Retraction

Retracted: Rough Set Construction and Entropy Weight Evaluation of Urban Higher Education Resource Carrying Capacity Based on Big Data

Journal of Mathematics

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] L. Wang, C. Liu, and M. Talha, "Rough Set Construction and Entropy Weight Evaluation of Urban Higher Education Resource Carrying Capacity Based on Big Data," *Journal of Mathematics*, vol. 2022, Article ID 7776940, 11 pages, 2022.

Research Article

Rough Set Construction and Entropy Weight Evaluation of Urban Higher Education Resource Carrying Capacity Based on Big Data

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With the popularization of higher education, the scale of urban higher education continues to expand, and the contradiction between the supply and demand of educational resources becomes increasingly prominent, which restricts the steady development of urban higher education. Based on the rough set theory, this paper constructs a rough set of big data of urban higher education resource carrying capacity from the three levels of higher education core resources, urban economic resources and urban basic resources, and evaluates the entropy weight of the city where the university is located. According to the theoretical knowledge of higher education resource carrying capacity, the system deconstructs and expounds the balance mechanism of higher education resource carrying capacity, which provides solid theoretical support for the development of the paper. The research shows that the agglomeration development of higher education resources can improve the carrying capacity of urban higher education resources. The second section performed well on the whole, and the index distribution was more uniform. The third interval index structure distribution is complex and uneven, and the overall performance is general. The fourth section belongs to the poor section of educational carrying capacity with a low overall index. It can be seen that the carrying capacity of higher education resources varies significantly, which provides a scientific basis for improving the carrying capacity of higher education resources and theoretical and policy basis for realizing rational allocation and sustainable carrying capacity of higher education resources.

1. Introduction

With the acceleration of the modernization of the governance system and the deepening of normalization construction, the construction and development of urban higher education have become a new landmark for different regions to show their new achievements in reform, new progress in economic and social development, and a new level of scientific, technological, and cultural development [1]. In the struggle for urban and regional development, resources, as the foundation supporting the growth of higher education in cities, regions, and nations, play a key role. Higher education resources may easily migrate across areas as a result of economic globalization and regional integration. Cities, as a highly concentrated regional area for human production and living, eventually become the center of higher education

resources in the process of free flow of higher education resources [2]. As higher education moves from popularization to popularization, regional center cities progressively become the collecting site for higher education resources, and their capacity to aggregate resources has a significant influence on regional higher education development. For a long time, researchers have been interested in the strategic impact of higher education resource agglomeration on regional higher education growth.

Educational resources refer to the human, material, and financial resources used, occupied and consumed in the course of education, including the human resources of educators and educatees, etc. Material resources include fixed assets, materials, and low-value consumables in the school. Financial resources are the monetary form of human and material resources, including personnel consumption

and public consumption, which are the material basis for the development of education and education work [3]. Educational resources are regarded as the sum total of human resources, financial resources, and material resources. To analyze the attribute of educational resources, we must first understand the connotation of the attribute. The so-called attribute is an abstract description of things, reflecting the homogeneity or difference between things is the attribute. A lot of properties and relations of a thing can be attributed to the attribute of this thing. Therefore, the analysis of the attributes of educational resources is helpful to further distinguish the relationship between educational resources and other resources and then distinguish and separate different core elements in the theory of resource allocation. Scarcity, flexibility, multifunctional, imbalance, and potential are all characteristics of educational resources. Regional imbalances, urban-rural imbalances, and class imbalances are all examples of educational resource imbalances. The difference between imbalance and equilibrium is that the former is absolute and the latter is relative. Bearing capacity is a term adopted from the area of engineering geology. Its initial purpose was to define the strength of a building's foundation bearing capacity, but it has since developed into one of the most often used terms to express the degree of growth limitation. This notion was initially introduced to this field by ecology. Carrying capacity shows the support capacity of ecosystem resources and environment to the benign growth of the human social system, as discussed in the early talks on the interaction between ecosystem resources and environment and human social system [4]. Subsequently, related concepts such as resource carrying capacity, population carrying capacity, and ecological environment carrying capacity are derived. These concepts mainly express the supporting capacity or development limitation of the bearing subject to the growth of the bearing object under certain conditions. In the case of taking a certain region and period as the research scope, if based on the above concepts of "educational resources" and "carrying capacity," the carrying capacity of educational resources is also one of the derivative concepts of carrying capacity. If the research goal is the geographical region where the educational population congregates, the carrying object and main bodies are the educational school-age population and educational resources, respectively. The carrying capacity of educational resources may be separated into two categories based on these two standards: educational resources and specific space. The logical deployment of educational resources and the long-term growth of education are the core of educational resource carrying capacity. However, it is not only a matter of educational resources; it is a multifaceted issue that must take into account a variety of aspects such as population, resources, education, and space. The lower the proportional ratio, the greater the educational resource carrying capacity; the more resources per student, the lower the risk of overloading.

