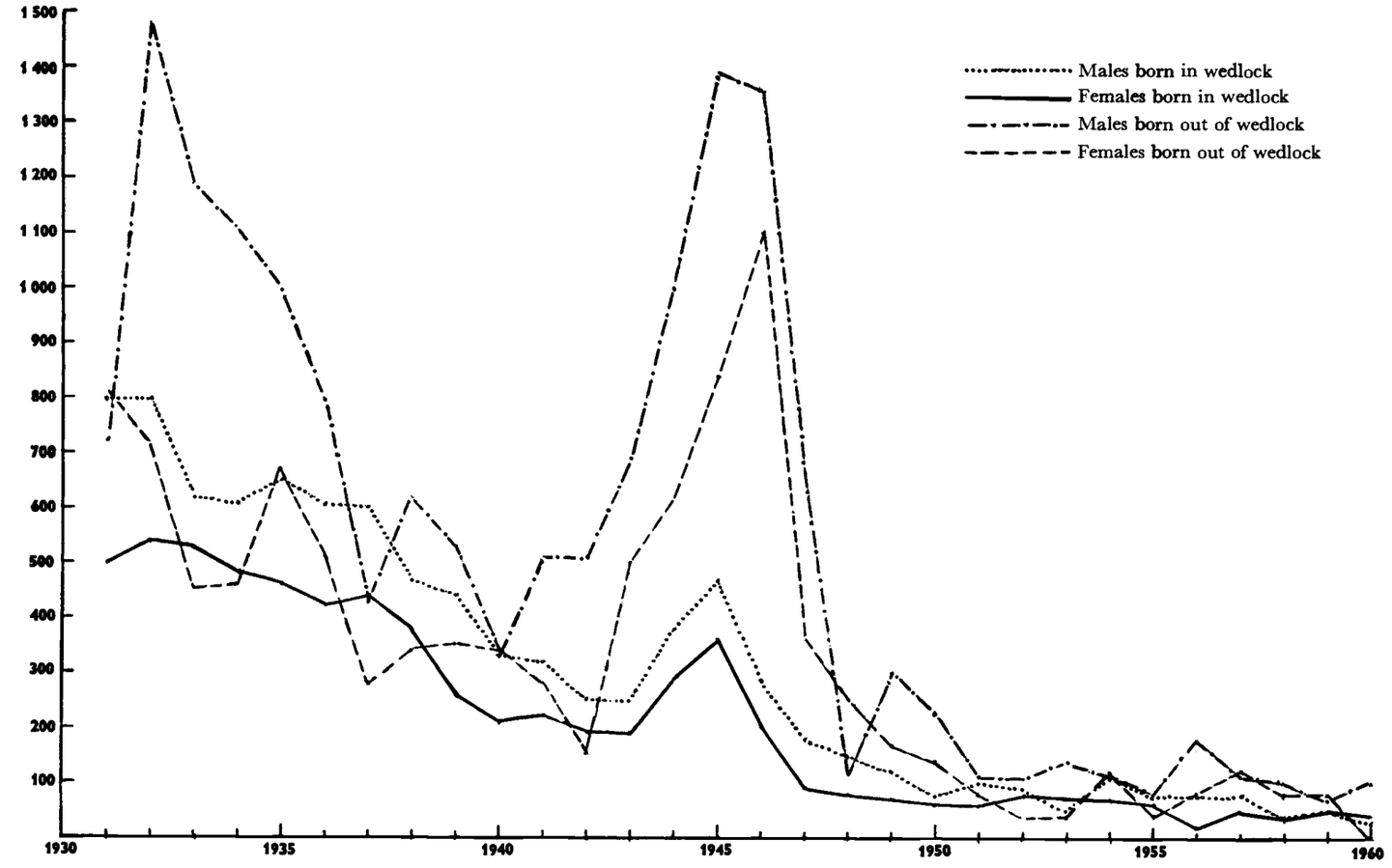


Fig. 8L. Deaths owing to cholerine among males and females born in and out of wedlock in the period 1931–60.

Number of deaths owing to whooping cough (12)
per 100,000 live births

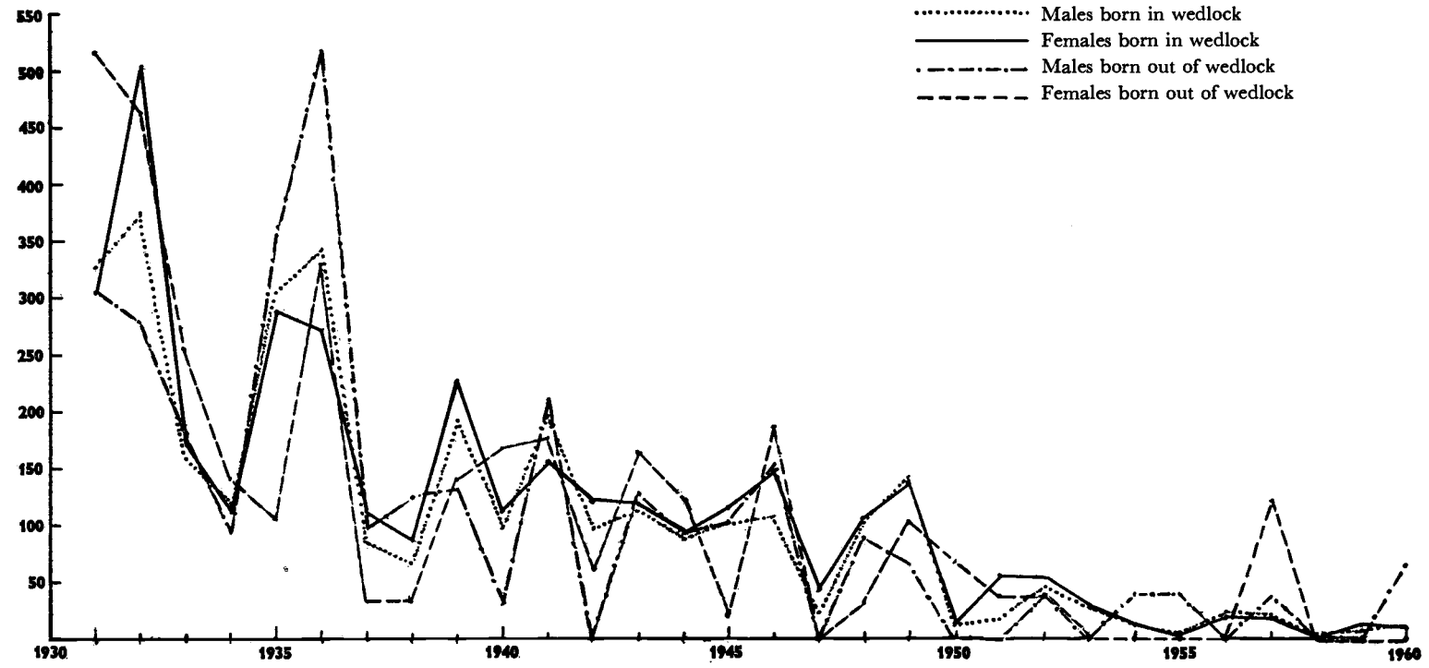


Fig. 8M. Deaths owing to whooping cough among males and females born in and out of wedlock in the period 1931–60.

Number of deaths owing to other infectious diseases (13)
per 100,000 live births

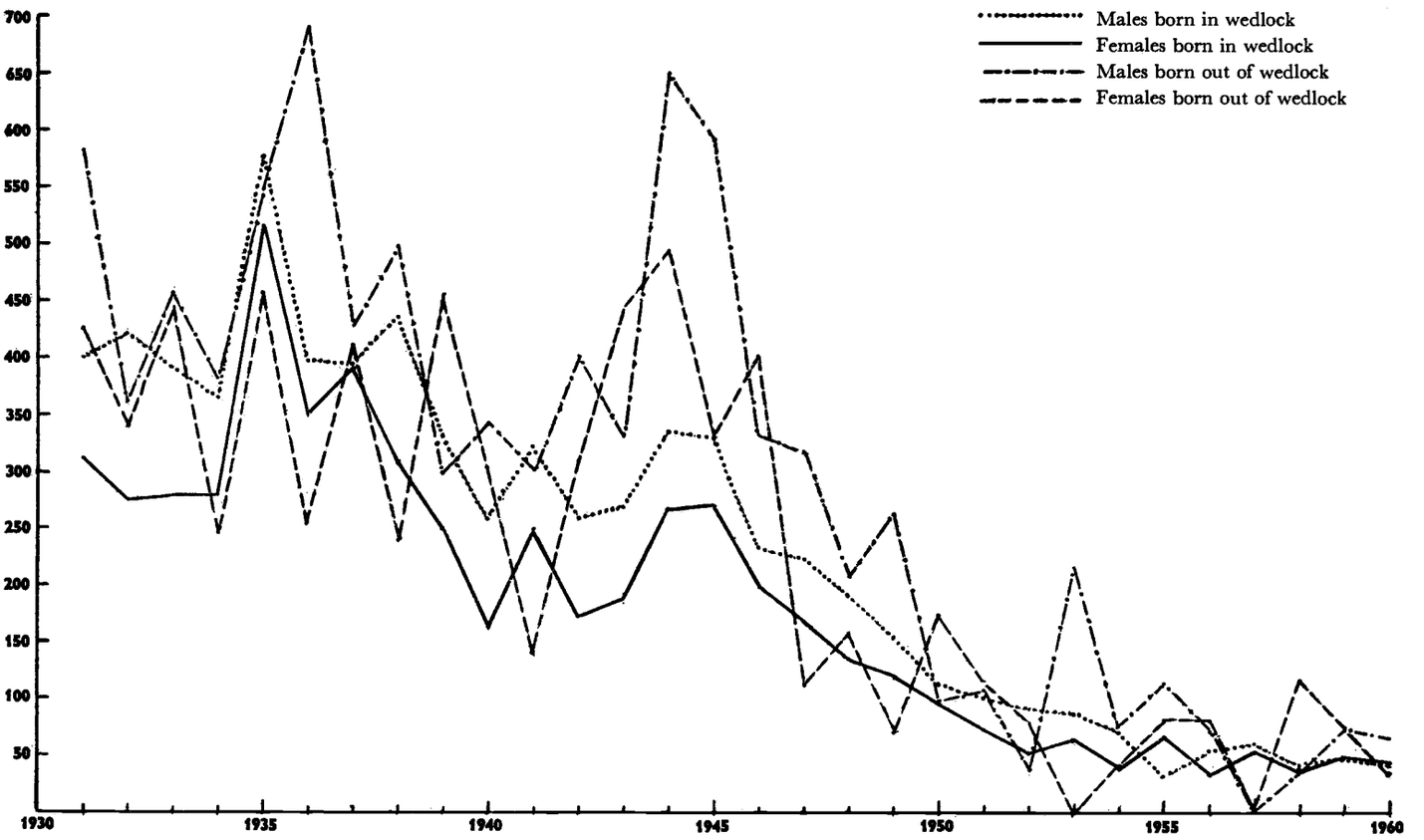


Fig. 8N. Deaths owing to other infectious diseases among males and females born in and out of wedlock in the period 1931–60.

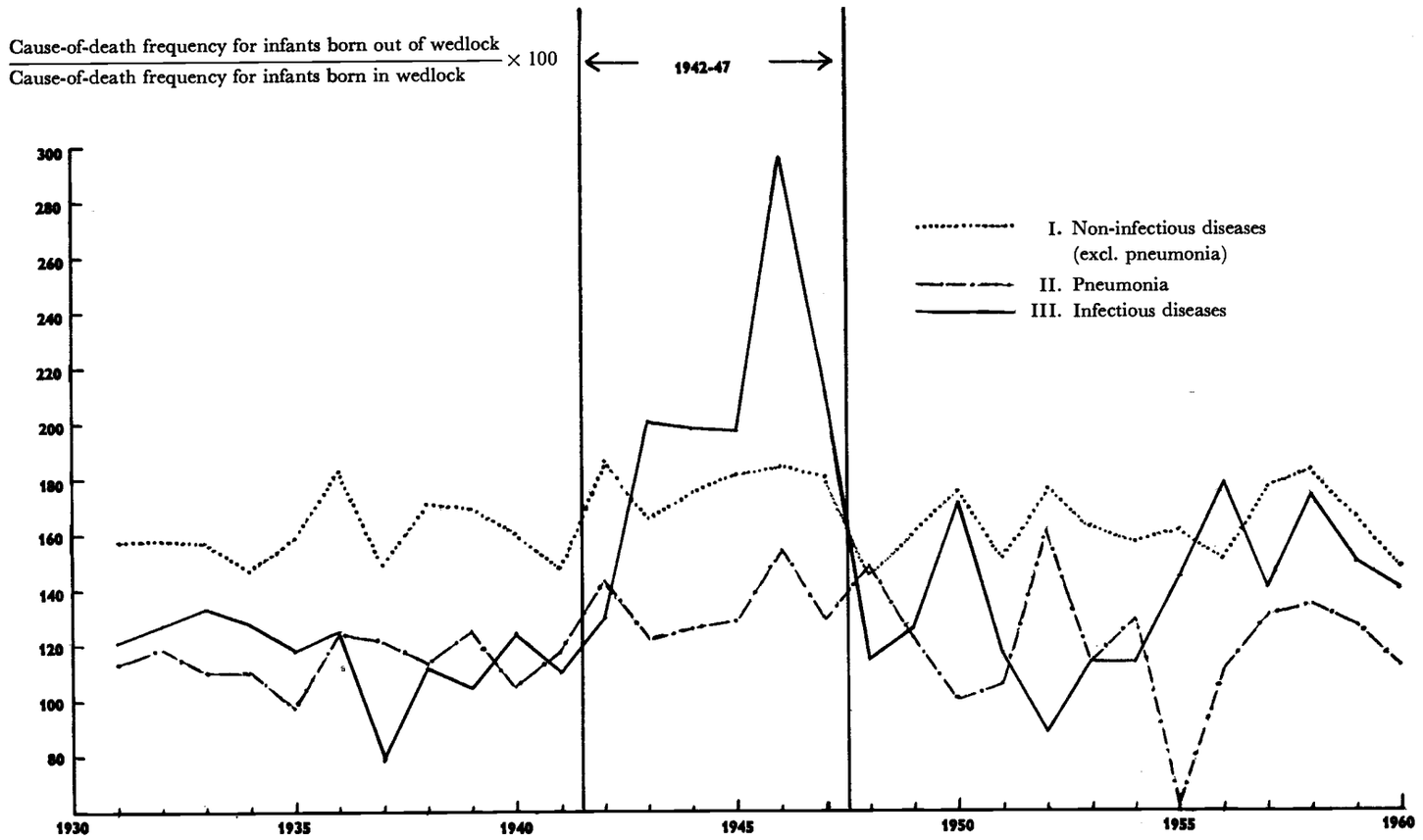


Fig. 9. The relation between the infant mortality for live births out of and in wedlock in connexion with causes of death I–III in the period 1931–60.

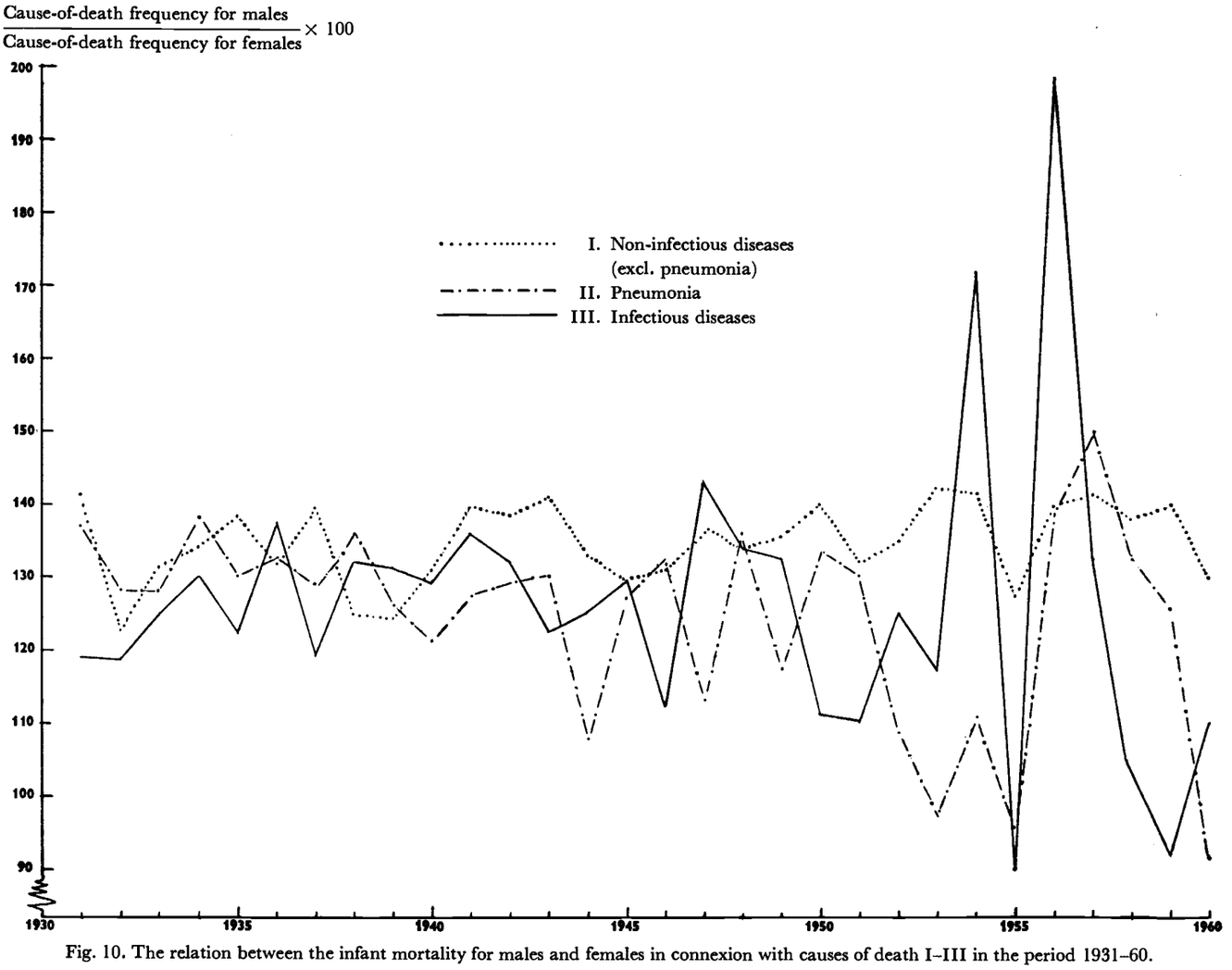
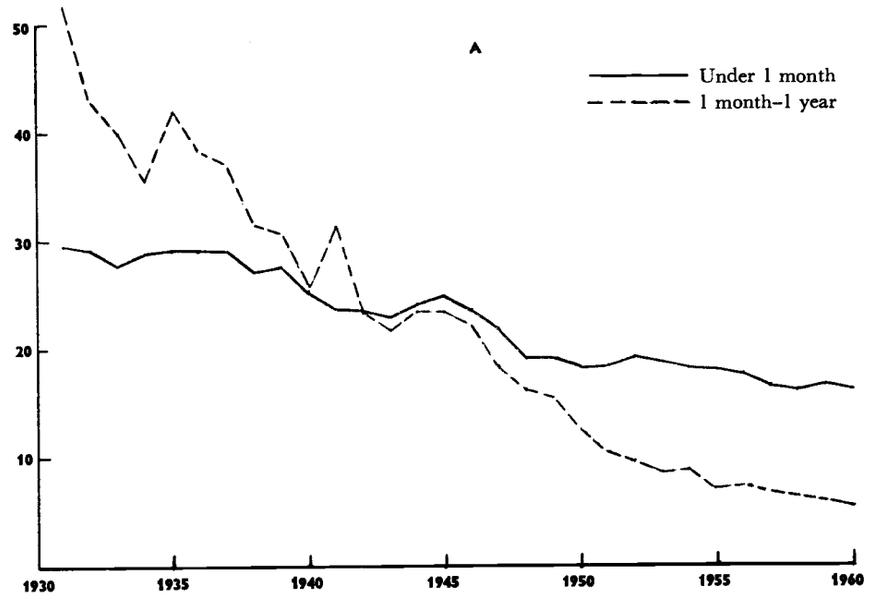


Fig. 10. The relation between the infant mortality for males and females in connexion with causes of death I–III in the period 1931–60.

