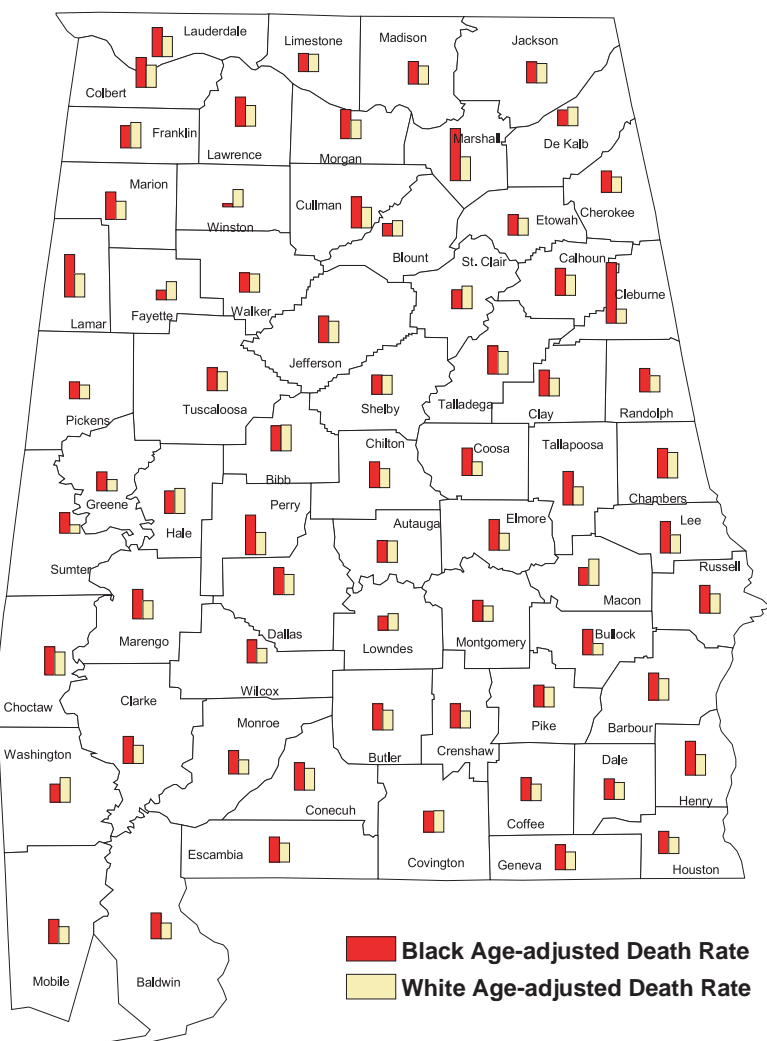


# 2005

# Alabama Stroke Report

## Statistics for Cerebrovascular Disease in Alabama

Age-adjusted Stroke Death Rates by Race and County of Residence, Alabama 1999 - 2002



### Stroke Mortality Rate in Alabama Increasing

After many years of steady decline, the stroke mortality rate among Alabamians has begun to increase. Since 1994, the rate has increased on average by more than 1 percent per year. Currently, stroke is the third leading cause of death in the state, accounting for 3,020 deaths in the year 2003.

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# 2005 Alabama Stroke Report

## Introduction

Cerebrovascular disease, commonly referred to as stroke, is the third leading cause of death in Alabama, following only heart disease and cancer. In 2003, 3,020 Alabamians died from stroke, accounting for more than six percent of all deaths in the year. Many others who suffer strokes live with the disabling effects. According to the American Stroke Association, stroke is the leading cause of long-term disability in the United States overall.

