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Age at Diagnosis and Diabetes Free Life Expectancy by Gender in Kerala: Evidence from LASI

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Abstract

Kerala known as diabetes capital of India. This study attempts to determine the prevalence and age at diagnosis of diabetes and diabetes free life expectancy in Kerala based on the data from the wave 1 of the Longitudinal Ageing Study in India conducted during 2017-18. The life table was constructed based on data from the Sample Registration System (SRS) matching the survey period. Sullivan method was applied to estimate diabetes-free life expectancy in the context of the study. The self-reported prevalence of diabetes in Kerala the highest among states and Union Territories of the country. The study reveals gender differentials in the age at the diagnosis of diabetes. The study reveals that a substantial proportion of older individuals spend a significant amount of their lives with diabetes. For the next decades, the impact of diabetes on healthy life expectancy is likely to rise unless preventive measures are taken.

Introduction

Kerala has entered an advanced stage of demographic and epidemiological transition which marks significant evolution of the population dynamics and disease pattern in the state. An implication of this transition is the aging of the population, increase in the prevalence of non-communicable diseases, and rising morbidity rates. The rapid increase in the proportion of the old age population in the state has emerged as a prominent concern from the public health perspective. The rapid increase in the old population of the state has resulted in marked changes in the disease profile and causes of death pattern with a marked increase in the prevalence of non-communicable diseases (NCDs). For example, a study carried out by the Indian Council of Medical Research estimated in the year 2011 that around 24 per cent population of the state had diabetes and this proportion is one of the highest in the country (Anjana et al, 2011). The latest round of the National Family Health Survey, 2019-2021 estimates that around 25 per cent of women aged 15 years and above and around 27 per cent of men aged 15 years and above in the state were diabetic - having a random blood glucose level of more than 140 mg/dl or were taking medicines to control blood glucose level at the time of the survey (Government of India, 2020a). The survey has

also revealed that this proportion varies widely across the districts of the state. The prevalence of diabetes in males has been found to be the highest in district Thiruvananthapuram but the lowest in district Kasaragod whereas the prevalence of diabetes in females has been found to be the highest in Pathanamthitta but the lowest in district Kasaragod. There is no district in the state where the proportion of men or women aged at least 15 years who were diabetic at the time of the survey was less than 20 per cent (Government of India, 2020b).

Diabetes is a metabolic condition that is marked by elevated blood glucose level. The elevated blood glucose level damages vital and other organs in the human body, potentially leading to increased mortality and other health problems (WHO, 2016). Diabetes affects people all over the world. In most of the high-income countries, it is either the fourth or the fifth leading cause of death, and there is strong evidence that it has become an epidemic in the newly developed and economically developing countries. According to the World Health Organization, the number of people living with diabetes increased from 200 million in 1990 to 830 million in 2022 and the prevalence of the disease is rising more rapidly in low- and middle-income countries than in high-income countries. In 2021, diabetes was the direct cause of 1.6 million deaths and 47 per cent of all deaths due to diabetes occurred before the age of 70 years. Another 530 000 kidney disease deaths were caused by diabetes, and high blood glucose caused around 11 per cent of cardiovascular deaths (Global Burden of Disease Collaborative Network, 2024).

Diabetes is acknowledged as a significant contributor to premature mortality and disability. Studies show that the life expectancy in population with diabetes is lower than the life expectancy in population without diabetes and the difference increases with age (Sikdar, 2010; Bardenheier, 2016). Moreover, studies also highlight an increase in the duration of morbidity associated with the disease (Muschik, 2017). Diabetes has a negative impact on the quality of life of an individual also. It places significant financial burden on the individual, the family, and the society.

There are studies in India which have analysed the impact of diabetes on life expectancy in India and in other countries (Andrade, 2009; Sharma et al, 2024; Luhar et al, 2021; Emerging Risk Factors Collaboration, 2023; Alam and Sheoti, 2024; Khyati et al, 2021). A study based on a survey carried out in 2004 in Kerala had estimated that diabetes-free life expectancy of males and females were 67.8 and 74.1 years, respectively (Krishnakumar et al, 2025). This study has also found statistically significant differences between males and females in the diabetes-free life expectancy in all ages except 85 years and over. Another finding of the study is that males and females of the state lived with diabetes, on average, 3.6 years, and 4.3 years, respectively their lifetime.

