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Sex Difference of the Compression of Mortality in Mainland China --Based on the Adjusted Census Data using Brass-logit method

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In view of the fact that China's 1982 third census is widely recognized as the highest quality census data, this study used Brass-logit method to adjust the mortality data of the 1990, 2000 and 2010 censuses. The analysis finds out the under-reporting of death of the younger age groups (e.g. 0-4) in the 1990, 2000 and 2010 censuses. And under-reporting of deaths in the advanced age groups (e.g. 80+) is more severe in 2010 than that of the 1990 and 2000 censuses.

Based on the adjusted mortality data, this paper uses the P-Spline smoothing method to analyze the trend of death rates in Mainland China. Between 1982 and 2010, the average life expectancy (LE(0)) has notably increased by 4.79 years from 66.92 to 71.71 for males, while for females the increase is two-fold higher than that of males from 69.83 to 78.31 in the same period. Similar to LE(0), there is a gender difference in the adult modal length of life (M). For females, M increases by 3.42 years from 81.04 years in 1982 to 84.46 years in 2010 which is more than 5 years higher than that of males.

The results show that increases in M and the force of mortality at M ($\mu(M)$) are generally accompanied by reduced dispersion (a decrease in the mean length of life after M ($e(M)$) from 1982 to 2010. The level of concentration of individual life durations ($d(M)$) among females are both larger than that of males, but the total numbers of individual life durations occurring at and above M ($d(M+)$) and $e(M)$ among females are much lower than that of males. Our findings suggest that the mortality is more compressed for females than that of males in Mainland China. Decomposition results indicate that the effect of compression of mortality above M contributes more for females (45.6%) than for males (23.4%) to the decrease of $e(M)$. In this study, we also use the Lee-Carter method to predict the future mortality. (327 words)