Drone networks to deliver defibrillators for cardiac arrest

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Background

Sudden cardiac arrests result in over 300,000 deaths across North America every year. Defibrillation is an effective means of resuscitation.

Cardiac arrests in rural and residential settings often do not have defibrillators close by. A drone may be able to deliver a defibrillator to the location before a conventional ambulance.

Implementation of drone-delivered defibrillators requires an optimized network of drones, intelligent dispatch decisions, and coordination with existing emergency services to maximize the benefit afforded to cardiac arrest patients.

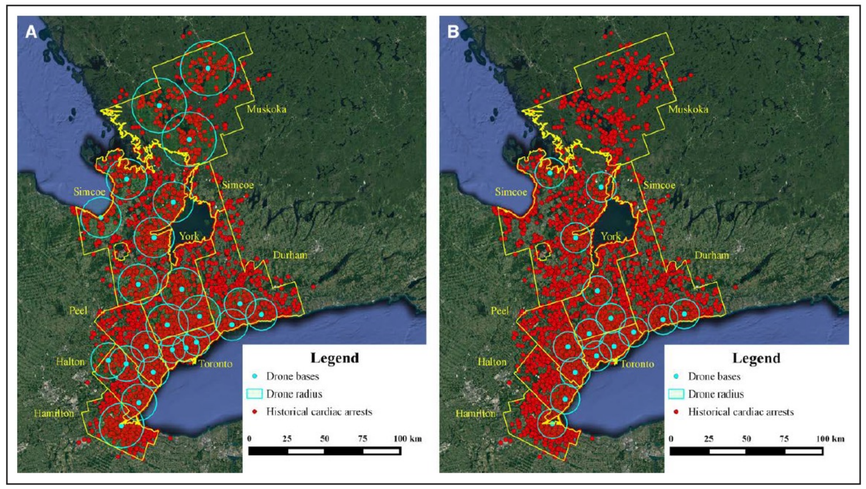
Methodology

Mathematical optimization models to determine locations for drones in order to achieve targeted response time reductions for cardiac arrest patients.

A data-driven decision model to determine when drones should be dispatched to potential cardiac arrests based on predicted travel times.

Results

We are working with Peel Regional Paramedic Services and Duke University to incorporate the proposed models in real-world trials.



Service areas in which a 1-minute reduction in median response time can be achieved when:

(A) Every paramedic service operates independently with their own drone bases

(B) Paramedic services share drone resources to cover integrated region

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