

## A Study on The Measurement and Regional Differences of The Fundamental Public Service Level in The Two-City Economic Circle in Chengyu Region

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#### Abstract

As the basic condition to ensure the coordinated development of the region, the basic public service affects the flow of regional factors, especially talents and capital elements, to a certain extent, and promotes the integration of regional public services to become the guaranteed foundation and core problem of regional cooperative development. Based on 16 cities in the two-city economic circle of Chengyu region, this paper constructs the evaluation index of basic public service level from the five dimensions of infrastructure, basic medical and health service, basic education and cultural service, basic social security service, public transportation and ecological environment, and makes a comprehensive analysis of the basic public service level and equivalency index of the two-city economic circle in Chengyu region by means of entropy method, equalization index and spatial self-correlation analysis. The study found that in 2015-2019, the basic public service level of the two-city economic circle in Chengyu region increased and decreased, there were problems in the basic public service level, the basic public service failed to achieve coordinated development, and in the past five years, the basic public service level of the two-city economic circle in Chengyu region gradually improved.

**Keywords-***Two-City economic circle in Chengyu region, basic public service, entropy method, spatial self-correlation analysis.* 

#### **1. INTRODUCTION**

As the urbanization progress continues in China, city clusters and metropolitan circles have developed rapidly and have become primary fronts and platforms for supporting China's economic growth. Chengdu-Chongqing Region has always played a crucial role in China's regional development pattern. On January 3, 2020, it was proposed on the sixth meeting of the Central Finance Committee of the Communist Party of China that "promoting construction of Chengdu-Chongqing economic circle helps form an important growth pole featured with high-quality development in western China, forge the open strategic highland in the Chinese Mainland, and promote overall development in Chengdu-Chongqing Region, which will make Chengdu-Chongqing Region become an important economic center, a technological innovation center, a reform and openingup highland, a high-quality living area with national

influences and boost high-quality development." Since then, Chengdu-Chongqing economic circle has become the fourth nation-level regional development growth pole following Coordinated Development of Beijing-Tianjin-Hebei Region, Construction of the Guangdong-Hong Kong-Macao Greater Bay Area and Integration Development in the Yangtze River Delta Region. At present, integration of public services has become an important basic condition and core issue of regional coordinated development<sup>[1]</sup>. Examining the current status of the basic public services in Chengdu-Chongqing economic circle helps us find problems about the basic public services in Chengdu-Chongqing Region, and then we can further explore the approach to improvement of the basic public service level and co-construction and sharing of basic public service resources to boost coordinated development of Chengdu-Chongqing economic circle.

## 2. CHENGDU-CHONGQING ECONOMIC CIRCLE AND REGIONAL BASIC PUBLIC SERVICES

Chengdu-Chongqing economic circle was put forward and upgraded based on the Chengdu-Chongqing city cluster framework. Although it has been a very long time since the concept of Chengdu-Chongqing Region was put forward, it is found through sorting out existing research achievements that compared with Beijing-Tianjin-Hebei, Yangtze River Delta and other regional development growth poles, literatures concerning development of Chengdu-Chongqing Region mainly focus on economic development and coordinated development of industries, and research from the perspective of the society and people's livelihood is relatively scattered. At this stage, exploring the approach to coordinated development of the economy in Chengdu-Chongqing economic circle is an important issue in this era. Scholars have carried out in-depth research in some aspects like the spatial evolution of Chengdu-Chongqing city cluster [2], industrial structure change and quality of economic growth [3], spatial economic pattern of city cluster and intercity economic correlation [4], and the approach to coordinated development of Chengdu-Chongqing economic circle [5]. Some scholars have carried out targeted research on public services in Chengdu-Chongqing economic circle from a single perspective. For example, Liu Hao et al. measured and analyzed through comparison the integration degree of kinds of labor markets inside and outside Chengdu-Chongqing economic circle. According to the results, the integration degree of the internal labor market had risen, but the synergistic effect had not been realized, and the integration progress of the production service-oriented labor market was relatively lagging [6]. Jia Xiuxian et al. researched the basis and approach of construction of the higher education system in Chengdu-Chongqing economic circle [7]. Zong Huiming et al. found through research that expressway construction is conducive to improvement of the accessibility of the Chengdu-Chongqing city cluster and upgrading of the economic radiation ability of cities in the center of this region, but the interaction pattern of cities, in addition to cities on the urban axis, encountered a situation of collapse [8]. Lan Feng et al. explored the spatial-temporal overflow mechanism of the prices of commercial houses in Chengdu-Chongqing city cluster, finding that cities in the core area had significant effects on the housing price in other cities [9], etc. Therefore, such research outcomes reflect indirectly that the improvement of public services (basic public services) is conducive to coordinated development of the economy and the society in Chengdu-Chongqing economic circle.

