Spatial Pattern and Influencing Factors of Patriotism Education Bases in the Yellow River Basin: Postprint

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Abstract

Patriotic education bases are important venues for strengthening patriotic education and inheriting the red gene. This study takes 171 national-level patriotic education bases in the Yellow River Basin as the research object, comprehensively employs geospatial analysis methods to reveal their spatial distribution patterns, and utilizes the Geographical Detector tool to measure the influencing factors. The results indicate: (1) The type structure of patriotic education bases in the Yellow River Basin is unbalanced, with the revolutionary tradition education category having the highest proportion and the construction achievement symbol category the lowest. (2) Regionally, they exhibit an overall clustered distribution with significant quantitative differences, characterized by the pattern of "more in the upper reaches and fewer in the middle reaches, more in Sichuan and Henan and fewer in Qinghai and Ningxia." (3) Kernel density presents a "water"character-shaped distribution pattern with Yan'an City as the core, featuring 4 high-density zones and 2 sub-high-density zones. (4) Cold-hot polarization is significant, dominated by cold spot areas, with hot spot areas concentrated in 8 cities at the junction of Shaanxi Province, Gansu Province, and Ningxia Hui Autonomous Region in the middle and upper reaches of the Yellow River. (5) Cultural environment, population size, and transportation level are dominant factors influencing the spatial pattern of patriotic education bases in the Yellow River Basin, among which red tourism resources, cultural venues, population density, events held, visitor numbers, and passenger volume are the core influencing factors. The research findings can provide a reference basis for optimizing the spatial layout of patriotic education bases in the Yellow River Basin and promoting the high-quality development of Yellow River red culture.

Full Text

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Spatial Pattern and Influencing Factors of Patriotic Education Bases in the Yellow River Basin

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Abstract: Patriotic education bases are crucial venues for strengthening patriotic education and inheriting the red gene. This study examines patriotic education bases in the Yellow River Basin, employing comprehensive geospatial analysis methods to reveal their spatial distribution patterns and utilizing geographic detector tools to measure their influencing factors. The results indicate: (1) The type structure is unbalanced, with revolutionary tradition education bases accounting for the highest proportion and construction achievement symbol bases the lowest. (2) At the regional scale, the overall distribution shows agglomeration characteristics, with significant quantitative differences manifesting as "more upstream, less midstream; more in Sichuan and Henan, less in Qinghai and Ningxia." (3) Kernel density analysis reveals a "⋊" -shaped distribution pattern with Yan' an City as the core and four high-density areas plus two sub-high-density areas. (4) Cold-hot polarization is significant, primarily dominated by cold spot areas, with hot spots concentrated in eight cities at the junction of Shaanxi, Gansu, and Ningxia Hui Autonomous Region in the middle and upper reaches of the Yellow River. (5) Cultural environment, population size, and transportation level are dominant factors influencing the spatial pattern, among which red tourism resources, cultural venues, population density, number of events held, visitor numbers, and passenger volume are core influencing factors. These findings provide reference for optimizing the spatial layout of patriotic education bases and promoting high-quality development of red culture in the Yellow River Basin.

Keywords: patriotic education base; spatial pattern; influencing factors; geographic detector; Yellow River Basin

Patriotic education bases are activity venues that embody patriotic themes and conduct patriotic education-focused activities for society, including revolutionary history memorials, cultural heritage sites, Party history education centers, national defense education centers, science popularization education centers, scenic spots, and modern construction achievements. In 1994, the CPC Central Committee issued the *Implementation Outline for Patriotic Education*, which pointed out the need to "do a good job in building patriotic education bases." In 1997, the Publicity Department of the CPC Central Committee announced the first batch of 100 national patriotic education bases, and subsequently an-

nounced the second through sixth batches by 2019. On the occasion of the 100th anniversary of the founding of the Party in July 2021, the Publicity Department announced another 111 bases, bringing the total number of national patriotic education bases to 585. Since the 18th National Congress of the CPC, General Secretary Xi Jinping has visited many patriotic education bases, making a series of important statements and instructions on making good use of revolutionary sites, memorial halls, and revolutionary ruins, which has pointed out the direction and provided the basis for promoting the work of patriotic education bases. In 2019, the CPC Central Committee and the State Council issued the *Outline for Patriotic Education in the New Era*, proposing to "build and make good use of patriotic education bases, improve the dynamic management mechanism, optimize the structural layout, and improve the quality and level," providing policy guidance for the construction of patriotic education bases.

