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Three studies describing past, present, and future trends in mortality

KOHORTDÖDLIGHETEN I SVERIGE

Tre studier över dödlighetstrenderna förr, nu och i framtiden

Utgivare: Statistiska centralbyrån, Fack, 102 50 Stockholm 27

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Ingvar Holmberg: En studie i dödligheten bland kohorter födda på 1700- och 1800-talet

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F Ö R O R D

De tre uppsatser, som härmed presenteras, framlades i en tidigare version vid Internationella Befolkningsunionens möte i London i september 1969. Eftersom upplagan var liten och därför snart utgången, ingick det i planerna att även utge dem i serien Statistiska meddelanden, i synnerhet som de inte skulle ingå i konferenshandlingarna. Uppsatserna kommer även att publiceras i förkortad version i Population Studies.

Inga väsentliga ändringar har gjorts av den tidigare publikationen. Några av beräkningarna i uppsats nr 1 har emellertid blivit kompletterade med uppgifter för de senaste perioderna och vissa diagram har tillfogats. Dessutom har i uppsats nr 2 de observerade och projekterade dödstalen för femårs födelsekohorter fått en utförligare presentation.

Två av författarna, A. M. Bolander och L. Widén, tillhör Be-byråns analyssektion, medan den tredje, I. Holmberg, är forskningsassistent vid den av Samhällsvetenskapliga forskningsrådet inrättade Demografiska forskningsgruppen i Göteborg.

Mars 1970

Ingvar Ohlsson

Erland Hofsten

P R E F A C E

Earlier versions of the three papers, which are hereby presented, were given at the session of the International Union for the Scientific Study of Population, held in London in September 1969. As the edition was small and soon exhausted and as there was no scope for including them in the coming conference proceedings, it has been found appropiate to republish them in one of the publication series of the Central Bureau of Statistics. Abridged versions of the papers will also be published in Population Studies.

No substantial changes have been made since the papers were presented at the London conference. However, some of the life table computations have been completed with recent data, lacking in the earlier version of report 1. Furthermore, a detailed presentation of observed and projected death rates of five-year cohorts has been added to the tables of report 2.

Two of the authors, Bolander and Widén, are among the permanent staff of the Division of Population Statistics of the Central Bureau of Statistics, whereas the third, Holmberg, is research assistant at the Demographic Institute of the University of Gothenburg.

March 1970

Ingvar Ohlsson

Erland Hofsten

A STUDY OF COHORT MORTALITY IN THE PAST HUNDRED YEARS

by Anne-Marie Bolander

KOHORTDÖDLIGHETEN UNDER DE GÅNGNA HUNDRA ÅREN

by Anne-Marie Bolander

SAMMANFATTNING

Avsikten med denna studie, vilken ursprungligen inspirerades av några epidemiologiska hypoteser för dödlighetsutvecklingen, är att bredda basen för mortalitetsanalysen i Sverige till att omfatta enskilda kohorters dödlighet.

Statistik över döda efter kön och ålder har publicerats regelbundet sedan 1861. Från 1895 finns även uppgifter med fördelning på födelseår. Man har därför kunnat följa rena kohorter fr o m detta år men fått nöja sig med parvisa kohorter från 1861 till 1894. Dessa båda slag av dödstal illustreras bäst av diagram 1 av typ Lexis' eller Beckers schema. Av olika skäl har man kunnat bortse från att populationen är öppen, dvs föremål för utrikes omflyttning.

Dödstalen för enskilda födelsekohorter har beräknats som köns- och åldersspecifika centrala dödskvoter för femårs åldersklasser utom för de fem första åldersåren med ettårs dödstal. Dessa tal utgör grunden för beräkning av livslängdstabeller efter förkortad metod fr o m 1861 års kohort (jfr formel sid 10). Av livslängdstabellens olika funktioner återges bl a överlevelsetal (1_x-värden) samt sannolikheterna för skilda kohorter att överleva från en ålder till en annan, uttryckt som kvoter mellan valda 1_x-värden. Kvarlevande av 100 000 levande födda i femårskohorter efter kön återges i diagram X och XI. Dödlighetsutvecklingen 1861-1967 för kohorter födda såväl före som efter 1861 kan följas i tabeller och diagram (se förteckning). För jämförelsens skull lämnas även en sammanställning av perioddödstal.

Vissa egenskaper hos kohortdödstalen diskuteras i samband med redovisningen av undersökningsresultaten och en diskussion av kohortdödstalens betydelse i den demografiska och epidemiologiska analysen följer i avsnitt 5.

1. AIM AND BACKGROUND OF THE STUDY

The generation approach to the study of mortality is nothing new in a country like Sweden, being famous for its early account of vital events in the registered population. Several studies have been performed, leading to generation life tables and other series of mortality rates on the cohort basis. All of them, however, are more or less thorough approximations of period rates, arranged to build up a generation design, passing from birth to death.

It was felt that it would be possible to build up a system of pure cohort rates from Swedish population data, as it turned out that no such attempts had ever been made before.

However, the set of questions that initiated this study had a different orientation. In epidemiological contexts some hypotheses had been put forward presumably without stronger efforts being made to prove or reject them. One hypothesis was that a cohort will be more or less marked for life by the prevailing health situation at the time of birth and early life, another that some single cohorts were at a disadvantage as to the chance of survival. Related problems included how the mortality in one year could be influenced by spells of epidemics or by other reasons for excessive death rates in the preceding year. All these problems should preferably be tackled by means of cohort data. In addition, in the study of health and illness on an epidemiological basis, the cohort approach to the problems was considered a useful complement to the period approach. In other words, there were sufficient motives to start.

Once the study had taken form, other demographic reasons for its continuation turned up. The cohort death rates gave renewed aspects on mortality development, useful in the analysis. They also seemed to form a good basis for mortality projections (Cf. Widén, "A method for the computation of projected survival factors").

Cohort life tables by the abridged method were constructed in complete or truncated form. These have left the abstract model stage for comparison and for summing up, and have become real descriptions of the cohorts as to past experiences of mortality. The series of cohort death rates and abridged life tables will in time form part of the permanent account of Swedish mortality. A further description of the procedure is therefore justified.

2. POPULATION STATISTICS AND LIMITATIONS OF THE STUDY

The quality of the Swedish statistics on population and vital events seems to have improved at certain periods. From 1861 data were regularly published in detailed form giving annual deaths and population at the end of each year by sex and one-year age groups. From 1895 and onwards the deaths were also available by year of birth, thus forming a reliable basis for cohort studies. Even if there might be some doubts as to the accuracy of death reporting by age before 1895 and the data were only given by age, it was considered sufficiently interesting to include this material in the cohort study. The study thus starts with the deaths of the year 1861, follows mixed cohorts up to 1895, and then continues with a pure cohort design up to the present time, ending with the deaths of the year 1967.

The cohorts born before 1861 are also included in part of the study. Their death rates can be found in table 2, starting with the age attained by each cohort in 1861. All the cohorts born 1861 or later are followed from birth and onwards and their losses in the form of deaths are registered by successive age groups.

Problems concerning the fact that the population is open instead of closed are on the whole disregarded. The circumstance that the cohorts here are subject to the influences of external migration would restrict the application of general cohort methods. As pure cohorts only are available from the period of 1895, one is already forced to handle earlier rates with caution, and avoid drawing too definite conclusions from their development. Besides, the major waves of emigration were already over by the end of the century. Furthermore, they intervened at ages where the death rates were fairly moderate. Immigration during and after the second world war was not of a size to influence cohort mortality rates much, as only relatively small numbers of war invalids and other selective groups of refugees were moved to Sweden. These aliens have presumably brought with them an increased probability of dying compared to that of the initial cohort population, but their quantitative influence upon the cohort death rates is probably inconsiderable.

3. DESIGN AND METHODS

The cohort design before and after 1895 has been illustrated in a Lexis´ diagram, where the life lines start as diagonals from a horisontal base line as if placed in a coordinate system with time as abscissa and age as ordinate, both with only positive values (cf. diagram I). The deaths are assembled in triangles, forming either squares as in the mixed cohort design,

or parallelograms as in the pure cohort design. The first "true" cohort is the one of 1895. The transition from mixed to pure cohort rates, however, begins with the period 1895-1900 for the five-year age groups and with 1895-96 for the one-year age groups.

The measurement of mortality applied in this study consists mainly of central death rates. The method of life table computation is based on this type of measure by one-year age groups from 0-4 and by quinquennial age groups up to 85-89 years. Death rates after 90 years are disregarded, as available population data seem to be less reliable. These central death rates have the form

$$ {}_n m_x^{t-x} = \frac{{}_n D_x^{t-x}}{n K_{x+1/2n}^{t-x}} $$

where t = calendar year, x = lower age limit of the n-year age group, t-x birth year of the cohort, D_x^{t-x} = deaths within cohort t-x in the n-year age group, starting with the x:th birthday, $K_{x+1/2n}^{t-x}$ = size of cohort t-x at age x+1/2n.

The risk population in person years (cf. MP of diagram I) is thus estimated at 5 times the size of the cohort t-x at the end of the calendar year t+2 when passing from the age of x+2 to x+3. A better estimate would have been the size at the age of x+2 1/2, a value that never appears in population statistics. The corresponding estimate for the one-year rates at age x is the size of the cohort t-x at the end of year t. For the first year of life the person-years are estimated in a different way, shown by the following formula:

$$ {}_1 m_0^t = \frac{D_0^t}{B^t - D_0^t (1-a)} $$

where a is the mean age at death of D_0^t, as published in table A of the following paper by Widén. These death rates are only used for life table computations. The infant mortality rates of table 1 are computed in the conventional way per 100 000 live births, but more accurately than usual, as the deaths all belong to the same cohort which is followed from birth to the exact age of one year:

$$ q_0^t = \frac{D_0^t}{B^t} $$

The method of abridged life-table computation based on the central death rates available in this study, does not claim to be the most suitable one, but it seems to fill its purposes sufficiently well[1]. The l_x-values are obtained by means of a transformation of the formula:

$$l_x = l_0 \cdot e^{-\int_0^x \mu_x \, dx}$$

where the exponent is substituted by

$$-\sum_{z=0}^{x-1} {}_1m_z \quad \text{and} \quad -5\sum_{z=5}^{x-5} {}_5m_z$$

for the first five years of life and for the following quinquennial age groups, respectively.

As no central death rates have been computed for age groups above 85-89, the life tables resulting from the present ADP program are never complete. But as they are only used for mutual comparisons, this deficiency can be overlooked. Furthermore this and other shortcomings in the data programme have been remedied. The function written $e_{15/65}$, occurring in table 4, is the mean number of years lived by those entering their 15th year of life (l_{15}) until reaching their 65th birthday:

$$e_{15/65} = \frac{\sum_{x=15}^{64} L_x}{l_{15}}$$

The functions $e_{15/60}$ etc. are computed in a similar way. For the computation of L_x the a-values mentioned above have been applied. The following sets of ratios of table 4, l_{x+n}/l_x, give the probability or rather fraction of the cohort at age x surviving to age x+n. These values are obtained in order to give comparative mortality measures of cohorts in different parts of the age scale, but also to summarize the mortality experiences for all those cohorts of which the life span has not yet come to an end.

4. PRESENTATION OF RESULTS

The computations of cohort rates and connected life table functions have been assembled in a set of tables, of which a large part is presented in the table appendix, (cf. tables 1, 2 and 4), where the period mortality is also accounted for, (table 3), in order to give data

1) The life-table computations have been carried out at the Demographic Institute of the University of Göteborg by one of its research assistants. Cf. Ingvar Holmberg, "A study of mortality among cohorts born in the 18th and 19th century", published in this same issue.

for comparisons. Some of the graphs are also reproduced in the same appendix, and the remaining diagrams and tables are available at the Population Division of the SCB.

The variables with most effect upon mortality rates are evidently sex and age. Male and female rates by age are accordingly printed side by side to facilitate the study of the almost constantly exceeding male rates and the female excess as to survival functions. The cohort rates are chosen to fit in with the age-pattern of period mortality. The simplest way of adding up cohort data should otherwise be summation of annual events by birth year, without regard to the splitting by triangular "elementary units", but then the exact age-limits would be lost and the conformity with the life table pattern, as demonstrated in the Lexis' diagram, would be spoilt. The disadvantage with the applied procedure is the spread of events ever several calendar years. In the matter of rates for one-year age groups this involves some benefits. As a rule, epidemics and other causes of excess mortality last over the autumn and winter parts of the year and are broken by the summer season. The period rates often divide the epidemic in two parts, whereas the cohort rates are centered around the turn of the year, only expanding by a fourth of the person-years over the time limits from mid-year to mid-year. The epidemic or excessive mortality spell is therefore well covered in the cohort rate, but divided in the period rate. Age-specific monthly or seasonal rates would solve the question, but are rare and complicated to compute. The cohort approach by one-year age-curves might therefore describe the situation better than the period pattern. The only one-year cohort rates returned in this study are the infant and childhood mortality rates of table 1 and diagram VI. These rates clearly illustrate the epidemic pattern in childhood mortality until a couple of decades ago, and show the decreasing influence of infections upon mortality since then. In this diagram the age-specific death curves are arranged by year of birth. It seems hard to trace any influences of the birth-year on the death vurves of successive age-years, as all changes seem to vary with time only. Nor do the quinquennial death rates, arranged by birth-year in table 1, suggest such associations. A scrutinizing or further analysis of the life-table functions is a better method for studying mortality variations within separate cohorts. This can be done in table 4, where some life table functions have been assembled. The steady decrease of mortality rates can also be seen from the diagrams X and XI, giving the survivorship picture for each five-year cohort when passing through life.

In diagrams IV and V selected cohort curves for men and women are given with the quinquennial age-scale as absciss axes. Sex- and age-specific curves for quinquennial groups give the pattern of cohort rates in diagrams II and III with the periods of six calendar years running along the horizontal axis. The female graph has also been used to demonstrate the course and pattern of the cohort-curves, where every fifth cohort is distinguished by a dotted curve line.

Diagram VII returns the epidemic of 1918/19 by cohort and period rates of five-year age groups. There is no doubt that rates by one-year age groups would give the best picture of the losses in the Spanish flu. Because of their spread over two calendar years the cohort rates centering around the turns of the years would probably be advantagous. The two kinds of curves in diagram VII reflect the mortality pattern entirely differently, and the purpose of the illustration is to show how period and cohort patterns of mortality appear, rather than to describe a well-known situation. Other possibilities of comparing period and cohort rates are given by the similar way of illustrating mortality development in the diagram sets II, III and X, XI.

5. APPLICATION OF COHORT RATES IN THE STUDY OF MORTALITY

It soon appeared that the collection of cohort death rates and life table values derived from these rates was not only of theoretical interest. The accumulated information related to single birth cohorts of Sweden, and embracing mortality experiences from more than a century, has already turned out to be a useful manual for several types of studies related to Swedish cohorts. It has thus been used to estimate survival rates, to give comparative mortality measurements and informative orientation of separate birth cohorts subject to follow-up studies, and to form the basis of projected survival factors etc.

In the study of mortality the cohort rates summarize developments in a similar way to the running averages of annual period rates, but give at the same time a true picture of the genuine mortality experienced by different groups of population defined as to sex, age, and country of residence. As a complement to the period rates the cohort rates likewise describe the tendencies in mortality development, thus forming a good ground for the analysis of male excess death rates. It would appear even more useful to arrange the cause-of-death statistics on a cohort rate basis, which is evidently easier once the cohort design has been introduced for the account of total mortality.

TABLES AND DIAGRAMS

TABELLER OCH DIAGRAM

Table 1. MORTALITY OF COHORTS BORN IN THE YEARS 1861 - 1966
Central death rates by sex and age per 100 000 mean population[1]

Tabell 1. DÖDLIGHETEN FÖR KOHORTER FÖDDA 1861 TILL 1960
Centrala dödskvoter efter kön och ålder per 100 000 av medelfolkmängden[1]

Age / Ålder	Sex / Kön	Year of birth - Födelseår									
		1861	1862	1863	1864	1865	1866	1867	1868	1869	1870
<1	M	14 833	14 949	14 161	14 690	14 524	13 566	15 016	17 996	15 594	14 185
	F	12 574	12 855	12 314	12 606	12 128	11 771	12 955	15 612	13 514	12 144
1	M	6 725	5 091	4 772	4 642	4 629	4 154	5 100	6 567	4 061	3 227
	F	6 460	4 624	4 452	4 206	4 071	3 733	5 119	6 222	3 839	3 024
2	M	3 362	3 276	3 360	3 244	2 397	3 060	4 097	2 769	1 960	1 864
	F	3 282	3 057	3 157	2 825	2 237	2 994	3 805	2 621	1 883	1 718
3	M	2 405	2 643	2 394	1 738	2 065	3 084	2 219	1 647	1 388	1 453
	F	2 430	2 370	2 285	1 646	1 988	3 047	2 128	1 542	1 269	1 456
4	M	2 096	1 809	1 305	1 429	2 290	1 796	1 238	1 048	1 192	1 589
	F	1 836	1 495	1 173	1 378	2 131	1 607	1 028	980	995	1 480
0 - 4	M	6 717	6 429	5 951	5 911	5 861	5 803	6 222	6 919	5 816	5 184
	F	5 930	5 524	5 247	5 098	4 986	5 120	5 523	6 072	5 045	4 487
5 - 9	M	899	817	858	905	705	710	756	858	931	967
	F	811	736	812	819	697	662	714	818	902	1 015
10 - 14	M	395	364	398	414	415	458	446	426	474	452
	F	406	346	402	441	456	487	481	475	472	501
15 - 19	M	486	408	438	448	455	485	439	414	425	445
	F	461	447	465	455	454	477	451	453	416	452
20 - 24	M	649	678	649	648	629	659	614	660	635	667
	F	529	505	521	526	525	537	542	528	578	603
25 - 29	M	667	602	647	685	710	642	649	634	632	645
	F	619	646	627	600	620	659	577	587	502	592
30 - 34	M	711	667	628	690	642	645	668	665	653	630
	F	650	705	628	636	626	647	673	636	655	626
35 - 39	M	732	736	727	724	706	685	733	657	650	649
	F	691	682	742	689	665	691	705	644	717	642
40 - 44	M	831	796	808	779	842	768	771	791	711	720
	F	735	732	744	727	753	719	704	648	678	698
45 - 49	M	957	975	952	946	914	893	885	920	946	928
	F	770	785	787	744	751	802	768	782	807	847
50 - 54	M	1 281	1 181	1 215	1 250	1 161	1 170	1 152	1 147	1 025	1 027
	F	951	990	996	1 015	1 047	987	1 030	1 010	951	858
55 - 59	M	1 645	1 558	1 573	1 454	1 432	1 474	1 483	1 415	1 534	1 462
	F	1 342	1 315	1 325	1 260	1 271	1 203	1 210	1 203	1 280	1 353
60 - 64	M	2 185	2 184	2 159	2 222	2 259	2 196	2 198	2 196	2 124	2 146
	F	1 970	1 841	1 824	1 835	1 860	1 916	1 879	1 855	1 866	1 803
65 - 69	M	3 500	3 451	3 369	3 421	3 421	3 402	3 387	3 417	3 339	3 421
	F	3 036	2 936	2 963	3 101	2 955	2 944	3 119	3 036	3 003	2 937
70 - 74	M	5 383	5 480	5 458	5 529	5 643	5 526	5 459	5 315	4 973	5 083
	F	4 851	4 957	5 174	5 013	5 031	5 088	4 947	4 688	4 757	4 729
75 - 79	M	9 519	9 134	8 893	8 669	8 607	8 362	8 551	9 296	8 419	8 638
	F	8 692	8 425	8 200	7 822	7 654	7 695	7 846	8 851	7 892	7 815
80 - 84	M	13 624	14 074	15 020	14 407	14 510	14 557	13 783	14 468	14 332	13 712
	F	12 617	12 816	14 000	13 318	13 806	13 432	13 272	13 134	13 242	12 976
85 - 89	M	23 964	22 888	22 666	23 704	24 060	23 501	22 985	21 993	21 723	22 119
	F	22 141	21 579	21 154	22 725	21 367	20 607	20 373	20 465	19 303	19 333

1) Infant mortality per 100 000 live births
Spädbarnsdödligheten per 100 000 levande födda

Table 1 (cont.)
Tabell 1 (forts)

Age / Ålder	Sex / Kön	Year of birth - Födelseår 1871	1872	1873	1874	1875	1876	1877	1878	1879	1880
< 1	M	12 315	13 894	13 740	15 684	16 129	14 949	13 665	14 455	12 030	13 139
	F	10 373	11 693	11 971	13 600	13 597	13 041	11 376	12 323	10 168	10 945
1	M	3 286	3 499	4 454	4 598	4 709	4 800	4 612	3 952	4 255	3 998
	F	2 920	3 599	4 140	4 140	4 616	4 542	3 611	3 796	3 787	
2	M	1 976	2 698	2 725	3 120	3 390	2 980	2 712	2 632	2 507	2 513
	F	2 019	2 527	2 531	2 927	3 147	2 969	2 492	2 607	2 462	2 440
3	M	1 965	1 990	2 489	2 490	2 264	1 885	2 024	1 952	2 000	2 012
	F	2 003	1 889	2 310	2 404	2 303	1 914	1 907	1 854	1 815	2 003
4	M	1 429	2 010	1 906	1 805	1 552	1 497	1 470	1 538	1 608	1 598
	F	1 472	1 911	1 949	1 763	1 555	1 632	1 470	1 531	1 585	1 479
0 - 4	M	4 809	5 413	5 751	6 344	6 501	5 993	5 579	5 534	5 089	5 226
	F	4 214	4 741	5 122	5 565	5 695	5 396	4 839	4 837	4 430	4 544
5 - 9	M	1 054	1 038	900	911	894	895	886	862	805	751
	F	1 076	998	966	878	889	873	839	795	783	728
10 - 14	M	425	426	384	381	371	354	390	358	355	374
	F	435	432	429	406	397	380	396	369	388	395
15 - 19	M	472	439	475	456	452	455	454	459	470	478
	F	469	471	483	450	470	459	483	467	447	480
20 - 24	M	686	697	651	659	656	684	670	668	696	645
	F	600	596	543	551	549	579	562	562	601	561
25 - 29	M	677	654	680	680	642	703	634	640	616	571
	F	628	616	616	631	616	627	627	624	594	570
30 - 34	M	590	576	608	627	591	590	600	624	561	624
	F	627	635	654	597	606	579	598	554	553	576
35 - 39	M	643	630	630	653	650	653	631	615	746	763
	F	673	669	598	588	620	617	607	633	707	747
40 - 44	M	747	728	746	765	787	775	770	720	594	596
	F	716	763	685	737	760	712	731	707	631	570
45 - 49	M	924	918	897	744	716	692	685	703	794	800
	F	774	820	850	699	700	708	668	678	686	662
50 - 54	M	1 001	1 001	1 021	934	944	1 028	1 021	1 037	997	996
	F	903	924	902	899	980	953	927	933	885	840
55 - 59	M	1 432	1 428	1 465	1 450	1 403	1 388	1 382	1 438	1 439	1 403
	F	1 265	1 263	1 202	1 287	1 264	1 214	1 203	1 239	1 184	1 185
60 - 64	M	2 085	2 210	2 171	2 162	2 192	2 219	2 116	2 096	1 988	1 983
	F	1 897	1 824	1 867	1 842	1 803	1 835	1 789	1 663	1 623	1 635
65 - 69	M	3 444	3 292	3 251	3 172	3 093	3 074	3 049	3 199	3 050	3 117
	F	3 070	2 824	2 748	2 757	2 620	2 697	2 665	2 736	2 631	2 621
70 - 74	M	4 938	4 892	5 020	5 038	5 151	5 056	4 842	4 914	4 907	4 905
	F	4 421	4 531	4 721	4 608	4 617	4 531	4 482	4 332	4 338	4 224
75 - 79	M	8 467	8 376	8 508	8 265	8 265	7 977	8 135	8 076	7 919	8 047
	F	7 914	7 683	7 833	7 697	7 530	7 316	7 068	6 994	6 886	7 042
80 - 84	M	13 481	13 696	13 398	13 468	13 743	13 785	13 434	13 149	13 558	13 460
	F	12 757	12 572	12 534	11 962	11 959	12 116	12 101	12 128	11 757	11 383
85 - 89	M	23 783	21 609	22 177	21 009	21 530	21 518	21 011			
	F	20 249	20 165	19 985	19 509	19 106	18 857	18 681			

Table 1 (cont.)
Tabell 1 (forts)

Age / Ålder	Sex / Kön	Year of birth - Födelseår 1881	1882	1883	1884	1885	1886	1887	1888	1889	1890
< 1	M	12 124	13 383	12 618	12 356	12 441	12 148	11 200	10 953	11 487	11 291
	F	10 372	11 486	10 454	10 220	10 365	10 040	9 372	9 069	9 924	9 279
1	M	4 266	4 167	3 697	4 081	3 514	3 555	3 157	2 765	3 399	3 585
	F	3 886	3 622	3 495	3 865	3 326	3 219	2 939	2 723	3 339	3 233
2	M	2 485	2 349	2 522	2 255	2 084	1 753	1 656	2 297	2 076	1 938
	F	2 430	2 241	2 543	2 127	2 016	1 841	1 613	2 039	1 999	1 682
3	M	1 896	1 807	1 628	1 609	1 323	1 234	1 719	1 650	1 401	1 597
	F	1 818	1 816	1 527	1 521	1 347	1 342	1 709	1 521	1 335	1 420
4	M	1 442	1 315	1 249	1 011	1 005	1 379	1 210	1 188	1 200	1 101
	F	1 439	1 273	1 224	1 002	1 007	1 353	1 205	1 145	1 311	1 081
0 - 4	M	5 016	5 218	4 878	4 841	4 571	4 537	4 219	4 134	4 088	4 395
	F	4 388	4 548	4 218	4 163	3 959	3 923	3 665	3 563	3 882	3 686
5 - 9	M	677	642	598	656	686	654	678	631	567	527
	F	682	642	626	656	704	668	671	645	576	532
10 - 14	M	378	356	332	351	316	341	336	310	336	337
	F	378	367	375	379	369	384	388	394	425	386
15 - 19	M	459	472	484	488	454	478	482	474	465	437
	F	476	495	521	502	503	513	478	478	490	452
20 - 24	M	658	654	672	648	619	636	641	603	644	626
	F	564	563	528	577	565	545	529	532	511	526
25 - 29	M	567	591	620	598	556	584	608	700	887	917
	F	579	577	547	557	574	549	585	571	759	787
30 - 34	M	607	583	622	808	824	808	865	776	460	457
	F	561	575	584	747	770	750	727	693	493	435
35 - 39	M	765	783	730	514	453	461	473	441	480	466
	F	698	717	677	536	499	494	467	465	457	460
40 - 44	M	570	522	514	576	569	588	591	564	525	525
	F	574	543	568	546	519	542	545	493	497	485
45 - 49	M	750	769	776	712	686	713	672	673	698	679
	F	702	685	661	640	646	624	637	631	608	584
50 - 54	M	950	973	996	952	999	1 009	927	919	871	842
	F	856	837	860	847	808	823	805	711	734	701
55 - 59	M	1 449	1 386	1 414	1 265	1 305	1 251	1 260	1 266	1 259	1 208
	F	1 175	1 144	1 055	1 058	1 025	984	1 006	979	982	992
60 - 64	M	1 941	1 986	1 950	1 907	1 939	1 939	1 914	1 923	1 917	1 872
	F	1 590	1 563	1 582	1 554	1 614	1 474	1 463	1 496	1 439	1 395
65 - 69	M	3 078	3 146	3 040	3 037	2 996	2 947	2 989	3 004	2 920	3 008
	F	2 541	2 601	2 522	2 367	2 401	2 342	2 288	2 282	2 207	2 230
70 - 74	M	4 975	4 858	5 001	4 801	4 864	4 820	4 921	4 927	4 930	4 966
	F	4 204	4 237	4 124	3 945	3 877	3 901	3 838	3 749	3 652	3 619
75 - 79	M	8 118	8 155	8 144	8 003	8 096	8 088	8 136			
	F	6 988	6 939	6 844	6 613	6 459	6 379	6 282			
80 - 84	M	13 482	13 140								
	F	11 328	11 167								

