DRAFT!!!!

THE BURDEN OF CHRONIC DISEASE

Nevada

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Executive Summary

Why Attention to Chronic Disease is Important?

Chronic diseases are prolonged conditions that often do not improve and are rarely cured completely. They are also the leading causes of death and disability in the United States. These diseases account for 7 of every 10 deaths and affect the quality of life of 90 million Americans (CDC, 2012e). In Nevada, heart disease, stroke, cancer, diabetes and arthritis are among the most common, costly, and preventable of all health problems today. For 2011, of the 2,700,551 people (U.S. Census Bureau, 2007) in the state of Nevada:

- At least 1 million adults have at least one chronic illness (BRFSS, 2011).
- 465,121 adults are living with arthritis which can increase activity limitations (CDC, 2011b).
- 228,185 adults are living with some form of cancer (BRFSS, 2011; CDC, 2011b).
- 209,661 adults are living with diabetes which remains one of the leading causes of kidney failure, non-traumatic lower-extremity amputations and blindness in adults, aged 20-74 (BRFSS, 2011; CDC, 2011b)
- The annual estimated costs of chronic disease is $20.313 billion (direct cost = $4.063 billion and indirect costs = $16.25 billion) (United Health Foundation, 2011).

There are four modifiable health risk behaviors that can greatly influence chronic disease outcomes including physical activity, nutrition, tobacco use and alcohol consumption (CDC, 2009).

- 60.2% of the adult population is either obese (498,709 Nevadans) or overweight (726,689 Nevadans) being obese or overweight increases one's risk of heart disease, stroke, type-2 diabetes, and certain types of cancer which can lead to death (CDC, 2011b).
- 79% of the adult population (1,608,079 Nevadans) do not meet both daily recommended aerobic and strength guidelines for physical activity (CDC, 2011b).
- 83% of the adult population (1,681,563 Nevadans) reported not eating 5 or more servings of fruit and vegetables per day (BRFSS, 2011).
- 22.9% of all adults 18-years of age and older are currently smokers, and in 2009, 17.0% of high school students smoked one or more cigarettes in the previous month (CDC, 2011b; CDC, 2011i; CDC, 2008e).

- 38.6% of high school students reported consuming alcohol in the past 30-days and a large number of studies provide strong evidence that drinking alcohol is a risk factor for liver cancer, breast cancer and colorectal (colon) cancer (CDC, 2008e).

Introduction and Purpose

Chronic disease has become one of the most significant public health challenges of the 21st Century with more than two-thirds of adults in the U.S. expressing that the healthcare system should place more emphasis on chronic disease preventive care. The Centers for Disease Control and Prevention has set the vision for the nation in which all people lead healthy lives free of chronic disease. Toward the realization of this vision, CDC instituted their own call to action in 2009 (CDC, 2009b). Naming tangible ways to achieve this goal, this call to action highlights the following key areas:

- Well-being
- Policy Promotion
- Health Equity
- Research Translation
- Workforce Development

Preliminary data from Nevada in 2011 indicates that the ranked causes of death were as follows: diseases of the heart (25%), malignant neoplasms (22%), chronic lower respiratory diseases (6%), cerebrovascular diseases (5%) and diabetes mellitus (2%) (BRFSS, 2011). In 2011, Nevada's causes of death closely reflected national percentages. Most of these chronic diseases are preventable through modifiable behavior changes.

Causes of Death In Nevada	2011*	
	Count	%
Diseases of the Heart	4,860	24.5%
Malignant Neoplasms (Cancer)	4,428	22.3%
Chronic Lower Respiratory Diseases	1,209	6.1%
Cerebrovascular Diseases (Stroke)	859	4.3%
Nephritis, Nephrotic Syndrome and Nephrosis	408	2.0%
Diabetes Mellitus	388	2.0%
Alzheimer's Disease	336	1.7%
Chronic Liver Disease and Cirrhosis	301	1.5%
Septicemia	300	1.5%
Essential Hypertensive Renal Disease	149	0.8%
Assault (Homicide)	131	0.7%
Atherosclerosis	74	0.4%

Note: Population estimates were provided by the Nevada State Demographer in March 2012.
Note: Counts are not final and are subject to changes.