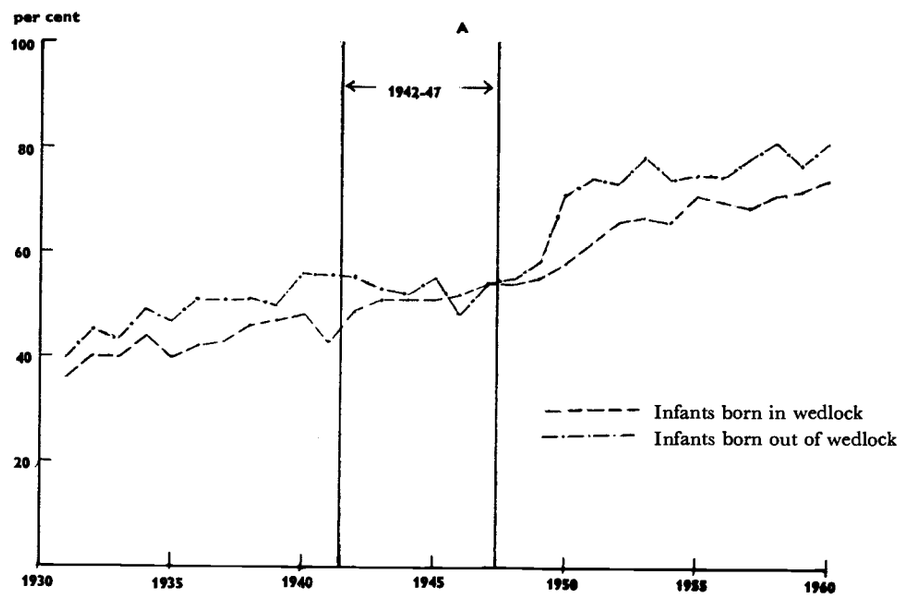
Number of deaths per 1000 live births



The proportion of deaths under 1 month

Fig. 11. Number of deaths among infants under 1 year by age at death in the period 1931–60.

The proportion of deaths under 1 month



The proportion of deaths under 1 month

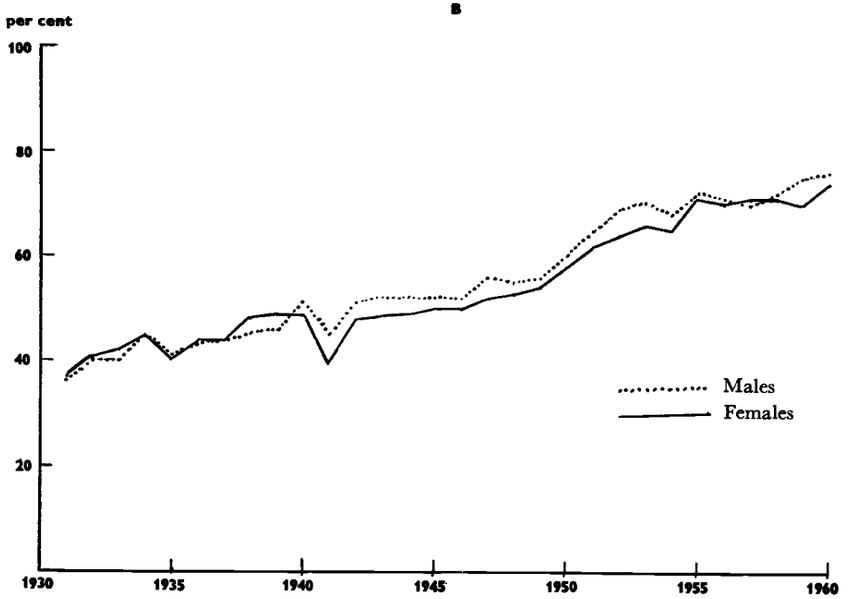
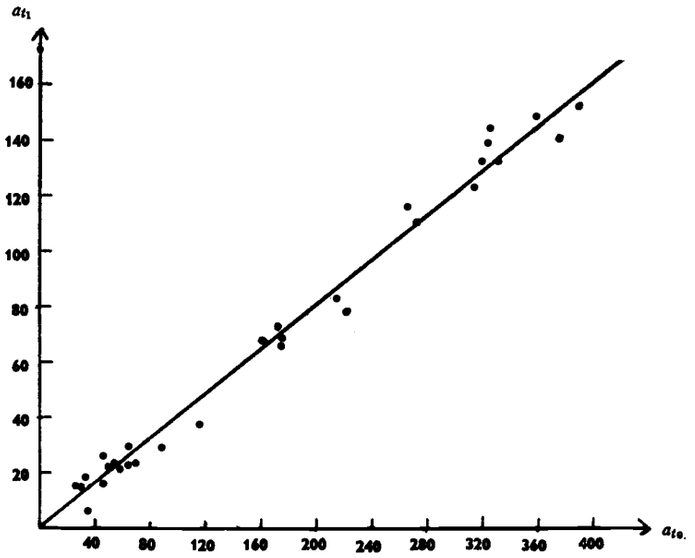


Fig. 12. The distribution of deaths among infants under 1 year by age at death for infants born in and out of wedlock and for males and females in the period 1931–60.

A. Born in wedlock



B. Born out of wedlock

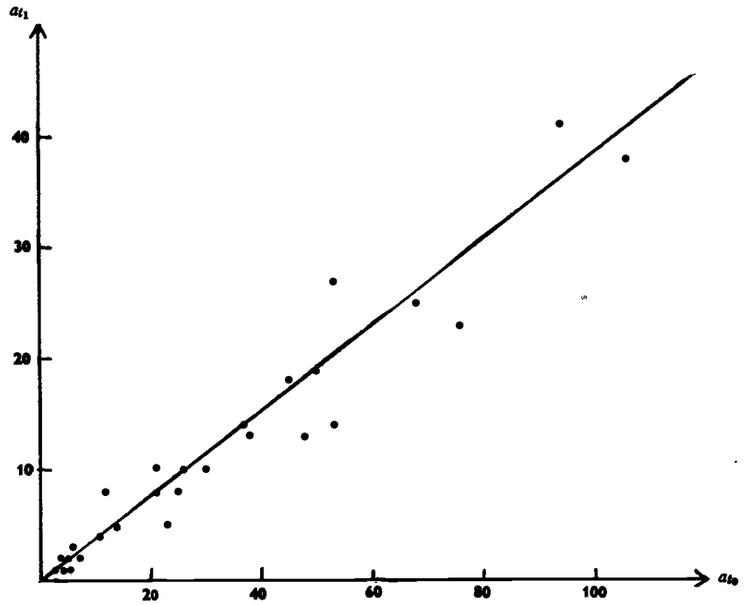
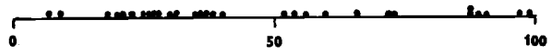
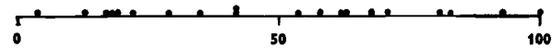


Fig. 13. The relation between number of deaths among females (a_{t_1}) and total number of deaths (a_{t_0}) from cholerine in the period 1931–60.

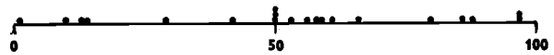
I. Non-infectious diseases (excl. pneumonia)



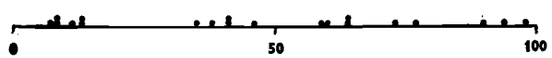
Malformations (1)



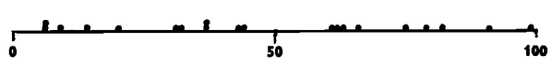
Prematurity (2)



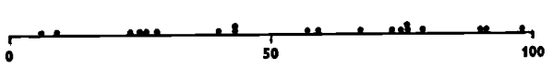
Congenital debility (3)



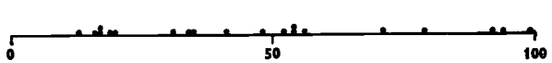
Injuries at birth (4)



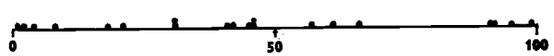
Other infants' diseases (5)



Infants' diseases proper, total (6)



Other non-infectious diseases (excl. pneumonia) (7)



II. Pneumonia

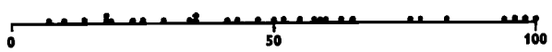
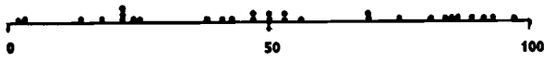
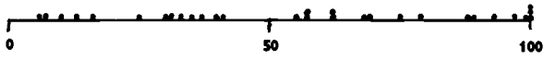


Fig. 14A. Graphical representation of fraction values ($P\{a_{t_1} \mid a_{t_0}\}$) for all causes of death in connexion with live-born females and males in wedlock.

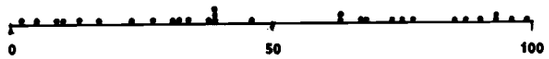
III. Infectious diseases, total



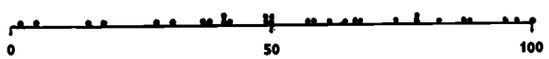
Influenza (10)



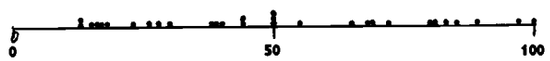
Cholerine (11)



Whooping cough (12)



Other infectious diseases (13)



I–III. All causes of death

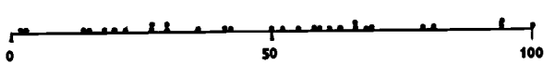
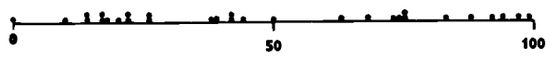
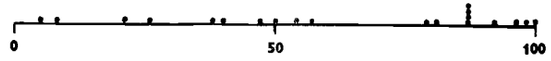


Fig. 14B. Graphical representation of fraction values ($P\{a_{t_1} \mid a_{t_0}\}$) for all causes of death in connexion with live-born females and males in wedlock.

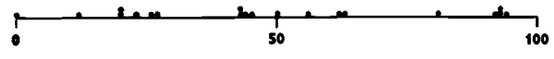
I. Non-infectious diseases (excl. pneumonia)



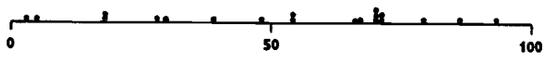
Malformations (1)



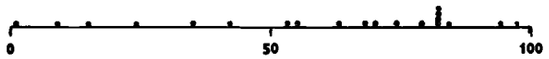
Prematurity (2)



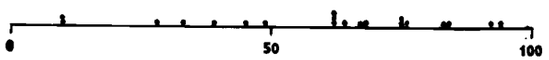
Congenital debility (3)



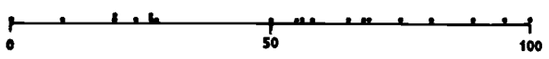
Injuries at birth (4)



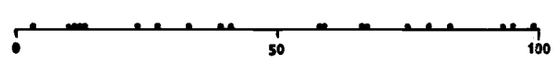
Other infants' diseases (5)



Infants' diseases proper, total (6)



Other non-infectious diseases (excl. pneumonia) (7)



II. Pneumonia

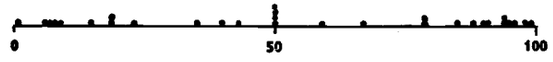
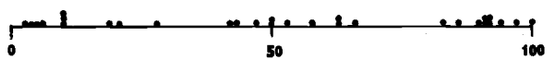
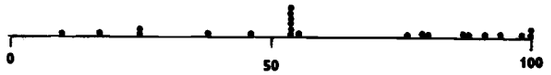


Fig. 15A. Graphical representation of fraction values ($P\{a_{t_1} \mid a_{t_0}\}$) for all causes of death in connexion with live-born females and males out of wedlock.

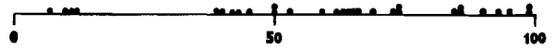
III. Infectious diseases total



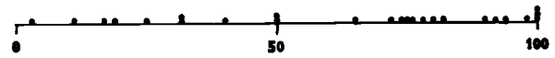
Influenza (10)



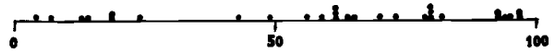
Cholerine (11)



Whooping cough (12)



Other infectious diseases (13)



I–III. All causes of death

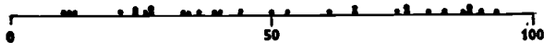


Fig. 15B. Graphical representation of fraction values ($P\{a_{t_1} \mid a_{t_0}\}$) for all causes of death in connexion with live-born females and males out of wedlock.

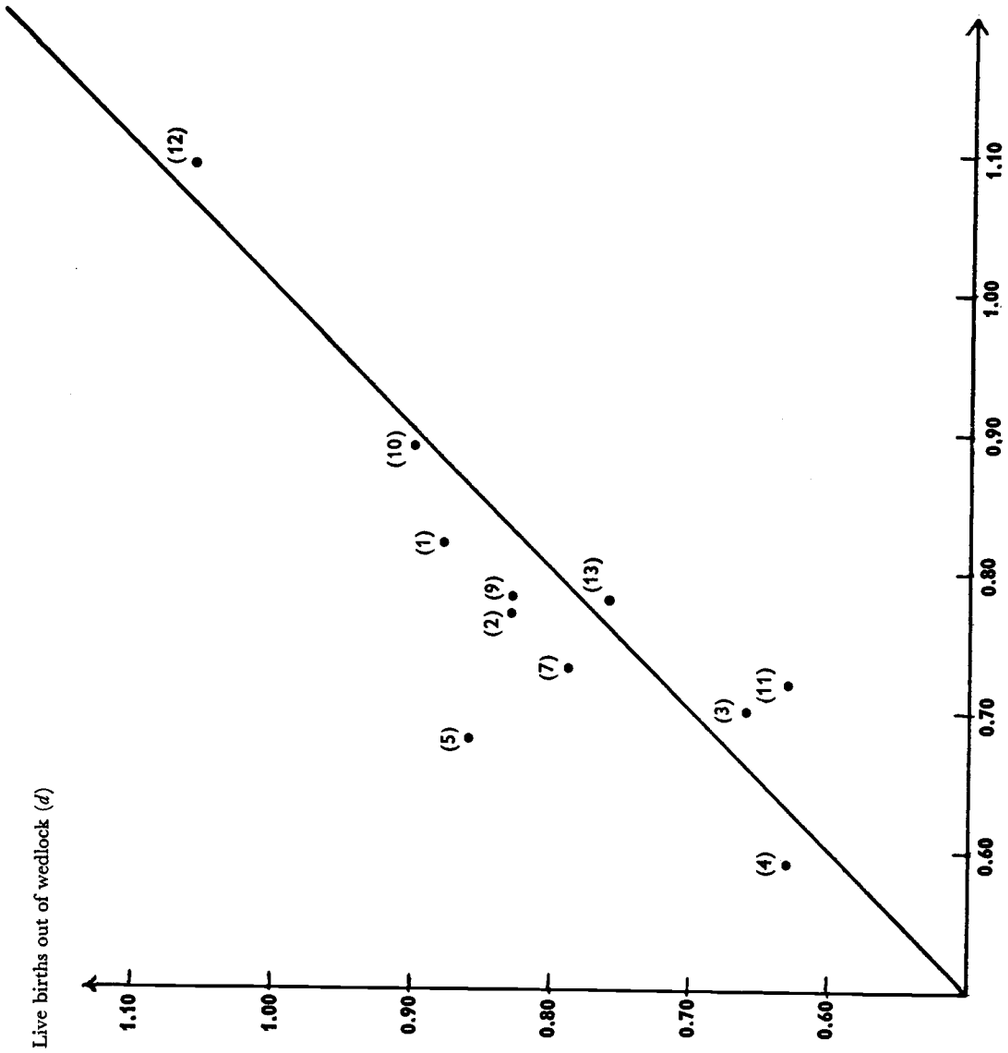


Fig. 16. Graphical illustration of the relation between the estimates of δ values for live-born females and males in and out of wedlock.