This paper has two objectives. The first is to estimate the prevalence of self-reported diabetes and age of diagnosis of diabetes in population aged at least 45 years in the state while the second objective is to estimate the diabetes free life expectancy. The comparison between the overall life expectancy and the diabetes free life expectancy sheds light on the specific impact of diabetes on longevity and quality of life in Kerala. The analysis has been carried out separately for males and females to highlight, if any, the differential impact of diabetes on the lifespan of men and women.

Data and Methods

The study is based on the data available from the first wave of the Longitudinal Ageing Study in India (LASI) which was conducted in 2017-2018 (Government of India, 2020c). LASI is a nationally representative household survey that covers all states and Union Territories of India with the objective of investigating health, economic, and social determinants and consequences of population ageing in India. Households with at least one member aged 45 and above are taken as the eventual observation unit in LASI. The Indian Council of Medical Research (ICMR) provided the essential guidance and approval for data collection. Written informed consent was obtained from each household and every eligible individual. The data available from LASI provide valuable insights into the prevalence and burden of chronic diseases in India. At the national level, the first wave of LASI covered a sample of 72,250 individuals aged 45 years and above and their spouses, irrespective of the age of the spouse. In Kerala, 2497 individuals aged 45 years were covered under the first wave of LASI. During the survey, all respondents were asked "Has any health professional ever diagnosed you with diabetes or high blood sugar." The response to the question was coded either "Yes" or "No" and all respondents whose response was "Yes" to the question were classified as having diabetes. The blood glucose level of the respondents was also measured during the survey. However, the present study is based on the response given by the respondents only. The prevalence of diabetes presented here, therefore, is the self-reported prevalence of diabetes. Moreover, the age when diabetes was first diagnosed was also asked from those respondents who reported to have been diagnosed for diabetes.

The Sullivan Method has been used to estimate the diabetes free life expectancy (DFLE) and diabetes life expectancy (DLE) (Sullivan, 1971). This method is the most widely used method to estimate population health indicators (Sullivan, 1971). The method involves dividing the person-years lived in an age interval into two mutually exclusive groups – one having diabetes and the other not having diabetes. The person-years lived in an age interval is obtained from the prevailing age-specific mortality rates by constructing the life table and the person-years lived in the age interval having diabetes is assumed to be proportional to the prevalence of diabetes in the age interval. Construction of the life table for the total population (diabetic and non-diabetic) is necessary for the application of the Sullivan method. The life expectancy of the total population is the sum of the life expectancy of the non-diabetic population and the life expectancy of the diabetic population. Using the standard life table notations, the life expectancy at age x in a population is given by

$$LE_x = \frac{1}{l_x}\sum_x L_x \quad (1)$$

and

$$DLE_x = \frac{1}{l_x}\sum_x p_x L_x \quad (2)$$

$$DFLE_x = \frac{1}{l_x}\sum_x (1 - p_x) L_x \quad (3)$$

The life tables for Kerala are constructed from the age-specific death rates available from the sample registration system for the year 2018 (Government of India, 2020d).

Table 1 gives the reported prevalence of diabetes in the population aged 45 years and above in the state. Among the 2497 persons aged 45 years and above covered during the first wave of LASI, 686 persons reported that they had diabetes which gives a prevalence rate of 27.5 per cent. The reported prevalence of diabetes is estimated to be 30.5 per cent for males but 25.5 per cent for females. The reported prevalence of diabetes increases with age and is found to be relatively higher in the urban areas as compared to the rural areas of the state. The level of education of the individual has not been found to be associated with the reported prevalence of diabetes as it is found to be the highest in respondents having up to primary education only. However, the reported prevalence is found to be the highest in respondents with the richest standard of living but the lowest in respondents with the poorest standard of living. The reported prevalence of diabetes has been found to be the lowest in respondents of Hindu religion but the highest in respondents of other religion – neither Hindu nor Muslim. Similarly, the reported prevalence of diabetes is found to be lowest in Scheduled Tribes respondents but the highest in respondents of social classes other than Scheduled Tribes, Scheduled Castes, and Other Backward Classes. In general, reported prevalence of diabetes in found to be lower in females than in males but, in the Scheduled Tribes population, the reported prevalence of diabetes is found to be higher in females than in males. Similarly, the reported prevalence of diabetes is found to be higher in females than in males in population with no education and in population with the poorest standard of living. The male-female difference in the reported prevalence of diabetes varies by the background characteristics of the population.

