

Abridged Life Tables of Pakistan and Provinces by Sex, 1962

by

MUHAMMAD ASLAM

SULTAN S. HASHMI

AND

WILLIAM SELTZER*

INTRODUCTION

Mortality in a population is measured by a number of demographic indices such as the crude death rate, the infant mortality rate, the age-specific death rate or the standardised death rate. Still another more comprehensive method of portraying mortality conditions in a population is by means of a life table. A life table as compared to other mortality indices serves many useful purposes. For measuring longevity of life, projecting current population into the future or estimating incidence of widowhood and orphanhood, a life table is essential. For comparison of expectation of life (or average duration of life) at birth and after birth for various ages of different populations the life table is also commonly used. Besides its utility in demographic problems, still another important use of a life table is made by actuaries in life insurance. The life table is also becoming an important tool of investigation for problems of commerce and industry as it enables one to describe the expectation of life of many non-human populations. For detailed discussion of various kinds of life tables and their uses, the reader is advised to refer to any one of many standard reference works [6, Chapters 12 and 13].

*The authors are Chief, Demographic and Social Statistics Division, Central Statistical Office, Government of Pakistan; Senior Research Demographer, Pakistan Institute of Development Economics (also Principal Investigator of Population Growth Estimation Project) and Research Advisor, Population Growth Estimation Project, respectively. The authors wish to acknowledge the support of the Central Statistical Office (CSO), Government of Pakistan, the Pakistan Institute of Development Economics (PIDE), the U.S. National Center for Health Statistics, Washington, D.C. and The Population Council, New York. Without the financial and technical collaboration of each of these agencies the Population Growth Estimation (PGE) Experiment could not have been conducted. The authors gratefully acknowledge the careful work of the many persons in PGE, CSO and PIDE who helped provide the data that underly this report. The authors also wish to acknowledge with gratitude the comments and suggestions received on the earlier draft from Dr. Warren C. Robinson, a former Research Advisor at the Pakistan Institute of Development Economics, Professor Ansley J. Coale and Mr. Al Hermalin of Princeton University. The findings of this paper do not necessarily represent the official views of the above-mentioned agencies and the authors themselves accept full responsibility for the statistics and conclusions presented herein.

A life table defined in simple terms is an age-specific quantitative portrayal of the course of mortality in a hypothetical closed cohort of people of a given area for a given period¹. The record begins with a radix or the number (usually one hundred thousand) of live births which forms the cohort at exact age 0 and continues until all in the cohort die at successive ages by experiencing a specified unchanging age-specific mortality schedule. For example, life tables for 1962 presented in this study indicate that a cohort beginning life with 100,000 births in Pakistan or in each of its provinces is subject throughout life to the mortality schedule of 1962. (The functions of the life table and their mathematical relationships are described in a subsequent section.)

Due to the paucity of adequate reliable data, very few attempts have so far been made to construct life tables for Pakistan. The only life table in existence in this country is the one prepared by Khan for 1950-52 which covers only the former Punjab Province [9]. In present paper an attempt has been made to construct a set of abridged life tables for Pakistan and its two provinces, by sex, for the year 1962. The source of data is the Population Growth Estimation experiment (briefly called PGE).

SOURCE AND QUALITY OF DATA

Source of Data

The data used for the construction of life tables are obtained through the Population Growth Estimation experiment. Details regarding the design of the experiment and its methods of collection of data have been given elsewhere [2; 13]. Briefly it may be mentioned that the planning of the PGE experiment was done in the later part of 1961 and the data collection began on 1st January, 1962. The experiment is still in progress and will continue until the end of June 1967². The experiment is based on a sample of 24 areas (each of the size of approximately one thousand households or five thousand population) as shown in table I. The object of the PGE experiment is to obtain data on births, deaths and population in order to determine the vital rates of Pakistan and its provinces and to test some of the techniques of data collection. Similar experiments have also been undertaken in a number of countries such as Turkey, Thailand, selected states in India and smaller studies in many other countries.

¹ A life table constructed for a real cohort is called generation life table. This type of life table is constructed by following a real cohort, for example of 100,000 persons born in a given calendar year through successive calendar years until all in the cohort die by experiencing changing mortality conditions. For constructing such a life table records of mortality schedules of a generation for a period of 100 years, *i.e.*, until all in the generation have died out are required.

² Beginning January 1966, the PGE entered into its second phase for which purpose the sample is being redesigned. However, this change has no bearing on the present paper.

TABLE I
PGE Areas by Province and Type of Survey Activity

Area ^a	PGE Areas	Both and LR ^b CS ^c	LR only	CS only
Pakistan	24	16	4	4
East Pakistan	12	8	2	2
West Pakistan	12	8	2	2

^a Sample universe excludes Chittagong Hill Tracts in East Pakistan, Frontier Regions and Quetta and Kalat Division in West Pakistan.

^b LR—Longitudinal Registration.

^c CS—Cross-Sectional Survey.

Two types of survey activities have been undertaken in the sampled segments. One is Longitudinal Registration (LR) wherein births and deaths (as they occur) are recorded by a Registrar who lives in the sampled segments. The other approach, called Cross-Sectional Survey (CS), is designed to obtain each quarter data on age, sex, marital status, family composition, occupation and pregnancy, and births and deaths which occurred in households in the PGE segments during the past year. Both these types of statistics collected in this experiment have been used for construction of life tables.

Two series of life tables (A and B) have been constructed. The difference between the two series is the type of data which have been used for each series. The following data obtained from PGE have been used for construction of each series of the life tables :

Series A

- 1) Estimated number of persons who died during the calendar year 1962 by age and sex separately for Pakistan and its provinces obtained by the registration (LR) and the survey (CS) methods on *de facto* basis and after applying the Chandra-Deming formula³ and then raising the sample figures to provincial and national estimates.

³ The events obtained by the two different systems in the sixteen areas on *de facto* basis are matched one by one. The non-matched events are further investigated both at the headquarters and in the field as far as is feasible. After matching, total number of births and deaths are estimated by Chandra-Deming formula [4]:

$$N = C + N_r + N_e + \frac{N_r N_e}{C}$$

where N = estimate of events
C = events matched (both registered and enumerated)
N_r = events registered only
N_e = events enumerated only

$$\frac{N_r N_e}{C} = \text{estimate of events neither registered nor enumerated.}$$

The application of this formula assumes i) independence between the two systems of data collection and ii) validity of C, N_r and N_e. If these conditions are not fully met, the estimate may be in error.

- 2) Estimated (*de facto*) population by age and sex for Pakistan and its provinces obtained by CS as of July 1962 after raising the sample figures to provincial and national levels.

Series B

- 1) Estimated number of persons who died during the calendar year 1962 by age and sex separately for Pakistan and its provinces obtained by the registration (LR) system on a *de facto* basis and then raising the sample figures to provincial and national estimates.
- 2) The same estimated population used for Series A as explained in 2 above.

Limitations of Data

Errors in data collected by a sample survey or a census may arise at any stage. PGE is no exception and the data underlying these life tables are subject to collection, processing, tabulation and presentation errors. In general, users of these life tables are cautioned not to put great reliance on small differences between life table values for various subgroups of the population.

Data collected by sampling are subject to sampling variability so that PGE estimates are subject to sampling error. No estimates of the sampling error for 1962 PGE results have yet been calculated. However the Central Statistical Office has produced estimates of the sample error associated with 1963 PGE results. These indicate that the coefficient of variation of the 1963 LR crude death rate (both sexes) was about 7 per cent in either Province.

Since the PGE sample design excluded the Chittagong Hill Tracts District in East Pakistan, the Frontier Regions and Quetta and Kalat Divisions in West Pakistan, the life tables presented in this article also exclude these areas from their domain.

In the year under study, both the registrar and enumerator were supposed to report only *de facto* deaths, that is, deaths that actually took place in the PGE area regardless of the person's usual residence. This resulted in the effective exclusion from the PGE sample data of all deaths taking place in institutions, but this number is so small that their omission has a negligible effect on the crude death rate [1].

One source of over-reporting of mortality may be the erroneous reporting of some still births as a live birth followed by an infant death. This is because in rural Pakistan a woman may suffer a certain amount of social approbrium for giving birth to a still born baby. It is not known whether social pressure of this type had a significant effect on the PGE infant mortality.

No post-enumeration survey or any other systematic check has been conducted that enables us to measure the extent of under or over enumeration of the 1962 base population obtained through the CS enumeration. Nevertheless it is probably safe to say that in most PGE areas the population enumerated was less than the true midyear *de facto* population. Such an under-enumeration would result in an upward bias in the mortality rates underlying both series A and series B life tables.

The population age distribution was obtained in January 1962 CS enumeration visit. In the subsequent visits in April and July, only changes in households such as additions and deletions were recorded. The age as originally reported was recorded unless the age reported in the subsequent visits in April or July 1962 differed by at least three years from the age reported in the January 1962 visit [12, p. 50]. The age distribution of the population used is as of January 1962, adjusted to conform to July 1962.

The distribution of the population and deaths by age obtained through the CS survey and the data on deaths by age obtained through the LR registration are both likely to suffer from the usual errors of mis-statement of ages and age selective omissions. In order to retain the original character of the population, no attempt has been made to graduate or smooth the data before computing the age specific death rates underlying these life tables.

The single-year age distribution of the mid-1962 PGE population estimates was tested by Myers blended method [11]⁴. The following are the indices computed over the ages 10-79 by the blended method.

