THE NATIONAL SAMPLE SURVEY

SEVENTH ROUND : OCTOBER 1953—MARCH 1954

NUMBER 54

VITAL RATES

सत्यमेव जयते

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THE NATIONAL SAMPLE SURVEY

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CHAPTER ONE

INTRODUCTION

1.1. Annual birth and death rates are basic demographic variables but knowledge of the crude rates of birth and death is not enough for understanding the dynamics of population growth. Specific components of fertility or mortality do not change in the same way and so a study of these components, in their differentials, is necessary for an idea of the probable future trend of the population or of impending changes in its composition. Marriage comes in as an important determinant of fertility. Its distribution by age over different sections of the population is of special significance when fertility is largely uncontrolled. Morbidity is another important characteristic. As a measure of health of the population this indicator is indispensable.

1.2. These four vital characteristics, namely, fertility, nuptiality, mortality and morbidity of the Indian population form the subject of study in the present report based upon data available from the National Sample Survey in its seventh round.

1.3. For countries with reliable registration statistics, the census count on population being also available, the computation of the basic rates for births, marriages and deaths is not a problem, though for special studies, supplementary information may be needed—sample survey being increasingly made use of in this connection, it being, besides, one of the principal methods of collection of sickness data.

1.4. In India, while marriage is, for the most part, not covered by registration, birth and death registration is admittedly incomplete and unreliable. In the absence of reliable mortality data, successive census life tables have been computed on the

* The draft report (No. D.47) was submitted to the Government of India in March 1960.

basis of inter-decade estimated natural increase of population above the childhood age range. Attempts have been made in the past to calculate birth rates from children enumerated at the successive censuses and the related life tables by the reverse survival method. The corresponding death rate could then be obtained from the estimated birth rate and the growth rate during the decade.

1.5. The birth and death rates calculated from both census and registration data for each decade since the turn of this century are presented in Table (1.1).

TABLE (1.1): BIRTH AND DEATH RATES CALCULATED FROM CENSUS AND REGISTRATION DATA

item	years					
	1901–10	1911–20	1921–30	1931–40	1941–50	1951–55
(1)	(2)	(3)	(4)	(5)	(6)	(7)
birth rate[1]						
1. census	48.1	49.2	46.4	45.2	39.9	—
2. registration	37	37	34	34	28	25.3
death rate[1]						
3. census	42.6	48.6	36.3	31.2	27.4	—
4. registration	—	34	26	23	20	13.4

[1]Kingsley Davis: *The Population of India and Pakistan* (1951), Princeton, p. 36; *Census of India, Paper No.* 6, 1954, p. 44; C.S.O.: *Monthly Abstract of Statistics, Vol. II, No.* 6, Government of India, p. 96 (1951-55 figures are averages of the annual rates).

1.6. Birth and death rates have also been variously estimated by other methods. A sample survey on births and deaths was conducted over a large part of India by the Census of India mostly during 1952-53 and the results have been published in *Census of India, Paper No.* 2, 1955, *Sample Census of Births and Deaths*, 1952-53. The birth and death rates for the area covered came to 31.3 and 15.9 respectively in the rural sector and 26.0 and 13.1 respectively in the urban sector.

1.7. The birth and death rates have also been estimated at 43.1 and 30.9[2] respectively for the decade 1941-50 on the basis of stable population concept and interrelationship between mortality at different ages while the corresponding infant mortality rate came to 225[2] compared to 183 implied in the Census of India life table.

1.8. While information on births and deaths was highly deficient, that on marriages was confined to the proportions married provided by the decennial censuses which have been used in the past in the calculation of average ages at marriage. Data on sickness on a national scale have also been rather scanty based chiefly on diseases notifiable to the health authorities.

[2]Ansley J. Coale and Edgar M. Hoover: *Population Growth and Economic Development in Low-income Countries* (1958), Princeton, p.44.

1.9. Some local surveys had been conducted in the past by the Indian Statistical Institute, Gokhale Institute of Politics and Economics and the All-India Institute of Hygiene and Public Health. Certain information on fertility was also collected in the past censuses in selected areas. Mention may also be made of an elaborate survey on population taken up in Mysore in 1951 under the joint auspices of the United Nations and the Government of India.

1.10. In the National Sample Survey (NSS) which is a continuing series of socio-economic surveys conducted in successive rounds covering practically the whole of India, fertility data began to be collected from the second round (April-June 1951) onwards. The results relating to trend and pattern of fertility from the second and fourth round data have been summarised in *National Sample Survey, Number* 7, *Couple Fertility*. A revised format for collecting information on current events of births, marriages, deaths and sickness was introduced during the seventh round (October 1953-March 1954) and, as mentioned earlier, forms the basis for this report. In the fourteenth round of the NSS a questionnaire on births and deaths on a much extended sample size was canvassed in the rural sector to estimate the population growth rate and this is being continued in the fifteenth round now in progress. Some results from later rounds are given in Appendix III.

1.11. The facsimile of the block for recording information on vital events in the household in the NSS seventh round is given at the end of the chapter. Other demographic characteristics as well as particulars of location and main socio-economic characteristics of the household were available form different blocks of the same schedule.

1.12. The data as presented here have been, for important items, analysed by two independent and inter-penetrating samples each of which furnishes a valid esitmate of the variate under study. An idea of the margin of uncertainty for any item can be had from the deviation between the two sample estimates. The agreement between the samples was good for the overall etimates but the margins of uncertainty were naturally bigger for various breakdowns. Detailed tables which would involve estimates based on small numbers of households are not given as the margin of uncertainty in such cases was very high. Data presented for the urban sector are also for the same reason confined mostly to overall all-India estimates.

1.13. The NSS sample design and general information on NSS are given in detail in NSS Reports Number 1 and 5. The sample design for the seventh round is broadly outlined here. The 2522 tehsils in the rural sector were divided into 240 strata on the criteria of contribution to consumer expenditure and geographical contiguity. Two sample tehsils were selected with replacement directly from each stratum, two sample villages being selected from each sample tehsil, with probability proportional to population/area and sample households were selected from each sample village systematically. For the urban sector, the towns were stratified according

to population size and the desired number of sample towns were selected with replacement from each stratum, the sample blocks being selected from towns, with probability proportional to population and sample households were selected from each sample block systematically.

1.14. The number of sample villages and households in the seventh round were 954 and 8,235 respectively in the rural sector while the number of sample towns, blocks and households were 57, 441 and 1,717 respectively in the urban sector. In the rural sector, data on consumer expenditure along with those on vital statistics were collected from only 4,192 households. The tables with per capita monthly expenditure as one of the classificatory items are based on information collected from these households only.

1.15. The facsimile of the block for recording information on vital events in the household is given below.

births, marriages & deaths during year, and sickness during month ended on.....																															
(1) births									(2) marriages							(3) deaths							(4) sickness						
												age at marriage years		husband															
serial number	birth code	age on date of survey or at death (weeks)	sex: m-1, f-2	order of birth	duration since marriage (years)	interval since previous birth (months)	age of mother (years)	month of birth	serial number	marriage code	month of marriage	husband	wife	education	industrial status	serial number	sex: m-1, f-2	age at death (years)	marital status	industrial status	month of death	cause of death	serial number	sex: m-1, f-2	age: (years)	marital status	industrial status	cause of sickness	duration of sickness (weeks)
1	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(1)	(2)	(3)	(4)	(5)	(6)	(7)

Chapter Two

SUMMARY FINDINGS

2.1. The results of the analysis based on NSS seventh round data are summarised broadly in the following sections. A few background facts are first presented.

2.2. The population of India, as enumerated at the 1951 Census, was 357 million, the land area being 1.27 million square miles. The mean growth rate during the decade 1941-50 was 1.25 per cent per year and the expectation of life at birth was 32.5 years.

2.3. About 83 per cent of the population live in rural areas and 70 per cent depend on agriculture as their means of livelihood. The per capita cultivated land is about 0.83 acres.

2.4. About 41 per cent of the population are under 15 years of age and the population median age is 21 years. There are 104 males for every 100 females. The average household size is 5.

2.5. Hindus form 85 per cent of the population, Muslims about 10 per cent and Christians and Sikhs about 2 per cent each. There are also 14 major languages in India.

2.6. The per capita national income was estimated at Rs. 289 for 1957-58.

2.7. In the computation of vital rates from NSS data, the base population used was as estimated from the survey and was, therefore, a little bigger than the corresponding exposed to risk, that is, the mean population of the year preceding the date of survey. This applied to birth, marriage and death rates for which the reference period was one year; the effect on the rates on this account was, however, very small. In all analyses by age, the 2-6 years age grouping was adopted as this had been found to be the most efficient grouping in the Indian situation[1].

2.8. The birth and death rates obtained from the seventh round data, 33.8 and 17.0 respectively, were much lower than seemed plausible on the basis of earlier official and other estimates for the decade 1941—50, even allowing for decline in mortality during the period subsequent to the central point of the decade. It appeared from analysis by month of the occurrence of the event prior to time of survey that there was considerable under-reporting of births and deaths occurring during the earlier part of the reference year. The distribution by month of event prior to time of survey was, however, itself subject to distortion due to misreporting of the month of the event.

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[1] *The National Sample Survey, Number* 12, *A Technical Note on Age Grouping* (1958), Government of India, Cabinet Secretariat.

2.9. The birth, marriage and death rates were found to be lower in the urban than in the rural sector. The figures quoted in the following sections relate to the rural sector except where stated otherwise. The birth and death rates were lowest in the south and highest in the central zone[2] (Tables 3.1 and 3.8). Marriage rate came to be highest in the north and lowest in the south and west zones, it being 10.8 in the north compared to 4.8 and 4.2 respectively in the south and west (Table 5.2). For monthly prevalence rate of sickness there seemed to be little difference between the rural and urban areas. There was, however, considerable zonal variation, the east having the highest value, 86 and the west the lowest, 32 (Table 7.1).

2.10. Fertility came to be highest in the age group 22-26 years, that at ages 17-21 years being only slightly lower; a comparison with some countries of low fertility shows that fertility in India is more evenly spread over the reproductive span and is relatively much higher at young ages. The index at ages 15-19 years, with the rate for 10-49 years being taken as the base, was found to be 111 compared to only 11 for Japan and 100, 26 and 40 respectively for USA, Italy, and England and Wales for 1953. At ages 40-44 years the index for India came to 59 compared to 26, 18, 50 and 24 respectively for Japan, USA, Italy, and England and Wales (Table 4.9).

2.11. The percentage distribution of the number of births by order of birth shows that higher order births constitute a much larger proportion of the total number of births in India than in countries of low fertility. Thus, fourth and higher order births made up 43 per cent of the total number of all births in India compared to 25 per cent in Japan, 24 per cent in USA and Italy and only 15 per cent in England and Wales (Table 4.12).

2.12. The average interval between successive births as reported was not appreciably different for different orders of birth. The average interval since previous birth for second and higher orders of birth came to 33 months in the rural and 35 months in the urban sector (Table 4.14).

2.13. Fertility seemed to be negatively correlated with per capita monthly expenditure but no consistent trend was evident when the data were analysed by size of land possessed. Also, there seemed to be little difference between the agricultural and the non-agricultural classes. Muslims were found to have higher fertility than Hindus.

2.14. For men the marriage rate was highest at ages 17-21 years, being 55 for all persons and 100 for never married persons compared to 14 and 22 respectivey for all ages. For women, the rate for all marriages was highest at ages 12-16 years being 67, but the first marriage rate for never married women was highest in the age group 17-21 years, it being 310 compared to 32 for all ages (Tables 5.5 and 5.7). Marriages were also found to be more widely spread over different ages for husbands

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[2] The 1951 Census classification is meant whenever "zone" is referred to.

than for wives. Hindus of caste group A[3] were found to have higher marriage rates than those of group B and the marriage rate increased with higher educational standard of husbands. The marriage rate was also greater for higher per capita expenditure groups and for higher land possessed groups. The classes with higher marriage rates were found to have lower median ages at marriage. The respective median ages at marriage for husband and wife were 19 and 14 in the rural and 23 and 16 in the urban sector. The north had the lowest ages at marriage, 15 and 13 respectively for husband and wife while the south had the highest, 25 and 18 respectively (Table 5.18).

2.15. Deaths under 15 years of age contributed 60 per cent of the total deaths in India compared to 28, 17, 9 and 5 per cent respectively in Japan (1950), Italy (1951), USA (1950), and England and Wales (1951). At ages 65 years and above the proportion for India was 15 per cent compared to 33, 55, 53 and 67 per cent for the countries named in that order (Table 6.2). The difference is partly due to the younger age structure of the population in India but mortality in this country at young ages is also relatively much higher than in the countries which have low death rates. Mortality for females was found to be higher than for males excepting at infant and advanced ages. The monthly per capita expenditure groups of Rs. 21 and above appeared to have higher mortality than those at per capita expenditure levels below Rs. 21 : it cannot, however, be definitely stated if this represented a real differential. No pronounced trend was observed according to size of land owned though mortality came to be a little higher for the group owning 6 acres of land and above.

2.16. In the rural areas the cause of death in a large proportion of cases, 46 per cent, was reported as not diagnosed. Comparatively high proportion of deaths was also reported as due to fevers—obviously an omnibus group—the percentage for this cause being 30 including 18 per cent due to undiagnosed fevers (Table 6.6).

2.17. Infant mortality rate was found to be higher for males than for females and higher at very early as well as at advanced stages of the reproductive period of the mother. Infant mortality rate of the first order births was found to be comparatively higher than for higher orders. It was also found to be higher at shorter intervals since previous birth (Tables 6.10-6.12).

2.18. The monthly prevalence rate of sickness came to 65 in the rural sector, the male and female rates being 68 and 61 respectively (Table 7.1). The incidence of sickness varied with age, though not so sharply as mortality. The lowest prevalence rate, 42 was observed for the age group 7-16 years and the highest, 96 for ages 57 years and above (Table 7.3).

2.19. The prevalence rate appeared to be higher for the per capita expenditure group of Rs. 21 and above but there was little difference between different

[3] Caste group A comprises those who according to custom use the sacred thread or from whom Brahmins take water by usual custom; caste group B represents the rest including the scheduled castes.

land possessed classes. The agricultural and the non-agricultural classes also seemed to have the same rates.

2.20. Malaria was reported as accounting for one-third of the total number of spells of sickness. A large proportion, 31 per cent, was also reported as due to fevers including those undiagnosed. The total undiagnosed cases constituted 30 per cent of all spells of sickness in the rural areas, the corresponding proportion in the urban areas being 23 per cent (Table 7.5).

2.21. Average duration per spell ending during a month came to 2 weeks (Table 7.16) and the number of days of sickness was 1.049 per 1000 persons in a month (Table 7.18).

CHAPTER THREE

REPORTING ERRORS IN BIRTH AND DEATH RATE ESTIMATES

3.1. Information on births occurring during the preceding one year to women who were members of the households on the day of enquiry, or if deceased, had been members on the day preceding the day of death, was collected from the sample households. Similarly, information on deaths occurring during the preceding year was collected from the sample households in respect of all persons who had been members on the day preceding the day of death.

3.2. Besides certain household characteristics and other particulars, information as to the month of occurrence of the event of birth or death was also recorded in the relevant sub-block. As the month of survey was also noted in the schedule, the data could be analysed by month of occurrence prior to the time of survey.

3.3. The number of still-births reported was very small, the still-birth ratio being only 6 per thousand live-births : by definition, all infants born at least 28 weeks after conception and showing no sign of life at birth were included in this category. For countries with reliable vital statistics, the still-birth ratio defined in the same way is seen to be above 20 per 1000 live-births. It may be presumed that only a small proportion of still-births actually occurring were reported. In the discussion that follows only live-births have been taken into account.

3.4. The crude birth rates for different rural zones and for the all-India urban sector are shown in Table (3.1).

TABLE (3.1) : BIRTH RATE PER 1000 PERSONS, FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL AND URBAN

sector	sample 1	sample 2	combined	number of sample persons	number of sample villages/ blocks
(1)	(2)	(3)	(4)	(5)	(6)
rural zone :					
1. north	31.9	37.5	34.6	7,315	148
2. east	36.6	40.6	38.5	10,024	251
3. south	26.5	17.8	22.1	6,768	161
4. west	39.0	29.1	33.9	5,802	128
5. central	42.0	41.9	41.9	6,146	147
6. north-west	37.0	38.4	37.7	5,423	119
7. all-India rural	34.8	34.3	34.6	41,478	954
8. all-India urban	30.9	28.5	29.7	7,779	441
9. all India	34.2	33.4	33.8	49,257	

3.5. The all-India birth rate of 33.8 is substantially lower than earlier estimates given in the *Census of India, Paper No. 6, 1954* : the birth rate is shown there as 39.9 per 1000 population during the decade 1941-50 on the basis of the results arrived at by the reverse survival method as well as the growth rate during the decade.

3.6. Though there are wide disparities between the two sample estimates for some of the zones, all-India figures are quite close to each other; the sampling error also, as given in Appendix I, is not large.

3.7. The birth rate came out highest in the central and lowest in the south zone; this agrees with the Census of India estimates though the birth rate in the south zone as obtained from the present survey is seen to be very much lower. The estimates for some of the other zones, particularly for the west, also appear to be too low. The divergence between the two sample values is also greatest for the south and the west.

3.8. The sex ratio at birth, that is, the number of male births per 100 female births came to 104.0 in the all-India rural sector, the two sample estimates being 103.8 and 104.3. This is only a little lower than the ratio of 106 obtained previously for the children born to the marriage cohorts of the years 1946-51 from the combined second and fourth round fertility data[1]. The sex ratio at birth for countries with reliable statistics is also seen to lie around the same value. Any pronounced sex-selective lapse in reporting is not implied by the estimated sex ratio at birth.

3.9. The infant mortality rate for the rural sector came to 151 per 1000 live births, the corresponding rates for males and females being 173 and 129 respectively. The method of computation is indicated in Appendix II, the estimates being based on the deaths occurring to infants born during the reference period. The infant mortality rate, based on all the infant deaths occurring during the reference period, irrespective of the year of birth of the dead infants, came to 158, the corresponding values for males and females being 164 and 151 respectively.

3.10. The infant death proportion in the all-India rural sector based on data from the second and fourth rounds on the fertility history of each couple in the sample households came to 182 (including still-births) in respect of births to the marriage cohorts of the years 1946-51[2]. Also the infant mortality rates implicit in the Census of India life tables for the decade 1941-50 are 190 and 175 respectively for males and females. These estimates may be considered to be rather on the low side in view of the mortality in the age range beyond 1 year and the evidence of strong association between the probability of dying in the age interval 0 to 1 year and the mortality in the age range beyond 1 year found from the life tables of a large number of countries[3]. In the light of above considerations an

[1] Ajit Das Gupta *et al.* : *The National Sample Survey, Number 7, Couple Fertility* (1955), Government of India, Ministry of Finance, Department of Economic Affairs, p. 62.

[2] *Ibid.*, p. 55.

[3] United Nations : *Population Studies, No. 13, Foetal, Infant and Early Childhood Mortality, Vol. II* pp. 2-4.

infant mortality rate of 151 might be considered to be too low an estimate for the period under reference.

3.11. The data on births were analysed by month of birth prior to date of survey in order to assess reporting lapse, if any, as the events recede from the date of survey within the reference period. The distribution of the number of births by month of birth prior to month of survey is given in percentages in Table (3.2) separately for males and females. The figure for the twelfth month prior to the month of survey represents the percentage for the same month as the month of survey, but in the preceding calendar year, this being determined from the ages of infants on the date of survey or at death.

TABLE (3.2): PERCENTAGE DISTRIBUTION OF THE NUMBER OF BIRTHS IN MONTH OF BIRTH PRIOR TO MONTH OF SURVEY BY SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL

month of survey— month of birth	male			female			total		
	sample 1	sample 2	combined	sample 1	sample 2	combined	sample 1	sample 2	combined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
0	6.37	5.48	5.93	6.02	7.65	6.80	6.19	6.54	6.36
1	10.06	7.75	8.94	9.48	11.91	10.66	9.78	9.79	9.78
2	5.91	7.99	6.92	11.67	12.59	12.12	8.74	10.24	9.47
3	12.13	10.39	11.28	5.46	9.59	7.46	8.86	10.00	9.41
4	11.82	9.45	10.67	8.41	5.83	7.16	10.15	7.68	8.95
5	7.37	7.10	7.24	11.99	9.55	10.81	9.64	8.30	8.99
6	10.40	11.36	10.87	8.73	6.55	7.67	9.58	9.00	9.30
7	7.37	7.42	7.40	7.13	8.15	7.63	7.25	7.78	7.51
8	6.95	7.22	7.08	9.52	9.04	9.29	8.21	8.11	8.16
9	8.75	7.10	7.95	6.69	4.69	5.72	7.74	5.92	6.86
10	5.49	9.98	7.67	7.25	5.62	6.46	6.35	7.84	7.08
11	4.61	7.14	5.84	5.14	6.34	5.72	4.87	6.75	5.78
12	2.77	1.62	2.21	2.51	2.49	2.50	2.64	2.05	2.35
all months	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
(number of sample births)	(370)	(371)	(741)	(360)	(349)	(709)	(730)	(720)	(1,450)

3.12. Though the distribution for males and females separately is marked by peaks at certain months, there is a progressive fall in percentages for the total in moving back over the year, there being, moreover, a sharp decline earlier to the sixth month prior to the month of survey.

