The Feasibility of "Trinity Model" to Perfect the Current Pension System in China

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Abstract. Aims at exploring the feasibility of constructing the database and inputting the physiological function data of the elderly constantly by the aid of intelligence while enhancing the old age model so as to monitor the health of the aged. On the premise of privacy among the elderly group, the trinity model of "individual community government" ought to be manufactured to supplement the current provident fund pension model to gradually establish a sound pension system. Based on the quadratic regression linear analysis method, the change trend function is obtained and the chart is regarded as predicting the change of the aging coefficient in China in the next five years. The result is that the aging coefficient of China will exceed 20% in 2021, which is a supplementary argument for the rationality of adopting the "trinity" model. It can be ultimately summarized that the database is conducive to the current pension model.

Keywords: Population aging, Database, Pension model, Aged group.

1. Aging and National Challenges

1.1 Analysis of China's Aging Trends

The elderly industry is an interactive third industry, which has been put into actual production and applied to the elderly group to guarantee life and health and continuous happiness. In line with the data provided in Table 1, as the total population of five years from 2014 to 2018 released by the National Bureau of Statistics, a linear regression model was established [1].

$$y = ax^2 + bx + c \tag{1}$$

$$a\sum_{i=1}^{5} x_i^4 + b\sum_{i=1}^{5} x_i^3 + c\sum_{i=1}^{5} x_i^2 = \sum_{i=1}^{5} x_i^2 y_i$$

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$$a\sum_{i=1}^{5} x_i^2 + b\sum_{i=1}^{5} x_i + 5c = \sum_{i=1}^{5} m$$

Drew support from substituting the relevant data of table 1 into formula (2) wielding SPSS software for quadratic regression modeling, the relevant formulas are obtained and the trend Fig.1:
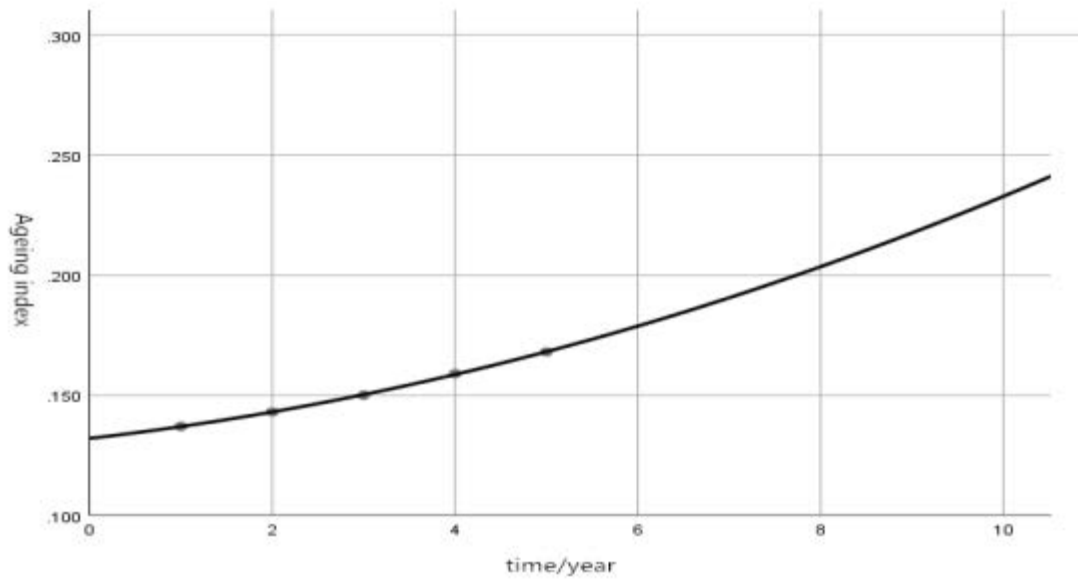
$$y = 0.001x^2 + 0.004x + 0.132 \tag{3}$$

