Research Article

Spatial Distribution Characteristics and Accessibility Analysis of Characteristic Towns in Guangdong Province Based on Ripley’s K Function

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1. Introduction

Currently, China is in a critical period of promoting urbanization and implementing rural revitalization. The proposal of characteristic towns provides a new way for China to promote the transformation and upgrading of traditional industries, modernize agriculture and rural areas, and realize the integrated development of urban and rural areas. On July 20, 2016, the Ministry of Housing and Urban-Rural Development of China, the National Development and Reform Commission, and the Ministry of Finance issued the “Notice on Carrying out the Cultivation of Characteristic Towns” and decided to cultivate characteristic towns in China. On June 12, 2017, the Guangdong Provincial Development and Reform Commission, the Science and Technology Department, and the Housing and Urban-Rural Development Department jointly issued the “Guiding Opinions on Accelerating the Construction of Characteristic Small (Cities) Towns.” On May 12, 2021, the Guangdong Provincial Development and Reform Commission announced a list of 142 characteristic towns for management, standardizing the management and helping the development of characteristic towns. The construction of characteristic towns aims to further promote new urbanization, promote coordinated development between cities and small towns, and eliminate uneven development between regions. Researching the spatial distribution of characteristic towns and their influencing factors can reflect the differences between them and their causes. This can assist local governments to use their characteristics and cultivate and distribute characteristic towns scientifically and rationally, providing full play to their radiation drive. Furthermore, it can promote the development of new urbanization and realize rural revitalization.
There is no clear definition of characteristic towns. However, there are many examples, such as Silicon Valley in the United States, Murano Glass City in Italy, Stuttgart Auto City in Germany, Daejeon Auto Parts Town in Japan, and Provence Town in France. At the end of the 19th century, many well-known industrial towns and resource-based towns in developed countries shifted toward the characteristic development because of environmental pollution or resource depletion, such as Wolfsburg in Germany and Vitre in France. Cultural accumulation has enabled the sustainable development of small towns. The construction of characteristic foreign towns has matured and become a primary means of promoting the urbanization process. Current research on characteristic small towns involves industrial development [1–3], planning and construction [4, 5], and operation modes of small towns [6].

In China, the concept of a characteristic town emanates from the early construction of small, key towns. In recent years, research on characteristic towns has become a burning issue in China, mainly involving conceptual definitions [7, 8], development paths [9, 10], planning and construction [11–13], and financing models [14, 15]. However, few analytical studies have been conducted. Previous studies mainly used spatial analysis methods, such as the nearest neighbor index, kernel density estimation, geographic concentration index, geographic connection rate, and imbalance index. For instance, Ma used ArcGIS 10.5 spatial analysis and SPSS 20.0 cluster analysis and other methods to study the spatial and regional types of characteristic towns in the Yangtze River Delta [16]. Shi and Yang mainly used the nearest neighbor index, kernel density estimation, overlay analysis, and other methods to analyze the spatial distribution of characteristic towns [17]. Wang used Ripley’s K function and kernel density estimation methods to investigate the spatial distribution characteristics and influencing factors of characteristic Chinese towns [18]. Guo proposed the use of coordinate kernel polynomials in kernel regression [19]. Zhou proposed a family of new structured deep neural networks: deep distributed convolutional neural networks [20]. Previous research mainly focused on the overall spatial distribution characteristics and influencing factors of characteristic towns within the study area. For example, through the research on the spatial distribution of small towns with national characteristics, Wang found that the overall spatial distribution type was condensed, and a highly dense area was formed in Jiangsu, Zhejiang, and Shanghai and a secondary dense area at the borders of Beijing, Tianjin, and Hebei, the Pearl River Delta, Sichuan, Chongqing and Yunnan [21]; Fang found that small towns with Chinese characteristics have “overall agglomeration, relying on economy, along the line, besieging cities and relying on scenery” in distribution [22]; Lu found that small towns with Chinese characteristics had formed a high-density cluster in the Yangtze River Delta and a subdensity cluster in the Beijing-Tianjin region and the Pearl River Delta in space [23]. Bellandi focused on the specialized towns and the industries that characterized them as complex actors of Chinese industrial development [24]. Barbieri offered a long-term, detailed overview of the policy program and of Guangdong’s specialized towns, classifying them as endogenous or exogenous according to their features and investigated their contribution to local growth and rebalancing [25].

