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Improving Response Times in a Safety Emergency Response System Using Stochastic Simulation

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Abstract: We approach this problem from an operations research and logistics in the service and government sector perspective, based on the analysis of resource allocation in a safety Emergency Response System (ERS) of a large city in Mexico, to decrease response time of police patrols considering a reference ideal response time. Our research incorporates the second half of the 7th police district to previously published results of seven police districts, since this district includes the equivalent of two districts. This research utilizes a discrete stochastic model based on characterized demand and system performance of 23 continuous days. The model first reproduces actual operations to validate its behavior. Subsequently, alternative scenarios were configured to incorporate the ideal international response time reference of three minutes, and identify required resource configuration strategies for each police quadrant. Similar to previous research, results found that the recommended allocation level of resources was realistic to be accomplished.

Keywords: Emergency Response Systems, Police Patrols Allocation, Response Time