

# An Empirical Analysis on Urban-rural Disparity of Compulsory Education Resource Allocation in Guangxi

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**Abstract.** In this paper, the situation of compulsory education resource allocation in Guangxi, China at the end of 2019 was empirically analyzed by selecting relevant indicator systems and using descriptive statistical analysis and analysis of variance. The main characteristics of the urban-rural disparity of compulsory education resource allocation in Guangxi were explored. From the statistical data, Guangxi has basically achieved the goal of realizing the basic balanced development of compulsory education between urban areas and counties & cities. However, the disparity of compulsory education resource allocation between elementary schools in Guangxi is still relatively serious. The continuous inflow of rural population to urban areas, the shrinkage and disappearance of rural schools, and the expansion of urban schools in counties and towns have led to the new characteristics of urban-rural disparity in compulsory education resource allocation in Guangxi, which must be observed with a new perspective. In the study, compulsory education resource allocation in districts and counties in Guangxi is suggested according to the target of urbanization rate of the resident population in each district and county in the future.

**Keywords:** Compulsory Education, Resource Allocation, Urban-rural Disparity.

## 1. Introduction

Compulsory education is the basic guarantee for improving the basic quality of citizens and the sustainable development of the country. “*The Compulsory Education Law*” promulgated and implemented by China in 1986 proposed a nine-year compulsory education system. In China, compulsory education is a public good and is achieved by the government’s overall financial support, And achievement of the balanced development of compulsory education is the most basic and fundamental task in the allocation of compulsory education resources. However, there still exist obvious gaps in the level of running schools and the quality of education among regions, between urban and rural areas, and among schools. The contradiction between the people’s growing demand for high-quality education and insufficient supply is still prominent. In September 2012, the “*Opinions of the State Council of China on In-depth Promotion of the Balanced Development of Compulsory Education*” pointed out that it is necessary to promote the balanced development of compulsory education to focus on improving the level of rural schools and low-performing schools, so as to comprehensively improve the quality of compulsory education. All school-age children and adolescents are “ready to go to school” must be realized to solve the deep-seated contradictions in compulsory education, promote the scientific development of education, and promote educational fairness. The “*Measures for Supervision and Evaluation of the High-quality and Balanced Development of Compulsory Education in Counties*” issued by the Ministry of Education of China in 2017 require that the allocation level of compulsory education schools in counties in terms of teachers, school buildings, equipment and so on should be assessed. At the same time, the inter-school balance of these indicators should be evaluated.

**Literature review.** In order to comprehensively understand the progress of research on compulsory education resource allocation in Guangxi, in this study, a fuzzy matching search was conducted by checking CNKI China Journal Full Text Database, with core journals as the scope. In this paper, about ten relevant pieces of literature in the past six years were collected. Based on the existing literature, the research on compulsory education resource allocation in Guangxi was mainly conducted from three aspects.

Significance of this study. Public goods theory provides a theoretical basis for the scale and manner of government investment in education, especially in compulsory education. Public goods have obvious positive spillover benefits. And compulsory education is a typical public good. Every school-age member of the society can enjoy the care of compulsory education policy provided by the state and which will not be reduced by the use of which of others. Generally speaking, the supply of public goods is difficult to be provided efficiently by relying entirely on the role of the market and the price mechanism, therefore, government intervention is needed to ensure the supply of public goods. In order to maximize the positive externality of compulsory education, the high level of compulsory education development is generally achieved through the relevant system, including the optimization of the funding management system. Therefore, it is of great theoretical significance to study the balanced development of compulsory education in Guangxi.

Rapid urbanization and industrialization have brought about a huge change in China. On one hand, the educational opportunities of the whole society have increased significantly both in scale and quantity. But on the other hand, the disadvantaged groups' access to education shows a trend of weakening in terms of quality gains. There are many problems in educational opportunities and educational equity between urban and rural areas. Educational equity is an extension and reflection of the value of social equity in the field of education. The uneven development of education is essentially the uneven distribution of educational resources at all levels. The emergence of differences in educational opportunities between urban and rural areas and regions are all the results of the appropriation of education resources, a scarce social resource. Among these contradictions, the education gap between urban and rural areas has been the focus of social attention. Analysis on the unbalanced distribution of educational resources between urban and rural areas is beneficial for us to recognize the importance of the problem and take more measures to improve the distribution of educational resources, so as to solve the imbalance. This study is of the reference value and practical significance to understand the problems in achieving the balanced development of compulsory education in Guangxi and taking the corresponding improvement measures.

