Cardiac Arrest Ambulance Runs

Facts and Trends (Calendar Year 2018)

Office of Preparedness and Emergency Health Care
Division of Public Health

Background

Wisconsin Ambulance Run Data System (WARDS)

Purpose

This report uses Wisconsin ambulance run data to examine out-of-hospital cardiac arrest and highlight the need for bystander-initiated cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED) intervention.

Methods

All ambulance runs between January and December 2018 were pulled from WARDS. Cardiac arrest events were identified in an emergency medical services (EMS) ambulance run if the primary or secondary impression, primary or secondary complaint, or incident narrative report indicated cardiac arrest had occurred. Ambulance runs where cardiac arrest occurred during response or transport were also included. This report also distinguishes workable from unworkable cases of cardiac arrest. Unworkable cardiac arrest events indicate that a patient did not receive treatment by EMS personnel due to obvious death with rigor mortis or lividity, injuries incompatible with life, or the presence of a valid do not resuscitate (DNR) order.

Core Results

- Cardiac arrests remain stable across the year and most occur during regular business hours.
- Males over 50 have the highest volume of cardiac arrest and males over 80 are at disproportionate risk for cardiac arrest compared to other age and gender groups.
- Those under the age of 5 had disproportionate risk of cardiac arrest compared to other pediatric groups.
- CPR and/or AED prior to EMS arrival was provided in slightly more than half of cardiac arrest cases and less than 7% had evidence of dispatch-assisted CPR.
- CPR and/or AED prior to EMS arrival was usually performed by first responders, not lay bystanders.

Call to Action

The Office of Preparedness and Emergency Health Care (OPEHC) is currently engaged in initiatives to expand emergency medical dispatch (EMD) services and promote greater bystander intervention in cardiac arrest events. More timely and effective intervention during a cardiac arrest event can exponentially decrease patient mortality. This is key, as complications from heart disease are a major leading cause of death in Wisconsin. For more information on how to enroll in CPR and AED intervention training and education, visit the American Heart Association website at: https://cpr.heart.org/en/course-catalog-search.

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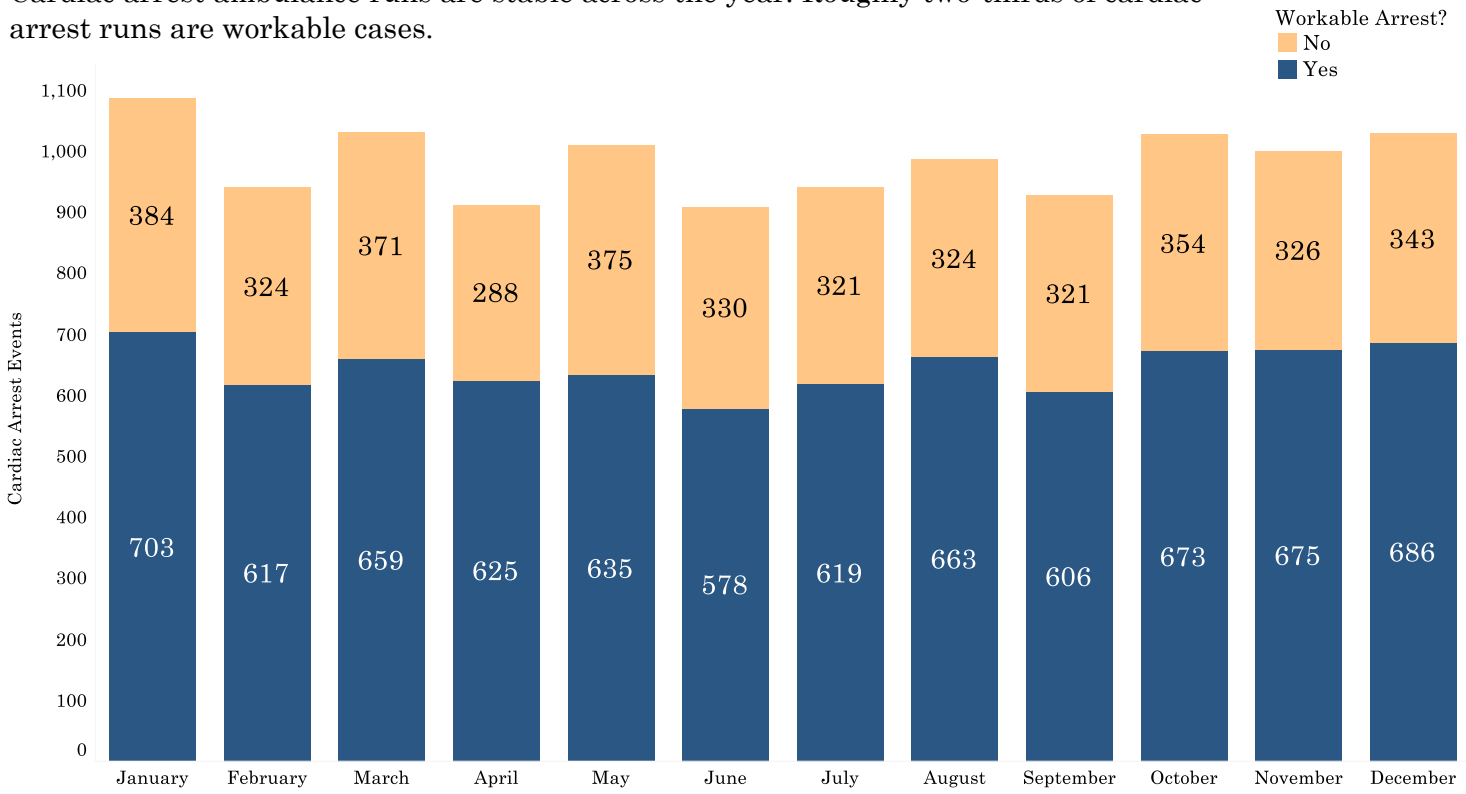
Overall Trends by Month and Time of Day

