Intelligent Old-age Care Policies in Yangtze River Delta and Pearl River Delta Regions

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Abstract. The Yangtze River Delta region represented by Zhejiang Province is compared with Guangdong Province where the Pearl River Delta is located. Based on 25 provincial-level policy documents issued by the two provinces, 83 articles related to smart healthy aging were selected for comparative analysis in three dimensions: policy objectives - policy tools - policy implementation.

Keywords: intelligent and healthy old-age care policies, policy comparative analysis, policy targets-tools-implementation, Yangtze River Delta, Pearl River Delta

1 Introduction

This paper selects Zhejiang Province, which has the highest level of development of smart and healthy aging in the Yangtze River Delta region [1]and Guangdong Province, where the Pearl River Delta is located, for comparative analysis. Among the four batches of pilot demonstration lists of smart health elderly care application published in China, 14 demonstration enterprises, 38 demonstration streets (towns) and 12 demonstration bases in Zhejiang Province were shortlisted, a total of 64, ranking first in China. However, there are 13 demonstration enterprises, 21 demonstration streets (towns) and 4 demonstration bases in Guangdong Province, with a total of 38, ranking only the fifth in China. The difference of development level may be affected by many factors. This paper makes a text analysis of the provincial policy documents issued by Zhejiang Province and Guangdong Province, describes the overall characteristics of these policy texts, compares their similarities and differences, summarizes the policy experience, and provides a reference for the local government to improve the intelligent and healthy elderly care policy[2],[3].

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2 Analysis of intelligent and healthy old-age care in Yangtze River Delta and Pearl River Delta Regions under Policy Objectives Tools and Implementation Dimensions

2.1 General features of the intelligent and healthy old-age care policy documents

From June 2016 to June 2021, Guangdong and Zhejiang provinces issued 25 policy documents related to intelligent healthy aging, including 83 relevant clauses. Among them, Guangdong Province issued eight policy texts with 29 relevant clauses and Zhejiang Province issued 17 policy texts with 54 relevant clauses.

From the time of policy release, Zhejiang Province took the lead in June 2016 in the Comprehensive Pilot Program of Deepening the Reform of The Medical and Health System in Zhejiang Province to promote the development of Internet plus health industry and support the innovative development and scale application of intelligent and healthy old-age care information software products[4]. Three months later, In September 2016, Guangdong province issued the Implementation Plan of Guangdong Province to Further Promote the "Internet + Circulation" Action Plan, proposing to support the development of community elderly care services based on Internet technology and smart pension. The starting time of the two provinces' attention to the intelligent and healthy old-age care is almost the same, and both are earlier than the Action Plan For the Development of Intelligent and Healthy Old-age Care Industry (2017-2020) released by the state in 2017. It can be seen that, as a region with developed economy and mature technology industry in China, the Yangtze River Delta region represented by Zhejiang Province and the Pearl River Delta region included in Guangdong Province pay relatively advanced attention to the emerging science and technology pension industry of intelligent health care in China. However, the differences between the two provinces gradually emerged in subsequent policy releases, and the number of policies issued in each year is shown in the table below.

Province	2016	2017	2018	2019	2020	2021	Total
Number of Policy Texts on intelligent and healthy old-age care in Guangdong Province	1	2	2	0	3	0	8
Number of Policy Texts on intelligent and healthy old-age care in Zhejiang Province	2	1	2	0	6	6	17

 Table 1 . Comparison of the rhythm of intelligent and healthy old-age care policies between

 Guangdong Province and Zhejiang Province

As shown in Table 1, there is little difference in the number of provincial policies related to smart and healthy elderly care issued by the two provinces before 2020. While after 2020, Zhejiang Province has paid more attention to this field and issued a large number of documents to promote the development of relevant technologies and industries. However, the policy rhythm of Guangdong Province has remained almost the same as that before 2020 and has not paid more attention to smart elderly care policies.

2.2 Policy Type

Further, based on the nature of policy document titles, the 25 documents were classified into different policy documents, which can be divided into six categories: regulations, programmes, plans, implementation opinions, implementation programs and notices, and the various types of policies[5][6]issued by the two provinces are shown in Table 2.

