


1305 SURVEILLANCE:

STATE PUBLIC HEALTH ACTIONS TO PREVENT AND CONTROL DIABETES, HEART DISEASE, OBESITY AND ASSOCIATED RISK FACTORS AND PROMOTE SCHOOL HEALTH

DATA PAGES

Division of Health Surveillance

VERMONT DEPARTMENT OF HEALTH

May, 2019

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Surveillance of Chronic Disease

1305 Grant Indicator

When this symbol is seen, there is a measure reportable to the CDC as part of the grant on the page.

Healthy Vermonters 2020 (HV2020)

When this symbol is seen, a HV2020 measure is reported on that page.

Chronic Disease Measure

When this symbol is seen, a recommended measure for the surveillance of chronic disease is on the page.

Footnote Legend†

Whenever the symbols to the right are seen it carries with it the associated meaning.

†	Refer to footnote legend.
^	Data had been age-adjusted to the 2000 U.S. population except for data that is broken down by age.
*	Statistically significant difference between compared groups.
~	Excludes those whose only form of cancer was skin cancer.
•	Due to BRFSS methodology changes, caution should be taken when comparing data from prior to 2011 and after.
◊	Data with contributing causes of mortality are only available starting in 2009.
**	Value is too small to report.
••	Data not available
‡	Rate is limited to those who currently smoke.
¤	In 2009, the New Hampshire Department of Health and Human Services (DHHS), in partnership with the Department of Information Technology (DoIT), changed the process used to create their hospital discharge data set. This change may contribute to differences in New Hampshire data provided to Vermont and subsequently any Vermont VUHDDS data reported after 2009. Starting in 2014, Massachusetts data are no longer included in the dataset. Diagnosis coding was changed from using ICD-9-CM to ICD-10-CM in the 4th quarter of 2015 and may be the cause of changes seen in 2015.
§	Data available only for grades 9-12; These questions were not asked of students grades 6-8.
Δ	All middle school students were not surveyed until 2011.
α	Healthy Vermonters 2020 target applies only to high school students.
+	2007 & 2009 YRBS did not have questions for sugar-sweetened beverages, values are for soda only.

State Public Health Actions 1305

State Public Health Actions 1305

- State Public Health Actions 1305 is a grant funded by the CDC for states to work towards the prevention of select chronic diseases in a coordinated fashion.
- Chronic diseases and conditions are the major drivers of sickness, disability, and health care costs in the nation.
  - Risk factors for chronic disease can be addressed at two levels: the individual level (healthcare interventions) and population level (including policies and environments that promote health).
- Decreasing cardiovascular disease, diabetes, and obesity and increasing physical activity, nutrition, and promoting school health are the main goals of the Vermont 1305 program.
- The four domains of chronic disease prevention is the CDC's recommended strategy for coordinated chronic disease prevention.

Source: Centers for Disease Control and Prevention, The Four Domains of Chronic Disease Prevention.

The Four Domains of Chronic Disease Prevention

- Domain 1: Epidemiology and Surveillance/Evaluation
- Domain 2: Environmental Approaches
- Domain 3: Health Care System Interventions
- Domain 4: Community Programs Linked to Clinical Services

- Monitor disease/risk factor trends and tracks progress.
- Promote policy and physical/social environment changes to make healthy lifestyles easier.
- Improve delivery and use of clinical and preventive services across patient populations.
- Improve connections between clinical and community programs that support prevention and self-management of chronic conditions.

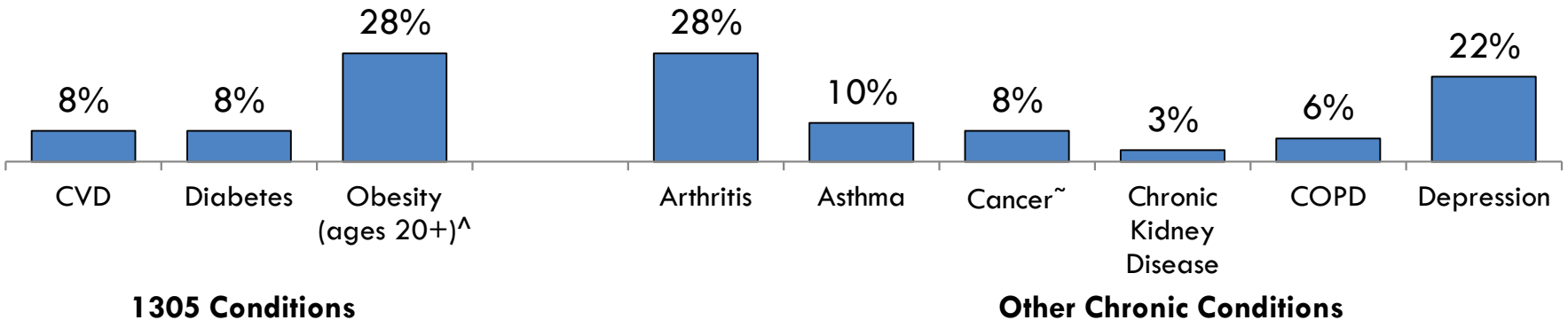
Source: Centers for Disease Control and Prevention, The Four Domains of Chronic Disease Prevention.

Vermont Chronic Disease Overview

Prevalence of Chronic Disease in Vermont

In 2016, almost three in ten Vermont adults were obese (28%) or had arthritis (28%), and almost a quarter had a depressive disorder (22%). One in ten (10%) Vermont adults had asthma. Eight percent or fewer Vermont adults had: diabetes (8%), cardiovascular disease (CVD) (8%), ever had cancer (8%), chronic obstructive pulmonary disorder (COPD) (6%), or chronic kidney disease (3%).

Prevalence of Chronic Disease in Vermont†

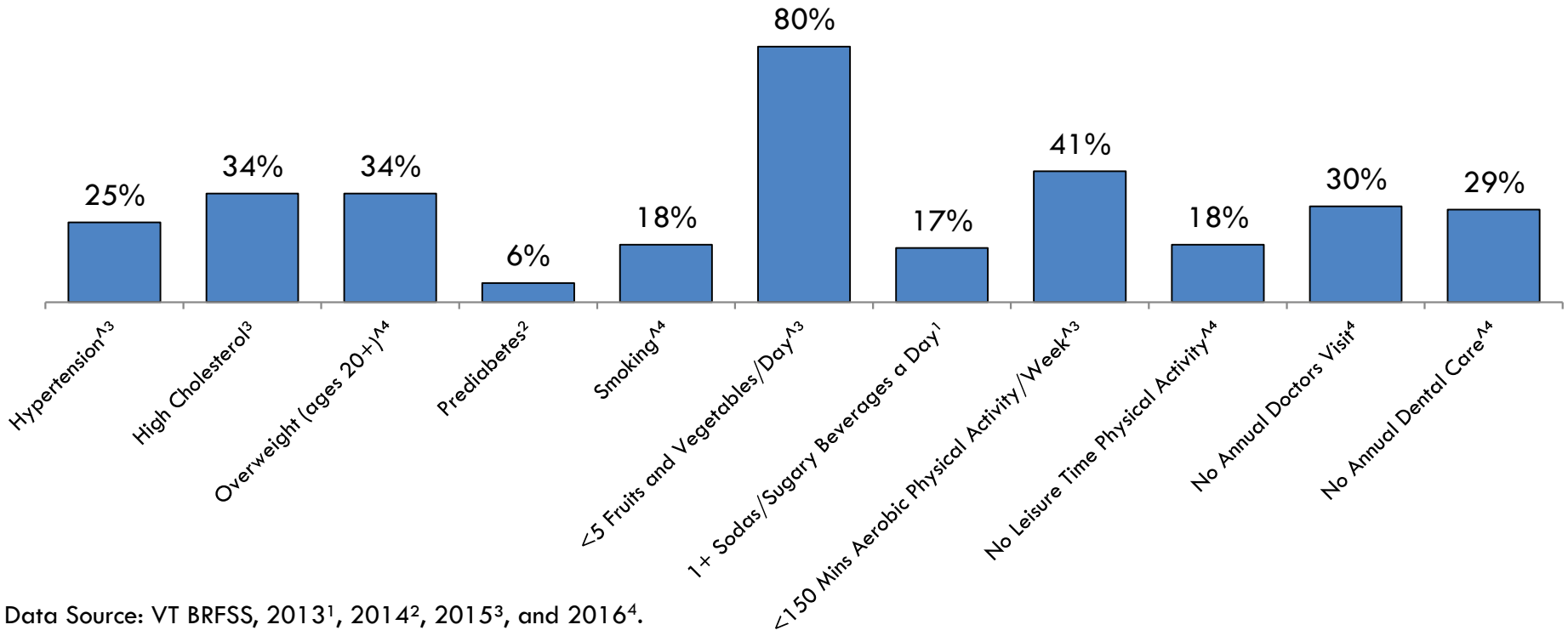


Source: VT BRFSS, 2016.

Adult Prevalence of Chronic Disease Risk Factors

Most chronic diseases are caused or made worse by one or more common risk factors. Eight in ten Vermont adults consumed less than five fruits or vegetables a day (80%). Half as many did not get the recommended amount of weekly aerobic physical activity (41%). About a third of adult Vermonters were overweight (34%) or had high cholesterol (34%), a quarter had hypertension (25%). One in three adults did not seek annual medical care (30%) or did not seek annual dental care (29%).

Prevalence of Common Chronic Disease Risk Factors among Vermont Adults†

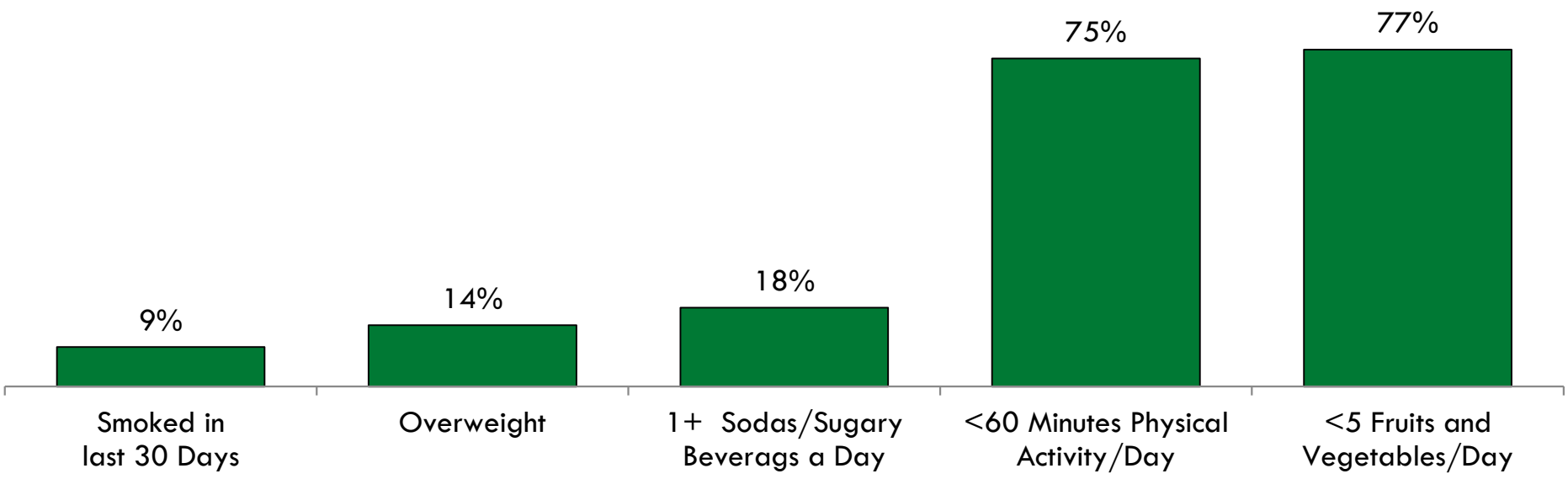


Data Source: VT BRFSS, 2013[1], 2014[2], 2015[3], and 2016[4].