Therefore, it is evident that previous studies on the spatial distribution characteristics of characteristic towns have mainly used methods such as the nearest neighbor index, coefficient of variation, geographic concentration index, and kernel density estimation. However, these methods cannot reflect the aggregation of characteristic towns at different spatial scales. There is more research on the overall spatial distribution of characteristic towns, than on characteristic towns by type. Therefore, this study adopted Ripley’s K function to investigate the spatial distribution features of characteristic towns in Guangdong Province. This enabled us to analyze their aggregation at different spatial scales and study the spatial distribution characteristics and influencing factors of different types of characteristic towns.

In sum, China’s research on characteristic towns yielded a large number of results; however, most of them are based on the qualitative analysis of typical or general cases. There are few quantitative studies on characteristic towns that reveal the dynamic evolution characteristics. Characteristic towns are the achievement of urbanization exploration and are an important force. The study of characteristic towns requires the theoretical guidance of spatial economics. A scientific and reasonable economic research paradigm should be adopted to analyze the industrial agglomeration mechanism and spatial distribution, how the industries and characteristics are gathered, and the spatial layout is conducted. Thereafter, the key elements of characteristic towns, such as compound efficiency, market demand, nontradable resources, planning and construction, layout and distribution, economic quality, and so forth, should be explained. This study focuses on the construction characteristics of characteristic towns in Guangdong Province and used them as the research object. It combines quantitative and qualitative analysis of the spatial pattern of characteristic towns, classifies them, and then examines them. It further analyzes the influencing factors of the spatial distribution of various types of characteristic towns to facilitate the spatial location and classification guidance of characteristic towns, to better promote the development of China’s innovative economy and the construction of new urbanization. Although academic circles have gradually deepened their understanding and research on characteristic towns, the research on these as a form of industrial agglomeration organization is lacking. The corresponding evaluation system and quantitative analysis seem to lag, and there is a lack of research on the combination of industrial distribution of characteristic towns and the regional economic and social development. The organic combination of industrial and location elements of characteristic towns is an important basis for the high quality and sustainable development of these towns. Therefore, this study attempts to construct the theoretical mechanism of coordinated development between characteristic towns and regions from an industry and regional economy perspective. Furthermore, it aims to conduct an empirical analysis on the coupling development and influencing factors between characteristic towns of...
different industry types and major metropolitan areas based on the
typical experience and data of Guangdong Province. It also
aims to supplement and expand the existing research.

This study used Ripley’s K function and kernel density
estimation methods to analyze the overall spatial distribution
characteristics of characteristic towns in Guangdong Province
and different types of characteristic towns. It aimed to in-
vestigate the agglomeration of characteristic towns in
Guangdong Province at different spatial scales and hot spots of
spatial distribution. On this basis, it further analyzed the
influencing factors of the spatial distribution of various types of
characteristic towns to coordinate the promotion of new ur-
banization and optimize the spatial layout of towns in
Guangdong Province, draw on regional advantages, and build
more vitality and competition. Li’s characteristic town provides
theoretical support and references for decision-making.

2. Research Methods and Data Sources

2.1. Research Methods

is an effective method for measuring event density changes
and exploring hotspot regions of the event distribution [26].
The larger the kernel density estimate, the higher the
probability of regional events [27]. In this study, kernel
density estimation was introduced, and through spatial vi-
ualization, the clustering hotspots of characteristic towns in
Guangdong Province could be presented more intuitively.
The formula is as follows:

\[ f_n(x) = \frac{1}{nh} \sum_{i=1}^{n} k\left(\frac{x - X_i}{h}\right), \] (1)

where \( k((x - X_i)/h) \) is the kernel function, \( h \) is the band-
width, and \( h > 0 \); \((x - X_i)\) represents the distance from the
estimated event point \( x \) to the observed event point \( X_i \).

