Factors that Determine the Willingness of Aged Care Model for Citizens in Yangtze River Delta: Home-based Care or Institutional Care

Shen Yulun

UWC Changshu China, Changshu 215505, China

Keywords: Aged Care Model, Home-based Care, Institutional Care, Yangtze River Delta

Abstract: Under the trend of China's aging population and declining birthrate, it is more necessary to promote the way of institutional care. This research selects Yangtze River Delta with the highest level of economic development in China as the research region, and collects 2463 questionnaires to study the preference and determinants of aged care model among residents of different cities and ages. By logit regression method, this research finds that the willingness of institutional aged care of residents in Shanghai, Zhejiang, Jiangsu and Anhui decreases in turn. Residents who are younger, live in cities, have a higher sense of happiness, have fewer children and have a higher level of education are more likely to receive institutional care, and the elderly who have more daughters and meet their children more frequently prefer home-based aged care.

1. Introduction

The population structure of China has two notable characteristics: aging and declining birthrate. On the one hand, with the improvement of medical treatment and quality of life, the mortality rate of Chinese residents has decreased and life expectancy has increased. As a result, the degree of population aging in China is deepened. According to data released by China's National Bureau of Statistics, China has become an elderly country (a country with a population of 65 years and over accounting for more than 7% of the total population) since 2000. According to the results of the seventh national census released by China's National Bureau of Statistics on May 11th 2021, China's population aged 60 and over was 264.02 million in 2020, accounting for 18.70% of the total population, which means that China is very close to a moderately aging society. What's more, the population aged 65 and above is 190.64 million, accounting for 13.50% of the total. Compared with 2010, the proportion of people aged 60 and over increased by 5.44%, and the proportion of people aged 65 and over increased by 4.63%. According to the forecast released by the National Office on Aging, China's elderly population will reach a peak of 487 million by 2050, accounting for 34.9% of the total population, more than one-third of the total population. China will face the pressure brought by a large number of aging population now and in the future.

On the other hand, both the birth population and the working-age population are falling. According to the data released by China's National Bureau of Statistics, in 2018, China's annual birth population was 15.23 million, and the birth rate was 10.94 ‰, which was the lowest since the data existed in 1952. In 2019, the annual birth population was 14.65 million, and the birth rate was 10.48 ‰. In 2020, there were 12 million births, and the birth rate dropped to 8.50 ‰, a record low. At the same time, the total working age population is still falling. From 2018 to 2020, the working age population aged 16 to 59 decreased from 897.29 million to 894.38 million, a decrease of 2.91 million.

In society, young people often participate in economic production activities as labor force to

  DOI: 10.25236/ermss.2021.056

create output. And the elderly whose productive capacity have declined are mainly supported by the savings, families and the government subsidies. When the proportion of young people in society decreases and the proportion of old people increases, the social aged care pressure will increase significantly due to the following reasons. From the perspective of the family, the number of young people in the family is small (especially in family under the “One-child Policy”, which often has only one child) and young people need to work. It is difficult for young people to have time and energy to take care of and accompany the elderly. Many researches have mentioned that that family members may be less able to provide old-age support due to the reduction in the average family size alongside increased labour migration. [1] [2] From the perspective of the government, the social pension insurance paid by young people decreases, while the amount of pension paid by the government to the elderly has increases. The funding gap in pension may become larger. According to Lu et al.(2021), along with the modernization and demographic transition, family functions have been weakened, and state-based care has begun to play an essential role in supporting family care for older people. [3] In conclusion, it can be predicted that the aged care problem will become a more and more serious problem in China.

The aged care mode is mainly divided into home-based care model and institutional care model. Critics highlight that the decline of family support for older family members has not come about; even in advanced welfare states, the family is still the main source of support for most older adults.[4] Before the implementation of “One-child Policy” in China, there used to be more than one child in a family. Several children can share the cost of support their parents when they get old. As a result, in traditional Chinese culture, the old-age care is generally borne by the children of the family and "home-based care" is a main way of providing for the aged. What’s more, if the children do not take good care of their parents, they will be condemned by the public for being unfilial.