	<i>Male</i>	<i>Female</i>
Pakistan	72.2	73.7
East Pakistan	66.4	65.8
West Pakistan	80.6	79.9

The single-year age distribution of the deceased persons obtained in the PGE experiment using the Chandra-Deming technique was also tested by Myers blended method by the Central Statistical Office with the following results :

	<i>Male</i>	<i>Female</i>
Pakistan	94.4	94.9
East Pakistan	97.9	87.1
West Pakistan	85.8	95.5

Comparison of the indices computed for the deceased and living population shows that the quality of the age reporting of the living population, though poor,

⁴ Myers blended method is used to examine the extent of age heaping in a single year age distribution. Age distributions showing little evidence of digital preference will have a Myers index approaching zero.

was better than the quality of the age reporting of deceased population. Combination of the single-year age distribution into five-year age groups hopefully cancels out many errors of mis-statement automatically. However, some vagaries in the age specific death rates and ultimately in the life tables are probably still present due to errors in the age data.

In this study, life tables have been constructed on the basis of mortality experience of one calendar year, 1962. Thus the present life table is limited to the extent of any non-typical mortality experiences which occurred in the one year under study. (The construction of further life tables based on PGE data will follow. These can be based on the mortality experience of more than one year when the basic data for later calendar years will become available.)

In the absence of requisite data we assume little change in the number of deaths in relation to number of births from one calendar year to another and therefore no adjustment was made in the number of infant deaths due to proportion of total deaths at age under one in calendar year 1962 with a last birth-day in the preceding year. In other words, the infant death rate has been computed by dividing the infant deaths which occurred in the calendar year 1962 by the number of births reported in the same calendar year. This, of course, amounts to assuming that there was no significant difference in the number of births in the two consecutive years. Studies done on this aspect have shown that moderate changes in the number of births have little effect on the resultant infant mortality rates [6, p. 309; 10].

In addition to the types of errors covered above, the PGE Chandrasekar-Deming estimates which underly the series A life tables are subject to other types of errors such as matching the mortality data obtained through the two systems, possible lack of independence between the two systems and errors of estimates.

Despite these limitations, the quality of data obtained through the PGE experiment is believed to be more satisfactory than one would expect in the setting of a developing country with a traditional agricultural society. In fact, Population Growth Estimation Project of Pakistan has set an example of how to obtain reasonably adequate data on vital events with measured degree of precision for countries which lack efficient national registration systems or in which social and economic conditions are such that prospects for the development of the national registration systems in the near future are not encouraging.

CRUDE DEATH RATE AND AGE SPECIFIC DEATH RATE

Crude death rates and age specific death rates computed for both sexes combined and also separately for each sex for Pakistan and its two provinces are given in Tables II and III.

TABLE II

Age Specific Death Rate, For Pakistan and Provinces, 1962

(Series A: includes Chandra-Deming factors)

(rates per thousand)

Age in years	Pakistan			East Pakistan			West Pakistan		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All ages*	19.7	19.0	20.5	20.3	19.4	21.4	19.0	18.6	19.4
Under 1	147	158	136	144	156	132	152	160	143
1 — 4	26	23	29	25	22	27	28	24	32
5 — 9	5 ⁷³	4	6	6	5	7	3	3	4
10—14	2	2	2	2	2	2	2	2	2
15—19	4	3	5	3	2	4	6	4	7
20—24	4	3	4	3	2	4	4	3	4
25—29	6	5	8	8	4	11	5	5	5
30—34	5	4	7	5	3	8	6	5	6
35—39	6	5	8	7	6	9	5	3	6
40—44	9	6	13	11	6	17	6	6	7
45—49	11	9	13	14	11	17	6	6	6
50—54	14	12	15	14	12	17	13	13	11
55—59	21	18	26	25	23	29	16	12	22
60—64	32	21	45	39	24	57	23	18	29
65—69	38	54	21	42	59	21	33	42	22
70 & Over	116	122	107	131	146	115	102	102	101

*crude death rates

Source : PGE sample data

TABLE III

Age Specific Death Rate, For Pakistan and Provinces, 1962

(Series B: based on LR registered deaths)

(rates per thousand)

Age in years	Pakistan			East Pakistan			West Pakistan		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
All ages*	16.9	16.4	17.5	16.8	16.4	17.2	17.1	16.5	17.8
Under 1	149	154	138	138	149	126	159	162	156
1 — 4	22	20	23	20	19	21	24	22	26
5 — 9	3	3	4	4	4	4	3	2	3
10—14	2	1	2	2	1	3	1	2	1
15—19	4	2	5	3	1	4	5	3	7
20—24	3	2	4	3	2	4	3	3	3
25—29	6	4	8	8	4	11	4	3	5
30—34	4	3	6	4	2	5	5	3	7
35—39	5	5	6	6	6	6	5	3	7
40—44	8	6	10	8	5	12	7	6	8
45—49	9	7	11	11	9	13	6	6	7
50—54	12	11	14	13	10	16	11	11	11
55—59	22	19	26	27	25	30	15	11	20
60—64	29	19	42	34	21	48	24	17	33
65—69	32	41	19	31	42	17	32	40	21
70 & Over	106	111	100	120	131	107	94	94	94

* crude death rates

Source : PGE sample data

Expressions for the computation of these rates are given below:

(1) Crude death rate (CDR) :

$$\text{CDR} = \frac{\text{total deaths in calendar year, 1962}}{\text{population as of July, 1962}} \times 1000$$

(2) Age specific death rate (${}_n m_x$) :

$${}_n m_x = \frac{\text{deaths between ages } x \text{ and } x+n \text{ in 1962}}{\text{persons between ages } x \text{ and } x+n \text{ as of July, 1962}} \times 1000$$

(3) Infant mortality rate (M_o) :

$$M_o = \frac{\text{number of deaths under age one year in 1962}}{\text{number of births in 1962}} \times 1000$$

This measure (M_o) rather than the age-specific mortality rate was used to estimate mortality under one year.

The trends based on scattered evidence of some areas now included in Pakistan show that mortality level has been declining. The crude death rates declined from the high thirties in the beginning of the present century to middle and low twenties by 1940 [15]. During the forties, the declining trend was probably halted by World War II, famine in 1943 in East Pakistan, partition of the subcontinent and after-effects of the partition. Beginning in the early fifties the mortality level probably again began to decline. That this trend has continued is clear in the results of current surveys including the PGE Survey.

The PGE crude death rates for Pakistan are about 20 per thousand according to Series A and 17 per thousand according to Series B. Although the differences in crude death rates of males and females are nominal, females have consistently higher rates. The variation in crude death rates between the two provinces is also small and the two series show inconsistent results—Series A shows higher crude death rates for East Pakistan whereas Series B shows higher crude death rates for West Pakistan.

The graphic presentation of the "B—Series" rates made in figures 1 to 3 shows that the age specific death rates conform to the general pattern (U shape) with minor fluctuations. The prominent hump in age group 60-64 for females is common in case of both East and West Pakistan but is more pronounced for East Pakistan. This is probably due to heaping of ages of deceased older women at 60. It is generally noticed that the reporting of older persons is more inaccurate than the reporting of younger persons and ages of females are more inaccurately reported than ages of males. The fluctuations indicated by the graphs appear to have been caused more by the inaccuracy in the reporting of deceased persons than of living persons.

The infant mortality rate is one of the most important indices of health conditions of a population of a country. Infant deaths in 1962 were two fifths of all deaths in Pakistan (Table IV) and this proportion is somewhat lower in East Pakistan than that in West Pakistan.

