

2019 GEORGIA STROKE CONFERENCE

Burden of Stroke In Georgia

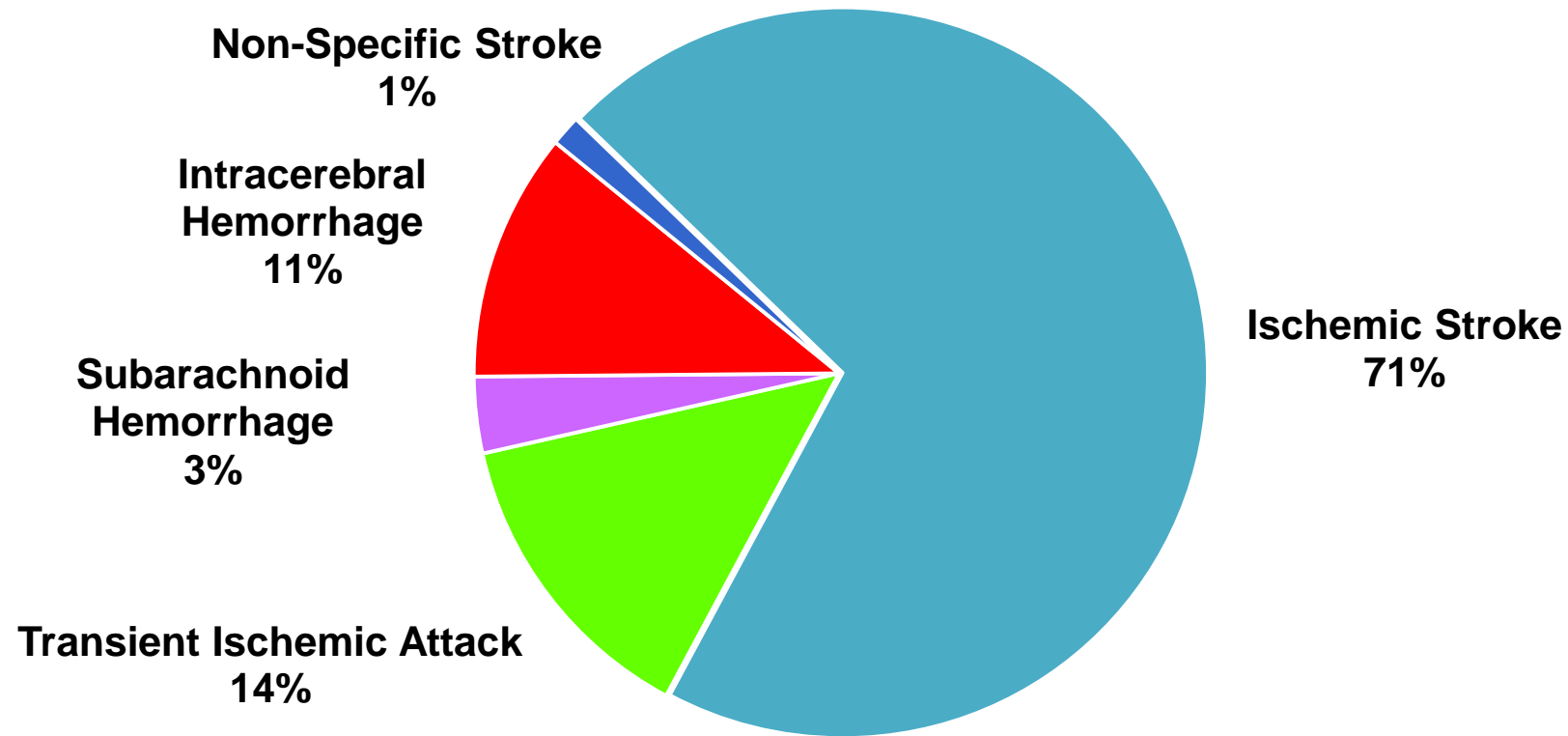
Georgia Coverdell Acute Stroke Registry

Moges Seyoum Ido / Georgia Department of Public Health / February 28, 2019

Outline

- How much are we affected?
 - Where do we stand compared to others?
 - Stroke & Stroke-related Risk Factors
- What has been done and achieved?
- Areas for improvement

Types of Stroke, GCASR Admissions, 2017



Major Modifiable Risk Factors

- Uncontrolled hypertension
- High blood cholesterol level
- Diabetes mellitus
- Atrial fibrillation
- Obesity
- Smoking
- Lack of physical activity

Definition of Ideal Cardiovascular Health¹

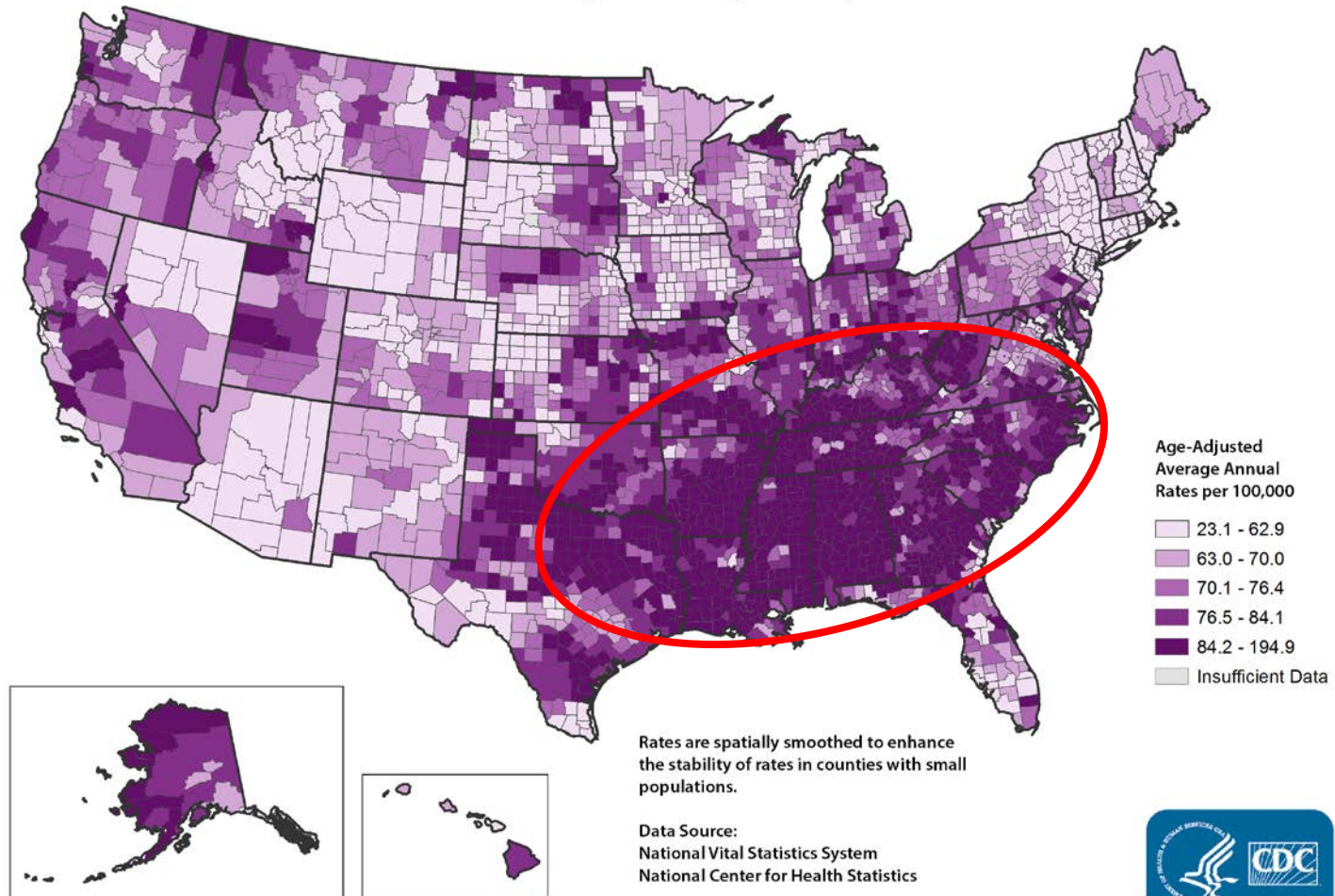
Metric	Goal: Ideal Cardiovascular Health Definition
Smoking	Never or quit > 12 month ago
Body mass index	< 25 kg/m ²
Physical activity	> 150 min/week moderate intensity, or > 75 min/week vigorous intensity, or Combination
Total cholesterol	< 200 mg/dL†
Blood pressure	< 120/_80 mm Hg†
Fasting plasma glucose	< 100 mg/dL†
Healthy diet score	4–5 Components*

1. Lloyd-Jones DM, et. al. *Circulation*. 2010;121:586-613

MORATLITY

Stroke Belt

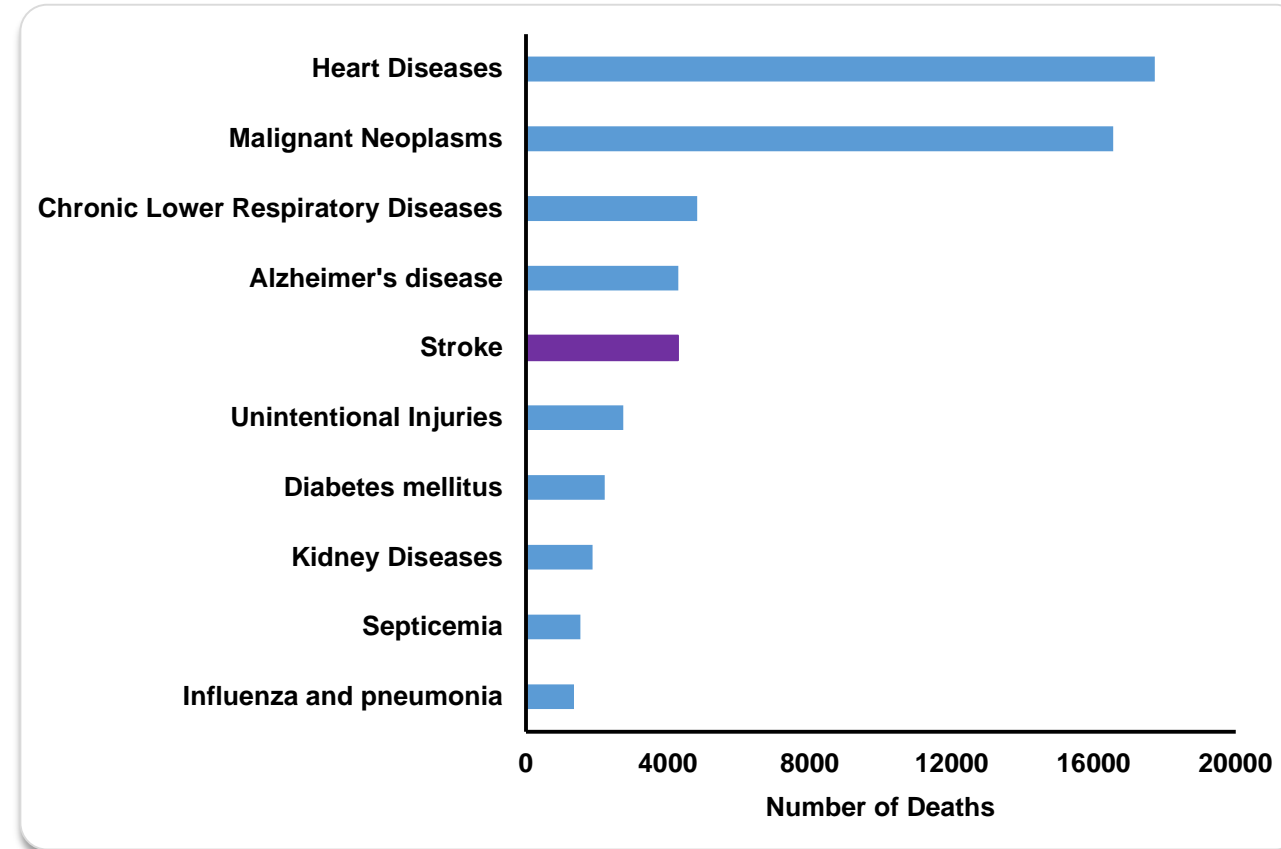
Stroke Death Rates, 2014 - 2016
Adults, Ages 35+, by County



— Stroke Belt

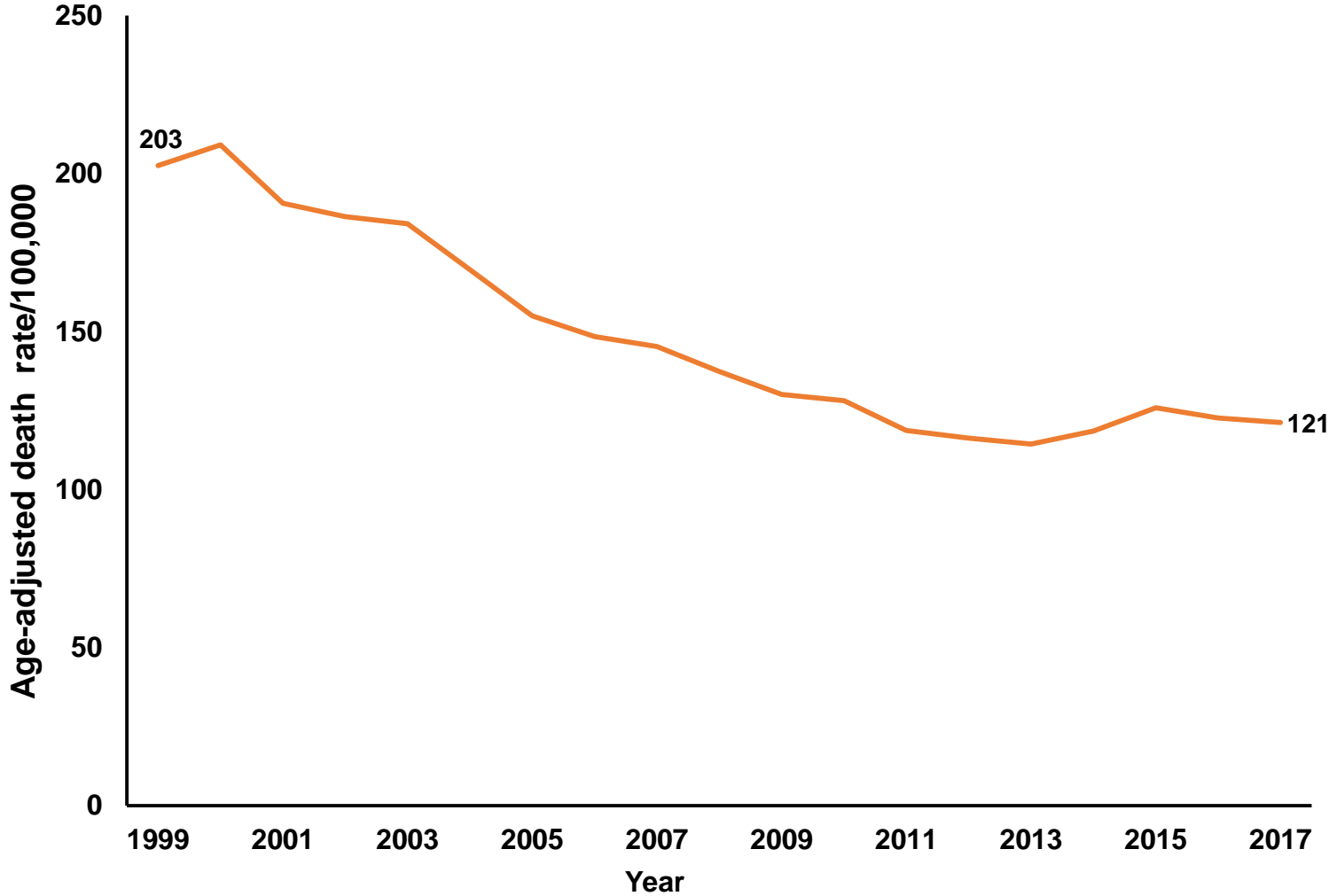
Mortality

- ~ 4,400 died from stroke in 2017
- the 5th leading cause of death among adults >45 years
- Georgia ranks 7th in AAMR among the 50 states

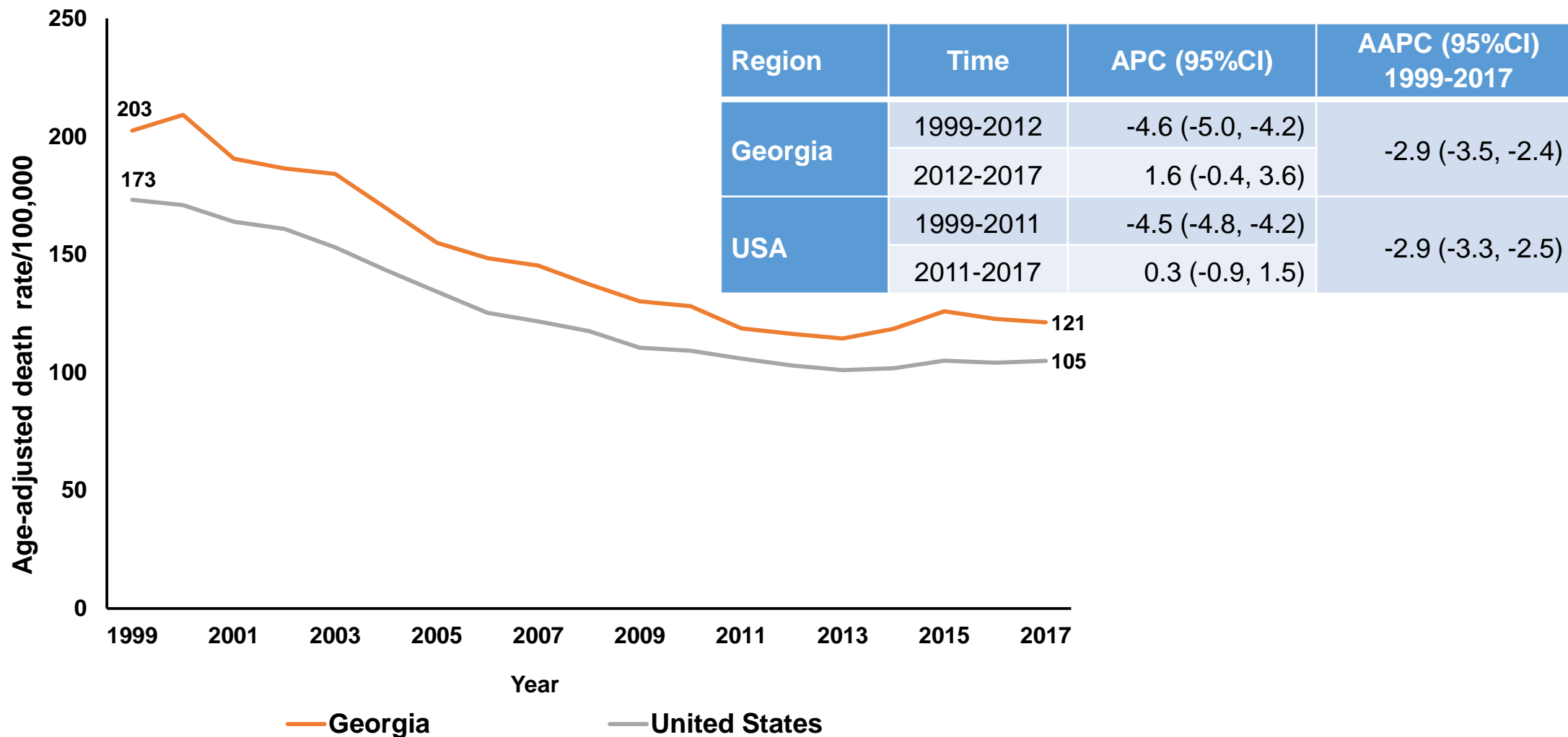


Top Ten Leading Causes of Death Among Adults 45 years and Older in Georgia in 2017

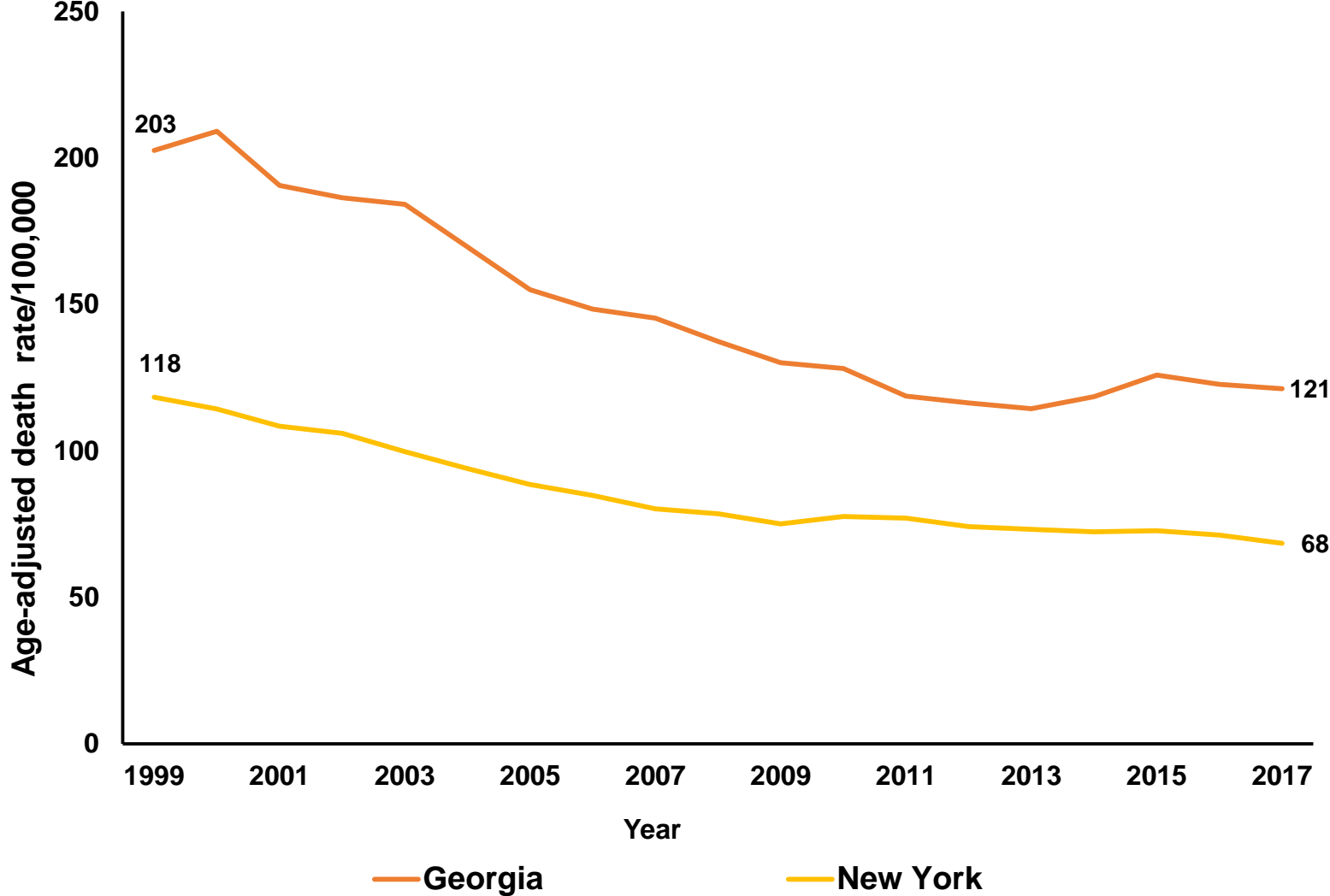
Age-adjusted Mortality Rate among Adults 45 years and Older by Calendar year, Georgia 1999–2017



