

Classification Index Dataset of Village Homestead Reuse in Jinghai District, Tianjin

Zhang, Y.¹ Cai, W. M.^{2*}

1. School of Economics and Management, Tiangong University, Tianjin 300387, China;

2. School of Environmental Science and Engineering, Tiangong University, Tianjin 300387, China

Abstract: Studying the types of homestead reuse is of great significance to promoting the reform of the homestead system. This dataset is an original dataset based on the statistical data obtained from the Jinghai district Government's thorough investigation of 56 homestead pilot villages, to construct a framework for the analysis of the coupling characteristics of the "village-land" system, and to establish a village identification index system and a homestead utilization feature identification index system. The data is archived in .xlsx and .shp formats, and consists of two data files, including the location of the pilot villages, the villages of the pilot villages and the characteristics indicators of the use of homesteads, etc. The data size is 614 KB (compressed into one file of 480 KB).

Keywords: reuse of homestead; characteristics of the "village-land" system; classification index; Jinghai district, Tianjin

DOI: <https://doi.org/10.3974/geodp.2022.04.06>

CSTR: <https://cstr.escience.org.cn/CSTR:20146.14.2022.04.06>

Dataset Availability Statement:

The dataset supporting this paper was published and is accessible through the Digital Journal of Global Change Data Repository at: <https://doi.org/10.3974/geodb.2022.06.07.V1> or <https://cstr.escience.org.cn/CSTR:20146.11.2022.06.07.V1>.

1 Introduction

Jinghai district is located in the southwest of Tianjin city. It has 2 sub-districts, 18 townships, and 383 administrative villages under its jurisdiction, covering an area of 1,475.68 km². In 2020, Jinghai district was identified as one of the pilot districts for the reform of the homestead system, and the pilot work of the homestead investigation was carried out in two batches from 9th December 2020 to 4th February 2021. The investigation involved 18 townships, 56 villages and 20,000 households. Farmers' rights and interests are the focus of government officials at all levels and people from all walks of life in China. For a long time,

Received: 13-07-2022; **Accepted:** 26-10-2022; **Published:** 24-12-2022

Foundation: National Natural Science Foundation of China (41801193)

***Corresponding Author:** Cai, W. M. GLN-5852-2022, School of Environmental Science and Engineering, Tiangong University, caiweimin@tiangong.edu.cn

Data Citation: [1] Zhang, Y., Cai, W. M. Classification index dataset of village homestead reuse in Jinghai district, Tianjin [J]. *Journal of Global Change Data & Discovery*, 2022, 6(4): 557-565. <https://doi.org/10.3974/geodp.2022.04.06>. <https://cstr.escience.org.cn/CSTR:20146.14.2022.04.06>.
[2] Zhang, Y., Cai, W. M. Indicators dataset of land use transformation classification of villages-land system in Jinghai district, Tianjin city of China [J/DB/OL]. *Digital Journal of Global Change Data Repository*, 2022. <https://doi.org/10.3974/geodb.2022.06.07.V1>. <https://cstr.escience.org.cn/CSTR:20146.11.2022.06.07.V1>.

as the place of residence and important rights and interests of farmers, homesteads have played an important role in safeguarding farmers' livelihood and maintaining social stability. Therefore, the collection of village and homestead data from the 56 pilot villages is of great significance for the research on homestead and the reform of the homestead system, etc.

At present, the research on homestead mainly focuses on the "three rights of homestead"^[1,2], the reform of the homestead system^[3,4] and the withdrawal of homestead^[5,6], etc. There are few studies on the reuse of homesteads. The author studies the selection of type of homestead reuse based on this dataset and has published a paper in the Journal of *Progress in Geography*. In terms of research methods, most of the studies use case studies^[7,8] and theoretical analysis^[9], and less use of spatial quantitative analysis. The reason for this is mainly due to the lack of spatial data of homesteads from a micro perspective and the difficulty of obtaining, which poses a huge obstacle to the development of micro-scale research.