Under the current demographic structure, especially in the context of "one child" families, the home-based care model will become unbearable for young people. In economics, specialized production will be more conducive to the improvement of product quality and the reduction of the cost. The same applies to the "aged care industry". Professional institutional aged care model will help reduce the burden on young people, and be more efficient. According to Zhang(2019) [5], the proportion of the total elderly population living in institutional care settings was estimated to be just 1.5% in 2014. Nowadays, to what extent do Chinese residents accept the non-traditional institutional care model? What factors determine residents' choice of aged care model? These issues remain to be discussed.

Due to the large area and the great development differences among regions of China, this paper narrows the research scope to the Yangtze River Delta in the East of China where the economic development level, culture and geographical environment are close, so as to control the impact of regional differences on the willingness of aged care model. In addition, the Yangtze River Delta is the most economically developed region in China. With less than 4% of its land area, it has created nearly 1/4 of China's total economic volume and 1/3 of China's total import and export volume [6] , which is the reference and future direction for the development of other regions in China. Considering that the way of institutional elderly care in China is a way that needs to be vigorously promoted in the future instead of the traditional way of home-based elderly care, discussing the acceptance and determinants of institutional elderly care in the most developed regions of China will make the study and the policy suggestions based on this study more forward-looking and will provide direction for the future development of other regions.

2. Data

i. Questionnaire Design

In order to study this problem, this paper issues an online questionnaire to Chinese citizens living in the Yangtze River Delta. The questionnaire is divided into two parts: personal information and the willingness of age-care model. A total of 2463 samples were collected, including 144 samples from Shanghai, 569 samples from Zhejiang Province, 793 samples from Jiangsu and 962 samples from Anhui.

The first part is the personal background information of residents. On the one hand, the first part asks personal objective information, such as gender, age, city where you live, education level, marital status, monthly income, household registration, number of children, children's personal information, frequency of meeting with children, etc. On the other hand, the first part asks some subjective information, such as personal score on your own happiness (full score of 10), the degree of harmony with your children (full score of 10), and the degree of harmony with your children's spouses (full score of 10).

The second part is the investigation of residents' willingness of the aged care model. The core question is "what kind of aged care model model do you prefer". Respondents choose from the four options of home-based care, institutional care, indifferent between home-based care and institutional care, or undecided. Around this core question, the questionnaire further asks the reason and more details about the answer.

ii. Basic Characteristics of the Answers

The distribution of the answer to the core question of "what kind of aged care model model do you prefer" is shown in Table 1. From the perspective of the total sample, 35.58% of the respondents explicitly choose home-based elderly care, which is close to 36.91% of those who explicitly choose institutional elderly care. This distribution is obviously different from the stereotype that "Chinese people are more excluded from the institutional pension model". Perhaps because the survey in this paper is not just like most previous research of which the questionnaire is only for the elderly who are facing pension problems. The sample in this paper involves the younger generation and includes more diverse groups, so the distribution of answers is different. This result also shows that the choice of pension model may be related to the different backgrounds of the sample.

From the comparison of different provinces, Shanghai citizens have the highest acceptance of institutional pension model, more than 50%, reaching 57.64%, followed by 45.52% in Zhejiang Province and 42.62% in Jiangsu Province. Anhui Province has the lowest willingness of institutional pension model, only 24.01%. Different cities have different levels of economic development, openness and cultural background, and the government's investment and publicity in institutional pension are also different. These factors will also lead to different acceptance of institutional pension model by citizens.

Table 1 Distribution of the willingness of aged care model

	Shanghai	Jiangsu	Zhejiang	Anhui	Total
Home-based care	15.97%	23.46%	21.79%	56.65%	35.58%
Institutional care	57.64%	42.62%	45.52%	24.01%	36.91%

Indifferent	15.28%	20.55%	18.80%	11.85%	16.45%
Undecided	11.11%	13.37%	13.88%	7.48%	11.06%

For those who choose home-based pension, the number of people who tend to be taken care of by their children or other relatives, people who tend to be taken care of by nursing workers or nannies, and people who tend to take care of themselves or to be taken care of by their spouses decreases in turn. The top three reasons for choosing home-based pension are more trust in family, more familiar with family environment and the hope to be accompanied by children and grandchildren.

