

Assessing Geographic Disparities in Stroke Care Access and Mortality in New York State

Spencer Keable, MPH¹, Kathleen Wales, BS¹, Krystal Parrigan-Oades, MS¹, Ian Brissette, PhD¹

¹New York State Department of Health, Bureau of Chronic Disease Evaluation and Research

Background

Stroke caused 6,433 deaths and nearly 48,000 hospitalizations in New York State (NYS) in 2020. NYS Department of Health (DOH) Designated Stroke Centers provide advanced stroke care. Timely treatment is critical to reducing stroke mortality and morbidity. Lack of awareness of signs and symptoms and long transport times contribute to stroke patients not arriving in time for optimal treatment. When 911 is called for a stroke, patients can be given care by EMS during transport to the hospital and receive faster treatment upon arrival.

Methods

Stroke mortality data for 2018-2020 was obtained from NYS Vital Records. Drive time from each US Census block group center of population to the nearest NYSDOH-Designated Stroke Center was calculated using ArcGIS Pro Network Analyst. Average drive times were calculated for each NYS county. Stroke patient mode of arrival data for 8/1/22-8/31/23 was obtained from NYS Get With The Guidelines Stroke Registry, American Heart Association. Upstate NY was defined as all counties outside of New York City, Long Island, and Westchester county.

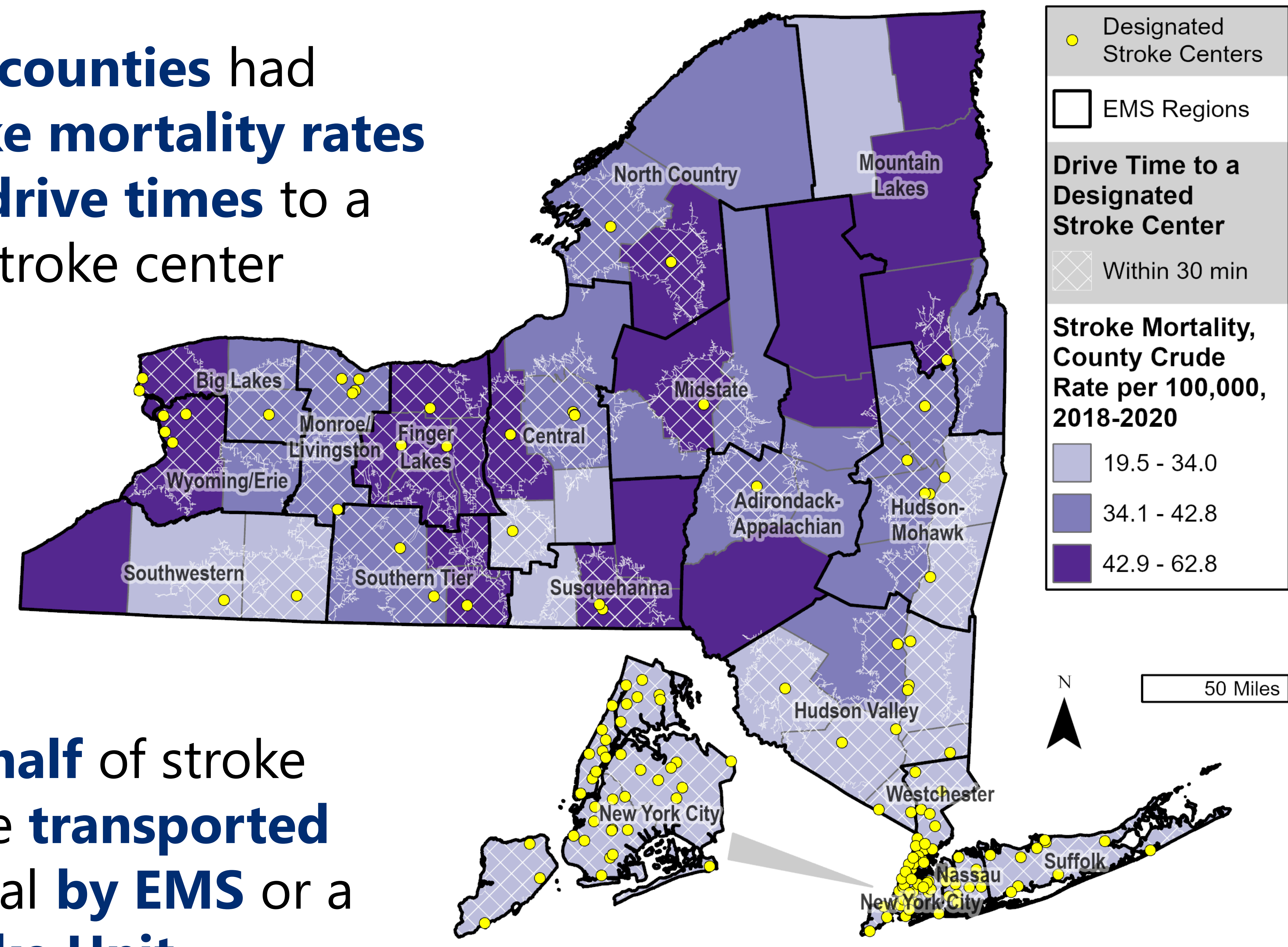
Results

Measure	Mean		p-value
	Upstate	Downstate	
Stroke Mortality, Crude Rate	40.6	26.8	<0.0001
Stroke Mortality, Age-Adjusted Rate	29.0	21.2	0.0001
Average Drive Time to a Designated Stroke Center	20.4	7.9	<0.0001