Evaluation research on public services (basic public services) in Chengdu-Chongqing economic circle has been reflected in many research outcomes. For example, Chen Minghua et al. measured and analyzed the trend of the livelihood development level in eight city clusters in China during 2002-2015, including Chengdu-Chongqing city cluster from five dimensions, including economic development, people's livelihood improvement, social development, ecological construction and science and technology innovation [10]. Tu Jianjun et al. evaluated the high-quality development of Chengdu-Chongqing city cluster in four aspects: spatial structure, scale structure, economic and social development and environmental protection, and traffic network [11]. Although there is little research on evaluation of the public services (basic public services) in Chengdu-Chongqing Region, domestic scholars have achieved fruitful research outcomes in terms of evaluation on regional basic public services, and these outcomes provide an experience reference for evaluation on the basic public services in Chengdu-Chongqing economic circle. Tian Xuebin et al. used Theil index to measure and analyze the trend of the basic public services in Beijing-Tianjin-Hebei Region from five dimensions, including the education culture, medical and health care, infrastructure, ecological environment and social security [12]. Xiong Xing et al. used entropy weight TOPSIS method to measure the basic public service level in 11 provinces and cities in the Yangtze River Economic Zone from six dimensions, including social security, medical and health care, elementary education, infrastructure, environmental protection and public culture [13]. Wu Jing used the entropy method to measure the basic public services of 26 cities in the Yangtze River Delta city cluster from five dimensions, i.e., social security, education and culture, medical and health care, ecological environment, and infrastructure [14]. It is found through analysis that there are differences in the evaluation dimensions between existing regional basic public service evaluation systems, and the fundamental reason lies in the failure to specify the connotation of public services and the basic public services. Therefore, importance should be attached to the interpretation of the definition of the basic public service when constructing the basic public service evaluation system of Chengdu-Chongqing economic circle.

Currently, Chengdu-Chongqing economic circle is at the stage of exploring the collaborated development approach and realizing high-quality development. According to existing research, regional coordinated development not only requires "hardware" coordination like integration of element resources, adjustment of the industry structure and overall arrangement of development projects in different cities, but also requires "software" coordination like breakthrough of intergovernmental administrative barriers, reform of regional administrative management method, overall arrangement of development of social undertakings and realization of the public service equalization, and coordinated development of the basic public services is the sustainable power and necessary guarantee of realizing regional coordinated development [15]. Therefore, exploring the current status of the basic public services in Chengdu-Chongqing economic circle and investigating the spatial correlation of the basic public service level between cities is conducive to exploring the approach to high-quality development of Chengdu-Chongqing economic circle from the perspective of coordination of the basic public services.

## 3. THE RESEARCH SCOPE, METHOD AND INDEX OF THE BASIC PUBLIC SERVICES IN CHENGDU-CHONGQING ECONMIC CIRCLE

#### 3.1.Research scope

Chengdu-Chongqing economic circle is researched in this article. According to relevant administrative planning released by Chengdu-Chongqing economic circle and in consideration of the accessibility of research data, the research scope of this article includes cities in Sichuan Province and districts in Chongqing within the Chengdu-Chongqing economic circle, and 15 cities in Sichuan Province are included: Chengdu City, Zigong City, Luzhou City, Deyang City, Mianyang City, Suining City, Neijiang City, Leshan City, Nanchong City, Meishan City, Yibin City, Guang'an City, Dazhou City, Ya'an City, and Ziyang City.