3.13. The percentage for any month from first to eleventh as shown in the above table represents the distribution over a period of two months when considered with reference to the date of survey as the latter moves over a particular month. As the number of households visited were found to be more or less uniformly distributed over different days in the survey months, the proportion for each of the twelve months prior to the date of survey was calculated from the figures given in the above table by the process of moving averages over two consecutive months[4]. The distribution as obtained in this way is presented in Table (3.3).

TABLE (3.3) : PERCENTAGE DISTRIBUTION OF THE NUMBER OF BIRTHS IN MONTH OF BIRTH PRIOR TO DATE OF SURVEY, FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL

month of birth prior to date of survey	sample 1	sample 2	combined
(1)	(2)	(3)	(4)
1. 1st	11.08	11.43	11.25
2. 2nd	9.26	10.02	9.62
3. 3rd	8.80	10.12	9.44
4. 4th	9.50	8.84	9.18
5. 5th	9.90	7.99	8.97
6. 6th	9.61	8.65	9.15
7. 7th	8.42	8.39	8.40
8. 8th	7.73	7.94	7.84
9. 9th	7.97	7.02	7.51
10. 10th	7.04	6.88	6.97
11. 11th	5.61	7.30	6.43
12. 12th	5.08	5.42	5.24
13. all months (number of sample births)	100.00 (730)	100.00 (720)	100.00 (1,450)

3.14. The percentages as represented in the above table tend to decrease progressively in moving back over the months. If the reference period were restricted to the preceding quarter, the adjusted birth rate of 42 per 1000 population could be taken as applicable to the period if the question of a shift in the month of birth in reporting as also of seasonal variation were ignored[5].

[4] If $b_0, b_1, \ldots, b_{11}, b_{12}$ represent the percentages for months '0', '1' .. '11', '12' as given in Table (3.2), and $b'_1, b'_2, \ldots, b'_{11}, b'_{12}$ the persontages for different months prior to date of survey, $b'_1 = b_0 + \frac{1}{2} b_1$, $b'_2 = \frac{1}{2} b_1 + \frac{1}{2} b_2, \ldots, b'_{11}, = \frac{1}{2} b_{10} + \frac{1}{2} b_{11}$, $b'_{12} = \frac{1}{2} b_{11} + b_{12}$.

[5] This method of analysis was referred to by Ajit Das Gupta in "Determination of Fertility Level and Trend in Defective Registration Areas", *Bulletin De L'Institut International De Statistique*, Tome 36—2° Livraison (1958) Stockholm, pp. 127-136.

3.15. The ages of infants at the time of survey or of death according as they were alive at or dead by the time of survey were recorded in weeks in the schedule. But the distribution of the number reported is seen to be mostly centred at ages of multiples of 4 weeks prior to 1 month from the date of survey, there being besides a concentration at 26 weeks corresponding to 6 months; evidently the ages were reported in months which were then converted into weeks by multiplying by 4. When the ages in a large proportion of cases could not be reported accurately there might have been a shifting also of the month of birth. The figures presented in Table (3.2) suggest that this had probably occurred though there is no conclusive evidence if the shifting had occurred over several months and systematically in one direction.

3.16. As observed earlier, the estimated birth rates appear to be particularly low in the south and west zones. The percentage distribution of the number of births in month of birth prior to the date of survey combined in quarterly periods is given in Table (3.4) separately for each zone from which the trend in the number of births with increasing duration from the date of survey can be analysed at the zonal level.

TABLE (3.4) : PERCENTAGE DISTRIBUTION OF THE NUMBER OF BIRTHS IN MONTH OF BIRTH PRIOR TO DATE OF SURVEY, BY ZONE : ALL-INDIA RURAL

zone	month of birth prior to date of survey				number of sample births
	1st-3rd	4th-6th	7th-9th	10th-12th	
(1)	(2)	(3)	(4)	(5)	(6)
1. north	30.6	27.9	27.8	13.7	242
2. east	27.8	25.1	25.6	21.5	386
3. south	23.1	31.9	24.9	20.1	157
4. west	33.4	30.8	20.8	15.0	202
5. central	31.3	26.1	20.0	22.6	258
6. north-west	40.3	25.6	19.1	15.0	205
7. all-India rural	30.2	27.3	23.8	18.6	1,450

3.17. The percentages decline progressively in moving back from the date of survey for the north, west and north-west zones but no consistent trend is observed for the east, south and central. The systematic fall in the number of births with increasing duration from the date of survey characteristic of the all-India distribution does not seem to be necessarily associated with systematic under-reporting at the zonal level : it follows that the decline in the number reported as the events recede from the date of survey is not a simple function of progressive lapse in reporting.

3.18. The discussion so far related to all live-births. It is, however, likely, as has been observed earlier, that the estimated infant mortality rate does not reflect the true level of infant mortality for the period under reference. Unless the shortfall in the reporting of all live-births was of the same proportion as that of infants dead

by the time of survey, the under-reporting of infant deaths would necessarily lead to a reduction in the infant mortality rate. In order to examine if the distribution of the number reported, by the period elapsed since the time of birth of infants dead by the time of survey, departed significantly from that of all live-births, the following table is presented with the percentages grouped in quarterly intervals because of the small size of the sample.

TABLE (3.5): PERCENTAGE DISTRIBUTION OF THE NUMBER OF INFANTS DEAD BY THE TIME OF SURVEY, IN MONTH OF BIRTH PRIOR TO DATE OF SURVEY, BY SEX: ALL-INDIA RURAL

month of birth prior to date of survey	male	female	total
(1)	(2)	(3)	(4)
1. 1st—3rd	25.8	40.1	31.8
2. 4th—6th	31.2	17.7	25.5
3. 7th—9th	21.1	22.2	21.6
4. 10th—12th	21.9	20.0	21.1
5. all months	100.0	100.0	100.0
(number of sample births)			(139)

3.19. The distribution is apparently of the same pattern as that considered earlier relating to all live-births. But as infants born in different months during the reference period had differing probabilities of survival, having been exposed for varying intervals to the risk of death, the figures as presented do not measure adequately the extent of differential reporting between different periods of births prior to the date of survey. Table (3.6) which gives the percentage distribution of the number of births in month of birth prior to date of survey classified by age at death brings out more clearly the disparity in the number of births reported for different periods prior to the date of survey.

TABLE (3.6): PERCENTAGE DISTRIBUTION OF THE NUMBER OF INFANTS DEAD BY THE TIME OF SURVEY, IN MONTH OF BIRTH PRIOR TO DATE OF SURVEY, BY AGE AT DEATH: ALL-INDIA RURAL

age at death (weeks)	month of birth prior to date of survey				all months
	1st-3rd	4th-6th	7th-9th	10th-12th	
(1)	(2)	(3)	(4)	(5)	(6)
1. 0—3	43.7	20.4	18.5	17.4	100.0
2. 4—12	40.2	42.1	13.4	4.3	100.0
3. 13—25	—	40.3	44.0	15.7	100.0
4. 26—51	—	—	15.7	84.3	100.0
5. all ages	31.8	25.5	21.6	21.1	100.0
(number of sample births)					(139)

3.20. The most striking feature of the above table is the preponderance of the number reported for months close to the date of survey when the deaths took place at early ages of the infant's life. Thus births occurring within 3 months prior to the date of survey account for 44 per cent of all deaths at ages 0-3 weeks; the deaths among infants born during the half year prior to the date of survey constitute 82 per cent of all deaths at ages 4-12 weeks though the infants born during the later part of this period were not exposed in full to the risk of death in this age interval. The infants born during the quarter 4th-6th month prior to the date of survey who were exposed only partly to the risk of death at ages 13 to 25 weeks made up 40 per cent of the total at this age as compared to 44 per cent among those born during the preceding quarter and only 16 per cent among those born during the quarter 10th-12th month.

3.21. While the results can be regarded as only tentative in view of the small size of the sample, it is evident that a shift in the month of birth in reporting cannot by itself explain the sharp fall in the number of births noted for the earlier months of the reference year when the infants failed to survive.

3.22. It seems obvious from foregoing considerations that a substantial proportion of births were missed at the reporting stage due to reporting lapse with regard to infant deaths occurring during the earlier part of the reference period and necessarily at short intervals after birth.

3.23. The factor operating behind the failure to report some of the births which culminated in deaths several months earlier to the date of survey also explains the omission of most of still-births at the reporting stage.

3.24. As there seems to be considerable under-reporting of infants born during the earlier part of the reference year who had died before the time of survey, it would be interesting to examine the distribution in respect only of surviving infants by month of birth prior to month of survey. As the interval increased, however, there was a larger depletion resulting from longer exposure to the risk of death and the distribution is not expected to be even apart from the effect of any bias and omission in reporting.

3.25. Table (3.7) gives the required distribution in percentages for males and females separately.

3.26. The peaks at some preferred months prior to the month of survey noticed earlier in the sex-wise distribution of the number of births become even more pronounced when the infants dead are excluded but the decline in the percentages remains slow and gradual as before through the greater part of the year. The abrupt fall during the early months of the reference period which characterises both this distribution and that in Table (3.2), however, suggests that some of the infants born in this period though alive at the time of survey might have been missed in reporting. The failure to recall the exact date of birth might have led to such bias near the

boundary of the reference year. The error arising from this source seems, however, to be considerably smaller than that due to reporting lapse when the infants failed to survive up to the time of survey.

TABLE (3.7): PERCENTAGE DISTRIBUTION OF THE NUMBER OF INFANTS ALIVE UP TO THE TIME OF SURVEY, IN MONTH OF BIRTH PRIOR TO MONTH OF SURVEY, BY SEX: ALL-INDIA RURAL

month of survey—month of birth	male	female	total
(1)	(2)	(3)	(4)
0	6.05	6.62	6.33
1	8.68	10.62	9.64
2	6.97	11.80	9.38
3	11.89	7.35	9.63
4	10.78	7.49	9.14
5	6.38	11.04	8.70
6	11.20	8.05	9.63
7	7.31	7.37	7.34
8	7.20	9.39	8.29
9	8.24	5.90	7.08
10	7.53	6.28	6.91
11	5.19	5.81	5.86
12	1.86	2.28	2.07
all months (number of sample births)	100.00 (662)	100.00 (649)	100.00 (1,311)

3.27. The foregoing analysis into the nature of omission in the reporting of births suggests that the estimates of both fertility and infant mortality have been subject to errors though the effect on infant mortality rate, of reporting lapse with regard to infants dead, has been partly balanced by lapse in reporting some of the infants surviving.

3.28. Progressive recall lapse with increasing interval between the survey year and marriage year in regard to infant death proportions over the effective marriage duration of couples has been studied previously in the analysis of second and fourth round fertility data[6]. This, however, took into account the trend over time in infant death proportions and involved a comparison between different marriage cohort groups. The foregoing results suggest that there may be a significant lapse in the reporting of vital events even when the period of reference is only one year preceding the date of survey.

[6] P. C. Mahalanobis and Ajit Das Gupta : *The Use of Sample Surveys in Demographic Studies in India*, presented at the World Population Conference, Rome, 1954; Ajit Das Gupta *et al.* : *op. cit.*, pp. 184-190.

3.29. The lapse in reporting infant deaths as considered uptil now would naturally lower the estimate of crude death rate; the effect for some of the zones, in particular, might be quite substantial.

3.30. The crude death rates for the rural and urban sectors, the former sub-divided by zone are presented in Table (3.8).

TABLE (3.8) : DEATH RATE PER 1000 PERSONS, FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL AND URBAN

sector	sample 1	sample 2	combined	number of sample persons
(1)	(2)	(3)	(4)	(5)
rural zone :				
1. north	25.3	19.4	22.5	7,315
2. east	18.5	16.7	17.6	10,024
3. south	13.3	10.1	11.7	6,768
4. west	11.4	13.2	12.3	5,802
5. central	20.3	27.6	23.9	6,146
6. north-west	13.2	15.9	14.5	5,423
7. all-India rural	18.0	17.2	17.6	41,478
8. all-India urban	14.3	13.5	13.9	7,779
9. all India	17.4	16.6	17.0	49,257

3.31. There is close agreement between the two sample estimates for both the all-India rural and urban sectors but the all-India estimate of 17.0 is far below the Census of India estimate of 27.4 for the decade 1941-50. The differentials between the different zones agree broadly, as regards ranking, with the Census of India estimates though the individual zonal estimates, in particular, those for the south, west and north-west are very much lower. There is large variation between the sample estimates at the zonal level, particularly for the north and central zones.

3.32. The death rates presented separately for males and females in Table (3.9) do not show any pronounced sex-selective bias in reporting. The death rate for females is only a little lower than that for males—the two sample values for the former, however, differ rather widely.

TABLE (3.9) : DEATH RATE PER 1000 PERSONS BY SEX, FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL

sample	male	female	total
(1)	(2)	(3)	(4)
1. 1	18.1	18.0	18.0
2. 2	18.7	15.7	17.2
3. combined (number of sample persons)	18.4	16.8	17.6 (41,478)

3.33. The trend in the reported number of deaths over successive months prior to the month of survey can be analysed in the same way as for births. The correct proportions to be assigned to '0' and '12' from the number of deaths reported for the same month as the month of survey were not, however, directly obtainable; these were taken in the ratio 2 : 1 on the basis of the reported number of deaths for the first and eleventh months earlier to the month of survey.

3.34. The distribution in percentages is presented in Table (3.10).

TABLE (3.10) : PERCENTAGE DISTRIBUTION OF THE NUMBER OF DEATHS IN MONTH OF DEATH PRIOR TO MONTH OF SURVEY, FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL

month of survey— month of death	sample 1	sample 2	combined
(1)	(2)	(3)	(4)
0	6.23	8.17	7.16
1	10.01	12.33	11.12
2	9.63	12.04	10.78
3	8.60	12.88	10.63
4	10.28	8.75	9.55
5	9.10	9.89	9.47
6	11.27	6.44	8.97
7	8.33	5.56	7.01
8	8.56	6.69	7.67
9	4.62	4.25	4.45
10	4.74	2.52	3.69
11	5.50	6.40	5.93
12	3.13	4.08	3.57
all months (number of sample deaths)	100.00	100.00	100.00 (682)

3.35. The systematic fall in the number in moving back over the year is even more rapid than was observed for births, there being also a similar sharp fall earlier to the sixth month prior to the month of survey : the proportion for the quarter immediately preceding the date of survey comes to 34.4 per cent[7] compared to 15.4 per cent for the quarter furthest from the date of survey. If the reference period is restricted to the preceding quarter, the rise in the death rate—to 24 per 1000 population—is proportionately much higher than the corresponding rise in the birth rate.

[7] The proportions for different periods prior to date of survey as given in Table (3.11) were obtained in the same way as for births referred to earlier.

3.36. The percentages for different quarters prior to the date of survey presented for different zones in Table (3.11) do not show a uniform pattern of decline in moving back over the year but these show consistently low values for the quarter furthest from the date of survey. Though the number in the sample is not large enough to lead to any firm conclusions, it is likely that bias near the boundary of the reference year has contributed significantly to lowering the estimate of the death rate.

TABLE (3.11) : PERCENTAGE DISTRIBUTION OF THE NUMBER OF DEATHS IN MONTH OF DEATH PRIOR TO DATE OF SURVEY, BY ZONE : ALL-INDIA RURAL

zone	month of death prior to date of survey				number of sample deaths
	1st-3rd	4th-6th	7th-9th	10th-12th	
(1)	(2)	(3)	(4)	(5)	(6)
1. north	34.4	27.8	19.5	18.3	142
2. east	29.8	25.4	27.6	17.2	165
3. south	40.5	32.7	15.4	11.4	80
4. west	39.4	39.6	13.3	7.7	72
5. central	31.9	30.3	24.1	13.7	144
6. north-west	41.6	24.1	16.5	17.8	79
7. all-India rural	34.4	28.8	21.4	15.4	682

3.37. The fall in the percentages is highest in the earlier half of the reference year in the west, south and north-west zones : if this signifies relatively greater lapse in reporting, that explains the particularly low estimates of the death rate obtained for these areas. The fall is, however, least in the east zone, though the estimate for this area also seems to be too low compared to the north and central.

3.38. For deaths under 1 year of age, as is apparent from Table (3.12), the sharp fall earlier to the sixth month prior to the month of survey is even more marked apart from a steadily declining trend in the percentages in going back over the year. Though the number in the sample is quite small, the data suggest a shift in the month of death besides lapse in reporting.

3.39. When the deaths below 1 year of age are excluded, the distribution becomes a little more even through the greater part of the year but, as is obvious from Table (3.13), the decline in the percentages tends to rise relatively as the events recede from the time of survey.

TABLE (3.12): PERCENTAGE DISTRIBUTION OF THE NUMBER OF DEATHS UNDER 1 YEAR OF AGE, IN MONTH OF DEATH PRIOR TO MONTH OF SURVEY, FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL

month of survey—month of death	sample 1	sample 2	combined
(1)	(2)	(3)	(4)
0	10.84	9.70	10.32
1	7.18	14.68	10.63
2	12.96	11.08	12.09
3	7.30	11.50	9.23
4	9.42	9.42	9.42
5	6.12	9.14	7.51
6	14.96	5.96	10.82
7	4.36	5.26	4.77
8	4.26	6.79	5.41
9	5.65	5.40	5.54
10	4.59	1.38	3.12
11	6.95	4.85	5.98
12	5.41	4.84	5.16
all months (number of sample deaths)	100.00	100.00	100.00 (202)

3.40. It appears that the failure in a considerable number of cases to report the event of death not only at infant but also at higher ages has substantially lowered the estimate of the death rate. The systematic fall in the number of deaths in going back over the year may, however, be due to omission, as well as a shift in the month of death in reporting. Adjustment for reporting lapse whether for births or for deaths on an objective basis would require determination of the magnitude of the errors arising from different causes but the detailed investigation needed for this purpose is not justified by the size of the sample.

TABLE (3.13) : PERCENTAGE DISTRIBUTION OF THE NUMBER OF DEATHS AT AGES 1 YEAR AND OVER, IN MONTH OF DEATH PRIOR TO MONTH OF SURVEY, FROM TWO INDEPENDENT SAMPLES : ALL INDIA RURAL

month of survey— month of death	sample 1	sample 2	combined
(1)	(2)	(3)	(4)
0	4.04	7.51	5.71
1	11.37	11.31	11.34
2	8.03	12.46	10.17
3	9.22	13.48	11.28
4	10.69	8.46	9.61
5	10.52	10.22	10.37
6	9.50	6.65	8.12
7	10.24	5.68	8.04
8	10.63	6.65	8.71
9	4.13	3.75	3.95
10	4.81	3.02	3.95
11	4.81	7.07	5.90
12	2.01	3.74	2.85
all months (number of sample deaths)	100.00	100.00	100.00 (480)

Chapter Four

BIRTHS

4.1. The birth rates for different rural zones, as presented in the previous chapter, might not reflect accurately the magnitude of zonal differentials as reporting errors seemed to be more pronounced in certain zones than in others. A comparison with the figures given in the *Census of India, Paper No. 6, 1954,* however, shows that the two sets of estimates agree with regard to ranking excepting for the east and west zones as may be seen from Table (4.1) presented below.

TABLE (4.1): BIRTH RATE BY ZONE FROM NSS AND OFFICIAL STATISTICS

zone	NSS 7th[1] round	Census of India[2]
(1)	(2)	(3)
1. north	34.6	38
2. east	38.5	38
3. south	22.1	36
4. west	33.9	42
5. central	41.9	44
6. north-west	37.7	41
7. all India	34.6	40

[1]Rural only.
[2]*Census of India, Paper No.* 6, 1954, p. 18.

4.2. In the following sections the rates are usually given as indices with the all-India rural value taken as 100 but tables showing absolute rates are also given for different zones and age groups. It is assumed that, in general, the analyses are not affected to any significant extent by differential lapse in reporting though in comparisons involving different zones, the results are subject to the limitations mentioned above.

4.3. Table (4.2) presents the fertility rates in respect of all women in the age range 12-46 years for different rural zones and for all-India urban; Table (4.3) presents corresponding figures in respect of married women only.

TABLE (4.2): FERTILITY RATE OF WOMEN AGED 12-46 YEARS, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN

sector	sample 1	sample 2	combined	combined (index: all-India rural = 100)
(1)	(2)	(3)	(4)	(5)
rural zone:				
1. north	129	147	138	103
2. east	144	158	151	113
3. south	94	70	82	62
4. west	147	108	128	96
5. central	161	155	158	119
6. north-west	150	152	151	113
7. all-India rural (number of sample women)	134	132	133 (10,769)	100
8. all-India urban (number of sample women)	116	105	111 (2,057)	83

TABLE (4.3): FERTILITY RATE OF MARRIED WOMEN AGED 12-46 YEARS, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN

sector	sample 1	sample 2	combined	combined (index: all-India rural = 100)
(1)	(2)	(3)	(4)	(5)
rural zone:				
1. north	151	172	161	94
2. east	183	202	192	112
3. south	147	103	125	73
4. west	191	140	164	96
5. central	198	196	197	115
6. north-west	182	191	186	109
7. all-India rural	173	170	172	100
8. all-India urban	161	153	157	91

4.4. When married women only are taken into consideration, the range of variation narrows down somewhat mainly because of a proportionately higher rise in the fertility rate in the south zone. The corresponding rise is lowest in the north zone followed by central and north-west. This is a consequence of the reproductive behaviour of women in the age range 12-21 years as may be seen from Table (4.4).