In view of this, this dataset collects and collates the village and homestead data of 56 pilot villages in Jinghai district, Tianjin, and visualizes the data by using ArcGIS 10.8 software to achieve the spatial analysis of the homestead. The dataset contains information on the economy, ecology, culture, management, population, land and other aspects of pilot villages, which is of great significance to the study of rural China.

2 Metadata of the Dataset

The metadata of the Indicators dataset of land use transformation classification of villages-land system in Jinghai district, Tianjin city of China^[10] is summarized in Table 1. It includes the dataset full name, short name, authors, year of the dataset, data format, data size, data files, data publisher, and data sharing policy, etc.

Table 1 Metadata summary of the Indicators dataset of land use transformation classification of villages-land system in Jinghai district, Tianjin city of China

Items	Description
Dataset full name	Indicators dataset of land use transformation classification of villages-land system in Jinghai district, Tianjin city of China
Dataset short name	VillagesJinghai
Authors	Zhang, Y. GLN-4098-2022, School of Economics and Management, Tiangong University, 15822580019@163.com Cai, W. M. GLN-5852-2022, School of Environmental Science and Engineering, Tiangong University, caiweimin@tiangong.edu.cn
Geographical region	Jinghai district, Tianjin
Year	2021
Data format	.xlsx, .shp
Data size	614 KB (compressed into 1 file of 480 KB)
Data files	The dataset consists of two parts: (1) geographical distribution data of the 56 pilot villages in Jinghai district, Tianjin (.shp) (2) classification index data of village homestead reuse in Jinghai district, Tianjin (.xlsx)
Foundations	National Natural Science Foundation of China (41801193)
Data computing environment	ArcGIS, Excel
Data publisher	Global Change Science Research Data Publishing System http://www.geodoi.ac.cn
Address	No. A11, Datun Road, Chaoyang District, Beijing 100101, China

(To be continued on the next page)

(Continued)

Items	Description
Data sharing policy	Data from the Global Change Research Data Publishing & Repository includes metadata, datasets (in the <i>Digital Journal of Global Change Data Repository</i>), and publications (in the <i>Journal of Global Change Data & Discovery</i>). 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 per cent 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 ^[11]
Communication and searchable system	DOI, CSTR, Crossref, DCI, CSCD, CNKI, SciEngine, WDS/ISC, GEOSS

3 Methods

3.1 Data Sources

All data in the Homestead Utilization Characteristics Identification Index System are from the homestead survey data published by the Tianjin Jinghai District People’s Government, and the data sources of the village characteristics identification index system are shown in the table.

Table 2 The source of the data of the Village Characteristics Identification Index System

Dimensionality Indicators	Data sources
Life A	Service completeness B1 Density of shopping service facility B2 Density of living service facility B3 Urbanization rate B4
Eco-C	Mean length of the river flowing through D1 Hydrological regulation index D2 Transport facility density D3 Degree of locational advantage D4
Country Style E	Science, Education and Culture Service density F1 Negative information rate F2 Village Features Resource Richness F3 Village Website Exposure F4
Industry G	Enterprise density H1 Enterprise registered capital average H2 Population density H3 Density of financial and insurance service facilities H4
Management I	Proportion of members of non-collective organizations J1 Homestead unique rate J2 Homestead approval rate J3 Density of government agencies and social groups J4

3.2 Data Processing

During the process of data collection, collation and recording, a small number of data values were missing. In order to ensure the integrity of the sample size, the missing data values were filled. In the sample, of the missing data of the variable “average service life of homestead” accounted for 1.8%, and the missing data of the variable “floor area ratio” accounted for 5.4%. The proportion of missing data was small and the indicators were all continuous numerical data^[12], so the mean interpolation method was used to fill in the missing values.

As the original data of the pilot village homestead survey released by the government of Jinghai district was conducted in two batches, and there were slight differences in the data indicators collected by each village, this dataset was used to collate and calculate the original data to obtain the required data through the use of SPSS.26 software. The Jinghai district Homestead System Reform Task Force Survey has accumulated abundant field data, which provides data support for the analysis at the micro-scale.

