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Impact of forecast accuracy on EMS deployment models: Do improved forecasts really improve ambulance location models?

Emergency Medical Services (EMS) supervisors have finite resources to achieve their objectives. One such objective is for ambulance response to emergencies fall within a set time range. Number and location of ambulances is the primary way decision makers can meet response times. Many location and deployment models have been developed to minimize the resources to maximize coverage. Most of them, however, use historical data to number and disperse the ambulances. This obviously maximizes the coverage from the past, but emergency response needs to focus on the future. The effectiveness of these deployment models will depend on the accuracy of the forecasts that feed them, or do they?

Two forecasting techniques will be compared. One will be the model used by an actual EMS provider. The other will be a statistically significant improved method using Artificial Neural Networks (ANN). Does the improved method of forecasting have a significant difference in the location and dispersion of ambulances over a geographic area? The forecast will be plugged into an optimized deployment model such as the dynamic available coverage location (DACL) model. Two different deployment patterns should arrive. The comparison will determine whether the optimized forecasting model actually saves resources (mileage, time, money, personnel, ambulances, etc.)