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Geographic Information Dataset of Urban Housing Price Changes in the Yangtze River Delta Region (2008–2018)

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Abstract: To study the factors influencing urban housing price changes in the Yangtze River Delta region, the authors used the national real estate transaction information platforms, such as Fangtianxia (www.fang.com) and 365 Taofang.com (www.house365.com), to search for data relevant to this research objective. Through data collection and analysis, housing prices in 327 districts or counties in 41 cities in the Yangtze River Delta from 2008 to 2018 were itemized and reorganized. This dataset includes: (1) Yearly housing prices in districts or counties in the Yangtze River Delta from 2008 to 2018; (2) Yearly housing prices in cities in the Yangtze River Delta from 2008 to 2018. The data show that housing price is the monetized expression of the abundance of resources such as urban economy, human, society, and administration. The regional housing price differentiation is a comprehensive indicator of differences in the ability of urban dominating resources. It is difficult for housing prices in the districts or counties of the Yangtze River Delta to achieve "club convergence" in a short period of time, so the gap in housing prices between core cities (e.g., Shanghai, Nanjing, Hangzhou) and other cities may continue to expand. The dataset is archived in .xls and .shp formats and consists of three data files with a data size of 14 MB (compressed to one file, 4.37 MB). The research results related to dataset were published in *Geography Research* (Vol. 37, No. 1, 2018).

Keywords: data of counties and districts; data of cities; housing price; Yangtze River Delta region; Geography Research

1 Introduction

Since the implementation of the urban housing system reform in 1998, urban housing prices in China have been increasing steadily. The problem of high housing prices has attracted broader attention, especially for the megacities, where the excessive growth rate causes the housing price risk to rise, and real estate bubbles become common.

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Housing prices depend on the development level of a region or country, including its economic, social, political dimensions and so on, which, in return, affects the development and stability of a given region (or country). In the process of rapid social development and urban renewal, housing prices can vary greatly according to the differences in the various resource allocation capabilities among cities, and these price gaps are currently widening. Usually, the index system for the influencing factors of housing price differentiation is constructed based on supply–demand theory[1–2] and urban hedonic price theory[3–4]. The first theory explores the influencing factors of urban housing price differentiation from the perspective of equilibrium prices of housing supply and the demand, and the second one is from the perspective of location equilibrium between manufacturers and consumers[5–6]. Currently, scholars have focused on the specific factors from the aspects of the economy, society, manpower, and administration to investigate the effect such price differentiations, including urban location and administrative level, population structure, wealth level of residents, mileage of traffic, immigration population scale, direct foreign investment, urban center, public services within cities, and traffic conditions, etc.[8–13].

Yangtze River Delta region are one of the areas with the highest housing prices in China, and the housing prices are still increasing rapidly. The regional housing price difference is significant, so it has high research value. As an example of an integrated area, the Yangtze River Delta region has the advantages of a developed economy, high-density population, strong public service ability, and convenient transportation. It also benefits from close inter-city links, with frequent element mobility and fewer obstacles. Although the level of integration among cities in the Yangtze River Delta region is high, the types of cities are various, so this region has great representativeness. Therefore, this dataset explores the spatial pattern and housing price differences in the Yangtze River Delta region, which can provide a new perspective on housing price differentiation in this region, and thus contribute to the adjustments of housing development policy.

2 Metadata of Dataset

The name, author, geographical region, year of the dataset, temporal resolution, spatial resolution, data format, data size, data files, data publisher, and data sharing policy of the dataset[14] are shown in Table 1.

Table 1 Metadata summary of "Dataset of urban housing price in Yangtze River Delta region (2008–2018)"

Items	Description		
Dataset full name	Dataset of urban housing price in Yangtze River Delta region (2008–2018)		
Dataset short name	HousingPriceYangtzeRD_2008-2018		
Authors	Ma, Y. Z. Z-2985-2019, Nanjing Institute of Geography and Limnology, mayuzhu17@mails.ucas.ac.cn Li, X. L. Z-2992-2019, Nanjing Institute of Geography and Limnology, lixiaoli17@mails.ucas.ac.cn Song, W. X. N-1173-2018, Nanjing Institute of Geography and Limnology, wxsong@niglas.ac.cn		
Geographical region	The Yangtze River Delta region (30°43′20″N–33°5′16″N; 119°15′36″E–120°29′0″E)		
Year	2008–2018	Temporal resolution	1 year
Data format	.shp, .xlsx	Data size	4.37 MB (after compression)