The Yellow River Basin is the core birthplace of Chinese civilization. The Yellow River is the mother river of the Chinese nation and a red river carrying a glorious revolutionary tradition. A large number of revolutionary sites, cultural heritage, and the resulting Yellow River spirit and culture are important red resources for patriotic education bases. The *Yellow River Protection Law of the People' s Republic of China* passed in 2022 clearly states that it is necessary to "strengthen the construction of patriotic education bases in the Yellow River Basin and inherit and promote the red culture of the Yellow River." Therefore, in-depth exploration of the spatial distribution pattern and formation mechanism of patriotic education bases in the Yellow River Basin is conducive to promoting the red cultural tradition of the Yellow River, inheriting the red gene, and promoting the development of red tourism. It also helps various regions in the Yellow River Basin to formulate targeted support policies and development measures, coordinate planning and layout optimization, and has important practical significance for promoting the high-quality development of red culture in the Yellow River Basin.

There is no concept of patriotic education bases abroad. Foreign scholars mainly conduct research from the perspective of venues for patriotic education, focusing on values education using museums, patriotic education based on cultural heritage, and science popularization and patriotic education relying on archives. Domestic research on patriotic education bases has conducted numerous discussions with fruitful results, mainly focusing on construction and management, functions and values, and development and utilization. Most existing studies are based on tourism and sociology perspectives, with fewer studies from a geographical perspective. Yu Zhiyuan et al. explored the spatial distribution type and equilibrium characteristics of patriotic education bases in Gansu Province. Xin Yun et al. analyzed the formation history and spatial aggregation of national patriotic education bases, using the standard deviational ellipse method to reveal their distribution tendencies in different periods. Overall, existing research has relatively single analytical methods for the spatial pattern of patriotic education bases, and research on the deep-seated driving factors causing their impact is still insufficient. Based on this, this study takes nine provinces in the

Yellow River Basin as the research area and 171 national patriotic education bases as the research object, revealing the spatial distribution pattern of patriotic education bases in the Yellow River Basin from a geographical perspective and analyzing their influencing factors, aiming to provide scientific guidance and reference value for the layout optimization, resource integration, and differentiated policy support for patriotic education bases in the Yellow River Basin.

1 Data and Methods

1.1 Data Sources

This study is based on the seven batches of national patriotic education bases announced by the Publicity Department of the CPC Central Committee. Memorial sites containing multiple bases were split to extract 171 patriotic education bases in the Yellow River Basin. Data were obtained from the China Civilization Network (http://www.wenming.cn). Spatial coordinates of patriotic education bases were collected from Baidu Maps and processed using ArcGIS 10.5 for geospatial matching and visualization to establish a patriotic education base database. Basic base map data were obtained from the National Geographic Information Resources Directory Service System of the Ministry of Natural Resources (https://www.webmap.cn). Statistical data were sourced from the *China Statistical Yearbook (2021)* and *China Cultural Heritage and Tourism Statistical Yearbook (2021)*. Red tourism attraction data were obtained from the *National Red Tourism Classic Scenic Spots List*. SRTM DEM 30 m data for the study area were obtained from the Geospatial Data Cloud website (http://www.gscloud.cn). River system data were obtained from the Data Center for Resources and Environmental Sciences of the Chinese Academy of Sciences (https://www.resdc.cn).

1.2 Methods

1.2.1 Nearest Neighbor Index The nearest neighbor index is used to represent the degree of mutual proximity of point features in geographic space and is the ratio of actual nearest neighbor distance to theoretical nearest neighbor distance, which can determine the distribution type of patriotic education bases. The calculation formula is:

$$R = \frac{\bar{D}_o}{\bar{D}_e}$$

where R is the nearest neighbor index; $\bar{D}_o$ is the actual nearest neighbor distance (km); $\bar{D}_e$ is the theoretical nearest neighbor distance (km); n is the number of patriotic education bases; D_i is the distance from point i to its nearest neighbor (km); and S is the total area of the study region (km^2). $R > 1$ indicates that patriotic education bases tend to be uniformly distributed; $R < 1$ indicates

that patriotic education bases tend to be clustered; and $R = 1$ indicates that patriotic education bases tend to be randomly distributed.

1.2.2 Kernel Density Analysis Kernel density analysis is used to estimate the probability of occurrence of point set elements at different geographic locations and can clearly represent the distribution form and agglomeration characteristics of patriotic education bases in space. The calculation formula is:

$$f(x) = \frac{1}{nh} \sum_{i=1}^{n} k\left(\frac{x - x_i}{h}\right)$$

where $f(x)$ is the kernel density estimate value of patriotic education bases; h is the search bandwidth (km); n is the number of patriotic education bases; x_i is the distance from the valuation point x to the sample point x_i (km); and k is the spatial weight function.