Age-adjusted Mortality Rate among Adults 45 years and Older by Calendar year



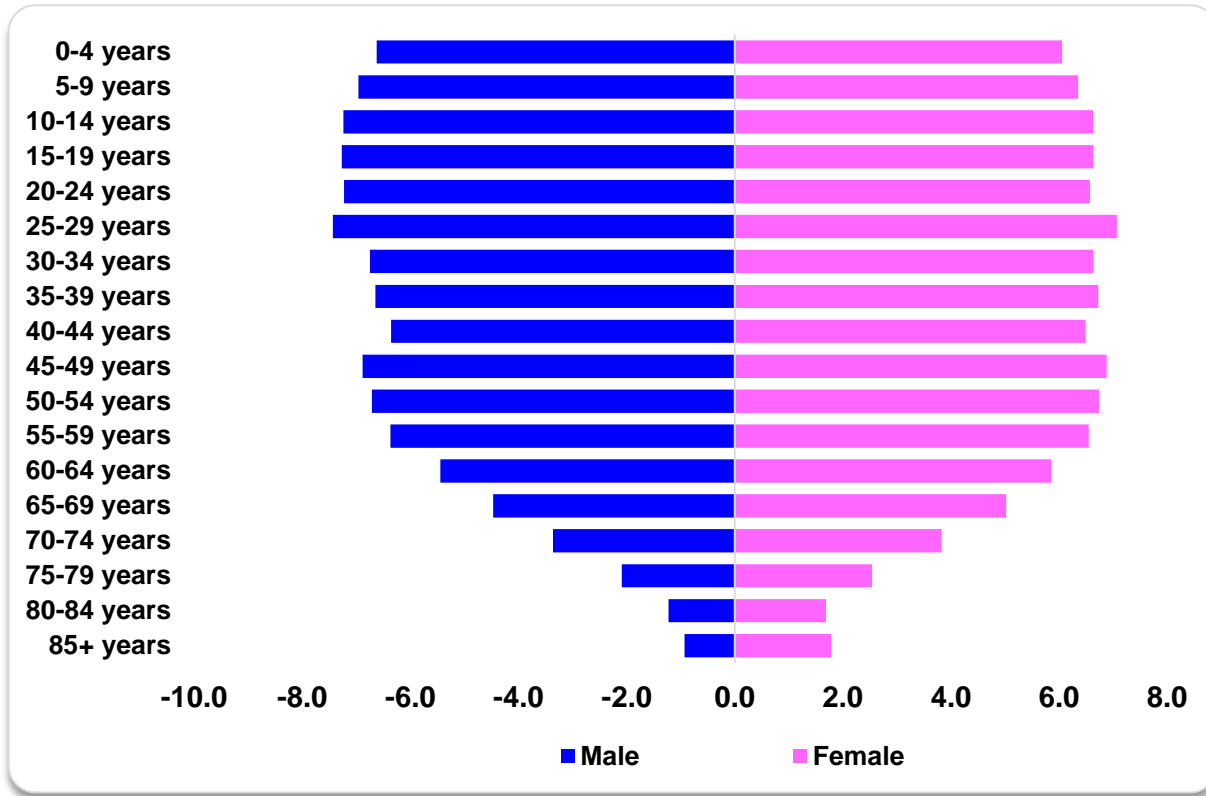
Age-adjusted Mortality Rate among Adults 45 years and Older by Calendar year



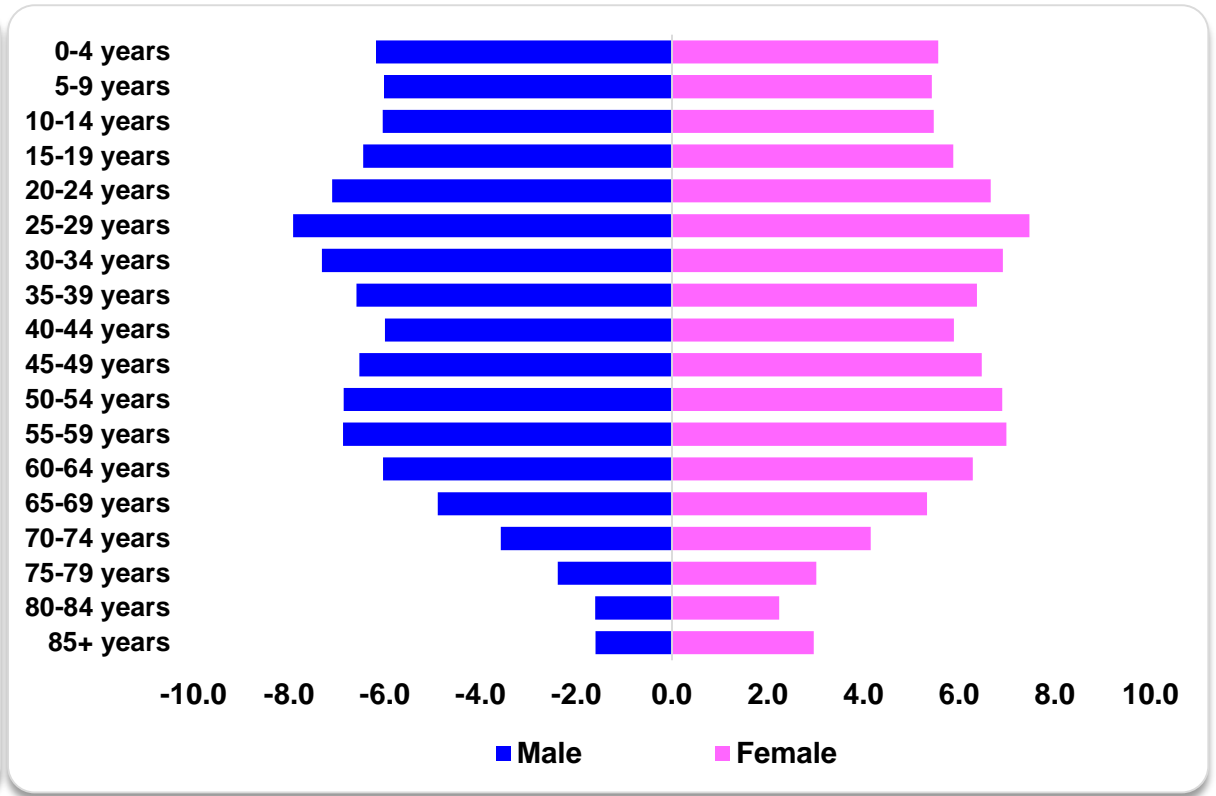
Source: wonder.cdc.gov

Population Distribution by Age and Sex, 2017

Georgia



New York



Demographic Distribution of the Population

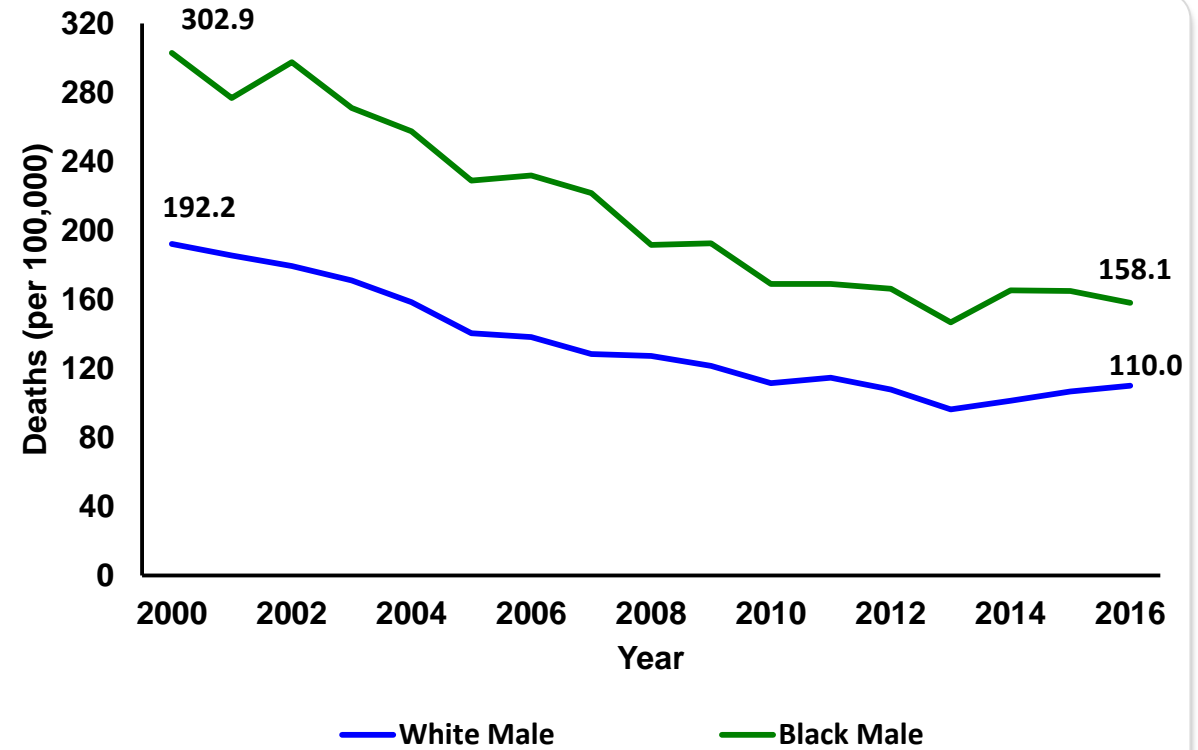
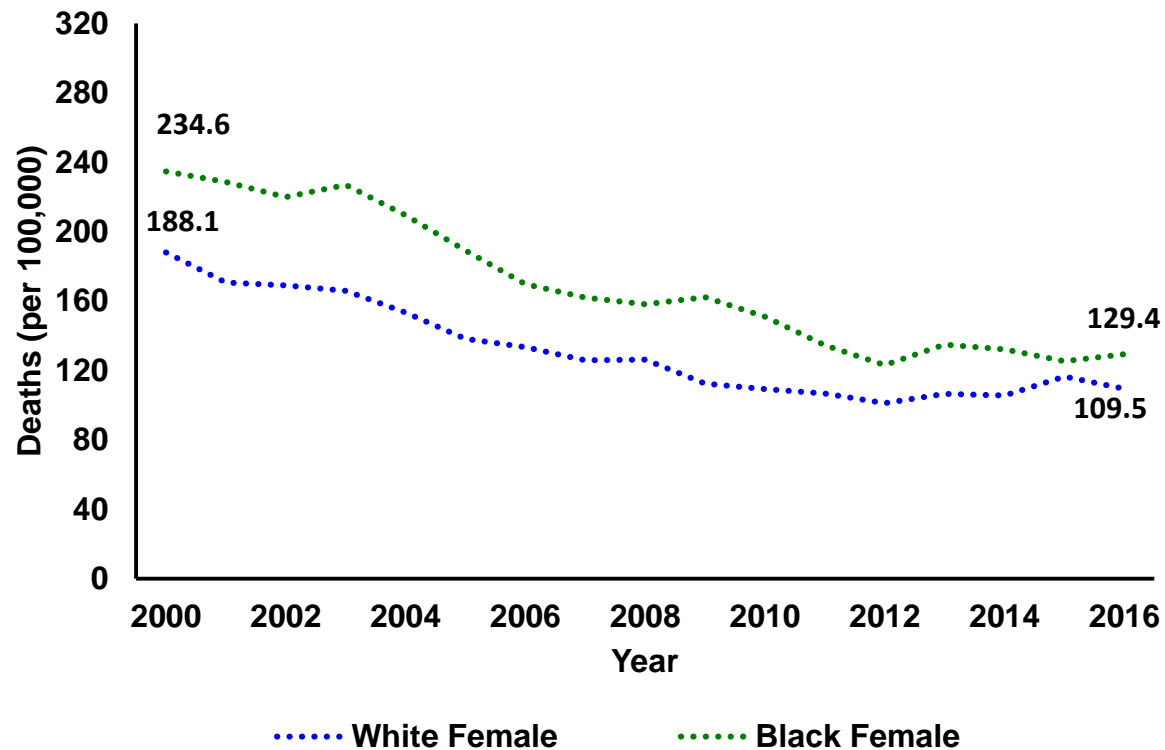
Demographic Group	New York	Georgia
Male	48.6%	48.7%
Female	51.4%	51.3%
White	55.28%	52.80%
Black	14.56%	31.33%
American Indian Alaskan Native	0.29%	0.23%
Asian	8.89%	4.13%
Native Hawaiian and Other Pacific Islander	0.04%	0.06%
Hispanic	19.20%	9.65%
Multiracial	1.74%	1.80%

Age-adjusted Stroke Mortality* in Georgia and New York States in 2017

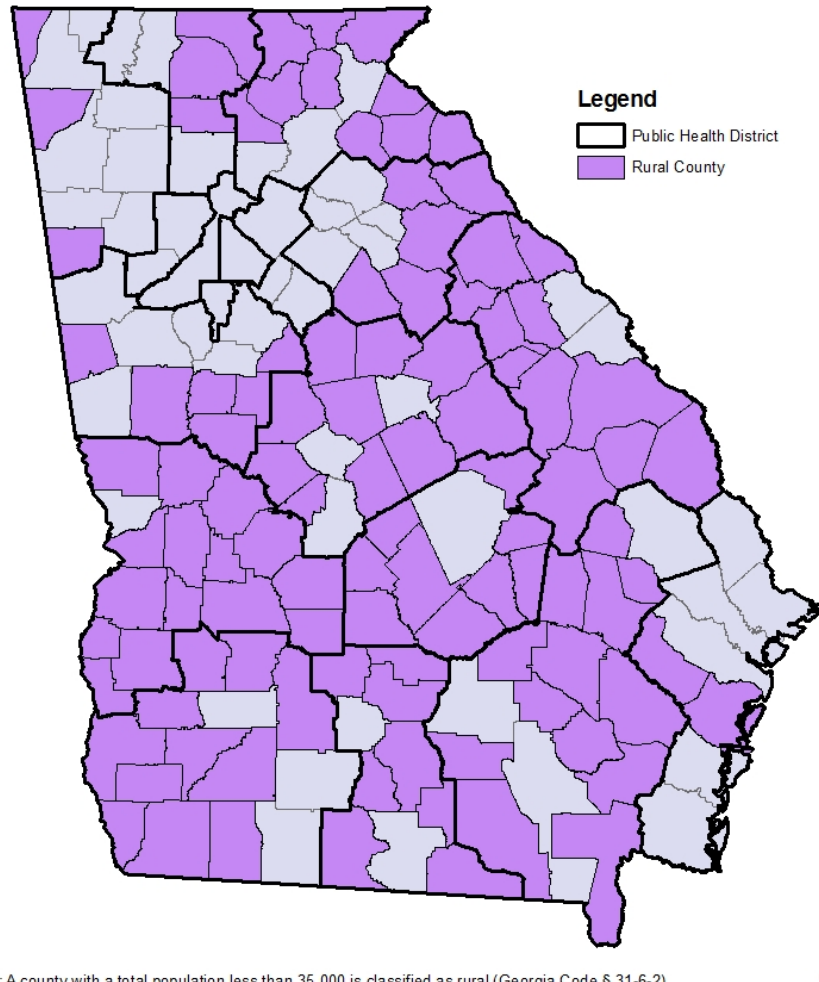
Group	Georgia	New York
NH Blacks	145.1	78.6
NH Whites	116.6	68.1
Hispanics	55.5	59.4

*: per 100,000 population

Trend in Age-adjusted Stroke Mortality Rate by Race and Gender group, Georgia 2000–2016



Age-adjusted Annual Stroke Mortality Rates by Race, Sex and Geographic Location, Georgia 2012–2016



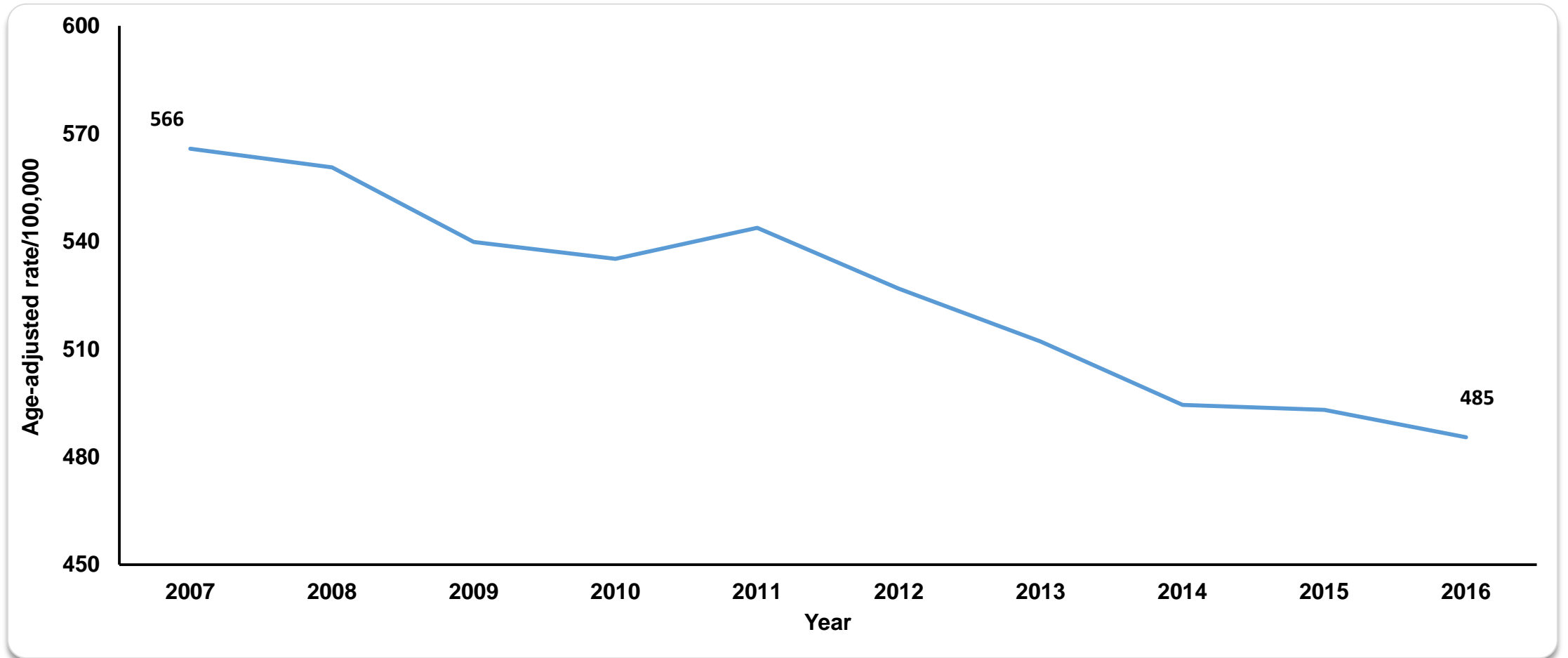
Legend
 Public Health District
 Rural County

Gender	Race-Ethnicity	Non-Rural	Rural
MALE	Non-Hispanic Blacks	157.5	174.6
	Non-Hispanic Whites	102.9	109.0
FEMALE	Non-Hispanic Blacks	126.9	140.9
	Non-Hispanic Whites	105.4	116.4

