

The Study on Optimization Location–Allocation of Emergency Shelter for Earthquake

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SUMMARY

Purpose: study optimization location-allocation of emergency shelter for Earthquake after destructive earthquake disaster, so as to prevent or reduce the damage caused by the earthquake and its secondary disasters, to guide the resettlement and reconstruction of post-disaster. Methods: basis on GIS, by applying the location - allocation optimization of P - center model of geographical space geometric network model, through the analysis of the shortest path based on Dijkstra algorithm and the most convenient facilities as well as neighborhood analysis of Euclidean distance calculation, the study select the evaluation indicators of validity, safety, Facility to confirm optimization location-allocation of emergency shelter for earthquake, by virtue of linear efficacy function method and the hierarchy process analysis. Results: (1) the geographical spatial geometric network can realize the analysis of the most convenient facilities and the shortest path and tracking, consequently providing detailed route guidance, meanwhile, it's owing the obvious advantages in the aspect of emergency rescue and fast response, however, it is the key point to abide by strict network topology relationship when choose the shortest path algorithm;(2) it is the first consideration to ensure the safety of emergency shelter, therefore, optimization location-allocation must avoid the geological structure hazard, geological disasters, and post-earthquake secondary disasters such as inflammable and explosive hazard place etc., however, such impact factors are not affected by the constraint of the traffic network, it's more appropriate for the measure of Euclidean distance which have the characteristic of buffer damping;(3) by compared the optimal allocation scheme with the actual resettlement location, they present the higher compatibility and matching degree, and the field demonstration also illustrate that the whole methods have scientificity and feasibility to some extent;(4)it's helpful to provide reference for land use planning of post-earthquake recovery and reconstruction, while the planning depends on more detailed ownership survey, disaster evaluation, safety evaluation, land supply and demand analysis, the land consolidation and ecological restoration research. Conclusion: supply an optional tool of space visual, fast, effective optimization location-allocation of emergency shelter for earthquake.