NEVADA DIVISION of PUBLIC and BEHAVIORAL HEALTH

NEVADA OBESITY 2023 ANNUAL REPORT

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State of Nevada
Department of Health and Human Services
Division of Public and Behavioral Health
Chronic Disease Prevention and Health Promotion Section
Wellness and Prevention Program

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ACKNOWLEDGMENTS

This report was developed with the contribution of staff from the Nevada Department of Health and Human Services (DHHS) and the Obesity Prevention Chair of the Nevada Chapter of the American Academy of Pediatrics.

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DATA OVERVIEW

The Division of Public and Behavioral Health (DPBH) prepares and submits an annual written report on obesity per the Nevada Revised Statutes (NRS) 439.521. This report includes current obesity rates in the State, obesity data related to specific demographics, actions taken by the DPBH regarding obesity, and the State's goals regarding obesity rates. On or before March 15 of each year this report is submitted to the Director of the Legislative Counsel Bureau for transmittal to: (I) The Joint Interim Standing Committee on Health and Human Services during even-numbered years; and (II) The Legislature during odd-numbered years.

The NRS 392.420 mandates the collection of height and weight data of 4th and 7th grade students from qualifying school districts (Clark and Washoe County). Additional school districts may choose to participate in the collection process on a volunteer basis. Elko County School District voluntarily provided data for School Year 2021-2022 and has a nurse in every school per the Nevada Department of Education. The height and weight of a representative sample of pupils are measured every other year at the same time other observations or examinations are conducted, which started in School Year 2021 (August 2021-June 2022) and was collected again in School Year 2023 (August 2023-June 2024). This was during the aftermath of the Coronavirus 2019 (COVID-19) pandemic, which impacted the collection process in 2021. Washoe County collected and provided data in School Year 2022 (August 2022-June 2023) that was not available in School Year 2021. The next mandated collection period will be in School Year 2025 (August 2025-June 2026).

The purpose of the height and weight assessments in the schools is to identify the prevalence of students who are potentially at risk for poor health conditions associated with the ratio between height and weight. The data assists with statewide wellness, food security, and public health initiatives. Federal grants often require relevant data to support the application processes. Therefore, the data collected increases the ability of local health authorities, state programs, and private programs to acquire needed funds to serve Nevadans. It is important to note, the collection process is impacted if the schools lack standardized equipment, resources, and/or consistent sustainable funding.

Nevada Department of Health and Human Services (DHHS) Office of Analytics (OOA) provided the following data to the DPBH Office of State Epidemiology Team and the Wellness and Prevention Program (WPP) within DPBH:

- Bi-Annual National Prevalence of Obesity National Health and Nutrition Examination Survey.
- Annual Prevalence of Chronic Diseases and Obesity in the United States (U.S.) and Nevada Behavioral Risk Factor Surveillance System.
- Chronic Disease Prevalence (Arthritis, Asthma, Cancer excluding skin cancer, Chronic Obstructive Pulmonary Disease (COPD), Diabetes, Heart, Kidney, Obesity, and Stroke) that are identified in Nevada by county.
- Obesity categories (underweight, normal, overweight, obesity) prevalence in the U.S. and Nevada.
- Behavioral Risk Factor Surveillance System 2021-2022 by county, sex, income, education, race-ethnicity, and veteran status.
- Biannual Obesity Categories (Underweight, Healthy Weight, Obese, Overweight) prevalence by Youth (14-18 years old) Youth Risk Behavior Surveillance System 2021-2022 by Grade (9th, 10th, 11th, 12th), Race-Ethnicity, and sex.
- Nevada Kindergarten Health Survey. Obesity Categories (Underweight, Healthy Weight, Overweight, Obese) 2021-2022 and 2022-2023. https://nic.unlv.edu/wp-content/uploads/2023/10/KHS-Year-15-Report_FINAL.pdf
- Obesity categories from the surveys in Clark and Washoe county school districts for 2019-2020, 2020-2021, and 2021-2022 by sex, Race (White, Black, Asian, Other), by Ethnicity (Hispanic and non-Hispanic), and by grade.
- A sample of Cancer cases 1984-2021 which include weight statistics.

The National Health and Nutrition Examination Survey (NHANES) is the source of national obesity data in this report.[1] The survey examines a nationally representative sample of Americans ages two years and older and combines interviews with physical examinations. Limitations of this survey include the delay from collection to reporting. The Behavioral Risk Factor Surveillance System (BRFSS) is the source of adult state-level (aged ≥ 18 years) obesity data in this report.[2] This surveillance system is a survey that collects information annually about risk factors for chronic diseases, obesity, and other leading causes of death. Some limitations are self-reported weight and height data and estimates for racial and ethnic groups are not reported for all races and ethnicities.

The Youth Risk Behavior Surveillance System (YRBSS) is the source of youth state-level (aged 14 to 18 years) obesity data in this report.[3] YRBSS data is obtained from a national school-based survey conducted by the Centers for Disease Control and Prevention (CDC) and partners. The survey

includes representative samples of 9th to 12th-grade students in public and private schools in the U.S. Some of the limitations of the survey are self-reported height and weight data, data applied only to youth who attend school, data collected only on odd-numbered years.

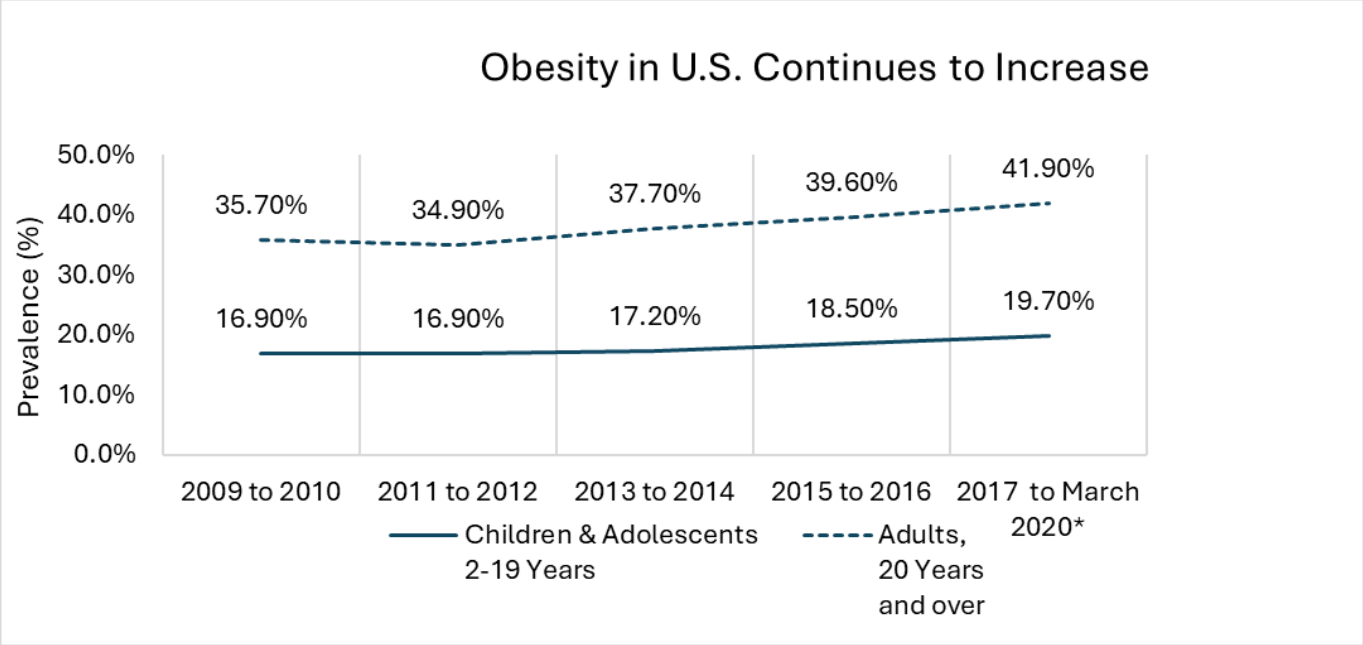
Data from the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is the source for childhood (under the age of 5) obesity data in this report.[4] The U.S. Department of Agriculture (USDA) conducts a biennial census in even-numbered years to collect data on nutrition characteristics and weight status. Annual estimates for overweight and obesity prevalence are derived from measured weight and height data collected in physician's offices or by trained WIC staff and medical facilities. The data does not represent all the children in this age group, the survey only includes data from low-income children, and information is collected only on even-numbered years. The Nevada Kindergarten Health Survey (KHS) collects information annually about the overall health status of Nevada statewide kindergarten students.[5] This data is self-reported height and weight data by parents or guardians, and the data only represent children attending public kindergarten.

BACKGROUND

In 1948 obesity was recognized as a disease in the International Classification of Diseases by the World Health Organization (WHO).[6] In 2013, the American Medical Association recognized obesity as a disease requiring treatment and prevention efforts.[7] According to NRS 0.038,[8] obesity is "a chronic disease characterized by an abnormal and unhealthy accumulation of body fat which, statistically, correlates with premature mortality, hypertension, heart disease, diabetes, cancer, and other health conditions." A Body Mass Index (BMI) is a person's weight status in kilograms divided by the square of height in meters (kg/m^2). An adult's weight status is classified as 'overweight' if the person's BMI is 25 to 29.9 and 'obese' if BMI is 30.0 or higher. For children, a BMI is compared to other U.S. children of the same age and sex to determine a child's BMI age-and-sex-specific percentile, also known as BMI-percentile. A child with a BMI-percentile equal to or greater than the 95th percentile means that a child's BMI is equal to or greater than that of 95% of other children of the same age and sex. A child with BMI at or above the 95th percentile has obesity. BMI values do not diagnose a person's body fatness or health conditions; health care providers are the only qualified individuals to determine body fatness and weight-related health conditions. BMI numbers are only one of many public health screening or surveillance tools for planning, implementing, and evaluating public health practice.[9]

Half of U.S. adults are projected to have obesity by 2030, and 60% of today's children are predicted to have obesity by age 35.[10] According to the 2009 to March 2020 data measured (Figure 1) from the NHANES[1], the prevalence of obesity among U.S. children and adolescents experienced a 17% increase from 2009 to March 2020. Similarly, U.S. adults experienced a 6.2% increase in obesity in the same timeframe with the overall obesity rate as 61.6% in the U.S. The Coronavirus pandemic exacerbated the problem. In 2021, the American Psychological Association stated that 61% experienced undesired weight changes with 42% gaining more then they intended.[11] The data suggests long term mental and physical health impacts for years to come following the pandemic. According to 2022 data published by Diabetes and Metabolic Syndrome, Clinical Research and Reviews, nearly half (48%) of adult Americans gained weight during the pandemic most likely a result of depression and anxiety symptoms.[12] Additionally, at the height of the pandemic, food security partners statewide saw an unprecedented increase in the need for food and nutrition services due to high unemployment rates, limited access to resources, and social distancing.

Figure 1. Prevalence (%) of Childhood and Adult Obesity in the U.S.



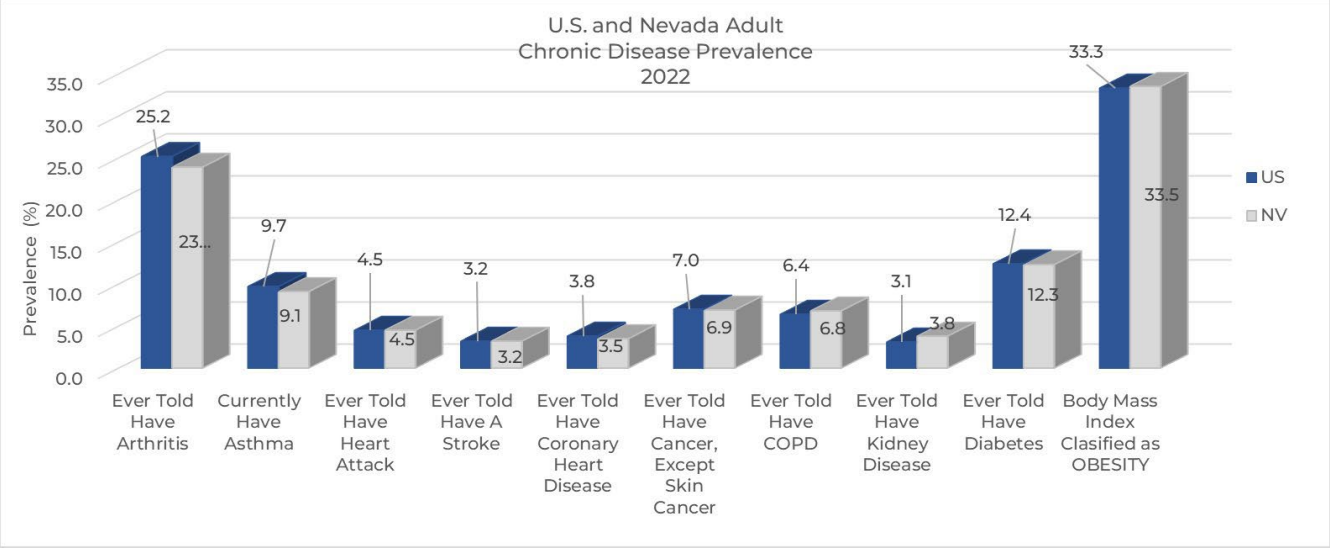
Data Source: NHANES National Survey 2009-2020.
* As data collected in the partial 2019-2020 cycle (herein referred to as 2019-March 2020) are not nationally representative, they were combined with previously released 2017-2018 data to produce nationally representative estimates. NHANES obesity data after 2020 has not been published.

Individuals with obesity may also experience fewer social, educational, and employment opportunities, bullying, and lower health care quality.[13] People with obesity have reported avoiding health care encounters due to discriminatory and stigmatizing experiences. Weight-based

discrimination can result in mental health disorders, social isolation, reduced wages, and poorer education and employment. Chronic psychological stress resulting from obesity stigma can trigger cortisol release that in turn increases fat deposition.[14] Also, experiencing weight-based stigma further increases the risk of unhealthy eating and the avoidance of exercise.[13]

Compared to the prevalence of other chronic diseases in Nevada, data from 2022 continues to show that the prevalence of obesity is significantly higher than the prevalence of most chronic diseases (Figure 2). For example, in 2022, the combined prevalence of heart attack, stroke, heart disease, cancers excluding skin cancer, and kidney and pulmonary disease in Nevada is 28.7%, while the prevalence of obesity is 33.5%. When comparing chronic disease prevalence, it is critical to understand that obesity is not only a chronic disease but also a risk factor for multiple other chronic diseases and socio-economic factors. Adults with obesity and those who are overweight have a higher risk of developing heart disease, type two diabetes, and some types of cancer. The CDC estimates that six out of ten Americans have a chronic disease, and four out of ten Americans have two or more chronic conditions. Five of the ten leading causes of death in the US in 2020 were chronic diseases.[15,16]

Figure 2. Prevalence (%) of Chronic Diseases, NV vs. U.S.



Data Source: Behavioral Risk Factors Surveillance System (BRFSS 2022).
Provided by the Director's Office of Analytics. Data analyzed by The Office of State Epidemiology, Chronic Disease Unit, and Division of Public and Behavioral Health – Wellness and Prevention Program.

