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Net Nuptiality Tables for Males and Females of India and some of its Selected States (2011)

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ABSTRACT

This paper attempts to study the nuptiality pattern of India and some of the selected states which includes- Assam, Kerala, Maharashtra, Punjab, Uttar-Pradesh and West Bengal for 2011 for males and females separately. To examine the marriage probabilities and expectancy of single life, we construct the Net Nuptiality Table for males and females of India and the selected states for 2011 using Census data of 2011 and abridged life table 2009-13 from Sample Registration System. Just like Life table, Nuptiality table has also been designed in the same way but unlike the analysis of population dynamics in a life table, Net Nuptiality Table examines the entry into marital union and the composition of population under marital status under given mortality rates.

INTRODUCTION

Nuptiality can be defined as the subject of formation and the frequency, characteristics and dissolution of marriage unions (Nyarang'O, 1985). The study of Nuptiality in any population is of immense importance due to its strong association with social, economic and demographic change in the population (Pandey and Nath, 2016). The pattern of shifting of population from the stage of being single to being married by age and sex are of great demographic importance because of their significant role in determining the population composition and growth through family formation and fertility (Afzal and Iftikhar, 1974). Nuptiality can be studied through a cohort of single females or males. The analysis then consists of observing the change in the proportions of single people over time as the cohort comes to get married (Fourth Population and Housing Census, Rwanda, 2012). In India, marriage is the only social institution, which allows reproduction, family formation and leads to kinship organization to the human being (Paul,2005). The trend in the number of marriages has important implications for housing programmes, community planning and for the enterprises like insurance companies who are concerned with providing health and life insurance of the married couples (Afzal and Iftikhar, 1974).

Though fertility and mortality had been given much attention, a growing awareness of the importance of nuptiality as a source of variation in birth rate has led to a heightened interest in this aspect of demographic behavior (Bogue, 1969). With reference to the excellent work of Agarwala (1962) in the field of marriage for the Indian population, it is proposed that construction and analysis of nuptiality tables over different periods would constitute a definite advancement in the study of Indian nuptiality (Malaker, 1973). There are many statistical measures to study the marriage pattern but nuptiality table is the most concentrated tool.

There are mainly two types of nuptiality tables- (1) the gross nuptiality table and (2) the net nuptiality table, a type of double-decrement table. A gross nuptiality table consists of computing the age-specific probabilities of marrying for single males or females and decreasing the population by these rates to obtain the survivors that is, those remaining single at each age (Shryock et.al., 1980). When mortality is taken as an additional form of attrition force to marriage (two decrement factors) the table is referred to as Net Nuptiality Table (NNT). Thus it is a Multiple Decrement Table (Nyarang'O, 1985); more specifically it can be referred to as a Double Decrement Table. For study of reproduction, net tables are extremely useful as a mathematical model although gross tables are to be preferred for purposes of comparing nuptiality among several populations as differences in net, tables may be due to differences either in mortality or in nuptiality or to an unknown mixture of both (Malaker, 1973). A comparative study of nuptiality tables over different periods may help us to determine the extent to which marriage rates and hence probabilities of marrying had been fluctuating over time; how the mean ages at marriage had been changing over

time; to what extent the proportions of men and women who ever marry were fluctuating; and the average number of years a single life was expected to live before marriage or death and its trend over time (Chauhan, 2017).

LITERATURE REVIEW

The Nuptiality Table is among the oldest and the most refined devices used to study marriage timing and incidence patterns as noted by several researchers (Kumar, 1967; Malaker ,1978). Its historical development and formulae date back to Kuczyski's 1938 works (Malaker, 1978). Though many demographers have contributed in the significant development of the technique of constructing nuptiality tables, in this study we have reviewed works of Malaker (1973), Malaker (1978), Afzal, et.al. (1974), Nyarang'O, M.(1985) , Pandey et.al.(2018) among other several works. Afzal, et.al. (1974) constructed Net Nuptiality Table (NNT) for males and females of Pakistan which revealed that marriage probabilities are greater for females in younger ages but the reverse occurs at older ages. Afzal, points out that errors of age reporting and coverage limit the reliability of estimates from NNT. Nyarang'O, M.(1985) analysed the proportions of single persons by age and sex from Kenya Population Censuses 1969 and 1979 (macro) and 1979 (regional) to estimate Nuptiality. Though much work has been done in the field of Nuptiality in different regions, Indian Nuptiality gained momentum with the contribution of works done by Agarwal(1962), Malaker (1973 and 1978) including other works. Malaker (1973) constructed abridged nuptiality tables for the single population of India for the three consecutive decades 1901- 1911, 1911-1921 and 1921-1931. Pandey et.al.(2018) constructed nuptiality tables for the hilly rural population of Uttarakhand: 1931-2000. In this paper we have attempted to construct the Net Nuptiality Table for males and females of India and some of the selected states- Assam, Kerala, Maharashtra, Punjab, Uttar-Pradesh and West-Bengal using 2011 Census data. We have analysed the marriage probabilities and the average expected years to marriage at each age.

OBJECTIVES

a) To construct net nuptiality tables for India and its major states- Assam, Kerala, Maharashtra, Punjab, Uttar-Pradesh and West Bengal using 2011 census data for males and females separately.
b) To calculate the marriage probabilities of males and females of India and the above selected states using 2011 Census data.
c) To calculate the average expectancy of remaining single before marriage or death of males and females of India and the above selected states of 2011

DATA SOURCE AND METHODOLOGY

Marital status constitutes a demographic characteristic which involves biological, social, economic, legal, cultural and in many cases religious aspects.(U.N.-ECA, 1983). Marital status is commonly divided into four categories (single, married, widowed, separated/divorced). Demographers prefer to work under two categories; the never-married (single) and the ever-married (married, widowed, divorced and separated). Marital status is a net function of Nuptiality, widowhood, divorce and separation.

For constructing Net Nuptiality Table, single age populations of males and females were taken from census data of India (Table:C-13, 2011), abridged life table has been obtained from Sample Registration System based life table 2009-2013 centered at 2011. We have accumulated data on marital status by age and sex from census data of India (Table:C-2, 2011) and also data on single year marital status by age and sex were acquired from Open Government Data (OGD) Platform India. (Table:C-2A,2011). Due to irregularities in the data of Uttar-Pradesh, exponential smoothing has been used to smooth the data.

In the construction of Nuptiality Tables, the Nuptiality rate (n_x) is used to refer to the probability of marriage (analogous to the probability of surviving or dying in the ordinary Life Table function). Following Mertens (1965), the basic equation for the estimation of the nuptiality rate is as follows:

$$n_x = \frac{S_x - S_{x+1}}{S_x},$$

where S_x = Proportion of singles at exact age x

S_{x+1} = Proportion of singles at exact age x +1

Now, let us discuss the columns involved in Net-Nuptiality table along with their definitions: (The prime (') denotes functions for NNT) as discussed by Nyrang'O (1985).

