

2021 Stroke Registry Data Summary

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Background and Purpose

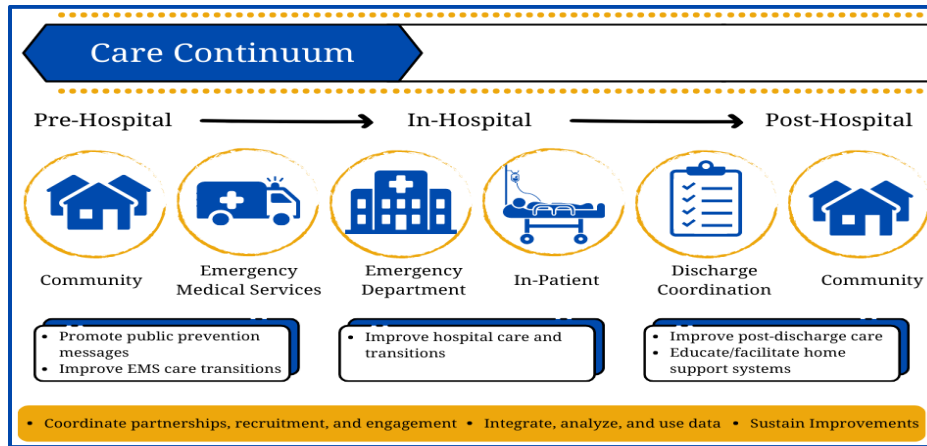
A stroke occurs when the blood supply to the brain is blocked by a blood clot (ischemic stroke) or when a blood vessel in the brain ruptures (hemorrhagic stroke), causing brain cells to die and leading to functional impairment. Stroke is a leading cause of disability and death nationally and in Nevada.¹

In 2015, the 78th Nevada Legislature enacted [Nevada Revised Statutes \(NRS\) 439.5291 through NRS 439.5297](#), requiring the Nevada Division of Public and Behavioral Health (DPBH) to develop an annual report concerning the operation and use of the Stroke Registry and the data collected by the Stroke Registry. The resulting report is titled, “Nevada Stroke Registry Data Summary Report.” [NRS 439.5295](#) mandates the establishment and maintenance of the Stroke Registry to compile information and statistics to align with the consensus measures prescribed by the Paul Coverdell National Acute Stroke Act Registry of the Centers for Disease Control and Prevention (CDC), the Department of Health and Human Services, the Joint Commission, the American Heart Association (AHA), and the American Stroke Association (ASA). In compliance, the DPBH adopted the *Get With The Guidelines-Stroke* (GWTG-S) data management platform established by the AHA/ASA as Nevada’s Stroke Registry database. The Heart Disease and Stroke Prevention (HDSP) Program maintains super-user access to the GWTG-S database to facilitate annual stroke data compilation, analysis, and reporting.

[NRS 439.5295 through 439.5297](#) further describes the duty of the DPBH to establish and maintain a Stroke Registry, encourage and facilitate information, conduct data analysis and sharing, and adopt and carry out procedures to utilize the data to analyze the response to and treatment of strokes in Nevada. As part of the annual report, the DPBH will “use the data analysis to identify potential solutions for the treatment of stroke and to make recommendations to legislation designed to improve the quality of care provided to Nevadans.”

The DPBH interprets the law as a directive to utilize the Stroke Registry data to drive collaborative promotion and implementation of evidence-based best practices, standards, and continuous quality improvements along the entire stroke care continuum (figure 1),² including community awareness, Emergency Medical Services, Emergency Department, In-patient care, discharge coordination, and home and community supports to benefit all Nevadans.

Figure 1 Continuum of Care



Get With The Guidelines-Stroke Limitations

GWTG-S Limitations.

In 2021, the GWTG-S database collected the reporting data exclusively from Nevada’s 16 Joint Commission accredited Certified Stroke Centers (CSCs) located in Carson City, Clark, and Washoe counties which accounts for approximately 90 percent of Nevada’s population. GWTG-S does not collect data from the remaining 12 acute care hospitals or any of Nevada’s 13 critical access hospitals serving Nevada’s rural and frontier populations.³ The limitations to becoming a GWTG-S participant include hospitals may decline participation due to adult stroke care is outside of their clinical focus, economic, workforce, or competitive reasons. Additionally, high-volume stroke centers reporting into the GWTG-S database may report a sampled stroke sub-population rather than all cases individually. For example, a CSC treating 225 or more stroke patients per quarter may report a sample size of only 45 patients per quarter.⁵ The identified limitations of the GWTG-S data results in the inability to draw comparisons between CSCs or to generalize data to represent the State of Nevada.

In response to the significant limitations and challenges, the Heart Disease and Stroke Prevention (HDSP) program analyzed all available data pertaining to stroke care in Nevada. The analysis resulted in the identification of existing, valid, and reliable data including: the Behavioral Risk Factor Surveillance System (BRFSS), Nevada hospitals billing data, and the Nevada death registry system. To deliver a meaningful report, the HDSP elected to examine Nevada’s accredited stroke centers’ voluntarily reported Coverdell Act performance measures data. Inclusion of these data allowed further insights which have been incorporated into “The Response to and Treatment of Stroke in Nevada.”

Nevada Hospitals Participating in the GWTG-S Database as of April 2021⁴

Carson Tahoe Health	Southern Hills Hospital Medical Center
Centennial Hills Hospital Medical Center	Spring Valley Hospital Medical Center
Desert Springs Hospital Medical Center	St. Rose Dominican Hospital – San Martin Campus

Henderson Hospital
Mountain View Hospital
Northern Nevada Medical Center
Renown Regional Medical Center
St. Mary's Regional Medical Center

St. Rose Dominican Hospital – Siena Campus
Summerlin Hospital Medical Center
Sunrise Hospital Medical Center
University Medical Center of Southern Nevada
Valley Hospital Medical Center

Stroke Impact

A stroke or “brain attack” is a medical emergency requiring immediate responsiveness. Like a heart attack, every minute between the onset of symptoms and therapeutic intervention impacts outcomes. Delays in care can be devastating.¹

In 2021, stroke was the 6th leading cause of death in Nevada and the 5th leading cause of death in the United States. Stroke is the leading cause of severe long-term disability in the U.S. and Nevada.¹ Strokes take an overwhelming toll on survivors, caregivers, families, communities, and healthcare systems. In the U.S., based upon historical medical expenditures surveyed, adjusted annual direct costs for a stroke participant was \$4,317 greater than for a non-stroke participant, resulting in a net yearly expenditure of \$38 billion nationally. An additional \$65.5 billion of indirect costs for un/under-employment and premature mortality can be added for a total aggregate expenditure of \$103.5 billion annually in 2016 U.S.-Dollar values.⁶

After decades of decline, progress has slowed in preventing stroke deaths. Almost 800,000 people have a stroke each year and of those, 200,000 people will have had a previous stroke and more than 140,000 people will die. In Nevada, there will be an estimated 1,500 deaths. This is disturbing as approximately 80 percent of strokes are preventable.^{7,8}

A compelling case and important consideration are evident in research literature that the current emphasis on prevention and early treatment of stroke overshadows the importance of stroke aftercare, reoccurrence prevention, and caregiver/family support.⁹ Improved stroke survival results in greater caregiver, family, and community burdens, often in the form of uncompensated care, as survivors navigate a difficult and complex journey of rehabilitation and finding a new normal.

