

DMC/WSU EMS FELLOWSHIP

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DETROIT

142.87 square miles of
which 138.75 sq mi
land and 4.12 sq mi
water



350 EMS Calls/day

FELLOWSHIP

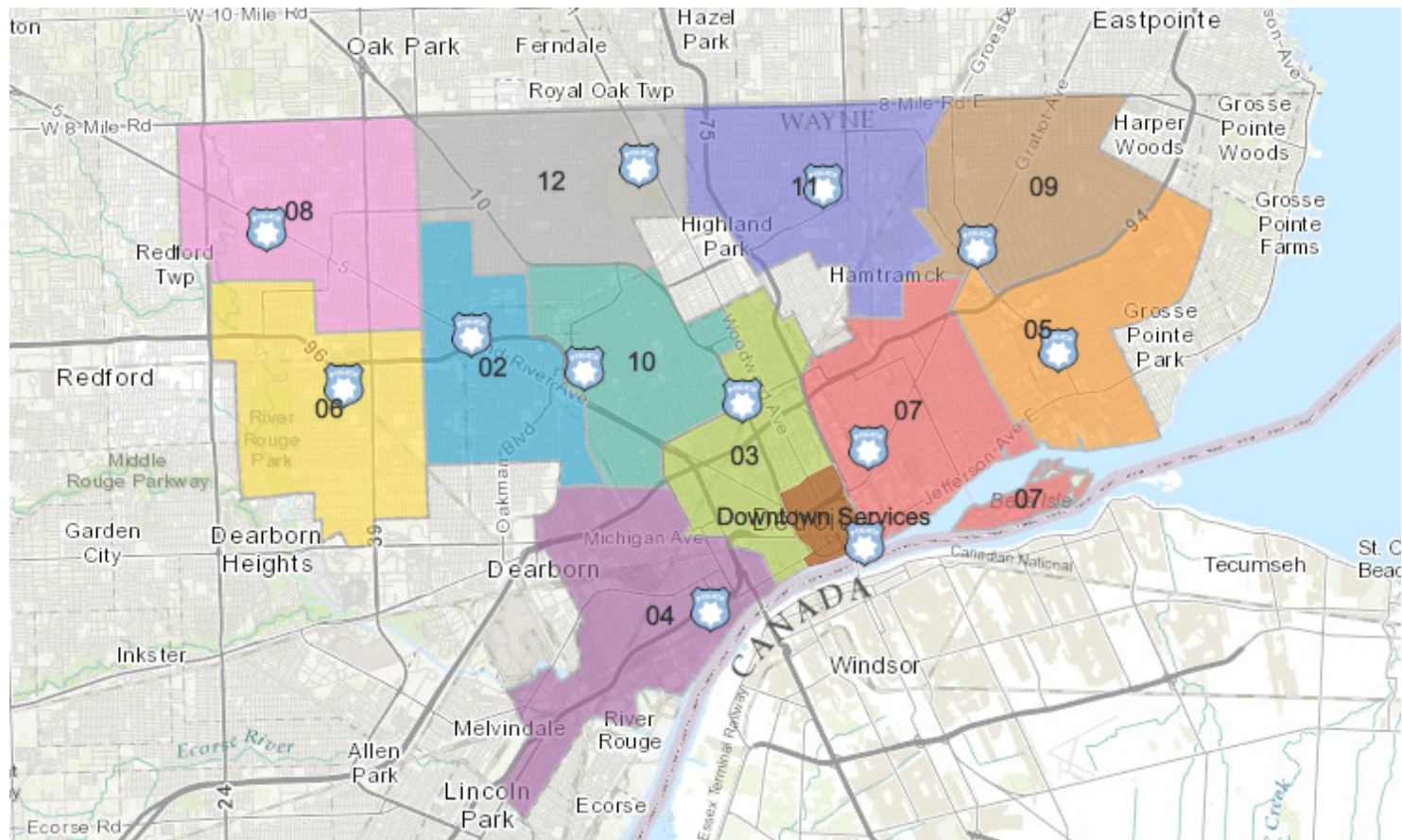
- Busiest area in the State of Michigan
- Fire Based EMS - primary Agency
- WSU based Research and Education
 - Existing Cardiac Arrest Research Program
 - Dedicated EMS data System
 - Current Prehospital Stroke Projects
- Multiple other Agencies
- Scalable Air Medical with Medstar
- Busy 911 Center
- Flexible Clinical Experiences