Column 1: x = Single year age; here we have considered ages from 15 to 40, where the population is more exposed to marriage.

Column 2: The probability of marriage n_x is converted into n_x' the net probabilities of marriage by using the formula-

$$n_x' = n_x\left(1 - \frac{q_x}{2}\right)$$

where q_x = Probability of death between exact ages x and x+1.

Here, q_x has been obtained from the abridged life table and then using the Karup King Formula, we have acquired the q_x for single year age.

Column 3: q_x'= Net probability that a single person at age x will die during the year and it is given by-

$$q_x' = q_x\left(1 - \frac{n_x}{2}\right)$$

Column 4: l_x' = Number of single persons living at the beginning of each year out of 100,000 born alive. These persons are sometimes known as "net nuptiality" survivors since they "escape" both death and marriage. This column is therefore, analogous to the l_x column in standard life table.

$$l_{x+1}' = l_x' - N_x' - d_x'$$

Column 5:

d_x' = Number of single person dying at exact age x. This column is also analogous to the d_x column in a standard life table.

$$d_x' = l_x' \cdot q_x'$$

Column 6:

N_x'= This column which has no counterpart in the standard life table, represents the number of single persons expected to marry during the remainder of their lives.

$$N_x' = l_x' \cdot n_x'$$

Column 7:

L_x' = Number of person-years lived as single and alive in the exact age x. This column is also analogous to the L_x column in a standard life table.

$$L_x' = \frac{l_x' + l_{x+1}'}{2}$$

Column 8:

T_x' = Number of person-years lived as single and alive at age x and all later ages. This column is also analogous to the T_x column in a standard life table.

$$T_x' = \sum L_x'$$

Column 9: e'_x= Average number of years of single life remaining before marriage or death to a single person at age x.

$$e'_x = \frac{T_x'}{l_x'}$$

FINDINGS AND DISCUSSIONS

Following the procedure described above, separate Net Nuptiality Tables (Table 1.1 to 1.7 and Table 2.1 to 2.7) have been prepared for males and females of India and the selected states- Assam, Kerala, Maharashtra, Punjab, Uttar Pradesh and West Bengal for 2011. In this study age 15 is considered as minimum for males as well as females keeping in view the distribution of population by marital status. On the same basis the maximum age for males and females has been taken as 40. Figure-1.1 highlights the marriage probability of India (2011) for selected ages for males and females respectively. Figure-1.2 and Figure-1.3 graphically displays the probability of marriage of the above mentioned states for males and females separately for ages-15, 20, 25, 30, 35 and 40. In Figure-1.4, expected years of single life for males and females of India in 2011 have been exhibited. Whereas, Figure-1.5 and Figure-1.6 shows the graphical presentation of expected years of single life remaining for the selected ages of Assam, Kerala, Maharashtra, Punjab, Uttar Pradesh and West Bengal for males and females separately. We have considered selected ages to avoid clumsiness in the visual presentation.

The results provided under each column of the Nuptiality Tables presented in this study are self-explanatory in the light of the description of each column given earlier and their analogous nature with the standard life table. It must be kept in view that the estimates provided in the Net Nuptiality Tables are the result of two types of age specific attrition probabilities- the death probabilities and the marriage probabilities (Afzal and Iftikhar, 1974). From the tables (Table 1.1 to 1.7 and Table 2.1 to 2.7) we observe that marriage probabilities are higher in females for almost all the ages (15-40) as compared to males in India and the selected states- Assam, Kerala, Maharashtra, Punjab, Uttar Pradesh and West Bengal for 2011. Also the marriage probability in 2011 is mostly seen to be higher among singles (both males and females) of the age-group 29-34 in India and the above mentioned states (Table 1.1 to 1.7 and Table 2.1 to 2.7). Though marriage probabilities of females are higher than marriage probabilities of males in India in 2011, from Figure-1.1 we also observe that at age 35 males of India has slightly more chance of getting married by next year than females. Out of all the selected states, marriage probability of males is lower in Kerala and at age-30 West Bengal records the highest probability of marriage among males and females (see Figure-1.2 and Figure-1.3). The marriage probability of females of Uttar Pradesh and Kerala is higher at age 20 and 25 as compared to Maharashtra, Punjab and West-Bengal (see Figure-1.3). Also, we notice from Figure-1.2 and Figure-1.3 that males and females of Kerala tend to have a lower chance of getting married at age 30 and age 35 as compared to other selected states. At age-40 for India and the above mentioned states, it is certain that singles (both males and females) will get married by that age so the probability of marriage of a single person of age-40 is equivalent to one.

The last column in the nuptiality table provides years of single life remaining at age x, or in other words, the average expected years to marriage for those singles surviving up to a particular age (e'_x). The result of e'_x from Table-1.1 reveals that a male of age 15 in India is expected to remain 9.55 years of single life and Table-2.1 shows that a female of age 15 in India has 5.87 years of average number of years of single life remaining before marriage or death. From Figure-1.4, we see that the expected years of single life of males are more than the expected years of single life of females in India in 2011. The same pattern i.e. e'_x for males being greater than e'_x for females can also be observed in all the mentioned states- Assam, Kerala, Maharashtra, Punjab, Uttar Pradesh and West-Bengal (see Table 1.2 to 1.7 and Table 2.2 to 2.7). The average expected years of single life remaining before marriage or death is higher in males of Kerala in all the selected ages as compared to other mentioned states. A male of age-15 in Kerala is expected to remain 13.17 years of single life unlike Assam whose e'_x at age-15 is 10.36 years, Maharashtra whose e'_xat age-15 is 10.13 years, Punjab whose e'_xat age-15 is 10.11 years, Uttar Pradesh whose e'_xat age-15 is 8.73 years and West-Bengal whose e'_xat age-15 is 10 years (see Figure-1.5). Whereas, Figure-1.6 shows that the average number of single life remaining is higher in females of Kerala only at age-25, 30 and 35. Also we observe that males and females of West-Bengal record the lowest expectancy of single life at age-30 i.e. 1.43 years in case of males and 0.73 years in case of females as compared to other selected states (see Table 1.7 and Table 2.7).

