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An Exact Algorithm for Location–Transportation Problems in Humanitarian Relief

Authors : Chansiri Singhtaun

Abstract : This paper proposes a mathematical model and examines the performance of an exact algorithm for a location–transportation problems in humanitarian relief. The model determines the number and location of distribution centers in a relief network, the amount of relief supplies to be stocked at each distribution center and the vehicles to take the supplies to meet the needs of disaster victims under capacity restriction, transportation and budgetary constraints. The computational experiments are conducted on the various sizes of problems that are generated. Branch and bound algorithm is applied for these problems. The results show that this algorithm can solve problem sizes of up to three candidate locations with five demand points and one candidate location with up to twenty demand points without premature termination.

Keywords : disaster response, facility location, humanitarian relief, transportation
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