The POI data was obtained from the crawl of the Gaode Map API in 2021. ArcGIS 10.8 software was used to crop the POI data, and was overlaid with the vector layer of the Jinghai district. The spatial connectivity tool was applied to count the number of different types of POIs in the 56 pilot villages. The POI classification data used in this paper are all consistent with the POI classification code officially announced by Gaode Map.

As a representative of Internet information in the Web 3.0 era, “Today’s Toutiao” (means Today’s Headline in Chinese) uses big data and algorithms to accurately distribute information, and with the popularization of smartphones, it provides convenience for small towns and rural populations to obtain information, and meets the information needs of people with low education, low age and low income^[13]. The Baidu index shows that the search volume of “Today’s Toutiao” is much higher than that of the four major news platforms, namely NetEase, Tencent, Sohu and Sina. Therefore, this paper selects the website “Today’s Toutiao” as the source of village report information data. First, with “×× village, ×× town, Jinghai district, Tianjin” as the search keyword, we searched for the relevant reports of 56 pilot villages under the information column of the “Today’s Toutiao” website, and captured the title, content profile and source website of all the information. Secondly, considering that the greater the number of reports on websites from different sources, the greater the influence of the villages, so the information with the same content but from different sources was not censored and included in the total amount of reports; third, the influence of the villages will drive the influence of the townships where they are located, i.e. the more villages are reported, the more the number of reports in the townships where they are located. Therefore, the content of the reports about the townships and the town government in the search content has been censored. And invalid reporting content such as villages or things with the same name in the non-study area were removed.

As a national enterprise information inquiry network, Tianyancha mainly provides professional enterprise information inquiry and enterprise relationship mining services. Its website data comes from the National Enterprise Credit Information Publicity System, China Judgment Documents Network, China Enforcement Information Disclosure Network, State Intellectual Property Office, Trademark Office, Copyright Office and other national authoritative websites^[14]. In this paper, by sorting and classifying the company enterprise data in the POI data, we use Tianyancha to capture the registered capital data of each company in order to screen the operating status of the company and reflect the scale and volume of the enterprise, eliminating the enterprises whose business address and operating status (revocation, cancellation, etc.) have changed, the enterprises not found on Tianyancha, individual industrial and commercial households (small in scale, which do not have a prominent impact on the industrial dimension) and the enterprises that have not disclosed

their registered capital. Finally, 231 pieces of valid data were obtained.

3.3 Technical Route

In order to study the type selection in the reuse of homestead, the data of village characteristics and homestead utilization characteristics were collected respectively, and the data were analyzed, collated and classified with the help of Microsoft office Excel 2013 and ArcGIS 10.8 software (Figure 1). Firstly, based on the calculation results of the village characteristics index system, the village characteristics identification model was used to classify the pilot villages; secondly, based on the calculation results of the homestead investigation data, the homestead utilization characteristics identification model was used to classify the homestead in the unit of the village. Finally, taking the “village-land” classification and the spatial distribution into account, the type of homestead reuse was obtained.

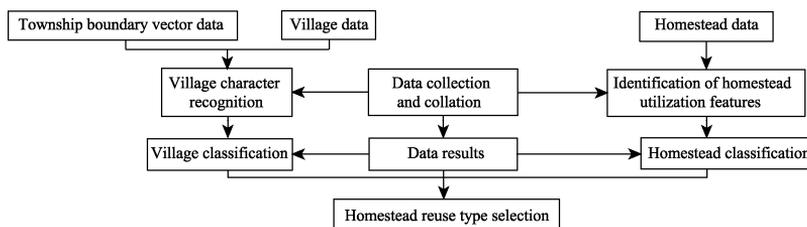


Figure1 Technology roadmap for dataset research and development

4 Data Results

4.1 Data Composition

The dataset consists of two parts: the geographical distribution data (.shp) of 56 pilot villages in Jinghai district, Tianjin and the characteristic index data (.xlsx) of villages and homestead utilization in Jinghai district, Tianjin. Among them, the characteristic index data of villages and homestead utilization includes the characteristic index scores of pilot villages for housing reform and homestead utilization, the standardization and weight scores of village classification indicators, the summary of village characteristics identification index scores, the calculation scores of village classification and identification models, village classification, homestead weight scores, homestead utilization characteristic index contribution score, the classification of homestead indicators, the summary of the index scores of the larger contribution of homestead, the classification and summary of different types of homestead and the classification and summary of the types of reuse of homestead, etc.