2.1.2. Ripley’s K Function. Ripley’s K function is a method for
exploring the degree of event aggregation at different spatial
scales [28]. This study introduced Ripley’s K function to explore
the degree of aggregation of characteristic towns in Guangdong
Province at different spatial scales. Ripley’s K function analysis
regards the characteristic town as the last event in space [29]. It
calculates the number of events in each circle with radius \( d \),
uses each event as the center, calculating the average value of all
events, and dividing the whole value by the average value [30].
The event density in the study area yields the value of the K
function \( \hat{K}(d) \) at distance \( d \), and the process is repeated for a
range of \( d \) values. The formula is as follows:

\[ \hat{K}(d) = \frac{A}{n^2} \sum_{i=1}^{n} \sum_{j=1,j\neq i}^{n} I_d(d_{ij}), \] (2)

where \( \hat{K}(d) \) is the K-function value, \( A \) is the study area, \( n \) is
the number of event points in the study area, \( i \) is the observed
event point, \( j \) is the nearest neighbor event point of \( i \), and \( d_{ij} \)
is the distance between the two events.

\( \hat{K}(d) \) can be converted into square root \( L(d) \), which can
express the linear relationship between \( L(d) \) and \( d \) more
clearly. The formula is as follows:

If \( L(d) > d \), it indicates that the events are clustered in
space, and the higher the L value, the higher the degree of
spatial clustering; if \( L(d) < d \), it indicates that the events are
distributed in space, and the lower the L value, the more
discrete the spatial distribution; if \( L(d) = d \), the event
presents a random distribution in space. A simulation
method was used to test the differences between \( L(d) \) and
the random spatial distribution. The process involved ran-
donly distributing N points in an area equal to the study
area and calculating each distance interval value \( L(d) \) to
obtain the maximum value of \( L(d) \) HiConfEnv and the
minimum value of \( L(d) \) LwConfEnv. If the \( L(d) \) is higher
than the HiConfEnv value, the spatial clustering of this
distance is statistically significant. If the \( L(d) \) is lower than
the LwConfEnv value, the spatial dispersion of this distance is
statistically significant.

2.2. Data Sources. The research data included characteristic
towns, socioeconomic, and geospatial data. In total, 142
characteristic towns in Guangdong Province were selected.
The data were obtained from official sources released by the
Guangdong Development and Reform Commission. Fur-
thermore, according to the types of characteristic towns,
they were divided into five: industrial development, agri-
cultural service, business circulation, cultural tourism, and
innovation and creativity. The socioeconomic data (GDP
and population) were obtained from the Guangdong sta-
tistical yearbook 2020; geospatial data were obtained from
the National Basic Geographic Information Center, and
Google Earth was used to obtain the coordinate information
of characteristic towns (Figure 1).

3. Spatial Distribution Characteristics and
Influencing Factors of Characteristic
Towns in Guangdong Province

3.1. The Overall Distribution Characteristics of Characteristic
Towns in Guangdong Province. Ripley’s K function was used to
study the agglomeration of characteristic towns in Guangdong
Province at different spatial scales. The observed value curve of the K function was above the expected value curve [31]. In addition, the K observations were higher than the HiConfEnv value. The characteristic towns in the study area exhibited significant agglomeration distribution character-
istics at different spatial scales (Figure 2). Furthermore, the ArcGIS kernel density analysis tool was used to detect the
hotspots of characteristic towns in Guangdong Province,
and the distribution kernel density map of characteristic
towns was generated (Figure 3). Spatial and local distribu-
tion characteristics of multinuclear diffusion in “eastern
Guangdong” and “western Guangdong” were determined.
Specifically, the Pearl River Delta region has a solid economic foundation, superior resource allocation, and unique location advantages that can more substantially promote the formation and construction of characteristic towns.

