

Motorcycle-Based Emergency Medical Response *effectiveness in an urban city*

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Introduction

Long ambulance response time (ART) is related to poor patient outcomes in time-critical diseases. Yet increasing population demand, urban traffic congestion and misuse in non-emergencies frustrate efforts to meet existing ART targets. We hypothesize that motorcycle-based response vehicles are alternatives to traditional ambulances.

Objectives

Our objective is to compare, for the same incident dispatch, the response time of motorcycle-based response vehicles with that of ambulances. We hypothesize that the motorcycle platform may be more effective in achieving faster prehospital emergency care.

Methods

We conducted a retrospective descriptive study on all emergency ambulance calls in Singapore. Response time of both motorcycle-based Fast Response Paramedics (FRP) and ambulances were calculated with electronic timestamps from time-of-call and time-at-scene.

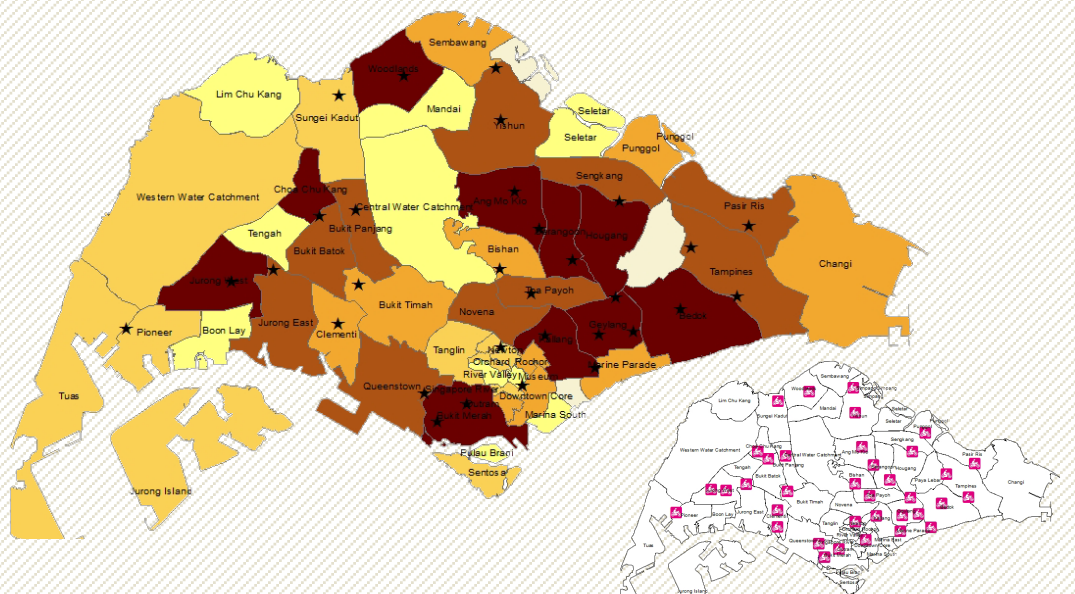
Other key variables extracted from the Singapore Civil Defence Force (SCDF)'s database include incident date, time, location and classification, as well as patient's age, incident classification and emergency status.

Results

Motorcycle-based FRPs were dispatched for 715 incidents from January - June 2011. 604 (84.4%) had Priority 1 or 2 statuses.

- FRPs had a mean (SD) response time of 7.52 (2.82) mins, compared to 10.44 (4.89) mins for ambulances dispatched for the same incidents.
- **FRPs arrived earlier than ambulances 68.8% of the time**, and in 24.2% they arrived within 30 seconds of each other.
- **Mean difference in response time was 4.37 (±4.01) minutes** for incidents where FRPs arrived earlier.
- In incidents where FRPs were not dispatched, 25.3% were of Priority 3 or 4. These made up ~ half of 6682 non-conveyed ambulance missions.

Time of Day	No.	Mean Response Time (mins)		P Value (95% CI)
		FRP	Ambulance	
All times	715	7.52 (±2.82)	10.44 (±4.89)	<0.01 (2.51 – 3.34)
Rush Hour	110	7.52 (±2.82)	10.44 (±4.89)	<0.01 (2.51– 3.34)
Non-Rush	605	7.40 (±2.77)	10.46 (±4.91)	<0.01 (2.61– 3.52)



Top No. of Ambulance Calls with Long Response Time (> 11 min)

Right SCDF motorcycle-based emergency medical vehicles

potential utility in reducing response time to time-sensitive emergencies

“ Motorcycle-based response vehicles achieved shorter response times compared to ambulances in a large urban city.

These findings can **encourage EMS planners to consider further use of motorcycle-based response vehicles in responding to time-critical diseases.** We also identified **potential for the use of these vehicles in triaging low priority incidents to reduce unnecessary ambulance missions.**

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