#### 3.2.Research method

#### 1) Entropy method

Entropy method is an objective empowerment method used for evaluating the dispersion degree of one index. As the entropy of one index is bigger, the evaluation object's dispersion degree of this index will be greater, the effect on comprehensive evaluation will be more significant, and the weight of the index will be relatively higher; on the contrary, it will be the opposite. The steps of calculation of the weight and composite score of the basic public service supply evaluation index in Chengdu-Chongqing economic circle with the entropy method are as follows:

#### a) Setting of the original index data matrix

Provided that there are m cities, n indexes,  $X_{ij}$  is the index value of the j item of the city i  $(0 \le i \le m, 0 \le j \le n, 0 \le X_{ij})$ , the original index data matrix is  $X = m * n(X_{ij})$ .

#### b) Standardized processing of data

Since the specific measurement unit of index data is not unified, standardized processing of these data is needed, positive and negative numerical values of indexes represent different meanings, and different processing methods are needed. The specific calculation formula is as follows:

$$X'_{ij} = \left(\frac{X_{ij} - minX_{ij}}{maxX_{ij} - minX_{ij}}\right) * 0.9 + 0.1 \quad (1)$$

(Positive index processing formula)

$$X''_{ij} = \left(1 - \frac{x_{ij} - minx_{ij}}{maxx_{ij} - minx_{ij}}\right) * 0.9 + 0.1$$
$$= \left(\frac{maxX_{ij} - X_{ij}}{maxX_{ij} - minX_{ij}}\right) * 0.9 + 0.1 \quad (2)$$

(Negative index processing formula)

*c)* Calculation of the proportion of the index *j* of the city *i* 

$$P_{ij} = \frac{X_{ij}}{\sum_{i=1}^{m} X_{ij}} \quad (3)$$

*d)* Calculate the entropy of index j

$$e_j = -k \sum_{i=1}^m P_{ij} \ln(P_{ij}) \quad (4)$$

Wherein,  $k = \frac{1}{\ln(m)}$ 

e) Calculate the weight of index j

$$W_{j} = \frac{g_{j}}{\sum_{j=1}^{n} g_{j}} = \frac{1 - e_{j}}{\sum_{j=1}^{n} (1 - e_{j})} \quad (5)$$

Wherein,  $g_j$  is the variance coefficient of index j, which is the result of 1 minus the entropy of this index.

f) The composite score of supply of the basic public service in cities

$$S_j = \sum_{j=1}^n P_{ij} W_j \quad (6)$$

2) Equalization index of the basic public service level

This paper adopts the public services equalization index constructed by Yang Shengli et al. and uses the difference between the score of each city and the mean value to reflect the equalization degree of the basic public service level. The specific formula is as follows:

$$L = \sum_{j=1}^{n} (S_j - \bar{S}_j)^2 \quad (7)$$

Wherein,  $\bar{S}_j$  is the mean value of the basic public service level.

3) Spatial autocorrelation analysis

Exploratory spatial data analysis is a common spatial autocorrelation analysis method, including global spatial autocorrelation analysis and local spatial autocorrelation analysis.

Global autocorrelation is mainly analyzed with the global Moran's I, aiming to measure the spatial distribution situation of the basic public service level in Chengdu-Chongqing economic circle. Its calculation formula is as follows:

$$I = \frac{\sum_{i=1}^{n} \sum_{j\neq 1}^{n} w_{ij}(x_i - \bar{x})(x_j - \bar{x})}{S^2 \sum_{i=1}^{n} \sum_{j\neq 1}^{n} w_{ij}} \quad (8)$$

Local autocorrelation is mainly analyzed via local Moran's I, aiming to investigate whether there is spatial clustering of the basic public service level in a local area. Its calculation formula is as follows:

$$I = \frac{(x_j - \bar{x})\sum_j w_{ij}(x_j - \bar{x})}{S^2}$$
(9)

Wherein,  $S^2 = \frac{1}{n} \sum_{i=1}^{n} (x_i - \bar{x})^2$ ,  $x_i$  and  $x_j$  are the observation value in area i and area j; n is the sample size, and  $w_{ij}$  is the spatial weight matrix;  $\bar{x}$  is the mean value of observation variables.