Table 1 (cont.)
Tabell 1 (forts)

Age / Ålder	Sex / Kön	Year of birth - Födelseår									
		1891	1892	1893	1894	1895	1896	1897	1898	1899	1900
<1	M	11 893	12 043	10 900	10 950	10 265	11 561	10 078	11 041	11 494	10 985
	F	9 630	9 734	9 291	9 190	8 567	9 599	8 497	9 307	9 669	8 844
1	M	3 282	3 025	2 851	2 645	3 021	2 683	2 940	3 199	2 870	2 862
	F	3 177	2 812	2 823	2 467	2 944	2 499	2 833	3 029	2 759	2 672
2	M	2 094	1 759	1 381	1 460	1 357	1 505	1 628	1 483	1 402	1 405
	F	1 802	1 730	1 401	1 451	1 237	1 495	1 679	1 425	1 405	1 294
3	M	1 436	1 048	1 063	975	1 189	1 254	1 106	1 147	878	898
	F	1 534	1 082	1 055	941	1 007	1 174	1 005	998	931	775
4	M	830	822	807	787	1 011	947	789	732	641	748
	F	981	874	812	787	921	810	855	731	655	793
0 - 4	M	4 430	4 134	3 810	3 719	3 671	3 993	3 620	3 905	3 903	3 772
	F	3 772	3 505	3 364	3 228	3 155	3 393	3 213	3 372	3 402	3 133
5 - 9	M	540	512	532	513	497	460	420	423	406	367
	F	572	531	543	518	495	493	489	421	398	353
10 - 14	M	333	290	314	305	264	248	252	254	266	249
	F	384	357	350	338	324	295	278	279	271	290
15 - 19	M	408	420	413	456	465	462	465	490	620	608
	F	443	451	429	428	444	445	428	485	645	590
20 - 24	M	679	648	721	1 021	967	900	817	848	585	526
	F	524	532	548	737	747	684	652	606	446	438
25 - 29	M	949	867	846	531	485	464	448	432	458	459
	F	771	775	688	446	442	415	424	425	418	419
30 - 34	M	433	409	425	435	453	428	421	423	382	389
	F	439	437	436	435	421	436	412	434	380	356
35 - 39	M	456	493	462	460	386	420	418	433	419	384
	F	437	436	406	448	383	410	387	359	360	341
40 - 44	M	507	512	485	516	511	489	464	432	428	382
	F	455	458	459	442	437	412	387	365	357	327
45 - 49	M	676	590	626	637	567	552	552	547	502	510
	F	569	533	508	494	458	470	488	450	438	432
50 - 54	M	851	806	823	808	845	738	735	785	715	682
	F	684	649	667	639	655	608	617	606	538	559
55 - 59	M	1 249	1 191	1 183	1 154	1 176	1 169	1 119	1 119	1 125	1 143
	F	932	898	902	865	924	815	806	765	742	736
60 - 64	M	1 817	1 853	1 860	1 875	1 833	1 799	1 845	1 803	1 863	1 862
	F	1 340	1 295	1 302	1 264	1 219	1 199	1 187	1 162	1 104	1 125
65 - 69	M	2 955	3 026	2 966	2 994	2 973	2 994	3 095			
	F	2 093	2 010	2 004	1 946	1 943	1 914	1 952			
70 - 74	M	4 939	4 837								
	F	3 452	3 319								

Table 1 (cont.)
Tabell 1 (forts)

Age / Ålder	Sex / Kön	Year of birth - Födelseår 1901	1902	1903	1904	1905	1906	1907	1908	1909	1910
<1	M	10 627	9 831	9 590	9 500	9 291	8 944	8 548	8 993	7 710	8 359
	F	8 747	8 012	7 867	7 934	7 507	7 301	7 011	7 583	6 333	6 616
1	M	2 875	2 449	2 417	2 145	1 931	2 139	2 107	1 783	1 954	1 888
	F	2 576	2 320	2 154	2 059	1 875	1 930	1 810	1 658	1 879	1 679
2	M	1 227	1 173	993	959	953	919	855	884	826	837
	F	1 136	1 135	1 006	837	868	894	761	792	795	815
3	M	937	806	622	678	581	581	615	638	535	535
	F	914	755	640	630	639	576	696	559	531	560
4	M	663	524	438	455	459	484	477	434	431	436
	F	647	521	443	486	446	481	334	474	398	496
0 - 4	M	3 607	3 261	3 099	3 000	2 892	2 838	2 730	2 780	2 476	2 644
	F	3 044	2 754	2 622	2 575	2 427	2 393	2 266	2 381	2 116	2 184
5 - 9	M	350	319	341	303	338	330	304	317	360	368
	F	329	306	315	326	312	319	317	318	347	366
10 - 14	M	247	258	252	289	300	298	280	252	223	204
	F	306	282	288	324	334	314	314	291	227	210
15 - 19	M	522	492	450	376	343	352	329	333	327	309
	F	547	522	449	359	349	333	314	315	332	316
20 - 24	M	508	465	498	455	477	429	400	405	374	373
	F	441	422	392	415	454	407	380	380	370	347
25 - 29	M	443	416	401	368	351	381	333	319	307	300
	F	413	429	380	373	401	337	305	314	303	278
30 - 34	M	329	361	331	329	324	306	283	266	274	261
	F	332	325	322	311	302	276	260	246	233	228
35 - 39	M	335	323	316	331	315	290	308	276	276	259
	F	306	290	300	257	266	259	262	243	215	223
40 - 44	M	389	373	356	351	332	299	300	280	297	268
	F	359	314	343	294	285	255	247	227	229	210
45 - 49	M	491	472	445	448	448	427	421	404	423	415
	F	394	377	382	349	337	340	325	314	313	293
50 - 54	M	693	685	692	636	673	656	635	655	640	610
	F	531	518	470	471	468	449	454	437	440	436
55 - 59	M	1 125	1 088	1 060	1 121	1 094	1 061	1 095			
	F	720	716	700	669	643	640	625			
60 - 64	M	1 822	1 801								
	F	1 044	998								

Table 1 (cont.)
Tabell 1 (forts)

Age / Ålder	Sex / Kön	Year of birth - Födelseår									
		1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
<1	M	7 823	7 744	7 475	8 468	7 890	7 555	6 742	8 069	7 252	7 368
	F	6 262	6 248	6 221	6 739	6 348	6 054	5 391	6 409	5 811	5 617
1	M	1 803	1 611	1 791	1 903	1 786	1 319	2 236	1 646	1 368	1 261
	F	1 659	1 506	1 555	1 721	1 744	1 235	2 160	1 408	1 211	1 071
2	M	699	717	745	780	755	1 223	893	623	543	496
	F	678	762	773	740	695	1 274	884	631	506	476
3	M	547	554	598	596	1 010	679	485	393	313	348
	F	553	540	543	559	971	632	440	372	291	267
4	M	466	466	466	865	632	430	374	289	300	312
	F	474	467	473	864	578	386	340	266	245	251
0 - 4	M	2 443	2 385	2 374	2 719	2 582	2 395	2 185	2 383	2 095	2 120
	F	2 040	2 013	2 023	2 251	2 179	2 019	1 936	1 931	1 705	1 635
5 - 9	M	385	384	375	271	221	200	189	199	187	204
	F	378	363	353	276	211	195	183	174	183	192
10 - 14	M	185	173	173	169	164	170	158	159	148	141
	F	198	178	178	175	185	166	158	159	152	145
15 - 19	M	317	296	286	272	266	248	245	253	234	235
	F	315	327	301	276	256	236	233	230	208	187
20 - 24	M	353	329	350	352	326	334	313	321	299	332
	F	325	327	324	272	260	248	212	192	202	196
25 - 29	M	297	279	279	268	280	259	229	239	229	215
	F	261	239	224	221	216	203	197	187	182	139
30 - 34	M	257	252	235	248	207	179	166	167	165	153
	F	241	213	205	186	166	165	139	117	115	112
35 - 39	M	213	214	218	198	194	192	193	198	174	169
	F	208	180	157	147	148	146	138	134	127	126
40 - 44	M	282	272	259	253	249	244	216	230	242	241
	F	219	208	202	208	185	178	187	187	164	174
45 - 49	M	398	378	395	386	391	387	416			
	F	291	301	280	280	285	262	257			
50 - 54	M	670	660								
	F	377	415								

Table 1 (cont.)
Tabell 1 (forts)

Age Ålder	Sex Ålder	Year of birth - Födelseår 1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
<1	M	6 620	6 659	6 407	6 434	6 295	6 268	6 575	6 484	6 257	6 682
	F	5 369	5 303	4 974	4 934	4 851	5 019	5 191	5 078	4 563	5 109
1	M	1 138	1 278	1 324	1 038	1 060	1 299	1 058	869	832	841
	F	967	1 050	1 024	955	913	1 122	973	706	797	798
2	M	505	549	468	488	433	486	442	381	352	323
	F	476	455	444	411	504	400	338	408	375	307
3	M	351	360	267	319	310	246	266	250	244	258
	F	348	267	330	314	266	265	251	217	235	198
4	M	267	260	294	244	261	234	201	181	182	245
	F	251	264	249	220	206	214	164	157	158	187
0 - 4	M	1 895	1 945	1 866	1 814	1 769	1 816	1 820	1 737	1 669	1 777
	F	1 399	1 382	1 354	1 432	1 412	1 494	1 454	1 377	1 278	1 383
5 - 9	M	209	202	181	160	167	153	163	162	146	141
	F	178	172	171	144	126	133	124	125	148	119
10 - 14	M	147	127	153	122	138	110	95	95	102	99
	F	125	113	119	122	110	107	87	76	70	72
15 - 19	M	210	205	207	176	198	182	161	157	147	129
	F	180	170	160	146	159	157	141	122	105	80
20 - 24	M	287	302	271	246	218	185	157	142	132	142
	F	200	203	183	164	150	110	89	72	61	67
25 - 29	M	166	146	155	136	141	129	119	145	110	110
	F	131	113	89	77	83	76	69	67	61	68
30 - 34	M	161	146	147	158	134	146	148	131	132	127
	F	109	93	89	86	75	72	81	75	67	81
35 - 39	M	170	166	183	172	179	191	180			
	F	125	123	118	107	113	103	117			
40 - 44	M	250	243								
	F	161	160								

Table 1 (cont.)
Tabell 1 (forts)

Age	Sex	Year of birth - Födelseår									
Ålder	Kön	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
< 1	M	5 793	5 734	5 329	5 407	5 139	4 943	5 001	4 779	4 506	4 309
	F	4 432	4 473	3 905	4 182	3 933	3 804	3 818	3 545	3 399	3 392
1	M	818	761	689	651	756	662	517	506	444	447
	F	720	595	540	590	563	462	451	373	383	333
2	M	330	284	341	408	368	321	241	210	230	245
	F	335	260	288	247	326	239	214	196	186	186
3	M	245	282	293	245	192	179	178	231	186	218
	F	184	179	214	197	156	126	150	139	143	173
4	M	184	220	218	189	138	156	135	95	180	170
	F	151	157	169	133	120	104	131	128	156	141
0 - 4	M	1 556	1 537	1 447	1 455	1 395	1 312	1 273	1 219	1 159	1 119
	F	1 212	1 180	1 066	1 115	1 065	981	987	906	881	874
5 - 9	M	142	123	124	117	128	121	115	119	100	91
	F	106	92	85	92	89	80	92	72	68	55
10 - 14	M	102	93	77	74	66	58	62	52	49	61
	F	77	69	69	53	52	42	42	39	38	37
15 - 19	M	113	110	109	107	90	105	96	109	93	102
	F	72	55	59	41	44	48	45	39	44	43
20 - 24	M	142	130	110	125	112	110	113	106	111	118
	F	68	49	61	44	49	49	45	45	46	45
25 - 29	M	126	123	109	113	108	112	111			
	F	60	64	65	60	63	56	50			
30 - 34	M	134	123								
	F	73	84								

Age	Sex	Year of birth - Födelseår									
Ålder	Kön	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950
< 1	M	3 974	3 290	3 384	3 560	3 148	2 915	2 765	2 689	2 556	2 343
	F	3 216	2 417	2 540	2 760	2 380	2 377	2 149	1 919	1 935	1 842
1	M	387	353	410	279	256	240	200	227	196	209
	F	296	254	355	261	175	197	170	156	179	184
2	M	280	260	187	170	154	136	147	141	159	124
	F	220	196	167	145	144	111	85	124	111	93
3	M	217	154	147	153	121	125	126	97	94	95
	F	188	110	84	130	98	108	88	84	62	82
4	M	135	111	105	116	102	101	107	82	86	91
	F	101	98	66	81	62	59	65	48	50	55
0 - 4	M	1 036	857	856	881	786	720	684	663	631	583
	F	828	627	652	691	590	580	520	522	475	458
5 - 9	M	79	71	75	69	76	72	58	64	65	53
	F	49	48	36	33	49	38	39	36	37	39
10 - 14	M	42	46	51	42	24	39	45	34	43	34
	F	29	34	33	23	27	31	28	26	23	29
15 - 19	M	96	97	93	96	98	88	84			
	F	45	41	40	36	41	43	42			
20 - 24	M	116	108								
	F	44	45								

Table 1 (cont.)
Tabell 1 (forts)

Age / Ålder	Sex / Kön	Year of birth - Födelseår									
		1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
<1	M	2 419	2 175	2 148	2 097	1 965	1 874	2 012	1 759	1 870	1 889
	F	1 840	1 718	1 630	1 528	1 513	1 538	1 558	1 322	1 348	1 430
1	M	169	189	146	169	144	158	141	108	161	111
	F	164	155	128	118	107	148	107	117	142	71
2	M	110	123	113	109	105	89	98	84	107	93
	F	98	92	86	94	74	70	66	58	58	67
3	M	90	96	97	103	94	82	80	78	56	79
	F	75	55	46	75	60	49	62	54	68	43
4	M	78	74	88	94	59	89	41	47	56	54
	F	59	48	46	44	54	60	66	34	60	36
0 - 4	M	586	543	528	523	480	467	485	422	455	451
	F	455	420	393	376	366	378	378	320	338	332
5 - 9	M	52	59	54	48	53	49	47			
	F	32	29	37	31	37	34	34			
10 - 14	M	35	42								
	F	28	26								

Age / Ålder	Sex / Kön	Year of birth - Födelseår					
		1961	1962	1963	1964	1965	1966
<1	M	1 823	1 787	1 680	1 606	1 452	1 439
	F	1 359	1 334	1 303	1 266	1 167	1 060
1	M	129	87	88	111	88	
	F	88	91	92	62	66	
2	M	76	57	97	48		
	F	56	56	48	42		
3	M	81	55	67			
	F	34	48	24			
4	M	60	62				
	F	47	57				
0 - 4	M	440	414				
	F	320	320				

Table 2. MORTALITY WITHIN THE YEARS 1861 - 1967 OF COHORTS BORN 1781 - 1860
Central death rates by sex and age per 100 000 mean population
Tabell 2. DÖDLIGHETEN UNDER ÅREN 1861 - 1967 FÖR KOHORTER FÖDDA 1781 - 1860
Centrala dödskvoter efter kön och ålder per 100 000 av medelfolkmängden

Age	Sex	Year of birth - Födelseår									
Ålder	Kön	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790
75 - 79	M						12 734	12 215	12 732	13 853	13 666
	F						11 481	11 186	11 536	11 510	11 591
80 - 89	M	20 536	20 731	20 623	21 745	21 297	21 395	17 761	17 737	21 724	19 570
	F	17 731	17 568	16 799	18 756	18 009	19 937	23 274	21 412	17 158	16 506
85 - 89	M	40 000	36 105	27 826	31 221	29 123	32 150	28 617	30 299	38 263	37 531
	F	29 412	32 509	28 181	28 557	27 376	27 026	26 596	26 639	27 589	27 595

Age	Sex	Year of birth - Födelseår									
Ålder	Kön	1791	1792	1793	1794	1795	1796	1797	1798	1799	1800
65 - 69	M						5 003	5 203	5 264	5 782	5 865
	F						4 468	4 464	4 552	4 661	4 568
70 - 74	M	7 800	8 092	8 026	8 881	9 351	8 645	9 248	8 784	8 195	8 135
	F	6 795	6 996	7 277	6 989	6 996	7 430	7 691	7 590	7 089	6 920
75 - 79	M	13 544	14 339	13 300	13 483	12 431	11 423	12 235	12 398	11 931	12 158
	F	12 062	11 744	10 897	10 977	10 594	10 319	10 418	10 453	9 920	9 895
80 - 84	M	18 891	19 478	18 532	19 538	18 526	17 181	18 186	18 619	18 718	18 484
	F	15 855	16 408	15 485	16 896	15 894	14 975	15 244	15 303	15 342	15 609
85 - 89	M	27 817	26 921	26 620	29 856	29 008	28 318	28 681	26 876	27 473	28 718
	F	24 711	22 188	24 141	23 613	24 944	23 478	25 223	24 924	21 709	25 155

Age	Sex	Year of birth - Födelseår									
Ålder	Kön	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810
55 - 59	M						2 529	2 641	2 580	2 633	2 690
	F						2 055	2 063	1 975	1 990	2 141
60 - 64	M	3 941	3 704	3 617	3 933	3 851	3 831	4 088	3 878	3 533	3 425
	F	3 220	2 865	3 008	3 031	3 036	3 231	3 153	3 155	2 909	2 840
65 - 69	M	6 203	5 955	5 425	5 420	5 077	4 957	5 108	4 876	4 975	4 645
	F	5 680	4 834	4 717	4 400	4 236	4 331	4 205	4 244	3 825	3 764
70 - 74	M	8 646	7 121	7 433	7 395	7 382	7 182	7 051	7 026	6 744	7 020
	F	7 175	6 368	6 234	6 387	6 091	6 054	5 927	5 904	5 904	5 829
75 - 79	M	12 988	11 030	10 562	10 896	11 140	10 944	10 916	10 904	10 584	10 377
	F	10 930	9 516	9 209	9 770	9 508	9 513	9 163	9 590	9 225	8 923
80 - 84	M	20 255	17 035	17 915	17 758	15 992	18 024	17 831	17 056	17 033	17 203
	F	15 928	14 358	14 398	15 344	14 305	14 371	14 982	15 109	14 744	14 983
85 - 89	M	36 593	26 267	24 940	27 393	27 167	29 435	29 386	27 452	20 804	26 468
	F	28 062	23 297	21 173	23 120	25 159	25 510	24 299	23 115	23 830	22 613

Table 2 (cont.)
Tabell 2 (forts)

Age / Ålder	Sex / Kön	Year of birth - Födelseår									
		1811	1812	1813	1814	1815	1816	1817	1818	1819	1820
45 - 49	M						1 421	1 457	1 443	1 528	1 561
	F						1 121	1 071	1 036	1 142	1 142
50 - 54	M	1 986	1 809	1 945	1 925	1 994	2 216	2 100	1 982	1 960	1 804
	F	1 420	1 465	1 422	1 466	1 495	1 578	1 463	1 443	1 438	1 378
55 - 59	M	2 901	2 922	2 720	2 438	2 450	2 505	2 400	2 361	2 342	2 188
	F	2 354	2 125	2 020	1 926	1 888	1 841	1 812	1 806	1 773	1 594
60 - 64	M	3 538	3 423	3 425	3 194	3 044	3 068	2 918	2 919	2 965	2 779
	F	2 712	2 666	2 757	2 563	2 589	2 469	2 490	2 406	2 428	2 338
65 - 69	M	4 575	4 684	4 435	4 269	4 422	4 307	4 266	4 183	4 180	3 851
	F	3 947	3 699	3 635	3 656	3 755	3 649	3 664	3 583	3 629	3 435
70 - 74	M	7 074	6 592	6 452	6 548	6 314	6 354	6 236	6 764	6 575	6 236
	F	5 893	5 784	5 649	5 762	5 440	5 539	5 652	5 972	6 182	5 699
75 - 79	M	10 292	10 429	10 460	10 521	10 831	10 735	10 653	9 880	9 742	9 741
	F	8 866	8 912	9 448	9 321	9 444	9 459	9 478	8 896	8 714	8 771
80 - 84	M	17 714	17 185	16 007	15 556	17 367	16 892	18 191	16 892	15 575	15 541
	F	15 392	15 331	14 692	13 974	14 627	13 874	14 506	14 838	13 828	13 904
85 - 89	M	25 702	25 253	28 867	26 732	24 939	25 090	25 833	27 278	26 684	25 632
	F	21 243	22 715	24 293	22 593	21 550	21 888	24 057	22 605	22 964	21 942

Age / Ålder	Sex / Kön	Year of birth - Födelseår									
		1821	1822	1823	1824	1825	1826	1827	1828	1829	1830
35 - 39	M						953	966	917	1 016	996
	F						797	832	814	895	871
40 - 44	M	1 140	1 142	1 127	1 200	1 243	1 307	1 291	1 171	1 171	1 181
	F	938	966	950	1 037	1 052	1 067	1 019	990	1 026	989
45 - 49	M	1 650	1 595	1 504	1 486	1 358	1 500	1 456	1 432	1 418	1 221
	F	1 255	1 176	1 095	1 128	1 075	1 043	1 014	996	1 040	934
50 - 54	M	1 751	1 781	1 811	1 793	1 662	1 575	1 515	1 474	1 585	1 550
	F	1 358	1 381	1 309	1 333	1 218	1 188	1 161	1 128	1 265	1 176
55 - 59	M	2 168	2 103	2 070	2 107	2 055	2 057	2 087	1 919	1 887	1 866
	F	1 670	1 630	1 553	1 599	1 553	1 567	1 602	1 482	1 535	1 445
60 - 64	M	2 938	2 754	2 688	2 730	2 737	2 748	2 708	2 748	2 861	2 674
	F	2 466	2 344	2 193	2 248	2 252	2 246	2 192	2 274	2 319	2 264
65 - 69	M	4 003	4 098	4 093	4 013	4 138	4 154	4 418	3 772	3 734	3 901
	F	3 564	3 468	3 648	3 621	3 559	3 525	3 469	3 202	3 211	3 256
70 - 74	M	6 272	6 094	5 924	6 037	6 028	6 033	6 231	6 121	5 932	5 747
	F	5 590	5 560	5 251	5 090	5 383	5 324	5 412	5 273	5 260	4 987
75 - 79	M	9 558	10 235	10 057	9 624	9 590	8 868	9 226	9 714	9 671	9 138
	F	8 593	8 671	8 727	8 840	8 693	8 498	8 210	8 597	8 626	8 192
80 - 89	M	15 081	15 561	15 689	15 413	14 968	15 453	15 005	14 745	15 015	14 987
	F	13 726	14 123	13 864	14 060	14 059	14 005	13 695	13 713	13 882	13 914
85 - 89	M	25 249	24 611	24 453	24 826	25 721	24 653	26 046	26 200	25 630	26 256
	F	23 356	23 963	22 044	22 464	22 075	22 769	23 039	23 738	23 986	21 573

Table 2 (cont.)
Tabell 2 (forts)

Age	Sex	Year of birth - Födelseår									
Ålder	Kön	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840
25 - 29	M						664	756	715	776	762
	F						555	580	611	606	675
30 - 34	M	774	785	787	845	857	903	806	831	832	891
	F	707	690	686	717	730	759	757	731	726	744
35 - 39	M	1 052	961	962	984	1 026	956	1 031	995	927	903
	F	945	869	827	811	840	863	947	853	855	832
40 - 44	M	1 209	1 091	1 222	1 170	1 109	991	982	961	923	986
	F	936	940	940	928	870	816	840	831	793	902
45 - 49	M	1 239	1 212	1 138	1 192	1 152	1 169	1 232	1 151	1 119	1 212
	F	983	879	895	927	967	926	899	899	863	800
50 - 54	M	1 586	1 462	1 448	1 423	1 472	1 344	1 392	1 414	1 402	1 507
	F	1 166	1 103	1 105	1 125	1 059	1 088	1 077	1 112	1 092	1 094
55 - 59	M	1 937	1 811	2 019	1 973	1 934	1 873	1 896	1 812	1 728	1 770
	F	1 537	1 479	1 507	1 588	1 525	1 473	1 412	1 438	1 356	1 359
60 - 64	M	2 691	2 525	2 478	2 579	2 536	2 644	2 569	2 566	2 473	2 493
	F	2 191	2 167	2 144	2 105	1 957	1 985	2 043	2 052	1 989	1 984
65 - 69	M	3 874	3 693	3 839	3 821	3 728	3 635	3 621	3 685	3 516	3 479
	F	3 182	3 175	3 252	3 072	3 079	3 065	3 072	3 082	3 042	2 970
70 - 74	M	5 822	5 785	5 812	5 521	5 661	5 621	5 623	5 668	5 671	5 655
	F	5 007	5 011	5 137	4 973	4 895	4 827	4 932	5 080	4 836	4 946
75 - 79	M	9 244	8 915	9 241	9 188	9 301	9 273	9 159	9 462	9 667	9 358
	F	8 262	8 498	8 199	8 320	8 892	8 416	8 324	8 267	8 496	8 028
80 - 84	M	15 589	15 377	15 964	15 410	14 901	15 253	15 298	15 187	13 795	14 363
	F	14 047	13 550	14 272	14 360	13 492	13 820	14 066	13 419	13 422	13 611
85 - 89	M	24 903	24 385	24 760	23 594	23 882	24 275	24 692	23 518	22 912	24 944
	F	21 861	21 021	22 048	22 552	22 398	22 899	21 206	23 070	21 412	23 457

Table 2 (cont.)
Tabell 2 (forts)

