

# TENNESSEE STROKE REGISTRY REPORT, 2014

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## Background

- Stroke is the 5<sup>th</sup> leading cause of death in Tennessee<sup>1</sup>
- The Tennessee Stroke Registry (TSR) Act<sup>2</sup> of 2008 established a statewide stroke database with annual reports produced by East Tennessee State University's College of Public Health
- The TSR is a partnership between East Tennessee State University's College of Public Health, American Heart/American Stroke Association (AHA), and the Tennessee Department of Health
- The TSR report is generated from data which are voluntarily input by hospitals in Tennessee who participate in the AHA-supported quality improvement program, Get with the Guidelines-Stroke

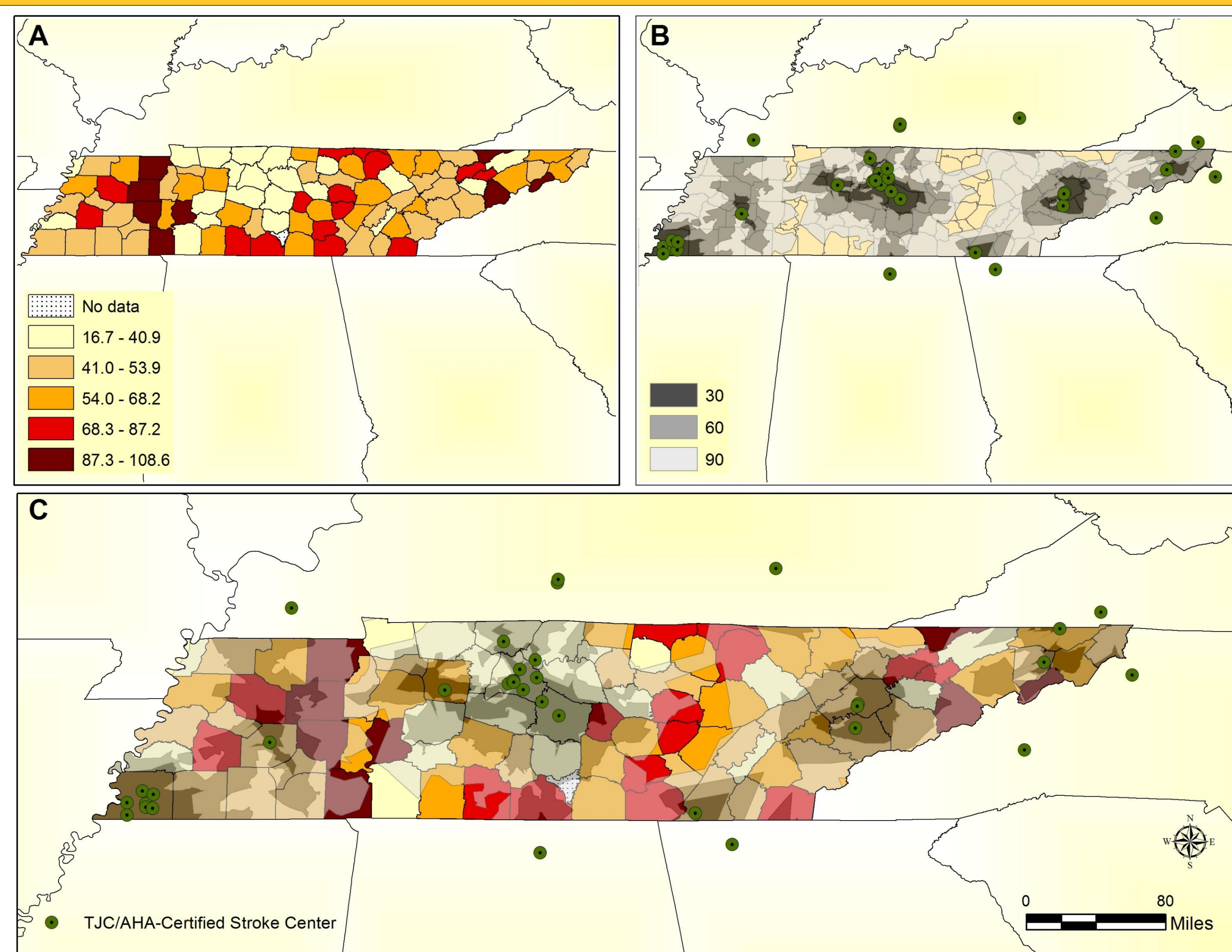
## Objectives

- To provide information about stroke in Tennessee to residents, health care professionals, and policy makers
- To highlight key findings of the 2014 Tennessee Stroke Registry Report
- To produce a map of the locations of certified stroke centers in TN and a choropleth of stroke mortality rates across the state
- To identify areas of stroke disparities in Tennessee as reflected by various stroke mortality rates across the state and locations of certified stroke centers
- To identify distributions of stroke risk factors (gender, age, etc.) across stroke types

## Methods

- ArcMap 10.2 was used to map mortality data, location of stroke centers, and service areas for 30, 60 and 90 minutes from stroke centers
- Primary and Comprehensive Stroke Centers were identified through The Joint Commission quality check search engine; addresses were obtained from hospital websites then geocoded into a point shapefile in ArcGIS using the Geocode Addresses tool
- Aggregate data was abstracted from Quintiles, the online software used by GWTG-Stroke participating hospitals to input data
- Microsoft Excel was used to generate charts and graphs to illustrate the data collected by the TSR