CONCLUSION

With the advancement of time, rise in education and employment, changes in the attitude and perception towards marriage, socio-economic development and modernization, nuptiality pattern has undergone a lot of changes in 2011 in India. In this study we notice that in India and the states mentioned-Assam, Maharashtra, Punjab, Uttar Pradesh and West Bengal, males and females both prefer to marry after age 28 so the marriage probabilities are quiet high in the age-group 29-35. Decline in child marriages, individual assertion of self-choice in marriages, increase in female literacy and the problems related to early marriages of females like depriving females their access to education, pushing them to early child bearing and various other risks of maternal and reproductive health problems (Raj et al 2009); might be the cause of high expectancy of single life in the age-group 15-25 for both the genders in India and the selected states. Interestingly, in this study Kerala has reported lower marriage probabilities and higher expectancy of single life for males (all ages) and females (after age-25) as compared to other selected states. It seems that reversal in marriage squeeze against women to men in Kerala put a cap on rising age at marriage on females generating a new pressure with increasing supply of eligible men in the marriage market. But the story of other selected states- Assam, Maharashtra, Punjab, Uttar Pradesh and West Bengal is different with a strong presence of patriarchy and adverse sex ratio (Bhagat, 2016).

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TABLE: 1.1

NET-NUPTIALITY TABLE FOR MALES IN INDIA, 2011

Age at x	n'_x	q'_x	l'_x	d'_x	N'_x	L'_x	T'_x	e'_x
15	0.00485	0.00100	93700	93	455	93426	895021	9.55
16	0.00671	0.00118	93152	110	625	92784	801595	8.61
17	0.01911	0.00132	92417	122	1766	91473	708811	7.67
18	0.03347	0.00141	90529	127	3030	88950	617338	6.82
19	0.10331	0.00165	87371	144	9026	82786	528388	6.05
20	0.06845	0.00168	78201	131	5353	75459	445601	5.70
21	0.12859	0.00166	72717	120	9351	67982	370142	5.09
22	0.06177	0.00177	63246	112	3907	61236	302161	4.78
23	0.13631	0.00179	59227	106	8073	55137	240924	4.07
24	0.26423	0.00213	51048	109	13488	44249	185787	3.64
25	0.05996	0.00246	37451	92	2246	36282	141538	3.78
26	0.12869	0.00251	35113	88	4519	32809	105256	3.00
27	0.23215	0.00255	30506	78	7082	26926	72447	2.37
28	0.10711	0.00297	23346	69	2501	22061	45521	1.95
29	0.59648	0.00238	20776	49	12393	14555	23459	1.13
30	0.79859	0.00216	8334	18	6656	4997	8904	1.07
31	0.32253	0.00320	1661	5	536	1390	3907	2.35
32	0.22845	0.00360	1120	4	256	990	2517	2.25
33	0.21747	0.00383	860	3	187	765	1527	1.78
34	0.68214	0.00293	670	2	457	440	762	1.14
35	0.62208	0.00317	211	1	131	145	322	1.53
36	0.22589	0.00433	79	0	18	70	177	2.24
37	0.35974	0.00434	61	0	22	50	107	1.76
38	0.24755	0.00510	39	0	10	34	58	1.49
39	0.67318	0.00417	29	0	19	19	24	0.82

40	0.99528	0.00472	9	0	9	5	5	0.50

TABLE: 1.2

NET-NUPTIALITY TABLE FOR MALES IN ASSAM, 2011

Age at x	n'_x	q'_x	l'_x	d'_x	N'_x	L'_x	T'_x	e'_x
15	0.004535	0.001512	91597	138	415	91320	949285	10.73
16	0.00695	0.00199	91043	181	633	90636	857965	10.50
17	0.013872	0.002098	90229	189	1252	89509	767328	9.54
18	0.032873	0.002143	88788	190	2919	87234	677819	8.61
19	0.089571	0.002097	85679	180	7674	81752	590585	7.72
20	0.061154	0.002096	77825	163	4759	75364	508833	6.97
21	0.092989	0.002493	72903	182	6779	69422	433469	6.60
22	0.066393	0.002177	65942	144	4378	63681	364047	6.00
23	0.103939	0.001904	61420	117	6384	58170	300366	5.56
24	0.201038	0.001695	54919	93	11041	49352	242196	4.92
25	0.065832	0.00182	43785	80	2882	42304	192843	4.44
26	0.097224	0.00152	40823	62	3969	38808	150539	4.43
27	0.118061	0.001515	36792	56	4344	34592	111731	3.71
28	0.097185	0.001587	32393	51	3148	30793	77139	3.05
29	0.528948	0.001302	29193	38	15442	21453	46346	2.39
30	0.607349	0.001334	13714	18	8329	9540	24892	1.60
31	0.225177	0.001302	5366	7	1208	4759	15353	1.83
32	0.188303	0.001857	4151	8	782	3756	10594	2.88
33	0.183455	0.002239	3362	8	617	3050	6838	2.57
34	0.673843	0.001797	2737	5	1845	1813	3788	2.05
35	0.386296	0.002252	888	2	343	715	1975	1.39
36	0.208296	0.004554	543	2	113	485	1260	2.24
37	0.374209	0.002884	427	1	160	347	775	2.34

38	0.11861	0.002477	266	1	32	250	428	1.82
39	0.737363	0.001475	234	0	173	148	178	1.61
40	0.998668	0.001332	61	0	61	31	31	0.76

TABLE: 1.3

NET-NUPTIALITY TABLE FOR MALES IN KERALA, 2011

Age at x	n'_x	q'_x	l'_x	d'_x	N'_x	L'_x	T'_x	e'_x
15	0.005650	0.00038	98605	37	557	98308	1298315	13.17
16	0.000011	0.0002	98011	20	1	98001	1200007	12.24
17	0.001353	0.000461	97990	45	133	97901	1102007	11.25
18	0.001311	0.000665	97812	65	128	97716	1004105	10.27
19	0.029038	0.000802	97619	78	2835	96163	906390	9.28
20	0.011568	0.0009	94706	85	1096	94116	810227	8.56
21	0.019264	0.001192	93525	112	1802	92569	716111	7.66
22	0.032323	0.001203	91612	110	2961	90076	623542	6.81
23	0.056424	0.001214	88541	107	4996	85989	533466	6.03
24	0.105564	0.001215	83437	101	8808	78983	447477	5.36
25	0.098107	0.001258	74528	94	7312	70825	368494	4.94
26	0.126027	0.001475	67123	99	8459	62843	297669	4.43
27	0.156983	0.001305	58564	76	9194	53929	234825	4.01
28	0.162620	0.001238	49294	61	8016	45256	180896	3.67
29	0.446160	0.001061	41217	44	18389	32000	135640	3.29
30	0.025119	0.001453	22784	33	572	22481	103640	4.55
31	0.228003	0.001148	22178	25	5057	19637	81158	3.66
32	0.111491	0.001398	17096	24	1906	16131	61521	3.60
33	0.172192	0.001525	15166	23	2612	13849	45390	2.99
34	0.526702	0.001371	12532	17	6600	9223	31541	2.52
35	0.069878	0.001987	5914	12	413	5702	22318	3.77
36	0.094433	0.002417	5489	13	518	5223	16616	3.03