Age	Sex	Year of birth - Födelseår									
Ålder	Kön	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850
15 - 19	M						498	515	499	472	547
	F						406	428	447	465	511
20 - 24	M	658	696	630	741	723	732	673	659	747	758
	F	529	502	475	543	607	579	566	571	520	531
25 - 29	M	773	744	712	742	797	798	773	814	810	721
	F	665	616	651	645	690	676	728	753	710	659
30 - 34	M	878	887	844	864	766	713	752	776	695	721
	F	706	789	729	792	677	699	697	663	651	698
35 - 39	M	851	814	827	814	810	743	781	789	722	771
	F	758	781	722	742	742	753	765	775	710	774
40 - 44	M	997	1 005	929	934	931	891	906	868	923	911
	F	858	849	758	841	809	810	831	797	787	864
45 - 49	M	1 086	1 108	1 090	1 088	1 166	1 059	1 049	1 055	1 030	1 070
	F	924	865	909	963	892	882	859	852	795	893
50 - 54	M	1 398	1 414	1 321	1 271	1 360	1 356	1 355	1 351	1 350	1 372
	F	1 136	1 111	998	1 077	1 094	1 067	1 086	1 114	1 071	1 055
55 - 59	M	1 778	1 812	1 813	1 695	1 724	1 799	1 688	1 709	1 740	1 691
	F	1 401	1 367	1 370	1 415	1 428	1 373	1 337	1 316	1 370	1 346
60 - 64	M	2 414	2 493	2 452	2 504	2 452	2 386	2 274	2 396	2 390	2 347
	F	2 016	2 067	1 976	1 968	1 841	1 925	1 847	1 930	1 961	1 888
65 - 69	M	3 699	3 613	3 618	3 530	3 623	3 563	3 669	3 606	3 667	3 517
	F	3 015	2 961	3 021	2 967	3 119	3 179	3 079	3 043	3 054	3 069
70 - 74	M	5 891	5 915	5 755	5 729	5 684	5 608	5 571	5 634	5 335	5 156
	F	5 037	5 151	4 924	5 206	5 144	5 046	5 175	5 103	4 861	4 788
75 - 79	M	8 905	9 375	9 095	8 614	8 627	8 842	8 740	8 760	8 737	9 101
	F	8 309	8 672	8 287	8 169	8 097	8 321	8 465	8 198	8 029	8 370
80 - 84	M	14 107	14 597	14 490	14 940	14 868	15 195	15 056	14 856	14 780	14 753
	F	13 725	13 154	13 488	13 567	13 646	14 265	14 068	13 967	13 669	14 642
85 - 89	M	26 133	24 289	23 748	24 157	24 202	24 310	23 564	24 390	24 708	24 531
	F	22 517	23 101	22 339	23 046	23 541	22 861	22 292	21 770	23 691	24 355

Table 2 (cont.)
Tabell 2 (forts)

Age / Ålder	Sex / Kön	Year of birth - Födelseår 1851	1852	1853	1854	1855	1856	1857	1858	1859	1860
5 - 9	M						902	993	971	950	949
	F						913	972	924	853	910
10 - 14	M	461	507	438	431	453	438	400	428	364	391
	F	448	426	407	453	423	406	415	413	392	380
15 - 19	M	510	492	469	461	422	457	447	494	444	495
	F	491	467	411	435	439	425	421	440	486	459
20 - 24	M	762	776	755	693	678	642	629	637	672	687
	F	586	613	575	593	548	534	511	532	498	544
25 - 29	M	720	698	672	696	672	689	655	706	682	642
	F	625	612	610	605	619	625	600	611	593	557
30 - 34	M	728	709	682	601	655	665	691	649	700	657
	F	697	672	627	715	645	671	627	684	651	659
35 - 39	M	750	773	751	780	773	770	714	737	670	823
	F	734	793	740	728	720	749	708	715	726	699
40 - 44	M	895	867	870	834	874	860	866	899	812	872
	F	812	793	737	767	792	743	772	784	764	708
45 - 49	M	1 023	1 136	1 040	1 076	1 047	977	968	992	1 023	997
	F	823	867	820	779	793	861	837	908	807	825
50 - 54	M	1 318	1 319	1 310	1 265	1 256	1 261	1 264	1 242	1 223	1 173
	F	1 032	995	1 024	994	1 001	992	990	977	965	963
55 - 59	M	1 685	1 677	1 696	1 694	1 668	1 721	1 679	1 681	1 689	1 575
	F	1 286	1 317	1 363	1 310	1 301	1 276	1 292	1 303	1 378	1 343
60 - 64	M	2 388	2 386	2 424	2 392	2 382	2 341	2 232	2 254	2 207	2 178
	F	1 965	1 940	1 915	1 955	1 951	1 892	1 956	1 928	1 845	1 812
65 - 69	M	3 559	3 442	3 468	3 330	3 243	3 388	3 277	3 450	3 386	3 338
	F	3 078	3 085	3 032	3 002	2 904	2 925	2 840	3 038	2 924	3 146
70 - 74	M	5 282	5 385	5 321	5 341	5 481	5 567	5 500	5 383	5 303	5 314
	F	4 605	4 699	4 994	4 799	4 856	5 075	4 997	4 972	5 010	5 067
75 - 79	M	8 922	9 260	8 986	8 939	8 844	8 917	8 919	9 113	9 112	9 355
	F	8 571	8 376	8 588	8 237	8 630	8 410	8 606	8 661	8 453	8 612
80 - 84	M	14 636	14 601	14 562	15 589	15 475	15 464	15 867	14 636	14 753	13 990
	F	13 567	13 543	13 673	13 901	14 687	14 645	14 535	13 948	13 676	13 124
85 - 89	M	24 522	24 305	24 439	25 098	23 879	22 231	22 447	24 623	22 988	23 436
	F	22 473	23 847	22 041	22 462	21 489	20 268	20 621	21 105	22 579	22 830

Table 3. PERIOD MORTALITY IN THE YEARS 1901 - 1967. Central death rates by age and sex per 100 000 mean population

Tabell 3. PERIODDÖDLIGHETEN UNDER ÅREN 1901 - 1967. Centrala dödskvoter efter ålder och kön per 100 000 av medelfolkängden

Age Ålder	Sex Kön	Calendar year - Kalenderår 1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915
0 - 4	M	3 937	3 343	3 460	3 075	3 216	2 842	2 751	2 972	2 510	2 626	2 490	2 457	2 288	2 389	2 464
	F	3 379	2 877	2 871	2 646	2 725	2 453	2 286	2 558	2 120	2 184	2 064	2 073	1 955	2 013	2 069
5 - 9	M	546	461	431	432	471	405	355	342	308	308	341	336	318	316	303
	F	582	463	458	422	506	381	347	330	287	311	345	333	306	292	300
10 - 14	M	356	308	294	323	357	286	244	266	228	267	268	258	225	246	254
	F	413	371	364	363	417	330	309	292	266	280	280	300	254	286	290
15 - 19	M	467	458	480	478	528	455	435	432	414	403	454	462	430	442	475
	F	525	486	464	489	516	480	484	458	417	423	431	428	420	440	471
20 - 24	M	695	674	637	680	674	643	652	616	607	633	641	658	627	619	774
	F	586	542	539	562	576	579	571	553	508	551	490	536	483	523	574
25 - 29	M	690	648	607	642	649	618	618	607	571	580	605	564	572	616	622
	F	646	623	610	598	611	627	588	576	563	573	550	536	573	566	586
30 - 34	M	619	608	613	601	645	561	612	602	564	612	585	642	587	606	620
	F	680	633	609	643	648	623	599	562	597	577	573	540	546	602	619
35 - 39	M	689	686	683	676	745	652	656	626	613	637	659	654	651	650	639
	F	670	691	658	684	723	675	685	683	650	602	621	592	595	620	647
40 - 44	M	840	799	803	826	850	803	804	813	788	734	710	750	747	728	748
	F	783	721	705	738	786	705	719	744	674	675	748	682	672	697	743
45 - 49	M	1 043	1 025	1 032	967	1 069	947	986	945	955	965	952	950	902	911	959
	F	836	853	820	842	856	820	869	821	763	782	750	779	757	764	824
50 - 54	M	1 384	1 342	1 289	1 289	1 357	1 279	1 248	1 266	1 191	1 218	1 256	1 212	1 269	1 250	1 219
	F	1 035	1 090	1 018	1 020	1 024	979	968	1 052	960	983	989	1 000	947	991	959
55 - 59	M	1 728	1 774	1 594	1 730	1 841	1 734	1 708	1 717	1 606	1 647	1 695	1 681	1 725	1 633	1 705
	F	1 409	1 373	1 343	1 373	1 457	1 301	1 341	1 338	1 317	1 333	1 256	1 326	1 270	1 245	1 374
60 - 64	M	2 415	2 524	2 428	2 512	2 502	2 425	2 417	2 436	2 326	2 350	2 350	2 413	2 395	2 367	2 497
	F	1 938	2 031	1 886	2 070	2 079	1 949	1 926	1 936	1 888	1 869	1 902	2 021	1 868	1 897	1 996
65 - 69	M	3 677	3 700	3 622	3 716	3 810	3 468	3 651	3 730	3 389	3 554	3 565	3 684	3 692	3 443	3 691
	F	2 975	3 204	2 934	3 152	3 116	2 943	2 979	3 131	3 009	3 049	2 902	3 105	3 071	3 090	3 250
70 - 74	M	5 811	5 682	5 776	6 011	5 689	5 528	5 803	5 703	5 479	5 600	5 490	6 042	5 747	5 780	6 127
	F	5 075	5 107	4 860	5 189	5 121	4 705	5 041	5 131	4 950	4 860	4 722	5 117	4 947	4 857	5 487
75 - 79	M	9 292	9 577	9 370	9 571	9 575	9 035	9 423	9 766	8 933	9 128	8 802	9 394	9 118	9 216	10 099
	F	8 624	8 655	8 404	8 687	8 672	7 720	8 663	8 903	7 949	8 096	7 955	8 659	8 207	8 378	9 202
80 -	M	18 078	18 367	17 453	18 952	18 361	17 334	18 787	19 438	17 803	18 463	17 659	18 669	18 471	18 738	20 701
	F	16 576	16 955	16 191	17 796	16 804	15 853	17 645	17 984	16 680	17 158	16 804	17 822	17 173	17 616	19 227

Table 3 (cont.)
Tabell 3 (forts)

Age / Ålder	Sex / Kön	Calendar year - Kalenderår 1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
0 - 4	M	2 326	2 167	2 423	2 476	2 417	2 165	1 941	1 699	1 854	1 644	1 615	1 786	1 780	1 694	1 590
	F	1 989	1 798	2 118	2 020	1 975	1 717	1 560	1 373	1 455	1 302	1 331	1 424	1 441	1 309	1 265
5 - 9	M	325	338	535	412	330	255	195	198	193	199	188	212	203	208	187
	F	319	311	538	401	331	256	205	185	193	159	173	201	205	180	162
10 - 14	M	244	265	434	308	257	216	178	173	182	187	164	154	163	166	158
	F	309	288	505	308	260	234	201	172	198	198	170	180	188	175	155
15 - 19	M	478	467	955	526	424	365	370	330	348	347	317	342	298	313	298
	F	489	472	973	498	424	343	352	305	351	339	311	301	323	316	317
20 - 24	M	758	710	1 767	768	718	579	492	460	479	514	473	472	431	424	397
	F	553	534	1 317	604	494	442	441	384	441	429	407	413	395	403	385
25 - 29	M	631	592	1 956	813	616	501	507	418	468	452	431	458	414	461	410
	F	561	533	1 543	679	550	460	448	406	416	400	415	454	404	427	393
30 - 34	M	553	547	1 669	790	593	517	484	431	441	409	440	453	436	441	429
	F	570	548	1 354	689	561	476	479	416	411	446	416	457	430	439	407
35 - 39	M	582	568	1 318	761	618	533	483	455	483	497	464	508	454	495	465
	F	608	606	1 137	651	605	519	543	459	447	477	446	470	429	473	449
40 - 44	M	667	654	1 125	769	675	630	608	522	550	555	555	597	569	614	585
	F	673	709	982	720	655	587	617	551	558	541	527	551	543	536	506
45 - 49	M	863	826	1 182	886	826	724	786	705	707	757	751	811	770	780	739
	F	734	760	1 037	784	741	668	759	675	650	678	679	743	670	686	658
50 - 54	M	1 137	1 152	1 384	1 157	1 111	1 048	1 060	928	994	1 011	990	1 065	974	1 023	1 008
	F	999	929	1 198	1 054	955	899	979	851	859	917	912	963	911	959	943
55 - 59	M	1 679	1 566	1 783	1 603	1 531	1 436	1 595	1 424	1 406	1 438	1 505	1 456	1 428	1 485	1 419
	F	1 271	1 303	1 529	1 388	1 271	1 224	1 335	1 134	1 264	1 232	1 211	1 305	1 240	1 277	1 217
60 - 64	M	2 244	2 295	2 551	2 329	2 197	2 191	2 218	2 132	2 187	2 154	2 163	2 272	2 220	2 266	2 182
	F	1 939	1 846	2 151	1 967	1 805	1 736	1 975	1 842	1 841	1 796	1 833	1 941	1 833	1 916	1 868
65 - 69	M	3 556	3 634	3 798	3 575	3 310	3 303	3 315	3 292	3 330	3 347	3 326	3 485	3 458	3 375	3 357
	F	2 906	2 978	3 269	3 073	2 942	2 889	3 195	2 752	2 949	2 859	2 952	3 111	3 054	3 011	2 982
70 - 74	M	5 480	5 650	5 922	5 718	5 279	5 220	5 607	5 243	5 104	5 270	5 339	5 670	5 572	5 300	5 182
	F	4 952	5 037	5 225	5 463	4 827	4 620	5 223	4 523	4 734	4 728	4 840	5 017	4 883	5 004	4 838
75 - 79	M	9 248	9 388	9 330	9 405	8 878	8 502	9 107	8 656	8 725	8 370	8 546	9 486	8 755	9 154	8 681
	F	8 085	8 121	8 035	8 556	8 162	8 146	9 100	7 660	8 122	7 696	8 009	9 127	8 243	8 643	7 991
80 -	M	18 282	19 311	18 713	18 838	18 446	17 360	19 240	17 294	18 017	17 207	17 643	20 191	18 426	18 631	17 331
	F	16 557	16 950	17 018	17 916	16 805	17 058	18 729	16 056	16 788	16 687	16 939	19 075	17 244	17 566	16 935

Table 3 (cont.)
Tabell 3 (forts)

Age / Ålder	Sex / Kön	Calendar year - Kalenderår														
		1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945
0 - 4	M	1 670	1 474	1 420	1 380	1 370	1 377	1 443	1 353	1 266	1 166	1 126	975	1 022	1 124	989
	F	1 304	1 199	1 086	1 053	1 032	1 047	1 088	1 031	938	887	910	745	771	839	767
5 - 9	M	159	160	150	164	154	165	168	140	127	114	104	108	127	150	121
	F	130	137	124	122	134	140	144	105	89	100	77	78	90	107	81
10 - 14	M	148	156	134	137	145	151	143	125	93	82	103	88	109	105	99
	F	141	144	131	127	125	134	127	108	80	85	76	63	81	81	76
15 - 19	M	287	288	239	237	247	267	247	232	195	195	202	161	186	211	200
	F	299	279	237	243	233	242	197	195	165	153	144	147	152	155	175
20 - 24	M	405	393	356	327	346	352	352	354	279	298	316	286	300	394	298
	F	411	369	319	332	292	298	286	244	226	196	214	184	196	209	226
25 - 29	M	390	383	336	334	336	323	317	305	275	284	263	256	262	298	263
	F	400	352	321	350	309	284	304	276	249	216	232	202	207	213	226
30 - 34	M	407	368	364	334	334	336	325	324	299	269	267	244	277	264	265
	F	407	378	339	314	312	352	314	286	260	249	243	233	229	243	216
35 - 39	M	461	408	406	405	420	396	388	384	331	333	337	300	319	314	303
	F	416	432	374	366	367	371	370	343	307	289	247	251	269	278	251
40 - 44	M	563	517	503	504	485	494	520	510	498	445	409	412	394	381	381
	F	547	487	428	455	457	459	446	425	402	364	353	338	360	348	330
45 - 49	M	745	734	669	690	697	682	677	669	635	646	624	564	552	569	537
	F	700	621	613	599	615	628	642	573	548	528	513	470	462	477	477
50 - 54	M	1 049	1 006	948	945	940	1 020	1 000	1 007	953	952	904	818	813	841	833
	F	935	850	847	832	809	872	858	790	808	769	748	695	665	673	685
55 - 59	M	1 447	1 372	1 369	1 411	1 429	1 459	1 473	1 434	1 373	1 405	1 353	1 238	1 207	1 331	1 259
	F	1 269	1 199	1 256	1 168	1 168	1 239	1 295	1 123	1 135	1 117	1 095	951	999	1 037	1 010
60 - 64	M	2 178	2 157	2 029	2 097	2 092	2 220	2 240	2 222	2 176	2 218	2 032	1 843	1 943	2 023	1 860
	F	1 957	1 817	1 796	1 797	1 838	1 835	1 879	1 787	1 765	1 810	1 694	1 556	1 595	1 572	1 600
65 - 69	M	3 448	3 378	3 400	3 345	3 460	3 474	3 405	3 467	3 342	3 349	3 189	2 986	2 928	3 146	3 017
	F	3 149	2 971	2 935	2 943	3 028	3 134	3 107	2 941	2 942	2 896	2 876	2 436	2 512	2 693	2 738
70 - 74	M	5 709	5 274	5 404	5 314	5 365	5 593	5 604	5 653	5 515	5 658	5 378	4 816	4 616	5 097	4 824
	F	5 363	4 896	4 774	4 828	5 060	5 147	5 267	4 924	5 139	5 133	4 988	4 263	4 267	4 624	4 646
75 - 79	M	9 478	8 806	8 668	8 714	8 976	9 420	9 326	9 211	9 251	9 428	9 135	8 078	8 174	8 625	8 490
	F	9 246	8 425	8 052	7 834	8 656	8 757	8 850	8 368	8 582	8 653	8 508	7 234	7 190	7 937	8 204
80 -	M	20 290	17 717	17 884	17 235	18 783	18 885	18 985	18 162	19 302	18 783	19 180	15 869	15 891	17 166	17 891
	F	19 623	17 460	16 515	16 832	17 999	18 149	18 065	17 130	18 504	18 257	18 172	14 624	15 130	16 684	16 830

Table 3 (cont.)
Tabell 3 (forts)

Age Ålder	Sex Kön	Calendar year - Kalenderår 1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
0 - 4	M	784	714	653	622	564	559	530	507	511	481	479	491	446	466	447
	F	615	565	479	474	424	430	414	392	363	376	377	375	334	330	341
5 - 9	M	101	94	72	84	75	76	70	77	50	62	63	64	55	57	51
	F	59	56	48	37	47	43	36	39	38	46	34	37	32	34	33
10 - 14	M	67	61	62	63	55	52	48	57	46	46	40	53	41	41	32
	F	58	54	42	48	43	40	33	30	37	28	28	31	32	22	25
15 - 19	M	146	137	126	110	96	104	107	109	87	99	105	96	99	95	88
	F	110	109	70	53	46	61	46	46	40	43	48	44	43	39	41
20 - 24	M	240	188	176	175	154	141	131	148	128	122	117	115	105	125	108
	F	174	147	107	90	85	81	61	67	53	57	50	52	41	47	45
25 - 29	M	208	212	169	168	151	135	130	146	124	116	126	126	112	116	114
	F	173	175	113	114	96	88	77	75	77	73	61	61	60	60	66
30 - 34	M	226	230	196	174	159	163	162	161	144	141	159	154	133	134	135
	F	190	175	155	132	130	121	108	109	102	83	93	86	78	72	80
35 - 39	M	259	246	235	214	213	191	201	199	194	189	184	183	179	166	171
	F	226	227	209	201	170	160	143	138	136	139	129	117	130	123	118
40 - 44	M	339	340	319	284	275	290	282	276	268	256	275	261	246	230	257
	F	304	315	246	244	250	219	226	214	207	209	191	193	195	194	176
45 - 49	M	528	481	493	480	474	470	434	433	436	407	417	416	371	409	394
	F	446	449	387	398	383	382	326	324	327	323	304	302	308	268	312
50 - 54	M	761	847	796	776	744	719	724	674	667	673	688	707	632	627	622
	F	643	660	618	631	580	568	561	546	514	517	467	467	463	439	456
55 - 59	M	1 247	1 278	1 215	1 195	1 181	1 170	1 151	1 192	1 114	1 169	1 129	1 142	1 059	1 052	1 140
	F	1 010	975	911	944	921	895	857	857	802	794	737	765	733	688	699
60 - 64	M	1 989	1 975	1 912	1 940	1 931	1 901	1 853	1 860	1 796	1 856	1 865	1 928	1 805	1 664	1 867
	F	1 587	1 601	1 517	1 538	1 483	1 421	1 422	1 386	1 349	1 272	1 245	1 297	1 221	1 165	1 174
65 - 69	M	3 168	3 290	3 080	3 080	3 074	2 992	2 980	3 004	3 037	2 906	2 947	3 030	2 968	2 845	3 049
	F	2 671	2 689	2 591	2 480	2 519	2 431	2 397	2 424	2 338	2 250	2 248	2 235	2 133	2 057	2 039
70 - 74	M	4 874	5 301	4 867	5 125	5 062	4 953	4 786	4 877	4 994	4 843	4 861	4 873	4 779	4 826	5 114
	F	4 476	4 803	4 455	4 561	4 536	4 343	4 279	4 371	4 136	4 015	4 008	4 046	3 837	3 752	3 897
75 - 79	M	8 414	8 929	8 108	8 413	8 623	8 309	8 162	8 205	8 035	7 996	8 028	8 337	7 920	7 847	8 221
	F	8 101	8 265	7 438	7 697	7 847	7 759	7 403	7 438	7 156	6 977	7 007	7 173	6 875	6 627	6 941
80 -	M	17 930	19 077	16 908	17 585	18 435	18 527	17 475	17 131	16 775	16 420	16 834	17 252	16 523	16 298	16 791
	F	16 981	18 189	16 203	16 962	17 609	17 414	16 325	16 474	16 428	15 308	15 465	16 063	15 310	14 844	15 994

Table 3 (cont.)
Tabell 3 (forts)

Age Ålder	Sex Kön	Calendar year - Kalenderår 1961	1962	1963	1964	1965	1966	1967
0 - 4	M	430	434	440	420	384	375	341
	F	331	325	330	332	306	265	269
5 - 9	M	50	49	53	48	54	44	40
	F	37	40	29	30	32	34	26
10 - 14	M	38	38	38	43	39	36	32
	F	28	30	27	24	25	21	23
15 - 19	M	88	87	95	103	94	94	75
	F	35	36	48	41	44	41	32
20 - 24	M	103	112	116	117	109	115	107
	F	47	39	45	47	44	53	46
25 - 29	M	111	109	111	112	113	99	123
	F	63	58	60	63	51	47	61
30 - 34	M	139	122	126	127	139	130	148
	F	71	70	81	76	77	73	82
35 - 39	M	172	170	172	186	198	187	190
	F	101	112	102	119	115	113	105
40 - 44	M	229	255	229	251	249	266	285
	F	157	177	164	167	182	166	171
45 - 49	M	374	392	399	401	375	403	416
	F	296	257	291	273	270	254	265
50 - 54	M	649	655	617	639	676	659	670
	F	442	426	414	433	418	398	385
55 - 59	M	1 078	1 083	1 092	1 117	1 040	1 031	1 064
	F	667	657	673	640	635	610	606
60 - 64	M	1 818	1 879	1 875	1 783	1 829	1 815	1 827
	F	1 106	1 096	1 066	1 110	1 046	1 015	971
65 - 69	M	2 967	3 062	2 923	3 020	2 965	3 026	3 010
	F	1 945	1 953	1 977	1 875	1 855	1 754	1 759
70 - 74	M	4 872	4 999	4 851	4 873	4 991	4 840	4 878
	F	3 677	3 687	3 448	3 419	3 335	3 293	3 199
75 - 79	M	7 856	8 456	8 143	8 005	8 088	8 034	8 065
	F	6 654	6 641	6 457	6 216	6 154	6 105	6 149
80 -	M	16 261	17 022	16 997	16 276	16 486	15 944	15 805
	F	14 895	15 421	14 736	14 073	14 188	13 799	13 617

Table 4. SELECTED VALUES FROM ABRIDGED LIFE TABLES OF COHORTS BORN 1861 - 1966

Tabell 4. VALDA VÄRDEN UR FÖRKORTADE LIVSLÄNGDSTABELLER FÖR KOHORTER FÖDDA 1861 - 1966

Life table value	Sex Kön	Year of birth - Födelseår 1861	1862	1863	1864	1865	1866	1867	1868	1869	1870
l_1	M	8 493	8 481	8 562	8 508	8 525	8 619	8 469	8 160	8 410	8 556
	F	8 725	8 696	8 752	8 722	8 771	8 808	8 686	8 413	8 629	8 769
l_5	M	7 340	7 461	7 608	7 617	7 608	7 638	7 463	7 235	7 716	7 887
	F	7 585	7 748	7 835	7 888	7 902	7 860	7 698	7 509	7 966	8 121
l_{25}	M	6 501	6 661	6 767	6 751	6 814	6 804	6 667	6 430	6 822	6 950
	F	6 792	6 999	7 019	7 051	7 103	7 054	6 900	6 702	7 077	7 142
l_{50}	M	5 350	5 515	5 606	5 576	5 631	5 674	5 539	5 353	5 700	5 813
	F	5 712	5 861	5 884	5 950	5 988	5 917	5 813	5 683	5 983	6 024
l_{65}	M	4 143	4 312	4 378	4 359	4 418	4 454	4 350	4 220	4 510	4 611
	F	4 615	4 763	4 782	4 845	4 859	4 818	4 731	4 637	4 875	4 928
$e_{15/65}$	M	41.81	42.14	42.11	42.00	42.07	42.15	42.23	42.29	42.42	42.35
	F	42.70	42.66	42.64	42.79	42.76	42.61	42.75	42.92	42.90	42.75
l_{15}/l_1	M	0.810	0.829	0.834	0.838	0.844	0.836	0.830	0.832	0.855	0.859
	F	0.818	0.844	0.843	0.849	0.851	0.843	0.835	0.837	0.862	0.859
l_{15}/l_5	M	0.937	0.943	0.939	0.936	0.946	0.943	0.942	0.938	0.932	0.932
	F	0.941	0.947	0.941	0.939	0.944	0.944	0.942	0.937	0.934	0.927
l_{35}/l_{15}	M	0.882	0.889	0.889	0.884	0.885	0.886	0.888	0.888	0.889	0.888
	F	0.893	0.891	0.894	0.895	0.895	0.891	0.894	0.896	0.898	0.893
l_{45}/l_{15}	M	0.816	0.823	0.823	0.820	0.819	0.824	0.824	0.826	0.831	0.829
	F	0.832	0.830	0.830	0.834	0.834	0.830	0.833	0.840	0.838	0.835
l_{45}/l_{25}	M	0.863	0.869	0.869	0.866	0.865	0.872	0.868	0.872	0.876	0.876
	F	0.874	0.871	0.872	0.876	0.875	0.873	0.876	0.882	0.880	0.880
l_{65}/l_{15}	M	0.602	0.613	0.613	0.611	0.614	0.618	0.619	0.622	0.627	0.628
	F	0.647	0.649	0.649	0.654	0.651	0.649	0.653	0.659	0.655	0.655
l_{65}/l_{45}	M	0.738	0.745	0.745	0.746	0.750	0.751	0.751	0.753	0.755	0.757
	F	0.778	0.782	0.782	0.785	0.782	0.782	0.783	0.785	0.783	0.784
l_{75}/l_{65}	M	0.641	0.640	0.643	0.639	0.636	0.640	0.643	0.646	0.660	0.654
	F	0.674	0.674	0.666	0.667	0.671	0.669	0.668	0.680	0.678	0.682
l_{85}/l_{65}	M	0.202	0.201	0.195	0.202	0.200	0.203	0.210	0.197	0.212	0.214
	F	0.232	0.233	0.219	0.232	0.229	0.233	0.232	0.226	0.236	0.241