1.2.3 Cold-Hot Spot Analysis The Getis-Ord G_i^* hot spot analysis tool in ArcGIS 10.5 is used to identify high-value and low-value agglomeration areas of patriotic education bases and reveal the spatial heterogeneity of cold and hot spot distribution. The G_i^* index calculation formula is:

$$G_i^* = \frac{\sum_{j=1}^{n} W_{ij}(d) X_j}{\sum_{j=1}^{n} X_j}$$

Standardization is performed using:

$$Z(G_i^*) = \frac{G_i^* - E(G_i^*)}{\sqrt{VAR(G_i^*)}}$$

where G_i^* is the local G coefficient; d is the size of the neighborhood interval (km); X_j is the number of patriotic education bases in region j; Z_i and Z_j are the standardized values of X_i and X_j; $W_{ij}(d)$ is the spatial weight matrix; $E(G_i^*)$ and $VAR(G_i^*)$ are the mathematical expectation and theoretical variance of G_i^*, respectively. When $Z(G_i^*)$ is positive and significant, it indicates that region i is a high-value agglomeration area and belongs to a hot spot area of patriotic education bases. When $Z(G_i^*)$ is negative and significant, it indicates that region i is a low-value agglomeration area and belongs to a cold spot area of patriotic education bases.

1.2.4 Geographic Detector The geographic detector is used to analyze the influencing factors of the spatial distribution pattern of patriotic education bases. The explanatory power of factors is measured by the q value. The calculation formula is:

$$q = 1 - \frac{1}{N\sigma^2} \sum_{h=1}^{L} N_h \sigma_h^2$$

where L is the number of types of natural factors; N_h is the number of units in detection element h; N is the number of units in the study area; σ_h^2 is the variance of the h-type independent variable; and σ^2 is the variance of the dependent variable Y values in all regions. The q value ranges from [0,1]. A larger q value indicates a stronger effect of the influencing factor on the spatial distribution of patriotic education bases, and vice versa.

2 Results and Analysis

2.1 Spatial Distribution Pattern

2.1.1 Type Distribution Pattern According to the *Outline for Patriotic Education in the New Era* and the subjectivity of patriotic education bases, and referring to relevant municipal patriotic education base management methods, patriotic education bases in the Yellow River Basin are divided into three types: revolutionary tradition education, historical culture education, and construction achievement symbols (Table 1). The type distribution of patriotic education bases in the Yellow River Basin shows significant differences. Revolutionary tradition education bases are the most numerous, reaching 103 and accounting for 60.23% of the total, making them important venues for patriotic education activities. Historical culture education bases follow with 57, accounting for 33.33%, which are closely related to local cultural resources and play an increasingly prominent role in patriotic education. Construction achievement symbol bases are the least numerous with only 11, accounting for 6.44%, representing the focus for future development. The three types of bases show different distribution patterns across provinces. Six provinces have all three types of bases, while Shanxi Province and Inner Mongolia Autonomous Region have only two types. The distribution proportions of the three types of bases show obvious inter-provincial differences. Shanxi Province has the largest proportion of revolutionary tradition education bases at 76.47%, Henan Province has the largest proportion of historical culture education bases at 39.29%, and Qinghai Province has the largest proportion of construction achievement symbol bases at 25.00%. Ningxia Hui Autonomous Region has no construction achievement symbol bases.

2.1.2 Regional Distribution Pattern At the basin scale, the nearest neighbor index of patriotic education bases in the Yellow River Basin was calculated using GIS 10.5. The results show an actual nearest neighbor distance of 50.420 km, a theoretical nearest neighbor distance of 79.440 km, a nearest neighbor index of 0.635, a Z-score of -7.236, and a significance test P-value of 0.000, indicating that patriotic education bases in the Yellow River Basin show a significant clustered distribution pattern in space.

At the regional scale (Table 2), patriotic education bases show significant differences among the upper, middle, and lower reaches, with the most in the upper reaches (79, accounting for 46.20%), followed by the lower reaches (58), and the least in the middle reaches (34). At the provincial scale (Table 2), the distribution of patriotic education bases varies greatly among provinces in the Yellow River Basin, showing an unbalanced distribution that can be divided into three intervals. Areas with more than 20 bases are high-value areas, including Sichuan Province (29 bases, accounting for 16.96% of the total), Henan Province, and Shandong Province. Areas with 11-19 bases are medium-value areas, including Shanxi Province (17 bases) and Gansu Province (16 bases). Qinghai Province and Ningxia Hui Autonomous Region have the fewest bases (4 each), representing low-value areas with fewer than 10 bases.