 Table2. Comparison of the type of intelligent and healthy old-age care policies between Guangdong Province and Zhejiang Province

Province	Regulations	Programmes	Plans	Implementation opinions	Implementation programs	Notices	Total
Guangdong Province	0	2	0	1	5	0	8
Zhejiang Province	1	7	3	3	2	1	17

As shown in Table 2, the policy documents issued by the two provinces are most concentrated in planning and implementation schemes. Among them, there are 9 planning documents, 7 of which are issued by Zhejiang Province and there are 7 implementation plans, 5 of which are issued by Guangdong Province.

Guangdong Province has issued 8 documents, 5 of which are implementation plans. It can be seen that the Guangdong government's policy guidance on smart and healthy old-age care is mainly reflected in the direct practical and application. The policy guidance of Zhejiang province is mainly reflected in the programme level. From March to April 2021, six programme documents on the 14th Five-year Plan were issued. The number of other documents released in Zhejiang province is also more than that in Guangdong Province, and the types of policy release are relatively balanced.

2.3 Similarities and differences in the policy objectives of the intelligent and healthy oldage care

As shown in Table 3, the number of policies and clauses related to smart and healthy elderly care released by Zhejiang province is about twice that of Guangdong Province. However, in terms of policy objectives, the provisions of Guangdong Province involve the construction of policy objectives 17 times, compared with 45 times in Zhejiang Province, which widens the gap to nearly three times. Obviously, Zhejiang Province pays more attention to the goal planning of smart and healthy pension policy.

Province	Promote the research of key technology products	Strengthen the construction of public service platform	Promote intelligent and healthy old- age care services	Establish intelligent and healthy old-age care standard system	Total
Guangdong Province	6/35.3%	6/35.3%	4/23.5%	1/5.9%	17/100%
Zhejiang Province	9/20%	15/33.3%	14/31.1%	7/15.6%	45/100%

 Table 3. Comparison of the objectives of intelligent and healthy old-age care policies between

 Guangdong Province and Zhejiang Province

As mentioned above, promoting the research of key technology products and strengthening the construction of public service platform are task-oriented policy objectives while the latter two objectives are diffusion-oriented policy objectives[7]. Both provinces focus more on task-oriented policy objectives. Guangdong province has a more prominent feature, with task-oriented policies accounting for 70.6%, while Zhejiang Province accounts for 53.3%, which is relatively balanced. This situation is closely related to the economic background of China's current lack of independent innovation capacity in science and technology. The intelligent and healthy old-age care involves many new high-tech industries such as the Internet, big data, artificial intelligence and biomedicine and requires strong technical capabilities for support. Therefore it is reasonable for the two provinces to focus more on the task-oriented policy goal at the beginning of the development of smart pension.

It is worth noting that the number of policies issued by the two provinces on the goal of establish intelligent and healthy old-age care standard system is relatively small, and Guangdong has only one clause on this aspect. This may be due to the fact that the current development of intelligent and healthy old-age care is still in the exploratory and experimental stage and has not been widely used. However, from the perspective of the long-term development, formulating scientific and reasonable equipment product standards in line with foreign countries, constructing standardized service processes and evaluation index system and clarifying information security standards and privacy data management and use specifications are the premise and necessary conditions for the universal application of smart and healthy old-age care.

2.4 Similarities and differences in the policy tools of the intelligent and healthy old-age care

As shown in Table 4, after coding and analysis, it was collated that Guangdong Province involved policy tools[8],[9]51 times in 29 articles and Zhejiang Province involved policy tools 110 times in 54 articles. The ratio of the number of times the two provinces used policy tools was about 1:2, which is as large as the ratio of the number of policy articles.