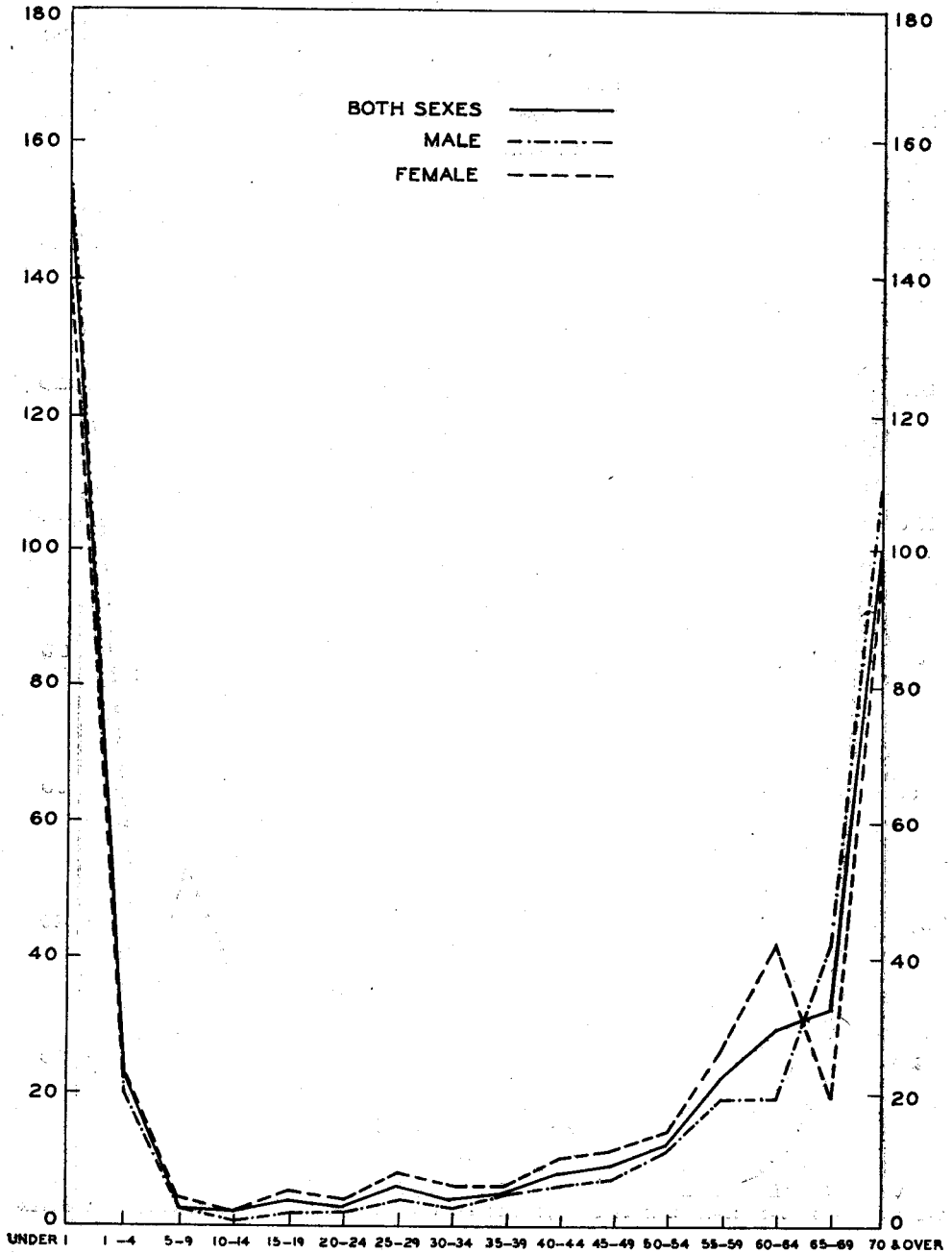


Figure 1. Pakistan: Age Specific Death Rates, 1962 (Based on Series B)

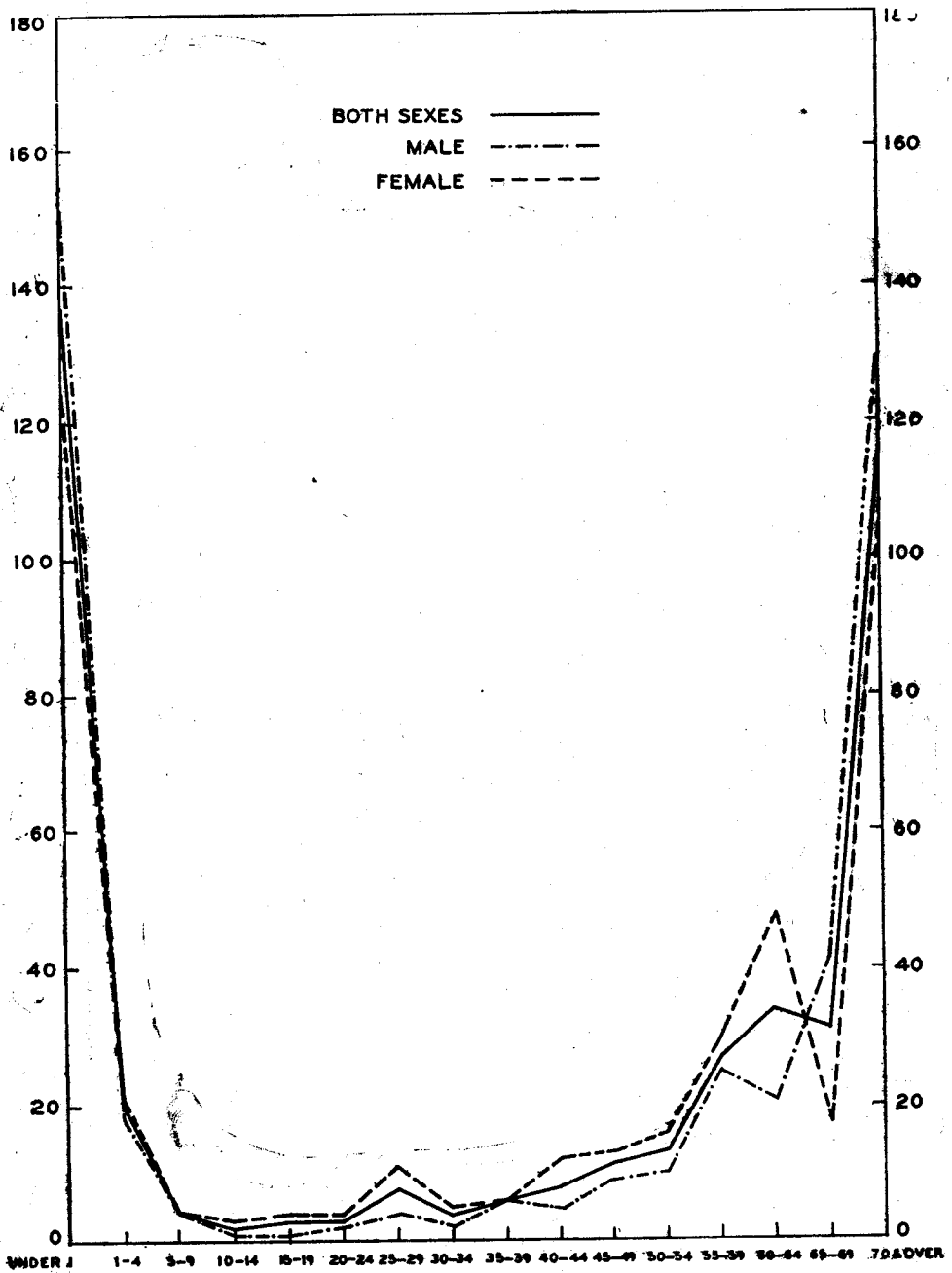


Figure 2. East Pakistan: Age Specific Death Rates, 1962 (Based on Series B)

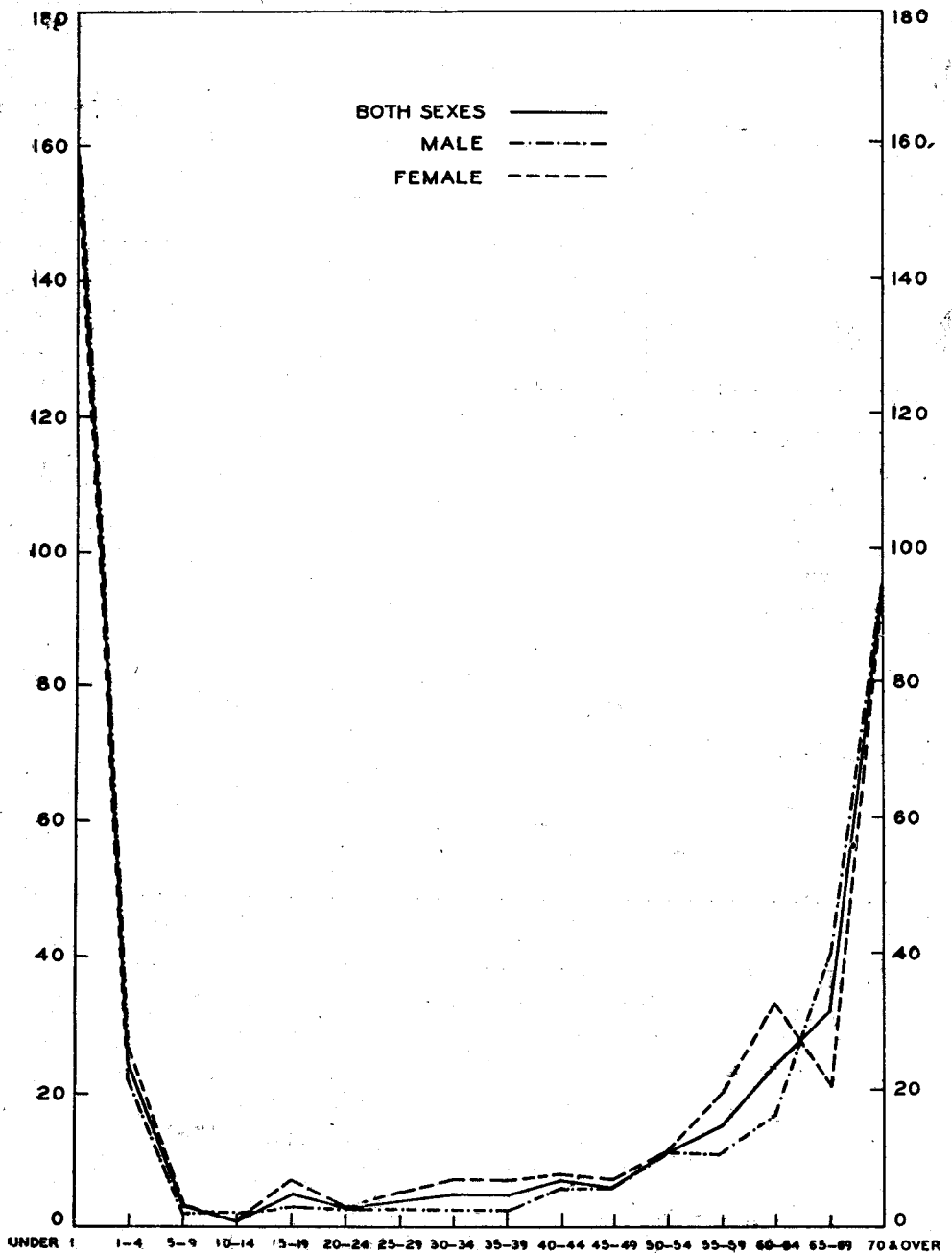


Figure 3. West Pakistan: Age Specific Death Rates, 1962 (Based on Series B)