TABLE (4.4) : INDEX OF THE FERTILITY RATE OF ALL WOMEN AND OF MARRIED WOMEN BY AGE (ALL-INDIA RURAL=100) : ALL-INDIA RURAL AND URBAN

sector	all women			married women		
	age (years)			age (years)		
	12–21	22–26	27–46	12–21	22–26	27–46
(1)	(2)	(3)	(4)	(5)	(6)	(7)
rural zone :						
1. north	76	113	121	61	110	116
2. east	117	102	117	112	102	117
3. south	73	70	50	114	74	53
4. west	94	106	90	92	104	91
5. central	146	101	112	126	100	115
6. north-west	114	121	112	108	116	104
7. all-India rural	100	100	100	100	100	100
8. all-India urban	85	87	77	111	89	79
9. (absolute rate : all-India rural)	(108)	(220)	(117)	(167)	(233)	(145)

4.5. As will be seen in Chapter Five, the marriage age was highest in the south zone and lowest in the north, the proportion of premature marriages being much greater in the latter. Moreover, the custom of return marriage in accordance with which the bride comes to live with her husband sometime after formal marriage is not followed uniformly in different parts of the country. Table (4.5) based on

TABLE (4.5) : AVERAGE INTERVAL (MONTHS) BETWEEN FORMAL AND RETURN MARRIAGE BY AGE AT MARRIAGE OF WIFE (MARRIAGE PERIOD : 1930-49), FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL AND URBAN[3]

age (years)	sample	rural zone						all-India rural	all-India urban
		north	east	south	west	central	north-west		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. 0—14	1	47.0	27.5	11.6	6.4	21.4	29.9	25.6	18.0
2. ,,	2	50.2	30.3	9.8	5.9	26.9	26.4	30.0	20.4
3. ,,	combined	48.5	28.9	10.8	6.3	24.2	28.0	27.6	19.2
4. 15—above	1	10.1	1.6	0.5	1.1	4.2	6.9	2.6	1.9
5. ,,	2	9.2	2.0	0.6	0.9	5.4	11.1	3.8	1.8
6. ,,	combined	9.7	1.8	0.5	1.0	4.9	9.6	3.2	1.8
7. all ages	1	36.8	18.0	3.3	5.0	15.9	19.2	15.5	8.6
8. ,,	2	37.6	17.6	3.2	3.5	19.5	19.6	17.8	8.8
9. ,,	combined	37.2	17.8	3.2	4.5	17.7	19.5	16.6	8.7
10. number of sample couples		896	1,303	912	411	795	772	5,089	2,136

[3]NSS eleventh round.

the eleventh round, in which information on the interval between formal and return marriage was collected in respect of all couples in the sample households, shows that this interval is longest in the north zone and shortest in the south and west in respect not only of marriags at very early ages but of those at higher ages also. The actual interval between formal marriage and effective marriage, that is, the time when the bride came to live with her husband was also taken though the required information was not recorded in some cases. The pattern of zonal differential was the same as for return marriage and the average intervals for 1930-49 marriages for all-India rural came to 38.2, 5.7 and 23.0 months respectively for marriages at 0-14, 15-above and all ages of the wife.

4.6. Tables (4.6) and (4.7) give the fertility rates of all women and of married women in 5-year age groups for the all-India rural sector together with corresponding rates for the rural areas of Nasik and Kolaba districts based on a survey by the Gokhale Institute of Politics and Economics[4]. The rates for North Satara as obtained from that survey were somewhat higher and are not given here.

TABLE (4.6): FERTILITY RATE OF WOMEN BY AGE IN ALL-INDIA RURAL SECTOR, FROM TWO INDEPENDENT SAMPLES AND IN RURAL AREAS OF NASIK AND KOLABA DISTRICTS

(NSS seventh round and Fertility Survey of Nasik and Kolaba districts)

age (years)	all-India rural			Nasik	Kolaba
	sample 1	sample 2	combined		
(1)	(2)	(3)	(4)	(5)	(6)
1. 12—16	25	31	28	27	37
2. 17—21	200	216	208	252	251
3. 22—26	228	210	220	223	224
4. 27—31	203	164	184	186	168
5. 32—36	121	122	122	103	92
6. 37—41	68	95	82	90	50
7. 42 —46	32	45	39	17	9
8. 12—46	134	132	133	150	135

[4] N. V. Sovani and Kumudini Dandekar : *Fertility Survey of Nasik, Kolaba and Satara (North) Districts* (1955), Gokhale Institute of Politics and Economics, Publication No. 31, (relate to the age groups 13-17, .., 43-47).

TABLE (4.7) : FERTILITY RATE OF MARRIED WOMEN BY AGE IN ALL-INDIA RURAL SECTOR, FROM TWO INDEPENDENT SAMPLES AND IN RURAL AREAS OF NASIK AND KOLABA DISTRICTS

(NSS seventh round and Fertility Survey of Nasik and Kolaba districts)

age (years)	all-India rural			Nasik	Kolaba
	sample 1	sample 2	combined		
(1)	(2)	(3)	(4)	(5)	(6)
1. 12—16	56	64	60	33	80
2. 17—21	226	240	233	274	293
3. 22—26	241	225	233	229	251
4. 27—31	224	186	206	197	189
5. 32—36	142	143	142	113	118
6. 37—41	91	127	108	111	65
7. 42—46	46	68	59	25	65
8. 12—46	173	170	171	169	178

4.7. The pattern of age specific fertility rates obtained from the NSS for the all-India rural sector is not essentially different from that obtained for the rural areas of Nasik and Kolaba districts except at advanced ages: allowance has, however, to be made for the fact that the age groups adopted for the latter are one year in advance of corresponding groups for the former.

4.8. The percentage distribution of the number of births by age group of mother is presented in Table (4.8); the figures for some selected countries are also shown for comparison.

TABLE (4.8) : PERCENTAGE DISTRIBUTION OF THE NUMBER OF BIRTHS BY AGE OF MOTHER FOR INDIA[5] AND SOME SELECTED COUNTRIES[6]

age (years)	India	Japan (1953)	USA (1953)	Italy (1953)	England and Wales (1953)
(1)	(2)	(3)	(4)	(5)	(6)
1. 10—14	0.8	—	0.1	—	—
2. 15—19	17.3	1.7	11.7	3.6	4.4
3. 20—24	30.7	26.5	31.3	23.3	28.5
4. 25—29	22.0	37.8	28.5	32.7	31.7
5. 30—34	15.0	21.9	17.7	23.0	22.0
6. 35—39	8.5	9.5	8.4	11.6	10.0
7. 40—44	4.7	2.5	2.2	5.4	3.2
8. 45—above	1.0	0.1	0.1	0.4	0.2
9. all ages	100.0	100.0	100.0	100.0	100.0

[5] NSS seventh round rural.
[6] Based on United Nations : *Demographic Yearbook* (1955), pp. 622-625 (relate to 1953).

4.9. The most striking feature brought out in the above table is the large contribution made by women at early ages in India to total fertility : as will be seen in subsequent sections, this is due to higher proportions married at these ages as also to younger age structure of the Indian population. 18 per cent of all births occurred to women at ages below 20 years in India compared to 12 per cent in the USA and only 2 per cent in Japan. In the age group 20 to 24 years, the proportion attained its maximum value in India and was also higher than in all the other countries shown in the table except the USA. Comparatively smaller proportions at ages 25-34 years made up for the excess at earlier ages but the relative fall in percentages at still higher ages was much smaller in India resulting in the proportion at ages 40 years and over going up higher than in all the other countries shown in the table except Italy.

4.10. Table (4.9) shows the indices of fertility rates by age of mother for India and some selected countries with the rate for the age range 10-49 years being taken as 100.

TABLE (4.9) : INDEX OF THE FERTILITY RATE OF WOMEN BY AGE FOR INDIA[7] AND SOME SELECTED COUNTRIES[8] (AGES 10—49=100)

age (years)	India	Japan	USA	Italy	England and Wales
(1)	(2)	(3)	(4)	(5)	(6)
1. 10—14	4	—	1	—	—
2. 15—19	111	11	100	26	40
3. 20—24	191	175	258	169	243
4. 25—29	160	278	212	234	252
5. 30—34	138	191	130	197	161
6. 35—39	87	94	65	116	80
7. 40—44	59	26	18	50	24
8. 45—49	15	2	1	5	2
9. 10—49	100	100	100	100	100
(absolute rate)	(117)	(69)	(86)	(59)	(55)

[7] NSS seventh round rural.

[8] Based on United Nations : *Demographic Yearbook* (1955), pp. 628-630 (relate to 1953).

4.11. The relatively higher fertility rate at ages below 20 years for India is not due to higher marital fertility as is apparent from Table (4.10) but to a much larger proportion of married women at these ages. The fall in fertility rates from the maximum value reached in the age group 20-24 years is also appreciably slower in India because of relatively higher fertility at advanced ages.

4.12. Table (4.10) represents similar indices for India, and England and Wales in respect of married women only.

TABLE (4.10) : INDEX OF THE FERTILITY RATE OF MARRIED WOMEN BY AGE FOR INDIA, AND ENGLAND AND WALES (AGES 10—49=100)

age (years)	India[9]	England and Wales[10]
(1)	(2)	(3)
1. 10—14	9	—
2. 15—19	106	460
3. 20—24	147	283
4. 25—29	126	192
5. 30—34	113	113
6. 35—39	80	56
7. 40—44	60	17
8. 45—49	19	1
9. 10—49 (absolute rate)	100 (162)	100 (90)

[9] NSS seventh round rural.

[10] Based on *Registrar General's Statistical Review of England and Wales*, 1955, *Part II, Tables, Civil* (1957), General Register Office, p. 184.

4.13. In India the indices for the various age groups come much closer to each other when married women only are taken into consideration, as a result of the relatively higher rise in the fertility rate at ages 15-19 years as also due to a comparatively slower decline with advancing age from the maximum value reached at ages 20-29 years.

4.14. Table (4.11) shows the percentages by order of birth for rural and urban areas and Table (4.12) shows similar percentages for some countries along with the figures for India.

TABLE (4.11) : PERCENTAGE DISTRIBUTION OF THE NUMBER OF BIRTHS BY ORDER OF BIRTH : ALL-INDIA RURAL AND URBAN

order of birth	all-India rural			all-India urban	all India
	sample 1	sample 2	combined		
(1)	(2)	(3)	(4)	(5)	(6)
1. 1st	20.7	22.4	21.5	21.9	21.6
2. 2nd	20.8	20.5	20.7	18.9	20.4
3. 3rd	15.3	15.0	15.1	18.7	15.6
4. 4th	14.3	12.3	13.3	10.1	12.9
5. 5th	10.7	9.5	10.2	8.8	9.9
6. 6th and above	18.2	20.3	19.2	21.6	19.6
7. all orders (number of sample births)	100.0 (730)	100.0 (720)	100.0 (1,450)	100.0 (225)	100.0 (1,675)

TABLE (4.12) : PERCENTAGE DISTRIBUTION OF THE NUMBER OF BIRTHS BY ORDER OF BIRTH FOR INDIA[11] AND SOME SELECTED COUNTRIES[12]

order of birth	India	Japan	USA	Italy	England and Wales
(1)	(2)	(3)	(4)	(5)	(6)
1. 1st	21.5	28.1	29.1	34.7	39.4
2. 2nd	20.7	25.5	28.3	26.5	30.2
3. 3rd	15.1	21.4	19.0	15.2	15.6
4. 4th	13.3	11.8	10.4	8.8	7.3
5. 5th	10.2	6.0	5.4	5.4	3.5
6. 6th and above	19.2	7.2	7.8	9.4	4.0
7. all orders	100.0	100.0	100.0	100.0	100.0

[11] NSS seventh round rural.

[12] Based on United Nations : *Demographic Yearbook* (1955), pp. 633-636 (relate to 1953).

4.15. The percentages declined rapidly after the second or third order of birth for all the countries shown in the table except India in which the fall was relatively gradual and slow. The first three orders of birth accounted for a much smaller proportion of the total number of births in India, but the percentage became increasingly larger, relative to the other countries, with higher orders of births after the third. The fourth and higher order births made up as much as 43 per cent of all births in India compared to 25 per cent in Japan, 24 per cent in the USA and Italy and only 15 per cent in England and Wales.

4.16. The foregoing comparisons between India and some countries of low fertility show that relatively a much larger contribution to total births in India came from women at early stages of the reproductive period and from higher orders of births.

4.17. It would be of interest to examine the distribution of the number of births by age of mother as well as order of birth. This is presented in Table (4.13).

4.18. One important feature of the Table (4.13) is that in the early years of the reproductive period, at ages below 22 years, the proportion seems to be higher in India than in England and Wales for all orders of birth including even the first; as is to be expected on the basis of previous comparison, the proportion fell slowly for India relative to England and Wales with increasing order of birth. The progressive increase in the relative proportion in India with successively higher orders of birth was characteristic of all age groups of mother, though, at ages 32 years and over when the number in the sample tended to become very small, there was a fall in the percentage for the second order births; and, as may be seen from the table, the percentage remained higher in India for the fifth and higher order births practically up to the end of the reproductive period.

TABLE (4.13): PERCENTAGE DISTRIBUTION OF THE NUMBER OF BIRTHS BY ORDER OF BIRTH AND AGE OF MOTHER: ALL-INDIA RURAL[13]

(figures in brackets refer to England and Wales)[14]

age (years)	order of birth						all orders	all orders: percentage
	1st	2nd	3rd	4th	5th	6th and above		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 12—21	53.2 (76.9)	30.1 (19.1)	11.6 (3.4)	2.8 (0.5)	0.8 (0.1)	1.5 (0.0)	100.0 (100.0)	31.0 (12.8)
2. 22—26	12.9 (51.1)	32.4 (31.9)	24.7 (11.7)	16.9 (3.8)	7.4 (1.1)	5.7 (0.4)	100.0 (100.0)	30.0 (34.2)
3. 27—31	4.1 (29.0)	7.5 (36.0)	17.3 (19.6)	22.9 (8.9)	23.2 (3.9)	25.0 (2.6)	100.0 (100.0)	19.7 (28.7)
4. 32—above	1.8 (15.5)	1.0 (26.6)	3.6 (22.8)	14.7 (13.9)	16.1 (8.2)	62.8 (13.0)	100.0 (100.0)	19.3 (24.3)
5. 4.1. 32—36	1.7 (17.6)	1.4 (30.2)	5.4 (23.7)	19.8 (13.1)	20.9 (7.0)	50.8 (8.4)	100.0 (100.0)	10.5 (15.7)
6. 4.2. 37—above	1.8 (11.8)	0.5 (19.9)	1.5 (21.1)	8.7 (15.4)	10.5 (10.5)	77.0 (21.5)	100.0 (100.0)	8.8 (8.6)
7. all ages	21.5 (39.4)	20.7 (30.2)	15.1 (15.6)	13.3 (7.3)	10.2 (3.5)	19.2 (4.0)	100.0 (100.0)	100.0 (100.0)

[13] NSS seventh round rural.

[14] Based on *Registrar General's Statistical Review of England and Woles*, 1953, *Part II, Tables, Civil* (1955), General Register Office, pp. 150–151.

4.19. In the age range below 22 years, the highest proportion was contributed by the first order births in India as in England and Wales; but in the next age group 22-26 years, while the first order births continued to represent the highest proportion in England and Wales, comprising more than 50 per cent of the total number in this age group, the weight shifted to the second order births in India and even births of the third and the fourth order numerically exceeded those of the first. The position changed further in more advanced age groups when the proportions tended progressively to rise in India with increasing orders of birth reaching the highest value for the sixth order and above. The fourth and higher order births constituted more than 71 per cent of the total number of births at ages 27-31 years in India compared to 15 per cent in England and Wales while at ages 32 years and above the corresponding proportions rose to 94 and 35 per cent respectively.

4.20. The proportion for the first order births sharply declined in India with each successively higher age group. For the second order, though there was a rise in the age group 22-26 years, there was a steep fall at higher ages. For third order births also, the proportion declined rapidly at ages 32 years and above. The

first, second and third order births in India in the age range 22 years and over constituted 5, 11 and 12 per cent respectively of the total number of births compared to 30, 20 and 15 per cent respectively in England and Wales.

4.21. The interval to births of all orders above the first, elapsed since previous birth to the mother, was recorded in months in the schedule. Births occurring to previous marriages, if any, as well as still-births were to be taken into account in recording the order of birth as well as the interval since previous birth. It has, however, been noted that still-births occurring during the reference year mostly went unreported. It is likely that in reporting the order of birth or the interval since previous birth, only live-births were, for the most part, taken into consideration. The few cases of reported still-births have, on that account, been left out in the calculation of average interval as was also done for the percentages relating to order of births presented earlier.

4.22. The average interval since previous birth for births of different orders is presented in Table (4.14) for rural and urban areas separately.

TABLE (4.14): AVERAGE INTERVAL (MONTHS) SINCE PREVIOUS BIRTH BY ORDER OF BIRTH: ALL-INDIA RURAL AND URBAN

order of birth	all-India rural		all-India urban	
	average interval (months)	number of sample births	average interval (months)	number of sample births
(1)	(2)	(3)	(4)	(5)
1. 2nd	34.4	301	34.1	46
2. 3rd	31.3	216	41.4	41
3. 4th	33.9	201	27.8	23
4. 5th	32.8	145	36.5	18
5. 6th and above	32.0	280	35.0	46
6. 2nd and above	32.9	1,143	35.4	174

4.23. The interval does not appear to have any pronounced trend with increasing order of birth. Though there were considerable fluctuations in the intervals between different orders particularly in the urban sector because of the small size of the sample, the average interval in the rural sector appears to be appreciably smaller than in the urban. This accords with the rural-urban differential observed previously in the fourth round data for the second to fourth order births in respect of Hindu couples married 1930—after, the intervals in that case being found to be 31.5 and 34.4 months respectively in the rural and the urban areas[15].

[15] Ajit Das Gupta *et al.* : *op. cit.*, p. 53.

4.24. Table (4.15) gives the percentage distribution of the number of births by interval since previous birth for different orders of birth and Table (4.16) compares the average intervals for India with those of U.K.

TABLE (4.15): PERCENTAGE DISTRIBUTION OF THE NUMBER OF BIRTHS BY INTERVAL (MONTHS) SINCE PREVIOUS BIRTH AND ORDER OF BIRTH : ALL-INDIA RURAL

order of birth	interval (months)							
	under 13	13—24	25—36	37—48	49—60	61—72	73—144	145–above
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 2nd	5.11	26.26	37.16	18.34	6.91	2.82	3.40	—
2. 3rd	4.99	35.64	35.97	11.30	8.11	2.06	1.93	—
3. 4th	4.23	27.24	37.74	16.00	10.94	1.51	2.34	—
4. 5th	3.90	29.27	37.96	15.88	6.59	5.59	—	0.80
5. 6th and above	6.30	26.23	43.97	12.75	6.61	2.10	2.05	—
6. all orders	5.07	28.62	38.80	14.90	7.71	2.63	2.17	0.10

TABLE (4.16): AVERAGE INTERVAL (YEARS) SINCE PREVIOUS BIRTH FOR INDIA AND U.K.

order of birth	India[16]	U.K.[17]
(1)	(2)	(3)
1. 2nd	2.9	2.6
2. 3rd	2.6	2.5
3. 4th	2.8	2.1
4. 5th	2.7	1.7
5. 6th and above	2.7	1.3

16 NSS seventh round rural.

17 Based on *Reports and Selected Papers of the Statistics Committee* (1950), Papers of the Royal Commission on Population, Vol. II, p. 151 (1939–43 births).

4.25. The intervals between successive births do not appear to be smaller in India—these tend, on the contrary, to be relatively smaller in U.K. at higher orders which, however, involve increasingly select groups of women in that country.

4.26. Table (4.17) shows that the fertility rate was highest for the lowest per capita monthly expenditure group and that it consistently decreased with higher per capita expenditure for all the three age groups of mother. However, women with higher fertility history having a larger number of children surviving might have been drawn towards lower per capita expenditure groups. Moreover, the occurrence of the birth itself during the preceding year might have tended to lower the per capita monthly expenditure.