Youth (Grades 9-12) Prevalence of Chronic Disease Risk Factors

Several behaviors can lead to the eventual development of chronic diseases. Of these behaviors, three quarters of youth consumed fewer than 5 fruits and vegetables a day (77%) or did not meet daily aerobic physical activity recommendations (75%). Almost one in five youth consumed one or more sodas/sugar-sweetened beverages a day (18%). Fourteen percent were overweight and 9% smoked cigarettes.

Prevalence of Risk Factors among Vermont Youth (grades 9-12) that Could Lead To Chronic Disease, 2017

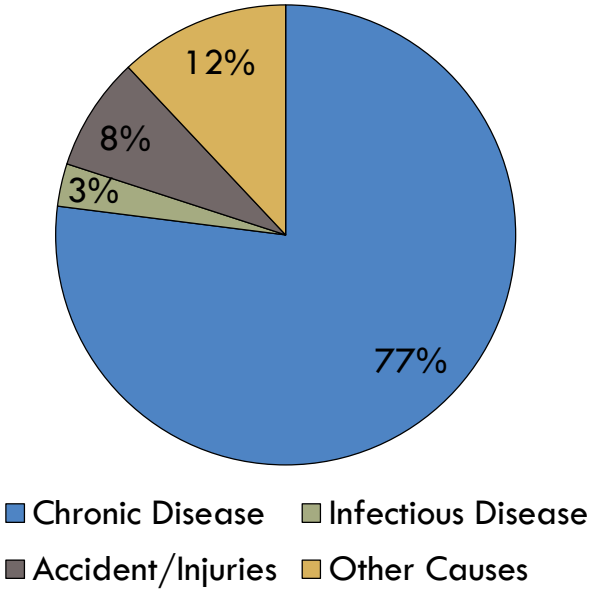


Source: VT YRBS, 2017.

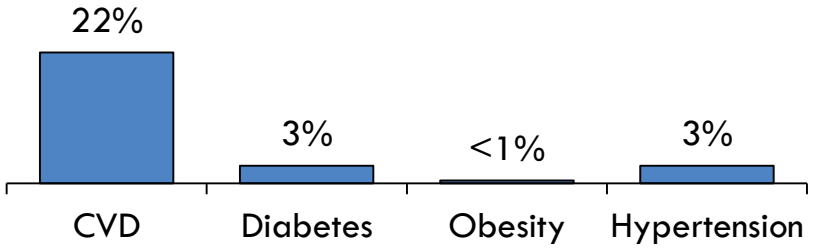
Chronic Disease-Related Mortality

Chronic diseases are the most common cause of death in Vermont, accounting for almost eight in ten deaths (77%) in 2015. Chronic diseases related to 1305 conditions accounted for over a quarter of all deaths among Vermont residents (27%).

Causes of Death, Vermont



Proportion of Deaths Related to 1305 Chronic Diseases among All Vermont Deaths



Source: Vermont Vital Statistics, 2015.

Diabetes

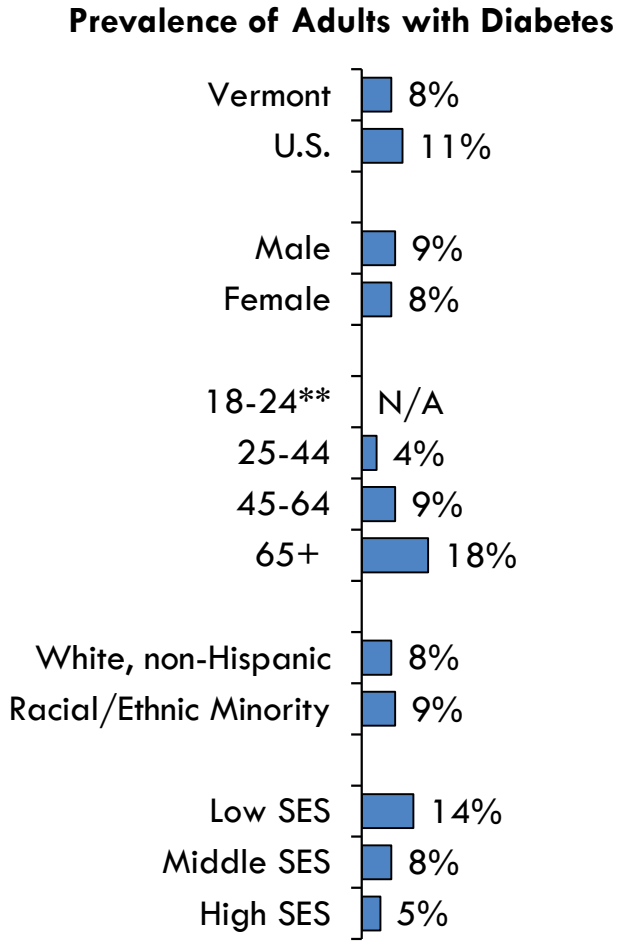
Diabetes

- Diabetes is a chronic disease in which the body does not make enough insulin or properly use the body's insulin.
  - With **Type 1** diabetes, the body is unable to produce insulin. **Type 2** diabetes is the most common form of diabetes, where the body does not use its insulin properly. Type 2 diabetes, can usually be prevented through lifestyle changes.
- Symptoms may include: frequent urination, excessive thirst and appetite, fatigue, blurred vision, slow-healing wounds, weight loss (type 1), and numbness/tingling in hands/feet (type 2).
- Over time, build up of glucose in the blood can damage the eyes, kidneys, nerves, or heart leading to serious health complications.

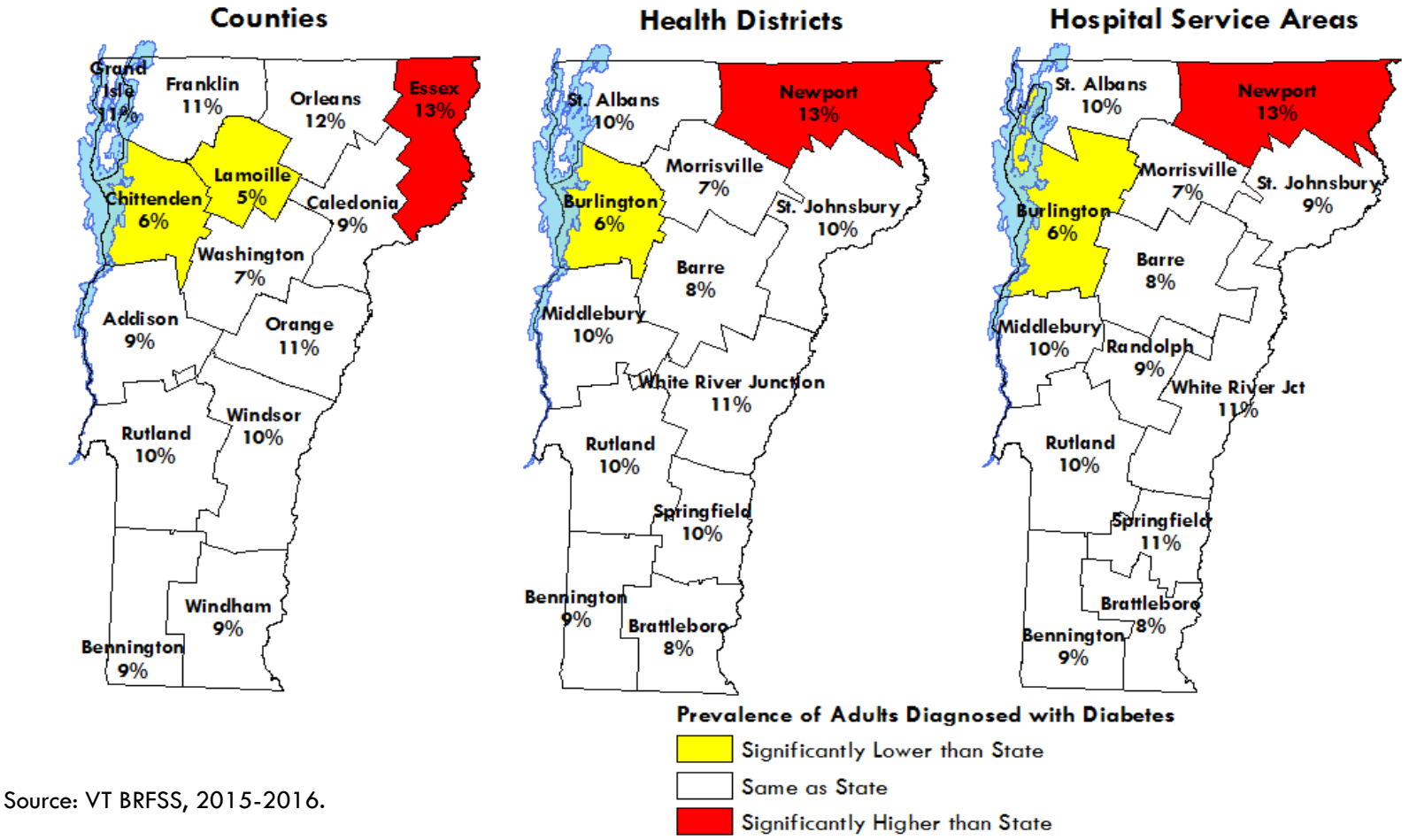
Source: American Diabetes Association, Diabetes Basics, 2015.

Adult Vermonters with Diabetes

- In 2016, About one in twelve (8%) Vermont adults had ever been diagnosed with diabetes (approximately 43,000 adults).
  - Vermont adults were significantly less likely to have diabetes than U.S. adults overall.
  - Diabetes prevalence increases significantly with advancing age.
  - All differences by socioeconomic status were statistically significant.
    - Adults living at a high socioeconomic status were least likely to have diabetes.



Source: VT BRFSS, 2016.



Source: VT BRFSS, 2015-2016.