Big data has penetrated into every industry and field and has become an important factor in production. The rapid development of mobile Internet, cloud computing, and the Internet of Things is pushing mankind into the era of big data. The higher education system can be regarded as an ecosystem, which has the same bearing capacity as the natural ecosystem. Once the scale of higher education exceeds the bearing capacity of certain education and the corresponding environment, its resource supply and regeneration capacity will be destroyed, and the system will lose balance [5]. Carrying capacity of educational resources refers to the supporting capacity of existing educational resources for the population of a country or region to receive all kinds of education under the premise of reasonable allocation and quality assurance of various educational resources. The research on education carrying capacity mainly focuses on higher education and vocational education, analyses the concept and elements of education carrying capacity in the higher education system, and analyses the scale of higher education carrying capacity, its relationship with social development and promotion strategies based on the analysis model of ecosystem carrying capacity. It provides useful theoretical reference and measurement methods for the subsequent research on the carrying capacity of compulsory education resources in big cities. The lack of an analytical model and theoretical index system that directly refers to the urban internal connection environmental background, influencing factors, and specific pressure performance provides a new space for the academic development of this study.

This study combines the connotation of educational resources and carrying capacity to produce a stable and logical technique of combining by examining the connotation of educational resources and carrying capacity. The value of educational resource carrying capacity can be maximized to ensure the smooth implementation of educational activities, and social subjects or educational subjects can integrate necessary resources to support the effective operation of educational activities by constructing a rough set of big data of urban higher education resource carrying capacity.

2. Related Work

With the popularization of higher education, the demand for educational resources increases, facing a series of problems such as resource shortage and ecological destruction of education. In this context, it is very important to study the carrying capacity of higher education resources. The resource carrying capacity of higher education is restricted by many factors. Rough set theory is a data mining method that has emerged in recent years, which is mainly used in data simplification, data significance assessment, object similarity or difference analysis, causality, and paradigm mining. Xue et al. discuss the concept, evaluation indexes, and evaluation methods of carrying capacity of educational resources based on the characteristics and influencing factors of educational resources [6]. Ding et al. analyzed the ecological carrying capacity of the education system of overseas students in China from three dimensions of "resource carrying capacity," "environmental carrying capacity," and "ecological elastic force" [7]. Peng et al. define its carrying capacity and, on this basis, put forward three core indicators for

measuring the carrying capacity of resources in the higher education system: the first is the allocation of teachers in colleges and universities. The second is infrastructure and equipment. The third is the government's financial investment in education [8]. Xi et al. constructed the higher education carrying capacity as an evaluation system and screened five key indicators with the support of rough set theory [9]. Shi et al. implemented the construction of an evaluation system related to the resource carrying capacity in higher education and adopted the carrying capacity index model analysis to conduct quantitative analysis on each component of regional higher education resources and their comprehensive carrying capacity [10]. At this time, it is required to strengthen the carrying capacity assessment index system and its evaluation theory.

Education resources bearing capacity is within a specific area with the upper body of production and management role, education resources in maintaining the balance of quantity and quality, education resources reasonable configuration, and effective utiliztation of resources under the premise of complete region for enjoying all educational resources for the population. The level of education of all types are considered as most efficient resource of educations. Shen L. et al. think that educational resource carrying capacity refers to the ability of current resources to sustain the people in the space receiving education at all levels, based on how to distribute and assure the quality of different educational resources in a nation or area [12]. Zhang et al. evaluated the carrying capacity of higher education resources from the perspective of rough set theory [13]. Cao et al. believe that a comprehensive evaluation system including educational, economic, and social indicators should be considered in the evaluation index system of carrying capacity [14]. The evaluation system of higher education resource carrying capacity makes up the higher education resource carrying capacity.

3. Construction of Big Data of Urban Higher Education Resource Carrying Capacity

3.1. PRES Analysis Framework for Education. In view of the carrying capacity of urban higher education resources, the carrying capacity analysis of educational resources based on a variety of constraint factors is a relatively special education system, which is different from the general education system that comprehensively analyses many educational elements within a single education category. It is composed of multiple factors including population, resources, society, and education [15]. Such an analysis perspective not only contains many restrictive factors that affect the resource carrying capacity of urban higher education but also combines these factors with relevant elements within the educational scope, thus establishing a systematic framework analysis perspective and structural relations based on environment and condition constraints.

Educational activities exist in a certain social system and environment and need to use certain resources to carry out education and teaching activities to meet their own educational goals and maintain the existence and development of the education system. With the continuous advancement and development of education, the scale and quality of educational activities are also expanding and improving. Therefore, the educational system with the ultimate goal of human development is becoming more and more extensive, and the connection and influence between the educational system and the social system and other relevant elements are becoming closer and closer. In this context, this paper attempts to construct an educational PRES analysis framework based on the system theory and education system theory and the carrying capacity of educational resources as the core theme and examines and studies the corresponding problems of the carrying capacity of educational resources by analyzing the internal structure and elements of the system.

The structure of the analysis framework refers to the relatively stable way of mutual connection and interaction among various elements of the system, that is, the organizational form, combination mode, and order within the system. According to the simulation, an analysis framework with educational factors as the core and link, social factors, resource factors, and population factors as a whole, and mutual influence and interaction is constructed. The analysis framework of education PRES is shown in Figure 1.

