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Life Tables for West Bengal, 1941-50[1]

1. Introduction

IN the construction of the Life Tables, 1941-50 for the East India Zone[1], which normally consisted of West Bengal, Bihar, Orissa, Assam and Manipur, the data for West Bengal were excluded for several reasons. In the first place, there was the partition of India in 1947, which meant also the partition of Bengal, Bengal was divided into two portions, the new state of West Bengal, in the Union of India and East Pakistan. The vast influx of over 2 million persons (called Displaced Persons), into West Bengal, occasioned by the partition, was expected to change the composition of the indigenous population (about 23 million in 1951) so thoroughly that a comparison of the age composition between 1941 and 1951 for deriving mortality rates had practically no significance. Secondly, the age-composition of Bengal at the 1941 census was seriously distorted by its two major communities (Hindu and Muslim) seeking to inflate their respective numbers at the census enumerations; any further work on the basis of the 1941 Census figures, unless corrected for such inflation (of about 1,7 million in a population of about 22 million), was, therefore, devoid of meaning.

These difficulties of dealing with the census data of West Bengal (1941-1951) naturally raised the problem of overcoming them in order to construct life tables for West Bengal for this period, especially when they were excluded from

[1]Revised version of paper written when both authors were in Ihe Indian Statistical Institute, Calcutta.

1. Census of India, 1951, Paper No. 2 of 1954, Actuarial Report, 1951 (Life Tables).

the zonal life tables. Fortunately, the 1951 Census tabulated the displaced persons separately, which made it possible to work with the enumerated population, exclusive of this special Hindu immigration caused by the partition. The corresponding Muslim immigration, which was of much smaller magnitude (around 500,000 persons) could on the other hand, be taken alongwith normal emigration during the decade. Further, in respect of the inflation of census figures in 1941, we have the figures for the enumerated population corrected for inflation by sex and age groups[2] (see Appendix I). Thus, the way paved for the construction of life tables for West Bengal, 1941-50 as presented in this paper.

2. The Method and its Rationale

2.1. The method followed here is based on the same principle as the one underlying the construction of the Zonal Life Tables, 1941-50 viz., tracing a group of persons living at a given point of time to their survivors at another point of time separated by a given interval. In the present case, we derive mortality rates experienced by different age groups of the resident population of the 1941 Census (inclusive of the then migrants). The survivors of these to the corresponding higher (10 years older) age-groups are given by the population enumerated by the 1951 Census, provided the latter are corrected for migration during the inter-censal period.

2.2. *Correction of 1951 Age Tables for Displaced Persons.* We have the 1951 Census age tables for West Bengal,[3] adjusted for errors of age, both according to individual age and age-groups (0-4, 5-9 etc-) for each sex, inclusive of displaced persons. The number of displaced persons of each sex are also given separately in age-groups *F(x)*. The proportion of persons at ages *x* and above in the total is graduated by the graphic method and further adjusted by inspection of third differences of the graphic values. The successive differences of the final values of *F(x)* give the adjusted numbers of displaced persons in the appropriate age-groups, which, when substracted from the age table, give the adjusted population of each sex in 1951 in age-groups, exclusive of displaced persons, (Appendix 2, Table A.2.1. Col. 4).

2. P. B. Gupia, Estimation of Net Inflation in West Bengal Census, 1941 **by Sex** and **Age-groups** (presented at the Seminar on Problems relating to Demography **in** West **Bengal, Calcutta,** September, 1967).

. Demographic Problems of Eastern India, Bureau of Applied Economics and Statistics, **Government** of West Bengal, 1969. See also Appendix 1.

3. Census of India, 1951, Paper No. 3 of 1954, Age Tables—1951 Census.

In West Bengal normal immigrants and emigrants are to be treated separately as they differ substantially in their characteristics. While normal immigration is predominantly male, heavily concentrated in the working age and is to a large extent impannanent and non-cumulative in character, normal emigration comprised more or less whole families. (Muslim emigration referred to above is also *>f the same nature as normal emigration, as it consisted of entire families forced to leave their homes[4], and can, therefore, be taken together with normal emigration.) This differentiation between the characteristics of immigration and emigration relating to West Bengal means that the emigrant population would grow to a future date as the parent population replenished by births and reduced by deaths, that births to the immigrant population could be ignored and that the population at a future date can be taken simply to be the one that survived to that date.

The intercensal fresh (net) migration rate[5] is split up into a fresh immigration rate and a fresh emigration rate by a suitable formula (see Appendix 3) and the respective numbers of fresh immigrants and emigrants obtained. Taking the immigrants first, they are divided by sex, by applying the sex-ratio of Calcutta immigrants 1961[6] (male about 70% and female 30%). -Then for each sex by a suitable formula (see Appendix 4) employing East India Zone Life Table, 1941-50 and the graduated (graphic) age-distribution of Calcutta immigrants, 1961, a survival factor to 1951 is calculated and applied to give the total immigrant population as in 1951, the distribution of which in age-groups is obtained by applying again the age-distribution of Calcutta immigrants (Appendix 5, Table A.5.1, Col. 2).

As for the fresh emigrants, they are separated into normal and Muslim emigrants, the latter being available from the West Bengal Census Report.' The

4. P.B. Gupta, Demographic Report of West Bengal, 1901-1961, (submitted to the Government of India. 1969) Chapter IV.

5. ***Ibid*** 4. The intercensal i.e. fresh (net) migration rate, West Bengal, 1941-51 was —.00114.

6. **Census Oflndia,** 1961, Migration Tables. Vol. I, Part Il-C(iii).

7. ***Ibid*** 4. **The** number of Muslim emigrants was 531,370 and so that of normal emigrants **40,620,** total 571,990 (See Appendix 3).

former could be supposed to be uniformly distributed over the intercensal period, and therefore concentrated at the mid-point of the period. The latter, though taking place over the period 1946-51 not uniformly but with noticeable humps in 1948 and 1950[8], could be also supposed, as an approximation, to be concentrated at the mid-point of this period. Applying the decennial exponential rate of natural increase of West Bengal population (from 1941 population corrected for inflation to 1951 population excluding displaced persons) and allowing for the fresh migration rate[9], for half and one-fourth to the normal and Muslim emigrants respectively, we get the total emigrant population as of 1951. Its distribution by sex and age-groups is obtained (Appendix 5, Table A.5.1, Col. 3) by applying the sex-ratio and sex-age distribution of the 1951 population exclusive of displaced persons as derived from Appendix 2, Table A. 2.1, Col. 4.

Thus, by substracting the fresh immigrants from and adding the fresh emigrants to the corresponding 1951 population, we get the distribution of the 1951 population excluding displaced persons by sex and age-groups, corrected for inter-censal migration, which at ages 10 and above, are the survivors of the 1941 population corrected for inflation, (Appendix 2, Table A.2.1, Col. 6).

