Efficient Utilization of Mobile Facilities in Humanitarian Relief Logistics

Mobile vs. Fixed Facilities

- The proposed model is a polynomial time algorithm.
- The model can be solved in polynomial time.
- The objective is to determine the optimal route for a single mobile facility.
- The model considers multiple mobile facilities with limited capacity.
- The model can be extended to consider multiple mobile facilities with different capacities.

Routing Mobile Facilities

- The model considers a fixed number of mobile facilities.
- The model considers a fixed number of locations.
- The model considers a fixed time horizon.
- The model considers a fixed set of demand points.

Routing Single Mobile Facility

- The model considers a single mobile facility with limited capacity.
- The model considers a single mobile facility with an unlimited capacity.
- The model considers a single mobile facility with a variable capacity.
- The model considers a single mobile facility with a fixed capacity.

Routing Multiple Mobile Facilities

- The model considers multiple mobile facilities with limited capacity.
- The model considers multiple mobile facilities with an unlimited capacity.
- The model considers multiple mobile facilities with a variable capacity.
- The model considers multiple mobile facilities with a fixed capacity.

Optimal Static Routing Heuristic:

- The model considers a single mobile facility with limited capacity.
- The model considers a single mobile facility with an unlimited capacity.
- The model considers a single mobile facility with a variable capacity.
- The model considers a single mobile facility with a fixed capacity.

Sequential Routing Heuristic with Local Search:

- The model considers multiple mobile facilities with limited capacity.
- The model considers multiple mobile facilities with an unlimited capacity.
- The model considers multiple mobile facilities with a variable capacity.
- The model considers multiple mobile facilities with a fixed capacity.

Why use mobile facilities?

- Mobile facilities can provide aid more rapidly than fixed facilities.
- Mobile facilities can provide aid to a larger geographic region.
- Mobile facilities can be deployed more quickly than fixed facilities.
- Mobile facilities can be more easily repositioned than fixed facilities.

What is a Mobile Facility?

- A mobile facility is a facility that can be moved from one location to another.
- A mobile facility is a facility that can be used to provide relief services.
- A mobile facility is a facility that can be used to provide emergency services.
- A mobile facility is a facility that can be used to provide public services.

Simulating data sets

- The model can be used to simulate real-world scenarios.
- The model can be used to simulate different demand patterns.
- The model can be used to simulate different arrival patterns.
- The model can be used to simulate different service times.

Routing Formulation

- The model considers a single mobile facility with limited capacity.
- The model considers a single mobile facility with an unlimited capacity.
- The model considers a single mobile facility with a variable capacity.
- The model considers a single mobile facility with a fixed capacity.

Conclusions

- Mobile facilities can provide aid more rapidly than fixed facilities.
- Mobile facilities can provide aid to a larger geographic region.
- Mobile facilities can be deployed more quickly than fixed facilities.
- Mobile facilities can be more easily repositioned than fixed facilities.

Why is the use of mobile facilities important?

- The use of mobile facilities can be critical during emergency situations.
- The use of mobile facilities can be critical during humanitarian disasters.
- The use of mobile facilities can be critical during natural disasters.
- The use of mobile facilities can be critical during economic crises.

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