		Number of articles	Number of articles
Policy tools	Tool type	involved in Guangdong	involved in Zhejiang
		Province	Province
Capital investment		4	4
Science and		1	5
technology investment			
Infrastructure	Supply-	1	4
Information	based	8	7
Technology	policy tools		
Personnel training		5	8
Model Industry		0	9
Resource Sharing		1	6

 Table 4. Comparison of the tools of intelligent and healthy old-age care policies between Guangdong Province and Zhejiang Province

Industry-Academia-		1	2
Research Support			
Goal Planning		4	14
Financial Support	Environment- based policy tools	4	4
Tax Benefits		4	1
Standards and norms		1	8
Organizational		7	9
leadership	policy tools		
Mechanism and		0	3
safeguard measures			
Government		5	11
Procurement			
International Exchange	Demand-	1	5
Demonstration and	based	4	7
Promotion	policy tools		
Publicity and		0	3
promotion			
Total		51	110

Supply-based policy tools

As shown in Table 5, The proportion of supply-based policy instruments used in Zhejiang Province and Guangdong Province is roughly the same as the ratio of the number of policy provisions in the two provinces, with no significant differences, but there are some differences in the use of specific policy instruments.

Table 5. Comparison of supply-based policy tools for intelligent and healthy old-age care between
Guangdong Province and Zhejiang Province

Supply-based policy tools	Number and percentage of articles involved in Guangdong Province	Number and percentage of articles involved in Zhejiang Province
Capital investment	4/19.0%	4/8.9%
Science and technology investment	1/4.8%	5/11.1%
Infrastructure	1/4.8%	4/8.9%
Information Technology	8/38.1%	7/15.6%
Personnel training	5/23.8%	8/17.8%
Model Industry	0/0%	9/20%
Resource Sharing	1/4.8%	6/13.3%
Industry-Academia-Research Support	1/4.8%	2/4.4%
Total	21/100%	45/100%

The most used supply-based policy tool in Guangdong Province is information technology, followed by personnel training and capital investment. Other tools are less used and the tool of model industry is even used zero times. The most frequently used supply-based policy tools in Zhejiang Province are model industry, personnel training, information technology, and resource sharing.

Both provinces have made extensive use of fiscal support, information technology, personnel training and other tools. Financial support includes two tools, capital input and science and technology input. In Zhejiang Province, the use of fiscal support is more clearly limited to science and technology investment, while in Guangdong Province, the use is scattered and unclear and only increasing fiscal support is generally pointed out. Information technology and personnel training are essential support for the development of the smart and healthy elderly care, and both provinces attach great importance to it.

In addition, there are significant differences between the two provinces in the use of two policy tools: model industry and resource sharing. Zhejiang province uses a large number of model industrial tools, accounting for 20%. In many articles, it emphasizes the pilot of health and elderly care industry, building industrial parks and combining health industry with smart elderly care, so as to bring more enterprises and social institutions into this field. However, Guangdong province did not use the tool of model industry and failed to give full play to the effect of industry driven development. As for resource sharing tools, Zhejiang Province emphasizes the coordinated development of the smart and healthy elderly care industry in the whole Yangtze River Delta region in a number of documents and plans different industrial development priorities for each city to form a linkage effect. At the same time, it is also emphasized that civil affairs, social security, public security, medical and other departments should break the data barrier and share pension data to provide information support for smart pension. In sharp contrast, only one provision in Guangdong Province uses resource sharing tools to emphasize the sharing of pension information resources, while the industrial layout and resource allocation and sharing among the cities in the Pearl River Delta are not regulated.

Environment-based policy tools

As shown in Table 6, the most used environmental policy tools in Guangdong Province are organizational leadership, goal planning, financial support and tax benefits, while the tool of mechanism and safeguard measures is not used. The most frequently used policies in Zhejiang province are goal planning, organizational leadership and standards and norms, while the frequency of other policies is obviously low.

Environment-based policy tools	Number and percentage of articles involved in Guangdong Province	Number and percentage of articles involved in Zhejiang Province
Goal Planning	4/20%	14/35.9%
Financial Support	4/20%	4/10.3%
Tax Benefits	4/20%	1/2.6%
Standards and norms	1/5%	8/20.5%

 Table 6. Comparison of environment-based policy tools for intelligent and healthy old-age care between

 Guangdong Province and Zhejiang Province

Organizational leadership	7/35%	9/23.1%
Mechanism and safeguard measures	0/0%	3/7.7%
Total	20/100%	39/100%

Both goal planning and organizational leadership are very common environment-based policy tools that are applicable to all types of policies and are important tools for guaranteeing policy effectiveness. It is reasonable for the two provinces to use these two tools in large quantities.