For those who choose institutional pension, 56.32% tend to live in private nursing institutions and 25.97% in government public nursing institutions, respectively. Others say they feel no difference. The top three reasons for choosing institutional pension are that there can be more peers around, institutions are more professional, and they do not want to increase the burden on their children. The main reason for choosing private pension institutions is that private pension institutions are more considerate and provide more diversified services. The main reason for choosing government public nursing institutions is that these institutions have lower cost and higher security.

3. Empirical Analysis

i. Empirical Model

From the basic characteristics of the survey answers, the choice of aged care model has a strong relationship with individual background. According to Cheung et al.(2006), elder care can involve many relative factors, including the elder's children, other relatives, friends, community, and services sponsored by the government. [7] Only by finding out which factors play a key role in the selection of aged care model, can we put forward effective suggestions for the promotion of institutional pension model. Therefore, this research further studies: Who are inclined to accept institutional pensions? What factors will promote the elderly to accept institutional care? The empirical model is established as follows to study the determinants of willingness of aged care model for citizens in Yangtze River Delta.

$$U_i = \alpha + \beta X_i + \mu_i \quad (1)$$

Ui represents the utility of choosing institutional care for person i. X is series of explanatory variables that may affect Ui, The variables contained in X and their explanations are shown in Table 2. μ_i is a random disturbance term, which represents the error of the model and obeys the Gauss Markov hypothesis.

Table 2 Variables in X and explanations

Variable	Explanation
age	Age.
city	Whether the person is from the city.
happiness_score	Scoring of happiness.
shanghai	Whether the person is from Shanghai.
zhejiang	Whether the person is from Zhejiang.

jiangsu	Whether the person is from Jiangsu
marriage	Whether the person is married.
children	Whether the person has children.
high_edu	Whether the person has a high education degree. (Used in the full-sample. Take 1 if the person's education degree is bachelor degree or above, otherwise take 0.)
high_wage	Whether the person has high income.(Used in the full-sample. Take 1 if the person's monthly income exceeds 10,000 yuan, otherwise take 0.)
high_edu2	Whether the person has a high education degree. (Used in the elderly sample. Take 1 if the person's education degree is technical secondary school degree or above, otherwise take 0.)
high_pension	Whether the person has high pension.(Used in the elderly sample. Take 1 if the monthly pension exceeds 3000 yuan, otherwise take 0.)
son_num	Number of sons.
daughter_num	Number of daughters.
high_meet	Whether the frequency of meeting with children is high (Take 1 if the number of meetings in the last month exceeds 5, otherwise take 0.)
harmony_child_score	Degree of harmony with children.
harmony_spouse_score	Degree of harmony with the children's spouse.

Since Ui cannot be observed, model (1) is further adjusted to the following model:

$$P(D_i = 1) = P(U_i \geq \overline{U}) = P[\mu_i \geq -(\alpha + \beta X_i)] = F(\alpha + \beta X_i) \quad (2)$$

In model (2), Di is the dummy variable of whether willing to accept institutional pension which can be observed by the answer in the questionnaire. When Di is set to 1, it means that the person is willing to accept the institutional care; when it is set to 0, it means that the person is unwilling to accept institutional care. After sorting, the coefficients of the model can be estimated through the following model deformation:

$$ln[\frac{P(D_i = 1)}{1 - P(D_i = 1)}] = \alpha + \beta X_i + \mu_i \quad (3)$$

ii. Descriptive Statistics of Variables

Variables involved in the empirical model and their descriptive statistical characteristics are shown in Table 3. For each variable, table 3 lists the number, mean value, standard deviation,

minimum value and maximum value of its observed values. Among all variables, the explained variable *D*, and *city, Shanghai, Zhejiang, Jiangsu, marriage, children, high_edu, high_wage, high_edu2, high_pension, high_meet* in the explanatory variables are dummy variables, so the minimum value of each variable is 0 and the maximum value is 1. The mean value shows the proportion of these variables in the sample with a value of 1, and the standard deviation shows the degree of dispersion for the two choices. The value range of *happiness_score, harmony_child_score* and *harmony_spouse_score* in explanatory variables is 0-10. In addition, value of *age，son_num* and *daughter_num* in explanatory variables is a positive integer.