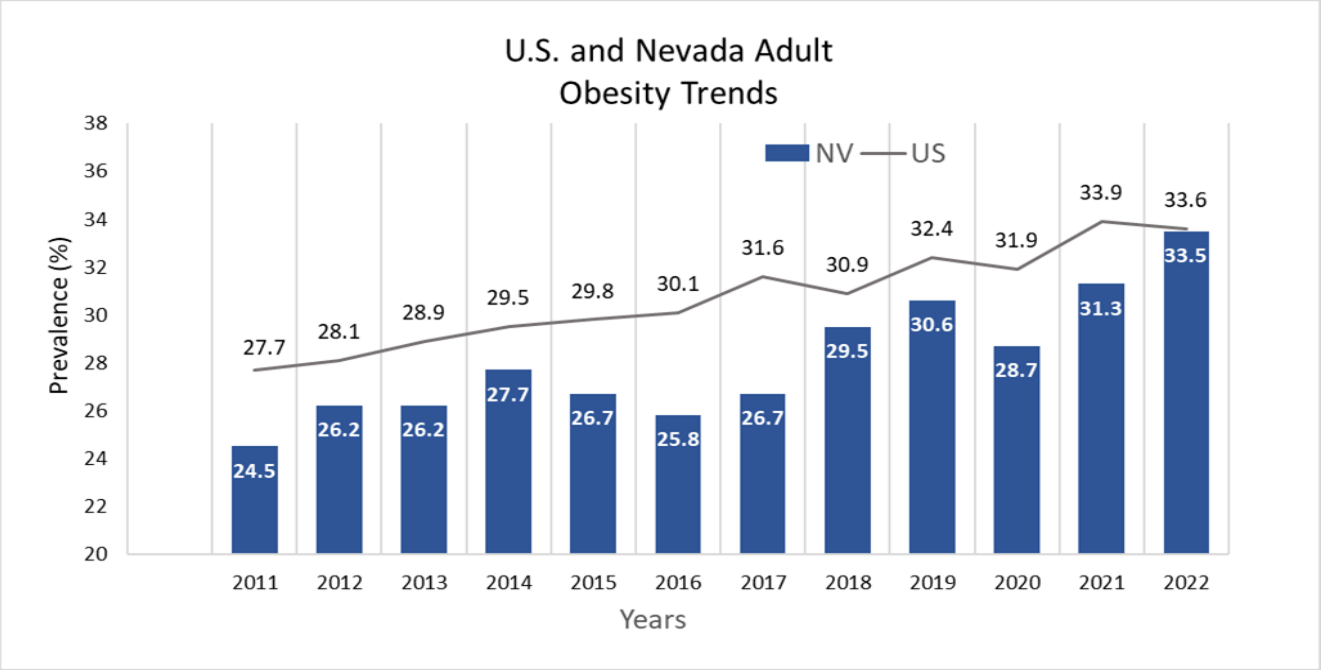
Children with obesity are more likely to develop obesity as adults than children that maintain healthy weight. One in five children and more than one in three adults struggle with obesity and/or type 2 diabetes in the U.S. Obesity also threatens our national security as only two in five

potential military recruits are weight eligible and physically prepared for basic training.[17, 18] The long-term socio-economic and health consequences of obesity are expected to increase as the population's BMI rise in the U.S. and Nevada.[11, 14] The economic impact of obesity in the U.S. has been identified as one of the key drivers of increased health care spending. Over the next 30 years, this is expected to reach an annual amount of almost $655 per person – 14% of the country's total annual health care expenditure.[19] Obesity costs the U.S. health care system nearly $173 billion a year.[17] Indirect costs from obesity also add up to the billions due to missed time at school and work, reduced workforce productivity, premature mortality, and strain on public resources.

ADULT OBESITY IN NEVADA

Overall, in 2022, the adult obesity prevalence was nearly the same within the U.S. at 33.5% and Nevada at 33.6% (Figure 3). Over 12 years, the adult obesity prevalence increased from 24.5% in 2011 to 33.5.% in 2022, a 36.7% increase in obesity since 2011.

Figure 3. Prevalence (%) of Adult Obesity, NV and U.S.

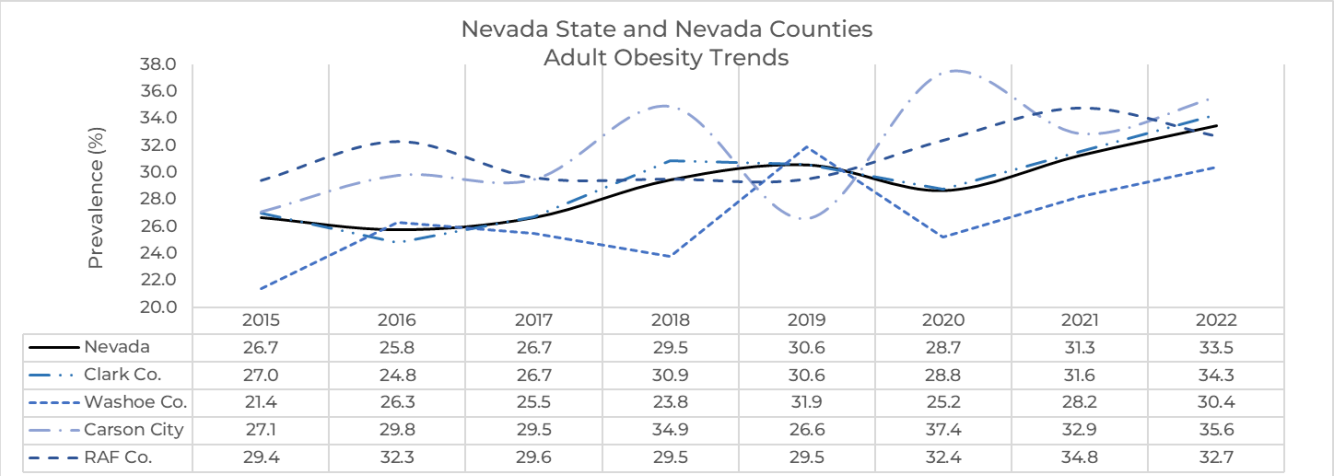


Data Source: BRFSS 2011-2022.
Provided by the Director's Office of Analytics. Data analyzed by The Office of State Epidemiology, Chronic Disease Unit, and Division of Public and Behavioral Health – Wellness and Prevention Program.

The available county level data show differences in adult obesity prevalence in Nevada (Figure 4). Overall, compared to the trends in Clark and Washoe counties, adult obesity prevalence in all rural and frontier (RAF) counties displays an upward trajectory. Notably, Carson City displayed the

highest increase in obesity rates when compared to Nevada.

Figure 4. Prevalence (%) of Adult Obesity, NV and NV Counties



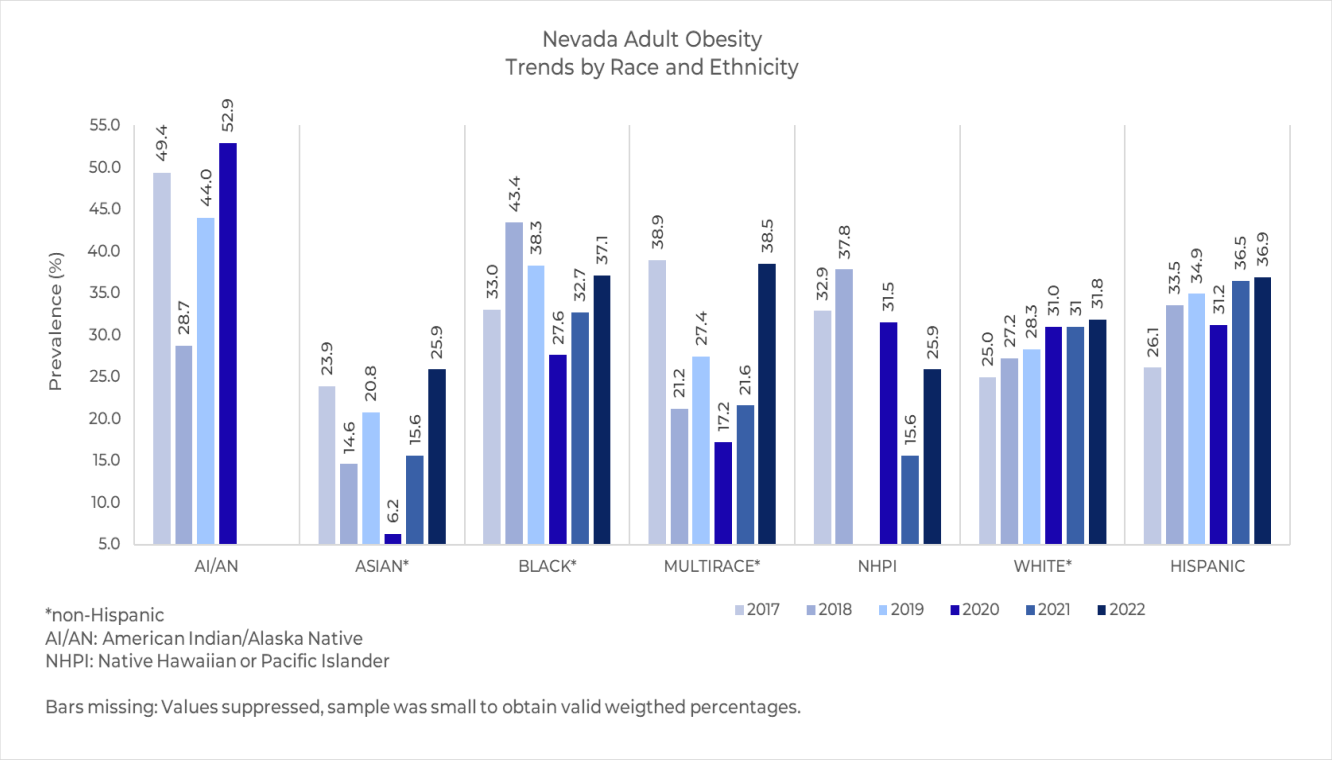
	2015	2016	2017	2018	2019	2020	2021	2022
Nevada	26.7	25.8	26.7	29.5	30.6	28.7	31.3	33.5
Clark Co.	27.0	24.8	26.7	30.9	30.6	28.8	31.6	34.3
Washoe Co.	21.4	26.3	25.5	23.8	31.9	25.2	28.2	30.4
Carson City	27.1	29.8	29.5	34.9	26.6	37.4	32.9	35.6
RAF Co.	29.4	32.3	29.6	29.5	29.5	32.4	34.8	32.7

Data Source: BRFSS 2011-2022.
Provided by the Director's Office of Analytics. Data analyzed by The Office of State Epidemiology, Chronic Disease Unit, and Division of Public and Behavioral Health – Wellness and Prevention Program.

ADULT OBESITY TRENDS IN NEVADA BY RACE AND ETHNICITY

Obesity takes a heavier toll on some Nevada racial groups than others (Figure 5). BRFSS 2022 data show significant increase among adult American Indians/Alaska Natives (AI/AN).

Figure 5. Prevalence (%) of Adult Obesity, Nevada by Race and Ethnicity.

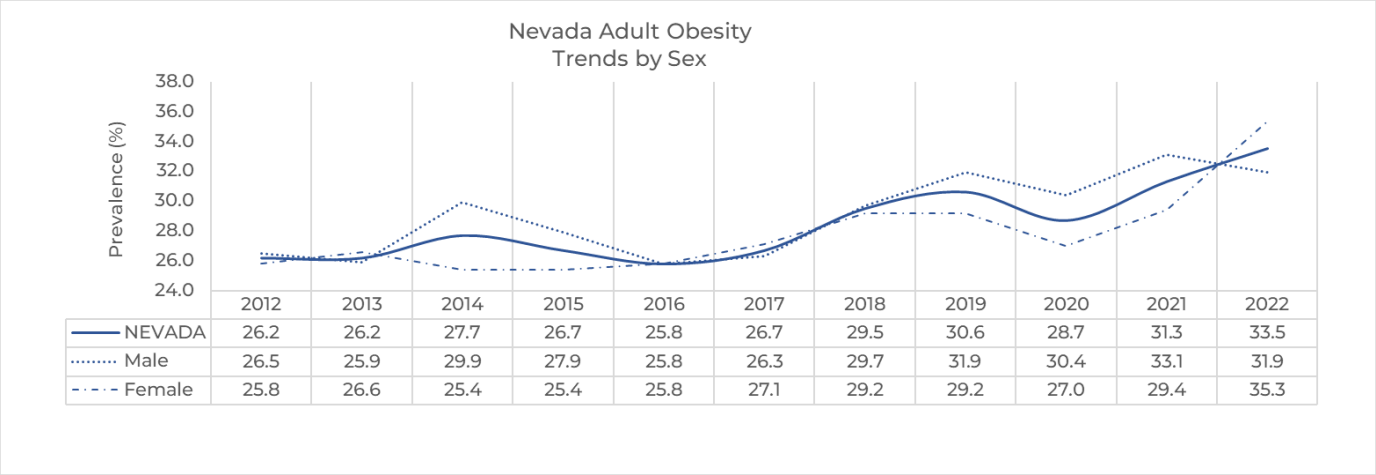


Data Source: BRFSS 2011-2022.
Provided by the Director's Office of Analytics. Data analyzed by The Office of State Epidemiology, Chronic Disease Unit, and Division of Public and Behavioral Health – Wellness and Prevention Program.

ADULT OBESITY TRENDS IN NEVADA BY SEX

The overall Nevada adult obesity prevalence continues to increase since 2015 except for the year following the Coronavirus pandemic. Between 2020 and 2021 the prevalence of adult obesity among males overall were higher than females. In 2022, that changed with females at 35.3% and males at 31.9% (Figure 6).

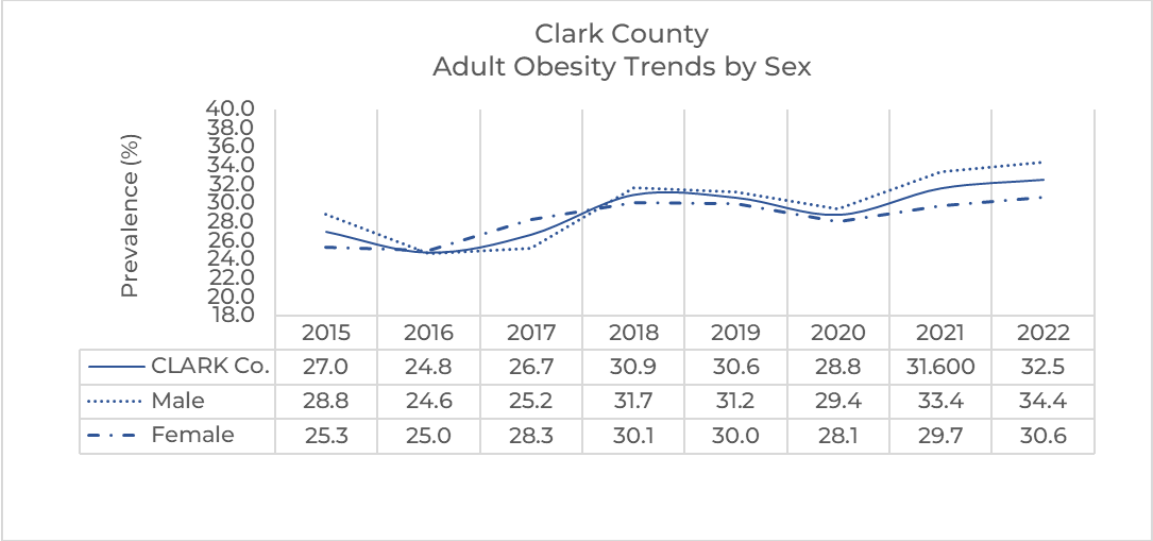
Figure 6. Prevalence (%) of Adult Obesity, Nevada by Sex.



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
NEVADA	26.2	26.2	27.7	26.7	25.8	26.7	29.5	30.6	28.7	31.3	33.5
Male	26.5	25.9	29.9	27.9	25.8	26.3	29.7	31.9	30.4	33.1	31.9
Female	25.8	26.6	25.4	25.4	25.8	27.1	29.2	29.2	27.0	29.4	35.3

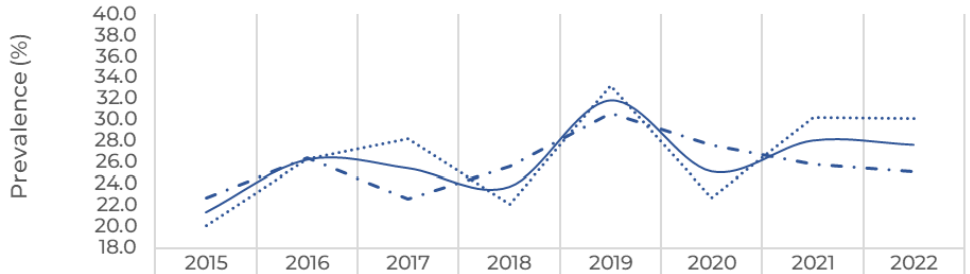
Data Source: BRFSS 2011-2022.
Provided by the Director's Office of Analytics. Data analyzed by The Office of State Epidemiology, Chronic Disease Unit, and Division of Public and Behavioral Health – Wellness and Prevention Program.