Risk Factors for Stroke

Stroke is one of the most preventable of all life-threatening health problems. Risk factors for stroke are either non-modifiable or modifiable through awareness, lifestyle change, or medical treatment.⁹

Non-modifiable Risk Factors

Some risk factors, such as age, gender, race/ethnicity, and family, personal, and past medical history, are out of an individual's control. The prevalence of stroke in the U.S. increases with age in every identifiable population. There are several unique stroke risk factors in women. And, as women increasingly outlive and

outnumber men, a disproportionate increase in the burden of stroke in women is expected.¹⁰ The Black and Hispanic populations have a higher stroke risk factor compared to the White population. Genetics are also a significant risk factor, if a grandparent, father, mother, or sibling had a stroke before age 65, individual risk is elevated. A history of a previous stroke will also increase the risk of a stroke recurrence.¹¹

Modifiable risk factors

There are several factors people can control to modify their stroke risk effectively. Uncontrolled high blood pressure is the leading cause of stroke, heart attack, heart failure, dementia, and kidney disease and the most important controllable risk modifier.^{12,14} Other factors include:

- High cholesterol, directly and indirectly, increases the risk of a stroke through the process of atherosclerosis (hardening of the arteries) – also a risk factor in coronary artery disease.^{8,11}
- Atrial fibrillation/flutter increases a stroke risk factor by fivefold. AF risk factor can be reduced by up to 70 percent with anticoagulants.⁹
- The nicotine and carbon monoxide that enters the bloodstream when smoking and vaping damages blood vessels and speed atherosclerosis increasing blood pressure and the heart's workload.¹⁴
- Diabetes mellitus (DM) plays a significant role in ischemic strokes – 67 percent of all strokes are associated with DM.¹
- Diet is a leading predictor and modifier of long-term cardiovascular, brain, and metabolic health. Too much saturated and trans-fats raise blood cholesterol levels. Excess salt can increase blood pressure, and high caloric intake can lead to obesity.^{14,15}
- Excess weight, poor diet, and a sedentary lifestyle (frequently co-occurring) put undue strain on the entire circulatory system, thus increasing stroke risks.^{7,14,15}
- Finally, recognizing and treating transient ischemic attacks (a stroke that lasts only a few minutes) can reduce the risk of a major stroke.^{8,16}

Social Determinants of Stroke

Stroke risk is also predicted and modified by social determinants of health, defined as the conditions and environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality of life outcomes and risks.¹³ In a meta-analysis of 51 studies, lower socioeconomic status measured by income, occupation, or education was linked to an increased stroke risk. Findings were particularly pronounced for education, with two-fold higher odds of hypertension (95 percent CI, 1.55–2.63) observed in lower- compared with higher-educated individuals. Associations were stronger among females and in higher-income countries.¹³ Adverse working conditions, including job loss and underemployment, are related to increased stroke risk, as are long work hours (>40hr/wk.). A smaller social network (i.e., contact with fewer family members, friends, and neighbors) was linked to a 44 percent higher risk of stroke over an 18.6-year follow-up, even after controlling for demographics and other relevant risk factors.¹³

Risk Reduction

There are several evidence-based lifestyle-change programs aimed at cardiovascular and stroke risk reduction from which to choose. Among them, the [American Heart Association's Life's Simple 7](#) is a prescription for health using the seven most important predictors of heart health and a pathway to achieve ideal cardiovascular health¹⁸ and the [American Heart Association's Life's Essential 8™](#) Your Checklist for Lifelong Good Health.¹⁹ These programs, and all competent healthy lifestyle content, address two major areas: purposeful, healthy behaviors and managed biometric factors. All Americans are called upon to quit smoking, be physically active, develop healthy eating patterns, get restorative sleep, and manage (medically, if necessary) body weight, blood glucose, cholesterol, and blood pressure.^{8,9,11,15,16}

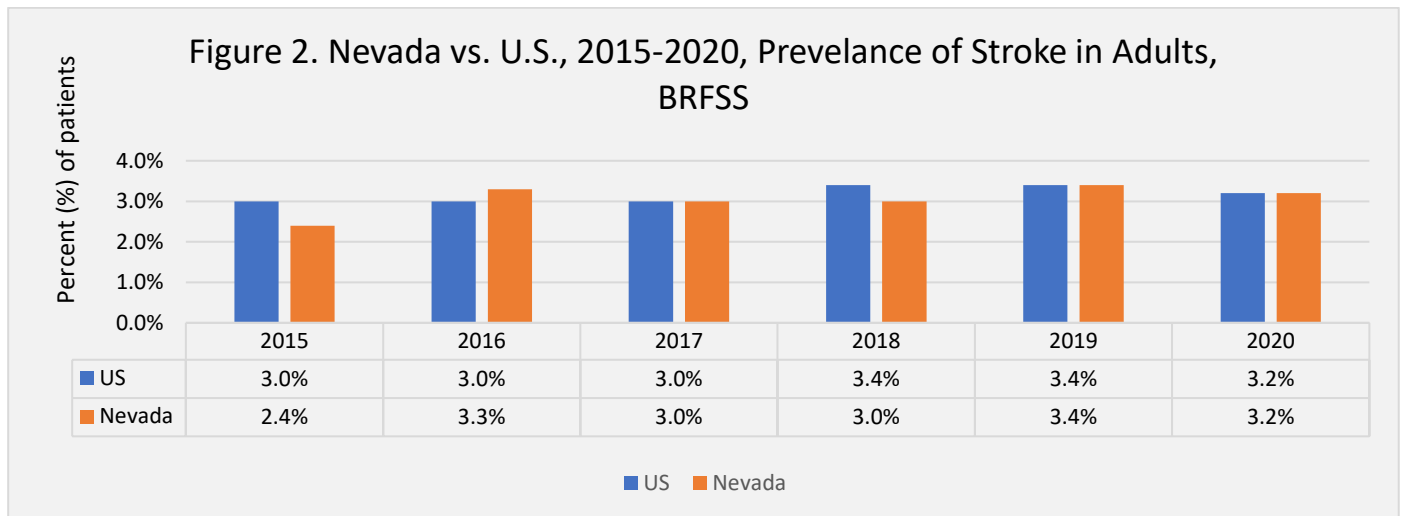
American Heart Association's Life's Essential 8™
EAT BETTER
<i>Aim for an overall healthy eating pattern that includes whole foods, lots of fruits and vegetables, lean protein, nuts, seeds, and cooking in non-tropical oils such as olive and canola.</i>
MANAGE WEIGHT
<i>Achieving and maintaining a healthy weight has many benefits. Body mass index (BMI), a numerical value of your weight in relation to your height, is a useful gauge. Optimal BMI for most adults ranges from 18.5 to less than 25. You can calculate it online or consult a health care professional.</i>
BE MORE ACTIVE
<i>Adults should participate in 150 minutes of moderate or 75 minutes of vigorous physical activity per week. Walking is great for moderate levels of activity. Kids should have 60 minutes every day, including play and structured activities.</i>
CONTROL CHOLESTEROL
<i>High levels of non-HDL, or "bad," cholesterol can lead to heart disease. Your health care professional can consider non-HDL cholesterol as the preferred number to monitor, rather than total cholesterol, because it can be measured without fasting beforehand and is reliably calculated among all people.</i>
QUIT TOBACCO
<i>Use of inhaled nicotine delivery products, which includes traditional cigarettes, e-cigarettes, and vaping, is the leading cause of preventable death in the U.S., including about a third of all deaths from heart disease. And about a third of U.S. children ages 3-11 are exposed to secondhand smoke or vaping.</i>
MANAGE BLOOD SUGAR
<i>Most of the food we eat is turned into glucose (or blood sugar) that our bodies use as energy. Over time, high levels of blood sugar can damage your heart, kidneys, eyes, and nerves. As part of testing, monitoring hemoglobin A1c can better reflect long-term control in people with diabetes or prediabetes.</i>
MANAGE BLOOD PRESSURE
<i>Keeping your blood pressure within acceptable ranges can keep you healthier longer. Levels less than 120/80 mm Hg are optimal. High blood pressure is defined as 130-139 mm Hg systolic pressure (the top number in a reading) or 80-89 mm Hg diastolic pressure (bottom number).</i>
GET HEALTHY SLEEP

Getting a good night's sleep every night is vital to cardiovascular health. Adults should aim for a nightly average of 7-9 hours, and babies and kids need more depending on their age. Too little or too much sleep is associated with heart disease, studies show.

Stroke Prevalence

The Behavioral Risk Factor Surveillance System (BRFSS) is a large-scale continuous health survey conducted by the CDC to collect data from U.S. residents about health-related risk behaviors, chronic health conditions, and the use of preventative services.²⁰ By collecting health risk data at the state and local level, BRFSS is a valuable tool to identify priority populations and implement disease prevention and health promotion activities. Because age, race/ethnicity, and co-morbidities (multiple simultaneous medical conditions) are known stroke risk factors, it is instructive to view the prevalence of strokes and chronic diseases in relation to each other.