2.1.3 Density Distribution Pattern The overall distribution density of patriotic education bases in the Yellow River Basin is 0.479$×10^{-4}$ bases · km^{-2}. The density in Henan Province is 1.677$×10^{-4}$ bases · km^{-2}, in Shandong Province is 1.412$×10^{-4}$ bases · km^{-2}, in Inner Mongolia is 0.111$×10^{-4}$ bases · km^{-2}, and in Qinghai Province is 0.110$×10^{-4}$ bases · km^{-2}, showing significant density differentiation characteristics among provinces. Using the ArcGIS 10.5 density analysis tool for further analysis of the density distribution pattern, the natural breaks classification method was applied to generate a kernel density distribution map of patriotic education bases (Figure 2). The results show that patriotic education bases in the Yellow River Basin exhibit a "ж" -shaped distribution pattern in space, with one core density area, four high-density areas, and two sub-high-density areas, with clear boundaries between core and edge areas. The core density area is located in Yan' an City, Shaanxi Province, with a distribution density of $2.125\$\times10^{\{-4\}-2.944\times10}\{-4\}\$$ bases · km^{-2}. The four high-density areas are located in the Guanzhong region of Shaanxi Province, Xinyang City of Henan Province, the central-eastern part of Sichuan Province in a "peanut" shape, and Shanxi Province, Henan Province, and Shandong Province in a contiguous area in a "" shape. The two sub-high-density areas are located at the junction of Gansu Province and Ningxia Hui Autonomous Region and in Hohhot City, Inner Mongolia Autonomous Region, with distribution densities of $1.132\$\times10^{\{-4\}-1.535\times10}\{-4\}\$$ bases · km^{-2} and $1.536\$\times10^{\{-4\}-2.124\times10}\{-4\}\$$ bases · km^{-2}, respectively.

[Figure 2: see original paper]

2.1.4 Hotspot Distribution Pattern Using the Getis-Ord G_i^* hot spot analysis tool in ArcGIS 10.5, the G_i^* index was calculated for each prefecture-level city to conduct hotspot analysis of the spatial distribution of patriotic education bases. The natural breaks classification method was applied to divide the index values into four categories: hotspot areas, sub-hotspot areas, sub-coldspot areas, and coldspot areas. The spatial distribution of patriotic education bases in the Yellow River Basin shows a "hot at the center, cold at the edge" pattern, with

significant cold-hot polarization. Hotspot areas are mainly distributed in eight cities at the junction of Shaanxi, Gansu, and Ningxia provinces in the middle and upper reaches of the Yellow River, including Yulin, Yan' an, Tongchuan, Weinan, Xianyang, Xi' an, Qingyang, and Guyuan, accounting for 6.96% of the total number of prefecture-level cities in the Yellow River Basin. Sub-hotspot areas are mainly concentrated in the central part of Shanxi Province, southwestern Henan Province, western Shandong Province, and at the junction of Sichuan, Gansu, and Shaanxi provinces, covering 23 cities and accounting for 20.00%. Coldspot and sub-coldspot areas are distributed throughout Qinghai Province and Inner Mongolia Autonomous Region, most of Gansu Province and Ningxia Hui Autonomous Region, southern Sichuan Province, southern Shaanxi Province, southern Shanxi Province, central-eastern Henan Province, and eastern Shandong Province, covering 80 cities and accounting for 69.56%. Overall, the spatial distribution of patriotic education bases in the Yellow River Basin is dominated by coldspot areas, with hotspot areas mainly concentrated in Sichuan and Gansu provinces in the upper reaches, Shaanxi and Shanxi provinces in the middle reaches, and Henan and Shandong provinces in the lower reaches, showing obvious spatial agglomeration differences and significant cold-hot polarization.