3.2. Distribution Characteristics of Various Types of Characteristic Towns in Guangdong Province. As shown in Figure 4, the observed value curves of the K function of the characteristic towns of industrial development, cultural tourism, innovation, and creativity were above the expected value curve. Moreover, K’s observed value was higher than the HiConfEnv value in the study area. The distribution of these three types of characteristic towns showed significant aggregation at different spatial scales. The K-function observed value curve of the characteristic agricultural service town was above the expected value curve, showing a certain degree of agglomeration. In addition, the observed value of K in the study area was close to the HiConfEnv value, and accordingly, the distribution of such characteristic towns in the study area was not significant [32]. The observed value curve of the K function of the characteristic towns with commercial and trade circulation was below the expected value curve in the study area. However, the observed value of K was lower than the HiConfEnv value. It can therefore be inferred that the distribution of such characteristic towns in the study area presents a certain discreteness, although not significantly.

Further analysis of the hotspot areas of the spatial distribution of different types of characteristic towns determined distinctive differences in their spatial distribution (Figure 5). Among them, the distribution of hotspot areas of industrial development, cultural tourism, innovation, and creative characteristic towns is relatively concentrated. Industrial development-oriented characteristic towns are mainly distributed in the Pearl River Delta region, which has a long history of industrial development, a strong industrial base, rich resources, and location advantages (Figure 5(a)). Cultural tourism-oriented characteristic towns are mainly distributed in the Pearl River Delta. The region and the eastern Guangdong region have profound historical and cultural accumulation. Accordingly, they can rely on their rich natural or human resources to form unique cultural tourism-oriented characteristic towns (Figure 5(d)). Innovative and creative characteristic towns are also mainly
Figure 4: Ripley’s K function of various types of Characteristic Towns in Guangdong Province (a) Industrial development; (b) Agricultural service; (c) Commercial circulation; (d) Cultural tourism; (e) Innovative and creative.
Figure 5: Continued.
distributed in the Pearl River Delta region, which is densely populated and has many colleges and universities. Therefore, it has unique advantages for developing innovative and creative characteristic towns (Figure 5(e)). Similar to Ripley’s K function analysis results above, the kernel density analysis also showed that the agglomeration characteristics of the distribution of agricultural service-oriented characteristic towns are not significant. Among them, characteristic agricultural service-oriented characteristic towns are widely distributed. As the primary industry, agriculture, forestry, animal husbandry, and fishery are the basic industries of the national economy. Hence, it is simple to form characteristic agricultural towns in various regions according to local characteristics. These areas are often based on traditional agriculture, and furthermore, they can develop modern agriculture, conduct deep processing of agricultural products, and develop tourism agriculture, retaining traditional characteristics, promoting and upgrading industrial transformation (Figure 5(b)). The number of characteristic towns with commercial and trade circulation is relatively small, and the distribution is relatively scattered (Figure 5(c)).

3.3. Analysis of Influencing Factors of Spatial Distribution of Characteristic Towns in Guangdong Province. According to the “Notice on Carrying out the Cultivation of Characteristic Towns” issued by the Ministry of Housing and Urban-Rural Development of China, the National Development and Reform Commission, and the Ministry of Finance in 2016, the requirements for the cultivation of characteristic towns include distinctive industrial forms, harmonious and livable characteristics, namely a beautiful environment, distinctive traditional culture, convenient and perfect facilities and services, and vibrant institutional mechanisms. Therefore, characteristic towns’ establishment and development requirements are primarily based on these five aspects. Starting from the influencing factors that affect the establishment and development of characteristic towns, this study selected four factors: population, economy, resources, and location, to further analyze their influence on the spatial distribution of characteristic towns.

3.3.1. Population Factors. According to China’s population statistics in 2020, the population density of Guangdong Province is divided into five levels, with the prefecture-level administrative region as a unit (Figure 6(a)). The areas with high population density in Guangdong Province are mainly distributed in the Pearl River Delta region. There is a strong positive relationship between the overall distribution of characteristic towns and population density, and most characteristic towns are in areas with high population density. Among them, the characteristic towns of agricultural services, commerce, and trade circulation have weak requirements for population density. In contrast, the characteristic towns of industrial development, innovation, and creativity are more obviously affected by the population and distributed in areas with high population density. Areas with high population density provide industrial enterprises with more human resources and a stable source market and promote the
further development of regional industries. In addition, cultural tourism-oriented characteristic towns are distributed in areas with different population densities, mainly because such characteristic towns rely on a rich source market for tourists and are also closely related to certain tourism resources.