4.2 Data Results

4.2.1 Village Feature Identification

The 56 villages in Jinghai district can be divided into 3 categories: industry-led, resource-led and balanced development. Resource-led and balanced development accounted for 42.86% and 41.07% respectively, and industry-led accounted for 16.07%, indicating that at present, the proportion of rural development driven by industrial is still relatively small. Among them, the industry-led type includes nine villages, namely Sidangkouhou village, Manyizhuang village, Erjie village, Yangxiaozihuang village, Yuan village, Xiaquan village, Shunmintun village, Wangzhuangzi village and Zhongmingzhuang village; the resource-led type includes 24 villages, i.e., Fengpu village, Huifengxi village, Wangjia village, Dingjiafangzi village, Xigaozhuang village, Bapu village, Gongjiatun village, Qiandeng village, Wangqianhu village, Zhongzhaizhuang village, Zengfutang village, Lvquantun

village, Gaoguantun village, Shiyipu village, Liujiatangzi village, Donggang village, Mengzhuangzi village, Beierpu village, Liuxiangzhuang village, Nanbatai village, Dongliumu village, Houxiaotun village, Linzhuangzi village, Pulu village. The balanced development type includes 23 villages, i.e., Beiwanying village, Wangkuang village, Tangshang village, quanli village, Xuzhuangzi village, Dongzhai village, Nanwanying village, Xitantou village, Lujia village, Houdeng village, Caizhuangzi village, Zengjiahe village, Jiangjiachang village, Liuxiadao village, Liangxinzhuang village, Luozhuangzi village, Hanzhuangzi village, Dongfangzi village, Nanerpu village, Xiaohuangwa village, Houmingzhuang village, Pan village, Shilipu village.

