

# Research on the Construction of the Peach Colony of the Aged under the Background of Beijing-Tianjin-Hebei Cooperation by Blockchain

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## **Abstract:**

China has comprehensively entered the aging period. The main elderly care model unable to meet the personal needs of the elderly population, and the mutual assistance in elderly care lacks reciprocal norms and mutual trust. The article attempts to build The Peach Colony Of The Aged, a regional urban elderly care group based on blockchain technology. Combined with the characteristics of blockchain technology, the elderly can help each other and become the masters of their own homes, meet the heterogeneity of individual needs of the elderly, and effectively solve the trust problem caused by mutual assistance of the elderly. The Peach Colony Of The Aged provides effective solutions to the main problems of the existing pension model and contributes to alleviating the social pressure of the elderly population.

**Keywords:** *Elderly care model, Blockchain, The aging rate, The peach colony*

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## I. INTRODUCTION

In recent years, the aging degree of China's population has been deepening. It can be seen from the figure 1 below by the end of 2020, there were about 190 millions of people over 65 years old in China, accounting for about 13.5% of the total population. By 2030, China's population over 65 will surpass Japan, becoming the highest aging population in the world.

The elderly population in Beijing, Tianjin and Hebei has reached 9.0%, 9.35% and 8.1% respectively in 2011. In 2020, the elderly population in the three places has increased to more than 13%, of which the elderly population in Tianjin has reached 14.75%. That shows one in six people is over the age of 65. As shown in fig 2.