However, in terms of financial support and tax benefits, the proportion of use in Guangdong Province is much higher than that in Zhejiang Province, especially tax benefits. These two tools are important methods to promote more subjects to enter the smart and healthy senior care market, which can effectively stimulate the market vitality, promote the innovation of the business model of the smart and healthy elderly care industry and achieve the purpose of promoting smart and healthy senior care services. The reason why the two tools are less used in Zhejiang Province may be that various tools are substitutable to each other. Zhejiang Province has devoted more human, financial and material resources to other tools, and the frequency of use of financial support and tax benefits tools has naturally decreased. For example, the use of science and technology investment tools in Zhejiang Province has stimulated the enthusiasm of market players to a certain extent. In addition, a large number of model industrial policies have been used to support a number of excellent demonstration enterprises and build industrial parks. On the other hand, taxes and fees for enterprises, especially private enterprises is a heavy burden. If Zhejiang Province can adjust the proportion of policy tools and increase the tax benefits, it may have a better effect.

Finally, there are also significant differences in the use of Standards and norms tools between the two provinces. Zhejiang Province has a long-term strategic vision by emphasizing the establishment of a good industry supervision system, the formulation of smart pension standards, the promotion of collaborative and mutual recognition of regional standards in the Yangtze River Delta, and the strengthening of the transformation of advanced international standards. However, Guangdong Province only proposes to update the configuration catalogue of rehabilitation aids in time in one policy clause, which is not conducive to the future development of the intelligent and healthy elderly care.

Demand-based policy tools

As shown in Table 7, Zhejiang Province has used demand-based policy tools 26 times, while Guangdong Province has used them 10 times. Compared with the number of policy terms, that is, 54 in Zhejiang Province and 29 in Guangdong Province, there is a certain gap between the two. Zhejiang Province uses demand-based policy tools more frequently.

Demand-based policy tools	Number and percentage of articles involved in Guangdong Province	Number and percentage of articles involved in Zhejiang Province
Government Procurement	5/50%	11/42.3%
International Exchange	1/10%	5/19.2%
Demonstration and Promotion	4/40%	7/26.9%

 Table 7. Comparison of demand-based policy tools for intelligent and healthy old-age care between

 Guangdong Province and Zhejiang Province

Publicity and promotion	0/0%	3/11.5%
Total	10/100%	26/100%

The most frequently used demand-based policy tool in both provinces is government procurement, followed by demonstration and promotion, which is currently the main way for the application of China's smart and healthy aging. Through a large number of pilot projects, demonstration streets (towns) and demonstration bases for smart elderly care are established. The equipment in the pilot area mainly depends on government procurement, so that qualified regions and residents can first experience the improvement of life brought by smart and healthy elderly care. At the same time, it also explores the problems faced by the smart and healthy old-age care in the implementation of technology to industry and application, and explores the way to further promote the universal application of intelligent and healthy elderly care.

The differences between the two provinces are reflected in the use of two tools: international exchange and publicity and promotion. Zhejiang Province has proposed in several documents to strengthen exchanges between domestic and foreign enterprises, build a regional and international exchange platform and encourage the export of health products and services. These measures can promote the technological production and manufacturing capabilities of our enterprises, open up new sales channels for the intelligent and healthy elderly products and increase the motivation of enterprises. Guangdong Province proposed in a document to deepen exchanges and cooperation with Hong Kong, Macao, Taiwan and even other countries on aging health, combined with the geographical advantages of the Guangdong-Hong Kong-Macao Greater Bay Area. In terms of publicity and promotion, Zhejiang Province first proposed to support families to install smart elderly care terminals such as intelligent monitoring equipment, which is of great significance to the popularization and application of smart elderly care. However, Guangdong Province has not paid attention to publicity and promotion, and the policy tool has not been effectively used.