Table 3 Descriptive Statistics of Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
D	2,468	0.3581848	0.479564	0	1
age	2,468	35.34684	11.598	16	65
city	2,468	0.4574554	0.4982876	0	1
happiness_score	2,468	4.584279	2.840688	1	10
Shanghai	2,468	0.0583468	0.2344456	0	1
Zhejiang	2,468	0.2305511	0.4212709	0	1
Jiangsu	2,468	0.3213128	0.4670752	0	1
marriage	2,468	0.4967585	0.5000908	0	1
children	2,468	0.5636143	0.4960372	0	1
high_edu	2,468	0.3776337	0.4848936	0	1
high_wage	2,463	0.2480715	0.4319812	0	1
high_edu2	658	0.5881459	0.4925434	0	1
high_pension	269	0.3122677	0.4642821	0	1
son_num	1,391	1.218548	0.7697339	0	3
daughter_num	1,391	1.149533	0.6988671	0	2
high_meet	1,391	0.4450036	0.4971449	0	1
harmony_child_score	1,391	4.774982	2.87817	1	10
harmony_spouse_score	499	7.539078	1.709874	3	10

It is worth noting that the number of effective samples for different variables is not the same. This is mainly because that different groups of people answer different questions. Some questions are asked for all samples, such as aged care intention, age, location, scoring of personal happiness, etc. However, some questions are asked for special populations. For example, only the number of pensions are asked for retirees, the number of sons and daughters, the frequency of meeting with children and the degree of harmony with children for those who have children, and the degree of harmony with children for those whose children have spouses.

In terms of age distribution, the age of the respondents ranges from 16 to 65, with an average

age of 35.3. Further subdivide the age. There are 151 people aged equal to or less than 20, 1278 people aged in (20,35], 538 people aged in (35,45], 263 people aged in (45,55], and 237 people aged over 55. Overall, the sample includes all ages, which has strong universality. However, the sample of young people is more, while the sample of old people is slightly insufficient. Because this paper uses online questionnaire to collect data, which can relatively save time and cost compared with face-to-face Q & A. However, it may be inconvenient for the elderly to use smart phones or computers to answer online, which may lead to less samples of the elderly in this survey. As for the aged care problem, residents before retirement often do not directly face the pension problem, while retired residents are facing this problem, so it is necessary to conduct a separate empirical analysis for the retired samples.

iii. Empirical Result

By bringing the sample into this model for logit regression, which variables have significant impact on the willing to accept institutional care can be found. The empirical results are shown in Table 4. Column (1) is the empirical result based on the full sample which includes all age groups. Column (2) is based on the old sample who have retired and have pension.

Table 4 Factors that determine the willingness of aged care

	(1)	(2)
institution_support	Full sample	The old
age	-0.022***	-0.113
	(0.006)	(0.120)
city	0.179**	0.831
	(0.087)	(0.567)
happiness_score	0.081***	-0.120
	(0.017)	(0.171)
Shanghai	1.498***	0.416
	(0.188)	(1.835)
zhejiang	1.002***	0.558
	(0.115)	(0.674)
jiangsu	0.881***	0.097
	(0.106)	(0.620)
marriage	0.029	
	(0.129)	
children	-0.166*	
	(0.093)	

high_edu	0.345***	
	(0.094)	
high_wage	-0.107	
	(0.104)	
high_edu2		0.400
		(0.562)
high_pension		1.007*
		(0.602)
son_num		-0.386
		(0.346)
daughter_num		-3.412***
		(0.588)
high_meet		-3.361***
		(0.693)
harmony_child_score		0.175
		(0.175)
harmony_spouse_score		0.167
		(0.157)
_cons	-0.898***	9.119
	(0.194)	(7.214)
N	2463	149
Pseudo R2	5.95%	52.24%