The education PRES analysis framework is made of four fundamental components: education, population, resources, and society [16]. People who are part of the social and educational systems are referred to as demographic factors. In the social system, the population with productive, consumption, and self-management capacity; in the category of education, the educational population, which includes students and faculty, is not only directly related to educational activities and educational resources but also determines its primary status in the educational resource system as a double identity of population and educational population. Educational components are educational activities in the education system, and educational activities in general refer to a wide range of educational activities that influence people's physical and mental development. Educational activities in the limited meaning pertain to school-related activities, but educational activities in this research refer to educational activities in the broadest sense. Educational components are at the heart of the whole system, not only because educational resources are the system's core composition of educational elements but also because the proper operation and development of educational elements ensure the educational resource system's survival and growth [17]. Resource elements refer to all kinds of objective elements related to the development of the social system and educational system, which can support and maintain the development of various activities and system operations. Resource elements refer to various educational resources that can effectively support the development of educational activities, including hardware facilities resources, human resources, financial resources, etc. Resource elements refer to all kinds of material resources in the social system that can effectively support the operation of the educational system and also include other forms of resources that can be transformed into educational resources. Social elements refer to the corresponding value cognition and social
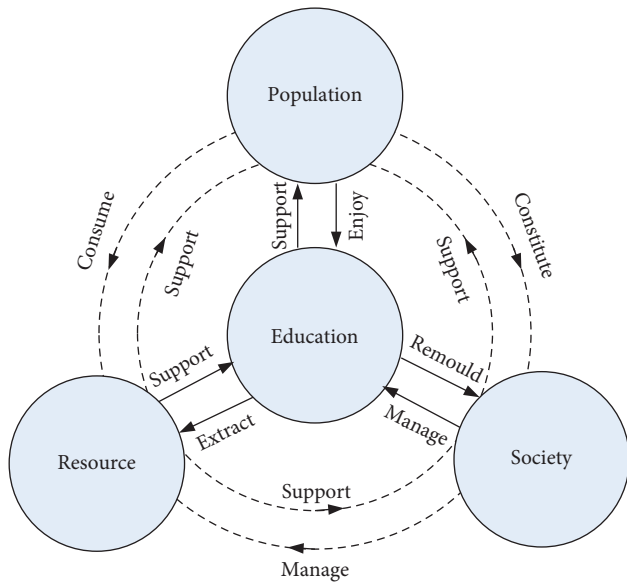
FIGURE 1: Educational PRES analysis framework diagram.

environment with value concepts that can profoundly influence the educational system and social system. From the macro level, it includes the system, mechanism, system, concept, and culture that can influence the system, and from the microlevel, it includes the policies, regulations, rules, and conditions that specifically guide and regulate the system. Among them, social factors not only invisibly influence and dominate other factors but also receive feedback from other factors for their changes and development.

3.2. Construct Rough Set Evaluation Index System.

Index system of design is a comprehensive and systematic scientific research activity; the index system has many characteristics, such as being systematic, comprehensive, scientific; in the collection of many indexes selected appropriate indicators, asking to choose the index can reflect the comprehensive and the internal structure of the system. The resource bearing index of higher education focuses on the supervision index of the education process and monitors the basic operation of higher education by observing and analyzing the dynamic process of each object [18]. Based on relevant theories of higher education resource carrying capacity and strict design principles, this paper selects reasonable evaluation indexes to form a comprehensive, systematic, and scientific evaluation index system of higher education resource carrying capacity.

The bearing capacity of education resources is based on the research methods and research of the indicators used; the existing index to merge similar definition analysis index, remove not related indicators, and define fuzzy index was improved; the index system of comparison and use other types of education at the same time, carefully considering the operability of the system, carefully adheres to the three evaluation index system design principles, and thoroughly examines the idea and connotation of higher education resource carrying capacity. The index system is built from

the core resources of higher education, urban economic resources, and urban basic resources, based on a comprehensive reference of some scholars on the construction of educational resource carrying capacity index, in accordance with the principle of scientific, complete, and measurable, and the Angle of data accessibility. Figure 2 depicts the assessment index method for urban higher education resource carrying capacity.

The primary index of core resources of higher education includes four secondary indexes: financial input, number of full-time teachers, number of students, and number of universities, which are mainly used to measure the development foundation, quality level, and sustainable development ability of urban higher education. The first-level indicators of urban economic resources include population density, per capita GDP, the average wage of employees, and regional GDP growth rate, which are mainly used to measure the supporting ability and level of urban economic development to higher education. The first-level indicators of urban basic resources include five second-level indicators: the total amount of urban water supply, the total amount of urban electricity, the number of urban hospital beds, the per capita road area, and the area of urban building land, which are mainly used to measure the auxiliary and supporting role of urban infrastructure and public services on higher education.