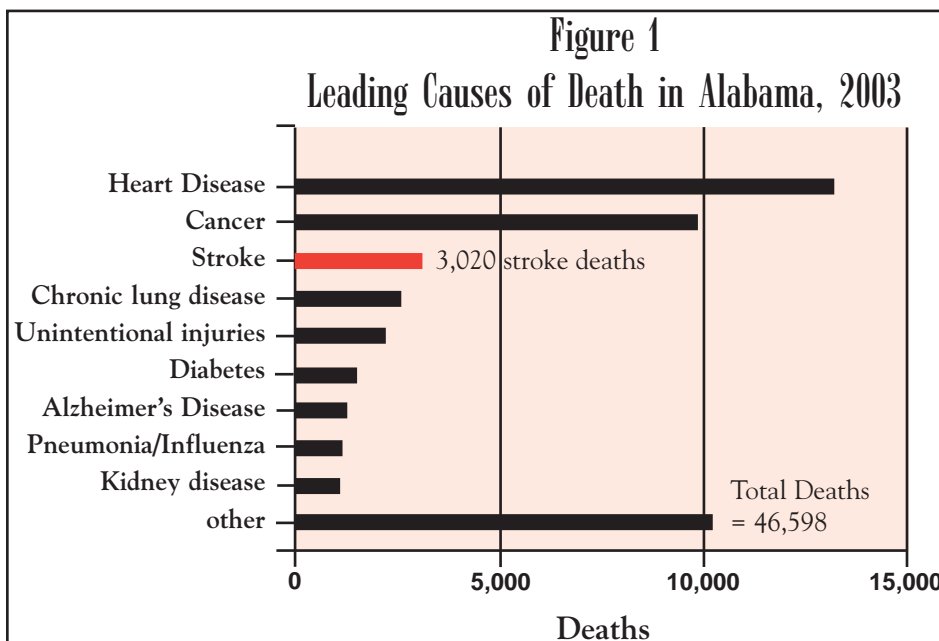
## What is Stroke?

Stroke is a cardiovascular disease that affects the blood vessels to the brain. A stroke occurs when a blood vessel in or near the brain is blocked or bursts, interrupting the flow of blood to the brain.

There are two primary types of stroke:

- **Ischemic stroke** occurs when a blood vessel to the brain is blocked. The two most common causes of this are:
  - *Cerebral thrombosis*, occurring when a blood clot forms and blocks blood flow in an artery bringing blood to the brain, and
  - *Cerebral embolism*, occurring when a wandering blood clot, which formed in some other part of the body, usually the heart, gets lodged in an artery leading to or in the brain and blocks the flow of blood.
- **Hemorrhagic stroke** occurs when a blood vessel ruptures or leaks in the brain. The two most common types of hemorrhagic stroke are:
  - *Subarachnoid hemorrhage*, occurring when a blood vessel on the surface of the brain ruptures and bleeds into the space between the brain and skull, and

- *Intra-cerebral hemorrhage*, occurring when a blood vessel ruptures and bleeds inside the brain itself.



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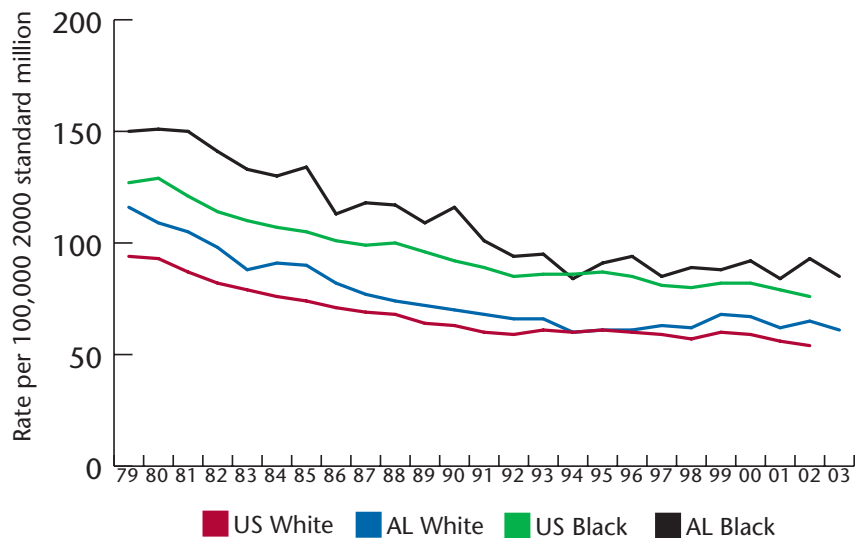
## Trends in Stroke Mortality in Alabama

Stroke mortality has decreased greatly over the past several years. From 1979 to 2002, the age-adjusted death rate decreased approximately 43 percent in both Alabama and the U.S. This decrease was also found in the age-adjusted rates for the two major racial groups in Alabama. The age-adjusted death rate decreased approximately 47 percent in whites and 43 percent in blacks during this time period.