[Appendix II, Table 1]

The purpose of this document is to provide a snapshot of the burden of chronic disease in Nevada and to understand health disparities and social determinants of health that are risk factors for all chronic diseases. Research indicates that there is a relationship between health outcomes and socioeconomic status, race/ethnicity, level of education and geographic region (Truman, Smith, Roy, Chen, & Moonesigne, 2011). Research also indicates a relationship between health outcomes, level of productivity, and cost to a state (Goetzel, Ozminkowski, Hawkins, Wang, & Lynch, 2004). By compiling localized data, comparing it to national targets, and calculating estimated cost associated with the burden of chronic disease, Nevada will have a clearer picture as to where to emphasize education, interventions, and programs to build a healthier state.

Data Sources and Methods

The main source of data for this report is the Behavioral Risk Factor Surveillance System (BRFSS). In addition, the Office of Public Health Informatics and Epidemiology provided select hospital inpatient billing and emergency department statistics and information from the Nevada Central Cancer Registry. Data was then compared to Healthy People 2020 national targets in order to provide a roadmap to improve health outcomes in Nevada. This will also highlight disparities or immutable characteristics such as race/ethnicity, socio-economic status, and geographic residency in disease prevalence, as well as highlight disparities in access to health care prevention and resources to attain optimal health and life without chronic disease.

Behavioral Risk Factor Surveillance System (BRFSS, Appendix II)

BRFSS is a state-based system of telephone health surveys that collects information on health risks behaviors, preventive health practices, and health care access related to chronic disease and injury. The annual survey of adults 18 and older has been conducted since its establishment in 1984 by the Centers for Disease Control and Prevention (CDC). BRFSS is based on self-reports and assesses risk factors for diseases and conditions related to the ten leading causes of death in the U.S. population. The data collected through BRFSS is routinely used to capture health information on demographically defined subgroups such as gender, ethnicity, age, educational level, and geographic location. "More than 350,000 adults are interviewed each year, making BRFSS the largest telephone health survey in the world. States use BRFSS data to identify emerging health problems, establish and track health objectives, and develop and evaluate public health policies and programs" (CDC website - http://www.cdc.gov/brfss/about.htm) (CDC, 2008a).

Throughout this report, specific questions regarding BRFSS are highlighted for reference to specific prevalence or chronic disease risk factors. Not all questions are asked annually, some questions are only asked biannually; therefore, not all data reflects the most recent year, 2011. Methodological changes in BRFSS occurred in 2011 that potentially effect prevalence estimates. Data is now collected from cell phone users to extend the reach of the survey and ultimately produce a more representative description of the health of the nation. Due to this change, trend data does not include BRFSS 2011 data.

Most prevalence charts are displayed as appropriate as they occur throughout the report; however, for further information, reference to full tables can be made in Appendix II. Table number is specified under most charts.

Healthy People 2020 (Appendix I)

Healthy People is a 10-year initiative that is evidence-based and provides national objectives for improving the health of all Americans. Three decades old now, Healthy People continues to establish benchmarks and monitor progress to (Healthy People: http://www.healthypeople.gov/2020) (Healthy People, 2012):

- Encourage collaborations across communities and sectors.
- Empower individuals to make informed health decisions.
- Measure the impact of prevention activities.

Four foundation health measures will serve as an indicator of progress towards achieving these goals:

- General Health Status
- Health-Related Quality of Life and Well-Being
- Determinants of Health
- Disparities

Measures utilized to indicate progress are broken down further:

General Health Status	Health-Related Quality of Life and Well-Being	Determinants of Health	Disparities
• Life expectancy • Healthy life expectancy • Years of potential life lost • Physically and mentally unhealthy days • Self-assessed health status • Limitation of activity • Chronic disease prevalence	• Physical, mental, and social health-related quality of life • Well-being/satisfaction • Participation in common activities	A range of personal, social, economic, and environmental factors that influence health status are known as determinants of health. Determinants of health include such things as biology, genetics, individual behavior, access to health services, and the environment in which people are born, live, learn, play, work, and age.	• Race/ethnicity • Gender • Physical and mental ability • Geography

Healthy People 2020 includes over 600 objectives with 1,200 measures. Healthy People rely on data sources derived from:

- A national census of events like the National Vital Statistics System
- Nationally representative sample surveys like the National Health Interview Survey

Office of Vital Statistics

The Nevada Office of Vital Statistics is overseen by the Bureau of Health Statistics, Planning, Epidemiology and Response and collects, processes, and maintains birth and death records. Funeral directors, or persons acting as such, are legally responsible for filing death certificates. The vital records database includes those individuals who died in Nevada (residents and non-residents) and includes Nevada residents who died outside the state of Nevada. Mortality data in this report includes only Nevada residents.