2.3. Derivation of Survival Probabilities

(*a*) Kozakeiwicz's interpolation formulae give the populations at pivotal ages 2, 7, . . . , 57 in 1941 from those in *quinquennial* age-groups (Appendix 1, Table A.1.1, Cols. 3 and 5) and at ages 12, 17, . . . , 67 in 1951, from those in *quinquennial* age-groups (Appendix 2, Table A.2.1, Col. 6), and hence the ten-year survival probabilities ${}_{10}p_x$ for $x = 2,7, \ldots, 57$. Then taking $\frac{1}{4}(\log {}_{10}p_{x-5} + \log {}_{10}p_x) = \log {}_5p_x$, we have the values of ${}_5p_7 \cdot {}_5p_{12} \cdots {}_5p_{57}$ and since ${}_5p_2 = {}_{10}p_2/{}_5p_7$, we have the five-year survivor probabilities ${}_5p_x$, for $x = 2, 7, \ldots, 57$, i.e., ${}_5p_{x+\frac{1}{2}}$ for $x = 2, 7, \ldots, 57$ since x (last birth day) $= x + \frac{1}{2}$.

(*b*) Using Kozakeiwicz's interpolation formula on

$$\log {}_5p_{x+\frac{1}{2}} = \log p_{x+\frac{1}{2}} + \log p_{x+1\frac{1}{2}} + \log p_{x+2\frac{1}{2}} + \log p_{x+3\frac{1}{2}} + \\ + \log p_{x+4\frac{1}{2}}$$

8. *Ibid* 4. Chapter 1.

9. *Ibid* 4. The decennial rate of natural increase was .11834. This rate being applied for appropriate periods, respectively to the Muslim and normal emigrants, the total of both as at 1951 was 590,421, consisting of 317,862 males and 272,559 females.

(a sum of five consecutive values), values of log $p_{x+\frac{1}{2}}$ and hence of $p_{x+\frac{1}{2}}$ at individual ages x, for $x = 2, 3, 4 \ldots, 61$ are obtained.

(c) By a third difference osculatory interpolation formula, applied to the above, we have the values of single year probabilities p_x for $x = 4, 5, \ldots, 60$. The above procedure is applied to males and females separately.

2.4. Values of p_x at the Advanced Ages

(a) MALES : ages 54 and above.

In the difference table drawn up with the values of colog p_x, $\frac{\text{colog } p_{x+1}}{\text{colog } p_x}$ is found to be nearly constant from $x = 54$ to $x = 59$, which suggests a Makehem curve, colog $p_x = A + BC^x$. The parameters of the curve are determined by using all the appropriate values and the fit is found to be very good in the range of ages, 54-60. The values of colog p_x given by the curve and hence of p_x from $x = 54$ to $x = 100$ are therefore adopted.

(b) FEMALES : ages 58 and above.

By a similar process, a Gompertz graduation, colog $p_x = BC^x$ appears to be applicable in the range of ages 58-60. The fit with the curve is satisfactory in the range, and the values given by the curve from $x = 58$ to $x = 110$ are adopted.

2.5. Values of p_x at the Early Ages

(a) MALES : ages 0 to 11.

(i) In a difference table drawn up from the table of values of l'_x ($x = 4$ to 12) constructed with values of p_x from $x = 4$ to $x = 11$ and $l_4 = 1{,}00000\ \Delta^2 l'_{x+1}/\Delta^2 l_x$ are about constant which suggests the curve $l'_x = A + Hx + BC^x$. The parameters are determined by using all the values and the graduated values of l'_x are very close to the values in the original table.

(ii) For extending the graduated table to ages at infancy ($x = 0$ to 4), we assume the formula $l_x = A + Hx + BC^x + me^{-nx}$ for $x = 0$ to 12.

Here the term me^{-nx} is supposed to be insignificant at ages $x \geqslant 5$, i.e., $l_x = l'_x + me^{-nx}$ $(0 \leqslant x \leqslant 4)$ and $l_x = l'_x$ $(x \geqslant 5)$.

The graduated table of l'_x is extended to age 0 using $l'_x = A + Hx + BC^x$ and l'_5 being assumed to be $= l_5$,

$$\frac{l_5}{p_4} = l_4 = l'_4 + me^{-4x},$$

or
$$l_4 - l'_4 = me^{-4x}. \qquad (1)$$

We obtain the value of p_3 by interpolation from the values of $p_{2\frac{1}{2}}$, $p_{3\frac{1}{2}}$, $p_{4\frac{1}{2}}$ and $p_{5\frac{1}{2}}$ (the leading differences of $p_{2\frac{1}{2}}$ up to the third, sharply diminishing to a very small value),

$$\frac{l_4}{p_3} = l_3 = l'_3 + me^{-3n} \quad \text{or} \quad l_3 - l'_3 = me^{-3n},$$

or
$$l_3 - l'_3 = me^{-3n}. \qquad (2)$$

By solving equations (1) and (2), we get the values of m and n.

(iii) The values of me^{-nx}, calculated for all values of x from 0 to 12, show that they are negligible at ages 5 and above. From the values of $l_x = l'_x + me^{-nx}$, being obtained from ages 0 to 12, $p_x\,(l_{x+1})/l_x$ is obtained for $x = 0$ to 11.

Of these, p_0, p_1 and p_2 are those not obtained initially from the data, and $p_0 = 0.777647$, $q_0 = 0.222353$ are quite reasonable; p_3 and p_4 are of course exactly reproduced and the values of p_x ($x = 5$ to $x = 11$) are almost exactly the same as those described in Sec. 2.3 (*c*), progressing smoothly into those at higher ages.

(*b*) FEMALES : ages 0 to 9.

(i) To the values of l'_x from ages 4 to 9, constructed with $l_5 = 1{,}000{,}000$, the equation $l'_x = A + Hx + l_{x(x-1)}/2 + BC^x$ gives a much better fit than when the second degree term is omitted from the equation (as in the case of males). The parameters of the equation are found as before, and the graduated values of l'_x are extended to age 0, but the method used for males is not suitable. The method adopted is to find the ratio of infant mortality rate of females to that of males from Vital Statistics, West Bengal, 1941-50[10] and applying it (identi-

10. Census of India, 1951, Vol. 6, Part 1B, Vital Statistics.

fying infant mortality rate with q_0) to q_0 (males) as determined above, q_0 (females) = .202077.

Then $$\frac{l_1}{l_0} = \frac{l_1 + me^{-n}}{l_0 + m} = p_0 = 1 - q_0 \qquad (3)$$

and $$\frac{l_5}{l_4} = \frac{l_5'}{l_4' + me^{-4n}} = p_4. \qquad (4)$$

Whence m and n are determined and found comparable with the male values.

(ii) The values of me^{-nx} are calculated for $x = 0$ to 9, and are found to be negligible for ages 5 and above. From the values of

$$l_x = l_x + me^{-nx} \ (x = 0 \text{ to } 9),$$

p_x is calculated from age 1 to 8 (p_0 being already obtained as above). Of these p_1, p_2 and p_3 are not given initially by the data; the other values are exactly those given in Sec. 2.3 (*c*), p_4 being reproduced as a matter of course, and they pass smoothly into those at higher ages except only at age 9, where the value is abruptly low. This value is therefore replaced by one obtained by interpolation from values of p_6, p_8, p_{10} and p_{12}.

2.6. Values of p_x in the Main Table

(*a*) Males (ages 12-55) and females (ages 10-57). The values of p_x for the respective ranges have been determined as described above in Sec. 2.3(*c*).