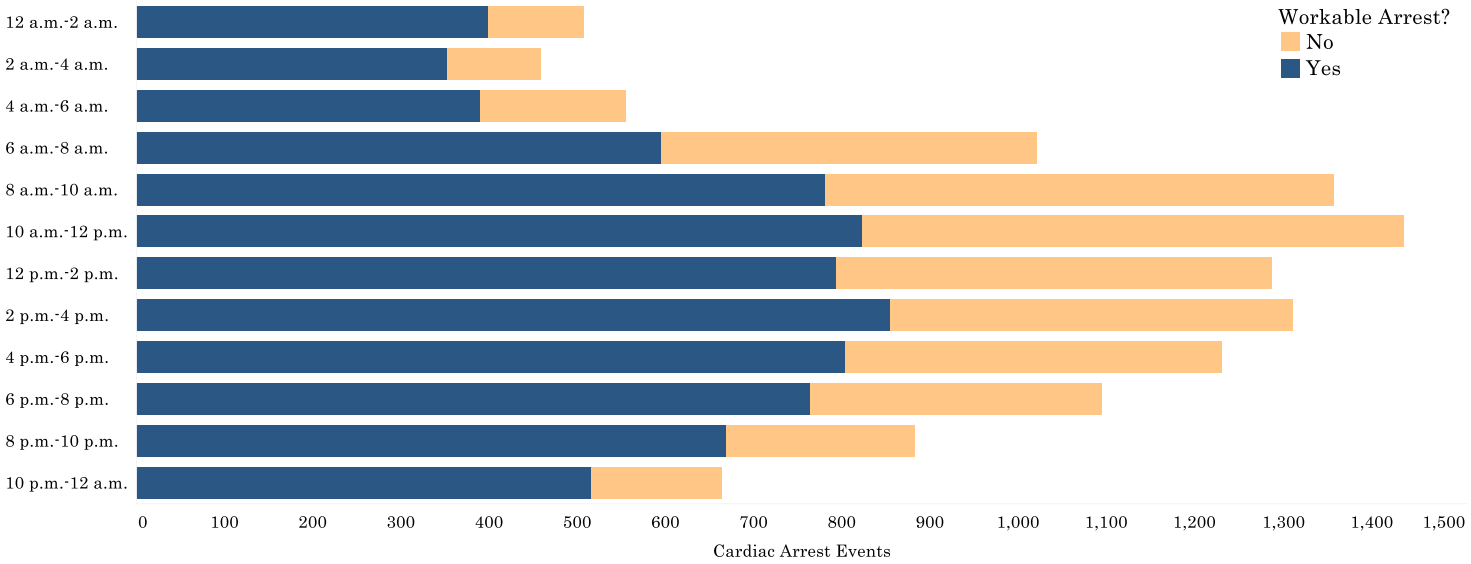
Number of Cardiac Arrest Ambulance Runs by Month

Cardiac arrest ambulance runs are stable across the year. Roughly two-thirds of cardiac arrest runs are workable cases.