Table 4 (cont.)
Tabell 4 (forts)

Life table value	Sex Kön	Year of birth - Födelseår 1871	1872	1873	1874	1875	1876	1877	1878	1879	1880
l_1	M	8 746	8 582	8 598	8 395	8 349	8 472	8 605	8 523	8 775	8 660
	F	8 948	8 813	8 784	8 616	8 616	8 674	8 845	8 767	8 970	8 890
l_5	M	8 020	7 750	7 658	7 445	7 411	7 577	7 723	7 706	7 911	7 826
	F	8 226	7 980	7 873	7 700	7 671	7 766	7 974	7 964	8 144	8 067
l_{25}	M	7 030	6 805	6 789	6 601	6 582	6 724	6 850	6 853	7 042	6 994
	F	7 231	7 043	6 975	6 869	6 836	6 925	7 115	7 137	7 289	7 240
l_{50}	M	5 877	5 711	5 681	5 549	5 557	5 669	5 802	5 810	5 978	5 924
	F	6 095	5 912	5 884	5 838	5 796	5 889	6 054	6 083	6 156	6 193
l_{65}	M	4 689	4 529	4 501	4 421	4 428	4 497	4 629	4 623	4 792	4 758
	F	4 974	4 837	4 824	4 773	4 734	4 821	4 977	5 022	5 119	5 157
$e_{15/65}$	M	42.28	42.40	42.31	42.41	42.54	42.38	42.54	42.52	42.54	42.58
	F	42.65	42.60	42.79	42.94	42.83	42.88	42.87	42.95	42.81	43.05
l_{15}/l_1	M	0.852	0.839	0.835	0.831	0.833	0.840	0.842	0.851	0.851	0.854
	F	0.852	0.843	0.836	0.838	0.835	0.841	0.848	0.857	0.856	0.858
l_{15}/l_5	M	0.929	0.929	0.938	0.937	0.939	0.940	0.938	0.941	0.944	0.945
	F	0.927	0.931	0.933	0.938	0.938	0.939	0.940	0.944	0.943	0.945
l_{35}/l_{15}	M	0.886	0.888	0.886	0.886	0.890	0.886	0.889	0.887	0.890	0.891
	F	0.890	0.891	0.892	0.895	0.894	0.894	0.893	0.896	0.896	0.896
l_{45}/l_{15}	M	0.826	0.830	0.827	0.825	0.828	0.825	0.829	0.830	0.833	0.833
	F	0.831	0.829	0.836	0.837	0.834	0.836	0.835	0.838	0.830	0.839
l_{45}/l_{25}	M	0.876	0.879	0.875	0.873	0.875	0.873	0.877	0.878	0.883	0.882
	F	0.876	0.875	0.880	0.880	0.878	0.881	0.880	0.882	0.874	0.884
l_{65}/l_{15}	M	0.630	0.629	0.627	0.634	0.637	0.632	0.639	0.638	0.642	0.643
	F	0.652	0.651	0.657	0.661	0.658	0.661	0.664	0.668	0.666	0.676
l_{65}/l_{45}	M	0.762	0.757	0.758	0.768	0.769	0.766	0.771	0.768	0.770	0.772
	F	0.785	0.785	0.786	0.790	0.789	0.790	0.795	0.798	0.803	0.806
l_{75}/l_{65}	M	0.658	0.664	0.661	0.663	0.662	0.666	0.674	0.667	0.672	0.670
	F	0.688	0.692	0.688	0.692	0.696	0.697	0.700	0.702	0.706	0.710
l_{85}/l_{65}	M	0.220	0.220	0.221	0.224	0.220	0.224	0.229	0.231	0.230	0.229
	F	0.245	0.252	0.249	0.259	0.263	0.264	0.268	0.270	0.278	0.283

Table 4 (cont.)
Tabell 4 (forts)

Life table value	Sex Kön	Year of birth - Födelseår 1881	1882	1883	1884	1885	1886	1887	1888	1889	1890
l_1	M	8 762	8 631	8 711	8 738	8 729	8 760	8 858	8 884	8 828	8 849
	F	8 946	8 831	8 938	8 962	8 947	8 981	9 049	9 080	8 992	9 059
l_5	M	7 921	7 838	7 953	7 990	8 064	8 093	8 198	8 209	8 144	8 150
	F	8 130	8 075	8 186	8 230	8 284	8 310	8 398	8 430	8 302	8 411
l_{25}	M	7 106	7 048	7 166	7 178	7 269	7 283	7 368	7 421	7 364	7 402
	F	7 319	7 282	7 388	7 405	7 443	7 478	7 574	7 609	7 512	7 651
l_{50}	M	6 038	5 992	6 087	6 114	6 229	6 220	6 275	6 338	6 323	6 357
	F	6 264	6 238	6 347	6 365	6 404	6 450	6 532	6 598	6 526	6 667
l_{65}	M	4 860	4 822	4 895	4 975	5 039	5 042	5 112	5 162	5 164	5 225
	F	5 227	5 225	5 329	5 354	5 390	5 474	5 545	5 626	5 573	5 714
$e_{15/65}$	M	42.66	42.65	42.54	42.65	42.87	42.74	42.66	42.77	42.84	42.95
	F	43.08	43.07	43.16	43.08	43.12	43.22	43.31	43.48	43.48	43.60
l_{15}/l_1	M	0.858	0.864	0.872	0.869	0.879	0.879	0.880	0.882	0.882	0.882
	F	0.862	0.869	0.871	0.872	0.878	0.878	0.880	0.881	0.878	0.887
l_{15}/l_5	M	0.949	0.951	0.955	0.951	0.951	0.952	0.951	0.954	0.956	0.958
	F	0.948	0.951	0.951	0.950	0.948	0.949	0.948	0.949	0.951	0.955
l_{35}/l_{15}	M	0.892	0.891	0.887	0.881	0.885	0.882	0.878	0.880	0.884	0.885
	F	0.897	0.895	0.897	0.888	0.886	0.889	0.891	0.893	0.894	0.896
l_{45}/l_{15}	M	0.834	0.835	0.834	0.834	0.841	0.837	0.833	0.837	0.841	0.843
	F	0.842	0.841	0.843	0.841	0.842	0.844	0.847	0.851	0.852	0.855
l_{45}/l_{25}	M	0.882	0.883	0.883	0.883	0.887	0.885	0.881	0.883	0.889	0.889
	F	0.886	0.886	0.888	0.888	0.889	0.890	0.890	0.895	0.896	0.897
l_{65}/l_{15}	M	0.647	0.647	0.645	0.655	0.657	0.655	0.656	0.659	0.664	0.669
	F	0.678	0.681	0.684	0.685	0.687	0.694	0.696	0.703	0.706	0.711
l_{65}/l_{45}	M	0.775	0.774	0.774	0.785	0.782	0.782	0.788	0.787	0.789	0.795
	F	0.806	0.809	0.812	0.815	0.815	0.823	0.822	0.826	0.829	0.832
l_{75}/l_{65}	M	0.669	0.670	0.669	0.676	0.675	0.678	0.673	0.673	0.675	0.671
	F	0.714	0.710	0.717	0.729	0.731	0.732	0.736	0.740	0.746	0.746
l_{85}/l_{65}	M	0.227	0.231								
	F	0.286	0.287								

Table 4 (cont.)
Tabell 4 (forts)

Life table value	Sex Kön	Year of birth - Födelseår 1891	1892	1893	1894	1895	1896	1897	1898	1899	1900
l_1	M	8 782	8 768	8 887	8 882	8 953	8 818	8 972	8 872	8 825	8 878
	F	9 021	9 010	9 056	9 066	9 130	9 024	9 138	9 054	9 017	9 102
l_5	M	8 136	8 203	8 361	8 376	8 383	8 272	8 411	8 309	8 328	8 368
	F	8 370	8 443	8 521	8 569	8 589	8 500	8 574	8 511	8 513	8 612
l_{25}	M	7 376	7 471	7 573	7 468	7 512	7 459	7 628	7 512	7 582	7 667
	F	7 602	7 689	7 760	7 745	7 768	7 723	7 817	7 782	7 796	7 922
l_{50}	M	6 342	6 472	6 569	6 564	6 662	6 631	6 798	6 707	6 796	6 895
	F	6 652	6 739	6 849	6 916	6 979	6 939	7 039	7 030	7 071	7 213
l_{65}	M	5 214	5 339	5 414	5 418	5 495	5 509	5 650	5 573	5 648	5 734
	F	5 738	5 846	5 933	6 022	6 068	6 086	6 178	6 194	6 276	6 391
$e_{15/65}$	M	42.91	43.15	43.07	42.91	43.14	43.38	43.60	43.51	43.81	44.02
	F	43.74	43.76	43.95	44.00	44.06	44.24	44.38	44.42	44.53	44.73
l_{15}/l_1	M	0.887	0.899	0.902	0.905	0.901	0.906	0.906	0.905	0.913	0.914
	F	0.885	0.896	0.900	0.906	0.903	0.906	0.903	0.908	0.913	0.916
l_{15}/l_5	M	0.957	0.961	0.959	0.960	0.963	0.965	0.967	0.967	0.967	0.970
	F	0.953	0.957	0.956	0.958	0.960	0.961	0.962	0.966	0.967	0.968
l_{35}/l_{15}	M	0.884	0.889	0.887	0.885	0.888	0.893	0.898	0.896	0.903	0.906
	F	0.897	0.896	0.900	0.903	0.902	0.906	0.909	0.907	0.910	0.914
l_{45}/l_{15}	M	0.842	0.846	0.846	0.843	0.849	0.854	0.859	0.858	0.865	0.872
	F	0.858	0.857	0.862	0.864	0.866	0.869	0.874	0.875	0.878	0.884
l_{45}/l_{25}	M	0.889	0.892	0.895	0.908	0.912	0.914	0.916	0.918	0.919	0.923
	F	0.900	0.900	0.905	0.915	0.919	0.920	0.923	0.924	0.927	0.930
l_{65}/l_{15}	M	0,670	0.677	0.676	0.674	0.681	0.690	0.695	0.694	0.701	0.707
	F	0.719	0.724	0.728	0.734	0.736	0.745	0.749	0.754	0.762	0.766
l_{65}/l_{45}	M	0.795	0.801	0.799	0.800	0.802	0.808	0.809	0.808	0.810	0.811
	F	0.838	0.845	0.845	0.850	0.850	0.857	0.857	0.861	0.868	0.867
l_{75}/l_{65}	M	0.674	0.675								
	F	0.754	0.766								

Table 4 (cont.)
Tabell 4 (forts)

Life table value	Sex Kön	Year of birth - Födelseår 1901	1902	1903	1904	1905	1906	1907	1908	1909	1910
l_1	M	8 914	8 997	9 022	9 031	9 053	9 089	9 130	9 084	9 217	9 150
	F	9 111	9 187	9 202	9 195	9 238	9 260	9 290	9 231	9 359	9 330
l_5	M	8 420	8 562	8 628	8 657	8 705	8 722	8 767	8 751	8 878	8 818
	F	8 643	8 762	8 820	8 833	8 891	8 907	8 961	8 915	9 028	9 005
l_{25}	M	7 762	7 930	7 988	8 062	8 093	8 129	8 210	8 197	8 326	8 282
	F	7 969	8 116	8 205	8 226	8 269	8 316	8 387	8 352	8 470	8 464
l_{50}	M	7 028	7 195	7 283	7 358	7 407	7 465	7 562	7 588	7 695	7 682
	F	7 282	7 442	7 526	7 600	7 637	7 728	7 820	7 809	7 940	7 958
l_{65}	M	5 859	6 018								
	F	6 493	6 656								
$e_{15/65}$	M	44.41	44.61	[1]40.94	[1]41.20	[1]41.28	[1]41.39	[1]41.57	[2]37.45	[2]37.50	[2]37.59
	F	44.93	45.09	41.32	41.59	41.52	41.79	41.95	37.65	37.69	37.80
l_{15}/l_1	M	0.917	0.925	0.928	0.931	0.931	0.930	0.933	0.936	0.936	0.937
	F	0.919	0.926	0.930	0.930	0.932	0.932	0.935	0.937	0.937	0.938
l_{15}/l_5	M	0.971	0.972	0.971	0.971	0.969	0.969	0.971	0.972	0.971	0.972
	F	0.969	0.971	0.970	0.968	0.968	0.969	0.969	0.970	0.972	0.972
l_{35}/l_{15}	M	0.914	0.917	0.919	0.926	0.928	0.929	0.935	0.936	0.938	0.940
	F	0.917	0.919	0.926	0.930	0.928	0.935	0.939	0.939	0.940	0.943
l_{45}/l_{15}	M	0.881	0.886	0.889	0.895	0.898	0.902	0.907	0.910	0.911	0.915
	F	0.887	0.891	0.897	0.904	0.902	0.911	0.915	0.917	0.919	0.923
l_{45}/l_{25}	M	0.928	0.929	0.932	0.933	0.936	0.938	0.941	0.945	0.944	0.947
	F	0.932	0.934	0.935	0.940	0.939	0.945	0.948	0.950	0.952	0.954
l_{65}/l_{15}	M	0.717	0.723								
	F	0.775	0.782								
l_{65}/l_{45}	M	0.813	0.817								
	F	0.874	0.878								

1) $e_{15/60}$ 2) $e_{15/55}$

Table 4 (cont.)
Tabell 4 (forts)

Life table value	Sex Kön	Year of birth - Födelseår 1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
l_1	M	9 204	9 212	9 240	9 137	9 197	9 232	9 315	9 178	9 263	9 251
	F	9 365	9 367	9 369	9 316	9 356	9 387	9 455	9 350	9 412	9 431
l_5	M	8 886	8 909	8 913	8 766	8 820	8 901	8 951	8 912	9 032	9 030
	F	9 056	9 065	9 061	8 961	8 991	9 061	9 100	9 103	9 202	9 239
l_{25}	M	8 352	8 397	8 401	8 312	8 400	8 487	8 555	8 506	8 648	8 627
	F	8 521	8 539	8 552	8 525	8 590	8 686	8 749	8 766	8 865	8 912
l_{50}	M	7 769	7 832	7 838	7 768	7 863	7 968	8 049			
	F	8 017	8 066	8 108	8 092	8 171	8 282	8 357			
$e_{15/55}$	M	37.64	37.75	[1] 33.31	[1] 33.34	[1] 33.41	[1] 33.48	[1] 33.56	[2] 28.90	[2] 28.97	[2] 28.95
	F	37.85	37.91	33.47	33.60	33.67	33.74	33.82	29.17	29.20	29.27
l_{15}/l_1	M	0.938	0.941	0.939	0.939	0.941	0.947	0.944	0.954	0.959	0.959
	F	0.940	0.942	0.942	0.941	0.942	0.948	0.946	0.958	0.962	0.963
l_{15}/l_5	M	0.972	0.973	0.973	0.978	0.981	0.982	0.983	0.982	0.983	0.983
	F	0.972	0.973	0.974	0.978	0.980	0.982	0.983	0.984	0.983	0.983
l_{35}/l_{15}	M	0.941	0.944	0.944	0.945	0.948	0.950	0.954	0.952	0.955	0.954
	F	0.945	0.946	0.949	0.953	0.956	0.958	0.962	0.964	0.965	0.969
l_{45}/l_{15}	M	0.918	0.921	0.922	0.924	0.927	0.930	0.934	0.932	0.935	0.935
	F	0.925	0.928	0.932	0.937	0.940	0.943	0.946	0.949	0.951	0.954
l_{45}/l_{25}	M	0.949	0.950	0.952	0.953	0.955	0.957	0.961	0.959	0.960	0.962
	F	0.955	0.959	0.961	0.963	0.965	0.966	0.968	0.969	0.971	0.973

1) $e_{15/50}$ 2) $e_{15/45}$

Table 4 (cont.)
Tabell 4 (forts)

Life table value	Sex Kön	Year of birth - Födelseår 1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
l_1	M	9 327	9 323	9 349	9 346	9 361	9 363	9 332	9 341	9 365	9 321
	F	9 456	9 463	9 496	9 501	9 509	9 492	9 474	9 486	9 538	9 483
l_5	M	9 119	9 098	9 132	9 153	9 169	9 154	9 150	9 185	9 215	9 167
	F	9 265	9 272	9 304	9 322	9 331	9 304	9 312	9 346	9 390	9 342
l_{25}	M	8 738	8 725	8 768	8 837	8 845	8 870	8 890	8 934	8 975	8 935
	F	8 954	8 972	9 014	9 057	9 080	9 071	9 109	9 163	9 212	9 186
$e_{15/45}$	M	29.07	29.09	[1] 24.37	[1] 24.43	[1] 24.43	[1] 24.48	[1] 24.54	[2] 19.71	[2] 19.73	[2] 19.74
	F	29.29	29.32	24.56	24.60	24.60	24.64	24.68	19.81	19.84	19.85
l_{15}/l_1	M	0.960	0.960	0.961	0.966	0.965	0.965	0.968	0.971	0.972	0.972
	F	0.965	0.966	0.966	0.968	0.970	0.969	0.973	0.975	0.974	0.976
l_{15}/l_5	M	0.982	0.984	0.983	0.986	0.985	0.987	0.987	0.987	0.988	0.988
	F	0.985	0.986	0.986	0.987	0.988	0.988	0.990	0.990	0.989	0.991
l_{35}/l_{15}	M	0.960	0.961	0.962	0.965	0.966	0.968	0.971	0.972	0.972	0.975
	F	0.970	0.972	0.974	0.977	0.977	0.980	0.981	0.983	0.985	0.985
l_{45}/l_{15}	M	0.940	0.941								
	F	0.956	0.958								
l_{45}/l_{25}	M	0.963	0.966								
	F	0.974	0.976								

1) $e_{15/40}$ 2) $e_{15/35}$

Life table value	Sex Kön	Year of birth - Födelseår 1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
l_1	M	9 411	9 417	9 459	9 450	9 478	9 498	9 492	9 515	9 543	9 564
	F	9 551	9 547	9 605	9 577	9 602	9 615	9 614	9 642	9 657	9 657
l_5	M	9 263	9 272	9 314	9 310	9 341	9 374	9 391	9 417	9 445	9 461
	F	9 419	9 434	9 489	9 465	9 491	9 526	9 523	9 562	9 573	9 577
l_{25}	M	9 035	9 063	9 120	9 116	9 158	9 191	9 212	9 237	9 279	9 286
	F	9 268	9 309	9 360	9 357	9 380	9 422	9 417	9 469	9 480	9 491
$e_{15/35}$	M	19.75	19.76	[1] 14.88	[1] 14.87	[1] 14.89	[1] 14.88	[1] 14.88	[2] 9.95	[2] 9.95	[2] 9.95
	F	19.86	19.89	14.93	14.95	14.95	14.94	14.95	9.98	9.98	9.98
l_{15}/l_1	M	0.972	0.974	0.975	0.976	0.976	0.978	0.981	0.981	0.982	0.982
	F	0.977	0.980	0.980	0.981	0.982	0.985	0.984	0.986	0.986	0.987
l_{15}/l_5	M	0.988	0.989	0.990	0.991	0.990	0.991	0.991	0.992	0.993	0.992
	F	0.991	0.992	0.992	0.993	0.993	0.994	0.993	0.995	0.995	0.995
l_{35}/l_{15}	M	0.975	0.976								
	F	0.986	0.988								

1) $e_{15/30}$ 2) $e_{15/25}$

Table 4 (cont.)
Tabell 4 (forts)

Life table value	Sex Kön	Year of birth - Födelseår 1941	1942	1943	1944	1945	1946	1947	1948	1949	1950
l_1	M	9 597	9 667	9 658	9 640	9 682	9 706	9 721	9 729	9 742	9 764
	F	9 675	9 756	9 744	9 722	9 760	9 760	9 783	9 807	9 805	9 815
l_5	M	9 500	9 583	9 576	9 571	9 621	9 647	9 665	9 675	9 690	9 713
	F	9 597	9 692	9 678	9 662	9 713	9 714	9 744	9 766	9 766	9 774
l_{25}	M	9 343	9 430								
	F	9 517	9 611								
$e_{15/25}$	M	9.95	9.95	^{1}4.99	^{1}4.99	^{1}4.99	^{1}4.99	^{1}4.99			
	F	9.98	9.98	5.00	5.00	4.99	4.99	4.99			
l_{15}/l_1	M	0.984	0.986	0.985	0.987	0.989	0.989	0.989	0.993	0.993	0.993
	F	0.988	0.989	0.990	0.991	0.991	0.992	0.993	0.993	0.993	0.993
l_{15}/l_5	M	0.994	0.994	0.994	0.995	0.995	0.995	0.995	0.998	0.998	0.998
	F	0.996	0.996	0.997	0.997	0.996	0.997	0.997	0.997	0.997	0.997

1) $e_{15/20}$

Life table value	Sex Kön	Year of birth - Födelseår 1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
l_1	M	9 756	9 781	9 783	9 789	9 802	9 811	9 797	9 823	9 812	9 810
	F	9 815	9 827	9 836	9 846	9 848	9 845	9 843	9 867	9 865	9 856
l_5	M	9 712	9 734	9 740	9 742	9 763	9 770	9 762	9 792	9 774	9 777
	F	9 776	9 793	9 806	9 814	9 819	9 813	9 814	9 841	9 832	9 835
l_{15}/l_1	M	0.994	0.993								
	F	0.993	0.994								
l_{15}/l_5	M	0.998	0.998								
	F	0.997	0.997								

Life table value	Sex Kön	Year of birth - Födelseår 1961	1962	1963	1964	1965	1966
l_1	M	9 816	9 820	9 831	9 838	9 854	9 854
	F	9 863	9 866	9 869	9 873	9 883	9 893
l_5	M	9 782	9 794				
	F	9 841	9 841				

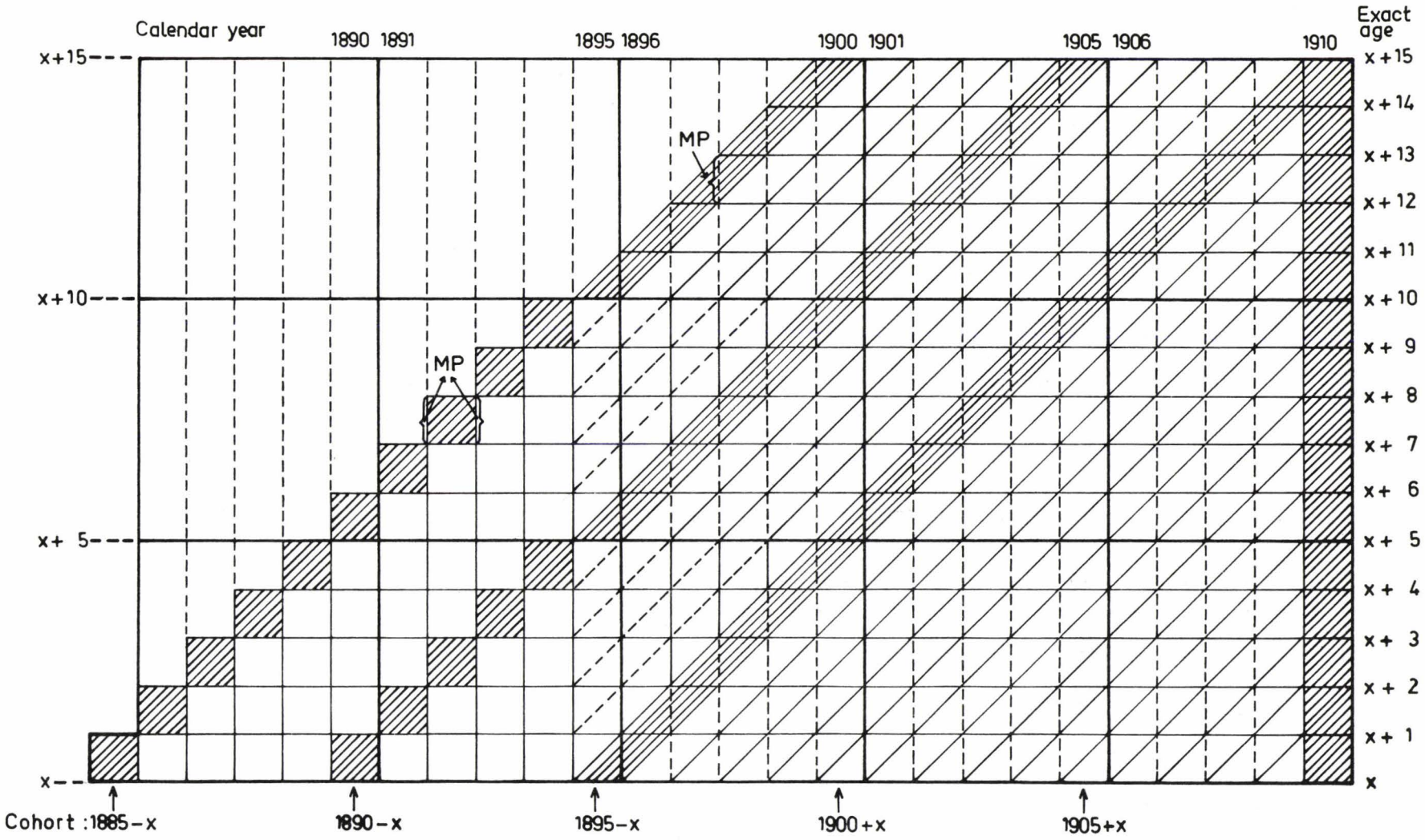


Diagram I. MIXED AND PURE COHORT DESIGN ILLUSTRATED BY LEXIS' DIAGRAM
Population at risk as "mid-year value" (MP) of double and of single cohorts, respectively. Pure cohorts from the period 1895-1900