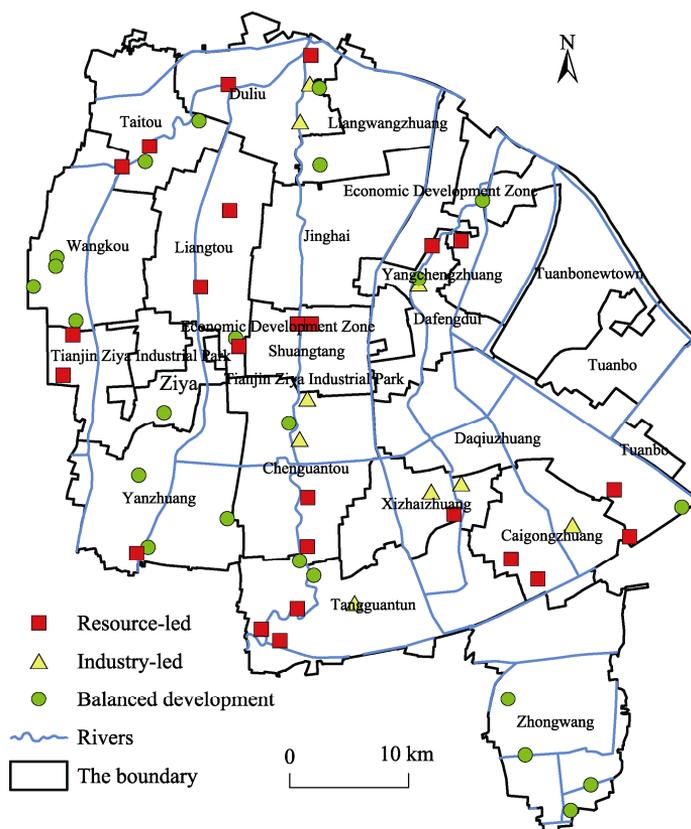


Figure 2 Distribution map of village types

4.2.2 Identification of Homestead Utilization Features

The 56 villages in Jinghai district can be divided into 2 categories: single-function-dominated homesteads and multi-function-dominated homesteads. Single-function-dominated homesteads accounted for 50%, including 28 villages, namely Linzhuangzi village, Liangxinzhuang village, Liuxiadao village, Manyizhuang village, Lvquantun village, Gaoguantun village, Yuan village, Pan village, Erjie village, Wangzhuangzi village, Xiaquan village, Bapu village, Luozhuangzi village, Zengjiahe village, Beiwanying village, Xigaozhuang village, Liujiatangzi village, Dingjiatangzi village, Dongfangzi village, Liuxiangzhuang village, Huifengxi village, Sidangkouhou village, Zengfutang village, Pulu village, Yangxiaozhuang village, Zhongzhaizhuang village, Shunmintun village, Shilipu village, indicating that the single-function-dominated homesteads are mostly distributed along the canal and the southern part of Jinghai district. The main reason is that the banks of the canal are protected areas and non-agricultural construction activities are

strictly controlled, resulting in the majority of single-function-dominated homesteads in the villages along the canal. The multi-function-dominated homesteads accounted for 50%, including 28 villages, namely Wangqianhu village, Nanerpu village, Beierpu village, Nanwanying village, Tangshang village, Wangjia village, Zhongmingzhuang village, Houmingzhuang village, Donggang village, Xitantou village, Xiaohuangwa village, Wangkuang village, Houxiaotun village, Shiyipu village, Nanbatai village, Jiangjiachang village, Hanzhuangzi village, Caizhuangzi village, Xuzhuangzi village, Houdeng village, Mengzhuangzi village, Dongliumu village, Fengpu village, Lujia village, Gongjiatun village, Dongzhai village, Quanli village, Qiandeng village, indicating that the multi-function-dominated homesteads are mainly distributed in the west and northwest of Jinghai district. The main reason is that the Ziya Economic and Technological Development Zone and the Linhai Circular Economy Demonstration Zone are located in the west and northwest of Jinghai district, covering most of the townships, with a certain degree of radiation effect.

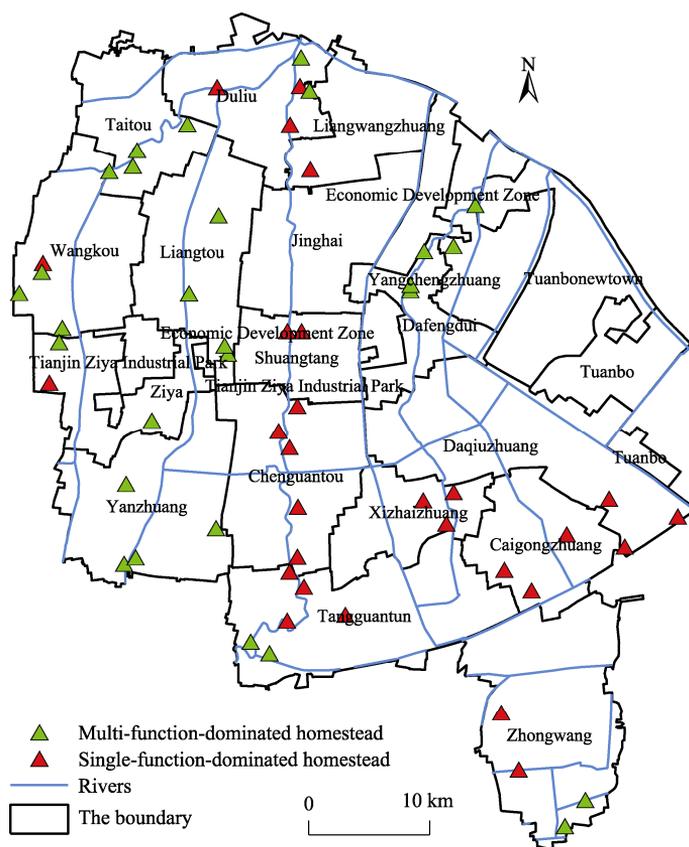


Figure 3 Distribution map of homestead types

4.2.3 Identification of the Types of Homestead Reuse Based on the Characteristics of the “village-land” System

The types of homestead reuse can be divided into three categories: multi-subject type, factor flow type and characteristic resource type. The multi-subject type accounts for 28.57%, including Zhongmingzhuang village, Wangkuang village, Tangshang village, Quanli village, Xuzhuangzi village, Dongzhai village, Nanwanying village, Xitantou village, Houdeng village, Lujia village, Caizhuangzi village, Jiangjiachang village, Hanzhuangzi village, Nanerpu village, Xiaohuangwa village and Houmingzhuang village. The multi-subject type

