

Vehicle Routing Problem for Medical Supplies in Large-scale Emergency with Multiple Depot and Split Deliveries

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Abstract:

In this project, the most important purpose is to find the best route for each vehicle in large-scale emergency. The number of demands is usually very high so delivery medical supplies to customers before deadline can decrease the number of death and result in saving people's life. Multiple depot and split delivery are assumptions that are considered in this project to achieve a real world problem. Usually, each customer can be serviced by different vehicles, so it is appropriate to consider this assumption. A new MIP model is presented for this problem that the objective is to minimize the quantity of unmet demand. For solving this project, each vehicle is as a travel salesman problem with capacity constraint so greedy initial solution algorithms presented for obtaining initial solution and simulated annealing is applied for improving the solution of problem. Results of researches show that with these new assumptions, unmet demand is minimized and the number of used vehicles is decreased, too.

Key words: *Disaster, VRP, Split Delivery, Multiple Depots*