Although stroke mortality has decreased in Alabama in the past few years, Alabama's stroke death rate remains above the national rate. In 2003, Alabama's stroke mortality rate was 67.1 per 100,000 population compared to the 2002 national rate of 56.4.



**Figure 2.**  
**Cerebrovascular Disease**  
**Age-adjusted Death Rates**  
**by Race,**  
**Alabama and United States,**  
**1979 to 2003**



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## Patterns in Stroke Mortality in Alabama

Figure 3 shows striking differences between the stroke mortality rates for white and black Alabamians. The risk of death from stroke is much greater for Alabamians of black and other races who have higher death rates overall and higher death rates at younger ages. The 2003 age-adjusted death rate was higher for black and other (80.7 per 100,000) compared to white (60.7 per 100,000).

In 2003, black and other males had the highest age-adjusted stroke death rate at 91.1, followed by black and other females at 73.6. The age-adjusted rates for white males and females were identical. The stroke death rate for black and other males was 23.8 percent higher than for black and other females and 50.6 percent higher than for white males.

Because of the increasing risk of stroke as one ages there are differences in stroke mortality among age groups in the state. It is not surprising that the number of deaths attributed to stroke increases with age, with the largest percent of deaths occurring in those 85 years of age and older.

However, stroke is not just a disease of old age. In 2003, in Alabama, 15.7 percent of people who died from stroke were under the age of 65. These premature deaths represent substantial cost to individuals, families and the state in terms of years of productive life lost.

Figure 3. Cerebrovascular Disease Age-adjusted Death Rates, by Race and Sex Alabama 2003

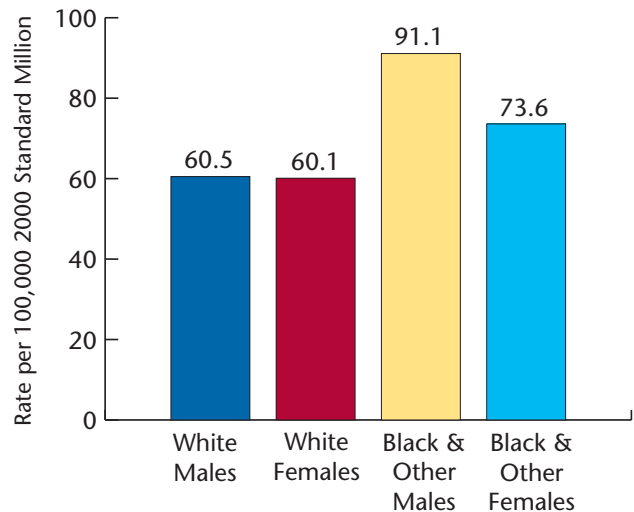
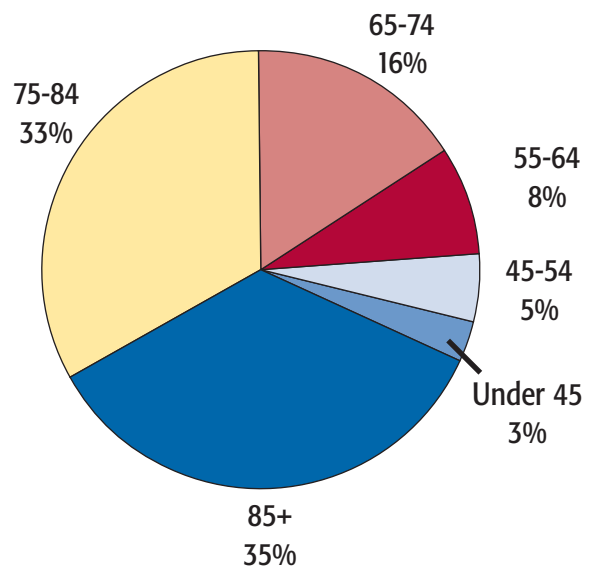