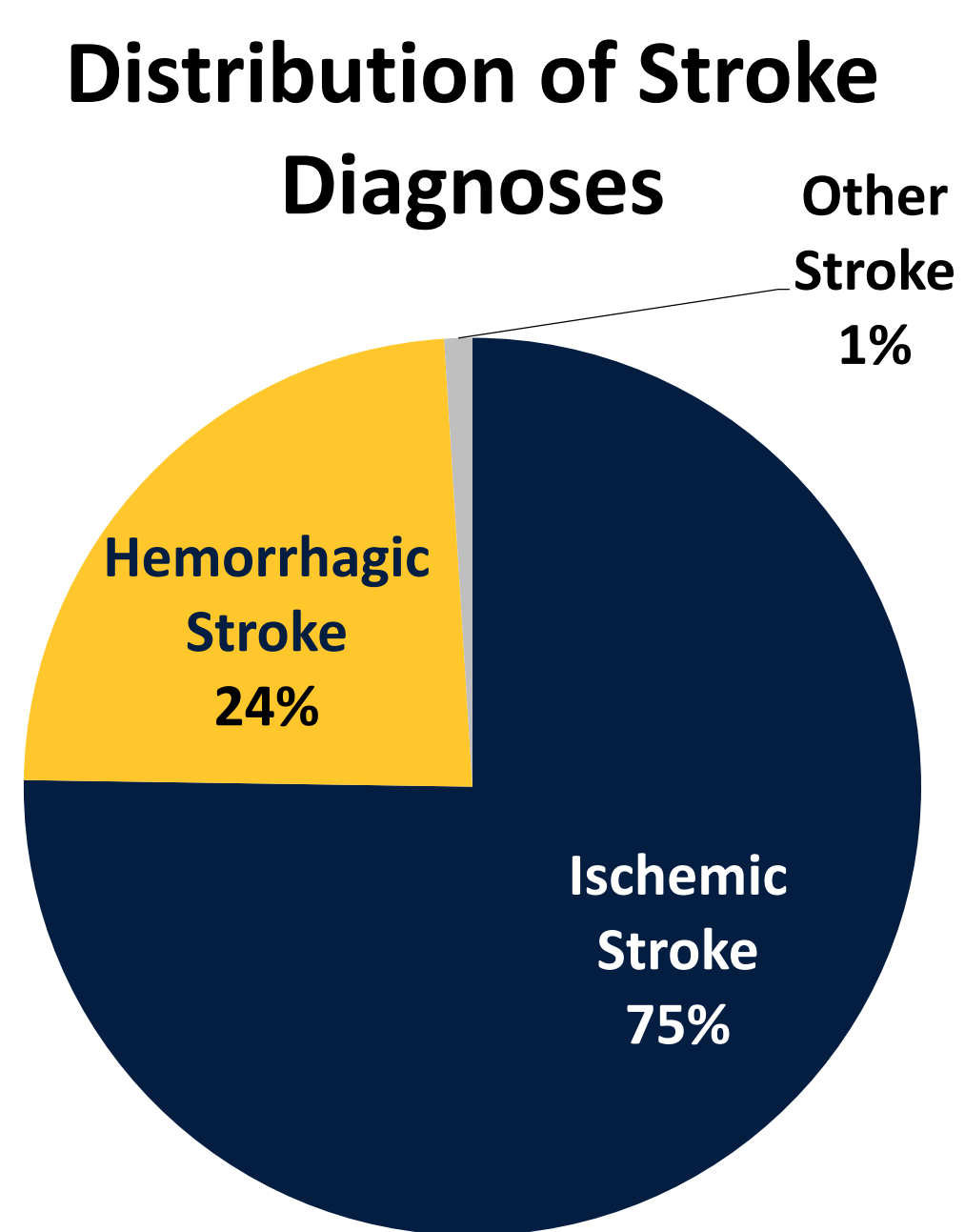
## Results<sup>3</sup>



**Figure 1: Map of Stroke Centers and Travel Time** illustrates the stroke mortality rates per 100,000 population<sup>4</sup> for each county in Tennessee (A) and shows the location of the 26 certified stroke centers in Tennessee and the 9 stroke centers in bordering states within 50 miles of the Tennessee border<sup>5</sup> and travel times to each stroke center are mapped for 30, 60 and 90 minutes (B). The map of 30, 60 and 90 minute service areas were then overlaid onto the map of mortality data (C).

