

# Spatial Distribution Dataset Development of 20th-Century Architectural Heritage Projects in China

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**Abstract:** China's 20th-century architectural heritage is deeply rooted in the nation's modern history. It carries rich material and spiritual memories and holds multidimensional value in historical testimony, cultural transmission, social identity, and economic revitalization. To systematically examine the spatial distribution characteristics and conservation status of such heritage, the authors compiled a list of 1,000 China's 20th-century architectural heritage projects based on 10 batches of recommendations released by the China 20th-Century Architectural Heritage Committee between September 2016 and May 2025. Detailed information for each project was recorded, including its name, historical period, and batch classification. Address details and geographic coordinates were collected and verified individually using Google Earth. This process resulted in the creation of a spatial distribution dataset covering 1,000 20th-century architectural heritage projects in China across 10 batches. The dataset includes each heritage project's name, construction period, batch, detailed address, and latitude-longitude coordinates. It is archived in 2 formats (.shp vector data and .xls spreadsheet data) to facilitate further GIS-based spatial analysis and visualization. The dataset consists of 8 data files with a total size of 3.70 MB (compressed into 1 file of 442 KB).

**Keywords:** 20th-century architectural heritage; spatial distribution; China

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## 1 Introduction

Architectural heritage refers to buildings or building complexes that possess integrated scientific, artistic, social, and historical values and have survived to the present day<sup>[1]</sup>. It is also one of the types of heritage most closely related to the human living environment<sup>[2]</sup>. The concept of "20th-century architectural heritage" was proposed in Europe in 1989<sup>[3]</sup>. It is defined by its temporal scope and encompasses representative buildings produced during the 20th century. As witnesses to urban evolution and material carriers of social production and lifestyles, 20th-century architectural heritage embodies multiple values, including socio-

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political, historical, cultural, scientific-technological, and artistic-aesthetic dimensions<sup>[4]</sup>. In China, such heritage is deeply rooted in the nation's modern history over the past century. It records major social transformations since the Opium Wars and bears witness to the path of national and ethnic revival<sup>[5]</sup>. Thus, its preservation and research are of great significance.

In 2014, the China Cultural Relics Society and the Architectural Society of China jointly established the China 20th-Century Architectural Heritage Committee (hereinafter referred to as the Committee) and formulated the Criteria for Identifying 20th-Century Architectural Heritage in China (hereinafter referred to as the Criteria). Based on the Criteria, the Committee identified and publicly announced 10 batches totaling 1,000 20th-century architectural heritage projects between September 2016 and May 2025. This work not only expands the conservation framework of China's cultural heritage but also promotes public attention to and revitalization of modern and contemporary urban cultural memory<sup>[6]</sup>. It thus provides a foundational inventory for related research.

However, a review of existing scholarship reveals that research on 20th-century architectural heritage has largely focused on micro-level aspects such as value assessment, conservation strategies, and adaptive reuse of individual heritage sites<sup>[7-9]</sup>. Systematic studies examining chronological formation and spatial distribution remain insufficient<sup>[10]</sup>. This research gap is partly due to a key data bottleneck: the collection and updating of geographic location data for the numerous 20th-century architectural heritage projects across China. Therefore, on the basis of the 10-batch recommendation list released by the Committee, this study collected spatial point data for 1,000 projects and developed the Spatial distribution dataset of China's ten batches of 1,000 20th-century architectural heritage projects. This dataset includes information such as the name, period, batch, detailed address, latitude and longitude of each architectural heritage project. It provides essential data support for research in heritage-related fields and facilitates the conservation of urban and rural historical and cultural heritage.

## 2 Methods

### 2.1 Data Sources

The data used in this study primarily consist of 2 parts: fundamental geographic information data and the list of 10 batches of recommended China's 20th-century architectural heritage projects. The fundamental geographic information data are vector data of administrative divisions at the provincial, municipal, and county levels across China for 2024<sup>1</sup>. The list of recommended Chinese 20th-century architectural heritage projects is sourced from relevant announcements issued by the China Cultural Relics Society<sup>2</sup> and the Architectural Society of China<sup>3</sup>.