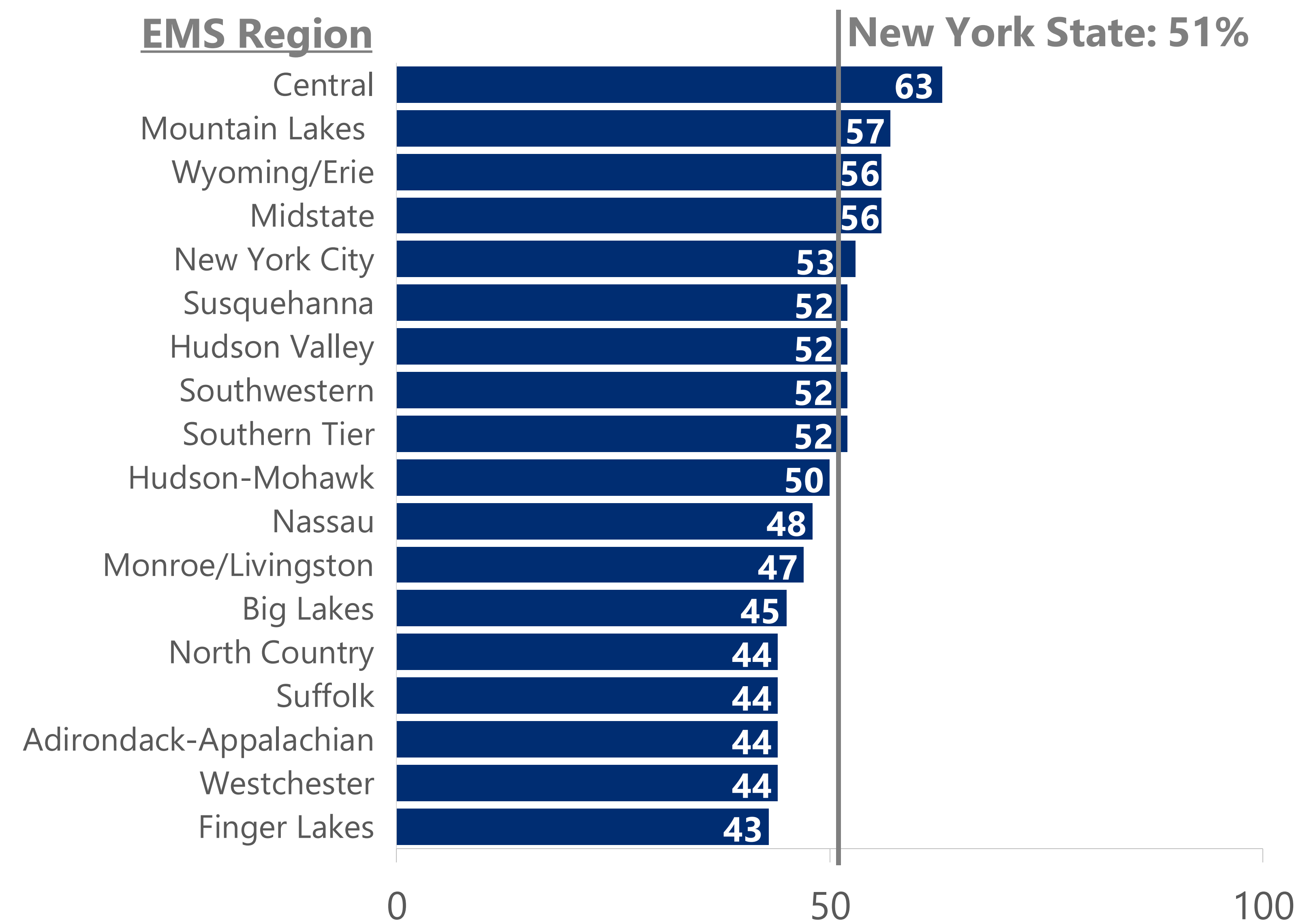
Conclusions

Upstate NY counties had higher crude and age-adjusted stroke mortality rates and longer average drive times. 51% of stroke patients in NYS were transported to a hospital by emergency medical services (EMS) or a mobile stroke unit.

Upstate NY counties had **higher stroke mortality rates** and **longer drive times** to a designated stroke center



Only **about half** of stroke patients were **transported** to the hospital **by EMS** or a **Mobile Stroke Unit**



Recommendations

Key opportunities to increase timely access to evidence-based stroke care, prevent recurrent strokes and reduce stroke mortality and morbidity include:

1. Promoting culturally and linguistically appropriate stroke education to help residents recognize stroke and encourage calling 911 for EMS transport;
2. Supporting EMS use of validated stroke severity scales to identify patients in need of care at a higher-level stroke hospital and inform transport decisions;
3. Improving EMS to hospital handoffs to coordinate efficient patient transitions throughout stroke systems of care;
4. Improving hospital to community handoffs to coordinate risk factor management, medication adherence and post-stroke care.