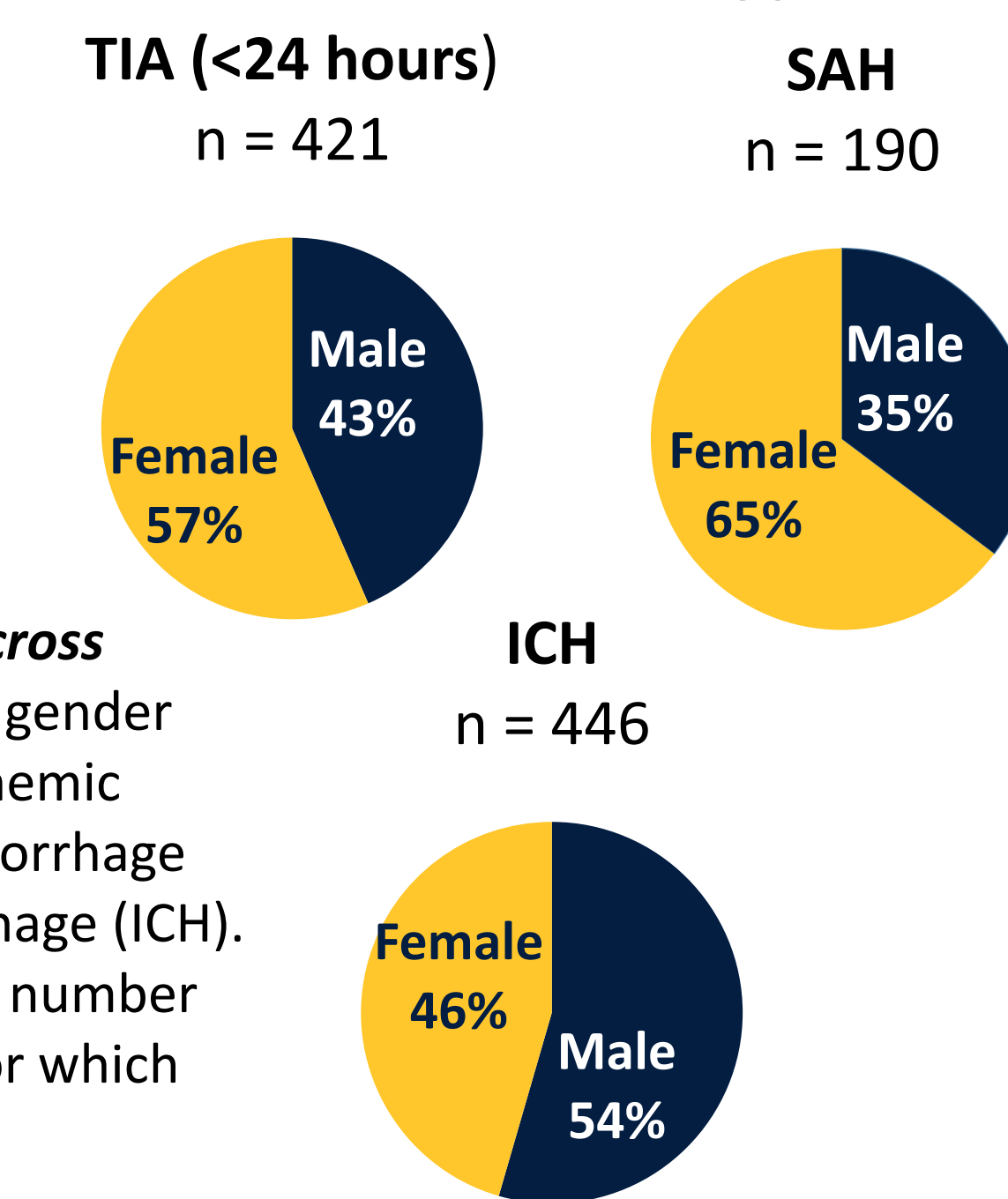
**Table 1: Population within Each Service Area** shows what percentage of the state's population lies within 30, 60, and 90 minutes of a certified stroke center and outside 90 minutes.

TN Population, 2010 <sup>6</sup>	6,346,105
Population within 30 min	45.1%
Population within 60 min	69.8%
Population within 90 min	89.1%
Population more than 90 min	10.9%