3.3. Balance Mechanism of Carrying Capacity of Higher Education Resources.

The balance mechanism of higher education resource carrying capacity is a set of operation modes and processes of higher education resource carrying capacity system to maintain the balance of educational resource carrying capacity [20]. For a comprehensive analysis, describe the environment, to understand its relationship with the social development, people created the organizational environment status information of a general framework, using the DPSIR model dynamic analysis of higher education from the perspective of integrity and connecting resources bearing capacity, the depth type structure and describing the content of the preschool education resources bearing capacity of structure system and operation mode, and expressing the resource logic of the development of higher education. According to DPSIR operation logic, this study decomposed the operation mechanism of higher education resource carrying capacity into driving system, bearing system, and response system. The operating mechanism of higher education resource carrying capacity is shown in Figure 3. The three systems are connected and functional according to the operation logic of operation.

3.4. Entropy Weight Method.

The entropy weight method is an objective method for determining index weight introduced by information theory. The basic idea is to calculate the entropy weight of an index according to its variability, which is inversely proportional to the variation degree of the index value, the amount of information provided, and its role in comprehensive evaluation [21]. Compared with the qualitative index weight assignment method, the entropy
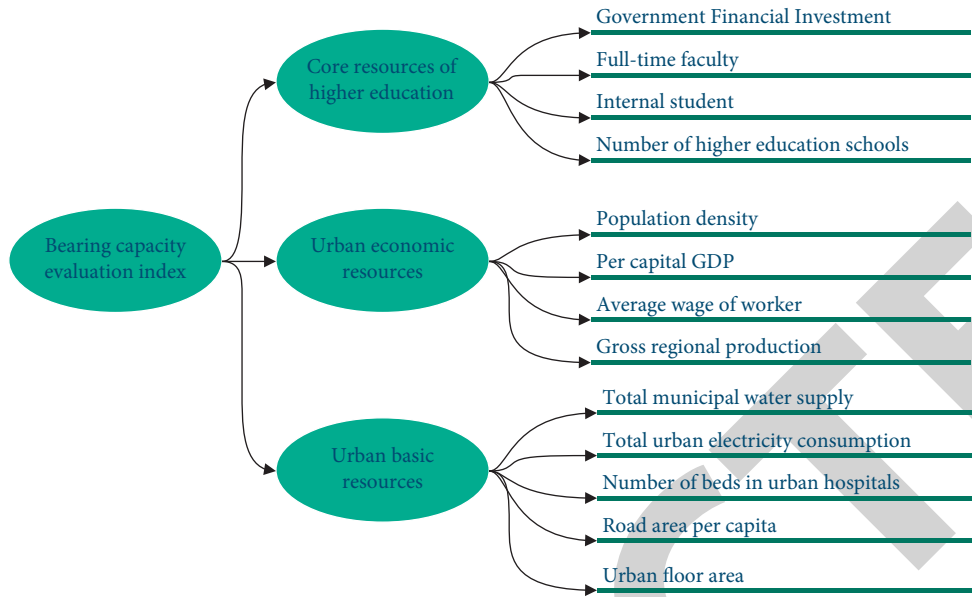
FIGURE 2: Evaluation index System diagram of urban higher education resource carrying capacity.
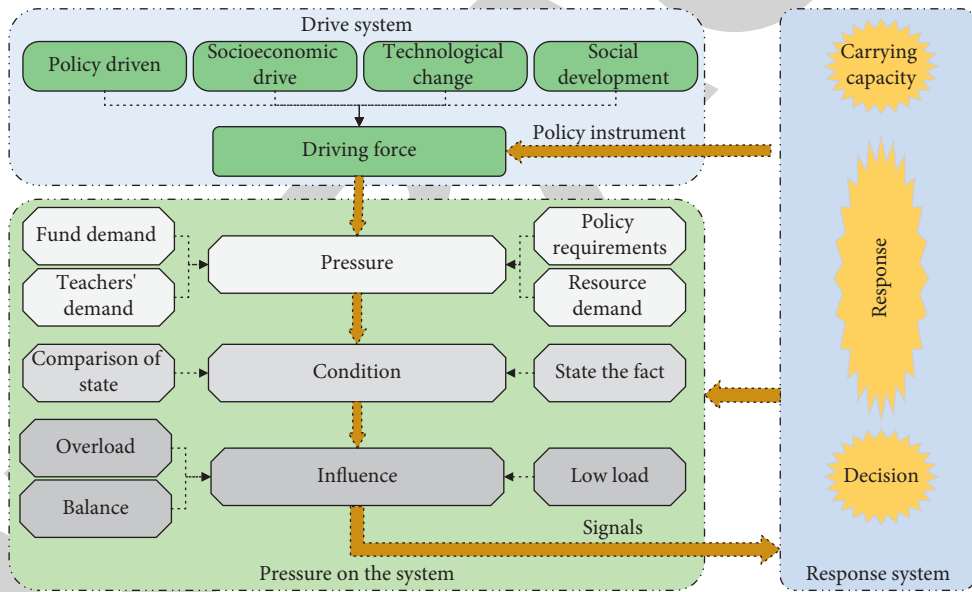

FIGURE 3: Operation mechanism diagram of higher education resource carrying capacity.

weight method has stronger objectivity and higher accuracy and can better explain the calculated results. The entropy weight method is used for a comprehensive evaluation, and the original matrix is constructed, which includes the evaluated object $m = (m_1, m_2..., m_m)$, evaluation index $D = (D_1, D_2,... D_n)$ raw data matrix.

$$
x = \left\{ \begin{matrix} x_1 & x_2 & \cdots & x_n \\ x_{11} & x_{12} & \cdots & x_{1n} \\ \vdots & \vdots & \cdots & \vdots \\ x_{m1} & x_{m2} & \cdots & x_{mn} \end{matrix} \right\}_{m \times n}, \tag{1}
$$

where x_{mn} represents the evaluation value of the m item under the n index.

