

Quantitative Estimate of Only Child Death Family and Discussion of Their Social Support Level

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1. Introduction

Only Child Policy continues for more than 30 years in China. Now there are more than 150 million Only Child Families. If the only child dies, the parents will suffer great loss in both economy and emotion, especially when they are too old to give birth to a new child. Only Child Death Families (OCDF) make the greatest sacrifices for China's Only Child Policy. Now there is support system for OCDF, but the support level and coverage of this system is not enough.

One Child families in rural areas are less than urban areas, but hazard of rural One Child death is higher in any age. As shown in Fig.1, mortality rate of rural female is much higher than urban female. So does mortality rate of male.

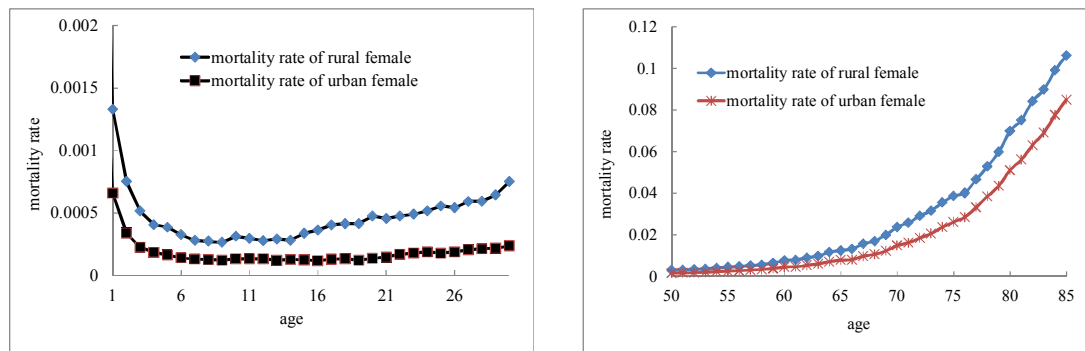


Fig.1 Mortality rate of rural female and urban female

We focus on the number of Only Child Families, hazard of Only Child death, the number of death and the number of their parents whose age are more than 49 (which means they can't give birth to a new child), and analyze the support level of OCDF in urban and rural areas, and provide theoretical and data support for the improvement of this support system.

2. Methodology

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The probability of women having only child can be determined by the function of fertility rate and fertility interval. The probability of women having only child can be represented as integral equation:

$$P_{1o}(T) = \frac{1 - r}{1 - r \cdot \int_0^T q_2(t)dt} \quad (1)$$

$$r = \frac{TPPR_2}{TPPR_1}; \quad q_2(t) = \frac{1}{N_2} \cdot \frac{dN_2}{dt}; \quad \int_0^\infty q_2(t)dt = 1 \quad (2)$$

$P_{1o}(T)$ is probability of woman have only child during T period after giving birth to the first child; $TPPR_1$ is total progressive fertility rate of giving birth to the first child of female queue; $TPPR_2$ is total progressive fertility rate of giving birth to the second child of female queue; r is Ratio of the female who have second child to the female queue who have one child; $q_2(t)$ is interval from first child to second child; N_2 is the expectancy number of having the second child.

The gender of first child plays an important role in the decision whether to give birth to second child, so gender is taken account into the model:

$$\begin{cases} P_{1mo}(T) = \frac{1 - r_{10}}{1 - r_{10} \cdot \int_0^T q_{10}(t)dt} \\ P_{1fo}(T) = \frac{1 - r_{01}}{1 - r_{01} \cdot \int_0^T q_{01}(t)dt} \end{cases} \quad (3)$$

$P_{1mo}(T)$ is probability to have only child during T period after giving birth to a boy; $P_{1fo}(T)$ is probability to have only child during T period after giving birth to a girl; Total progressive rate of giving birth to the first child of one female queue; r_{10} is the ratio of the female who have second child to the female queue who have a boy; r_{01} is the ratio of the female who have second child to the female queue who have a girl.

3. Conclusions

- (1) Up to 2010, there are 79.49 million only child families in rural areas and 99.27 million only child families in urban areas. There are 1.59 million only child death families in rural areas and 0.83 million only child death families in urban areas, the total number is 2.41 million.
- (2) The number of parents who lost their only child is 553 thousand in rural areas, and 268 thousand in urban areas.
- (3) The support level should be improved to be 500 yuan for parents aged 49-59, and 800 yuan for parents aged more than 60. In this design, the amount of funding is 5.11 billion in 2010, and 13.47 billion in 2030 if the Only Child policy continues.
- (4) If parents are allowed to give birth two children, or the mortality rate of rural population decline to the level of urban population, Only Child death families can be reduced significantly.

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