3.3.2. Economic Factors. Economic development level is an essential factor that affects the cultivation and spatial layout of characteristic towns. The construction and development of characteristic towns requires the support of regional economic strength. The economic development degree of Guangdong Province was divided into five levels using the

![Figure 6: Analysis of influencing factors on the spatial distribution of Characteristic Towns in Guangdong Province](image-url)
per capita GDP of Guangdong Province in 2020 as an indicator for judging the degree of regional economic development (Figure 6(b)). The economically developed areas of Guangdong Province are mainly distributed in the Pearl River Delta. The densely distributed area of characteristic towns for industrial development is also located in the Pearl River Delta region, and the two are highly coupled. In general, economically developed areas tend to have good location conditions, resources, complete infrastructure and service facilities. This makes it easier to develop the characteristics and innovations of existing industries, accept innovative systems and mechanisms, and form extremely industrial towns with local characteristics.

3.3.3. Resource Factors. Rich and distinctive tourism resources are the basis for cultivating cultural-tourism-type characteristic towns. The distribution of regional tourism resources is represented by the number of A-level scenic spots in the administrative regions of Guangdong Province in 2020 (Figure 6(c)). The A-level scenic spots are mainly distributed in the Pearl River Delta region, and cultural tourism-oriented characteristic towns also have a certain concentration in these areas. A clear coupling relationship exists between the two distributions. The endowment of tourism resources is based on establishing and developing tourism as the leading industrial town. It has an essential influence on constructing cultural-tourism-type characteristic towns.

3.3.4. Location Factor. Using the distance between characteristic towns and cities above the prefecture level as a measure of location factor and using natural breakpoints to divide them into five levels (Figure 6(d)) revealed that the distance between most characteristic towns and cities above the prefecture level is below 80 km, and the drive between characteristic towns and cities is less than one h. It suggests that the distribution of characteristic towns depends largely on the city layout. The closer the distance to the city, the higher the radiation effect. Additionally, when the advantages of customer sources are greater, the small town industry will also receive more support in terms of talent, technology, capital, information, and so forth. Therefore, location plays a vital role in the formation and development of the cultivation conditions of various characteristic towns and is an essential factor affecting the spatial layout of characteristic towns. In addition, most of the characteristic towns that are relatively far away from the city are cultural tourism-oriented towns and have tourism resources to attract long-distance residents.

4. Analysis of Accessibility Results

Accessibility is a measure of how easily an area is connected to other areas. Therefore, the accessibility of characteristic towns in Guangdong Province can be measured as the average travel time from a characteristic town in the region to other surrounding characteristic towns. The evaluation index of accessibility is:

\[ R_i = \sum_{j=1}^{n} T_{ij}/n, \]  

where, \( i \) and \( j \) are the characteristic towns in Guangdong Province. \( T_{ij} \) is the shortest travel time taken from the characteristic town \( i \) in the region to the characteristic town \( j \) through the transportation network, \( n \) is the number of characteristic towns, and \( R_i \) is the characteristic town of Guangdong Province. Considering the average travel time between towns, the smaller the value, the better the accessibility of the characteristic town [33]; that is, the more convenient the closer the characteristic town is to other characteristic towns; otherwise, the worse [34].

According to the calculated data, the accessibility values between all characteristic towns (142) in Guangdong Province and the source of tourists were obtained and interpolated using the inverse distance weight method (Figure 7), and the relevant data (Table 1) are shown.