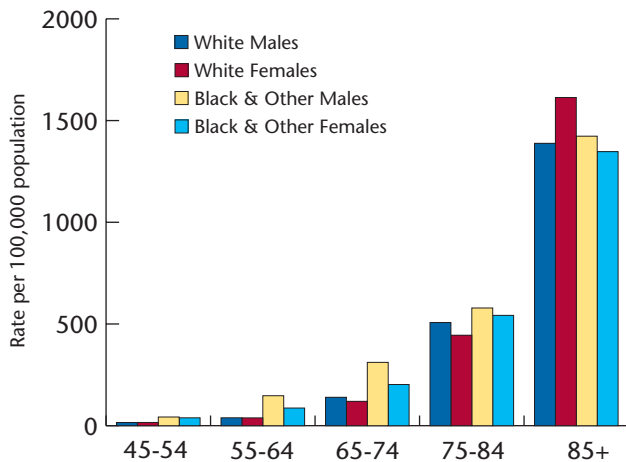
Figure 4 Cerebrovascular Disease Deaths by Age Group, Alabama 2003



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## Premature Stroke Deaths by Race

Figure 5. Cerebrovascular Disease  
Age-specific Death Rates  
by Race, Sex, and Age Group,  
Alabama 2003



Age-specific stroke death rates clearly illustrate the higher risk of death from stroke for younger black and other Alabamians. For Alabamians ages 45 to 54, overall the black and other rate was 159 percent higher than the white rate. For ages 55 to 64, the black and other rate was 195 percent higher than the white rate.

The higher risk of death from stroke for black and other Alabamians at younger ages is also clear when comparing age-specific death rates by race and sex. Figure 5 shows the higher risk for death from stroke at ages 45 to 54 and 55 to 64 for

black and other compared to white males and females. In the oldest age groups, stroke risk becomes more comparable across race and sex groupings.

## Stroke Prevalence

Data are not available within the state to determine the number of persons who may have suffered a stroke within a given year (i.e., incidence of stroke), nor are data available to determine with certainty how many Alabamians may have survived a stroke (i.e., prevalence). The best estimate of stroke prevalence may be found in the results of the Alabama Behavioral Risk Factor Survey, a telephone survey administered to adults within the state each year. In 2003, approximately 3 percent of Alabama adults (or an estimated 126,000 individuals) reported being told by a health care professional that they have had a stroke. There were no real differences in self-reported stroke prevalence between men and women (3.6 percent among women, compared to 3.0 percent among men) or between blacks and whites.