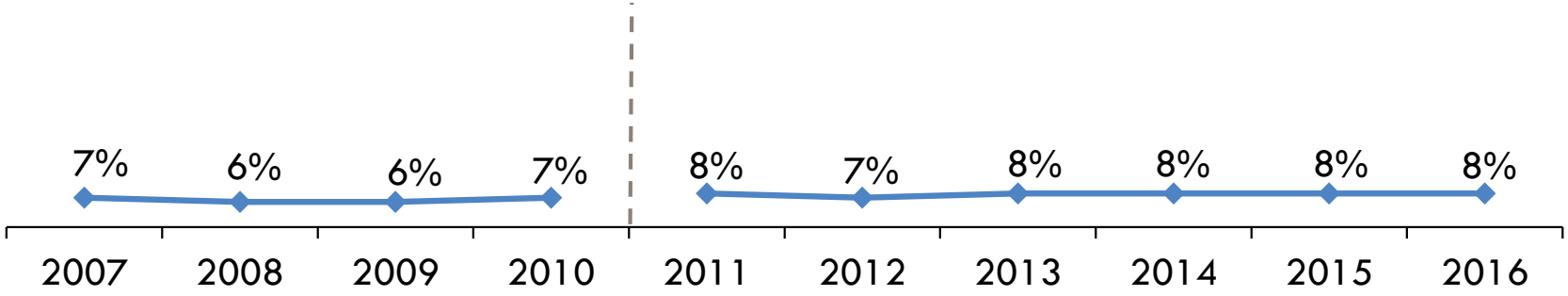
Adult Prevalence of Diabetes by Subgeography

Regionally, northeastern Vermont (Essex county and the Newport health district and hospital service area) had a significantly higher prevalence of adults ever diagnosed with diabetes when compared to the state average.

Adult Prevalence of Diabetes†

The prevalence of diagnosed diabetes in Vermont has held steady and remains statistically unchanged from 2007 through 2016.

Prevalence of Adults with Diabetes†•

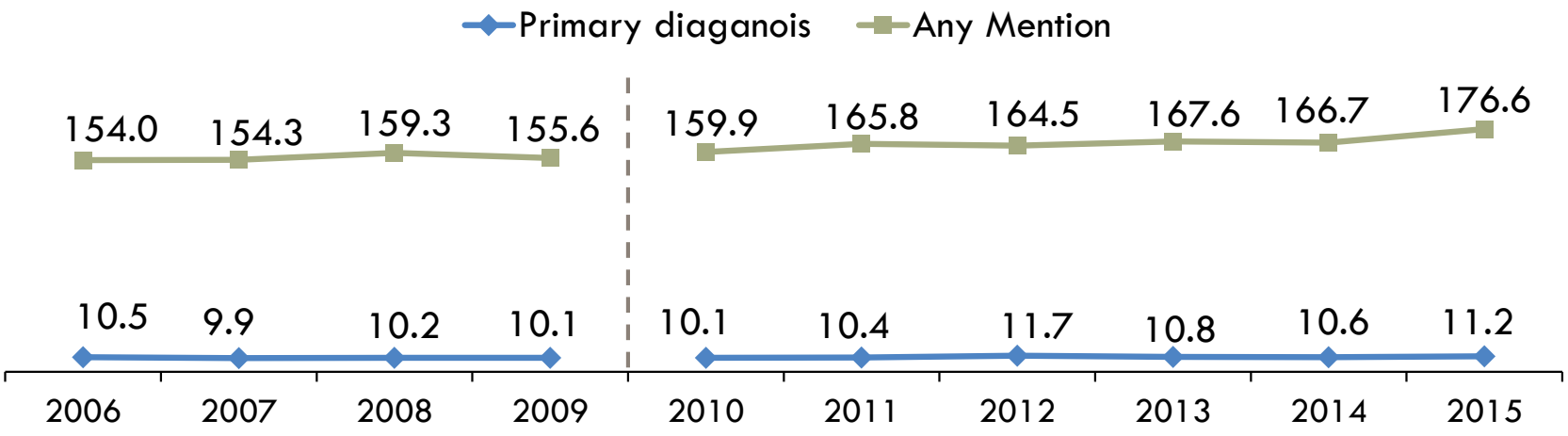


Source: VT BRFSS, 2007-2016.

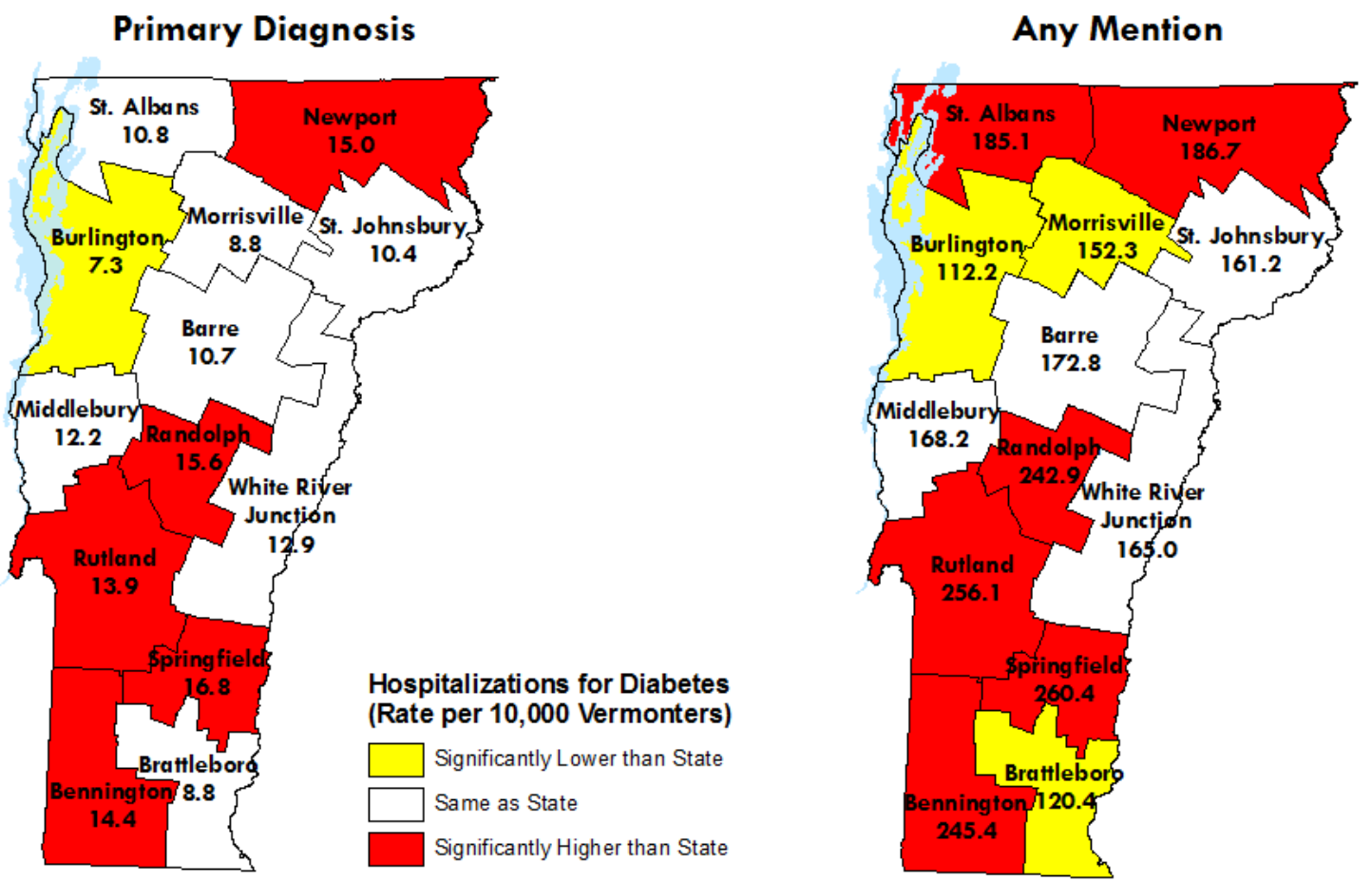
Diabetes-Related Hospital Discharges†

Diabetes often co-occurs with other (chronic) conditions/diseases. In 2015, there were 176.6 hospital discharges with any mention of diabetes for every 1,000 Vermonters (11,054 discharges). Diabetes was the primary diagnosis in 11.2 hospitalizations for every 10,000 Vermonters (703 discharges) indicating a substantial number of discharges with diabetes as a contributing factor. The rates of diabetes as a primary diagnosis did not significantly change from 2014 to 2015. However, any mention of diabetes significantly increased from 2014 to 2015.

Hospital Discharge with a Diabetes Diagnosis (per 10,000 Vermonters)¤



Source: VUHDDS, 2006-2015.



Source: VUHDDS, 2013-2015.¤

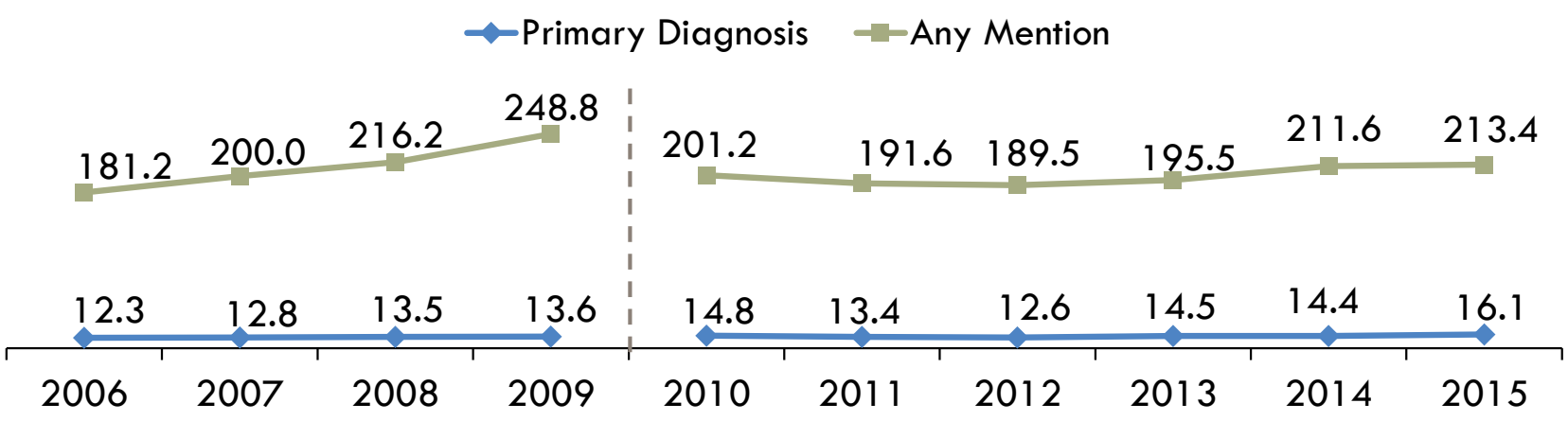
Diabetes-Related Hospital Discharges by Hospital Service Area (HSA)†

Hospital discharges with a primary diagnosis of diabetes were significantly higher than the state average in the Newport HSA, and the southern part of the state, except for the Brattleboro HSA. Any mention of a diabetes diagnosis during hospitalizations remained significantly higher for HSAs in southern Vermont and Newport. The St. Albans HSA was also significantly higher for any mention.