37	0.265605	0.00215	4957	11	1317	4294	11393	2.30
38	0.040241	0.002482	3630	9	146	3552	7100	1.96
39	0.477188	0.002053	3475	7	1658	2642	3547	1.02
40	0.998514	0.001486	1810	3	1807	905	905	0.50

TABLE: 1.4

NET-NUPTIALITY TABLE FOR MALES IN MAHARASHTRA, 2011

Age at x	n'_x	q'_x	l'_x	d'_x	N'_x	L'_x	T'_x	e'_x
15	0.005128	0.000278	96826	54	496	96551	981137	10.13
16	0.005650	0.00038	96275	48	247	96128	884586	9.19
17	0.000011	0.0002	95981	59	963	95470	788458	8.21
18	0.001353	0.000461	94959	70	1510	94169	692989	7.30
19	0.001311	0.000665	93379	79	6966	89856	598820	6.41
20	0.029038	0.000802	86334	85	4528	84027	508964	5.90
21	0.011568	0.0009	81721	86	8046	77654	424937	5.20
22	0.019264	0.001192	73588	90	5098	70994	347282	4.72
23	0.032323	0.001203	68400	90	8713	63999	276288	4.04
24	0.056424	0.001214	59597	81	15143	51985	212289	3.56
25	0.105564	0.001215	44373	71	4007	42334	160304	3.61
26	0.098107	0.001258	40294	75	6784	36865	117970	2.93
27	0.126027	0.001475	33436	59	7824	29494	81105	2.43
28	0.156983	0.001305	25553	48	4226	23416	51610	2.02
29	0.162620	0.001238	21280	29	15679	13426	28194	1.32
30	0.446160	0.001061	5572	11	1972	4581	14768	2.65
31	0.025119	0.001453	3589	6	969	3102	10187	2.84
32	0.228003	0.001148	2614	6	286	2468	7085	2.71
33	0.111491	0.001398	2322	6	555	2042	4617	1.99
34	0.172192	0.001525	1761	4	1165	1177	2575	1.46
35	0.526702	0.001371	593	2	231	476	1398	2.36
36	0.069878	0.001987	360	1	55	331	922	2.56
37	0.094433	0.002417	303	1	100	253	590	1.95

38	0.265605	0.00215	202	1	34	185	338	1.67
39	0.040241	0.002482	168	0	98	118	153	0.91
40	0.477188	0.002053	69	0	69	35	35	0.50

TABLE: 1.5

NET-NUPTIALITY TABLE FOR MALES IN PUNJAB, 2011

Age at x	n'_x	q'_x	l'_x	d'_x	N'_x	L'_x	T'_x	e'_x
15	0.002771	0.000765	96012	73	266	95842	970421	10.11
16	0.002505	0.000478	95672	46	240	95529	874580	9.14
17	0.010842	0.000832	95387	79	1034	94830	779050	8.17
18	0.017707	0.001116	94273	105	1669	93386	684220	7.26
19	0.068081	0.001301	92499	120	6297	89290	590834	6.39
20	0.048649	0.001463	86081	126	4188	83924	501544	5.83
21	0.100258	0.001905	81767	156	8198	77591	417620	5.11
22	0.070429	0.001911	73414	140	5170	70758	340029	4.63
23	0.134775	0.001868	68103	127	9179	63450	269271	3.95
24	0.221837	0.001842	58797	108	13043	52221	205821	3.50
25	0.127418	0.002049	45645	94	5816	42691	153600	3.37
26	0.171459	0.001934	39736	77	6813	36291	110909	2.79
27	0.224056	0.002049	32846	67	7359	29133	74618	2.27
28	0.173468	0.002271	25419	58	4409	23186	45486	1.79
29	0.767609	0.001635	20952	34	16083	12893	22300	1.06
30	0.546284	0.002042	4835	10	2641	3509	9406	1.95
31	0.268202	0.00284	2184	6	586	1888	5897	2.70
32	0.199933	0.002866	1592	5	318	1430	4009	2.52
33	0.169515	0.00292	1269	4	215	1160	2579	2.03
34	0.599242	0.00231	1050	2	629	734	1419	1.35
35	0.608558	0.002442	418	1	255	291	685	1.64
36	0.241572	0.003064	163	0	39	143	394	2.42
37	0.263583	0.00322	123	0	32	107	251	2.04
38	0.226674	0.003521	90	0	20	80	145	1.61

39	0.559751	0.003075	69	0	39	50	65	0.94
40	0.997693	0.002307	30	0	30	15	15	0.50

TABLE: 1.6

NET-NUPTIALITY TABLE FOR MALES IN UTTAR PRADESH, 2011

Age at x	n'_x	q'_x	l'_x	d'_x	N'_x	L'_x	T'_x	e'_x
15	0.14028	0.000823	91178	75	12791	84745	795892	8.73
16	0.036098	0.000518	78313	41	2827	76879	711146	9.08
17	0.005122	0.000936	75445	71	386	75217	634267	8.41
18	0.011514	0.001241	74988	93	863	74510	559051	7.46
19	0.040326	0.001427	74032	106	2985	72486	484541	6.55
20	0.091354	0.001492	70940	106	6481	67647	412055	5.81
21	0.100728	0.002133	64354	137	6482	61044	344408	5.35
22	0.137701	0.001903	57734	110	7950	53704	283364	4.91
23	0.114965	0.00182	49674	90	5711	46774	229659	4.62
24	0.154258	0.00176	43873	77	6768	40451	182885	4.17
25	0.23051	0.001745	37028	65	8535	32728	142435	3.85
26	0.15332	0.001734	28428	49	4359	26224	109707	3.86
27	0.165063	0.001755	24020	42	3965	22017	83482	3.48
28	0.192155	0.001806	20013	36	3846	18072	61466	3.07
29	0.163	0.001961	16131	32	2629	14801	43393	2.69
30	0.458645	0.00179	13470	24	6178	10369	28592	2.12
31	0.42141	0.002076	7268	15	3063	5729	18223	2.51
32	0.216602	0.002333	4190	10	908	3732	12494	2.98
33	0.291775	0.002316	3273	8	955	2792	8762	2.68
34	0.159015	0.002684	2310	6	367	2124	5971	2.58
35	0.538509	0.002358	1937	5	1043	1413	3847	1.99
36	0.033492	0.003389	889	3	30	873	2434	2.74
37	0.433534	0.002844	856	2	371	670	1561	1.82
38	0.285559	0.00336	483	2	138	413	892	1.85
39	0.100906	0.004091	343	1	35	325	479	1.40