Age at Diagnosis of Diabetes

Table 2 presents distribution of the age at diagnosis of diabetes in Kerala along with the distribution of the age at diagnosis of diabetes in India for the total population and for males and females separately based on the data available from LASI. In India, the median age at diagnosis of diabetes was 51 years for both males and females and, therefore, in the total population. In Kerala, however, the median age at diagnosis of diabetes was 53 years for males but 50 years for females. For the male and female combined population, the median age at diagnosis of diabetes was 50 years which is very close to that in India. The median age at diagnosis of diabetes in males was higher in Kerala compared to India but the median age at diagnosis in females was lower in Kerala than that in India. There is, however, big difference between India and Kerala in terms of both youngest age at diagnosis of diabetes and oldest age at diagnosis of diabetes. In India, the youngest age at diagnosis of diabetes was 6 years for both males and females compared to 26 years for both males and females in Kerala. On the other hand, the oldest age at diagnosis of diabetes was 83 years for males and 85 years for females but 77 years and 71 years respectively in Kerala.

The age at diagnosis of diabetes in Kerala has also been found to vary by the background characteristics of the respondents such as gender, place of residence, religion, social group, and the standard of living (Table 3). The median age at the diagnosis of diabetes has been found to be higher in rural respondents as compared to urban respondents. On the other hand, the median age at diagnosis has been found to be comparatively the highest in Muslim respondents but the lowest in Hindu respondents.

Among different social classes, the age at diagnosis has been found to be the highest in Scheduled Tribes respondents but the lowest in respondents belonging to Other Backward Classes. Finally, the age at diagnosis of diabetes has been found to be the lowest in respondents with the poorest and the richest standard of living as measured through the mean per capita consumption expenditure (MPCE). Among respondents with average and richer standard of living, the median age at diagnosis of diabetes has been found to be around 3 years higher than the median age at diagnosis among respondents with either the poorest or the richest standard of living index, Table 3 also shows that both minimum and maximum age at diagnosis of diabetes have also been found to vary widely across the background characteristics of the respondents. For example, although the median age at diagnosis of diabetes is found to be the same in respondents with the lowest and the highest standard of living, yet the minimum age at diagnosis was found to be substantially lower in respondents with the richest standard of living than that in respondents with the poorest standard of living. On the other hand, the maximum age at the diagnosis has been found to be the lowest in respondents with above average – richer and richest – standard of living, it was the lowest in respondents with middle standard of living.

Table 1: Reported prevalence of diabetes in population aged 45 years and above in Kerala as revealed through LASI.

Background characteristics of respondents		Reported prevalence of diabetes (per cent)		
		Male	Female	Person
Age	45-59	23.1	18.5	20.1
	60-74	35.2	34.7	35.0
	75+	42.2	33.5	37.3
Residence	Urban	34.2	26.2	29.3
	Rural	27.3	25.1	26.0
Education	No education	20.9	28.6	26.4
	Up to Primary	28.9	28.9	28.9
	Middle/Secondary	31.3	24.7	27.4
	Higher Secondary & above	37.2	18.5	26.0
Religion	Hindu	28.2	22.3	24.6
	Muslim	31.6	28.8	29.9
	Christian	36.4	32.4	34.1
Caste	General	31.9	29.1	30.3
	SC	18.8	17.6	18.1
	ST	15.8	23.8	20.0
	OBC	31.9	24.5	27.4
Wealth	Poorest	21.3	25.7	24
	Poorer	29.2	23.7	25.8
	Middle	34.6	23.2	27.7
	Richer	29.7	25.9	27.4
	Richest	34.6	28.9	31.3
All		30.5	25.5	27.5
N		991	1506	2497

Source: Authors' calculations

Table 2: Age at diagnosis of diabetes (years) by gender in India and Kerala

	Minimum	Q1	Median	Q3	Maximum	IQR
			India			
Total	6	45	51	59	85	14
Male	6	45	51	60	83	15
Female	6	45	51	58	85	13
			Kerala			
Total	26	45	50	58	77	13
Male	26	48	53	58	77	10
Female	26	45	50	58	71	13

Source: Authors' calculations

Table 3: Age at diagnosis of diabetes by selected demographic and social and economic characteristics of persons at least 45 years of age who self-reported that they have been diagnosed with diabetes.