2.7. Construction of the Life Tables and Associated Functions

(*a*) MALE TABLE. With values of the rates of mortality q_x (from those of p_x obtained above) for all ages 0 and above and l_0 = 1,000,000, the d_x and the l_x columns are obtained. L_x values from ages 0 to 11 are obtained by integration of the equation of l_x at these ages. For higher ages, L_x is taken to be = $\frac{1}{2}(l_x + l_{x+1})$. From the L_x values, values of T_x and finally of e_x^0 are obtained at all values of x, 0 and above.

(*b*) FEMALE TABLE. The value of q_x instead of showing the usual (as in the male table) fall from age 0 to a certain age, and thereafter a continuous rise to the end of life show an initial fall to age 18, after which, with a

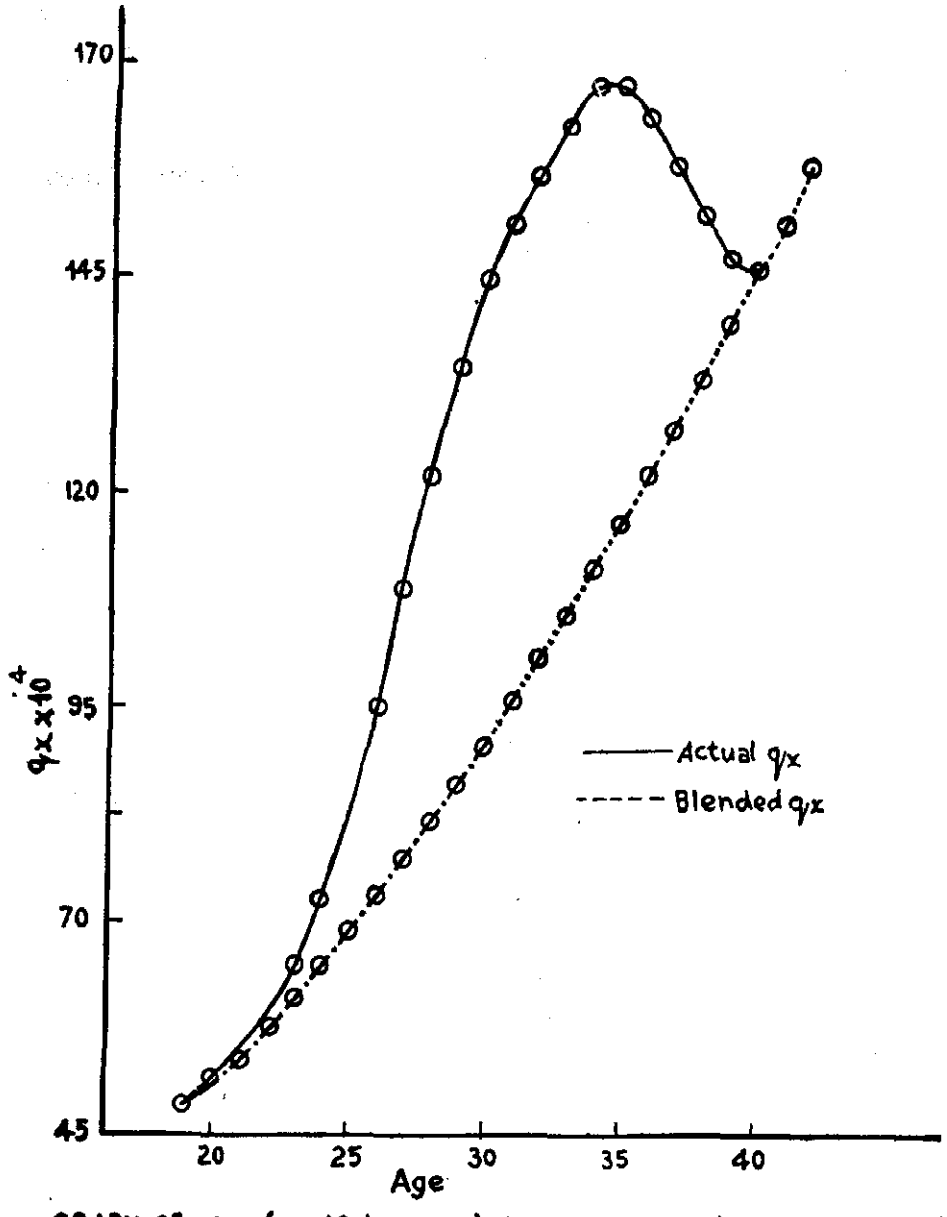
point of inflexion at about age 28, the rates rise to age 35, fall to age 40 and then increase continuously to the end of life. This seems to be a special feature of female mortality in West Bengal during 1941-50, caused perhaps by the abnormal conditions prevailing in this period. The point is discussed later, but it appears necessary to estimate the hypothetical set of mortality rates in this region which would show the usual run of values (as in the male table) and by difference, bring out the special feature in more or less quantitative terms. For this purpose, the lower curve through q_{18}, q_{19} and q_{20} is blended with the upper curve through q_{41}, q_{42} and q_{43} by a method of osculatory interpolation. The blended values of q_x for $x = 21$ to 40 taken in conjunction with the original values at lower and higher ages show a continuous rise from 18 to higher ages, (see graph).

For construction of the female life table, the same procedure is adopted as in the male table. Additional columns of l'_x, q'_x and d'_x are however provided corresponding to blended values of rates of mortality at ages 21 to 40, l'_{21} being of course $= l_{21}$ of the main table. l'_{41}/l'_{21} may then be compared to l_{41}/l_{21} to show to what extent survival probability from age 21 to age 41 is diminished by the progression of the rates of mortality in this region differing from the usual run of values. The life tables are given at the end of the paper.

3. Results and Comparison with Other Life Tables

3.1. Male and Female Mortality

The general pattern of sex differentials of mortality in all-India life tables, 1941-50 and 1951-60; East India Zone Life Tables, 1941-50; and Eastern Zone Life Tables, 1951-60 is that female mortality is lighter at infancy, heavier at ages of childhood, lighter at adolescence and the early adult ages, heavier at the mature adult ages and finally lighter at the older ages. Granting that females have greater hold on life at all ages, the heavier mortality of females at the mature adult ages which cover the female reproductive period, is explained by the risks of maternity which are substantial in this country. The heavier female mortality at ages of childhood might, it is suggested, be due to the comparative neglect in the rearing of female children at these ages. But this theory does not seem to be tenable as the impact of this neglect should be greatest at infancy, but on the contrary, female mortality is lighter in the first year of life, not only by the life tables mentioned above but also by all official life tables



GRAPH OF q_x (x=19 tox=42) FOR FEMALES (WEST BENGAL) (1941-1951); ACTUAL & BLENDED

constructed in India. This is also supported by the lighter infant mortality of females from registration data. In fact, it is an anomaly that female mortality should be heavier at ages of childhood beginning from age 1. It may be partly due to the fact that the derived rates of mortality at very young ages are not entirely dependable.[11]

This anomaly, however, does not exist in the West Bengal life tables, 1941-50, presented in this paper. Here, female mortality is lighter at all ages 0-18, heavier at ages 19-46 and lighter at ages 47 and above. This result agrees with the findings of T. G. Ackland in his Actuarial Report, 1911, viz., that "the general trend over the whole as indicating a superior mortality for female, as compared with the male, lives in the early years, and after middle life, with an inferior mortality in the intermediate years, appears to be well-marked and unmistakable".[12]

In the present tables, complete expectation of life of females is 'arger at all ages beyond 32, smaller at ages, 1 to 32 and larger at age 0. As $\overset{o}{e}_x$ is a cumulative function representing the total mortality at ages .Y and above, the above result follows from the sex differentials in mortality rates mentioned above.

