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An Estimate of Number of Marriages in India

Introduction

IN absence of compulsory registration of marriages, there is no source of information which provides data on number of women marrying in India. In this paper, an attempt has been made to estimate the annual number of marriages among women of reproductive ages (15-44 years) in India on the basis of proportion of women married in different age-groups in two consecutive censuses. The method is extended to provide estimates for post-censal periods also.

Method

Annual number of marriages (M) among women of reproductive age group can be estimated as sum of:

- (a) Increase in number of currently married women in the year (I).
- (b) Number of marriages dissolved during the year on account of death of wife or husband or both (D).
- (c) Number of currently married women leaving reproductive age group of 15-44 years on account of ageing (A). The balancing equation is:-

$$M = I + D + A$$

No account is taken of divorces and migration and marriages below the age of 15 years as their combined effect is assumed to be marginal at the country level.

Estimation of Proportion of Women Currently Married. Proportions of women currently married in 5-year age groups 15- 19, 20-24 , . . . , 40-44 are worked out using unsmoothed census age data for women and currently married women according to 1971 and 1981 Censuses. The proportions of women married are then applied to smoothed age distributions

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of women for these censuses to obtain the number of married women in each 5-years age-group. These numbers are adjusted, on pro-rata basis, so that the total number of married women of all ages as enumerated in 1971 and 1981 Censuses remain unchanged. Adjusted proportions are given in Table 1. These are used alongwith the smoothed age distributions for estimating number of women currently married in different age groups as of 1971 and 1981 Censuses.

TABLE 1 : PROPORTIONS OF WOMEN CURRENTLY MARRIED BY AGE-GROUPS, 1971-91

<i>Age-Group</i>	<i>1971*</i>	<i>1981*</i>	<i>1986**</i>	<i>1991**</i>
15-19	55.61	43.84	37.96	32.07
20-24	89.12	85.17	83.20	81.22
25-29	95.25	95.14	95.09	95.03
30-34	94.35	95.63	95.95	96.27
35-39	91.61	93.97	94.56	95.15
40-44	84.45	88.57	89.60	90.63
15-44	83.14	80.50	78.58	77.19

Notes : * Estimates of 1971 and 1981 are based on proportions as per 1971 and 1981 Censuses, but adjusted for smoothening of age data etc. ** Estimates for 1986 and 1991 are arrived at by extrapolation of 1971 and 1981 proportions.

The proportions of women married in different 5-year age groups for 1986 and 1991 were estimated on the basis of linear extrapolation for the age-groups 15-19, 20-24 and 25-29, which had shown decline in the proportion married during 1971-81. In the higher age-groups, which indicated an increase in the proportion married, the linear extrapolation was done by assuming (rather arbitrarily) that after 1981, the proportions married would increase annually at half of the rates obtained during 1971 and 1981. Such proportions are given in Table 1. The proportions of married women were then applied to age-distributions of women in the reproductive age groups given by the Expert Committee (1985) for obtaining the estimates of numbers of women currently married as on 1st March of 1971, 1981, 1986 and 1991. Annual average increase (*I*) in numbers of married women is then obtained for the periods 1971-81, 1981-86 and 1986-91.

Estimation of Number of Marriages Dissolved on Account of Death (D). The number of women surviving in the marital state are worked out by applying suitable joint survival ratios. While estimating joint survival ratios, it is assumed that husbands are older than wives by five years. It is further assumed that survival ratios depend only on ages and are independent of marital status of men and women. For the period 1971-81 joint survival ratios were estimated on the basis of U. N. South Asian Model Life Table (United Nations, 1982) and for the periods 1981-86 and 1986-91 the survival ratios were estimated from age-wise population projections of the Expert Committee (1985). The Annual Joint Survival Ratios (*S*) were estimated from five yearly survival ratios (*P*) by using the formula

$$S = (P)^{1/5}$$

The Annual Joint Survival Ratios are applied to estimated number of married women as on mid-points of periods 1971-81 (as of 1st March, 1976), 1981-86 (as on 1st September, 1983) and 1986-91 (as on 1st September, 1988) to calculate the total number of survivors among the married women during the corresponding years. The annual number of marriages dissolved on account of death (D) are then worked out as the difference between the total number of married women on these dates and the number of survivors. Annual number of deaths are, however, adjusted for deaths among couples leaving the reproductive age group, i.e. among women of age 44 to 45 years. No adjustment is made on account of dissolutions of marriages during the year of marriage itself since magnitude of such marriages, which can be estimated as

$$\frac{M \times (1-S)^{1/2}}{S^{1/2}}$$

is very small being of the order of only 0.02 to 0.03 millions (where S is average Joint Survival Ratio for age group 15- 29 years, which accounts for most of the marriages among women of reproductive ages).