TABLE (4.17) : INDEX OF THE FERTILITY RATE OF WOMEN BY PER CAPITA MONTHLY EXPENDITURE AND AGE (ALL EXPENDITURES, AGES 12—46=100) : ALL-INDIA RURAL

age (years)	per capita monthly expenditure (rupees)			all expenditures	all expenditures : absolute rate
	below 11	11—20	21—above		
(1)	(2)	(3)	(4)	(5)	(6)
1. 12—21	89.3	73.2	62.8	74.5	98.2
2. 22—26	206.3	162.1	160.0	173.5	228.6
3. 27—46	113.2	95.4	67.7	93.3	122.9
4. 12—46	119.9	99.6	80.0	100.0	131.8
(number of sample women)	(1,739)	(2,318)	(1,516)	(5,573)	

4.27. Table (4.18) presents the indices of the fertility rates for two broad household industry classes, agricultural and non-agricultural. There was very little difference between the two groups in the age range 12-46 years. The fertility rate, however, came to be somewhat higher for the non-agricultural class at ages 12-21 years, but with advancing age the fertility index of the agricultural class tended to rise relative to that of the non-agricultural.

TABLE (4.18) : INDEX OF THE FERTILITY RATE OF WOMEN BY HOUSEHOLD INDUSTRY AND AGE (ALL INDUSTRIES, AGES 12—46=100) : ALL-INDIA RURAL

age (years)	household industry		all industries[18]	number of sample women
	agriculture	others		
(1)	(2)	(3)	(4)	(5)
1. 12—21	80.8	99.0	82.8	4,046
2. 22—26	165.7	161.0	164.3	1,948
3. 27—46	91.5	73.6	88.0	4,775
4. 12—46	100.9	100.0	100.0	10,769
(absolute rate)	(134.8)	(133.6)	(133.5)	

[18] Includes those for whom no household industry was recorded.

4.28. Table (4.19) shows the indices of the fertility rates for three broad land possessed groups.

TABLE (4.19): INDEX OF THE FERTILITY RATE OF WOMEN BY LAND POSSESSED AND AGE (ALL LAND POSSESSED, AGES 12—46=100): ALL-INDIA RURAL

age (years)	land possessed (acres)			all land possessed	number of sample women
	0–1	2–5	6–above		
(1)	(2)	(3)	(4)	(5)	(6)
1. 12—21	80.5	89.9	80.4	82.8	4,046
2. 22—26	138.6	182.0	182.6	164.3	1,948
3. 27—46	82.7	89.3	94.0	88.0	4,775
4. 12—46 (absolute rate)	92.2 (123.2)	107.3 (143.3)	103.9 (138.7)	100.0 (133.5)	10,769

4.29. The smallest land possessed class owning less than 2 acres of land seems to have the lowest fertility. In the early years of the reproductive period the fertility rate came out highest for the middle land possessed group owning 2-5 acres for which the age at marriage of wife was lowest. But at higher ages the fertility rates tended to rise relatively higher for the highest land possessed class owning 6 acres and above. For the age range 12-46 years, the fertility rate was lowest for the smallest land possessed class, that of the middle group being only a little higher than that of the group owning 6 acres and above. It has been seen before that the fertility rate of the non-agricultural class was not significantly lower than that of the agricultural; comparatively low fertility of the agricultural class among the smallest land possessed group might have tended to lower the fertility rate of this group.

4.30. The indices of fertility rates for Hindus and Muslims and for two broad caste groups among Hindus are shown in Table (4.20).

TABLE (4.20): INDEX OF THE FERTILITY RATE OF WOMEN BY RELIGION, CASTE (FOR HINDUS ONLY) AND AGE (ALL RELIGIONS, AGES 12—46=100): ALL-INDIA RURAL

age (years)	religion					
	Hindu		all Hindus[19]	Muslim	all religions[20]	all religions: absolute rate
	caste group					
	A	B				
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. 12—21	89.0	79.7	83.1	84.0	82.8	108.4
2. 22—26	157.6	161.5	160.2	237.1	164.3	219.5
3. 27—46	104.9	78.6	88.2	105.5	88.0	117.4
4. 12—46	108.2	94.4	99.5	122.6	100.0	133.5
(number of sample women)	(3,267)	(6,042)	(9,321)	(723)	(10,769)	

[19] Includes those for whom no caste was recorded.

[20] Includes religions not shown separately.

4.31. The fertility rate seems to be much higher for Muslims than for Hindus and higher for caste group A than for B. In the early years, at ages 12-21years, there was very little difference in fertility between Hindus and Muslims but it rose relatively much higher for Muslims at higher ages probably due, to some extent, to more frequent remarriages of widows among the latter.

4.32. The higher fertility rate of caste group A among Hindus at ages 12-21 years might be due to lower age at marriage of the wife but though there was little difference between the two groups at ages 22-26 years, the fertility of the former group rose highest in the age range 27-46 years relatively to that of the other.

4.33. For married women, the difference between Hindus and Muslims, as may be seen from the indices presented in Table (4.21), narrowed down to some extent but the fertility for the latter remained significantly higher in the age range 12-46 years. Between the two caste groups among Hindus the difference seems to be appreciably large only at advanced ages 27-46 years when marital fertility is considered.

TABLE (4.21) : INDEX OF THE FERTILITY RATE OF MARRIED WOMEN BY RELIGION, CASTE (FOR HINDUS ONLY) AND AGE (ALL RELIGIONS, AGES 12—46=100) : ALL-INDIA RURAL

age (years)	religion					
	Hindu		all Hindus[21]	Muslim	all religions[22]	all religions : absolute rate
	caste group					
	A	B				
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. 12—21	95.9	95.7	96.0	92.0	97.1	167.2
2. 22—26	129.0	134.1	132.3	194.2	135.8	233.3
3. 27—46	100.8	76.1	85.1	98.8	84.8	145.3
4. 12—46	105.1	95.3	99.0	118.0	100.0	171.7
(number of sample women)	(2,624)	(4,661)	(7,297)	(576)	(8,370)	

[21] Includes those for whom no caste was recorded.

[22] Includes religions not shown separately.

3.34. The sex ratio at birth is not presented by detailed breakdown as the standard error, even for the all-India rural estimate, was found to be as high as 5.97.

4.35. The number of multiple births per 100 total births (including still-births) was found to be .90, only twins being reported. The corresponding frequencies for a large number of countries for the years 1930-34 show that these vary

between 1.1 and 1.4.[23] As the still-birth ratio as well as infant mortality rate are higher for multiple than for single births, relatively a larger proportion of multiple births might have been missed in reporting.

4.36. The information on duration since marriage in respect of women to whom births had occurred during the reference year was collected in the relevant block of the schedule but the corresponding information relating to all married women which was to be entered in parenthesis after the entry on age in another block of the same schedule was not recorded in a substantial proportion of cases; fertility rates by marriage duration could not, on that account, be calculated from the data available.

[23] United Nations : *Population Studies, No.* 13, *Foetal, Infant and Early Childhood Mortality, Vol. II,* p. 10.

Chapter Five

MARRIAGES

5.1. Information on marriages occurring during the year preceding the day of enquiry was collected in respect of all men who were members of the sample households on the day of enquiry or who were dead but had been members of the households on the day preceding the day of death.

5.2. Besides ages at marriage, the month of marriage and household particulars, certain information was collected regarding the marital status of both husband and wife prior to the marriage referred to. As, however, the number of marriages reported other than first was quite small, the estimates given here relate either to all marriages or to first marriages only.

5.3. Marriages in India are mostly not registered. Information on marriage available so far for the country as a whole, other than that collected in some of the earlier rounds of NSS in the course of enquiry into the fertility history of couples, related to the proportions married enumerated at the successive decennial censuses.

5.4. Table (5.1) presents the percentage distribution of population by marital status classified by age and sex for rural and urban sectors separately as estimated from the seventh round.

TABLE (5.1): PERCENTAGE DISTRIBUTION OF POPULATION IN MARITAL STATUS GROUPS BY SEX AND AGE: ALL-INDIA RURAL AND URBAN

age (years)	sex	rural			urban		
		never married	married	widowed and separated	never married	married	widowed and separated
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. 0—11	male	98.16	1.71	0.13	99.75	0.19	0.06
2. ,,	female	95.68	4.14	0.18	98.33	1.67	—
3. 12—16	male	81.63	17.74	0.63	97.09	2.91	—
4. ,,	female	52.80	46.47	0.73	72.94	26.63	0.43
5. 17—21	male	50.78	48.12	1.10	76.29	23.44	0.27
6. ,,	female	8.16	89.32	2.52	19.18	78.01	2.81
7. 22—26	male	18.72	78.40	2.88	39.67	59.27	1.06
8. ,,	female	0.96	94.10	4.94	3.31	92.36	4.33
9. 27—36	male	5.44	89.17	5.39	8.83	88.30	2.87
10. ,,	female	0.47	87.72	11.81	2.70	85.67	11.63
11. 37—46	male	3.27	87.27	9.46	2.36	91.96	5.68
12. ,,	female	0.39	71.42	28.19	0.93	70.24	28.83
13. 47—above	male	2.85	72.92	24.23	1.80	75.80	22.40
14. ,,	female	0.17	35.46	64.37	0.18	34.81	65.01
15. all ages	male	50.37	44.37	5.26	54.39	41.66	3.95
16. ,,	female	39.31	46.90	13.79	42.57	44.06	13.37

5.5. As is apparent from Table (5.2), the marriage rates varied considerably between the different rural zones. Though there was large divergence between the two sample estimates for most of the zones, the north seems to have by far the highest rate consistently for both the samples while the marriage rate in the south as well as in the west appears to be less than half of that for the north.

TABLE (5.2) : NUMBER OF MARRIAGES PER 1000 PERSONS, FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL AND URBAN

sector	sample 1	sample 2	combined	number of sample persons
(1)	(2)	(3)	(4)	(5)
rural zone :				
1. north	10.1	11.6	10.8	7,315
2. east	6.5	8.7	7.6	10,024
3. south	5.6	4.0	4.8	6,768
4. west	4.9	3.6	4.2	5,802
5. central	8.0	5.6	6.8	6,146
6. north-west	4.6	7.7	6.1	5,423
7. all-India rural	7.0	7.3	7.1	41,478
8. all-India urban	3.2	8.0	5.5	7,779
9. all India	6.3	7.4	6.8	49,257

5.6. The marriage rates given above related to the total population. Table (5.3) presents the marriage rates separately for males and females for different rural zones.

TABLE (5.3) : NUMBER OF MARRIAGES PER 1000 PERSONS BY SEX AND ZONE, FROM TWO INDEPEEDENT SAMPLES : ALL-INDIA RURAL

sex	sample	zone						all-India rural
		north	east	south	west	central	north-west	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. male	1	19.7	13.1	11.5	10.1	15.5	8.8	13.9
2. ,,	2	23.2	16.8	7.9	7.3	11.2	15.0	14.3
3. ,,	combined	21.3	14.9	9.6	8.6	13.4	11.8	14.1
4. female	1	20.9	13.0	10.9	9.6	16.4	9.7	14.0
5. ,,	2	23.3	18.2	8.3	6.9	11.1	16.0	14.8
6. ,,	combined	22.1	15.4	9.6	8.2	13.8	12.7	14.4
7. number of sample persons		7,315	10,024	6,768	5,802	6,146	5,423	41,478

5.7. The marriage rate for males was a little lower than that for females; all the zones except the south and west had also lower male marriage rates because of larger proportions of males in the population : the sample variation, however, was greater than the difference between the male and female rates.

5.8. The zonal differential noted previously held also for both males and females. As will be seen later, the age at marriage was lowest in the north zone and highest in the south. Low marriage rates were, however, observed for the west zone also though the age at marriage was not comparatively high : this may reflect a rising trend in the age at marriage in the west zone.

5.9. The marriage rates considered so far related to all persons irrespective of whether they had been previously married or not. But the persons exposed to the risk of marriage were those that were unmarried, that is, single, widowed and divorced though a few marriages were reported among married men also. Most of the marriages, moreover, related to those who had never previously been married. A significant measure of the marriage experience of the population would be the number of first marriages in relation to the corresponding marriageable population, that is, those never married. This is represented in Table (5.4) for different zones.

TABLE (5.4) : NUMBER OF FIRST MARRIAGES PER 1000 NEVER MARRIED PERSONS BY SEX AND ZONE, FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL

sex	sample	zone						all-India rural
		north	east	south	west	central	north-west	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. male	1	33.0	20.0	17.6	12.9	29.3	14.0	22.2
2. ,,	2	42.6	24.6	10.1	13.9	17.9	24.9	22.6
3. ,,	combined	37.4	22.3	13.6	13.4	23.8	19.1	22.4
4. female	1	48.8	27.8	20.3	15.5	39.9	19.0	29.6
5. ,,	2	60.7	40.4	18.7	16.8	26.5	36.0	34.4
6. ,,	combined	54.5	33.5	19.6	16.2	33.2	27.1	31.9
7. number of sample persons		3,090	4,476	3,420	2,684	2,510	2,555	18,735

5.10. The marriage rate for spinsters came out to be 31.9 compared to 22.4 for bachelors. Though the number of first marriages among women was reported as somewhat larger than among men, the difference between the marriage rates of bachelors and spinsters arose mainly from a much smaller proportion of women who were never married, this being true of all the zones. It is also apparent that the marriage rates for never married persons, whether male or female, rose higher for the north and central zones relative to the marriage rates for all persons

considered earlier : it may be noted that the proportions of single persons among both males and females were also lowest in the north and central zones.

5.11. The male and female marriage rates for the all-India rural sector rise from 14.1 and 14.4 respectively to 22.4 and 31.9 respectively when only first marriages are considered; the respective marriage rates in the north zone, in comparison, rise from 21.3 and 22.1 to 37.4 and 54.5 and in the central zone from 13.4 and 13.8 to 23.8 and 33.2.

5.12. The ranking of different zones in regard to the marriage rates, however, remains unaltered except that the central zone appears to have a higher rate than the east when marriages for single persons only are considered.

5.13. Table (5.5) presents the marriage rates by age for males and females separately.

TABLE (5.5) : NUMBER OF MARRIAGES PER 1000 PERSONS BY SEX AND AGE, FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL

sex	age (years)	sample 1	sample 2	combined	number of sample persons
(1)	(2)	(3)	(4)	(5)	(6)
1. male	0—11	4.5	5.7	5.1	7,333
2. ,,	12—16	30.9	34.4	32.7	2,346
3. ,,	17—21	54.3	55.4	54.8	1,703
4. ,,	22—26	27.7	27.0	27.4	1,905
5. ,,	27—above	5.1	4.4	4.8	7,707
6. ,,	all ages	13.9	14.3	14.1	20,994
7. female	0—11	11.0	13.1	12.0	7,008
8. ,,	12—16	63.0	70.4	66.5	2,165
9. ,,	17—21	30.1	27.5	28.8	1,881
10. ,,	22—above	1.8	0.9	1.4	9,430
11. ,,	all ages	14.0	14.8	14.4	20,484

5.14. The two series of sample estimates come close to each other for different age groups for both males and females. The rates appear to be highest at ages 17-21 years for males and at 12-16 years for females. It is, however, obvious that the marriages of women not only occurred at a younger age, on the average, but these were also confined mostly within a narrower range of ages.

5.15. Table (5.6) shows the percentage distribution of the number of marriages by age at marriage.

TABLE (5.6) : PERCENTAGE DISTRIBUTION OF THE NUMBER OF MARRIAGES IN A YEAR BY AGE AND SEX, FROM TWO INDEPENDENT SAMPLES : AL-INDIA RURAL

sex	sample	age (years)				all ages	number of sample marriages
		0—11	12—16	17—21	22—above		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. male	1	11.2	24.6	32.5	31.7	100.0	144
2. ,,	2	14.0	26.8	30.4	28.8	100.0	153
3. ,,	combined	12.6	25.7	31.5	30.2	100.0	297
4. female	1	26.8	48.3	18.8	6.1	100.0	144
5. ,,	2	30.3	49.7	17.1	2.9	100.0	153
6. ,,	combined	28.6	49.0	18.0	4.4	100.0	297

5.16. Nearly 50 per cent of all marriages were reported for women at ages 12 to 16 years and 22 per cent at ages 17 years and over; for men, on the other hand, the respective proportions were 26, 31 and 30 per cent in the age groups 12-16, 17-21 and 22 years and over. The marriage rate appears to decline more sharply for women after attaining its maximum value in the age group 12-16 years.

5.17. The marriage rates of single persons are presented in Table (5.7) for different age groups and for males and females separately.

TABLE (5.7) : NUMBER OF FIRST MARRIAGES PER 1000 NEVER MARRIED PERSONS BY SEX AND AGE, FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL

sex	age (years)	sample 1	sample 2	combined	number of sample persons
(1)	(2)	(3)	(4)	(5)	(6)
1. male	0—11	3.8	5.5	4.7	7,187
2. ,,	12—16	34.9	39.9	37.3	1,901
3. ,,	17—21	94.7	105.2	99.6	871
4. ,,	22—26	115.9	73.4	94.8	357
5. ,,	27—above	50.5	34.4	42.0	338
6. ,,	all ages	22.2	22.6	22.4	10,654
7. female	0—11	10.2	13.5	11.8	6,721
8. ,,	12—16	97.9	122.1	109.1	1,148
9. ,,	17—21	301.2	321.2	310.2	161
10. ,,	22—above	203.1	77.8	129.9	51
11. ,,	all ages	29.6	34.4	31.9	8,081

5.18. The proportionate increase in the rate for first marriages progressively rose with advancing age relative to the rate for all marriages. But for men the marriage rate remained highest at ages 17-21 years though the sample variation was very large for some of the age groups, particularly for 22-26 years. For women, on the other hand, the marriage rate rose sharply from 109 at ages 12-16 years to 310 at ages 17-21 years though it tended to decline at still more advanced ages. At older ages the marriage rate even for single persons moved downward as the proportion ultimately remaining unmarried became more significant. The rise in the marriage rate for single persons was much higher for women largely because of the younger age at marriage of women and a smaller proportion of single women in the population.

5.19. Table (5.8) gives the marriage rates by caste group among Hindus.

TABLE (5.8) : NUMBER OF MARRIAGES PER 1000 PERSONS BY CASTE (FOR HINDUS), SEX AND AGE : ALL-INDIA RURAL

sex	age (years)	caste group (Hindus) A	B	all Hindus	all religions
(1)	(2)	(3)	(4)	(5)	(6)
1. male	0—16	15.1	10.9	12.4	11.8
2. ,,	17—21	69.0	48.8	56.3	54.8
3. ,,	22—above	8.9	9.5	9.2	9.2
4. ,,	all ages	16.8	13.2	14.4	14.1
5. female	0—11	14.1	11.9	12.6	12.0
6. ,,	12—16	94.0	55.3	69.3	66.5
7. ,,	17—above	4.0	6.4	5.6	5.8
8. ,,	all ages	17.5	13.3	14.7	14.4
9. number of sample persons		12,762	22,983	35,745	41,478

5.20. The marriage rate seems to be higher among caste group A for both men and women. But for men, the rate was relatively highest among the former group at ages 0-16 years and it came down to 8.9 at ages 22 years and over compared to 9.5 for the other caste group. For caste group A among women the marriage rate was relatively highest at ages 12-16 years but the decline was much sharper at more advanced ages, the respective rates at ages 17 years and over being 4.0 and 6.4 for groups A and B. It will be seen later that the marriage age was lower among caste group A in respect of all marriages though the difference between the two groups is small when only first marriages are taken into account.

5.21. Table (5.9) presents the marriage rates among men by educational standard and age.

TABLE (5.9): NUMBER OF MARRIAGES PER 1000 MALES BY EDUCATIONAL STANDARD AND AGE: ALL-INDIA RURAL

age (years)	educational standard			all standards
	illiterate	literate but below primary	primary and above	
(1)	(2)	(3)	(4)	(5)
1. 0—16	9.9	14.4	36.5	11.8
2. 17—21	49.8	63.7	66.9	54.8
3. 22—above	9.3	7.5	12.2	9.2
4. all ages	12.5	15.2	27.3	14.1
5. number of sample persons	15,815	3,513	1,662	20,994

5.22. For the group with educational standard, primary and above, the marriage rate was considerably higher, being 27.3 compared to 12.5 for the illiterate class. The rate was relatively highest for this group at ages 0-16 years but there was a sharp fall relative to the other groups at higher ages. The illiterate class shows the lowest rates in both the age groups 0-16 and 17-21 years but goes up above the middle group at higher ages. As will be seen later, the comparatively high marriage rate of the highest educational group at early ages was associated with the lowest age at marriage.

5.23. Table (5.10) shows the marriage rate by per capita monthly expenditure and age. The per capita expenditure as also land possessed by which marriage rates have been analysed relate to the household to which the husband belonged at the time of the enquiry. The significance of the differentials as presented for women is limited to the extent that these characteristics differed for the household to which the wife belonged prior to her marriage.