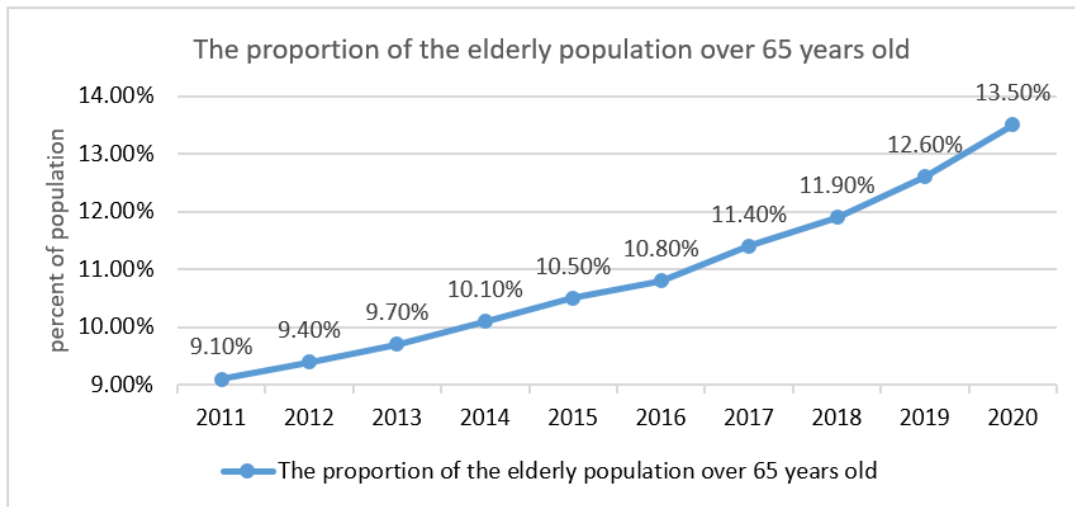


Fig 1. The proportion of the elderly population over 65 years old

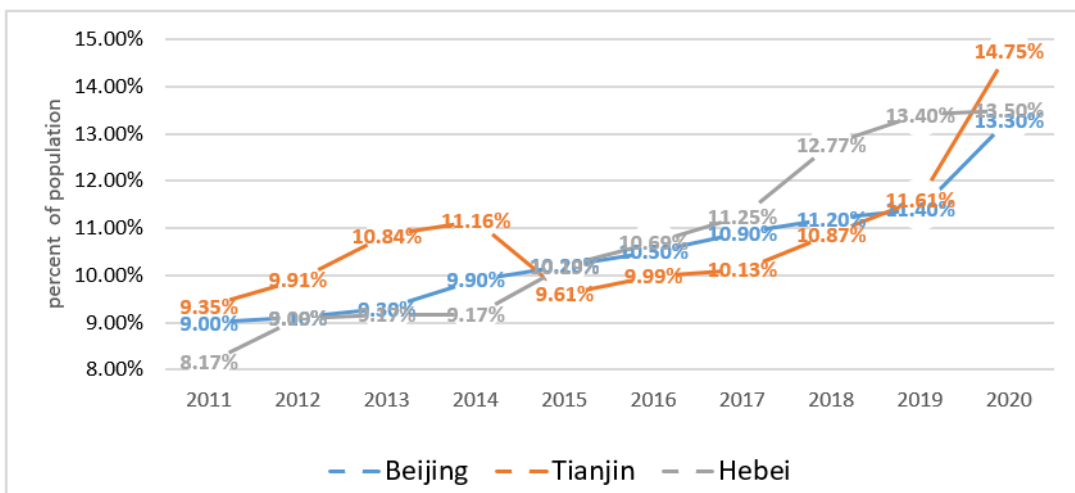


Fig 2. The proportion of elderly people over 65 years old in the Beijing-Tianjin-Hebei region

In the existing pension model, it is difficult to completely solve the problem of the elderly. Considering the examples of regional synergistic development such as The North American Free Trade Area and the Yangtze River Delta Scientific and Technological Innovation Community, it is often more effective for neighboring regions to solve the retiree problems together than one region alone. The establishment of The Peach Colony of the Aged under the coordinated development of the Beijing-Tianjin-Hebei region not only break the old age of many difficult problems, but also the balance of the elderly population proportion of the Beijing-Tianjin-Hebei region. Furthermore, it can provide high quality of life which is very good for the elderly in later years. The establishment of The Peach Colony of The Aged requires policy coordination, resource sharing and information transparency among various regions to ensure that The Peach Colony of the Aged can achieve decentralized management and reach cooperation consensus.

Moreover, to achieve these requirements, it is necessary to use Blockchain technology.

Blockchain is to build blocks based on cryptography, and each block has a corresponding public key and private key. In the distributed data technology connected by the chain of Blockchain, each block on the chain exists side by side, and the data is recorded under the sequence of events occurring among the parties involve. The content on the blockchain of the data can not tamper with, and this recording method also enables the data to be tracked back to the origin. The combination of these characteristics, Decentralization, Immutability, information consensus of Blockchain with the concept of The Peach Colony of the Aged jointly building in the Beijing-Tianjin-Hebei region can not only get the trust of the elderly but also make the concept of The Peach Colony of the Aged model more perfect.

## **II. LITERATURE REVIEW**

The French sociologist Durkheim (1902) pointed out the important role of mutual assistance in social work in the book "Social Division of Labor"[1]. This was the embryonic period of the idea of mutual assistance, which paved the way for later scholars research on mutual assistance. The academic circles have different definitions of the connotation of "mutual assistance for the elderly" depending on the focus. Lukes (2013) notes criticisms but focuses on the sociological achievements of the text, including a consideration of the individual in relation to the social whole, and the ways in which collective consciousness is produced [2]. The role of citizens in a nation-state (and the envisioning of a European union), despite the absence of the nation of power. Chen Jing (2013) defined mutual assistance for the elderly as the basic principles of fraternity, mutual assistance and mutual trust among the elderly [3]. The realization of self-management and self-service in the grassroots community is an important way to realize the self-enhancement and development of the elderly; the concept of "mutual assistance-self-help" for the elderly are also a grassroots community elderly care system that takes multiple forms of expressions such as neighborhood mutual assistance, relatives and friends mutual assistance, and community voluntary mutual assistance among the elderly. Jia Yajuan (2020) believe that the concept of "mutual assistance for the elderly" can be divided into broad and narrow senses [4]. The broad sense of mutual assistance for the elderly includes "mutual assistance for the elderly" and "mutual assistance for the elderly "; the mutual assistance for the elderly mainly refers to the elderly are organized by individuals or associations for the elderly out of voluntary or utilitarian motives, with financial assistance, life care, spiritual care, and rights protection as the main content, and the new elder care methods are carried out with families, communities, and elderly care institutions as the carrier of activities.