The original matrix is dimensionless. In order to eliminate the dimensionality effects of different indicators, the entropy weight method normalized the original data with different trends. Meanwhile, as the average area of dangerous houses per resident in some provinces, regions, and cities in the original data was zero, the extreme value method was used to standardize different types of indicators to meet the requirement that the real number of logarithmic calculations was greater than zero.

High quality index: positive index, the larger its value, the better the evaluation:

$$
V_{mn} = \frac{x_{mn} - \min(x_m)}{\max(x_m) - \min(x_m)} + 1. \tag{2}
$$

Low quality index: The higher the reverse index value, the lower the evaluation:

$$V_{mn} = \frac{\max(x_m) - x_{mn}}{\max(x_m) - \min(x_m)} + 1. \quad (3)$$

The characteristic proportion of the m item under the n index is as follows:

$$p_{mn} = \frac{v_{mn}}{\sum_{m=1}^{a} v_{mn}}. \quad (4)$$

The entropy value of the n index is as follows:

$$e_n = -\frac{1}{\ln(a)} \sum_{m=1}^{a} p_{mn} \times \frac{1}{\ln(p_{mn})}. \quad (5)$$

When n is the index of each project, the smaller the entropy value, the greater the difference of the index value, the more information reflected. On the contrary, the larger the entropy value, the larger the difference of the index value, the less information reflected.

The difference coefficient of the n index is as follows:

$$d_n = 1 - e_n. \quad (6)$$

The entropy weight of each indicator is determined as follows:

$$w_n = \frac{d_n}{\sum_{m=1}^{b} d_n}. \quad (7)$$

Positive and negative ideal solutions are determined as follows:

$$Z^+ = \left\{ \max_{1 < m < a} v_{mn} \middle| m = 1, 2, \ldots, a \right\} = \{v_1^+, v_2^+, \ldots, v_b^+\},$$
$$Z^- = \left\{ \max_{1 < m < a} v_{mn} \middle| m = 1, 2, \ldots, a \right\} = \{v_1^-, v_2^-, \ldots, v_b^-\}. \quad (8)$$

The distance between each evaluation scheme and positive and negative ideal solutions: The distance of the positive ideal solution is as follows:

$$D_n^+ = \sqrt{\sum_{n=1}^{b} (v_{mn} - v_n^+)^2}, \quad m = 1, 2, \ldots, a. \quad (9)$$

The distance of the negative ideal solution is as follows:

$$D_n^- = \sqrt{\sum_{n=1}^{b} (v_{mn} - v_n^-)^2}, \quad m = 1, 2, \ldots, a. \quad (10)$$

The relative proximity to the optimal scheme is as follows:

$$C_m = \frac{D^-}{D^+ - D^-}, 1 \le m \le a. \quad (11)$$

The larger the C_m, the higher the proximity between m evaluation scheme and the optimal scheme.

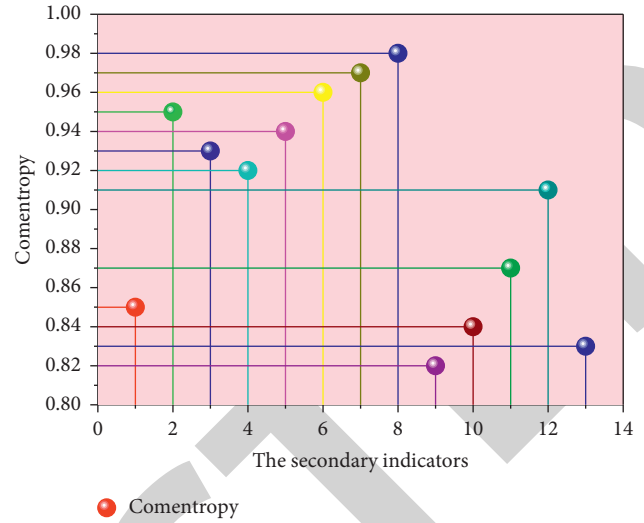
Figure 4: Statistical chart of information entropy of educational carrying capacity index.

4. Result and Analysis

4.1. The Entropy Weight Analysis of Educational Carrying Capacity. Various data were collected on the official website of each school, including financial input, number of full-time teachers, number of students, and number of colleges and universities. Among them, the number of full-time teachers and administrative staff was the number of staff. The index values of urban population density, per capita GDP, average wage of staff and workers, regional GDP growth rate, the total amount of urban water supply, the total amount of urban electricity, the number of urban hospital beds, and per capita road area are collected through this method. Considering that the index caliber of the original data is different and the order of magnitude is greatly different, the original data is standardized. As study samples, this report uses cross section data from 18 institutions. The normalized matrix of the formula style was created after normalization of the original data: Information entropy calculation. The information entropy of 13 educational carrying capacity indicators was estimated using the formula. Figure 4 depicts a statistical representation of the information entropy of educational carrying capacity measures.