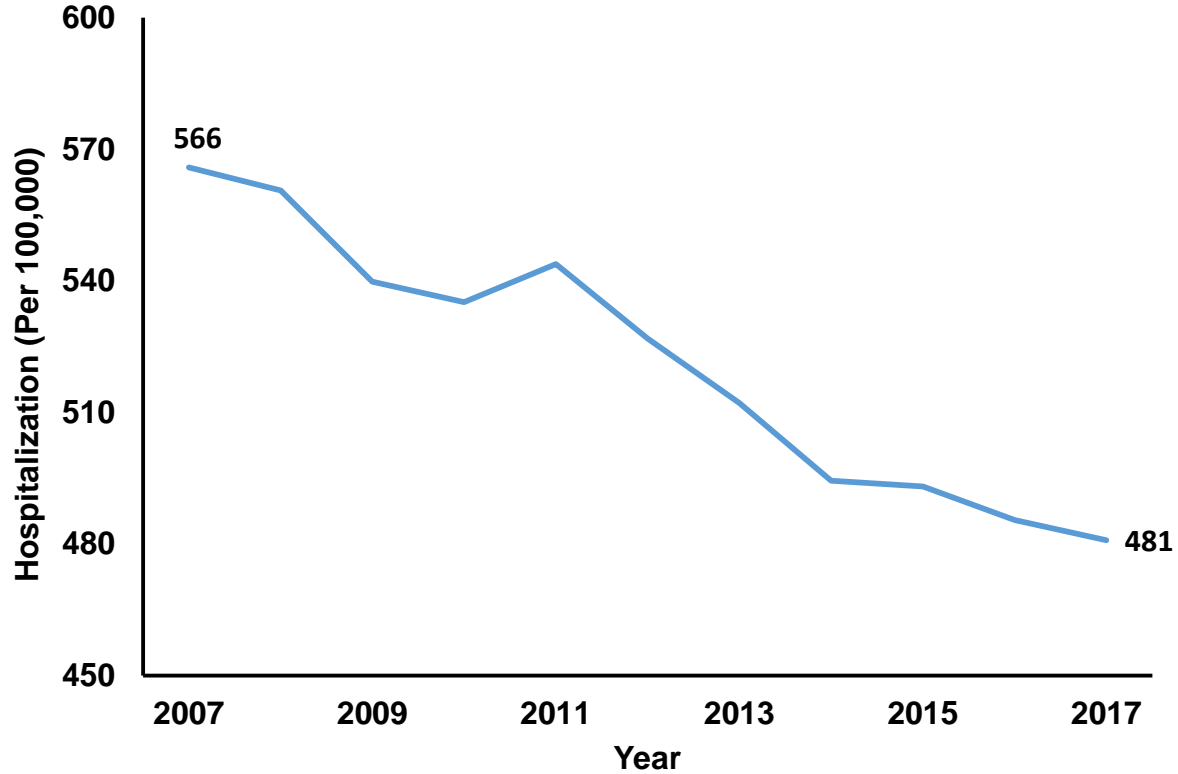
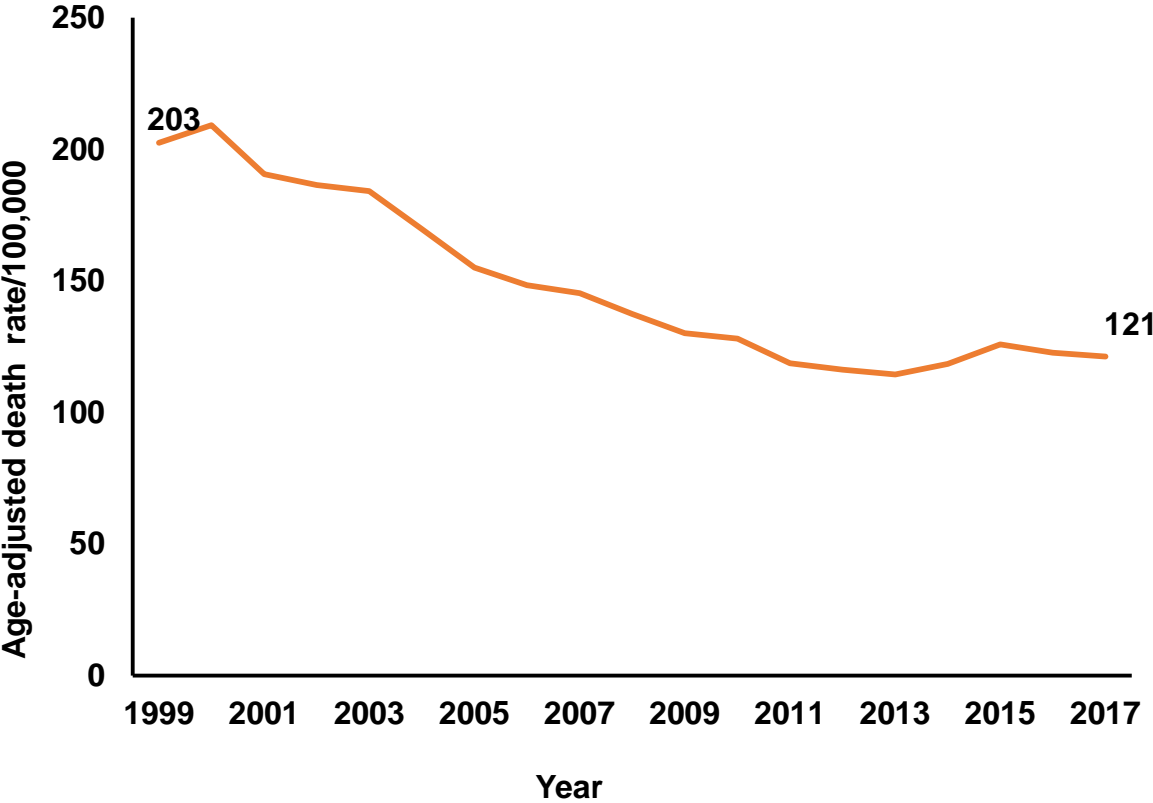
*: A county with a total population less than 35,000 is classified as rural (Georgia Code § 31-6-2)

MORBIDITY

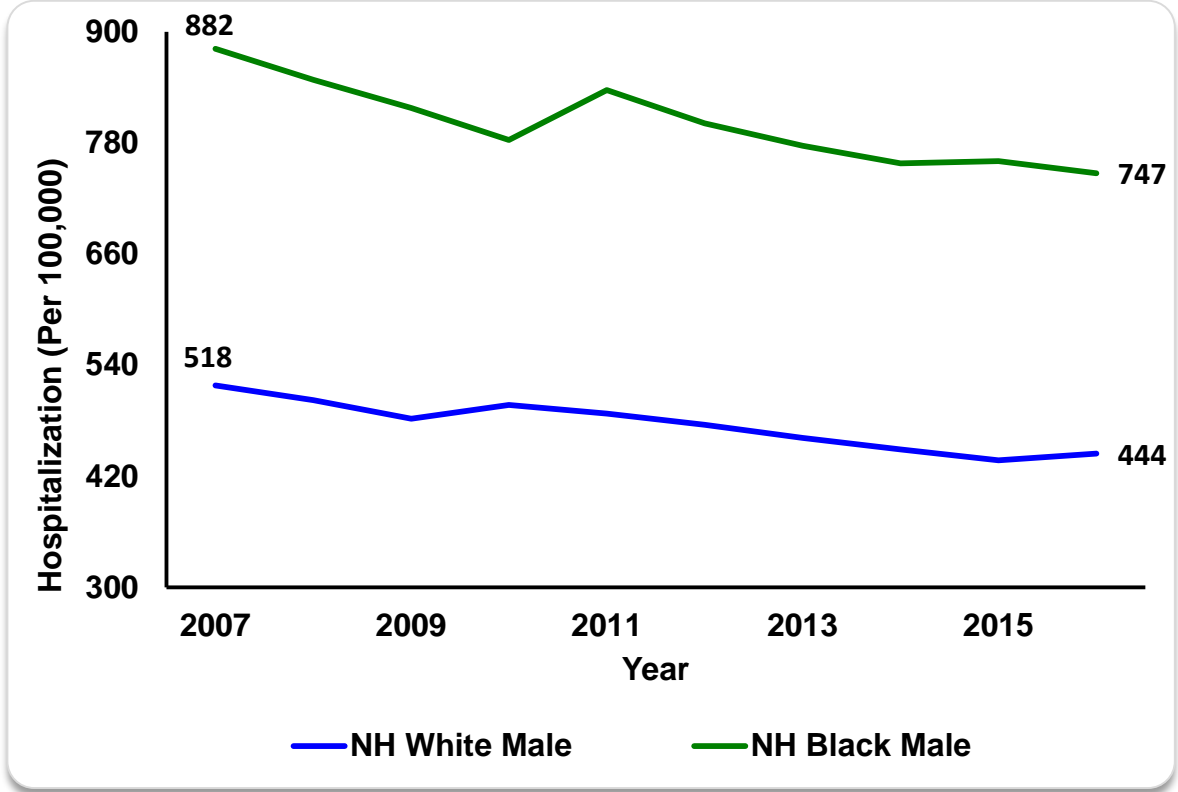
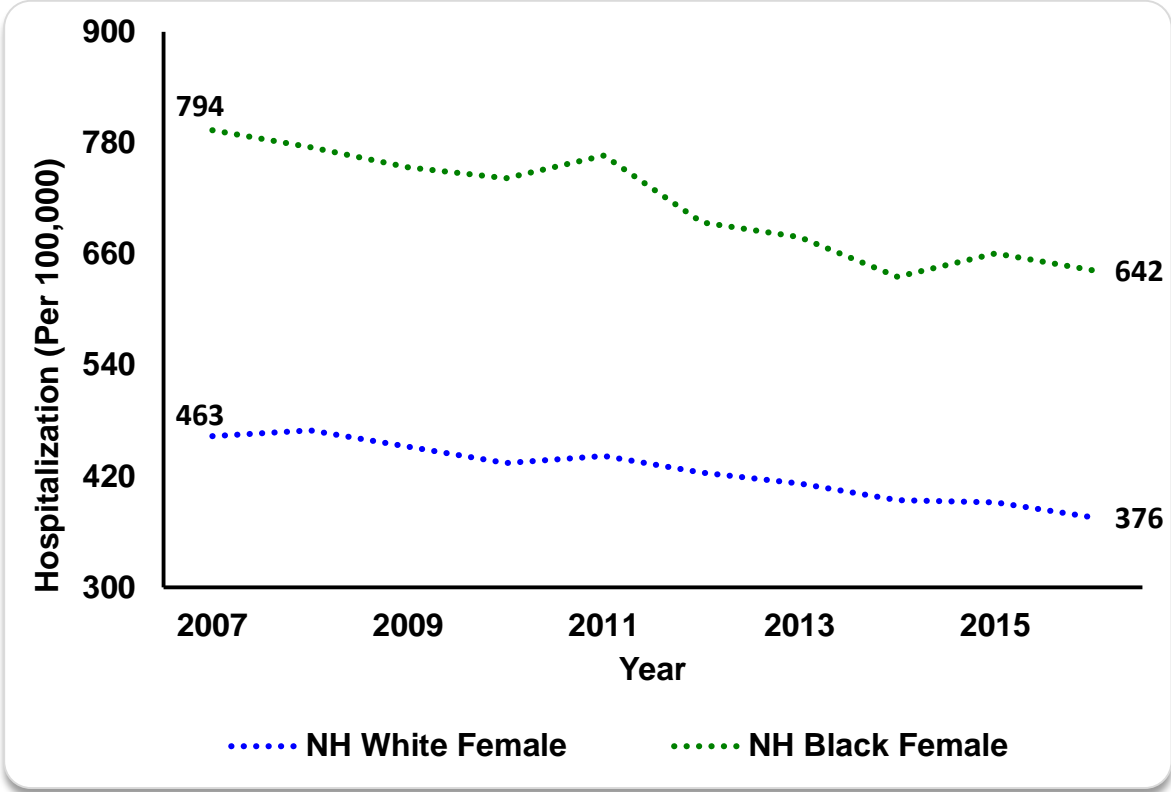
Age-adjusted Hospitalization Rate Among Adults 45 Years and Older by Year, Georgia 2007-2016



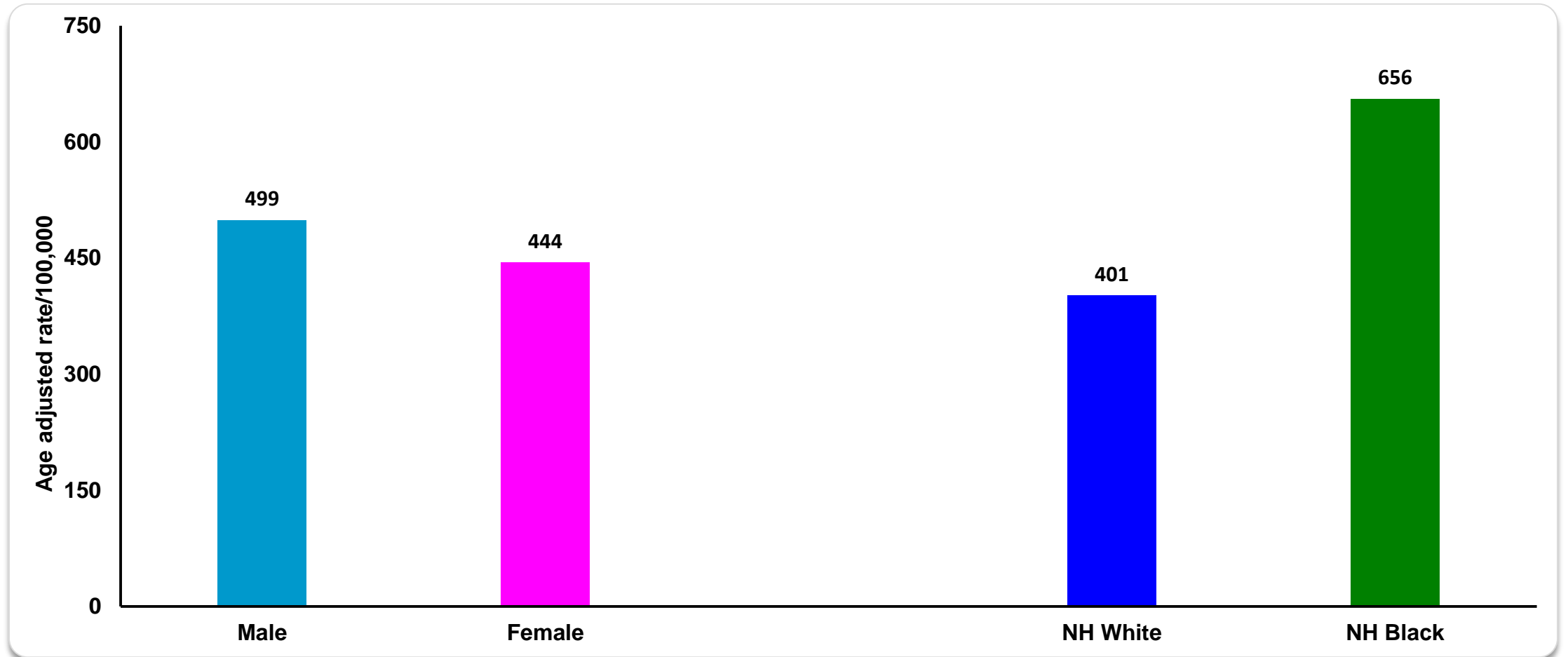
Age-adjusted Hospitalization and Mortality Rate Among Adult Georgians 45 Years and Older



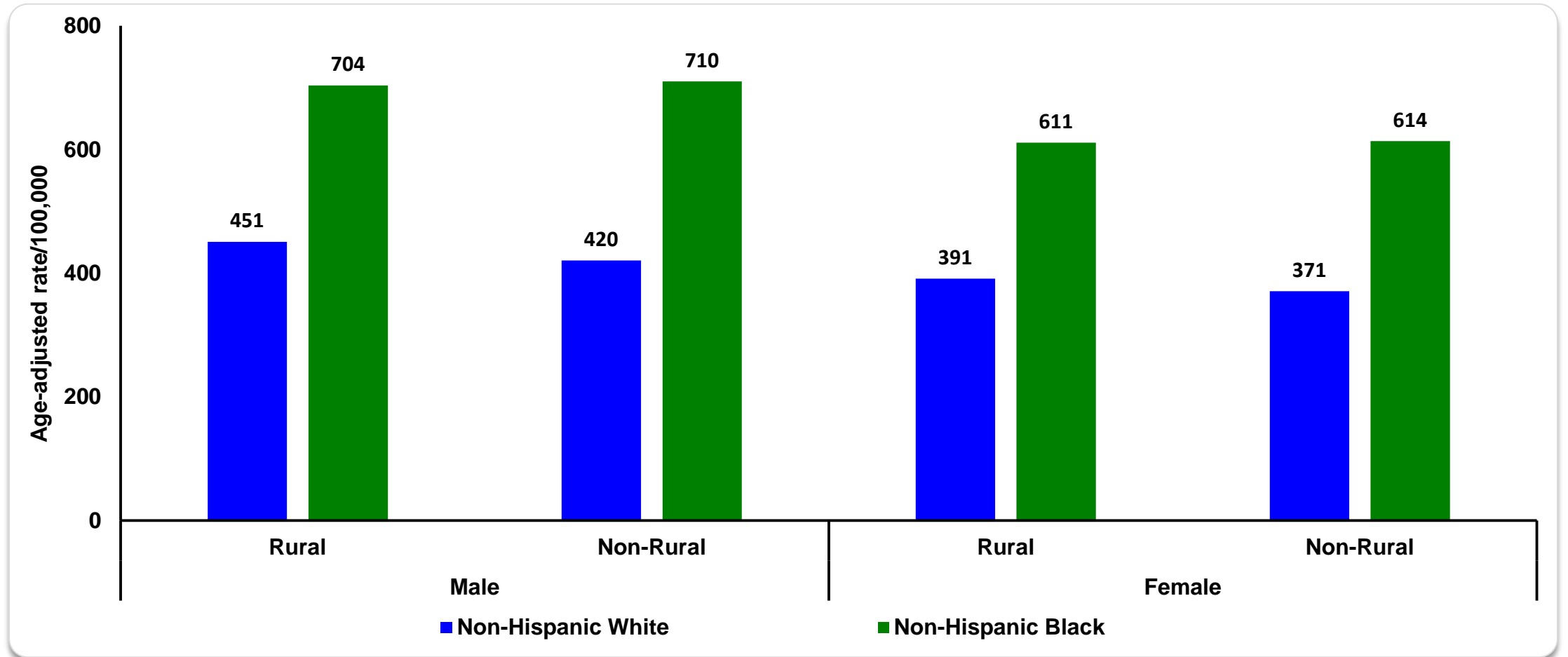
Trend in Age-adjusted Stroke Hospitalization Rate by Race and Gender group, Georgia 2000–2016



Age-adjusted Annual Stroke Hospitalization Rate Among Adults 45 Years and Older by Demographic Characteristics, Georgia 2012-2016



Age-adjusted Annual Stroke Hospitalization Rate Among Adults 45 Years and Older by Geographic Location, Race, and Gender, Georgia Hospital Discharge data, 2012-2016



DISABILITY

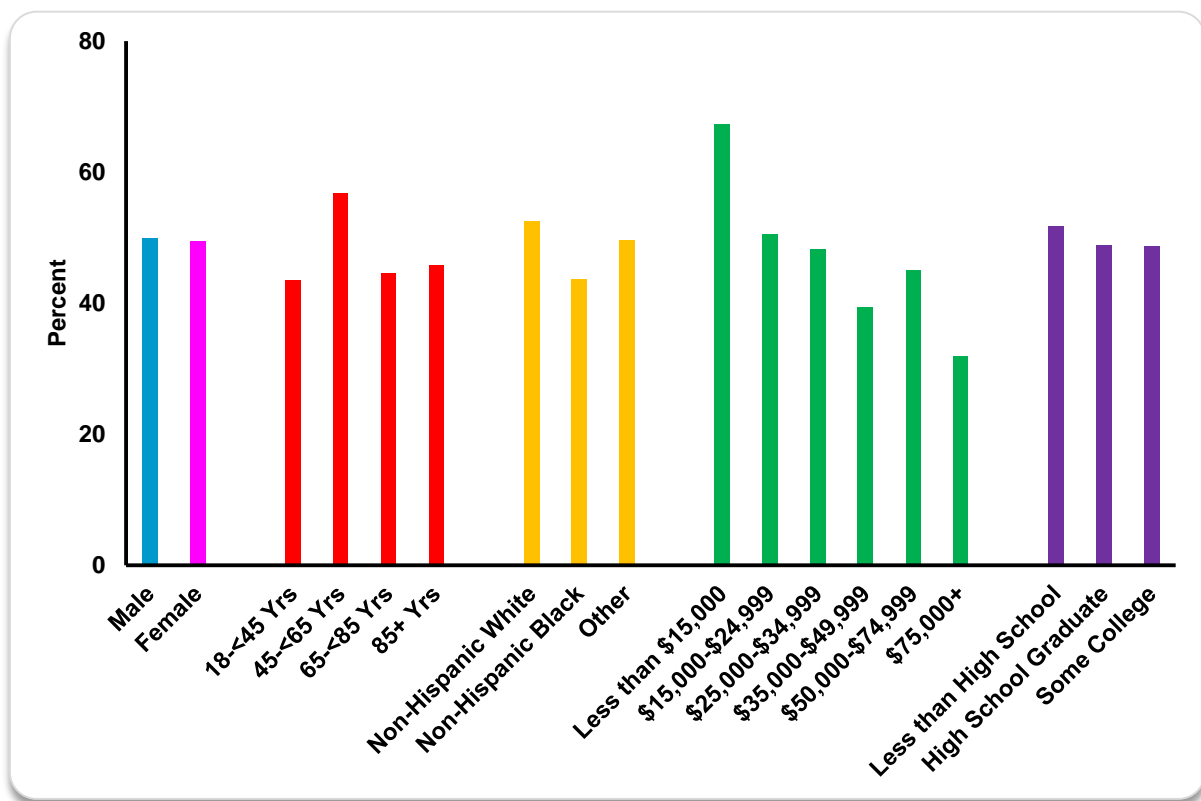


Disability

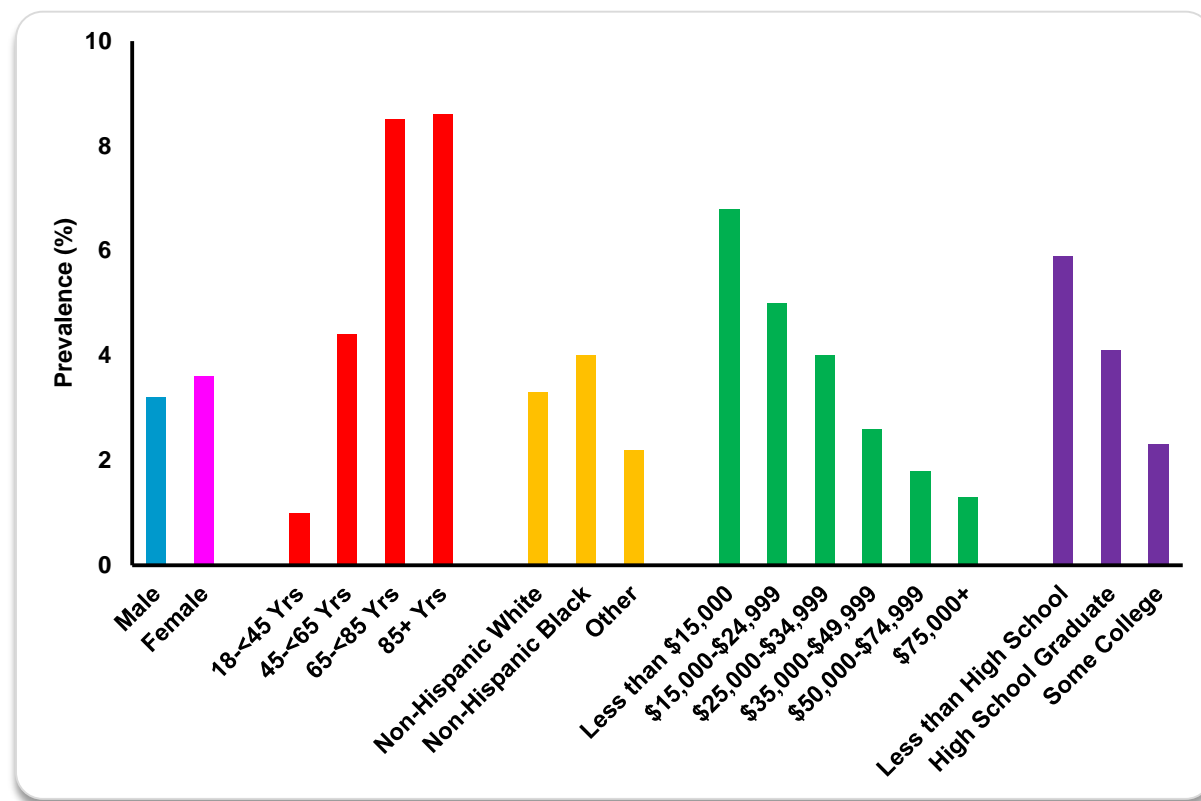
- 70% of stroke patients develop some form of disability¹
- ~ 3.4% adult Georgians (N=259,246) are Stroke survivors
- Based on 2016 Georgia BRFSS, among stroke survivors
 - 49.7% have limitation of activity due to health problems
 - 38.7% use special equipment to conduct their daily life