40	0.997601	0.002399	307	1	306	154	154	0.50

TABLE: 1.7

NET-NUPTIALITY TABLE FOR MALES IN WEST BENGAL, 2011

Age at x	n'_x	q'_x	l'_x	d'_x	N'_x	L'_x	T'_x	e'_x
15	0.002822	0.000711	95613	68	270	95444	956297	10.00
16	0.005979	0.000626	95275	60	570	94960	860853	9.04
17	0.019901	0.000761	94646	72	1884	93668	765893	8.09
18	0.037205	0.000867	92690	80	3449	90926	672225	7.25
19	0.087756	0.000931	89161	83	7824	85208	581299	6.52
20	0.071199	0.001001	81254	81	5785	78321	496092	6.11
21	0.105602	0.001265	75387	95	7961	71359	417771	5.54
22	0.08053	0.001195	67331	80	5422	64580	346412	5.14
23	0.114942	0.001141	61828	71	7107	58240	281832	4.56
24	0.196958	0.00111	54651	61	10764	49239	223593	4.09
25	0.089047	0.00125	43826	55	3903	41848	174354	3.98
26	0.126744	0.001078	39869	43	5053	37321	132506	3.32
27	0.156328	0.001222	34773	43	5436	32034	95185	2.74
28	0.088623	0.001417	29294	42	2596	27976	63152	2.16
29	0.574861	0.001155	26657	31	15324	18979	35176	1.32
30	0.696651	0.001135	11302	13	7874	7359	16197	1.43
31	0.350514	0.001755	3416	6	1197	2814	8838	2.59
32	0.172059	0.001875	2212	4	381	2020	6024	2.72
33	0.179391	0.001868	1828	3	328	1662	4004	2.19
34	0.631756	0.001456	1496	2	945	1023	2342	1.57
35	0.367959	0.001863	549	1	202	447	1319	2.40
36	0.114497	0.002326	346	1	40	326	872	2.52
37	0.340773	0.002031	305	1	104	253	546	1.79
38	0.273345	0.002189	201	0	55	173	293	1.46
39	0.672366	0.001812	145	0	98	96	120	0.83
40	0.998483	0.001517	47	0	47	24	24	0.50

TABLE: 2.1

NET-NUPTIALITY TABLE FOR FEMALES IN INDIA, 2011

Age at x	n'_x	q'_x	l'_x	d'_x	N'_x	L'_x	T'_x	e'_x
15	0.01610	0.000939	93042	87	1498	92249	546450	5.87
16	0.05839	0.000973	91457	89	5340	88742	454201	4.97
17	0.17155	0.001077	86028	93	14758	78602	365458	4.25
18	0.17329	0.001197	71177	85	12334	64967	286856	4.03
19	0.29909	0.001189	58758	70	17574	49936	221889	3.78
20	0.07616	0.001388	41114	57	3131	39520	171953	4.18
21	0.27309	0.001432	37926	54	10357	32720	132433	3.49
22	0.16205	0.001504	27514	41	4459	25264	99713	3.62
23	0.22666	0.00144	23014	33	5216	20390	74449	3.23
24	0.35063	0.001336	17765	24	6229	14639	54059	3.04
25	0.07205	0.001568	11512	18	829	11088	39421	3.42
26	0.17733	0.00154	10665	16	1891	9711	28332	2.66
27	0.35867	0.001336	8757	12	3141	7181	18621	2.13
28	0.00380	0.001597	5605	9	21	5589	11440	2.04
29	0.56014	0.001155	5574	6	3122	4010	5851	1.05
30	0.91734	0.000889	2446	2	2243	1323	1841	0.75
31	0.33770	0.001365	200	0	68	166	518	2.59
32	0.18120	0.001501	132	0	24	120	352	2.66
33	0.13064	0.001575	108	0	14	101	232	2.15
34	0.57722	0.001243	94	0	54	67	131	1.40
35	0.55935	0.001323	40	0	22	28	64	1.63
36	0.19788	0.001844	17	0	3	16	36	2.07
37	0.41829	0.001565	14	0	6	11	20	1.46
38	0.52016	0.001472	8	0	4	6	9	1.16
39	0.61345	0.001442	4	0	2	3	3	0.89
40	0.99887	0.001125	1	0	1	1	1	0.50

TABLE: 2.2

NET-NUPTIALITY TABLE FOR FEMALES IN ASSAM, 2011

Age at x	n'_x	q'_x	l'_x	d'_x	N'_x	L'_x	T'_x	e'_x
15	0.022191	0.001498	90757	136	2014	89682	559696	6.17
16	0.075269	0.001922	88607	170	6669	85187	470014	5.30
17	0.205804	0.001895	81767	155	16828	73276	384827	4.71
18	0.19024	0.001972	64784	128	12325	58558	311551	4.81
19	0.257928	0.001912	52332	100	13498	45533	252993	4.83
20	0.069182	0.002087	38734	81	2680	37354	207460	5.36
21	0.175335	0.002385	35974	86	6307	32777	170106	4.73
22	0.073796	0.002168	29580	64	2183	28457	137329	4.64
23	0.168514	0.001839	27333	50	4606	25005	108872	3.98
24	0.317404	0.001586	22677	36	7198	19060	83867	3.70
25	0.011168	0.001872	15443	29	172	15343	64807	4.20
26	0.078719	0.001535	15242	23	1200	14630	49465	3.25
27	0.18384	0.001462	14019	21	2577	12720	34834	2.48
28	0.114275	0.001573	11421	18	1305	10759	22115	1.94
29	0.641895	0.001202	10098	12	6482	6851	11355	1.12
30	0.771051	0.001177	3604	4	2779	2212	4504	1.25
31	0.178889	0.001336	821	1	147	747	2292	2.79
32	0.254653	0.001789	673	1	171	587	1545	2.30
33	0.190292	0.00223	500	1	95	452	958	1.92
34	0.651861	0.001827	404	1	263	272	506	1.25
35	0.533199	0.002046	140	0	75	102	234	1.67
36	0.350539	0.004191	65	0	23	53	132	2.03
37	0.341918	0.002941	42	0	14	35	78	1.86
38	0.19534	0.002376	27	0	5	25	43	1.58
39	0.650733	0.001577	22	0	14	15	19	0.85
40	0.998668	0.001332	8	0	8	4	4	0.50