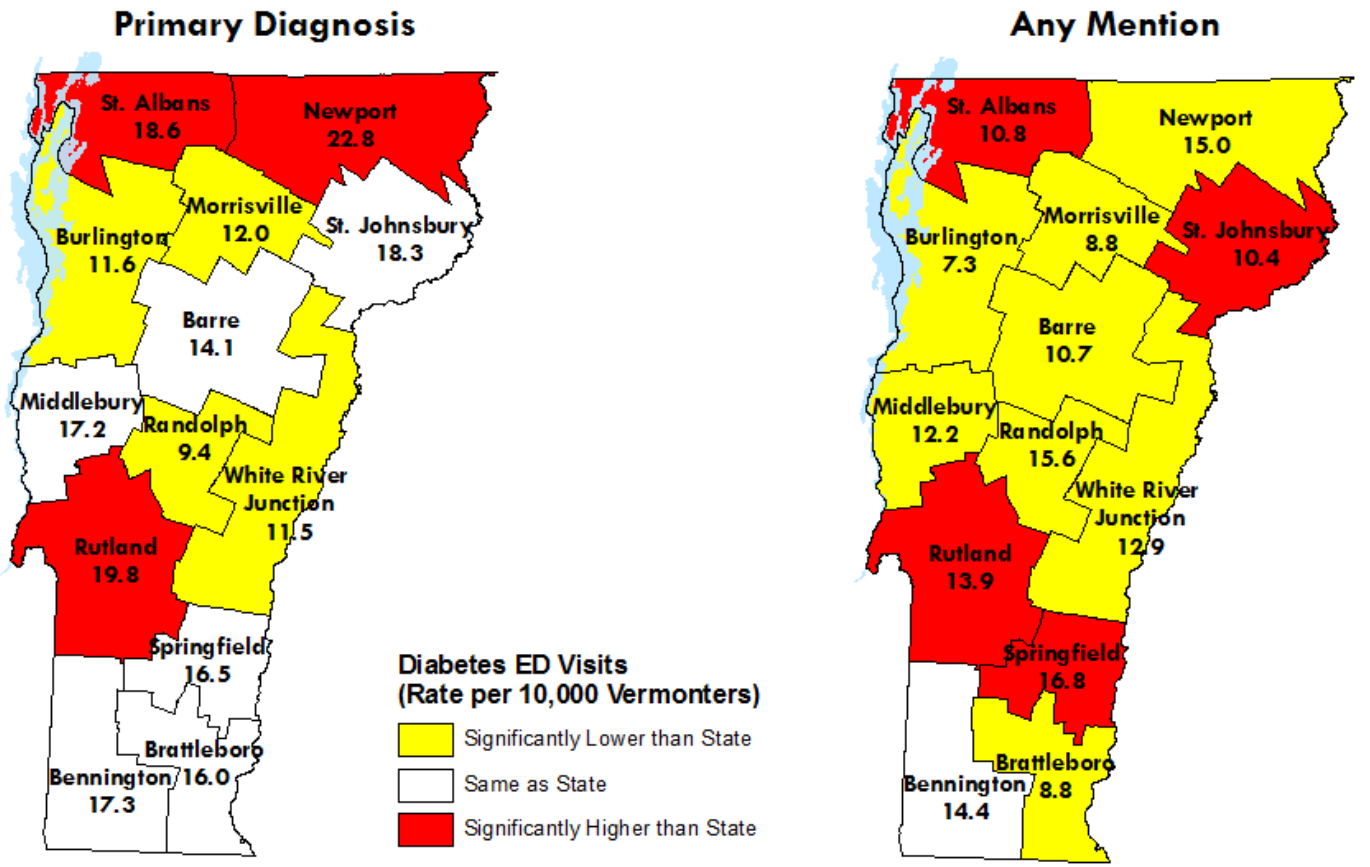
Diabetes-Related Emergency Department Visits†

In 2015, there were 16.1 ED visits with a primary diagnosis of diabetes for every 10,000 Vermonters (1,007 ED visits). For every 10,000 Vermonters, 213.4 had any mention of diabetes during an ED visit (13,358 ED visits). As a primary diagnosis, diabetes-related ED visits rose significantly from 2011 to 2015 and 2014 to 2015. Any mention of diabetes during an ED visit significantly increased from 2010 to 2015 but was similar to 2014.

ED Visits with a Diabetes Diagnosis (rate per 10,000 Vermonters)¤



Source: VUHDDS, 2006-2015.



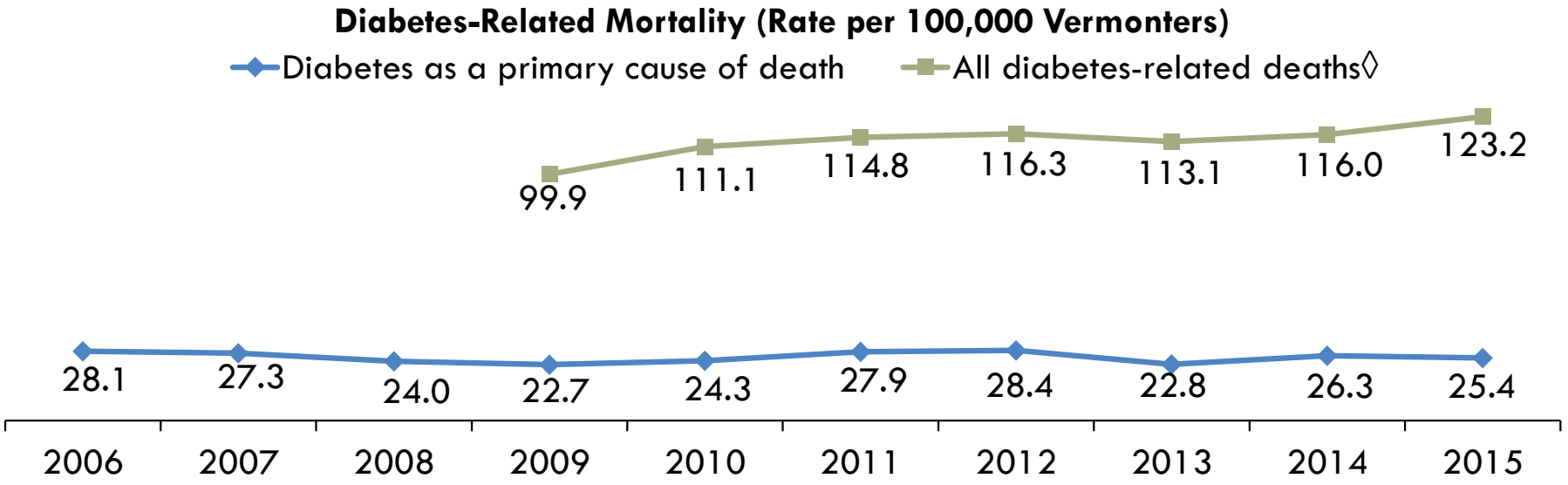
Source: VUHDDS 2013-2015.¤

Diabetes-Related Emergency Department Visits by Hospital Service Area (HSA)†

Northern Vermont and the Rutland HSAs were significantly higher than the state average for diabetes as the primary diagnosis for an ED visit. St. Albans and Rutland HSAs remained higher than the state average for any mention of diabetes during an ED visit. The St. Johnsbury and Springfield HSAs were also higher than the state average for any mention of a diabetes diagnosis.

Diabetes-Related Mortality†

In 2015, diabetes was the primary cause in 19.8 deaths for every 100,000 Vermonters. The rate of diabetes as a primary cause of death significantly declined from 2006 to 2015. In 2015, the all diabetes-related mortality rate for Vermont was 123.2 deaths per 100,000 Vermonters. While all diabetes-related deaths have increased significantly from 2009 to 2015 but was similar 2014 to 2015, indicating that diabetes as a contributing cause of death is potentially driving the all diabetes-related mortality.

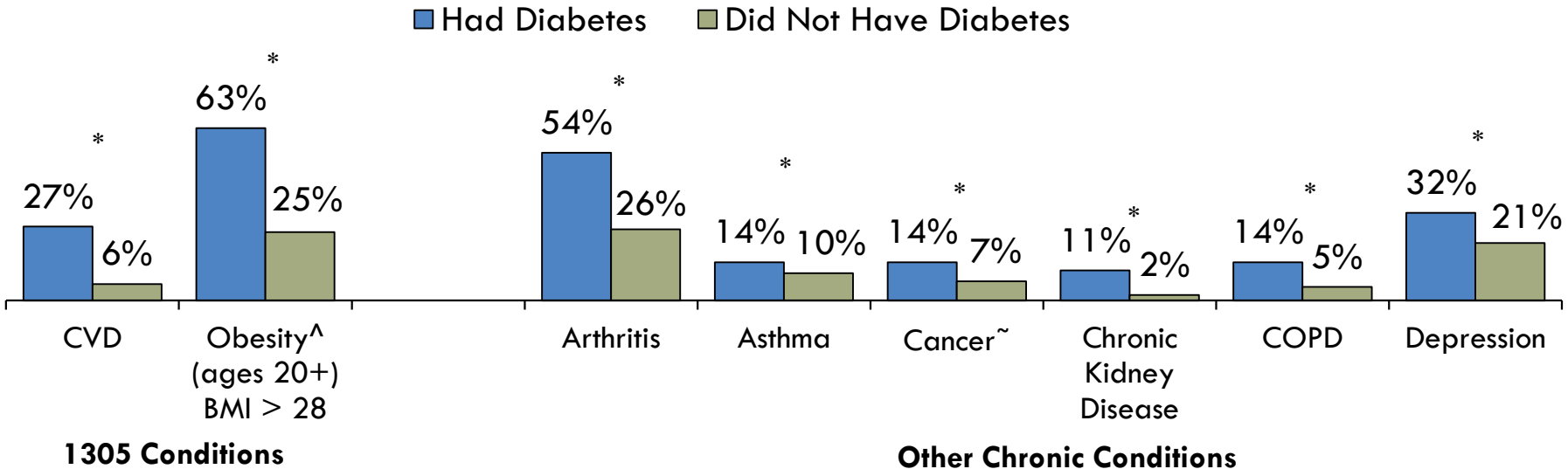


Source: Vermont Vital Statistics, 2006-2015.

Chronic Disease Comorbidities for Adults with Diabetes†

About two-thirds of Vermont adults who had diabetes were also obese (63%) and over a quarter (27%) also had cardiovascular disease (CVD). Over half of Vermont adults who had diabetes also had arthritis (54%) and almost a third had a depressive disorder (32%). Vermont adults with diabetes were significantly more likely to have all of the comorbidities below when compared to adults who did not have diabetes.