Prevalence of Stroke Survivors and Activity Limitation due to Health Problems among Georgia Stroke Survivors, BRFSS 2012-2016

Limitation of Activity

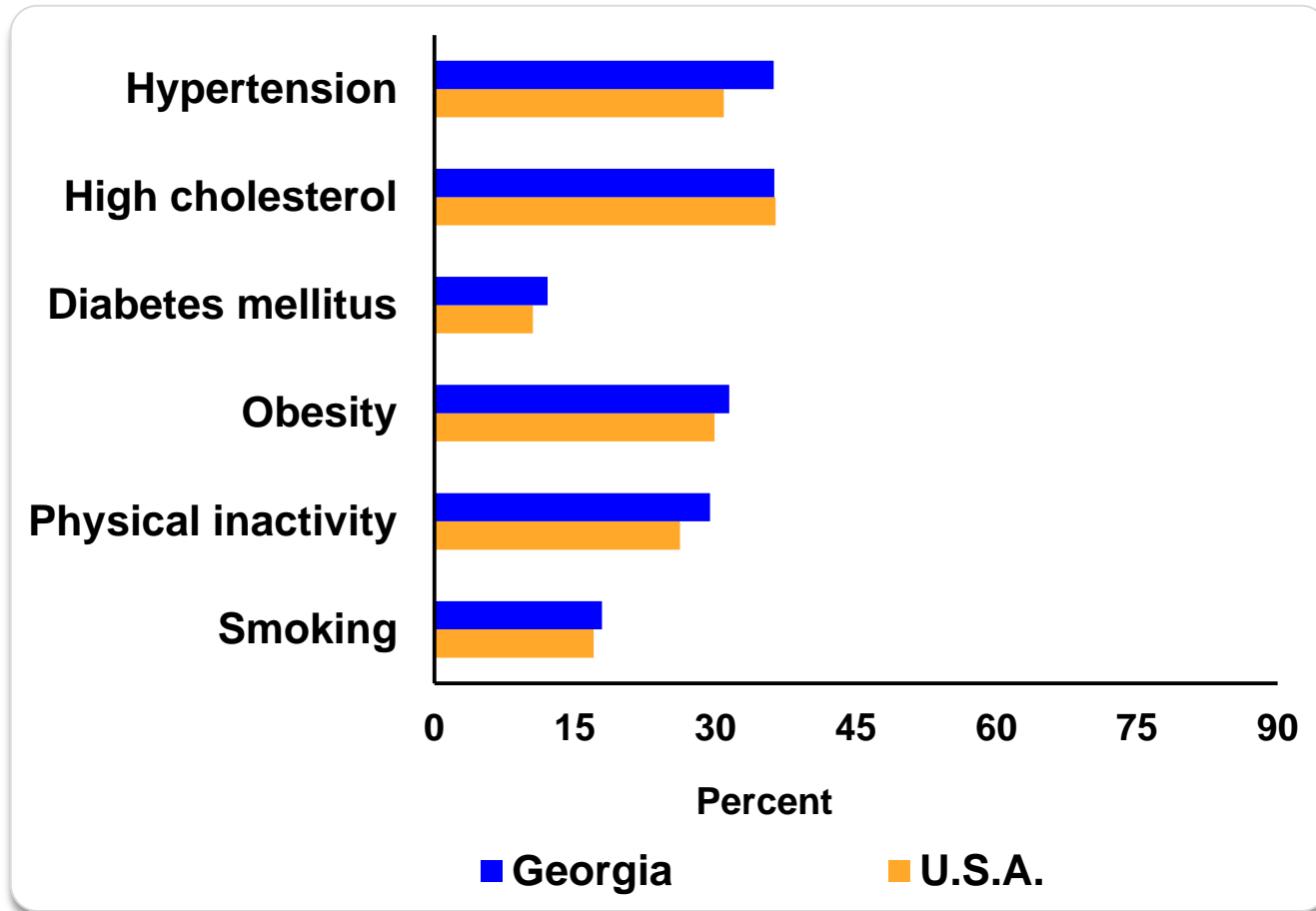


Stroke Survivors



MAJOR MODIFIABLE RISK FACTORS

Prevalence of Risk Factors Among Adult Georgians, Georgia Stroke Survivors, and U.S., BRFSS 2016*§



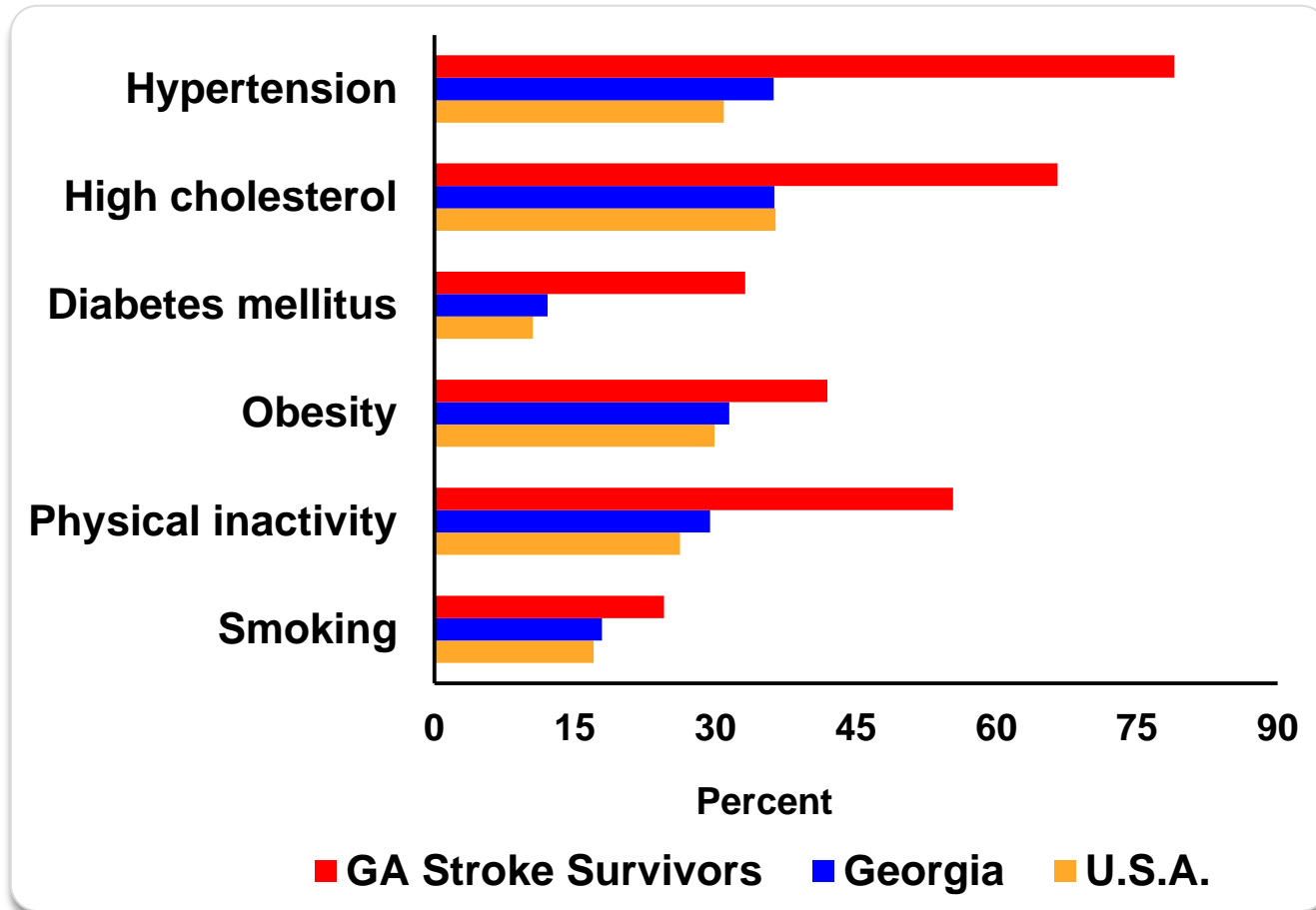
- Overall Adult Georgians have a high prevalence of Stroke risk factors

*: Prevalence of Hypertension and high cholesterol level were determined based on the 2015 Georgia BRFSS data

§: a person is physical inactive if he or she didn't do any physical activity or exercise during the past 30 days other than their regular job

Obese: Body mass index 30 or greater

Prevalence of Risk Factors Among Adult Georgians, Georgia Stroke Survivors, and U.S., BRFSS 2016*§



- Overall Adult Georgians have a high prevalence of Stroke risk factors
- Stroke patients in Georgia have much higher risk factors than the average adult Georgian and U.S. Adult.

*: Prevalence of Hypertension and high cholesterol level were determined based on the 2015 Georgia BRFSS data

§: a person is physical inactive if he or she didn't do any physical activity or exercise during the past 30 days other than their regular job

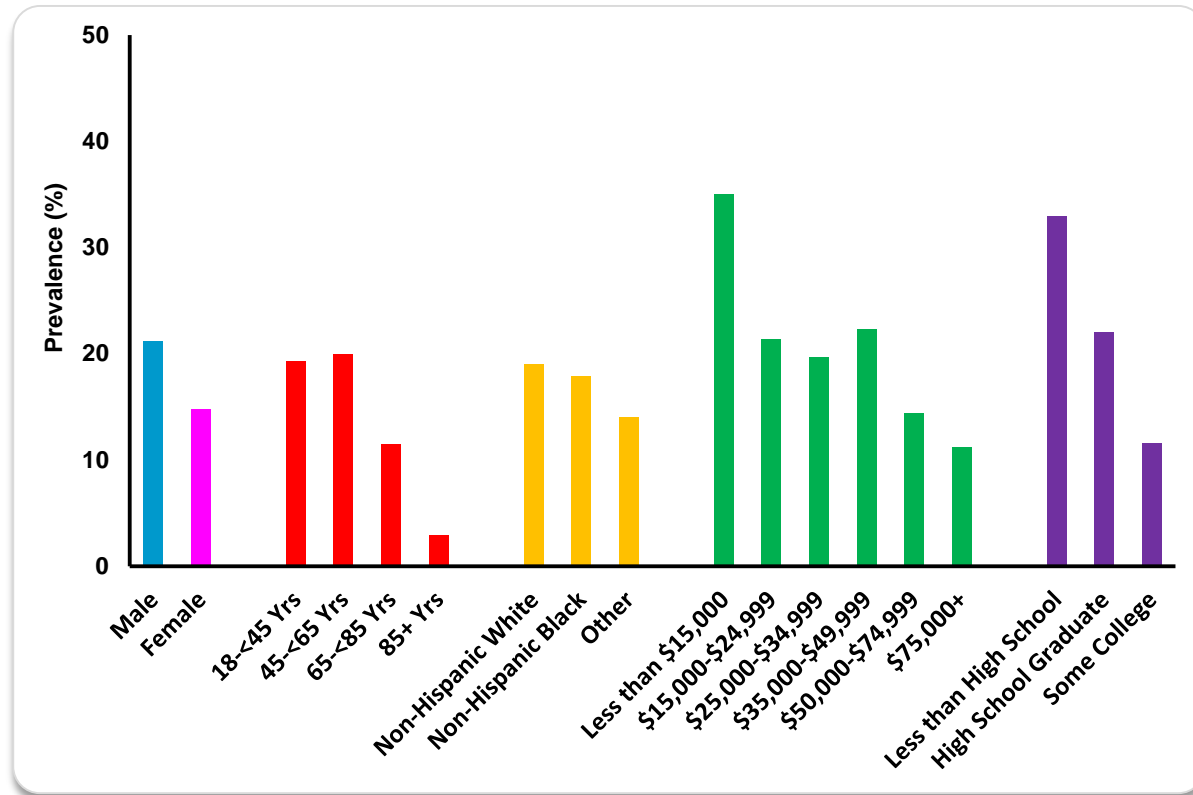
Obese: Body mass index 30 or greater

Estimated Number of Georgians Affected by Stroke and Stroke-related Chronic Conditions and Risk Factors

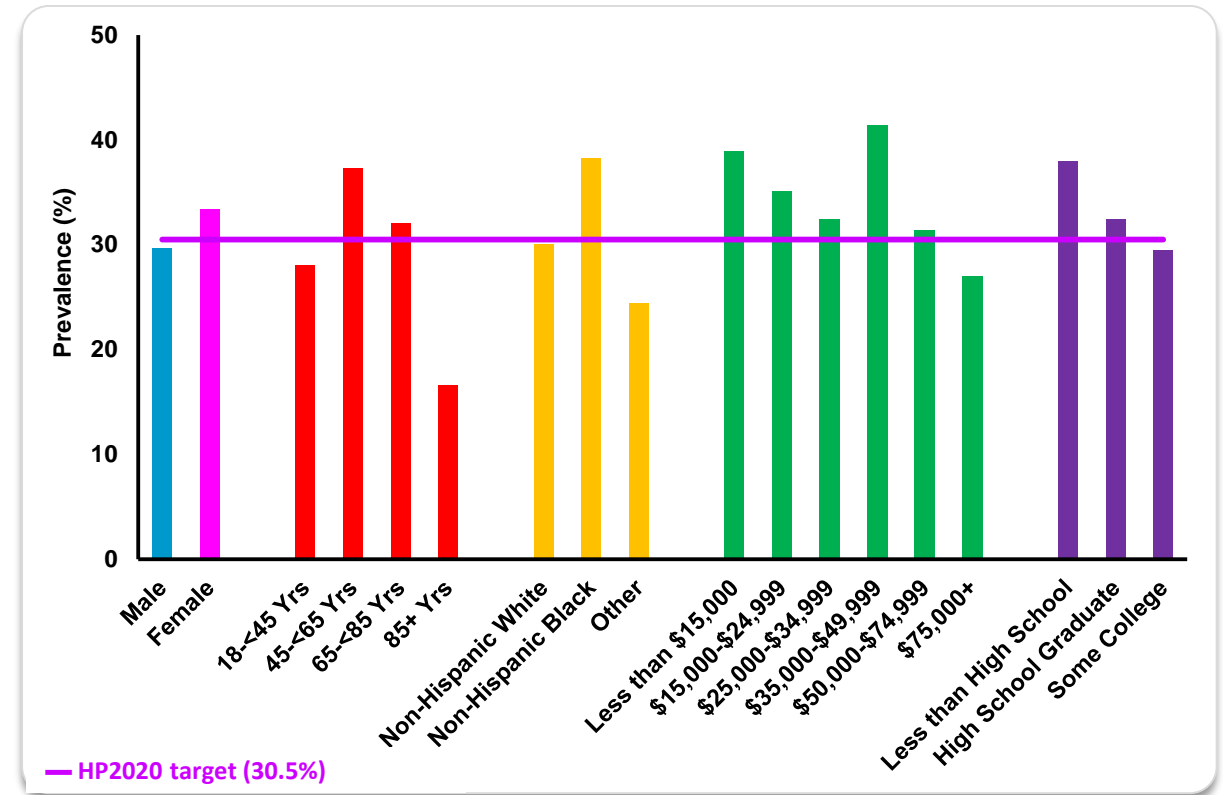
Disease/Risk Factor	Prevalence		Estimated Population
	Percent	95% CI	
Stroke	3.4	(3.2, 3.7)	259,200
Hypertension	34.2	(33.4, 34.9)	2,598,900
Diabetes	11.1	(10.7, 11.6)	849,500
CHD or MI	6.5	(6.2, 6.9)	496,400
Obesity	30.4	(29.7, 31.2)	2,145,900
High Cholesterol	35.5	(34.7, 36.3)	2,160,300
Smoking	18.4	(17.8, 19.1)	1,340,800
Physical Inactivity	26.2	(25.5, 26.9)	1,914,000