According to the statistical data, the accessibility index of characteristic towns in Guangdong Province was obtained. It was found that the top 10 characteristic towns with good accessibility are located in Guangzhou and Foshan in the Pearl River Delta region. Several influencing factors also had high values in this area. Both socioeconomic level and population density are high in the dominant areas in Guangdong Province. Characteristic towns with the last 10 accessibility values are in the western and eastern Guangdong regions. The population in this area is small and the socioeconomic level is low, resulting in the relatively low accessibility of the characteristic towns in this region, which is the direct cause of poverty. This also shows that the transportation network is one of the factors that affect regional accessibility, which is affected by a combination of factors. The overall accessibility pattern of tourist source places in Guangdong Province is like the spatial structure of characteristic towns in Guangdong Province; more specifically, there is a concentration phenomenon in the central area of the Pearl River Delta.

The accessibility values of the 142 characteristic towns in Guangdong Province and the prefecture-level administrative regions in Guangdong Province ranged from 1.25 to 5.32 h. The average accessibility time value was 2.73 h. A total of 86 characteristic towns had an accessibility time of three hours. Within the given h, accounting for 60.6% of the total number of all characteristic towns; in all industrial development characteristic towns, the accessibility time value ranged from 1.25 to 4.45 h. The average accessibility time value was 1.87 h. There are 39 industrial towns in total. The accessibility time value of development-oriented characteristic towns was within 3 h, accounting for 81.3% of the total number of industrial development-oriented characteristic towns. In all agricultural service characteristic towns, the accessibility time value ranged from 2.48 to 5.17 h. The average accessibility time value was 3.53 h, and the accessibility time value of a total of 8 agricultural service-oriented characteristic towns was less than 3 h, accounting for 36.4% of the total number of agricultural service-oriented characteristic towns. In the town, the accessibility time value
Figure 7: Continued.
ranged from 2.39 to 4.65 h, and the average accessibility time value was 3.46 h. Among them, there are three characteristic towns with commercial and trade circulation whose accessibility time value was less than 3 h, accounting for all commercial and trade circulation. There were 42.9% of the total number of characteristic towns of cultural tourism type; in all characteristic towns of cultural tourism type, the accessibility time value ranged from 2.27 to 5.32 h. The average accessibility time value was 3.30 h. Among these, there are 22 characteristic towns of cultural tourism type. The accessibility time value of the town was within 3 h, accounting for 44.9% of the total number of cultural tourism characteristic towns. The accessibility time value of 13 innovative and creative characteristic towns was less than 3 h, accounting for 81.3% of the total number of cultural tourism characteristic towns.

In general, areas with low accessibility values of characteristic towns in Guangdong Province have a concentrated distribution. It is concentrated in the core area of the Pearl River Delta and spreads from this center. The characteristic towns...
5. Conclusion and Discussion

5.1. Conclusion. This study used Ripley’s K function and kernel density estimation methods to study the spatial distribution characteristics and influencing factors of 142 characteristic towns in Guangdong Province and obtained the following main conclusions.

(1) Ripley’s K function analysis of characteristic towns in Guangdong Province showed that the distribution of characteristic towns in Guangdong Province exhibits significant agglomeration at different spatial scales. The kernel density estimation showed that characteristic towns in Guangdong Province are centered in the “Pearl River Delta region” and the local distribution characteristics of multinuclear diffusion in “eastern Guangdong” and “western Guangdong.”

(2) Ripley’s K function analysis of several types of characteristic towns in Guangdong Province showed that the spatial distribution of industrial development, cultural tourism type, innovative and creative characteristic towns show significant agglomeration; however, the agglomeration characteristics of agricultural service-oriented and commercial and trade circulation-oriented characteristic towns are not significant. According to the estimation of the core density of various types of characteristic towns, the hot spots of characteristic towns of industrial development, innovation, and creativity are mainly concentrated in the Pearl River Delta region, characteristic towns of cultural tourism are mainly distributed in the Pearl River Delta region and eastern Guangdong; small towns are widely distributed in Guangdong Province, and characteristic towns with commercial and trade circulation are small and scattered.