Characteristics	Minimum	Q1	Median	Q3	Maximum	IQR
Age (years)						
45-59	26	36	42	43	47	7
60+	32	51	55	60	77	9
Sex						
Male	26	48	53	58	77	10
Female	26	45	50	58	71	13
Residence						
Rural	26	47	55	60	77	13
Urban	26	42	50	55	72	13
Religion						
Hindu	26	45	50	56	77	11
Christian	33	47	52	56	66	9
Muslim	32	44	54	60	72	16
Social Group						
Scheduled Tribes	26	44	55	67	77	23
Other Backward Classes	26	45	50	56	72	11
Others	30	45	52	59	71	14
Standard of living						
Poorest	32	48	50	55	72	7
Poorer	30	45	51	57	71	12
Middle	33	43	53	63	77	20
Richer	31	46	53	59	67	13
Richest	26	44	50	56	67	12

Source: Authors' calculations.

Remarks: The standard of living of the individuals has been classified into five mutually exclusive yet exhaustive categories based on the average monthly consumption expenditure at current prices of the household of the individual.

Prevalence of Diabetes

Table 4 gives the prevalence of diabetes in population above age 45 years in Kerala estimated from the data available through LASI. Prevalence of diabetes is found to be higher among males than females among all the age groups and similar pattern is found in rural and urban areas also.

Table 4: Prevalence of diabetes (per cent) in population at least 45 years of age in Kerala.

	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
					Total				
Person	13.5	21.6	29.0	31.3	34.0	41.6	41.6	38.7	27.8
Male	17.3	23.8	27.3	29.1	36.9	40.0	44.3	44.4	34.5
Female	12.2	19.9	30.4	32.9	31.4	43.1	39.3	33.3	24.0
					Rural				
Person	13.2	17.9	29.3	32.1	24.9	37.1	41.8	48.9	23.3
Male	19	18.9	23.9	28.8	27.7	33.3	41.9	48.1	28.6
Female	11.4	17.0	33.3	34.2	22.2	40.7	41.7	50.0	20.7
					Urban				
Person	13.7	25.4	28.7	30.5	44.0	46.7	41.3	23.3	33.3
Male	15.8	29.7	30.4	29.4	47.3	47.9	46.2	33.3	40.0
Female	13.0	22.5	27.4	31.3	41.2	45.6	36.1	19.0	28.6

Source: Authors' calculations

Life Expectancy and Diabetes-Free Life Expectancy

Life expectancy (LE) highlights, on average, the longevity in the population and is the universally used measure of population health. The diabetes-free life expectancy (DFLE), on the other hand, reflects the average number of years, a person is expected to live without diabetes whereas diabetes life expectancy (DLE) reflects the average number of years, a person is expected to live with diabetes. The estimation of DFLE and DLE requires construction of the life table for the total population – population with or without diabetes – and estimates of the prevalence of diabetes by age.

For the estimation of DFLE and DLE, we have first constructed life tables for the total population and for males and females for Kerala and for its rural and urban areas for the year 2018 from the age-specific death rates available from the official Sample Registration System of the country (Government of India, 2020c). The life tables so constructed are given in the appendix table. According to our calculations, the life expectancy at birth in Kerala was around 75 years for the total population and 72 years for males and 78 years for females. Life tables for Kerala have also been prepared by the Registrar General of India based on the data available from the official Sample Registration System. According to the life tables prepared by the Registrar General of India, the life expectancy at birth in Kerala was 70 years for the male-female combined population and around 72 years for males and 78 years for females during the period 2016-2021 (Government of India, 2022).

Table 5 gives estimates of life expectancy (LE), diabetes free life expectancy (DFLE) and diabetes life expectancy (DLE) in Kerala in the year 2018 at different ages of the life span beginning 45 years of age for total, rural and urban populations separately for males and females. Table 5 suggests that a male aged 45 years in Kerala is expected to live on average, about 30 more years out of which around 21 years will be without diabetes while around 9 years will be with diabetes. In other words, more than 30 per cent of the expected future life of a male aged 45 years in the state is likely to be with diabetes. On the other hand, a female aged 45 years in the state is expected to live on average, about 35 years more, out of which about 25 years is likely to be without diabetes while about 10 years will be with diabetes. This means that more than almost 29 per cent of the future life of a female aged 45 years in the state is likely to be with diabetes.