Prevalence of Risk Factors among Adult Georgians, BRFSS 2016

Diabetes mellitus

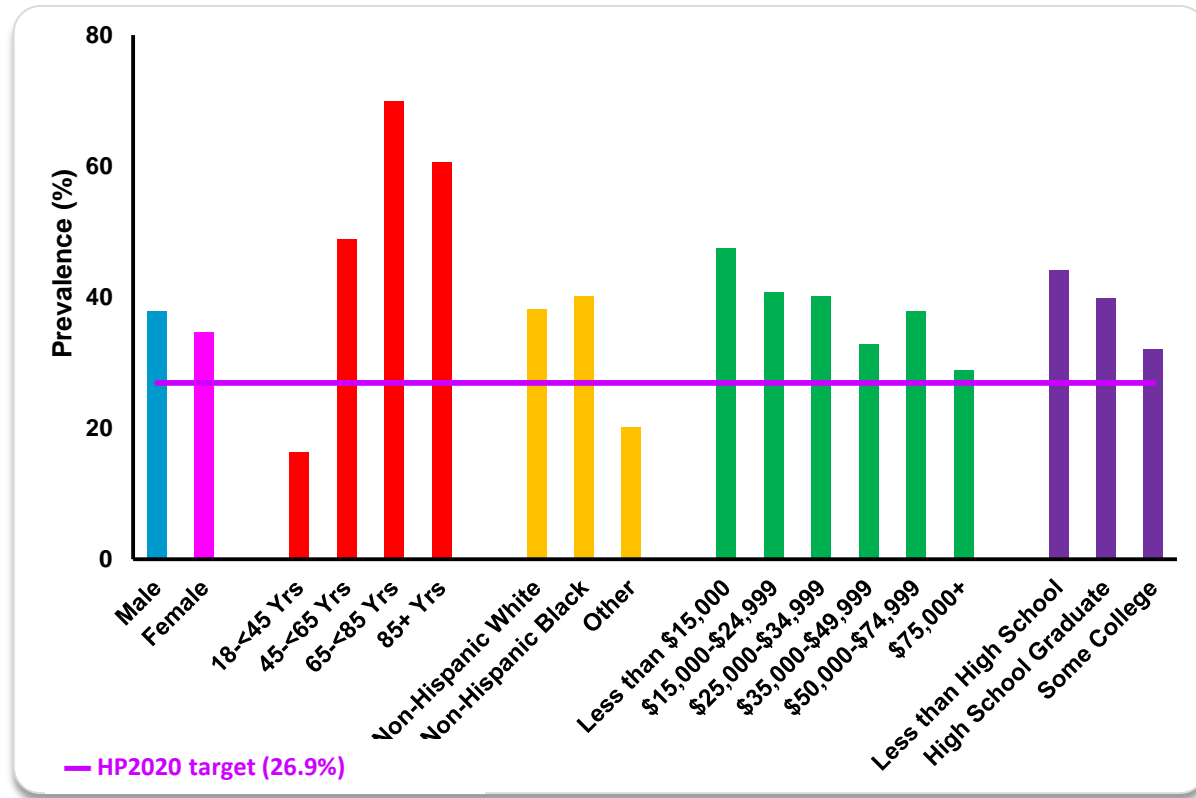


Obesity

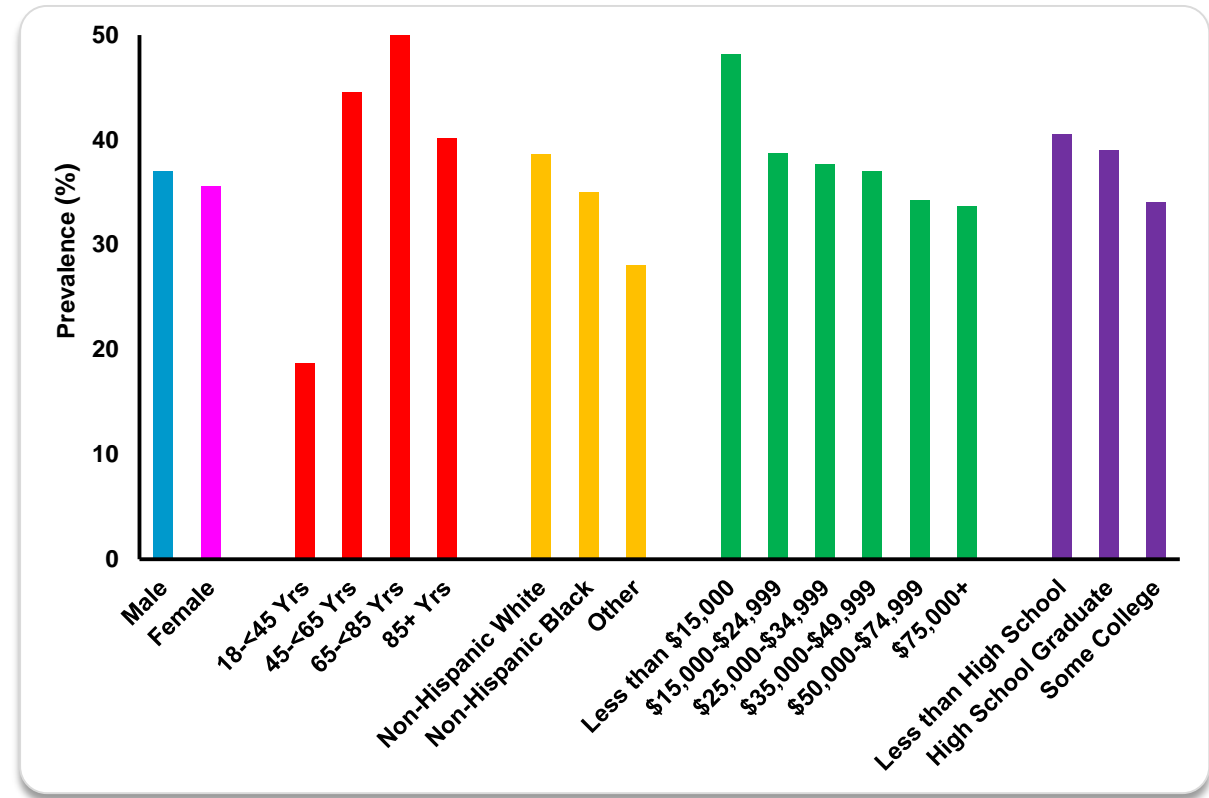


Prevalence of Risk Factors among Adult Georgians, BRFSS 2015

Hypertension

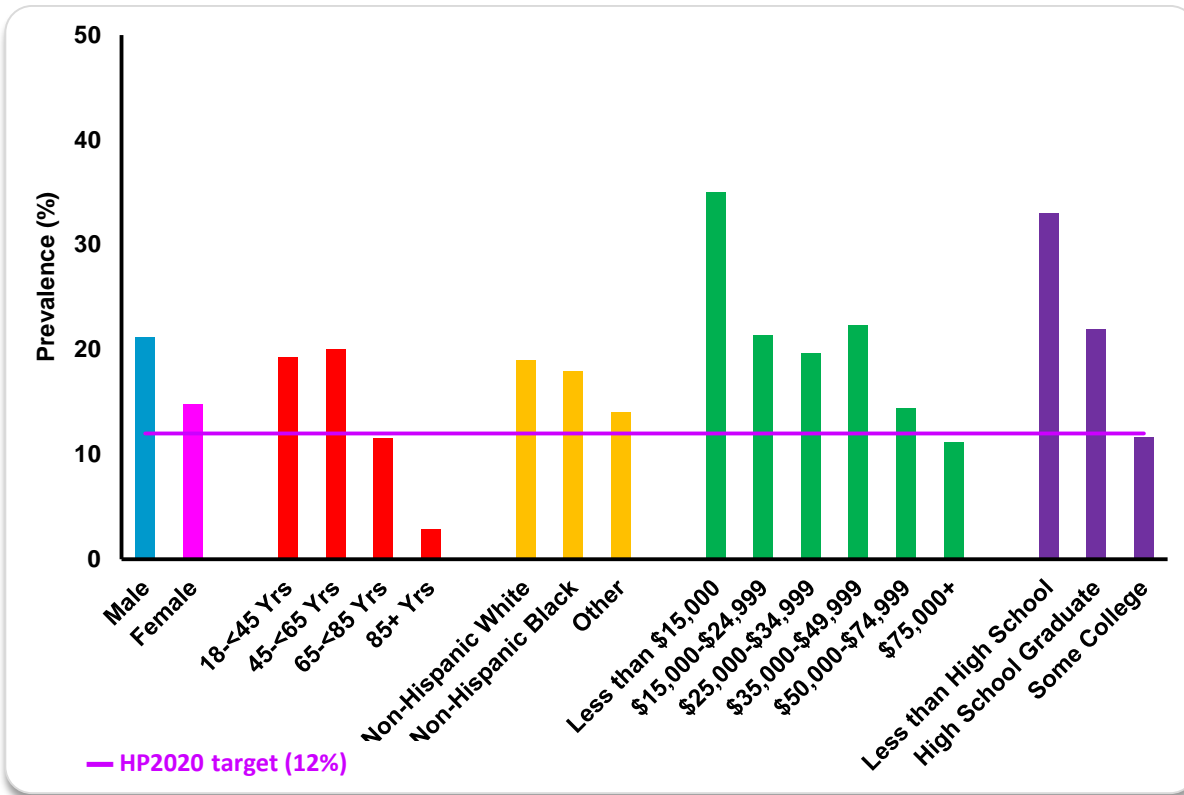


High Cholesterol

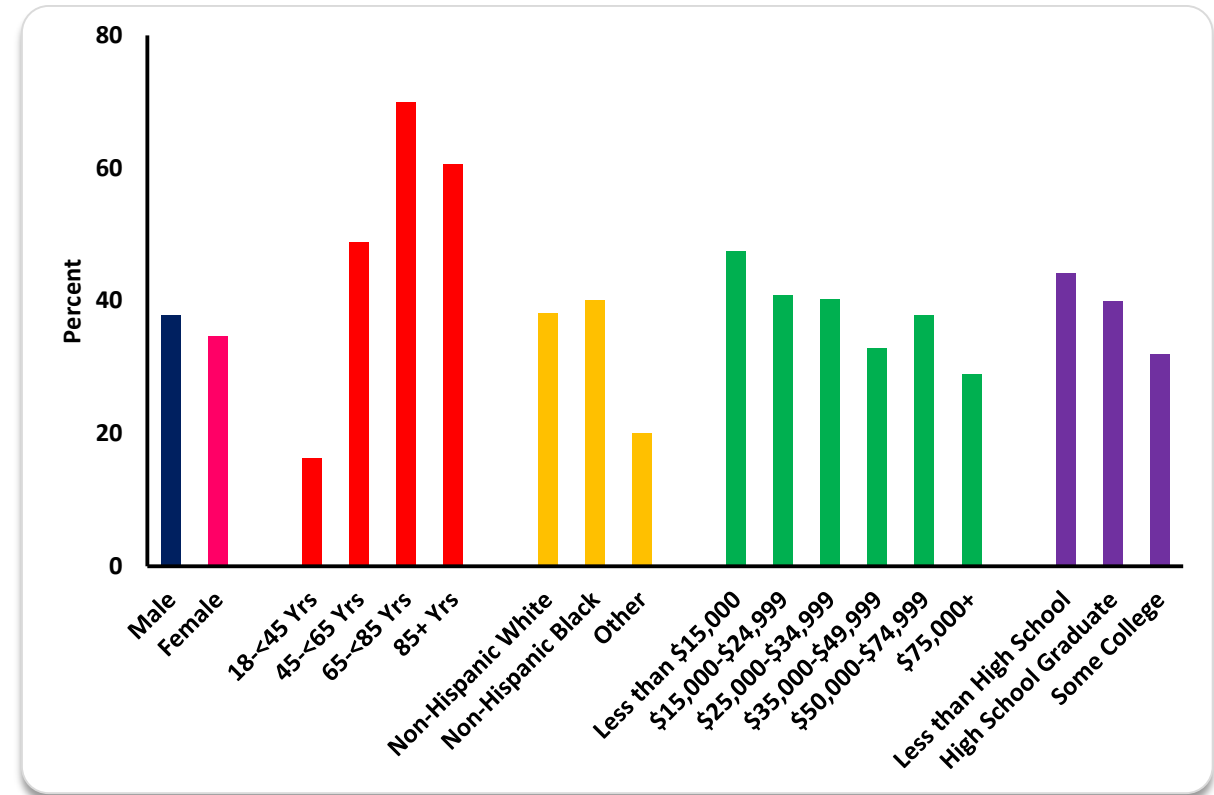


Prevalence of Cigarette Smoking among Adult Georgians, BRFSS 2016

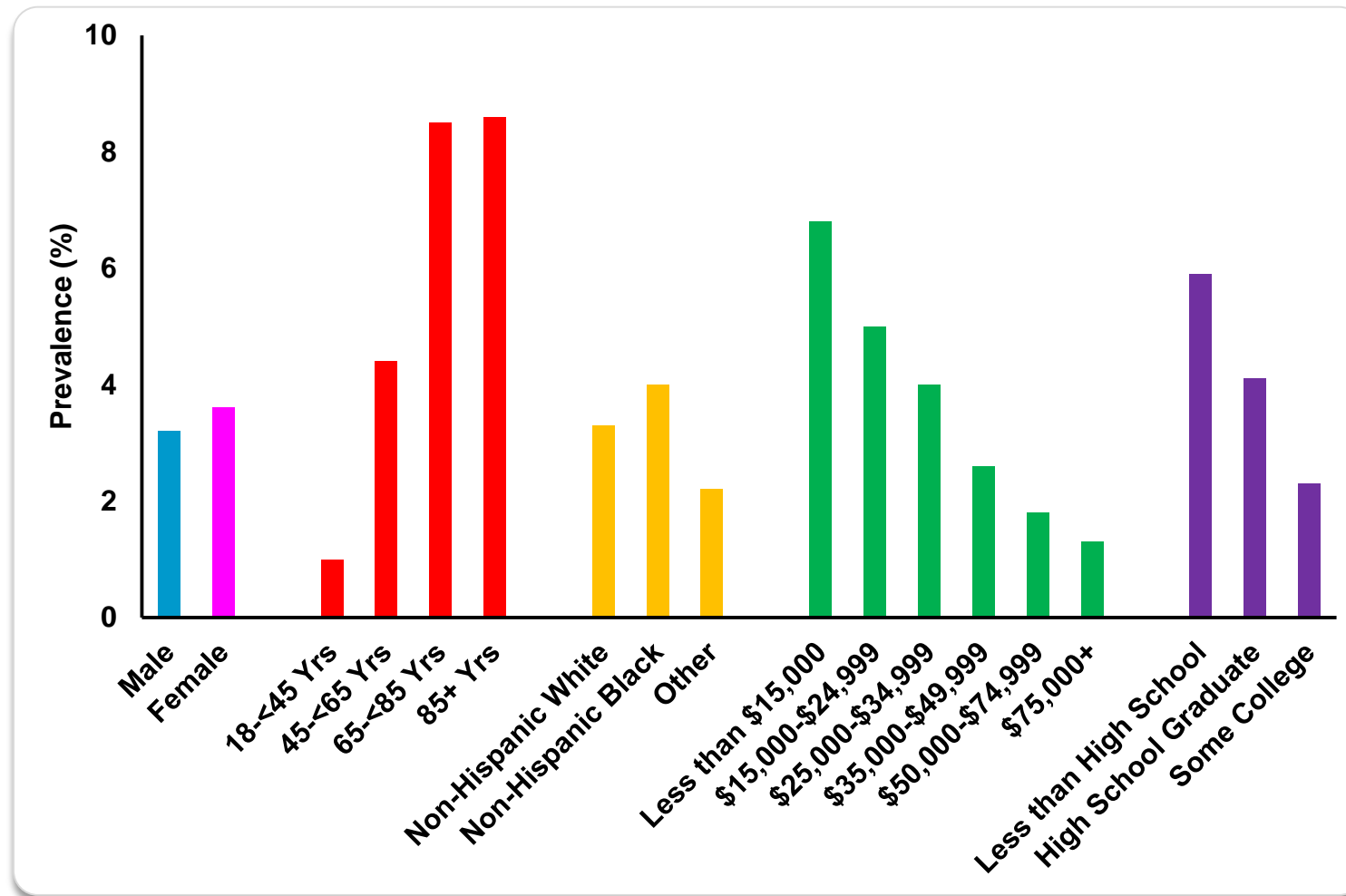
Smoking



No Leisure Time Physical Activity



Prevalence of Stroke Survivors among Adult Georgians, BRFSS 2016



GEORGIA COVERDELL ACUTE STROKE REGISTRY

Georgia Coverdell Acute Stroke Registry

Objectives

- Prevent stroke death, disability and recurrence
- Reduce stroke morbidity in Georgia

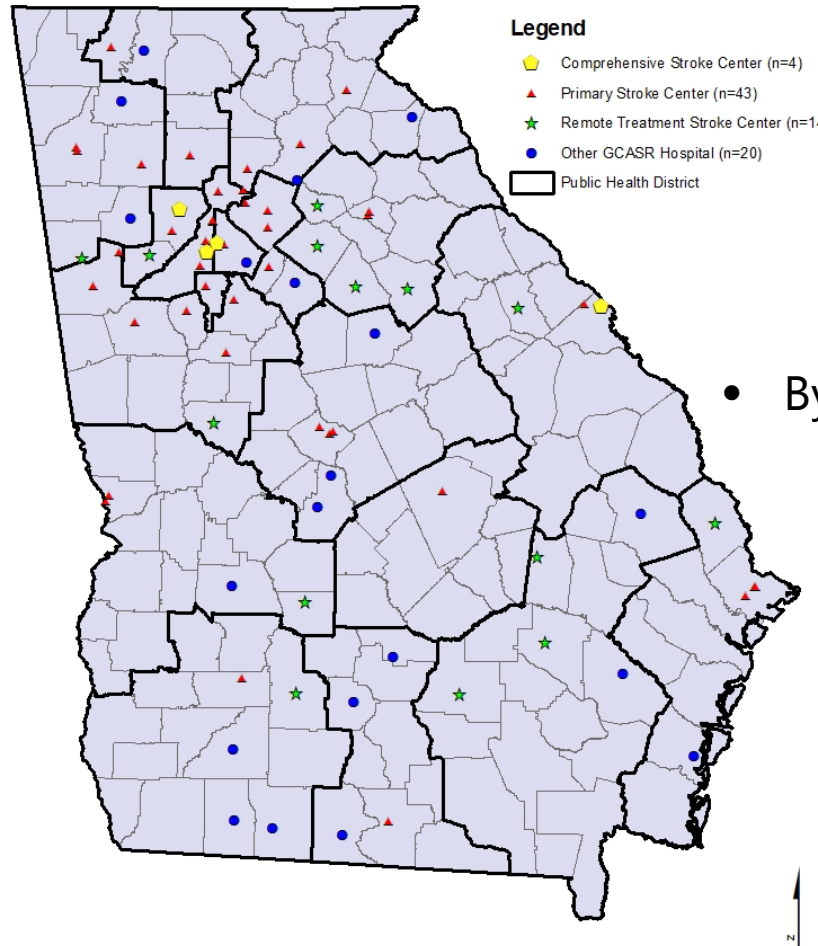
Approach

- Monitor quality of stroke care: pre-hospital, in-hospital and post-hospital
- Data-driven quality improvement through collaborative efforts

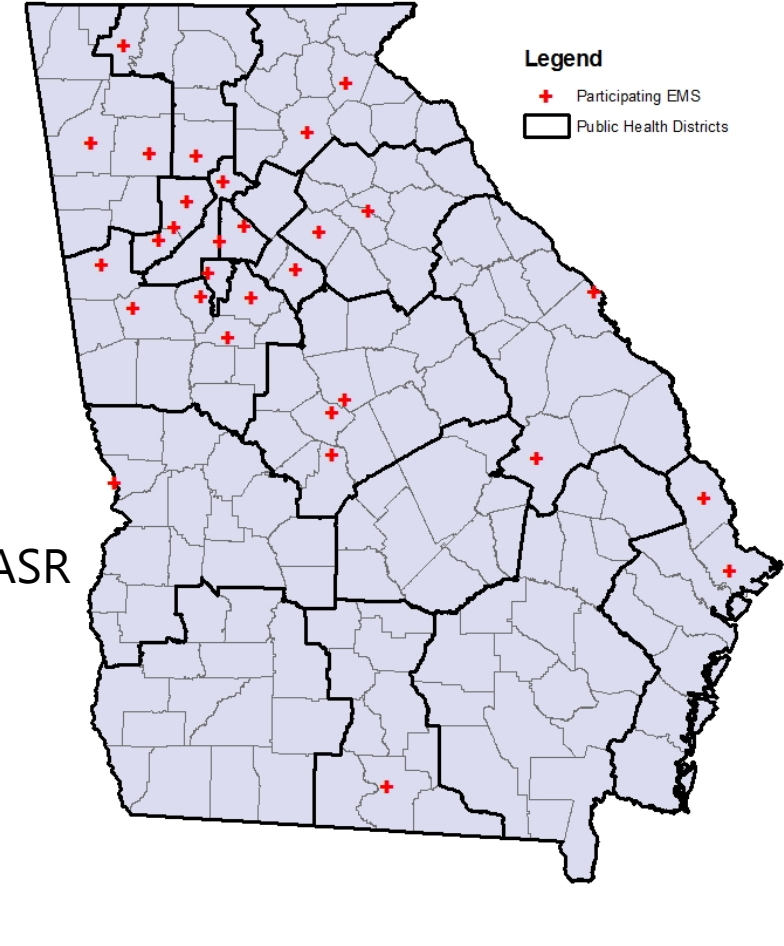
GCASR REACH: Pre-hospital & In-Hospital Care

Year	Number of EMS Agency Participating	Georgians Transported with Presumed Stroke	Number of Hospitals Enrolled	Georgians' Hospital Visit for Acute Stroke
2005			19	35%
2012	9	20%		
2019	31	68%	81	94%