TABLE: 2.3

NET-NUPTIALITY TABLE FOR FEMALES IN KERALA, 2011

Age at x	n'_x	q'_x	l'_x	d'_x	N'_x	L'_x	T'_x	e'_x

15	0.009193	0.000314	98406	31	905	97939	713779	7.25
16	0.036557	0.000542	97471	53	3563	95663	615840	6.32
17	0.095448	0.00047	93855	44	8958	89353	520178	5.54
18	0.115028	0.00043	84852	37	9760	79954	430824	5.08
19	0.185322	0.000402	75055	30	13909	68086	350870	4.67
20	0.142408	0.00042	61116	26	8703	56751	282785	4.63
21	0.191486	0.000386	52387	20	10031	47361	226034	4.31
22	0.20017	0.00038	42335	16	8474	38090	178673	4.22
23	0.25534	0.000379	33845	13	8642	29517	140583	4.15
24	0.255356	0.000402	25190	10	6432	21969	111065	4.41
25	0.229911	0.000445	18747	8	4310	16588	89097	4.75
26	0.224133	0.000382	14429	6	3234	12809	72508	5.03
27	0.205316	0.000488	11189	5	2297	10038	59699	5.34
28	0.175115	0.000578	8887	5	1556	8106	49661	5.59
29	0.198868	0.000629	7325	5	1457	6595	41555	5.67
30	0.145226	0.000687	5864	4	852	5436	34961	5.96
31	0.118876	0.000886	5008	4	595	4708	29525	5.90
32	0.002199	0.000889	4408	4	10	4402	24816	5.63
33	0.120701	0.000816	4395	4	530	4128	20415	4.65
34	0.226701	0.000777	3861	3	875	3422	16287	4.22
35	0.000759	0.000914	2983	3	2	2980	12865	4.31
36	0.032644	0.001097	2978	3	97	2927	9885	3.32
37	0.210724	0.000852	2877	2	606	2573	6958	2.42
38	0.123837	0.000834	2268	2	281	2127	4385	1.93
39	0.362095	0.000757	1986	2	719	1625	2258	1.14
40	0.999471	0.000529	1265	1	1264	633	633	0.50

TABLE: 2.4

NET-NUPTIALITY TABLE FOR FEMALES IN MAHARASHTRA, 2011

Age at x	n'_x	q'_x	l'_x	d'_x	N'_x	L'_x	T'_x	e'_x
15	0.008079	0.000692	96692	67	781	96268	591319	6.12

16	0.048183	0.000867	95844	83	4618	93493	495051	5.17
17	0.153078	0.000912	91143	83	13952	84125	401557	4.41
18	0.167789	0.000969	77108	75	12938	70601	317432	4.12
19	0.30775	0.000928	64095	59	19725	54203	246831	3.85
20	0.092687	0.001056	44310	47	4107	42233	192628	4.35
21	0.243346	0.001152	40157	46	9772	35247	150395	3.75
22	0.121311	0.001135	30338	34	3680	28481	115147	3.80
23	0.242448	0.001002	26624	27	6455	23383	86666	3.26
24	0.35784	0.00091	20142	18	7208	16529	63283	3.14
25	0.043314	0.001089	12916	14	559	12629	46754	3.62
26	0.177899	0.000998	12343	12	2196	11239	34125	2.76
27	0.261871	0.000912	10135	9	2654	8803	22886	2.26
28	0.082305	0.000997	7471	7	615	7160	14084	1.89
29	0.779744	0.000651	6849	4	5340	4177	6923	1.01
30	0.610582	0.000786	1504	1	918	1044	2747	1.83
31	0.216928	0.000864	585	1	127	521	1703	2.91
32	0.177438	0.001059	457	0	81	416	1182	2.58
33	0.203013	0.001182	376	0	76	337	765	2.04
34	0.574145	0.001019	299	0	172	213	428	1.43
35	0.575791	0.001071	127	0	73	90	215	1.69
36	0.229305	0.001775	54	0	12	48	125	2.32
37	0.30751	0.001509	41	0	13	35	77	1.87
38	0.317923	0.001406	29	0	9	24	42	1.48
39	0.556834	0.001205	19	0	11	14	18	0.94
40	0.99911	0.00089	9	0	9	4	4	0.50

TABLE: 2.5

NET-NUPTIALITY TABLE FOR FEMALES IN PUNJAB, 2011

Age at x	n'_x	q'_x	l'_x	d'_x	N'_x	L'_x	T'_x	e'_x
15	0.000091	0.000680	95373	65	9	95337	715107	7.50
16	0.014661	0.000955	95300	91	1397	94556	619770	6.50

17	0.068375	0.000946	93812	89	6414	90560	525214	5.60
18	0.080487	0.000958	87309	84	7027	83753	434654	4.98
19	0.198047	0.000915	80198	73	15883	72220	350901	4.38
20	0.074118	0.000995	64241	64	4761	61829	278682	4.34
21	0.207055	0.000917	59416	54	12302	53238	216853	3.65
22	0.157654	0.000982	47059	46	7419	43327	163615	3.48
23	0.227420	0.000973	39594	39	9004	35072	120289	3.04
24	0.311101	0.000945	30551	29	9504	25784	85216	2.79
25	0.176470	0.001030	21018	22	3709	19152	59432	2.83
26	0.212495	0.001142	17287	20	3673	15440	40280	2.33
27	0.396494	0.000953	13594	13	5390	10892	24839	1.83
28	0.088099	0.001088	8191	9	722	7826	13947	1.70
29	0.881393	0.000629	7460	5	6576	4170	6121	0.82
30	0.477196	0.000876	880	1	420	670	1951	2.22
31	0.329189	0.000937	459	0	151	384	1281	2.79
32	0.104173	0.001064	308	0	32	292	897	2.92
33	0.133709	0.001072	275	0	37	257	606	2.20
34	0.581843	0.000853	238	0	139	169	349	1.46
35	0.490329	0.000970	99	0	49	75	180	1.81
36	0.240261	0.001433	51	0	12	44	105	2.08
37	0.381640	0.001157	38	0	15	31	61	1.58
38	0.504607	0.001018	24	0	12	18	30	1.25
39	0.477335	0.001086	12	0	6	9	12	1.02
40	0.999188	0.000812	6	0	6	3	3	0.50

TABLE: 2.6

NET-NUPTIALITY TABLE FOR FEMALES IN UTTAR PRADESH, 2011

Age at x	n'_x	q'_x	l'_x	d'_x	N'_x	L'_x	T'_x	e'_x
15	0.004786	0.00094	89732	84	429	89475	649084	7.23
16	0.002730	0.000776	89218	69	244	89062	559608	6.27
17	0.035852	0.001045	88906	93	3187	87265	470546	5.29

18	0.100097	0.001234	85625	106	8571	81287	383281	4.48
19	0.159461	0.001363	76949	105	12270	70761	301994	3.92
20	0.232002	0.001424	64574	92	14981	57037	231233	3.58
21	0.183721	0.00157	49500	78	9094	44914	174196	3.52
22	0.272123	0.001701	40328	69	10974	34807	129281	3.21
23	0.291548	0.001827	29286	54	8538	24990	94474	3.23
24	0.242578	0.001968	20694	41	5020	18164	69485	3.36
25	0.280259	0.001952	15633	31	4381	13427	51321	3.28
26	0.200782	0.002507	11221	28	2253	10081	37894	3.38
27	0.22055	0.002247	8940	20	1972	7944	27813	3.11
28	0.363343	0.001931	6948	13	2525	5679	19869	2.86
29	0.134016	0.002135	4410	9	591	4110	14189	3.22
30	0.420707	0.001826	3810	7	1603	3005	10079	2.65
31	0.36353	0.001696	2200	4	800	1798	7074	3.22
32	0.305984	0.001817	1397	3	427	1182	5276	3.78
33	0.041592	0.002191	967	2	40	946	4094	4.24
34	0.043652	0.002298	924	2	40	903	3149	3.41
35	0.415185	0.001966	882	2	366	698	2246	2.55
36	0.064373	0.002468	514	1	33	497	1548	3.01
37	0.160479	0.002482	480	1	77	441	1051	2.19
38	0.39766	0.002282	401	1	160	321	610	1.52
39	0.296737	0.002555	241	1	71	205	289	1.20
40	0.998424	0.001576	169	0	169	84	84	0.50