### III. THE ANALYSIS OF MAIN ELDER CARE MODES IN BEIJING-TIANJIN-HEBEI-REGION

#### 3.1 Main Elder Care Models

TABLE I. Different effects in the Main Elder Care Models

Effect Model	Family	Institution	Community	Mutual-support	Strange-land
Medical security		√	√		
Mental consolation	√		√	√	√
Entertainment	√		√	√	√
Material insurance		√	√		
Rights protection	√	√	√		
Personal safety		√			
Traceable responsibility					

TABLE I shows the achievable effects of five main elder care models in Beijing-Tianjin-Hebei region, which including Family Model, Institutional Model, Community Model, Mutual-support Model and Strange-land Model.

##### 3.1.1 Family model

This Elder Care model is the most common one in this area. And based on the blood-relation, some generations of immediate family members and the collateral relatives provide material and spiritual care for the elder.

##### 3.1.2 Institution model

Rely on state funds, social funds or personal funds (from themselves or their relatives and children), commercial institutions provide the elderly with centralized places and paid goods and services about Elder Care.

##### 3.1.3 Community model

Under the concept of “Family as core, community as bridge”. the community management organization introduces the elder care service system, and the professional pension institutions provide door-to-door and day-care services for the elderly, which include physical care, domestic service and spiritual company.

##### 3.1.4 Mutual-support model

Age-appropriate and healthy old people, believing in the spirit of “mutual-support”, forwardly take care of other elderly people or the sick individual, and thus solve the pension demand.

### 3.1.5 Strange-land model

Old people leave their original long-term residence to live in other places, including traveling to other places, Migratory-bird-type Elder Care, or living with relatives or children, and so on.

## 3.2 Disadvantage of the Main Elder Care Models

### 3.2.1 Lack of medical security

For the majority of senior citizen, medical security has always been a priority. However, the existing medical and health systems can't completely meet the health demands of the elderly in their daily life.

On the one hand, the domestic medical security system is unable to achieve the exchange of patients' information across regions, which means the elderly who under the strange-land model need go to the Original insured area after paying all the expenses themselves for the deduction of the expenses. On the other hand, only the elderly under the community model as well as institution model can enjoy timely basic medical and health services, and the others have to only be forced to choose the nearest hospital or medical institution [7].

What is even more worrying that even if the relevant subsidy policies are introduced, there is still a huge gap in the professional medical staff in the pension industry in this region.

### 3.2.2 Few ways of mental consolation

Many elements, such as the weakening of social ability and the decline of physical function, make the elderly feel inferior and disrespectful. Therefore, the elderly need to be cared by the society in spirit. Influenced by traditional ideas, most elderly people want to be accompanied by family or friends, but, in fact, there are also a lot of problems.

In real life, the basic living material needs of the elderly who living in the pension institution are met, but it is difficult for them to be free to a greater extent, such as going out to watch movies or visiting old friends living outside.

Like the managers of many institutions, children are often busy with their work and neglect to provide spiritual support for the elderly, even if a hug or a greeting. In other words, the individual choice of the elderly is infringed by these behaviors, making their spiritual appeals unable to be satisfied.

### 3.2.3 Less remedy measures and Responsibility traceability after accident

Although the national quality and attention to the elderly have been greatly improved, in real life, there are huge obstacles for the elderly without physique and flexible mind as well as young people, as disadvantaged groups to defend their rights. There are same things will happen, especially under the mutual-support model and Strange-land model, just because they lack support from their children or third-party organizations.

Meanwhile, some situations are still possible to become embarrassed when they go back to these harmful accidents, because of the decline of their memory. And, no monitoring facilities or witnesses are also huge problem which means difficult to assign responsibility.