Number of Cardiac Arrest Ambulance by Time of Day

Most cardiac arrest ambulance occur between 8 a.m. and 6 p.m. The proportion of unworkable cardiac arrest cases also tends to increase during this period.



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Demographics of Workable Cardiac Arrest Ambulance Runs

Workable Cardiac Arrest Volume by Age and Gender

	Male	Female
0-4	98	62
5-9	14	11
10-14	15	17
15-19	57	25
20-29	239	133
30-39	348	193
40-49	437	221
50-59	842	440
60-69	1,155	558
70-79	925	550
80+	779	569

Low High

Workable Cardiac Arrest Rate per 10,000 by Age and Gender

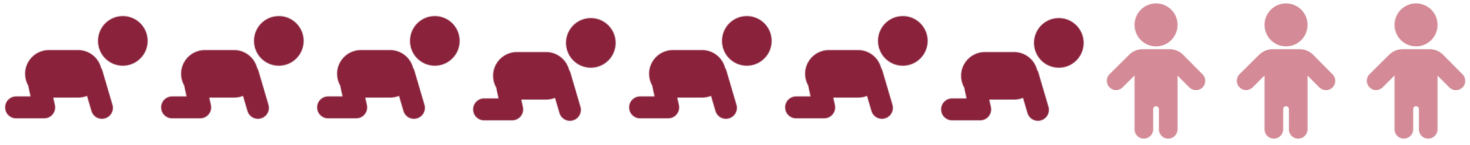
	Male	Female
0-4	5.42	3.78
5-9	0.77	0.64
10-14	0.74	0.95
15-19	2.78	1.29
20-29	6.01	3.47
30-39	9.12	5.18
40-49	12.07	6.32
50-59	19.73	10.35
60-69	32.21	15.10
70-79	48.66	25.88
80+	81.81	37.16

Low High

Males over the age of 50 represented the highest volume of cardiac arrest runs. Males over the age of 80 had more than twice the rate of cardiac arrest ambulance runs per 10,000 than nearly every other age group. Both male and female patients under the age of 5 had at least twice the volume and rate of cardiac arrest ambulance runs per 10,000 than nearly every other pediatric age group.

Cardiac Arrest Ambulance Runs for Children Under the Age of 5

For the pediatric population under the age of 5, approximately **70%** of cases were under the age of one at the time of the cardiac arrest ambulance run.