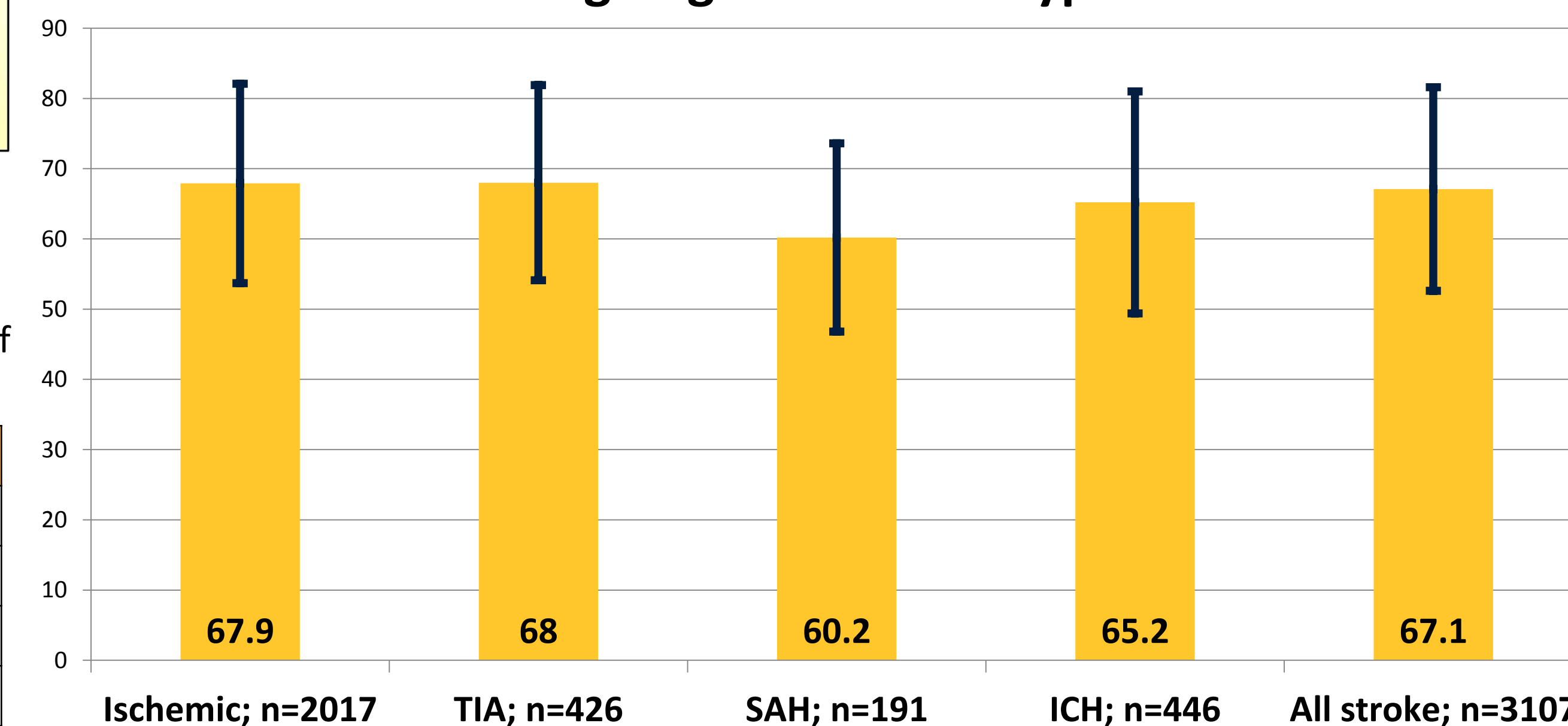
**Figure 2: Distribution of Stroke Diagnoses** illustrates the distribution of stroke types among 2,681 stroke patients, excluding TIA.