Figure 7. Prevalence (%) of Adult Obesity, Nevada Counties.



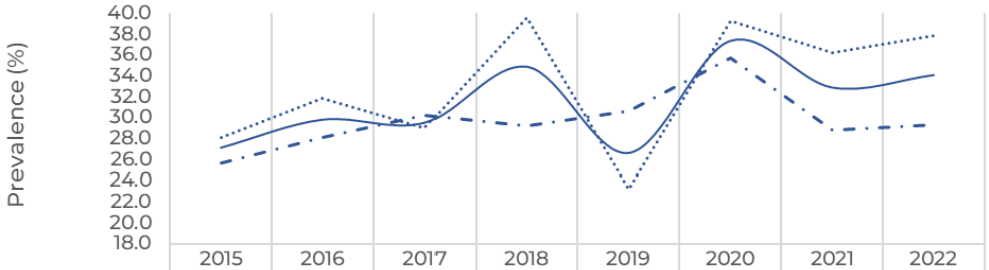
	2015	2016	2017	2018	2019	2020	2021	2022
CLARK Co.	27.0	24.8	26.7	30.9	30.6	28.8	31.600	32.5
Male	28.8	24.6	25.2	31.7	31.2	29.4	33.4	34.4
Female	25.3	25.0	28.3	30.1	30.0	28.1	29.7	30.6

Washoe County
Adult Obesity Trends by Sex



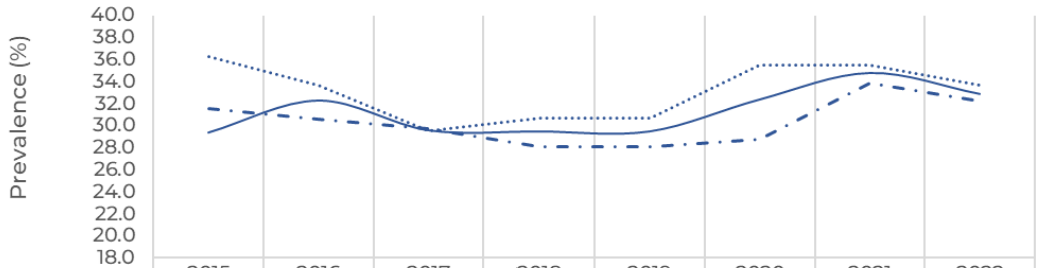
	2015	2016	2017	2018	2019	2020	2021	2022
WASHOE Co.	21.4	26.3	25.5	23.8	31.9	25.2	28.1	27.7
Male	20.1	26.3	28.2	22.1	33.2	22.7	30.2	30.1
Female	22.7	26.4	22.6	25.6	30.6	27.6	25.8	25.1

Carson City
Adult Obesity Trends by Sex



	2015	2016	2017	2018	2019	2020	2021	2022
CARSON CITY	27.1	29.8	29.5	34.9	26.6	37.4	32.9	34.1
Male	28.1	31.9	29.0	39.6	23.2	39.3	36.2	37.9
Female	25.7	28.1	30.2	29.2	30.6	35.7	28.8	29.3

Other Rural and Frontier Counties (RAF)
Adult Obesity Trends by Sex



	2015	2016	2017	2018	2019	2020	2021	2022
RAF Co.	29.4	32.3	29.6	29.5	29.5	32.4	34.8	32.9
Male	36.3	33.7	29.5	30.7	30.7	35.5	35.5	33.7
Female	31.6	30.6	29.7	28.1	28.1	28.8	33.9	32.2

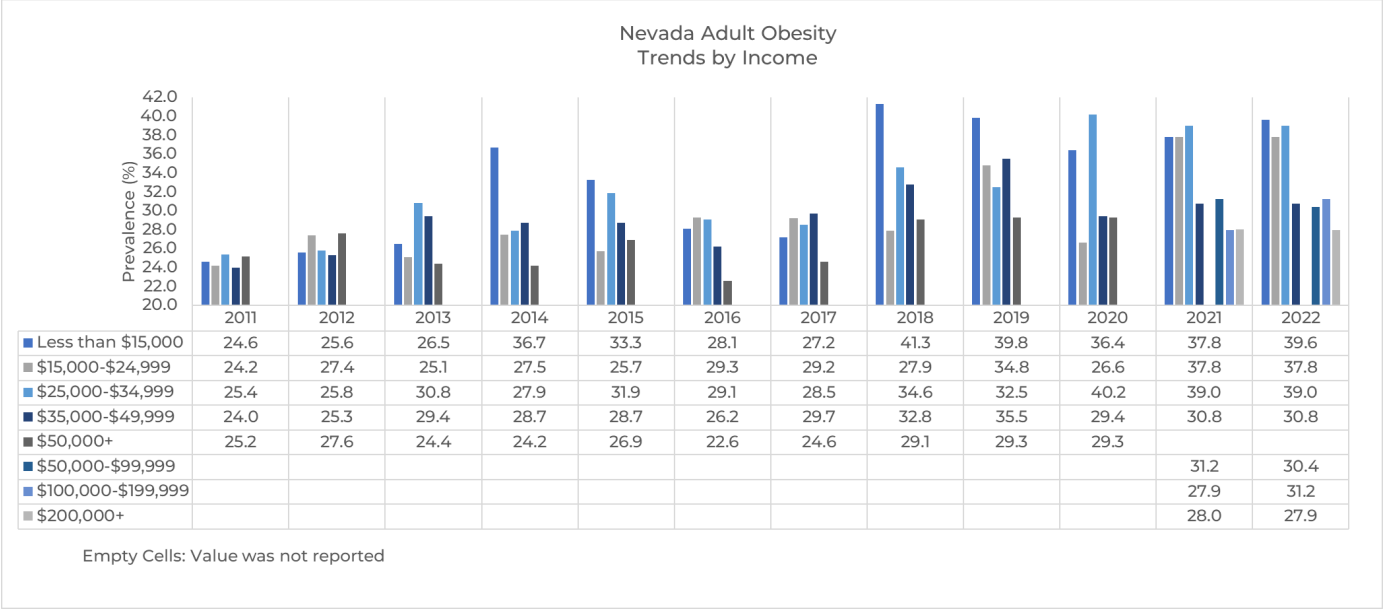
Data Source: BRFSS 2011-2022.Provided by the Director's Office of Analytics. Data analyzed by The Office of State Epidemiology, Chronic Disease Unit, and Division of Public and Behavioral Health – Wellness and Prevention Program.

In 2022, Carson City led with the highest prevalence rate of adult obesity by sex at 34.1%; males at 37.9% and females at 29.3%. Following closely, rural and frontier counties showed a prevalence of 32.9%; males at 33.7% and females at 32.2%. Clark County followed at 32.5% with males at 34.4% and females at 30.6%. Finally, Washoe County exhibited a lower prevalence at 27.7%, with males at 30.1% and females at 25.1% (Figure 7).

ADULT OBESITY TRENDS IN NEVADA BY INCOME

In Nevada, from 2011 to 2022, the obesity prevalence continues to support a faster increase among people with the lowest incomes than among the wealthiest Nevadans (Figure 8). In 2022, the highest obesity prevalence, 39.6%, was among Nevadans in the lowest income group.

Figure 8. Prevalence (%) of Adult Obesity, Nevada by Income



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Less than $15,000	24.6	25.6	26.5	36.7	33.3	28.1	27.2	41.3	39.8	36.4	37.8	39.6
$15,000-$24,999	24.2	27.4	25.1	27.5	25.7	29.3	29.2	27.9	34.8	26.6	37.8	37.8
$25,000-$34,999	25.4	25.8	30.8	27.9	31.9	29.1	28.5	34.6	32.5	40.2	39.0	39.0
$35,000-$49,999	24.0	25.3	29.4	28.7	28.7	26.2	29.7	32.8	35.5	29.4	30.8	30.8
$50,000+	25.2	27.6	24.4	24.2	26.9	22.6	24.6	29.1	29.3	29.3		
$50,000-$99,999											31.2	30.4
$100,000-$199,999											27.9	31.2
$200,000+											28.0	27.9

Empty Cells: Value was not reported

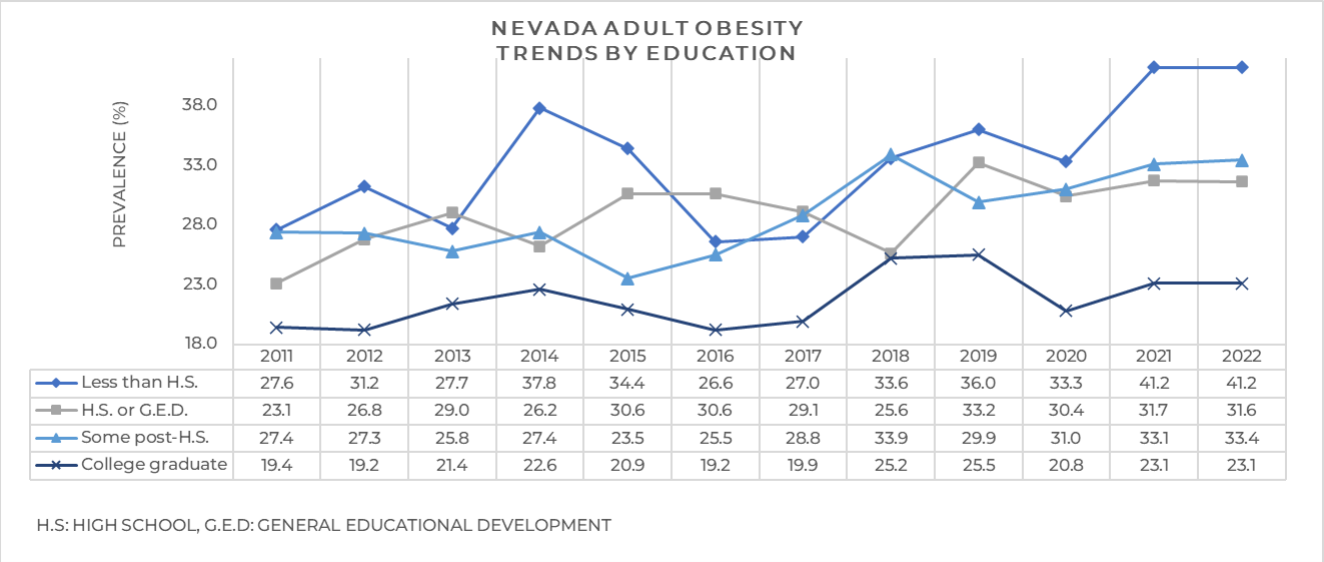
Data Source: BRFSS 2011-2022.
Provided by the Director's Office of Analytics. Data analyzed by The Office of State Epidemiology, Chronic Disease Unit, and Division of Public and Behavioral Health – Wellness and Prevention Program.

ADULT OBESITY TRENDS IN NEVADA BY EDUCATION

In Nevada, higher educational attainment continues to be associated with a lower prevalence of obesity. In 2021, the prevalence of obesity was not only much higher among the less than high school (41.2%) group, but it also increased much faster, a 49% increase from 2011 to 2022, than in college-graduated (23.1%) with only a 19% increase in obesity. The adult obesity trend remained

steady between 2021 and 2022 among all levels of education (Figure 9).

Figure 9. Prevalence (%) of Adult Obesity, Nevada by Education.



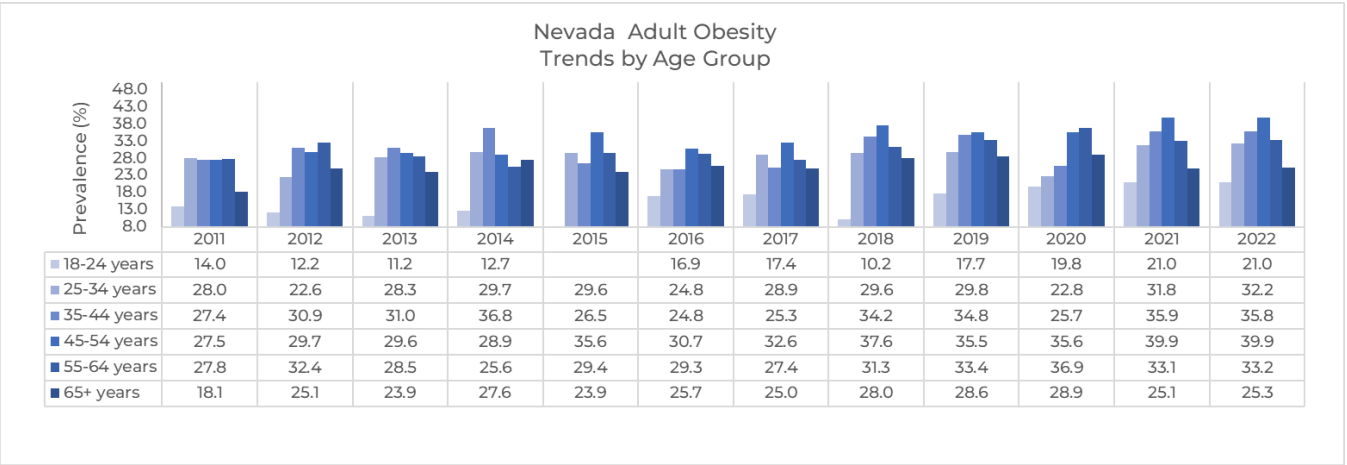
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Less than H.S.	27.6	31.2	27.7	37.8	34.4	26.6	27.0	33.6	36.0	33.3	41.2	41.2
H.S. or G.E.D.	23.1	26.8	29.0	26.2	30.6	30.6	29.1	25.6	33.2	30.4	31.7	31.6
Some post-H.S.	27.4	27.3	25.8	27.4	23.5	25.5	28.8	33.9	29.9	31.0	33.1	33.4
College graduate	19.4	19.2	21.4	22.6	20.9	19.2	19.9	25.2	25.5	20.8	23.1	23.1

H.S: HIGH SCHOOL, G.E.D: GENERAL EDUCATIONAL DEVELOPMENT

ADULT OBESITY TRENDS IN NEVADA BY AGE

Obesity prevalence among 18-24 and 45–54-year-old groups nearly doubled since 2011 and the highest obesity prevalence since 2015 continues to be the 45–54-year group (Figure 10)

Figure 10. Prevalence (%) of Adult Obesity, Nevada by Age Group.