## **2. Empirical Analysis On Urban-Rural Disparity In Compulsory Education Resource Allocation In Guangxi**

### **2.1 The selection of main indicators and data sources**

By the end of 2019, Guangxi had 14 prefecture-level cities, 49 counties, 12 autonomous counties, nine county-level cities and 41 municipal districts, with the resident population of 49.6 million and the gross product of 212.3714 billion yuan. According to the national statistical bulletin on the implementation of education funding, the total financial investment in education in the general public budget of Guangxi in 2019 was 100.888 billion yuan, ranking 15th in China, and education expenditure accounted for 17.24% of fiscal expenditure, ranking 10th in China.

In this study, five indicators were selected to reflect the distribution of compulsory education resources, mainly including the area of teaching and auxiliary rooms per student (m<sup>2</sup>), the area of sports venues per student (m<sup>2</sup>), the value of teaching instruments and equipment per student (yuan), the teacher-student ratio, the number of teachers with higher required qualifications per student, the number of teachers with middle-level and senior professional and technical titles.

### **2.2 Urban-rural disparity analysis on teacher allocation**

#### **(1) Urban-rural disparity of the student-teacher ratio**

The student-teacher ratio (number of students in school/number of full-time teachers) has always been an important indicator to measure the conditions of school operation and education resources investment in a broad sense. It is also one of the important indicators for international and regional comparisons in education. Figure 1 represents the difference between the primary school student-teacher ratio in urban and rural areas of Guangxi at the end of 2019. The student-teacher ratio at the

primary level in Guangxi is significantly lower than the national average, which indicates that the teacher resources at the primary compulsory education stage in Guangxi do not reach the national average.

**Figure 1.** Urban-rural disparity of student-teacher ratio of primary compulsory education in Guangxi in 2019

	Mean value	Highest value	Highest value district and county	Lowest value	Lowest value district and county
<b>Urban area</b>	0.05409	0.07	Guilin Yanshan District	0.039	Yulin Yuzhou District
<b>County</b>	0.05478	0.071	Guilin Longsheng County	0.041	Yulin Beiliu City, Rong County County

Note: Urban area refers to 41 prefecture-level cities in Guangxi; rural area refers to 71 counties and county-level cities in Guangxi.

However, the difference in the student-teacher ratio within urban areas and counties & cities in Guangxi is still huge. The per capita GDP of Yuzhou District, Yulin is 64,456 yuan, and that of Rong County is 25,711 yuan. The per capita GDP of Longsheng County, Guilin is 36,272 yuan, and that of Yanshan District, Guilin is 21,892 yuan. By comparing the student-teacher ratio, coefficient of variation, and GDP per capita (Yuan) of these four districts and counties, there is no sign that the student-teacher ratio is higher in the area where the GDP per capita is higher. Meanwhile, the coefficients of variation among districts and counties are small.

**Figure 2.** Comparison of primary school student-teacher ratio and its difference coefficient among four districts and counties in Guangxi in 2019

	Student-teacher ratio	Coefficient of variation	GDP per capita (Yuan)	GDP per capita Guangxi ranking
Guilin Yanshan District	0.07	0.0183	21892	96
Yulin Yuzhou District	0.039	0.0293	64456	16
Guilin Longsheng county	0.071	0.0197	36272	50
Yulin Rong County	0.041	0.0181	25711	79

## (2) Urban-rural disparity in the educational composition of full-time teachers

The “*Supervision and Evaluation Measures for Quality and Balanced Development of County Compulsory Education*” issued by the Ministry of Education requires that schools in county compulsory education should own 4.2 or more teachers per 100 students in elementary school with higher required qualifications. Overall, the inter-school imbalance in the educational composition of full-time teachers in primary-level schools in Guangxi is still obvious.

**Figure 3.** Urban-rural disparity in the educational composition of full-time teachers in primary compulsory education in Guangxi in 2019

	Mean value	Highest value	Highest value district and county	Lowest value	Lowest value district and county
<b>Urban area</b>	0.05278	0.069	Guilin Yanshan District	0.038	Yulin Yuzhou District
<b>County</b>	0.05218	0.07	Laibin Jinxiu County	0.04	Yulin Beiliu City

## 2.3 Urban-rural disparity of Compulsory education schooling conditions

### (1) Average area of teaching and supporting rooms per student (m<sup>2</sup>)

In 2017, the Chinese Ministry of Education proposed that the average area of teaching and supporting rooms per student in primary and junior high schools should reach more than 4.5 m<sup>2</sup> and 5.8 m<sup>2</sup> respectively. After the comparison, all urban areas and counties & cities in Guangxi exceed the standard proposed by the Ministry of Education.