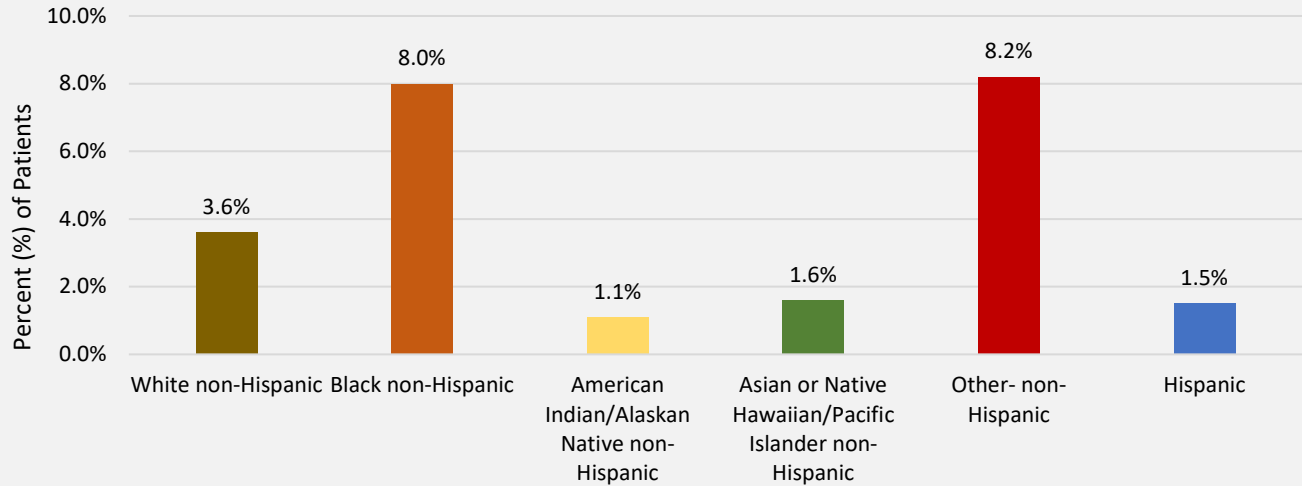
Figure 2 compares the prevalence of stroke in adults in Nevada versus the U.S. from 2015 to 2020. The prevalence of stroke in Nevada adults is comparable to the U.S. over the period. The small increases in prevalence for Nevadans may be due to a growing and aging population.



Source: Centers for Disease Control and Prevention (CDC) . Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2015-2020.

Figure 3 represents the prevalence of stroke in Nevada adults by race/ethnicity. In 2020 non-Hispanic Black persons had the highest prevalence of stroke in Nevada which aligns with national data and indicates an area for concern and focus.

Figure 3. Nevada, 2020, Prevalence of Stroke in Adults by Race/Ethnicity, BRFSS

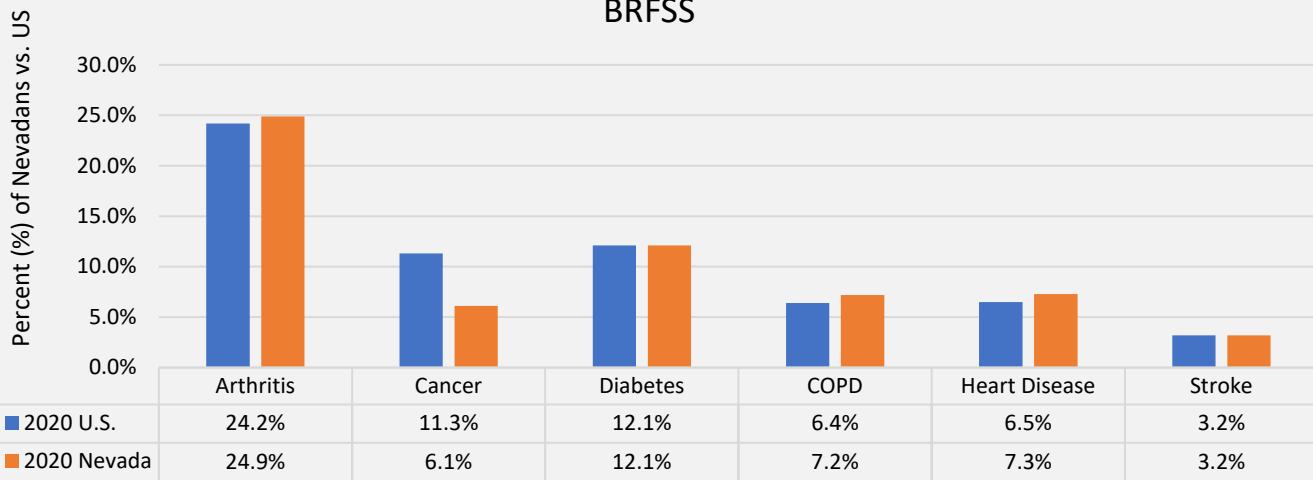


Source: Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2020.

Prevalence of Chronic Disease

Figure 4 represents a comparison of the prevalence of selected chronic diseases in Nevada versus the U.S. The prevalence of chronic disease is comparable to the U.S. in 2020.

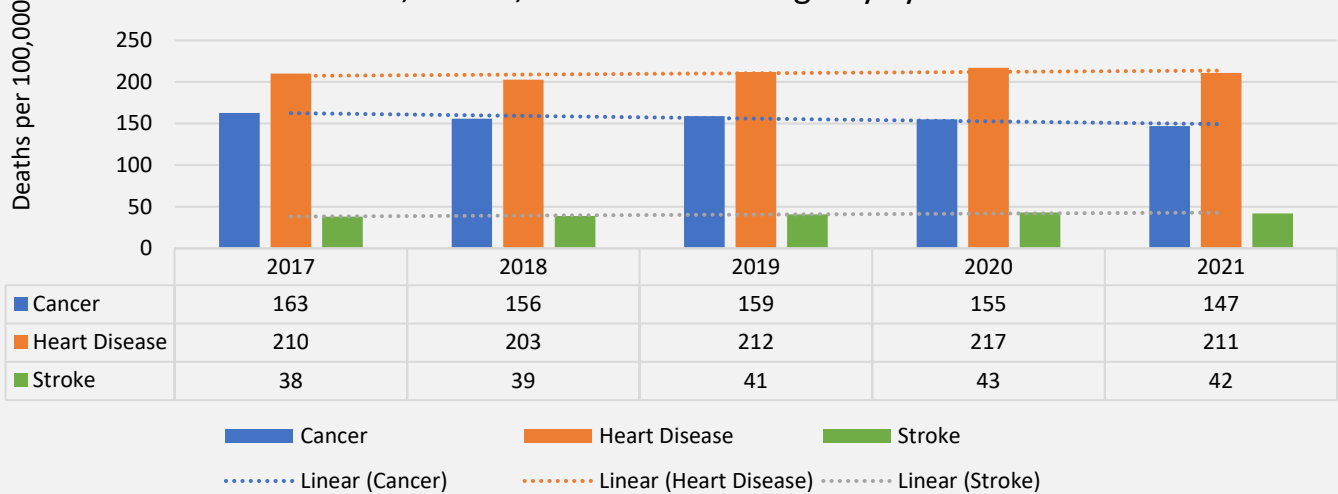
Figure 4. Nevada vs. U.S., 2020, Prevalence of Chronic Disease in Nevada BRFSS



Source: Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2020

Figure 5 represents the age-adjusted mortality rate for cancer, heart disease, and stroke in Nevada from 2017 to 2021. The trendline has remained stable for heart disease and stroke mortality over the period while cancer’s trendline reveals a modest decline in mortality over the period.