3.2. Comparison with East India Zone Life Tables, 1941-50

As West Bengal data were excluded for the construction of the East India Zone Life Tables, 1941-50, a comparison of these tables with those for West Bengal, 1941-50 would show the differentials in mortality between West Bengal and other constituents of the East India Zone taken together, during 1941-50, In the male tables, $\overset{\circ}{e}_{\pounds}$ for West Bengal is greater at all ages, 0-55 but less at higher ages, whereas in the female tables, $\overset{\circ}{e}_x$ for West Bengal is greater at all ages. Further the difference in $\overset{\circ}{e}_0$ is quite substantial, viz., 6.24 years for males and 7.44 years for females.

Comparing mortality rates at individual ages, for males, q_x in West Bengal is smaller at ages 0-2, larger at ages 3-8, smaller at ages 9-65 and larger at ages 66 and above. For females, q_x for West Bengal is larger at age 0 but smaller at all higher ages. </„, however, is nearly the same in both cases (male or female), showing that infant mortality rate for each sex was nearly the same for

11. *Ibid* 1, p. 22.
12. Census of India, Actuarial Reports, 1881-1931 and 1951, pp. 186-87.

West Bengal and East India Zone during 1941-50, and was of the order of 200-225 per 1,000.

To compare mortality in age-groups *(x-to x* + ?)> the function $tp_{\pounds}$ is a convenient index. From the comparison of $q_{\pounds}$ at individual ages as des;ribed above it would be fruitful to compare the values of $_5p_a$,$_5p_5$ and $_5p^{\wedge}$ in the male tables on account of fluctuations in the differential mortality as ages included in the corresponding age-groups, and in the female table, the values of $_5$/v The values are given in the following table.

TABLE 1—VALUES OF $_tp_a$ WEST BENGAL LIFE TABLES 1941-50 **AND EAST INDIA ZONE** LIFE TABLES, 1941-50

		Mo If a		*Females*	
t	*x*	*West Bengal*	*E.I. Zone*	*West Bengal*	*E.I. Zone*
5	**0**	**.660459**	**.642591**	**.689910**	**.€47790**
5	**5**	**.889103**	**.898220**	—	—
5	**65**	**.627916**	**.638996**	—	—

For females, $_6$#« for West Bengal is larger at $x = 0$. It must also be larger at all higher *quinquennial* values of *x.* For males, however, $_5p_x$ is larger at $x = 0$ but smaller at $x = 5$ and 65. It is evident that it must be larger at all *quinquennial* ages between $x = 10$ and x •-= 60 (both inclusive) and smaller at and from age 70,

Broadly it can be said that while female mortality of West Bengal was lighter than that of East India at all ages except at infancy, where it is very nearly the same, male mortality was lighter from adolescence to fairly old ages, heavier at the more advanced ages, and fluctuated between the positive and negative differentials during ages of infancy and childhood. In the overall West Bengal experienced lighter mortality than East Indian Zone during 1941-50 and this despite of the fact that West Bengal's mortality was heavier than usual on account of the Bengal famine of 1943-44 and other natural calamities during this period.

3.3. Comparison with Life Table of All-India and Other Population Zones, 1941-50

Considering only the over-all mortality represented by $\overset{\circ}{e}_{0t}$ we find that for males, $\overset{\circ}{e}_Q$ for West Bengal (34.39) is larger than that for all-India (32.45), North

India (34.00), West India (31.33) and Central India (25.35) but smaller than that for South India (36.22). For females, e°_{Q} for West Bengal (34.85) is again larger than that for All-India (31.66), North India (34.36), West India (30.93) and Central India (25.64) but smaller than that for South India (37-23). Thus West Bengal's mortality, both for males and females was lighter than that of all-India, and that of every other zone except the South India Zone.

3.4. Special Feature of Female Mortality between Ages 21 and 40 West Bengal, 1941-50

As noticed earlier, the mortality rates show contrary to expectation a sharp rise to age 35 and then a fall to age 40. As the range of ages, 21-40 covers most of the reproductive period, the excess mortality over that represented by the blended rates was possibly associated with the increased maternal risks, larger incidence of abortion, miscarriage and still births from malnutrition and disease caused by the Bengal famine and other natural disasters during the decade.[13] From this point of view, the increased rates should come down, as they did, when the end of reproductive period was practically reached.

As already stated, a quantitative measure of this excess mortality is provided by the extent by which ${}_{2Q}p_{31}$ on the experienced rates of mortality is less than on the blended rates. The respective values are 0.7768 and 0.8249 from the female life table.

13. Census of India, 1951, Vol. 6, Part I-A, Report, p. 81.
14. *Ibid* 4, Chapter IV.
15. *Ibid* 4, Chapter IV, table 4.1.

Appendix 1

POPULATION OF WEST BENGAL ENUMERATED AT 1941 CENSUS, AND CORRECTED FOR INFLATION BY SEX AND AGE-GROUPS

Age group $x-x+4$	*Males*		*Females*	
	**Enumerated*	*Corrected*	**Enumerated*	*Corrected*
0–4	1,420,928	1,796,218	1,349,491	1,581,092
5–9	1,373,564	1,456,690	1,229,536	1,266,723
10–14	1,231,471	1,303,354	1,079,593	1,100,292
15–19	1,101,219	1,160,971	969,534	980,091
20–24	1,124,901	1,029,540	959,638	859,891
25–29	1,160,424	887,156	919,653	748,937
30–34	1,065,696	755,727	799,698	619,492
35–39	888,080	635,248	639,759	508,538
40–44	710,464	536,675	509,808	425,323
45–49	556,530	427,149	409,845	342,107
50–54	414,437	339,529	329,876	277,385
55–59	296,027	262,862	249,906	212,662
60+	497,325	361,434	549,792	323,614
Total	11,841,066	10,952,553	9,996,229	9,246,147

SOURCE : As in Footnote (2).

*Values of Π_x (as defined above) applied to the total enumerated population, 1941 (Census of India, 1951, Final Population Totals, Paper No. 1 of 1952) on the 1951 lay-out of the State.

The method for deriving the corrected population is based on the following formulae :

(i) $I_x = P(\Pi_x - \Pi'_x) + I.\Pi'_x$,
(ii) $P'_x = P \cdot \Pi_x - I_x$,

where P = total enumerated population, 1941;
I = estimated total inflation;

IT, = graduated proportion of the enumerated population in the age-group beginning with *x* (Age Tables, 1941, Census of India, 1951, Paper No. 3 of 1954, with slight modifications in the age-groups 0-4 and 5-9, which are left uncorrected);

11x = estimated proportion of the time population in the age-group beginning with *x*, from the graduated values of earlier censuses.