The contribution of core resources of higher education, social economic resources, and urban basic resources to the carrying capacity of urban higher education resources is as follows: 40%, 21%, and 39%, fully indicating that the higher education resource carrying capacity is mainly affected by the higher education core resources and urban basic resources, and the impact of urban economic resources indicators on the higher education resource carrying capacity is limited. The carrying capacity of urban higher education resources is not only restricted by the current situation and development of higher education resources but also highlights the supporting role of urban infrastructure and public services to higher education. As a part of the urban system,
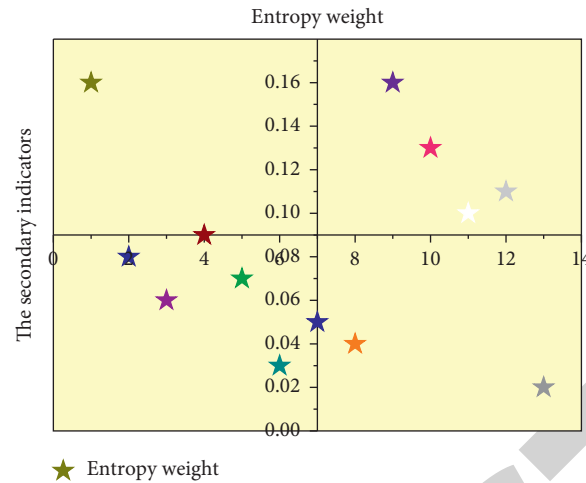
FIGURE 5: Statistical chart of entropy weight of educational carrying capacity index.

the higher education ecosystem is relatively independent in its operation and development, so it is less affected by the urban economic operation and development. However, the basic resources of the higher education ecosystem need the support of the urban system, so the basic resources become the most important indicator next to the core resources of higher education.

The entropy weights of 13 educational carrying capacity indicators are calculated according to the formula, and the entropy weights statistics of educational carrying capacity indicators are shown in Figure 5.

Financial input, the total amount of urban water supply, and the total amount of urban electricity consumption all contribute significantly to the carrying capacity of urban higher education resources, accounting for nearly half of the total. This fully reflects the main impact of government financial support and urban hydropower infrastructure and service on the carrying capacity of higher education resources. The carrying capacity of urban higher education at the average level is determined by the number of full-time teachers, students, colleges and universities, population density, the number of beds in urban hospitals, and per capita road area, which reflects the status quo of higher education resources. The contribution of urban traffic and medical conditions to the carrying capacity is crucial. The contribution of per capita GDP, average wage, and regional GDP growth rate to urban higher education resource carrying capacity is low. The results of the secondary index are highly consistent with the primary index, which reflects the weak correlation between urban economic development and higher education resource carrying capacity.

The closeness degree of urban higher education resource carrying capacity is calculated according to the formula. The statistical figure of the closeness degree of higher education resource carrying capacity is shown in Figure 6.

As can be seen from the figure, the closer the relevance is to 1, the higher the carrying capacity level of urban higher education is, the stronger the sustainable development capacity of higher education is, and the greater the space and potential of education development is. The closer the degree

of closeness is to 0, the vice versa. The ranking results can be divided into four ranges: the first range is 1–6, the comprehensive performance evaluation is "good"; the second range is 7–11, the comprehensive performance evaluation is "good"; the third range is 12–15, indicating "average" overall performance evaluation; the fourth range is that the comprehensive performance evaluation is "poor" after the closeness degree is 16. The grounds for the first section's "excellent" educational carrying capacity can be seen in the figure, which shows that it performs well in terms of full-time teachers, students, and colleges and universities, and the scores of the six cities are comparable to the ranking. As a result, higher education resource agglomeration may increase the carrying capacity of urban higher education resources. Because the overall performance of indicators is better and the distribution of indicators is more uniform, the second interval's overall performance is better. The third segment has a low score, and the structure of the distribution of numerous indicators is complicated and uneven, with general performance. The overall distribution is in the central and western areas, and urban development performance is average. Due to the effect of geographical location or city administrative level, the fourth zone belongs to the weak educational carrying capacity with a low overall index since it cannot compete with the top cities in terms of financial assistance, policy support, and city attractiveness.

4.2. Analysis of Higher Education Resources Concentration Level. Cities with higher education resource concentration levels are distributed in 18 higher education resource concentration indexes. Figure 7 shows the map of cities with higher education resource concentration levels.

