



NYS BRFSS Brief

The Behavioral Risk Factor Surveillance System (BRFSS) is an annual statewide telephone survey of adults developed by the Centers for Disease Control and Prevention and conducted in all 50 states, the District of Columbia, and several US Territories. The New York BRFSS is administered by the New York State Department of Health to provide statewide and regional information on behaviors, risk factors, and use of preventive services related to the leading causes of chronic and infectious diseases, disability, injury, and death.

Awareness of Stroke Signs and Symptoms

New York State Adults; 2021



Key Findings

- In 2021, 35.5% of NYS adults were able to recognize all five common signs and symptoms of stroke correctly and 31.2% were able to recognize all five symptoms and identify calling 9-1-1 as the first action to take in response to stroke.
- Less than half of adults (49%) were aware a sudden headache without a known cause is a sign of stroke.
- Awareness of all five stroke warning signs and symptoms was significantly lower among males, adults who are non-White (Black non-Hispanic, Hispanic, and other race or multiracial non-Hispanic), adults with household incomes less than \$50,000, adults living with disability, adults with no personal doctor, and adults who live in New York City.
- Adults who completed the interview in Spanish demonstrated significant disparities in knowledge of all five signs and symptoms of stroke compared to adults who completed the interview in English.
- Eighty-six percent of adults correctly identified calling 9-1-1 as the first action to take when responding to stroke symptoms. The percentage of adults identifying 9-1-1 correctly was significantly higher among females and adults who completed the interview in English compared to those who completed the interview in Spanish.

Introduction

Stroke occurs when blood flow to the brain is restricted because a blood vessel is blocked by a clot or a blood vessel bursts (aneurysm). Stroke is the fifth leading cause of death in the United States (US) and the sixth leading cause of death in New York State (NYS). In the US, approximately 159,000 people died of stroke in 2020, including 6,400 New Yorkers.^{1,2} Stroke is also a significant cause of disability including paralysis, speech difficulties, and emotional disturbances.³

The onset of a stroke is often accompanied by numbness or weakness of the face, arm, or leg on one side of the body; confusion and trouble speaking or understanding; trouble walking, dizziness, or loss of balance or coordination; trouble seeing in one or both eyes; or severe headache without a known cause. Individuals who arrive at a hospital within three hours of the first stroke symptom onset can receive treatments that return blood flow to areas impacted by a clot. These stroke patients are more likely to be healthier three months after a stroke than those patients whose care is delayed.⁴ To ensure stroke victims receive timely care and reduce death and disability due to stroke, it is important for the public to be familiar with the symptoms of stroke, recognize signs of stroke in others, and respond to signs and symptoms by calling 9-1-1 immediately. Emergency medical services personnel who respond to 9-1-1 are trained to recognize stroke and transport patients with suspected stroke to one of the more than 100 NYS designated stroke centers with expertise in caring for stroke patients.⁵



