Floating Life Expectancy in China

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China had a floating population of 221.4 million according to the 2010 population census, more than 30-fold increase compared to the figure in the early 1980s. Its percentage in the total population rose from less than 1% in the early 1980s to more than 16% in 2010. In addition to the rapidly expanding size of the floating population, another major trend of the migration has been the transition from a stage of individual temporal migration to a stage of family long-term migration. However, China's floating migrants usually do not have citizenship in the cities they live because of the institutional barriers set by the *Hukou* system (household registration system). Thus they work in the cities, but originated from rural areas where they have the *Hukou* which is extremely difficult to transfer. Since most of welfare programs including medical care and pension are distributed according to the types of *Hukou*, the rural migrants working and living in the cities are usually not entitled to the welfare and public services in the cities. They are living in a floating status although many of them have already lived in the cities for many years. According to a one-per-thousand migrant survey conducted in 2006 in Beijing by People's University of China, the mean duration of stay in Beijing of the sample migrants was 4.8 years. Nearly 40% of the migrants had already lived in Beijing for more than 5 years, and 14% had lived for more than 10 years. A considerable and increasing portion of life time of the floating population is being spent in a floating status in China.

In measuring the time length of being in the floating status of the population of China, this paper develops a demographic indicator using life tale techniques. Borrowing the idea of calculating healthy life expectancy by Sullivan method, we develop floating life expectancy. By incorporating age-sex-specific mortality rates and age-sex-specific proportions of being in the floating status of the population, floating status life tables are generated. The floating life expectancies obtained from the life tables could measure the expected length of life spent in the floating status of the population.

In constructing floating status life tables, we use data from China's 2010 population census. However, mortality data in the 2010 census are notoriously under-reported, and under-reporting largely occurred in infant and child mortality. For example, the infant mortality rate obtained from the 2010 census was surprisingly as low as 3.8 deaths per thousand births, which, according to international experiences is too low, unreasonably too low. Very few countries, even among the most developed, in the world had such low infant mortality rate. In adjusting the 2010 mortality data, we use Brass logit transformation to calculate China's 2010 life tables by referring to the life tables generated from the previous three population censuses. Mortality data are much better in the previous censuses, and the results from Brass logit transformation suggest that age patterns of mortality are largely stable while level of

mortality has declined substantially over the last 30 years in China.

Despite the fact that China's National Bureau of Statistics, who conducted the 2010 population census, published China's 2010 life expectancies, the corresponding complete life tables are not available, nor are the procedures involved in adjusting the mortality data by the National Bureau of Statistics. In this case, we have generated the 2010 life tables under the level of mortality indicated by the life expectancies published by the National Bureau of Statistics using Brass logit transformation in which linear relationships are established between the life tables from the last three censuses. We have thus calculated 2000, 2005 and 2010 life tables, which are further extended to obtain the respective floating status life tables. Table 1 elaborates on the calculation of the 2010 floating status life table for the total population of China.

Table 1　Floating Status Life Table, China, 2010

Age	Number of survivors	Number of person years lived	Cumulative number of person years lived	Life expectancy	Proportion being in the floating status	Number of person years lived in the floating status	Cumulative number of person years lived in the floating status	Floating life expectancy
x	l_x	L_x	T_x	e_x	m_x	$L_x(F)$	$T_x(F)$	FLE_x
（1）	（2）	（3）	（4）	（5）	（6）	(7)=(3)*(6)	（8）	(9)=(8)/(2)
0-4	100000	488894	7482998	74.83	0.0969	47350	1083771	10.84
5-9	97363	486302	6994104	71.84	0.1120	54446	1036421	10.64
10-14	97158	485392	6507803	66.98	0.1023	49645	981975	10.11
15-19	96999	484373	6022411	62.09	0.2541	123071	932330	9.61
20-24	96750	482819	5538038	57.24	0.2984	144088	809259	8.36
25-29	96377	480852	5055219	52.45	0.2709	130281	665171	6.90
30-34	95963	478598	4574367	47.67	0.2434	116485	534890	5.57
35-39	95476	475846	4095769	42.90	0.2080	98958	418405	4.38
40-44	94863	472169	3619923	38.16	0.1685	79561	319447	3.37
45-49	94005	466910	3147754	33.48	0.1298	60592	239885	2.55
50-54	92759	458952	2680844	28.90	0.0934	42873	179293	1.93
55-59	90822	446631	2221892	24.46	0.0796	35534	136420	1.50
60-64	87831	426862	1775260	20.21	0.0720	30743	100886	1.15
65-69	82914	395213	1348398	16.26	0.0630	24889	70144	0.85
70-74	75171	345457	953185	12.68	0.0551	19020	45254	0.60
75-79	63012	274488	607728	9.64	0.0455	12484	26234	0.42
80-84	46783	185146	333240	7.12	0.0417	7712	13750	0.29
85+	27275	148094	148094	5.43	0.0408	6038	6038	0.22