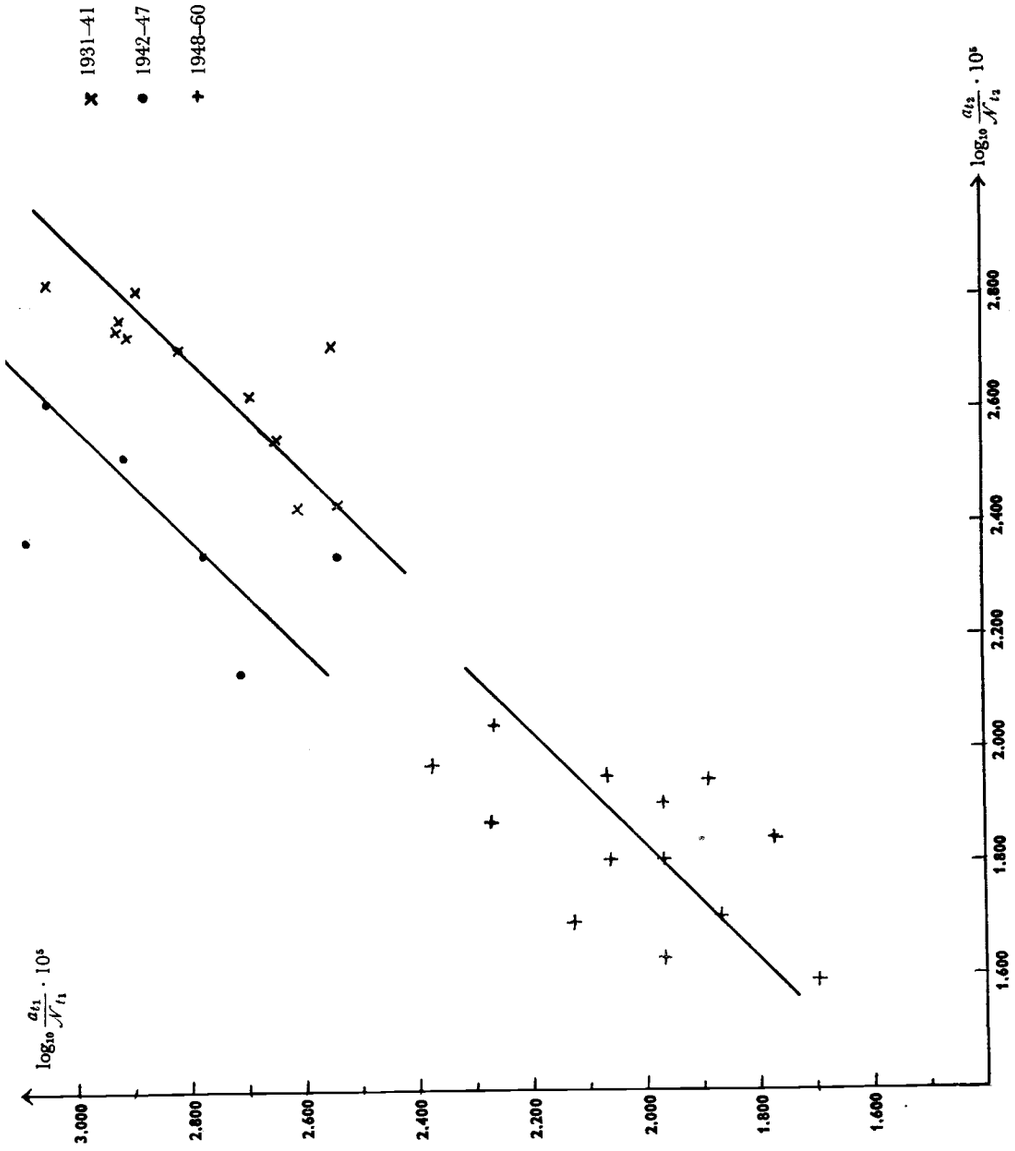


Fig. 17. The incidence of cholerine among live births in and out of wedlock in the period 1931–60.

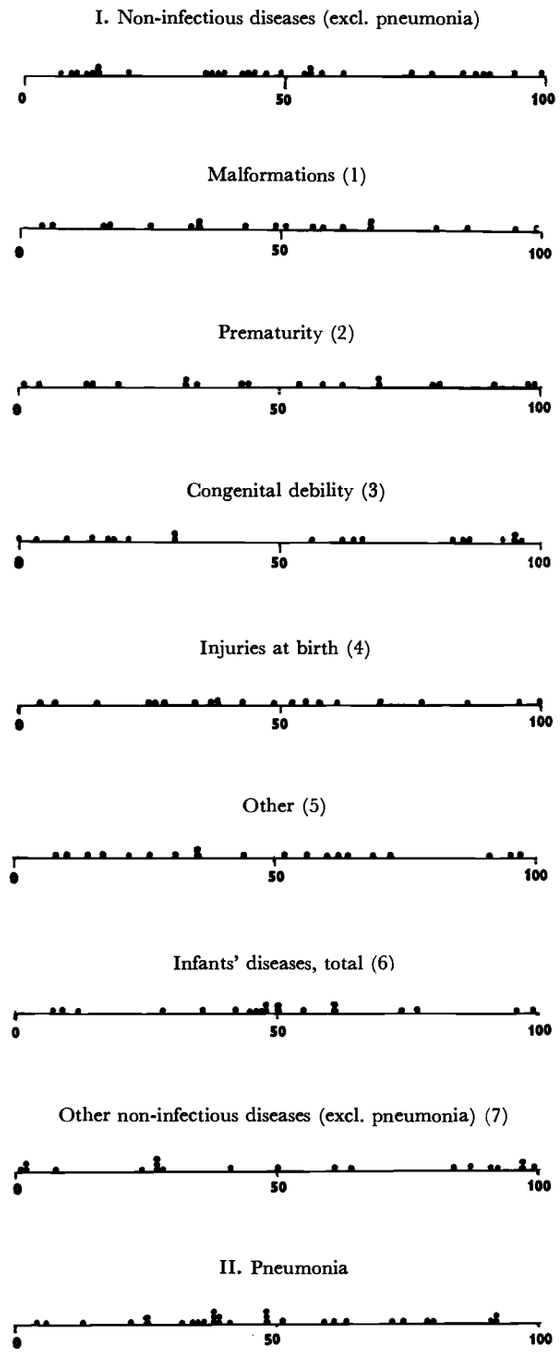


Fig. 18A. Graphical representation of fraction values ($P\{a_{t_1} \mid a_{t_0}\}$) for all causes of death in connexion with live births out of and in wedlock.

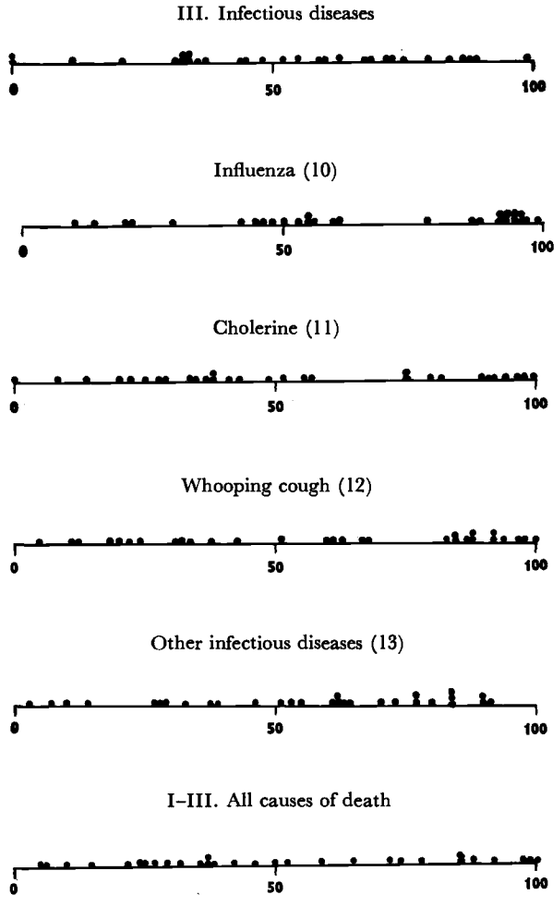


Fig. 18B. Graphical representation of fraction values for all causes of death in connexion with live births out of and in wedlock.

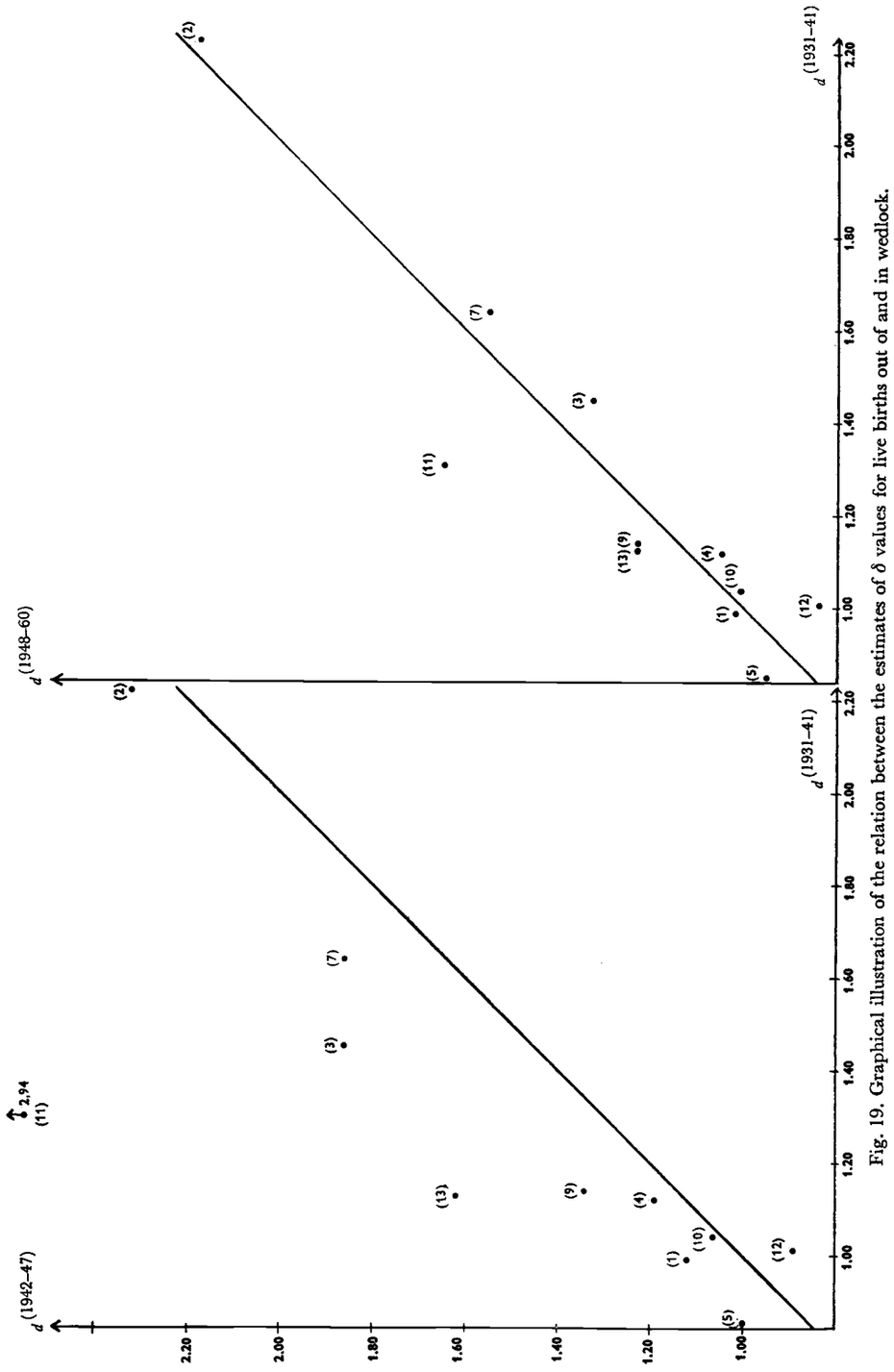


Fig. 19. Graphical illustration of the relation between the estimates of δ values for live births out of and in wedlock.

E. Tables

Table I. **Crude infant mortality for all live births in the period 1921–60**

Year	Live births	Deaths under 1 year	Deaths under 1 year as per cent of live births	1931 = 100	Year	Live births	Deaths under 1 year	Deaths under 1 year as per cent of live births	1931 = 100
	1	2	3	4		1	2	3	4
1921	78 815	6067	7.70	95	1941	71 306	3919	5.50	68
1922	73 899	6311	8.54	105	1942	79 545	3737	4.70	58
1923	74 827	6202	8.29	102	1943	84 319	3780	4.48	55
1924	73 836	6239	8.45	104	1944	90 641	4322	4.77	59
1925	71 897	5737	7.98	98	1945	95 062	4590	4.83	59
1926	70 734	5969	8.44	104	1946	96 111	4405	4.58	56
1927	68 024	5675	8.34	102	1947	91 714	3709	4.04	50
1928	68 516	5537	8.08	99	1948	84 938	2997	3.53	43
1929	65 297	5413	8.29	102	1949	79 919	2755	3.45	42
1930	66 303	5301	8.00	98	1950	79 558	2445	3.07	38
1931	64 266	5232	8.14	100	1951	76 559	2209	2.89	36
1932	64 650	4673	7.23	89	1952	76 943	2223	2.89	36
1933	62 780	4246	6.76	83	1953	78 261	2130	2.72	33
1934	65 116	4194	6.44	79	1954	76 365	2051	2.69	33
1935	65 223	4634	7.11	87	1955	76 845	1934	2.52	31
1936	66 418	4473	6.73	83	1956	76 725	1914	2.50	31
1937	67 440	4455	6.61	81	1957	75 264	1758	2.34	29
1938	68 462	4022	5.87	72	1958	74 681	1675	2.24	28
1939	67 914	3945	5.81	71	1959	73 928	1660	2.25	28
1940	70 121	3517	5.02	62	1960	76 077	1636	2.15	26

Table II. **Crude infant mortality for males and females born in wedlock in the period 1931–60**

Year	Males				Females			
	Live births	Deaths under 1 year	Deaths under 1 year as per cent of live births	1931 = 100	Live births	Deaths under 1 year	Deaths under 1 year as per cent of live births	1931 = 100
	1	2	3	4	5	6	7	8
1931	29 471	2644	8.97	100	27 908	1849	6.63	100
1932	29 431	2252	7.65	85	28 395	1753	6.17	93
1933	29 134	2130	7.31	81	27 229	1534	5.63	85
1934	30 451	2170	7.13	79	28 670	1519	5.30	80
1935	30 534	2380	7.80	87	28 747	1702	5.92	89
1936	31 153	2279	7.32	82	29 621	1626	5.49	83
1937	31 361	2306	7.35	82	30 127	1654	5.49	83
1938	32 020	2040	6.37	71	30 307	1473	4.86	73
1939	32 090	1997	6.22	69	29 945	1465	4.89	74
1940	32 726	1783	5.45	61	31 232	1308	4.19	63
1941	33 385	2025	6.07	68	31 769	1453	4.57	69
1942	37 494	1909	5.09	57	35 327	1322	3.74	56
1943	39 372	1924	4.89	55	37 418	1341	3.58	54
1944	42 514	2139	5.03	56	39 779	1547	3.89	59
1945	44 327	2238	5.05	56	41 297	1616	3.91	59
1946	45 772	2189	4.78	53	42 702	1585	3.71	56
1947	43 512	1889	4.34	48	40 822	1336	3.27	49
1948	40 503	1591	3.93	44	37 885	1087	2.87	43
1949	38 065	1430	3.76	42	35 930	1031	2.87	43
1950	37 693	1275	3.38	38	35 942	888	2.47	37
1951	36 789	1164	3.16	35	34 386	830	2.41	36
1952	36 963	1163	3.15	35	34 772	819	2.36	36
1953	37 720	1136	3.01	34	35 173	778	2.21	33
1954	36 653	1103	3.01	34	34 582	747	2.16	33
1955	37 127	988	2.66	30	34 664	759	2.19	33
1956	36 807	1045	2.84	32	34 682	680	1.96	30
1957	36 106	951	2.63	29	33 929	608	1.79	27
1958	35 626	876	2.46	27	33 662	595	1.77	27
1959	35 217	866	2.46	27	33 283	605	1.82	27
1960	35 885	821	2.29	26	34 239	635	1.86	28

Table III. Crude infant mortality for males and females born out of wedlock in the period 1931–60

Year	Males				Females			
	Live births	Deaths under 1 year	Deaths under 1 year as per cent of live births	1931 = 100	Live births	Deaths under 1 year	Deaths under 1 year as per cent of live births	1931 = 100
	1	2	3	4	5	6	7	8
1931	3596	434	12.07	100	3291	305	9.27	100
1932	3589	373	10.39	86	3235	295	9.12	98
1933	3275	335	10.23	85	3142	247	7.86	85
1934	3149	299	9.49	79	2846	206	7.24	78
1935	3098	332	10.72	89	2844	220	7.74	83
1936	2894	330	11.40	94	2750	238	8.65	93
1937	3035	278	9.16	76	2917	217	7.44	80
1938	3210	280	8.72	72	2925	229	7.83	84
1939	3023	267	8.83	73	2856	216	7.56	82
1940	3201	238	7.44	62	2962	188	6.35	69
1941	3314	284	8.57	71	2838	157	5.53	60
1942	3482	298	8.56	71	3242	208	6.42	69
1943	3899	301	7.72	64	3630	214	5.90	64
1944	4305	348	8.08	67	4043	288	7.12	77
1945	4897	423	8.64	72	4541	313	6.89	74
1946	3892	358	9.20	76	3745	273	7.29	79
1947	3816	282	7.39	61	3564	202	5.67	61
1948	3354	174	5.19	43	3196	145	4.54	49
1949	3052	176	5.77	48	2872	118	4.11	44
1950	3041	167	5.49	45	2882	115	3.99	43
1951	2819	121	4.29	36	2565	94	3.67	40
1952	2669	129	4.83	40	2539	112	4.41	48
1953	2779	127	4.57	38	2589	89	3.44	37
1954	2656	121	4.56	38	2474	80	3.23	35
1955	2598	109	4.20	35	2456	78	3.18	34
1956	2731	107	3.92	32	2505	82	3.27	35
1957	2733	107	3.92	32	2496	92	3.69	40
1958	2830	113	3.99	33	2563	91	3.55	38
1959	2769	112	4.05	34	2659	77	2.90	31
1960	3074	112	3.64	30	2879	68	2.36	25

Table IV. The relation between live-born males and females in and out of wedlock in connexion with crude infant mortality and the number of live births in the period 1931–60

	Infant mortality			Live births		
	Born in wedlock	Born out of wedlock	Born out of wedlock / Born in wedlock × 100	Born in wedlock	Born out of wedlock	Born out of wedlock / Born in wedlock × 100
	Males / Females × 100	Males / Females × 100		Females / Males × 100	Females / Males × 100	
	1	2	3	4	5	6
1931	135	130	137	95	92	120
1932	124	114	141	96	90	118
1933	130	131	140	93	96	114
1934	135	131	135	94	90	101
1935	132	139	135	94	92	100
1936	133	132	157	95	95	93
1937	134	124	129	96	96	97
1938	131	111	147	95	91	98
1939	127	117	147	93	94	95
1940	130	117	143	95	93	96
1941	133	155	134	95	86	94
1942	136	133	170	94	93	92
1943	137	131	161	95	93	98
1944	129	113	170	94	94	101
1945	129	125	174	93	93	110
1946	129	126	194	93	96	86
1947	133	130	171	94	93	88
1948	137	114	142	94	95	84
1949	131	140	149	94	94	80
1950	137	138	162	95	95	80
1951	131	117	143	93	91	76
1952	133	110	168	94	95	73
1953	136	133	153	93	93	74
1954	139	141	151	94	93	72
1955	121	132	152	93	95	70
1956	145	120	150	94	92	73
1957	147	106	171	94	91	75
1958	139	112	178	94	91	78
1959	135	139	162	95	96	79
1960	124	154	146	95	94	85