Nevada Central Cancer Registry (NCCR)

NCCR is a population-based registry that maintains data on all cancer patients in Nevada. NCCR collects data on all reportable cancers from hospitals, outpatient facilities, and pathology laboratories throughout the state. In accordance with National Program of Cancer Registries (NPCR) and the North American Association of Central Cancer Registries (NAACCR) standards, NCCR strives to achieve and maintain 95% complete case ascertainment within 24 months of diagnosis date. The data is compiled, aggregated, and submitted to federal agencies annually. Once submitted, NCCR data is reviewed by each diagnosis year for completeness, accuracy, and timeliness.

Hospital Inpatient Billing Data

Hospital Inpatient Billing Data provides information about patients discharged from non-federal acute care hospitals in Nevada. Data is collected by the standard Uniform Billing (UB-92) Form that hospitals use to bill for their charges. This data includes patients who spent at least 24 hours as an inpatient but does not include

patients who were discharged from the emergency department. It captures demographic characteristics, diagnoses (identified by International Classification of Disease codes—9 (ICD-9)), diagnostic and operative procedures, charges billed, length of stay, and discharge destination. The data identify billed charges only and not payments received. The ICD-9 system is used to code and classify morbidity data from inpatient records.

Technical Notes

Age-specific rates shown in this report are per 100,000 age-specific population.

Age-adjusted rates shown in this report are adjusted to the US standard population and are per 100,000 Nevada residents.

2009 population estimates used in this report were provided by the Nevada State Demographer in April 2012.

Due to changes in methodology, rates for subgroups published in this edition may not match or be directly comparable to past years and should be used with caution when compared to other published rates.

Definitions

Crude Rate: In this report, crude rates are the number of cases which occur per 100,000 Nevada population and are not adjusted for other factors, such as age. Gender and/or race/ethnicity specific populations are used in the denominator when applicable.

Age-adjusted Incidence Rate (direct method): These are observed age-specific crude rates which are applied to the 2000 U.S. standard population 11 age groups to make populations with different age distributions comparable.

Standard Population: This is the standard population or weights that are used in the calculation of age-adjusted rates to serve as an index (Beckles & Truman, 2011). The 2000 U.S. standard population has been used in this report and is used by many national agencies as well.

The Burden of Chronic Disease
National Perspective

According to the Centers for Disease Control and Prevention (2012e), the most common and costly chronic diseases are heart disease, stroke, cancer, diabetes, and arthritis which also happen to be the most preventable diseases in the United States. Other chronic diseases that significantly affect our nation are respiratory diseases and oral conditions.

Heart Disease

The Healthy People 2020 objective is to increase overall cardiovascular health in the U.S. population. Currently, mortality due to diseases of the heart rank number one in the nation and is the leading cause of death for men, women and most races/ethnicities. In 2012, CDC stated that coronary heart disease was the most common heart disease in 2010 and estimated to cost the U.S. $108.9 billion (CDC, 2012f).

Stroke

A stroke usually occurs when there is a blockage in the blood supply to the brain or when a blood vessel in the brain bursts. Stroke is the leading cause of long-term disability causing paralysis, speech difficulties, and emotional problems. The Healthy People 2020 objective is to reduce deaths due to stroke to 33.9 per every 100,000 people. Stroke is ranked as one of the five leading causes of death across every race/ethnicity. On average someone has a stroke every 40minutes, and every 4 minutes somebody dies as a result of having a stroke. The estimated cost to the U.S. was $53.9 billion in 2010 according to CDC (CDC, 2011g).

Cancer

Cancer is defined by abnormal cell growth and can involve tissue from all parts of the body. Nationally, cancer is the second leading cause of death, and 1 in every 4 deaths is cancer related. The top three most common cancers are prostate, breast and lung/bronchus cancer. In 2010, the estimated national cost of cancer was $124.57 billion and was estimated to reach $158 billion by 2020 (National Cancer Institute, 2012). The Healthy People 2020 objectives are to reduce the overall cancer death rate from 178.4 per 100,000 people to 160.6 per 100,000 people and to increase the proportion of cancer survivors who are living 5-years or longer after diagnosis by 72.8% (Healthy People, 2012b).