### Gender Distribution across Various Stroke Types



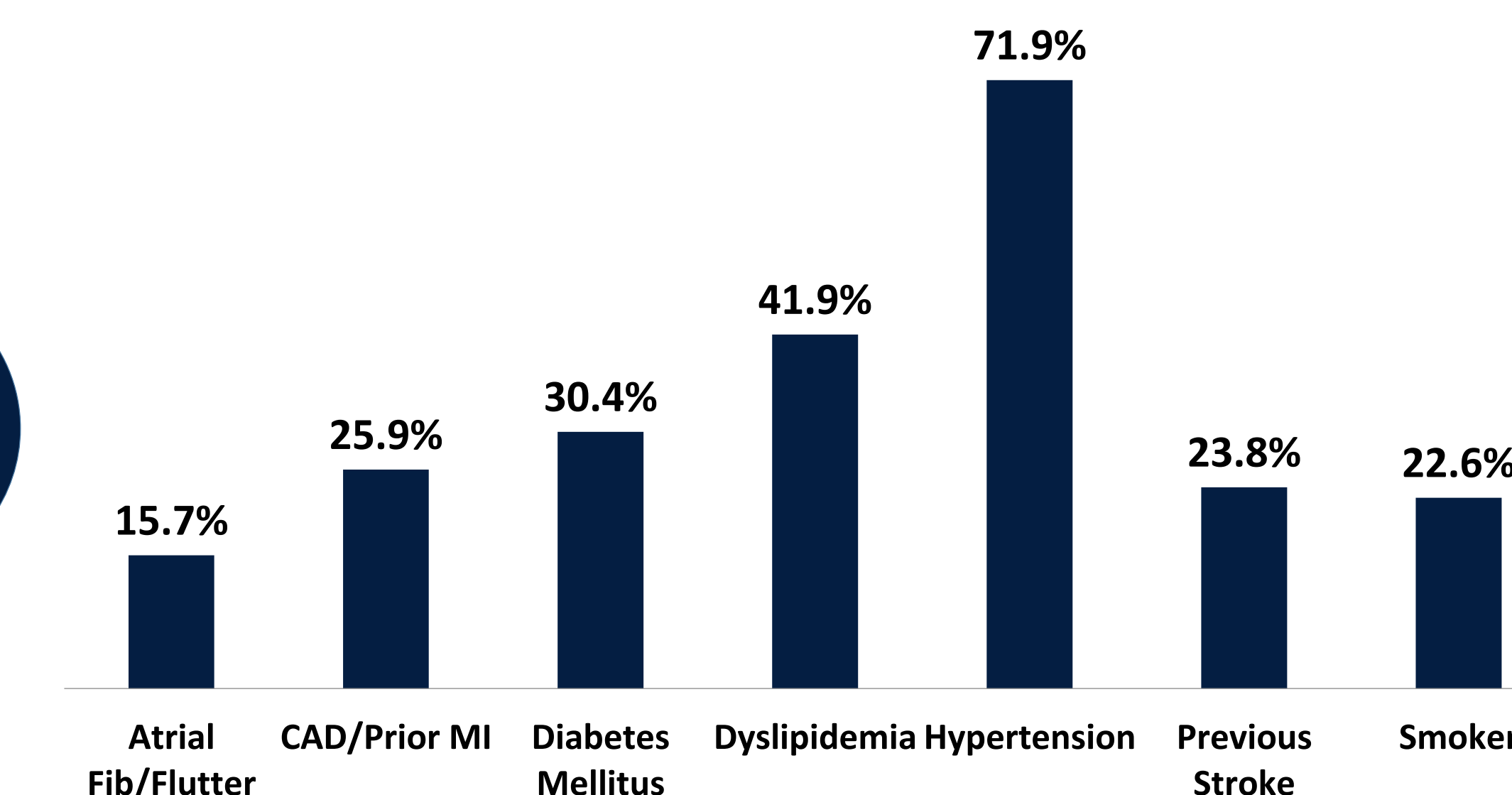
**Figure 3: Gender Distribution across Various Stroke Types** shows the gender distribution across transient ischemic attacks (TIA), subarachnoid hemorrhage (SAH) and intracerebral hemorrhage (ICH). For each chart, n represents the number of patients of that stroke type for which gender was reported.

### Average Ages of Stroke Types ± 1σ



**Figure 4: Average Ages of Stroke Types ± 1σ** shows the average ages and one standard deviation for each type of stroke and all strokes, with n representing the number of patients of that stroke type with age reported.

### Co-morbidities among Stroke Patients



**Figure 5: Co-morbidities among Stroke Patients** shows the top seven co-morbidities of the 3,080 files with a co-morbidity recorded with the corresponding percentage of patients with that co-morbidity. Percentages total to more than 100% due to multiple co-morbidities among patients.

## Conclusions

In 2014, stroke types (i.e. hemorrhagic and ischemic) exhibited different characteristics than stroke overall and geographic disparities were highlighted through the descriptive mapping. Regions with clusters of certified stroke center (i.e. the Nashville area) tend to have lower rates of stroke mortality. Clusters of stroke centers appear to have a greater association with lower stroke mortality rates than does the presence of a single stroke center. Identifying and understanding these differences and disparities in stroke mortality can help in addressing ways to improve stroke care and outcomes in Tennessee.

References Cited – a list of full references is available upon request

- Tennessee Deaths, 2013
- Tennessee Stroke Registry Act, 2008
- Quintiles
- Tennessee Department of Health web site
- American Heart/American Stroke Association
- quickfacts.census.gov