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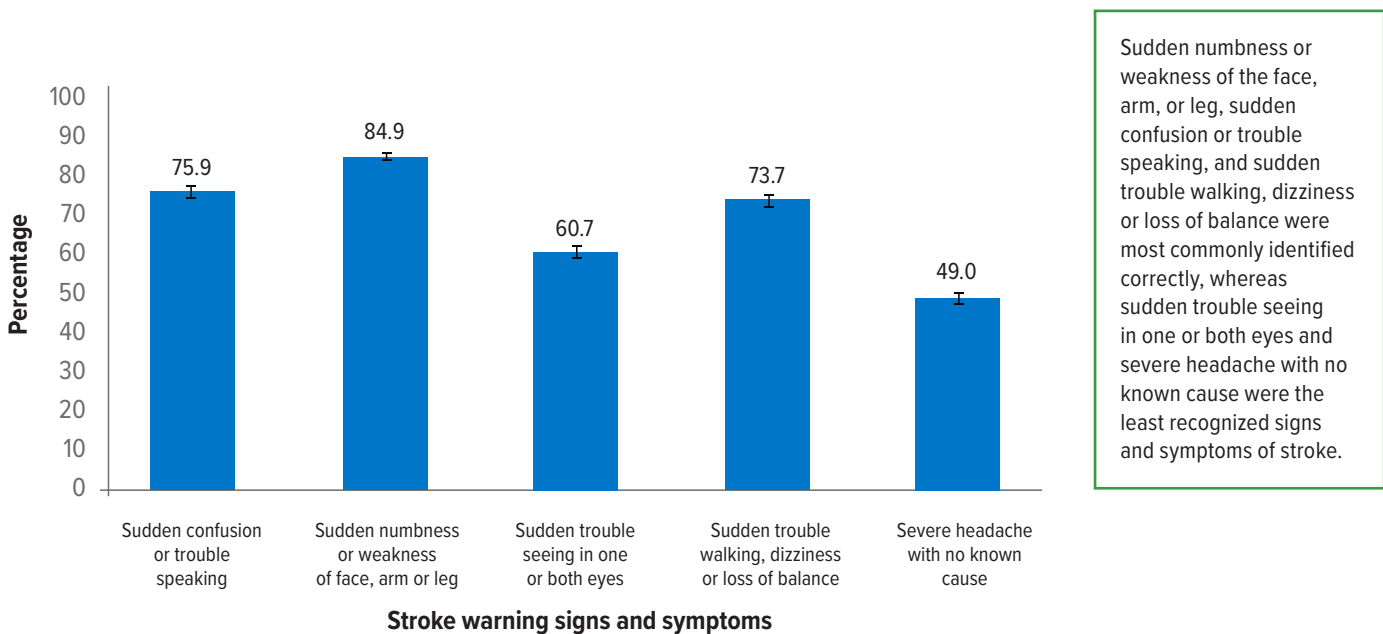




Health Equity

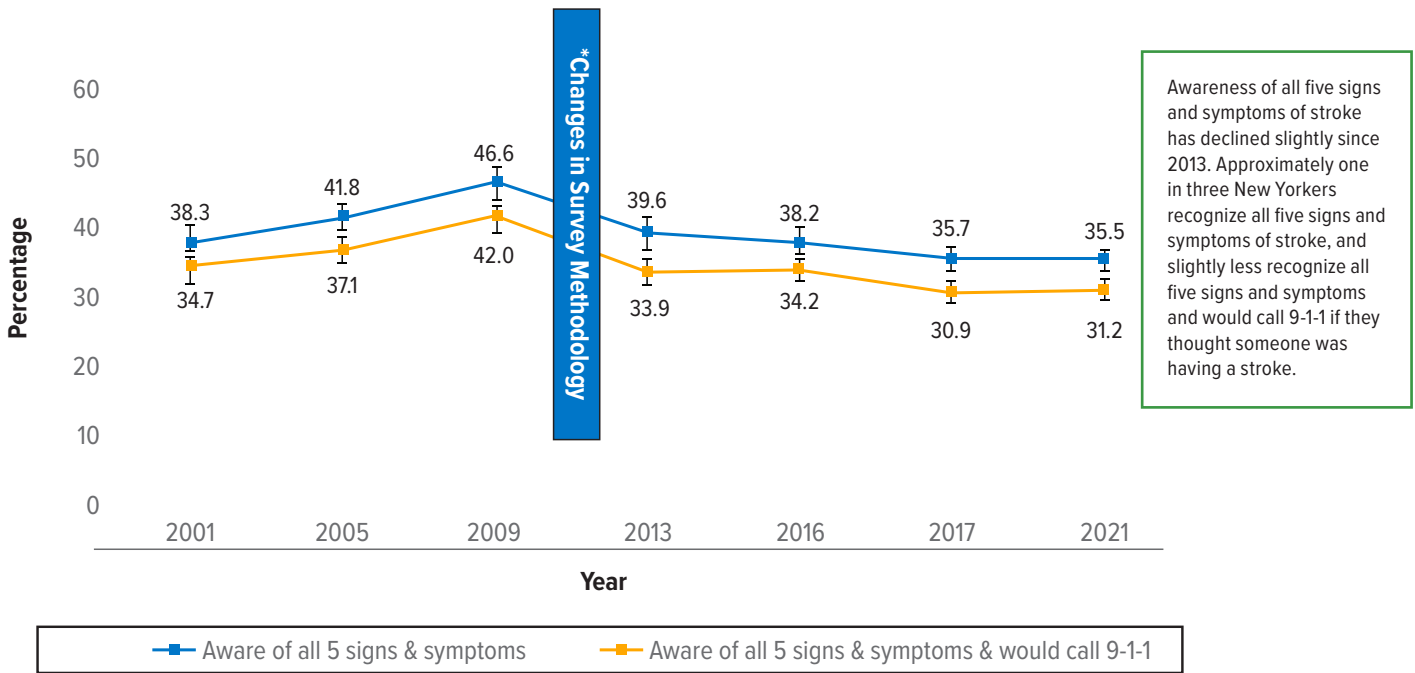
Structural factors in the US and NY contribute to racial disparities, including inequitable access to healthcare and information for making informed health-related decisions. Compared to White New Yorkers, Hispanic, other race, or multiracial non-Hispanic, and Black non-Hispanic New Yorkers are significantly less likely to recognize all the signs and symptoms of stroke. New York residents surveyed in Spanish were almost four times less likely to recognize all the common signs and symptoms of stroke and to know to call 9-1-1 when suspecting and responding to stroke symptoms than adults surveyed in English (table 1). It is important that all people have access to the same information, and that the information is understandable and culturally and linguistically appropriate. It is recommended that hospitals and community partners translate stroke education materials to Spanish and additional languages appropriate for their communities and partner with community-based organizations to educate communities of color about stroke signs and symptoms and importance of activating 9-1-1 for stroke.