As can be seen from the figure, Beijing has the highest concentration index of higher education resources, followed by Shanghai, Wuhan, Nanjing, Guangzhou, Xi 'an, and Chengdu. In addition, the agglomeration level of higher education resources in the eastern, central, and western regions has an obvious trend of stepwise decline. In the eastern region, Beijing is the center, with Shanghai, Nanjing,
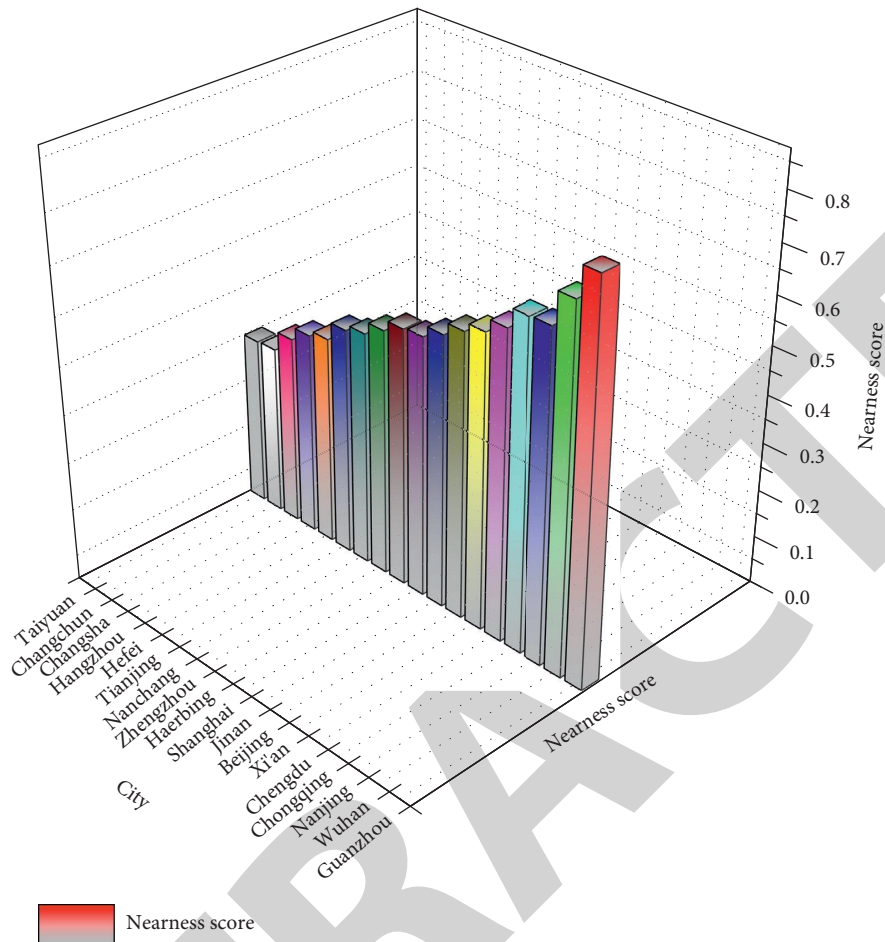
Figure 6: Statistical chart of closeness degree of higher education resource carrying capacity.

and Guangzhou as the three subcenters. In the central region, Wuhan is the center, and Changsha, Zhengzhou, Hefei, and Nanchang are the subcenters. In the western region, Xi'an and Chengdu are the dual centers, with Chongqing and Kunming as the subcenters. Within each region, the agglomeration ability of urban higher education resources in Fujian province, Guangxi Zhuang Autonomous Region, and Hainan Province is weaker than that of other provincial capitals or subprovincial cities in the east. The capital cities of Shanxi Province and Inner Mongolia Autonomous Region are weak in higher education resources gathering ability. In western China, Qinghai, Gansu, Ningxia, Guizhou, Xizang, and other provinces have a weak ability to gather higher education resources. At the national level, higher education resources are mainly concentrated in the capital cities of municipalities directly under the Central Government, while the higher education resources concentration index of other cities is generally lower than the national average. This shows that China's higher education resources tend to cluster in central cities with larger scale and obvious centrality.

4.3. Analysis of Spatial Distribution Difference of Bearing Capacity. Function core city as the city's economic and political center, known as the owner of the superior quality

education resources manpower and material resources, financial resources, the higher education resource bearing capacity should be at a higher level; however, due to its high quality education resources to attract more students to cause a virtuous cycle, the limitation of core area and because of its realistic condition, the students' ability is limited. As a result, the carrying capacity of educational resources is relatively low. The spatial distribution difference of bearing capacity is shown in Figure 8.