Unluckily, there is no elder care model that can effectively retrospect the events to save and compensate the elderly in time when their rights and interests are damaged.

## **IV. THE CONSTRUCTION OF THE PEACH COLONY OF THE AGE IN THE BEIJING-TIANJIN-HEBEI REGION**

### 4.1 Theoretical Basis

ERG theory is proposed by C.P. Alderfer in 1969, which is closely related to Maslow's hierarchy of needs theory [5]. He divided people's needs into three categories, namely existential needs, relationship needs and growth needs. Existence. Such needs are related to the existence or survival of the organism. Including clothing, food, shelter, and the means provided by the body's work organization to obtain these factors. This is equivalent to the physiological needs and safety needs in Maslow's theory. Relatedness. This refers to the need to develop interpersonal relationships. This need is met through contact and interaction with other people. It is equivalent to the need of emotion and part of the need of respect in Maslow's theory. Growth needs is the need for personal self-development and self-improvement. This need can be met only through the development of personal talents and potential. This is equivalent to the need for self-realization and the need for respect in Maslow's theory. Neugarten (1968) put forward the persistence theory [6], adding that the success of aging is related to the personality changes of the elderly. Sustainability theory is more biased towards behavioral theory, which believes that a person's personality and behavior characteristics are shaped by environmental influences and social enhancement. Personality will continue to change with age. For example, individuals can change their personality in time, adapt to different stages of life, and more successfully adapt to the aging process. Some longitudinal research reports have pointed out that the personality behaviors that the elderly often have may be behaviors that have changed in order to adapt to age. Riley (1972) proposed age stratification theory [7]. This theory divides the population into different age classes according to a certain age interval. The main points of this theory are: People born in the same age not only have similar ages, but also have similar age groups. Physical, psychological characteristics and social experience. New age groups are constantly emerging, and they will have different feelings about history. Social groups can be classified into different classes

according to their different ages and their roles. As society continues to change, people of all ages and their roles also change. The interaction between demographic structure and social economic development is dynamic. Therefore, the elderly and society are always influencing each other continuously. The elderly are an age group in a social group. Therefore, the elderly in the same age group will influence each other's socialization process of old age. Due to the existence of this reason, the elderly have certain general characteristics. Behavioral patterns. The theory believes that the behavior and personality characteristics of the elderly group are the mutual rendering of the mutual influence of various groups.

## 4.2 Basic Principles of Constructing the Peach Colony of the Aged

### 4.2.1 Policy coordination principle and resource sharing principle

Policy coordination principle and resource sharing principle are key factors.

If anyone wants to build the peach colony of the aged in China, they must get the support of Beijing, Tianjin and Hebei Region. Among the existing elder care model in China, the government-led elderly care model is the mainstay. Regardless of the choice of nursing home or community home care, the source of funds for these methods mainly depends on government funding. This reflects a problem in our country's elderly care services. As the elderly population rises in the future, the pressure on elderly care will gradually increase. Now we should break this model of relying solely on the support of a single local government. China's elderly care model is mainly based on market mechanisms. Therefore, if someone are constructing the peach colony of the aged, we should not only increase the influence of the elder care model of Beijing-Tianjin-Hebei, but also realize the synergy between the government and the market in the elderly care industry. Relieving the pressure on the governments of the Beijing-Tianjin-Hebei regions for realizing the government's dominant position. The primary condition for policy coordination in the Beijing-Tianjin-Hebei three places is to break the information barriers of the three places. The three underground pension policies should be consistent, such as the relevant subsidy policy for the elderly in the peach colony of the aged.

Resource coordination is another key factor. Shared resources include educational resources, medical resources, human resources, financial resources, and material resources [8]. The allocation of resources in the Beijing-Tianjin-Hebei region should follow the principle of Beijing-Tianjin-Hebei coordination and conform to the rational and effective allocation and flow of resources. Optimize the allocation of resources in various regions to maximize resource utilization efficiency. This is of great significance to social progress. For example, Tianjin has a lot of usable space and Beijing has abundant medical resources. Combining the advantages of these two places achieve the best results.