Figure 1. Percentage of New York State adults aware of certain stroke warning signs and symptoms, BRFSS 2021



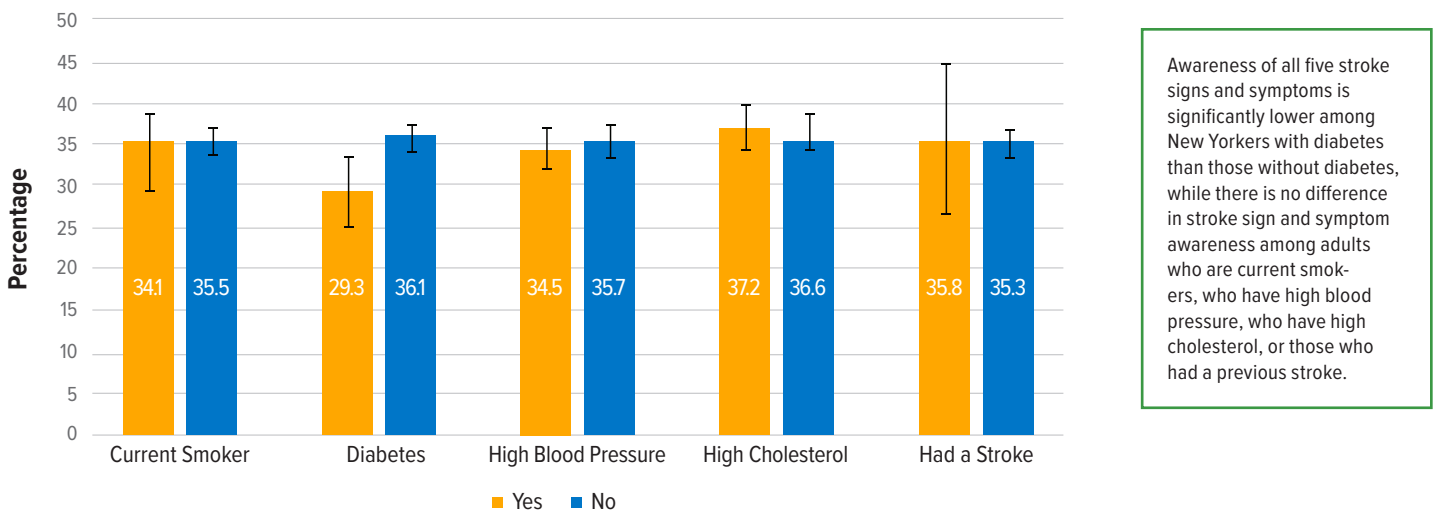
Note: Error bars represent 95% confidence intervals.