TABLE IV

Total Deaths and Infant Deaths by Sex Based on Chandra-Deming Factors and on Registered (LR) Deaths, Pakistan and Provinces, 1962

Area and sex	Total deaths (in 100)		Infant deaths (n 100)		Infant deaths as percent of total deaths	
	With Chandra- Deming	Regis- tered (LR)	With Chandra- Deming	Regis- tered (LR)	With Chandra- Deming	Regis- tered (LR)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Pakistan</i>						
Both sexes	18203	15605	7418	6238	40.7	40.0
Male	9186	7926	4096	3431	44.6	43.3
Female	9017	7679	3323	2807	36.8	36.6
<i>East Pakistan</i>						
Both sexes	10632	8769	4279	3395	40.2	38.7
Male	5218	4409	2342	1900	44.9	43.0
Female	5414	4360	1937	1495	35.8	34.3
<i>West Pakistan</i>						
Both sexes	7571	6836	3140	2843	41.5	41.6
Male	3968	3517	1754	1531	44.2	43.5
Female	3603	3319	1386	1312	38.5	39.5

Source : PGE sample data

It appears that with the decline in mortality, Pakistan is probably assuming the general pattern of infant mortality, *i.e.*, higher survival of female babies. The number of male infant deaths in 1962 was higher than the number of female infant deaths (Table IV). Although this pattern appears to be consistent with the general pattern observed in many populations, it is inconsistent with the experience of Pakistan where masculinity ratio in each of its provinces is more than 100. The reversal of sex differences in infant mortality from the expected picture is probably due to current improvement in the health conditions. Mortality is comparatively high in early years of life for both males and females and in both East and West Pakistan (Tables II and III). The infant and child (1—4) mortality for each sex is higher in West Pakistan than in East Pakistan. The lowest mortality is observed in age group 10—14, but is increasingly higher

throughout the young age groups and through the middle and older ages. Although the general pattern of mortality of males and females is similar, the mortality rates of females are higher at every age than for males with the exception of infants and older persons. The male and female differences are especially pronounced in the reproductive period (15—49). It appears that despite improvements in the health conditions and declining mortality, the incidence of deaths from the puerperal causes in Pakistan is still quite significant. It is important to note that the maternal mortality appears to be higher in East Pakistan than in West Pakistan. This can be attributed to the higher fertility in East Pakistan.

METHOD USED FOR CONSTRUCTION OF ABRIDGED LIFE TABLES

The abridged life tables presented in this article are constructed by following conventional methods. Given the ${}_n m_x$ values in tables II and III, values of ${}_n q_x$ (life table death rate) except of q_0 were directly read from the standard tables computed by Reed and Merrell⁵ and reproduced in [3, pp. 298—305] and [8, pp. 22—25]. For the values of q_0 (life table death rate at birth) the original values of $M_0 = \frac{D_0}{B}$ were transcribed. For the purpose of constructing life tables it is supposed that 100,000 persons begin life.

Each column of the life table denotes a life table function. The steps in computation of each function given in Appendix Tables 1 to 6 are described below :

x : exact age in years

n : age interval between two exact ages, for example in Col. 1, age 10—14 means the 5 year interval between the tenth and the fifteenth birth-day.

${}_n q_x$: (Col. 2) is the probability of dying of persons between age x and $x + n$. The values of ${}_n q_x$ except of q_0 as described earlier are directly read from the standard tables. For the values of q_0 the original values of M_0 are transcribed. More specifically ${}_n q_x$ values indicate the proportion of persons dying during the given age interval. For example, proportion dying in the age interval 10—14 means that if the 1962 age-specific death rates prevail then out of the total persons alive at the beginning of the interval (10 years) some would die before completing the fifteenth year of life.

⁵ For the original article of Reed and Merrell, refer to [14].

: (Col. 3) is the probability of surviving between age x and $x + n$ and is found as follows:

$${}_n p_x = 1 - {}_n q_x$$

: (Col. 4) is the number of deaths occurring in an age interval *i.e.* between age x and $x + n$ and is obtained as follows:

$${}_n d_x = l_x \cdot {}_n q_x$$

: (Col. 5) is the number of survivors from an initial cohort (l_0) of 100,000 births (called the radix) to exact age x , it can be expressed :

$$l_{x+n} = l_x - {}_n d_x$$

: (Col. 6) is the number of years lived by the life table cohort between age x and $x + n$. In fact this col. shows the number of persons in the stationary population *i.e.* birth rate is equal to death rate and therefore the number of persons living in an age interval will not change. For example, the population shown for the age interval 10—14 means that in a stationary population in which 100,000 births take place every year and the mortality schedule shown in Col. 2 prevails, so many persons would be enumerated between age 10 and 14. The number shown against the given age interval will not change irrespective of the date of enumeration. The values are obtained as follows :

$${}_n L_x = \frac{n(l_x + l_{x+n})}{2}$$

$$L_0 = 0.3l_0 + 0.7 l_1$$

$$L_{70+} = (l_{70+}) \times \log (l_{70+})$$

: (Col. 7) is the total number of years lived by the life table cohort after age x (all higher ages) and is derived by summing up the ${}_n L_x$ values beginning at the highest age group.

$$T_x = \sum_{70+}^x {}_n L_x$$

This col. is different from the previous col. as it shows the total population of an age interval plus all subsequent age intervals and is equal to the total number of years lived by the survivors of the original cohort after attaining age x .

TABLE V

Average Life Expectancy (${}^{\circ}e_x$) at Specified Ages by Sex for Pakistan and Provinces, 1962

(Series A: includes Chandra-Deming factors)

Exact age (years)	Pakistan			East Pakistan			West Pakistan		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
0	47.5	48.9	45.9	46.9	49.0	44.8	48.2	49.4	47.4
1	54.6	57.0	52.0	53.7	57.0	50.6	55.8	57.8	54.3
5	55.4	57.4	53.2	54.2	57.2	52.1	57.2	58.5	56.3
10	51.8	53.6	49.7	50.8	53.6	47.9	53.0	54.3	52.3
15	47.3	49.1	45.2	46.3	49.1	43.4	48.5	49.8	47.8
20	43.2	44.8	41.2	41.9	44.5	39.2	44.9	45.8	44.5
25	39.0	40.4	37.0	37.5	40.0	34.9	40.8	41.4	40.3
30	35.1	36.4	33.4	34.0	35.7	31.8	36.7	37.4	36.3
35	30.9	32.0	29.6	29.8	31.2	28.0	32.8	33.3	32.3
40	26.8	27.8	25.7	25.7	27.1	24.1	28.5	28.8	28.2
45	22.9	23.6	22.2	22.0	22.8	21.1	24.3	24.6	24.1
50	19.1	19.6	18.5	18.5	19.0	17.7	20.0	20.3	19.8
55	15.3	15.6	14.8	14.6	15.0	14.1	16.2	16.5	15.8
60	11.7	11.8	11.5	11.3	11.6	10.9	12.3	12.3	12.3
65	8.3	7.9	8.8	8.2	7.7	8.7	8.5	8.3	8.8
70	4.6	4.6	4.5	4.5	4.5	4.4	4.6	4.6	4.6

Source : PGE sample data

TABLE VI

Average Life Expectancy (${}^{\circ}e_x$) at Specified Ages by Sex for Pakistan and Provinces, 1962

(Series B: based on registered LR deaths)

Exact age (years)	Pakistan			East Pakistan			West Pakistan		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
0	49.3	51.1	47.8	49.3	51.2	47.9	49.3	50.8	47.8
1	56.8	59.3	54.5	56.2	59.1	53.8	57.6	59.6	55.6
5	57.0	59.3	54.7	55.9	58.8	53.5	58.3	60.0	56.5
10	52.8	55.2	50.7	52.0	55.0	49.6	54.1	55.6	52.3
15	48.4	50.4	46.2	47.4	50.3	45.3	49.4	51.1	47.5
20	44.3	45.9	42.3	43.1	45.5	41.1	45.6	46.8	44.2
25	39.9	41.3	38.1	38.7	40.9	36.9	41.2	42.5	39.8
30	36.1	37.1	34.6	35.2	36.7	33.9	37.0	38.1	35.7
35	31.7	32.6	30.6	30.9	32.0	29.7	32.8	33.7	31.9
40	27.5	28.4	26.4	26.8	28.0	25.5	28.6	29.1	28.0
45	23.5	24.2	22.6	22.7	23.6	21.9	24.6	24.9	24.0
50	19.5	20.0	18.8	18.9	19.6	18.2	20.2	20.6	19.8
55	15.5	16.0	15.0	15.0	15.4	14.5	16.2	16.6	15.7
60	12.0	12.3	11.7	11.8	12.2	11.5	12.3	12.5	12.1
65	8.5	8.3	8.9	8.6	8.2	9.0	8.6	8.3	8.9
70	4.6	4.6	4.6	4.6	4.6	4.5	4.6	4.6	4.6

Source : PGE sample data

${}^{\circ}e_x$: (Col. 8) is the mean expectation of life in years lived by the cohort after age x . This is derived by dividing the total number of years lived after age x by the survivors of the cohort at that age as follows :

$${}^{\circ}e_x = \frac{T_x}{l_x}$$

MEAN EXPECTATION OF LIFE

Tables V and VI present the mean expectation of life by age according to the two series of life tables.