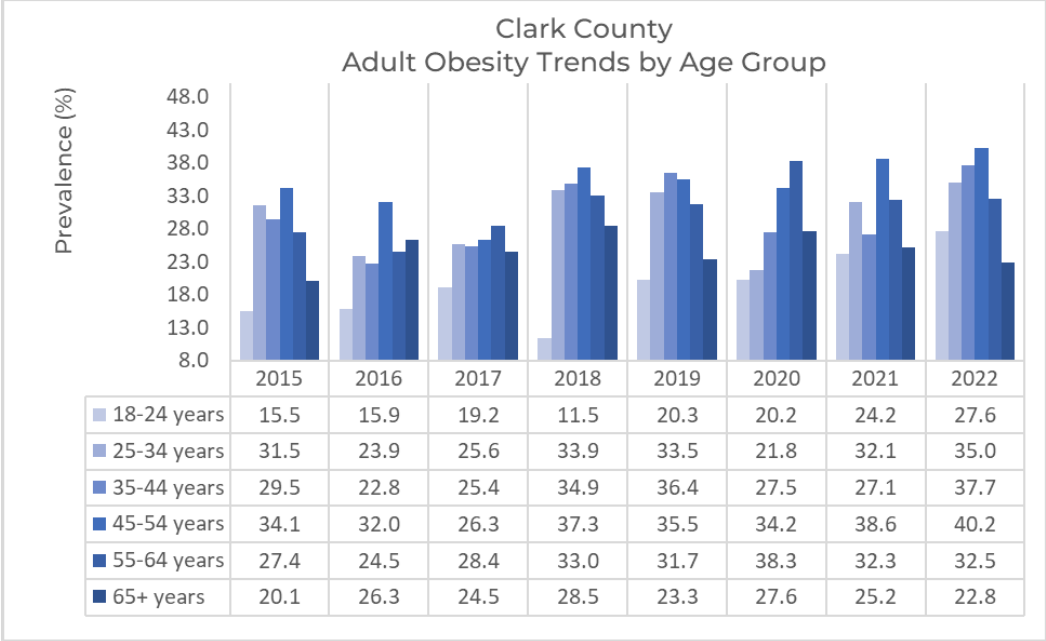
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
18-24 years	14.0	12.2	11.2	12.7		16.9	17.4	10.2	17.7	19.8	21.0	21.0
25-34 years	28.0	22.6	28.3	29.7	29.6	24.8	28.9	29.6	29.8	22.8	31.8	32.2
35-44 years	27.4	30.9	31.0	36.8	26.5	24.8	25.3	34.2	34.8	25.7	35.9	35.8
45-54 years	27.5	29.7	29.6	28.9	35.6	30.7	32.6	37.6	35.5	35.6	39.9	39.9
55-64 years	27.8	32.4	28.5	25.6	29.4	29.3	27.4	31.3	33.4	36.9	33.1	33.2
65+ years	18.1	25.1	23.9	27.6	23.9	25.7	25.0	28.0	28.6	28.9	25.1	25.3

Data Source: BRFSS 2011-2022.
Provided by the Director's Office of Analytics. Data analyzed by The Office of State Epidemiology, Chronic Disease Unit, and Division of Public and Behavioral Health – Wellness and Prevention Program.

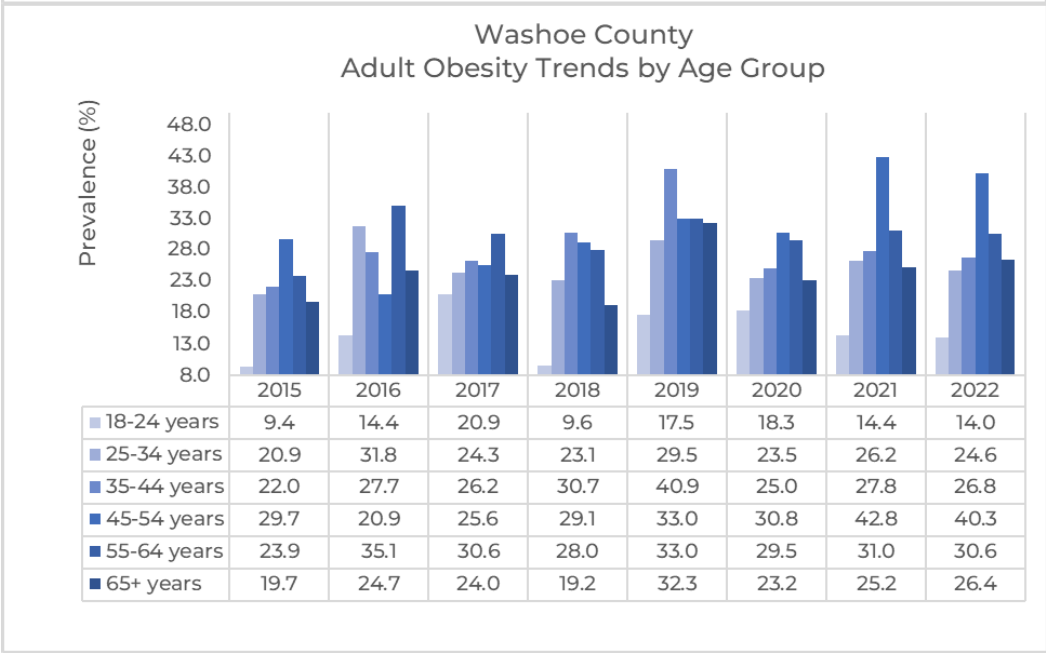
Between 2011 and 2022, the highest percentage increase in obesity among 18–24-year-olds was in

Clark County and Washoe County: 78% and 48.9%, respectively. The 55–64-year-old group had the highest percentage increase in Carson City 120%. (Figure 11).

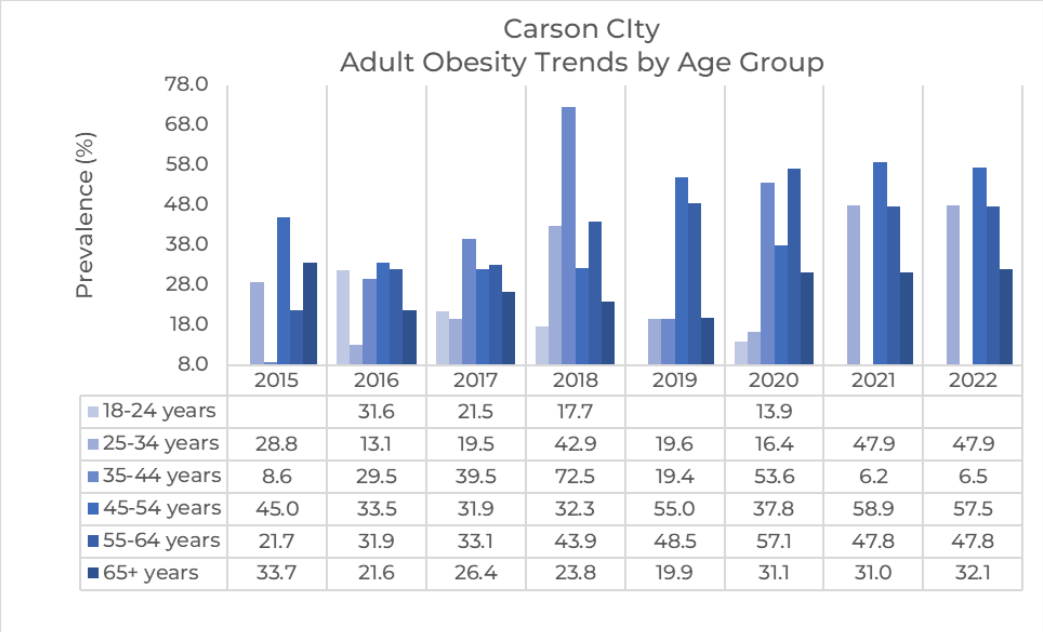
Figure 11. Prevalence (%) of Adult Obesity, Nevada Counties by Age. BRFSS, 2015-2022, aged ≥ 18 years



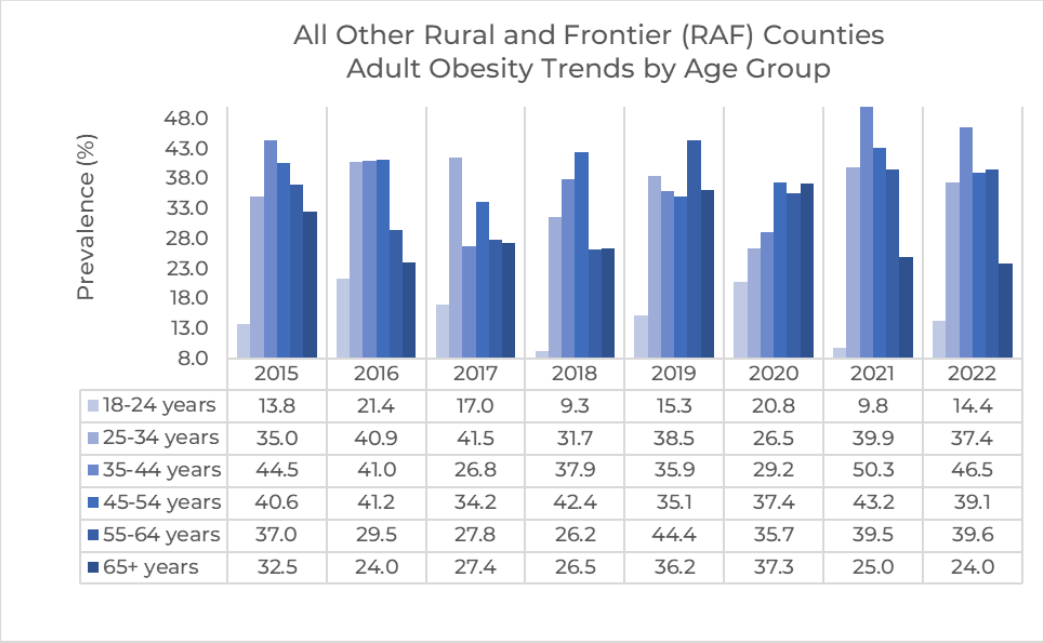
	2015	2016	2017	2018	2019	2020	2021	2022
18-24 years	15.5	15.9	19.2	11.5	20.3	20.2	24.2	27.6
25-34 years	31.5	23.9	25.6	33.9	33.5	21.8	32.1	35.0
35-44 years	29.5	22.8	25.4	34.9	36.4	27.5	27.1	37.7
45-54 years	34.1	32.0	26.3	37.3	35.5	34.2	38.6	40.2
55-64 years	27.4	24.5	28.4	33.0	31.7	38.3	32.3	32.5
65+ years	20.1	26.3	24.5	28.5	23.3	27.6	25.2	22.8



	2015	2016	2017	2018	2019	2020	2021	2022
18-24 years	9.4	14.4	20.9	9.6	17.5	18.3	14.4	14.0
25-34 years	20.9	31.8	24.3	23.1	29.5	23.5	26.2	24.6
35-44 years	22.0	27.7	26.2	30.7	40.9	25.0	27.8	26.8
45-54 years	29.7	20.9	25.6	29.1	33.0	30.8	42.8	40.3
55-64 years	23.9	35.1	30.6	28.0	33.0	29.5	31.0	30.6
65+ years	19.7	24.7	24.0	19.2	32.3	23.2	25.2	26.4



	2015	2016	2017	2018	2019	2020	2021	2022
18-24 years		31.6	21.5	17.7		13.9		
25-34 years	28.8	13.1	19.5	42.9	19.6	16.4	47.9	47.9
35-44 years	8.6	29.5	39.5	72.5	19.4	53.6	6.2	6.5
45-54 years	45.0	33.5	31.9	32.3	55.0	37.8	58.9	57.5
55-64 years	21.7	31.9	33.1	43.9	48.5	57.1	47.8	47.8
65+ years	33.7	21.6	26.4	23.8	19.9	31.1	31.0	32.1



	2015	2016	2017	2018	2019	2020	2021	2022
18-24 years	13.8	21.4	17.0	9.3	15.3	20.8	9.8	14.4
25-34 years	35.0	40.9	41.5	31.7	38.5	26.5	39.9	37.4
35-44 years	44.5	41.0	26.8	37.9	35.9	29.2	50.3	46.5
45-54 years	40.6	41.2	34.2	42.4	35.1	37.4	43.2	39.1
55-64 years	37.0	29.5	27.8	26.2	44.4	35.7	39.5	39.6
65+ years	32.5	24.0	27.4	26.5	36.2	37.3	25.0	24.0

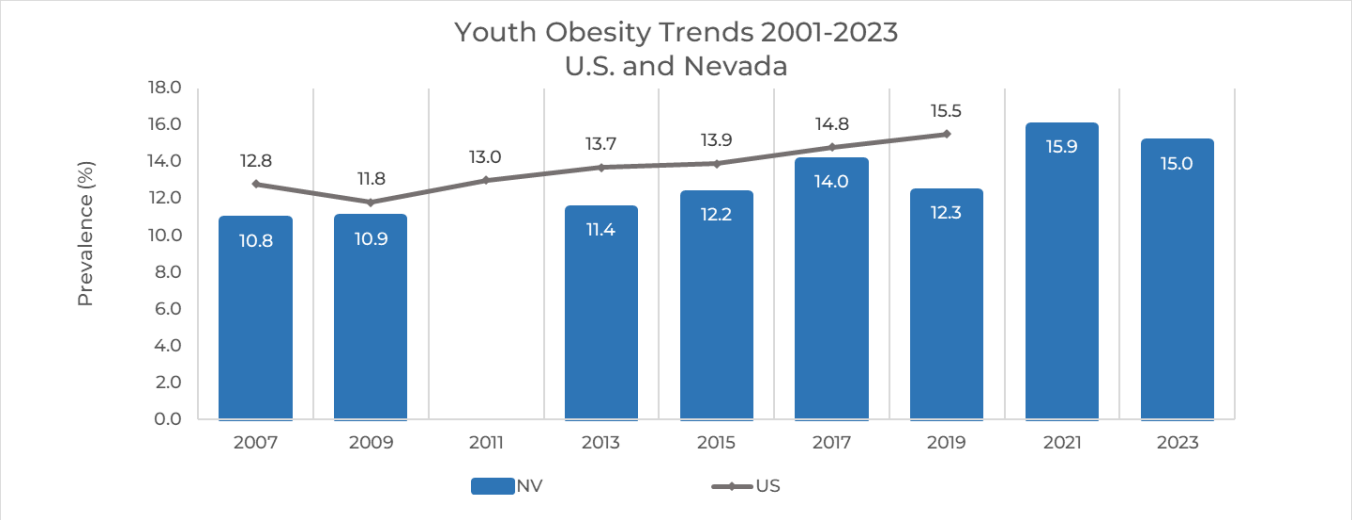
Data Source: BRFSS 2011-2022.
Provided by the Director's Office of Analytics. Data analyzed by The Office of State Epidemiology, Chronic Disease Unit, and Division of Public and Behavioral Health – Wellness and Prevention Program.

YOUTH OBESITY IN NEVADA

Overall, through the years 2007 to 2019, the national youth obesity prevalence is higher than the prevalence of youth obesity in Nevada; still, the youth obesity prevalence in Nevada for the same period is too high. Although the data show a 12% decrease in obesity, from 14.0% in 2017 to 12.3% in

2019, the overall youth obesity prevalence is trending upward. From 2007 to 2019, obesity prevalence increased by 14% and it was expected, obesity prevalence increased 29% from 2019 to 2021 (Figure 12).

Figure 12. Prevalence (%) of Youth Obesity, U.S. and Nevada. YRBSS, 2001 – 2023, aged 14 to 18 years.

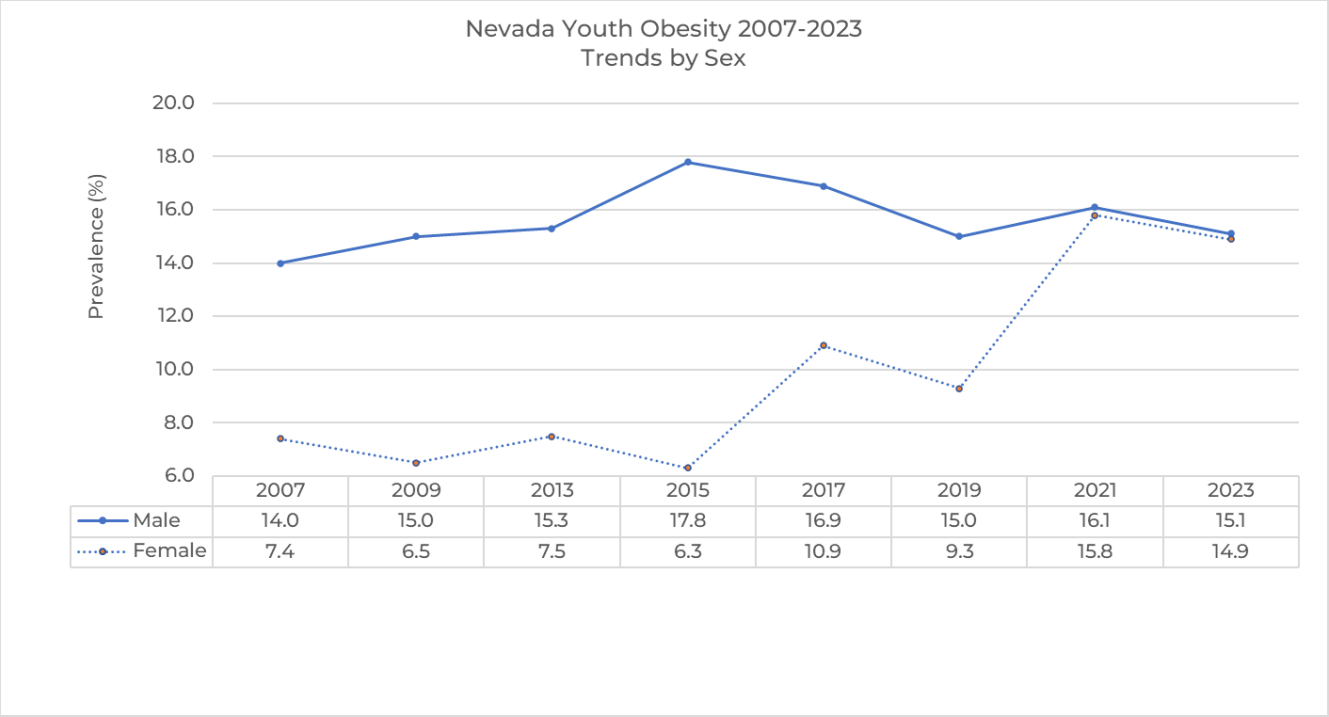


Note: U.S Data available up to 2019. Nevada data for 2011 is unavailable due to limitations in collection that made it statistically not significant.
Data Source: YRBSS 2007-2023.
Provided by the Director's Office of Analytics. Data analyzed by The Office of State Epidemiology, Chronic Disease Unit, and Division of Public and Behavioral Health – Wellness and Prevention Program.