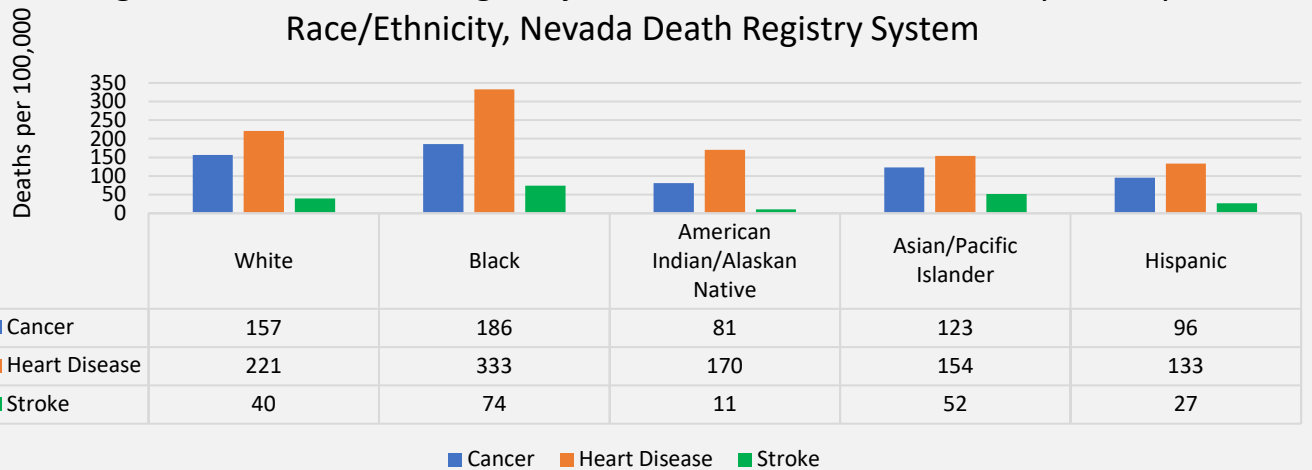
Figure 5. Nevada, 2017-2021, Age-Adjusted Chronic Disease Mortality Rate, Adults, Nevada Death Registry System



Source: Nevada Department of Health and Human Services, Office of Analytics, Nevada Death Registry System, 2022

Figure 6 represents age adjusted mortality rates by race/ethnicity in Nevada for 2021. The Black population had the highest mortality rates for heart disease, cancer, and stroke. Again, indicating an area for concern and focus.

Figure 6. Nevada, 2021, Age-Adjusted Chronic Disease Mortality Rate by Race/Ethnicity, Nevada Death Registry System

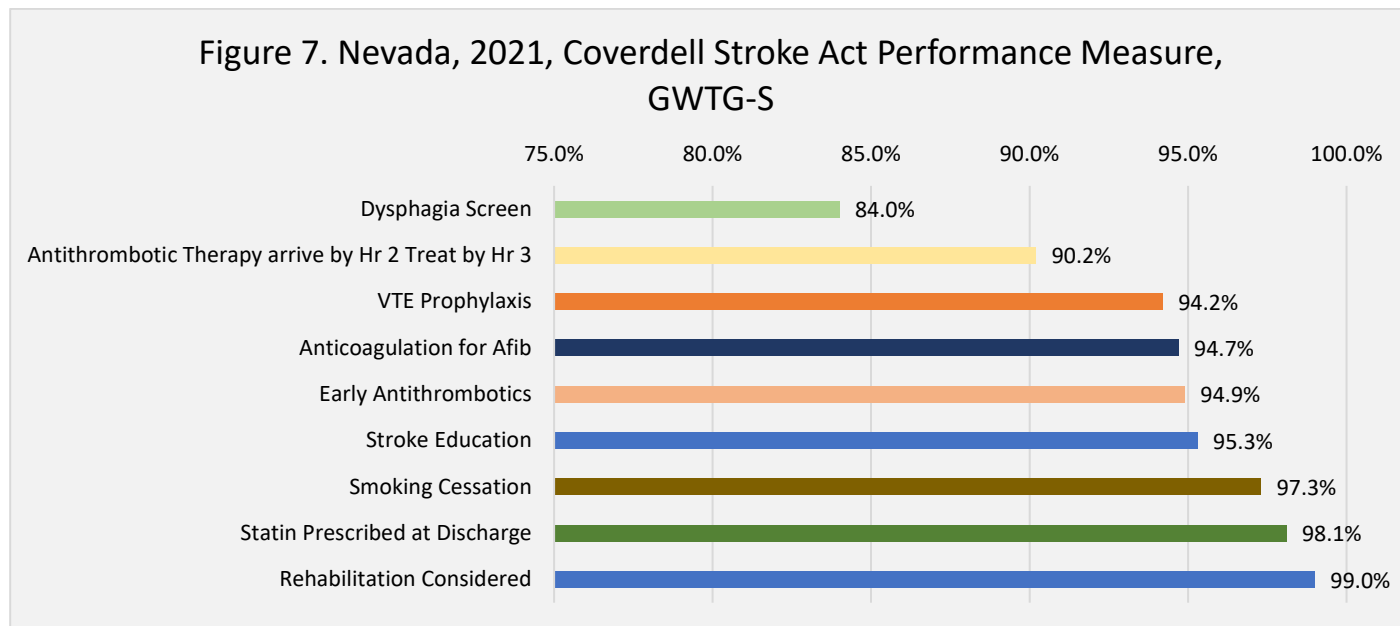


Source: Nevada Department of Health and Human Services, Office of Analytics, Nevada Death Registry System, 2022

Paul Coverdell National Acute Stroke Care Program

The Coverdell program, in partnership with the Joint Commission, the American Heart Association, and American Stroke Association, developed performance measures to track and analyze the quality of stroke care from the onset of symptoms through acute care and rehabilitation to preventing repeat strokes and known complications.²

Figure 7 represents the aggregate performance measures achievement of Nevada’s 16 Get With The Guidelines-Stroke (GWTG-S) participating hospitals in 2021.



Source: American Stroke Association. *Get With The Guidelines - Stroke Data Registry System*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2022.

Coverdell Stroke Act Performance Measures

Venous Thromboembolism (VTE) Prophylaxis – Treatment for VTE prophylaxis, also known as deep vein thrombosis or pulmonary embolism, is highly effective in preventing complications and reducing early post-stroke mortality.²¹

Stroke Education - Stroke education provided to stroke survivors, caregivers, and families modifies outcomes. Instruction provided by stroke centers can improve post-stroke quality of life, assist with navigating the healthcare system, improve access to medication and therapy options and decrease readmission and recurrence rates.²²

Smoking Cessation – The importance of smoking cessation after a stroke is widely recognized. Continued smoking after a stroke is associated with elevated recurrent stroke risk. Recurrent strokes are generally more disabling than initial strokes. Therefore, smoking/vaping cessation is an essential target for secondary prevention.¹⁴

High-Intensity Statin Therapy - Reducing cholesterol levels is a well-established primary prevention strategy to reduce long-term cardiovascular and stroke risk. High-intensity statin therapy after ischemic stroke is an established secondary prevention strategy to reduce recurrent stroke risk, especially in large vessel atherosclerosis.²³

Intravenous Tissue Plasminogen Activator (tPA) Therapy, Arrive by Hour Two (2), Treat by Hour Three (3) – The clot-dissolving medicine tPA, when administered within four hours from the onset of symptoms helps to restore blood flow to the brain regions affected by stroke, thereby limiting the risk of damage and functional impairment.²⁴

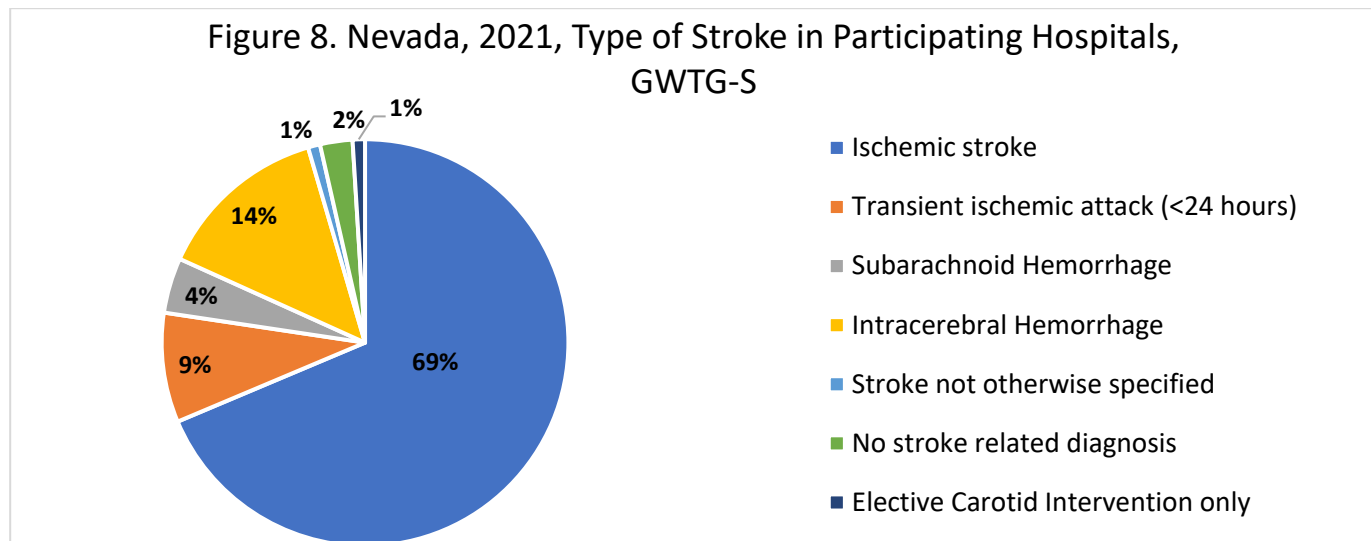
Early Antithrombotic Therapy – Stroke survivors carry a high risk of recurrence. “Early” is defined by the end of day two of the hospital stay. Large, randomized control trials provide evidence-based support for the use of anticoagulant and antiplatelet agents for secondary prevention and overall stroke burden reduction.²⁵