Figure 2. Percentage of New York State adults with recognition of stroke signs and symptoms, by BRFSS survey year from 2001 to 2021



*Data 2013 and after are not comparable to prior years because of changes to the BRFSS methods in 2011. See the following link for more information on these changes: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6122a3.htm?s_cid=mm6122a3_w

Figure 3. Awareness of all five signs and symptoms by risk factors, New York State adults, 2021 BRFSS



Note: Error bars represent 95% confidence intervals.

| Awareness of certain stroke warning signs and symptoms and of calling "9-1-1" as the first action to take, among New York State adults ^a , 2021 BRFS | | | | | | |
|---|---|---------------------|--|------------------|--|------------------|
| | Aware of all five signs and symptoms ^a | | Calling 9-1-1 identified as first action | | Aware of all five signs and symptoms and indicated calling 9-1-1 as first action | |
| | % ^c | 95% CI ^b | % | 95% CI | % | 95% CI |
| New York State (NYS) [n=39,095] | 35.5 | 33.9-37.1 | 86.5 | 85.4-87.7 | 31.2 | 29.7-32.8 |
| Sex | | | | | | |
| Male | 32.7 | 30.4-35.0 | 84.1 | 82.3-85.9 | 27.6 | 25.4-29.8 |
| Female | 38.0 | 35.8-40.2 | 88.7 | 87.2-90.2 | 34.5 | 32.4-36.7 |
| Age | | | | | | |
| 18-24 | 29.0 | 23.0-34.9 | 84.4 | 79.9-88.9 | 24.9 | 19.1-30.7 |
| 25-34 | 35.9 | 31.2-40.6 | 86.3 | 83.2-89.4 | 32.0 | 27.3-36.6 |
| 35-44 | 37.8 | 33.7-41.8 | 84.4 | 81.2-87.5 | 33.4 | 29.5-37.4 |
| 45-54 | 34.1 | 30.2-38.0 | 88.7 | 85.7-91.6 | 30.6 | 26.8-34.3 |
| 55-64 | 40.3 | 36.6-43.9 | 88.8 | 86.1-91.5 | 35.1 | 31.6-38.5 |
| 65+ | 34.7 | 32.1-37.3 | 85.8 | 83.8-87.9 | 30.4 | 27.9-32.8 |
| Race, Ethnicity | | | | | | |
| Black, non-Hispanic | 29.3 | 24.9-33.7 | 87.9 | 84.6-91.2 | 26.0 | 21.6-30.1 |
| Hispanic | 23.2 | 19.7-26.6 | 80.6 | 77.3-84.0 | 18.2 | 15.0-21.4 |
| Other race or multiracial, non-Hispanic ^c | 26.8 | 21.2-32.4 | 84.8 | 80.2-89.3 | 23.1 | 17.8-28.4 |
| White, non-Hispanic | 42.5 | 40.4-44.6 | 88.4 | 87.0-89.8 | 38.1 | 36.1-40.2 |
| Questionnaire Language | | | | | | |
| English | 37.2 | 35.6-38.9 | 87.8 | 86.6-89.0 | 33.1 | 31.5-34.7 |
| Spanish | 14.6 | 10.1-19.0 | 71.2 | 65.1-77.3 | 8.6 | 5.1-12.1 |
| Annual Household Income | | | | | | |
| <\$25,000 | 24.3 | 20.6-28.1 | 86.0 | 82.9-89.1 | 19.8 | 16.4-23.2 |
| \$25,000-\$49,999 | 32.8 | 29.5-36.1 | 86.9 | 84.2-89.5 | 28.8 | 25.6-32.0 |
| \$50,000 and greater | 44.1 | 41.5-46.6 | 86.8 | 84.9-88.6 | 39.0 | 36.5-41.6 |
| missing ^d | 28.6 | 25.5-31.8 | 86.2 | 83.9-88.6 | 25.8 | 22.7-28.9 |
| Educational Attainment | | | | | | |
| Less than high school (HS) | -- | -- | -- | -- | -- | -- |
| High school or GED | 28.3 | 25.3-31.2 | 87.1 | 85.0-89.3 | 24.4 | 21.6-27.1 |
| Some college | 39.8 | 36.5-43.1 | 88.2 | 86.0-90.4 | 35.8 | 32.5-39.1 |
| College graduate | 44.0 | 41.4-46.5 | 87.0 | 85.32-88.8 | 39.6 | 37.0-42.1 |
| Health Care Coverage^e | | | | | | |
| Private | 41.4 | 38.9-44.0 | 87.7 | 86.0-89.5 | 37.1 | 34.6-39.6 |
| Medicare | 36.4 | 33.3-39.4 | 87.8 | 85.7-89.9 | 32.3 | 29.4-35.3 |
| Medicaid | 27.8 | 23.4-32.2 | 86.7 | 83.3-90.1 | 22.9 | 18.9-26.9 |
| Other insurance | 31.5 | 26.7-36.3 | 85.7 | 81.7-89.7 | 25.7 | 21.3-30.1 |
| No coverage | 21.4 | 15.6-27.2 | 76.5 | 70.2-82.8 | 17.8 | 12.4-23.2 |
| Personal doctor | | | | | | |
| Yes | 36.6 | 35.0-38.3 | 87.5 | 86.3-88.8 | 32.6 | 30.9-34.2 |
| No | 29.1 | 24.4-33.8 | 80.7 | 76.8-84.5 | 23.7 | 19.2-28.2 |
| Disability Status | | | | | | |
| Yes | 27.2 | 24.6-29.9 | 87.3 | 85.3-89.3 | 24.0 | 21.5-26.5 |
| No | 38.8 | 36.9-40.8 | 86.3 | 84.9-87.7 | 34.2 | 32.3-36.1 |
| Region | | | | | | |
| NYS excluding NYC | 40.2 | 38.2-42.2 | 87.8 | 86.5-89.1 | 36.2 | 34.2-38.1 |
| New York City | 26.9 | 24.3-29.5 | 84.2 | 81.9-86.5 | 22.3 | 19.8-24.7 |