Table V. Contents of the cause-of-death groups used

Period	Cause-of-death nomenclature	I. Non-infectious diseases (excl. pneumonia)						II. Pneumonia	III. Infectious diseases			
		Infants' diseases					Other		Influenza	Cholerine	Whooping cough	Other
		Malformations	Prematurity	Congenital debility	Injuries at birth	Other						
	1	2	3	4	5	6	7	8	9	10	11	12
		Detailed nomenclature numbers										
1931–40	The Inter-Scandinavian cause-of-death nomenclature of 1926	000	051	050	052	070	All other numbers	452 453	110 111	113	108	100 – 174 excl. 108, 110, 111, 113
1941–50	The international cause-of-death nomenclature of 1938	000 068	051	050	052	070	All other numbers	452 453	150 151	502	108	069, 100–181, 250, 529, 670 excl. 108, 140–142, 150, 151
1951–60	International causes of Death (World Health Organization, Geneva 1948)	...	...	...	...	...	All other numbers	763 490–493	480–483	042 571 764	056	001–138, 400, 401, 470–475, 690–698, 766 excl. 042, 056

Col. 2: Malformations (Vitia primae conformationis).
– 3: Prematurity (Partus praematurus).
– 4: Congenital debility (Debilitas congenita).
– 5: Injuries at birth (Laesiones intra partum).
– 6: Other causes of death among infants (Aliae causae mortis neonatorum).
– 7: Other.
– 8: Catarrhal pneumonia (Bronchopneum. acuta).
Croupous pneumonia (Pneumonia crouposa).
– 9: Influenza with pulmonary complications (Influenza cum compl. pulm.).
Influenza without pulm. complications (Influenza sine compl. pulm.).
– 10: Cholerine (Gastro-enterit. acuta).
– 11: Whooping cough (Tussis convulsiva).
– 12: Other:

Typhoid fever (fb. typhoidea).
Paratyphoid fever (fb. paratyph.).
Undulant fever (fb. undulans (bac. aborti Bang)).
Malaria (fb. intermittens, Malaria).
Smallpox (variolae).
Chicken-pox (varicellae).
Measles (morbilli).
Scarlet fever (scarlatina).
Diphteria.
Mumps (parotitis epid.).
Dysentery, bacillary (dysenteria, bacillaris).
Paradysentery (paradysenteria).
Epidemic jaundice (icterus epid.).
Rheumatic fever (fb. rheumatica).
Erysipelas.
Septicaemia.
Pyemia.
Abscess, inflammation of the connective tissue (abscessus, phlegmone).
Angina, septic (angina septica).
Infantile paralysis (poliomyelitis ant. acuta).
Epidemic encephalitis (encephalitis epid.).
Epidemic cerebro-spinal meningitis (meningitis cerebro-spin. epid.).
Herpetiform dematitis among new-born infants (pemphigus neonat.).
Anthrax (anthrax, pustula maligna).
Tetanus.
Actinomycosis.
Pulmonary and laryngeal tuberculosis (tub. pulm. et laryngis).
Tub. of the brain and the meninx (tub. meningum, cerebri).
Tub. of the intestine and the peritoneum (tub. intestini, peritonei).
Urogenital tub. (tub. urogenitalis).
Tub. of bones and joints (tub. ossium, articolorum).
Miliary tuberculosis (tub. miliaris).
Scrofula (scrophulosis (tub. gld. lymph.)).
Lupus (tuberculosis of the skin) (lupus (tub. cutis)).
Tub. in other organs (tub. aliorum organorum).
Lymphogranulomatosis (lymphogranulomatosis maligna).
Congenital syphilis (syphilis cong.).
Acquired syphilis (syphilis acq.).
Other cerebro-spinal syphilis (syphilis cerebrospinalis).
Helminth infections (helminthiases).
Echinococcosis (echinococcus).
Trichinae (tricianesis).
Epidemic hiccups (singultus epid.).
German measles (rubeolae).
Myalgia epid.
Weil's disease (morbus weilii).
Other infections (aliae infectiones).

Table VI. Number of deaths under 1 year distributed by cause of death in the period 1931–60

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	393	810	342	169	92	1806	949	2755	1472	125	430	210	240	1005	5232
1932 ...	365	818	360	164	102	1809	687	2496	1096	111	466	278	226	1081	4673
1933 ...	394	737	331	162	66	1690	635	2325	1108	109	378	107	219	813	4246
1934 ...	379	773	362	201	115	1830	653	2483	1023	32	371	75	210	688	4194
1935 ...	430	865	348	177	112	1932	618	2550	1080	79	381	190	354	1004	4634
1936 ...	433	840	383	193	95	1944	566	2510	1066	79	351	212	255	897	4473
1937 ...	484	884	332	193	101	1994	546	2540	1157	86	341	64	267	758	4455
1938 ...	434	765	428	206	96	1929	491	2420	947	50	296	52	257	655	4022
1939 ...	422	700	437	214	100	1873	477	2350	953	52	248	138	204	642	3945
1940 ...	442	761	408	183	93	1887	411	2298	741	48	195	80	155	478	3517
1941 ...	462	768	289	200	105	1824	487	2311	1014	65	200	128	201	594	3919
1942 ...	450	907	322	163	163	2005	494	2499	772	17	185	82	182	466	3737
1943 ...	459	925	325	164	169	2042	428	2470	775	15	217	101	202	535	3780
1944 ...	500	1150	352	173	163	2338	465	2803	766	30	342	83	298	753	4322
1945 ...	582	1161	342	200	160	2445	479	2924	786	14	465	99	302	880	4590
1946 ...	512	1223	195	258	156	2344	516	2860	878	16	306	125	220	667	4405
1947 ...	458	1076	123	232	199	2088	502	2590	739	16	154	28	182	380	3709
1948 ...	385	904	92	193	138	1712	410	2122	545	5	100	85	140	330	2997
1949 ...	350	850	89	194	156	1639	284	1923	505	21	84	111	111	327	2755
1950 ...	364	784	97	172	154	1571	284	1855	417	10	66	11	86	173	2445
1951 ...	...	...	...	...	...	...	...	1751	297	3	63	27	68	161	2209
1952 ...	...	...	...	...	...	...	...	1792	266	4	68	38	55	165	2223
1953 ...	...	...	...	...	...	...	...	1778	208	11	52	20	61	144	2130
1954 ...	...	...	...	...	...	...	...	1683	235	10	70	11	42	133	2051
1955 ...	...	...	...	...	...	...	...	1690	146	1	53	4	40	98	1934
1956 ...	...	...	...	...	...	...	...	1684	134	2	43	16	35	96	1914
1957 ...	...	...	...	...	...	...	...	1507	135	7	51	18	40	116	1758
1958 ...	...	...	...	...	...	...	...	1461	138	7	35	1	33	76	1675
1959 ...	...	...	...	...	...	...	...	1444	121	13	39	6	37	95	1660
1960 ...	...	...	...	...	...	...	...	1457	104	3	30	9	33	75	1636

Table VII. **Number of deaths under 1 year distributed by cause of death per 100,000 live births in the period 1931–60**

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	612	1260	532	263	143	2810	1477	4287	2290	195	669	327	373	1564	8141
1932 ...	565	1265	557	254	158	2799	1063	3862	1695	172	721	430	349	1672	7229
1933 ...	628	1174	527	258	105	2692	1011	3703	1765	174	602	170	349	1295	6763
1934 ...	582	1187	556	309	177	2811	1003	3814	1571	49	570	115	322	1056	6441
1935 ...	659	1326	534	271	172	2962	948	3910	1656	121	584	291	543	1539	7105
1936 ...	652	1265	577	290	143	2927	852	3779	1605	119	528	319	384	1350	6734
1937 ...	718	1311	492	286	150	2957	810	3767	1716	127	506	95	396	1124	6607
1938 ...	634	1117	625	301	140	2817	717	3534	1383	73	432	76	376	957	5874
1939 ...	621	1031	644	315	147	2758	702	3460	1403	76	365	203	301	945	5808
1940 ...	630	1085	582	261	133	2691	586	3277	1057	68	278	114	221	681	5015
1941 ...	648	1077	405	280	147	2557	683	3240	1422	91	280	180	282	833	5495
1942 ...	566	1140	405	205	205	2521	621	3142	970	21	232	103	229	585	4697
1943 ...	544	1097	385	194	200	2420	508	2928	919	18	257	120	240	635	4482
1944 ...	552	1269	388	191	180	2580	513	3093	845	33	377	92	329	831	4769
1945 ...	612	1221	360	210	168	2571	504	3075	827	15	489	104	318	926	4828
1946 ...	533	1272	203	268	162	2438	537	2975	914	17	318	130	229	694	4583
1947 ...	499	1173	134	253	217	2276	548	2824	806	17	168	31	198	414	4044
1948 ...	453	1064	108	227	162	2014	483	2497	642	6	117	100	165	388	3527
1949 ...	438	1064	111	243	195	2051	355	2406	632	26	105	139	139	409	3447
1950 ...	458	985	122	216	194	1975	357	2332	524	13	83	14	107	217	3073
1951 ...	...	...	...	...	...	...	...	2287	388	4	82	35	89	210	2885
1952 ...	...	...	...	...	...	...	...	2329	346	5	88	49	71	213	2888
1953 ...	...	...	...	...	...	...	...	2272	266	14	66	26	78	184	2722
1954 ...	...	...	...	...	...	...	...	2204	308	13	92	14	55	174	2686
1955 ...	...	...	...	...	...	...	...	2199	190	1	69	5	52	127	2516
1956 ...	...	...	...	...	...	...	...	2195	175	3	56	21	46	126	2496
1957 ...	...	...	...	...	...	...	...	2002	179	9	68	24	53	154	2335
1958 ...	...	...	...	...	...	...	...	1956	185	9	47	1	45	102	2243
1959 ...	...	...	...	...	...	...	...	1953	164	18	53	8	50	129	2246
1960 ...	...	...	...	...	...	...	...	1915	137	4	39	12	43	98	2150

Table VIII. **Number of deaths under 1 year distributed by cause of death per 100,000 live births in the period 1931–60 (1931 = 100)**

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1932 ...	92	100	105	97	110	100	72	90	74	88	108	131	94	107	89
1933 ...	103	93	99	98	73	96	68	86	77	89	90	52	94	83	83
1934 ...	95	94	105	118	124	100	68	89	69	25	85	35	86	68	79
1935 ...	108	105	100	103	120	105	64	91	72	62	87	89	146	98	87
1936 ...	106	100	108	110	100	104	58	88	70	61	79	98	103	86	83
1937 ...	117	104	92	109	105	105	55	88	75	66	76	29	106	72	81
1938 ...	104	89	118	114	98	100	49	82	60	37	65	23	101	61	72
1939 ...	102	82	121	120	103	98	48	81	61	39	55	62	81	60	71
1940 ...	103	86	109	99	93	96	40	76	46	35	42	35	59	44	62
1941 ...	106	85	76	106	103	91	46	76	62	47	42	55	76	53	68
1942 ...	92	90	76	78	143	90	42	73	42	11	35	32	61	37	58
1943 ...	89	87	72	74	140	86	35	68	40	9	38	37	64	41	55
1944 ...	90	101	73	73	126	92	35	72	37	17	56	28	88	53	59
1945 ...	100	97	68	80	117	91	34	72	36	8	73	32	85	59	59
1946 ...	87	101	38	102	113	87	36	69	40	9	48	40	61	44	56
1947 ...	82	93	25	96	152	81	37	66	35	9	25	10	53	26	50
1948 ...	74	84	20	86	113	72	33	58	28	3	18	31	44	25	43
1949 ...	72	84	21	92	136	73	24	56	28	13	16	42	37	26	42
1950 ...	75	78	23	82	136	70	24	54	23	7	12	4	29	14	38
1951 ...	...	...	...	...	...	...	...	53	17	2	12	11	24	13	35
1952 ...	...	...	...	...	...	...	...	54	15	3	13	15	19	14	35
1953 ...	...	...	...	...	...	...	...	53	12	7	10	8	21	12	33
1954 ...	...	...	...	...	...	...	...	51	13	7	14	4	15	11	33
1955 ...	...	...	...	...	...	...	...	51	8	1	10	2	14	8	31
1956 ...	...	...	...	...	...	...	...	51	8	2	8	6	12	8	31
1957 ...	...	...	...	...	...	...	...	47	8	5	10	7	14	10	29
1958 ...	...	...	...	...	...	...	...	46	8	5	7	0	12	7	28
1959 ...	...	...	...	...	...	...	...	46	7	9	8	2	13	8	28
1960 ...	...	...	...	...	...	...	...	45	6	2	6	4	12	6	26

Table IX. Number of deaths under 1 year distributed by cause of death in the period 1931–60 (Relative distribution)

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	per cent														
1931 ...	7.5	15.5	6.6	3.2	1.8	34.6	18.1	52.7	28.1	2.4	8.2	4.0	4.6	19.2	100.0
1932 ...	7.8	17.5	7.7	3.5	2.2	38.7	14.7	53.4	23.4	2.4	10.0	6.0	4.8	23.2	100.0
1933 ...	9.3	17.3	7.8	3.8	1.6	39.8	15.0	54.8	26.1	2.6	8.9	2.5	5.1	19.1	100.0
1934 ...	9.0	18.4	8.6	4.8	2.7	43.5	15.6	59.1	24.4	0.8	8.9	1.8	5.0	16.5	100.0
1935 ...	9.3	18.7	7.5	3.8	2.4	41.7	13.3	55.0	23.3	1.7	8.2	4.1	7.7	21.7	100.0
1936 ...	9.7	18.8	8.6	4.3	2.1	43.5	12.7	56.2	23.8	1.8	7.8	4.7	5.7	20.0	100.0
1937 ...	10.9	19.8	7.5	4.3	2.3	44.8	12.2	57.0	26.0	1.9	7.7	1.4	6.0	17.0	100.0
1938 ...	10.8	19.0	10.7	5.1	2.4	48.0	12.2	60.2	23.5	1.2	7.4	1.3	6.4	16.3	100.0
1939 ...	10.7	17.7	11.1	5.4	2.5	47.4	12.1	59.5	24.2	1.3	6.3	3.5	5.2	16.3	100.0
1940 ...	12.6	21.6	11.6	5.2	2.6	53.6	11.7	65.3	21.1	1.4	5.5	2.3	4.4	13.6	100.0
1941 ...	11.8	19.6	7.4	5.1	2.7	46.6	12.4	59.0	25.9	1.6	5.1	3.3	5.1	15.1	100.0
1942 ...	12.0	24.3	8.6	4.4	4.4	53.7	13.2	66.9	20.6	0.5	5.0	2.2	4.8	12.5	100.0
1943 ...	12.1	24.5	8.6	4.3	4.5	54.0	11.3	65.3	20.5	0.4	5.7	2.7	5.4	14.2	100.0
1944 ...	11.6	26.6	8.1	4.0	3.8	54.1	10.8	64.9	17.7	0.7	7.9	1.9	6.9	17.4	100.0
1945 ...	12.7	25.3	7.4	4.3	3.5	53.2	10.5	63.7	17.1	0.3	10.1	2.2	6.6	19.2	100.0
1946 ...	11.6	27.8	4.4	5.9	3.5	53.2	11.7	64.9	19.9	0.4	7.0	2.8	5.0	15.2	100.0
1947 ...	12.3	29.0	3.3	6.3	5.4	56.3	13.5	69.8	19.9	0.4	4.2	0.8	4.9	10.3	100.0
1948 ...	12.8	30.2	3.1	6.4	4.6	57.1	13.7	70.8	18.2	0.2	3.3	2.8	4.7	11.0	100.0
1949 ...	12.7	30.9	3.2	7.0	5.7	59.5	10.3	69.8	18.3	0.8	3.1	4.0	4.0	11.9	100.0
1950 ...	14.9	32.1	3.9	7.0	6.3	64.2	11.6	75.8	17.1	0.4	2.7	0.4	3.6	7.1	100.0
1951 ...	...	...	...	...	...	...	...	79.3	13.4	0.1	2.9	1.2	3.1	7.3	100.0
1952 ...	...	...	...	...	...	...	...	80.6	12.0	0.2	3.1	1.7	2.4	7.4	100.0
1953 ...	...	...	...	...	...	...	...	83.5	9.8	0.5	2.4	0.9	2.9	6.7	100.0
1954 ...	...	...	...	...	...	...	...	82.0	11.5	0.5	3.4	0.5	2.1	6.5	100.0
1955 ...	...	...	...	...	...	...	...	87.4	7.6	0.1	2.7	0.2	2.0	5.0	100.0
1956 ...	...	...	...	...	...	...	...	88.0	7.0	0.1	2.2	0.8	1.9	5.0	100.0
1957 ...	...	...	...	...	...	...	...	85.7	7.7	0.4	2.9	1.0	2.3	6.6	100.0
1958 ...	...	...	...	...	...	...	...	87.2	8.2	0.4	2.1	0.1	2.0	4.6	100.0
1959 ...	...	...	...	...	...	...	...	87.0	7.3	0.8	2.3	0.4	2.2	5.7	100.0
1960 ...	...	...	...	...	...	...	...	89.0	6.4	0.2	1.8	0.6	2.0	4.6	100.0

Table X. Number of deaths among males under 1 year (born in wedlock) distributed by cause of death in the period 1931–60

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	194	375	172	103	45	889	498	1387	758	48	236	97	118	499	2644
1932 ...	179	376	179	85	49	868	323	1191	549	41	237	110	124	512	2252
1933 ...	197	325	163	102	39	826	336	1162	566	61	181	46	114	402	2130
1934 ...	194	363	202	119	68	946	335	1281	544	14	184	36	111	345	2170
1935 ...	224	413	197	100	62	996	316	1312	565	35	199	93	176	503	2380
1936 ...	229	386	211	101	54	981	279	1260	552	45	191	107	124	467	2279
1937 ...	244	412	187	109	61	1013	313	1326	593	48	188	27	124	387	2306
1938 ...	221	345	209	116	52	943	249	1192	512	25	150	21	140	336	2040
1939 ...	190	327	230	115	48	910	243	1153	499	33	143	62	107	345	1997
1940 ...	222	375	201	109	51	958	190	1148	385	26	108	32	84	250	1783
1941 ...	234	402	151	118	58	963	224	1187	523	35	106	66	108	315	2025
1942 ...	213	464	162	94	94	1027	245	1272	398	10	95	37	97	239	1909
1943 ...	239	449	163	104	92	1047	219	1266	402	5	100	45	106	256	1924
1944 ...	265	545	179	105	90	1184	242	1426	358	16	159	37	143	355	2139
1945 ...	304	525	179	106	84	1198	229	1427	402	8	210	45	146	409	2238
1946 ...	270	566	103	149	96	1184	257	1441	458	5	129	49	107	290	2189
1947 ...	239	534	59	134	123	1089	237	1326	373	5	78	10	97	190	1889
1948 ...	205	453	53	117	83	911	212	1123	289	2	59	41	77	179	1591
1949 ...	198	391	49	122	92	852	150	1002	257	12	46	55	58	171	1430
1950 ...	194	373	61	102	76	806	160	966	226	4	32	4	43	83	1275
1951 ...	...	...	...	...	...	...	...	926	158	–	36	7	37	80	1164
1952 ...	...	...	...	...	...	...	...	951	124	2	35	17	34	88	1163
1953 ...	...	...	...	...	...	...	...	967	99	6	21	10	33	70	1136
1954 ...	...	...	...	...	...	...	...	906	117	8	41	5	26	80	1103
1955 ...	...	...	...	...	...	...	...	874	72	–	28	2	12	42	988
1956 ...	...	...	...	...	...	...	...	910	77	1	28	9	20	58	1045
1957 ...	...	...	...	...	...	...	...	809	78	5	29	8	22	64	951
1958 ...	...	...	...	...	...	...	...	764	76	5	15	1	15	36	876
1959 ...	...	...	...	...	...	...	...	760	64	6	17	2	17	42	866
1960 ...	...	...	...	...	...	...	...	743	45	2	12	4	15	33	821