(*To be continued on the next page*)

(***Continued***)

Items	Description
Data files	(1) Yearly housing prices in districts or counties in the Yangtze River Delta region from 2008 to 2018; (2) Yearly housing prices in cities in the Yangtze River Delta region from 2008 to 2018
Foundation	National Natural Science Foundation of China (41771184)
Data publisher	Global Change Research Data Publishing & Repository, http://www.geodoi.ac.cn
Address	No. 11 Datun Road, Chaoyang District, Beijing 100101, China
Data sharing policy	***Data*** from the Global Change Research Data Publishing & Repository includes metadata, datasets (data products), and publications (in this case, in the *Journal ofGlobal Change Data & Discovery*). ***Data***sharing policy includes: (1) ***Data*** are openly available and can be free downloaded via the Internet; (2) End users are encouraged to use ***Data*** subject to citation; (3) Users, who are by definition also value-added service providers, are welcome to redistribute ***Data*** subject to written permission from the GCdataPR Editorial Office and the issuance of a ***Data*** redistribution license; and (4) If ***Data*** are used to compile new datasets, the 'ten percent principal' should be followed such that ***Data*** records utilized should not surpass 10% of the new dataset contents, while sources should be clearly noted in suitable places in the new dataset[15]
Communication and searchable system	DOI, DCI, CSCD, WDS/ISC, GEOSS, China GEOSS

3 Data Sources and Research Areas

3.1 Data Sources

The vector data of administrative boundary came from the diva-gis website (www.diva-gis.org). Some obsolete boundary data have been readjusted according to the latest administrative divisions, which are inquired in the websites of municipalities. Housing price data were from national real estate trading information platforms, such as Fangtianxia (www.fang.com) and 365 Taofang (www.house365.com). The data in these websites were collected by professional information collectors, or provided by developers and intermediaries. After that, the collected data were reorganized, filtered, with duplicates and outlier data eliminated, so as to compile timely and comprehensive housing price dataset. The China Index Academy also uses the data from Fangtianxia as original data (details can be checked on the official website: industry.fang.com), so we presumed that the data have good reliability. It should be pointed out that 10 revoked or important functional areas have been eliminated from the data (in Excel), leaving 317 districts and counties in the vector data.

3.2 Research Areas

This dataset includes three provinces and one province-level municipality in the Yangtze River Delta region: Shanghai, Jiangsu, Zhejiang, and Anhui, totaling 41 cities and 327 districts or counties. There are significant differences in economic power, population, and traffic conditions among the cities, especially between core cities such as Shanghai, Nanjing, Hangzhou and other cities, which may cause spatial heterogeneity in overall housing prices[16]. There're also certain gaps in the development level among downtown areas, suburbs, and counties, so there may be obvious spatial differentiation of housing prices in a city as well.

3.3 Data Development Technology Route

The technical route to study the housing price differentiation patterns in the Yangtze River Delta is shown in Figure 1. Firstly, we compared the mean value of housing prices in the dataset with those of the whole country in 2008–2018 and plotted them, and summarized the growth characteristics of each stage. Then we conducted a three-stage analysis of the growth rate in housing prices to identify the agglomeration characteristics. Finally, we visualized the data, trying to ascertain the overall and local differentiation pattern of urban housing prices,

and proposed the future directions for follow-up research.