Diabetes

Diabetes is a disease whereby the body suffers a shortage of insulin, a decreased ability to use insulin, or both. Damage can occur to vital organs when diabetes is not controlled and glucose and fats remain in the blood. In 2007 in the United States, 25.8 million people had diabetes, 7 million had diabetes but were not diagnosed, and 1.9 million more were diagnosed in 2010 ages 20 or older. Diabetes is the seventh leading cause of death in the nation and can cause blindness, kidney failure and amputations of the feet, and legs not related to accidents or injury. CDC estimated in 2007 that the total of direct and indirect costs of diabetes was $174

billion (CDC, 2008c). The Healthy People 2020 objectives are to reduce the number of new cases and the number of deaths and to increase the proportion of persons diagnosed with diabetes.

Arthritis

Arthritis is the most common cause of disability in the U.S. The basic definition of arthritis is joint inflammation; however, CDC uses the term to address over 100 rheumatic diseases that affect the joints, surrounding tissue, connective tissue and the location of symptoms. From 2003-2005, 1 in 5 (50-million) adults were diagnosed with arthritis and the disease tends to affect women more than men (CDC, 2006). It is estimated that by 2030 67 million people ages 18 and older will be diagnosed with arthritis. The total cost attributed to arthritis and other rheumatic conditions in the U.S. was estimated in 2003 to cost $128 billion (CDC, 2009c). The Healthy People 2020 objectives are to reduce the mean level of joint pain among adults diagnosed and to reduce the proportion of adults diagnosed who experience a limitation in activity due to arthritis or joint symptoms.

Respiratory Diseases

Respiratory diseases or chronic obstructive pulmonary disease (COPD) refers to a group of diseases that are defined by an airflow blockage or breathing related problem. CDC identified in 2002 that emphysema, chronic bronchitis, and asthma are the most commonly diagnosed respiratory disorders. According to CDC, over 12-million Americans have been diagnosed with chronic obstructive pulmonary disease (COPD) (CDC, 2009a). In the U.S., 75% of COPD cases can be attributed to tobacco use; however, exposure to air pollutants, genetics and respiratory infections can also play a role in disease development. It was projected that COPD would cost the U.S. $49.9 billion in 2010 (U.S. Department of health and Human Services, 2009). Healthy People 2020 objectives for COPD include reducing activity limitations and deaths from COPD among adults, COPD related hospitalizations and increasing the proportion of adults with abnormal lung function who were diagnosed with COPD.

Oral Conditions

Oral conditions include mouth and throat diseases such as tooth decay, periodontal (gum) disease and oral cancers. According to CDC (2011f), tooth decay affects more than one-fourth of U.S. children aged 2-5 years old and half of those aged 12-15 years. Advanced gum disease affects 4%-12% of U.S. adults. Half of severe gum diseases can be attributable to cigarette smoking (CDC, 2011f). One-fourth of U.S. adults aged 65 or older have lost all of their teeth and more than 7,800 Americans die from oral and pharyngeal cancers each year (U.S. Department of Health and Human Services, 2000). Current research is starting to indicate a relationship between oral health and other chronic diseases such as diabetes and heart disease. Most oral diseases are preventable and each year cost the U.S. an estimated $108 billion dollars in dental services (CDC, 2011f). Healthy People 2020 objectives for oral health include reducing the proportion of children experiencing dental caries (cavities), natural tooth loss in older adults and increasing oral and pharyngeal cancer screenings and the proportion of people getting dental services and preventative care.