Fig.1 Ageing trends 2014-2024[index/year]

Table 1. Population statistics 2014-2018[ten thousand/year]

Indicators	2018	2017	2016	2015	2014
Year	5	4	3	2	1
Total population at year-end	13,9538	13,9008	13,8271	13,7462	13,6782
Population aged 0-14	2,3523	2,3348	2,3008	2,2715	2,2558
Population aged 15-64	9,9357	9,9829	10,0260	10,0361	10,0469
Population aged 65 and over	1,6658	1,5831	1,5003	1,4386	1,3755
Old-age dependency ratio (%)	16.8	15.9	15	14.3	13.7

From the data in figure 1, it can be implied that the change range of aging growth in China is in 2016, and the annual aging coefficient of China starts to increase at a rate of 0.8% in contrast to 2014 and 2015. In the light of the conventional definition of the United Nations World Health Organization, an aging society referred to a country or region in which 10 percent of the population was older than 60 years of age, while the current refers to 7 percent of the population aged over 65 years.[2] Combining data analysis from a defined perspective, China has entered an aging society, and the dependency ratio of the elderly is increasing rapidly at a rate of about 1% per year. According to the analysis of the data, following the new definition of the World Health Organization, the number of elderly people over 65 years of age in China reached 143.86 million in 2015, while the number of active old-age service institutions in China in the same year was only 318,000. Following statistics, the daily self-care (ADL) disability rate of elderly people over 65 years of age accounted for 8.13 percent, and about 11.7 million were in a state of disability in China. The ratio of the number of people employed for the aged to the number of disabled elderly is 1:37, which indicates that the individual pension service worker is responsible for taking care of 37 disabled elderly people. At the same time, the personnel in China's current pension institutions are greatly deficient as identical as pension-related industry support, and relevant personnel can not be trained. According to figure 2 pension insurance income-expenditure year by year percentage analysis, If we continue to ignore the improvement of the pension industry, the state and individuals will need to bear huge pension costs. In summary, it is reasonable to effectively train the talents of the pension industry to promote and improve the pension industry when the supply of the pension market is in short supply.

Table 2. Number of persons employed in pension service institutions in China ,2010-2015 [ten thousand/year]

Indicators	2015	2014	2013	2012	2011	2010
Number of employees of services for the elderly and the disabled	31.8	33.4	35.6	33.1	31.2	27.4
Number of employees in urban pension service institutions	13.1	12.5	11	9.3	8.1	7.3
Number of employees in rural old-age service institutions	18.3	17.6	16.4	15.9	15.2	14.2

Table 3. Percentage of pension insurance income and expenditure 2012-2016

Indicators	2015	2014	2013	2012	2011	2010
Number of service units for the elderly and the disabled	2,7752	3,3043	4,2475	4,4304	42589	3,9904
Number of Urban Pension Service Units	7659	7322	7077	6464	6058	5413
Number of rural old-age service units	32654	31225	3,0247	3,2787	32103	3,1472

1.2 Social Problems of Aging

According to the data in Table 1, China's population over 65 years old reached 166.58 million in 2018, which was equipped with a large base and rapid development. Besides, the country entered the aging society without buffers. Besides, the phenomenon of "getting old before being rich" is quite obvious. During the transition period from a stable society to an aging society, it takes decades or even hundreds of years for developed countries, while China takes less than two decades to enter an aging society.[3] Coupled with china's family-planning policy since 1982, most of china's families are only children. With the severity of aging, dependency ratio and aging show a negative growth relationship. While young people are confronted with pressure, the physical and mental health of the elderly in China is not optimistic. According to the definition of health by the World Health Organization, it refers to the better integration and harmonious state of society except for the normal performance of the physiological and mental state.[4] [5] In the line with the 2018 China Center for Scientific Research on Aging in the elderly health report, at present, only nearly 30% of the elderly in China are in healthy physiological conditions. And World Health Organization statistics indicate that more than 50% of the deaths of people over 60 years of age in China are attributed to dietary risk and hypertension. Besides, diet is one of the vital factors affecting the health of the elderly.[6] Moreover, since our country does not carry out the "family doctor" policy on a large scale like Europe and the United States, it is the only pilot in a small part of the region. Besides, the elderly possess weaker awareness of regular physical examination, which brought about that the potential diseases are not in a position to be detected in time so that the follow-up treatment and rehabilitation time require to pay more energy. In a word, At present, the social problems brought about by China's aging are mainly concentrated on pension security, such as the expenditure of pension funds and the imperfection of the elderly medical system. In general, in the face of China's rapidly aging population society, improving the pension industry to enhance the elderly group regular self-health screening can play a positive role.

