

## Genetic Algorithm for the Elderly Home Meal Delivery Routing Problem

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### Abstract

Long-term care has become an important issue for countries and societies around the world. This study studies the route planning problem of elderly home delivery services. Currently, delivery services for people living alone or in long-term care are included in the long-term care subsidy in Taiwan, so the demand for delivery services is increasing. This study considers two important conditions of delivery service users: (1) Delivery service users often have different delivery frequency requirements, such as: lunch and dinner every day, lunch every day, dinner every day, or even lunch every Monday, Tuesday, and Wednesday, dinner every Tuesday, Thursday, and Saturday, etc. (2) Daily delivery time restrictions, such as: lunch is 11:00-13:00, dinner is 17:00-19:00. This study uses genetic algorithm to investigate the planning problem of home delivery services, and takes a certain area in Chiayi (Taiwan) as an example to test the impact of different numbers of delivery trucks on delivery planning. It is expected that the results of this research may provide a reference for the planning of meal delivery service.

### Keywords

Meal delivery, route, genetic algorithm, optimization.