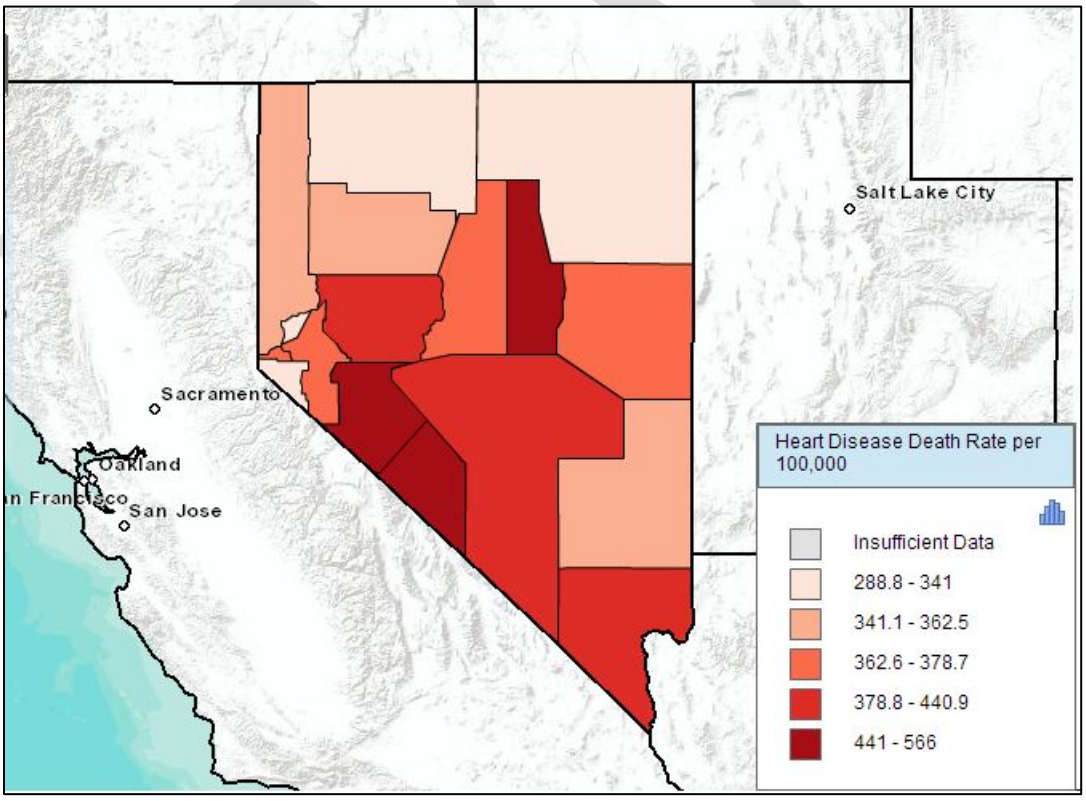
Burden of Chronic Disease in Nevada

Geographically Nevada is the 7th largest state in the United States, but a large portion of the state is sparsely populated. The state is comprised of 17 counties that cover over 110,000 square miles of land. Of the 17 counties, 3 are considered "urban" (Clark, Washoe, Carson City), accounting for 87.7% of the population; the remaining 14 counties are divided among "rural" (Douglas, Lyon, Storey) and "frontier" counties. Frontier counties are defined as 7 persons or less per square mile. Nevada's rural and frontier counties account for 12.3% of the state population, but 86.8% of the total state land mass (Griswold & Packham, 2011).

Until recently, Nevada was considered one of the four fastest-growing states in the nation by population growth. However, 2011 marked the first time in over 30 years that Nevada's population growth rate (0.84% - Ranked 26th) fell below the United States national average of 0.91% (Griswold & Packham, 2011). This drop in population growth could be an indication that the dynamics of the population are changing and therefore prevalence rates and risk factors associated with chronic disease could also change in the future.

Nevada has a minority population over 40% but is not considered a majority-minority state. Minority populations tend to have disproportionately higher rates of disease, birth, and uninsured/underinsured. The Nevada State Health Division hopes to assist these groups with the help of the research and analysis laid out in this burden document.