GCASR REACH: Pre-hospital & In-Hospital Care

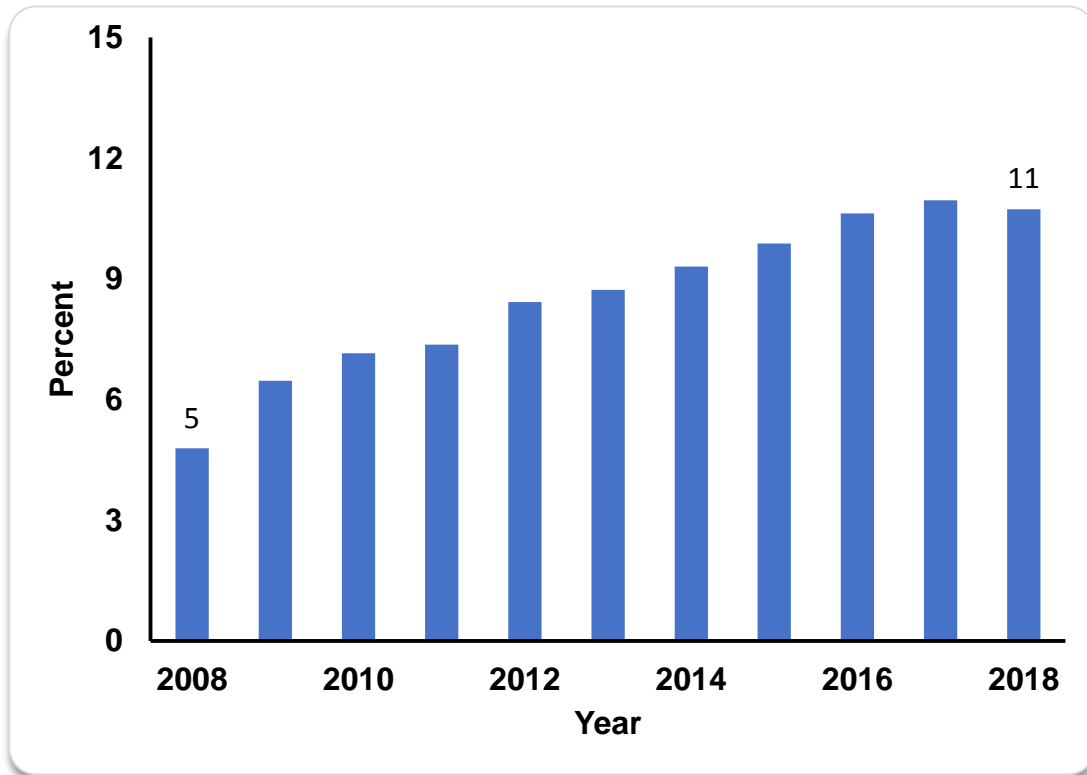


- By Jan 2019
 - ❖ 81 Hospitals
 - ❖ 31 EMS Agencies
 - Participate in GCASR

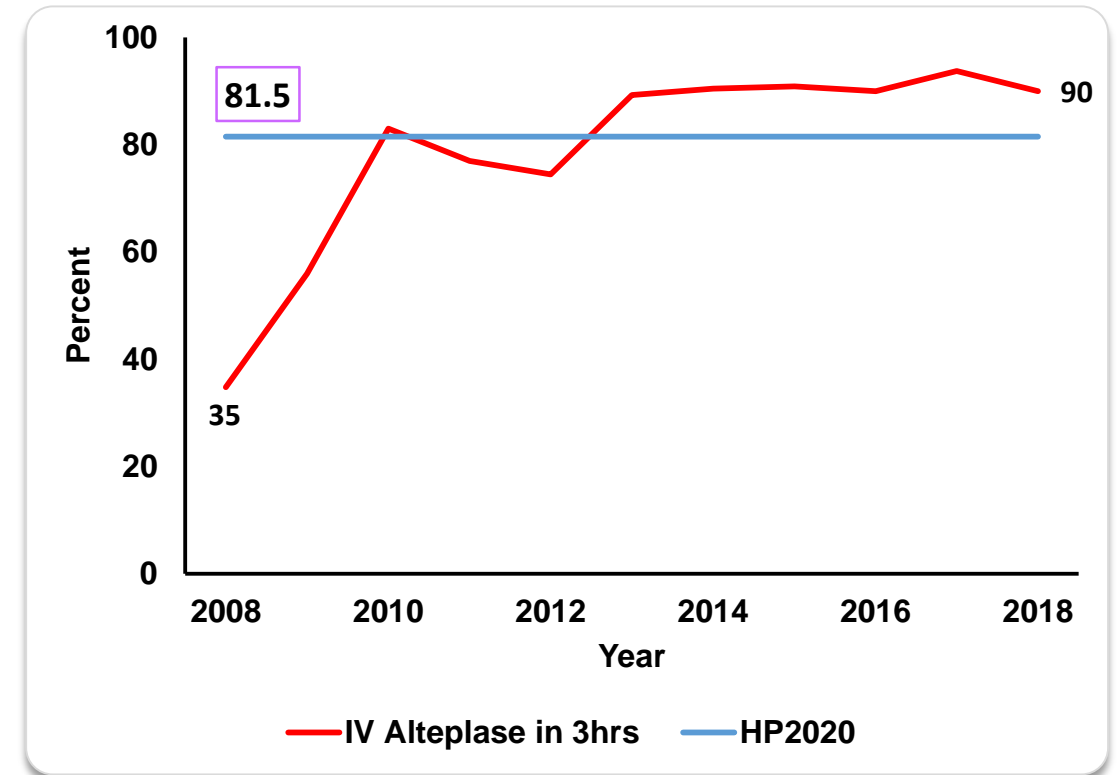


GCASR: Improvements

IV Alteplase Among Ischemic Stroke Patients, GCASR
2008-2018

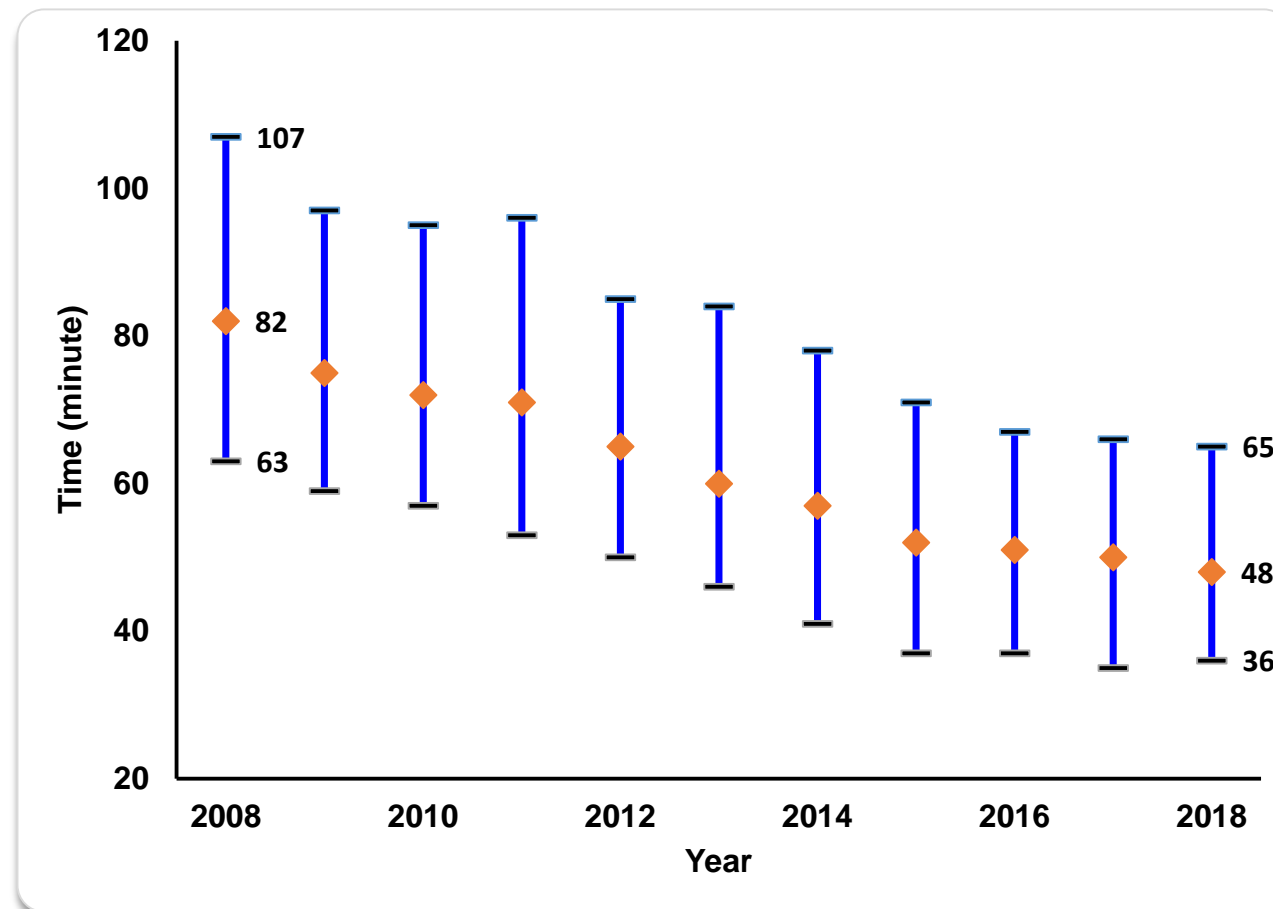


IV Alteplase Among Eligible Ischemic Stroke Patients
Within 3 hours of Last Known Well Time, GCASR
2008-2018



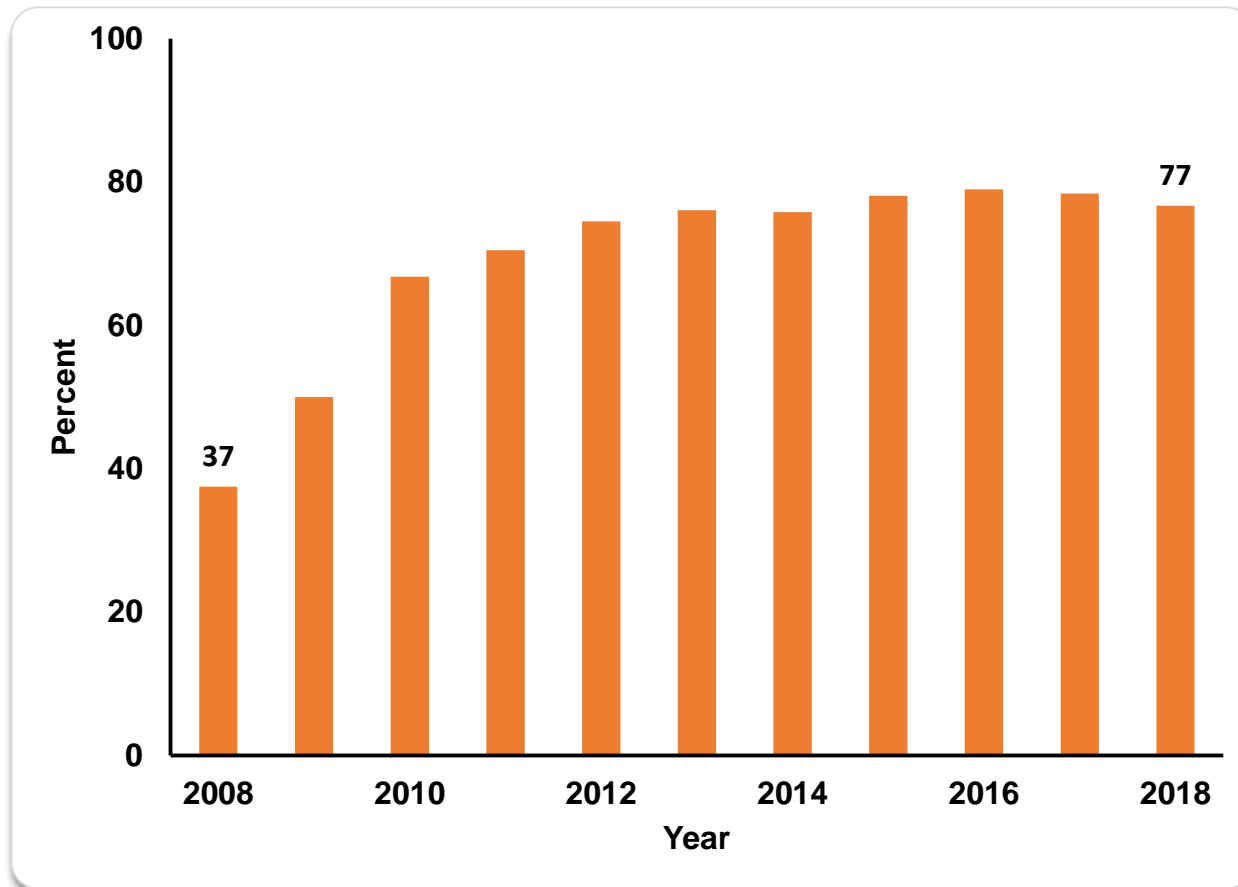
GCASR: Improvements

Median Door-To-IV Alteplase Time Among Eligible Ischemic Stroke Patients, GCASR 2008-2018



GCASR: Improvements

Defect-free Care among Acute Stroke Patients, GCASR
2008-2018

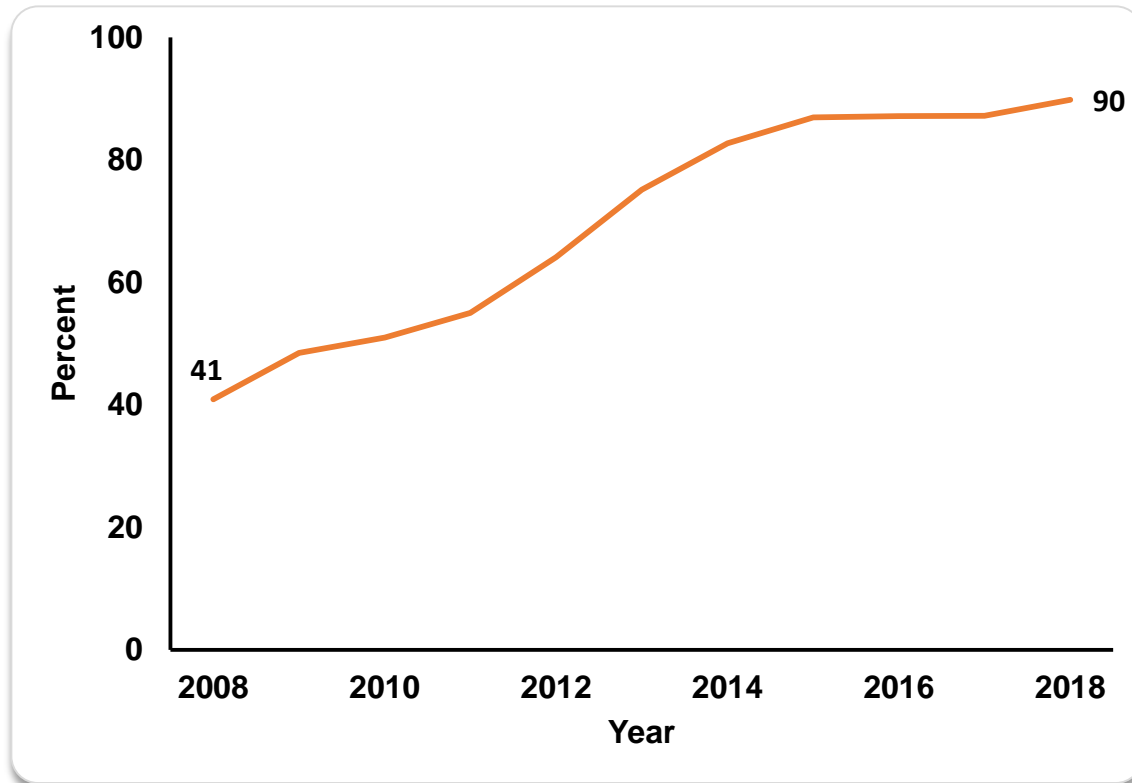


Performance measures constituting [Defect-free Care](#)

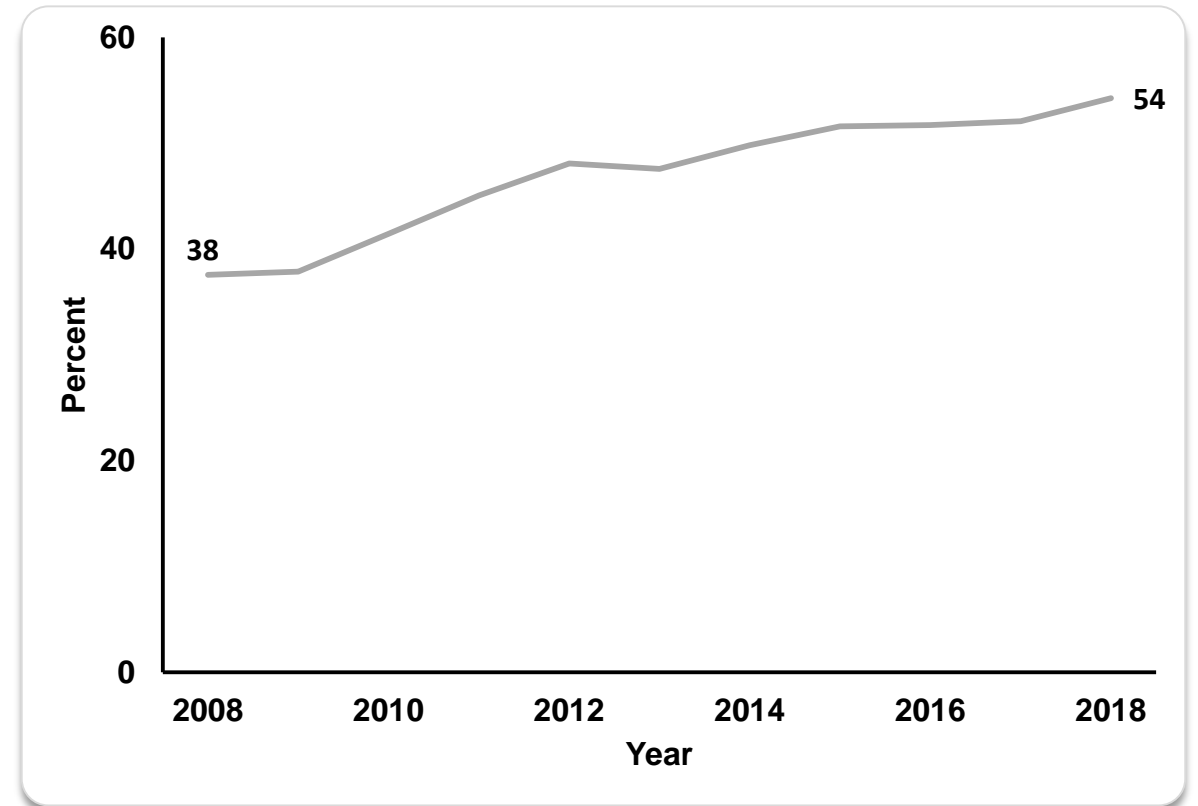
- A clot busting drug Alteplase intravenously
- Venous thromboembolism prophylaxis
- Dysphagia screening
- Antithrombotic medication in the first 48 hours
- Stroke education
- Smoking cessation counseling or treatment
- Rehabilitation assessment
- Lipid lowering medication
- Antithrombotic medication at discharge
- Anticoagulant medication for those with atrial fibrillation

GCASR: Improvements

NIH Stroke Scale Score Documentation for Ischemic Stroke Patients, GCASR 2008-2018



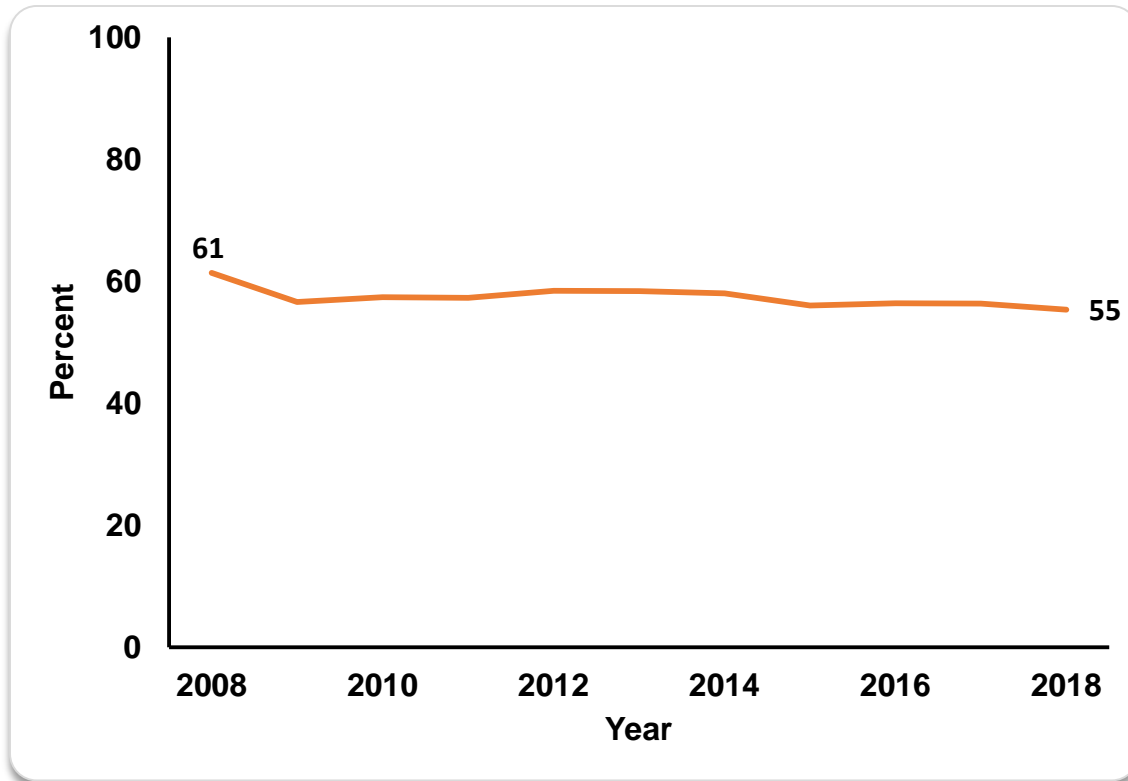
Last Known Well Time Documentation for Ischemic Stroke Patients, GCASR 2008-2018



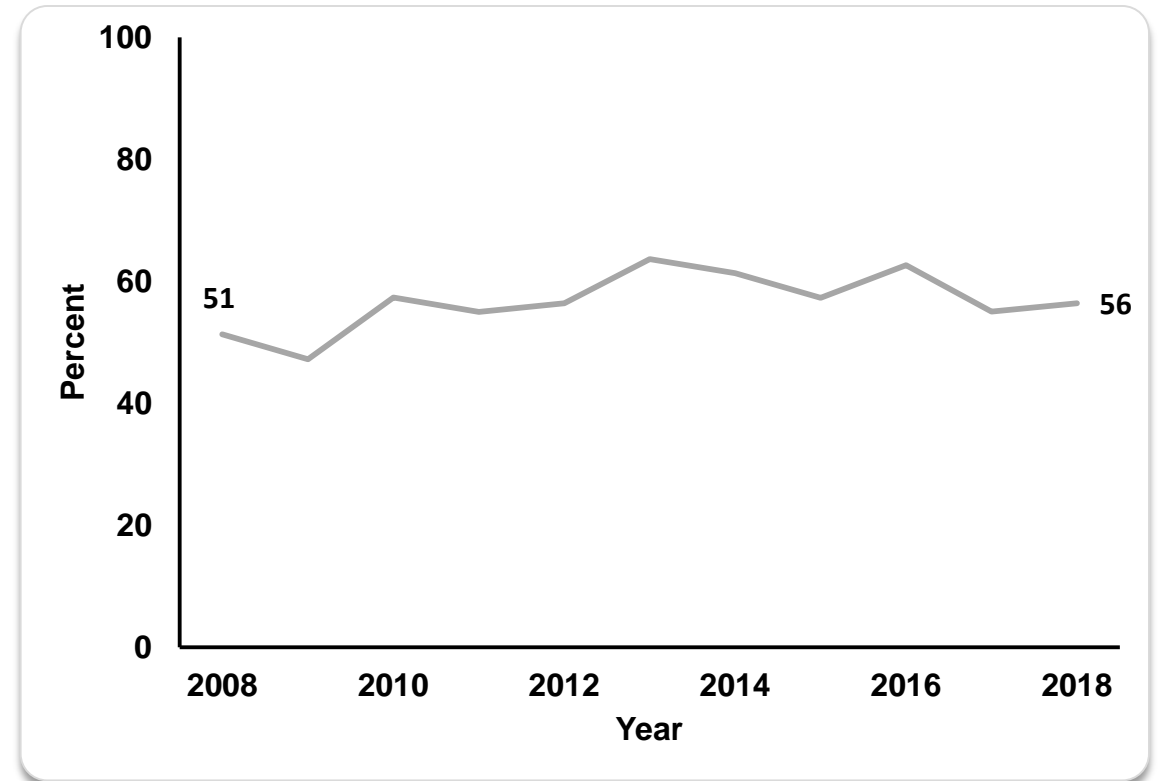
AREAS FOR IMPROVEMENT

Areas for Improvement

Percent of Acute Stroke Patients Brought by EMS, GCASR, 2008-2018

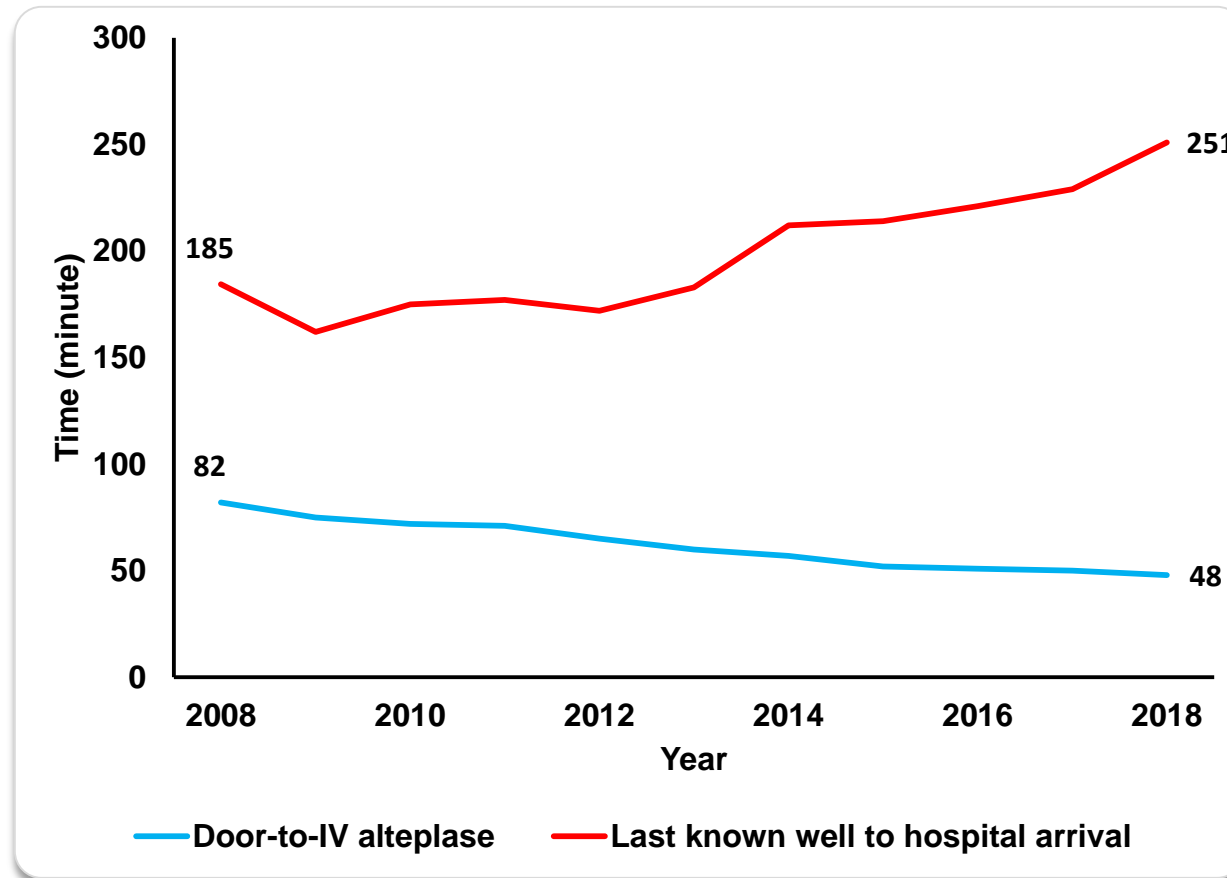


Percent of Acute Stroke Patients Brought by EMS With Hospital Prenotification, GCASR 2008-2018