Table XI. Number of deaths among females under 1 year (born in wedlock) distributed by cause of death in the period 1931–60

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	156	278	118	45	33	630	302	932	538	66	141	85	87	379	1849
1932 ...	152	274	122	67	42	657	255	912	413	54	153	143	78	428	1753
1933 ...	168	262	110	43	23	606	205	811	419	37	144	47	76	304	1534
1934 ...	159	273	117	61	39	649	230	879	376	13	139	32	80	264	1519
1935 ...	154	307	110	52	44	667	221	888	419	32	132	83	148	395	1702
1936 ...	170	284	138	62	34	688	197	885	404	29	123	81	104	337	1626
1937 ...	198	300	120	64	34	716	178	894	443	34	132	33	118	317	1654
1938 ...	173	274	158	74	37	716	163	879	340	18	116	26	94	254	1473
1939 ...	196	256	147	81	41	721	152	873	353	17	79	68	75	239	1465
1940 ...	175	249	164	56	34	678	165	843	288	18	66	42	51	177	1308
1941 ...	186	252	95	69	43	645	195	840	390	25	69	50	79	223	1453
1942 ...	192	281	115	51	54	693	168	861	284	6	67	43	61	177	1322
1943 ...	181	299	118	44	60	702	158	860	290	7	72	45	67	191	1341
1944 ...	187	392	115	50	56	800	154	954	321	13	115	37	107	272	1547
1945 ...	217	389	102	66	61	835	180	1015	287	5	149	48	112	314	1616
1946 ...	198	464	57	88	47	854	173	1027	317	10	83	63	85	241	1585
1947 ...	168	363	52	78	64	725	187	912	291	8	38	18	69	133	1336
1948 ...	155	338	25	63	46	627	142	769	196	2	29	40	51	122	1087
1949 ...	125	328	34	57	57	601	101	702	203	8	24	51	43	126	1031
1950 ...	138	273	29	54	62	556	103	659	160	6	23	5	35	69	888
1951 ...	...	...	...	...	...	...	...	...	645	117	2	22	19	25	68	830
1952 ...	...	...	...	...	...	...	...	...	638	114	1	29	19	18	67	819
1953 ...	...	...	...	...	...	...	...	...	622	93	5	26	10	22	63	778
1954 ...	...	...	...	...	...	...	...	...	606	98	2	23	5	13	43	747
1955 ...	...	...	...	...	...	...	...	...	644	68	1	22	1	23	47	759
1956 ...	...	...	...	...	...	...	...	...	606	47	1	8	7	11	27	680
1957 ...	...	...	...	...	...	...	...	...	522	45	1	16	6	18	41	608
1958 ...	...	...	...	...	...	...	...	...	515	49	2	15	–	14	31	595
1959 ...	...	...	...	...	...	...	...	...	516	46	5	18	4	16	43	605
1960 ...	...	...	...	...	...	...	...	...	551	50	1	15	3	15	34	635

Table XII. Number of deaths among males under 1 year (born out of wedlock) distributed by cause of death in the period 1931–60

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	25	80	34	19	7	165	93	258	114	4	26	11	21	62	434
1932 ...	16	87	34	7	5	149	62	211	77	9	53	10	13	85	373
1933 ...	16	83	32	12	4	147	52	199	73	3	39	6	15	63	335
1934 ...	15	72	28	12	3	130	49	179	66	4	35	3	12	54	299
1935 ...	26	87	26	16	4	159	48	207	61	5	31	11	17	64	332
1936 ...	13	100	20	17	4	154	45	199	69	4	23	15	20	62	330
1937 ...	20	95	15	11	4	145	33	178	68	3	13	3	13	32	278
1938 ...	17	73	40	11	4	145	42	187	47	6	20	4	16	46	280
1939 ...	17	70	35	10	4	136	52	188	49	1	16	4	9	30	267
1940 ...	28	82	30	10	4	154	29	183	30	2	11	1	11	25	238
1941 ...	21	78	33	11	4	147	42	189	59	2	17	7	10	36	284
1942 ...	30	95	28	8	10	171	45	216	49	1	18	–	14	33	298
1943 ...	27	101	23	12	10	173	36	209	46	1	27	5	13	46	301
1944 ...	28	109	34	10	9	190	30	220	53	–	43	4	28	75	348
1945 ...	34	140	35	17	8	234	36	270	51	–	68	5	29	102	423
1946 ...	20	109	21	16	6	172	55	227	58	1	53	6	13	73	358
1947 ...	38	100	7	13	6	164	46	210	32	3	25	–	12	40	282
1948 ...	14	65	9	6	5	99	26	125	34	1	4	3	7	15	174
1949 ...	17	75	6	9	4	111	23	134	22	1	9	2	8	20	176
1950 ...	15	85	5	10	10	125	14	139	18	–	7	–	3	10	167
1951 ...	...	...	...	...	...	...	...	...	99	15	1	3	–	3	7	121
1952 ...	...	...	...	...	...	...	...	...	104	19	1	3	1	1	6	129
1953 ...	...	...	...	...	...	...	...	...	110	7	–	4	–	6	10	127
1954 ...	...	...	...	...	...	...	...	...	105	10	–	3	1	2	6	121
1955 ...	...	...	...	...	...	...	...	...	101	2	–	2	1	3	6	109
1956 ...	...	...	...	...	...	...	...	...	97	3	–	5	–	2	7	107
1957 ...	...	...	...	...	...	...	...	...	98	5	–	3	1	–	4	107
1958 ...	...	...	...	...	...	...	...	...	104	5	–	3	–	1	4	113
1959 ...	...	...	...	...	...	...	...	...	102	5	1	2	–	2	5	112
1960 ...	...	...	...	...	...	...	...	...	99	6	–	3	2	2	7	112

Table XIII. Number of deaths among females under 1 year (born out of wedlock) distributed by cause of death in the period 1931–60

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)							
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)				Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	18	77	18	2	7	122	56	178	62	7	27	17	14	65	305
1932 ...	18	81	25	5	6	135	47	182	57	7	23	15	11	56	295
1933 ...	13	67	26	5	–	111	42	153	50	8	14	8	14	44	247
1934 ...	11	65	15	9	5	105	39	144	37	1	13	4	7	25	206
1935 ...	26	58	15	9	2	110	33	143	35	7	19	3	13	42	220
1936 ...	21	70	14	13	3	121	45	166	41	1	14	9	7	31	238
1937 ...	22	77	10	9	2	120	22	142	53	1	8	1	12	22	217
1938 ...	23	73	21	5	3	125	37	162	48	1	10	1	7	19	229
1939 ...	19	47	25	8	7	106	30	136	52	1	10	4	13	28	216
1940 ...	17	55	13	8	4	97	27	124	38	2	10	5	9	26	188
1941 ...	21	36	10	2	–	69	26	95	42	3	8	5	4	20	157
1942 ...	15	67	17	10	5	114	36	150	41	–	5	2	10	17	208
1943 ...	12	76	21	4	7	120	15	135	37	2	18	6	16	42	214
1944 ...	20	104	24	8	8	164	39	203	34	1	25	5	20	51	288
1945 ...	27	107	26	11	7	178	34	212	46	1	38	1	15	55	313
1946 ...	24	84	14	5	7	134	31	165	45	–	41	7	15	63	273
1947 ...	13	79	5	7	6	110	32	142	43	–	13	–	4	17	202
1948 ...	11	48	5	7	4	75	30	105	26	–	8	1	5	14	145
1949 ...	10	56	–	6	3	75	10	85	23	–	5	3	2	10	118
1950 ...	17	53	2	6	6	84	7	91	13	–	4	2	5	11	115
1951 ...	...	...	...	...	...	...	...	81	7	–	2	1	3	6	94
1952 ...	...	...	...	...	...	...	...	99	9	–	1	1	2	4	112
1953 ...	...	...	...	...	...	...	...	79	9	–	1	–	–	1	89
1954 ...	...	...	...	...	...	...	...	66	10	–	3	–	1	4	80
1955 ...	...	...	...	...	...	...	...	71	4	–	1	–	2	3	78
1956 ...	...	...	...	...	...	...	...	71	7	–	2	–	2	4	82
1957 ...	...	...	...	...	...	...	...	78	7	1	3	3	–	7	92
1958 ...	...	...	...	...	...	...	...	78	8	–	2	–	3	5	91
1959 ...	...	...	...	...	...	...	...	66	6	1	2	–	2	5	77
1960 ...	...	...	...	...	...	...	...	64	3	–	–	–	1	1	68

Table XIV. Number of deaths among males under 1 year (born in wedlock) distributed by cause of death per 100,000 live births in the period 1931–60

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)							
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)				Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	658	1272	584	349	153	3016	1690	4706	2572	163	801	329	400	1693	8971
1932 ...	608	1278	608	289	167	2950	1097	4047	1865	139	805	374	421	1739	7651
1933 ...	676	1116	559	350	134	2835	1153	3988	1943	209	621	158	391	1379	7310
1934 ...	637	1192	663	391	223	3106	1100	4206	1786	46	604	118	365	1133	7125
1935 ...	734	1353	645	328	203	3263	1035	4298	1850	115	652	305	576	1648	7796
1936 ...	735	1239	677	324	173	3148	896	4044	1772	144	613	344	398	1499	7315
1937 ...	778	1314	596	348	195	3231	998	4229	1891	153	599	86	395	1233	7353
1938 ...	690	1077	653	362	162	2944	778	3722	1599	78	468	66	437	1049	6370
1939 ...	592	1019	717	358	150	2836	757	3593	1555	103	446	193	333	1075	6223
1940 ...	678	1146	614	333	156	2927	580	3507	1176	79	330	98	257	764	5447
1941 ...	701	1204	452	353	174	2884	671	3555	1567	105	318	198	323	944	6066
1942 ...	568	1238	432	251	251	2740	653	3393	1062	27	253	99	259	638	5093
1943 ...	607	1140	414	264	234	2659	556	3215	1021	13	254	114	269	650	4886
1944 ...	623	1282	421	247	212	2785	569	3354	842	38	374	87	336	835	5031
1945 ...	686	1184	404	239	190	2703	516	3219	907	18	474	102	329	923	5049
1946 ...	590	1236	225	326	210	2587	561	3148	1001	11	282	107	234	634	4783
1947 ...	549	1227	136	308	283	2503	545	3048	857	11	179	23	223	436	4341
1948 ...	506	1118	131	289	205	2249	524	2773	714	5	146	101	190	442	3929
1949 ...	520	1027	129	320	242	2238	394	2632	675	32	121	144	152	449	3756
1950 ...	515	990	162	271	202	2140	424	2564	599	11	85	11	114	221	3384
1951 ...	...	...	...	...	...	...	...	2517	429	–	98	19	100	217	3163
1952 ...	...	...	...	...	...	...	...	2573	335	5	95	46	92	238	3146
1953 ...	...	...	...	...	...	...	...	2564	262	16	56	26	87	185	3011
1954 ...	...	...	...	...	...	...	...	2472	319	22	112	14	70	218	3009
1955 ...	...	...	...	...	...	...	...	2354	194	–	75	5	32	112	2660
1956 ...	...	...	...	...	...	...	...	2472	209	3	76	24	54	157	2838
1957 ...	...	...	...	...	...	...	...	2241	216	14	80	22	61	177	2634
1958 ...	...	...	...	...	...	...	...	2144	213	14	42	3	42	101	2458
1959 ...	...	...	...	...	...	...	...	2158	182	17	48	6	48	119	2459
1960 ...	...	...	...	...	...	...	...	2070	125	6	33	11	42	92	2287

Table XV. Number of deaths among females under 1 year (born in wedlock) distributed by cause of death per 100,000 live births in the period 1931–60

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	559	996	423	161	118	2257	1082	3339	1928	236	505	305	312	1358	6625
1932 ...	535	965	430	236	148	2314	898	3212	1454	190	539	504	275	1508	6174
1933 ...	617	962	404	158	84	2225	753	2978	1539	136	529	173	279	1117	5634
1934 ...	555	952	408	213	136	2264	802	3066	1311	45	485	112	279	921	5298
1935 ...	536	1068	383	181	153	2321	769	3090	1458	111	459	289	515	1374	5922
1936 ...	574	959	466	209	115	2323	665	2988	1364	98	415	273	351	1137	5489
1937 ...	657	996	398	212	113	2376	591	2967	1470	113	438	110	392	1053	5490
1938 ...	571	904	521	244	122	2362	538	2900	1122	59	383	86	310	838	4860
1939 ...	654	855	491	270	137	2407	508	2915	1179	57	264	227	250	798	4892
1940 ...	560	797	525	179	109	2170	528	2698	922	58	211	135	163	567	4187
1941 ...	585	793	299	217	135	2029	614	2643	1228	79	217	157	249	702	4573
1942 ...	543	795	326	144	153	1961	476	2437	804	17	190	122	172	501	3742
1943 ...	484	799	315	118	161	1877	422	2299	775	19	192	120	179	510	3584
1944 ...	470	985	289	126	141	2011	387	2398	807	33	289	93	269	684	3889
1945 ...	525	942	247	160	148	2022	436	2458	695	12	361	116	271	760	3913
1946 ...	464	1087	133	206	110	2000	405	2405	742	23	194	148	199	564	3711
1947 ...	412	889	127	191	157	1776	458	2234	713	20	93	44	169	326	3273
1948 ...	409	892	66	166	121	1654	375	2029	517	5	77	106	135	323	2869
1949 ...	348	913	95	159	159	1674	281	1955	565	22	67	142	119	350	2870
1950 ...	384	760	81	150	173	1548	286	1834	445	17	64	14	97	192	2471
1951 ...	...	...	...	...	...	...	...	1876	340	6	64	55	73	198	2414
1952 ...	...	...	...	...	...	...	...	1834	328	3	83	55	52	193	2355
1953 ...	...	...	...	...	...	...	...	1768	264	14	74	28	63	179	2211
1954 ...	...	...	...	...	...	...	...	1752	283	6	67	14	38	125	2160
1955 ...	...	...	...	...	...	...	...	1858	196	3	64	3	66	136	2190
1956 ...	...	...	...	...	...	...	...	1747	136	3	23	20	32	78	1961
1957 ...	...	...	...	...	...	...	...	1538	133	3	47	18	53	121	1792
1958 ...	...	...	...	...	...	...	...	1530	146	6	45	–	42	93	1769
1959 ...	...	...	...	...	...	...	...	1550	138	15	54	12	48	129	1817
1960 ...	...	...	...	...	...	...	...	1609	146	3	44	9	44	100	1855

Table XVI. Number of deaths among males under 1 year (born out of wedlock) distributed by cause of death per 100,000 live births in the period 1931–60

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	695	2225	945	528	195	4588	2586	7174	3170	111	723	306	584	1724	12068
1932 ...	446	2424	947	195	139	4151	1728	5879	2145	251	1477	279	362	2369	10393
1933 ...	488	2534	977	366	122	4487	1588	6075	2229	92	1191	183	458	1924	10228
1934 ...	476	2286	889	381	95	4127	1556	5683	2096	127	1112	95	381	1715	9494
1935 ...	839	2808	839	516	129	5131	1549	6680	1969	161	1001	355	549	2066	10715
1936 ...	449	3455	691	587	138	5320	1555	6875	2384	138	795	518	691	2142	11401
1937 ...	659	3130	494	362	132	4777	1087	5864	2241	99	428	99	428	1054	9159
1938 ...	530	2274	1246	343	125	4518	1308	5826	1464	187	623	125	498	1433	8723
1939 ...	562	2316	1158	331	132	4499	1720	6219	1621	33	529	132	298	992	8832
1940 ...	875	2562	937	312	125	4811	906	5717	937	62	344	31	344	781	7435
1941 ...	634	2354	996	332	121	4437	1267	5704	1780	60	513	211	302	1086	8570
1942 ...	862	2728	804	230	287	4911	1293	6204	1407	29	517	–	402	948	8559
1943 ...	692	2590	590	308	257	4437	923	5360	1180	26	692	128	333	1179	7719
1944 ...	650	2532	790	232	209	4413	697	5110	1231	–	999	93	650	1742	8083
1945 ...	694	2859	715	347	164	4779	735	5514	1041	–	1389	102	592	2083	8638
1946 ...	514	2801	540	411	154	4420	1413	5833	1490	26	1362	154	334	1876	9199
1947 ...	996	2621	183	341	157	4298	1205	5503	839	79	655	–	315	1049	7391
1948 ...	417	1938	268	179	149	2951	775	3726	1014	30	119	89	209	447	5187
1949 ...	557	2457	197	295	131	3637	753	4390	721	33	295	66	262	656	5767
1950 ...	493	2795	164	329	329	4110	460	4570	592	–	230	–	99	329	5491
1951 ...	...	...	...	...	...	...	...	3512	532	35	106	–	106	247	4291
1952 ...	...	...	...	...	...	...	...	3897	712	37	112	37	37	223	4832
1953 ...	...	...	...	...	...	...	...	3958	252	–	144	–	216	360	4570
1954 ...	...	...	...	...	...	...	...	3954	376	–	113	38	75	226	4556
1955 ...	...	...	...	...	...	...	...	3888	77	–	77	38	115	230	4195
1956 ...	...	...	...	...	...	...	...	3552	110	–	183	–	73	256	3918
1957 ...	...	...	...	...	...	...	...	3586	183	–	110	36	–	146	3915
1958 ...	...	...	...	...	...	...	...	3675	177	–	106	–	35	141	3993
1959 ...	...	...	...	...	...	...	...	3683	181	37	72	–	72	181	4045
1960 ...	...	...	...	...	...	...	...	3221	195	–	98	65	65	228	3644

Table XVII. Number of deaths among females under 1 year (born out of wedlock) distributed by cause of death per 100,000 live births in the period 1931–60