^a Five signs and symptoms: 1) sudden confusion or trouble speaking; 2) sudden numbness or weakness of face, arm, leg, esp. on one side; 3) sudden trouble seeing in one or both eyes; 4) sudden trouble walking, dizziness, or loss of balance; and 5) severe headache with no known cause.

^b Rows with less than 50 observations and rows that contain a confidence interval with a half-width or greater than 10 have been suppressed.

^c % = weighted percentage; CI = confidence interval

^d "Missing" category included because more than 10% of the sample did not report income.

^e Medicare includes Medigap; Other includes Children's Health Insurance Program (CHIP), TRICARE, VA/Military, Indian Health Services, State sponsored health plan, and other government programs.

^f Respondents who reported at least one type of disability (cognitive, self-care, independent living, vision, mobility, or hearing).

References



1. Ahmad FB, Anderson RN. The Leading Causes of Death in the US for 2020. JAMA. 2021;325(18):1829–1830. doi:10.1001/jama.2021.5469
2. New York State Department of Health Vital Statistics, 2020; table 34a. Available at [Table 34a: Leading Causes of Death by Age and Race\(1\)/ Ethnicity, New York State - 2020 \(ny.gov\)](#) Accessed on March 6, 2023.
3. Tsao CW, Aday AW, Almarzooq ZI ,et al. Heart Disease and Stroke Statistics—2022 update: a report from the American Heart Association. Circulation. 2022;145(8):e153-e639.
4. Lloyd-Jones D, Adams R, Carnethon M, et al. Heart Disease and Stroke Statistics—2009 Update. A Report From the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Circulation. 2009;119:e21–e181.
5. New York State Department of Health Designated Stroke Centers https://profiles.health.ny.gov/hospital/designated_center/Stroke+Center

Stroke awareness questions



Which of the following do you think is a symptom of stroke? For each, tell me “Yes,” “No,” or you’re “Not sure.”

1. Do you think sudden confusion or trouble speaking are symptoms of a stroke?
2. Do you think sudden numbness or weakness of face, arm, or leg, especially on one side, are symptoms of a stroke?
3. Do you think sudden trouble seeing in one or both eyes is a symptom of a stroke?
4. Do you think sudden trouble walking, dizziness, or loss of balance are symptoms of a stroke?
5. Do you think severe headache with no known cause is a symptom of a stroke?

Respondents were identified as “aware” of each of the five valid stroke awareness questions if they answered “yes” to the question about that symptom.

Respondents were also asked the following question to measure the public’s awareness to call 9-1-1 when they thought someone was having a stroke:

If you thought someone was having a stroke, what is the first thing you would do?

Response choices:

1. take them to the hospital
2. tell them to call their doctor
3. call 9-1-1
4. call their spouse or a family member
5. do something else

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