School of Medicine

Detroit East Medical Control Authority

- Designated by the Michigan Department of Health and Human Services (MDHHS) with the responsibility of EMS oversight in Detroit and Eastern Wayne County

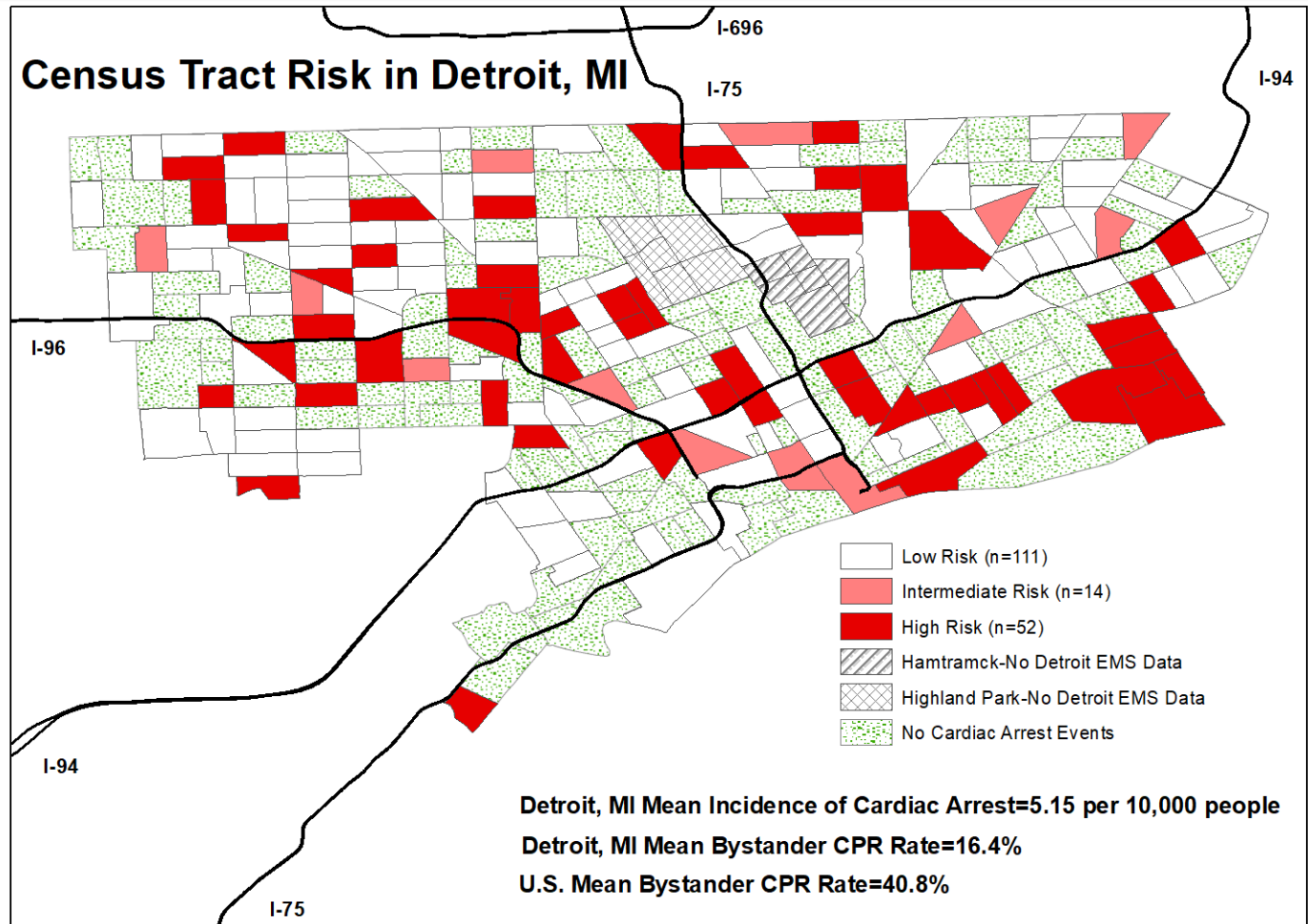


DFD

- Pro QA, MPD, Weekly review, CPR inst – started 7/15
- Accredited training center 1st time since 2008
- Frequent user tracking- field referrals
- Scheduled vehicle replacements occurring
- Updated all transport Monitors 12/2017 – cloud data
- New AED 2019 – cloud based data
- CPR data review
- PEER review
- DATA, Research Committee