I_K = inflation in the age-group beginning with *x;*

and Pi = true population in the age-group beginning with *x.*

Appendix 2

TABLE A.2.1—CORRECTION OF 1951 AGE TABLES FOR DISPLACED PERSONS AND INTERCENSAL MIGRATION

Age group	*Age table population (1951) in 00's*	*Displaced persons (1951) in 00's (adjusted)*	*1951 population exclusive of Displaced persons (2)-(3) in 00's*	*Net migrants (1951) in 00's*	*1951 population exclusive of D.P's and net of migration in 00's (4)-(5)*
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
			Males		
0—4	13998	1286	12712	−201	12913
5—9	14976	1258	13718	−234	13952
10—14	14972	1239	13733	−199	13932
15—19	14383	1227	13156	+171	12985
20—24	13542	1189	12353	+ 95	12258
25—29	12573	1067	11506	+ 66	11440
30—34	11167	909	10258	+ 41	10217
35—39	9394	761	8633	+ 43	8590
40—44	7801	626	7175	+ 56	7119
45—49	6343	498	5845	+ 64	5781
50—54	4862	386	4476	+ 68	4408
55—59	3496	288	3208	− 45	3253
60—64	2421	205	2216	− 23	2239
65—69	1603	131	1472	− 4	1476
70 and over	1923	115	1808	+153	1655
All ages	133454	11185	122269	+ 51	122218
			Females		
0—4	14214	1275	12939	−240	13179
5—9	14418	1216	13202	−254	13456
10—14	13634	1180	12454	−243	12697

Appendix 2 Table A.2.1. (*contd. on page* 234)

(1)	(2)	(3)	(4)	(5)	(6)
15–19	12662	1118	11544	–100	11644
20–24	11412	997	10415	– 94	10509
25–29	10009	850	9159	– 94	9253
30–34	8373	702	7671	– 78	7749
35–39	6853	563	6290	– 62	6352
40–44	5701	467	5234	– 48	5282
45–49	4732	392	4340	– 31	4371
50–54	3807	326	3481	– 18	3499
55–59	2965	262	2703	– 51	2754
60–64	2226	197	2029	– 35	2064
65–69	1535	124	1411	– 19	1430
70 and above	2108	137	1971	+ 56	1915
All ages	114649	9806	104843	–1311	106154

NOTES : Col. (2) : Number of "age not stated" is estimated and distributed pro-rata over the various age-groups.

Col. (3) : Number of 'age not stated' is estimated and distributed pro-rata over the various age-groups. This distribution of Displaced Persons forms the basis of the procedure described in the test for obtaining the adjusted numbers in the various age-groups.

Col. (5) : From Col. (4), Table A.5.1, Appendix 5.

Appendix 3

In the decennial period, 1941-51, we have Growth of population = Births − Deaths + Fresh net migration divided by the mean population during the period,

$\delta' = (BR) - (DR) + (FMR)$ . . . (1), where δ' = exponential decennial rate of growth and (BR), (DR) and (FMR) respectively the decennial birth, death and fresh migration rates of the resident population considering however the natural population,

$\delta = (BR)_N - (DR)_N$ . . . (2) where δ = exponential decennial rate of natural increase, and $(BR)_N$ and $(DR)_N$ respectively the decennial birth and death rates of the natural population.

If now the migrant population have practically the same fertility and mortality experiences as the natural population or are a small fraction of the latter, we have as a close approximation.

$(BR) = (BR)_N$ and $(DR) = (DR)_N$, so that from equations (1) and (2),

$$\delta' = \delta + FMR \qquad \ldots(3)$$

Let P_1 and M_1 be respectively the resident and migrant populations at the 1941 Census, and similarly P_2 and M_2 at the 1951 Census.

Then, $e^{\delta} = N_2/N_1$, where N_1 and N_2 are the natural population at the 1941 and 1951 Census respectively

$$= \frac{P_2 - M_2}{P_1 - M_1} = \frac{P_2}{P_1} \cdot \frac{1 - K_2}{1 - K_1}, \text{ where } K_1 = \frac{M_1}{P_1} \text{ and } K_2 = \frac{M_2}{P_2}$$

$$= e^{\delta'} \frac{1 - K_2}{1 - K_1}$$

$$\therefore \delta = \delta' + \log_e \frac{1 - K_2}{1 - K_1}$$

$$\text{or } \delta' - \delta = \log_e \frac{1 - K_1}{1 - K_2}.$$

Hence by equation (3),

$$FMR = \log_e \frac{1 - K_1^{14}}{1 - K_2} \qquad \ldots(4)$$

Considering now that the migrant population at either census consists of two

types of migrants, for which the fresh migration rates should be derived separately,

let $$M_1 = M_1' + M_1''$$

and $$M_2 = M_2' + M_2'',$$

where M_1' and M_2' are the numbers of migrants of one type at the 1941 and 1951 Censuses respectively, and similarly M_1'' and M_2'' are those of the other type,

whence $$K_1 = K_1' + K_1''$$

and $$K_2 = K_2' + K_2'', \text{ where } K_1' = \frac{M_1'}{P_1},$$

$$K_1'' = \frac{M_1''}{P_1}$$

and similarly K_2' and K_2''.

Thus from equation (4), writing F for FMR,

$$F = \log_e \frac{1 - K_1' - K_1''}{1 - K_2' - K_2''} = \log_e \frac{(1 - K_1')\left(1 - \frac{K_1''}{1 - K_1'}\right)}{(1 - K_2')\left(1 - \frac{K_2''}{1 - K_2'}\right)}$$

$$= \log_e \frac{1 - K_1'}{1 - K_2'} + \log_e \frac{1 - \frac{K_1''}{1 - K_1'}}{1 - \frac{K_2''}{1 - K_2'}}.$$

Where the first term might be regarded as the fresh migration rate of the first type, F' and the second term as that of the second type, F''.

Similarly F is also

$$= \log_e \frac{1 - K_1'}{1 - K_2''} + \log_e \frac{1 - \frac{K_1'}{1 - K_1''}}{1 - \frac{K_2'}{1 - K_2''}}$$

in which the first term would be F'' and the second F'.

Hence, we may take

$$F' = \frac{1}{2}\left[\log_e \frac{1 - K_1'}{1 - K_2'} + \log_e \frac{1 - \frac{K_1'}{1 - K_1}}{1 - \frac{K_2'}{1 - K_2'}}\right],$$

and

$$F'' = \frac{1}{2}\left[\log_e \frac{1 - \frac{K_1''}{1 - K_1}}{1 - \frac{K_2''}{1 - K_2'}} + \log_e \frac{1 - K_1''}{1 - K_2''}\right],$$

and of course $F' + F'' = F$.

In the present case (West Bengal, 1941-51), M_1' and M_2' are the numbers of *immigrants*, and M_1'' and M_2'' are those of *emigrants* at the 1941 and 1951 Census respectively. Hence in the above, K_1' and K_2' are positive, and K_1'' and K_2'' negative, and the estimated values of

$$F' = +\ .02552,\ F'' = -.02666,\ \text{and } F = -.00114 \qquad \ldots(15)$$

Applied to the mean population, the number of fresh immigrants during the decade was 547,531 and that of fresh emigrants 571,990.

