

Improving Emergency Medical Services with Time-Region-Specific Cruising Ambulances

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Abstract:

This study aims to propose a dynamic resource allocation policy for Emergency Medical Service (EMS) of New Taipei City, Taiwan. Response time is one of the major key performance indicators in EMS system since rapid ambulance response provides patients better chances of recovering or surviving. Ambulances in New Taipei City used to park in separate fire stations and wait for the calls from emergency medical dispatch center (EMD). As an alternative, a dynamic resource allocation policy is designed and proposed by dispatching ambulance to patrol on the streets or stay at specific locations in the areas with high emergency events demand time slots. These areas and time slots are determined by statistical analysis of the historical emergency medical service data.

The main idea of this dynamically allocated ambulance policy is to increase the probability that an ambulance will be on stand-by at the nearby area when an emergency event occurs. In addition, this policy is investigated under the condition that no extra EMS resource is available. A simulation model is developed to evaluate this dynamic resource allocation policy, and the results of this study show that time-region-specific ambulance cruising policy can significantly re-duce the EMS response times.

About Dr. Jiun-Yu Yu

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Trained as an Operational Researcher and applied statistician, Dr. Yu is interested in exploring the potential applications of these quantitative tools to healthcare service innovation. Research methods employed include simulation, system dynamics, analytics, service operations management, and design thinking.