#### 3.3.Evaluation index system

Basic public services refer to the public services provided by the government within one specific development period and under certain economic conditions, aiming to guarantee the survival and development of all the citizens [16]. By referring to existing research outcomes [12] [13] [14] and in consideration of the accessibility and integrity of index data, this paper constructs the evaluation index system of the basic public service supply level in Chengdu-Chongqing economic circle from five aspects: basic social security services, basic education and culture services, basic medical and health care services, infrastructure, public transportation and ecological environment. Details about evaluation indexes are as shown in Table 1.

		Ratio of full-time teachers and students in middle		
	hasis advection and	schools (%)		
		Ratio of full-time teachers and students in primary	0.0647	
	(0 2011)	schools (%)		
	(0.2011)	Collection of books in public libraries possessed by	0.0691	
		per 10,000 persons (volumes)		
		Urban workers participation rate on Endowment	0.0569	
	Basic social security services	insurance (%)		
		Urban workers participation rate on Medical	0.0606	
		insurance (%)		
	(0.17)	Urban workers participation rate on Unemployment	0.0525	
Basic public		insurance (%)		
services	Basic medical and health care service (0.1423)	Number of health personnel accessed by per 10,000	0.0739	
30111003		persons (pcs.)		
		Number of sickbeds in health agencies accessed by	0.0684	
	(0.1 120)	per 10,000 persons (pcs.)		
	Infrastructure	Road area / person (m <sup>2</sup> )	0.0921	
		Gas supply per 10,000 persons (m <sup>3</sup> )	0.0662	
	(0.2230)	Water drainage pipe length / person (km)	0.0653	
		Number of public vehicles accessed by per 10,000	0.0677	
	public transportation and	persons (pcs.)		
		Number of taxis accessed by per 10,000 persons	0.0695	
	(0.2629)	(pcs.)		
	(0.2023)	Green land area / person (m <sup>2</sup> )	0.0652	
		Green coverage of built-up area (%)	0.0605	

 Table 1. Basic Public Service Supply Level Measurement Index System and Weight in 2019

Source: Arranged by the author.

#### 3.4.Data source

Index data in each city are from Sichuan Statistical Yearbook, Chongqing Statistical Yearbook and China City Statistical Yearbook during 2016-2020. The population data are based on permanent resident population. To guarantee the comparability of data between cities, all the data in this paper are data of the municipal district of each city.

## 4.ANALYSIS ON THE CURRENT STATUS OF THE BASIC PUBLIC SERVICES IN CHENGDU-CHONGQING ECONOMIC CIRCLE

## 4.1.Overall situation of the basic public services in Chengdu-Chongqing economic circle

On the basis of calculating the index weight of the basic public service level in Chengdu-Chongqing economic circle with the entropy method, the basic public service of each city in this region is measured as a whole in this article (Table 2 and Table 3).

In light of the basic public service level change trend in Chengdu-Chongqing economic circle during 2015-2019, there are big differences between changes in cities. Specifically speaking, the basic public service level in Chengdu City during these five years increased rapidly, and the total score increased from 0.6564 (ranking the second place) in 2015 to 0.8800 (ranking the first place) in 2019; the basic public service level in Chongqing declined, and the score decreased from 0.4263 in 2015 to 0.4052 in 2019 (the 8th place remained unchanged). According to the total score change trend of each city, that of 7 of 16 cities, including Chengdu City, increased; According to the score trend of individual indexes of the basic public service, the infrastructure score of Chengdu City and Meishan City increased significantly, the basic education and culture service score of Devang City, Suining City, etc. declined, the basic medical and health care service score of Chengdu City, Luzhou City, etc. increased, the basic social security service score of Chongqing, Deyang City, etc. increased, the public

transportation and ecological environment service score of Chengdu City, Zigong City, etc. increased. This indicates that some of the regional cities has different focuses on improving basic public service, leading them to being not able to balance the basic public service level, proving that the coordinated development of basic public services is yet to be realized