Appendix 4

Assuming uniform distribution of fresh migrants in the decade and in any year of the decade, if FM = number of fresh migrants at all ages during the decade, the number of fresh migrant between ages x and $x + dx$ and the interval t to $t + dt$ of a year, (t in years measured from the end of the decennial period),

$$= \frac{FM}{10} \cdot \Pi_x \cdot dx \cdot dt,$$

where $\Pi_x\, dx$ = proportion of fresh migrants between ages x and $x + dx$.

The survivors of fresh migrants to the end of decennial period

$$= \frac{FM}{10} \int_{x=0}^{\infty} \Pi_x \int_{t=0}^{10} \Pi_x \cdot \frac{l_{x+t}}{l_x} \cdot dx\, dt$$

$$= \frac{FM}{10} \int_{x=0}^{\infty} \Pi_x \left(\int_{t=0}^{10} {}_tp_x \cdot dt \right) dx$$

$$= \frac{FM}{10} \int_{x=0}^{\infty} \Pi_x \, (\mathring{e}_x - {}_{10}p_x \cdot \mathring{e}_{x+10})\, dx$$

$$= \frac{FM}{10} \sum_{n=1}^{\infty} \int_{x=(n-1)h}^{nh} \Pi_x \, (\mathring{e}_x - {}_{10}p_x \cdot \mathring{e}_{x+10})\, dx,$$

where h is a given age interval

$$= \frac{FM}{10} \sum_{n=1}^{\infty} \left[\frac{1}{h} \int_{(n-1)h}^{nh} \Pi_x \, dx \int_{(n-1)h}^{nh} (\mathring{e}_x - {}_{10}p_x \, \mathring{e}_{x+10}) dx \right]$$

$$= \frac{FM}{10} \sum_{n=1}^{\infty} \left[\frac{1}{h} \Pi_{(n-1)h/h} \cdot h(\mathring{e}_{(n-\frac{1}{2})h} - {}_{10}p_{(n-\frac{1}{2})h} \cdot \mathring{e}_{(n-\frac{1}{2})h+10}) \right]$$

where $\Pi_{(n-1)h/nh}$ = proportion in the age-group, $(n-1)h$ to nh.

$$\therefore\ 10X \text{ Survival Factor} = \sum_{n=1}^{\infty} \Pi_{(n-1)h/nh} (\mathring{e}_{(n-\frac{1}{2})h} - {}_{10}p_{(n-\frac{1}{2})h} \cdot \mathring{e}_{(n-\frac{1}{2})h+10}).$$

Taking *quinquennial* age-groups 0-5, 5-10 etc., $(h - 5) - h$

$$10X \text{ survival factor} = \Pi_{0/5}\,(\overset{\circ}{e}_{2\frac{1}{2}} - {}_{10}p_{2\frac{1}{2}} \cdot \overset{\circ}{e}_{12\frac{1}{2}})$$
$$+ {}_{5/10}(\overset{\circ}{e}_{7\frac{1}{2}} - {}_{10}p_{7\frac{1}{2}} \cdot \overset{\circ}{e}_{17\frac{1}{2}})$$
$$+ {}_{10/15}(\overset{\circ}{e}_{12\frac{1}{2}} - {}_{10}p_{12\frac{1}{2}} \cdot \overset{\circ}{e}_{22\frac{1}{2}})$$
$$+ \cdots\cdots\cdots\cdots$$

which can be evaluated for each sex, if the proportionate frequencies of the fresh migrants in the *quinquennial* age-groups are known and the required life table functions are extracted from the appropriate life table.

Using the graduated age-distribution of Calcutta immigrants 1961 and the East India Zone life tables, 1941-50 (see text), the survival factor comes out to be .852807 and .836243 for males and females respectively. Applying these ratios respectively to 378,609 male and 168,922 female immigrants (total 547, 531, see Appendix 3) the male and female immigrants surviving to 1951 were 322,880 and 141,260 respectively, the age-distribution of which are given in App. 5, Table A.5.1, Col. (2).

Appendix 5

TABLE A.5.1--DISTRIBUTION OF INTERCENSAL IMMIGRANTS SURVIVING TO AND INTERCENSAL EMIGRANTS GROWING TO 1951

Age group	*Intercensal immigrants as at 1951*	*Intercensal emigrants (Normal+Muslim) as at 1951*	*Net intercensal migrants as at 1951 (2)—(3)*
(1)	(2)	(3)	(4)
		Males	
0—4	12915	33,047	— 20132
5—9	12269	35,662	— 23393
10—14	15821	35,702	— 19881
15—19	51339	34,202	+ 17137
20—24	41652	32,114	+ 9538
25—29	36486	29,912	+ 6574
30—34	30770	26,668	+ 4102
35—39	26702	22,443	+ 4259
40—44	24216	18,653	+ 5563
45—49	21633	15,195	+ 6438
50—54	18404	11,636	+ 6768
55—59	3810	8,340	— 4530
60—64	3423	5,761	— 2338
65—69	3423	3,827	— 404
70 and over	20017	4,700	+ 15317
All ages	322,880	317,862	+ 5018

Appendix 5 Table A.5.1 (*contd. on page* 241)

(1)	(2)	(3)	(4)
		Females	
0–4	9606	33,6	— 24031
5–9	8899	34,321	— 25422
10–14	8052	32,376	— 24324
15–19	20059	30,011	— 9952
20–24	17658	27,076	— 9418
25–29	14408	23,810	— 9402
30–34	12148	19,942	— 7794
35–39	10171	16,352	— 6181
40–44	8758	13,607	— 4849
45–49	8193	11,283	— 3090
50–54	7204	9,050	— 1846
55–59	1893	7,027	— 5134
60–64	1766	5,275	— 3509
65–69	1723	3,668	— 1945
70 and over	10722	5,124	+ 5598
All ages	141,260	272,559	—131,299

MALE LIFE TABLE WEST BENGAL (1941-50)