SCHEMA ÖVER BLANDADE OCH RENA KOHORTER, ILLUSTRERADE AV LEXIS' DIAGRAM
Riskpopulationen såsom "mittårsvärde" (MP) av dubbla resp. enkla kohorter. Rena kohorter fr o m perioden 1895-1900

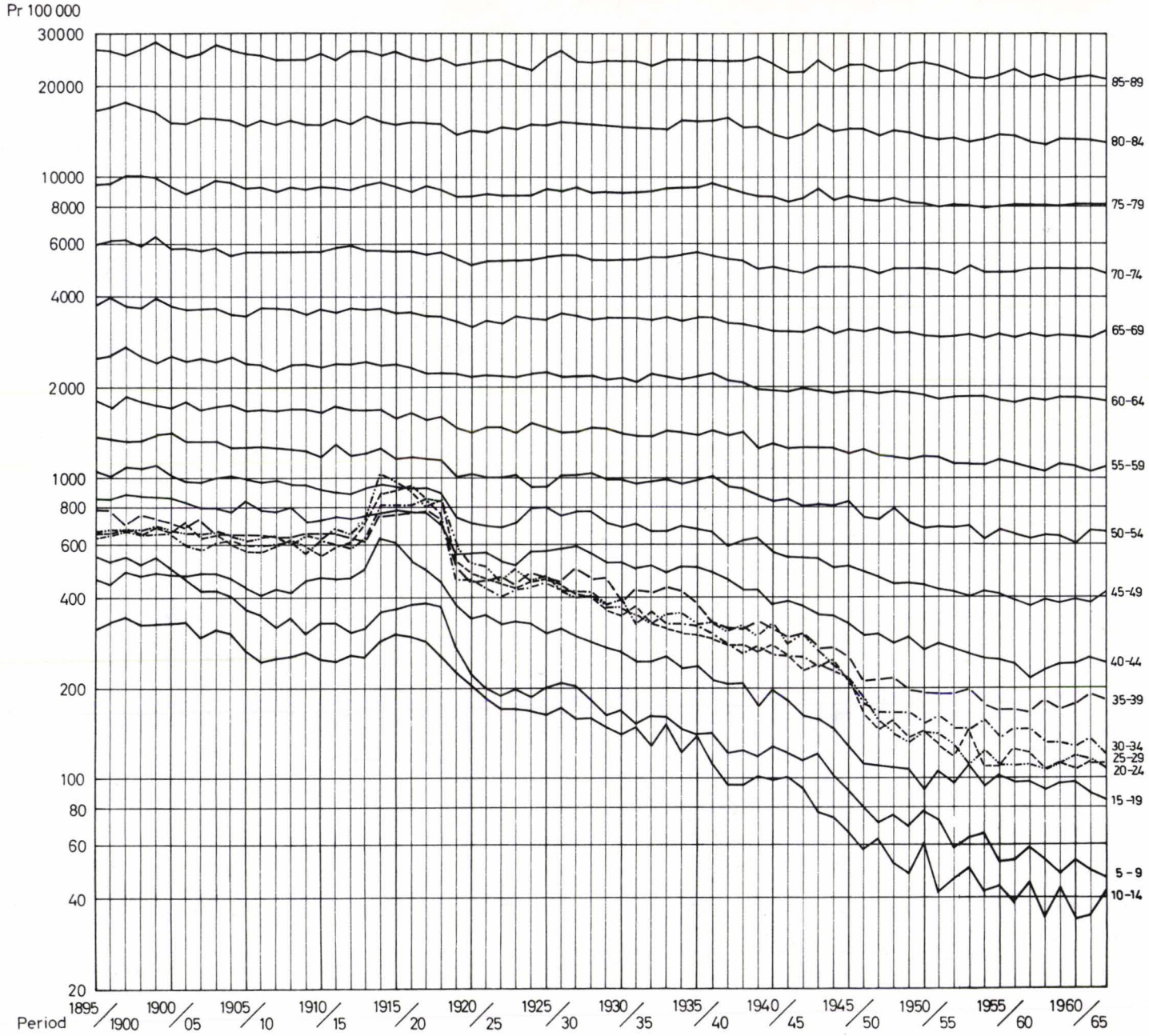
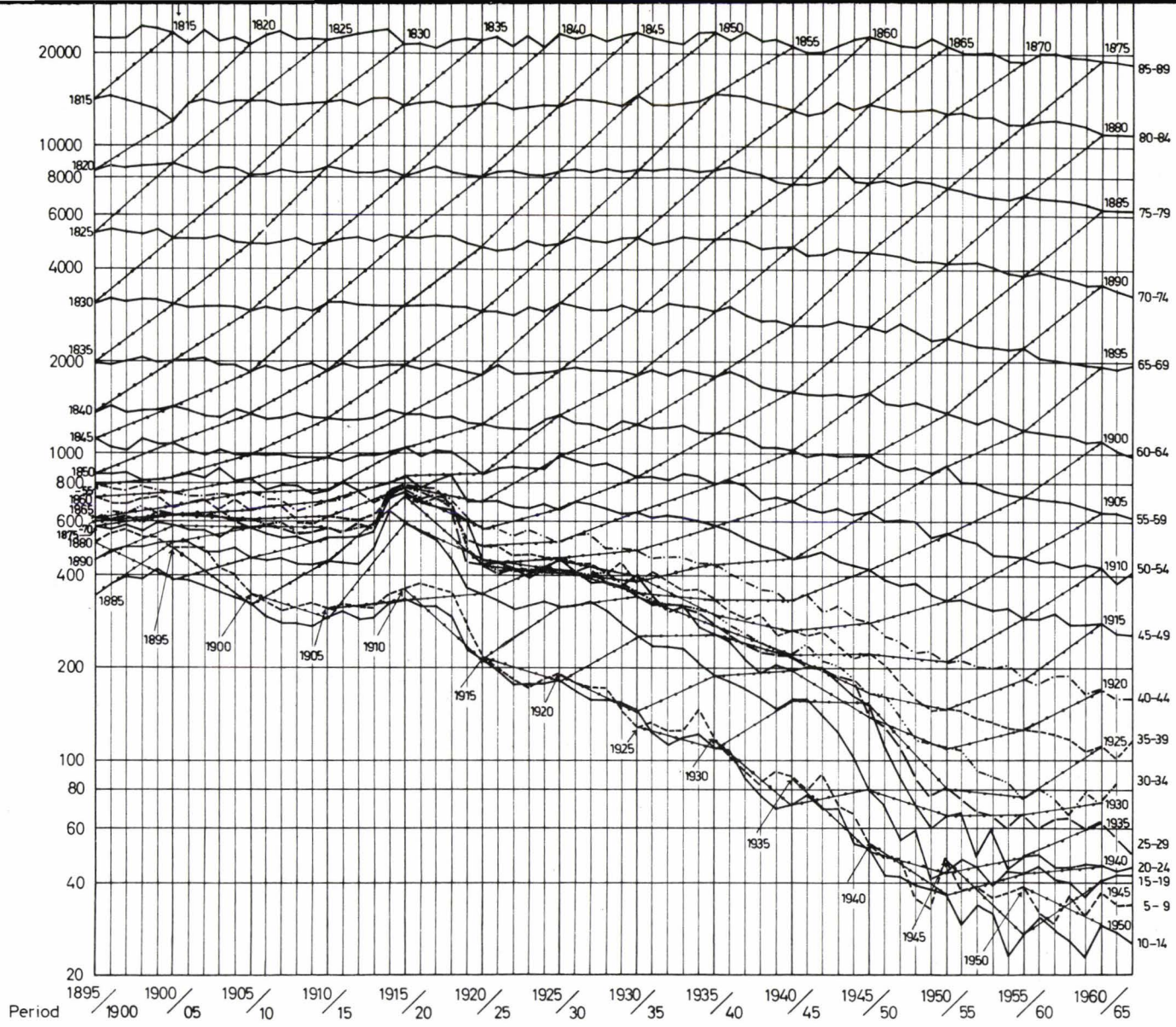


Diagram II. AGE-SPECIFIC DEATH CURVES OF COHORT RATES FOR MEN BY PERIOD

Central death rates per 100 000 mean population by five-year age groups for each birth cohort

ÅLDERSSPECIFIKA KURVOR ÖVER KOHORTDÖDLIGHETEN FÖR MÄN EFTER PERIOD

Centrala dödskvoter per 100 000 av medelfolkmängden i femårs åldersklasser för varje födelsekohort



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ÅLDERSSPECIFIKA KURVOR ÖVER KOHORTDÖDLIGHETEN FÖR KVINNOR EFTER PERIOD SAMT DÖDSTALSKURVOR FÖR VAR FEMTE FÖDELSEKOHORT FRÅN 5 TILL 87 ÅRS ÅLDER
Centrala dödskvoter per 100 000 av medelfolkmängden i femårs åldersklasser för varje födelsekohort

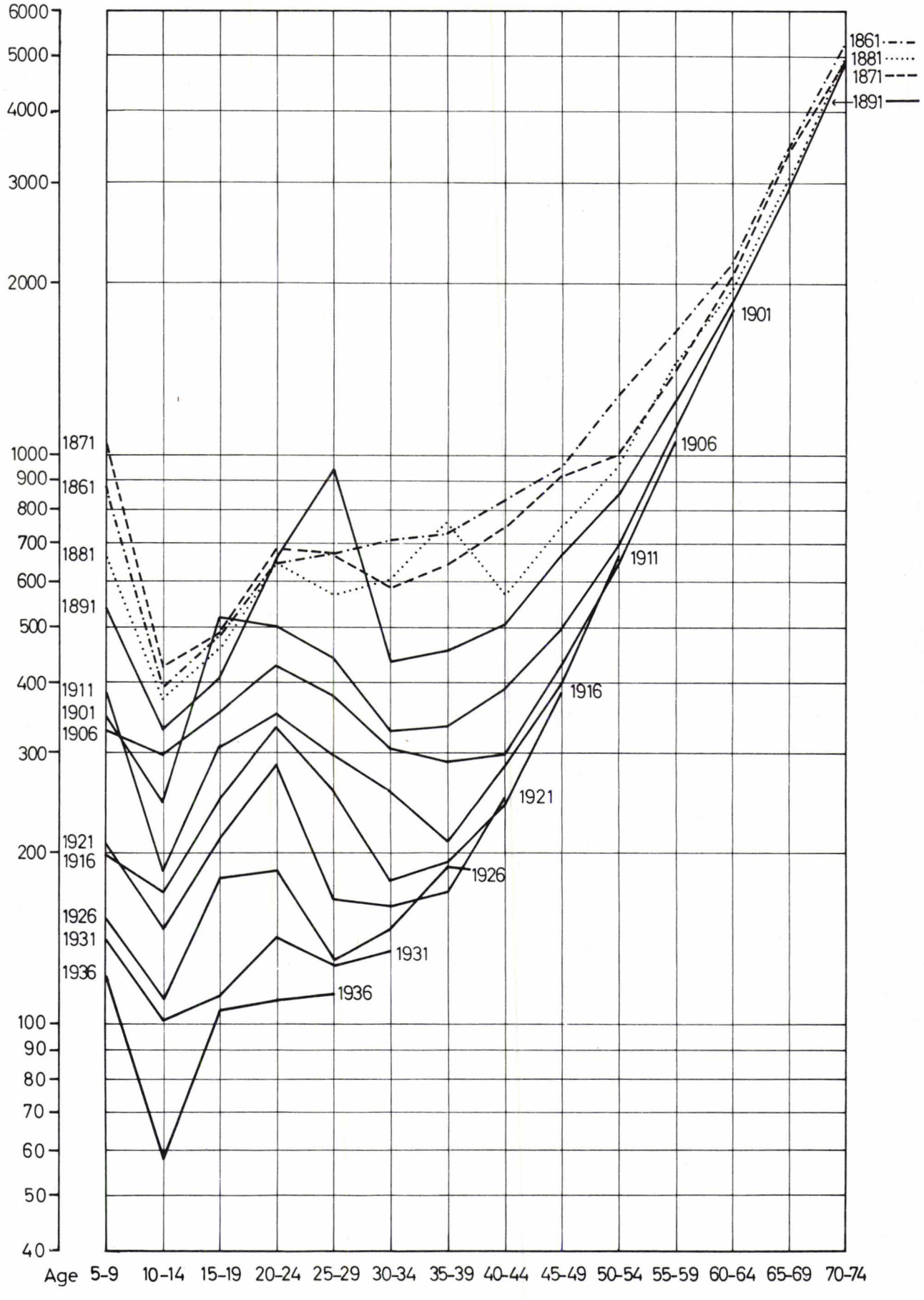


Diagram IV. SELECTED COHORT DEATH CURVES FOR MEN BY AGE

Central death rates per 100 000 mean population by five-year age groups. Mixed cohort death rates for cohort of 1861 until 30-34, of 1871 until 20-24, and of 1881 until 10-14 years of age

VALDA KOHORTDÖDSKURVOR FÖR MÄN EFTER ÅLDER

Centrala dödskvoter per 100 000 av medelfolkmängden i femårs åldersklasser. Blandade kohortdödstal för kohort 1861 t o m 30-34 år, för 1871 t o m 20-24 år och för 1881 t o m 10-14 år

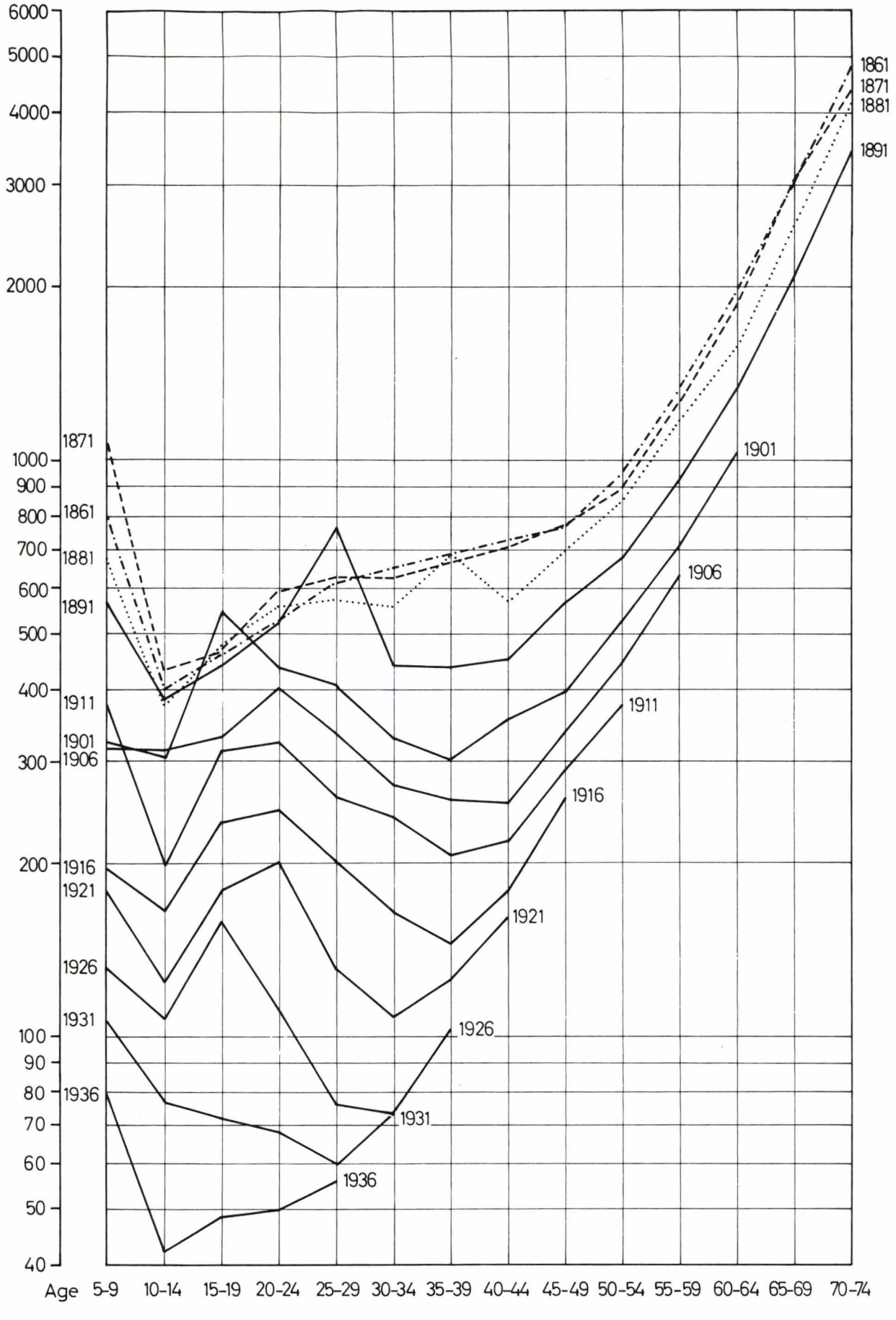
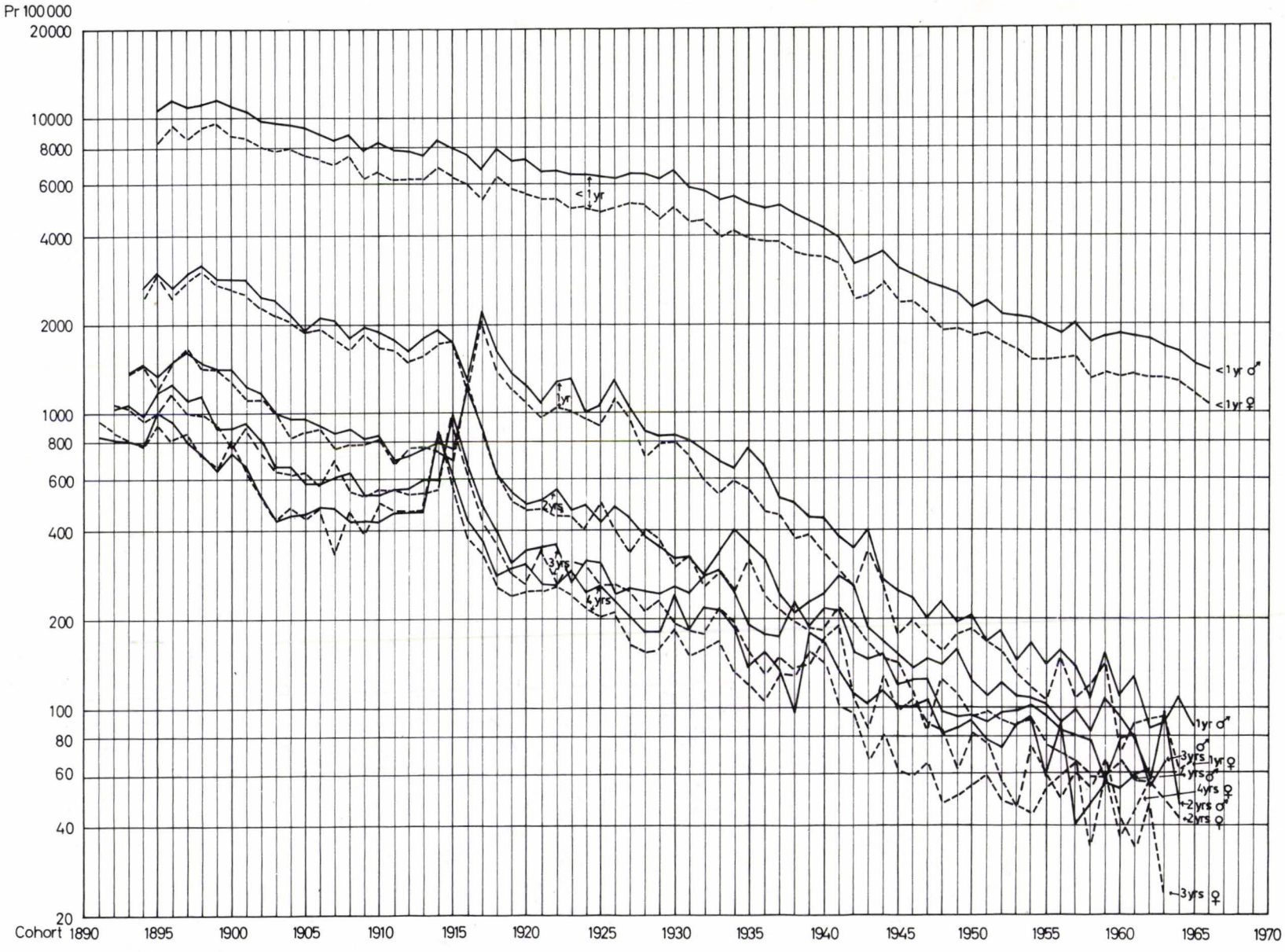


Diagram V. SELECTED COHORT DEATH CURVES FOR WOMEN BY AGE

Central death rates per 100 000 mean population by five-year age groups. Mixed cohort death rates for cohort of 1861 until 30-34, of 1871 until 20-24, and of 1881 until 10-14 years of age

VALDA KOHORTDÖDSKURVOR FÖR KVINNOR EFTER ÅLDER

Centrala dödskvoter per 100 000 av medelfolkmängden i femårs åldersklasser. Blandade kohortdödstal för kohort 1861 t o m 30-34 år, för 1871 t o m 20-24 år och för 1881 t o m 10-14 år



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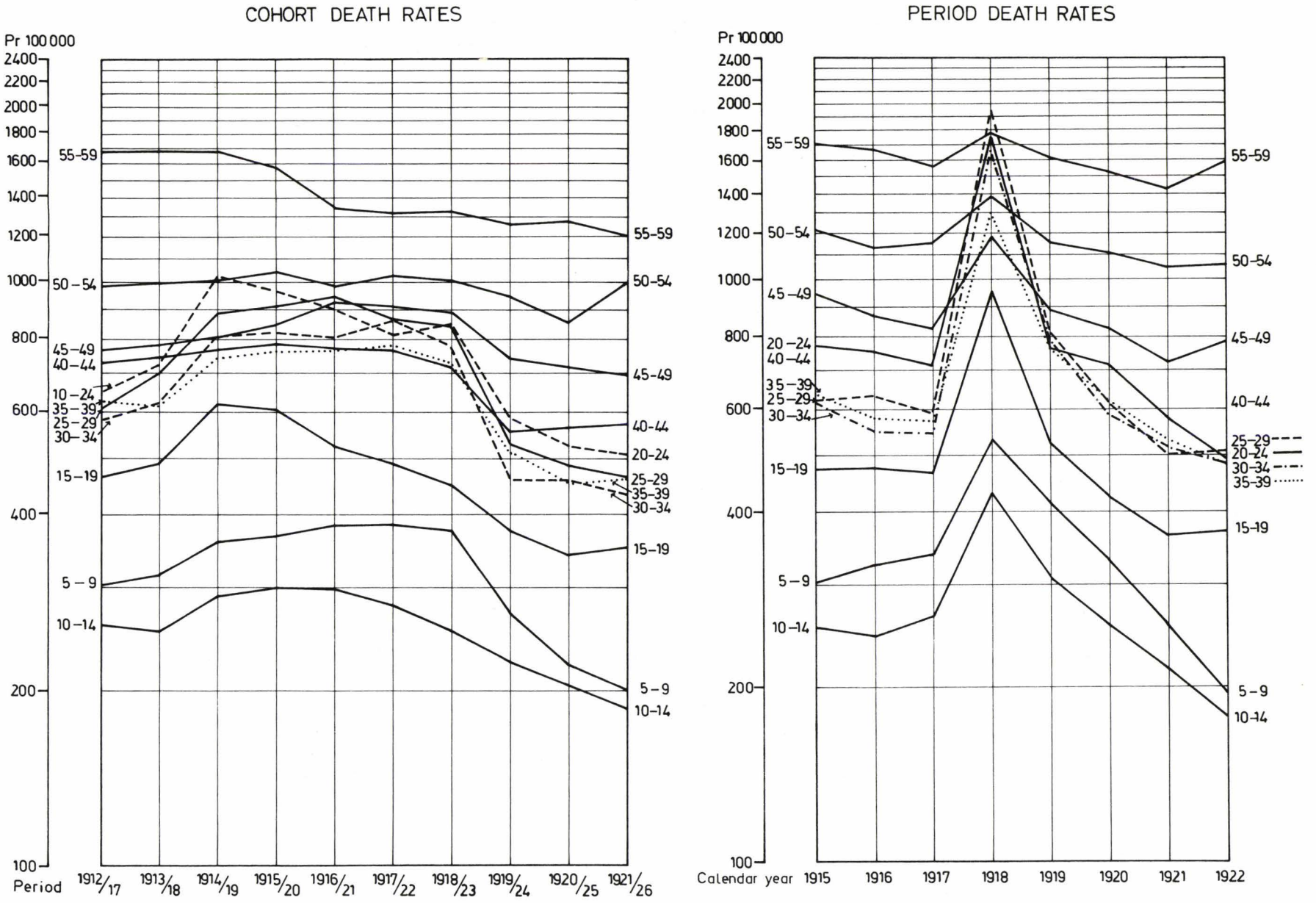
Centrala dödskvoter per 100 000 av medelfolkmängden (Under 1 år per 100 000 levande födda). Gossar —— Flickor ---