Dysphagia Screening – Dysphagia, or difficulty swallowing, is common after a stroke. Early screening can identify patients vulnerable to weight loss, dehydration, malnutrition, and food or liquid aspiration. Consuming food and liquid by mouth is a predictor of hospital stay length and outcomes.²⁶

Anticoagulation for Atrial Fibrillation – The risk of recurrent ischemic stroke is high among patients with a recent stroke and atrial fibrillation. Early initiation of anticoagulation is thought to protect these patients from further damage due to recurrent stroke.²⁷

Rehabilitation Consideration – For many stroke survivors, rehabilitation involves physical therapy to relearn motor activities, occupational therapy to relearn the activities of daily living, or speech therapy to relearn language and speaking skills. Rehabilitation can start as soon as the patient is medically stable and occurs in various settings, including subacute in-patient facilities, at home, and as an outpatient. The rehabilitation care team might include a case manager/care coordinator, dietitians, neurologists, nurses, psychiatrists, peer groups, and recreation therapists.^{9,28}

Figure 8 represents the types of strokes treated by Nevada’s Get With The Guidelines-Stroke (GWTG-S) participating hospitals in 2021.



Source: American Stroke Association. *Get With The Guidelines - Stroke Data Registry System*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2022.

Nevada Hospital Billing Data

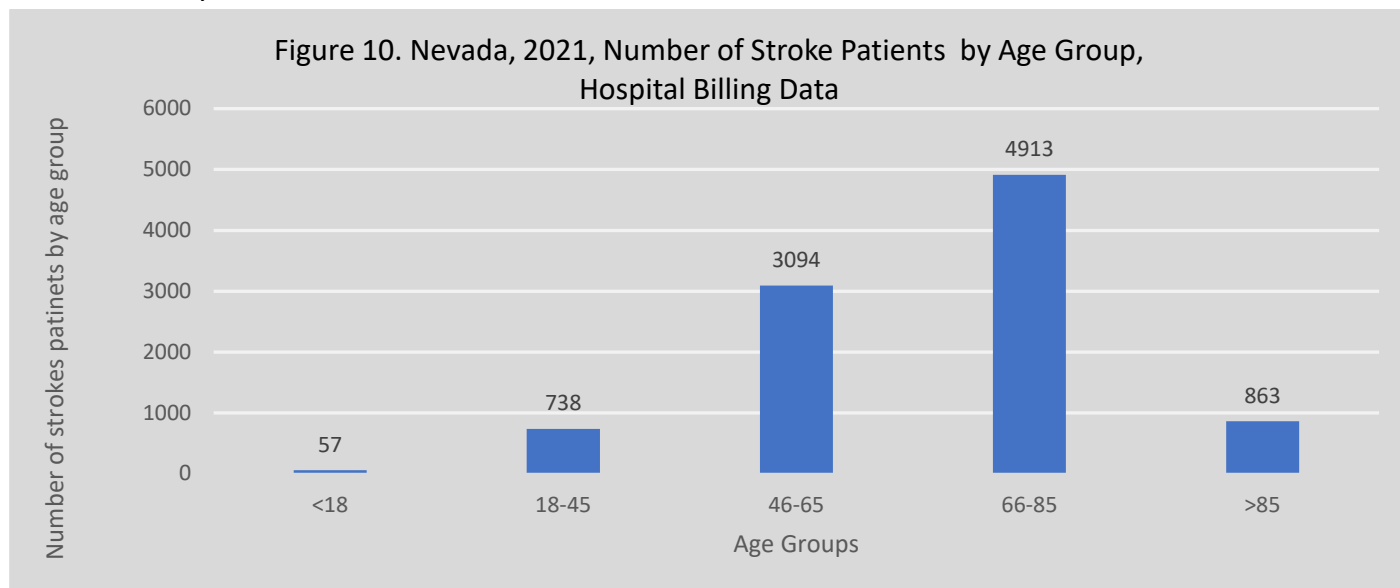
The Heart Disease and Stroke Prevention (HDSP) program collected and analyzed Nevada hospital billing data (HBD) from the Center for Health Information Analysis for Nevada's thirty (30) Acute Care Hospitals² to discern the scope of stroke in Nevada and which Nevadans are most affected. Data inclusion criteria used the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) stroke diagnosis codes I60 – I69. The data reflect the number of patients with at least one hospital billing record where a stroke ICD-10-CM code was present as diagnosis code one, two, or three. In cases where patients had both emergency and inpatient records on the same date, only the inpatient records were counted.

Figure 9 represents the frequency of patients with a stroke diagnosis by resident county for Nevada in 2021.

Resident County	Emergency	Inpatient	Total
	N	N	N
Carson City	41	171	212
Churchill	30	64	94
Clark	1,058	6,013	7,071
Douglas	35	155	190
Elko	17	21	38
Esmeralda	0	6	6
Eureka	3	1	4
Humboldt	10	28	38
Lander	4	10	14
Lincoln	3	15	18
Lyon	45	190	235
Mineral	15	16	31
Nye	83	206	289
Pershing	2	12	14
Storey	0	4	4
Washoe	306	1,073	1,379
White Pine	15	10	25
Unknown	0	3	3
Total	1,667	7,998	9,665

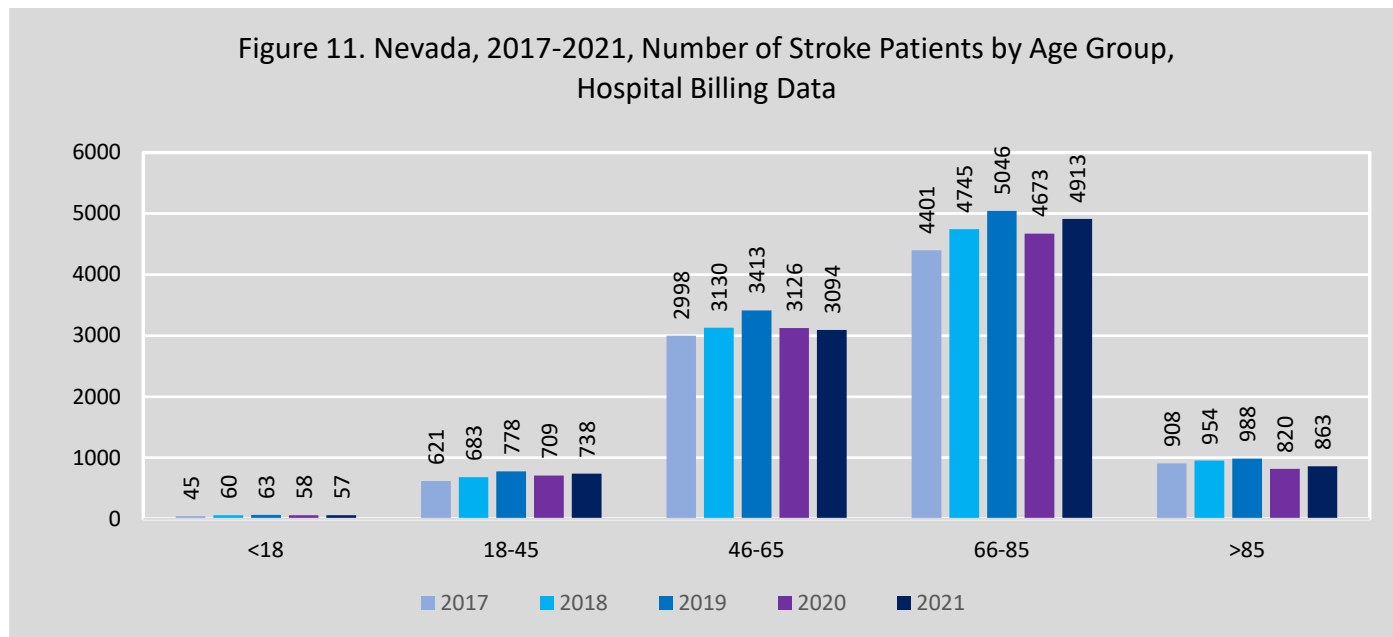
Source: Nevada Department of Health and Human Services, Office of Analytics, 2022.