Prevalence of Chronic Disease Comorbidities among Adults with Diabetes, 2016†

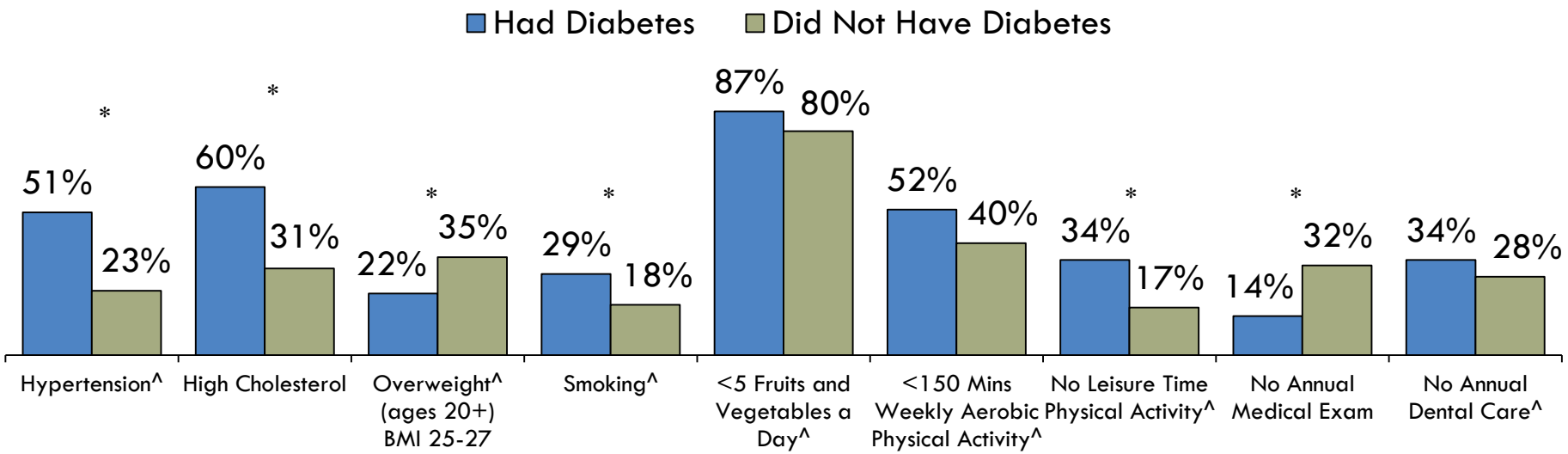


Source: VT BRFSS, 2016.

Chronic Disease Risk Factors among Adults with Diabetes†

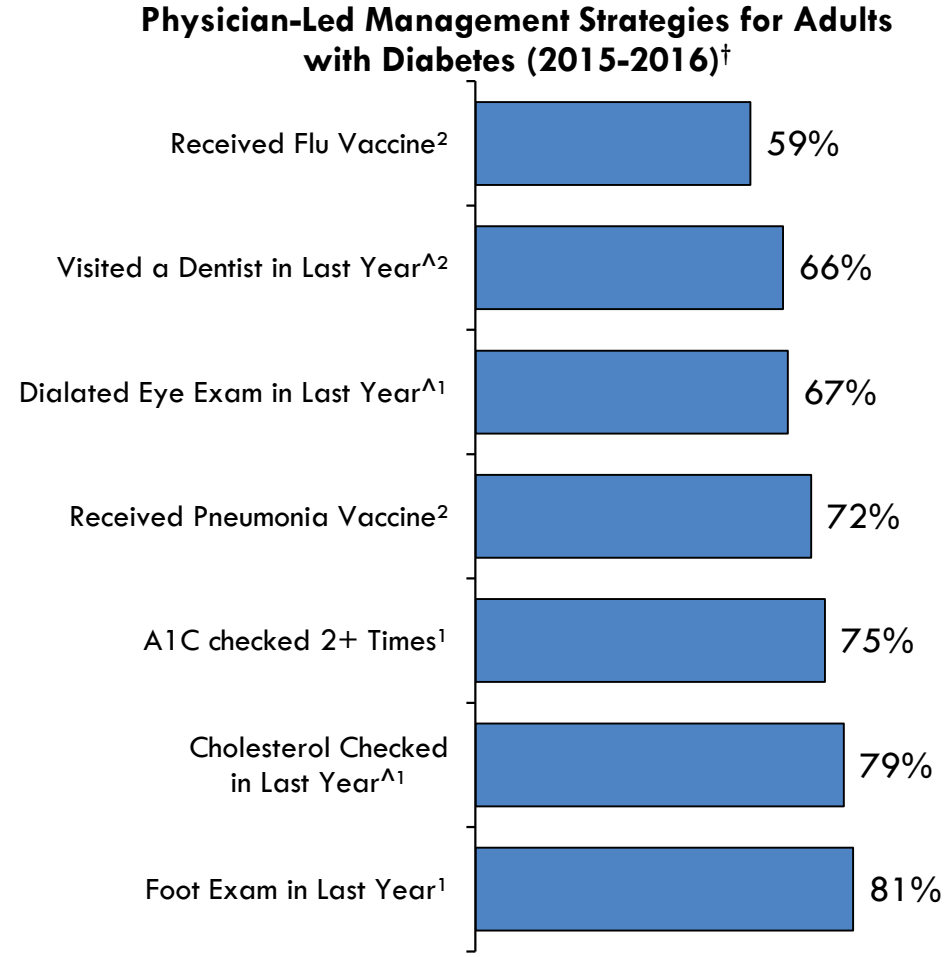
Adults with diabetes were significantly more likely to have hypertension, high cholesterol, smoke, and have no leisure time physical activity when compared to adults who did not have diabetes. Adults who had diabetes were significantly less likely be overweight (though they were significantly more likely to be obese – see **previous page**) or to not have an annual medical exam when compared to adults who did not have diabetes.

Prevalence of Chronic Disease Risk Factors among Adults with Diabetes†



Source: VT BRFSS, 2015 (hypertension, cholesterol, nutrition, aerobic physical activity recommendations) and 2016 (overweight, smoking, leisure time physical activity, medical exam, and dental care).

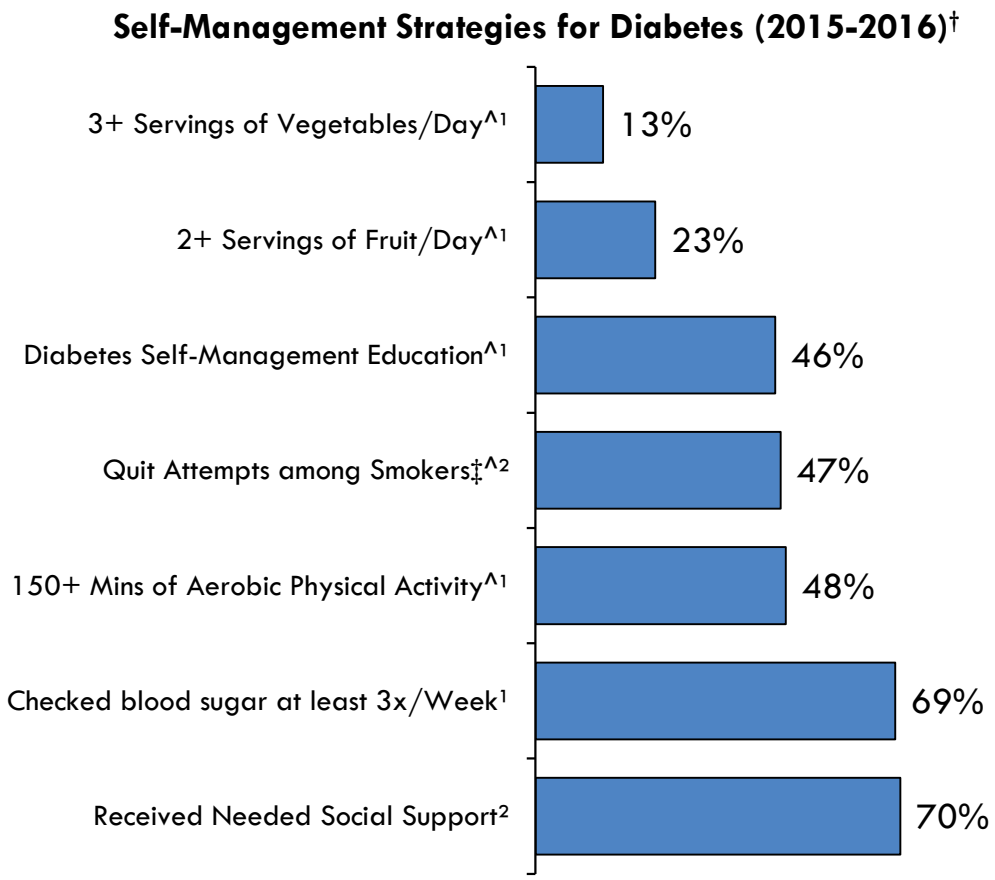
Provider Management of Diabetes



Source:
[1]VT BRFSS, 2015.
[2]VT BRFSS, 2016.

- Over half of adults with diabetes (66%) received oral healthcare from a dentist, dental hygienist, or dental clinic in the last year.
- Two-thirds of Vermont adults with diabetes received an annual dilated eye exam (67%) in the last year, above the Healthy Vermonters 2020 target of 60%.
- Over three-quarters of adult Vermonters diagnosed with diabetes had their cholesterol checked in the last year (79%).
- Four in five (81%) Vermont adults with diabetes had a health professional check their feet for sores or irritations in the last year as the most common physician-led management strategy.

Adult Self-Management of Diabetes



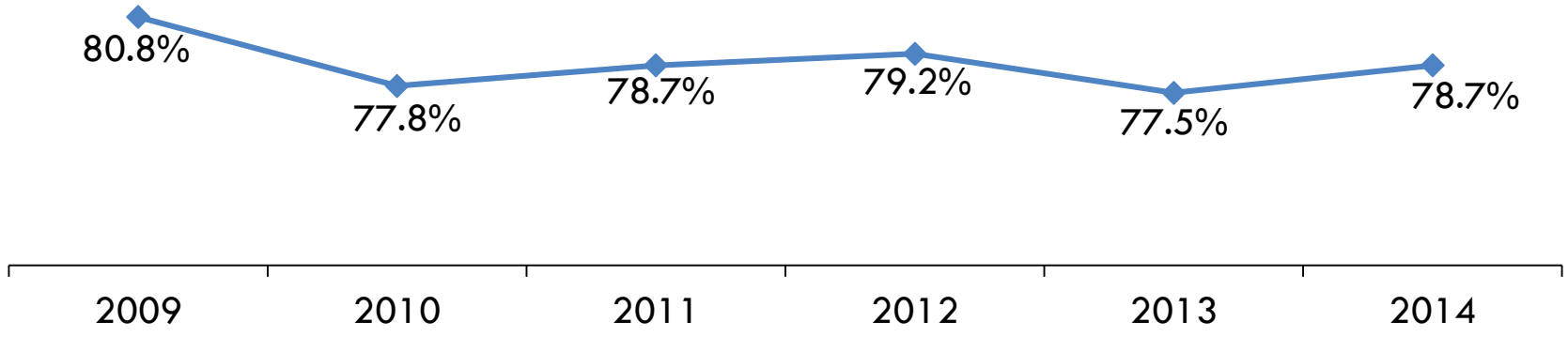
Source:
[1]VT BRFSS, 2015.
[2]VT BRFSS, 2016.