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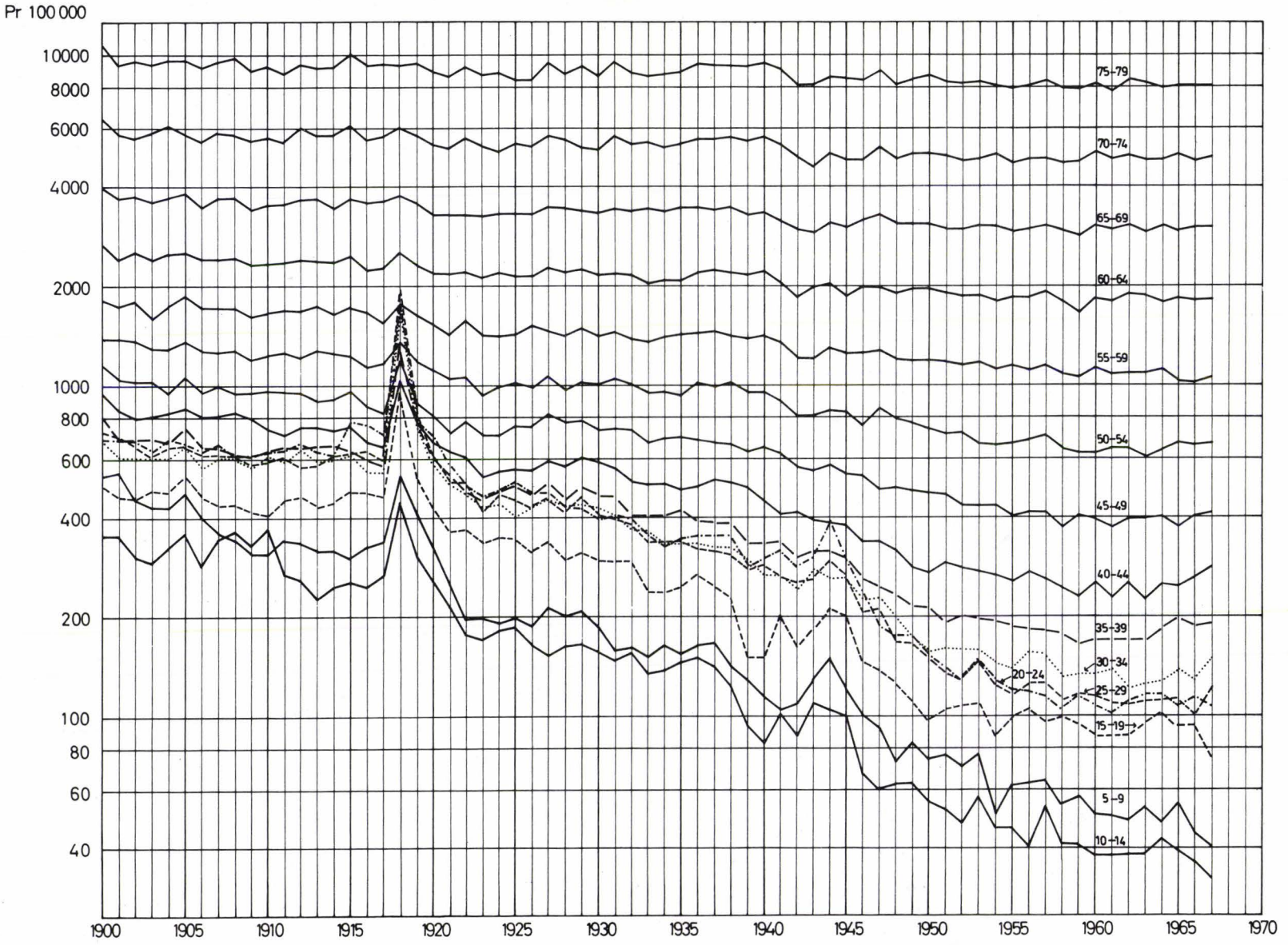

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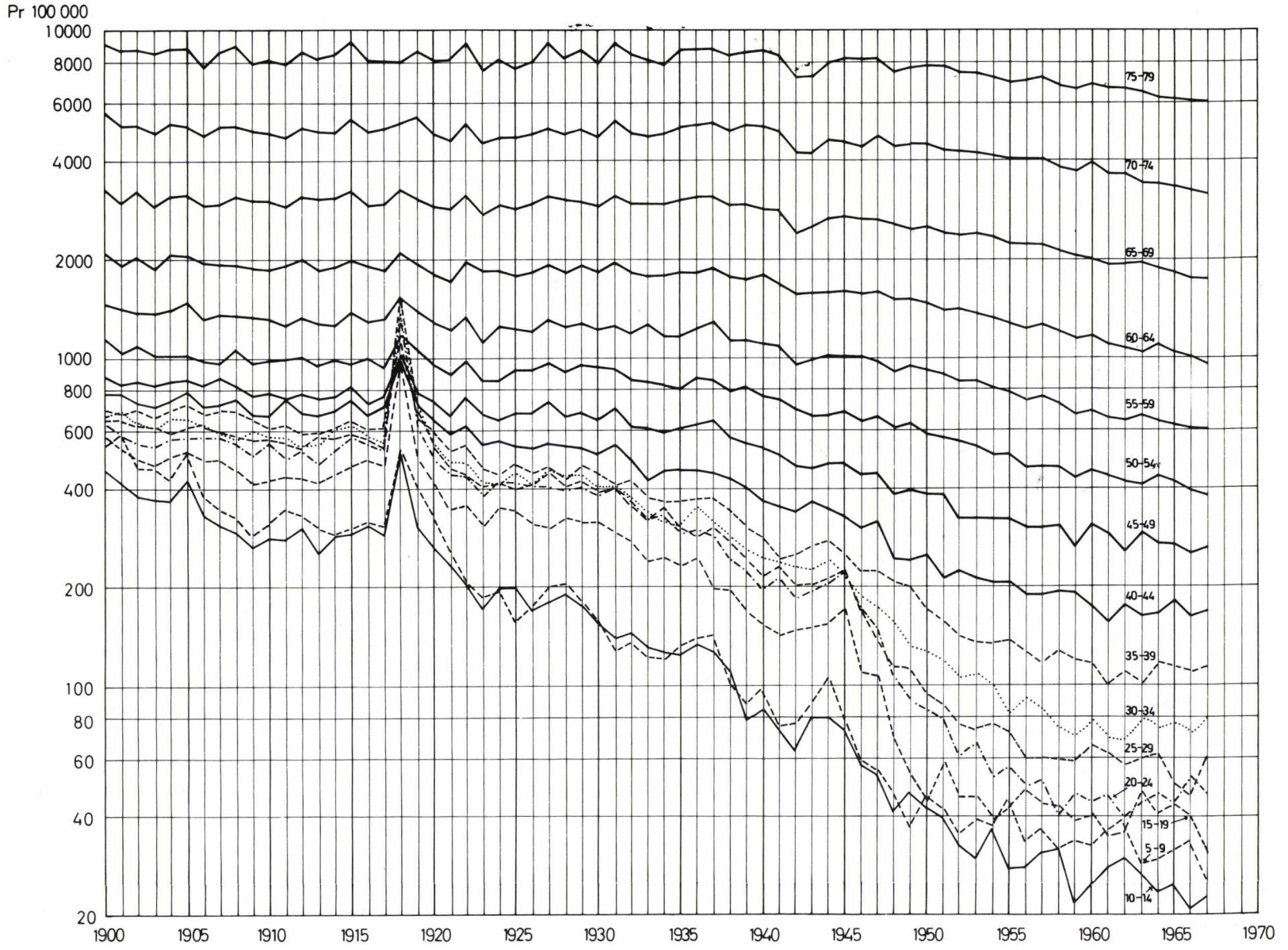

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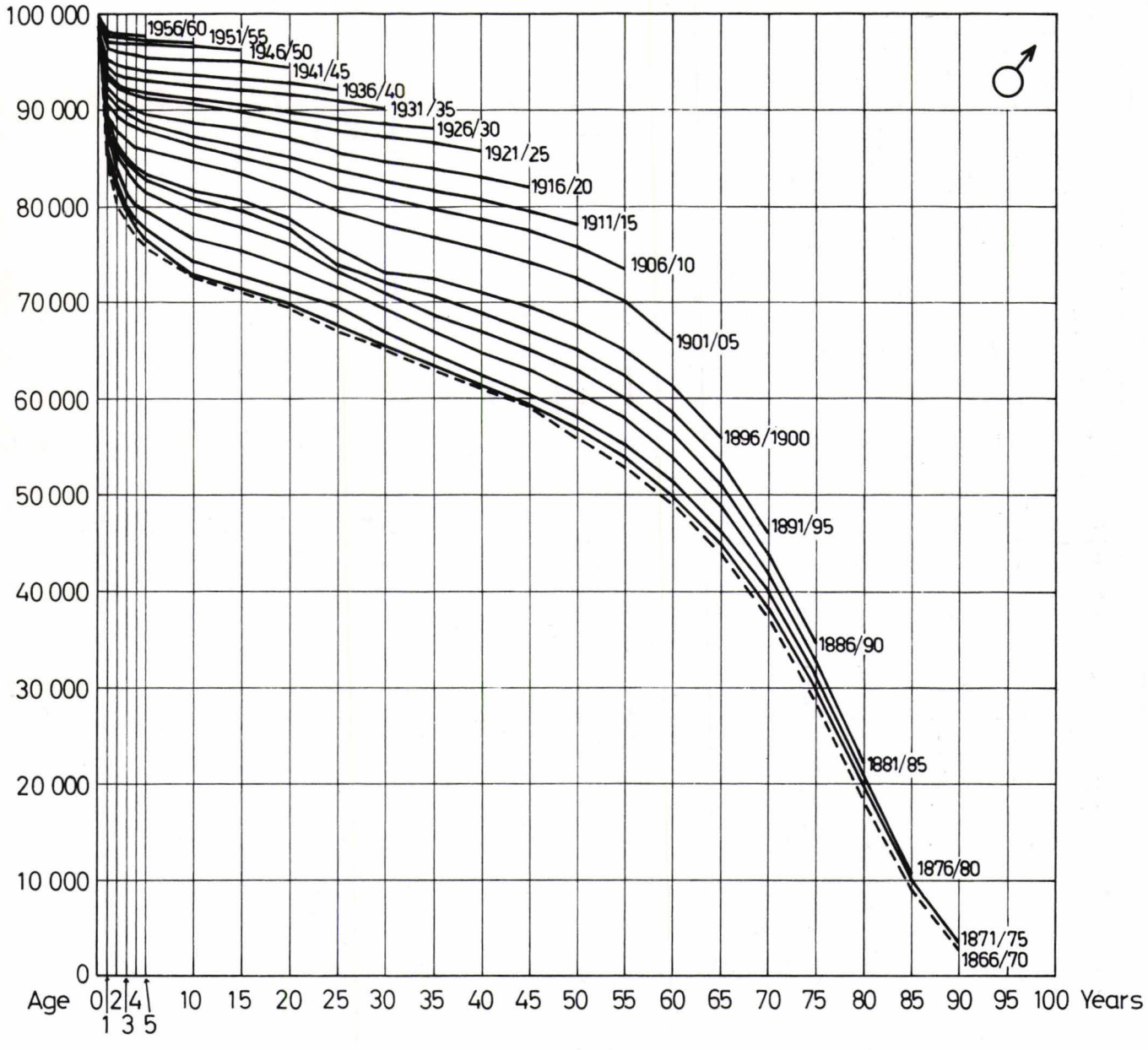

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Values obtained from life tables of single birth cohorts

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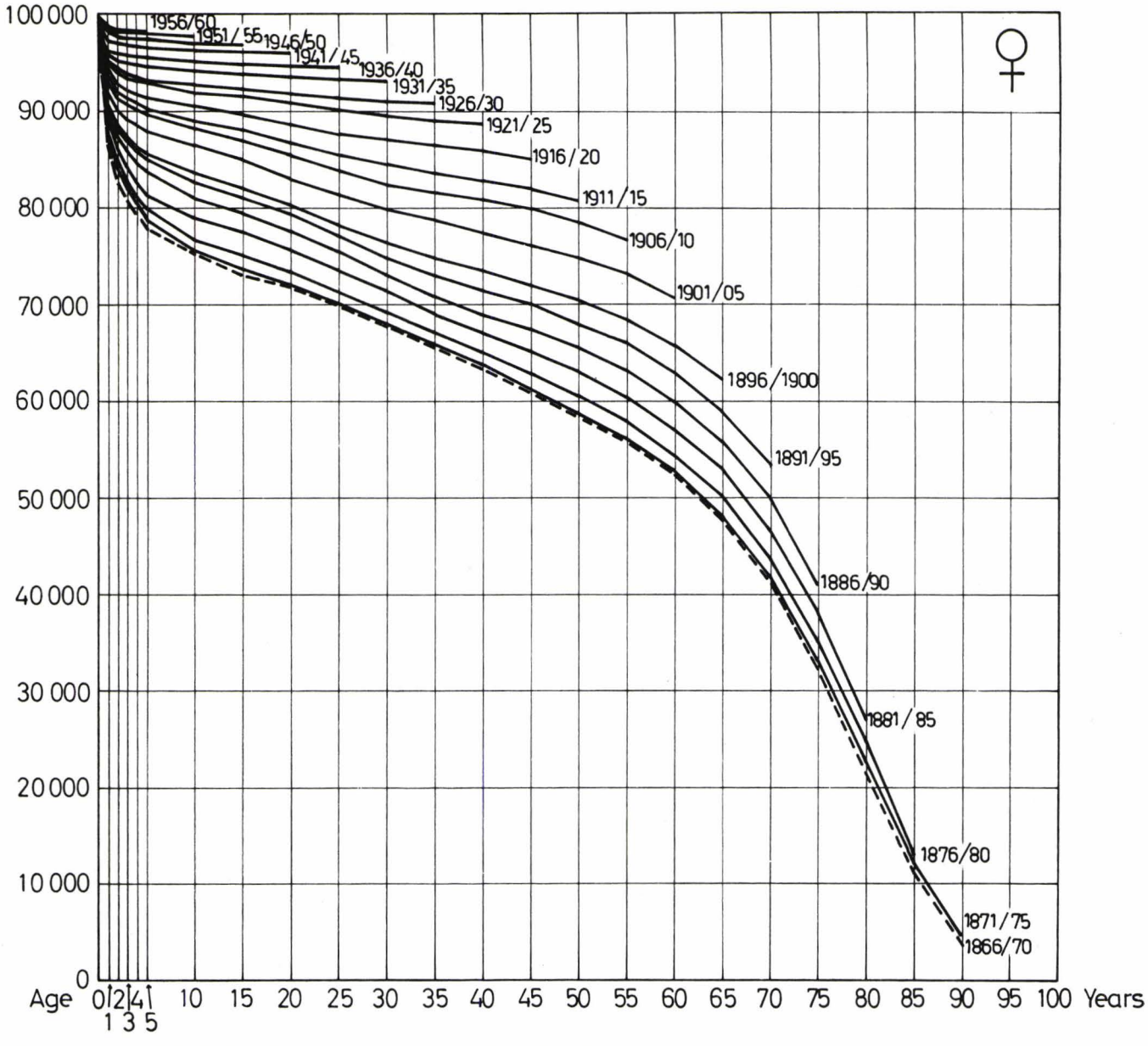
Uppgifter hämtade ur livslängdstabeller för enskilda födelsekohorter



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Uppgifter hämtade ur livslängdstabeller för enskilda födelsekohorter

A METHOD FOR THE COMPUTATION OF PROJECTED SURVIVAL FACTORS

by Lars Widén

EN METOD FÖR BERÄKNING AV PROJEKTERADE REDUKTIONSKVOTER

by Lars Widén

CONTENTS

INNEHÅLL

SAMMANFATTNING

Denna studie behandlar femårskohorter, födda 1871-65. För dessa kohorter har dödstal uträknats för varje åldersår i intervallet 0-4 år och därefter för femårs åldersgrupper från 5-9 år, 10-14 år osv.

Dessa dödstal efter kohort, ålder och period återges i diagram för män och kvinnor, av vilka framgår att dödlighetsutvecklingen för närliggande kohorter visar likformiga trender. Det tycktes därför vara möjligt att grafiskt beräkna de framtida dödlighetstrenderna för varje grupp av kohorter. Man har vidare beräknat livslängdstabeller enligt förkortad metod med hjälp av de observerade och grafiskt projekterade centrala dödskvoterna. Dessa överlevelsetabeller har utnyttjats för beräkning av reduktionsfaktorer för skilda perioder i framtiden.

1. HISTORICAL BACKGROUND

Observed mortality rates can be graduated and extrapolated either analytically or graphically, in a way which is suitable for population projections.

The analytical method is of ancient provenance. Thus De Moivre assumed (1724) that the death rates in the age groups between 12 and 86 formed an arithmetic series. This assumption was soon found to have little relation to reality, and new attempts were made to discover the law of nature which during the 19th century was assumed to govern human mortality. Gompertz (1825) regarded the instantaneous death rate as a biological function rising in geometric progression from the age of 30. Makeham (1860) modified this function by assuming that mortality was a combination of two simultaneous influences, one of which operated at the same strength in all age groups while the other increased in strength with advancing age. This assumption was mathematically summarised in a formula which assumed that the succesive differences in the instantaneous death rates increase with age in a geometric series. Nowadays Makeham´s formula is regarded merely as an analytical expression of a graduation, the constants of which are adapted to a given series of observations. Extrapolation can be undertaken by computing the constants for different periods and determining their trends with the aid of simple mathematical expressions.

The graphical method of determining mortality trends is now used to a great extent by many demographers. This method general provides more scope for modifications of the projected curve in terms of other factors than sex, age and time. The graphic method is recommended by Whelpton and Dorn, among others.

The projection of mortality can be based on observations of different periods or distinct cohorts. In the former case mortality is regarded as a function of age and time, while in the latter case it is regarded as a function of age and year of birth.

The expression cohort was really launched as a demographic concept by Whelpton, especially in his "Cohort Fertility, Native White Women in the United States", published in 1954. As the title implies, the concept was limited here to the analysis of fertility. On the other hand the cohort is far from being a modern invention in the context of mortality.

As early as the mid-18th century Swedish offical statistics included analyses of mortality by different cohorts. In the abstract for 1856-60, Dr. F. Th. Berg[1] maintains that, while explanations for annual variations in population can be traced in contemporary influences, such explanations are not sufficient in themselves and further explanations are to be sought in the history, origin and succession of the separate generations.

Berg made use of information concerning the population by age at the end of the years 1750, 1755, ... 1860 as well as the sizes of the generations of 1751-55, 1756-60, ... 1856-60. Since foreign migration during the period in question was negligible, Berg was able to draw up tables illustrating how many members of a given five-year generation survived to different ages. The successive attritions in each cohort were summarised in tables. Berg then re-computed these attritions by making each observed generation equal to 10,000. Curves were inserted in a diagram to show how many members of the 10,000 born into a given cohort survived at different ages, As a rule the curve for a later cohort lay somewhat higher than the curve for a cohort born earlier, thus showing that the mortality situation was successively improving. Berg´s diagram also included the curve for the number of survivors out of 10,000 births according to the life table for the period 1856-60. In the lower age groups this curve passed between the cohort curves, while in the middle and upper age groups it lay above these. Berg claimed that the survival curve was a reliable aid to the assessment of the future trend of survivors in different cohorts. But he considered this future trend to be very much dependent on the external conditions in which the cohorts were destined to continue their lives. Berg did not make any projection in the true sense of the word.

However it was not until the 1920s that the cohort method came into more general use, above all as a result of Derrick´s researches. Derrick´s method was primarily based on finding differences in the mortality of different cohorts. If the difference exhibited a regular pattern it could provide the basis for a projection of mortality.

Derrick made use of age-specific death rates for England and Wales from 1841 to 1925. These rates were summarised by year of birth and age. A diagram was drawn with a curve having the year of birth as its x-axis and the logarithm of the death rate in each individual age class as its y-axis. In this way Derrick obtained a host of parallel curves for different ages. From this picture he drew the conclusion that the death rate curves would in the long run continue parallel. This gave him a basis on which to compute the future development of mortality in the cohorts born before 1925.

1) Fredrik Theodor Berg; doctor, Head of Division to the National Swedish Board of Health, Head of the Central Bureau of Statistics 1858-1879.

Derrick's studies were published in 1926. Twenty years later his computations were compared with the actual mortality development, and it was found that the parallelism between the curves persists in the upper age groups but that other age groups do not exhibit the same regularity.

2. DEMOGRAPHIC DATA

The official Swedish statistics permit computations of death rates by sex and age for different generation cohorts. This study covers five-year cohorts born between 1871/75 and 1961/65. For these cohorts, death rates have been computed for each year of age in the interval 0-4 years and then for the intervals 5-9 years, 10-14 years, and so forth. Thus for the cohort born, say, in 1901/05, the death rate for the interval 5-9 years is centred to the turn of the year 1910/11, for the interval 10-14 years to the turn of the year 1915/16, and so on. The death rate for the 1961/65 cohort is only available for the ages of 0-1 and 1-2 years, that for 1956/60 for age groups under 5 years, that for 1951/55 for age groups under 10 years, and so on. Thus the observed death rates can be presented by year of birth, age and period.

3. GRAPHIC PROJECTION

The projection has been made with one five-year cohort at a time, starting with the cohort born in 1876-80. It has been performed graphically taking into account both the observed mortality in the cohort in question and the observed mortality in the earlier cohorts.

Table A shows for every cohort in the survey the values of observed and projected death rates. Diagrams 1 and 2 invlude curves of the death rates of different cohorts by age and period. Observed rates are denoted by rings, projected rates by crosses.

The projection of the mortality of the earlier cohorts only covers the higher age groups. This projection is relatively simple, since the curves of near-lying cohorts seem to run parallell to a certain extent. The projection of the mortality of the as yet unborn cohorts is more difficult. In this survey the estimate of future mortality has not been carried further ahead than the turn of the year 1990/91. Consequently the 1961/65 cohort only comprises age groups up to 25-30 years, the 1966/70 cohort up to 20-24 years, and so on. The last cohort, born in 1986/90 covers age groups under five years only.

4. COMPUTATION OF THE SURVIVAL FACTORS

The projected mortality rates are not directly suited to the computation of an observed population at the turn of a certain year. Starting from observed and projected central death rates and using the method of constructing an abbridged life table, one can compute survival factors in the accepted sense.

The survival rates in the life table have been calculated by the formula:

$$l_x = l_o \exp\left[- \sum_{o}^{x-1} m_z \right]$$

For ages under 5 years, m_z refers to the central death rates for single-year age classes and, for ages from five years and upwards, to death rates for 5-year age classes.

The stationary population in the ages under five years is:

$$L_x = l_{x+1} + a_x d_x \qquad (x = 0,\ 1,\ 2,\ 3,\ 4)$$

where a_x is equal to the average number of years lived of the deceased in the age interval. The values of a_x have been computed on the basis of the life tables for the decades between 1861-70 and 1951-60. The value of a_x for the decade 1961-70 has been estimated on the basis of the life table for 1961-65. Table B shows the values of a_x for different periods, sexes and ages.

The stationary population of the ages of 5 years and upwards is:

$${}_5L_x = 5\, l_{x+5} + \frac{5}{2}\, {}_5d_x \qquad (x = 5,\ 10,\ 15\ \ldots.)$$

Here it has been assumed that the deaths according to the life table are evenly distributed throughout the age interval. This is not entirely correct, but the error thus arising in the computation of the stationary population in different age intervals is of minor importance in this connection.

Next survival factors were computed for each separate cohort in the accepted way, thus:

$$k_b = \frac{L_{o-4}}{5\, l_o}; \quad k_o = \frac{L_{5-9}}{L_{o-4}}; \quad k_5 = \frac{L_{10-14}}{L_{5-9}}; \quad \ldots.$$

where k_b denotes the proportion of those born during the 5-year period attaining the age of 0-4 years at the end of this period, k_o the proportion of the age class at the beginning of the period attaining the age of 5-9 at the end of the 5-year period, and so on. These ratios were then placed in their chronological context, i.e. grouped into separate future periods and ages. The results are shown in Table C.

Table A. OBSERVED AND PROJECTED DEATH RATES OF FIVE-YEAR COHORTS BY SEX, AGE, AND PERIOD [1]

Age	Central point of period	Death rates per 100,000	
		Males	Females
Cohort born in 1871/75			
0	1873/74	14 352	12 247
1	1874/75	4 109	3 887
2	1875/76	2 782	2 630
3	1876/77	2 240	2 182
4	1877/78	1 740	1 730
5- 9	1880/81	959	961
10-14	1885/86	397	480
15-19	1890/91	459	469
20-24	1895/96	671	571
25-29	1900/01	668	619
30-34	1905/06	598	624
35-39	1910/11	641	630
40-44	1915/16	755	732
45-49	1920/21	840	769
50-54	1925/26	980	922
55-59	1930/31	1 436	1 256
60-64	1935/36	2 164	1 847
65-69	1940/41	3 250	2 804
70-74	1945/46	5 008	4 580
75-79	1950/51	8 376	7 731
80-84	1955/56	13 557	12 393
85-89	1960/61	22 022	19 803
Cohort born in 1876/80			
0	1878/79	13 648	11 571
1	1879/80	4 323	4 046
2	1880/81	2 669	2 594
3	1881/82	1 975	1 899
4	1882/83	1 542	1 539
5- 9	1885/86	840	804
10-14	1890/91	366	386
15-19	1895/96	460	460
20-24	1900/01	674	572
25-29	1905/06	633	608
30-34	1910/11	600	572
35-39	1915/16	682	662
40-44	1920/21	678	711
45-49	1925/26	735	680
50-54	1930/31	1 016	908
55-59	1935/36	1 410	1 205
60-64	1940/41	2 080	1 709
65-69	1945/46	3 098	2 670
70-74	1950/51	4 925	4 381
75-79	1955/56	8 031	7 061
80-84	1960/61	13 477	11 897
85-89	1965/66	22 000+	19 500+

1) Projected rates are indicated by an asterisk (+).

Table A (cont.)

Age	Central point of period	Death rates per 100,000	
		Males	Females
Cohort born in 1881/85			
0	1883/84	12 584	10 579
1	1884/85	3 945	3 639
2	1885/86	2 339	2 271
3	1886/87	1 653	1 606
4	1887/88	1 204	1 189
5- 9	1890/91	652	662
10-14	1895/96	346	368
15-19	1900/01	473	498
20-24	1905/06	650	559
25-29	1910/11	586	567
30-34	1915/16	689	647
35-39	1920/21	649	625
40-44	1925/26	550	550
45-49	1930/31	739	667
50-54	1935/36	974	842
55-59	1940/41	1 364	1 091
60-64	1945/46	1 945	1 581
65-69	1950/51	3 059	2 486
70-74	1955/56	4 900	4 077
75-79	1960/61	8 103	6 769
80-84	1965/66	13 500+	11 500+
85-89	1970/71	22 000+	19 000+
Cohort born in 1886/90			
0	1888/89	11 416	9 537
1	1889/90	3 292	3 091
2	1890/91	1 944	1 835
3	1891/92	1 520	1 465
4	1892/93	1 216	1 219
5- 9	1895/96	617	615
10-14	1900/01	331	393
15-19	1905/06	467	482
20-24	1910/11	630	529
25-29	1915/16	739	650
30-34	1920/21	673	620
35-39	1925/26	464	469
40-44	1930/31	559	512
45-49	1935/36	687	617
50-54	1940/41	914	755
55-59	1945/46	1 249	989
60-64	1950/51	1 913	1 453
65-69	1955/56	2 974	2 270
70-74	1960/61	4 913	3 752
75-79	1965/66	8 000+	6 400+
80-84	1970/71	13 500+	10 500+
85-89	1975/76	22 000+	18 500+

Table A (cont)

Age	Central point of period	Death rates per 100, 000	
		Males	Females
Cohort born in 1891/95			
0	1893/94	11 210	9 282
1	1894/95	2 965	2 845
2	1895/96	1 610	1 524
3	1896/97	1 142	1 124
4	1897/98	851	875
5- 9	1900/01	523	536
10-14	1905/06	301	351
15-19	1910/11	432	439
20-24	1915/16	807	618
25-29	1920/21	736	624
30-34	1925/26	431	434
35-39	1930/31	451	422
40-44	1935/36	506	450
45-49	1940/41	619	512
50-54	1945/46	827	659
55-59	1950/51	1 191	904
60-64	1955/56	1 848	1 284
65-69	1960/61	2 983	1 999
70-74	1965/66	4 900+	3 400+
75-79	1970/71	8 000+	5 800+
80-84	1975/76	13 500+	10 000+
85-89	1980/81	22 000+	18 000+
Cohort born in 1896/1900			
0	1898/99	11 032	9 183
1	1899/00	2 911	2 758
2	1900/01	1 485	1 460
3	1901/02	1 057	977
4	1902/03	771	769
5- 9	1905/06	415	451
10-14	1910/11	254	283
15-19	1915/16	529	519
20-24	1920/21	735	565
25-29	1925/26	452	420
30-34	1930/31	409	404
35-39	1935/36	415	371
40-44	1940/41	439	370
45-49	1945/46	533	456
50-54	1950/51	731	586
55-59	1955/56	1 135	773
60-64	1960/61	1 834	1 155
65-69	1965/66	3 000+	1 900+
70-74	1970/71	4 900+	3 300+
75-79	1975/76	8 000+	5 600+
80-84	1980/81	13 500+	9 800+
85-89	1985/86	22 000+	17 500+

Table A (cont.)