2. The Pension System in Developed Countries

2.1 Type of Pension Services Provided

The old-age service model adopted in the world can be divided into five types as below: community old-age care, full package old-age care, elderly care, provident fund old-age care, and welfare old-age service. The operating mechanism of the above mode owns its advantages and Inferiority. Based on combining theory with practice and along with the current situation of China, The author mainly introduces the community pension and provident fund old-age care model and its related characteristics.[7] [8]

2.2 Community Old-age Care Model and its Characteristics

[9]Community old-age care refers to the establishment of the family as the unit under the social organism, and the local social old-age service institutions and their related old-age personnel are responsible for providing care, nursing, domestic service and relieving mental stress and other care services to all the elderly groups in the family to meet the emotional needs of the elderly. Also, the old-age service is composed of daily and professional services to meet the needs of distinct elderly groups.[10] The most notable feature is that the elderly only need to hold a smart device to the community pension service organization to call the relevant contact phone for home service. Recently, Britain is a typical country under this model. In the UK, life care is the most frequently relied upon service. Due to the physiological degenerative changes of the elderly body, the disability rate increases with age. Therefore, life care can compensate for the deterioration of the physiological function of the elderly. But since the majority of community pension is by pension institutions to charge services. Combined with the current national conditions, the elderly in China will be uncomfortable with the change of residence and away from their children, which is not suitable for wide promotion. In addition to the expensive old-age payments that individuals need to pay, the government also needs to pay the additional costs of professional maintenance systems (such as the purchase of new equipment) that are used daily in providing financial subsidies for social welfare institutions. There is no relevant and perfect standard old-age care model system, so various regions face the uncertainty of the measures required by the community for old-age care.

2.3 Pension Model and its Characteristics

Accumulation fund, in our country usually refers to a social security accumulation fund. Specifically, they refer to natural persons who lose their ability to work after retirement due to the deterioration of old physiological functions. During this period, certain living expenses and daily care are given. Currently, Singapore is a typical country under this model. The Central Provident Fund (CPF) system has been used to design a "family security scheme" designed to protect insured persons and their families in the event of death or permanent disability,[11] whose conspicuous characteristic is to advocate "three in one ", which meets the elderly being taken care of by young people at the same time, to solve the children's concerns about the physical and mental health of the elderly. However, this model mainly depends on the individual, not the welfare pension, which also leads to the loss of the bottom of the society or the ability to pay insufficient or even no provident fund, thus unable to obtain related pension services. Therefore, this model is not very broad, only applicable to the purchase of provident funds based on the public services of the national court center. According to the above both models, although China is highly similar to the provident fund model adopted by Singapore, at the same time, China is still piloting the community pension service model. Taking Chongqing as an example, in 2018,200 new community pension service stations and 20 municipal model community pension service centers were added in Chongqing, and the pension industry chain of individual-community-institutional-hospital recuperation was formed.[12] It can be seen that reform and diversification of the current pension model have achieved the purpose of protecting tangible and tangible assets and considering the mental health status of the elderly under the premise of adopting the social provident fund system and drawing on the experience of other countries' pensions. Based on the above analysis, we can comprehend that promoting the

development and improvement of the old-age industry and perfecting the training mechanism of relevant old-age talents can better combine the old-age model implemented under the national conditions, and deal with the complex and changeable aging calmly by promoting the diversification of the old-age model.