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	547	2340	547	61	213	3708	1702	5410	1884	213	820	517	425	1975	9269
1932 ...	556	2504	773	155	185	4173	1453	5626	1762	216	711	464	340	1731	9119
1933 ...	414	2132	827	159	–	3532	1337	4869	1591	255	446	255	446	1402	7862
1934 ...	386	2284	527	316	176	3689	1370	5059	1300	35	457	141	246	879	7238
1935 ...	914	2039	527	317	70	3867	1160	5027	1231	246	668	106	457	1477	7735
1936 ...	764	2545	509	473	109	4400	1636	6036	1491	36	509	327	255	1127	8654
1937 ...	754	2640	343	308	69	4114	754	4868	1817	34	274	34	411	753	7438
1938 ...	786	2496	718	171	103	4274	1265	5539	1641	34	342	34	239	649	7829
1939 ...	665	1646	875	280	245	3711	1051	4762	1821	35	350	140	455	980	7563
1940 ...	574	1857	439	270	135	3275	911	4186	1283	68	338	169	304	879	6348
1941 ...	740	1268	352	70	–	2430	916	3346	1480	106	282	176	141	705	5531
1942 ...	463	2067	524	308	154	3516	1111	4627	1265	–	154	62	308	524	6416
1943 ...	331	2094	578	110	193	3306	413	3719	1019	55	496	165	441	1157	5895
1944 ...	495	2572	594	198	198	4057	965	5022	841	25	618	124	494	1261	7124
1945 ...	595	2356	573	242	154	3920	749	4669	1013	22	837	22	330	1211	6893
1946 ...	641	2243	374	133	187	3578	828	4406	1202	–	1095	187	400	1682	7290
1947 ...	365	2217	140	196	168	3086	898	3984	1206	–	365	–	112	477	5667
1948 ...	344	1502	156	219	125	2346	939	3285	814	–	250	31	156	437	4536
1949 ...	348	1950	–	209	104	2611	348	2959	801	–	174	104	70	348	4108
1950 ...	590	1839	69	208	208	2914	243	3157	451	–	139	69	174	382	3990
1951 ...	...	...	...	...	...	...	...	3158	273	–	78	39	117	234	3665
1952 ...	...	...	...	...	...	...	...	3899	354	–	39	39	79	157	4410
1953 ...	...	...	...	...	...	...	...	3051	348	–	39	–	–	39	3438
1954 ...	...	...	...	...	...	...	...	2668	404	–	121	–	41	162	3234
1955 ...	...	...	...	...	...	...	...	2891	163	–	41	–	81	122	3176
1956 ...	...	...	...	...	...	...	...	2834	279	–	80	–	80	160	3273
1957 ...	...	...	...	...	...	...	...	3125	280	40	120	120	–	280	3685
1958 ...	...	...	...	...	...	...	...	3043	312	–	78	–	117	195	3550
1959 ...	...	...	...	...	...	...	...	2482	226	38	75	–	75	188	2896
1960 ...	...	...	...	...	...	...	...	2223	104	–	–	–	35	35	2362

Table XVIII. The relation between the cause-of-death frequencies for infants born out of and in wedlock in the period 1931–60

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	1.02	2.00	1.51	1.18	1.49	1.57	1.55	1.57	1.13	0.80	1.17	1.28	1.42	1.21	1.37
1932 ...	0.87	2.19	1.66	0.67	1.02	1.58	1.60	1.58	1.18	1.43	1.65	0.84	1.01	1.27	1.41
1933 ...	0.70	2.25	1.87	1.03	0.56	1.58	1.53	1.57	1.10	0.98	1.43	1.32	1.34	1.33	1.40
1934 ...	0.73	2.12	1.33	1.15	0.73	1.45	1.54	1.47	1.10	1.80	1.47	1.02	0.98	1.28	1.35
1935 ...	1.37	2.01	1.33	1.64	0.56	1.61	1.50	1.59	0.97	1.79	1.51	0.79	0.92	1.18	1.35
1936 ...	0.92	2.73	1.05	1.98	0.86	1.77	2.04	1.83	1.24	0.73	1.27	1.38	1.27	1.25	1.57
1937 ...	0.98	2.50	0.84	1.20	0.65	1.58	1.16	1.49	1.21	0.50	0.68	0.68	1.07	0.79	1.29
1938 ...	1.03	2.40	1.69	0.86	0.80	1.65	1.95	1.71	1.13	1.65	1.14	1.08	1.00	1.12	1.47
1939 ...	0.98	2.12	1.68	0.97	1.31	1.57	2.19	1.69	1.25	0.42	1.23	0.65	1.28	1.05	1.47
1940 ...	1.18	2.28	1.22	1.13	0.98	1.59	1.64	1.60	1.05	0.94	1.25	0.84	1.54	1.24	1.43
1941 ...	1.06	1.85	1.85	0.74	0.42	1.42	1.72	1.48	1.17	0.88	1.51	1.10	0.79	1.10	1.34
1942 ...	1.20	2.35	1.76	1.35	1.10	1.80	2.12	1.86	1.43	0.68	1.54	0.27	1.64	1.30	1.70
1943 ...	0.95	2.41	1.60	1.10	1.14	1.71	1.38	1.65	1.22	2.50	2.67	1.25	1.71	2.01	1.61
1944 ...	1.05	2.24	1.95	1.15	1.15	1.76	1.72	1.75	1.26	0.34	2.45	1.20	1.89	1.98	1.70
1945 ...	1.06	2.45	1.97	1.48	0.94	1.84	1.66	1.81	1.28	0.73	2.68	0.59	1.55	1.97	1.73
1946 ...	1.09	2.17	2.53	1.03	1.05	1.74	2.32	1.84	1.54	0.76	5.13	1.34	1.69	2.96	1.94
1947 ...	1.43	2.28	1.23	1.08	0.73	1.72	2.10	1.80	1.29	2.73	3.73	–	1.10	2.02	1.71
1948 ...	0.83	1.71	2.14	0.86	0.83	1.35	1.89	1.45	1.48	3.00	1.63	0.59	1.12	1.15	1.42
1949 ...	1.05	2.27	0.90	1.04	0.59	1.60	1.64	1.61	1.22	0.63	2.48	0.59	1.24	1.26	1.49
1950 ...	1.20	2.66	0.97	1.27	1.44	1.91	0.99	1.76	1.00	–	2.48	2.83	1.27	1.71	1.62
1951 ...	...	...	...	...	...	...	...	...	1.51	1.06	6.33	1.15	0.51	1.28	1.16	1.43
1952 ...	...	...	...	...	...	...	...	...	1.76	1.62	4.75	0.86	0.76	0.81	0.89	1.68
1953 ...	...	...	...	...	...	...	...	...	1.62	1.13	–	1.45	–	1.49	1.13	1.53
1954 ...	...	...	...	...	...	...	...	...	1.57	1.29	–	1.30	1.43	1.05	1.13	1.51
1955 ...	...	...	...	...	...	...	...	...	1.61	0.61	–	0.84	5.00	2.02	1.44	1.52
1956 ...	...	...	...	...	...	...	...	...	1.51	1.10	–	2.68	–	1.77	1.78	1.50
1957 ...	...	...	...	...	...	...	...	...	1.77	1.30	2.11	1.80	3.80	–	1.40	1.71
1958 ...	...	...	...	...	...	...	...	...	1.83	1.34	–	2.16	–	1.76	1.74	1.78
1959 ...	...	...	...	...	...	...	...	...	1.66	1.26	2.31	1.45	–	1.54	1.49	1.62
1960 ...	...	...	...	...	...	...	...	...	1.48	1.12	–	1.28	3.40	1.16	1.40	1.46

Table XIX. Number of deaths among infants under 1 year (born in wedlock) distributed by cause of death in the period 1931–60 (Relative distribution)

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	per cent														
1931 ...	7.8	14.5	6.5	3.3	1.7	33.8	17.8	51.6	28.8	2.5	8.4	4.1	4.6	19.6	100.0
1932 ...	8.3	16.2	7.5	3.8	2.3	38.1	14.4	52.5	24.0	2.4	9.7	6.3	5.1	23.5	100.0
1933 ...	10.0	16.0	7.4	4.0	1.7	39.1	14.7	53.8	26.9	2.7	8.9	2.5	5.2	19.3	100.0
1934 ...	9.6	17.2	8.7	4.9	2.9	43.3	15.3	58.6	24.9	0.7	8.8	1.8	5.2	16.5	100.0
1935 ...	9.3	17.6	7.5	3.7	2.6	40.7	13.2	53.9	24.1	1.6	8.1	4.3	8.0	22.0	100.0
1936 ...	10.2	17.2	8.9	4.2	2.2	42.7	12.2	54.9	24.5	1.9	8.1	4.8	5.8	20.6	100.0
1937 ...	11.2	18.0	7.7	4.3	2.4	43.6	12.4	56.0	26.2	2.1	8.1	1.5	6.1	17.8	100.0
1938 ...	11.2	17.6	10.5	5.4	2.5	47.2	11.7	58.9	24.3	1.2	7.6	1.3	6.7	16.8	100.0
1939 ...	11.1	16.8	10.9	5.7	2.6	47.1	11.4	58.5	24.6	1.4	6.4	3.8	5.3	16.9	100.0
1940 ...	12.8	20.2	11.8	5.3	2.8	52.9	11.5	64.4	21.8	1.4	5.6	2.4	4.4	13.8	100.0
1941 ...	12.1	18.8	7.1	5.4	2.9	46.3	12.0	58.3	26.2	1.8	5.0	3.3	5.4	15.5	100.0
1942 ...	12.5	23.0	8.6	4.5	4.6	53.2	12.8	66.0	21.1	0.5	5.0	2.5	4.9	12.9	100.0
1943 ...	12.9	22.9	8.6	4.5	4.7	53.6	11.5	65.1	21.2	0.3	5.3	2.8	5.3	13.7	100.0
1944 ...	12.3	25.4	8.0	4.2	4.0	53.9	10.7	64.6	18.4	0.8	7.4	2.0	6.8	17.0	100.0
1945 ...	13.5	23.7	7.3	4.5	3.8	52.8	10.6	63.4	17.9	0.3	9.3	2.4	6.7	18.7	100.0
1946 ...	12.4	27.3	4.2	6.3	3.8	54.0	11.4	65.4	20.5	0.4	5.6	3.0	5.1	14.1	100.0
1947 ...	12.6	27.8	3.4	6.6	5.8	56.2	13.2	69.4	20.6	0.4	3.6	0.9	5.1	10.0	100.0
1948 ...	13.4	29.6	2.9	6.7	4.8	57.4	13.2	70.6	18.1	0.2	3.3	3.0	4.8	11.3	100.0
1949 ...	13.1	29.2	3.4	7.3	6.1	59.1	10.2	69.3	18.7	0.8	2.8	4.3	4.1	12.0	100.0
1950 ...	15.3	29.9	4.2	7.2	6.4	63.0	12.2	75.2	17.8	0.5	2.5	0.4	3.6	7.0	100.0
1951 ...	...	...	...	...	...	...	...	78.8	13.8	0.1	2.9	1.3	3.1	7.4	100.0
1952 ...	...	...	...	...	...	...	...	80.2	12.0	0.2	3.2	1.8	2.6	7.8	100.0
1953 ...	...	...	...	...	...	...	...	83.0	10.0	0.6	2.5	1.0	2.9	7.0	100.0
1954 ...	...	...	...	...	...	...	...	81.8	11.6	0.5	3.5	0.5	2.1	6.6	100.0
1955 ...	...	...	...	...	...	...	...	86.9	8.0	0.1	2.8	0.2	2.0	5.1	100.0
1956 ...	...	...	...	...	...	...	...	87.9	7.2	0.1	2.1	0.9	1.8	4.9	100.0
1957 ...	...	...	...	...	...	...	...	85.4	7.9	0.4	2.9	0.9	2.5	6.7	100.0
1958 ...	...	...	...	...	...	...	...	86.9	8.5	0.5	2.0	0.1	2.0	4.6	100.0
1959 ...	...	...	...	...	...	...	...	86.7	7.5	0.7	2.4	0.4	2.3	5.8	100.0
1960 ...	...	...	...	...	...	...	...	88.9	6.5	0.2	1.8	0.5	2.1	4.6	100.0

Table XX. Number of deaths among infants under 1 year (born out of wedlock) distributed by cause of death in the period 1931–60 (Relative distribution)

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	per cent														
1931 ...	5.8	21.3	7.0	2.8	1.9	38.8	20.2	59.0	23.8	1.5	7.2	3.8	4.7	17.2	100.0
1932 ...	5.1	25.2	8.8	1.8	1.6	42.5	16.3	58.8	20.1	2.4	11.4	3.7	3.6	21.1	100.0
1933 ...	5.0	25.8	9.9	2.9	0.7	44.3	16.2	60.5	21.1	1.9	9.1	2.4	5.0	18.4	100.0
1934 ...	5.1	27.1	8.5	4.2	1.6	46.5	17.4	63.9	20.4	1.0	9.5	1.4	3.8	15.7	100.0
1935 ...	9.4	26.3	7.4	4.5	1.1	48.7	14.7	63.4	17.4	2.2	9.1	2.5	5.4	19.2	100.0
1936 ...	6.0	29.9	6.0	5.3	1.2	48.4	15.8	64.2	19.4	0.9	6.5	4.2	4.8	16.4	100.0
1937 ...	8.5	34.8	5.0	4.0	1.2	53.5	11.1	64.6	24.5	0.8	4.2	0.8	5.1	10.9	100.0
1938 ...	7.8	28.7	12.0	3.1	1.4	53.0	15.5	68.5	18.7	1.4	5.9	1.0	4.5	12.8	100.0
1939 ...	7.5	24.2	12.4	3.7	2.3	50.1	17.0	67.1	20.9	0.4	5.4	1.6	4.6	12.0	100.0
1940 ...	10.6	32.2	10.1	4.2	1.9	59.0	13.1	72.1	16.0	0.9	4.9	1.4	4.7	11.9	100.0
1941 ...	9.5	25.9	9.8	2.9	0.9	49.0	15.4	64.4	22.9	1.1	5.7	2.7	3.2	12.7	100.0
1942 ...	8.9	32.0	8.9	3.6	3.0	56.4	16.0	72.4	17.8	0.2	4.5	0.4	4.7	9.8	100.0
1943 ...	7.6	34.4	8.5	3.1	3.3	56.9	9.9	66.8	16.1	0.6	8.8	2.1	5.6	17.1	100.0
1944 ...	7.5	33.5	9.1	2.8	2.7	55.6	10.9	66.5	13.7	0.2	10.7	1.4	7.5	19.8	100.0
1945 ...	8.3	33.6	8.3	3.8	2.0	56.0	9.5	65.5	13.2	0.1	14.4	0.8	6.0	21.3	100.0
1946 ...	7.0	30.6	5.5	3.3	2.1	48.5	13.6	62.1	16.3	0.2	14.9	2.1	4.4	21.6	100.0
1947 ...	10.5	37.0	2.5	4.1	2.5	56.6	16.1	72.7	15.5	0.6	7.9	–	3.3	11.8	100.0
1948 ...	7.8	35.4	4.4	4.1	2.8	54.5	17.6	72.1	18.8	0.3	3.8	1.2	3.8	9.1	100.0
1949 ...	9.2	44.6	2.0	5.1	2.4	63.3	11.2	74.5	15.3	0.3	4.8	1.7	3.4	10.2	100.0
1950 ...	11.3	48.9	2.5	5.7	5.7	74.1	7.5	81.6	11.0	–	3.9	0.7	2.8	7.4	100.0
1951 ...	...	...	...	...	...	...	...	83.7	10.2	0.5	2.3	0.5	2.8	6.1	100.0
1952 ...	...	...	...	...	...	...	...	84.2	11.6	0.4	1.7	0.8	1.3	4.2	100.0
1953 ...	...	...	...	...	...	...	...	87.5	7.4	–	2.3	–	2.8	5.1	100.0
1954 ...	...	...	...	...	...	...	...	85.0	10.0	–	3.0	0.5	1.5	5.0	100.0
1955 ...	...	...	...	...	...	...	...	92.0	3.2	–	1.6	0.5	2.7	4.8	100.0
1956 ...	...	...	...	...	...	...	...	88.9	5.3	–	3.7	–	2.1	5.8	100.0
1957 ...	...	...	...	...	...	...	...	88.5	6.0	0.5	3.0	2.0	–	5.5	100.0
1958 ...	...	...	...	...	...	...	...	89.2	6.4	–	2.4	–	2.0	4.4	100.0
1959 ...	...	...	...	...	...	...	...	88.9	5.8	1.1	2.1	–	2.1	5.3	100.0
1960 ...	...	...	...	...	...	...	...	90.6	5.0	–	1.7	1.0	1.7	4.4	100.0

Table XXI. The relation between the cause-of-death frequencies for males and females in the period 1931–60

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	1.19	1.21	1.43	2.44	1.23	1.32	1.56	1.40	1.37	0.67	1.47	1.00	1.30	1.19	1.35
1932 ...	1.10	1.25	1.39	1.22	1.08	1.23	1.22	1.23	1.28	0.78	1.58	0.73	1.48	1.18	1.23
1933 ...	1.10	1.16	1.34	2.23	1.75	1.27	1.47	1.32	1.28	1.34	1.31	0.88	1.34	1.25	1.30
1934 ...	1.15	1.21	1.63	1.76	1.51	1.34	1.34	1.34	1.38	1.20	1.35	1.02	1.33	1.30	1.34
1935 ...	1.30	1.29	1.67	1.79	1.34	1.40	1.35	1.38	1.30	0.97	1.43	1.14	1.12	1.22	1.32
1936 ...	1.20	1.30	1.44	1.50	1.49	1.33	1.27	1.32	1.33	1.55	1.49	1.29	1.23	1.37	1.33
1937 ...	1.15	1.29	1.49	1.58	1.73	1.33	1.66	1.39	1.28	1.40	1.38	0.84	1.02	1.19	1.33
1938 ...	1.15	1.14	1.31	1.51	1.32	1.22	1.37	1.25	1.36	1.54	1.27	0.88	1.46	1.32	1.29
1939 ...	0.90	1.22	1.44	1.31	1.01	1.18	1.51	1.24	1.26	1.76	1.67	0.85	1.23	1.31	1.26
1940 ...	1.24	1.43	1.24	1.77	1.38	1.36	1.09	1.31	1.21	1.32	1.49	0.67	1.51	1.29	1.29
1941 ...	1.16	1.57	1.65	1.71	1.36	1.47	1.13	1.39	1.27	1.25	1.51	1.25	1.34	1.36	1.35
1942 ...	1.10	1.51	1.36	1.58	1.65	1.40	1.34	1.38	1.29	1.80	1.48	0.77	1.47	1.32	1.36
1943 ...	1.31	1.39	1.27	2.29	1.45	1.41	1.40	1.41	1.30	0.64	1.33	0.94	1.36	1.23	1.36
1944 ...	1.33	1.23	1.44	1.85	1.44	1.33	1.32	1.33	1.08	1.06	1.35	0.92	1.26	1.25	1.27
1945 ...	1.29	1.25	1.56	1.49	1.26	1.32	1.15	1.29	1.27	1.23	1.38	0.95	1.28	1.29	1.28
1946 ...	1.22	1.15	1.63	1.66	1.78	1.28	1.43	1.31	1.33	0.54	1.37	0.74	1.13	1.12	1.28
1947 ...	1.43	1.34	1.09	1.61	1.73	1.41	1.21	1.37	1.14	0.94	1.90	0.51	1.40	1.44	1.32
1948 ...	1.24	1.26	1.93	1.65	1.65	1.35	1.30	1.34	1.36	1.40	1.60	1.00	1.40	1.34	1.34
1949 ...	1.50	1.15	1.52	1.97	1.50	1.34	1.47	1.36	1.17	1.60	1.79	1.00	1.38	1.33	1.32
1950 ...	1.29	1.34	2.02	1.77	1.21	1.39	1.51	1.40	1.34	0.67	1.37	0.56	1.09	1.11	1.37
1951 ...	...	...	...	...	...	...	...	...	1.32	1.30	0.60	1.51	0.33	1.33	1.10	1.30
1952 ...	...	...	...	...	...	...	...	...	1.35	1.09	4.00	1.20	0.83	1.63	1.25	1.31
1953 ...	...	...	...	...	...	...	...	...	1.43	0.97	1.15	0.86	0.96	1.66	1.17	1.36
1954 ...	...	...	...	...	...	...	...	...	1.42	1.11	4.20	1.60	1.07	1.87	1.72	1.40
1955 ...	...	...	...	...	...	...	...	...	1.27	0.96	–	1.21	2.67	0.57	0.90	1.22
1956 ...	...	...	...	...	...	...	...	...	1.40	1.39	0.67	3.19	1.21	1.60	1.98	1.42
1957 ...	...	...	...	...	...	...	...	...	1.42	1.50	2.17	1.58	0.92	1.16	1.33	1.42
1958 ...	...	...	...	...	...	...	...	...	1.38	1.34	2.60	1.00	–	0.87	1.05	1.36
1959 ...	...	...	...	...	...	...	...	...	1.40	1.26	1.12	0.89	0.45	1.00	0.92	1.36
1960 ...	...	...	...	...	...	...	...	...	1.30	0.92	1.67	0.98	1.88	1.02	1.10	1.26