Table 5: Life expectancy, diabetes-free life expectancy (DFLE), and diabetes life expectancy (DLE) in Kerala, based on self-reported diabetes from LASI, 2018

Age	Male				Female			
	LE (years)	DFLE (years)	DLE (Years	Proportion of expected future life likely to be lived with diabetes (per cent)	LE (years)	DFLE (years)	DLE (Years	Proportion of expected future life likely to be lived with diabetes (per cent)
45	29.97	20.89	9.08	30.30	34.95	24.83	10.12	28.96
60	17.23	10.81	6.42	37.25	21.27	13.87	7.40	34.79
70	10.87	6.29	4.59	42.18	13.70	8.65	5.05	36.87
80	5.58	3.28	2.30	41.28	7.35	5.20	2.15	29.24
85+	3.32	2.17	1.15	34.50	4.90	3.72	1.18	24.00
				Rural				
45	30.02	20.92	9.10	30.30	34.83	24.76	10.07	28.92
60	17.41	10.93	6.48	37.20	21.08	13.75	7.33	34.76
70	10.82	6.28	4.54	42.00	13.41	8.47	4.94	36.86
80	6.12	3.62	2.50	40.80	7.35	5.20	2.15	29.30
85+	4.00	2.62	1.38	34.50	4.68	3.55	1.13	24.00
				Urban				
45	29.84	20.81	9.03	30.27	35.05	24.89	10.16	29.00
60	16.98	10.65	6.33	37.29	21.46	13.99	7.47	34.81
70	10.84	6.25	4.59	42.38	14.01	8.84	5.17	36.87
80	5.00	2.90	2.10	41.91	7.37	5.22	2.15	29.14
85+	2.53	1.66	0.87	34.50	5.22	3.97	1.25	24.00

Source: Authors' calculations

Table 5 also shows that there is only a marginal difference in the proportion of expected future life of males and females aged 45 years with diabetes in the rural and in the urban areas of the state. The table also shows that the proportion of expected future life likely to be lived with diabetes is the highest in both males and females who have

reached 70 years of age but is lower in both males and females who are older than 70 years of age. Another observation of table 5 is that the life expectancy at all ages in higher in females as compared to males in the state but the proportion of the expected future life likely to be lived with diabetes is higher for males as compared to females. The relatively higher proportion of the expected future life of a male likely to be lived with diabetes may be one of the reasons for the comparatively lower life expectancy of a male aged 45 years relative to a female aged 45 years in the state.

Discussion

India has the highest prevalence of diabetes mellitus globally, with Kerala having leaped ahead. Kerala has emerged as the 'Diabetic Capital' of India with the prevalence of diabetes at 19.2 per cent (Sarma, 2019). Any country transitioning from a developing to a developed economy is likely to experience similar trends in non-communicable diseases. The present study found that self-reported diabetes mellitus is associated with increasing age, and it confirms the findings of Tiwari et al (2008), Agrawal (2011) and Sharma et al (2024). The current study observed that females had a slightly higher likelihood of developing diabetes compared to males, though the prevalence was higher for males than for females. The study by Maiti et al (2023) lends credence to this finding. Lifestyle differences may be a significant reason for the differences in the prevalence of this condition between women and men (Wandell, 2014). The prevalence was higher in urban than in rural areas (Kalra, 2024). From the present study, it was found that in Kerala, elderly males lead a healthier life compared to elderly females. The number of years before progressing to diabetes is higher among females up to the age of 45 years only, and later, the pattern changes though the difference in the number of years before being diagnosed with diabetes among males and females isn't statistically significant Sharma et al (2024). Our study highlighted that even though life expectancy is higher for females than males, the proportion of years spent with diabetes is more for males and it is contradictory to the finding that women with diabetes live longer but experience a greater number of years with a disability (Payne, 2023).

Conclusion

Kerala, a state with one of the best health indicators in India, has a high prevalence of diabetes. The prevalence of self-reported diabetes is higher among males than females. Even though the prevalence rate is higher among males, the age at diagnosis of diabetes is earlier in females than in males. Females have also been found to live longer than males with diabetes. Kerala is at an advanced stage of demographic transition so that there is a rapid growth in the old population in the state. It is, therefore, crucial to promote healthy eating and exercise among the old people of the state as a way of reducing the burden of diabetes. Management of diabetes faces many challenges in Kerala. These include rising prevalence of diabetes, lifestyle alterations, delayed diagnosis, low degree of awareness, and expensive treatment cost. The present analysis shows that a significant proportion of the rapidly increasing old population of the state is likely to be living with diabetes in the

years to come. It is, therefore, important that health policy of the state should prioritise diabetes preventive and management measures like early screening of the old population, diabetes management education, and lifestyle interventions to help reduce the burden of diabetes and extend diabetes free life expectancy in the middle-aged and old population of the state. It is also important that equitable healthcare access is ensured through appropriate resources allocation to support prevention and management of diabetes, especially in rural areas of the state.

