

# **Abstract**

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## **Optimizing Emergency Response Through The Use of Intelligent Transportation Systems (ITS) Technologies**

Emergency service (EMS, fire, and police) operations can benefit from the integration of Intelligent Transportation Systems (ITS) technologies into the transportation system infrastructure and the emergency vehicles themselves. From simple emergency notification systems to sophisticated dynamic routing algorithms for expedited incident response, ITS provides enormous capabilities to improve the efficiency of EMS operations and optimize the use of healthcare resources. This study is analyzing the potential for ITS to a) optimize deployment of healthcare resources, and b) optimize response and transport times for emergency vehicles. Using the CUBE and CORSIM simulation packages, as well as GIS databases, the study team is analyzing a number of candidate technologies and scenarios to estimate the benefits to emergency operations. Specific scenarios being analyzed include the positioning of emergency response assets based on prevailing traffic conditions, optimizing vehicle routing to minimize response and transport times, and implementing enhanced types of traffic signal pre-emption to move emergency vehicles through congested networks. Costs and benefits will be estimated for each scenario, along with recommendations for technologies that appear to hold the most promise in urban and rural environments.