Mortality Rate of Heart Disease in Nevada, 2007-2009

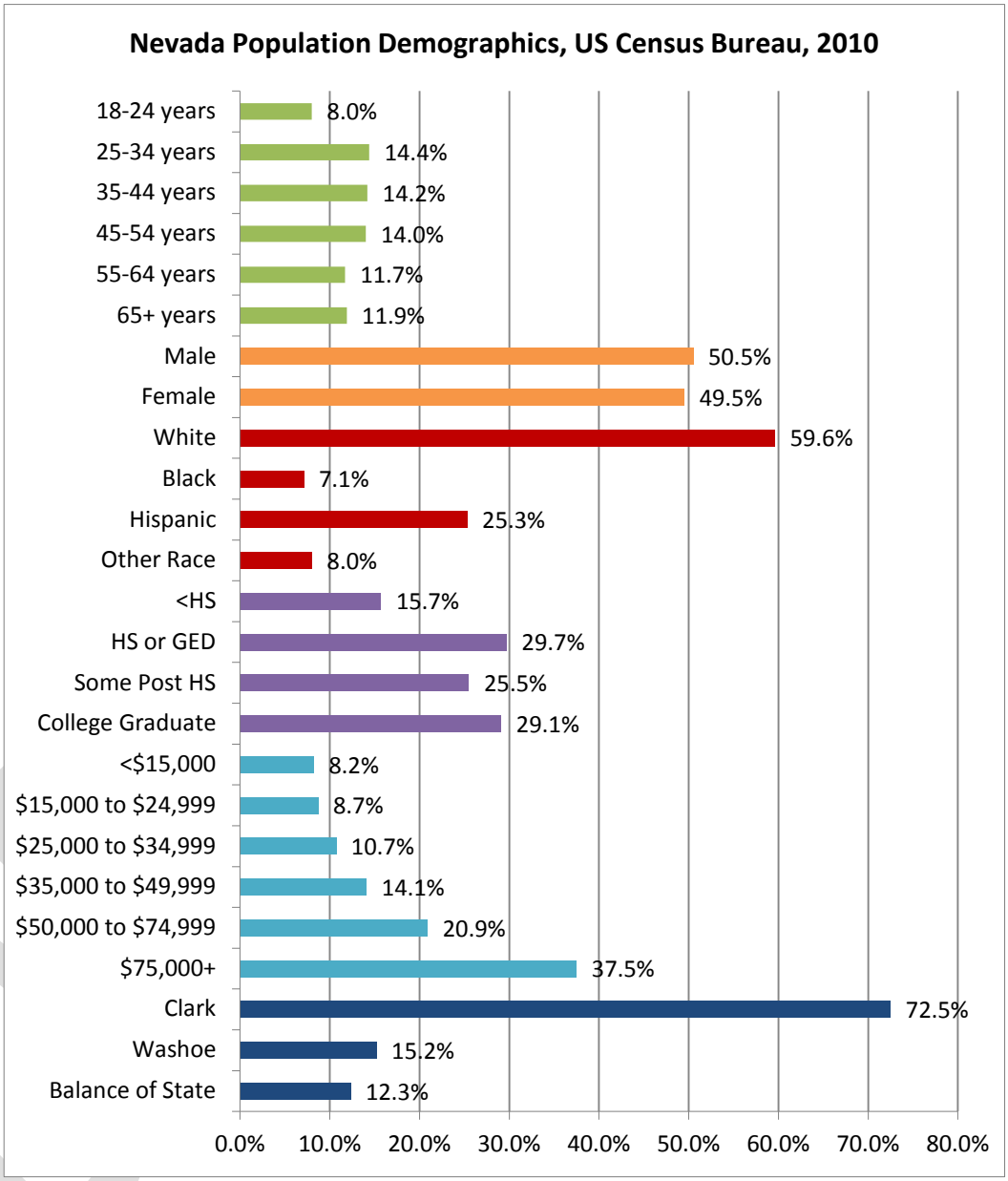


Source: National Center for Chronic Disease Prevention and Health Promotion, Division for Heart Disease and Stroke Prevention, 2010

Demographics

Basics

Demographics are broken down into the following categories: Age, Sex, Race/Ethnicity, Education Level, Household Income, and Geographic Location within the state of Nevada. Each category in demographics will add up to 100%. The color scheme for each category that is maintained through the document.



[Appendix II, Table 2, 3]

Age

- 37% of Nevadans were between the ages of 18 and 44, 14% middle aged (45-54) and 24% 55 years of age or older.

Sex

- There was almost an even distribution of males (51%) and females (50%).

Race/Ethnicity

- Nevadans predominantly reported being White (60%) followed by Hispanic (25%) when stating racial/ethnic background.

Geographic Location

- 73% of the Nevadans lived in Clark County followed by 15% in Washoe County and 12% in the rural and frontier areas.

