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GRIDDED POPULATION DISTRIBUTION MAP FOR THE HEBEI PROVINCE OF CHINA

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Abstract

Mapping the distribution of populations has become an important issue in geographical and relative researchers. Combining population and spatial data allows for socio-graphic information to be visualized, in order to evaluate the total numbers of people at risk of environmental health hazards, who have died in natural disasters etc. Therefore, spatial distribution of population data is an effective way to integrate statistical and spatial data. This paper presents a multi-factor data fusion modeling method for population estimation, which is based on spatial relationships that determine the factors affecting population distribution. The factors that have a strong correlation with population distribution in the Hebei Province were extracted using Geographic Information Systems (GIS). Their standardized weight coefficients were factored as weight coefficients of population distribution in a given spatial unit. The unit (1 km × 1 km) population database was established, allowing for the computation of the relevant population data error. The accuracy of the map was then assessed by comparing predicted population data with that collected from the local government. The results show that the population correlated with geographical factors. The population of the Hebei Province was distributed heterogeneously, increasing from the northwest to southeast. There was relatively low population density in the Taihang Mountains in the west and in the Yanshan Mountains in the northeast, with less than 100 people per square kilometer. The population density in the central Hebei Province was higher, with about 2,000 people per square kilometer, which was higher and denser than that in Handan, Shijiazhuang, Langfang, and Tangshan. These findings may be important for data mining (DM), Decision-making Support Systems (DSS), and regional sustainable development.

Key words: data fusion, grid population, Hebei Province, multi-factor fusion, partial correlation coefficient

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