TABLE (5.10): MARRIAGE RATE PER 1000 PERSONS BY PER CAPITA MONTHLY EXPENDITURE, AGE AND SEX: ALL-INDIA RURAL

sex	age (years)	per capita monthly expenditure (Rs.)			all expenditures
		below 11	11–20	21–above	
(1)	(2)	(3)	(4)	(5)	(6)
1. male	0—16	5.0	14.8	11.3	10.9
2. ,,	17—21	49.8	42.9	71.7	53.9
3. ,,	22—above	13.0	7.1	15.4	11.1
4. ,,	all ages	11.3	13.8	19.0	14.5
5. female	0—11	6.4	14.1	14.9	11.7
6. ,,	12—16	49.2	63.4	80.7	64.3
7. ,,	17—above	5.8	3.5	10.1	5.9
8. ,,	all ages	10.8	13.8	20.6	14.6
9. number of sample persons		6,721	8,992	5,718	21,431

5.24. Among men the marriage rate seems to be highest for the middle per capita expenditure class at ages 0-16 years but at higher ages the marriage rate for this class rapidly declined relative to both the lower and the higher expenditure classes : at ages 22 years and over the rate was 7.1 for the middle expenditure class compared to 13.0 and 15.4 respectively for the lower and the upper classes. The highest per capita expenditure class of Rs. 21 and above shows higher marriage rates than the lowest class for all the age groups but the relative difference was highest at ages 0-16 years and narrowed down with advancing age.

5.25. Among women there was little difference between the middle and the highest per capita expenditure classes at ages 0-11 years but the middle group shows progressively decreasing rates with advancing age relative to the other groups though the trend of decline was slower than for men. The higher per capita expenditure class of Rs. 21 and above shows appreciably higher marriage rates as was also observed for men, though relative to the lowest expenditure class, these do not follow any consistent trend at older ages.

5.26. Table (5.11) presents marriage rates by land possessed class and age.

TABLE (5.11) : NUMBER OF MARRIAGES PER 1000 PERSONS BY LAND POSSESSED, SEX AND AGE : ALL-INDIA RURAL

sex	age (years)	land possessed (acres)			all land possessed
		0–1	2–5	6–above	
(1)	(2)	(3)	(4)	(5)	(6)
1. male	0–16	9.0	14.1	13.1	11.8
2. ,,	17—21	32.2	65.3	69.0	54.8
3. ,,	22—above	9.5	10.1	8.1	9.2
4. ,,	all ages	11.0	16.3	15.9	14.1
5. female	0–11	8.9	17.4	11.6	12.0
6. ,,	12—16	46.8	78.2	78.1	66.5
7. ,,	17–above	5.7	5.0	6.7	5.8
8. ,,	all ages	10.7	17.0	17.0	14.4
9. number of sample persons		15,885	10,545	15,048	41,478

5.27. There seems to be little difference in the marriage rates between the two upper land possessed classess but these had consistently higher rates than the lowest class for both men and women. For men, the class owning less than 2 acres of land shows relatively lowest rate at ages 17-21 years but the difference between the three classes at ages 22 years and above was quite small. For women the middle land possessed group of 2-5 acres seems to have an appreciably higher marriage rate than both the upper and the lower land possessed classes at ages 0-11 years; at ages

12-16 years, however, the two upper land possessed classes seem to have more or less equal rates, these being considerably higher than the rate for the lowest land possessed class. At still higher ages the marriage rates for both the middle and the higher land possessed classes, particularly for the former, seem to decline relative to the class owning less than 2 acres of land and the rates for all the three groups come close to each other in this age range.

5.28. A comparison is made between the marriage rates of India and of some other countries in Table (5.12). The, rate for India came out lower than for the other countries represented in the table. While the lower ages at marriage in India might tend to raise the marriage rate, this is offset by the younger age structure of the Indian population. Also, remarriage of widows is not common in India and divorce not being permissible, until recently, amongst the major religious groups, the number of marriages among the divorced is not of much significance.

5.29. The marriage rates as standardised for some selected countries for respective census years for the two broad age groups under 15 years and 15-above years according to the age distribution in India are presented in Table (5.13) along with the unstandardised rates for the years in question.

TABLE (5.12) : NUMBER OF MARRIAGES PER 1000 PERSONS FOR INDIA[1] AND SOME SELECTED COUNTRIES[2]

India	Japan (1954)	USA (1952)	Italy (1953)	England and Wales (1953)
(1)	(2)	(3)	(4)	(5)
7.1	7.9	9.9	7.2	7.8

[1] NSS seventh round rural.

[2] United Nations : *Demographic Yearbook* (1955), pp. 729, 731 and 733.

TABLE (5.13) : UNSTANDARDISED AND STANDARDISED MARRIAGE RATES FOR SOME SELECTED COUNTRIES

country[3]	marriage rate	
	unstandard-ised	standard-ised
(1)	(2)	(3)
1. Japan (1950)	8.6	7.8
2. USA (1950)	11.0	8.9
3. England and Wales (1951)	8.2	6.2

[3] Based on United Nations : *Demographic Yearbook* (1955), pp. 396, 404, 426 and 728-733.

5.30. The rates are considerably reduced by standardisation, though except for England and Wales, these still remain higher than India's.

5:31. The crude marriage rates represented in Tables (5.12) and (5.13), however, relate to the total population including those still-married and thus do not actually reflect the marriage experience of the population exposed to the risk of marriage, that is, the single, widowed and separated. Table (5.14) shows marriage rates of the unmarried, that is, the single, widowed and separated, marriages occurring among married men being excluded in the calculation of the rates for men. The marriage rates of the total population are also given in the same table. Table (5.15) gives the marriage rates of the unmarried population for two broad age groups. The rates for the other countries standardised according to the age distribution of the unmarried population in India as between the two age groups are also shown in brackets.

TABLE (5.14): NUMBER OF MARRIAGES PER 1000 TOTAL AND UNMARRIED POPULATION BY SEX AND AGE: ALL-INDIA RURAL

	age (years)	male		female	
		total	unmarried	total	unmarried
	(1)	(2)	(3)	(4)	(5)
1.	0—9	3.3	3.0	7.2	7.3
2.	10—14	17.4	18.2	54.7	79.2
3.	15—19	57.3	81.0	52.8	212.1
4.	20—above	12.0	52.9	2.2	7.8
4.1.	20—24	36.7	118.5		
4.2.	25—above	6.6	27.3		
5.	all ages	14.1	22.8	14.4	27.1

TABLE (5.15): NUMBER OF MARRIAGES PER 1000 UNMARRIED PERSONS BY SEX AND AGE FOR INDIA[4] AND SOME SELECTED COUNTRIES[5]

	sex	age (years)	India	Japan (1950)	USA (1950)	England and Wales (1951)
	(1)	(2)	(3)	(4)	(5)	(6)
1.	male	0–14	7.0	—	—	—
2.	,,	15–above	63.5	69.6	95.3	71.1
3.	,,	all ages	22.8	28.4	43.7	35.0
		(standardised)		(19.4)	(26.6)	(19.8)
4.	female	0–14	22.8	—	—	—
5.	,,	15—above	36.9	58.7	84.8	52.2
6.	,,	all ages	27.1	26.8	42.1	30.3
		(standardised)		(18.0)	(26.1)	(16.1)

[4] NSS seventh round rural.

[5] Based on United Nations: *Demographic Yearbook* (1955), pp. 396-404 and 728–732.

5.32. The marriage rates for the population in the age range 15 years and above are seen to be lower in India particularly for females than in the other countries shown in the table. Lower incidence of widowhood as well as higher marriage rates of the widowed and divorced in the countries selected affect the marriage rates of these countries in relation to India's.

5.33. Marriage rates for the total unmarried population of all ages are also seen to be low for India compared to the other countries but if these are standardised according to the age distribution in India for the two broad groups, as previously, these come out lower than in India except for USA males.

5.34. Marriage rates of bachelors and spinsters are given in detailed age groups in Table (5.16) while in Table (5.17) the rates are shown for two broad age groups together with those for England and Wales.

TABLE (5.16): NUMBER OF FIRST MARRIAGES PER 1000 NEVER MARRIED PERSONS BY SEX AND AGE: ALL-INDIA RURAL

sex	age (years)						all ages
	0—9	10—14	15—19	20—above	20—24	25—above	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. male	3.0	18.0	81.4	83.5	112.1	47.6	22.4
2. female	6.4	74.5	192.6	146.1			31.9

TABLE (5.17): NUMBER OF FIRST MARRIAGES PER 1000 NEVER MARRIED PERSONS BY SEX AND AGE FOR INDIA[6] AND ENGLAND AND WALES[7]

age (years)	male		female	
	India	England and Wales (1951)	India	England and Wales (1951)
(1)	(2)	(3)	(4)	(5)
1. 0—14	7.0	—	21.0	—
2. 15—above	82.3	71.6	184.8	71.7
3. all ages	22.4	33.1	31.9	33.7
(standardised)		(15.1)		(4.8)

[6] NSS seventh round rural.

[7] Based on United Nations: *Demographic Yearbook* (1958), pp. 190-191 and 450-451.

5.35. The marriage rates for bachelors aged 15 years and over came to 82.3 and 71.6 respectively for India, and England and Wales compared to 63.5 and 71.1 respectively for all unmarried males. The relative rise of the rate for females is seen to be even higher for India, the rates for spinsters and all unmarried females being 184.8 and 36.9 respectively for India compared to 71.7 and 52.2 respectively for England and Wales.

5.36. The marriage rates for bachelors and spinsters as those for others considered previously, were lower for India when related to persons of all ages but the rates for England and Wales when standardised for the two age groups under 15 years and 15 years and over according to the age distribution of the never married population in India come out lower than for India.

5.37. Table (5.18) shows the median age at marriage for different rural zones and for the urban sector as a whole.

TABLE (5.18): MEDIAN AGE AT MARRIAGE (YEARS) OF HUSBAND AND WIFE, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL AND URBAN

partner	sample	rural zone						all-India rural	all-India urban
		north	east	south	west	central	north-west		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. husband	1	15.1	19.8	24.5	21.2	19.3	21.4	19.2	24.2
2. ,,	2	15.1	19.5	25.2	18.6	18.5	17.7	18.5	23.0
3. ,,	combined	15.1	19.6	24.8	19.7	19.1	18.4	18.9	23.4
4. wife	1	13.0	15.4	18.5	14.7	13.3	15.0	14.4	16.8
5. ,,	2	13.1	14.4	16.5	13.6	13.2	15.5	14.0	15.1
6. ,,	combined	13.0	14.7	17.7	14.3	13.2	15.2	14.2	15.6
7. number of sample marriages		78	87	30	23	42	37	297	42

5.38. The sample variation for some of the zones was quite large particularly for the husband's age at marriage. But the south consistently shows the highest age at marriage and the north the lowest for both husband and wife though the wife's age at marriage in the central zone does not seem to be higher than in the north. These agree with the results obtained from NSS second round for all-India rural Hindu couples married 1930-after[8].

5.39. The all-India estimates for the two samples were quite close to each other in both the rural and the urban sectors and the husband's and the wife's ages at marriage, 18.9 and 14.2 respectively in the rural sector and 23.4 and 15.6 respectively in the urban are not far off from the average ages at marriage for the 1946-51 cohorts as obtained from the fourth round data, these being 20.2 and 14.6 respectively in the rural and 23.0 and 16.3 respectively in the urban sector[9].

5.40. From Table (5.19) it appears that the marriage age of caste group A among Hindus was a little lower than for the other group. For first marriages; however, the difference is reduced for the husband's age at marriage.

[8]Ajit Das Gupta *et al.* : *op. cit.*: p. 27.

[9]*Ibid*, p. 23.

TABLE (5.19): MEDIAN AGE AT MARRIAGE (YEARS) OF HUSBAND AND WIFE BY CASTE GROUP AMONG HINDUS FOR ALL MARRIAGES AND FOR FIRST MARRIAGES ONLY: ALL-INDIA RURAL

marriage type	partner	caste group (Hindus)		all Hindus[10]	all religions
		A	B		
(1)	(2)	(3)	(4)	(5)	(6)
1. all marriages	husband	18.3	19.4	18.8	18.9
2. ,,	wife	13.9	14.4	14.1	14.2
3. first marriages	husband	17.8	18.1	17.8	17.8
4. ,,	wife	13.8	14.2	13.9	14.0
5. number of sample marriages		122	143	265	297

[10]Includes those for whom no caste was shown.

5.41. Table (5.20) shows median ages at marriage for husband and wife for some broad groups according to certain characteristics.

TABLE (5.20): MEDIAN AGE AT MARRIAGE (YEARS) OF HUSBAND AND WIFE BY PER CAPITA MONTHLY EXPENDITURE, HOUSEHOLD INDUSTRY, LAND POSSESSED AND HUSBAND'S EDUCATIONAL STANDARD: ALL-INDIA RURAL

class	partner		number of sample marriages
	husband	wife	
(1)	(2)	(3)	(4)
per capita monthly expenditure (rupees):			
1. 0—10	21.4	14.6	30
2. 11—20	16.6	13.4	63
3. 21—above	20.2	14.7	61
household industry:			
4. agriculture	18.8	14.2	247
5. others	20.2	14.5	42
land possessed (acres):			
6. 0—1	20.0	14.6	87
7. 2—5	18.6	13.4	86
8. 6—above	18.5	14.4	124
husband's educational standard:			
9. illiterate	18.9	13.9	193
10. literate but below primary	19.0	14.2	56
11. primary and above	18.6	15.1	48
12. all classes[11]	18.9	14.2	297

[11]Includes those for whom no industry was shown.

5.42. For men the marriage age for the middle per capita expenditure group of Rs. 11-20 appears to be considerably lower than for either of the other two groups and that for the lowest expenditure group seems to be the highest. For women the difference between the three classes seems to be rather small though the middle expenditure group shows the lowest age at marriage.

5.43. The age at marriage of husband for the non-agricultural class seems to be a little higher than that for the agricultural; for wife, however, there was very little difference in ages at marriage between these two classes.

5.44. The median age at marriage for the class owning less than 2 acres of land came out to be highest among men, there being little difference between the two other classes. For women, however, the three groups came close to each other, the middle land possessed class of 2-5 acres showing the lowest age at marriage and there being little difference between the two other classes.

5.45. The age at marriage of husband does not appear to vary significantly with educational standard as presented here but for women the marriage age seems to rise a shade higher with higher educational standard of husbands.

5.46. From Table (5.21) it appears that marriages were most common in the month of June. These were also reported to have been comparatively frequent in February, March, April, May and July, the proportion of the total number of marriages for these six months coming to 86 per cent.

TABLE (5.21): PERCENTAGE DISTRIBUTION OF THE NUMBER OF MARRIAGES IN A YEAR IN DIFFERENT MONTHS, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL

month	sample 1	sample 2	combined
(1)	(2)	(3)	(4)
1. January	2.5	2.7	2.6
2. February	9.2	19.8	14.5
3. March	13.0	16.1	14.6
4. April	9.0	7.5	8.3
5. May	11.8	12.9	12.3
6. June	30.7	21.3	26.0
7. July	8.2	11.4	9.8
8. August	3.1	1.3	2.2
9. September	2.0	4.0	3.0
10. October	3.0	0.7	1.8
11. November	5.9	1.9	3.9
12. December	1.6	0.4	1.0
13. all months	100.0	100.0	100.0
(number of sample marriages)	(144)	(153)	(297)

5.47. Table (5.22) shows the median ages at marriage of husband and wife for some selected countries along with those for India.

TABLE (5.22): MEDIAN AGE AT MARRIAGE (YEARS) OF HUSBAND AND WIFE FOR INDIA AND SOME SELECTED COUNTRIES

partner	India[12]	Japan[13]	USA[14] (1950)	Italy[15]	England[15] and Wales (1951)
(1)	(2)	(3)	(4)	(5)	(6)
1. husband	19.5	27.0	22.8	28.5	25.1
2. wife	14.4	22.5	20.3	23.5	22.6

[12] NSS seventh round (rural and urban combined).

[13] W. S. Woytinsky & E. S. Woytinsky: *World Population and Production, Trends and Outlook* (1953), Twentieth Century Fund, New York, p. 194 (1946-48 marriages).

[14] Conrad Taeuber and Irene B. Taeuber: *The Changing Population of the United States* (1958), A Volume in the Census Monograph Series, p. 154 (first marriages only).

[15] Based on *Registrar General's Statistical Review of England and Wales*, 1951, *Part II, Tables, Civil* (1953), General Register Office, pp. 66-67 (first marriages only).

Chapter Six

DEATHS

6.1. The estimate of the death rate obtained for different rural zones along with that of the urban sector have been presented in Chapter Three. It was noted that the all-India estimate, which related principally to the calendar year 1953, was far below the official estimate for the decade 1941-50. Decline in mortality as might have occurred could not conceivably lead to a fall in the crude death rate of the order observed. It appeared from the analysis presented in Chapter Three that there might have been lapses, in some cases, in reporting deaths occurring during the earlier part of the reference year. The effect on the estimate of the death rate of error arising from this source may not be uniform at all ages but it is assumed that differentials between broad groups classified by age or some other characteristic will not be significantly affected thereby.

6.2. Apart from reporting errors there might be other causes inherent in the nature of the survey which could have similar effects on the estimate of the death rate. Households which had broken up during the preceding year on the death of a member would, in the usual course, be outside the scope of the enquiry; this would be true, in particular, of single-member households which had ceased to exist on the death of a member. It was, however, found from a consideration of the number, and the age and sex distribution of the population, of single-member households at the time of enquiry that the adjustment needed in the estimate of the crude death rate on account of deaths in such households, would be by only a fraction of a point. Provision was made in the tenth and eleventh round schedules for the collection of information on deaths, which had led to the breaking up of households, from survivors who might be members of the sample households at the time of enquiry. But such information was recorded in respect of only one household during the entire course of the tenth and eleventh round survey. However, in view of likely reporting errors as observed previously, the death rates are mostly presented only as indices with the all-India rural estimate being taken as the base.

6.3. Table (6.1) gives the percentage distribution of the number of deaths by age.

6.4. The most noteworthy feature of this table is the magnitude of the proportion contributed by deaths at very young ages. Though there is a large sample variation at certain ages, in particular, for the age group 47-56 years, the pattern of distribution is not essentially different in this respect as between the two samples. Nearly one in every three persons among the dead was reported to have been under one year of age while the proportion of children under seven years exceeded 50 per cent of the total dead.

TABLE (6.1): PERCENTAGE DISTRIBUTION OF THE NUMBER OF DEATHS IN A YEAR BY AGE, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL

age (years)	sample 1	sample 2	combined
(1)	(2)	(3)	(4)
1. under 1	33.1	28.7	31.0
2. 1 — 6	27.7	23.5	25.7
3. 7—16	4.5	5.2	4.8
4. 17—26	4.2	4.1	4.2
5. 27—46	8.2	9.5	8.8
6. 47—56	2.5	8.4	5.3
7. 57—66	7.1	7.8	7.4
8. 67—above	12.7	12.8	12.8
9. all ages	100.0	100.0	100.0
(number of sample deaths)	(342)	(349)	(691)

6.5. The percentage distribution of the number of deaths by age groups for some selected countries is presented in Table (6.2) along with the figures for India. The crude death rates were 10.9, 9.6, 10.3 and 12.6 in that order for Japan

TABLE (6.2): PERCENTAGE DISTRIBUTION OF THE NUMBER OF DEATHS IN A YEAR FOR INDIA[1] AND SOME SELECTED COUNTRIES[2] BY AGE

age (years)	India	Japan (1950)	USA (1950)	Italy (1951)	England and Wales (1951)
(1)	(2)	(3)	(4)	(5)	(6)
1. under 1	31.0	15.6	7.2	11.9	3.7
2. 1 — 4	23.7	9.1	1.2	3.2	0.7
3. 5—14	5.7	3.3	1.0	1.4	0.6
4. 15—24	3.6	6.3	2.0	2.2	1.0
5. 25—44	9.4	12.9	8.2	6.9	4.9
6. 45—54	4.8	8.2	10.2	7.4	7.5
7. 55—64	7.3	12.1	17.5	12.5	15.0
8. 65—above	14.5	32.5	52.7	54.5	66.6
9. all ages	100.0	100.0	100.0	100.0	100.0

[1] NSS seventh round rural.

[2] Based on United Nations: *Demographic Yearbook* (1957), pp. 238, 239, 256, 257, 272, 273, 280 and 281.

(1950), USA(1950), Italy (1951), and England and Wales (1951). The proportion of the number of deaths to infants under one year of age was the highest for Japan, among the countries selected other than India, but even this was half of the corresponding figure for India while it was as low as 4 per cent for England and Wales. In the age group 1-4 years, the proportion for India appears to be still higher relative to the other countries shown in the table. The proportions remained higher in India than in some of the other countries through childhood and young adult ages and became relatively smaller at older ages decreasing progressively with advancing age. In the old age range 65 years—above it, came to only 15 per cent compared to 33 per cent for Japan and 67 per cent for England and Wales.

6.6. The distribution of the number of deaths over ages is a function not only of mortality at different ages but also of the age structure of the population. The population proportion under 15 years of age came to nearly 41 per cent for India compared to 35.4, 26.9, 26.3 and 22.1 per cent respectively for the years in question in Japan, Italy, USA, and England and Wales, while at ages 65 years and above the respective proportions for these countries were 4.9, 8.1, 8.3 and 11.0 per cent compared to only 2.6 per cent for India. A clearer picture of comparative mortality at different ages is presented in Tables (6.3) and (6.4); the former shows the death rates for the two samples separately while the latter presents the indices of the death rates for the selected countries for specified age groups, the crude death rate in each case being taken as the base.