According to the scores of basic public services in Chengdu-Chongqing economic circle in 2019, the total score of basic public services and the index of each basic public service of Chengdu City ranked in the front among 16 cities, while the performance of Chongqing ranked the middle place in terms of infrastructure, basic education and culture services, and public transportation and ecological environment, except the score of the basic social security service that ranked the 3rd place. Specifically speaking, the basic public service level of Chengdu City, Deyang City and Mianyang City was relatively high, and the basic public service level of Chongqing ranked in the middle place among 16 cities; according to the score of each basic public service, the infrastructure score of Deyang City, Chengdu City and Mianyang City was relatively high, the basic education and culture service score of Guang'an City, Chengdu City and Ya'an City was relatively high, the basic medical and health care service score of Chengdu City, Ya'an City and Luzhou City was relatively high, the basic social security service score of Chengdu City, Devang City and Chongqing was relatively high, and the public transportation and ecological environment score of Chengdu City, Luzhou City and Leshan City was relatively high.

City	Total score	Infrastruc ture	Basic education and culture services	Basic medical and health care service	Basic social security services	Public transportation and ecological environment
Chongqing	0.4052	0.0875	0.0819	0.0349	0.0970	0.1038
Chengdu						
City	0.8800	0.1717	0.1302	0.1566	0.1652	0.2563
Zigong City	0.4365	0.0964	0.0689	0.0847	0.0538	0.1327
Luzhou City	0.5870	0.1456	0.0501	0.1195	0.0857	0.1862
Deyang City	0.6233	0.1964	0.0903	0.0734	0.1128	0.1503
Mianyang						
City	0.5413	0.1616	0.0458	0.0829	0.0793	0.1718
Suining						
City	0.3711	0.1159	0.0801	0.0368	0.0281	0.1101

Table 2. Total and Individual Score of Basic Public Services in Chengdu-Chongqing Economic Circle in 2019

Neijiang						
City	0.2564	0.0481	0.0499	0.0400	0.0281	0.0904
Leshan City	0.5413	0.1022	0.0793	0.0852	0.0959	0.1786
Nanchong						
City	0.3982	0.0912	0.0661	0.0562	0.0483	0.1363
Meishan						
City	0.3564	0.0675	0.0884	0.0536	0.0479	0.0990
Yibin City	0.3481	0.0679	0.0775	0.0520	0.0610	0.0896
Guang'an						
City	0.3618	0.0548	0.1462	0.0165	0.0272	0.1170
Dazhou						
City	0.2445	0.0250	0.0862	0.0552	0.0231	0.0551
Ya'an City	0.4679	0.0736	0.1085	0.1266	0.0441	0.1151
Ziyang City	0.2611	0.0531	0.0657	0.0419	0.0474	0.0531

Source: Arranged and calculated by the author.

Table 3. Total and Individual Score of Basic Public Services in Chengdu-Chongqing Economic Circle in 2015

			Basic	Basic medical	Basic social	Public transportation
City	Total	Infrastruct	education	and health	security	and ecological
City	score	ure	and culture	care service	services	environment
			services			
Chongqing	0.4263	0.0554	0.0993	0.0416	0.1237	0.1063
Chengdu						
City	0.6564	0.0973	0.1491	0.1116	0.1270	0.1714
Zigong City	0.3327	0.0729	0.0730	0.0434	0.0577	0.0858
Luzhou City	0.4621	0.1253	0.0618	0.0624	0.0843	0.1283
Deyang City	0.6965	0.1954	0.1361	0.0600	0.1640	0.1411
Mianyang						
City	0.5672	0.1605	0.0664	0.0743	0.1276	0.1383
Suining City	0.4027	0.0973	0.1306	0.0378	0.0461	0.0909
Neijiang City	0.2702	0.0489	0.0652	0.0375	0.0533	0.0653
Leshan City	0.4373	0.0945	0.1126	0.0609	0.0985	0.0708
Nanchong						
City	0.3814	0.0743	0.0987	0.0344	0.0616	0.1124
Meishan City	0.5023	0.1059	0.1327	0.1002	0.0244	0.1391
Yibin City	0.4731	0.0735	0.1100	0.0684	0.1058	0.1155
Guang'an						
City	0.2743	0.0544	0.1176	0.0142	0.0220	0.0660
Dazhou City	0.1936	0.0302	0.0706	0.0271	0.0292	0.0365
Ya'an City	0.4094	0.0957	0.1149	0.0704	0.0378	0.0907
Ziyang City	0.2719	0.0583	0.0732	0.0392	0.0353	0.0659