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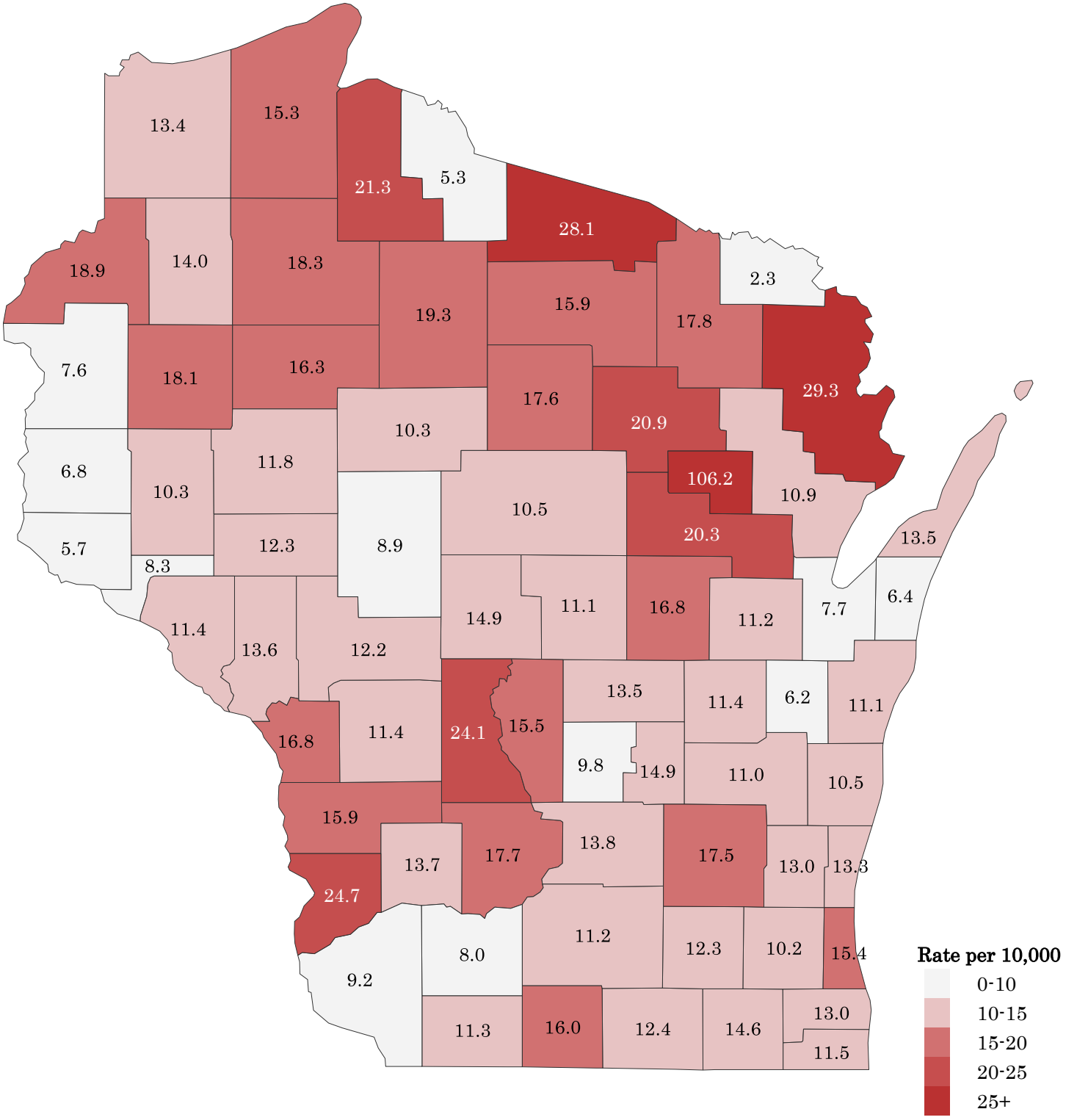
Workable Cardiac Arrest Ambulance Runs by County

Rate of Workable Cardiac Arrest Ambulance Runs per 10,000 by Incident County



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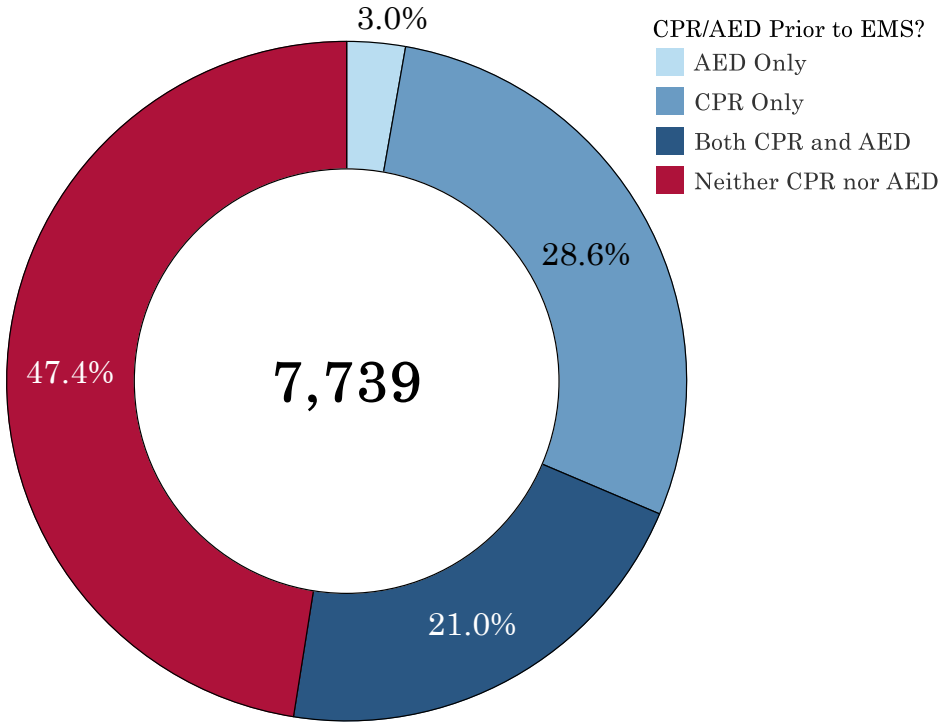
Cardiac Arrest Ambulance Runs