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Appendix Table 1: Life tables for Kerala, 2018

Age group	m_x	${}_nq_x$	l_x	${}_nd_x$	${}_nL_x$	T_x	e_x
				Total Male			
0-4	2.2	0.0109	100000	1094	497265	7240350	72.40
5-9	0.2	0.0010	98906	99	494283	6743085	68.18
10-14	0.4	0.0020	98807	197	493542	6248802	63.24
15-19	0.6	0.0030	98610	295	492310	5755260	58.36
20-24	0.5	0.0025	98314	245	490958	5262950	53.53
25-29	1.2	0.0060	98069	587	488878	4771992	48.66
30-34	0.9	0.0045	97482	438	486317	4283114	43.94
35-39	1.7	0.0085	97045	821	483169	3796797	39.12
40-44	3.3	0.0164	96223	1575	477179	3313628	34.44
45-49	3.1	0.0154	94648	1456	469603	2836449	29.97
50-54	6.3	0.0310	93193	2890	458738	2366846	25.40
55-59	11.5	0.0559	90303	5047	438895	1908108	21.13
60-64	16.8	0.0806	85255	6873	409095	1469213	17.23
65-69	38.5	0.1756	78383	13764	357503	1060118	13.52
70-74	46.4	0.2079	64619	13433	289510	702615	10.87
75-79	73.6	0.3108	51185	15909	216155	413105	8.07
80-84	122.9	0.4701	35276	16582	134926	196950	5.58
85+	301.4	1.0000	18694	18694	62024	62024	3.32
				Total Female			
0-4	2.0	0.0100	100000	995	497512	7806432	78.06
5-9	0.4	0.0020	99005	198	494530	7308920	73.82
10-14	0.1	0.0005	98807	49	493912	6814389	68.97
15-19	0.4	0.0020	98758	197	493296	6320477	64.00
20-24	0.6	0.0030	98560	295	492064	5827182	59.12
25-29	0.4	0.0020	98265	196	490835	5335117	54.29
30-34	0.7	0.0035	98069	343	489488	4844282	49.40
35-39	0.5	0.0025	97726	244	488021	4354794	44.56
40-44	1.5	0.0075	97482	728	485590	3866773	39.67
45-49	1.9	0.0095	96754	915	481482	3381183	34.95
50-54	3.2	0.0159	95839	1521	475392	2899701	30.26
55-59	4.8	0.0237	94318	2237	465997	2424309	25.70
60-64	10.2	0.0497	92081	4579	448957	1958312	21.27
65-69	18.7	0.0893	87502	7816	417968	1509355	17.25
70-74	26.0	0.1221	79686	9727	374111	1091387	13.70
75-79	47.6	0.2127	69959	14880	312595	717276	10.25
80-84	83.3	0.3447	55079	18987	227930	404681	7.35
85+	204.2	1.0000	36093	36093	176752	176752	4.90