Attrition due to Ageing. Average number of currently married women aged 44-45 years who will be leaving the reproductive age group within the span of a year are worked out by linear inter-polation between the number of married women in age groups 40-44 and 45-49 (A).

Estimates of Number of Marriages

During the period 1971 -81. Table 2 gives estimated number of currently married women in different age groups in 1971, 1981 and 1976 alongwith estimated joint survival ratios.

TABLE 2 : NUMBER OF MARRIED COUPLES IN THE YEARS 1971, 1981 AND 1976 (millions)

Age Group	1st March		Annual Joint Survival Ratios	
	1971	1981	1976 (2+3)/2 (Wi)	(Si)
(1)	(2)	(3)	(4)	(5)
15-19	14.46	14.54	14.50	0.9942
20-24	20.10	24.26	22.18	0.9931
25-29	19.02	23.85	21.44	0.9917
30-34	16.52	20.78	18.65	0.9893
35-39	13.72	17.81	15.76	0.9858
40-44	10.49	14.57	12.53	0.9800
45-49	7.97	11.68	9.82	
15-44	94.31	115.82	105.062	

$$\text{Total number of survivors} = \sum S_i W_i = 103.97$$

$$\text{Number of deaths among married couples leaving the reproductive age group} = 2.29(1 - 0.98) = 0.05$$

$$\text{Number of deaths among married couples} = 105.06 - 103.97 - 0.05 = 1.04 \quad (D)$$

Average number of married women in the single year age group 44-45 years were worked out linearly between couples in 42-43 and 47-48 single-year age-group, as shown in Table 3.

TABLE 3 : AVERAGE NUMBER OF MARRIED WOMEN IN 42-48 AGE GROUP BY SINGLE AGE GROUP

<i>Age Group</i>	<i>Average number of married women (in millions)</i>
42-43	2.51
43-44	2.40
44-45	2.29
45-46	2.18
46-47	2.07
47-48	1.96

$$\text{Average number of married couples leaving the reproductive age group (15-44)} = \underline{229} \quad (A)$$

$$\begin{aligned} \text{Average annual increase in married couples during 1971-81} &= \frac{115.82 - 94.31}{10} \\ &= 2.15 \quad (I) \end{aligned}$$

$$\begin{aligned} \text{Total number of marriages in years during 1971-81 are estimated at} \\ &= D + A + I \\ &= 1.04 + 2.29 + 2.15 = 5.58 \text{ millions} \end{aligned}$$

Estimated Annual Number of Marriages during 1981-86. Estimated number of deaths are arrived at for the period 1971-81, as shown in Table 4.

TABLE 4 : ESTIMATED NUMBER OF DEATHS FOR THE PERIOD 1981-86
(millions)

Age Group	Number of married couples as on			Annual Joint Survival Rates (Si)
	1st March 1981	1st March 1986	1st Sept., 1983 (2)+(3) 2 (Wi)	
1	2	3	4	5
15-19	14.54	14.84	14.69	.9951
20-24	24.26	27.21	25.71	.9942
25-29	23.85	26.64	25.25	.9931
30-34	20.78	23.65	22.22	.9912
35-39	17.81	20.20	19.00	.9883
40-44	14.57	16.63	15.60	.9836
45-9	11.68	13.46	12.57	
15-44	115.81	129.17	122.49	

$$\text{Total number of survivors} = \sum S_i W_i = 121.42$$

$$\begin{aligned} \text{Number of deaths among married couples} \\ \text{leaving the reproductive age groups} &= 2.88 \times 0.0164 = 0.05 \end{aligned}$$

$$\begin{aligned} \text{Number of deaths among married} \\ \text{couples} &= 122.49 - 121.42 - 0.05 = 1.02 \quad (D) \end{aligned}$$

Average number of married couples in the single year age group 44-45 years are worked out linearly between the couples in 42-43 and 47-48 age groups and presented in Table 5.

TABLE 5 : AVERAGE NUMBER OF MARRIED COUPLES IN AGE GROUP 42-48 BY SINGLE AGE-GROUP

Age Group	Average number of married couples (in millions)
42-43	3.12
43-44	3.00
44-45	2.88
45-46	2.76
46-47	2.64
47-48	2.51

Average number of married couples leaving the reproductive age group (15-44 years)=2.88 (A)
 Annual increase in married couples during 1981-86

$$= \frac{129.17-115.81}{5} = 2.67 \quad (I)$$

The total number of marriages in a year during 1981-86 is estimated at:

$$= (D) + (A) + (I) \\ = 1.02 + 2.88 + 2.67 = 6.57$$

Estimated Annual Number of Marriages during 1986-91. Estimated number of deaths are worked out on similar lines as for the period 1981-86 and are presented in Table 6.