CPR and/or AED Prior to EMS Arrival and EMD

Workable Cardiac Arrest Runs with CPR or AED Prior to EMS Arrival

In more than half of workable cardiac arrest ambulance runs, CPR and/or AED was provided prior to arrival by EMS personnel. However, in the remaining **47%** of workable cases, neither CPR nor AED was administered prior to EMS arrival on-scene. A potential reason for this result is due to a lack of training or comfort by bystanders to engage in life-saving procedures. This is of key concern, as more timely and effective intervention during a cardiac arrest event can exponentially decrease patient mortality.

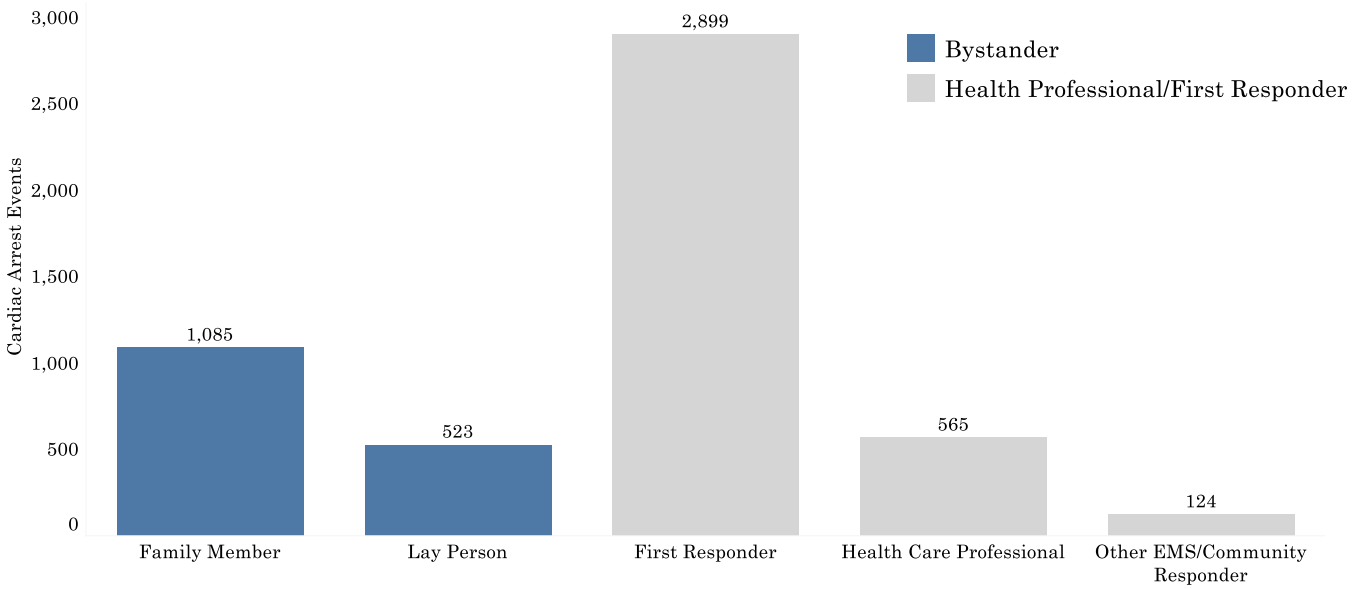


Emergency Medical Dispatch (EMD) Services with Instructions

<7% of workable cardiac arrest ambulance runs have evidence of documented EMD with pre-arrival instructions. OPEHC is funding an initiative to provide broader EMD training and expand the reach of dispatch-assisted CPR.

Who Initiated CPR and/or AED Prior to EMS Arrival for Workable Runs

In most cases of workable cardiac arrest, CPR and/or AED was administered by a health professional or first responder prior to EMS arrival, rather than bystanders. OPEHC is actively engaged in efforts to expand EMD and community training to increase bystander-initiated CPR and/or AED.



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