### 4.2.2 The principle of autonomy and co-governance

In the Beijing-Tianjin-Hebei enjoying the peach colony of the aged, the old-age care services enjoyed by the elderly are a resource that can be shared. The sharing of elderly resources can be divided into the

following four aspects. First of all, realizing the sharing of human resources among service personnel, all elderly people can enjoy services equally. In the next place, Enable the sharing of information about medical devices and even doctors. All older persons in the park can have a physical examination through the equipment provided, have a good health record and can see any doctor without discrimination. All elderly people in the same situation will be treated the same and enjoy the same quality and the same price of daily necessities. All data in all parks can be shared, and all advanced resources, products and services can be shared. It is necessary to know that the principle of sharing is the foundation for constructing the peach colony of the aged.

#### 4.3 Suitable Living Environment

The environment of the peach colony of the aged needs to be an elderly-friendly area which occupied livable and beautiful environment with barrier-free facilities [9]. The living condition for the elderly should emphasize the suitable situation of the community environment. Residential for the elderly need a reasonable living area, suitable design, and functional facilities of the elderly with different cultures and social backgrounds. For example, handrails, emergency call equipment, etc. which must be considered suitable for the elderly, rather than Beautiful shell; inside the residential, the integration of living, activities, and logistics spaces must be considered of functional separation.

The location of the peach colony of the aged should be combined the characteristics of the Beijing-Tianjin-Hebei regions to meet the living needs of the elderly. Places such as Zhangjiakou, Hebei, Tianjin Jixian and other places which can provide the elderly with natural scenery, in order to get a sense of belonging [10].

#### 4.4 Autonomous and Co-Governance Mechanism

The elderly can be participants in the management or decision-makers of all policy services in the peach colony of the aged. Different identities can be changed through the decision made by the elderly group. The elderly of managers are responsible for the administrative decision-making. Through the blockchain consensus mechanism, every elderly can participate in relevant management work decisions in the park and each decisions will be paid attention.

Combined with blockchain, the needs of the elderly of citizens in the peach colony of the aged can be reached by autonomous consensus, and the existing mutual assistance care model for the elderly can be combined to enable the capable elderly to meet the needs to provide corresponding services. After mutual assistance completed, the contributions of each elderly will be recorded in the blockchain, which brings reputation to the corresponding elderly. Achieving the decentralized autonomous and co-governance of the elderly in the Beijing, Tianjin and Hebei region. As shown in figure 3.