TABLE 6 : ESTIMATED NUMBER OF DEATHS DURING 1986-91

Age Group	1 st March 1986	1st March 1991	(millions)	
			1st Sept., 1988 = $\frac{(2) + (3)}{2}$ (Wi)	Annual Joint Survival Ratios (Si)
I	2	3	4	5
15-19	KM	14.06	14.45	.9960
20-24	27.21	31.39	29.30	.9953
25-29	26.64	30.68	28.66	.9943
30-34	23.65	26.67	25.13	.9926
35-39	20.20	23.12	21.66	.9899
40-44	16.63	19.01	17.82	.9854
45-49	13.46	15.46	14.46	—
15-44	129.17	144.87	137.02	

Total number of survivors = $\sum Si Wi = 136.00$

Number of deaths among married couples leaving the reproductive age group
 = $3.30 \times 0.0146 = 0.05$

Number of deaths among married couples
 = $137.02 - 136.00 - 0.05 = 0.97 \quad (D)$

Average number of married couples in the single year age-group 44-45 years were worked out linearly from the couples in 42-43 and 47-48 age groups, as shown in Table 7.

TABLE 7 : AVERAGE NUMBER OF MARRIED COUPLES IN AGE GROUP 42-48 BY SINGLE AGE GROUP

<i>Age Group</i>	<i>Average number of married couples (in million)</i>
42-43	3.56
43-44	3.43
44-45	3.30
45-46	3.16
46-47	3.03
47-48	2.89
42-48	3.30

Annual Increase in married couples = $(144.87-129.17)/5 = 3.14$ (I)

The total number of marriages in a year during 1986-91 are estimated at:

$$= (D) + (A) + (I) = 0.97 + 3.30 + 3.14 = 7.41 \text{ millions}$$

Number of Marriages among Women Aged 15-44 Years. Annual number of marriages is estimated to be around 5.48 millions during 1971-81, 6.57 millions during 1981-86 and 7.41 millions during 1986-91. By linear interpolation, the estimate works out to be 5.48 millions during 1976-77, 6.10 millions during 1980-81, 6.91 millions during 1985-86 and 7.75 millions during 1990-91.

Marriage Rates. Marriage rates presented in Table 8 show that the rate per 1000 population was 8.89 during 1971-81 and 9.09 during 1981-86 and it rose to 9.27 during 1986-91.

Marriage rate per 1000 women in the reproductive age span worked out to 42.6 during 1971-81 as well as 1981-86 but it declined slightly to 42.1 during 1986-91.

Summary

Annual number of marriages among women of reproductive age span of 15-44 years has been estimated as a sum of

- (i) increase in number of currently married women in age-group of 15-44 years, (ii) number of marriages dissolved on account of death of either spouse, and (iii) number of married women aged 44 years (but less than 45 years), who cross the reproductive age-span.

TABLE 8 : AVERAGE NUMBER OF MARRIAGES (ANNUAL) AND MARRIAGE RATES — INDIA,
DURING 1971-91

(millions)

	1971-81	1981-86	1986-92
1 Total Population (Mid-point)	616.15*	723.12**	799.16**
2 Number of Women (15-44 Years) (Mid-point)	128.65*	154.12**	176.03**
3 Marriage Rates			
(a) Average number of yearly marriages	5.48	6.57	7.41
(b) Average number of yearly marriages per 1000 population	8.89	9.09	9.27
(c) Average number of yearly marriages per 1000 women	42.6	42.6	42.1

Note: * Based on census figures for 1971 and 1981. 1981 census figures include projected figures for Assam where census was not undertaken.
** Based on 1981 Census figures and population projections of the Expert Committee (1985).

Increase in the number of currently married women during 5-year (or 10-year) period is worked out by applying proportions of women married in 5 year age groups to smoothed (or projected) age distributions of women at the beginning and at the end of the period. Number of marriages dissolved on account of mortality of either spouse is estimated by application of suitable yearly joint survival ratios to numbers of married women, classified by 5-year age-groups. The number of women aged 44 years is estimated by linear interpolation between numbers of married women in age groups of 40-44 years and 45-49 years. Annual number of marriages among women aged 15-44 years is estimated to be 5.48 million in 1971-81, 6.57 million in 1981-1986 and 7.41 million in 1986-91. The number of marriages works out to 6.10 million in 1980-81, 6.91 million in 1985-86 and 7.75 million in 1990-91. Marriage rate per 1000 women of ages 15-44 years is estimated to be 42.6 in 1971-81, as well as in 1981-86 and 42.1 in 1986-91.

References

1. Registrar General of India, 1988, *Report of the Expert Committee on the Population Projections*, Occasional Papers No. 4 of 1988.
2. United Nations, 1982, *Model Life Tables for Developing Countries*, New York.