*Source: Arranged and calculated by the author.* 

# 4.2. Analysis on equalization of basic public services in Chengdu-Chongqing economic circle

Equalization index estimation can reflect the differences of the basic public service level between

cities in Chengdu-Chongqing economic circle. 15 cities in Sichuan Province are included in the sample, so the equalization index of the whole Chengdu-Chongqing economic circle and cities in Sichuan Province was calculated respectively. The results are shown in Table 4.

Scope	Total score	Infrastruct ure	Basic education and culture services	Basic medical and health care service	Basic social security services	Public transportation and ecological environment
Chengdu- Chongqing in 2015	0.2921	0.0273	0.0126	0.0102	0.0296	0.0198
Chengdu- Chongqing in 2019	0.4032	0.0360	0.0113	0.0217	0.0223	0.0408
Cities in Sichuan Province in 2015	0.2920	0.0260	0.0126	0.0100	0.0270	0.0197
Cities in Sichuan Province in 2019	0.4017	0.0359	0.0113	0.0204	0.0212	0.0401

Table 4. 2015-2019 Equalization Index of Basic Public Services in Chengdu-Chongqing Economic Circle

*Source: Arranged and calculated by the author.* 

According to the equalization index change trend of basic public services in Chengdu-Chongqing economic circle during 2015-2019, the equalization index of basic public services in Chengdu-Chongqing economic circle increased gradually, and the inequality degree of the basic public service level in this region increased gradually. According to specific analysis, the equalization index of basic public services in Chengdu-Chongqing economic circle increased from 0.2921 in 2015 to 0.4232 in 2019, and the inequality degree of the regional basic public service level increased significantly; according to the equalization index of the index of each basic public service, the equalization degree of basic education and culture service and basic social security service in Chengdu-Chongqing economic circle increased gradually, but that of the infrastructure, basic medical and health care service and public transportation and ecological environment declined, and the equalization index of the public transportation and ecological environment increased the most. By comparing the equalization index of the basic public services of cities in Sichuan Province during 2015-2019, it is found that the difference of the total and individual scores of basic public services between cities in Sichuan Province is the primary reason of affecting the intercity differences in basic public services in Chengdu-Chongqing economic circle, and the joining of Chongqing aggravated such a difference to some extent, and especially the intercity inequality degree in terms of the basic medical and health care service and the basic social security service was further improved. By analyzing the reasons, Yang Shengli et al. believe that the population in the municipal district has increased fast, the demands for basic public services have gradually increased, but the basic public service supply

level cannot meet the fast-increasing service demands, so the basic public service equalization degree at the municipal district level has declined.

According to the equalization index of basic public services in Chengdu-Chongqing economic circle in 2019, the inequality degree of regional cities in terms of the public transportation and ecological environment was the highest, followed by the infrastructure, basic social security service and basic medical and health care service, and the equalization degree of the basic education and culture service was the highest. According to the change trend of individual indexes in 2015-2019, the inequality degree of public transportation and ecological environment increased the fastest during these five years. This indicates that in further development, Chengdu-Chongqing economic circle should attach special importance to the public transportation and ecological environment service in each municipal district, can refer to strategies of Chengdu City like Park City Construction and Traffic Network Construction to significantly improve the green coverage in each municipal district and perfect the urban public traffic network. Infrastructure construction and basic social security service should also be emphasized in further development. During competitive (coordinated) development of economy, Chengdu-Chongqing economic circle should fully guarantee urban infrastructure construction and the basic social security service of permanent resident population. The economic development and infrastructure and the basic social security service should interact with each other, but not oppress each other. Further improvement of the infrastructure and the basic social security service is an important basic condition of guaranteeing sustainable, high-quality and equalized development of ChengduChongqing economic circle. In addition, Chengdu-Chongqing economic circle can release relevant policies to encourage and promote effective sharing and reasonable flow of regional medical and health care service personnel to shrink the intercity basic medical and health care service gap and reduce the challenge of tense basic medical and health care service in core cities.