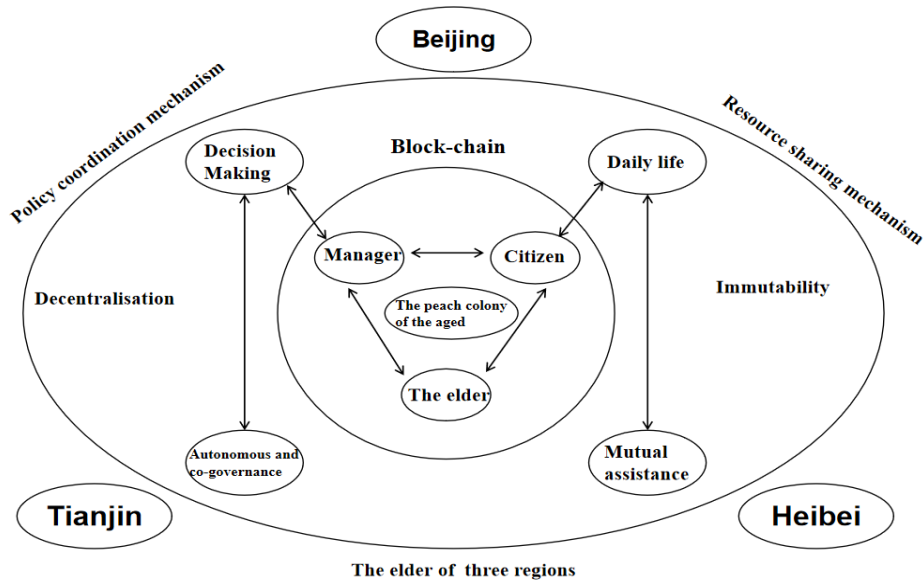


Fig 3: The construction of the peach colony of the aged

The fundamental logic of the peach colony of the aged based on decentralization, Immutability and consensus of blockchain. decentralized can enable the internal consensus mechanism to realize the independence and autonomy of the elderly lifestyle through the autonomous and co-governance mechanism of the elderly. The internal management mechanism can be traced to achieve a safe and reliable environment through the Immutability. And through the consensus information mechanism of the blockchain which the information sharing of each elderly person realizes the fair and just of the internal supervision mechanism among the elderly. As shown in figure 4.

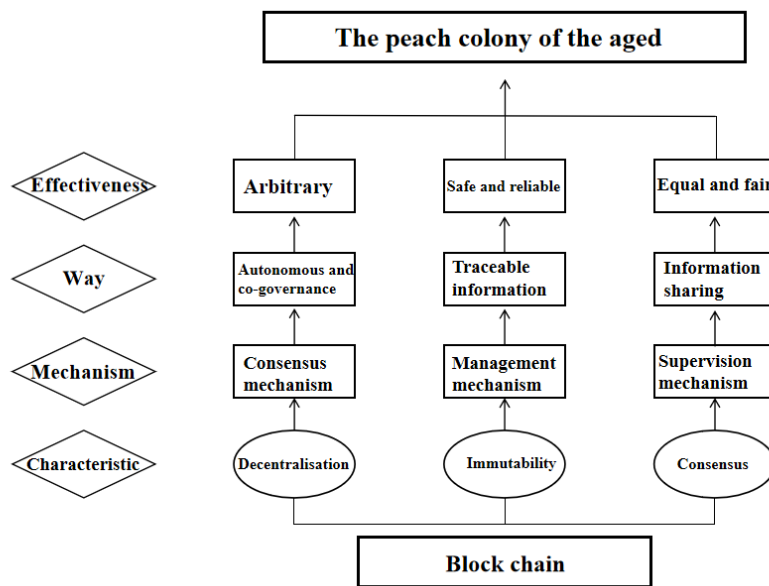


Fig 4: The fundamental logic of the peach colony of the aged

## V. CONCLUSION

Due to the development of society economic and the turning of elder care conception, traditional elder care model can't satisfy contemporary demand of China anymore. According to the ERG theory, continuity theory, age stratification theory and the characterizations of blockchain, we can draw a conclusion that the peach colony of the aged is more efficient for the elderly. While the peach colony of the aged in Beijing-Tianjin-Hebei region is unique. The construction of the peach colony of the aged considers the feature of population in Beijing-Tianjin-Hebei region, the situation of aging and lack of resource allocation closely. It integrates and optimizes the resource of Beijing-Tianjin-Hebei region in order to bring into full play of finite resource. In comparison of traditional elder care model, the construction of the peach colony of the aged integrates the features of blockchain whose characterizations are decentralization, tamper-resistant and smart contract. So that the operational mode will be increasingly perfect. Not only make the elderly choose the peach colony of the aged, but also have a special area to spend their remaining years in comfort and improve their life quality.

Moreover, the peach colony of the aged in Beijing-Tianjin-Hebei region not only satisfy the medical security, mental demand, material demand, independence of life, monitor of incident, but also become the paradigm for China even all around the world. Once the pilot project success, we can just promote the elder care mode nationwide and ease the pressure of the elder. Last but not least, the peach colony of the aged is prerequisite for overall development of urban and rural, which identifies with the condition of China.

The Peach Colony: Litterateur named Tao Yuanming in the Eastern Jin Dynasty described a place called The Peach Colony isolated from the world, where the people surround with harmony and peace. The article of The Peach Colony translated by Lin Yutang, famous linguist in the Republic of China.

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