The following values of expectation of life at birth (${}^{\circ}e_x$) (obtained in series A and B) along with some estimates for the previous years throw some light on the trends of the average duration of life :

	Male	Female
<i>Series A (1962)</i>		
East Pakistan	49.0	44.8
West Pakistan	49.4	47.4
<i>Series B (1962)</i>		
East Pakistan	51.2	47.9
West Pakistan	50.9	47.8
Undivided India (1931-41)	32.1	31.4 [5]
Former Punjab Province (1950-52)	33.0	34.7 [9]

The above comparison shows that the level of expectation of life at birth did not change much from the period 1931—41 to 1950—52 assuming, of course, that the former Punjab Province of Pakistan was not much different in respect of mortality level from the Indo-Pakistan subcontinent as a whole. But an average gain of about 15 years in expectation of life from 1950—52 to 1962 indicates a quite sizeable reduction in mortality assuming again that the former Punjab Province of Pakistan can be taken as representative of whole of Pakistan in 1950—52. After Independence in 1947 the introduction of health programmes for malaria eradication and control of other contagious diseases such as smallpox and cholera, may have improved mortality conditions.

Series B of the life tables which is based on unadjusted death data yields somewhat higher values of ${}^{\circ}e_x$ than Series A. However, both the series show

nominal differences in the values of expectation of life at birth for both sexes between the two provinces, but reveal higher values for males than for females in both the provinces. In other words, males in Pakistan, on the average, live 2 to 4 years longer than females. With respect to males, the values of expectation of life at birth ($^{\circ}e_0$) are not significantly different in the two provinces but with regard to females, the value yielded by Series A is markedly higher in West Pakistan than in East Pakistan. The pattern of sex differences in the values of expectation of life is consistent with the observed masculinity ratio in the population yielded by the Census of Pakistan and the PGE. The masculinity ratio of the total population in West Pakistan is higher than that in East Pakistan as indicated below :

	<i>1961 Census</i>	<i>1962 PGE</i>
Pakistan	111	110
East Pakistan	108	106
West Pakistan	115	115

The sex differences in mortality alone may not explain the differences in the masculinity ratio between the two provinces. But it is interesting to note that the pattern of masculinity ratio at birth revealed by the 1962 PGE data, given below, is almost the same as of the masculinity ratios of the population as shown above.

	<i>With Chandra- Deming factors included</i>	<i>Registration (LR)</i>
Pakistan	107	110
East Pakistan	102	108
West Pakistan	113	112

Part of this difference may be due to sex differences in the completeness of registration of births in the two provinces.

The sex ratio in a closed population subject to constant mortality is approximately equal to the sex ratio at birth multiplied by the ratio of male to female expectation of life at birth. If the population in addition to being closed were stationary this approximation would be exact. In growing population like that of Pakistan in which mortality is changing, the growth gives more weight to the

young age groups as compared to old age groups. If the masculinity ratios at birth, 107 including Chandra-Deming factors and 110 obtained from registration alone, are multiplied by the respective male to female ratios of expectation of life at birth, the expected masculinity ratios obtained for Pakistan are 114 and 117, respectively. These expected ratios compare with the observed masculinity ratios of 111 obtained in the 1961 Census and 110 obtained in the 1962 PGE (CS). The variation between the expected and the observed ratios could be attributed to sampling and other errors.

At ages 1 and above (as at age 0) males have longer expectation of life than do females. Both the series show that males and females of East Pakistan have somewhat lower expectation of life at age 1 and above than do their counterparts in West Pakistan but the differences between the expectation of life at these ages of females of the two provinces are more pronounced. There are marked sex differences in the values of 0e_x especially in the reproductive ages. The females of reproductive ages in East Pakistan appear to have lower expectation of life than corresponding females of West Pakistan.

In Table VII the levels of expectation of life at birth (0e_0) of East and West Pakistan are compared with those of selected countries of the ECAFE region.

TABLE VII
Expectation of Life at Birth (0e_0) in Pakistan and Selected Countries

Country	Period	Male (years)	Female (years)
Cambodia ^a	1958-59	44.2	43.3
Ceylon	1945-47	46.8	44.7
	1948	54.9	53.3
	1950	56.4	54.8
	1954	60.3	59.4
China:(Taiwan)	1936-41	41.1	45.7
	1956-58	60.5	65.0
	1959-60	61.3	65.6
India ^b	1941-50	32.5	31.7
	1951-60	41.9	40.6
Indonesia	1960	about 47.5*	—
	1947	50.1	54.0
Japan	1949-50	56.2	59.6
	1955 ^c	63.6	67.8
	1960 ^c	65.4	70.3
	1963 ^d	67.2	72.3
Republic of Korea ^e	1955-60	52.5*	—
Federation of Malayar	1956-58	55.8	58.2

Apart from the differences in the period to which the values pertain and degrees of quality of data of each country, the differences in the expectation of life at birth of these countries are mainly due to the varying levels of achievements in public health and economic development programmes. The differences between the levels of mortality of developed countries (New Zealand, Australia and Japan) and developing countries (all the rest of the ECAFE region) are still wide. However, increase in the expectation of life at birth in the developing countries is taking place at a quite substantial rate and these differences are likely to narrow in the near future. Among the countries listed in Table VII, Pakistan (after India) has the second lowest value of the average duration of life. In other words, people in most of the countries listed in this table on the average live longer than the people of Pakistan. It, therefore, appears that despite the improvements in health conditions and the substantial increase in the average duration of life since 1951 Pakistan still has to go a long way even to catch up with the other countries of Asia.

It may also be noted that India and Ceylon, like Pakistan, have higher expectation of life at birth for males than for females. This explains at least some, if not all, surpluses of males found in these countries at the time of their 1961 and earlier censuses. The masculinity ratios in 1961 were : Pakistan 111, India 106 and Ceylon 111 [17, p. 71].

COHORT SURVIVORS

Column (5) of the life tables (Appendix Tables 1 to 6) shows the number of survivors to exact age x in a cohort of 100,000 live births. On the average half of the males in Pakistan die before they complete age 65 and half of the females die by the time they completed age 55. The higher median length of life experienced by males is probably due to the cumulative effect of higher female mortality in the reproductive ages. Whereas in the developed countries only about 5 per cent children die by the time they reach age 15, in Pakistan more than one fifth children die before they reach 5 or enter the school age and about one fourth die by the time they reach age 15 or enter the economically active ages.

SUMMARY

Two series (A and B) of life tables have been prepared separately for Pakistan and its two provinces, for 1962. The difference between the two series lies in the use of adjusted and unadjusted death data. For series A the number of deaths adjusted by Chandra-Deming formula has been used whereas for series B registered deaths have been used. The base population (1962 mid-year) for both the series is the same. The differences in the two series are therefore attributable to the adjustment of death data.

Males in Pakistan have longer duration of life than that of females which is consistent with the high masculinity ratio of the population as observed in the decennial censuses and the PGE survey. The sex differences in longevity become more pronounced in the reproductive ages showing that the incidence of maternal mortality in Pakistan is quite high. It is surprising to note that the differences in the values of expectation of life at birth between East and West Pakistan, both sexes combined, are minor. One would expect that general mortality level would be higher in East than in West Pakistan, but this study does not support this view. On the other hand it is noted that infant mortality is higher in West than in East Pakistan. A plausible explanation may be that the health programmes which are being launched in the two provinces of Pakistan are meeting more success in compact and densely populated East Pakistan than in relatively sparsely populated West Pakistan. The possibility of differences in the quality of registration of births and deaths also cannot be ruled out.

In spite of the tremendous improvement in the health conditions, Pakistan is still one of the high mortality areas in Asia. The tendency towards a general improvement in the expectation of life shown in this analysis means an acceleration in the rate of population growth.

For the first time in Pakistan, life tables (based on primary data) have been prepared. These life tables are based on death rates observed over a period of one year instead of two or three years, and, therefore, the results should be interpreted with caution. In addition, they are based on sample data which themselves are subject to sampling and non-sampling biases in varying magnitudes. However, these life tables provide important information about the population of Pakistan.

REFERENCES

1. Afzal, M., *Estimation of Institutional Births and Deaths in West Pakistan*. PGE Special Research Studies No. 2. (Karachi: Population Growth Estimation, April 1966).
2. Ahmed, Nazir and Karol J. Krotki, "Simultaneous Estimation of Population Growth—The Pakistan Experiment", *Pakistan Development Review*, Vol. III No. 1, 1963.
3. Barclay, George W., *Techniques of Population Analysis*. (New York; London : John Wiley and Sons Inc., 1958).
4. Chandrasekar, C. and Edward D. Deming, "On a Method of Estimating Birth and Death Rates and Extent of Registration", *Journal of the American Statistical Association*, Vol. 44, No. 24, March 1949.