YOUTH OBESITY TRENDS IN NEVADA BY SEX

From 2007 to 2019, high school males had consistently higher obesity prevalence than high school females. Although obesity is much higher in males than females, obesity among female students increased much faster than for male students, with 26% and 7% increases, respectively (Figure 13).

Figure 13. Prevalence (%) of Youth Obesity, Nevada by Sex. YRBSS, 2007 – 2023, aged 14 to 18 years.



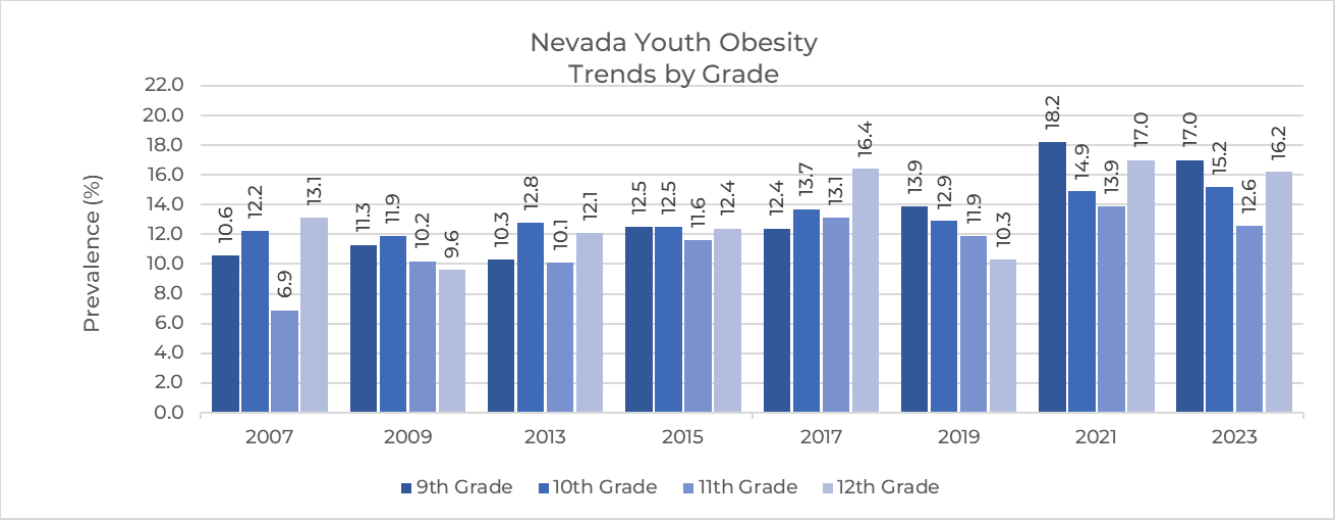
	2007	2009	2013	2015	2017	2019	2021	2023
Male	14.0	15.0	15.3	17.8	16.9	15.0	16.1	15.1
Female	7.4	6.5	7.5	6.3	10.9	9.3	15.8	14.9

Data Source: YRBSS 2007-2023.
Provided by the Director's Office of Analytics. Data analyzed by The Office of State Epidemiology, Chronic Disease Unit, and Division of Public and Behavioral Health – Wellness and Prevention Program.

YOUTH OBESITY TRENDS IN NEVADA BY GRADE

Overall, youth obesity prevalence by students' grades shows upward trends. From 2007 to 2019, considered as the pre-pandemic period, the obesity prevalence among 9th and 11th grade students increased by 31% and 73% respectively. The lowest percent increase in obesity was among 10th grade students, with a 6% increase, while 12th grade students experienced a 21% decrease. For 2021 and 2023, a significant increase in obesity was observed for all grades. Notably, 12th graders experienced the highest increase in obesity prevalence at 67.8% (Figure 14).

Figure 14. Prevalence (%) of Youth Obesity, Nevada by Grade. YRBSS, 2007 – 2023, 9th Grade, 10th Grade, 11th Grade, 12th Grade.



Data Source: YRBSS 2007-2023.
Provided by the Director's Office of Analytics. Data analyzed by The Office of State Epidemiology, Chronic Disease Unit, and Division of Public and Behavioral Health – Wellness and Prevention Program.

YOUTH OBESITY TRENDS IN NEVADA BY RACE AND ETHNICITY

YRBSS data were available for only a small number of specifically funded local school districts or counties. Trend analysis for youth obesity by race and ethnicity was not possible due to the lack of data by race. Overall, in 2021 and 2023, the prevalence of obesity was higher among the Black-non-Hispanic (20.1%) and Hispanic (18.1%) groups. White non-Hispanic shows an increase of 64% from 2009 to 2023, and these students had the lowest obesity prevalence in 2021 and 2023.

Table 1. Prevalence (%) of Youth Obesity, Nevada by Race and Ethnicity. YRBSS, 2007 – 2023, aged 14 to 18 years

RACE/ETHNICITY	2007	2009	2013	2015	2017	2019	2021	2023
Non-Hispanic White	6.4	9.4	8.6	9.6	13.1	9.8	11.0	10.5
Non-Hispanic Black	13.3	11.2	17.4				19.5	20.1
Non-Hispanic Other		13.0	11.5		12.5	15.2	13.5	11.4
Hispanic	16.8	13.5	13.4	15.8	15.6	15.0	19.3	18.1

Data Source: YRBSS 2007-2023.
Provided by the Director's Office of Analytics. Data analyzed by The Office of State Epidemiology, Chronic Disease Unit, and Division of Public and Behavioral Health – Wellness and Prevention Program.

YOUTH OBESITY IN SCHOOLS

Two school districts in Nevada, Clark County and Washoe County, are mandated to collect and report measured height and weight data of a representative sample of 4th, 7th, and 10th grade students, starting with the 2017-2018 school year. In 2021-2022, the new representative sample to collect the mandated data was all 4th and 7th grade students and collected every other year. Should school districts collect data voluntarily that data is required to be reported to the State. DPBH created a table below to better define which School Year data is mandated to be collected and which Obesity Annual Reports will include that data.

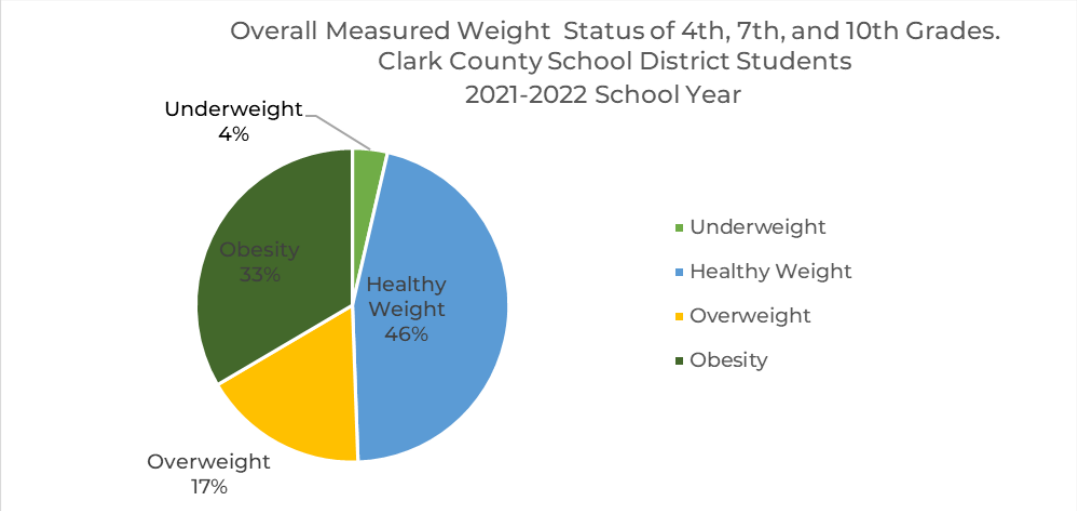
Table 2. Height and Weight Data Collection Period Mandated for Clark and Washoe Counties

School Year	Timeline	Collection Period?	Year of Obesity Annual Report
2021	August 2021-June 2022	YES	2023
2022	August 2022- June 2023	NO	Data provided voluntarily may be analyzed in 2023 and/or 2024 report.
2023	August 2023- June 2024	YES	2025
2024	August 2024- June 2025	NO	Data provided voluntarily may be analyzed in 2026 and/or 2027 report.
2025	August 2025- June 2026	YES	2027
2026	August 2026- June 2027	NO	Data provided voluntarily may be analyzed in 2028 and/or 2029 report.
2027	August 2027- June 2028	YES	2029

Students Weight Status and Trends, Clark County School District

After the school year, Clark County School District (CCSD) confronted multiple barriers to collecting and reporting mandated students' height and weight data. Some reported barriers are staffing shortage, school nurses' new duties due to the COVID-19 outbreak, lack of standardized measurement equipment and guidance, and lack of funding for alternative options.

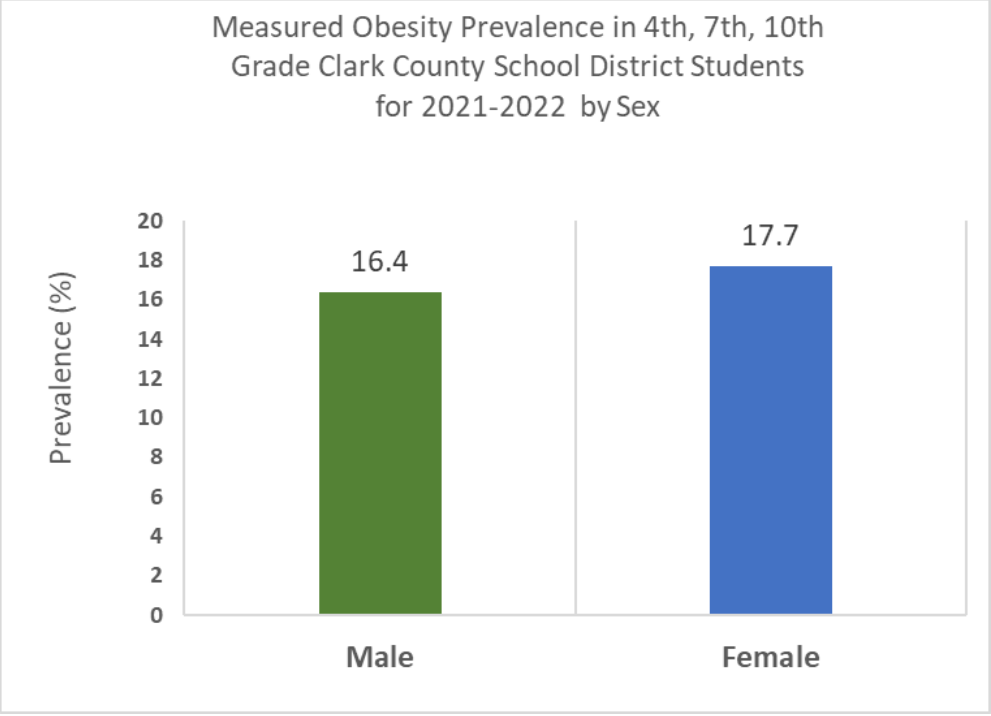
Figure 15. Percentage (%) of Youth Obesity, CCSD by Weight Status, 2021-2022 School Year



Data Source: NRS 392.420 mandates School Height and Weight measure data collection in selected Nevada school districts. Data was provided by the Director's Office of Analytics and analyzed by the State Office of Epidemiology. Nevada Public and Behavioral Health.

For the school year 2021-2022, obesity was observed in 33% of all students in the sample. Of those, 17% were classified as overweight while 46% of students maintained a healthy weight. Among those classified as obese, 47.5% were females and 48.5% were males.

Figure 16. Prevalence (%) of Youth Obesity, CCSD by Sex. 2021-2022 School Year



Data Source: NRS 392.420 mandates School Height and Weight measure data collection in selected Nevada school districts. Data was provided by the Director's Office of Analytics and analyzed by the State Office of Epidemiology. Nevada Public and Behavioral Health.

Table 3. Percentage (%) of Youth Obesity and Overweight, CCSD, 2017-2018 to 2021-2022

Categories	Obesity Percentage (%)					Overweight Percentage (%)				
	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Overall	24.9	24.2	~	~	33.5	18.1	19.5	~	~	17.1
Male	27.1	26.6	~	~	36.5	16.6	18.1	~	~	16.4
Female	21.5	21.6	~	~	30.1	20.4	21.0	~	~	17.7
4th	20.3	25.2	~	~	33.4	15.7	17.9	~	~	17.1
7th	25.6	28.3	~	~	34.4	19.0	21.3	~	~	21.4
10th	29.6	16.1	~	~	44.3	20.2	18.4	~	~	15.7
White	15.5	14.6	~	~	23.7	16.8	19.9	~	~	15.1
Black	23.9	20.6	~	~	27.7	15.5	22.5	~	~	16.7
Asian	16.4	19.6	~	~	27.8	14.7	15.2	~	~	11.4
Other	26.9	29.2	~	~	29.1	18.5	19.2	~	~	19.1
Hispanic	29.8	29.8	~	~	19.2	19.9	19.2	~	~	17.9
Non-Hispanic	19.0	19.0	~	~	26.7	19.7	19.7	~	~	16.2