Figure 10 represents the number of stroke patients in Nevada by age group. The distribution indicates stroke risk increases with age. The >85 age group is the smallest group in the data set due to increased all-cause mortality in older adults.



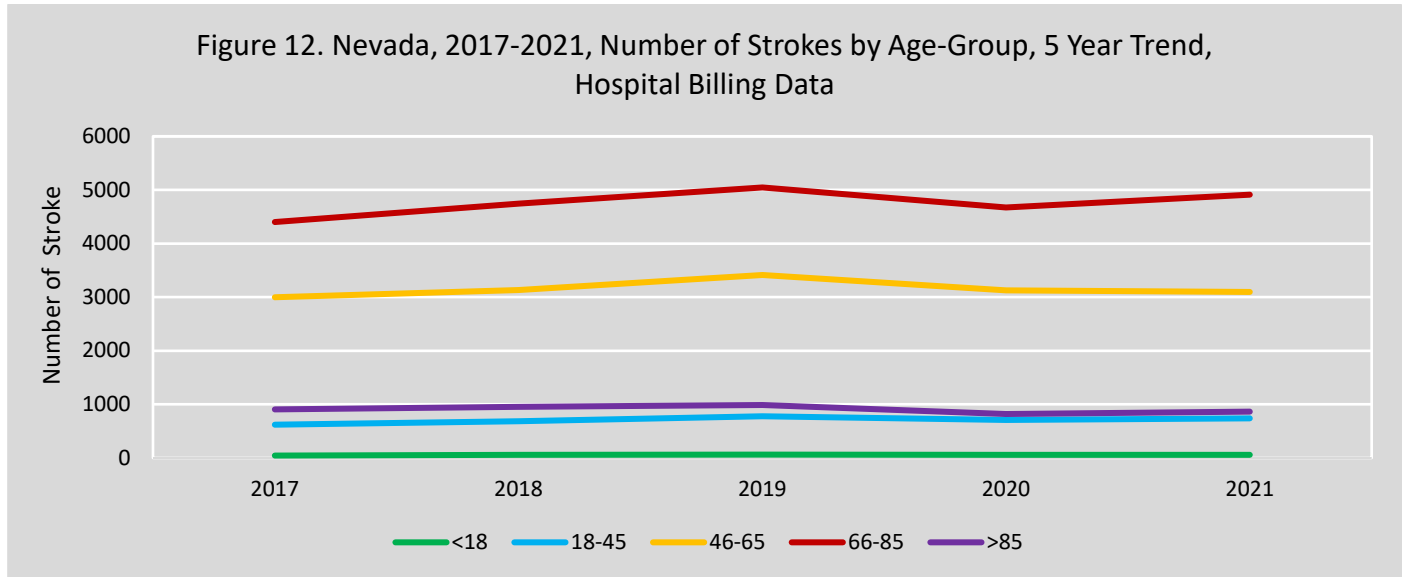
Source: Nevada Department of Health and Human Services, Office of Analytics, 2022.

Figure 11 represents the number of stroke patients in Nevada by age group from 2017 to 2021.



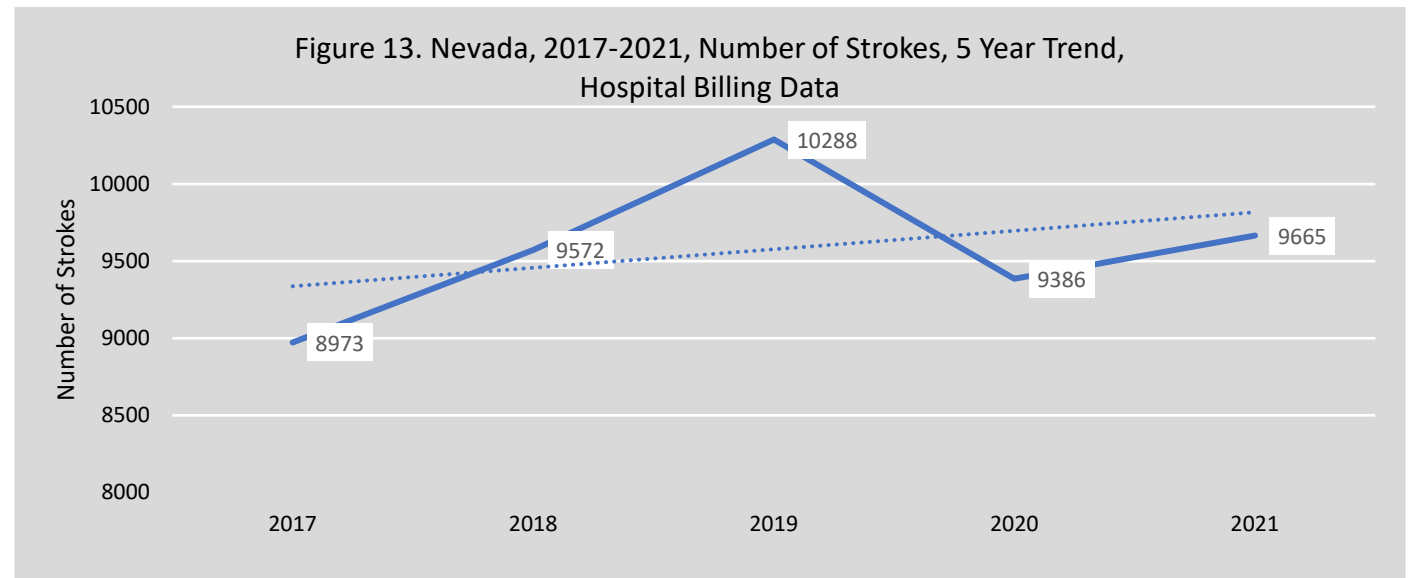
Source: Nevada Department of Health and Human Services, Office of Analytics, 2022.

Figure 12 represents the five- year trend for the number of stroke patients by age group in Nevada from 2017 to 2021. The trend lines for the 18-45 and 66-85 age groups may indicate areas for concern and focus.