3. The Optimizing Idea for China's Current Pension Model

3.1 Implementation of "Trinity" under Database

The author believes that under the current pension model system in China, especially in the physical health of the elderly group, the focus is still on preventing troubles at an early stage. For the elderly, the decline of physiological function leads to mobility is one of the negative emotional factors of the elderly, and bad emotions often affect the mental state of the elderly group. In the second place, the old people's awareness of regular physical examination is weak, if there is no family to carry out timely supervision and arrangement of their physical examination, it may lead to the inability to check for potential diseases in time, which will affect the social burden of family medical expenses. Therefore, it is recommended to use the Internet to establish an elderly health data registration database and use the "individual-community-government" trinity model to optimize the current pension model in China and strengthen the early prevention of the elderly. Based on the payment of the provident fund, while the relevant departments carry out the health data policy, they are handed over to the relevant enterprises to produce the physiological data of the elderly group that can be detected and recorded, and equipped with smart wearable devices that can call the local community pension service institutions. On this basis, the registered elderly are entered into the database after registration and filing by individuals or their families in local community pension service institutions. After entering the old age, the old people are not grouped according to different degrees, so according to Fig.2, we can initially group the old people. In this paper, we divide the elderly into three groups:60-65,66-75,76 and above. If we encounter obstacles in using the device, we can rely on community service personnel to carry out home-to-door service to ensure that all elderly people in the community can be provided with convenient old-age care services, which happens to form a complete organic combination of "individual – community - government" constructed by relying on the Internet under the current old-age care model.[13]
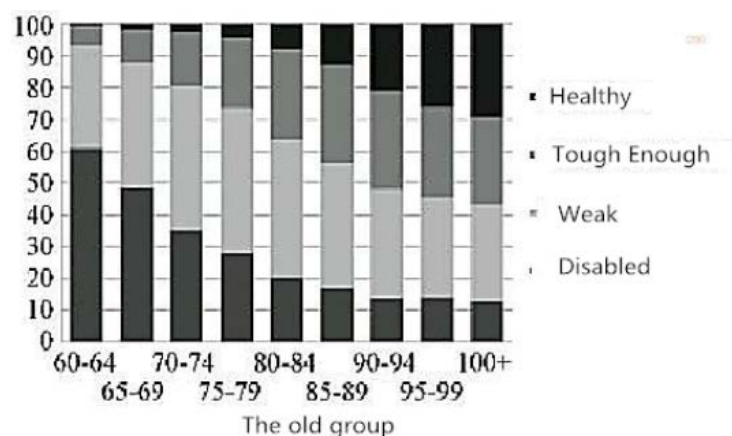

Fig.2 Table on elderly health at different stages of aging

3.2 Challenges to Implementation

However, it is still difficult to implement in practice. Based on data supply and storage, it is urgent to guarantee whether the elderly or their families themselves are willing to hand over physiological data to the community or government, which involves citizens' right to privacy. The so-called right to privacy means that the body and psychology of normal people are protected by law based on their human rights, private life, and the secret of personal information, and subjects have the right to interfere in their private life. Live for a certain amount of time and space and

decide whether they need public citizenship to protect their privacy. Therefore, this is also one of the difficulties in implementing the idea. Furthermore, because of the different degrees of economic development in our country and the difference between rural and urban development, it can not be implemented effectively and on a large scale.

4. Summary and Enlightenment

In the global trend towards aging, how to provide complementary improvement of pension model according to the national system needs further research. The implementation of supporting mechanisms in conjunction with the formulation of ideas still requires to be explored. To sum up, it is feasible to construct the "trinity" model to assist the current pension model in China.

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