### 2.2 Methods

The recommendation lists for each batch of China's 20th-century architectural heritage projects document the name and batch of each heritage item but do not include geographic

1 China Standard Map Service System. <http://bzdt.ch.mnr.gov.cn>.

2 China Cultural Relics Society. <http://www.zgwwxh.com/>.

3 The Architectural Society of China. <https://www.chinaasc.org.cn>.

coordinates. Detailed addresses and precise geographic coordinates of each project were obtained using the search function of Google Earth, uniformly converted to the WGS84 coordinate system, and further supplemented with attribute information such as the corresponding province, city, and county-level administrative divisions. For heritage projects comprising multiple buildings, the geographic location of the most representative individual structure was typically selected. After integrating the above information, a spatial distribution dataset for 1,000 China's 20th-century architectural heritage projects across 10 batches was constructed. The data were processed and integrated using ArcGIS 10.4.1 software, ultimately enabling the spatial visualization of China's 20th-century architectural heritage projects.

### 2.3 Data Storage

The geographic coordinate data of the heritage projects were integrated with administrative division data to generate a .shp format file. Attribute information such as name, period, batch, address, longitude, and latitude was archived in .xls format. Table 1 lists the field names and examples.

**Table 1** Dataset attribute field table

Entry	Description
Serial number	0, 1, 2, 3, ..., 1,000
Building name	The Great Hall of the People, the former site of the National Central Museum, the Gude Temple, ...
Time	From the Qing Dynasty to the Republic of China, from the 1930s to the 1940s, the 1960s, ...
Address	No. 1, Wusi Avenue, Dongcheng District, Beijing, ...
Batch name	The first batch, the second batch, the third batch, ...
Provincial region name	Hubei Province, Shanghai City, Guangxi Zhuang Autonomous Region, ...
Municipal region name	Nanjing City, Guangzhou City, Hohhot City, ...
County region name	Yuzhong District, Dingxiang County, Chengguan District, ...
Longitude	106.29739, 116.41535, 121.51087, ...
Latitude	22.79691, 34.78818, 45.73498, ...

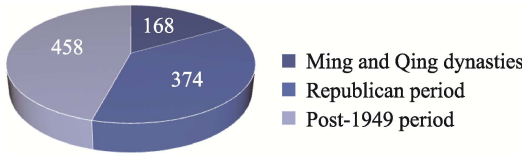
## 3 Data Results

### 3.1 Dataset Composition

The Spatial distribution dataset of China's ten batches of 1,000 20th-century architectural heritage projects consists of 2 parts: (1) attribute data of the China's 20th-century architectural heritage projects, including name, period, batch, administrative division, detailed address, and latitude-longitude coordinates (.xls); (2) spatial vector data of the China's 20th-century architectural heritage projects (.shp).

### 3.2 Data Results

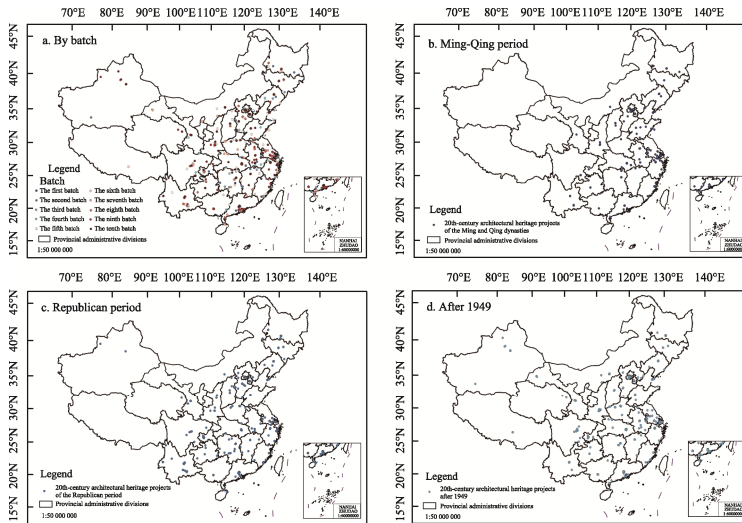
The 20th-century architectural heritage projects were quantified according to 3 time periods: the Ming-Qing period, the Republican era, and the post-1949 period (Figure 1). The number of architectural heritage projects from the Ming-Qing period is relatively small, totaling only 168 sites. This result may be attributed to the substantial loss of buildings from that period because