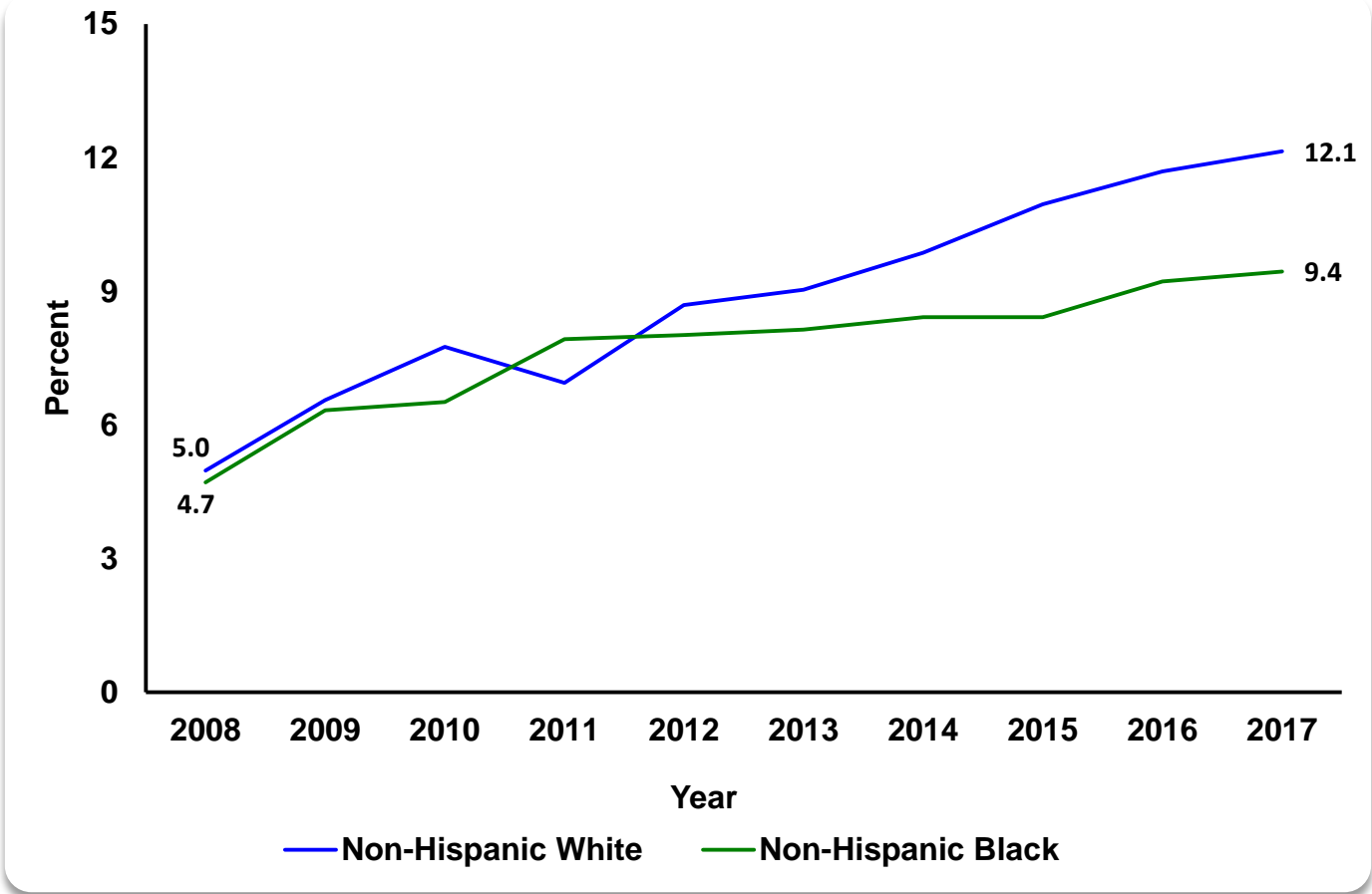
Areas for Improvement

Median Last Known Well to Hospital Arrival and Door-to-IV Alteplase Administration time Among Acute Ischemic Stroke Patients, GCASR 2008-2018



Areas for Improvement

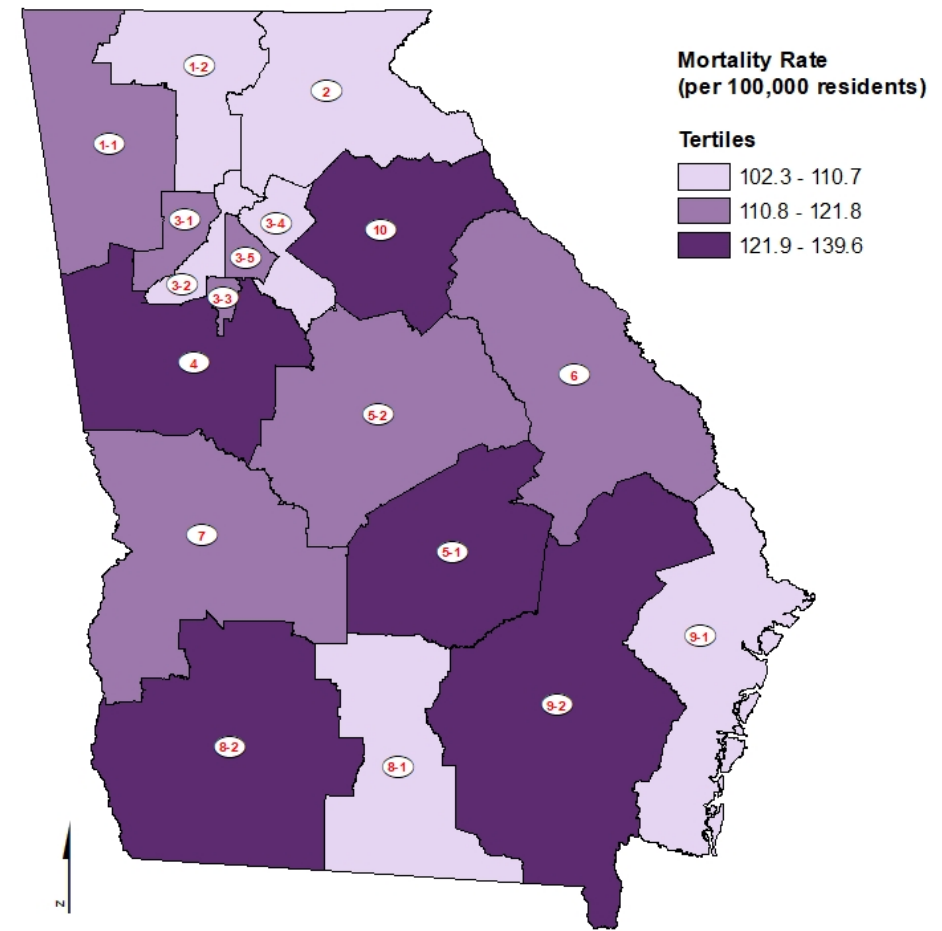
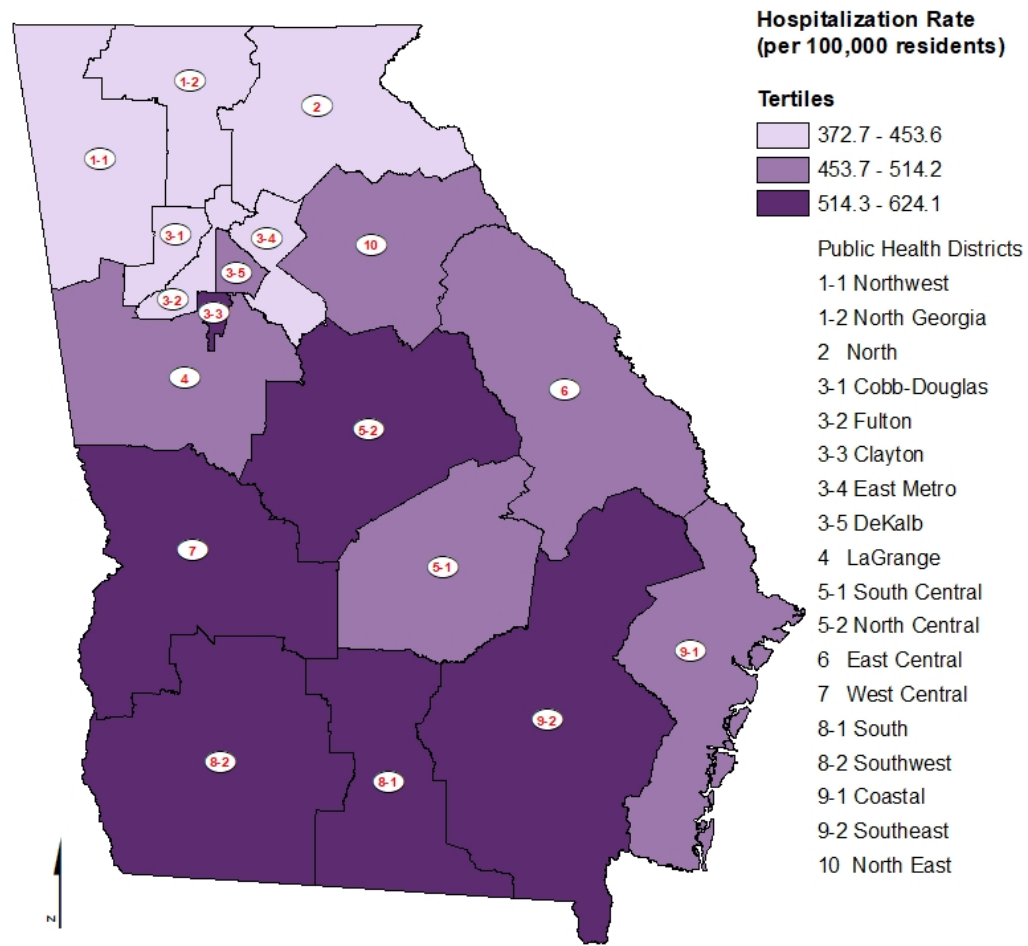
IV Alteplase Administration among All Ischemic Stroke Patients, GCASR 2008-2017



Areas Affected the Most

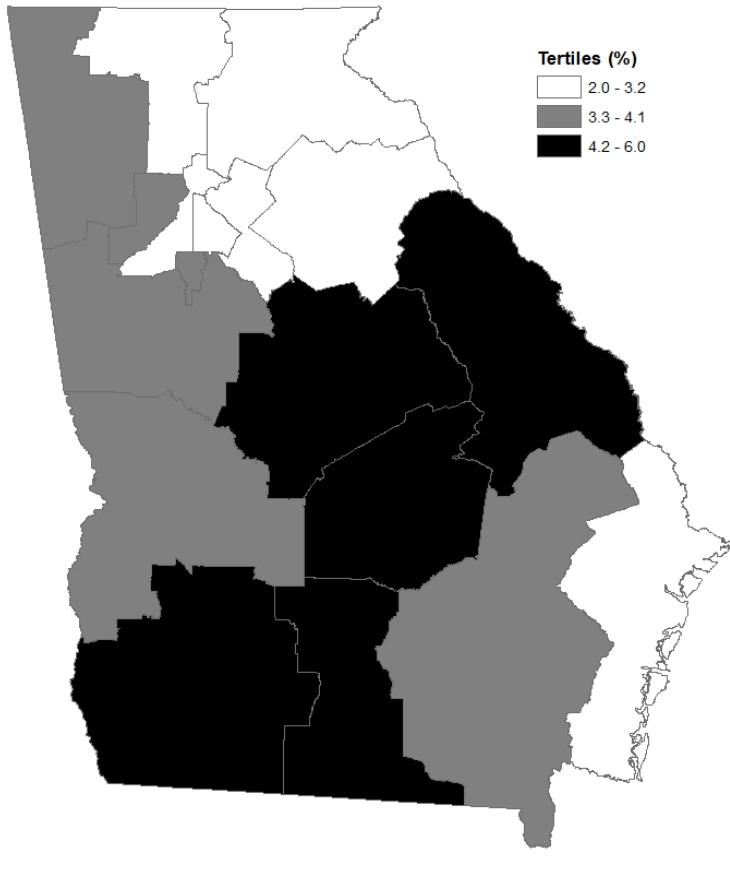
- Stroke morbidity and mortality
- Prevalence of stroke survivors
- Prevalence of stroke-related diseases and risk factors
 - Diabetes, Hypertension, CAD/MI, Obesity, High Cholesterol, Smoking, Physical Inactivity
- Socio-demographic indicators
 - Prevalence of adults
 - With annual household income less than \$25,000
 - Who have not completed high school

Age-adjusted Annual Stroke Hospitalization and Mortality Rates among Adults 45 Years and Older by Public Health Districts, Georgia 2012-2016