Table XXII. Number of deaths among infants under 1 year distributed by sex and age at death and civil status of mother. 1931–60

Year	Born in wedlock						Born out of wedlock						Total		
	Males			Females			Males			Females					
	Under 1 month	1 month – 1 year	Total	Under 1 month	1 month – 1 year	Total	Under 1 month	1 month – 1 year	Total	Under 1 month	1 month – 1 year	Total	Under 1 month	1 month – 1 year	Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	931	1713	2644	671	1178	1849	164	270	434	131	174	305	1897	3335	5232
1932 ...	893	1359	2252	696	1057	1753	159	214	373	140	155	295	1888	2785	4673
1933 ...	840	1290	2130	641	893	1534	152	183	335	104	143	247	1737	2509	4246
1934 ...	962	1208	2170	670	849	1519	140	159	299	109	97	206	1881	2313	4194
1935 ...	969	1411	2380	672	1030	1702	156	176	332	102	118	220	1899	2735	4634
1936 ...	953	1326	2279	691	935	1626	162	168	330	128	110	238	1934	2539	4473
1937 ...	1005	1301	2306	698	956	1654	135	143	278	119	98	217	1957	2498	4455
1938 ...	911	1129	2040	691	782	1473	143	137	280	119	110	229	1864	2158	4022
1939 ...	917	1080	1997	710	755	1465	134	133	267	108	108	216	1869	2076	3945
1940 ...	887	896	1783	640	668	1308	141	97	238	98	90	188	1766	1751	3517
1941 ...	903	1122	2025	590	863	1453	137	147	284	60	97	157	1690	2229	3919
1942 ...	971	938	1909	625	697	1322	164	134	298	115	93	208	1875	1862	3737
1943 ...	1000	924	1924	658	683	1341	163	138	301	110	104	214	1931	1849	3780
1944 ...	1108	1031	2139	754	793	1547	180	168	348	152	136	288	2194	2128	4322
1945 ...	1161	1077	2238	795	821	1616	229	194	423	178	135	313	2363	2227	4590
1946 ...	1147	1042	2189	811	774	1585	181	177	358	125	148	273	2264	2141	4405
1947 ...	1070	819	1889	687	649	1336	150	132	282	110	92	202	2017	1692	3709
1948 ...	871	720	1591	575	512	1087	97	77	174	79	66	145	1622	1375	2997
1949 ...	803	627	1430	553	478	1031	101	75	176	69	49	118	1526	1229	2755
1950 ...	744	531	1275	504	384	888	122	45	167	78	37	115	1448	997	2445
1951 ...	741	423	1164	501	329	830	89	32	121	71	23	94	1402	807	2209
1952 ...	800	363	1163	512	307	819	92	37	129	83	29	112	1487	736	2223
1953 ...	779	357	1136	506	272	778	99	28	127	70	19	89	1454	676	2130
1954 ...	743	360	1103	483	264	747	94	27	121	55	25	80	1375	676	2051
1955 ...	706	282	988	532	227	759	82	27	109	59	19	78	1379	555	1934
1956 ...	732	313	1045	481	199	680	86	21	107	56	26	82	1355	559	1914
1957 ...	664	287	951	418	190	608	79	28	107	76	16	92	1237	521	1758
1958 ...	625	251	876	416	179	595	91	22	113	74	17	91	1206	469	1675
1959 ...	642	224	866	417	188	605	87	25	112	59	18	77	1205	455	1660
1960 ...	619	202	821	462	173	635	87	25	112	58	10	68	1226	410	1636

Table XXIII. Number of deaths among infants under 1 year per 10000 live births distributed by sex and age at death and civil status of mother. 1931–60

Year	Born in wedlock						Born out of wedlock						Total		
	Males			Females			Males			Females					
	Under 1 month	1 month – 1 year	Total	Under 1 month	1 month – 1 year	Total	Under 1 month	1 month – 1 year	Total	Under 1 month	1 month – 1 year	Total	Under 1 month	1 month – 1 year	Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1931 ...	316	581	897	241	422	663	456	751	1207	398	529	927	295	519	814
1932 ...	303	462	765	245	372	617	443	596	1039	433	479	912	292	431	723
1933 ...	288	443	731	235	328	563	464	559	1023	331	455	786	277	399	676
1934 ...	316	397	713	234	296	530	445	505	950	383	341	724	289	355	644
1935 ...	317	462	779	234	358	592	504	568	1072	359	415	774	291	419	710
1936 ...	306	426	732	233	316	549	560	580	1140	465	400	865	291	382	673
1937 ...	320	415	735	232	317	549	445	471	916	408	336	744	290	371	661
1938 ...	284	353	637	228	258	486	445	427	872	407	376	783	272	315	587
1939 ...	286	336	622	237	252	489	443	440	883	378	378	756	275	306	581
1940 ...	271	274	545	205	214	419	441	303	744	331	304	635	252	250	502
1941 ...	271	336	607	186	271	457	413	444	857	211	342	553	237	313	550
1942 ...	259	250	509	177	197	374	471	385	856	355	287	642	236	234	470
1943 ...	254	235	489	176	182	358	418	354	772	303	287	590	229	219	448
1944 ...	261	242	503	190	199	389	418	390	808	376	336	712	242	235	477
1945 ...	262	243	505	192	199	391	468	396	864	392	297	689	248	235	483
1946 ...	250	228	478	190	181	371	465	455	920	334	395	729	236	222	458
1947 ...	246	188	434	168	159	327	393	346	739	309	258	567	220	184	404
1948 ...	215	178	393	152	135	287	289	230	519	247	207	454	191	162	353
1949 ...	211	165	376	154	133	287	331	246	577	240	171	411	191	154	345
1950 ...	197	141	338	140	107	247	401	148	549	271	128	399	182	125	307
1951 ...	201	115	316	146	95	241	316	113	429	277	89	366	184	105	289
1952 ...	217	98	315	148	88	236	345	138	483	327	114	441	193	96	289
1953 ...	206	95	301	144	77	221	356	101	457	270	74	344	186	86	272
1954 ...	203	98	301	140	76	216	354	102	456	222	101	323	180	89	269
1955 ...	190	76	266	153	66	219	316	104	420	240	78	318	180	72	252
1956 ...	199	85	284	139	57	196	315	77	392	223	104	327	176	73	249
1957 ...	184	79	263	123	56	179	289	103	392	305	64	369	165	69	234
1958 ...	176	70	246	124	53	177	321	78	399	289	66	355	161	63	224
1959 ...	183	63	246	126	56	182	314	90	404	222	68	290	165	60	225
1960 ...	173	56	229	134	51	185	283	81	364	201	35	236	161	54	215

Table XXIV. Relative distribution of number of deaths among infants under 1 year by sex and age at death and civil status of mother. 1931–60

Year	Born in wedlock						Born out of wedlock						Total		
	Males			Females			Males			Females					
	Under 1 month	1 month – 1 year	Total	Under 1 month	1 month – 1 year	Total	Under 1 month	1 month – 1 year	Total	Under 1 month	1 month – 1 year	Total	Under 1 month	1 month – 1 year	Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	per cent														
1931 ...	35	65	100	36	64	100	38	62	100	43	57	100	36	64	100
1932 ...	40	60	100	40	60	100	43	57	100	48	52	100	40	60	100
1933 ...	39	61	100	42	58	100	45	55	100	42	58	100	41	59	100
1934 ...	44	56	100	44	56	100	47	53	100	53	47	100	45	55	100
1935 ...	41	59	100	40	60	100	47	53	100	46	54	100	41	59	100
1936 ...	42	58	100	42	58	100	49	51	100	54	46	100	43	57	100
1937 ...	44	56	100	42	58	100	49	51	100	55	45	100	44	56	100
1938 ...	45	55	100	47	53	100	51	49	100	52	48	100	46	54	100
1939 ...	46	54	100	48	52	100	50	50	100	50	50	100	47	53	100
1940 ...	50	50	100	49	51	100	59	41	100	52	48	100	50	50	100
1941 ...	45	55	100	41	59	100	48	52	100	38	62	100	43	57	100
1942 ...	51	49	100	47	53	100	55	45	100	55	45	100	50	50	100
1943 ...	52	48	100	49	51	100	54	46	100	51	49	100	51	49	100
1944 ...	52	48	100	49	51	100	52	48	100	53	47	100	51	49	100
1945 ...	52	48	100	49	51	100	54	46	100	57	43	100	51	49	100
1946 ...	52	48	100	51	49	100	50	50	100	46	54	100	51	49	100
1947 ...	57	43	100	51	49	100	53	47	100	54	46	100	54	46	100
1948 ...	55	45	100	53	47	100	56	44	100	54	46	100	54	46	100
1949 ...	56	44	100	54	46	100	57	43	100	58	42	100	55	45	100
1950 ...	58	42	100	57	43	100	73	27	100	68	32	100	59	41	100
1951 ...	64	36	100	60	40	100	74	26	100	76	24	100	64	36	100
1952 ...	69	31	100	62	38	100	71	29	100	74	26	100	67	33	100
1953 ...	69	31	100	65	35	100	78	22	100	79	21	100	68	32	100
1954 ...	67	33	100	65	35	100	78	22	100	69	31	100	67	33	100
1955 ...	72	28	100	70	30	100	75	25	100	76	24	100	71	29	100
1956 ...	70	30	100	71	29	100	80	20	100	68	32	100	71	29	100
1957 ...	70	30	100	69	31	100	74	26	100	83	17	100	70	30	100
1958 ...	71	29	100	70	30	100	80	20	100	81	19	100	72	28	100
1959 ...	74	26	100	69	31	100	78	22	100	77	23	100	73	27	100
1960 ...	75	25	100	73	27	100	78	22	100	85	15	100	75	25	100

Table XXV. **Relative distribution of number of deaths among infants under 1 year by civil status of mother and sex of infant in the period 1931–60**

Year	Born in wedlock			Born out of wedlock			Males			Females		
	Under 1 month	1 month–1 year	Total	Under 1 month	1 month–1 year	Total	Under 1 month	1 month–1 year	Total	Under 1 month	1 month–1 year	Total
	1	2	3	4	5	6	7	8	9	10	11	12
	per cent											
1931 ...	36	64	100	40	60	100	36	64	100	37	63	100
1932 ...	40	60	100	45	55	100	40	60	100	41	59	100
1933 ...	40	60	100	44	56	100	40	60	100	42	58	100
1934 ...	44	56	100	49	51	100	45	55	100	45	55	100
1935 ...	40	60	100	47	53	100	41	59	100	40	60	100
1936 ...	42	58	100	51	49	100	43	57	100	44	56	100
1937 ...	43	57	100	51	49	100	44	56	100	44	56	100
1938 ...	46	54	100	51	49	100	45	55	100	48	52	100
1939 ...	47	53	100	50	50	100	46	54	100	49	51	100
1940 ...	49	51	100	56	44	100	51	49	100	49	51	100
1941 ...	43	57	100	45	55	100	45	55	100	40	60	100
1942 ...	49	51	100	55	45	100	51	49	100	48	52	100
1943 ...	51	49	100	53	47	100	52	48	100	49	51	100
1944 ...	51	49	100	52	48	100	52	48	100	49	51	100
1945 ...	51	49	100	55	45	100	52	48	100	50	50	100
1946 ...	52	48	100	48	52	100	52	48	100	50	50	100
1947 ...	54	46	100	54	46	100	56	44	100	52	48	100
1948 ...	54	46	100	55	45	100	55	45	100	53	47	100
1949 ...	55	45	100	58	42	100	56	44	100	54	46	100
1950 ...	58	42	100	71	29	100	60	40	100	58	42	100
1951 ...	62	38	100	74	26	100	65	35	100	62	38	100
1952 ...	66	34	100	73	27	100	69	31	100	64	36	100
1953 ...	67	33	100	78	22	100	70	30	100	66	34	100
1954 ...	66	34	100	74	26	100	68	32	100	65	35	100
1955 ...	71	29	100	75	25	100	72	28	100	71	29	100
1956 ...	70	30	100	75	25	100	71	29	100	70	30	100
1957 ...	69	31	100	78	22	100	70	30	100	71	29	100
1958 ...	71	29	100	81	19	100	72	28	100	71	29	100
1959 ...	72	28	100	77	23	100	75	25	100	70	30	100
1960 ...	74	26	100	81	19	100	76	24	100	74	26	100

Table XXVI. **The relation between the mortality for live born females and males in wedlock in the period 1931–60 as regards "cholerine"**

Year	Deaths from "cholerine"		$a_{t_0}\frac{a_{01}}{a_{00}}$	$\sqrt{a_{t_0}\frac{a_{01}}{a_{00}}\left(1-\frac{a_{01}}{a_{00}}\right)}$	$\frac{a_{t_1}-a_{t_0}\frac{a_{01}}{a_{00}}}{\sqrt{a_{t_0}\frac{a_{01}}{a_{00}}\left(1-\frac{a_{01}}{a_{00}}\right)}}$	$P\{a_{t_1} \mid a_{t_0}\}$
	Females a_{t_1}	Total a_{t_0}				
	1	2	3	4	5	6
						per cent
1931	141	377	151.9	9.54	−1.14	13
1932	153	390	157.2	9.70	−0.43	33
1933	144	325	131.0	8.83	+1.47	93
1934	139	323	130.2	8.83	+1.00	84
1935	132	331	133.4	8.89	−0.16	44
1936	123	314	126.5	8.72	−0.40	34
1937	132	320	129.0	8.78	+0.34	63
1938	116	266	107.2	8.00	+1.10	86
1939	79	222	89.5	7.28	−1.44	7
1940	66	174	70.1	6.48	−0.63	26
1941	69	175	70.5	6.48	−0.23	41
1942	67	162	65.3	6.25	+0.27	61
1943	72	172	69.3	6.40	+0.42	66
1944	115	274	110.4	8.12	+0.57	72
1945	149	359	144.7	9.33	+0.46	68
1946	83	212	85.4	7.14	−0.34	37
1947	38	116	46.7	5.29	−1.64	5
1948	29	88	35.5	4.58	−1.42	8
1949	24	70	28.2	4.12	−1.02	15
1950	23	55	22.2	3.61	+0.22	59
1951	22	58	23.4	3.74	−0.37	36
1952	29	64	25.8	4.00	+0.80	79
1953	26	47	Reference to tables			99
1954	23	64	25.8	4.00	−0.70	24
1955	22	50	Reference to tables			75
1956	8	36				2
1957	16	45				31
1958	15	30	Reference to tables			90
1959	18	35				93
1960	15	27				96

$$\frac{\Sigma a_{t_0}}{\Sigma a_{t_1}} = \frac{a_{01}}{a_{00}} = 0{,}403$$

Table XXVII. The relation between the mortality for live born females and males out of wedlock in the period 1931–60 as regards "cholerine"

Year	Deaths from "cholerine"		$a_{t_0}\frac{a_{01}}{a_{00}}$	$\sqrt{a_{t_0}\frac{a_{01}}{a_{00}}\left(1-\frac{a_{01}}{a_{00}}\right)}$	$\frac{a_{t_1}-a_{t_0}\frac{a_{01}}{a_{00}}}{\sqrt{a_{t_0}\frac{a_{01}}{a_{00}}\left(1-\frac{a_{01}}{a_{00}}\right)}}$	$P\{a_{t_1} \mid a_{t_0}\}$
	Females a_{t_1}	Total a_{t_0}				
	1	2	3	4	5	6
						per cent
1931	27	53	19.5	3.46	+2.17	99
1932	23	76	27.9	4.24	−1.16	12
1933	14	53	19.5	3.46	−1.59	6
1934	13	48	Reference to tables			11
1935	19	50				64
1936	14	37				63
1937	8	21				65
1938	10	30	Reference to tables			43
1939	10	26				66
1940	10	21				90
1941	8	25				40
1942	5	23	Reference to tables			10
1943	18	45				73
1944	25	68	25.0	4.00	0.00	50
1945	38	106	38.9	5.00	−0.18	43
1946	41	94	34.5	4.69	+1.39	92
1947	13	38				45
1948	8	12	Reference to tables			99
1949	5	14				59
1950	4	11				62
1951	2	5				74
1952	1	4				53
1953	1	5	Reference to tables			39
1954	3	6				86
1955	1	3				69
1956	2	7				50
1957	3	6				86
1958	2	5	Reference to tables			74
1959	2	4				85
1960	–	3				25

$$\frac{\Sigma a_{t_1}}{\Sigma a_{t_0}} = \frac{a_{01}}{a_{00}} = 0{,}367$$

Table XXVIII. The relation between the mortality for live born females and males in wedlock in the period 1931–60