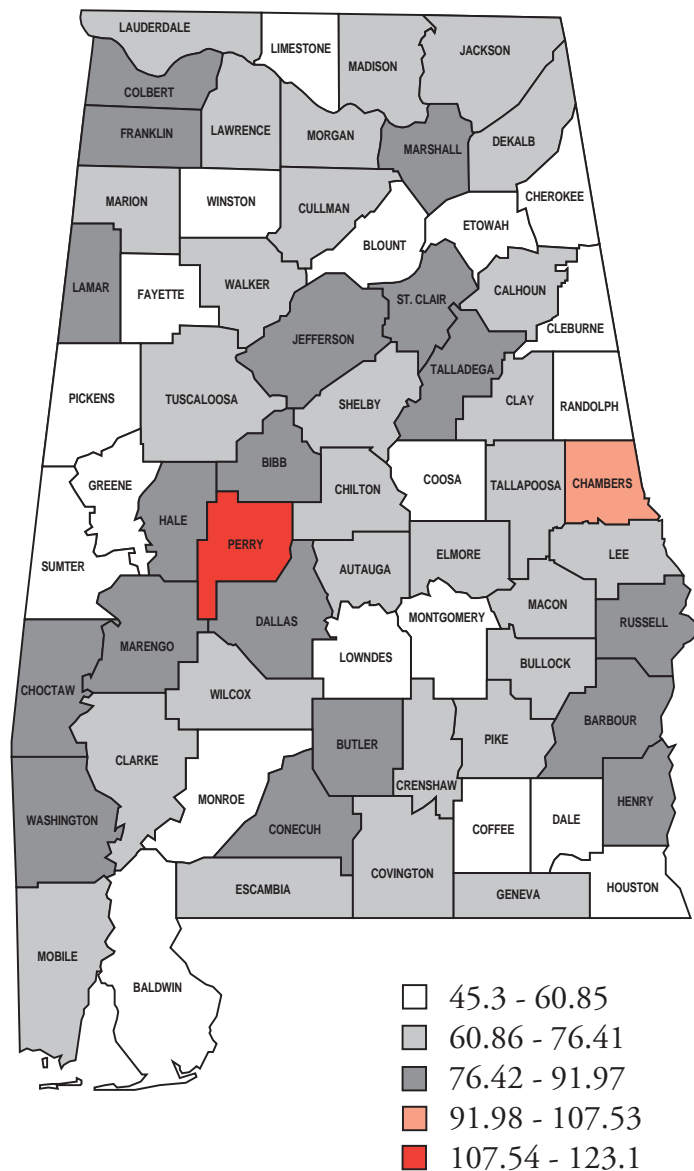


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Table 1. Stroke Age-adjusted Mortality by County, Alabama, 1999-2002

| County     | Age Adjusted Rates |       |       |
|------------|--------------------|-------|-------|
|            | Total              | Black | White |
| Alabama    | 69.9               | 89.1  | 65.1  |
| Autauga    | 73.6               | 76.0  | 74.0  |
| Baldwin    | 55.3               | 94.0  | 52.8  |
| Barbour    | 81.2               | 97.3  | 74.0  |
| Bibb       | 90.2               | 90.5  | 93.7  |
| Blount     | 48.6               | 36.9  | 48.9  |
| Bullock    | 70.3               | 91.6  | 33.7  |
| Butler     | 78.3               | 94.9  | 68.0  |
| Calhoun    | 72.8               | 98.2  | 69.3  |
| Chambers   | 97.1               | 108.1 | 92.4  |
| Cherokee   | 52.3               | 76.4  | 51.1  |
| Chilton    | 67.4               | 95.0  | 65.5  |
| Choctaw    | 89.5               | 103.0 | 82.2  |
| Clarke     | 73.5               | 98.2  | 61.4  |
| Clay       | 63.7               | 94.0  | 59.6  |
| Cleburne   | 50.1               | 238.0 | 45.0  |
| Coffee     | 58.9               | 82.2  | 55.7  |
| Colbert    | 81.7               | 110.4 | 77.5  |
| Conecuh    | 86.7               | 100.6 | 77.8  |
| Coosa      | 57.7               | 100.3 | 42.3  |
| Covington  | 75.2               | 73.9  | 75.2  |
| Crenshaw   | 61.6               | 86.2  | 56.3  |
| Cullman    | 73.0               | 115.1 | 72.4  |
| Dale       | 57.3               | 70.7  | 55.8  |
| Dallas     | 84.8               | 97.9  | 69.7  |
| DeKalb     | 62.7               | 50.1  | 63.2  |
| Elmore     | 63.9               | 113.4 | 57.0  |
| Escambia   | 68.5               | 89.1  | 64.3  |
| Etowah     | 57.9               | 71.2  | 55.9  |
| Fayette    | 57.9               | 26.0  | 61.8  |
| Franklin   | 91.1               | 77.7  | 92.8  |
| Geneva     | 63.6               | 90.2  | 60.5  |
| Greene     | 54.4               | 64.3  | 32.1  |
| Hale       | 83.4               | 79.5  | 90.8  |
| Henry      | 86.3               | 125.9 | 70.4  |
| Houston    | 58.2               | 78.5  | 54.5  |
| Jackson    | 68.0               | 74.7  | 68.2  |
| Jefferson  | 81.8               | 97.1  | 74.8  |
| Lamar      | 87.6               | 161.9 | 81.1  |
| Lauderdale | 71.2               | 105.8 | 68.8  |
| Lawrence   | 74.5               | 107.3 | 70.7  |
| Lee        | 74.4               | 117.3 | 61.6  |
| Limestone  | 58.5               | 61.2  | 58.2  |
| Lowndes    | 45.3               | 44.7  | 55.6  |
| Macon      | 65.9               | 60.4  | 94.9  |
| Madison    | 63.6               | 79.6  | 61.7  |
| Marengo    | 83.1               | 109.7 | 62.3  |
| Marion     | 62.9               | 100.8 | 62.3  |
| Marshall   | 86.6               | 201.9 | 85.5  |
| Mobile     | 64.8               | 87.2  | 56.4  |
| Monroe     | 56.7               | 82.6  | 44.6  |
| Montgomery | 57.7               | 72.6  | 49.6  |
| Morgan     | 66.1               | 106.1 | 62.9  |
| Perry      | 123.1              | 151.0 | 79.1  |
| Pickens    | 47.5               | 56.3  | 43.9  |
| Pike       | 69.5               | 76.2  | 67.4  |
| Randolph   | 59.3               | 83.1  | 53.1  |
| Russell    | 78.0               | 101.4 | 66.2  |
| Shelby     | 65.1               | 67.7  | 65.4  |
| St. Clair  | 79.2               | 66.6  | 80.1  |
| Sumter     | 54.8               | 72.3  | 21.1  |
| Talladega  | 85.7               | 104.6 | 80.5  |
| Tallapoosa | 73.1               | 125.1 | 62.0  |
| Tuscaloosa | 68.7               | 82.1  | 65.3  |
| Walker     | 61.3               | 67.3  | 61.5  |
| Washington | 80.8               | 60.9  | 87.6  |
| Wilcox     | 68.3               | 82.4  | 46.3  |
| Winston    | 58.3               | 0.0   | 58.7  |