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

From column (1), the capacity of the whole sample is 2463. For the whole sample, the effect of variable *age* is significantly negative, that is, young people are more willing to accept institutional pension. The impact of *city* is significantly positive, that is, residents from cities are more willing to accept institutional pension than those from rural areas. The impact of *happiness_score* is significantly positive, that is, residents with high self evaluation of happiness are more willing to accept institutional pension. The coefficients before *Shanghai*, *Zhejiang* and *Jiangsu* are significantly positive, and the coefficients decreases in turn, indicating that the institutional pension willingness of residents in Shanghai, Zhejiang, Jiangsu and Anhui decreases in turn. The coefficient of *children* is significantly negative, indicating that residents with fewer children are more inclined to accept institutional pension. In addition, the coefficient of *high_ edu* is significantly positive, indicating that residents with higher education tend to accept institutional pension.

From column (2), the sample size of the elderly is 149. For the elderly, only *daught_num* and *high_meet* have statistically significant influence. The fewer daughters, the more the elderly tend to accept institutional care. The fewer times they meet their children, the more likely the elderly are to accept institutional care. This confirms what Hareven (1978) [8] says that the most classic exchange in the process of human life is intergenerational support between children and parents and what Litwak (1966) [9] says that children's care for their parents is based on the commitment of blood relationship and emotional bond. As in many previous studies, it is believed that the number of children increases the possibility that parents believe that children should be mainly responsible for the pension of the elderly.[10][11][12] What's more, family theorists often insist on the important role of daughters in intergenerational support.[13] However, Zhang(2000) points that the gender difference in children's support in parents' pension has been weakened in cities, daughters perform better than sons in many aspects, and daughters' contribution to family economy and pension is also increasing.[14]

4. Conclusion

The trend of aging and fewer children in China may become more and more obvious.What's more, the number of Chinese childless elderly is expected to increase in the future due to voluntary and involuntary factors, including late or non marriage, infertility, high divorce rates and child deaths.[15] It is necessary to promote the way of institutional pension in China. Based on the empirical results of logit regression, this research finds that the willingness of institutional aged care of residents in Shanghai, Zhejiang, Jiangsu and Anhui decreases in turn, which is is consistent with the ranking order of provinces in income per capita. According to the data released by the National Bureau of statistics, in 2020, the per capita disposable income of Shanghai residents was 72232 yuan, ranking first in China. Zhejiang Province and Jiangsu Province ranked third and fifth respectively, and Anhui Province ranked 13th. It can be seen that the level of economic development plays a vital role in the acceptance of institutional care.

In addition, from the impact of personal demographic background on pension intention, residents who are younger, live in cities, have a higher sense of happiness, have fewer children and have a higher level of education are more likely to receive institutional care. It can be inferred that with the decline of China's fertility rate, the improvement of urbanization and the improvement of residents' education level, the institutional pension mode of Chinese residents will be more common in the future.

For the elderly, people who have more daughters and meet their children more frequently prefer home-based aged care. It can be seen that the choose of home-based aged care is still because of the family relationship with their children, especially the close relationship with their daughters. This reflects that women take on more responsibilities in family care in China.

According to the research results of this paper, with the improvement of social urbanization, the reduction of fertility and the popularization of education, more and more residents will take the initiative to choose the way of institutional aged care mode. In addition, according to the questionnaire feedback, residents generally hope that the government can improve the service level, reduce the charges and improve the facilities of nursing institutions, so as to improve the experience of the elderly. This requires the relevant government departments to constantly improve and standardize the service system of institutional aged care, accelerate the construction of public and private nursing homes, strengthen the supervision of the service quality of nursing homes, and make full preparations in advance for the arrival of a large group of elderly people.