Project: Geographic Targeting of Citizen CPR



Intermediate Risk: Incidence of Cardiac Arrest > 5.15 per 10,000 people, Bystander CPR Rates > 16.4% but < 40.8%

High Risk: Incidence of Cardiac Arrest > 5.15 per 10,000 people, Bystander CPR Rates < 16.4%

Project: Community/Citizen Response

- Culture change: everyone can respond
- Metrics:
 - Bystander CPR Rate
 - Bystander AED Application Rate
- Compare to national benchmarks
- Set goal for annual increase
- Celebrate saves
- CPR rate from 14% to 40.1% (2019)
- Detroit call takers are big part of this



Fellow Projects

Improvement in Non-Traumatic, Out-Of-Hospital Cardiac Arrest Survival in Detroit From 2014 to 2016

Spencer May, BA; Liying Zhang, PhD; Dan Foley, BA; Erin Brennan, MD, MPH; Brian O'Neil, MD; Ethan Bork, BA, EMT-P; Phillip Levy, MD, MPH; Robert Dunne, MD

Background—In 2002, the out-of-hospital cardiac arrest (OHCA) survival rate in Detroit was the lowest in the nation. Concerted efforts sought to improve the city's chain of survival with a focus on emergency medical services (EMS). This study assesses the impact on OHCA survival rates and describe factors associated with survival.

Methods and Results—Data for non-traumatic OHCA cases in Detroit from 2014 to 2016 were extracted from CARES (Cardiac Arrest Registry to Enhance Survival). Chi-squared tests, non-parametric tests, and a multivariable logistic regression analysis were employed to examine the associations between overall survival and its covariates. A total of 2359 non-traumatic OHCA cases were examined. The overall survival rate increased from 3.7% in 2014 to 5.4% in 2015, and 6.4% in 2016 ($P<0.01$), reflecting a 73% improvement in survival over the 3-year period. EMS median on-scene time decreased over the study period, while the rate at which EMS initiated cardiopulmonary resuscitation and applied an automated external defibrillator (AED) greatly increased ($P<0.001$). The factors significantly associated with survival were female sex (odds ratio=1.70, $P<0.05$), a public setting (odds ratio=2.31, $P<0.01$), an EMS witness (odds ratio=6.18, $P<0.01$), and the presence of an initial shockable rhythm (odds ratio=1.88, $P<0.05$).

Conclusions—From 2014 to 2016, the overall survival rate for OHCA patients in Detroit, MI significantly improved. Our results suggest that an improved chain of survival may explain this progress. This study is an example of how OHCA data analysis and EMS improvement can improve end OHCA outcomes in a resource-limited urban setting. (*J Am Heart Assoc.* 2018;7:e009831. DOI: 10.1161/JAHA.118.009831.)

Key Words: African American, Black, resource-limited, cardiac arrest • emergency medical services • out-of-hospital cardiac arrest • sudden cardiac arrest • surveillance • survival • survival rate • urban

Out of hospital cardiac arrest (OHCA) is a major cause of death in the United States.¹ An estimated 395 000 cases of OHCA occur in the United States every year, and 2005 to 2010 data from the CARES (Cardiac Arrest Registry to Enhance Survival) showed that the nation's overall survival rate to hospital discharge was 9.6%.² By targeting elements predictive of survival, improvements to OHCA care over the past decade has resulted in greater national overall survival rates.³

($n=1$) of patients survived to hospital discharge among 471 confirmed OHCA cases.⁴ This survival rate reflects the lowest ever reported among similar cities in the United States and highlights how, at the time, OHCA was an almost uniformly fatal event in Detroit, MI.

Detroit OHCA data during the next decade are limited, as many of the city's systems were less functional during the city's financial decline and ultimate bankruptcy.⁵ Since the

Project: CPR Quality: Live Feedback



Project: CPR Quality: Follow up Feedback

Manage Cases (/CaseFile/Manage) Upload (/CaseFile/Upload) Tags (/Tags/TagManager) Help (/Help/CaseReviewHelp/Basic/Basic.htm)

Case start: 1/16/2019 14:57:17

Patient ID / MRN: Patient 0092, Device/Unit ID: M23B, Duration: 00:51:33

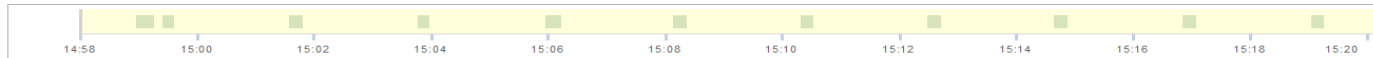
Case Summary Playback **CPR Performance** CPR Zoom Exports

