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Police Patrols Optimum Allocation for an ERS Using Stochastic Simulation Based on a Performance Requirement Approach

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Abstract: Our research analyzes actual operating strategies of a public safety Emergency Response System (ERS) in a large city in Mexico integrating a sixth police district to previously published research composed of five districts out of a total of eight in the city. The research procedure firstly characterizes the demand for service and processes associated with the patrols' response and utilization during the attention of historic calls. Subsequently, we created a stochastic simulation model to emulate current ERS's patrols deployment strategies. After validating the model, we then generated a scenario with the restricted and optimized response time of three minutes maximum. Lastly, the minimum numbers of police patrols, required to provide the ideal response time for each police quadrant in every district, were obtained. Results reflect that the minimum required numbers of police patrols to provide an acceptable service level are viable.

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