Educational Attainment

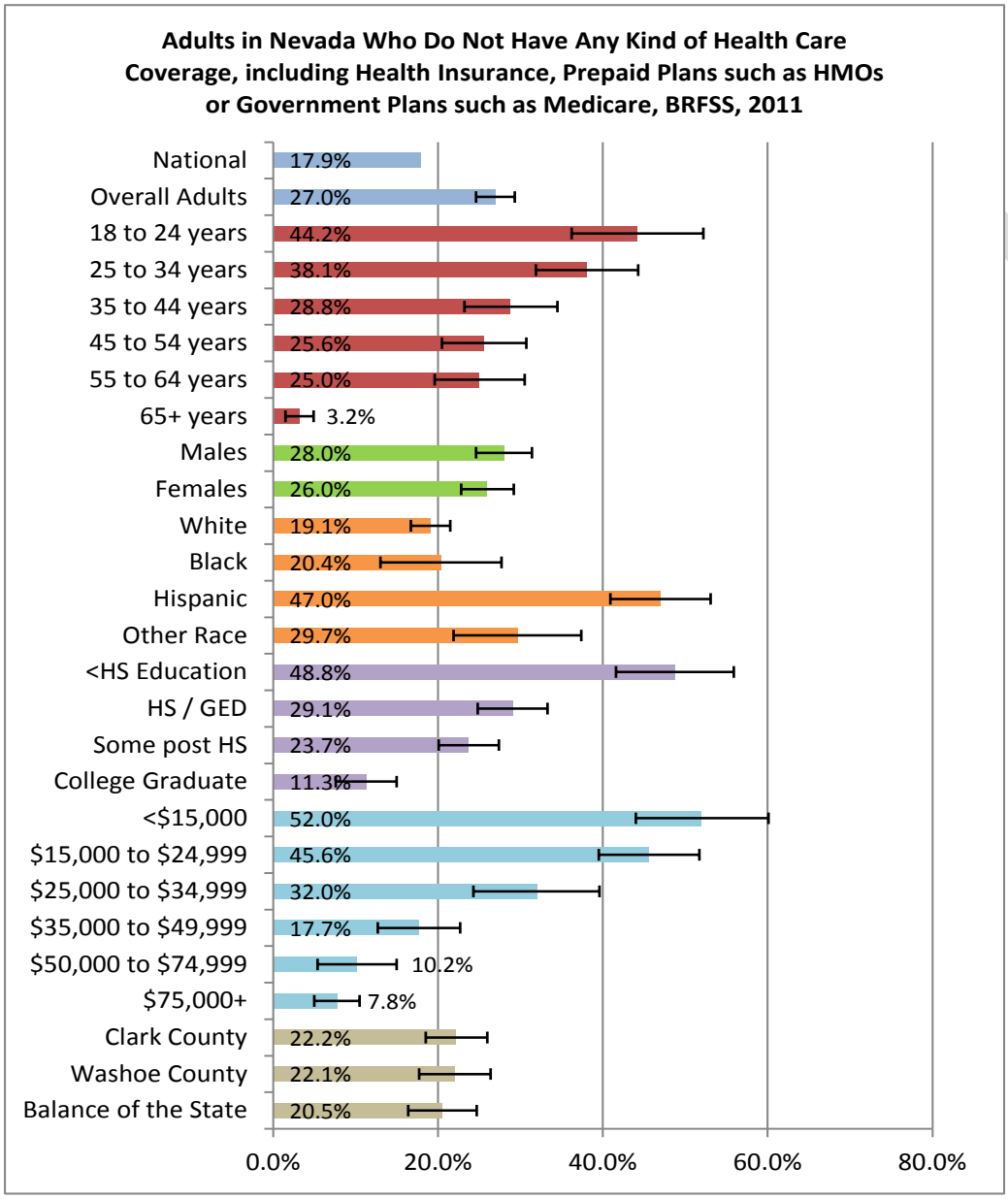
- 30% of Nevadans had a high school diploma or equivalent, 29% a college degree, 26% some post high school education, and 16% less than a high school diploma.

Household Income

- 58% of Nevadans made a household income of $50,000 or more with 38% making $75,000 or more.
- 42% of Nevadans made a household income of $49,999 or less.

Health Insurance

The United Health Foundation (2012) ranked Nevada as the 42nd healthiest state in the U.S., up from 47th in 2010. Nevada also ranked 47th in the nation for healthcare coverage (United Health Foundation, 2011). Racial/ethnic minorities often face barriers to care and receive poorer quality of care when accessed (U.S. Department of Health and Human Services, 2012).



[Appendix II, Table 4]

Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System (BRFSS), Prevalence and Trends Data, 2011

Note: National median percentage is the median percentage of all the states including DC.

Nevadans without Health Insurance

- 27% of Nevadans surveyed did not have any sort of health insurance coverage.
- Prevalence was slightly higher among males (28%) as compared to females (26%).
- Almost half of Nevadans were Hispanic (47%).
- 43% of Nevadans without health insurance were between the ages of 18 and 24 years.
- Almost half (49%) of Nevadans without health insurance had less than a high school education.
- Over half (52%) of Nevadans without health insurance had a household income of less than $15,000.
- There was a fairly equal distribution of uninsured people in metro and rural/frontier counties.