villages are mainly distributed in the western part of Jinghai district, indicating that the market economy in the western part of Jinghai district is well developed, and the multi-subject type is high active. The use of multi-subject type to revitalize resources is an important development direction for this category of villages; the factor flow type accounts for 35.71%, including Wangqianhu village, Beierpu village, Wangjia village, Donggang village, Houxiaotun village, Shiyipu village, Nanbatai village, Mengzhuangzi village, Dongliumu village, Fengpu village, Gongjiatun village, Qiandeng village, Sidangkouhou village, Manyizhuang village, Erjie village, Yangxiaozihuang village, Yuan village, Xiaquan village, Shunmintun village, Wangzhuangzi village, which are villages with factor flow type. The 20 villages in this category are mainly distributed along the rivers in Jinghai district, indicating that multi-branched rivers are a key consideration for complementary villages to achieve factor flow, and making full use of their own advantageous factors is an important development direction for such category villages; the characteristic resource type accounts for 35.71%, including 20 villages, namely Beiwanying village, Zengjiahe village, Liuxiadao village, Liangxinhuang village, Luozihuangzi village, Dongfangzi village, Pan village, Shilipu village, Linzhuangzi village, Lvquantun village, Gaoguantun village, Bapu village, Xigaozhuang village, Liujiatangzi village, Dingjiatangzi village, Liuxiangzhuang village, Huifengxi village, Zengfutang village, Pulou village and Zhongzhaizhuang village. The characteristic resource type villages are mainly distributed in the lower reaches of the South Canal and the southeast of Jinghai district, indicating that the region has superior resource endowments and that making full use of its own resources is an important development direction for such villages in this category to achieve rural revitalization.