TABLE (6.3): DEATH RATE PER 1000 PERSONS BY AGE, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL

age (years)	sample 1	sample 2	combined	number of sample persons
(1)	(2)	(3)	(4)	(5)
1. under 1	188.2	166.1	177.8	1,289
2. 1 — 6	27.5	21.8	24.7	7,620
3. 7—16	3.4	3.7	3.6	9,943
4. 17—26	4.3	3.9	4.1	7,438
5. 27—36	4.6	6.2	5.3	5,708
6. 37—46	8.7	7.9	8.3	4,111
7. 47—56	6.5	21.4	13.7	2,772
8. 57—66	31.6	31.9	31.8	1,695
9. 67—above	108.3	98.4	103.3	902
10. all ages	18.0	17.2	17.6	41,478

TABLE (6.4) : INDEX OF THE DEATH RATE BY AGE FOR INDIA[3] AND SOME SELECTED COUNTRIES[4] (ALL AGES = 100)

age (years)	India	Japan (1950)	USA (1950)	Italy (1951)	England and Wales (1951)
(1)	(2)	(3)	(4)	(5)	(6)
1. under 1	1009.5	557.9	342.3	674.7	244.4
2. 1 — 4	188.6	85.2	14.5	43.3	10.8
3. 5—14	22.3	15.1	6.2	8.0	4.1
4. 15—24	19.8	32.2	13.3	13.1	7.5
5. 25—34	35.6	47.9	18.5	18.5	11.6
6. 35—44	37.8	55.5	37.2	30.2	20.9
7. 45—54	65.7	92.4	88.6	65.4	55.0
8. 55—64	149.1	199.8	198.4	146.8	144.2
9. 65—above	556.7	657.0	646.7	659.8	603.7
10. all ages	100.0	100.0	100.0	100.0	100.0
(absolute rate)	(17.6)	(10.9)	(9.6)	(10.3)	(12.6)

[3] NSS seventh round rural.

[4] Based on United Nations : *Demographic Yearbook* 1955), pp. 245, 248 and 249, *Demographic Yearbook* (1956), p. 174 and *Demographic Yearbook* (1957), pp. 238, 239, 256, 257, 272, 273, 280 and 281.

6.7. It is apparent that mortality in India in the early years of life was relatively much higher than in the other countries shown in the table. The percentage of the number of deaths at these ages came to be relatively still higher because of the younger age structure of the Indian population. For the same reason the indices of mortality at advanced ages were relatively higher in India compared to percentages of deaths at corresponding ages. At all ages below 65 years, the indices shown for India are higher than those for Italy, and England and Wales. In the old age range 65 years and above, the age composition of the population of the countries compared with is obviously much older : this underlines not only the higher mortality indices for these countries but also the much greater proportion of the number of deaths reported in this age range.

6.8. The indices of death rates by age group for males and females separately are shown in Table (6.5).

TABLE (6.5) : INDEX OF THE DEATH RATE BY SEX AND AGE (TOTAL FOR ALL AGES = 100) : ALL-INDIA RURAL

age (years)	male	female	total	number of sample persons
(1)	(2)	(3)	(4)	(5)
1. under 1	1062.5	956.0	1009.5	1,289
2. 1—6	139.3	141.2	140.2	7,620
3. 7—16	17.4	23.4	20.3	9,943
4. 17—26	14.8	31.4	23.4	7,438
5. 27—46	41.1	33.0	37.2	9,819
6. 47—above	229.6	159.0	193.9	5,369
7. all ages	104.3	95.6	100.0	41,478
(absolute rate)	(18.4)	(16.8)	(17.6)	

6.9. For infants under 1 year of age, the death rate for males came to be higher than for females but the female death rate tended to rise relatively at higher ages. In the age group 1-6 years, the difference between the two rates seems to be small but at ages 7-16 years which comprise part of the reproductive period, the death rate of females became appreciably higher and it attained its highest value relative to that for males in the age range 17-26 years. At older ages, however, the death rate for males exceeded that for females leading to a higher crude death rate for the former. The sex differential in mortality at certain ages, as noted above, is different from the experience of most countries having comparatively low death rates where mortality is distinctly higher for males at all ages of the life span.

6.10. Table (6.6) gives the percentage distribution of the number of deaths by cause, the information on cause of death as on other items being as given by the informant. The figures available from registration statistics are also given for comparison.

6.11. 38 per cent of all deaths were related to causes not shown separately including old age and other undiagnosed causes which were reported as accounting for 7 and 21 per cent respectively of all deaths. Also, of the 30 per cent of deaths reported as due to fevers, 18 per cent were due to fevers undiagnosed. All undiagnosed causes thus accounted for 46 per cent of the total number of deaths. Apart from the standard of medical diagnosis, this highlights a situation in which the causes of death in a large proportion of cases had not actually been diagnosed. The figures obtained from registration statistics for the year 1953 are not essentially different in this respect though a larger proportion of deaths was reported as due to fevers and a much smaller proportion for other specified causes except dysentery and diarrhoea and respiratory diseases.

TABLE (6.6): PERCENTAGE DISTRIBUTION OF THE NUMBER OF DEATHS BY CAUSE, FROM NSS AND OFFICIAL STATISTICS: ALL-INDIA RURAL

cause	NSS seventh round			official[5] statistics
	sample 1	sample 2	combined	
(1)	(2)	(3)	(4)	(5)
1. malaria	6.2	7.5	6.8	
2. kalaazar, typhoid and other fevers diagnosed and fevers undiagnosed	28.8	30.8	29.8	50.4[6]
3. smallpox	4.5	3.5	4.0	0.7
4. cholera	6.9	2.8	5.0	0.3
5. tuberculosis	1.1	2.0	1.5	
6. stomach troubles	8.0	5.9	7.0	5.6[7]
7. respiratory diseases	3.3	3.9	3.6	9.6
8. cancer, heart diseases, rickets and mental deformity	3.0	4.0	3.4	
9. complications of child birth	0.9	0.9	0.9	
10. snake bite	0.3	0.7	0.5	
11. accidents, old age and other causes diagnosed and causes undiagnosed	37.0	38.0	37.5	33.4[8]
12. all causes	100.0	100.0	100.0	100.0
(number of sample deaths)	(342)	(349)	(691)	

[5]C.S.O.: *Statistical Abstract, India*, 1955-56, *No.* 6 (1957), Government of India, p. 62.
[6]Fevers.
[7]Dysentery and diarrhoea.
[8]Other causes.

6.12. Table (6.7) gives the indices of the death rates by activity class and sex for broad age groups.

6.13. The death rate of those gainfully employed was considerably lower than for others not so employed, the differential being higher for males than for females. The classification by gainful employment status may, however, itself be a selective factor particularly for males, the physically handicapped and disabled persons being drawn towards the class not gainfully employed: this also underlines the much more pronounced differences observed for males.

6.14. Table (6.8) shows the indices of the death rate by per capita monthly expenditure for some broad age groups.

TABLE (6.7) : INDEX OF THE DEATH RATE BY ACTIVITY CLASS, SEX AND AGE (TOTAL FOR ALL CLASSES AND ALL AGES = 100) : ALL-INDIA RURAL

sex	age (years)	activity class: gainfully employed	activity class: others	all classes	number of sample persons
(1)	(2)	(3)	(4)	(5)	(6)
1. male	0 — 6		270.8	270.8	4,552
2. ,,	7—16	19.9	16.0	17.4	5,127
3. ,,	17—56	32.7	144.8	37.6	10,070
4. ,,	57—above	256.5	777.8	404.2	1,245
5. ,,	all ages	53.9	175.6	104.3	20,994
6. female	0 — 6		260.9	260.9	4,357
7. ,,	7—16	11.3	26.4	23.4	4,816
8. ,,	17—56	35.7	39.4	37.4	9,959
9. ,,	57—above	187.6	259.5	244.3	1,352
10. ,,	all ages	63.7	110.7	95.6	20,484
11. total	0 — 6		265.9	265.9	8,909
12. ,,	7—16	16.9	21.6	20.3	9,943
13. ,,	17—56	33.7	48.5	37.5	20,029
14. ,,	57—above	239.3	384.9	319.5	2,597
15. ,,	all ages	57.3	135.4	100.0	41,478
(absolute rate : total for all ages)		(10.1)	(23.8)	(17.6)	

TABLE (6.8) : INDEX OF THE DEATH RATE BY PER CAPITA MONTHLY EXPENDITURE AND AGE (ALL EXPENDITURES FOR ALL AGES = 100) : ALL-INDIA RURAL

age (years)	per capita monthly expenditure (Rs.): below 11	11—20	21—above	all expen-ditures	number of sample persons
(1)	(2)	(3)	(4)	(5)	(6)
1. under 1	612.5	679.9	1885.9	903.1	689
2. 1 — 6	112.9	135.7	143.9	130.5	3,939
3. 7—16	23.3	7.9	31.4	18.7	5,096
4. 17—56	33.0	39.8	39.5	37.9	10,376
5. 57—above	297.8	290.6	574.0	368.7	1,331
6. all ages	83.2	89.6	135.3	100.0	21,431
(absolute rate)	(14.9)	(16.0)	(24.2)	(17.9)	

6.15. The death rate surprisingly came to be highest among the per capita expenditure group of Rs. 21—above, the difference between the two lower per capita expenditure groups being not significantly large. A higher death rate for the highest per capita expenditure group appears, however, to be largely due to deaths under 1 year of age and at ages 57 years and above. However, the removal by death of members of some households might have tended, in these cases, to raise the per capita monthly expenditure which was related to the size of the household at the time of the enquiry.

6.16. Table (6.9) presents the indices of the death rate by land possessed group and age.

TABLE (6.9): INDEX OF THE DEATH RATE BY LAND POSSESSED AND AGE (ALL LAND POSSESSED FOR ALL AGES=100): ALL-INDIA RURAL

age (years)	land possessed(acres)			all land possessed	number of sample persons
	0—1	2—5	6—above		
(1)	(2)	(3)	(4)	(5)	(6)
1. under 1	838.9	952.0	1242.3	1009.5	1,289
2. 1—6	138.4	141.2	144.0	140.2	7,620
3. 7—16	22.8	18.7	18.9	20.3	9,943
4. 17—56	41.5	31.9	37.8	37.5	20,029
5. 57—above	318.8	269.8	357.5	319.1	2,597
6. all ages	97.2	92.3	109.4	100.0	41,478
(absolute rate)	(17.1)	(16.3)	(19.3)	(17.6)	

6.17. The death rate came to be highest among the highest land possessed class owning 6 acres of land and above. The mortality of this group seems, however, to be significantly higher only for infants under 1 year of age and at old ages 57 years and above. The differential though smaller than that observed for per capita monthly expenditure classes exhibits a somewhat similar pattern.

6.18. All deaths under one year of age during the reference year were related to infants enumerated at the time of survey to get the death rate under one year of age as given in the preceding sections. As information was available in respect of the number and age at death of infants born during the year but dead by the time of survey together with the relevant information about infants surviving up to the time of enquiry, a measure of infant mortality rate could be obtained from the data collected. The method followed in calculating this is given in Appendix Two.

6.19. Table (6.10) shows the infant mortality rates for males and females separately for the two samples

TABLE (6.10): INFANT MORTALITY RATE BY SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL

sample	male	female	total
(1)	(2)	(3)	(4)
1. 1	173	112	142
2. 2	174	148	161
3. combined	173	129	151
(number of sample births)	(741)	(709)	(1,450)

6.20. The infant mortality rate for females appears to be substantially smaller than for males, it being 129 compared to 173 for the latter. The sample size in respect of infant deaths was however quite small, the sample variation for the female infant morality rate being also considerably large. It was noted previously in Chapter Four that the sampling error for the sex ratio at birth was also appreciably large though the reported sex ratio did not suggest any sex-selective lapse in reporting female births.

6.21. The infant mortality rates according to age groups of mother as well as order of birth are presented in Table (6.11).

6.22. The mortality rate of infants born to women at ages 22-26 years appears to be considerably smaller than at younger as well as at older ages. In view of the small size of the sample the data could not be analysed for detailed age breakdowns or for subdivision by order of birth for different age groups of mother. Classification by order of birth, however, seems to show that the infant mortality rate was very high for the first order births and came down sharply for higher orders. The rate drops from 224 for the first order of birth to 123 for the second and third orders combined, tending to rise for still higher orders.

TABLE (6.11): INFANT MORTALITY RATE BY AGE OF MOTHER AND ORDER OF BIRTH: ALL-INDIA RURAL

item	infant mortality rate	number of sample births
(1)	(2)	(3)
age of mother: (years)		
1. 12—21	158	441
2. 22—26	133	442
3. 27—above	161	567
order of birth:		
4. 1st	224	307
5. 2nd and 3rd	123	517
6. 4th and above	138	626
7. total	151	1,450

6.23. The interval in months since previous birth had been collected in respect of all births of second and higher orders. The total number of births involved was considerably smaller and the infant mortality rate in respect of these births also came to be much lower, being 130. Table (6.12) presents the infant mortality rate for two broad groups according to intervals since previous birth. It appears that infants born after a shorter interval at less than 25 months since previous birth has a much higher mortality than those born after longer intervals, the respective figures being 152 and 118.

TABLE (6.12): INFANT MORTALITY RATE BY INTERVAL SINCE PREVIOUS BIRTH FOR BIRTHS OF SECOND AND HIGHER ORDERS: ALL-INDIA RURAL

interval since previous birth (months)	infant mortality rate	number of sample births
(1)	(2)	(3)
1. up to 24	152	374
2. 25—above	118	769
3. all intervals	130	1,143

6.24. The probability of dying in different age segments within 1 year is given in Table (6.13).

TABLE (6.13): THE PROBABILITY OF DYING IN SPECIFIED AGE INTERVALS PER 1000 INFANTS AT THE BEGINNING OF EACH AGE INTERVAL: ALL-INDIA RURAL

sample	age interval (weeks)				under 1 year
	0—3	4—12	13—25	26—51	
(1)	(2)	(3)	(4)	(5)	(6)
1. 1	52	20	35	43	142
2. 2	63	24	29	56	161
3. combined	57	22	32	49	151

6.25. The probability of dying within the first 4 weeks after birth, as is to be expected, came to be much higher than in comparable intervals in the later part of the infant's life. At age 4-12 weeks, however, the probability does not appear to be higher than in comparable period during the subsequent interval of 13-25 weeks. The number of deaths was, however, very small for the middle intervals, and the data may, on that account, be subject to rather large errors.

CHAPTER SEVEN

SICKNESS

7.1. Information on sickness relating to a period of 30 days preceding the day of enquiry was collected in respect of all persons who were members of the sample households on the day of enquiry or who had died during the reference period but had been members of the households on the day preceding the day of death. A person was considered to be sick for the purpose of this enquiry if he had been unable to attend to his normal work and activities or had been on a restricted diet on account of illness for at least one day; he was also considered to be under one spell of sickness unless there were at least 3 days intervening between two consecutive cases of sickness or the causes of the different cases were distinctly different.

7.2. Table (7.1) gives the prevalence rate for different rural zones classified by sex.

TABLE (7.1): MONTHLY PREVALENCE RATE (NUMBER OF SPELLS OF SICKNESS PER 1000 PERSONS IN A MONTH) BY ZONE AND SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL

sex	sample	zone						all-India rural
		north	east	south	west	central	north-west	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. male	1	83.5	86.7	50.3	28.0	61.5	52.0	66.6
2. ,,	2	71.5	90.9	41.4	35.4	86.7	76.6	69.8
3. ,,	combined	77.8	88.8	45.7	31.8	73.7	63.8	68.2
4. female	1	60.9	85.1	44.0	28.0	56.9	53.8	59.6
5. ,,	2	62.0	82.3	44.3	35.1	78.9	59.9	63.1
6. ,,	combined	61.4	83.8	44.2	31.6	67.8	56.7	61.3
7. total	1	72.6	85.9	47.1	28.0	59.2	52.8	63.1
8. ,,	2	66.8	86.8	42.8	35.2	82.8	68.5	66.5
9. ,,	combined	69.8	86.3	44.9	31.7	70.8	60.4	64.8
10. number of sample persons		7,315	10,024	6,768	5,802	6,146	5,423	41,478

7.3. Though there was a large variation between the two samples leading to overlapping of the zonal estimates in some cases, the west zone consistently shows the lowest rate for both the samples with the south following next, this being true

for both males and females; also, the highest prevalence rate seems to have prevailed in the east zone for both males and females, with the two sample values coming close to each other in either case.

7.4. The prevalence rate for men came to be a little higher than that for women. The differential appears to be greatest in the north zone, while it was insignificant in the south and west.

7.5. Table (7.2) gives the prevalence rate for two broad size classes of towns for males and females separately. The all-India rural values are also shown in the same table for comparison.

TABLE (7.2): MONTHLY PREVALENCE RATE (NUMBER OF SPELLS OF SICKNESS PER 1000 PERSONS IN A MONTH) BY SIZE CLASS OF TOWNS AND SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA URBAN

sex	sample	size class of towns		all-India urban	all-India rural
		below 50,000	50,000-above		
(1)	(2)	(3)	(4)	(5)	(6)
1. male	1	77.4	54.3	66.3	66.6
2. ,,	2	70.8	56.4	63.6	69.8
3. ,,	combined	74.2	55.3	65.0	68.2
4. female	1	55.2	52.1	53.8	59.6
5. ,,	2	70.2	55.0	62.9	63.1
6. ,,	combined	62.3	53.5	58.2	61.3
7. total	1	66.6	53.2	60.3	63.1
8. ,,	2	70.5	55.8	63.3	66.5
9. ,,	combined	68.4	54.5	61.8	64.8
10. number of sample persons		3,674	4,105	7,779	41,478

7.6. The higher size class towns show consistently lower rates than the smaller towns. While this is true for both males and females, the magnitude of the differential was considerably larger for the former. Men seem to have a higher rate than women, but this differential was significantly large only in the lower size class towns having a population less than 50,000, for which the sample variation was, however, quite large for women. While the prevalence rate for the larger size class towns was appreciably lower than in the rural sector the latter does not appear to have a higher rate than the smaller size class towns.

7.7. From Table (7.3) which shows the prevalence rates by age group and sex for the rural sector, it is evident that the difference between the male and female rates was somewhat more pronounced in childhood than in the early adult years, but it seems to be greatest at old ages. As with mortality, the incidence of sickness was lowest at ages 7-16 years but the highest incidence was not reported for children or even infants under 1 year of age but for persons aged 57 years and over, the rates under one year of age and at ages 1-6 years being 78.1 and 73.6 respectively compared to 95.7 in the age range 57 years and over. This may be due largely to a much longer duration of sickness at old ages, the reference period for sickness being only 30 days preceding the day of enquiry. It is also obvious that the fall in the incidence with advancing age in the early years of life or the rise at advanced ages was not nearly so sharp as changes in mortality at corresponding ages : the fatality from all causes of sickness varied significantly with age, it being greatest at ages 0-6 years and in the age range 47 years and over.

TABLE (7.3) : MONTHLY PREVALENCE RATE (NUMBER OF SPELLS OF SICKNESS PER 1000 PERSONS IN A MONTH) BY AGE AND SEX, FROM TWO INDEPENDENT SAMPLES : ALL-INDIA RURAL

sex	sample	age (years)					all ages
		0—6	7—16	17—46	47—56	57—above	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. male	1	81.9	47.8	62.8	70.1	114.5	66.6
2. ,,	2	76.7	42.4	74.7	83.5	105.1	69.8
3. ,,	combined	79.3	45.1	68.6	76.8	109.8	68.2
4. female	1	74.0	39.7	57.1	73.2	85.0	59.6
5. ,,	2	63.7	37.3	72.0	77.5	81.4	63.1
6. ,,	combined	69.0	38.5	64.4	75.2	83.2	61.3
7. total	1	78.0	43.8	60.0	71.7	98.7	63.1
8. ,,	2	70.4	39.9	73.3	80.6	92.7	66.5
9. ,,	combined	74.3	41.9	66.5	76.0	95.7	64.8
10. number of sample persons		8,909	9,943	17,257	2,772	2,597	41,478

7.8. As is apparent from Table (7.4), the prevalence rates for the smaller size class towns came to be higher than those for the larger towns for all age groups; the difference between the two samples was, however, quite large for some of the groups, the sample size being rather small.

TABLE (7.4): MONTHLY PREVALENCE RATE (NUMBER OF SPELLS OF SICKNESS PER 1000 PERSONS IN A MONTH) BY SIZE CLASS OF TOWNS AND AGE, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA URBAN

size class of towns	sample	age (years)				all ages
		0—6	7—16	17—46	47—above	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. below 50,000	1	88.7	37.3	65.7	90.0	66.6
2. ,,	2	100.3	35.1	74.4	85.8	70.5
3. ,,	combined	93.7	36.2	69.7	87.8	68.4
4. 50,000—above	1	76.9	29.6	51.0	69.3	53.3
5. ,,	2	65.3	25.7	58.1	82.2	55.8
6. ,,	combined	71.1	27.8	54.5	75.6	54.5
7. all-India urban	1	83.3	33.6	59.0	79.3	60.3
8. ,,	2	81.8	30.9	66.3	84.1	63.3
9. ,,	combined	82.6	32.3	62.5	81.7	61.8
10. number of sample persons		1,494	1,797	3,525	963	7,779

7.9. Table (7.5) gives the percentage distribution by cause of sickness for males and females separately. The cause of sickness recorded in the schedule was as stated by the informant and the data are subject to consequent limitations particularly due to lack of proper medical facilities in rural areas[1].