Age	Central point of period	Death rates per 100,000	
		Males	Females
Cohort born in 1901/05			
0	1903/04	9 768	8 013
1	1904/05	2 363	2 197
2	1905/06	1 061	996
3	1906/07	725	696
4	1907/08	508	509
5- 9	1910/11	330	318
10-14	1915/16	269	307
15-19	1920/21	437	445
20-24	1925/26	481	425
25-29	1930/31	396	399
30-34	1935/36	335	318
35-39	1940/41	324	284
40-44	1945/46	360	319
45-49	1950/51	461	368
50-54	1955/56	676	492
55-59	1960/61	1 098	690
60-64	1965/66	1 800^{+}	1 100^{+}
65-69	1970/71	3 000^{+}	1 850^{+}
70-74	1975/76	4 900^{+}	3 200^{+}
75-79	1980/81	8 000^{+}	5 400^{+}
80-84	1985/86	13 500^{+}	9 700^{+}
85-89	1990/91	22 000^{+}	17 000^{+}
Cohort born in 1906/10			
0	1908/09	8 511	6 969
1	1909/10	1 974	1 791
2	1910/11	864	811
3	1911/12	581	584
4	1912/13	452	437
5- 9	1915/16	336	333
10-14	1920/21	251	271
15-19	1925/26	330	322
20-24	1930/31	396	377
25-29	1935/36	328	307
30-34	1940/41	278	249
35-39	1945/46	282	240
40-44	1950/51	289	234
45-49	1955/56	418	317
50-54	1960/61	639	443
55-59	1965/66	1 050^{+}	650^{+}
60-64	1970/71	1 750^{+}	1 050^{+}
65-69	1975/76	2 900^{+}	1 750^{+}
70-74	1980/81	4 800^{+}	3 100^{+}
75-79	1985/86	8 000^{+}	5 300^{+}
80-84	1990/91	13 500^{+}	9 400^{+}

Table A (cont.)

Age	Central point of period	Death rates per 100, 000 Males	Females
Cohort born in 1911/15			
0	1913/14	7 880	6 364
1	1914/15	1 779	1 637
2	1915/16	739	730
3	1916/17	661	633
4	1917/18	579	571
5- 9	1920/21	327	316
10-14	1925/26	173	183
15-19	1930/31	287	295
20-24	1935/36	342	302
25-29	1940/41	281	232
30-34	1945/46	240	202
35-39	1950/51	207	168
40-44	1955/56	263	204
45-49	1960/61	390	287
50-54	1965/66	620+	400+
55-59	1970/71	1 000+	610+
60-64	1975/76	1 700+	1 000+
65-69	1980/81	2 900+	1 700+
70-74	1985/86	4 800+	2 900+
75-79	1990/91	8 000+	5 200+
Cohort born in 1916/20			
0	1918/19	7 397	5 856
1	1919/20	1 566	1 417
2	1920/21	756	754
3	1921/22	444	400
4	1922/23	341	298
5- 9	1925/26	196	185
10-14	1930/31	155	156
15-19	1935/36	243	219
20-24	1940/41	320	210
25-29	1945/46	234	182
30-34	1950/51	166	130
35-39	1955/56	185	134
40-44	1960/61	235	178
45-49	1965/66	370+	260+
50-54	1970/71	600+	380+
55-59	1975/76	1 000+	580+
60-64	1980/81	1 700+	960+
65-69	1985/86	2 900+	1 650+
70-74	1990/91	4 800+	2 800+
Cohort born in 1921/25			
0	1923/24	6 483	5 086
1	1924/25	1 168	982
2	1925/26	489	458
3	1926/27	321	305
4	1927/28	265	238

Table A (cont.)

Age	Central point of period	Death rates per 100, 000	
		Males	Females
5- 9	1930/31	184	158
10-14	1935/36	137	118
15-19	1940/41	199	163
20-24	1945/46	265	180
25-29	1950/51	149	99
30-34	1955/56	149	90
35-39	1960/61	174	117
40-44	1965/66	230+	160+
45-49	1970/71	370+	230+
50-54	1975/76	600+	350+
55-59	1980/81	1 000+	550+
60-64	1985/86	1 700+	940+
65-69	1990/91	2 900+	1 600+
Cohort born in 1926/30			
0	1928/29	6 453	4 992
1	1929/30	980	879
2	1930/31	397	366
3	1931/32	253	233
4	1932/33	209	176
5- 9	1935/36	153	130
10-14	1940/41	100	82
15-19	1945/46	155	121
20-24	1950/51	152	80
25-29	1955/56	123	68
30-34	1960/61	137	75
35-39	1965/66	170+	100+
40-44	1970/71	225+	140+
45-49	1975/76	370+	210+
50-54	1980/81	600+	320+
55-59	1985/86	1 000+	520+
60-64	1990/91	1 700+	900+
Cohort born in 1931/35			
0	1933/34	5 480	4 185
1	1934/35	735	602
2	1935/36	346	291
3	1936/37	251	186
4	1937/38	190	146
5- 9	1940/41	127	93
10-14	1945/46	82	64
15-19	1950/51	106	54
20-24	1955/56	124	54
25-29	1960/61	116	62
30-34	1965/66	135+	70+
35-39	1970/71	165+	90+
40-44	1975/76	220+	130+
45-49	1980/81	370+	200+
50-54	1985/86	600+	300+
55-59	1990/91	1 000+	500+

Table A (cont.)

Age	Central point of period	Death rates per 100, 000	
		Males	Females
Cohort born in 1936/40			
0	1938/39	4 708	3 592
1	1939/40	515	400
2	1940/41	249	204
3	1941/42	198	146
4	1942/43	147	132
5- 9	1945/46	109	73
10-14	1950/51	56	40
15-19	1955/56	101	44
20-24	1960/61	112	46
25-29	1965/66	110+	50+
30-34	1970/71	125+	65+
35-39	1975/76	160+	86+
40-44	1980/81	215+	125+
45-49	1985/86	370+	190+
50-54	1990/91	600+	290+
Cohort born in 1941/45			
0	1943/44	3 471	2 663
1	1944/45	337	268
2	1945/46	210	174
3	1946/47	158	122
4	1947/48	114	82
5- 9	1950/51	74	43
10-14	1955/56	41	29
15-19	1960/61	96	41
20-24	1965/66	105+	45+
25-29	1970/71	100+	50+
30-34	1975/76	120+	62+
35-39	1980/81	155+	84+
40-44	1985/86	210+	120+
45-49	1990/91	370+	180+
Cohort born in 1946/50			
0	1948/49	2 654	2 044
1	1949/50	214	177
2	1950/51	141	105
3	1951/52	107	85
4	1952/53	93	55
5- 9	1955/56	62	38
10-14	1960/61	39	27
15-19	1965/66	90+	35+
20-24	1970/71	100+	38+
25-29	1975/76	95+	45+
30-34	1980/81	110+	60+
35-39	1985/86	150+	80+
40-44	1990/91	205+	110+

Table A (cont.)

Age	Central point of period	Death rates per 100,000	
		Males	Females
Cohort born in 1951/55			
0	1953/54	2 161	1 646
1	1954/55	163	134
2	1955/56	112	89
3	1956/57	96	62
4	1957/58	79	50
5- 9	1960/61	53	33
10-14	1965/66	38+	26+
15-19	1970/71	80+	32+
20-24	1975/76	80+	35+
25-29	1980/81	90+	43+
30-34	1985/86	110+	58+
35-39	1990/91	145+	75+
Cohort born in 1956/60			
0	1958/59	1 881	1 439
1	1959/60	136	117
2	1960/61	94	64
3	1961/62	75	55
4	1962/63	57	51
5- 9	1965/66	45+	33+
10-14	1970/71	35+	25+
15-19	1975/76	70+	29+
20-24	1980/81	70+	34+
25-29	1985/86	80+	43+
30-34	1990/91	100+	54+
Cohort born in 1961/65			
0	1963/64	1 670	1 286
1	1964/65	101	80
2	1965/66	70+	60+
3	1966/67	52+	51+
4	1967/68	45+	44+
5- 9	1970/71	40+	29+
10-14	1975/76	34+	23+
15-19	1980/81	66+	27+
20-24	1985/86	64+	32+
25-29	1990/91	80+	40+
Cohort born in 1966/70, 1971/75, 1976/80, 1981/85 and 1986/90			
0		1 400+	1 000+
1		80+	60+
2		60+	50+
3		50+	40+
4		40+	40+
5- 9		30+	25+
10-14		30+	20+
15-19		50+	25+
20-24		50+	30+

Table B. AVERAGE AGE AT DEATH WITHIN THE AGE INTERVAL 0-1 YEARS AND 1-2 YEARS

Period	Boys		Girls	
	0-1 years	1-2 years	0-1 years	1-2 years
1871-80	0.2840	0.4200[x]	0.2990	0.4200[x]
1881-90	0.2840	0.4200[x]	0.2990	0.4200[x]
1891-00	0.2990	0.4220	0.3170	0.4262
1901-10	0.2948	0.4111	0.3100	0.4136
1911-20	0.2727	0.4105	0.2873	0.4135
1921-30	0.2500	0.3977	0.2632	0.3982
1931-40	0.2046	0.4124	0.2027	0.4082
1941-50	0.1479	0.4380	0.1556	0.4251
1951-60	0.1068	0.4688	0.1151	0.4565
1961-70[xx]	0.0750	0.4600	0.0800	0.4600

x) 0.5 year has been assumed in both life tables. Since this value is completely unrealistic it has been replaced here by 0.42, which should tally better with actual conditions.

xx) The values of a_x for this period have been estimated on the basis of the life tables for 1961-67.

Table C. PROJECTED SURVIVAL FACTORS BY SEX, AGE, AND PERIOD

k_x	Survival factors for 5-year periods with mid at:				
	1970/71	1975/76	1980/81	1985/86	1990/91
MALES					
k_b	0.9853	0.9853	0.9853	0.9853	0.9853
k_o	0.9973	0.9978	0.9978	0.9978	0.9978
k_5	0.9980	0.9982	0.9985	0.9985	0.9985
k_{10}	0.9971	0.9974	0.9975	0.9980	0.9980
k_{15}	0.9953	0.9960	0.9965	0.9968	0.9975
k_{20}	0.9949	0.9951	0.9958	0.9963	0.9964
k_{25}	0.9941	0.9945	0.9949	0.9950	0.9955
k_{30}	0.9925	0.9929	0.9932	0.9935	0.9937
k_{35}	0.9902	0.9904	0.9907	0.9909	0.9912
k_{40}	0.9851	0.9853	0.9854	0.9855	0.9856
k_{45}	0.9761	0.9761	0.9761	0.9761	0.9761
k_{50}	0.9605	0.9610	0.9610	0.9610	0.9610
k_{55}	0.9330	0.9353	0.9353	0.9353	0.9353
k_{60}	0.8885	0.8917	0.8929	0.8929	0.8929
k_{65}	0.8246	0.8246	0.8287	0.8287	0.8287
k_{70}	0.7333	0.7333	0.7334	0.7354	0.7354
k_{75}	0.6056	0.6056	0.6056	0.6056	0.6056
k_{80}	0.4497	0.4497	0.4497	0.4497	0.4497
FEMALES					
k_b	0.9894	0.9894	0.9894	0.9894	0.9894
k_o	0.9978	0.9982	0.9982	0.9982	0.9982
k_5	0.9986	0.9987	0.9989	0.9989	0.9989
k_{10}	0.9986	0.9987	0.9988	0.9989	0.9989
k_{15}	0.9982	0.9983	0.9984	0.9985	0.9986
k_{20}	0.9976	0.9979	0.9981	0.9981	0.9982
k_{25}	0.9971	0.9972	0.9974	0.9975	0.9976
k_{30}	0.9960	0.9962	0.9964	0.9965	0.9967
k_{35}	0.9940	0.9945	0.9947	0.9949	0.9953
k_{40}	0.9903	0.9913	0.9918	0.9922	0.9925
k_{45}	0.9842	0.9856	0.9869	0.9876	0.9881
k_{50}	0.9751	0.9763	0.9778	0.9793	0.9803
k_{55}	0.9586	0.9607	0.9624	0.9636	0.9653
k_{60}	0.9296	0.9330	0.9353	0.9374	0.9390
k_{65}	0.8801	0.8833	0.8876	0.8929	0.8962
k_{70}	0.8000	0.8056	0.8113	0.8153	0.8214
k_{75}	0.6695	0.6876	0.6942	0.6995	0.7055
k_{80}	0.4993	0.5191	0.5310	0.5383	0.5440

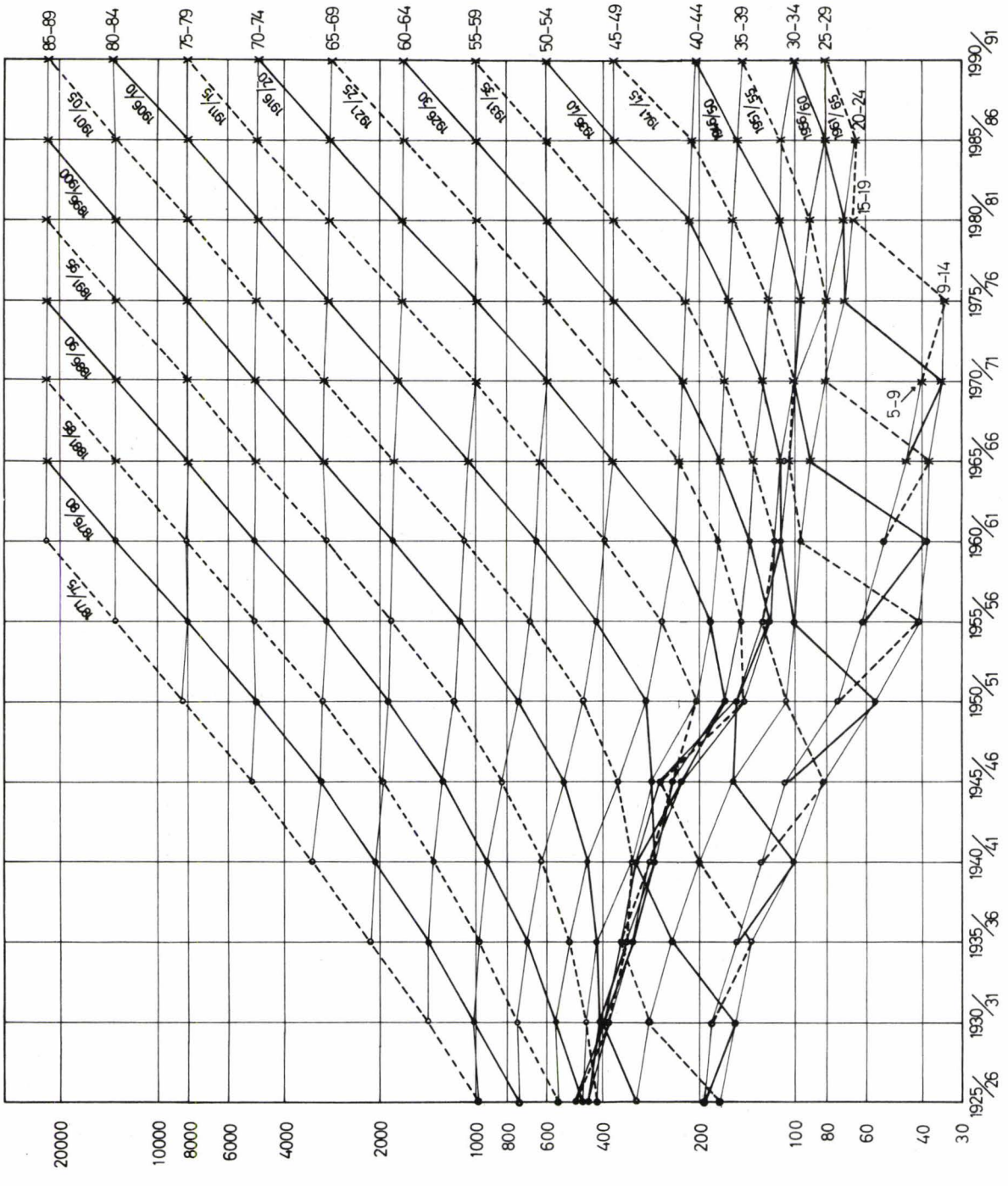

Diagram 1. OBSERVED AND PROJECTED DEATH RATES OF MALE COHORTS BY AGE AND PERIOD
Central death rates per 100 000 mean population by five-year age groups from 5-9 years up to 85-89 years

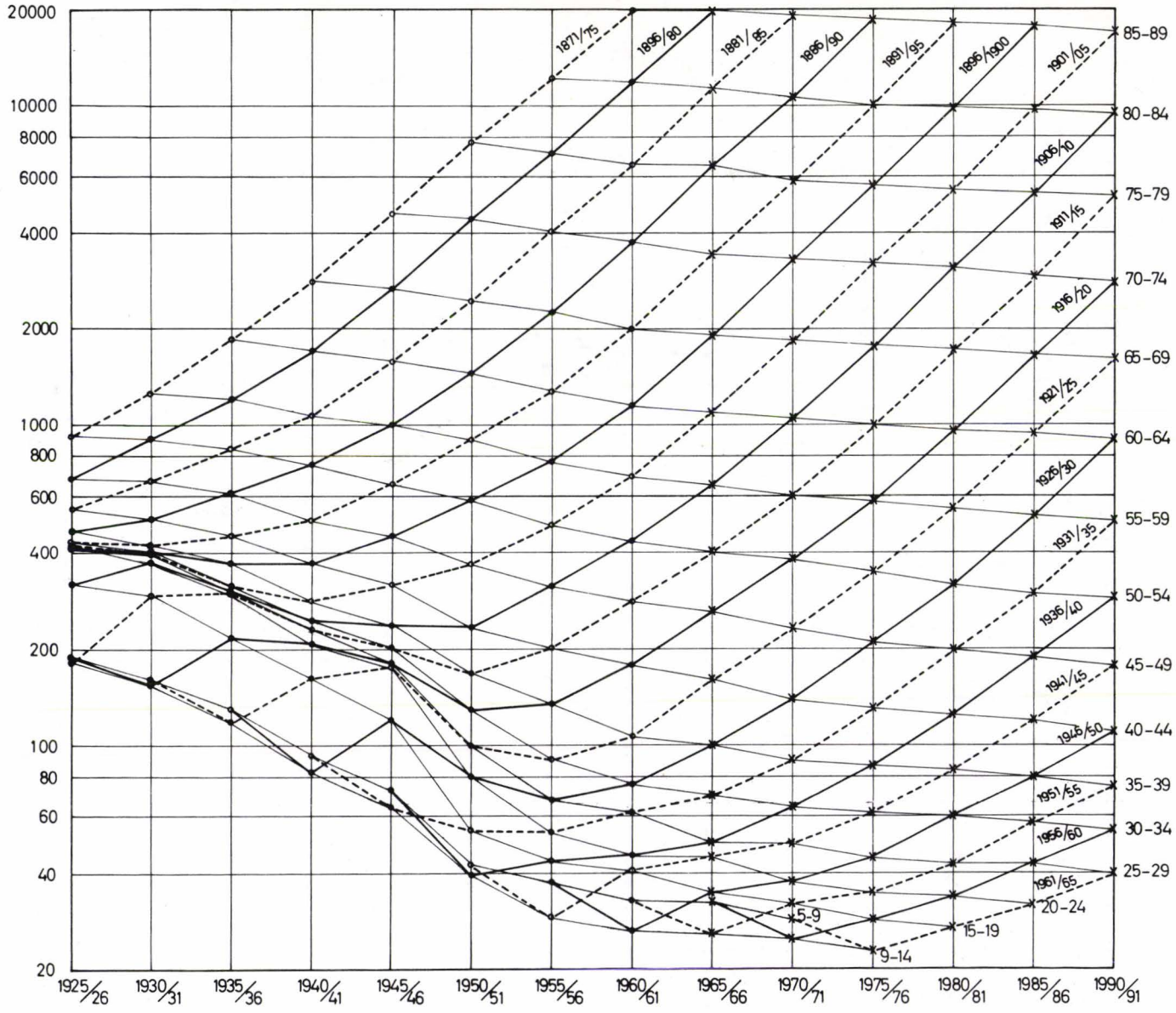

Diagram 2. OBSERVED AND PROJECTED DEATH RATES OF FEMALE COHORTS BY AGE AND PERIOD
Central death rates per 100 000 mean population by five-year age groups from 5-9 years up to 85-89 years

A STUDY OF MORTALITY AMONG COHORTS BORN IN THE 18TH AND 19TH CENTURY

by Ingvar Holmberg

EN STUDIE I DÖDLIGHETEN BLAND KOHORTER FÖDDA PÅ 1700- OCH 1800-TALET

by Ingvar Holmberg

SAMMANFATTNING

Denna rapport beskriver några resultat från en analys av dödlighetsutvecklingen i Sverige. Som underlag för denna analys har beräknats dödlighetstabeller avseende 5-årsperioderna 1751/1755 till 1956/1960 samt generationslivslängdstabeller för födda mellan 1751/55 och 1871/75. Dessutom har genom en relativt begränsad extrapolering beräkningarna utsträckts till generationer födda under förra hälften av 1700-talet samt i början av 1900-talet. Vissa livslängdstabellvärden av speciellt intresse presenteras i tabellerna 3-10.

Beräkningarna har baserats på centrala dödskvoter efter ålder och perioder 5-årsvis. Formel (1) visar, hur transformationen av periodtal till generationstal sker. Överlevelsetalen har beräknats direkt från centrala dödskvoter enligt sambandet i formel (3). En analys av exaktheten i denna beräkningsmetod visar att de fel den kan ge upphov till är av försumbar storleksordning. För de perioder, där det är möjligt att göra jämförelser med officiella livslängdstabeller, finner man en mycket god överensstämmelse. En jämförelse har också gjorts med resultaten från beräkning enligt Reed-Merrell's metod. Denna ger emellertid genomgående större avvikelser från de officiella talen.

Den allmänna bild av dödlighetens utveckling som medellivslängden för åldern 0 år visar, överensstämmer mycket väl med den utveckling man finner om man studerar de allmänna dödstalen. Man finner också det intressanta förhållandet att de svängningar som förekommer i periodtal, i stor utsträckning elimineras när beräkningarna baseras på kohorter. Man kan dessutom skönja en kontinuerlig nedgång i dödligheten ända från mitten av 1700-talet. För männen är denna dödlighetsnedgång begränsad till lägre åldrar medan dödligheten i högre åldrar håller sig på en i det närmaste konstant nivå ända till senare delen av 1800-talet. I åldrar över 65 år är nedgången mycket obetydlig under hela den studerade perioden.

1. Introduction

The rising interest shown during recent years in mortality trends and the factors by which they are determined has led to greater importance being attached to studies of mortality in what are now highly developed countries.

This interest in what is generally referred to as generation mortality has put Sweden in a special position, thanks to its possession of a series of statistical records extending very far back in time and providing the material for a study of mortality trends in a present-day industrialised country from the time when it was still in the pre-industrial stage of its development.

Starting in the mid-18th century we have a body of fairly reliable demographic data concerning population and population change which enables us to study complete generations from 1750 up to about 1870. A fairly moderate degree of extrapolation makes it possible extend the study backwards in time to the beginning of the 18th century and forwards to the beginning of the 20th century.

The work of the Demographic Institute at the University of Göteborg regarding the development of demographic models also includes an analysis of the early development of population in Sweden, using the technique developed in recent years. The present paper is intended to illustrate some of the results so far achieved in this work regarding the development of mortality.

2. Demographic data and methods

The official population statistics provide information on deaths by age and sex in five-year age classes from 1750 onwards for separate calendar years and summarised over longer periods (5 and 10 years). The statistical data designated official comprise the results of the studies made by Gustav Sundbärg, the Swedish statistician, of the earlier statistical population records. In his corrections of the earlier population statistics Sundbärg discovered considerable errors, among other things in information on population. One predominant feature was that of heaping in certain age classes. The greatest error seems to occur in the

ages of 5-9 years, where the total has been recorded too high at the expense of the youngest age class (0-4 years); the same phenomenon is to be seen in subsequent age classes, though here it is somewhat less pronounced.

The age distribution used in population statistics was also applied to information on deaths. This makes it quite likely that similar errors also occur in statistics on deaths, since the primary data were collated by the same persons in both cases.

It is not possible to correct the mortality statistics in the same way as was done with the population statistics, since the effect of migration cannot be separated. For this reason Sundbärg refrained entirely from any such attempts, but in order to eliminate the effect of these errors to a certain extent he made use of the uncorrected population figures when computing death rates.

Thus these rates, which are quoted in the official statistics, refer to periods. In order to transform them into cohort data, successive mean values were calculated for the death rates for a given age and referring to two consecutive quinquennial periods with a leap of five years for each new age class. If t and z denote five-year intervals, the following relation between the cohort and the period death rates is obtained:

$$m_x^t = 1/2\,(m_x^{t+x} + m_x^{t+x+5}) \qquad (1)$$

where m_x^t is the death rate at the age of x years among people born during period t.

This method entails an approximation in two respects. Firstly it is assumed that deaths are evenly distributed within age-groups, a reasonable assumption when dealing with quinquennial age intervals. Secondly, an unweighted mean value of death rates is used instead of a weighted mean value. Provided that the first assumption is acceptable, the latter error can be shown to be in the order of:

$$C = \frac{D_x^t \cdot \frac{\delta}{1-\delta} - D_x^{t+5} \cdot \frac{\delta}{1+\delta}}{D_x^t + D_x^{t+5}} \qquad (2)$$

where D_x^t and D_x^{t+5} are the number of deaths at the age of x, x+4 during period t, t+4, and t+5, t+9 respectively, and δ is the deviation between the mean populations of the separate five-year periods and the mean population of the entire ten-year period. Consequently an increase in the number of deaths ($D_x^t < D_x^{t+5}$) generally results in an under-

estimate of mortality, while a fall ($D_x^t < D_x^{t+5}$) leads to an overestimate.