Figure 6. Stroke Age-adjusted Death Rates by County of Residence Alabama 1999 - 2002



# 2005 Alabama Stroke Report

## Risk Factors for Stroke in Alabama

Many of the risk factors that place an individual at greater risk for stroke are not within the control of the individual. These non-modifiable risk factors are: age, gender, family history, and race/ethnicity. However, other risk factors that increase risk of stroke are controllable.

Unfortunately, many Alabamians suffer from one or more of these modifiable risk factors. According to the 2003 Alabama Behavioral Risk Factor Survey:

- **High blood pressure** - 33.1 % of Alabama adults reported they had been told by a health care professional that they had high blood pressure.
  - 32.2 % among whites
  - 38.3 % among blacks
- **High cholesterol** - 36.8 % of Alabama adults reported they had been told by a health professional that their blood cholesterol was high.
  - 37.6 % among white
  - 32.5 % among blacks
- **Diabetes** - 8.1 % of Alabama's adults reported that they have diabetes.
  - 7.2 % among whites
  - 11.3 % among blacks
- **Overweight or obesity** - 63.2 % of Alabama adults are overweight or obese, according to their self-reported height and weight.
  - 61.2 % whites
  - 70.3 % blacks
- **Smoking** - 24.9 % of Alabama adults reported that they currently smoke.
  - 25.5 % whites
  - 22.5 % blacks
- **Physical Inactivity** - 29.6 % of Alabama adults reported no leisure time physical activity (any level of physical activity or exercise during the past 30 days other than one's regular job)
  - 27.7 % whites
  - 34.1 % blacks
- **Excessive alcohol intake** - 4.2 % of Alabama adults were classified as heavy drinkers by virtue of reporting more than two drinks a day for men and more than one drink a day for women.

Taken together, these findings suggest that a large number of Alabama adults are at risk of having a stroke, based on modifiable risk factors.



# 2005 Alabama Stroke Report

## Warning Signs of Stroke

The warning signs of stroke include:

- Sudden numbness or weakness of the face, arm or leg, especially on one side of the body
- Sudden confusion, trouble speaking or understanding speech
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, loss of balance or coordination
- Sudden severe headache with no known cause