[Figure 3: see original paper]

2.2 Influencing Factors

2.2.1 Selection and Measurement of Influencing Factors To reveal the influencing factors of the spatial pattern of patriotic education bases in the Yellow River Basin, and based on existing relevant research and the application standards for patriotic education bases, an index system was constructed from five dimensions (population size, economic level, transportation level, cultural environment, and natural environment) with 11 factors, considering data scientificity, representativeness, and accessibility (Table 3). Population size is the driving force for the development of patriotic education bases, represented by total population and population density. Economic level is the effective guarantee for development, represented by regional GDP and public expenditure. Transportation level is the external dependence for development, represented by transportation density and passenger volume. Cultural environment is the resource base for development, represented by red tourism resources, cultural venues, visitor numbers, and events held. Natural environment is the basic prerequisite for development, represented by terrain relief and river network density. The geographic detector tool was used to measure and analyze the driving forces of influencing factors on the spatial distribution pattern of patriotic education bases. The average q value of secondary influencing factors under each of the five dimensions was used as the comprehensive q value of primary influencing factors.

2.2.2 Analysis of Influence Results The factor detection results in Table 3 show that all 11 secondary influencing factors significantly affect the spatial distribution pattern of patriotic education bases at the 0.01 level, with varying driving forces. From the comprehensive q values of primary influencing factors, the order of influence is: cultural environment (0.612) > population size (0.534) > transportation level (0.428) > economic level (0.387) > natural environment (0.203). The cultural environment plays a dominant role, population size plays a key role, transportation conditions play a connecting role, economic level plays a promoting role, and natural environment plays a constraining role.

The cultural environment is the resource foundation for the development of patriotic education bases and plays a dominant role. The Chinese nation has created splendid Chinese civilization, and rich cultural heritage provides a valuable resource base for patriotic education bases. Sichuan Province has a long history and is the birthplace of ancient Shu civilization, with a very strong cultural accumulation that has created the largest number of patriotic education bases. Yan' an City, as a revolutionary old district, retains a large number of revolutionary memorial sites and memorial halls, resulting in numerous patriotic education bases. As patriotic education for all citizens, it drives visitor numbers to cultural venues and promotes the number of social education activities held by cultural venues, which are important factors dominating the development of patriotic education bases.

Population size is the driving force supporting the development of patriotic education bases and plays a key role. People need to receive the influence and edification of patriotic education in their daily lives. Areas with large population density and numbers have greater demand for patriotic education, which is more conducive to the development of patriotic education base construction. For example, Sichuan, Henan, and Shandong provinces with large population density and numbers have more patriotic education bases, while provinces with sparse populations like Qinghai and Ningxia Hui Autonomous Region have fewer bases.

Transportation level is the external dependence for promoting the development of patriotic education bases and plays a connecting role. The more developed the transportation, the stronger the passenger capacity, and the more convenient it is for people to participate in activities at patriotic education bases, which is more conducive to their development. For example, Henan and Shandong provinces with developed transportation have greater distribution density of patriotic education bases, while the backward transportation conditions in Qinghai and Ningxia Hui Autonomous Region constrain their development.

Economic level is the effective guarantee for promoting the development of patriotic education bases and plays a facilitating role. Higher regional GDP and general public budget expenditure, such as in Shandong and Henan provinces which rank at the top in total volume and public expenditure, provide more financial support for patriotic education base construction. In contrast, Qinghai and Ningxia Hui Autonomous Region with relatively lagging economic develop-

ment have insufficient funds to support patriotic education base development, resulting in fewer bases. At the same time, economic development level reflects people's living standards to a certain extent, and improved living standards drive people' s travel, which is conducive to promoting the development of patriotic education bases.

The natural environment is the basic prerequisite for the formation of patriotic education bases and plays a constraining role. Using ArcGIS 10.5, DEM data for the Yellow River Basin was classified into five categories based on terrain relief: plain (<200 m), low mountain (200-500 m), middle mountain (500-1000 m), high mountain (1000-3500 m), and extremely high mountain (>5000 m). Through extraction and analysis, there are 103 bases in areas below 1000 m altitude, accounting for 60.23% of the total, while only 11 bases are in areas above 3500 m altitude, showing a "low-altitude agglomeration" distribution characteristic. This indicates that altitude significantly affects the distribution of patriotic education bases—the higher the altitude, the fewer the bases—because high-altitude areas have poor climate conditions, steep terrain, and are unsuitable for human habitation, with sparse human activity resulting in fewer patriotic education bases. Using ArcGIS 10.5 to establish 3 km ring buffers around major rivers in the Yellow River Basin and counting the distribution of patriotic education bases within 0-3 km, 3-6 km, 6-9 km, 9-12 km, and 12-15 km from rivers, it was found that the closer to rivers, the more bases there are. Within the 0-3 km buffer zone, there are 110 bases, accounting for as high as 64.33%, showing a decreasing trend with increasing distance. This indicates that rivers have a very strong constraining effect on the spatial distribution of patriotic education bases. Water is the source of human life and the blood of production and living, and the site selection of patriotic education bases shows water-proximity characteristics.