According to the figure, the spatial distribution pattern of the comprehensive carrying capacity of higher education resources is analyzed. Specifically, the distribution pattern of human, financial, and material resources is slightly different. The distribution pattern of the carrying capacity of financial resources and material resources is the same as that of comprehensive carrying capacity. The strongest carrying capacity is the ecological conservation and development area, followed by the urban function expansion area; the weakest is the functional core area, and the weakest is the new urban development area. The different distribution patterns are reflected in the human resource carrying capacity, which is still the strongest in ecological conservation development zones, and the second in urban development zones, while the human resource carrying capacity of functional core and functional expansion zones is weak.
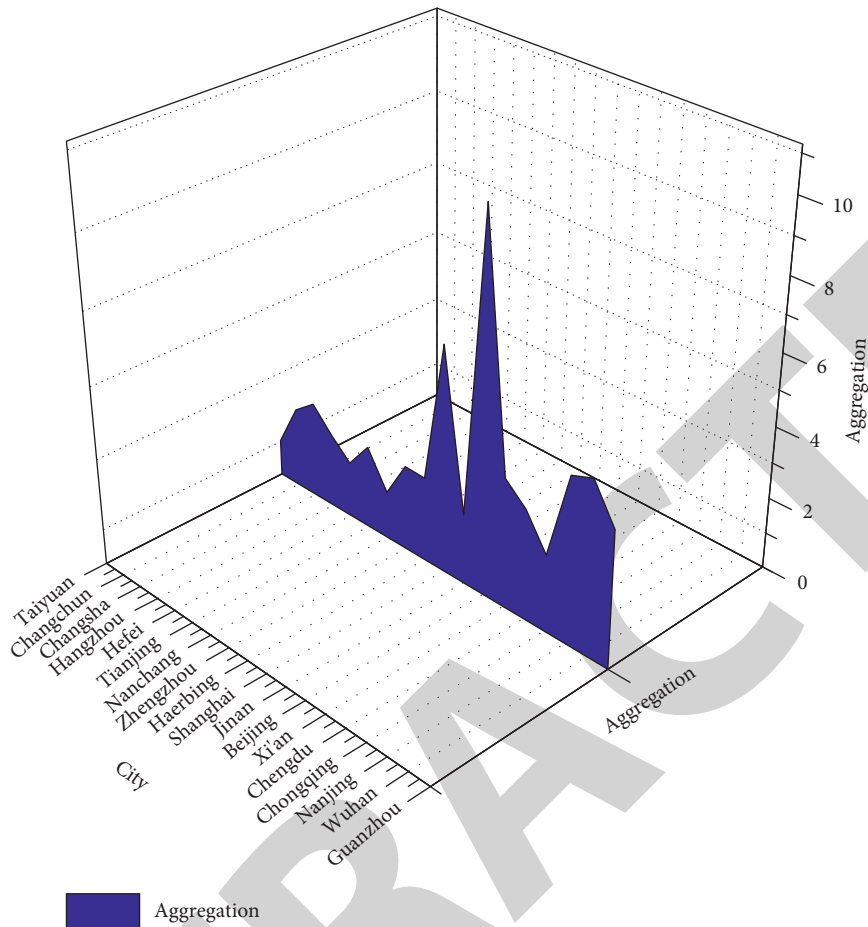
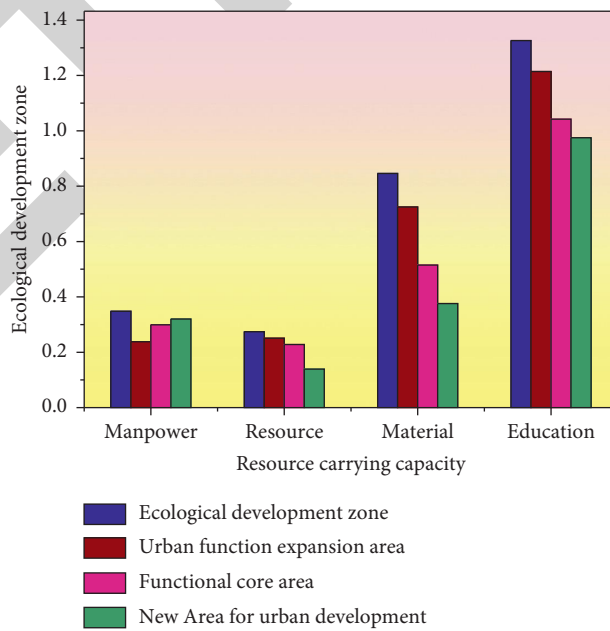Figure 7: Map of higher education resource concentration level cities.

Figure 8: Spatial distribution difference diagram of bearing capacity.

5. Conclusion

Higher education is one of the important components of social development and progress. The level of education determines the quality of a nation's development and affects the basic capabilities of a country and a region. Vigorously developing higher education provides strong support for the realization of sustainable economic and social development. Based on the rough set theory, this paper constructs a rough set of big data of urban higher education resource carrying capacity from the three levels of higher education core resources, urban economic resources, and urban basic resources. This system deeply deconstructs and expounds the balance mechanism of higher education resource carrying capacity and provides solid theoretical support for the development of the thesis. The research shows that the agglomeration development of higher education resources can improve the carrying capacity of urban higher education resources. There are significant differences in the carrying capacity of higher education resources, which provides a scientific basis for improving the carrying capacity of higher education resources and provides theoretical and policy basis for realizing rational allocation and sustainable carrying capacity of higher education resources. From the perspective of education ecology, the evaluation index system of higher education resource carrying capacity is constructed from the three levels of higher education core resources, urban economic resources, and urban basic resources. It is found that the higher education resource carrying capacity is mainly affected by the core resources of higher education and the urban basic resources and has a weak correlation with urban economic development. The impact of financial support and urban hydropower resources on the carrying capacity of higher education resources is prominent. The carrying capacity of urban higher education also has a certain range, so it is necessary to implement an optimal allocation and differentiation strategy to fully tap the potential and concentrate superior resources.

Data Availability

The data are available upon request.

Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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