Print

CPR TIMES			
Power on time:	14:57:17	Time to first compression:	00:44
Pads on time:	14:57:57	Time to first shock:	00:00
Power off time:	15:48:50	Total time in CPR:	22:11

LEGEND			
<input type="checkbox"/>	In target	<input type="checkbox"/>	CPR period
<input type="checkbox"/>	Out of target	<input type="checkbox"/>	Pause period
<input type="checkbox"/>	Target band	<input type="checkbox"/>	ROSC period

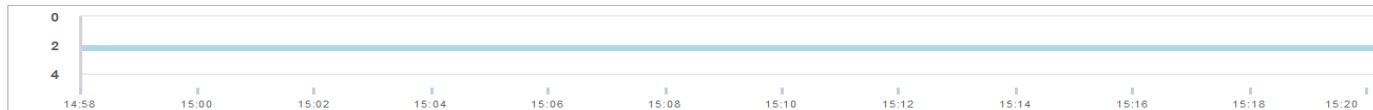
CPR event summary



Depth: Adult Target (2.0 - 2.4 in)

72% in target depth

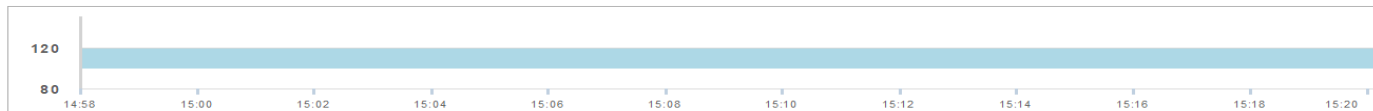
Average CPR depth: 2.1 in



Rate: Target (100 - 120 cpm)

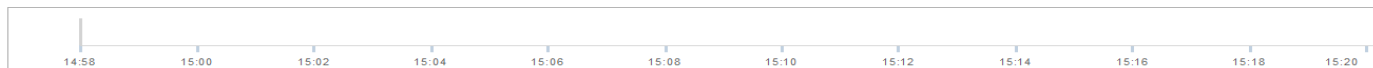
86% in target rate

Average CPR rate: 107 cpm



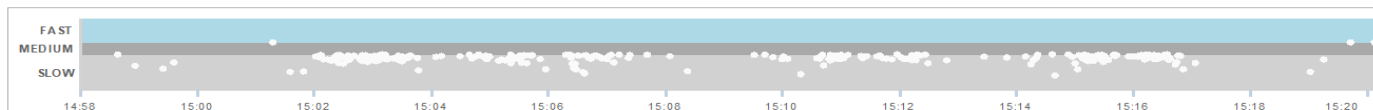
Compressions in target

63% Compressions in target



Release velocity trend: Target (400+ mm/s)

Average release velocity: 352 mm/s



FELLOWSHIP VEHICLE



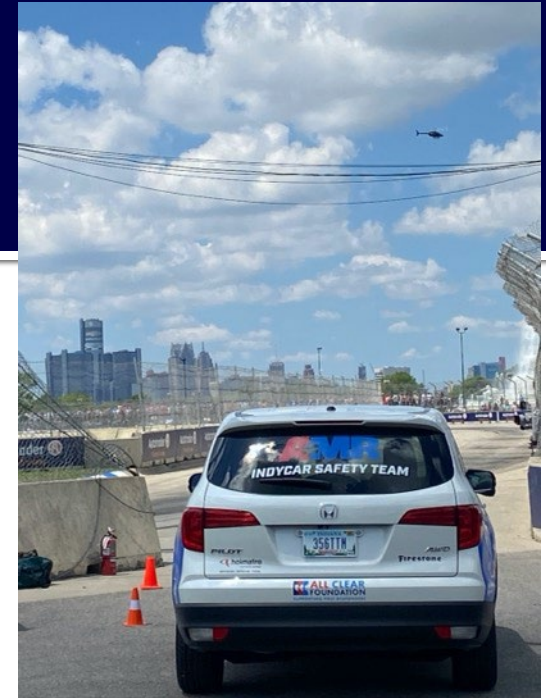
FELLOWSHIP VEHICLE



SPECIAL EVENTS



SPECIAL EVENTS



QUESTIONS?