5. Davis, Kingsley, *The Population of India and Pakistan*. (Princeton N. J. : University of Princeton Press, 1951).
6. Dublin, Louis I., Alfred J. Lotka and Mortimer Spiegelman, *Length of Life : A Study of the Life Table*. (New York : the Ronald Press Company, 1949).
7. Hashmi, Sultan S., *Main Features of the Demographic Conditions in Pakistan*. Country background paper presented to the Asian Population Conference held in December 10—20, 1963 at New Delhi; (Karachi : Central Statistical Office, Government of Pakistan, 1963).
8. Jaffe, A. J. *Handbook of Statistical Methods for Demographers : Selected Problems in the Analysis of Census Data*. (Washington: United States Government Printing Press, 1951).
9. Khan, M. K. H., "Abridged Life Tables for Males and Females in the Former Province of the Punjab, 1950—52". *Pakistan Journal of Medical Research*, Vol. 1, No. 2, 1956.
10. Moriyama, I. M. and T. N. E. Greville, "Effect of Changing Birth Rates upon Infant Mortality Rates", *Vital Statistics-Special Reports*, Vol. 19, p. 399 (Washington : Bureau of the Census, November 10, 1944).
11. Myers, R. J., "Errors and Bias in the Reporting of Ages in Census Data", *Transaction of the Actuarial Society of America*, Vol. 41, October-November, 1940.
12. Population Growth Estimation, *Instructions for Cross-Sectional Survey. Special Studies Series PGE 3*. (Karachi: Central Statistical Office, Government of Pakistan, February 1964).
13. Population Growth Estimation, *Procedures-Special Studies Series PGE 1* (Karachi : Central Statistical Office, Government of Pakistan, February, 1962).
14. Reed, Lowell J. and Margaret Merrell, "A Short Method for Constructing an Abridged Life Table", *The American Journal of Hygiene*, Vol. 30, No. 2, September 1939.
15. Robinson, Warren C., William Seltzer and Sultan S. Hashmi, "Quasi-Stable Estimates of Vital Rates of Pakistan", *Pakistan Development Review*, Vol. V, No. 4, Winter 1965.
16. United Nations, *Demographic Year-Book, 1964*. (New York : United Nations, 1965).
17. United Nations (ECAFE), *Report of the Asian Population Conference and Selected Papers*. Held at New Delhi, India 10—20 December 1963. (New York : United Nations, 1964).

Appendix

TABLE 1
 ABRIDGED LIFE TABLE BY SEX FOR PAKISTAN, 1962
 (Series A : Chandra-Deming Factors included)

Age in years and sex	Life table death rate	Probability of surviving between age x and x+n	Number of deaths between age x and x+n	Survivors at exact age x	Years lived between age x and x+n	Total years lived after exact age x	Expectation of life (average number of years lived after exact age x)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$1000 n^q_x$	n^p_x	n^d_x	l_x	L_n^x	T_x	e_x
Both Sexes							
Under 1	147.000	.853000	14,700	100,000	89,710	4,750,056	47.50
1-4	91.864	.908136	7,836	85,300	366,219	4,660,346	54.63
5-9	24.714	.975286	1,914	77,464	382,535	4,294,127	55.43
10-14	9.954	.990046	752	75,550	375,870	3,911,592	51.77
15-19	19.817	.980183	1,482	74,798	370,285	3,535,722	47.27
20-24	19.817	.980183	1,453	73,316	362,948	3,165,437	43.18
25-29	29.590	.970410	2,126	71,863	354,000	2,802,489	39.00
30-34	24.714	.975286	1,723	69,737	344,378	2,448,489	35.11
35-39	29.590	.970410	2,013	68,014	335,038	2,104,111	30.94
40-44	44.080	.955920	2,909	66,001	322,732	1,769,073	26.80
45-49	53.629	.946371	3,384	63,092	307,000	1,446,341	22.92
50-54	67.789	.932211	4,048	59,708	288,420	1,139,341	19.08
55-59	100.072	.899928	5,570	55,660	264,375	850,921	15.29
60-64	148.728	.851272	7,450	50,090	231,825	586,546	11.71
65-69	174.234	.825766	7,429	42,640	194,628	354,721	8.32
70 & over	1000.000	0	35,211	35,211	160,093	160,093	4.55

(contd.)

TABLE 1 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Males							
Under 1	158,000	.842000	15,800	100,000	88,940	4,891,120	48.91
1-4	82,237	.917763	6,924	84,200	363,321	4,802,180	57.03
5-9	19,817	.980183	1,531	77,276	382,552	4,438,859	57.44
10-14	9,954	.990046	754	75,745	376,840	4,056,307	53.55
15-19	14,897	.985103	1,117	74,991	372,162	3,679,467	49.07
20-24	14,897	.985103	1,101	73,874	366,618	3,307,305	44.77
25-29	24,714	.975286	1,799	72,773	359,368	2,940,687	40.41
30-34	19,817	.980183	1,406	70,974	351,355	2,581,319	36.37
35-39	24,714	.975286	1,719	69,568	343,542	2,229,964	32.05
40-44	29,590	.970410	2,008	67,849	334,225	1,886,422	27.80
45-49	44,080	.955920	2,902	65,841	321,950	1,552,197	23.57
50-54	58,371	.941629	3,674	62,939	305,510	1,230,247	19.55
55-59	86,365	.913635	5,118	59,265	283,530	924,737	15.60
60-64	100,072	.899928	5,419	54,147	257,188	641,207	11.84
65-69	238,843	.761157	11,638	48,728	214,545	384,019	7.88
70 & over	1000,000	0	37,090	37,090	169,474	169,474	4.57

(contd.)

TABLE 1 (Contd.)

	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Females							
Under 1	136,000	.864000	13,600	100,000	90,480	4,586,884	45.87
1-4	101,255	.898745	8,748	86,400	369,117	4,496,404	52.04
5-9	29,590	.970410	2,298	77,652	382,515	4,127,287	53.15
10-14	9,954	.990046	750	75,354	374,895	3,744,772	49.70
15-19	24,714	.975286	1,844	74,604	368,410	3,369,877	45.17
20-24	19,817	.980183	1,442	72,760	360,195	3,001,467	41.25
25-29	39,272	.960728	2,801	71,318	349,588	2,641,272	37.04
30-34	34,442	.965558	2,360	68,517	336,685	2,291,684	33.45
35-39	39,272	.960728	2,598	66,157	324,290	1,954,999	29.55
40-44	63,091	.936909	3,710	63,559	307,770	1,630,709	25.66
45-49	63,091	.936909	3,757	59,549	288,352	1,322,939	22.22
50-54	72,465	.927535	4,043	55,792	268,852	1,034,587	18.54
55-59	122,498	.877502	6,339	51,749	242,898	765,735	14.80
60-64	203,099	.796901	9,223	45,410	203,992	522,837	11.51
65-69	100,072	.899928	3,621	36,187	171,882	318,845	8.81
70 & over	1000,000	0	32,566	32,566	146,963	146,963	4.51

TABLE 2
 ABRIDGED LIFE TABLE BY SEX FOR EAST PAKISTAN, 1962
 (Series A : Chandra-Deming Factors included)

Age in years and sex	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1000 q_x	Probability of surviving between age x and $x+n$	Number of deaths between age x and $x+n$	Survivors at exact age x	Years lived between age x and $x+n$	Total years lived after exact age x	Expectation of life (average number of years lived after exact age x)	
	$1000 q_x$	$n^p x$	$n^d x$	l_x	$L_n x$	T_x	$o e_x$	
Both Sexes								
Under 1	144.000	.856000	14,400	100,000	89,920	4,687,273	46.87	
1-4	88.681	.911319	7,591	85,600	368,120	4,597,353	53.70	
5-9	29.590	.970410	2,308	78,009	384,275	4,229,233	54.21	
10-14	9.954	.990046	754	75,701	376,620	3,844,958	50.79	
15-19	14.897	.985103	1,116	74,947	371,945	3,468,338	46.28	
20-24	14.897	.985103	1,100	73,831	366,405	3,096,393	41.94	
25-29	39.272	.960728	2,856	72,731	356,515	2,729,988	37.54	
30-34	24.714	.975286	1,727	69,875	345,058	2,373,473	33.97	
35-39	34.442	.965558	2,347	68,148	334,872	2,028,415	29.76	
40-44	53.629	.946371	3,529	65,801	320,182	1,693,543	25.74	
45-49	67.789	.932211	4,221	62,272	300,808	1,373,361	22.05	
50-54	67.789	.932211	3,935	58,051	280,418	1,072,553	18.48	
55-59	118.054	.881946	6,389	54,116	254,608	792,135	14.64	
60-64	178.416	.821584	8,515	47,727	217,348	537,527	11.26	
65-69	190.844	.809156	7,483	39,212	177,352	320,179	8.17	
70 & over	1000.000	0	31,729	31,729	142,827	142,827	4.50	

(contd.)