## 5. CONCLUSIONS AND DISCUSSION

#### 5.1.Conclusions

Taking Chengdu-Chongqing economic circle as the research object, this article constructed the basic public service evaluation indexes from five dimensions of the infrastructure, basic medical and health care service, basic education and culture service, basic social security service and public transportation and ecological environment, measured the basic public service level and equalization of 16 cities in Chengdu-Chongqing economic circle during 2015-2019 with the entropy method. the equalization index and spatial autocorrelation analysis and analyzed the internal space correlation in this region. The main conclusions are as follows:

First, the basic public service level change trend in Chengdu-Chongqing economic circle during 2015-2019 shows that the growth of the basic public service level in Chengdu City, as the core city, is significant within the five years. Chongqing City's basic public service level decreased slightly while other regional cities have inconsequential increases or decreases in the same period. More importantly, some of the regional cities has different focuses on improving basic public service, leading them to being not able to balance the basic public service level, proving that the coordinated development of basic public services is yet to be realized.

Second, according to the basic public service equalization index change result of Chengdu-Chongqing economic circle in 2015-2019, the intercity basic public service level gap increased gradually, the inequality was improved stably, and the equalization index of the public transportation and ecological environment grew the fastest among five specific services. In addition, the inequality degree of basic public services in Chengdu-Chongqing economic circle may be correlated to the inequality degree between cities in Sichuan Province, and the gap between the basic public service level in Chongqing and that in other cities is also an important reason of the inequality of the basic public service level in this region.

### 5.2.Discussion

By investigating the current status of the basic public service level in Chengdu-Chongqing economic circle, to improve the regional basic public service level and realize equalization, it is believed that efforts can be made in the following aspects:

First, the inequality of the intercity basic public service level in Chengdu-Chongqing economic circle should be clearly realized to continuously improve the overall basic public service level of this region.

On one hand, the inequality of the basic public service level is reflected on specific services. To effectively improve the equality of specific basic public services, this region can improve its basic public service supply efficiency and reasonably configure kinds of basic public service resources in the form of participation of the market body, optimization of the supply supervision mechanism and attraction of social capital.

On the other hand, the inequality of the basic public service level is reflected on intercity differences. in future development, all the cities in Chengdu-Chongqing economic circle, especially megacities, should deal with the contradiction between the immigrant population and the registered population among permanent resident population in terms of the demand for the basic public services while paying attention to economic construction, and should meet the huge and diversified basic public service demands through improving the basic public service supply, sharing basic public service resources with surrounding cities, etc.

Second, the region should actively eliminate the coordination barrier in Chengdu-Chongqing economic circle and make more efforts to promote the regional basic public service interconnection and intercommunication level.

On one hand, the region can explore establishment of an internal mutual assistance and co-building mechanism of basic public services in Chengdu-Chongqing economic circle. A regional basic public service mutual assistance and co-construction linkage mechanism can be built by establishing a basic public service coordinated development foundation. strengthening strategic cooperation of intercity basic public services, establishing a horizontal transfer payment mechanism in Chengdu-Chongqing economic circle, jointly cultivating basic public service talents, etc. to improve the overall basic public service level in this region.

On the other hand, Chengdu-Chongqing economic circle can rely on the economic coordinated development strategy in this region to boost the basic public service level. Equalized development of basic public services can be realized by expanding the economic development force in Chengdu-Chongqing economic circle, transformation and upgrading can be further optimized by virtue of the regional industry structure, and lessdeveloped cities can make use of the resource strength to undertake technology and industry transfer from developed areas to realize coordinated development of Chengdu-Chongqing economic circle in terms of economic development and promote the basic public services with economic development.