$P\{a_{t_1} \mid a_{t_0}\}$

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	per cent														
1931 ...	64	58	64	9	72	56	4	21	26	100	13	14	50	49	27
1932 ...	81	49	61	98	91	92	95	99	63	99	33	97	14	93	100
1933 ...	83	88	58	6	38	78	9	54	54	6	93	48	25	47	63
1934 ...	71	64	14	30	29	31	48	39	17	68	84	27	44	53	30
1935 ...	13	59	8	35	70	16	57	27	55	65	44	17	88	68	55
1936 ...	34	54	47	74	46	48	60	59	46	14	34	2	84	23	52
1937 ...	70	48	41	64	26	54	2	24	61	23	63	75	98	84	58
1938 ...	55	85	90	83	68	94	31	91	7	37	86	78	25	47	66
1939 ...	100	80	39	91	91	99	17	97	28	7	7	64	37	13	81
1940 ...	58	12	98	32	57	55	99	89	58	33	26	85	14	23	79
1941 ...	61	3	36	63	76	17	1	66	58	28	41	5	49	21	58
1942 ...	94	1	73	44	25	20	48	28	34	35	61	71	17	39	22
1943 ...	42	11	78	7	54	16	67	30	40	88	66	45	17	42	27
1944 ...	17	41	42	18	42	19	22	18	100	55	72	46	55	54	67
1945 ...	18	59	12	77	77	42	91	72	35	41	68	58	63	55	66
1946 ...	29	97	15	68	6	71	41	73	18	97	37	88	70	85	69
1947 ...	17	15	94	63	9	13	92	41	77	93	5	95	42	23	42
1948 ...	42	62	8	42	21	34	40	38	19	75	8	40	28	18	15
1949 ...	4	97	59	14	41	52	43	57	78	40	15	30	52	39	61
1950 ...	23	51	8	39	92	36	29	36	35	89	59	74	68	71	31
1951 ...	...	...	...	...	...	...	...	52	52	100	36	99	38	75	51
1952 ...	...	...	...	...	...	...	...	26	96	57	79	66	13	50	40
1953 ...	...	...	...	...	...	...	...	7	95	62	99	57	36	83	20
1954 ...	...	...	...	...	...	...	...	23	83	10	24	61	16	3	14
1955 ...	...	...	...	...	...	...	...	87	93	100	75	49	100	97	94
1956 ...	...	...	...	...	...	...	...	21	15	79	2	38	28	2	3
1957 ...	...	...	...	...	...	...	...	9	10	16	31	37	69	19	2
1958 ...	...	...	...	...	...	...	...	30	23	31	90	49	80	70	19
1959 ...	...	...	...	...	...	...	...	34	45	62	93	88	81	92	36
1960 ...	...	...	...	...	...	...	...	88	98	57	96	49	85	90	94

Table XXIX. **The relation between the mortality for live born females and males out of wedlock in the period 1931–60**

$$P\{a_{t_1} \mid a_{t_0}\}$$

Year	I Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	per cent														
1931 ...	40	92	29	1	76	48	11	23	1	94	99	92	49	99	27
1932 ...	87	89	75	74	84	95	55	93	41	55	12	90	73	44	82
1933 ...	57	60	85	35	10	56	66	63	25	98	6	80	82	57	51
1934 ...	47	82	39	79	92	74	63	76	6	25	11	78	43	6	23
1935 ...	81	19	48	55	45	29	37	25	8	88	64	3	65	44	12
1936 ...	98	26	71	82	62	68	92	87	9	25	63	17	7	8	41
1937 ...	87	62	67	84	45	81	35	74	52	38	65	32	80	52	74
1938 ...	96	94	27	42	62	89	77	92	92	10	43	19	19	4	88
1939 ...	87	23	71	82	94	65	14	41	95	79	66	65	97	89	85
1940 ...	21	21	18	82	75	10	80	21	98	75	90	98	70	93	77
1941 ...	79	1	3	9	10	0	23	0	34	87	40	40	24	24	0
1942 ...	8	28	54	97	28	19	63	27	65	54	10	100	59	18	28
1943 ...	5	43	93	24	49	28	3	11	57	91	73	74	95	92	35
1944 ...	38	94	68	82	68	94	99	99	20	100	50	76	56	52	93
1945 ...	45	46	76	68	67	60	85	73	78	100	43	11	19	9	53
1946 ...	92	50	66	15	83	66	11	42	51	54	92	72	93	92	67
1947 ...	100	56	71	53	75	21	39	19	99	17	45	.	13	5	39
1948 ...	54	40	54	94	64	56	95	83	48	54	99	32	62	86	86
1949 ...	26	42	5	70	62	26	11	14	88	54	59	82	14	28	21
1950 ...	87	11	46	63	39	24	27	17	50	.	62	100	94	91	29
1951 ...	...	...	...	...	...	...	...	74	19	54	74	100	79	76	65
1952 ...	...	...	...	...	...	...	...	96	15	54	53	75	93	63	90
1953 ...	...	...	...	...	...	...	...	41	90	.	39	.	4	3	36
1954 ...	...	...	...	...	...	...	...	15	79	.	86	50	62	63	23
1955 ...	...	...	...	...	...	...	...	36	94	.	69	50	65	47	42
1956 ...	...	...	...	...	...	...	...	46	98	.	50	.	80	53	61
1957 ...	...	...	...	...	...	...	...	68	91	100	86	94	.	97	89
1958 ...	...	...	...	...	...	...	...	53	94	.	74	.	97	90	74
1959 ...	...	...	...	...	...	...	...	19	85	80	85	.	80	83	32
1960 ...	...	...	...	...	...	...	...	20	40	.	25	25	62	10	11

Table XXX. **A comparison of the mortality of females and males born in and out of wedlock in the period 1931–60**

	Cause of Death	Live births A. In wedlock B. Out of wedlock	Deaths: Females a_{01}	Deaths: Total a_{00}	$\frac{a_{01}}{a_{00}}$	d	$\log_{10} d$	$10^3 \cdot \gamma\{\log_{10} d\}$	$\Phi(u)$
	1	2	3	4	5	6	7	8	9
									per cent
I.	Non-infectious diseases....	A	23 260	56 718	0.4101	0.7373	−0.1323	0.01375	0
	(excl. pneumonia)	B	3 666	8 613	0.4256	0.7965	−0.0988	0.08955	
a.	Malformations (1)	A	3 448	7 903	0.4363	0.8208	−0.0858	0.09702	17
		B	358	795	0.4503	0.8805	−0.0553	0.95833	
b.	Prematurity (2).....	A	6 136	14 535	0.4222	0.7748	−0.1108	0.05320	4
		B	1 380	3 166	0.4359	0.8305	−0.0806	0.24226	
c.	Congenital debility (3)....	A	2 046	5 156	0.3968	0.6978	−0.1562	0.15284	74
		B	306	801	0.3820	0.6644	−0.1776	0.99736	
d.	Injury at birth (4)	A	1 225	3 435	0.3566	0.5879	−0.2307	0.23928	27
		B	139	376	0.3697	0.6304	−0.2004	2.15297	
e.	Other infants' diseases(5)..	A	911	2 328	0.3913	0.6819	−0.1663	0.34013	6
		B	92	207	0.4444	0.8598	−0.0656	3.69080	
a–e.	Infants' diseases	A	13 766	33 357	0.4127	0.7453	−0.1277	0.02333	1
	proper, total (6)	B	2 275	5 345	0.4256	0.7964	−0.0989	0.14432	
f.	Other (7).....	A	3 629	8 886	0.4084	0.7322	−0.1354	0.08785	6
		B	638	1 496	0.4265	0.7992	−0.0974	0.51544	
II.	Pneumonia.....	A	7 459	17 578	0.4243	0.7818	−0.1069	0.04392	9
		B	893	2 046	0.4365	0.8324	−0.0797	0.37480	
III.	Infectious diseases.....	A	5 426	12 552	0.4323	0.8076	−0.0928	0.06123	98
		B	698	1 733	0.4028	0.7248	−0.1398	0.45250	
a.	Influenza (10).....	A	429	942	0.4554	0.8869	−0.0521	0.80736	48
		B	45	99	0.4545	0.8957	−0.0479	7.69796	
b.	Cholerine (11).....	A	2 088	5 181	0.4030	0.7160	−0.1451	0.15130	97
		B	330	899	0.3671	0.6234	−0.2052	0.90282	
c.	Whooping cough (12)	A	1 114	2 199	0.5066	1.089	+0.0370	0.34316	59
		B	104	210	0.4952	1.055	+0.0233	3.59238	
d.	Other (13).....	A	1 795	4 230	0.4243	0.7819	−0.1068	0.18250	57
		B	219	525	0.4171	0.7692	−0.1140	1.47690	
I–III.	Total.....	A	36 145	86 848	0.4162	0.7561	−0.1214	0.00894	1
		B	5 257	12 392	0.4242	0.7919	−0.1013	0.06231	

Table XXXI. The relation between the mortality owing to "cholerine" for infants born out of and in wedlock in the period 1931–60

Year	a_{t_1}	a_{t_0}	d	β_t	$\frac{\beta_t \cdot d}{1+\beta_t \cdot d}$	$\frac{\beta_t \cdot d}{1+\beta_t \cdot d} \cdot a_{t_0}$	$\sqrt{\frac{\beta_t \cdot d}{(1+\beta_t \cdot d)^2} \cdot a_{t_0}}$	$\frac{a_{t_1} - \frac{\beta_t \cdot d}{(1+\beta_t \cdot d)} \cdot a_{t_0}}{\sqrt{\frac{\beta_t \cdot d}{(1+\beta_t \cdot d)^2} \cdot a_{t_0}}}$	$P\{a_{t_1} \mid a_{t_0}\}$
	1	2	3	4	5	6	7	8	9
									per cent
1931 ...	53	430		0.120	0.136	58.5	7.10	−0.77	22
1932 ...	76	466		0.118	0.134	62.4	7.35	+1.85	97
1933 ...	53	378		0.114	0.130	49.1	6.54	+0.60	73
1934 ...	48	371		0.101	0.118	43.8	6.22	+0.67	75
1935 ...	50	381		0.100	0.116	44.2	6.25	+0.93	82
1936 ...	37	351	1.313	0.093	0.109	38.3	5.84	−0.22	41
1937 ...	21	341		0.097	0.113	38.5	5.84	−3.00	0
1938 ...	30	296		0.098	0.114	33.7	5.46	−0.68	25
1939 ...	26	248		0.095	0.111	27.5	4.84	−0.30	38
1940 ...	21	195		0.096	0.112	21.8	4.40	−0.18	43
1941 ...	25	200		0.094	0.110	22.0	4.42	+0.68	75
1942 ...	23	185		0.092	0.214	39.6	5.58	−0.30	38
1943 ...	45	217		0.098	0.224	48.6	6.12	−0.59	28
1944 ...	68	342	2.943	0.101	0.230	78.7	7.78	−1.38	8
1945 ...	106	465		0.110	0.245	113.9	9.27	−0.85	20
1946 ...	94	306		0.086	0.203	62.1	7.03	+4.53	100
1947 ...	38	154		0.088	0.205	31.6	5.01	+1.28	90
1948 ...	12	100		0.084	0.121				56
1949 ...	14	84		0.080	0.117				94
1950 ...	11	66		0.080	0.117				92
1951 ...	5	63		0.076	0.111				29
1952 ...	4	68		0.073	0.107				14
1953 ...	5	52		0.074	0.109				49
1954 ...	6	70	1.654	0.072	0.107	Reference to tables			37
1955 ...	3	53		0.070	0.104				19
1956 ...	7	43		0.073	0.108				91
1957 ...	6	51		0.075	0.110				67
1958 ...	5	35		0.078	0.114				80
1959 ...	4	39		0.079	0.116				52
1960 ...	3	30		0.085	0.123				49

Table XXXII. The relation between the mortality for infants born out of and in wedlock in the period 1931–60

$P\{a_{t_1} \mid a_{t_0}\}$

Year	I. Non-infectious diseases (excl. pneumonia)								II. Pneumonia	III. Infectious diseases					I–III Total
	Infants' diseases						Other	Total (6–7)		Influenza	Cholerine	Whooping cough	Other	Total (10–13)	
	Malformations	Prematurity	Congenital debility	Injuries at birth	Other	Total (1–5)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
								per cent							
1931 ...	58	13	56	58	97	45	28	35	48	21	22	88	91	59	36
1932 ...	25	43	83	4	72	50	41	42	63	88	97	18	27	80	65
1933 ...	4	54	96	37	22	48	27	36	34	42	73	83	80	89	50
1934 ...	6	32	30	55	35	12	27	10	36	92	75	60	28	75	24
1935 ...	99	14	30	96	17	61	24	46	6	96	82	24	14	52	27
1936 ...	34	99	3	100	52	96	97	99	79	29	41	92	73	72	99
1937 ...	49	91	0	61	26	50	1	12	74	10	0	32	39	0	5
1938 ...	62	81	86	15	44	74	92	88	48	91	25	67	29	34	86
1939 ...	51	32	85	28	91	46	99	84	80	14	38	11	70	21	86
1940 ...	86	62	14	52	64	55	50	54	25	55	43	43	90	63	72
1941 ...	67	4	93	7	8	7	64	13	61	48	75	61	10	32	25
1942 ...	67	58	38	69	62	61	87	78	72	55	38	5	53	0	32
1943 ...	16	69	17	39	69	28	2	9	22	95	28	85	61	44	6
1944 ...	33	34	64	43	31	47	27	38	32	20	8	85	84	37	37
1945 ...	34	80	66	86	60	77	8	55	35	56	20	20	38	33	52
1946 ...	43	19	95	26	56	42	97	74	92	61	100	92	62	99	100
1947 ...	95	44	9	34	14	36	84	55	38	96	90	12	7	48	46
1948 ...	17	1	95	25	35	2	91	7	91	95	56	34	46	55	10
1949 ...	56	69	18	49	10	48	61	44	51	53	94	22	51	45	29
1950 ...	80	98	21	77	95	99	2	89	13	45	92	97	63	88	78
1951 ...	...	...	...	...	...	...	...	20	25	99	29	51	64	36	15
1952 ...	...	...	...	...	...	...	...	87	92	97	14	63	33	12	88
1953 ...	...	...	...	...	...	...	...	57	39	46	49	31	77	34	59
1954 ...	...	...	...	...	...	...	...	37	59	50	37	87	55	33	38
1955 ...	...	...	...	...	...	...	...	49	4	93	19	98	90	69	42
1956 ...	...	...	...	...	...	...	...	43	38	87	91	39	84	87	37
1957 ...	...	...	...	...	...	...	...	14	59	92	67	100	3	60	92
1958 ...	...	...	...	...	...	...	...	94	62	59	80	94	84	84	98
1959 ...	...	...	...	...	...	...	...	61	52	93	52	68	77	73	74
1960 ...	...	...	...	...	...	...	...	14	39	78	49	98	62	68	22

Table XXXIII. **A comparison of the mortality of infants born out of and in wedlock in the period 1931–60**

	Cause of Death	Period	a_{01}	a_{00}	$\frac{a_{01}}{a_{00}}$	d	$\log_{10} d$	$10^3 \cdot \sqrt{\{\log_{10} d\}}$	$\Phi(u)$
	1	2	3	4	5	6	7	8	9
I.	Non-infectious diseases....	1931–41	3 803	27 038	0.1407	1.596	+0.2030	0.0577	per cent
	(excl. pneumonia)	1942–47	2 359	16 146	0.1461	1.781	+0.2507	0.0936	100
		1948–60	2 451	22 147	0.1107	1.620	+0.2095	0.0865	71
a.	Malformations (1)	1931–41	423	4 638	0.0912	0.985	−0.0065	0.4906	
		1942–47	288	2 961	0.0973	1.118	+0.0483	0.7252	94
		1948–50	84	1 099	0.0764	1.018	+0.0076	2.4335	60
b.	Prematurity (2).....	1931–41	1 613	8 721	0.1850	2.218	+0.3460	0.1434	
		1942–47	1 171	6 442	0.1818	2.316	+0.3647	0.1969	85
		1948–50	382	2 538	0.1505	2.177	+0.3379	0.5821	38
c.	Congenital debility (3)....	1931–41	519	4 020	0.1291	1.453	+0.1623	0.4173	
		1942–47	255	1 659	0.1537	1.856	+0.2686	0.8731	100
		1948–50	27	278	0.0971	1.328	+0.1232	7.7295	33
d.	Injury at birth (4)	1931–41	211	2 062	0.1023	1.120	+0.0492	0.9958	
		1942–47	121	1 190	0.1017	1.189	+0.0752	1.7351	69
		1948–50	44	559	0.0787	1.052	+0.0220	4.6570	36
e.	Other infants' diseases(5)..	1931–41	86	1 077	0.0799	0.850	−0.0705	2.3813	
		1942–47	89	1 010	0.0881	1.009	+0.0039	2.3255	86
		1948–50	32	448	0.0714	0.950	−0.0224	6.3502	70
a–e.	Infants' diseases,	1931–41	2 852	20 518	0.1390	1.582	+0.1992	0.0768	
	proper, total (6)	1942–47	1 924	13 262	0.1451	1.765	+0.2467	0.1147	100
		1948–50	569	4 922	0.1156	1.606	+0.2057	0.3748	62
f.	Other (7).....	1931–41	951	6 520	0.1458	1.640	+0.2148	0.2323	
		1942–47	435	2 884	0.1508	1.858	+0.2690	0.5107	98
		1948–50	110	978	0.1125	1.554	+0.1915	1.9304	31
II.	Pneumonia.....	1931–41	1 228	11 657	0.1053	1.140	+0.0569	0.1718	
		1942–47	535	4 716	0.1134	1.336	+0.1258	0.3978	100
		1948–60	283	3 251	0.0871	1.227	+0.0888	0.7296	86
III.	Infectious diseases.....	1931–41	937	8 615	0.1088	1.176	+0.0704	0.2258	
		1942–47	614	3 681	0.1668	2.052	+0.3122	0.3686	100
		1948–60	182	1 989	0.0915	1.299	+0.1136	1.1410	88
a.	Influenza (10)	1931–41	82	836	0.0981	1.036	+0.0154	2.5486	
		1942–47	10	108	0.0926	1.064	+0.0269	20.7252	53
		1948–60	7	97	0.0722	1.012	+0.0052	29.0154	48
b.	Cholerine (11).....	1931–41	440	3 657	0.1203	1.313	+0.1183	0.4873	
		1942–47	374	1 669	0.2241	2.943	+0.4688	0.6499	100
		1948–60	85	754	0.1127	1.654	+0.2185	2.5013	97
c.	Whooping cough (12)	1931–41	147	1 534	0.0958	1.013	+0.0056	1.4191	
		1942–47	41	518	0.0792	0.893	−0.0493	4.9921	25
		1948–60	22	357	0.0616	0.840	−0.0758	9.1376	21
d.	Other (13).....	1931–41	268	2 588	0.1036	1.129	+0.0527	0.7845	
		1942–47	189	1 386	0.1364	1.624	+0.2106	1.1549	100
		1948–60	68	781	0.0871	1.227	+0.0888	3.0370	72
I–III.	Total.....	1931–41	5 968	47 310	0.1261	1.393	+0.1440	0.0362	
		1942–47	3 508	24 543	0.1429	1.728	+0.2375	0.0627	100
		1948–60	2 916	27 387	0.1065	1.541	+0.1878	0.0724	100