- Almost half of adults (47%) with diabetes who smoked attempted to quit in the last year.
- Less than half (46%) of adults with diabetes said they had attended diabetes self-management education. This is below the Healthy Vermonters 2020 target of 60%.
- Seven in ten adult Vermonters with diabetes felt they had the social support they needed (70%).
- Almost seven in ten (69%) adults with diabetes checked their own blood sugar at least 3 times per week.
  - 52% of all adults with diabetes in 2014 had their blood sugar checked within the last 3 years.

Antidiabetes Medication Adherence

Medication adherence is measured using "proportion of days covered" (PDC). PDC refers to the proportion of days an insured person has medication in relation to the number of days they should have it from their first prescription date through the end of the calendar year. In 2014, 79% of insured Vermont adults ages 18-64 with diabetes, who were not taking insulin, were at least 80% adherent to their medication regimens. Medication adherence did not differ significantly between commercial insurance plans and Medicaid from 2009 to 2014.

Proportion of Insured Vermont Adults 18-64 With Diabetes Who Are At Least 80% Adherent with their Antidiabetic Medication Regimens



Source: VHCURES 2009-2014.

Gestational Diabetes

Gestational Diabetes

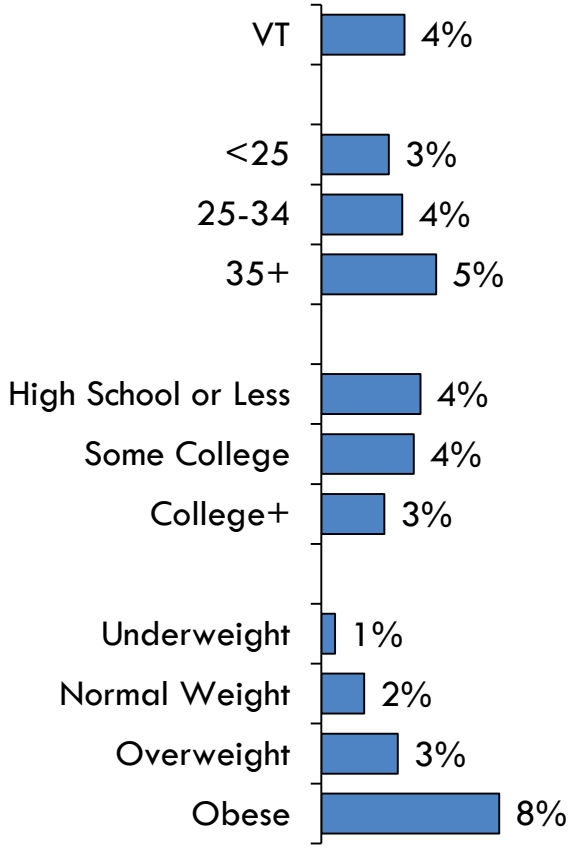
- Gestational diabetes is a condition with high blood sugar in the diagnostic range of diabetes that develops during pregnancy and usually reverses to normal blood sugar after pregnancy. It can cause pregnancy complications, as well as increased risk of developing diabetes later in life for the mother.
- During pregnancy, usually around the 24th week, many women may develop high blood glucose levels due to insulin resistance. This is known as gestational diabetes.
  - Little is known about the exact cause of gestational diabetes but it is believed that hormones that help the baby develop also block the action of insulin, known as insulin resistance, in the mother's body.
- Proper management of blood glucose levels during pregnancy is essential to the health of both mother and baby.

Source: American Diabetes Association, Gestational Diabetes, November 21, 2016.

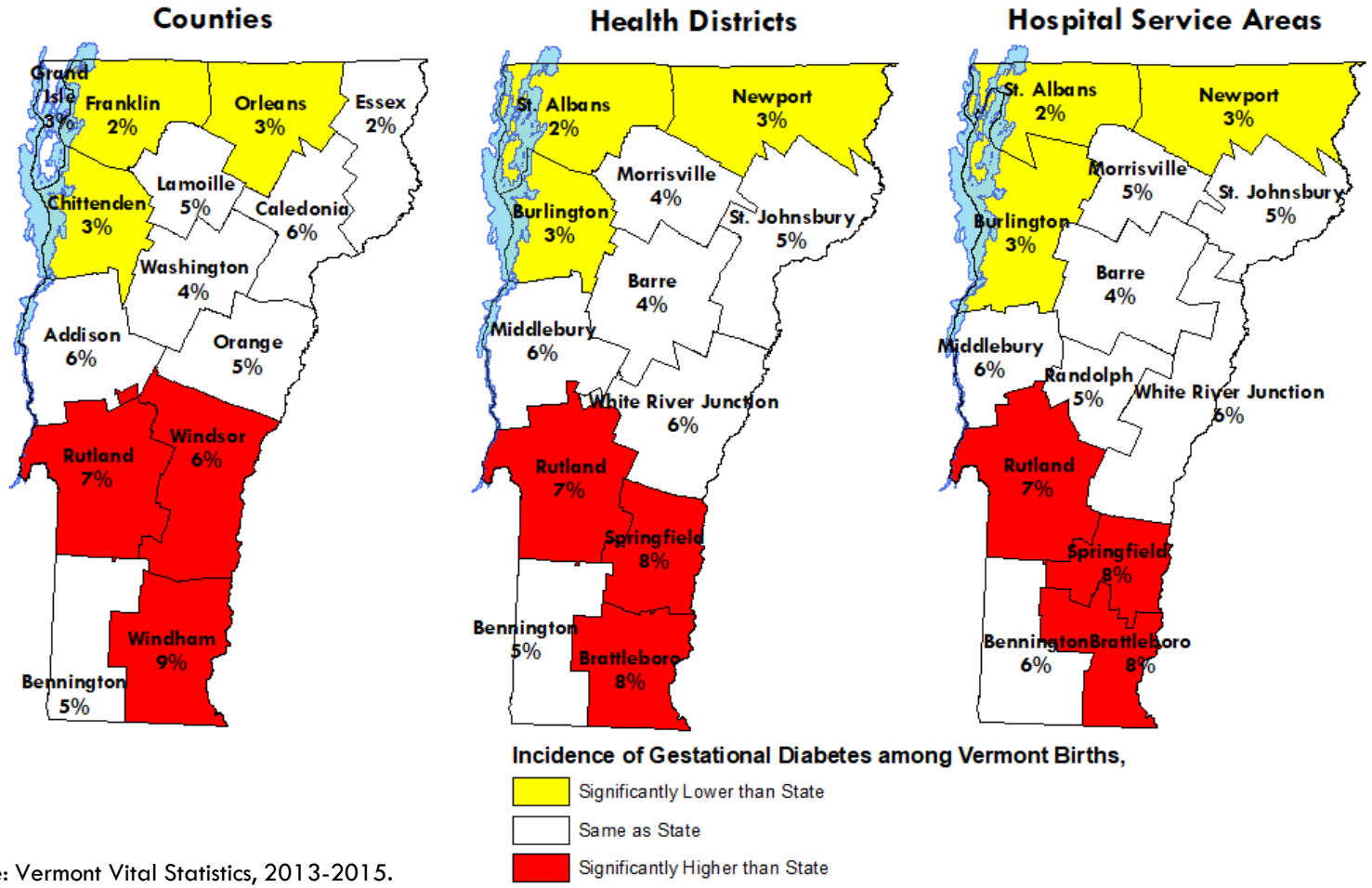
Vermont Mothers with Gestational Diabetes

- Four percent of births in Vermont were to mothers with gestational diabetes in 2015 (represents 219 births).
  - Births to mothers with gestational diabetes were significantly more likely among those with a high school or less education than mothers with a college degree or higher.
  - Mothers were more likely to have gestational diabetes if they were overweight (twice as likely) or obese (four times as likely) pre-pregnancy than mothers who were underweight or of normal weight.

Incidence of Births to Vermont Mothers with Gestational Diabetes, 2015



Source: Vermont Vital Statistics, 2015.



Source: Vermont Vital Statistics, 2013-2015.

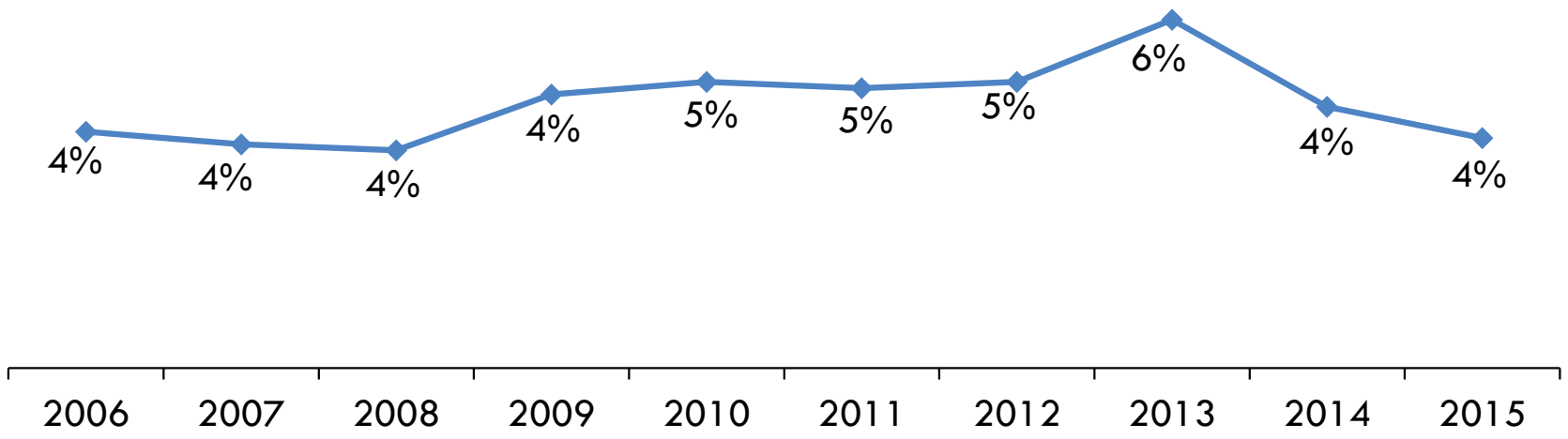
Prevalence of Gestational Diabetes among Vermont Births by Subgeography

Regionally, the northern part of the state showed significantly lower rates of births to Vermont mothers with gestational diabetes. Areas in the southern part of the state showed significantly higher rates of births to mothers with gestational diabetes, except for Bennington county and the Bennington health district and hospital service area (HSA).

Prevalence of Gestational Diabetes among All Vermont Births

In 2015, the rate of births to mothers with gestational diabetes (4%) continued the 2013 reversal of the historical ascending trend and was significantly lower than the rates seen in 2013 and 2014. From 2013 to 2014, the rate of births to Vermont mothers with gestational diabetes had also significantly decreased (6% vs. 4%). The steep increases in gestational diabetes seen in 2008 is likely related to better capture of gestational diabetes due to enhanced electronic reporting.

Prevalence of Gestational Diabetes among All Vermont Births



Source: Vermont Vital Statistics, 2006-2015.