There are still many deficiencies in this research to be further solved in the future. Firstly, in the

data, the number of elderly people who are facing aged care problems is insufficient, which leads to the small number of variables found to play a significant role in the logit regression model with elderly people as samples and weakens the explanation of elderly behavior in this paper.

In addition, although this paper finds that the acceptance of institutional pension by residents is consistent with the level of economic development, this paper does not further discuss the ways how the economic level enhances residents' acceptance of institutional aged care model, by improving the degree of marketization, openness, cultural diversity or other mechanism.

Finally, the area discussed in this paper is only limited to the Yangtze River Delta. The data obtained based on the questionnaire of residents in the Yangtze River Delta is not a rigorous random sample, and the data quality may not be fully guaranteed. The number and quality of samples, as well as a larger survey scope, need to be further guaranteed in future research.

References

[1] Qin, Min, Jane Falkingham, and Sabu S. Padmadas. 'unpacking the Differential Impact of Family Planning Policies in China: Analysis of Parity Progression Ratios from Retrospective Birth History Data, 1971–2005', Journal of Biosocial Science, vol. 50/no. 6, (2018), pp. 800-822.

[2] Giles, John, Dewen Wang, and Changbao Zhao. 'Can China's Rural Elderly Count on Support from Adult Children? Implications of Rural-to-Urban Migration', Journal of Population Ageing, vol. 3/no. 3, (2010), pp. 183-204.

[3] Lu, Jiehua, Li Zhang, and Kunyu Zhang. 'Care Preferences among Chinese Older Adults with Daily Care Needs: Individual and Community Factors', Research on Aging, vol. 43/no. 3-4, (2021), pp. 166-176.

[4] Djundeva, Maja, P. A. Dykstra, and T. Emery. 'Family Dynamics in China and Europe in the Last Half-Century', Chinese Journal of Sociology, vol. 5/no. 2, (2019), pp. 143-172.

[5] Zhang, Haomiao. 'Sending Parents to Nursing Homes is Unfilial? an Exploratory Study on Institutional Elder Care in China', International Social Work, vol. 62/no. 1, (2019), pp. 351-362.

[6] http://www.sasac.gov.cn/n2588025/n2588134/c15388991/content.html

[7] Cheung, Chau-kiu, Alex Yui-huen Kwan, and Sik Hung Ng. 'Impacts of Filial Piety on Preference for Kinship Versus Public Care', Journal of Community Psychology, vol. 34/no. 5, (2006), pp. 617-634.

[8] Hareven, Tamara K. 'The Dynamics of Kin in an Industrial Community', The American Journal of Sociology, vol. 84/(1978), pp. S151-S182.

[9] Litwak, Eugene, and Henry J. Meyer. 'A Balance Theory of Coordination between Bureaucratic Organizations and Community Primary Groups', Administrative Science Quarterly, vol. 11/no. 1, (1966), pp. 31-58.

[10] Meng, Dijuan, Guihua Xu, Ling He, et al. 'What Determines the Preference for Future Living Arrangements of Middle-Aged and Older People in Urban China?', PloS One, vol. 12/no. 7, (2017), pp. e0180764-e0180764.

[11] Hermalin, Albert I., and Li-Shou Yang. 'Levels of Support from Children in Taiwan: Expectations Versus Reality, 1965-99', Population and Development Review, vol. 30/no. 3, (2004), pp. 417-448.

[12] Zhang, L.P. Living arrangements and living willingness of the aged population. Population Journal no.6, (2012), pp. 25–33.

[13] Crimmins, Eileen M., and Dominique G. Ingegneri. 'Interaction and Living Arrangements of Older Parents and their Children: Past Trends, Present Determinants, Future Implications', Research on Aging, vol. 12/no. 1, (1990), pp. 3-35.

[14] Zhang, Weiguo. 'Earlier, Shorter, but Fewer: Fertility Transition in a North China Village', Genus, vol. 56/no. 1/2, (2000), pp. 77-98.

[15] Sun, J.J. and Wang, Q. ‘Childless older people in China: Current situation, trends and characteristics. Population Research, no.32, (2008), pp. 73–80.