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Allocating Optimum Number of Police Patrols in a Public Safety Emergency Response System Based on Stochastic Simulation

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Abstract: Our research is focused on assisting current operations of a public safety Emergency Response System (ERS) in a large city in Mexico to achieve the international ideal response time of three minutes maximum based on allocating the optimum number of police patrols. We believe that improvements in patrol response times will strongly improve statistics in the crime prevention and control as well as in the apprehension of presumable delinquents. The city is composed by eight police districts and this research integrates an additional district to four previously evaluated. In this research we first characterized the demand for service and processes linked to the attention of the call and patrol utilization. Next, we built a stochastic simulation model to reproduce current operating conditions to validate its behavior. Ultimately, we identified the optimum number of police patrols required to be allocated as back up inventory in each police quadrant within all districts.

Keywords: Patrol allocation, Emergency Response Systems, Public Safety