End-Stage Renal Disease (ESRD)

End-Stage Renal Disease (ESRD)

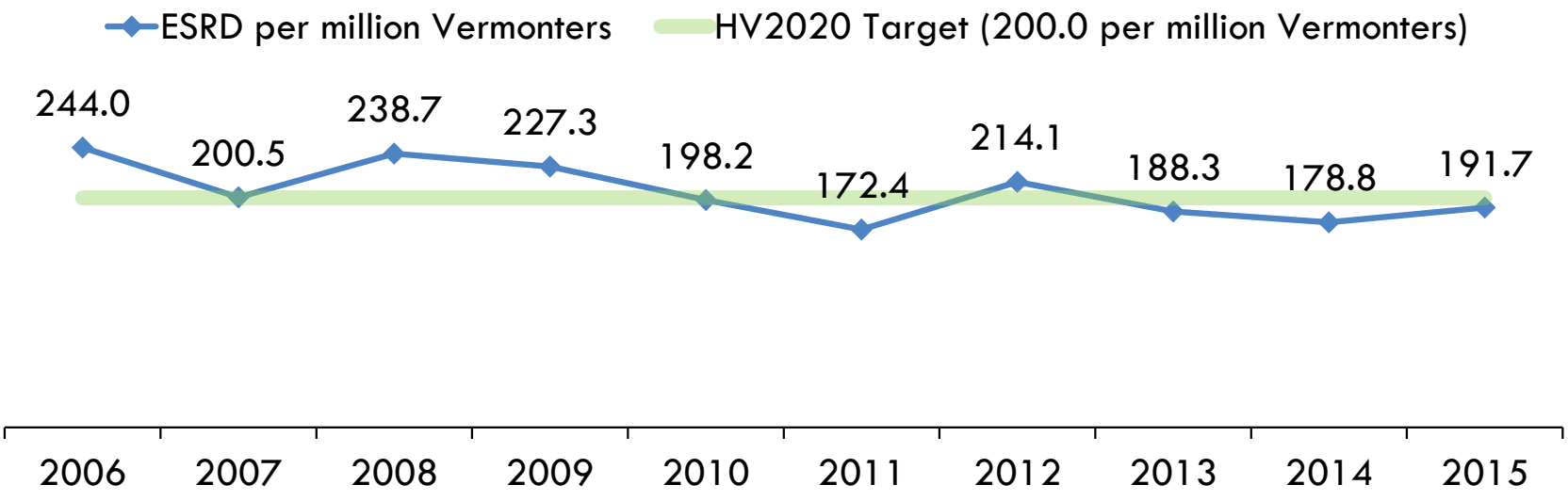
- ESRD is the final stage (Stage 5) of Chronic Kidney Disease and also known as end-stage renal failure or late chronic renal insufficiency.
  - Chronic Kidney Disease is caused by diabetes-related nephropathy (kidney damage from excess blood sugar), hypertension (high blood pressure), glomerular diseases (various types of kidney diseases), inherited/congenital kidney diseases, poisons, and trauma to the kidneys.
- Those experiencing ESRD will typically have 10-15% of normal kidney function.
- ESRD symptoms include: anemia, headache, fatigue, weakness, nausea, vomiting, thirst, muscle cramps/twitching/numbness in limbs, high blood pressure, poor digestion, decreased urinary output, and mental symptoms (lowered alertness, trouble concentrating, seizures).

Source: National Kidney Center, Chronic Kidney Disease.

New Cases of ESRD

The rate of new cases of ESRD among Vermonters as of 2015 was 191.7 cases for every one million Vermonters. This rate has increased from 178.8 cases for every one million Vermonters in 2014. As seen below, ESRD incidence does peak with some regularity, so this may simply be another such fluctuation. However, the rate in 2015 remains below the Healthy Vermonters 2020 target of 200.0 cases for every one million Vermonters as well as the 2009 baseline of 227.3 cases per million Vermonters.

Rate of New Cases of End-Stage Renal Disease (ESRD), 2005-2015



Source: U.S. Renal Data System 2006-2015.

Prediabetes

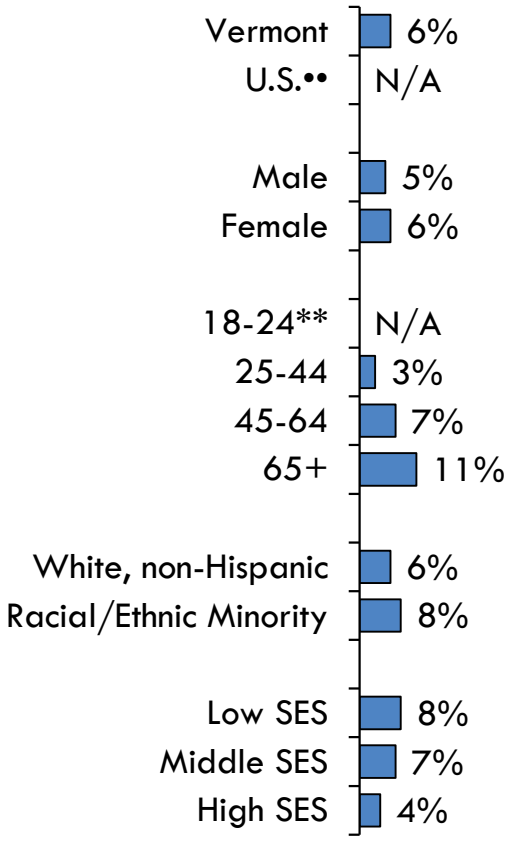
Prediabetes

- Prediabetes, sometimes referred to as impaired blood glucose tolerance (IGT) or impaired fasting glucose (IFG), is classified by blood sugar levels that are higher than normal but not high enough to be diagnosed as diabetes.
- Prediabetes has no clear symptoms; however, some people will have some of the same symptoms or health complications of diabetes.
- Prediabetes places you at increased risk for developing type 2 diabetes and cardiovascular disease.
- Evidence is growing that indicates the health consequences associated with diabetes actually begin among those with prediabetes.

Source: American Diabetes Association, Diagnosing and Learning About Prediabetes. November 21, 2016.
Tabák AG et al. Prediabetes: A high risk state for developing diabetes. *Lancet*. 2012;379(9833):2279-2290.

Adult Vermonters with Prediabetes†

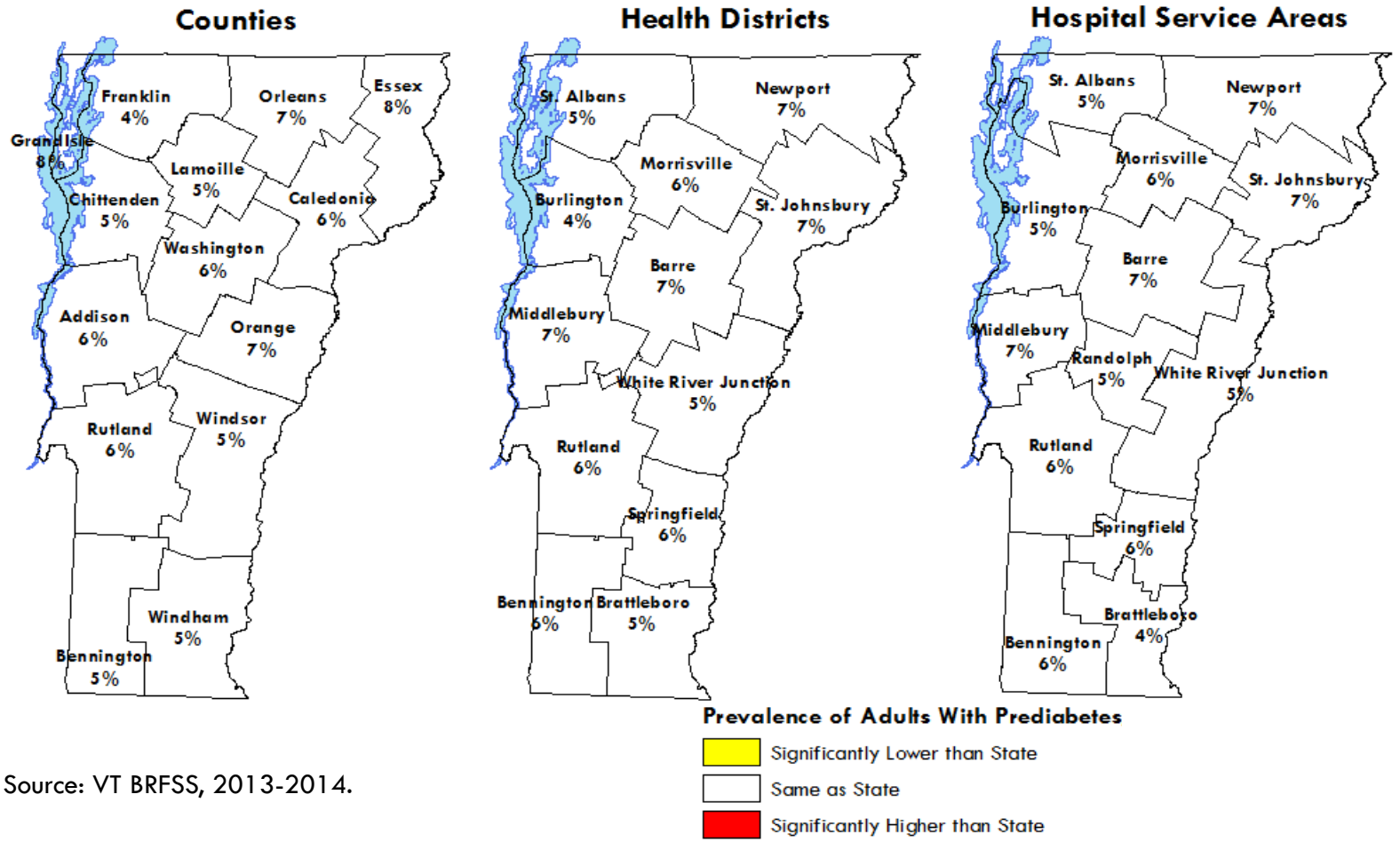
Prevalence of Adults with Prediabetes, 2014



- About one in sixteen (6%) Vermont adults had prediabetes in 2014 (approximately 27,000 adults).
  - As age increases the prevalence of prediabetes significantly increases.
  - Adults living at a high socioeconomic status were significantly less likely to have prediabetes than those living at a middle or low socioeconomic status.
- Most prediabetes goes undiagnosed, therefore the reported prevalence likely underestimates the true impact of prediabetes in Vermont.
  - Over a third (37%) of U.S. adults are estimated to have prediabetes.[1] Based on this, an additional 157,000 Vermont adults may have prediabetes and not know it.

Source: VT BRFSS, 2014.

[1]CDC, National Center for Chronic Disease Prevention and Health Promotion, National Diabetes Statistics Report, 2014.