TABLE: 2.7

NET-NUPTIALITY TABLE FOR FEMALES IN WEST BENGAL, 2011

Age at x	n'_x	q'_x	l'_x	d'_x	N'_x	L'_x	T'_x	e'_x
15	0.046155	0.000873	95585	83	4412	93337	489012	5.12
16	0.107945	0.000954	91090	87	9833	86130	395675	4.34
17	0.270452	0.000904	81170	73	21953	70157	309545	3.81
18	0.227495	0.000952	59144	56	13455	52389	239388	4.05

19	0.302323	0.000931	45633	42	13796	38714	186999	4.10
20	0.092343	0.00106	31795	34	2936	30310	148285	4.66
21	0.23934	0.000988	28825	28	6899	25361	117976	4.09
22	0.098359	0.001098	21897	24	2154	20808	92614	4.23
23	0.192636	0.001064	19720	21	3799	17810	71806	3.64
24	0.321517	0.000998	15900	16	5112	13336	53996	3.40
25	0.061033	0.001153	10772	12	657	10437	40660	3.77
26	0.126234	0.001327	10102	13	1275	9458	30223	2.99
27	0.207548	0.001111	8813	10	1829	7894	20765	2.36
28	0.068066	0.001096	6974	8	475	6733	12872	1.85
29	0.638419	0.000749	6492	5	4145	4417	6138	0.95
30	0.92277	0.000613	2343	1	2162	1261	1721	0.73
31	0.27209	0.000846	179	0	49	155	460	2.56
32	0.304652	0.000892	130	0	40	111	305	2.34
33	0.157323	0.001052	91	0	14	83	194	2.15
34	0.590739	0.000878	76	0	45	54	111	1.46
35	0.512584	0.001015	31	0	16	23	57	1.84
36	0.256294	0.001315	15	0	4	13	34	2.25
37	0.292096	0.001347	11	0	3	10	21	1.86
38	0.335422	0.001394	8	0	3	7	11	1.43
39	0.600868	0.001259	5	0	3	4	5	0.90
40	0.999023	0.000977	2	0	2	1	1	0.50