Age group	m_x	$_nq_x$	l_x	$_nd_x$	$_nL_x$	T_x	e_x
				Rural Male			
0-4	2.2	0.0109	100000	1094	497265	7274039	72.74
5-9	0.3	0.0015	98906	148	494159	6776774	68.52
10-14	0.3	0.0015	98758	148	493419	6282614	63.62
15-19	0.3	0.0015	98610	148	492679	5789195	58.71
20-24	0.4	0.0020	98462	197	491818	5296516	53.79
25-29	1.0	0.0050	98265	490	490101	4804698	48.90
30-34	1.2	0.0060	97775	585	487413	4314598	44.13
35-39	1.7	0.0085	97190	823	483895	3827184	39.38
40-44	2.0	0.0100	96368	959	479441	3343290	34.69
45-49	3.4	0.0169	95409	1608	473023	2863849	30.02
50-54	7.2	0.0354	93800	3317	460709	2390826	25.49
55-59	11.1	0.0540	90483	4886	440201	1930117	21.33
60-64	16.4	0.0788	85597	6743	411129	1489916	17.41
65-69	35.0	0.1609	78855	12689	362550	1078786	13.68
70-74	57.6	0.2517	66165	16657	289184	716237	10.82
75-79	67.7	0.2895	49508	14333	211710	427052	8.63
80-84	113.6	0.4424	35176	15561	136977	215343	6.12
85+	250.3	1.0000	19615	19615	78366	78366	4.00
				Rural Female			
0-4	2.1	0.0104	100000	1045	497389	7821550	78.22
5-9	0.2	0.0010	98955	99	494530	7324161	74.01
10-14	0.1	0.0005	98857	49	494159	6829631	69.09
15-19	0.3	0.0015	98807	148	493666	6335472	64.12
20-24	0.3	0.0015	98659	148	492926	5841806	59.21
25-29	0.4	0.0020	98511	197	492064	5348880	54.30
30-34	0.5	0.0025	98314	245	490958	4856817	49.40
35-39	0.6	0.0030	98069	294	489610	4365859	44.52
40-44	1.0	0.0050	97775	488	487656	3876249	39.64
45-49	1.5	0.0075	97287	727	484620	3388592	34.83
50-54	3.1	0.0154	96561	1485	479090	2903972	30.07
55-59	4.9	0.0242	95075	2301	469624	2424882	25.50
60-64	10.3	0.0502	92774	4658	452226	1955259	21.08
65-69	17.8	0.0852	88116	7508	421811	1503032	17.06
70-74	35.6	0.1635	80608	13176	370101	1081222	13.41
75-79	40.3	0.1831	67432	12344	306302	711121	10.55
80-84	77.4	0.3243	55088	17863	230785	404818	7.35
85+	213.9	1.0000	37226	37226	174033	174033	4.68

Age group	m_x	$_nq_x$	l_x	$_nd_x$	$_nL_x$	T_x	e_x
				Urban Male			
0-4	2.1	0.0104	100000	1045	497389	7210504	72.11
5-9	0.0	0.0000	98955	0	494777	6713115	67.84
10-14	0.5	0.0025	98955	247	494160	6218338	62.84
15-19	0.9	0.0045	98708	443	492434	5724178	57.99
20-24	0.5	0.0025	98265	245	490713	5231744	53.24
25-29	1.5	0.0075	98020	732	488268	4741031	48.37
30-34	0.5	0.0025	97287	243	485830	4252763	43.71
35-39	1.6	0.0080	97045	773	483290	3766933	38.82
40-44	4.6	0.0227	96271	2189	475884	3283644	34.11
45-49	2.8	0.0139	94082	1308	467141	2807760	29.84
50-54	5.4	0.0266	92774	2472	457692	2340619	25.23
55-59	11.9	0.0578	90303	5218	438469	1882927	20.85
60-64	17.2	0.0825	85085	7016	407885	1444458	16.98
65-69	42.5	0.1921	78069	14996	352855	1036572	13.28
70-74	35.7	0.1639	63073	10336	289524	683717	10.84
75-79	80.9	0.3365	52737	17743	219326	394192	7.47
80-84	134.5	0.5033	34993	17611	130939	174867	5.00
85+	395.7	1.0000	17382	17382	43928	43928	2.53
				Urban Female			
0-4	1.8	0.0090	100000	896	497760	7799401	77.99
5-9	0.6	0.0030	99104	297	494778	7301641	73.68
10-14	0.0	0.0000	98807	0	494036	6806863	68.89
15-19	0.5	0.0025	98807	247	493419	6312827	63.89
20-24	0.9	0.0045	98560	443	491696	5819408	59.04
25-29	0.4	0.0020	98118	196	490100	5327712	54.30
30-34	0.9	0.0045	97922	440	488510	4837613	49.40
35-39	0.4	0.0020	97482	195	486924	4349102	44.61
40-44	1.9	0.0095	97287	920	484138	3862178	39.70
45-49	2.4	0.0119	96368	1150	478964	3378041	35.05
50-54	3.3	0.0164	95218	1558	472195	2899076	30.45
55-59	4.6	0.0227	93660	2130	462975	2426882	25.91
60-64	10.2	0.0497	91530	4552	446271	1963907	21.46
65-69	19.8	0.0943	86978	8205	414379	1517636	17.45
70-74	16.1	0.0774	78773	6096	378628	1103257	14.01
75-79	55.4	0.2433	72678	17683	319181	724629	9.97
80-84	90.5	0.3690	54995	20294	224240	405448	7.37
85+	191.5	1.0000	34701	34701	181207	181207	5.22

Source: Authors' calculations