**Figure 4.** Urban-rural disparity in the average area of teaching and supporting rooms per student in primary compulsory education in Guangxi in 2019

	Mean value	Highest value	Highest value district and county	Lowest value	Lowest value district and county
<b>Urban area</b>	4.5419	6.57	Yulin Fumian District	3.32	Nanning Qingxiu District
<b>County</b>	4.7894	6.83	Laibin Jinxiu County	3.22	Guilin Resources County

### (2) Average area of sports venues per student (m<sup>2</sup>)

The average value of elementary school in 41 urban areas in Guangxi is 8.5439 m<sup>2</sup> and the average value of elementary school in counties and cities is 9.3991 m<sup>2</sup>, both of which exceed the national standard. But large interschool differences exist.

**Figure 5.** Urban-rural disparity in the average area of sports venues per student in primary compulsory education in Guangxi in 2019

	Mean value	Highest value	Highest value district and county	Lowest value	Lowest value district and county
<b>Urban area</b>	8.5439	15.76	Beihai Tieshan Port District	4.67	Beihai Haicheng District
<b>County</b>	9.3991	15.39	Qinzhou Public County	5.1	Guilin Resources County

### (3) Average value of teaching instruments and equipment per student (yuan)

The average value of teaching instruments and equipment per student in elementary schools in urban areas or counties & cities in 111 districts and counties of Guangxi do not reach the standard of more than 2,000 yuan per student in elementary school proposed by the Ministry of Education.

**Figure 6.** Urban-rural disparity in the value of teaching instruments and equipment per student in primary compulsory education in Guangxi in 2019

	Mean value (yuan)	Highest value	Highest value district and county	Lowest value	Lowest value district and county
<b>Urban District</b>	1867.78	4013	Nanning Yongning District	1249	Yulin Yuzhou District
<b>County</b>	1752.21	3709	Baise Napo County	881	Liuzhou Luzhai County

## 3. Research Findings and Major Recommendations

Breaking through the urban-rural dichotomy in education and achieving integrated development of urban-rural education are strategic goals for China's education development in the next decade. Guangxi committed in the *"Memorandum on Balanced Development of Compulsory Education"* that "by the end of 2020, all counties in the region will achieve basic balanced development of compulsory education". In this study, an empirical analysis on the policy implementation of this commitment was conducted. The findings of this study are as follows.

Conclusion 1. From the statistical data, Guangxi has basically achieved the goal of realizing the basic balanced development of compulsory education in counties.

In terms of teacher allocation and school conditions, the average values of eight indicators of compulsory education resource allocation in elementary schools in 70 counties and cities are closer to the average values of relevant indicators in 41 urban areas. Among them, the average values of four indicators, such as student-teacher ratio, the average number of teachers with middle-level and senior professional and technical titles, the average area of teaching and supporting rooms (m<sup>2</sup>), and average area of sports venues (m<sup>2</sup>) per student in 70 counties and cities are higher than those in 41 urban areas, which indicates that the schooling conditions of elementary schools in counties and cities have been improved considerably.

Conclusion 2. The inter-school imbalance of compulsory education resource allocation in elementary schools in Guangxi is still relatively serious.

In 2017, the Ministry of Education required the inter-school comprehensive coefficient of variation of county-level primary compulsory education of 0.50 in the “*Supervision and Evaluation Measures of County Compulsory Education Quality and Balanced Development*”. Among the 111 districts and counties in Guangxi, there are still 11 counties and cities with the average value of the coefficient of variation of 8 indicators exceeding 0.5. The highest one is Longan County of Nanning City, with a comprehensive coefficient of variation of 0.609, reflecting the large inter-school differences in compulsory education resource allocation among elementary schools in Guangxi, especially among counties.

Main suggestions: In recent years, due to the comprehensive implementation of the “reform project of compulsory education for low-performing areas, the construction of compulsory education school infrastructure in Guangxi has made positive progress. But at the same time, there are many empty nests in primary and secondary school buildings, especially in rural areas. Because of the lack of foresight in planning and construction, the number of students in many elementary schools in villages and towns has been far less than those in the planned construction of schools. School building fixed assets are not effectively utilized, and compulsory education invested funds have been wasted. Therefore, it becomes urgent to pay attention to the inequality of service quality behind the numerical balance, the education equity of the rural transfer population, and so on. Meanwhile, the supervision of educational poverty alleviation has been gradually enhanced in cities and counties in Guangxi, but there are still many problems that have not been effectively solved, among which, the most urgent one is the lack of education poverty alleviation supervision mechanism with long-term effects. It is suggested that government departments at all levels in Guangxi should scientifically formulate construction plans, and based on the projected target of the future urbanization rate of the resident population in Guangxi, they should be forward-looking and foreseeable to determine the growth rate of investment in compulsory education in cities and counties, which should be linked with the local personnel mobility and urbanization rate of the resident population. The scale and quantity of primary and secondary school construction should be considered comprehensively according to the local personnel flow and the expected urbanization rate of the resident population, and the limited education resources should be invested to the most needed areas to obtain the greatest social benefits.

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