TABLE (7.5): PERCENTAGE DISTRIBUTION OF THE NUMBER OF SPELLS OF SICKNESS IN CAUSE OF SICKNESS GROUPS BY SEX: ALL-INDIA RURAL

cause of sickness	male	female	total
(1)	(2)	(3)	(4)
1. malaria	32.8	31.3	32.1
2. kalaazar, typhoid and other fevers diagnosed and fevers undiagnosed	30.8	30.9	30.8
3. smallpox	2.7	3.1	2.9
4. diphtheria	0.3	0.1	0.2
5. cholera	0.5	0.0	0.3
6. tuberculosis	0.5	0.3	0.4
7. respiratory diseases	2.3	1.5	2.0
8. stomach troubles	6.7	8.5	7.5
9. cancer, heart diseases, rickets and mental deformity	2.4	2.0	2.2
10. complications of child birth	—	1.9	0.9
11. snake bite	—	0.2	0.1
12. accidents, old age and other causes diagnosed and causes undiagnosed	21.0	20.2	20.6
13. all causes	100.0	100.0	100.0
(number of sample cases)	(1,364)	(1,162)	(2,526)

[1] Information on such matters as the number of doctors, hospitals, etc. in the rural areas can be had from *The National Sample Survey, Number 45, Indian Villages, A Study of Some Social and Economic Aspects* (1961), Government of India, Cabinet Secretariat.

7.10. All cases reported as fevers accounted for 31 per cent of the total, the percentages for kalaazar, typhoid, other fevers diagnosed and fevers undiagnosed being 0.3, 2, 9 and 20 respectively. Of the 21 per cent reported for unspecified causes, 2 per cent were due to accidents, 1 per cent to old age and 9 per cent to other causes diagnosed while 9 per cent of the cases were reported as not diagnosed. Though, under the conditions prevailing when a large proportion of cases were undiagnosed, the data could not give a firm indication of the relative contribution of various causes to total sickness, the table shows the importance of malaria in the period under reference, the reported cases accounting for 32 per cent of the total number of spells of sickness. Of the remaining causes, only stomach troubles constituted a substantial proportion; these four groups of causes which included undiagnosed cases made up 91 per cent of the total number of spells of sickness.

7.11. As was noted in Chapter Six, mortality from malaria accounted for only 7 per cent of the total number of deaths compared to 32 per cent for the corresponding spells of sickness, while mortality from smallpox, cholera and tuberculosis, apart from unspecified causes, was proportionately much higher. Case fatality rate for malaria was evidently lower than for some of the other causes of sicknes, this coupled with the recurrent nature of malarial incidence, might have tended to raise the percentage for spells of malaria. During the reference period of the month, malaria accounted for five out of eight cases of second spell of sickness to the same person, while out of five cases of third spell, three were due to malaria; there was only one instance of fourth spell, this being due to some other cause. These, however, did not take account of the causes of previous spells of sickness.

7.12 The survey started near about the middle of October and continued into March of the next calendar year. As is evident from Table (7.6), the number of reported spells of sickness was proportionately much greater during the early months of the survey period. Moreover, the spells of malaria reported during these months

TABLE (7.6): PERCENTAGE DISTRIBUTION OF THE NUMBER OF SPELLS OF SICKNESS BY MONTH OF SURVEY, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA RURAL

month of survey[2]	sample 1	sample 2	combined
(1)	(2)	(3)	(4)
1. October	12.7	10.3	11.5
2. November	33.9	32.2	33.0
3. December	22.3	24.4	23.4
4. January	14.1	15.7	14.9
5. February	13.1	11.0	12.1
6. March	3.3	6.3	4.8
7. other months	0.6	0.1	0.3
8. all months	100.0	100.0	100.0
(number of sample cases)	(1,189)	(1,337)	(2,526)

[2] The period of survey extended from October 1953 to March 1954 though a few households were visited in later months.

were found to constitute a still larger proportion of the total number of malarial cases. Compared to 68 per cent of all cases of sickness reported during the months of October to December, the proportion of spells of malaria came to nearly 80 per cent.

7.13. As the reference period was only 30 days preceding the day of enquiry, the measures of sickness as obtained from the survey data related to the period extending from September 1953 to March 1954. The downward trend in the reported number of spells of sickness from all causes with the progress of the survey as well as the relatively larger percentage of reported spells of malaria during the early months suggest that these measures as also the contribution of malaria to all cases of sickness might have been different if the data relating to a whole year were the basis of measurement.

7.14. Table (7.7) gives the percentage distribution by cause of sickness for some broad age groups and Table (7.8) presents prevalence rate by cause and age.

TABLE (7.7): PERCENTAGE DISTRIBUTION OF THE NUMBER OF SPELLS OF SICKNESS IN CAUSE OF SICKNESS GROUPS BY AGE: ALL-INDIA RURAL

cause of sickness	age (years)				all ages
	0—6	7—16	17—46	47—above	
(1)	(2)	(3)	(4)	(5)	(6)
1. malaria	23.4	45.6	35.8	23.2	32.1
2. kalaazar, typhoid and other fevers diagnosed and fevers undiagnosed	37.2	29.4	28.7	28.1	30.8
3. other specified causes	19.9	15.8	14.8	16.3	16.5
4. accidents, old age and other causes diagnosed and causes undiagnosed	19.5	9.2	20.7	32.4	20.6
5. all causes	100.0	100.0	100.0	100.0	100.0
(number of sample cases)	(570)	(372)	(1,114)	(470)	(2,526)

TABLE (7.8): MONTHLY PREVALENCE RATE (NUMBER OF SPELLS OF SICKNESS PER 1000 PERSONS IN A MONTH) BY CAUSE AND AGE: ALL-INDIA RURAL

cause of sickness	age (years)				all ages
	0—6	7—16	17—46	47—above	
(1)	(2)	(3)	(4)	(5)	(6)
1. malaria	17.4	19.1	23.8	19.9	20.8
2. kalaazar, typhoid and other fevers diagnosed and fevers undiagnosed	27.7	12.3	19.1	24.0	19.9
3. other specified causes	14.7	6.6	9.8	13.9	10.8
4. accidents, old age and other causes diagnosed and causes undiagnosed	14.5	3.9	13.8	27.7	13.3
5. all causes	74.3	41.9	66.5	85.5	64.8
(number of sample persons)	(8,909)	(9,943)	(17,257)	(5,369)	(41,478)

7.15. The percentage contribution from fevers does not appear to vary significantly between different age groups except in early childhood, at ages 0-6 years, in which the reported cases made up 37 per cent of the total, the highest for this age group. The largest variation occurs for the group of unspecified causes, the proportion falling from a higher value at early childhood ages to its minimum at ages 7-16 years, to rise progressively at still higher ages and accounting for more than one-third of all cases of sickness in the age range 47 years and over. Malaria appears to have been the most predominant cause of sickness at ages 7-16 years and unlike that of other causes, the proportion of spells of sickness from malaria declined at younger and older ages. Of the specified causes, stomach troubles accounted for a considerable proportion of spells of sickness at all ages, though the proportion of cases as well as the prevalence rate due to this cause, were found to be highest for the age group 0-6 years; also, the incidence of smallpox was significant only at ages 0-16 years.

7.16. Unlike the percentage, the prevalence rate, due to fevers, appears to vary considerably between different age groups. The prevalence rate due to malaria came to be highest in the age range 17-46 years but the variation between different ages seems to have been rather small.

7.17. As is evident from Table (7.9), the zonal differential in the prevalence rate, which varies between 86.3 for the east zone and 31.7 for the west was primarily due to difference in the incidence of malaria as well as of fevers While both the south and west zones had by far the lowest rates from malaria, the comparatively low prevalence rate in the west was due to a much lower incidence of fevers. The east zone had the highest rate not only for malaria and fevers but also for other specified causes owing to a higher incidence of stomach troubles and smallpox.

TABLE (7.9) : MONTHLY PREVALENCE RATE (NUMBER OF SPELLS OF SICKNESS PER 1000 PERSONS IN A MONTH) BY CAUSE : ALL-INDIA RURAL AND URBAN

cause of sickness	rural zone						all-India rural	all-India urban
	north	east	south	west	central	north-west		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. malaria	26.8	29.9	2.7	9.3	26.3	22.7	20.8	11.5
2. kalaazar, typhoid and other fevers diagnosed and fevers undiagnosed	17.9	24.9	20.4	6.3	22.7	19.6	19.9	17.9
3. other specified causes	12.6	17.6	6.7	4.8	7.6	7.2	10.8	15.5
4. accidents, old age and other causes diagnosed and causes undiagnosed	12.5	13.9	15.1	11.3	14.2	10.9	13.3	16.9
5. all causes	69.8	86.3	44.9	31.7	70.8	60.4	64.8	61.8
(number of sample persons)							(41,478)	(7,779)

7.18. In the urban sector, though the prevalence rate from malaria was apparently much lower than in the rural, the rates due to some of the other causes seem to have been somewhat higher. The proportion of cases reported as undiagnosed was lower in the urban sector being 23 per cent compared to 30 per cent in the rural.

7.19. Table (7.10) gives the prevalence rate by activity status for broad age groups and for males and females separately.

TABLE (7.10): MONTHLY PREVALENCE RATE (NUMBER OF SPELLS OF SICKNESS PER 1000 PERSONS IN A MONTH) BY ACTIVITY CLASS, SEX AND AGE: ALL-INDIA RURAL

sex	age (years)	activity class		all classes	number of sample persons
		gainfully employed	others		
(1)	(2)	(3)	(4)	(5)	(6)
1. male	0 — 6		79.3	79.3	4,552
2. ,,	7—16	46.4	44.5	45.1	5,127
3. ,,	17—46	67.9	86.1	68.6	8,653
4. ,,	47—above	86.2	119.8	91.9	2,662
5. ,,	all ages	70.3	65.2	68.2	20,994
6. female	0 — 6		69.0	69.0	4,357
7. ,,	7—16	59.5	33.4	38.5	4,816
8. ,,	17—46	65.5	63.1	64.4	8,604
9. ,,	47—above	82.0	77.9	79.3	2,707
10. ,,	all ages	72.6	56.1	61.3	20,484
11. total	0 — 6		74.3	74.3	8,909
12. ,,	7—16	51.1	38.6	41.9	9,943
13. ,,	17—46	67.0	64.9	66.5	17,257
14. ,,	47—above	84.9	86.3	85.5	5,369
15. ,,	all ages	71.1	59.6	64.8	41,478

7.20. The prevalence rate for those without gainful employment appears to have been higher amongst males at ages 17 years and over but not among females. As with deaths the activity status might, however, have been a selective factor for males in the working age range.

7.21 Table (7.11) presents the prevalence rate by per capita monthly expenditure.

TABLE (7.11): MONTHLY PREVALENCE RATE (NUMBER OF SPELLS OF SICKNESS PER 1000 PERSONS IN A MONTH) BY PER CAPITA MONTHLY EXPENDITURE AND AGE: ALL-INDIA RURAL

age (years)	per capita montnly expenditure (Rs.)			all expendi-tures
	below 11	11—20	21—above	
(1)	(2)	(3)	(4)	(5)
1. 0—6	62.6	62.0	98.7	71.1
2. 7—16	28.2	35.4	48.7	36.6
3. 17—46	64.0	64.4	93.7	72.6
4. 47—above	91.4	94.9	123.3	102.2
5. all ages	56.9	60.2	87.6	66.6
(number of sample persons)	(6,721)	(8,992)	(5,718)	(21,431)

7.22. The difference in the prevalence rates between the two lower per capita expenditure groups appears to be small but the highest per capita expenditure group of Rs. 21-above shows consistently higher rates for all age groups. As noted in the previous chapter, the mortality of this class was also found to be higher. It is not, however, definite if this represented a real differential or if a higher incidence of sickness, in terms of the definition adopted for this enquiry, did not reflect a greater cognisance of sickness among the more affluent classes.

7.23. The difference in the prevalence rates between the agricultural and non-agricultural classes as presented in Table (7.12) appears to be small; classification by size of land owned also does not show up any consistent trend in the rates for different age groups though the prevalence rate for the middle land possessed group owning 2-5 acres appears to be a little higher when sickness at all ages is considered.

TABLE (7.12): MONTHLY PREVALENCE RATE (NUMBER OF SPELLS OF SICKNESS PER 1000 PERSONS IN A MONTH) BY HOUSEHOLD INDUSTRY AND AGE: ALL-INDIA RURAL

age (years)	household industry		all industries	number of sample persons
	agriculture[3]	others		
(1)	(2)	(3)	(4)	(5)
1. 0—6	73.4	79.4	74.3	8,909
2. 7—16	41.4	45.0	41.9	9,943
3. 17—46	66.1	68.3	66.5	17,257
4. 47—above	88.3	72.0	85.5	5,369
5. all ages	64.6	65.9	64.8	41,478

[3] Includes those for whom no household industry was shown.

TABLE (7.13): MONTHLY PREVALENCE RATE (NUMBER OF SPELLS OF SICKNESS PER 1000 PERSONS IN A MONTH) BY LAND POSSESSED AND AGE: ALL INDIA RURAL

age (years)	land possessed (acres)			all land possessed	number of sample persons
	0—1	2—5	6—above		
(1)	(2)	(3)	(4)	(5)	(6)
1. 0—6	68.7	70.4	84.3	74.3	8,909
2. 7—16	44.7	44.8	37.0	41.9	9,943
3. 17—46	62.3	73.9	65.9	66.5	17,257
4. 47—above	87.1	86.5	82.9	85.5	5,369
5. all ages	63.0	67.7	64.7	64.8	41,478

7.24. Table (7.14) shows the percentage distribution of the number of spells starting within a month, the corresponding distribution for all spells of sickness being also given for comparison.

TABLE (7.14): PERCENTAGE DISTRIBUTION OF THE NUMBER OF SPELLS OF SICKNESS STARTING WITHIN A MONTH AND OF ALL SPELLS OF SICKNESS BY CAUSE: ALL INDIA RURAL

cause of sickness	spells of sickness	
	starting within a month	all-India rural
(1)	(2)	(3)
1. malaria	34.2	32.1
2. kalaazar, typhoid and other fevers diagnosed and fevers undiagnosed	32.3	30.8
3. smallpox	3.2	2.9
4. diphtheria	0.2	0.2
5. cholera	0.1	0.3
6. tuberculosis	0.3	0.4
7. respiratory diseases	1.0	2.0
8. stomach troubles	7.3	7.5
9. cancer, heart diseases, rickets and mental deformity	1.1	2.2
10. complications of child birth	0.8	0.9
11. snake bite	0.1	0.1
12. accidents, old age and other causes diagnosed and causes undiagnosed	19.4	20.6
13. all causes (number of sample cases)	100.0 (1,874)	100.0 (2,526)

7.25. For chronic diseases the proportion of spells of sickness starting within a month was obviously smaller than the corresponding proportion for all spells of sickness while for malaria, fevers and smallpox it was somewhat higher.

7.26. It appears also from Table (7.15) that the inception rate was higher at younger ages relative to the prevalence rate and tended progressively to decrease with advancing age.

TABLE (7.15): MONTHLY INCEPTION RATE (NUMBER OF SPELLS OF SICKNESS STARTING WITHIN A MONTH PER 1000 POPULATION) BY ACTIVITY CLASS, SEX AND AGE: ALL-INDIA RURAL

sex	age (years)	activity class		all classes	number of sample persons
		gainfully employed	others		
(1)	(2)	(3)	(4)	(5)	(6)
1. male	0 — 6		59.9	59.9	4,552
2. ,,	7—16	39.1	37.2	37.8	5,127
3. ,,	17—46	48.7	34.5	48.1	8,653
4. ,,	47—above	62.6	60.8	62.3	2,662
5. ,,	all ages	51.1	48.9	50.2	20,994
6. female	0 — 6		58.1	58.1	4,357
7. ,,	7—16	39.8	27.5	29.9	4,816
8. ,,	17—46	51.6	47.6	49.7	8,604
9. ,,	47—above	66.6	55.2	58.9	2,797
10. ,,	all ages	54.7	45.1	48.1	20,484
11. total	0 — 6		59.0	59.0	8,909
12. ,,	7—16	39.4	32.0	34.0	9,943
13. ,,	17—46	49.7	46.5	48.9	17,257
14. ,,	47—above	63.8	56.3	60.6	5,369
15. ,,	all ages	52.3	46.5	49.1	41,478

7.27. Unlike the prevalence rate, the inception rate seems to have been higher for males with gainful employment at ages 17-46 years though the difference between the two classes at 47 years and above was small. This suggests that the spells of sickness among males without gainful employment represented a larger proportion of cases with longer duration.

7.28. Table (7.16) shows the average duration per spell ending during a month for some selected causes. The figures for some of the specified causes are not given as the size of the sample in these cases was very small. The average duration referred to here represents the entire duration of sickness irrespective of whether a spell of sickness had started during or prior to the reference period. Also, as the duration was recorded in completed weeks, the spells of sickness ending during the reference month were assumed to have continued half-way through the week of termination.

7.29. The causes grouped under cancer and other mostly chronic diseases had, on the average, the highest duration followed by unspecified causes, while smallpox seems to have had the shortest duration.

TABLE (7.16) : AVERAGE DURATION (WEEKS) PER SPELL ENDING DURING A MONTH BY CAUSE AND SEX : ALL-INDIA RURAL

cause of sickness	male	female	total	number of sample cases
(1)	(2)	(3)	(4)	(5)
1. malaria	2.07	2.15	2.11	672
2. kalaazar, typhoid and other fevers diagnosed and fevers undiagnosed	2.12	2.20	2.16	613
3. smallpox	1.59	1.52	1.55	39
4. stomach troubles	3.42	2.07	2.71	121
5. cancer, heart diseases, respiratory diseases, rickets and mental deformity	3.76	2.69	3.28	52
6. accidents, old age and other causes diagnosed and causes undiagnosed	2.76	2.46	2.62	348
7. all causes[4]	2.51	2.23	2.38	1,874

[4] Includes diphtheria, cholera, tuberculosis, complications of child birth and snake bite not shown separately.

7.30. Table (7.17) shows the average duration for the two broad activity status groups classified by sex and age. Apparently the average duration tended to increase with age; the difference between males and females in this respect was

TABLE (7.17) : AVERAGE DURATION (WEEKS) PER SPELL ENDING DURING A MONTH BY ACTIVITY CLASS, SEX AND AGE : ALL-INDIA RURAL

sex	age (years)	activity class		all classes	number of sample cases
		gainfully employed	others		
(1)	(2)	(3)	(4)	(5)	(6)
1. male	0 — 6		2.18	2.18	233
2. ,,	7—16	2.31	1.97	2.09	171
3. ,,	17—46	2.35	3.47	2.39	435
4. ,,	47—above	2.49	8.89	3.78	166
5. ,,	all ages	2.41	2.67	2.51	1,005
6. female	0 — 6		2.03	2.03	186
7. ,,	7—16	2.52	2.41	2.44	139
8. ,,	17—46	2.28	2.09	2.20	384
9. ,,	47—above	2.13	2.53	2.38	160
10. ,,	all ages	2.29	2.19	2.23	869
11. total	0 — 6		2.11	2.11	419
12. ,,	7—16	2.40	2.17	2.24	310
13. ,,	17—46	2.33	2.22	2.30	819
14. ,,	47—above	2.38	4.18	3.10	326
15. ,,	all ages	2.37	2.39	2.38	1,874

due to the small number of cases for certain diseases like tuberculosis for which the duration was comparatively much longer. The differential with age in regard to average duration resulted primarily from different patterns of causes of sickness at different ages.

7.31. For females, the difference in the average duration between the two activity classes was not pronounced, though at ages 47 years and over, the duration was, on the average, a little higher for the class without gainful employment. The average duration among males, on the other hand, differed widely between the two classes, particularly at advanced ages. This is in line with the differentials previously observed between the two activity classes for other measures of sickness. For the class gainfully employed, the average duration does not appear to be perceptibly longer for males at higher ages, nor is the difference between males and females significantly large but for the class not gainfully employed, the differentials by sex as well as by age appear to be sharply pronounced. It may, however, be noted that the number of cases among males not gainfully employed in the working age range was not sufficiently large.

7.32. Table (7.18) gives the number of days of sickness within a month per thousand population by cause of sickness and age. The information collected was, however, in respect of the total period of sickness. The duration within the reference month of spells of sickness starting prior to this period was not therefore available from the data; such cases were assumed to terminate, on the average, half-way through the reference month. Also, as the duration was recorded in completed weeks, the duration of spells of sickness starting within the reference period was converted into days by assuming that these had continued half-way through the week of termination.