4 Data Results

4.1 Data Products

The dataset includes two parts: (1) Yearly housing prices in districts or counties in the Yangtze River Delta from 2008 to 2018; (2) Yearly housing prices in cities in the Yangtze River Delta from 2008 to 2018

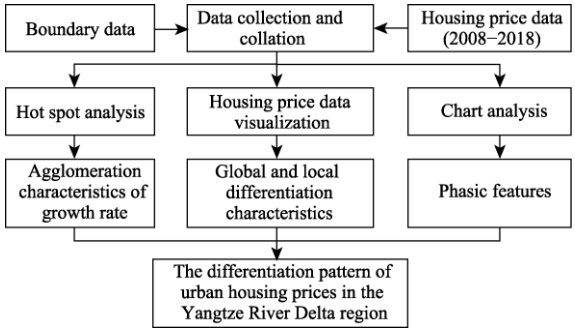

Figure 1 Technical route of the dataset

4.2 Data Results

The overall growth trend for urban housing prices in the dataset appears periodic (Figure 2), which is similar to China's national pattern. There're three stages from 2008 to 2018. The first stage lasted from 2008 to 2011, when housing prices rose rapidly; the second stage was from 2011 to 2015, when housing prices remained stable; the third stage was from 2015 to 2018, marked by housing prices re-entering a period of faster growth.

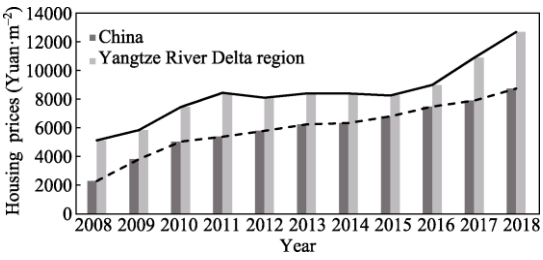

Figure 2 Periodic growth trends of housing prices in the Yangtze River Delta region

For these three stages, an analysis of housing price growth rates is shown in Figure 3. This revealed that the high growth rate was concentrated in Zhejiang, especially near Wenzhou, in the first-stage; the high value was concentrated in the Anhui and northern Jiangsu in the second-stage; the high value was around core cities, such as Shanghai, Nanjing, Hangzhou, and Hefei in the third-stage.

Based on the data of 327 districts or counties in 2008–2018, housing prices in the Yangtze River Delta region generally showed a steady upward trend. Notably, the growth in 2012–2015 was relatively stable, when the housing prices rose by an average of just 1.36%. By contrast, in 2008–2011 and 2016–2018, the housing prices rose rapidly, with an average increase of 18.49% and 16.21%, respectively. As shown in Figure 4, high housing prices mainly occurred in the central urban areas of Shanghai, Nanjing, and Hangzhou. The highest value was found in the Shanghai Jing'an District in 2018, where the housing price exceeded 90,000 Yuan m^{-2}, and the maximum increase and the fastest growth rate occurred respectively in the Jing'an district of Shanghai and Binhu new district of Hefei. In 2008, only 30 areas had housing prices that exceeding 10,000 Yuan m^{-2}, which accounted for 9% of the total. In 2018, however, 163 areas attained housing prices of more than 10,000 Yuan m^{-2}, accounting for half of the total. In northern Jiangsu and Anhui (except for Hefei), the prices for most areas increased, but they did not surpass 10,000 Yuan m^{-2}; this exemplified the geographic difference between the north and south in housing prices, reflecting the overall pattern of housing prices in the dataset. The difference in housing prices between the counties and districts in a given city of the Yangtze River Delta was also significant, and this gap continued to widen. In 2008, the greatest gap was in Shanghai, where it exceeded 22,000 Yuan m^{-2}; in 2018, this gap came close to 80,000 Yuan m^{-2}. Over this period, Chizhou,

which had the smallest gap in 2008, also expanded from 904 to 3,466 Yuan m^{-2}, reflecting the partial differentiation pattern of urban housing prices in the Yangtze River Delta region.