X	l_x	d_x	q_x	p_x	L_x	T_x	e_x^0
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
0	1000000	222353	.222353	.777647	848783	34385831	34.39
1	777647	42245	.054324	.945676	753992	33537048	43.13
2	735402	28658	.038966	.961034	720649	32783056	44.58
3	706746	24681	.034922	.965078	694127	32062407	45.37
4	682065	21606	.031677	.968323	671030	31368280	45.99
5	660459	18908	.028628	.971372	650795	30697250	46.48
6	641551	16520	.025750	.974250	633106	30046455	46.83
7	625031	14405	.023047	.976953	617664	29413349	47.06
8	610626	12534	.020527	.979473	604214	28795685	47.16
9	598092	10876	.018185	.981815	592524	28191471	47.14
10	587216	9409	.016023	.983977	582396	27598947	47.00
11	577807	8109	.014034	.985966	573654	27016556	46.76
12	569698	6956	.012210	.987790	566220	26442897	46.42
13	562742	5723	.010521	.989479	559880	25876677	45.98
14	557019	5014	.009001	.990999	554512	25316797	45.45
15	553005	4256	.007710	.992290	549877	24762285	44.86
16	547749	3628	.006623	.993377	545935	24212408	44.20
17	544121	3093	.005684	.994316	542574	23666473	43.49
18	541028	2652	.004902	.995098	539702	23123899	42.74
19	538376	2267	.004210	.995790	537242	22584197	41.95
20	536109	1849	.003449	.996551	535184	22046955	41.12
21	534260	1394	.002609	.997391	533563	21511771	40.26
22	532866	983	.001845	.998155	532374	20978208	39.37
23	531883	636	.001195	.998805	531565	20445834	38.44
24	531247	374	.000704	.999296	531060	19914269	37.48
25	550873	283	.000533	.999467	530732	19383209	36.51
26	530590	359	.000676	.999324	530410	18852477	35.53
27	520231	510	.000962	.999038	529976	18322067	34.55
28	529721	692	.001307	.998693	529375	17792091	33.59

Male Life Table West Bengal (*contd. on page* 243)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
29	529029	914	.001727	.998273	528572	17262716	32.63
30	528115	1158	.002192	.997808	527536	16734144	31.69
31	526957	1414	.002684	.997316	526250	16206608	30.76
32	525543	1712	.003257	.996743	524687	15680358	29.84
33	523831	2072	.003956	.996044	522795	15155671	28.93
34	521759	2433	.004664	.995336	520542	14632876	28.04
35	619326	2671	.005144	.994856	517990	14112334	27.17
36	516655	2798	.005416	.994584	515256	13594344	26.31
37	513856	2932	.005706	.994294	512391	13079088	25.45
38	510925	3101	.006069	.993931	509374	12566697	24.60
39	507824	3346	.006589	.993411	506151	12057323	23.74
40	504478	3802	.007537	.992463	502577	11551172	22.90
41	500676	4472	.008931	.991069	498440	11048595	22.07
42	496204	5210	.010500	.989500	493599	10550155	21.26
43	490994	5946	.012110	.987890	488021	10056556	20.48
44	485048	6690	.013792	.986208	481703	9568535	19.73
45	478358	7382	.015433	.984567	474667	9086832	19.00
46	470976	8025	.017039	.982961	466964	8612165	18.29
47	462951	8669	.018726	.981274	458616	8145201	17.59
48	454282	9336	.020551	.979449	449614	7686585	16.92
49	444946	10002	.022479	.977521	439945	7236971	16.26
50	434944	10574	.024310	.975690	429657	6797026	15.63
51	424370	11077	.026102	.973898	418832	6367369	15.00
52	413293	11571	.027998	.972002	407500	5948537	14.39
53	401722	12081	.030074	.969926	395682	5541029	13.79
54	389641	12596	.032328	.967672	383343	5145347	13.20
55	377045	13105	.034758	.965242	370492	4762004	12.63
56	363940	13615	.037410	.962590	357132	4391512	11.96
57	350325	14120	.040306	.959694	343265	4034380	11.52
58	336205	14613	.043455	.956535	328893	3691115	10.98
59	321592	15087	.046912	.953088	314048	3362217	10.45
60	306505	15531	.050670	.949330	298740	3048169	9.94
61	290974	15936	.054768	.945232	283006	2749429	9.45
62	275038	16291	.059233	.940767	266892	2466423	8.97
63	258747	16585	.064096	.935904	250454	2199531	8.50
64	242162	16804	.069390	.930610	233760	1949077	8.04

Male Life Table West Bengal (*contd. on page* 244)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
65	225358	16936	.075152	.924848	216890	1715317	7.61
66	208422	16969	.081417	.918583	199938	1498427	7.19
67	191453	16891	.088227	.911773	183008	1298489	6.78
68	174562	16692	.095624	.904376	166216	1115481	6.39
69	157870	16364	.103652	.896348	149688	949265	6.01
70	141506	15899	.112358	.886742	133556	799577	5.65
71	125607	15298	.121791	.878209	117958	166021	5.30
72	110309	14561	.132002	.867998	103028	548063	4.97
73	95748	14838	.143043	.856957	88329	445035	4.65
74	80910	12538	.154968	.845032	74641	356706	4.41
75	68372	11475	.167832	.832168	62634	282065	4.12
76	56897	10338	.181689	.818311	51728	219431	3.86
77	46559	9153	.196592	.803408	41982	167703	3.60
78	37406	7952	.212595	.787405	33430	125721	3.36
79	29454	6767	.229748	.770252	26070	92291	3.13
80	22687	5629	.248096	.751904	19872	66221	2.92
81	17058	4566	.267679	.732321	14775	46349	2.72
82	12492	3604	.288532	.711468	10690	31574	2.53
83	8888	2761	.310678	.689322	7508	20884	2.35
84	6127	2047	.334130	.665870	5104	13376	2.18
85	4080	1464	.358888	.641112	3348	8272	2.03
86	2616	1007	.384935	.615065	2112	4924	1.88
87	1609	663	.412236	.587764	1278	2812	1.75
88	946	417	.440733	.559267	738	1534	1.62
89	529	249	.470345	.529655	404	796	1.50
90	280	140	.500266	.499034	210	392	1.40
91	140	74.6	.532459	.467541	102.7	181.7	1.30
92	65.4	36.9	.564658	.435342	47.0	79.0	1.21
93	28.5	17.0	.597368	.402632	20.0	32.0	1.12
94	11.5	7.25	.630363	.369637	7.88	12.03	1.05
95	4.25	2.82	.663389	.336611	2.84	4.15	.98
96	1.43	1.00	.696167	.303833	.93	1.31	.92
97	.43	.31	.728400	.271600	.28	.38	.88
98	.12	.09	.759776	.240224	.08	.10	.83
99	.03	.02	.789982	.210018	.02	.02	.67
100	.01	.01	.818710	.181290	—	—	—

FEMALE LIFE TABLE WEST BENGAL (1941-50)

X	l_x	d_x	q_x	p_x	L_x	T_x	e_x^0	l'_x	d'_x	q'^x
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
0	1000000	202077	.202077	.797923	858262	34845672	34.85			
1	797923	36179	.045341	.954659	778183	33987410	42.59			
2	761744	27230	.035747	.964253	747801	33209227	43.60			
3	734514	23785	.032382	.967618	722359	32461426	44.19			
4	710729	20819	.029293	.970707	700089	31739067	44.66			
5	689910	18143	.026297	.973703	680631	31038978	44.99			
6	671767	15726	.023410	.976590	663710	30358347	45.19			
7	656041	13549	.020657	.979347	649096	29694637	45.26			
8	642492	11592	.018042	.981958	636542	29045541	45.21			
9	630900	9841	.015599	.984401	625980	28408999	45.03			
10	621059	8285	.013340	.986660	676916	27783019	44.73			
11	612774	6917	.011288	.988712	609316	27166103	44.33			
12	605857	5719	.009439	.990561	602998	26556787	43.83			
13	600138	4652	.007751	.992249	597812	25953789	43.25			
14	595486	3772	.006334	.993666	593600	25355977	42.58			
15	591714	3196	.005402	.994598	590116	24762377	41.85			
16	588518	2908	.004942	.995058	587064	24172261	41.07			
17	585610	2760	.004747	.995253	584220	23585197	40.27			
18	582830	2759	.004734	.995266	581450	23000966	39.46			
19	580071	2840	.004896	.995104	578651	22419527	38.65			