Figure 1 presents levels and trends in China's floating life expectancies over the last decade. China's overall floating life expectancy doubled, from 5.4 years in 2000 to 10.8 years in 2010. Gender gap in floating life expectancy has slightly increased.

Chinese people could on average be expected to spend nearly 11 years in the floating status, with males having a half year more than females. This clearly demonstrates a strongly intensifying trend of long-term floating migration in China.

Figure 1   Trends in Floating Life Expectancies in China, 2000-2010
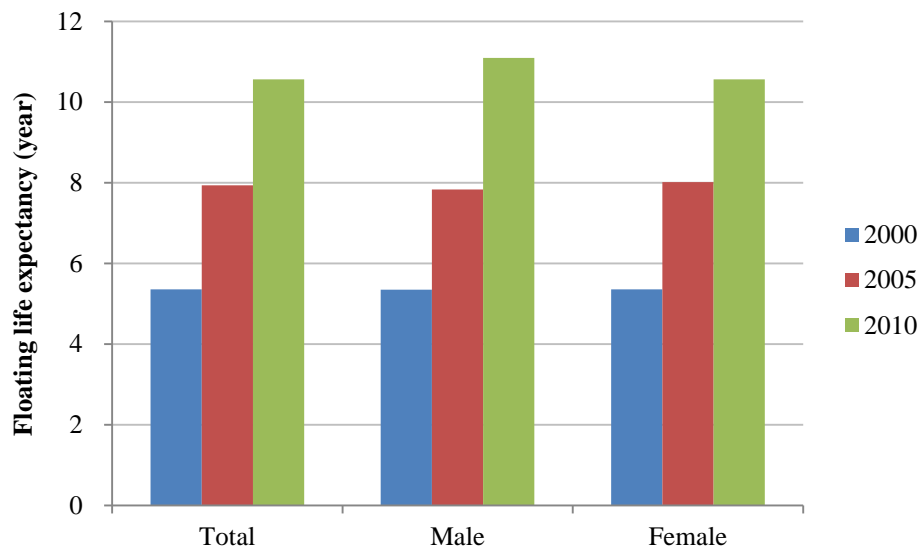
China's floating life expectancies increased more rapidly than life expectancies. While the overall floating life expectancy doubled, with an increment of 5 years, the overall life expectancy only increased by 3 years, leading to rapidly rising proportion of the floating life expectancy among the overall life expectancy. The proportion has nearly doubled over the last decade. Since male life expectancy was 5 years less than female life expectancy in 2010, but male floating life expectancy was 0.5 year more than female floating life expectancy, thus male proportion of floating life expectancy among the life expectancy was higher than the female proportion. The male proportion increased from 7.7% to 15.3%, while the female proportion increased from 7.3% to 13.4% over the last decade.

The very large and rapidly expanding floating population with rapidly lengthening floating life expectancy poses considerable urban policy and planning challenges. In a typical case, Chinese cities prepare for public resources and infrastructure only according to the local residents. Overburden pressures resulting from flooding in of rural migrants have been increasing in most of the cities, especially in the large cities like Shanghai and Beijing. Both the central and local city governments need to adjust development strategies to take into account the increasing floating population. On the other hand, the vast majority of the floating migrants, many of whom have lived in the cities for very long time, only have made geographic transition, they have not had citizenship transition owing to the barriers from the *Hukou* system. China needs to speed up the *Hukou* system reform to enable and facilitate citizenship transition, so that the floating migrants could be treated equally with local residents and integrated fully into the cities.