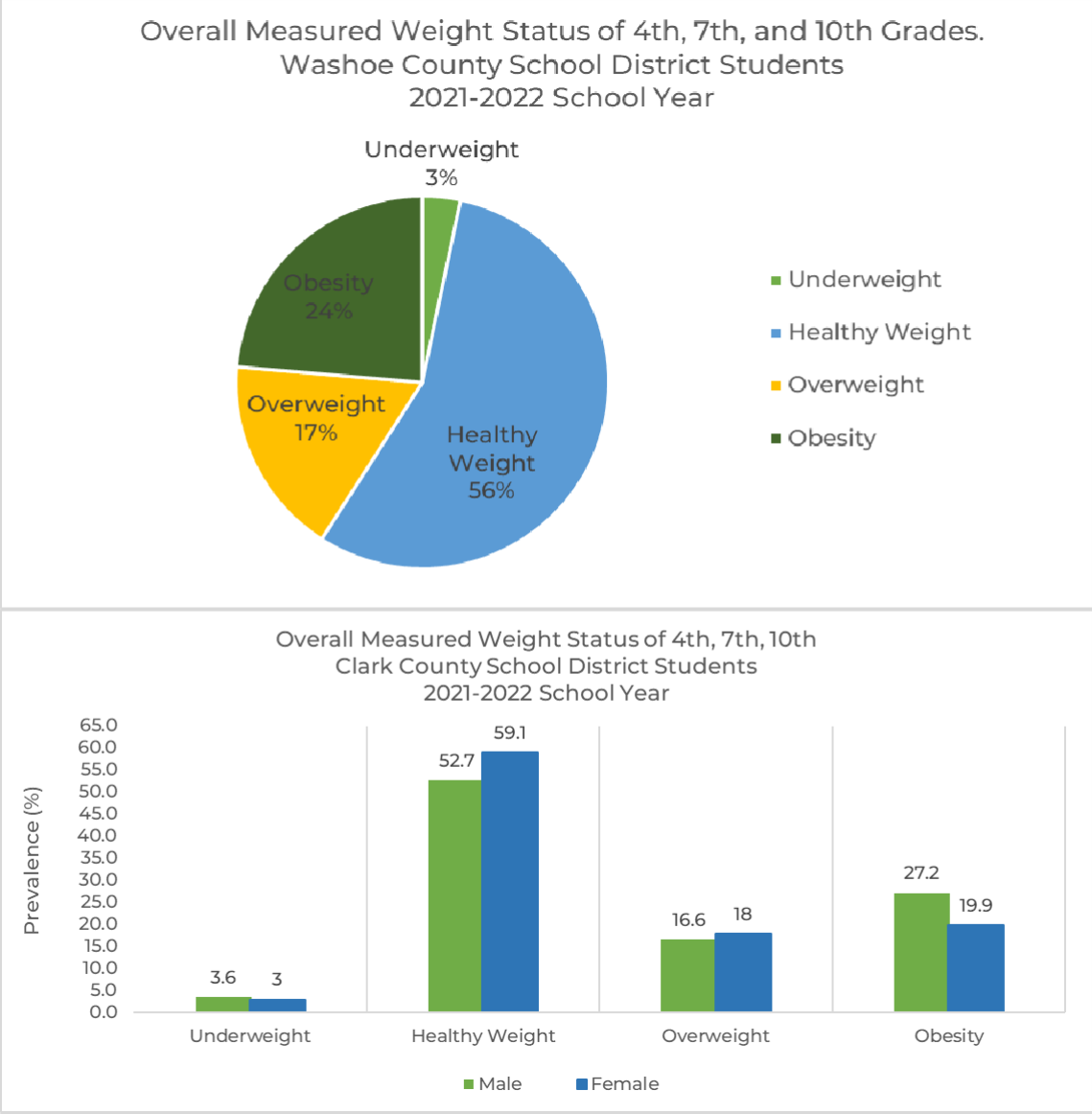
Note: ~ Data not available
Data Source: Nevada Revised School Height and Weight measure data collection in selected Nevada School Districts. Data was provided by the Director's Office of Analytics and analyzed by the State Office of Epidemiology. Nevada Public and Behavioral Health.

Trend analysis was not completed due to difficulties obtaining data for two schools for 2019-2020 and 2020-2021. Obesity increased 34.5% from 2017-2022. By sex, males showed a higher percentage of obesity, 36.5%, and among females, it was 30.1%. By school grade, 4th graders showed 17.1% obesity and 10th-grade students had a lower percentage of 15.7% obesity. Students most affected by obesity were 7th grade students, at 21.4%. Looking at school students by race and ethnicity, Asian students showed 11.4% obesity, and White students showed 15.1%. Black students showed 16.7% obesity, and Hispanic (all groups) had a higher percentage for obesity, at 17.9%.

Students Weight Status and Trends, Washoe County School District

Starting school year 2017-2018, Washoe County School District (WCSD) reported measured students' height and weight data for four consecutive school years, 2017-2018 to 2020-2021. In addition to the barriers reported by CCSD, WCSD reported barriers to collect reported data included lack of standardized guidance and resources to refer a child with obesity to a health care provider that can treat childhood obesity.

Figure 17. Percentage (%) of Youth Obesity, WCSD by Weight Status, 2021-2022 School Year



Data Source: NRS 392.420 mandates School Height and Weight measure data collection in selected Nevada school districts. Data was provided by the Director's Office of Analytics and analyzed by the State Office of Epidemiology. Nevada Public and Behavioral Health.

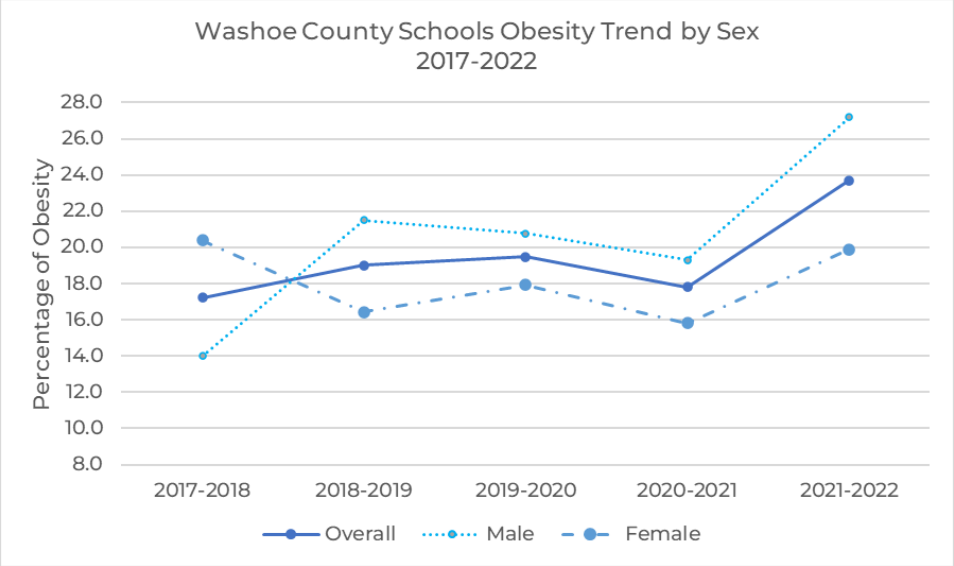
Table 4. Percentage (%) of Youth Obesity & Overweight, WCSD, 2017-2018 to 2021-2022

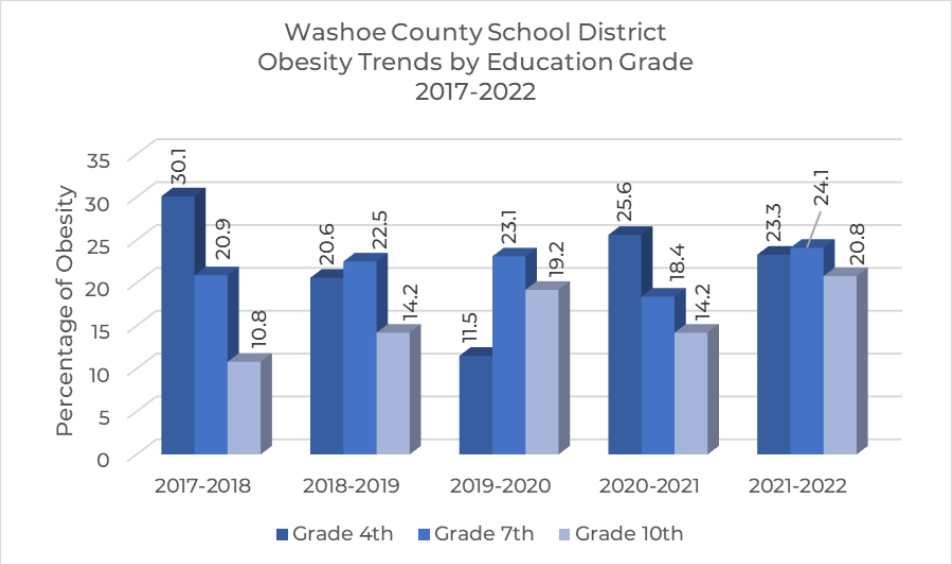
Categories	Obesity Percentage (%)					Overweight Percentage (%)				
	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Overall	17.2	19.0	19.5	17.8	23.7	21.1	17.7	14.5	16.1	17.3
Male	14.0	21.5	20.8	19.3	27.2	19.9	18.5	14.5	15.4	16.6
Female	20.4	16.4	17.9	15.8	19.9	22.2	16.9	14.4	17.0	18.0
4th	30.1	20.6	11.5	25.6	23.3	17.9	14.0	13.7	19.3	16.4
7th	20.9	22.5	23.1	18.4	24.1	20.0	19.4	16.9	18.1	18.3
10th	10.8	14.2	19.2	14.2	20.8	22.8	17.1	13.1	13.3	25.0
White	~	12.4	13.8	12.8	14.2	~	14.9	10.5	14.7	14.4
Black	~	21.1	26.2	9.3	32.6	~	24.4	14.3	9.3	20.4
Asian	~	16.8	14.1	13.7	19.8	~	14.7	21.9	11.8	16.1
Other	~	25.2	23.5	22.9	27.4	~	20.3	16.8	17.9	18.0
Hispanic	~	26.6	23.8	22.7	32.1	~	20.9	16.1	18.3	19.8
Non-Hispanic	~	14.0	15.6	14.2	17.5	~	15.6	13.0	14.4	32.1

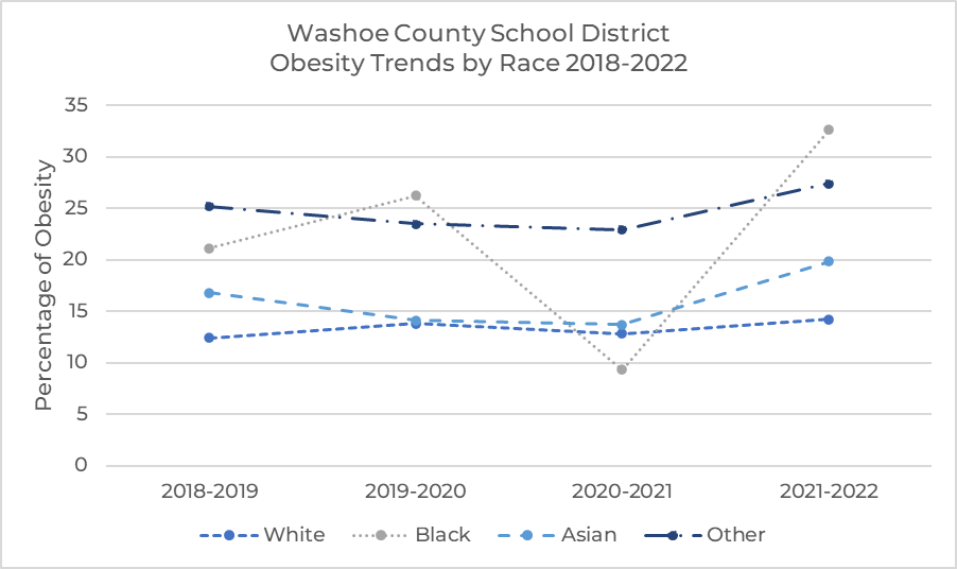
Data Source: NRS 392.420 mandates School Height and Weight measure data collection in selected Nevada School Districts. Data was provided by the Director's Office of Analytics and analyzed by the State Office of Epidemiology. Nevada Public and Behavioral Health.

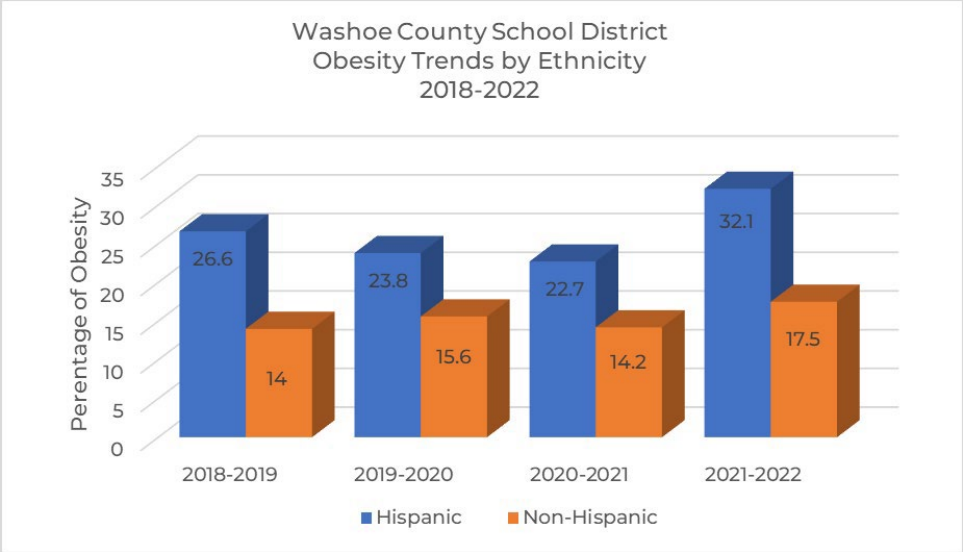
Data from four consecutive school years in WCSD show that the obesity percentage among measured female students keep steady from 20.4% in 2017-2018 to 19.9% in 2021-2022. In contrast, obesity increased by 94% among measured male students, from 14.0% in 2017-2018 to 27.2% in 2021-2022. Over the years, measured female students maintained lower obesity trends than male students. Male students had the highest obesity prevalence for a period of four (4) school years, from 2018-2019 to 2021-2022. The overall percentage of obesity among measured 4th grade students decreased 15% from 2017- 2018 to 2020-2021, with a decrease of 9% from 2020-2021 to 2021-2022. Among 10th grade students, obesity prevalence increased steadily for three (3) consecutive school years, from 2017-2018 to 2019-2020, with a 78% increase and a 26% decrease from 2019-2020 to 2020-2021. The 10th graders obesity rate increased 98% in a period of four (4) school years.

Figure 18. Prevalence (%) of Youth Obesity, Washoe County School District. 2017-2018 to 2021-2022









Data Source: NRS 392.420 mandates School Height and Weight measure data collection in selected Nevada School Districts. Data was provided by the Director's Office of Analytics and analyzed by the State Office of Epidemiology. Nevada Public and Behavioral Health.

WCSD obesity trends by race show measured White students had the lowest obesity prevalence compared to Black, Asian, and other race groups' students. The prevalence of obesity among Hispanic students is nearly double compared to non-Hispanic students.

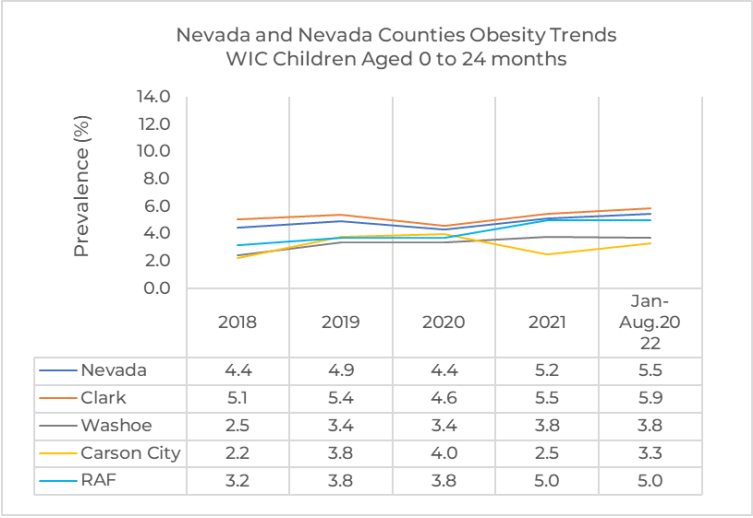
CHILDHOOD OBESITY IN NEVADA

Women, Infants, and Children (WIC)

Weight-for-Length (WT/LT) is the recommended assessment of weight status in children younger than two (2) years old and BMI is recommended for children older than two (2) years. Children in

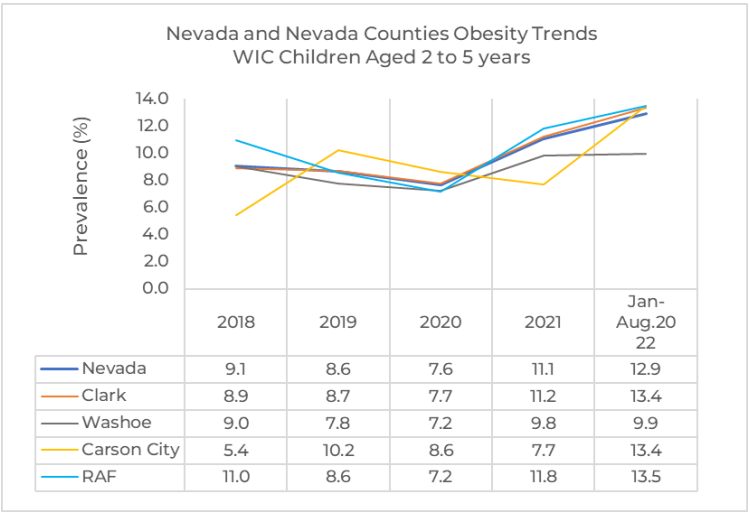
families with low incomes are often served by the WIC program. Statewide, childhood obesity in Nevada is evaluated in this report using measured weight and height data collected from children in families enrolled in WIC. Although WIC data does not represent all 0–5-year-old children in Nevada, WIC data describes accurately the state of obesity of children from families with lower incomes.