### References

- Wang Yu, Zhao Yihang, Can Regional Coordinated Development Policy Improve the Public Services Supply Efficiency? -- Beijing-Tianjin-Hebei Region as an Example [J]. China Population Resources and Environment, 2020, 30 (08): 100-109.
- [2] Xiao Lei, Pan Yonggang, Spatial Evolution of the Chengdu-Chongqing City Cluster -- Based on 2000-2015 Section Analysis [J]. Urban Development Studies, 2019, 26(02): 7-15.
- [3] Yang Zhanfeng, Duan Xiaomei, The Effect of the Industrial Structure Change on Economic Growth Quality -- Analysis Based on the Total Factor Productivity in Chengdu-Chongqing Economic Zone [J]. Areal Research and Development, 2019, 38 (01): 39-44.
- [4] Yin Hongpan, Correlation between the Spatial Economic Pattern and Intercity Economy in the Chengdu-Chongqing City Cluster [J]. Journal of Southwest University (Natural Science), 2019, 45(03): 44-53.
- [5] Qin Peng, Liu Huan, The Theoretical Logic and Path Exploration of Coordinated Development in Chengdu-Chongqing Economic Circle -- from the Perspective of Functionalist Theory [J/OL]. Journal of Chongqing University (Social Science): 1-11[2020-12-23].http://kns.cnki.net/kcms/detai 1/50.1023.C.20201029.0859.002.html.
- [6] Liu Hao, Zhu Zhiyong, Labor Market Integration in Chengdu-Chongqing Economic Circle and Influencing Factors [J]. Soft Science, 2020, 34 (10): 90-96.
- [7] Jia Xiuxian, Qi Wunian, Construction of the Higher Education System in Chengdu-Chongqing Economic Circle: Foundation and Approach [J]. Chongqing Higher Education Research, 2020, 8 (05): 32-43.
- [8] Zong Huiming, Huang Yan, Effects of Expressways on the Accessibility and the City Interaction Pattern

of Chengdu-Chongqing City Cluster [J]. Human Geography, 2019, 34 (03): 99-107+127.

- [9] Lan Feng, Liu Jiao, Yang Zan, The Spatial-temporal Overflow Mechanism of Commercial Housing Prices in Chengdu-Chongqing City Cluster [J]. Research on Financial and Economic Issues, 2017 (07): 102-109.
- [10] Chen Minghua, Liu Yuxin, Zhang Xiaomeng, Zhong Chongyang, Measurement and Trend Evolution of the People's Livelihood Development Level in Chinese City Clusters -- Experience Review Based on City DLI [J]. China Soft Science, 2019 (01): 45-61+81.
- [11] Tu Jianjun, Kuang Renrui, Mao Kai, Li Nanxi, Evaluation on the High-quality Development Level in Chengdu-Chongqing City Cluster [J/OL]. Economic Geography: 1-15[2020-12-23].http://kns.cnki.net/kcms/detail/43.1126.K.2020 0813.1606.002.html.
- [12] Tian Xuebin, Chen Yidan, The Equalization Characteristic Differentiation and Trend of Basic Public Services in Beijing-Tianjin-Hebei Region [J]. Economy and Management, 2019, 33 (06): 7-15
- [13] Xiong Xing, Yu Xinghou, Pu Kunming, Comprehensive Evaluation and Spatial Analysis on Basic Public Services in Yangtze River Economic Zone [J]. East China Economic Management, 2019, 33(01): 51- 61.
- [14] Wu Jing, Regional Difference and Spatial Evolution of Basic Public Services in City Clusters in Yangtze River Delta [J]. Shanghai Economy, 2017 (06): 46-58.
- [15] Gao Shulan, Exploration for Coordinated Development of Basic Public Services and Fiscal Policy Support in Beijing-Tianjin-Hebei Region [J]. Economy and Management, 2016, 30 (06): 12-17.
- [16] Sun Xiaoli, Song Xiongwei, Lei Qiang, Basic Public Service Development in China within 40 Years since the Reform and Opening-up [J]. Theoretical Exploration, 2018 (05): 5-14.

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