(3) Population, economy, resources, and location are the main factors that influence the spatial distribution of characteristic towns. The characteristic towns of industrial development are distributed in areas with high population density, whereas the characteristic towns of agricultural service and business circulation have weak requirements for population density. The dense areas of characteristic towns of industrial development are mainly distributed in the economically developed Pearl River Delta; there is a high degree of coupling between the two. Cultural tourism-oriented characteristic towns need to rely on a rich tourist market and are also closely related to certain tourism resource sources. The distribution of characteristic towns depends on a significant extent on the layout of the city; the closer it is to the city, the higher the radiation effect of the city, and it will have more customer source advantages.

(4) The overall spatial and regional accessibility of characteristic towns in Guangdong Province is relatively good. At the same time, the accessibility of characteristic towns for industrial development is better than that of other types of characteristic towns. However, areas with the best accessibility showed apparent agglomeration. The overall pattern takes the central area of the Pearl River Delta as the core and presents a ring-like structure that spreads outward.

6. Discussion

Economic transformation and upgrading under the new normal require industrial space organization carriers, such as characteristic towns, to further support the space for industrial upgrading and coordination for urban and rural development. The construction of characteristic towns in Guangdong Province began early, setting a model for other provinces in China for their industrial transformation, upgrading, and urbanization. However, the spatial layout of characteristic towns must be further optimized to fit the strategic deployment of Guangdong’s economic transformation and upgrading. The coupling relationship between characteristic town industrial agglomeration and metropolitan regional agglomeration has an internal mechanism. In the three-dimensional interactive relationship between innovation level, industrial agglomeration, and regional span, the industrial and regional attributes of characteristic towns are the endogenous driving force for the coupled development of industrial and regional agglomeration. This will help to promote the mutual promotion and coordinated development between characteristic towns and their regions and solve the construction problems of these towns from the internal mechanism. In terms of theoretical research, further research reflection and theoretical excavation with industry as the core are needed. The characteristic town is not a characteristic island or a simple geographical location. It cannot remain in the case- or geographical relationship study of the characteristic town. It should return to the essential requirements of industrial agglomeration and innovation of the characteristic town and tap the endogenous driving force of the coordinated development thereof and the regional economy to effectively avoid repeated construction. The high-quality sustainable development of characteristic towns should be promoted and supported by stronger theoretical support.

First, the construction of characteristic towns in Guangdong Province should be based on the adjustment plan of the spatial distribution of productive forces during the 13th Five-Year Plan period and focus on the three major spatial structure optimization strategies of main functional areas, metropolitan areas, and “small counties and large cities,” making full use of the construction and development of characteristic towns in Guangdong Province to further tap the potential of the urban social economy and characteristic industries, and accurately grasp the development direction of
characteristic towns. Second, opening the institutional environment for the cultivation and construction of characteristic towns, ensuring the continuous influx of various resource elements, creating a new platform for innovation and entrepreneurship, gathering high-end elements of industrial development such as talent, technology, and capital, and forming characteristic towns is required for aggregate development of culture and tourism. Third, we should continue to investigate and enhance the features of characteristic towns in terms of location, industry, history, geography, position, and spatially arranging the overall functions, enabling industries, cultural tourism, ecological environment, and characteristic parks of such towns to provide different themed spaces based on characteristic industries [35]. Finally, based on the concept of multiple spaces combining "function-zoning" and "construction-connection," Guangdong Province should pay attention to the coordinated and balanced development of characteristic towns. It should also provide the guiding and leading role of industrial policies and promote the balanced improvement of innovation in industrial clusters. The innovation chain and the industrial chain should be connected, and organic connections between towns with different characteristics should be established to promote the integrated development of informatization and industrialization, manufacturing, and service industries.

Data Availability

The source of the data displayed in the figure is the Guangdong Provincial Development and Reform Commission. Data are available at https://zenodo.org/record/6323056#.Yh9pNsgmGU; these data are available free of charge.

Conflicts of Interest

The authors declare no conflicts of interest.

Authors’ Contributions

Conceptualization was done by Zhenjie Liao, data curation was performed by Lijuan Zhang, formal analysis was performed by Zhenjie Liao, original draft was written by Zhenjie Liao, software was provided by Lijuan Zhang, reviewing and editing were done by Zhenjie Liao and Lijuan Zhang. All authors have read and agreed to the published version of the manuscript.

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