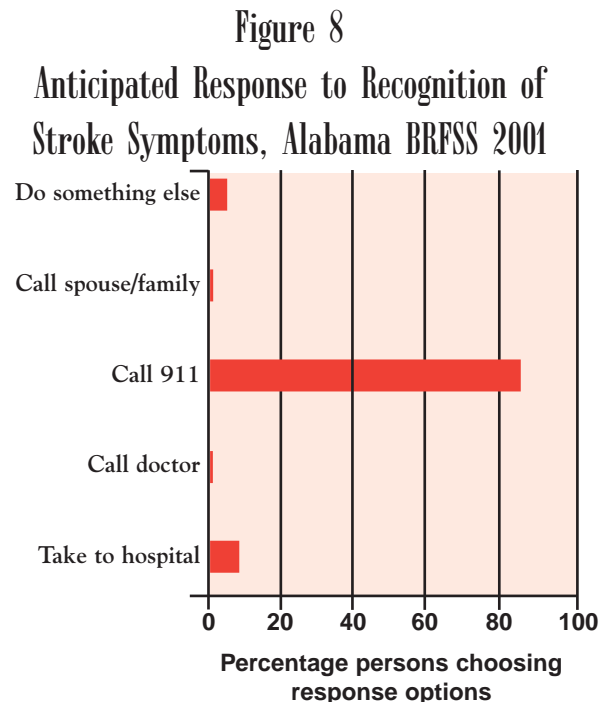
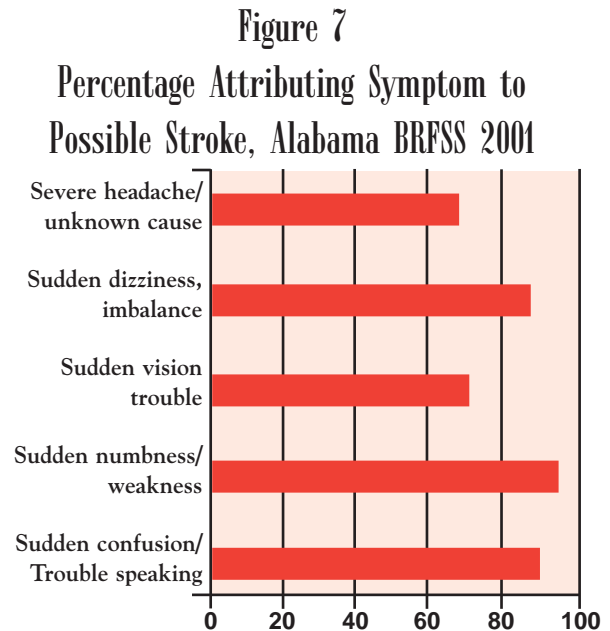
Not all warning signs occur with every stroke. If you believe someone is having a stroke, **call 9-1-1 immediately. Stroke is a medical emergency.** Early recognition and medical treatment can prevent or reduce disability and potentially save lives.

## Recognition of Stroke Symptoms in Alabama

One of the national health objectives for 2010 is to increase the proportion of people who are aware of the early warning signs and symptoms of stroke. In the 2001 Alabama Behavioral Risk Factor Survey, a statewide survey of Alabama adults, respondents were asked to identify the symptoms of stroke from a series of symptoms listed. Figure 7 shows the percentage of adults who were able to correctly identify each option as a possible sign of stroke. The least recognized symptoms of stroke were sudden trouble seeing in one or both eyes and sudden, severe headache with no known cause.

Survey participants were also asked how they might respond if they thought they or a loved one were having a stroke. It is encouraging to note that 85.4 percent of respondents indicated they would call for emergency assistance, which is the preferred option in the event of a stroke, since rapid treatment with appropriate medications can limit damage and enhance recovery.

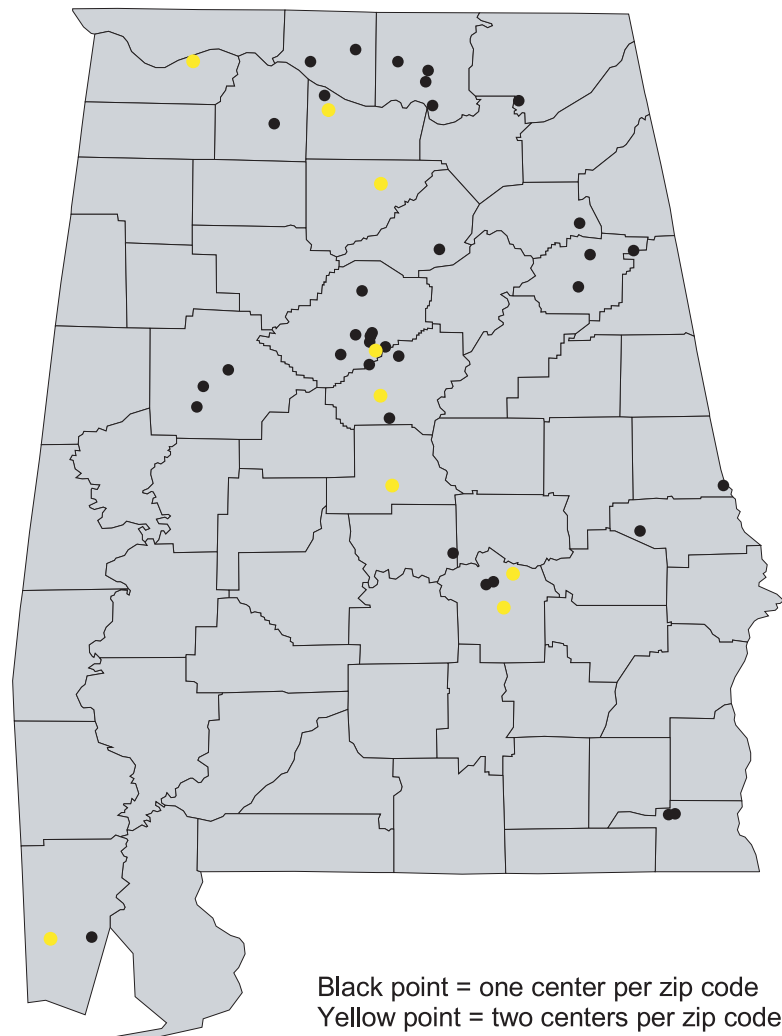
However, the percentage of respondents recognizing *all* correct stroke warning signs *and* who identified calling 9-1-1 as the appropriate action to take if someone were possibly having a stroke was low (21.7%). These figures indicate a need to improve public awareness of stroke as a medical emergency if the 2010 national health objective is to be achieved.



