

# Travelers' Rationality in Online Anticipatory Emergency Response Model

## Abstract

Traditional allocations decisions of freeway emergency resources only focused on serving the current emergency and have ignored which future emergency will be occurring. These studies have myopic decisions with an assumption of independency between emergencies and neglected travelers' experience on unexpected events during their commuting. This research will contribute in relaxing the structural assumptions of independency between events, in optimizing online look-ahead decisions, and in designing behaviors of individual travel agents during the assignment of emergency vehicles. An agent based online optimization model is proposed to represent boundedly rational decisions under strictly imposed capacity constraints, due to clearing activities at emergency site. Under tight transportation capacity due to a lane-blockage for clearing an emergency, user equilibrium will be considered on the network. This research will find rationality of each traveler to minimize disutility within rational bands, choosing user optimal path from a limited number of capacity feasible routing options. TransModeler, simulation software, will be used to test the optimization model with simulation with a direct and indirect impact of dispatching policy on transportation network and to test the effect of dispatching model on travelers' rational behavior. The output of the simulation will provide information about wide area multimodal networks in great detail and with high fidelity.

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