The above analyzes the use of supply-based, environment-based and demand-oriented policy tools in the relevant policy provisions of smart and healthy elderly care in the two province. The following table shows statistics on the frequency and percentage of the use of three policy tools in the two provinces:

Policy tools	Number and percentage of articles involved in Guangdong Province	Number and percentage of articles involved in Zhejiang Province	Total
Supply-based policy tools	21/41.2%	45/40.9%	66/41.0%
Environment- based policy tools	20/39.2%	39/35.5%	59/36.6%
Demand-based policy tools	10/19.6%	26/23.6%	36/22.4%
Total	51/100%	110/100%	161/100%

 Table 8. Comparison between Guangdong Province and Zhejiang Province on the use of three types of policy tools for intelligent and healthy old-age care

As shown in Table 8, the frequency distribution of using the three types of policy tools in Guangdong Province and Zhejiang Province is highly similar, in descending order of supply-based policy tools, environment-based policy tools and demand-based policy tools.

At present, the smart and healthy elderly care is in the stage of exploration and development. During this period, a large number of supply-based policy tools are used to provide sufficient capital, equipment, personnel and technology support for industrial development, which can promote the rapid growth of the industry. The use of environmental policy tools can cultivate a good environment for the development of smart and healthy old-age care. However, the two provinces use relatively few demand-based policy tools and both focus on government procurement and demonstration and promotion. With the growth of China's economic level and the deepening of aging, the demand of the elderly for humanized and personalized elderly care services will become more prominent. The lack of demand-based policy tools may lead to the government and the market unable to fully and timely tap the people's demand for the intelligent and healthy elderly care services, which is not conducive to the wide promotion of the industry.

2.5 Similarities and differences in the implementation of the intelligent and healthy oldage care policies

Among the 17 policy documents related to smart and healthy pension issued by Zhejiang Province, one of them was a regulation document approved by the Standing Committee of Zhejiang Provincial People's Congress, which has higher legal effect than general policy documents. There are 9 documents issued by the general office of Zhejiang Provincial People's government, which have stronger policy implementation than those issued by other departments. In addition, seven of these documents were issued by the Zhejiang development and Reform Commission. Among these documents, the Zhejiang development and Reform Commission also jointly issued them with the Department of civil affairs, the Department of finance, the Department of economy and information technology and the office of the network security and Information Technology Commission of the CPC Zhejiang Provincial Committee, mobilizing the resources of various departments in the province.

Among the eight policy documents related to intelligent and healthy aging issued by Guangdong Province, four were issued by the General Office of People's Government, two by the Health Commission, one by the Department of Civil Affairs and one by the Financial Supervision Administration. Documents issued by provincial departments in Guangdong were also jointly issued by multiple departments. The number of four policy joint departments is 13, 7, 4 and 6 respectively, significantly more than that of Zhejiang Province.

It can be seen from the above that except for a regulation document, the issuing agencies of policies in Zhejiang Province are concentrated in the General Office of the Provincial People's Government and the Development and Reform Commission. The policy documents issued by these two agencies will be implemented more vigorously and the cooperation of other departments will be higher. Therefore, the implementation of policies is often more smooth. This shows that Zhejiang Province attaches full importance to intelligent and healthy aging and has a strong determination to implement it. However, in addition to the four policies issued by the General Office of the Provincial People's Government, the implementation of other policies in Guangdong Province will inevitably face greater resistance and will be more

difficult. Therefore, in order to ensure the implementation of the policy, Guangdong Province adopts the method of jointly formulating and issuing policies with multiple departments, so as to mobilize more resources. Generally speaking, Zhejiang Province pays more attention to the policies for the development of smart and healthy elderly care and has greater implementation efforts. However, the attention of Guangdong provincial government is general, and the implementation resistance will be greater.

3 Conclusion

Through the above comparative policy analysis, it can be seen that there are many differences in the setting of policy objectives, selection of policy tools and policy implementation between Guangdong Province and Zhejiang Province's intelligent and healthy old-age care policies. And this difference has to some extent caused the difference in the level of development of intelligent and healthy old-age care between the two provinces.

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