TABLE 2 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Males							
Under 1	156.000	.844000	15,600	100,000	89,080	4,898,537	48.99
1-4	78.975	.921025	6,665	84,400	364,804	4,809,457	56.98
5-9	24.714	.975286	1,921	77,735	383,872	4,444,653	57.18
10-14	9.954	.990046	755	75,814	377,182	4,060,781	53.56
15-19	9.954	.990046	747	75,059	373,428	3,683,599	49.08
20-24	9.954	.990046	740	74,312	369,710	3,310,171	44.54
25-29	19.817	.980183	1,458	73,572	364,215	2,940,461	39.97
30-34	14.897	.985103	1,074	72,114	357,885	2,576,246	35.72
35-39	29.590	.970410	2,102	71,040	349,945	2,218,361	31.23
40-44	29.590	.970410	2,040	68,938	339,590	1,868,416	27.10
45-49	53.629	.946371	3,588	66,898	325,520	1,528,826	22.85
50-54	58.371	.941629	3,695	63,310	307,312	1,203,306	19.01
55-59	109.105	.890895	6,504	59,615	281,815	895,994	15.03
60-64	113.590	.886410	6,033	53,111	250,472	614,179	11.56
65-69	258.056	.741944	12,149	47,078	205,018	363,607	7.73
70 & over	1000.000	0	34,929	34,929	158,689	158,689	4.54

—(contd.)—

TABLE 2 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Females							
Under 1	132,000	868000	13,200	100,000	90,760	4,482,233	44.82
1-4	95,020	904980	8,248	86,800	372,042	4,391,473	51.59
5-9	34,442	965558	2,705	78,552	385,998	4,019,431	52.09
10-14	9,954	990046	755	75,847	377,348	3,633,433	47.90
15-19	19,817	980183	1,488	75,092	371,740	3,256,085	43.36
20-24	19,817	980183	1,459	73,604	364,372	2,884,345	39.19
25-29	53,629	946371	3,869	72,145	351,052	2,519,973	34.93
30-34	39,272	960728	2,681	68,276	334,678	2,168,921	31.77
35-39	44,080	955920	2,891	65,595	320,748	1,834,243	27.96
40-44	81,753	918247	5,126	62,704	300,705	1,513,495	24.14
45-49	81,753	918247	4,707	57,578	276,122	1,212,790	21.06
50-54	81,753	918247	4,322	52,871	253,550	936,668	17.72
55-59	135,705	864295	6,588	48,549	226,275	683,118	14.07
60-64	250,425	749575	10,508	41,961	183,535	456,843	10.89
65-69	109,105	890895	3,432	31,453	148,685	273,308	8.69
70 & over	1000,000	0	28,021	28,021	124,623	124,623	4.45

TABLE 3

ABRIDGED LIFE TABLE BY SEX FOR WEST PAKISTAN, 1962

(Series A : Chandra-Deming Factors included)

Age in years and sex	1000 n^a_x	Probability of surviving between age x and $x+n$	Number of deaths between age x and $x+n$	Survivors at exact age x	Years lived between age x and $x+n$	Total years lived after exact age x	Expectation of life (average number of years lived after exact age x)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		n^p_x	n^d_x	l_x	L_x	T_x	${}^o e_x$
Under 1	152,000	.848000	15,200	100,000	89,360	4,823,828	48.24
1-4	98,151	.901849	8,323	84,800	362,873	4,734,468	55.83
5-9	14,897	.985103	1,139	76,477	379,538	4,371,595	57.16
10-14	9,954	.990046	750	75,338	374,815	3,992,057	52.99
15-19	29,590	.970410	2,207	74,588	367,422	3,617,242	48.50
20-24	19,817	.980183	1,434	72,381	358,320	3,249,820	44.90
25-29	24,714	.975286	1,753	70,947	350,352	2,891,500	40.76
30-34	29,590	.970410	2,047	69,147	340,852	2,541,148	36.72
35-39	24,714	.975286	1,659	67,147	331,588	2,200,296	32.77
40-44	29,590	.970410	1,938	65,488	322,595	1,868,708	28.54
45-49	29,590	.970410	1,880	63,550	313,050	1,546,113	24.33
50-54	63,091	.936909	3,891	61,670	298,622	1,233,063	19.99
55-59	77,120	.922880	4,456	57,779	277,755	934,441	16.17
60-64	109,105	.890895	5,818	53,323	252,070	656,686	12.32
65-69	153,029	.846971	7,270	47,505	219,350	404,616	8.52
70 & over	1000,000	0	40,235	40,235	185,266	185,266	4.60

(contd.)

TABLE 3 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Females							
Under 1	143,000	.857000	14,300	100,000	89,990	4,743,233	47.43
1—4	110,416	.889584	9,463	85,700	364,358	4,653,243	54.30
5—9	19,817	.980183	1,511	76,237	377,408	4,288,885	56.26
10—14	9,954	.990046	744	74,726	371,770	3,911,477	52.34
15—19	34,442	.965558	2,548	73,982	363,540	3,539,707	47.85
20—24	19,817	.980183	1,416	71,434	353,630	3,176,167	44.46
25—29	24,714	.975286	1,730	70,018	345,765	2,822,537	40.31
30—34	29,590	.970410	2,021	68,288	336,388	2,476,772	36.27
35—39	29,590	.970410	1,961	66,267	326,432	2,140,384	32.30
40—44	34,442	.965558	2,215	64,306	315,992	1,813,952	28.21
45—49	29,590	.970410	1,837	62,091	305,862	1,497,960	24.13
50—54	53,629	.946371	3,231	60,254	293,192	1,192,098	19.78
55—59	104,599	.895401	5,965	57,023	270,202	898,906	15.76
60—64	135,705	.864295	6,929	51,058	237,968	628,704	12.31
65—69	104,599	.895401	4,616	44,129	209,105	390,736	8.85
70 & over	1000,000	0	39,513	39,513	181,631	181,631	4.60

TABLE 4
 ABRIDGED LIFE TABLE BY SEX FOR PAKISTAN, 1962
 (Series B : Based on (LR) Registered Deaths)

Age in years and sex	Life table death rate	Probability of surviving between age x and x + n	Number of deaths between age x and x + n	Survivors at exact age x	Years lived between age x and x + n	Total years lived after exact age x	Expectation of life (average number of years lived after exact age x)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$1000 n^d_x$	n^p_x	n^d_x	l_x	L^i_x	T_x	o^e_x
Both sexes							
Under 1	148,900	.851100	14,890	100,000	89,577	4,927,696	49.28
1-4	78,975	.921025	6,722	85,110	367,870	4,838,119	56.85
5-9	14,897	.985103	1,168	389,388	389,020	4,470,249	57.03
10-14	9,954	.990046	769	77,220	384,178	4,081,229	52.85
15-19	19,817	.980183	1,515	76,451	378,468	3,697,051	48.36
20-24	14,897	.985103	1,116	74,936	371,890	3,318,583	44.29
25-29	29,590	.970410	2,184	73,820	363,640	2,946,693	39.92
30-34	19,817	.980183	1,420	71,636	354,630	2,583,053	36.06
35-39	24,714	.975286	1,735	70,216	346,742	2,228,423	31.74
40-44	39,272	.960728	2,689	68,481	335,682	1,881,681	27.48
45-49	44,080	.955920	2,900	65,792	321,710	1,545,999	23.50
50-54	58,371	.941629	3,671	62,892	305,282	1,224,289	19.47
55-59	104,599	.895401	6,194	59,221	280,620	919,007	15.52
60-64	135,705	.864295	7,196	53,027	247,145	638,387	12.04
65-69	148,728	.851272	6,816	45,831	212,115	391,242	8.54
70 & over	1000,000	0	39,015	39,015	179,127	1,179,127	4.59

(contd.)

TABLE 4 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Males							
Under 1	154,300	.845700	15,430	100,000	89,199	5,107,845	51.08
1-4	72,370	.927630	6,120	84,570	366,795	5,018,646	59.34
5-9	14,897	.958103	1,169	78,450	389,328	4,651,851	59.30
10-14	4,989	.995011	386	77,281	385,440	4,262,523	55.16
15-19	9,954	.990046	765	76,895	382,562	3,877,083	50.42
20-24	9,954	.990046	758	76,130	378,755	3,494,521	45.90
25-29	19,817	.980183	1,494	75,372	373,125	3,115,766	41.34
30-34	14,897	.985103	1,101	73,878	366,638	2,742,641	37.12
35-39	24,714	.975286	1,799	72,777	359,388	2,376,003	32.65
40-44	29,590	.970410	2,100	70,978	349,640	2,016,615	28.41
45-49	34,442	.965558	2,372	68,878	338,460	1,666,975	24.20
50-54	53,629	.946371	3,567	66,506	323,612	1,328,515	19.98
55-59	90,955	.909045	5,725	62,939	300,382	1,004,903	15.97
60-64	90,955	.909045	5,204	57,214	273,060	704,521	12.31
65-69	186,721	.813279	9,711	52,010	235,772	431,461	8.30
70 & over	1000,000	0	42,299	42,299	195,689	195,689	4.63

(contd.)

TABLE 4 (Contd.)