Thus the applicability of the method used is based on the assumption of a fairly even temporal development of population size and of the number of deaths in the various age classes. However, large fluctuations can be observed in the number of deaths during certain years. One can mention by way of example the years 1772 and 1773, when mortality rose very steeply as a result of a series of epidemics. In the age class 10-14 years, which exhibited the largest rise in the number of deaths, the number rose by over 90 % between 1771 and 1772, and by a further 90 % from 1772 to 1773. After this one could observe a very steep fall in the number of deaths, so that the figure for 1774 was only 20 % of that for the preceding year. When basing the compulations on quinquennial periods instead, these violent fluctuations are smoothed out to a certain extent. If the example quoted above is studied in the summaries for the periods 1766/70, 1771/75, and 1776/80, one obtains first an increase of c. 87 % and then a decline of 50 %. Owing to the very slight increase of the population in this age class between the quinquennial periods (0.2 % and 2 %, respectively), this variation in deaths will involve in the first instance an underestimation of the death rate of c. 0.07 % and in the second an overestimation of c. 0.6 %.

In both cases the deviations are quite extreme - in the majority of cases the variation in the population figures is 10-15 % and that of the number of deaths 25-30 %. The effect on the death rates has the form of an over- or underestimate of c. 2 %. In many cases, however, the variations in these two components will cancel one another out, so that the effect on the death rates will be far less than this average - perhaps no more than some tenths per cent.

What is more, periods with extreme values of mortality are distributed over a large number of cohorts when the life tables are computed, and this tends to eliminate their importance still further. The minor deviations then remaining will to a considerable extent be smoothed out altogether in, say, the computation of the expectation of life at various ages.

The method used for computing the life tables is based on the well-known relation between survival rates and instantaneous deaths rates:

$$l(x) = l_o \cdot e^{-\int_o^x \mu(z)dz} \qquad (3)$$

In applying this formula the integral in the exponent is replaced by a discrete sum and

appears as follows when quinquennial age distribution is applied:

$$1_x = 1_o \cdot e^{-\sum_{x=0}^{x-5} m_z (5)} \qquad (4)$$

This means that the sum of the death rates for five age years is replaced by five times the unweighted mean value for the corresponding class. Consequently this procedure rests upon the assumption that the curve describing the variation of the death rates by age in each separate quinquennial interval can be approximated by a straight line. This is an acceptable approximation for ages of over 5 years, but it is somewhat less satisfactory for the lowest age class, 0-4 years.

The alternatives to the above method for constructing abridged life tables on the basis of death rates are to employ either Reed-Merrell's method or the direct relation between central death rates and mortality probabilities:

$$n q_x = \frac{n \cdot n m_x}{1 + 1/2 \cdot n \cdot n m_x} \qquad (5)$$

In order to investigate some of the properties of these methods, a number of computations were made of life tables for periods where "exact" tables exist, namely 1851/60 (e_o c. 40 for men and 44 for women), 1871/80 (45 and 49) and 1891/1900 (51 and 54). Reed-Merrell's method was used together with a computation according to formula (4), above, both with and without a division of the first age interval into subintervals 0, 1-2 and 3-4. The results of these computations are given in Table 1.

Table 1. COMPUTATION OF THE EXPECTATION OF LIFE AT AGE 0 YEARS ACCORDING TO DIFFERENT METHODS

Period	Expectation of life at age 0 years							
	Method, men				Method, women			
	1	2	3	4	1	2	3	4
1851/60	40.48	40.11	39.63	39.60	44.39	44.11	43.74	43.55
1871/80	45.30	45.13	44.66	44.46	48.60	48.51	48.12	47.97
1891/00	50.94	50.89	50.73	50.57	53.63	53.65	53.53	53.40

1: Exact computation from mortality probabilities; official figures

2: According to formula (4) with division of the first age class

3: According to formula (4) without division of the first age class

4: According to Reed-Merrell's method

Thus there is very good agreement between the three computation methods and the "true" values as regards the computation of e_o, the deviation amounting to no more than 1 - 2%. It is also to be observed that Reed-Merrell's method gives the greatest difference throughout.

These deviations can be studied more closely in Table 2, where the survival rates for certain exact ages have been set out. One observes among other things that the difference can almost entirely be attributed to the first age class. The deviation for the subsequent ages up to 65 years is practically constant. One also notes a variation with the mortality level such that the difference is greater with higher mortality and conversely.

The computations of life tables presented in the following section are based on the relation given in formula (4) above, and the first age interval 0-4 years has been used undivided, since certain problems are involved in the deduction of cohort data for the subintervals.

Table 2. INDEX VALUES FOR COMPARING SURVIVAL RATES AT CERTAIN EXACT AGES ACCORDING TO DIFFERENT COMPUTATION METHODS AND CORRESPONDING RATES OF OFFICIAL LIFE TABLES

Period	1851/60			1871/80			1891/00		
Method[1]	2	3	4	2	3	4	2	3	4
Age									
0	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000
1	9 915	-	-	9 941	-	-	9 970	-	-
3	9 884	-	-	9 939	-	-	9 968	-	-
5	9 902	9 698	9 654	9 938	9 765	9 735	9 966	9 887	9 872
15	9 884	9 680	9 635	9 940	9 765	9 735	9 966	9 866	9 870
25	9 879	9 674	9 629	9 938	9 765	9 732	9 964	9 886	9 867
50	9 868	9 663	9 608	9 932	9 761	9 720	9 969	9 889	9 867
65	9 858	9 653	9 570	9 972	9 791	9 747	9 978	9 899	9 864
80	10 206	9 991	9 592	10 265	10 091	9 835	10 199	10 118	9 927

1) Concerning the different alternatives cf. Table 1.

Note: These index values are obtained by putting the corresponding survival rates of the official life tables, (method I), equal to 10 000.

3. SOME PRINCIPLE FEATURES OF MORTALITY DEVELOPMENT

An analysis of mortality development since the 18th century on the basis of the crude death rate reveals a more or less constant level up to the beginning of the 19th century, though with considerable variations around the mean level. These variations are directly connected with bad harvests and various epidemics. Starting at the beginning of the 19th century one can discern a falling trend which continued until the 1940s, when a stabilisation seems to have occurred. Another typical feature of this later period is that the violent fluctuations in the death rate decline and eventually virtually disappear.

Now the crude death rate is no suitable measure for comparisons over long periods in which large structural population changes also occur. If the effect of age distribution is eliminated one finds that the decline in mortality observable from the beginning of the 19th century is mainly confined to the lower age groups.

There are also reasons to assume that mortality development has differed as between men and women. A computation of the death rates for the two sexes separately reveals that the excess mortality of men, which was normally 8-9 %, rises towards 11-12 % until the mid-19th century. However, this is a minimum difference, since the women have an age distribution with a larger number of older members. A standardised comparison also shows that the actual excess mortality was probably in the area of 22-23 %, and no real fall in mortality among men is to be observed until the second half of the 19th century.

The stabilisation of the crude death rate that can be observed from about the mid-1940s is naturally due to the rising proportion of elderly persons in the population.

The question now arises whether this general pattern of development can also be observed in the results obtained when computing life tables for the corresponding period and whether a computation on a cohort basis can further elucidate this development.

For the purposes of this analysis life tables have been computed for each of the quinquennial periods from 1750 to 1960. Life tables have also been computed on the basis of the cohort death rates, the deduction of which was dealt with in the previous section, regarding quinquennial generations from the same point in time. Complete tables of this kind can only be computed for births up to and including the quinquennial period 1871-75, but with the help of a moderate extrapolation these computations can be extended to include the generation of 1901-05. Furthermore a retrojection has been made back to the beginning of the 18th century to give a somewhat longer perspective of the development of cohort mortality. This

extrapolation has been made graphically on the logarithms of the death rates. The figures extrapolated for the later period are somewhat more reliable because the period is shorter, added to which the mortality change was quite small in the ages in question. The latter of these circumstances can also justify an extrapolation regarding the earlier period; here too the trend is very weak, in this instance in the younger ages.

Tables 3-10 show various life table values, namely expectations of life e_o, e_5 and $e_{15/65}$ together with survival rates l_5, l_{15}, l_{50}, and l_{65} for periods and cohorts; men and women are considered separately in each instance.

The development of mortality on the basis of expectation of life for periods shows the same trend as the crude death rate, i.e. a practically constant level though subject to violent variations around this level up to the beginning of the 19th century, after which a stabilisation and a rising trend are to be observed. The increase is very even and can be estimated to about 2.5 % for men and 2.2 % for women per period.

If instead one now computes the expectation of life on a generation basis one finds, interestingly enough, that the violent fluctuations disappear altogether and a very even development is obtained. As regards men, the increase in expectation of life is very slight for those born before the five-year period 1771-75. The rise sets in after this, quite slowly to begin with but accelerating thereafter.

As regards the women one finds the same even development, but the decline in mortality can be said to have begun somewhat earlier in their case. Here one can discern a continuous improvement starting at the beginning of the 18th century. In both sexes the generations of the first half of the 19th century exhibit a steep rise in the expectation of life, but this is followed by a certain levelling out until the expectation of life again begins to rise more swiftly.

It is interesting to note here the agreement for the latest generations between the value of e_o observed during a period and the "actual outcome", i.e. e_o for the corresponding generation; the difference is considerably larger as regards the older generations.

The change in mortality which has occurred during the two hundred years or so covered by the Swedish population statistics may not seem particularly impressive so long as attention is confined to the increase in the expectation of life at birth - from 35 years in 1751/75 to 71 in 1956/60 for men and from 38 to 75 for women. But the picture is entirely changed when considering the implications for survival. According to the mortality level in 1751/55,

57.7 % of male births attained the age of 15 and only 25.0 % attained the age of 65. The rates are somewhat higher for females, namely 60.7 % and 30.7 %, respectively. According to the latest life table, shown here, regarding the period 1956/60, 97.2 % of male births attained the age of 15 (98.0 % of female births) and c. 76.1 % the age of 65 (females 83.3 %).

According to the cohort life tables, 58.0 % of the male generation of 1751/55 attained the age of 15 (61.1 % of the females) and 20.3 % (25.5 % of the females) the age of 65. The partially extrapolated rates for the period 1901/05 give 83.2 % (85.0 %) and 60.2 % (66.6 %), respectively. The retrojection indicates that, of the generation of 1701/05, 53.8 % (56.5 %) attained the age of 15 and 19.9 % (25.0 %) the age of 65.

Thus the results obtained regarding survival during the earlier years are quite similar whether one studies period data or cohort data, and this corroborates the thesis stated above, namely that mortality remained practically constant during this first period. One can obtain further corroboration for this assumption from a study of the relative age distribution of the population; this too is practically constant up to the mid-18th century. A computation of e_o on the basis of the average age distribution during the period 1751/90 results in $e_o = 34.6$ (both sexes), while a conventional computation gives $e_o = 35.2$.

One interesting feature is that the difference between the sexes regarding the proportion of survivors at the age of 65 has increased in the latest life tables while becoming entirely negligible at the age of 15.

The most striking change in mortality is perhaps not quite so obvious from the figures quoted above. The decline in mortality has been almost entirely confined to ages under 65 and exceedingly insignificant as regards the upper age groups. In order to study this aspect one can form ratios of the type l_{65}/l_{50}, l_{70}/l_{65} etc., but one can also study the different components of the expectation of life at birth. One finds that the above-mentioned increase during the period 1751/56 - 1956/60 observed for men can be divided up as follows:

a. An in rease in the average time lived in the age interval 0-65 years by those dying in the interval, from 20.8 years to 46.7 years.
b. An increase in the expectation of life at age 65, from 11.6 years to 14.1 years.
c. More men survive to the age of 65, as shown above.

Similar estimates for cohorts give much the same results, although in this case computations cannot be extended as far ahead in time.

The great change in mortality which has occurred during this long period is however strikingly brought out in the above simple estimate.

Table 3. LIFE TABLE VALUES FOR MALES. PERIODS 1751/55-1956/60

Period	e_0	e_5	$e_{15/65}$	l_5	l_{15}	l_{50}	l_{65}
1751/55	34.78	48.84	38.42	6 357	5 767	3 898	2 502
1756/60	33.66	46.01	36.53	6 495	5 889	3 649	2 125
1761/65	32.02	45.47	36.58	6 219	5 582	3 463	2 009
1766/70	34.31	47.86	37.86	6 389	5 801	3 835	2 416
1771/75	28.39	40.26	34.05	6 145	5 213	2 879	1 512
1776/80	35.51	49.25	38.74	6 447	5 871	4 029	2 691
1781/85	32.38	45.12	37.07	6 351	5 568	3 572	2 216
1786/90	32.76	44.76	35.29	6 505	5 910	3 435	1 981
1791/95	36.40	49.13	38.77	6 630	6 111	4 187	2 570
1796/00	35.87	48.91	38.57	6 557	6 065	4 125	2 512
1801/05	37.48	49.06	38.49	6 845	6 360	4 352	2 591
1806/10	29.95	41.78	34.34	6 284	5 532	3 121	1 579
1811/15	33.59	46.05	36.48	6 476	5 960	3 679	2 033
1816/20	36.81	48.26	37.96	6 822	6 329	4 194	2 443
1821/25	40.05	50.15	38.62	7 186	6 781	4 600	2 793
1826/30	37.10	46.82	36.60	7 075	6 623	4 058	2 224
1831/35	38.67	47.89	37.14	7 233	6 794	4 300	2 460
1836/40	38.86	48.11	37.48	7 240	6 791	4 347	2 511
1841/45	40.95	50.05	38.76	7 368	6 925	4 721	2 897
1846/50	40.46	49.49	38.59	7 353	6 887	4 656	2 814
1851/55	39.57	48.69	38.17	7 294	6 777	4 498	2 679
1856/60	39.22	49.13	39.01	7 168	6 505	4 525	2 882
1861/65	42.43	52.34	40.50	7 331	6 828	5 051	3 347
1866/70	41.66	50.69	39.40	7 412	6 925	4 894	3 102
1871/75	44.24	52.77	39.95	7 596	7 200	5 189	3 542
1876/80	44.57	53.58	41.04	7 547	7 012	5 289	3 791
1881/85	46.44	54.32	41.19	7 772	7 280	5 521	3 993
1886/90	49.55	55.99	41.64	8 078	7 668	5 919	4 382
1891/95	49.92	55.93	41.56	8 146	7 745	5 969	4 426
1896/00	51.18	56.63	41.64	8 261	7 910	6 108	4 589
1901/05	52.80	57.34	41.84	8 432	8 102	6 316	4 788
1906/10	55.92	58.92	42.50	8 720	8 462	6 801	5 215
1911/15	56.59	58.68	42.33	8 860	8 611	6 859	5 255
1916/20	54.81	56.48	40.69	8 887	8 586	6 447	4 986
1921/25	60.81	61.59	43.77	9 112	8 932	7 468	5 919
1926/30	61.55	61.84	44.00	9 190	9 026	7 588	6 002
1931/35	63.28	63.00	44.70	9 291	9 153	7 882	6 294
1936/40	64.18	63.45	45.09	9 361	9 240	8 078	6 405
1941/45	66.57	65.08	45.67	9 489	9 385	8 353	6 818
1946/50	69.21	66.51	46.61	9 671	9 603	8 812	7 229
1951/55	70.78	67.61	47.13	9 743	9 685	9 021	7 498
1956/60	71.36	68.02	47.31	9 768	9 715	9 107	7 611

Table 4. LIFE TABLE VALUES FOR MALES. COHORTS 1751/55-1871/75

Cohort	e_0	e_5	$e_{15/65}$	l_5	l_{15}	l_{50}	l_{65}
1751/55	32.91	45.39	36.43	6 424	5 796	3 679	2 025
1756/60	32.43	45.18	36.66	6 354	5 658	3 602	2 051
1761/65	31.97	44.85	36.95	6 303	5 535	3 501	2 030
1766/70	32.18	45.57	37.14	6 266	5 557	3 533	2 042
1771/75	32.56	45.85	37.29	6 294	5 605	3 602	2 068
1776/80	33.21	46.05	37.01	6 399	5 772	3 660	2 111
1781/85	33.86	46.84	36.78	6 427	5 919	3 701	2 202
1786/90	34.76	47.14	36.74	6 567	6 065	3 791	2 287
1791/95	34.94	47.22	37.03	6 594	6 038	3 817	2 311
1796/00	35.44	47.16	37.48	6 044	6 700	3 893	2 415
1801/05	35.16	48.10	37.83	6 557	5 966	3 883	2 473
1806/10	35.54	49.86	38.30	6 379	5 921	3 928	2 563
1811/15	37.95	51.34	38.90	6 646	6 228	4 272	2 884
1816/20	40.64	52.41	39.44	7 001	6 574	4 619	3 229
1821/25	41.81	53.05	39.86	7 128	6 680	4 752	3 416
1826/30	42.48	53.79	40.21	7 153	6 720	4 858	3 556
1831/35	43.31	54.28	40.45	7 236	6 798	4 986	3 694
1836/40	43.79	54.42	40.59	7 302	6 835	5 056	3 785
1841/45	44.23	54.56	40.93	7 360	6 835	5 130	3 879
1846/50	43.97	54.49	41.23	7 323	6 733	5 117	3 897
1851/55	43.88	55.12	41.51	7 229	6 676	5 125	3 924
1856/60	44.85	56.31	41.88	7 247	6 774	5 289	4 088
1861/65	46.10	57.00	42.09	7 371	6 935	5 466	4 263
1866/70	46.98	57.12	42.23	7 501	7 029	5 543	4 376
1871/75	47.55	57.31	42.34	7 573	7 079	5 610	4 453

Table 5. LIFE TABLE VALUES FOR MALES. COHORTS 1876/80-1901/05; EXTRAPOLATED DEATH RATES

Cohort	e_0	e_5	$e_{15/65}$	l_5	l_{15}	l_{50}	l_{65}
1876/80	48.68	58.12	42.46	7 657	7 229	5 767	4 605
1881/85	50.83	58.77	42.58	7 922	7 528	6 041	4 872
1886/90	52.52	59.41	42.77	8 110	7 741	6 266	5 112
1891/95	53.81	60.26	43.07	8 204	7 878	6 463	5 331
1896/00	55.78	61.55	43.69	8 344	8 069	6 764	5 621
1901/05	58.62	63.13	44.70	8 573	8 315	7 211	6 020

Table 6. LIFE TABLE VALUES FOR MALES. COHORTS 1701/05-1746/50; EXTRAPOLATED DEATH RATES

Cohort	e_0	e_5	$e_{15/65}$	l_5	l_{15}	l_{50}	l_{65}
1701/05	30.83	44.60	36.37	6 099	5 379	3 322	1 989
1706/10	31.15	44.87	36.54	6 129	5 428	3 399	1 990
1711/15	31.40	45.02	36.61	6 163	5 477	3 416	2 009
1716/20	31.84	45.37	36.83	6 210	5 527	3 485	2 113
1721/25	32.27	45.81	37.12	6 241	5 568	3 526	2 140
1726/30	32.47	46.00	37.19	6 256	5 599	3 543	2 147
1731/35	32.61	46.00	37.12	6 284	5 638	3 613	2 166
1736/40	32.74	46.04	37.04	6 307	5 681	3 613	2 187
1741/45	32.73	45.85	36.83	6 329	5 724	3 597	2 098
1746/50	32.69	45.62	36.65	6 351	5 744	3 624	1 999

Table 7. LIFE TABLE VALUES FOR FEMALES. PERIODS 1751/55-1956/60

Period	e_0	e_5	$e_{15/65}$	l_5	l_{15}	l_{50}	l_{65}
1751/55	38.27	51.79	29.79	6 650	6 068	4 326	3 065
1756/60	37.00	48.67	38.36	6 805	6 200	4 169	2 669
1761/65	35.37	48.53	38.54	6 508	5 880	3 969	2 590
1766/70	37.39	50.23	39.21	6 680	6 105	4 251	2 924
1771/75	31.19	42.70	35.35	6 427	5 579	3 273	1 857
1776/80	38.03	50.92	39.61	6 713	6 157	4 365	3 079
1781/85	35.50	47.76	38.66	6 633	5 868	4 023	2 740
1786/90	37.04	48.83	38.36	6 791	6 238	4 179	2 674
1791/95	39.33	50.72	39.56	6 977	6 463	4 566	3 021
1796/00	39.09	51.14	39.82	6 880	6 392	4 563	3 067
1801/05	40.77	50.99	39.52	7 207	6 727	4 785	3 111
1806/10	33.48	44.68	36.34	6 637	5 916	3 671	2 065
1811/15	37.35	48.95	38.40	6 835	6 319	4 281	2 666
1816/20	40.54	50.67	39.26	7 207	6 723	4 721	3 074
1821/25	44.04	53.13	40.60	7 513	7 096	5 252	3 613
1826/30	41.87	50.97	39.33	7 412	6 977	4 889	3 125
1831/35	43.08	51.47	39.40	7 565	7 146	5 013	3 266
1836/40	43.24	51.74	39.80	7 558	7 114	5 094	3 347
1841/45	45.80	53.76	40.84	7 738	7 323	5 463	3 804
1846/50	44.88	53.07	40.76	7 668	7 207	5 374	3 681
1851/55	43.90	52.18	40.32	7 615	7 114	5 197	3 498
1856/60	43.13	51.94	40.58	7 509	6 869	5 084	3 510
1861/65	46.09	55.15	41.98	7 603	7 107	5 543	4 029
1866/70	45.63	53.85	41.09	7 695	7 222	5 447	3 852
1871/75	48.13	55.71	41.54	7 874	7 475	5 732	4 253
1876/80	47.74	55.75	42.07	7 804	7 240	5 664	4 345
1881/85	49.78	56.63	42.24	8 029	7 524	5 921	4 586
1886/90	52.35	57.77	42.41	8 299	7 870	6 225	4 892
1891/95	52.73	57.62	42.29	8 382	7 957	6 275	4 939
1896/00	54.05	58.48	42.44	8 479	8 098	6 427	5 127
1901/05	55.43	58.84	42.47	8 650	8 282	6 580	5 273
1906/10	58.17	60.14	42.83	8 905	8 629	6 942	5 616
1911/15	59.24	60.41	43.04	9 035	8 768	7 107	5 755
1916/20	57.65	58.49	41.74	9 057	8 737	6 784	5 466
1921/25	63.05	62.78	44.17	9 287	9 103	7 680	6 294
1926/30	63.66	63.04	44.39	9 343	9 181	7 811	6 373
1931/35	65.44	64.19	45.03	9 446	9 324	8 102	6 666
1936/40	66.83	65.18	45.76	9 512	9 404	8 365	6 914
1941/45	69.31	67.12	46.47	9 603	9 522	8 659	7 338
1946/50	71.74	68.55	47.32	9 748	9 700	9 053	7 745
1951/55	73.73	70.18	47.96	9 802	9 768	9 291	8 098
1956/60	74.91	71.21	48.28	9 827	9 797	9 394	8 332

Table 8. LIFE TABLE VALUES FOR FEMALES. COHORTS 1751/55-1871/75

Cohort	e_0	e_5	$e_{15/65}$	l_5	l_{15}	l_{50}	l_{65}
1751/55	36.19	48.07	38.06	6 727	6 108	4 154	2 554
1756/60	35.83	48.11	38.38	6 653	6 084	4 082	2 608
1761/65	35.47	48.02	38.71	6 594	5 877	3 999	2 628
1766/70	35.58	48.52	38.85	6 551	5 871	4 009	2 651
1771/75	36.07	49.14	39.14	6 567	5 910	4 111	2 709
1776/80	36.83	49.44	38.99	6 673	6 068	4 217	2 783
1781/85	37.62	50.33	38.96	6 710	6 210	4 300	2 903
1786/90	38.84	50.75	39.02	6 883	6 386	4 433	3 024
1791/95	39.23	50.96	39.23	6 928	6 389	4 484	3 056
1796/00	39.89	51.04	39.71	7 040	6 408	4 589	3 170
1801/05	39.89	52.03	40.15	6 914	6 329	4 596	3 243
1806/10	39.91	53.55	40.41	6 733	6 275	4 579	3 296
1811/15	42.35	54.71	40.77	7 019	6 597	4 889	3 604
1816/20	45.02	55.66	41.20	7 357	6 938	5 234	3 951
1821/25	45.92	56.04	41.35	7 460	7 033	5 315	4 102
1826/30	46.55	56.68	41.65	7 486	7 065	5 409	4 223
1831/35	47.41	57.21	41.88	7 562	7 139	5 521	4 354
1836/40	48.08	57.43	42.04	7 645	7 200	5 610	4 471
1841/45	48.44	57.44	42.14	7 703	7 233	5 658	4 532
1846/50	47.62	56.85	42.28	7 641	7 072	5 563	4 473
1851/55	47.43	57.24	42.44	7 562	7 019	5 552	4 482
1856/60	47.96	58.00	42.61	7 554	7 079	5 633	4 566
1861/65	48.93	58.50	42.69	7 649	7 211	5 767	4 684
1866/70	49.72	58.44	42.78	7 784	7 294	5 851	4 774
1871/75	50.17	58.59	42.82	7 839	7 327	5 889	4 829

Table 9. LIFE TABLE VALUES FOR FEMALES. COHORTS 1876/80-1901/05; EXTRAPOLATED DEATH RATES

Cohort	e_0	e_5	$e_{15/65}$	l_5	l_{15}	l_{50}	l_{65}
1876/80	51.35	59.50	42.92	7 914	7 468	6 035	4 991
1881/85	53.73	60.49	43.12	8 163	7 749	6 313	5 299
1886/90	55.70	61.49	43.46	8 340	7 941	6 551	5 588
1891/95	57.21	62.60	43.82	8 428	8 073	6 760	5 860
1896/00	59.49	64.21	44.54	8 564	8 270	7 096	6 259
1901/05	62.21	65.67	45.30	8 777	8 504	7 479	6 663

Table 10. LIFE TABLE VALUES FOR FEMALES. COHORT 1701/05-1746/50; EXTRAPOLATED DEATH RATES

Cohort	e_0	e_5	$e_{15/65}$	l_5	l_{15}	l_{50}	l_{65}
1701/05	33.70	47.56	38.00	6 307	5 647	3 755	2 496
1706/10	33.88	47.64	38.13	6 332	5 681	3 821	2 467
1711/15	34.04	47.65	38.17	6 360	5 718	3 840	2 454
1716/20	34.31	47.82	38.22	6 392	5 758	3 883	2 535
1721/25	34.59	48.00	38.27	6 424	5 798	3 867	2 551
1726/30	34.95	48.26	38.41	6 463	5 848	3 887	2 577
1731/35	35.28	48.51	38.56	6 495	5 889	3 991	2 625
1736/40	35.51	48.65	38.57	6 521	5 930	4 019	2 663
1741/45	35.55	48.45	38.43	6 554	5 972	4 027	2 572
1746/50	35.73	48.28	38.27	6 610	6 023	4 080	2 493

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