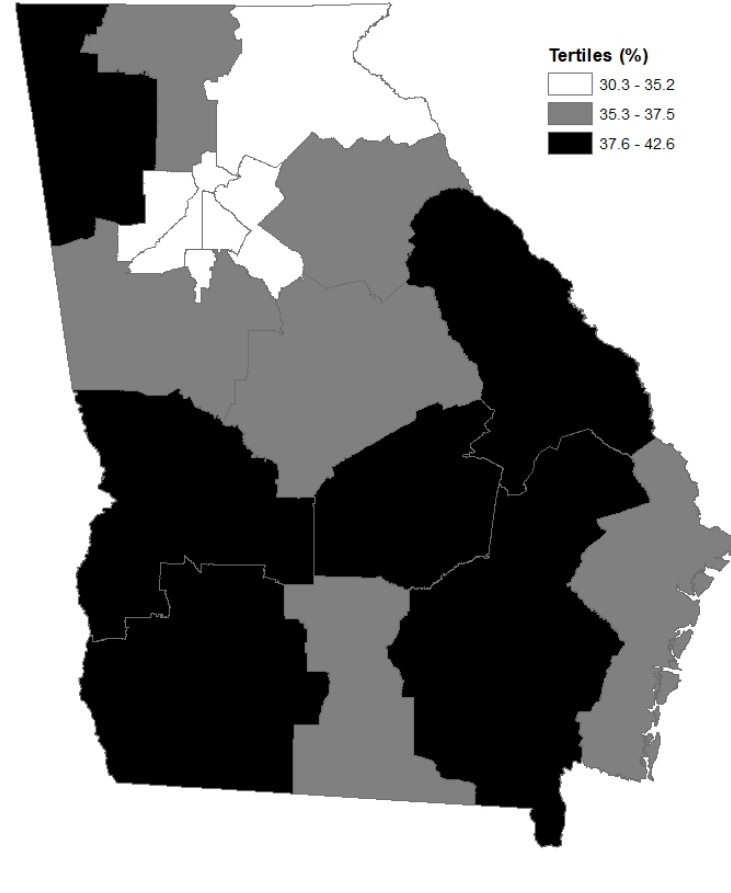


Prevalence of Stroke and Stroke-related Risk Factors, Georgia BRFSS 2011-2017

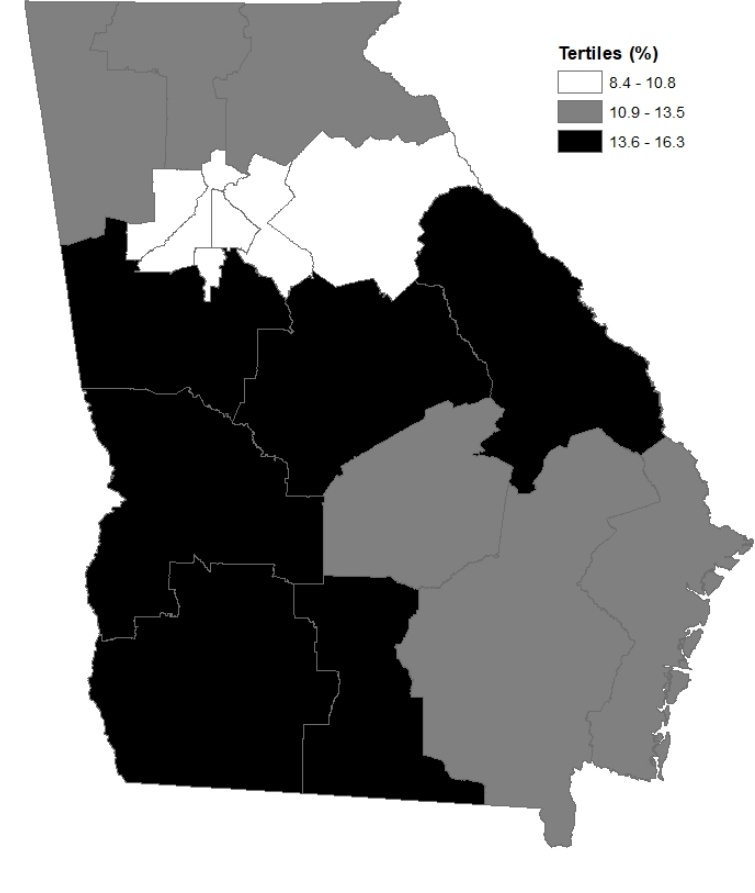
Stroke



Hypertension

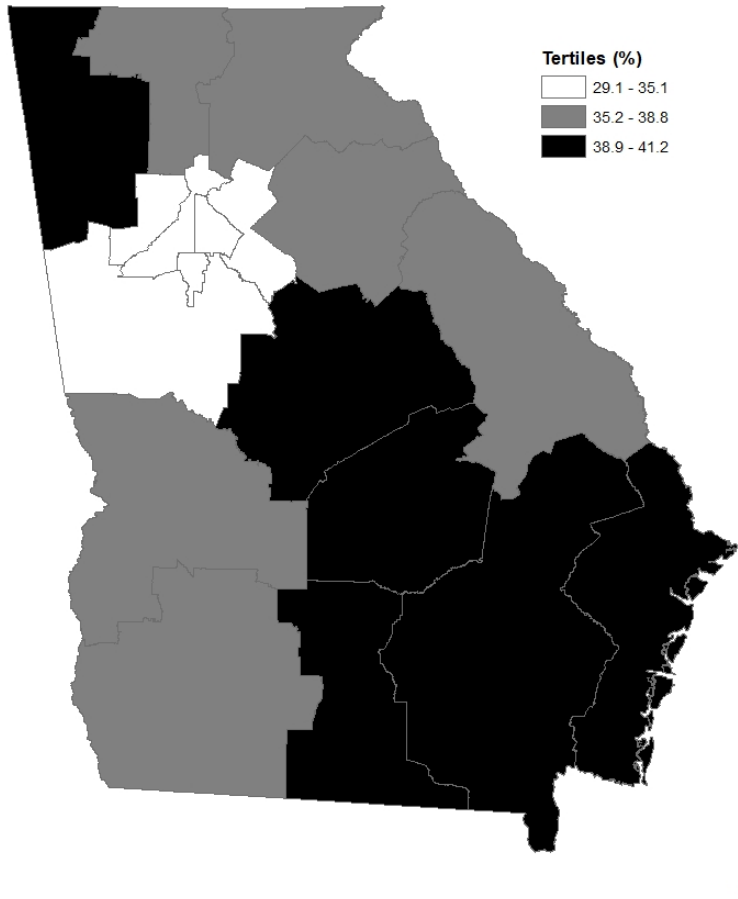


Diabetes

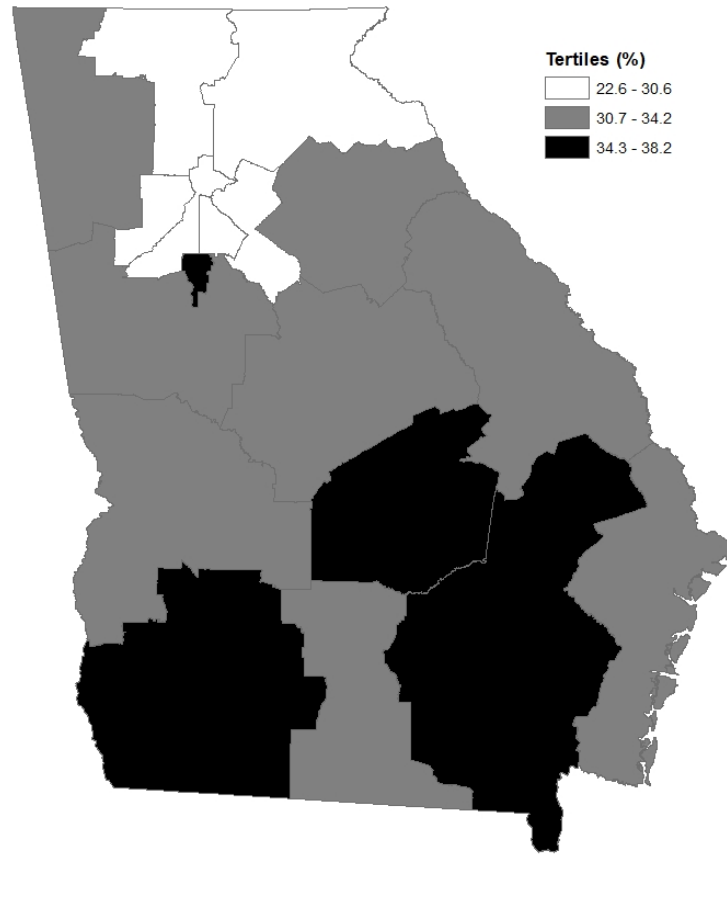


Prevalence of Stroke and Stroke-related Risk Factors, Georgia BRFSS 2011-2017

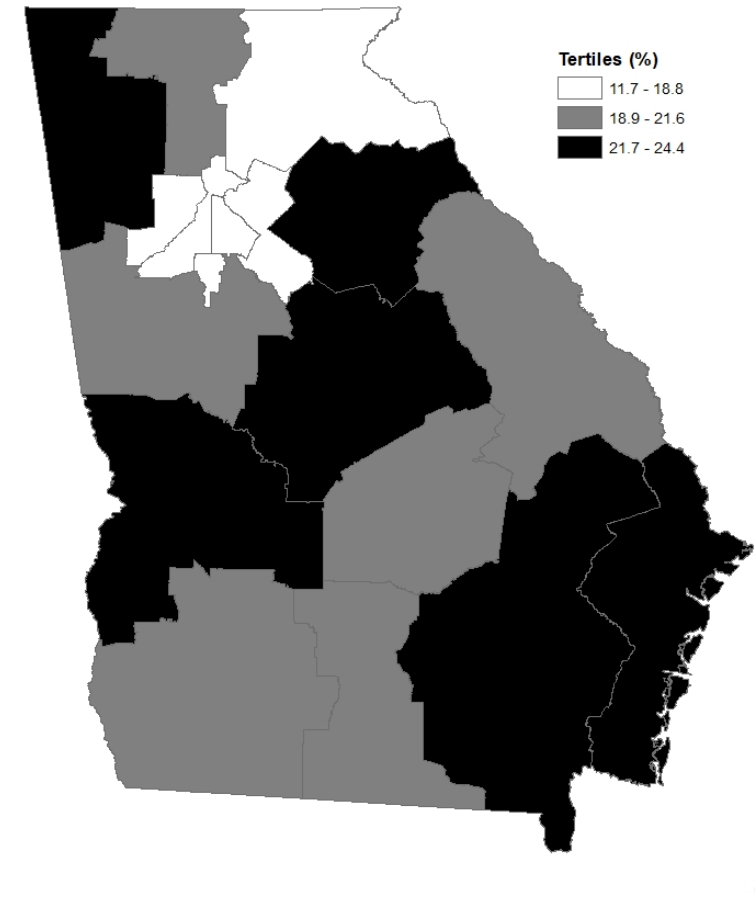
High Cholesterol



Obesity

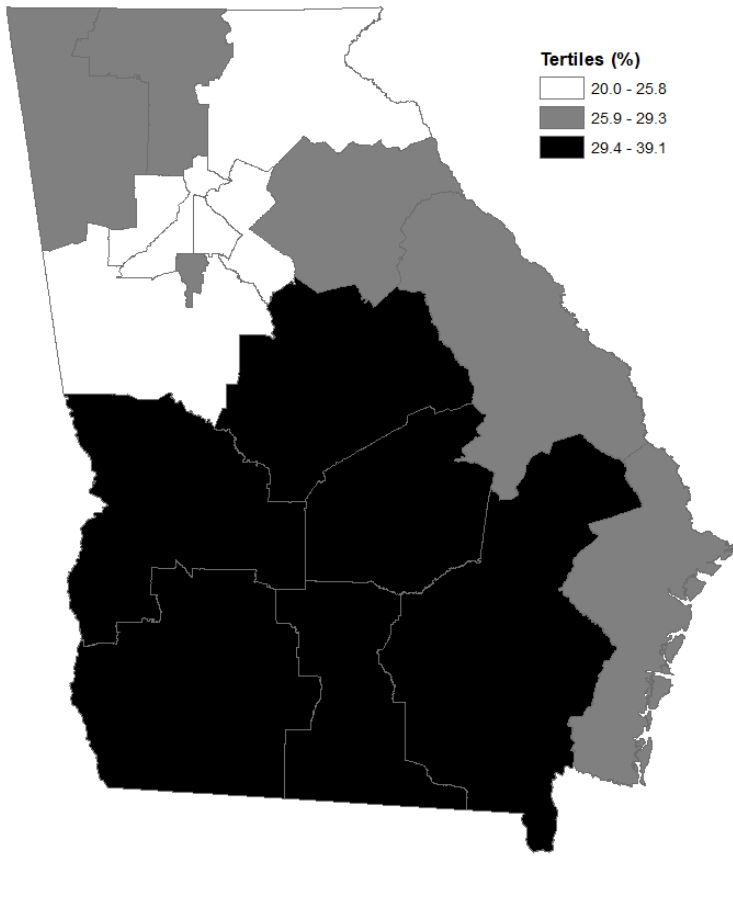


Smoking

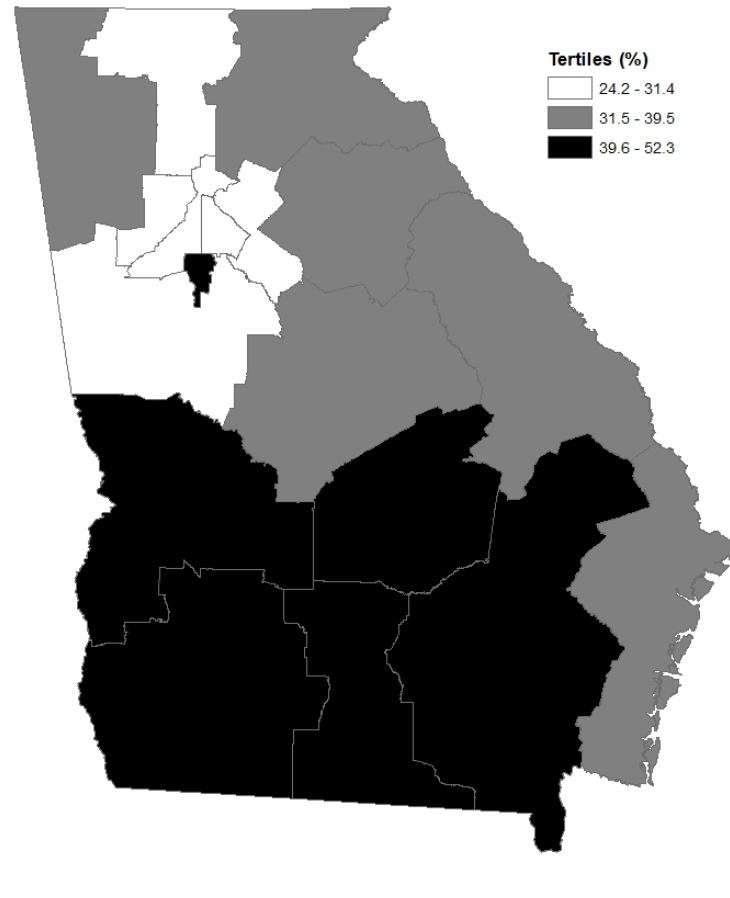


Prevalence of Stroke and Stroke-related Risk Factors, Georgia BRFSS 2011-2017

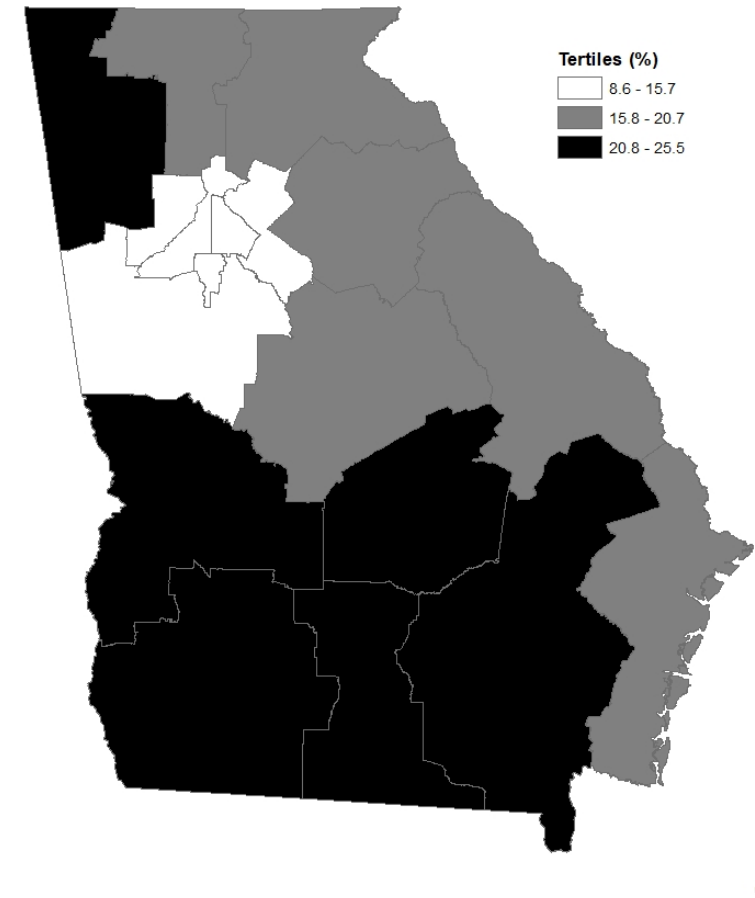
Physical Inactivity



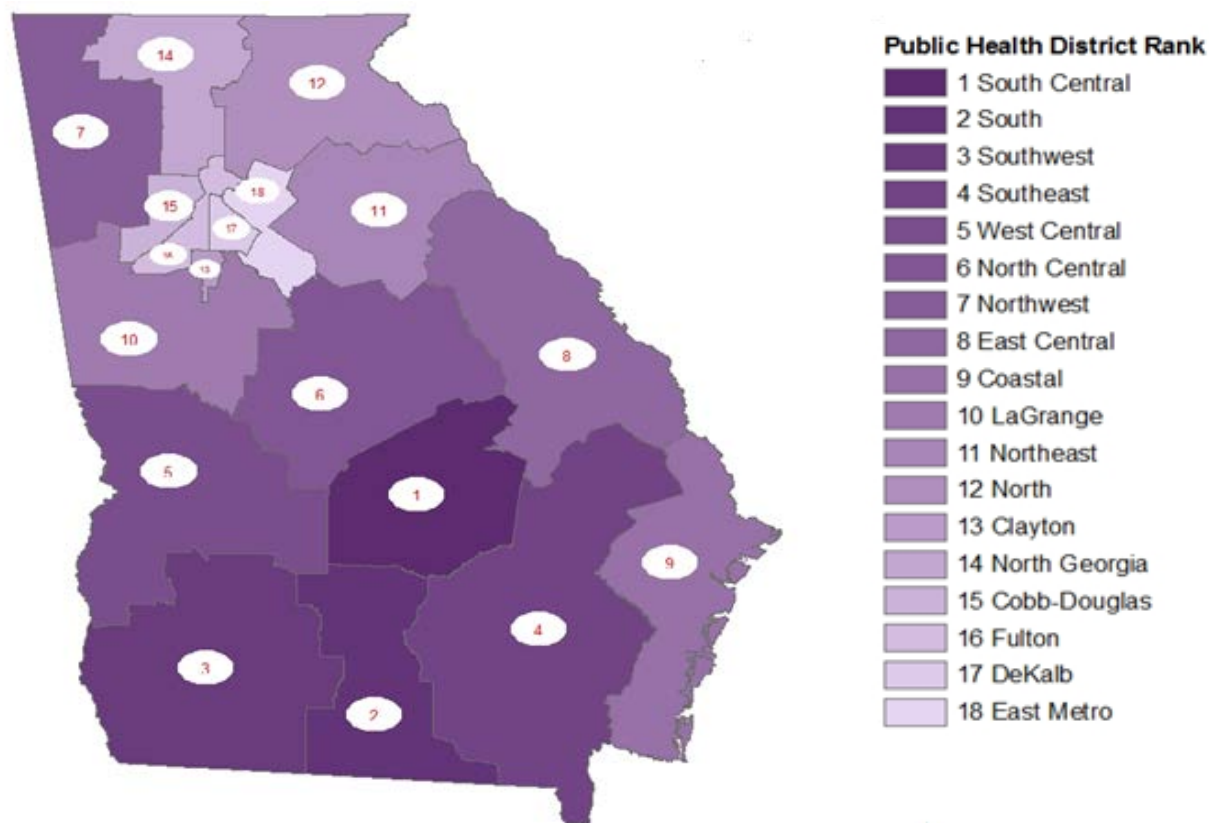
Household Income <\$25,000



High School Noncompletion



Public Health Districts Ranked* by Composite Index of Stroke-related Chronic Conditions and Socioeconomic Status, Georgia BRFSS 2011-2017



*Prevalence of stroke, hypertension, coronary artery disease or myocardial infarction, diabetes mellitus, high blood cholesterol level, smoking, obesity, physical inactivity, high school noncompletion and annual household income less than \$25,000 USD aware considered for ranking.

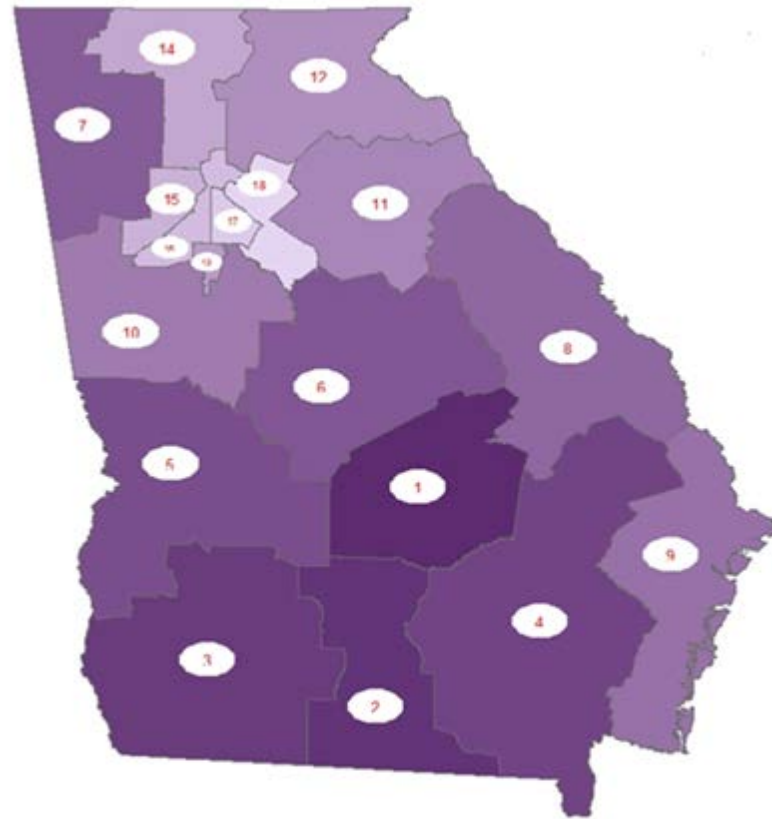
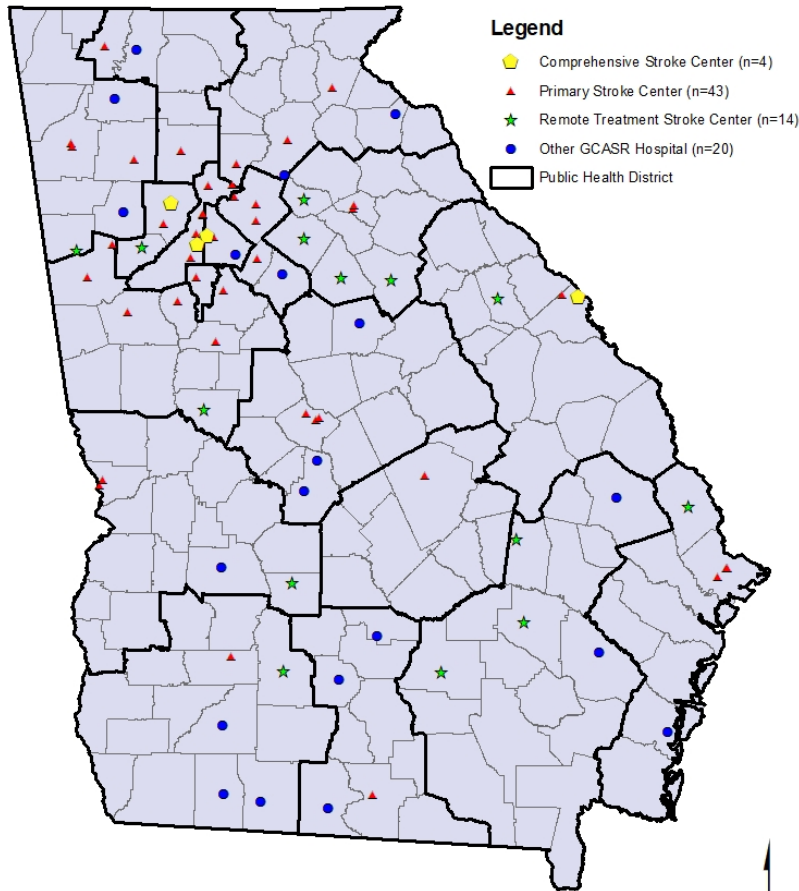


Office of Health Indicators for Planning (OHIP)
Georgia Department of Public Health

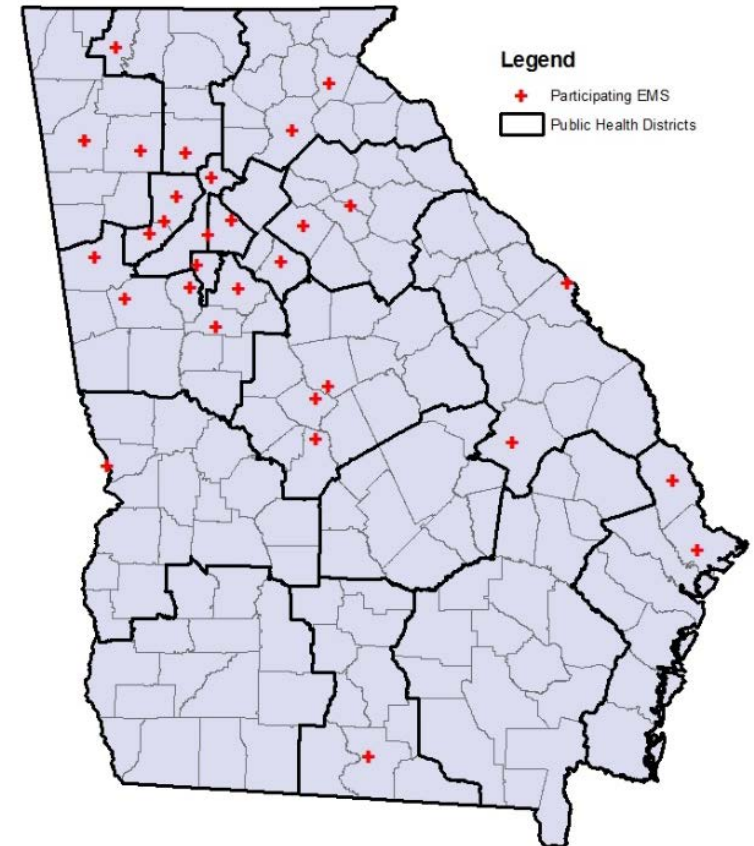


Created: October 20 18
Source: Department of Public Health
Projection: Georgia Statewide Lambert Conformal Conic

Areas Affected the Most & GCASR Coverage



* Prevalence of stroke, hypertension, coronary artery disease or myocardial infarction, diabetes mellitus, high blood cholesterol level, smoking, obesity, physical inactivity, high school noncompletion and annual household income less than \$25,000 USD were considered for ranking.





Summary

- Significant reduction in morbidity and mortality in the last 10-20 years but can be reduced further
- The decline in mortality has stopped/reversed?
- Southwest region of Georgia is most affected
- Quality of in-hospital stroke care has improved in GCASR-participating hospitals
- 45% of stroke patients are not using EMS
- Time between symptom onset and hospital arrival is increasing

Questions?

Thank YOU!