Smartphone-Enabled Volunteer Programs in Emergency Medical Services

Shane Henderson

Cornell University, School of Operations Research and Information Engineering

Abstract

Out-of-hospital cardiac arrest (OHCA) calls demand a fast response. In recent years, smartphone apps such as GoodSam and PulsePoint have arisen. Qualified volunteers install such an app on their phone. When an OHCA is received at ambulance dispatch, in addition to dispatching an ambulance, nearby volunteers are alerted through the app. Volunteers can potentially respond much faster than ambulance services, and that reduction in delay is critical to survival. We develop modeling methodology to inform the design of these programs using a combination of Poisson point processes and convex optimization to quantify the potential gains from varying numbers and types of volunteers. I'll discuss the modeling and sample results.

Joint work with Caroline Jagtenberg, Hemeng (Maggie) Li and Pieter van den Berg.