TABLE (7.18): NUMBER OF DAYS OF SICKNESS PER 1000 PERSONS IN A MONTH BY CAUSE AND AGE: ALL-INDIA RURAL

cause of sickness	age (years)				all ages
	0—6	7—16	17—46	47—above	
(1)	(2)	(3)	(4)	(5)	(6)
1. malaria	269	293	363	311	319
2. kalaazar, typhoid and other fevers diagnosed and fevers undiagnosed	423	201	285	354	304
3. other specified causes	217	98	188	253	183
4. accidents, old age and other causes diagnosed and causes undiagnosed	254	64	241	538	243
5. all causes	1,163	656	1,077	1,456	1,049
(number of sample persons)	(8,909)	(9,943)	(17,257)	(5,369)	(41,478)

7.33. The number of days of sickness per thousand persons came to 1,049 or 1 day for every person, on the average, during a month. Nearly one-third of the total was, as reported, due to malaria, the contribution from fevers also being the same. Of 'other specified causes', the most important was stomach troubles, the number of days of sickness due to this cause exceeding half the total for that group.

7.34. The number of days of sickness was the least, on the average, for persons aged 7-16 years and it appears to rise steeply with increasing age. For persons in the age range 47 years and over it came to 1,456 per thousand persons which was more than twice at ages 7-16 years.

7.35. The number of days of sickness for females, as is apparent from Table (7.19), does not seem to differ significantly between the two activity classes at ages 17 years and above, though it appears to be considerably smaller for those not gainfully employed at ages 7-16 years.

7.36. For males, on the other hand, though the difference between the two classes was small at ages 7-16 years, the number of days of sickness appears to have been greater for the class not gainfully employed at higher ages and it also tended to increase more rapidly with advancing age relative to those with gainful employment.

TABLE (7.19): NUMBER OF DAYS OF SICKNESS PER 1000 PERSONS IN A MONTH BY ACTIVITY CLASS, SEX AND AGE: ALL-INDIA RURAL

sex	age (years)	activity class		all classes	number of sample persons
		gainfully employed	others		
(1)	(2)	(3)	(4)	(5)	(6)
1. male	0 — 6		1,295	1,295	4,552
2. ,,	7—16	757	670	699	5,127
3. ,,	17—46	1,084	1,634	1,107	8,653
4. ,,	47—above	1,421	2,471	1,596	2,662
5. ,,	all ages	1,148	1,083	1,118	20,994
6. female	0 — 6		1,027	1,027	4,357
7. ,,	7—16	967	526	611	4,816
8. ,,	17—46	1,011	1,085	1,045	8,604
9. ,,	47—above	1,247	1,354	1,319	2,707
10. ,,	all ages	1,093	926	977	20,484
11. total	0 — 6		1,163	1,163	8,909
12. ,,	7—16	831	593	656	9,943
13. ,,	17—46	1,058	1,131	1,077	17,257
14. ,,	47—above	1,371	1,571	1,456	5,369
15. ,,	all ages	1,135	982	1,049	41,478

7.37. The mean monthly days of incapacity accompanied by abstention from normal avocations based on Social Survey data in England and Wales during 1944-47 were found to be 1,132 and 1,006[5] respectively for males and females at ages 15 years and over for illness reported for the month preceding the date of enquiry. At ages 17 years and over the number of days of sickness in the rural sector of India came to 1,222 and 1,112 respectively. The differences between the two sets of figures appear to be rather small.

7.38. Table (7.20) shows the prevalence rate by source of drinking water for some broad groups of causes. The number in the sample for some of the sources was not sufficiently large. However, the prevalence rate came to be highest among the group using tanks and ponds and lowest for those using municipal tap water for drinking purpose.

TABLE (7.20): MONTHLY PREVALENCE RATE (NUMBER OF SPELLS OF SICKNESS PER 1000 PERSONS IN A MONTH) BY SOURCE OF DRINKING WATER AND CAUSE: ALL-INDIA RURAL

cause of sickness	source of drinking water						
	tanks and ponds	wells	tube-wells	rivers, lakes and springs	muni-cipal tap water	other sour-ces	all sour-ces[6]
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. malaria	19.4	21.2	24.2	17.1	16.1	2.0	20.8
2. kalaazar, typhoid and other fevers diagnosed and fevers undiagnosed	26.5	18.3	16.9	27.3	—	40.0	21.0
3. other specified causes	20.4	8.8	13.8	7.3	—	11.3	10.6
4. accidents, old age and other causes diagnosed nd causes undiagnosed	13.8	13.6	16.4	17.8	43.6	32.6	14.2
5. all cases	80.1	61.9	71.3	69.5	59.7	85.9	66.6
(number of sample persons)	(2,463)	(14,465)	(698)	(2,464)	(84)	(320)	(21,431)

[6]Includes persons for whom no source was recorded.

[5]Percy stock: *Studies in Medical and Population Subjects, No. 2, Sickness in the Population of England and Wales in 1944-47* (1949), General, Register Office, p. 21.

7.39. Table (7.21) gives certain summary measures for broad age groups for the urban sector.

TABLE (7.21): MONTHLY INCEPTION RATE, AVERAGE DURATION (WEEKS) PER SPELL ENDING DURING A MONTH AND NUMBER OF DAYS OF SICKNESS PER 1000 PERSONS IN A MONTH BY AGE : ALL-INDIA URBAN

age-groups	incep-tion rate	average duration per spell	number of day of sickness	number of sample persons	number of sample cases ending during a month
(1)	(2)	(3)	(4)	(5)	(6)
1. 0—6	62.6	1.97	1,215	1,494	82
2. 7—16	25.5	1.80	473	1,797	28
3. 17—46	48.9	2.21	949	3,525	138
4. 47—above	44.5	3.42	1,562	963	39
5. all ages	45.6	2.25	966	7,779	287

Appendix One

SAMPLING ERRORS

A1.1. The estimates of the standard errors of birth, marriage, death and monthly prevalence rates are presented in the following table along with the respective rates for different rural zones.

TABLE (A1.1): BIRTH, MARRIAGE, DEATH AND MONTHLY PREVALENCE RATES AND ESTIMATED STANDARD ERRORS FOR THE SAME BY RURAL ZONE

rural zone	birth rate	s.e. (±)	marriage rate	s.e. (±)	death rate	s.e. (±)	prevalence rate	s.e. (±)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. north	34.6	2.3	10.8	1.7	22.5	3.7	69.8	14.2
2. east	38.5	2.5	7.6	0.8	17.6	2.3	86.3	10.2
3. south	22.1	2.1	4.8	0.9	11.7	1.9	44.9	4.1
4. west	33.9	2.1	4.2	1.2	12.3	1.3	31.7	3.2
5. central	41.9	2.5	6.8	1.3	23.9	2.4	70.8	7.2
6. north-west	37.7	3.0	6.1	1.1	14.5	1.8	60.4	7.9
7. all-India rural	34.6	1.0	7.1	0.5	17.6	1.1	64.8	4.4

Appendix Two

COMPUTATION OF INFANT MORTALITY RATE

A2.1. Infants born during the year preceding the day of survey were exposed for varying periods to the risk of death up to the time of enquiry. The proportion of deaths actually occurring to infants to the total expected till they reached one year of age would depend upon the interval between the time of birth and the time of survey. The number of deaths among a group of infants is not, however, uniformly distributed over the age interval 0-1 year but falls sharply with the passage of time, particularly during the earlier part of the infant's life. The appropriate exposed-to-risk for calculating the infant mortality rate could not, therefore, be obtained on the basis of average length of exposure for infants born during different periods within the reference year.

A2.2. The probability of dying at ages 0-3, 4-12, 13-15 and 26-51 weeks was calculated separately on the assumption of uniform distribution of deaths within these age intervals. The infant mortality rate was then taken to be equal to the sum of these probabilities.

A2.3. Let q_0^{0-3}, q_0^{4-12}, q_0^{13-25} and q_0^{26-51} be the probabilities of dying at ages 0-3, 4-12, 13-25 and 26-51 weeks respectively.

$$q_0^k = \frac{\theta_0^k}{E_0^k}, \; k = \text{0-3, 4-12, 13-25 and 26-51 weeks,}$$

where θ_0^k = deaths during the age interval k and $E_0^k = \frac{1}{2} B^k + B^{k'}$, B^k being the births during the interval k prior to the time of survey and $B^{k'}$, all births occurring earlier during the reference year. Then the infant mortality rate

$$q_0 = q_0^{0-3} + q_0^{4-12} + q_0^{13-25} + q_0^{26-51} .$$

Appendix Three

VITAL RATES FROM SUBSEQUENT ROUNDS

A3.1. Data on current vital events as discussed in previous chapters in regard to the seventh round were also collected during subsequent rounds. But the sample size prior to the fourteenth was usually much smaller and only certain summary estimates are presented in this appendix. While the sample design for the eighth round was the same as in the seventh, it was different during ninth to thirteenth rounds, the enquiry being also confined only to the urban areas in the thirteenth. Very broadly, districts or district groups within the same natural division formed the rural strata and sample villages were selected with replacement from these strata with probability proportional to population/area and sample households were selected from sample villages systematically. In the thirteenth round, the urban areas were stratified according to population size as also geographical region and sample blocks were selected from these strata and sample households from the sample blocks systematically.

A3.2. The number of sample villages, blocks and households for different rounds covered in this appendix are given in Table (A3.1).

A3.3. The birth, marriage, death and monthly prevalence rates for the rural areas for eighth to tenth rounds together with corresponding estimates for the seventh round are presented in Table (A3.2).

A3.4. As is apparent from the table, the birth and death rates came to be still lower in the eighth and ninth rounds than in the seventh. Though in the tenth round, the estimate of the birth rate was somewhat higher, that of the death rate was much lower than in the seventh. The sample variation in most of the cases was also considerably higher, the sample size in eighth to tenth rounds, particularly in the ninth and tenth, being also very much smaller than in the seventh round.

A3.5. While the marriage rate came to be higher in ninth and tenth rounds, the monthly prevalence rate of sickness was lower in all the subsequent rounds than

in the seventh. Apart from the question of sample size, the measures of sickness were subject also to seasonal variation, the reference period being 30 days preceding the day of enquiry.

A3.6. The fall in the number of births and deaths in going back over the year as noted for the seventh round was also observed for eighth to tenth rounds, but there were larger fluctuations, the data being based on considerably smaller samples.

TABLE (A3.1): NUMBER OF SAMPLE UNITS COVERED IN DIFFERENT NSS ROUNDS

round	survey period	number of sample villages/ blocks	number of sample house-holds
(1)	(2)	(3)	(4)
rural:			
1. eighth	July 1954—March 1955	1,424	3,706
2. ninth	May 1955—November 1955	1,624	1,616
3. tenth	December 1955—May 1956	1,624	1,616
4. twelfth	February 1957—June 1957	1,848	5,544
urban:			
5. thirteenth	September 1957—May 1958	1,168	11,872

TABLE (A3.2): BIRTH, MARRIAGE, DEATH AND MONTHLY PREVALENCE RATES OF SICKNESS, FROM TWO INDEPENDENT SAMPLES FOR DIFFERENT ROUNDS: ALL-INDIA RURAL

rate	sample	round			
		seventh	eighth	ninth	tenth
(1)	(2)	(3)	(4)	(5)	(6)
1. birth	1	34.8	27.2	33.7	36.7
2. ,,	2	34.3	22.8	27.7	37.0
3. ,,	combined	34.6	25.0	30.6	36.9
4. marriage	1	7.0	6.9	8.6	8.7
5. ,,	2	7.3	7.0	7.5	8.7
6. ,,	combined	7.1	7.0	8.1	8.7
7. death	1	18.0	12.2	11.8	11.3
8. ,,	2	17.2	10.7	13.1	15.4
9. ,,	combined	17.6	11.4	12.5	13.4
10. prevalence	1	63.1	49.4	57.6	41.9
11. ,,	2	66.5	45.9	45.5	43.0
12. ,,	combined	64.8	47.6	51.4	42.5

A3.7. During the twelfth and thirteenth rounds, an additional item 'duration during month (days)' was included in the schedule in the sickness sub-block. The definition of sickness was also changed so that a person was considered to be sick only if he abstained from normal activities because of illness, the question of restricted diet being not taken into account as in seventh to tenth rounds. From the data collected during the twelfth and thirteenth rounds, the distribution of spells of sickness by number of days of sickness as well as average duration of sickness during the reference month could be directly calculated.

A3.8. The percentage distribution of all spells of sickness within the reference month by number of days of sickness is given in Table (A3.3), the monthly prevalence rates in the all-India rural and urban sectors being 57 and 42 respectively per 1000 persons as estimated from the twelfth and thirteenth rounds.

TABLE (A3.3) : PERCENTAGE DISTRIBUTION OF THE NUMBER OF SPELLS OF SICKNESS IN A MONTH BY DURATION (DAYS) DURING MONTH AND SEX : ALL-INDIA RURAL AND URBAN

(NSS twelfth and thirteenth rounds)

duration (days)	twelfth round rural			thirteenth round urban		
	male	female	total	male	female	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. 1	2.47	3.58	2.99	2.87	2.00	2.45
2. 2	4.95	3.48	4.27	7.98	3.43	5.81
3. 3	7.44	10.08	8.67	7.52	7.34	7.43
4. 4	9.47	10.18	9.80	8.09	8.71	8.39
5. 5	6.60	7.05	6.81	5.07	6.65	5.82
6. 6	5.99	5.69	5.85	4.53	4.78	4.65
7. 7	13.96	15.15	14.51	13.48	12.42	12.97
8. 8—10	13.58	11.40	12.56	9.93	10.51	10.21
9. 11—14	5.07	6.22	5.61	6.18	8.21	7.15
10. 15—21	17.13	13.00	15.20	15.65	13.26	14.51
11. 22—30	13.34	14.17	13.73	18.70	22.69	20.61
12. all durations	100.00	100.00	100.00	100.00	100.00	100.00

A3.9. As duration increased from 1 to 4 days, there was an increase in the number of spells of sickness, there being a steady fall at longer durations, though for duration of 7 days, the proportion came to be maximum, presumably due to bias in reporting. The trend in the proportions with increasing duration was the same in both the rounds and for both males and females. At durations of 11 to 30 days the

proprotion was consistently low and the number of spells of sickness reported to have lasted for 1 to 10 days constituted 65 per cent of all spells of sickness in the twelfth round and 58 per cent in the thirteenth.

A3.10. Table (A3.4) shows the number of days of sickness per 1000 persons in a month as obtained for different size classes of towns from the thirteenth round. The estimates came to be substantially lower in the big cities for both males and females consistently for both the samples.

TABLE (A3.4): NUMBER OF DAYS OF SICKNESS PER 1000 PERSONS IN A MONTH BY SIZE CLASS OF TOWNS AND SEX, FROM TWO INDEPENDENT SAMPLES: ALL-INDIA URBAN

(NSS thirteenth round)

size class of towns	sample	male	female	total
(1)	(2)	(3)	(4)	(5)
1. below 300,000	1	584	573	579
2. ,,	2	487	523	504
3. ,,	combined	535	548	541
4. 300,000—above	1	539	840	680
5. ,,	2	401	604	495
6. ,,	combined	468	720	586
7. big cities[1]	1	285	302	292
8. ,,	2	324	388	351
9. ,,	combined	304	345	322

[1]Bombay, Calcutta, Delhi and Madras.

A3.11. Tables (A3.5) and (A3.6) show that the number of days of sickness was larger for not gainfully employed persons both in the rural and the urban areas.

TABLE (A3.5) : NUMBER OF DAYS OF SICKNESS PER 1000 PERSONS IN A MONTH BY ACTIVITY CLASS, SEX AND AGE, : ALL-INDIA RURAL

(NSS twelfth round)

sex	age (years)	activity class		all classes
		gainfully employed	others	
(1)	(2)	(3)	(4)	(5)
1. male	0 — 6		561	561
2. ,,	7—16	360	552	498
3. ,,	17—46	672	1,199	750
4. ,,	47—above	632	1,220	790
5. ,,	all ages	621	685	652
6. female	0 — 6		543	543
7. ,,	7—16	405	334	344
8. ,,	17—46	398	833	676
9. ,,	47—above	461	743	679
10. ,,	all ages	412	617	574
11. total	0 — 6		552	552
12. ,,	7—16	374	442	427
13. ,,	17—46	590	901	713
14. ,,	47—above	590	864	734
15. ,,	all ages	560	644	613

TABLE (A3.6): NUMBER OF DAYS OF SICKNESS PER 1000 PERSONS IN A MONTH BY ACTIVITY CLASS, SEX, AND AGE: ALL-INDIA URBAN

(NSS thirteenth round)

sex	age (years)	activity class		all classes
		gainfully employed	others	
(1)	(2)	(3)	(4)	(5)
1. male	0 — 6		700	700
2. ,,	7—16	198	231	227
3. ,,	17—46	362	680	413
4. ,,	47—above	743	1,478	961
5. ,,	all ages	420	568	496
6. female	0 — 6		607	607
7. ,,	7—16	548	303	315
8. ,,	17—46	438	594	563
9. ,,	47—above	634	876	836
10. ,,	all ages	483	561	552
11. total	0 — 6		655	655
12. ,,	7—16	290	267	269
13. ,,	17—46	375	610	483
14. ,,	47—above	724	1,042	900
15. ,,	all ages	431	564	522

Appendix Four

PROCEDURE OF ESTIMATION

A4.1 In the seventh and eighth rounds when sampling was three-stage, the total for any characteristic x for stratum i in the rural areas was estimated from the jth tehsil ($j=1, 2$) as

$$\hat{X}_{ij} = \frac{1}{\pi_{ij}} \frac{1}{n_{ij}} \sum_{k=1}^{n_{ij}} \frac{1}{\pi_{ijk}} \frac{M_{ijk}}{m_{ijk}} \sum_{l=1}^{m_{ijk}} X_{ijkl},$$

and the total for all-India rural as also for any rural zone was estimated as

$$\hat{X} = \frac{1}{2} \sum_{i} \sum_{j=1}^{2} \hat{X}_{ij},$$

the summation i extending over corresponding strata. In the above notation,

X_{ijkl} = total of the observations for the lth household in the kth village in the jth tehsil in the ith stratum,

M_{ijk} = total number of households in the kth village in the jth tehsil in the ith stratum,

m_{ijk} = number of sample households in the kth village in the jth tehsil in the ith stratum,

π_{ijk} = probability of selection of the kth village in the jth tehsil in the ith stratum,

n_{ij} = number of sample villages in the jth tehsil in the ith stratum,

π_{ij} = probability of selection of the jth tehsil in the ith straum.

The ratio of the totals for two characteristics x and z was estimated as

$$\hat{R} = \frac{\hat{X}}{\hat{Z}}.$$

A4.2. For the urban sector in the seventh round, a similar procedure was followed and the estimates for all-India (rural and urban combined) totals were obtained by adding the estimates for the rural and the urban areas. The ratio of the totals for two characteristics x and z for all-India was estimated as

$$\hat{R} = \frac{\hat{X}' + \hat{X}''}{\hat{Z}' + \hat{Z}''},$$

$\hat{X}'$ and $\hat{Z}'$ representing the estimates for the rural areas, and $\hat{X}''$ and $\hat{Z}''$, those for the urban areas.

A4.3. For the ninth to twelfth rounds when the sampling was two-stage, the total for all-India rural was estimated as

$$\hat{X} = \sum_i \frac{1}{n_i} \sum_{j=1}^{n_i} \frac{1}{\pi_{ij}} \frac{M_{ij}}{m_{ij}} \sum_{k=1}^{m_{ij}} X_{ijk},$$

where, X_{ijk} = total of the observations for the kth household in the jth village in the ith stratum,

M_{ij} = total number of households in the jth village in the ith stratum,

m_{ij} = number of sample households in the jth village in the ith stratum,

π_{ij} = probability of selection of the jth village in the ith stratum,

n_i = number of sample villages in the ith stratum.

A4.4. For the thirteenth round, with the same notation as above, the estimate for the urban areas was obtained as

$$\hat{X} = \sum_i \frac{N_i}{n_i} \sum_{j=1}^{n_i} \frac{M_{ij}}{m_{ij}} \sum_{k=1}^{m_{ij}} X_{ijk},$$

'j' in this case standing for sample block and N_i representing the total number of blocks and n_i the number of sample blocks in the ith stratum.

A4.5. If $\hat{X}_{ij}$ and $\hat{Z}_{ij}$ represent the estimates of the totals for the ith stratum obtained from the jth tehsil (j=1, 2) for characteristics x and z respectively, the variance of $\hat{R} = \frac{\hat{X}}{\hat{Z}}$ for all-India rural or for any rural zone in the seventh round was estimated as

$$v(\hat{R}) = \frac{1}{4\hat{Z}^2} \sum_i [(\hat{X}_{i1}-\hat{X}_{i2})^2 - 2\hat{R}(\hat{X}_{i1}-\hat{X}_{i2})(\hat{Z}_{i1}-\hat{Z}_{i2}) + \hat{R}^2(\hat{Z}_{i1}-\hat{Z}_{i2})^2],$$

the summation i extending over corresponding strata.