TABLE 4 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Females							
Under 1	138,500	.861500	13,870	100,000	90,305	4,784,968	47.85
1-4	82,237	.917763	7,085	86,150	371,734	4,694,663	54.49
5-9	19,817	.980183	1,567	79,065	391,408	4,322,929	54.68
10-14	9,954	.990046	771	77,498	385,562	3,931,521	50.73
15-19	24,714	.975286	1,896	76,727	378,895	3,545,959	46.22
20-24	19,817	.980183	1,483	74,831	370,448	3,167,064	42.32
25-29	39,272	.960728	2,881	73,348	359,537	2,796,616	38.13
30-34	29,590	.970410	2,085	70,467	347,122	2,437,079	34.58
35-39	29,590	.970410	2,023	68,382	336,852	2,089,957	30.56
40-44	48,866	.951134	3,243	66,359	323,688	1,753,105	26.42
45-49	53,629	.946371	3,385	63,116	307,118	1,429,417	22.65
50-54	67,789	.932211	4,049	59,731	288,532	1,122,299	18.79
55-59	122,498	.877502	6,821	55,682	261,358	833,767	14.97
60-64	190,844	.809156	9,325	48,861	220,992	573,409	11.74
65-69	90,955	.909045	3,596	39,536	188,690	352,417	8.91
70 & over	1000,000	0	35,940	35,940	163,727	163,727	4.56

TABLE 5
ABRIDGED LIFE TABLE BY SEX FOR EAST PAKISTAN, 1962
 (Series B : Based on (LR) Registered Deaths)

Age in years and sex	Life table death rate	Probability of surviving between age x and x+n	Number of deaths between age x and x+n	Survivors at exact age x	Years lived between age x and x+n	Total years lived after exact age x	Expectation of life (average number of years lived after exact age x)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1000 n ^q _x	n ^p _x	n ^d _x	l _x	n ^L _x	T _x	^o e _x
Both Sexes							
Under 1	138.100	.861900	13,830	100,000	90,333	4,931,222	49.31
1-4	72.370	.927630	6,238	86,190	373,820	4,840,889	56.17
5-9	19.817	.980183	1,584	79,932	395,800	4,467,069	55.87
10-14	9.954	.990046	780	78,368	389,890	4,071,269	51.95
15-19	14.897	.985103	1,156	77,588	385,050	3,681,379	47.45
20-24	14.897	.985103	1,139	76,432	379,312	3,296,329	43.13
25-29	39.272	.960728	2,957	75,293	369,072	2,917,017	38.74
30-34	19.817	.980183	1,433	72,336	358,098	2,547,945	35.22
35-39	29.590	.970410	2,098	70,903	349,270	2,189,847	30.89
40-44	39.272	.960728	2,702	68,805	337,270	1,840,577	26.75
45-49	53.629	.946371	3,545	66,103	321,652	1,503,307	22.74
50-54	63.091	.936909	3,947	62,558	302,922	1,181,655	18.89
55-59	126.921	.873079	7,439	58,611	274,458	878,733	14.99
60-64	157.310	.842690	8,050	51,172	235,735	604,275	11.81
65-69	144.407	.855593	6,227	43,122	200,042	368,540	8.55
70 & over	1000.000	0	36,895	36,895	168,498	168,498	4.57

(contd.)

TABLE 5 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Males							
Under 1	149.000	.851000	14,900	100,000	89,570	5,122,110	51.22
1—4	69.026	.930974	5,874	85,100	369,734	5,032,540	59.14
5—9	19.817	.980183	1,570	79,226	392,205	4,662,806	58.85
10—14	4.989	.995011	387	77,656	787,312	4,270,601	54.99
15—19	4.989	.995011	385	77,269	385,382	3,883,289	50.26
20—24	9.954	.990046	765	76,884	382,508	3,497,907	45.50
25—29	19.817	.980183	1,508	76,119	376,825	3,115,399	40.92
30—34	9.954	.990046	743	74,611	371,198	2,738,574	36.70
35—39	29.590	.970410	2,186	73,868	363,875	2,367,376	32.05
40—44	24.714	.975286	1,772	71,682	353,980	2,003,501	27.95
45—49	44.080	.955920	3,082	69,910	341,845	1,649,521	23.59
50—54	48.866	.951134	3,266	66,828	325,975	1,307,676	19.57
55—59	118.054	.881946	7,504	63,562	299,050	981,701	15.44
60—64	100.072	.899928	5,610	56,058	266,265	682,651	12.18
65—69	190.844	.809156	9,628	50,448	228,170	416,386	8.25
70 & over	1000.000	0	40,820	40,820	188,216	188,216	4.61

(contd.)

TABLE 5 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Females							
Under 1	126.400	.873600	126,400	100,000	91,152	4,791,364	47.91
1—4	75.686	.924314	6,612	87,360	378,243	4,700,212	53.80
5—9	19.817	.980183	1,600	80,748	399,740	4,321,969	53.52
10—14	14.897	.985103	1,179	79,148	392,792	3,922,229	49.56
15—19	19.817	.980183	1,545	77,969	385,982	3,529,437	45.27
20—24	19.817	.980183	1,514	76,424	378,335	3,143,455	41.13
25—29	53.629	.946371	4,017	74,910	364,508	2,765,120	36.91
30—34	24.714	.975286	1,752	70,893	350,085	2,400,612	33.86
35—39	29.590	.970410	2,046	69,141	340,590	2,050,527	29.66
40—44	58.371	.941629	3,916	67,095	325,685	1,709,937	25.49
45—49	63.091	.936909	3,986	63,179	305,930	1,384,252	21.91
50—54	77.120	.922880	4,565	59,193	284,552	1,078,322	18.22
55—59	140.066	.859934	7,652	54,628	254,010	793,770	14.53
60—64	215.182	.784818	10,108	46,976	209,610	539,760	11.49
65—69	81.753	.918247	3,014	36,868	176,805	330,150	8.95
70 & over	1000.000	0	33,854	33,854	153,345	153,345	4.53

TABLE 6
 ABRIDGED LIFE TABLE BY SEX FOR WEST PAKISTAN, 1962
 (Series B : Based on (LR) Registered Deaths)

Age in years and sex	Life table death rate	Probability of surviving between age x and $x+n$	Number of deaths between age x and $x+n$	Survivors at exact age x	Years lived between age x and $x+n$	Total years lived after exact age x	Expectation of life (average number of years lived after exact age x)
	$1000 n^q_x$	n^p_x	n^d_x	l_x	L_x	T_x	${}^o e_x$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Both Sexes							
Under 1	158.700	.841300	15,870	100,000	88,891	4,933,637	49.34
1-4	85.472	.914528	7,191	84,130	326,405	4,844,746	57.59
5-9	14.897	.985103	1,146	76,939	381,830	4,482,341	58.26
10-14	4.989	.995011	378	75,793	378,020	4,100,511	54.10
15-19	24.714	.975286	1,864	75,415	372,415	3,722,491	49.36
20-24	14.897	.985103	1,096	73,551	365,015	3,350,076	45.55
25-29	19.817	.980183	1,436	72,455	358,685	2,985,061	41.20
30-34	24.714	.975286	1,755	71,019	350,708	2,626,376	36.98
35-39	24.714	.975286	1,712	69,264	342,040	2,275,668	32.85
40-44	34.442	.965558	2,327	67,552	331,942	1,933,628	28.62
45-49	29.590	.970410	1,930	65,225	321,300	1,601,686	24.56
50-54	53.629	.946371	3,394	63,295	307,990	1,280,386	20.23
55-59	72.465	.927535	4,341	59,901	288,650	972,396	16.23
60-64	113.590	.886410	6,311	55,560	262,022	683,746	12.31
65-69	148.728	.851272	7,325	49,249	227,932	421,724	8.56
70 & over	1000.000	0	41,924	41,924	193,792	193,792	4.62

(contd.)

TABLE 6 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Males							
Under 1	161,500	.838500	16,150	100,000	88,695	5,084,654	50.85
1-4	78,975	.921025	6,622	83,850	362,426	4,995,959	59.58
5-9	9,954	.990046	769	77,228	384,218	4,633,533	60.00
10-14	9,954	.990046	761	76,459	380,392	4,249,315	55.58
15-19	14,897	.985103	1,128	75,698	375,670	3,868,923	51.11
20-24	14,897	.985103	1,111	74,570	370,072	3,493,253	46.85
25-29	14,897	.985103	1,094	73,459	364,560	3,123,181	42.52
30-34	14,897	.985103	1,078	72,365	359,130	2,758,621	38.12
35-39	14,897	.985103	1,062	71,287	353,780	2,399,491	33.66
40-44	29,590	.970410	2,078	70,225	345,930	2,045,711	29.13
45-49	29,590	.970410	2,016	68,147	335,695	1,699,781	24.94
50-54	53,629	.946371	3,547	66,131	321,788	1,364,086	20.63
55-59	53,629	.946371	3,356	62,584	304,530	1,042,298	16.65
60-64	81,753	.918247	4,842	59,228	284,035	737,768	12.46
65-69	182,578	.817422	9,930	54,386	247,105	453,733	8.34
70 & over	1000,000	0	44,456	44,456	206,628	206,628	4.65

(contd.)

TABLE 6 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) ¹⁰⁰
Females							
Under 1	155,600	844,400	15,560	100,000	89,108	4,782,426	47.82
1-4	91,864	908,136	7,757	84,440	362,527	4,693,318	55.58
5-9	14,897	985,103	1,142	76,683	380,560	4,330,791	56.48
10-14	4,989	995,011	377	75,541	376,762	3,950,231	52.29
15-19	34,442	965,558	2,589	75,164	369,348	3,573,469	47.54
20-24	14,897	985,103	1,081	72,575	360,172	3,204,121	44.15
25-29	24,714	975,286	1,767	71,494	353,052	2,843,949	39.78
30-34	34,442	965,558	2,402	69,727	342,630	2,490,897	35.72
35-39	34,442	965,558	2,319	67,325	330,828	2,148,267	31.91
40-44	39,272	960,728	2,553	65,006	318,648	1,817,439	27.96
45-49	34,442	965,558	2,151	62,453	306,888	1,498,791	24.00
50-54	53,629	946,371	3,234	60,302	293,425	1,191,903	19.77
55-59	95,525	904,475	5,451	57,068	271,712	898,478	15.74
60-64	153,029	846,971	7,899	51,617	238,338	626,766	12.14
65-69	100,072	899,928	4,375	43,718	207,652	388,428	8.88
70 & over	1000,000	0	39,343	39,343	180,776	180,776	4.59