Female Life Table West Bengal (*contd. on page* 246)

Female Life Table West Bengal (*contd. from page* (245)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
20	577231	2974	.005152	.994848	575744	21840874	37.84			
21	574257	3154	.005493	.994507	572680	21265132	37.03	574257	3138	0.005465
22	571103	3404	.005961	.994039	569401	20692452	36.23	571119	3311	0.005797
23	567699	3708	.006532	.993468	555845	20123051	35.45	567808	3491	0.006148
24	563991	4084	.007242	.992758	561949	19557206	34.68	564317	3677	0.006516
25	559907	4613	.008238	.991762	557600	18995257	33.92	560640	3870	0.006903
26	555294	5281	.009510	.990490	552654	18437657	33.20	556770	4069	0.007308
27	550013	5969	.010852	.989148	547028	17885003	32.52	552701	4271	0.007728
28	544044	6633	.012192	.987808	540728	17337975	31.87	548430	4478	0.008619
29	537411	7229	.013451	.986549	533797	16797247	31.26	543952	4688	0.008619
30	530182	7647	.014423	.987577	526358	16263451	30.68	539264	4901	0.009088
31	522535	7886	.015092	.984908	518592	15737093	30.12	534363	5115	0.009572
32	514649	8057	.015656	.984344	510620	15218501	29.57	529248	5330	0.010070
33	506592	8218	.016223	.983777	502483	14707881	29.03	523918	5544	0.010582
34	498374	8341	.016737	.983264	494204	14205398	28.50	518374	5758	0.011107
35	490033	8204	.016741	.983259	485931	13711194	27.98	512616	5970	0.011646
36	481829	7856	.016305	.983695	477901	13225263	27.45	506646	6180	0.012197
37	473973	7464	.015747	.984253	470241	12741362	26.89	500466	6386	0.012761
38	466509	7074	.015163	.984837	462972	12277121	26.32	494080	6589	0.013336
39	459435	6741	.014672	.985328	456064	11814149	25.71	487491	6787	0.013922
40	452694	6634	.014654	.985346	449377	11358085	25.09	480704	6979	0.014519
41	446060	6747	.015126	.984873	442686	10908708	24.46	473725	7166	0.015226
42	439313	6912	.015733	.984267	435857	10466022	23.82			
43	432401	7061	.016330	.983670	428870	10030165	23.20			
44	425340	7212	.016957	.98403	421734	9601295	22.57			
45	418128	7332	.017534	.982466	414462	9179561	21.95			

46	410796	7416	.018053	.981947	407088	8765099	21.34
47	403380	7514	.081628	.981372	399623	8358011	20.72
48	395866	7653	.019333	.980667	392040	7958388	20.10
49	388213	7802	.020097	.979904	384312	7566348	19.49
50	380411	7915	.020806	.979194	376454	7182036	18.88
51	372496	8002	.021482	.978518	368495	6805582	18.27
52	364494	8111	.022253	.977747	360438	6437087	17.66
53	356383	8263	.023185	.976815	352252	6076649	17.05
54	348120		.024275	.975725	344894	5724397	16.44
55	339669	8647	.025337	.974463	335332	5380503	15.84
56	330995	8936	.026997	.973003	326527	5045171	15.24
57	322059	9237	.028680	.971320	317440	4718644	14.65
58	312822	9576	.030611	.969389	308034	4401204	14.07
59	303246	9953	.032822	.967178	298269	4093170	13.50
60	293293	10356	.035309	.964691	288115	3794901	12.94
61	282937	10746	.037980	.962020	277564	3506786	12.39
62	272191	11119	.040850	.950150	266632	3229222	11.86
63	261072	11469	.043931	.956069	255338	2962590	11.35
64	249603	11791	.047239	.952761	243708	2707552	10.85
65	237812	12078	.050790	.949210	231773	2463544	10.36
66	225734	12325	.054599	.945401	219572	2231771	9.89
67	213409	12524	.058685	.941315	207147	2012199	9.43
68	200885	12669	.063067	.936933	194550	1805052	8.98
69	188216	12754	.067764	.932236	181839	1610502	8.56

Female Life Table West Bengal (*contd. on page* 248)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
70	175462	12773	.072797	.927203	169076	1428663	8.14			
71	162689	12720	.078188	.921812	156329	1259587	7.74			
72	149969	12591	.083960	.916040	143674	1103258	7.36			
73	137378	12383	.090137	.909863	131186	959584	6.98			
74	124995	12092	.096743	.903257	118949	838398	6.63			
75	112903	11720	.103806	.896194	107043	709449	6.28			
76	101183	11267	.111352	.888648	95550	602406	5.95			
77	89916	10737	.119409	.880591	84548	506856	5.64			
78	79179	10135	.128005	.871995	74112	422308	5.33			
79	69044	9471	.137172	.862828	64308	348196	5.04			
80	59573	8753	.146937	.853063	55196	283888	4.76			
81	50820	7996	.157332	.842668	46822	228692	4.50			
82	42824	7211	.168388	.831612	39218	191870	4.25			
83	35613	6415	.180135	.819865	32406	142652	4.00			
84	29198	5624	.192602	.807398	26386	110246	3.78			
85	23574	4852	.205819	.794181	21148	83860	3.56			
86	18722	4115	.219813	.780187	16664	62712	3.35			
87	14607	3427	.234612	.765388	12894	46048	3.15			
88	11180	2798	.250238	.749762	9781	33154	2.96			
89	8382	2236	.266713	.733287	7264	23373	2.79			
90	6146	1746	.284055	.715945	5273	16109	2.62			
91	4400	1330	.302276	.697724	3735	10836	2.46			
92	3070	987	.321387	.678717	2576	7101	2.31			
93	2083	711	.341382	.658718	1728	4525	2.17			
94	1372	497	.362263	.637737	1124	2801	2.04			

95	875	336	.384016	.615984	707	1677	1.92
96	539	219	.406617	.593383	430	970	1.80
97	320	138	.430035	.569965	251	540	1.69
98	182	827	.454227	.545733	141	289	1.59
99	993	476	.479138	.520862	75.5	147.7	1.49
100	51.7	26.1	.504701	.495299	38.6	72.2	1.40
101	25.6	13.6	.530854	.469166	18.8	33.6	1.31
102	12.0	6.7	.557442	.442558	8.66	14.81	1.23
103	5.31	3.10	.584418	.415582	3.76	6.15	1.15
104	2.21	1.36	.611639	.388361	1.53	2.39	1.08
105	.85	.54	.638968	.361032	.58	.86	1.01
106	.31	.21	.666258	.333742	.20	.28	0.90
107	.10	.07	.693351	.306649	.06	.08	0.80
108	.03	.02	.720078	.279922	.02	.02	0.67
109	.01	.01	.746268	.253732	—	—	—