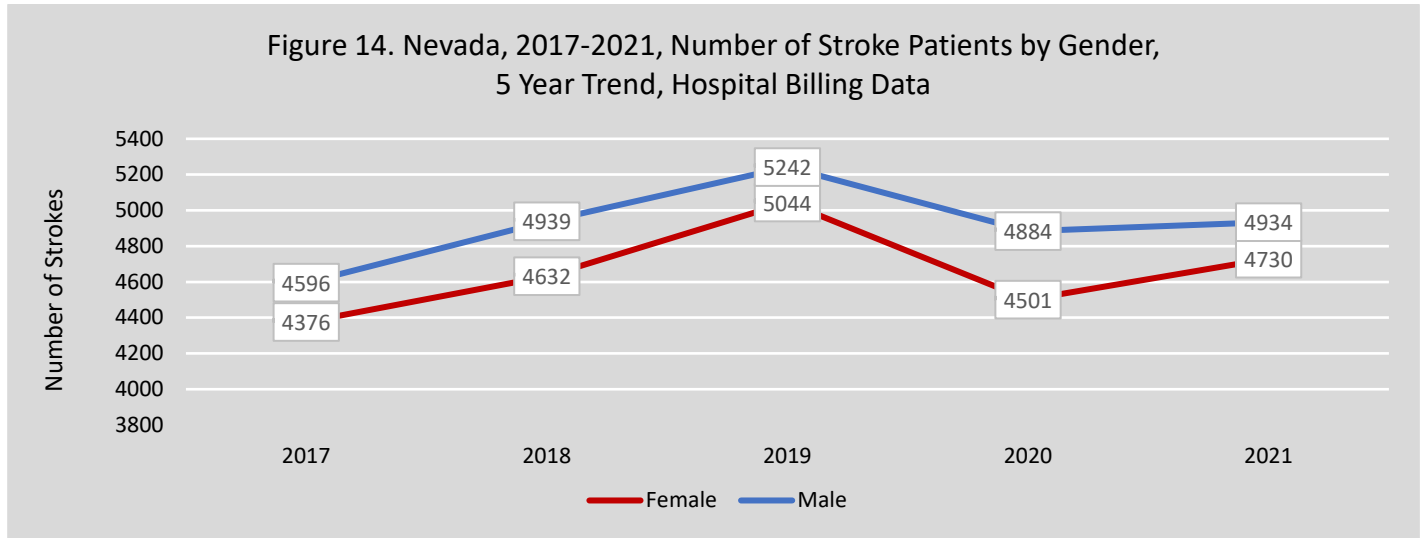
Source: Nevada Department of Health and Human Services, Office of Analytics, 2022.

Figure 13 represents the number of strokes patients in Nevada from 2017 to 2021. The upward trajectory aligns with Nevada’s growing and aging population. The somewhat anomalous dip in 2020 may be related to the surge in COVID-19 mortality that year.



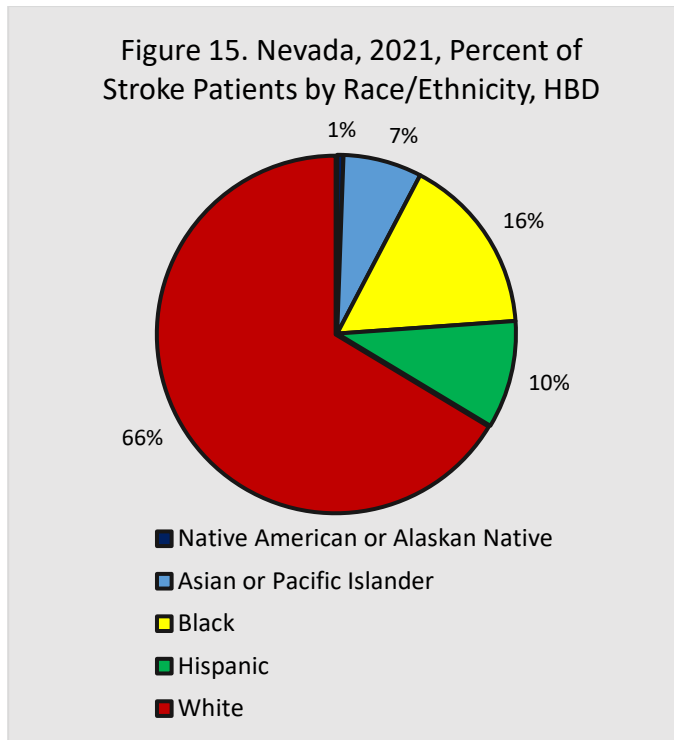
Source: Nevada Department of Health and Human Services, Office of Analytics, 2022

Figure 14 represents the five-year trend for the number of stroke patients by gender (male/female) in Nevada from 2017 to 2021.

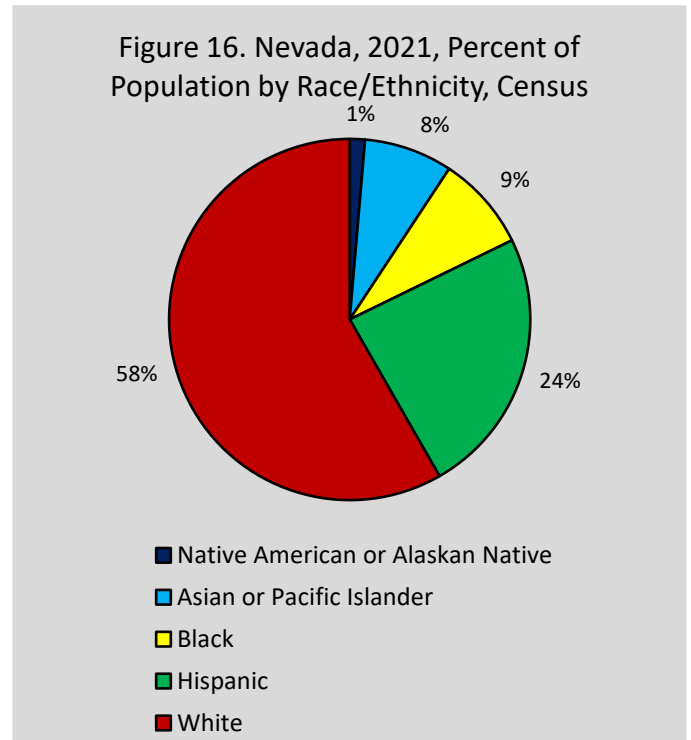


Source: Nevada Department of Health and Human Services, Office of Analytics, 2022.

Figures 15 and 16 provide a side-by-side representative comparison of percent stroke by origin to percent of population. Figure 15 represents the percent of stroke patients in Nevada by race/ethnicity for 2021. Figure 16 represents the percent of population in Nevada by race/ethnicity for 2021. The demographic groups are defined using [United States Census Bureau population estimates for 2021](https://www.census.gov/quickfacts/fact/table/NV_US/PST045221) definitions for Non-Hispanic White, Non-Hispanic Black, Hispanic, Asian and Pacific Islander, and Native American or Alaskan Native.

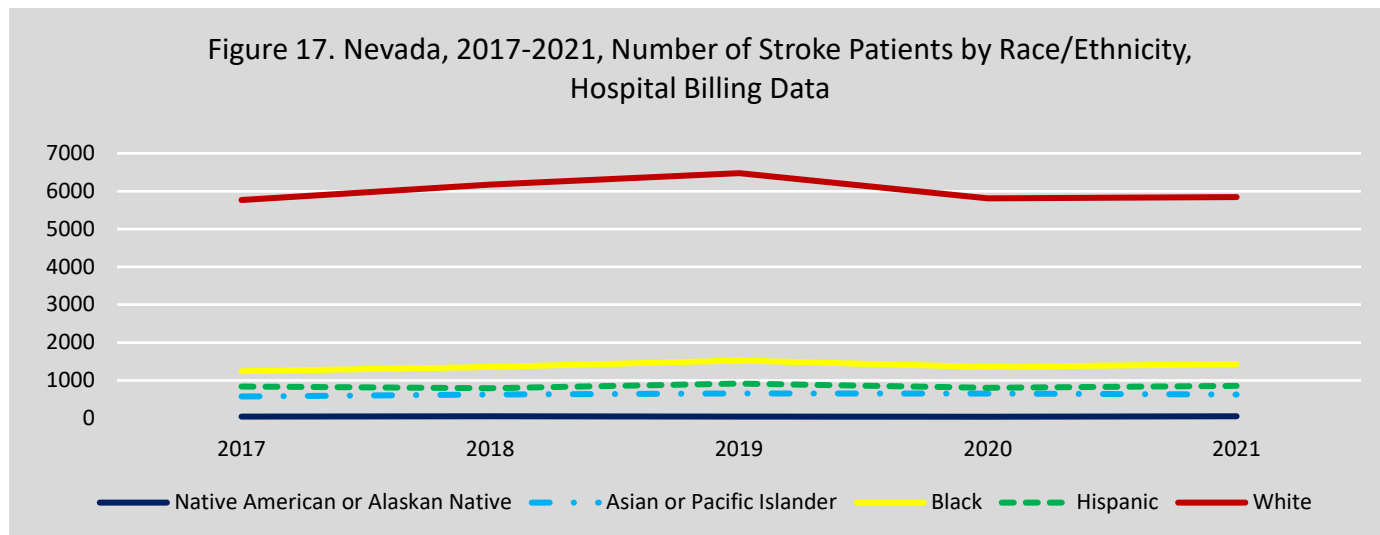


Source: Nevada Department of Health and Human Services, 2022. Office of Analytics, 2022.