Figure 19. Prevalence (%) of Childhood Weight-for-Length and Obesity, WIC Enrolled Children, 2018-2022



	2018	2019	2020	2021	Jan-Aug.2022
Nevada	4.4	4.9	4.4	5.2	5.5
Clark	5.1	5.4	4.6	5.5	5.9
Washoe	2.5	3.4	3.4	3.8	3.8
Carson City	2.2	3.8	4.0	2.5	3.3
RAF	3.2	3.8	3.8	5.0	5.0

Overall, the prevalence of Weight-for-Length (WT/LT) among WIC-enrolled 0–24-month-old Nevada children increased from 4.4% in 2018 to 5.5% in August 2022, a 25% increase since 2018. The highest percentage increase in WT/LT among 0–24-month WIC-enrolled children was in rural and frontier (RAF) counties, a 56% increase, from 3.2% in 2018 to 5.0% in August 2022. Although WIC-enrolled children in the same age group in Clark County experienced only a 16% increase in obesity since 2018, through the years, they had the highest obesity prevalence, including August 2022.



	2018	2019	2020	2021	Jan-Aug.2022
Nevada	9.1	8.6	7.6	11.1	12.9
Clark	8.9	8.7	7.7	11.2	13.4
Washoe	9.0	7.8	7.2	9.8	9.9
Carson City	5.4	10.2	8.6	7.7	13.4
RAF	11.0	8.6	7.2	11.8	13.5

Among the 2-5-year-old WIC-enrolled children, the overall obesity prevalence in Nevada increased from 9.1% in 2018 to 12.9% in August 2022, a 42% increase since 2018. WIC-enrolled 2-5-year-olds in Carson City not only had the highest prevalence of obesity (13.4%) in August 2022; they also had the fastest percentage increase in obesity since 2018. Obesity in this group increased from 5.4% in 2018 to 13.4% in August 2022, a 149% increase.

Data Source: Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) database under Nevada State WIC administration Office.

Nevada Kindergarten Health Survey (KHS)

The Nevada Institute for Children's Research and Policy (NICRP) conducts an annual survey of children entering kindergarten, the KHS. The survey collects information about statewide kindergarten students' overall health status including height and weight, as well as socio-economic factors.

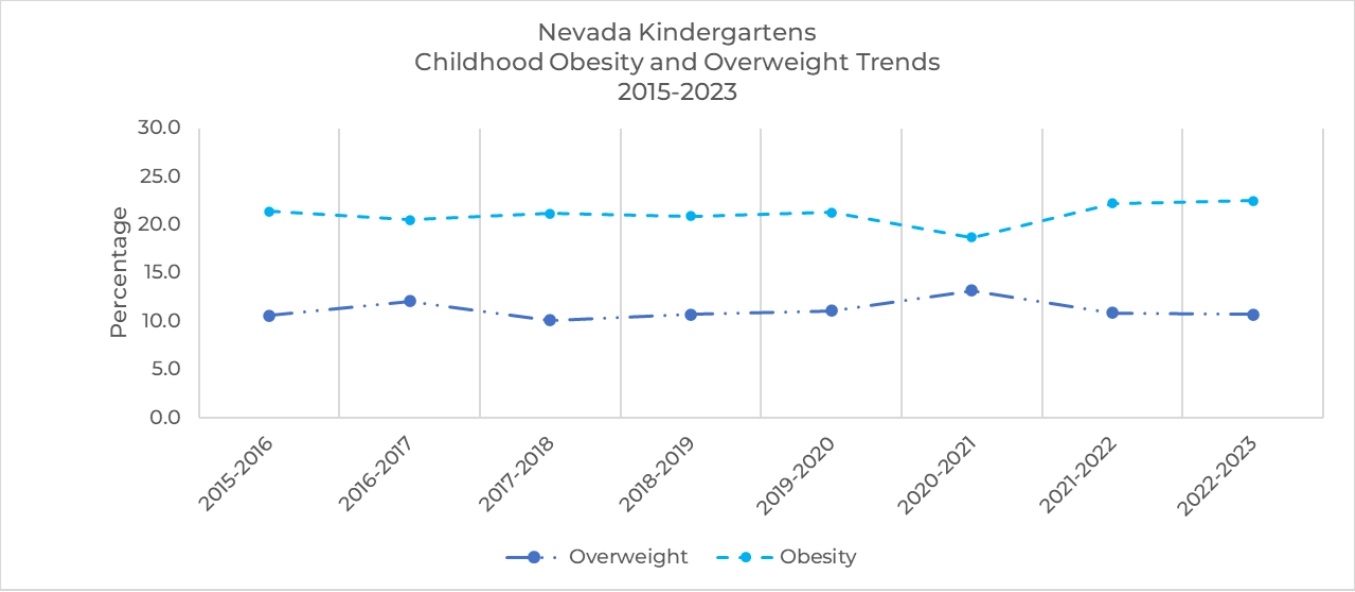
Table 5. Percentage (%) of Childhood Weight Status, KHS, 2015-2016 to 2022-2023

Weight Category	Kindergartens Weight Status in Nevada							
	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
Underweight	15.5	16.8	17.1	17.2	17.3	19.5	16.2	15.6
Healthy Weight	52.5	50.7	51.6	51.2	50.3	48.6	50.7	51.3
Overweight	10.6	12.1	10.1	10.7	11.1	13.2	10.9	10.7
Obesity	21.4	20.5	21.2	20.9	21.3	18.7	22.2	22.5

Data Source: Nevada Institute for Children's Research and Policy (NICRP), Nevada Kindergarten Health Survey (KHS). Data was published for 2023. https://nic.unlv.edu//reports-publications/.

Self-reported height and weight data shows that kindergarteners had 33.2% excess of body weight; 22.5% with Obesity and 10.7%were overweight in school year 2022-2023. The data from eight consecutive years show that the obesity percentage among KHS children did not change statistically from 21.4% in 2015-2016 to 22.5% in 2022-2023.

Figure 20. Percentage (%) of Childhood Obesity and Overweight, KHS, 2015-2016 to 2022-2023



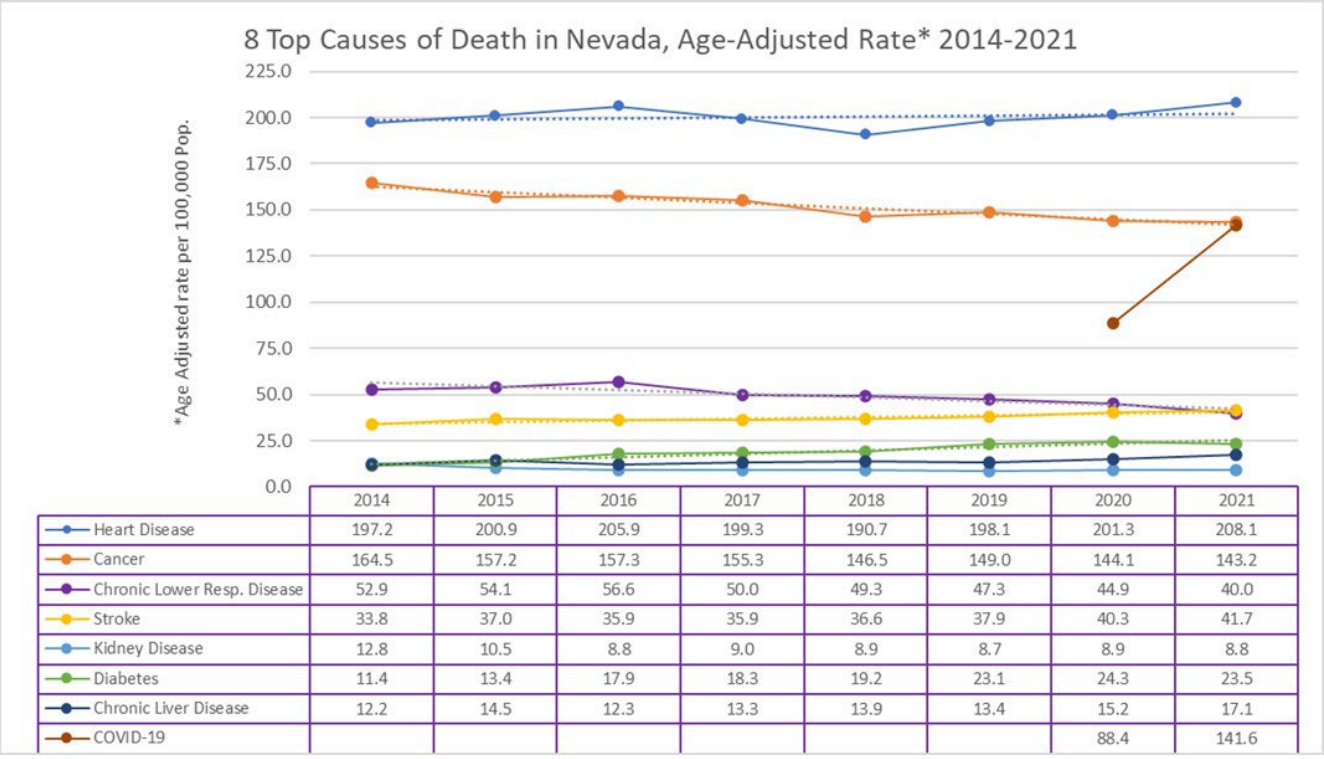
Data Source: NRS 392.420 mandates School Height and Weight measure data collection in selected Nevada School Districts. Data was provided by the Director's Office of Analytics and analyzed by the State Office of Epidemiology. Nevada Public and Behavioral Health.

Compared to the obesity trends calculated from national and state measured data, the NHANES and WIC trends, KHS trends are contradictory to national and state obesity trends (Figures 1 and 19). Thus, it is highly recommended to use KHS data trends with caution.

OBESITY AND CHRONIC DISEASES: ASSOCIATED DEATH RATES AND WEIGHT STATUS

Obesity is a complex multifactorial chronic disease and a major cause of other chronic diseases, which also contribute to causes of death in the U.S. and Nevada. Mortality data from the National Center for Health Statistics, 2020, found that chronic diseases including heart disease, cancer, chronic lower respiratory disease (CLRD), stroke, diabetes, and chronic liver disease were among the top ten leading causes of death in Nevada.

Figure 21. Adult Age-Adjusted Death Rates, Nevada, NCHS 2014-2021



	2014	2015	2016	2017	2018	2019	2020	2021
Heart Disease	197.2	200.9	205.9	199.3	190.7	198.1	201.3	208.1
Cancer	164.5	157.2	157.3	155.3	146.5	149.0	144.1	143.2
Chronic Lower Resp. Disease	52.9	54.1	56.6	50.0	49.3	47.3	44.9	40.0
Stroke	33.8	37.0	35.9	35.9	36.6	37.9	40.3	41.7
Kidney Disease	12.8	10.5	8.8	9.0	8.9	8.7	8.9	8.8
Diabetes	11.4	13.4	17.9	18.3	19.2	23.1	24.3	23.5
Chronic Liver Disease	12.2	14.5	12.3	13.3	13.9	13.4	15.2	17.1
COVID-19							88.4	141.6

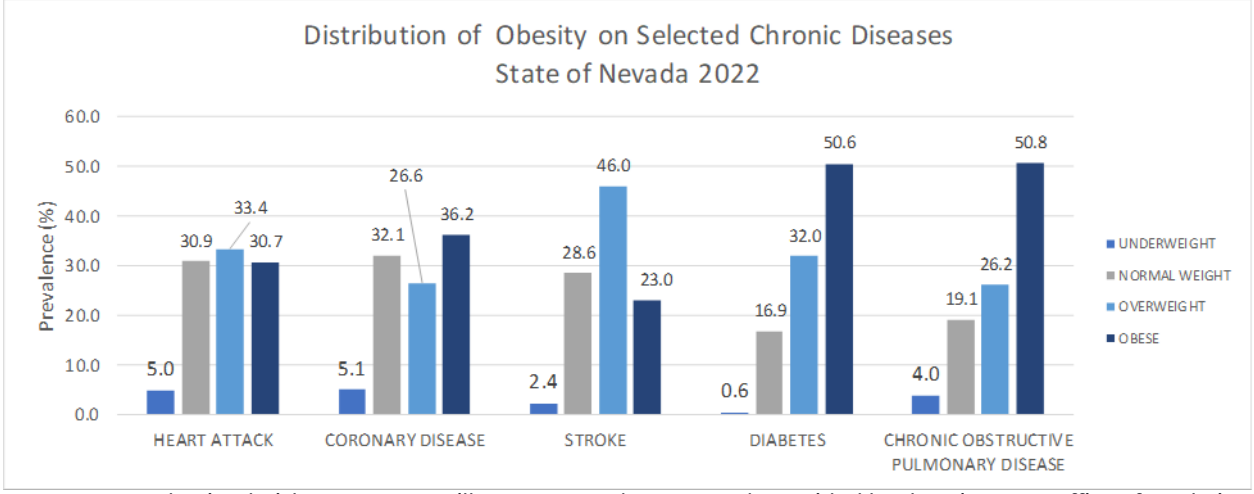
Data Source: CDC, National Center for Health Statistics. National Vital Statistics System, Mortality 2018-2021 on CDC WONDER Online Database, released in 2021.

Obesity is an important risk factor associated with 7 of the 10 main death causes. Heart disease, the most frequent cause of death age-adjusted rate showed a 9.1% increase from 2018-2021. This is similar to other cardiovascular causes such as stroke, having a light but steady increase for the

same period. The COVID-19 pandemic introduces an important influence among these group of diseases death rates; Obesity, Diabetes, Cancer, and Chronic Lower Respiratory Disease were identified as the most important risk factors of death among COVID-19 cases, the high COVID-19 mortality Age-Adjusted Rates could affect the decrease of already mentioned death causes.

In 2022, 82.6% of those reporting diabetes were overweight (32.0%) or obese (50.6%). Alarmingly, the proportion of overweight (33.4%) Nevadans is notably higher among cases reporting myocardial infarction and stroke (46.0%). Overall, the prevalence of stroke, diabetes, and COPD increased with the increase of weight (Figure 22).

Figure 22. Distribution of Obesity on Selected Chronic Diseases State of Nevada 2022

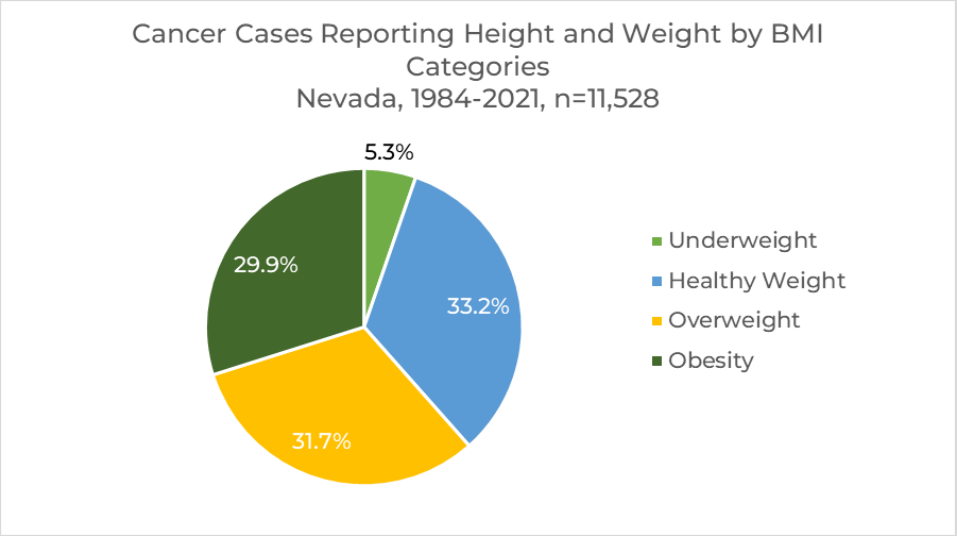


Data Source: Behavioral Risk Factors Surveillance System (BRFSS2022). Provided by the Director's Office of Analytics. Data analyzed by the Office of State Epidemiology, Chronic Diseases Unit, and Public and Behavioral Wellness and Prevention Program, Division of Public and Behavioral Health.