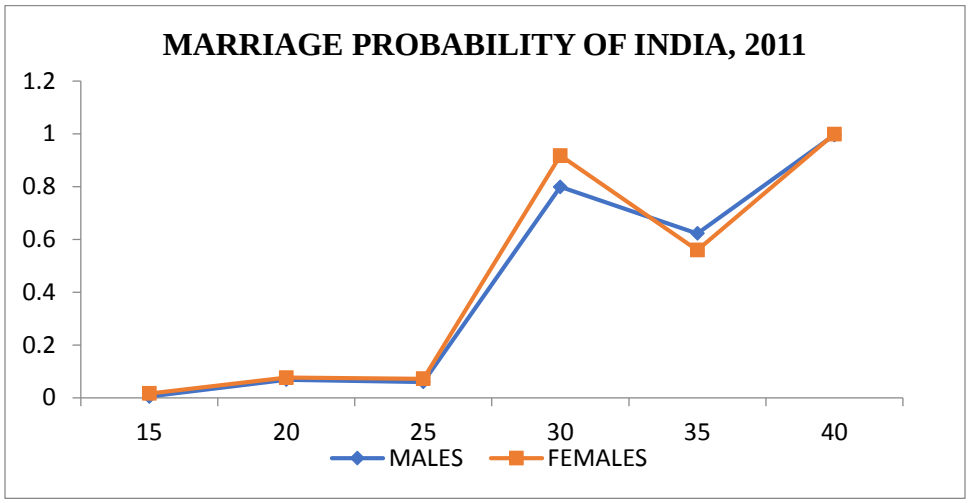

Figure-1.1

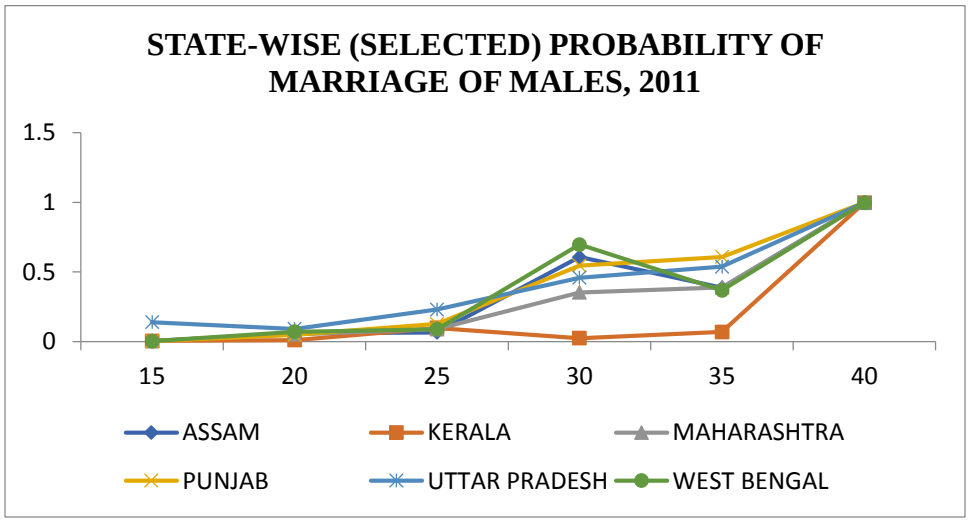

Figure-1.2

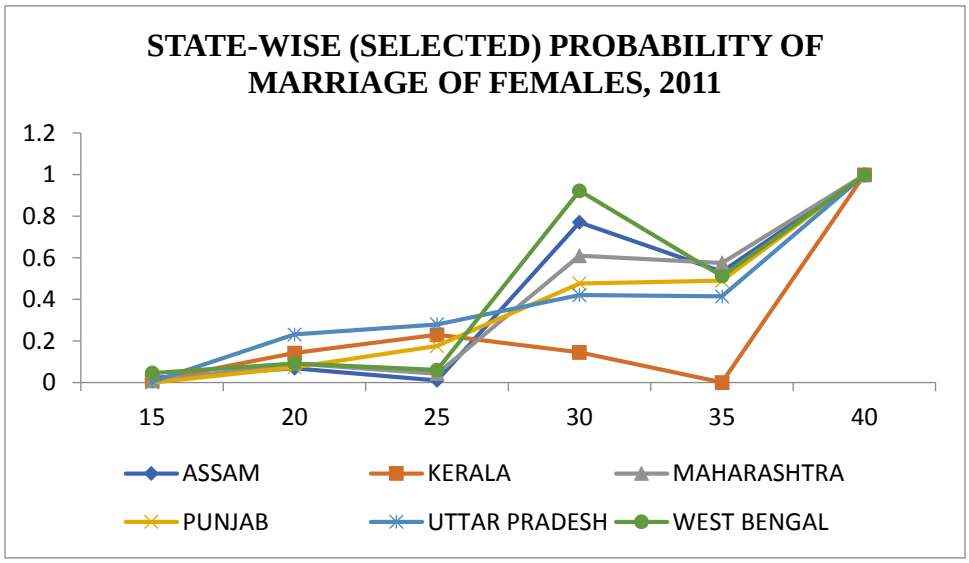

Figure-1.3

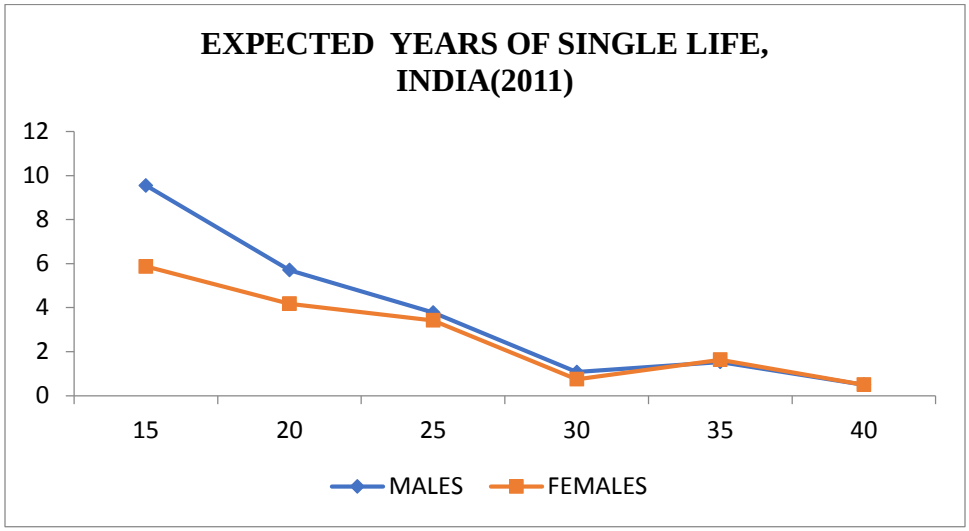

Figure-1.4

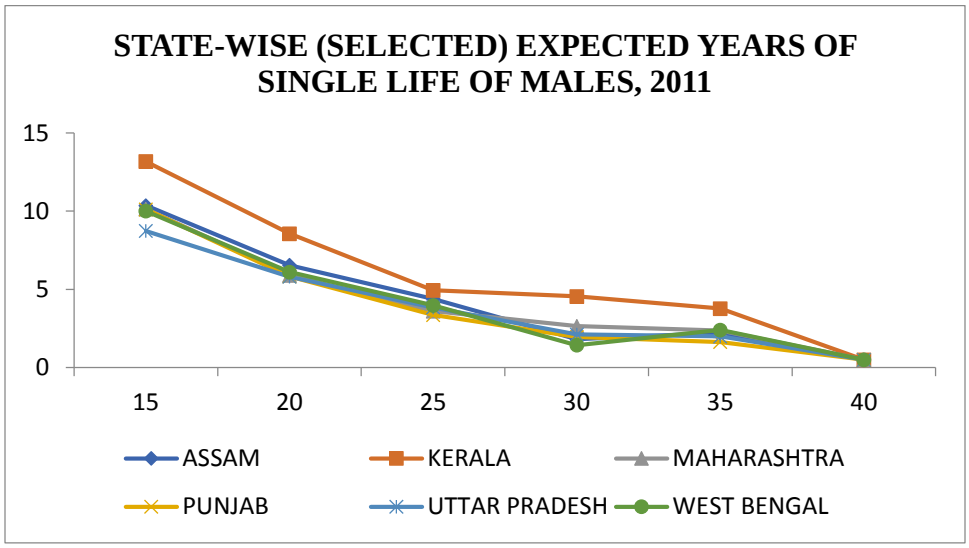

Figure-1.5

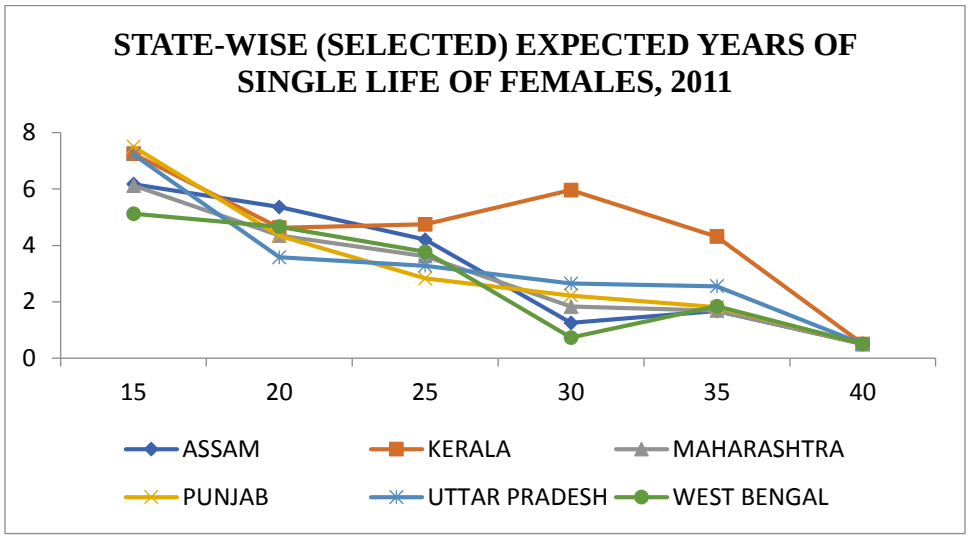
STATE-WISE (SELECTED) EXPECTED YEARS OF SINGLE LIFE OF FEMALES, 2011
8
6
4
2
0
15
20
25
30
35
40
ASSAM
KERALA
MAHARASHTRA
PUNJAB
UTTAR PRADESH
WEST BENGAL

Figure-1.6