Source: https://www.census.gov/quickfacts/fact/table/NV_US/PST045221.

Figure 17 represents a five-year trend of the number of stroke patients by race/ethnicity in Nevada from 2017 to 2021.



Source: Nevada Department of Health and Human Services, Office of Analytics, 2022.

Report Conclusion

The data aggregated in this report provides an opportunity to enhance stroke survivorship and reduce the burden of disease and disability in Nevada. Through identifying high-burden populations and systemic strengths and weaknesses, quality improvement strategies can be planned, implemented, tracked, and adjusted to meet the needs of Nevadans.

The Behavioral Risk Factor Surveillance System (BRFSS) data (Fig. 2 – 4) indicates the prevalence of stroke, cancer, diabetes, chronic obstructive pulmonary disease, and heart disease in Nevada are comparable to the U.S. over the past few years. The data also demonstrates Nevada’s Black population has experienced the highest stroke mortality. Nevadans' chronic disease mortality rates (Fig. 5 and 6) are comparable to U.S. rates and have remained relatively stable over the past five years.

The Coverdell performance measures (Fig. 7 and 8) indicate the participating hospitals successfully adhere to evidence-based recommendations developed by the Joint Commission, American Heart Association, American Stroke Association, and the Centers for Disease Control and Prevention. Nearly 70 percent of strokes treated in Nevada Certified Stroke Centers are ischemic strokes which is caused by a blood clot blocking the blood flow to an area of the brain.¹ Nevada hospital discharge data (Fig 9 – 17) indicates which communities and populations experience elevated risk and possible trends to watch.

Recommendations

DPBH

- Develop a specific program to address the higher incidence of stroke within the Black population.
- Continue to use the data to identify gaps and inequities in care and to drive quality improvements throughout the stroke care continuum.
- Continue to seek funding sources to help reduce death and disability from heart disease and strokes.
- Enhance the Well-Integrated Screening and Evaluation for Women across the nation (WISEWOMAN) program for low-income and uninsured women to prevent heart disease and strokes.²⁹
- Promote the Million Hearts initiative to private sector partners to raise awareness about quality improvements in preventing heart disease and strokes.²⁹
- Support Heart Disease and Stroke Prevention program efforts to expand the Heart Healthy Ambassador Blood Pressure Self-Monitoring program throughout Nevada.
- Support the Nevada statewide Heart Disease and Stroke Prevention task force.
- Support collaborations between funded programs within the Division.
- Conduct public awareness campaigns to promote recognizing heart attack and stroke and the importance of calling 911.²⁹
- Investigate the [Rural Healthcare Outcomes Accelerator](#).

Health Systems

- Use system-wide approaches to identify patients “hiding in plain sight” with undiagnosed or unmanaged heart disease and stroke risk factors.²⁹
- Participate in the Nevada statewide heart disease and stroke prevention task force.
- Coordinate with Emergency Medical Service (EMS) care providers to implement coordinated systems of care that get patients to certified stroke centers fast and reduce delays in care transitions.²⁹
- Work with community members to raise awareness of stroke and heart attack symptoms and ensure EMS systems are activated quickly.

Healthcare Professionals

- Identify and treat high blood pressure, diabetes, obesity, high cholesterol, smoking, and other stroke risk factors.²⁹
- Refer patients to community lifestyle change resources and programs such as quitting smoking lines, obesity, and diabetes prevention.²⁹
- Educate patients to recognize the signs and symptoms of heart attack and stroke and the importance of calling 911.²⁹

Every Nevadan

- Learn to recognize the signs and symptoms of a heart attack and stroke and call 911.²⁹
- Eat a healthy diet with lots of fruit and vegetables, maintain a healthy weight, and be physically active.

- Manage medical conditions such as obesity, pulmonary disease, diabetes, high cholesterol, and high blood pressure by following medical advice and taking medication as prescribed.^{18,19}
- Avoid smoking, vaping, and secondhand smoke.^{14,16}
- Share this information with a friend, neighbor, or loved one.

Stroke Reporting Terms - Acronym List

Acronym	Definition
ACH	Acute Care Hospitals
AF	Atrial Fibrillation/Flutter
AHA	American Heart Association
AI/AN	American Indian and/or Alaskan Native
API	Asian and/or Pacific Islander
ASA	American Stroke Association
BMI	Body Mass Index
BRFSS	Behavioral Risk Factor Surveillance System
CDC	Center for Disease Control
CDPHP	Chronic Disease Prevention and Health Promotion
CFCW	Child, Family, and Community Wellness
COPD	Chronic Obstructive Pulmonary Disease
Coverdell	Paul Coverdell National Acute Stroke Act
CQI	Continuous Quality Improvement
CSCs	Certified Stroke Centers
DHHS	Department of Health and Human Services
DM	Diabetes Mellitus
DPBH	Division of Public and Behavioral Health
DVT	Deep Vein Thrombosis
ED	Emergency Department
EMS	Emergency Medical Services
GWTG-S	Get With the Guidelines - Stroke
HBD	Hospital Billing Data
HDD	Hospital Discharge Data
HDL	High-Density Lipoprotein
HDSP	Heart Disease and Stroke Prevention
ICD-10-CM	International Classification of Diseases, Tenth Revision, Clinical Modification code
JC	Joint Commission
M/F	Male/Female
NH	Non-Hispanic
NRS	Nevada Revised Statute
PE	Pulmonary embolism
SES	Socioeconomic Status
tPA	Tissue Plasminogen Activator
U.S.	United States
VTE	Venous Thromboembolism
WISEWOMAN	Well-Integrated Screening and Evaluation for Woman Across the Nation

Call To Action


Figure 18 is the summation of this report and its call to action. Strokes happen wherever Nevadans are born, live, learn, work, play, worship, and age. To enjoy active productive years of life, know and manage

the risk factors. To save lives, learn to recognize the signs of a stroke and take action. To reduce the burden of disability healthcare systems and professionals can ensure coordinated well informed transitions of care.


What's needed to decrease stroke deaths?

RISK FACTORS FOR STROKE


Knowing and managing your risks for stroke are key.




HIGH BLOOD PRESSURE
a leading cause of **STROKE**




TOBACCO USE



DIABETES







HIGH CHOLESTEROL



OBESITY & PHYSICAL INACTIVITY





Recognize the signs of stroke **F.A.S.T.**

 <p>FACE Ask the person to smile. Does one side droop?</p>	 <p>ARMS Ask the person to raise both arms. Does one arm drift downwards?</p>	 <p>SPEECH Ask the person to repeat a simple sentence. Are the words slurred?</p>	 <p>TIME If the person shows any of these symptoms, call 911 immediately.</p>
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Learning the signs of a stroke can HELP SAVE LIVES

SOURCE: Adapted from the Cincinnati Pre-hospital Stroke Scale, University of Cincinnati, 1997.

Stroke Systems of Care

 <p>Community</p>	 <p>Pre-Hospital</p>	 <p>Hospital</p>	 <p>Post-Hospital</p>
<p>Detection</p> <p>Everyone knows the signs of stroke and the need to call 911 immediately.</p>	<p>Delivery</p> <p>Fast emergency medical services (EMS) transport to the hospital with pre-hospital notification that they are on the way.</p>	<p>Decision</p> <p>Identify stroke, quickly decide on and provide appropriate treatment.</p>	<p>Discharge Coordination</p> <p>Patient rehabilitates, recovers, and returns home.</p>

SOURCES: Paul Coverdell National Acute Stroke Program, CDC; Guidelines for the Early Management of Adults with Ischemic Stroke, Circulation, May 22, 2007.



The **STROKE SYSTEMS OF CARE** depends on coordinated partnerships among health systems and professionals, smooth transitions from one care setting to the next, data-driven quality improvement programs that provide the best care to every patient every time, consistent hospital discharge processes with all of the patient's healthcare professionals, and continued actions that improve patient care and save lives.

<https://www.cdc.gov/vitalsigns/stroke/index.html>

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