# 2005 Alabama Stroke Report

## Rehabilitation Centers, Alabama 2005

Nationally, Medicare spent \$3.6 billion in 1998 on stroke survivors discharged from short-stay hospitals. From the early 1970s to the early 1990s, the estimated number of noninstitutionalized stroke survivors increased from 1.5 million to 2.4 million. Figure 9, depicts that rehabilitation centers in Alabama are located mainly in urban areas not rural areas. Among Alabama's 67 counties, only 20 counties have rehabilitation centers.



Produced by the Center for Health Statistics  
July 2005

## Methods

Figure 1, 3, 4, and 5: Data source was the Center for Health Statistics, Alabama Department of Public Health.

Cover, Table 1, and Figure 2 and 6. Data source was the National Center for Health Statistics, Centers for Disease Control and Prevention ([www.wonder.cdc.gov](http://www.wonder.cdc.gov))  
Data was combined for the years 1999 through 2002.

Figures 7 and 8. Data source was Heat Attack and Stroke Module, Module Report, Behavioral Risk Factor Surveillance System, Alabama 2001.  
Weighed percentages were used in both figures.

Figure 9. ADPH Bureau of Health Provider Standards, Division of Health Care Facilities

## Definitions

Age-adjusted mortality (death) rate. A rate calculated in a manner that allows for the comparison of rates derived from populations with different age structures. In this document, all age adjustments are performed using the direct method. The 2000 standard million was used as the standard.

Cardiovascular disease. This term describes a wide variety of diseases of the heart and blood vessels, including coronary heart disease, high blood pressure, stroke, and rheumatic heart disease. Cardiovascular disease is defined as ICD9 codes 390-448 and ICD10 codes I00-I99.

Stroke. This term describes that disease or event that occurs when a blood vessel in or near the brain is blocked or ruptures, causing damage to or loss of neural tissue. A type of cardiovascular disease, stroke is defined by ICD9 codes 430-438 and ICD10 codes I60-I69.

Prevalence. The percentage of a population that has a disease or risk factor at a specific point in time.

Incidence. The number of new cases of a disease or event that occur in a specified population within a specified period of time. Incidence is typically expressed as the number of cases per 100,000 persons in the population.

Risk factor. A behavior, characteristic, finding on clinical examination, or other circumstance that is consistently associated with increased probability of a disease or event. Risk factors addressed in this document have been identified by the American Heart Association through a review of research as being consistently associated with atherosclerosis and/or stroke.

## Abbreviations

AL = Alabama  
BRFSS = Behavioral Risk Factor Surveillance Survey  
CDC = Centers for Disease Control and Prevention  
ICD9 = International Classification of Diseases, 9th Revision  
ICD10 = International Classification of Disease, 10th Revision  
NCHS = National Center for Health Statistics  
US = United States

# 2005 Alabama Stroke Report



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Cardiovascular Health Program