4 Conclusion

This study supplements, expands, and improves upon previous research by Yu Zhiyuan et al. and Xin Yun et al., which examined the spatial distribution patterns of patriotic education bases at provincial and national scales in terms of equilibrium and agglomeration. First, it supplements the research scale by conducting a regional-scale study of the Yellow River Basin, enriching the research scales on the spatial pattern of patriotic education bases. Second, it expands the spatial distribution perspective by comprehensively revealing the spatial distribution from multiple dimensions including type distribution pattern, regional distribution pattern, density distribution pattern, and hotspot distribution pattern. Third, it adds analysis of influencing factors, which was lacking in existing research. This study constructs an influencing factor index system with 11 factors and uses the geographic detector to systematically explore the driving forces affecting the spatial pattern of patriotic education bases in the Yellow River Basin, finding that cultural environment has the greatest impact while natural environment has the least. Areas with rich cultural resources,

dense population, developed transportation, and good economic foundations have higher agglomeration of patriotic education bases. This research provides reference value and guidance for optimizing the spatial layout of patriotic education bases and promoting high-quality development of red culture in the Yellow River Basin.

Based on the analysis results, the following three aspects should be prioritized in future development: First, deeply explore red resources. Various regions in the Yellow River Basin should fully utilize internal advantages such as cultural resources and economic foundations, and external advantages such as transportation and terrain conditions, to deeply explore red resources, expand patriotic education functions, coordinate planning and collaborative construction, and improve utilization efficiency, thereby optimizing the spatial distribution pattern of patriotic education bases. Second, develop red tourism. Patriotic education bases are potential resources for the tourism market. Various regions can combine base type attributes to highlight red tourism themes, emphasize red cultural connotations, enhance social effects, develop red tourism routes, innovate red tourism products, improve red tourism service levels, and present patriotic education and red gene inheritance in new ways to achieve effective integration of patriotic education bases and tourism. Third, hold characteristic activities. Various regions should use patriotic education bases to carry out red-themed education series activities, guiding people to understand, pay attention to, appreciate, and experience the traditional culture, revolutionary culture, socialist advanced culture, and modern construction achievements of the Chinese nation, effectively playing the educational function of patriotic education bases and promoting their construction and sustainable development.

The conclusions of this study are as follows: (1) In terms of type distribution pattern, the type structure of patriotic education bases in the Yellow River Basin is unbalanced, mainly dominated by revolutionary tradition education bases accounting for 60.23%, while construction achievement symbol bases are the least at only 6.44%. The distribution proportions of the three types of bases show significant inter-provincial differences. (2) In terms of regional distribution pattern, patriotic education bases in the Yellow River Basin show significant clustered distribution characteristics at the basin scale, structural characteristics of “more upstream, less midstream” at the regional scale, and are mainly concentrated in Sichuan, Henan, and Shanxi provinces at the provincial scale, with the fewest in Qinghai and Ningxia, showing a huge provincial gap. (3) In terms of density distribution pattern, patriotic education bases in the Yellow River Basin show a “米” -shaped “one core, four high, two sub-high” distribution pattern, with one core density area in Yan’ an City, four high-density areas in the Guanzhong region of Shaanxi, Xinyang City of Henan, central-eastern Sichuan, and contiguous Shanxi-Henan-Shandong areas, and two sub-high-density areas in Hohhot City of Inner Mongolia and the junction of Gansu and Ningxia. (4) In terms of hotspot distribution pattern, patriotic education bases in the Yellow River Basin show a “hot at the center, cold at the edge” pattern with significant cold-hot polarization. Hotspot areas are distributed in eight cities at the junction

of Shaanxi, Gansu, and Ningxia in the middle and upper reaches; sub-hotspot areas are concentrated in 18 cities in central Shanxi, southwestern Henan, western Shandong, and at the junction of Sichuan, Gansu, and Shaanxi; coldspot and sub-coldspot areas are distributed in 80 cities across most other regions. (5) The spatial pattern of patriotic education bases in the Yellow River Basin is the result of multiple factors. The explanatory power of primary influencing factors from strong to weak is cultural environment, population size, transportation level, economic level, and natural environment. Among secondary influencing factors, red tourism resources, cultural venues, population density, events held, visitor numbers, and passenger volume are strong influencing factors.

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Note: Figure translations are in progress. See original paper for figures.