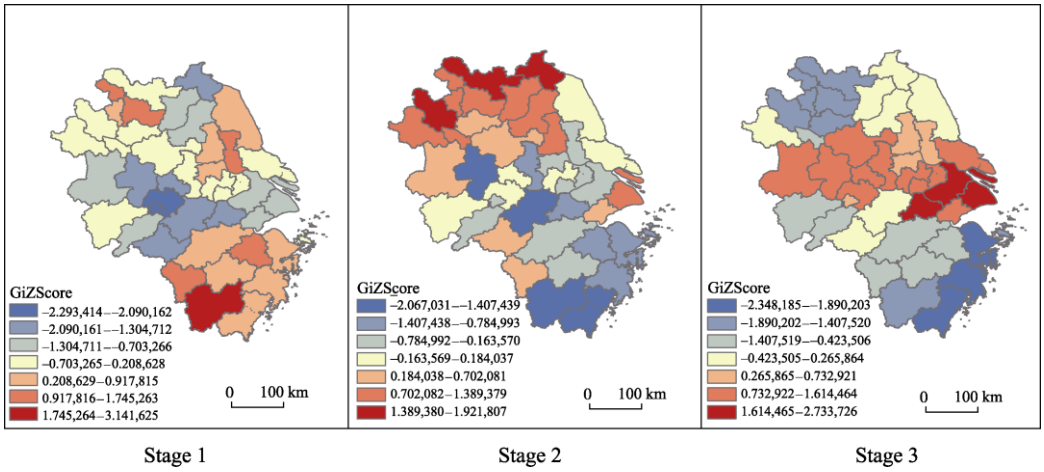

Figure 3 Three-stage hotspot analysis of housing price growth rates in the Yangtze River Delta region

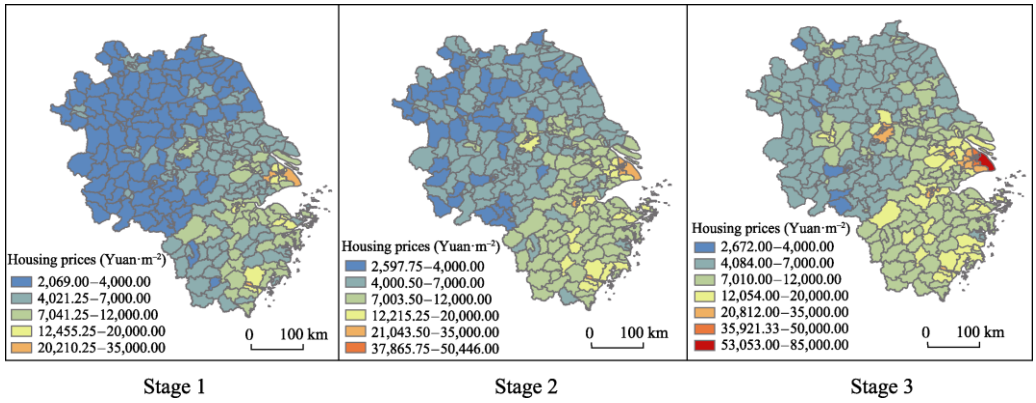

Figure 4 Distribution map of housing prices of districts or counties in the Yangtze River Delta region

5 Discussion and Conclusion

Under the background of rapid housing price growth, the greater risks, and the significant differences, this dataset aimed at providing new research materials and perspectives for the spatial differentiation pattern, mechanisms, and effects of housing prices in the Yangtze River Delta region. According to the data visualization results, housing prices in the region have risen steadily over 2008–2018, showing periodic characteristics and the overall and local differences in the spatial distribution. This study combined housing price data with vector data, and then developed a simple spatial analysis and description. However, it didn't consider endogenous factors, such as economy, society, administration, and external factors, such as housing policy, economic situation, and spillover effects[17–18], to analyze the data deeply. Therefore, this dataset provides a readily accessible database for future in-depth research on housing price trends. But the urban endogenous and external factors that can jointly affect housing price differentiation need to be further collected and collated. The future research should focus on the impact mechanisms and spatial effects to explain the differentiation in housing prices that we revealed here. This enabled us to better explore the reality and critical factors governing such

differentiation in the region, to understand housing prices in various cities, to provide a reference for the government to implement differentiated housing development policies, and to motivate commitment towards contributing to the healthy and stable operation of the real estate market. At the same time, we can also explore the mutual feedback mechanism(s) between housing price differentiation and the integration process, to provide fresh ideas for high-quality integration from the perspective of housing prices.

Author Contributions

Ma, Y. Z. analyzed the data; Li, X. L. collated the housing price data and boundary data; Song, W. X. was responsible for the overall design of the dataset and collected housing price data. Ma, Y. Z. and Li, X. L. wrote the data paper.

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