Obesity and Cancer Cases Reporting Height and Weight Data

The CDC, the American Cancer Society, the National Cancer Institute, and the North American Association of Central Cancer Registries indicate being overweight or having obesity increases the risk of getting at least 13 types of cancer[16]. Cancer data from the Nevada Central Cancer Registry from 1984 to 2021 showed 11,528 cancer cases collected height and weight data. Based on this data, 62% of the cancer cases were overweight (31.7%) or had obesity (29.9%).

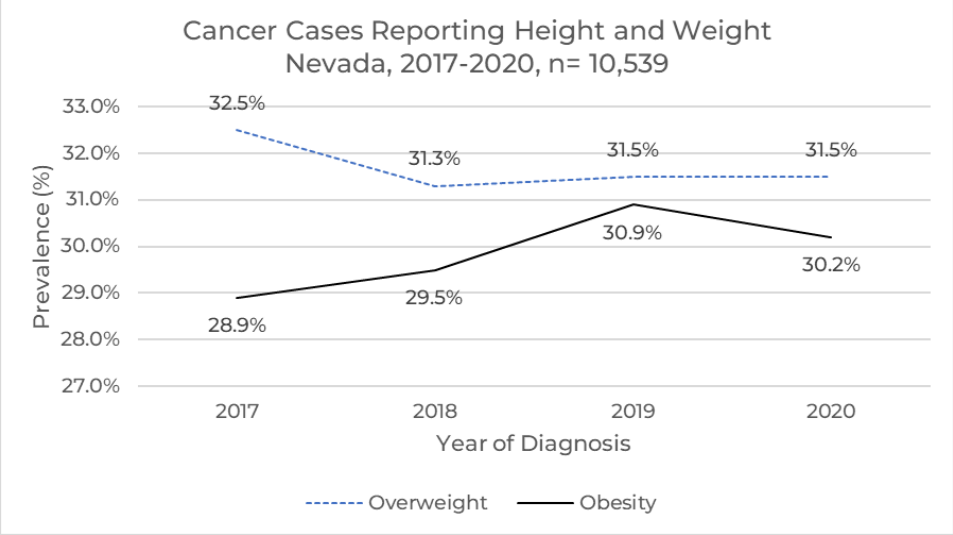
Figure 23. Prevalence (%) of Cancer Cases, Nevada Central Cancer Registry (NCCR) 1984-2021



Data Source: Nevada Central Cancer Registry (NCCR) from 1984-2021 Prevalence Data.

Over four consecutive years, the overweight prevalence stayed steady from 32.5% in 2017 to 31.5% in 2020, Obesity among cancer cases who reported height and weight increased slightly by only 5%, from 28.9% in 2017 to 30.2% in 2020.

Figure 24. Prevalence (%) of Obesity and Overweight Among Cancer Cases, NCCR, 2017-2020



Data Source: Nevada Central Cancer Registry (NCCR) from 2017-2020 Prevalence Data.

Table 6 shows cancer cases who reported height and weight data and are listed by prevalence of weight status from highest to lowest obesity prevalence. Corpus uteri and uterine cancer cases are

among the cancer cases with the highest obesity prevalence (58.2%). Thyroid Gland (42.5%), Melanoma of the Skin (38.0%), Kidney and Renal Pelvis (36.2%), and Breast (34.0%) are also among the cancer cases with the highest obesity prevalence. When considering overweight and obesity combined status, 77.9% of the corpus uteri and uterine cancer cases were either overweight or had obesity.

Table 6. Nevada Cancer Cases by Weight Status

Cancer Cases Reporting Height and Weight, N= 11,505, By Weight Status NEVADA, 1984-2020				
CANCER SITE	WEIGHT STATUS			
	Under weight (%)	Healthy Weight (%)	Overweight (%)	Obesity (%)
Corpus Uteri & Uterus, not otherwise specified	0.9	21.1	19.7	58.2
Thyroid Gland	2.8	25.5	29.2	42.5
Melanoma of the Skin	2.6	24.8	34.6	38.0
Kidney and Renal Pelvis	3.1	24.9	35.8	36.2
Breast	2.9	29.9	33.2	34.0
Brain & Other Central Nervous Sys., Benign and Uncertain	5.3	29.7	32.4	32.6
Cervix Uteri	5.6	33.9	28.3	32.2
Myeloma	5.8	31.1	32.6	30.5
Connective, Subcutaneous, and Other Soft Tissues, incl. Heart	12.5	37.5	19.6	30.4
Prostate	1.9	29.8	38.7	29.6
Urinary Bladder	2.3	30.6	38.2	28.9
Colorectal	6.0	36.1	29.9	28.1
All other sites	7.1	35.3	30.2	27.5
Leukemia	9.7	37.0	26.2	27.1
Ovary	6.0	40.4	26.8	26.8
Non-Hodgkin Lymphoma	4.8	35.0	33.9	26.3
Esophagus	11.3	44.4	20.0	24.4
Stomach	6.4	36.5	33.3	23.8
Pancreas	7.3	41.7	27.6	23.4
Lung and Bronchus	9.0	37.4	30.2	23.4
Liver and Intrahepatic Bile Ducts	4.9	37.6	35.3	22.2
Lip, Oral Cavity and Pharynx	6.3	41.7	30.7	21.3
Hodgkin Lymphoma	8.0	46.0	26.0	20.0
Larynx	12.5	41.7	33.3	12.5

Data Source: Nevada Central Cancer Registry (NCCR) from 1984-2020.

SUMMARY OF FINDINGS

BRFSS data showed the overall prevalence of adult obesity in Nevada increased 17%, from 2015 (26.7%) to 2021 (31.3%). The prevalence of obesity was higher in all rural and frontier counties and Carson City than in the rest of the state. More than two-thirds (67.4%) of Nevada adults were overweight or obese. The prevalence of overweight or obese was highest among men (33.1% obesity and 38.2% overweight), those aged 45-54 (39.9% obesity and 37.0% overweight), with some college/technical school education (33.1% obesity and 35.3% overweight), and an annual household income of $15,000-$24,999 (37.4% obesity and 32.4% overweight).

Data from the YRBSS show that the overall prevalence of youth obesity in Nevada increased 14%, from 2007 (10.8%) to 2019 (12.3%). Approximately one third (29.0%) of Nevada youth, 14 to 18 years of age, were overweight (16.7%) or had obesity (12.3%). The prevalence of overweight or obese was highest among male students (15.0% obesity and 16.2% overweight), those in 10th grade (12.9% obesity and 17.9% overweight), with two or more races (15.2% obesity and 10.6% overweight), and Hispanic heritage (15.0% obesity and 17.3% overweight).

According to BMI data from CCSD, the prevalence of obesity among 4th, 7th, and 10th grade students during the 2017-2018 school year was 24.2%. This percentage decreased by 31.3% from school years 2017-2018 and 2021-2022. For the school year 2021-2022, half (50%) of all measured students in CCSD were overweight (17%) or had obesity (33.2%). The prevalence of obesity was slightly higher among female students (17.7%). By grade, 7th grade students had the highest obesity rate (21.4%), higher than the overall obesity rate of 17.1%. By race, Black students and all other races showed the highest percentages at 16.7% and 19.1%, respectively. Asian (11.4%) and White (15.1%) students had lower obesity rates. Hispanic students (all races) showed the second highest percentage of obesity (17.9%).

In WCSD, BMI data indicate that the overall prevalence of school youth obesity among 4th, 7th, and 10th grade students in school year 2021-2022, was 23.7% in a period of four (4) school years (2017-2018 to 2021-2022) obesity increased 37.7%. For the school year 2021-2022 close to half (41%) of all measured students in WCSD were overweight (17.3%) or had obesity (23.7%). The percentage of obese was highest among male students 27.2% obesity, and females showed highest overweight 18.0%. Those in 7th grade (24.1% obesity and 19.3% overweight) the more overweighted, by race, students of other races than Black, White, or Asian showed the major percentage of obesity and

overweight (27.4% obesity and 18.0% overweight), Hispanic students (all races) showed similarly high percentage of obesity than Black race students (32.1% and 32.6%).

Among children enrolled in the WIC program, the overall prevalence of childhood obesity in Nevada in 2022 increased 25% for 0–24-month-olds (5.5%) and 16% for 2–5-year-olds (12.9%) from 2018 to August 2022. The prevalence of obesity was higher in Clark County for the 0–24-month group (5.9%) and in RAF counties for the 2–5-year-old group (13.5%).

OPPORTUNITIES FOR ACTION AND RECOMMENDATIONS

Obesity is a multifactorial chronic, often progressive, disease associated with an increase in mortality and morbidity that is increasing in prevalence in adults, youth, and children in Nevada. The etiology of obesity is complex and often unknown, as it is also a risk factor for other chronic diseases. Thus, controlling and preventing risk factors for obesity and being overweight requires efforts in multiple, complex systems. Single measures like BMI values, do not provide reliable information to explain why there is only a 9% difference in unhealthy weight status when comparing adults in the less than $15,000 household income group (39.6% obesity, 24.0% overweight) with those in the $50,000-$99,999 group (30.1% obesity, 39.2% overweight). BMI data does not help identify the health differences nor the causes of the disease within each subgroup of the population. Consequently, to understand the complexity of obesity and answer multifaceted questions, there is a need to adopt new methods and tools to assess the state of obesity in Nevada. Ensuring proper measures to control and prevent obesity in Nevada opens new opportunities for specific actions.

First, BMI data cannot be the only measure to guide prevention and control decisions and shape the state of obesity in Nevada since it does not distinguish between excess fat, muscle, or bone mass, nor does it provide any indication of the distribution of fat. Further work is needed to explore the possibility of integrating reliable measures and indicators of wellness. Statewide-specific data on how sociocultural, economic, and environmental factors influence Nevadans' physical inactivity, poor nutrition, and other behavioral information are necessary to plan, coordinate, and implement wellness and prevention interventions. Self-reported BMI data adds another layer to the problem, and it may underestimate or overestimate the prevalence of obesity.

Second, surveillance and epidemiology are necessary tools to guide the prevention and control efforts of any disease in public health settings. Thus, effective control and prevention of obesity

requires the support of WPP, surveillance systems and epidemiology staff. There is a need to define the nature and extent of the burden of obesity in Nevada communities. It is necessary to examine how obesity contributes to inequalities and how societal inequities contribute to BMI categories including obesity and overweight statuses. Environmental factors such as food advertising, the lack of access to healthy food and safe physical activity influence the etiology and prevalence of obesity and should be examined using epidemiology work.

Third, primary prevention strategies are pivotal to preventing risk factors for chronic disease, including obesity. Thus, targeted primary prevention strategies should be part of statewide initiatives when planning and implementing chronic diseases prevention programs. Nevada ranks among the states with low rates in preventable hospital (21st) and dental (41st) visits.[20] Chronic disease-preventing behaviors in Nevada, such as eating nutritious meals and maintaining a physically activity routine, are among the worst (43rd) in the nation.[20] Such a landscape allows the state to look for and embrace statewide primary prevention partnerships and address access gaps.

Fourth, federal nutrition programs add value to the nutrition of the most underserved Nevadans. Programs like WIC. the Supplemental Nutrition Assistance Program (SNAP), and the Supplemental Nutrition Assistance Program-Education (SNAP-Ed) increase food security, promote a healthier diet, and provide nutrition education to children and adults in the state. Ongoing interagency collaboration to increase participation in these federal nutrition programs is integral to statewide obesity prevention efforts.

ACTIONS TAKEN BY AND GOALS OF THE DIVISION OF PUBLIC AND BEHAVIORAL HEALTH

Of the four opportunities for action and recommendations mentioned in the previous section, including accurate indicators of obesity, staff support, primary prevention strategies, and statewide partnerships strategies, the WPP is developing and implementing primary prevention strategies and statewide partnerships.

For primary prevention strategies, DPBH-WPP partnered with local health districts and obesity prevention subject matter experts to develop the Healthy Eating and Active Living Nevada (HealNV) otherwise known as NV 5-2-1-0 Program (5 or more servings of fruits and vegetables, 2 hours or less of recreational screen time, 1 hour or more of physical activity, and 0 sugary drinks) The NV 5-2-1-0

Program is a community engagement program to promote and increase chronic disease prevention behaviors, and it is based on the multi-setting model Maine Health Let's Go! Program.[21] The Maine Let's Go Program started in 2006 with the evidence-based 5-2-1-0 Program message and has been adopted nationwide in the U.S. and in health systems in Canada.[22] Maine has seen a shift in healthy behaviors in children and is starting to see some mild reduction in childhood BMI after the trend upward during the Coronavirus pandemic. The 5-2-1-0 Program is the foundation, call to action, message used to start the conversation about lifestyle changes in our communities. The 5-2-1-0 Program asks Nevadans to make "small changes" for "big results" inhealth.

The priority for the state fiscal calendar 2024 is getting the health care sector onboard with 5-2-1-0 messaging so that engaging in respectful conversations with individuals about weight status and chronic disease-preventing behaviors becomes a standard component of clinical practice in Nevada. Other sectors will follow as funding becomes available. The goals of the 5-2-1-0 Program are to deliver a cohesive wellness message to community members where they live, work, study, play, and seek medical attention and for healthy choices to become *the easy* choices through policy and environmental changes.

Another statewide primary prevention initiative achieved by the WPP is implementing and disseminating the Standard Operating Procedures for Collecting and Reporting Students' Height and Weight in Nevada Schools (SOP).[23]The SOP includes technical assistance to collect accurate height and weight data in schools and provides resources to refer students and their families to a healthcare provider who can attend and treat obesity and overweight. The goal of the SOP is to assist school nurses, teachers, and licensed educational personnel who have completed training in measuring the height and weight of students. Informed and trained designated school staff could ensure standard operating processes to communicate related activities effectively.

The DPBH-WPP is also engaged in an interagency collaboration initiative for statewide partnership strategies between the Nevada Department of Agriculture and the Children's Cabinet. The initiative is a reoccurring annual Geographic Information System (GIS) map that will guide outreach and promotion of the Children and Adult Care Food Program (CACFP). The map has the potential to identify Early Care and Education (ECE) providers, CACFP sponsors, food deserts, high-poverty areas, and where to target resources. Through interagency collaboration, the goal is to increase CACFP participation in ECE settings.

Another statewide partnership strategy is a collaboration with the Centers for Disease Control and Prevention (CDC), Nemours, and the University of Nevada, Reno, Extension. Through this collaboration, DPBH-WPP will assist statewide ECE providers in gaining knowledge, tools, and resources to develop and install fruit and vegetable gardens for young children as a vehicle for learning. The goal is to give every child in Nevada's ECE system access to activities that teach and promote healthy behaviors, such as gardening and cooking educational programs.

The WPP also engages in a statewide partnership strategy with the newly formed Nevada Obesity Collaborative. The collaborative is a statewide working group of community members across multiple private and public sectors whose singular goal is to reduce obesity and related comorbidities.

Nevada residents should have access to and opportunities for choosing healthier eating and active living options. However, healthy decisions and behaviors are influenced by a range of factors. Thus, making the healthier option easy may require multiple layers of intervention and partnership. Having the ability to build and strengthen a comprehensive wellness and prevention program and prevent risk factors for obesity through community partnerships and primary prevention strategies is vital.

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