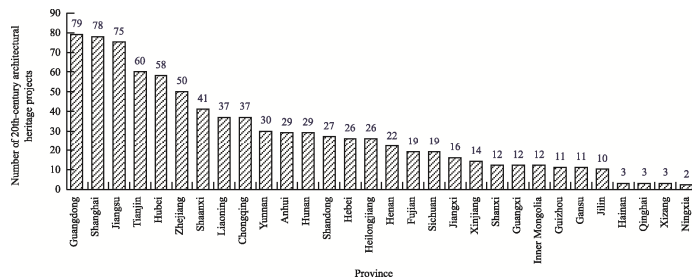
**Figure 1** Number of 20th-century architectural heritage projects by decade

of prolonged historical changes. The Republican era saw a slightly higher number of architectural heritage projects, with 374 sites recorded. After 1949, the large-scale construction efforts left a considerable number of 20th-century architectural heritage sites, amounting to 458 in total.

In terms of spatial distribution, the 20th-century architectural heritage projects are widely dispersed across the country, covering 31 provinces, autonomous regions, and municipalities directly under the central government (Figure 2). Among them, the top 10 provinces and municipalities by number of heritage projects are Beijing, Guangdong, Shanghai, Jiangsu, Tianjin, Hubei, Zhejiang, Shaanxi, Chongqing, and Liaoning (Figure 3). Beijing alone hosts 149 such projects, accounting for 14.9% of the national total. By contrast, the Ningxia Hui Autonomous Region has the fewest 20th-century architectural heritage projects, with only 2 sites. Overall, the spatial distribution of these heritage projects demonstrates a pronounced clustering pattern to the southeast of the Hu Line, with the vast majority located in densely populated and economically developed areas east of this line. Distribution to the northwest is extremely sparse.



**Figure 2** Distribution maps of 20th-century architectural heritage projects in China



**Figure 3** Statistics of 20th-century architectural heritage projects by province

## 4 Discussion and Conclusion

Analyzing and understanding the spatial distribution of China's 20th-century architectural heritage projects is important for advancing systematic research and informing the formulation and optimization of conservation strategies for historical and cultural heritage represented by such sites. To this end, the authors compiled the 10-batch recommendation list of China's 20th-century architectural heritage projects published between 2016 and 2025, supplementing it with additional information such as the historical period, address, and geographic coordinates of each project, and developed the Spatial distribution dataset of China's ten batches of 1,000 20th-century architectural heritage projects. Analysis of the construction periods and spatial distribution characteristics of these heritage projects reveals 2 key patterns. First, a large number of projects were constructed after the founding of the People's Republic of China. Second, these projects are relatively concentrated to the southeast of the Hu Line. This dataset provides comprehensive attribute information for the 10 batches of 20th-century architectural heritage projects in China. It is intended to serve as essential data support for in-depth research in fields such as heritage geography studies and conservation planning practices.

### *Author Contributions*

Zhang, Y. and Guo, S. H. contributed to the overall design of the dataset development; He, J. Y., Du, Y. X., Li, W. J., Zheng, X. Z., Men, Y. T., Liang, Z. R., Wang, Y. T., and Li, M. Y. collected and processed the data. Guo, S. H. wrote the data paper, and Zhang, Y. reviewed the paper.

### *Conflicts of Interest*

The authors declare no conflicts of interest.

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