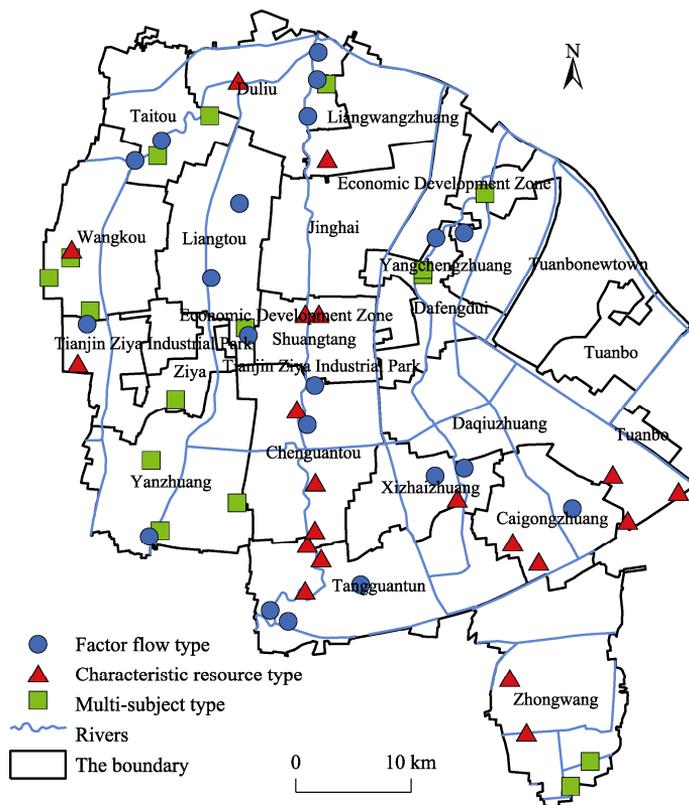


Figure 4 Distribution map of reuse types of homesteads

5 Discussion and Conclusion

The dataset constructed in this study mainly collates and collects the data of the classification indicators of village homestead reuse in Jinghai district, Tianjin, from the perspective of “village-land” characteristics, and provides a theoretical reference for solving the problems and obstacles related to homestead reuse. Starting from solving practical problems, the dataset not only provides a classification governance idea based on the rural scale, but also proposes a feasible and operable classification governance scheme from the perspective of homestead scale and homestead reuse. Compared with similar studies, this dataset uses multi-source data and cross-scale research methods to explore a feasible pathway to solve the practical issues, which is innovative and replicable. It can also provide data support for the study on rural settlements, homestead and rural revitalization in eastern China. The disadvantage is that the selected indicators of this dataset are limited and have a great correlation with the population, so attention should be paid to regionality and timeliness in the process of data use.

Author Contributions

Zhang, Y. collected and processed the data and wrote the data paper; Cai, W. M. reviewed the data paper, etc.

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Cui, J. F., Guo, G. C., Han, S., et al. A logical review of the “separation of three rights” in rural collective land and the form of its realization [J]. *China Land Science*, 2022, 36(4): 8–15.
- [2] Chen, S. X. The “three rights” of rural residential bases: problem orientation, logic and realization path [J]. *Journal of Nanjing Agricultural University (Social Science Edition)*, 2022, 22(2): 147–158.
- [3] Chen, W. H., Lv, P. The innovative dynamics of residential land system reform: dilemma and breakthrough: an analysis based on two rounds of pilot studies [J]. *Rural Economy*, 2022(5): 30–39.
- [4] Qiu, L. “Collectivization of land rights”: the logic of reforming the residential base system in traditional farming areas [J]. *Journal of Northwest Agrarian and Forestry University of Science and Technology (Social Science Edition)*, 2022, 22(3): 82–89.
- [5] Wu, Y. L., Yu, Y. Y., Hong, J. G. Property rights transfer, value realization and benefit sharing of residential land withdrawal: a field survey based on Jinzhai and Yujiang [J]. *China Rural Economy*, 2022(4): 42–63.
- [6] Yan, X., Li, L. T., Li, H. Did home base withdrawal reduce farmers’ poverty vulnerability? —Evidence from Jinzhai, Anhui [J]. *China Land Science*, 2022, 36(4): 38–48.
- [7] Wei, C. L., Zhong, X. H. Spatial reorganization: integration of property rights and effective social governance of unused farmhouses in the urban-rural interface: a case study of farmhouse reuse in Shanghai [J]. *China Rural Economy*, 2022(4): 23–41.
- [8] Yang, L. L., Wang, H. H. A study of seven typical pilot villages in two municipalities [J]. *Journal of Northwestern University (Philosophy and Social Science Edition)*, 2022, 52(3): 63–79.
- [9] Wang, Y. The re-systematization of collective construction land use rights in the context of “three pieces of land” reform [J]. *Yunnan Social Science*, 2022(3): 137–149.
- [10] Indicators dataset of land use transformation classification of villages-land system in Jinghai district, Tianjin city of China [J/DB/OL]. *Digital Journal of Global Change Data Repository*, 2022. <https://doi.org/10.3974/geodb.2022.06.07.V1>. <https://cstr.science.org.cn/CSTR:20146.11.2022.06.07.V1>.
- [11] GCdataPR Editorial Office. GCdataPR data sharing policy [OL]. <https://doi.org/10.3974/dp.policy.2014.05> (Updated 2017).
- [12] Li, J. L. Dynamic evaluation of micro and small enterprises’ credit based on tax information [D]. Nanjing: Nanjing University of Posts and Telecommunications, 2020.
- [13] Ouyang, R. H. From news portals to social media: the changing business model and development path of portals [J]. *News and Writing*, 2019(2): 11–17.
- [14] Hu, J. Research on the characteristics of regional association networks from the perspective of enterprise organization [D]. Wuhan: Wuhan University, 2018.