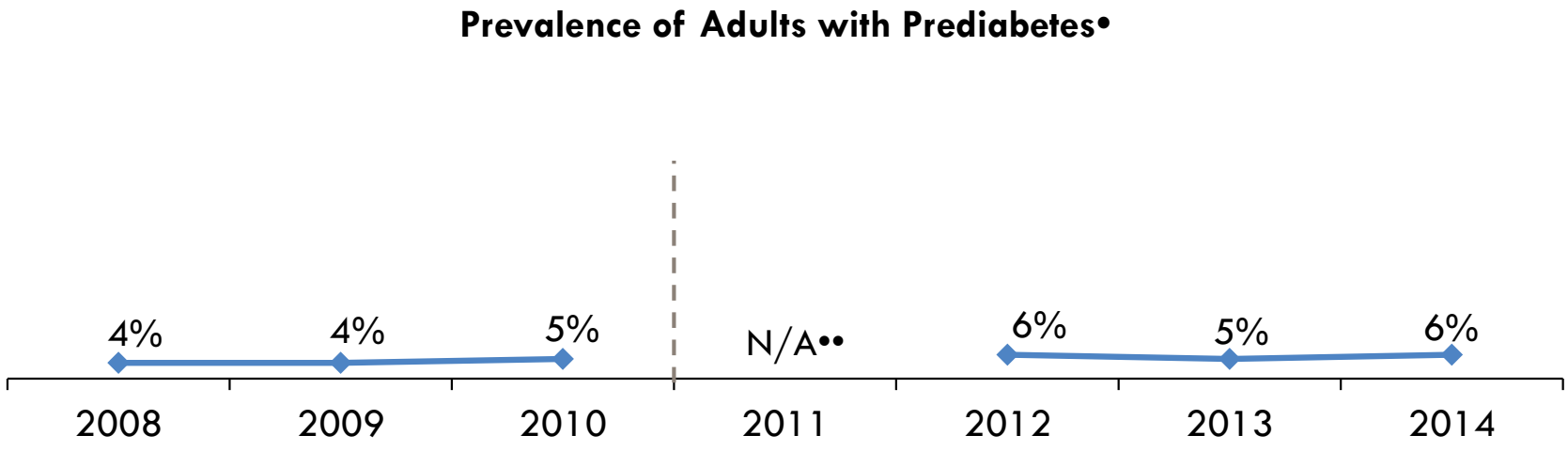
Source: VT BRFSS, 2013-2014.

Prevalence of Adults with Prediabetes by Subgeography

All state subgeographies show similar rates of adults with diagnosed prediabetes when compared to the state average. This indicates that, as with diabetes itself, prediabetes is of similar concern in all areas across the state.

Adult Prevalence of Prediabetes†

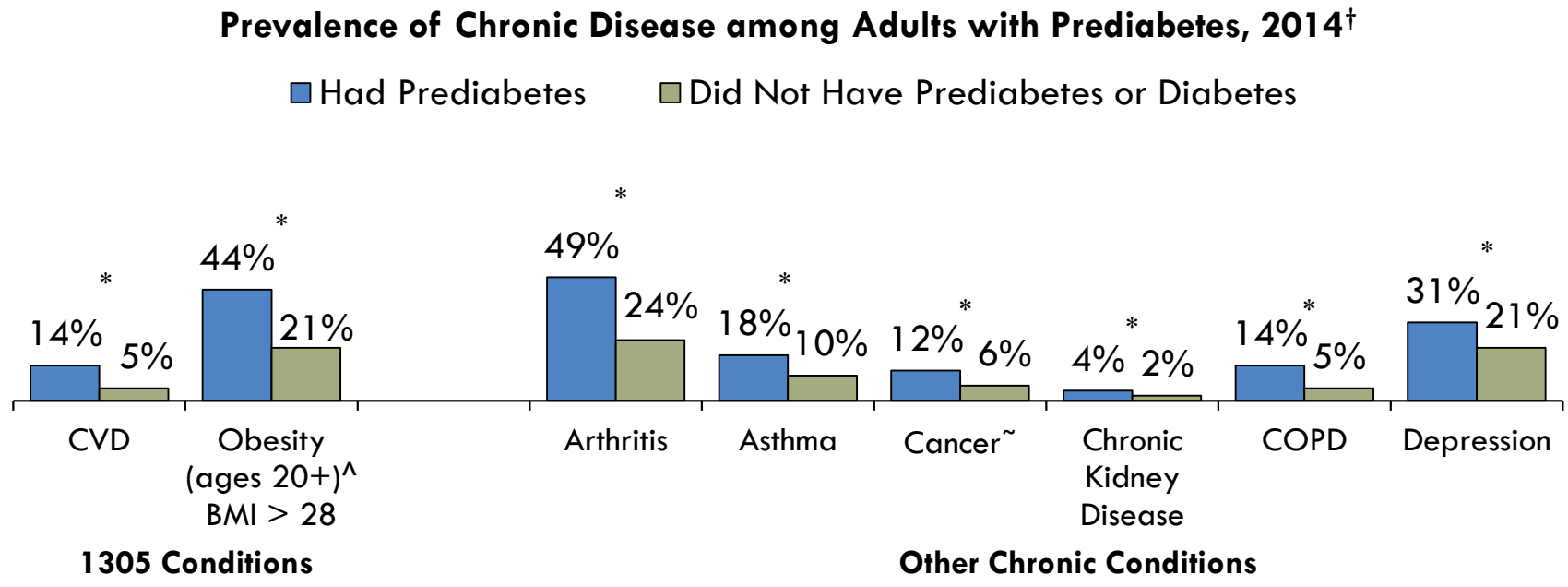
The prevalence of diagnosed prediabetes in Vermont remained statistically unchanged from 2008 through 2014.



Source: VT BRFSS, 2008-2014.

Prevalence of Chronic Disease among Adults with Prediabetes

In 2014, close to half (44%) of Vermont adults diagnosed with prediabetes were also obese and 14% also had cardiovascular disease (CVD). Close to half of adult Vermonters with prediabetes also had arthritis (49%) and a third had a depressive disorder (31%). Vermont adults with prediabetes were significantly more likely to have all of the comorbid chronic conditions shown below than adults who did not have prediabetes or diabetes.



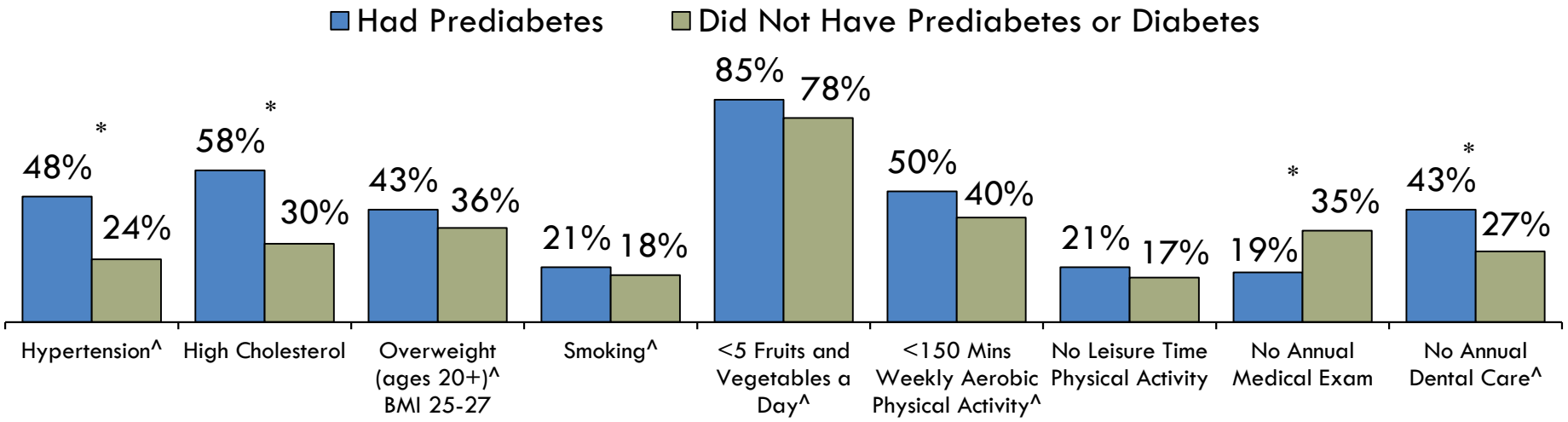
Source: VT BRFSS, 2014.

Chronic Disease Risk Factors among Adults with Prediabetes

Vermont adults with prediabetes were significantly more likely to have hypertension, high cholesterol, and receive no annual dental care when compared to adults who did not have prediabetes or diabetes. Adults diagnosed with prediabetes were significantly less likely to not get an annual medical exam than adults who did not have prediabetes or diabetes.

Fifty percent of adults with prediabetes met their aerobic physical activity guidelines, this is below the Healthy Vermonters 2020 target of 58%.

Prevalence of Chronic Disease Risk Factors among Adults with Prediabetes†



Source: VT BRFSS, 2013 (hypertension, cholesterol, nutrition, meeting physical activity recommendations) and 2014 (overweight, smoking, no leisure time physical activity, medical exam, dental care).

Cardiovascular Disease (CVD)

Coronary Heart Disease

Heart Attack

Stroke

Cardiovascular Disease (CVD)

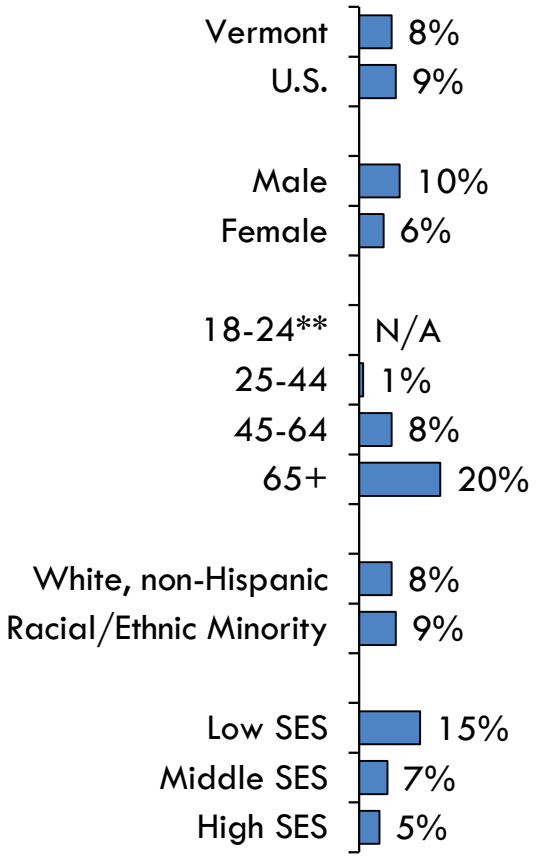
- CVD is a term that refers to several types of heart conditions, including coronary heart disease, heart attack, and stroke.[1]
- Certain things can increase the risk of CVD including: several health conditions, lifestyle, age, and family history.[1]
  - Almost half of Americans[1] and over half of Vermonters[2] have at least one of the key risk factors for CVD: high blood pressure (hypertension), high cholesterol, or smoking.
  - Other health conditions and behaviors that can lead to CVD are diabetes, overweight and obesity, poor diet, physical inactivity, and excessive alcohol use.[1]
- CVD is one of the leading causes of death in the U.S.[1] and in Vermont[3].

Source: [1]Centers for Disease Control and Prevention, Heart Disease, August 10, 2015.
[2]VT BRFSS, 2015.
[3]Vermont Vital Statistics 2015.

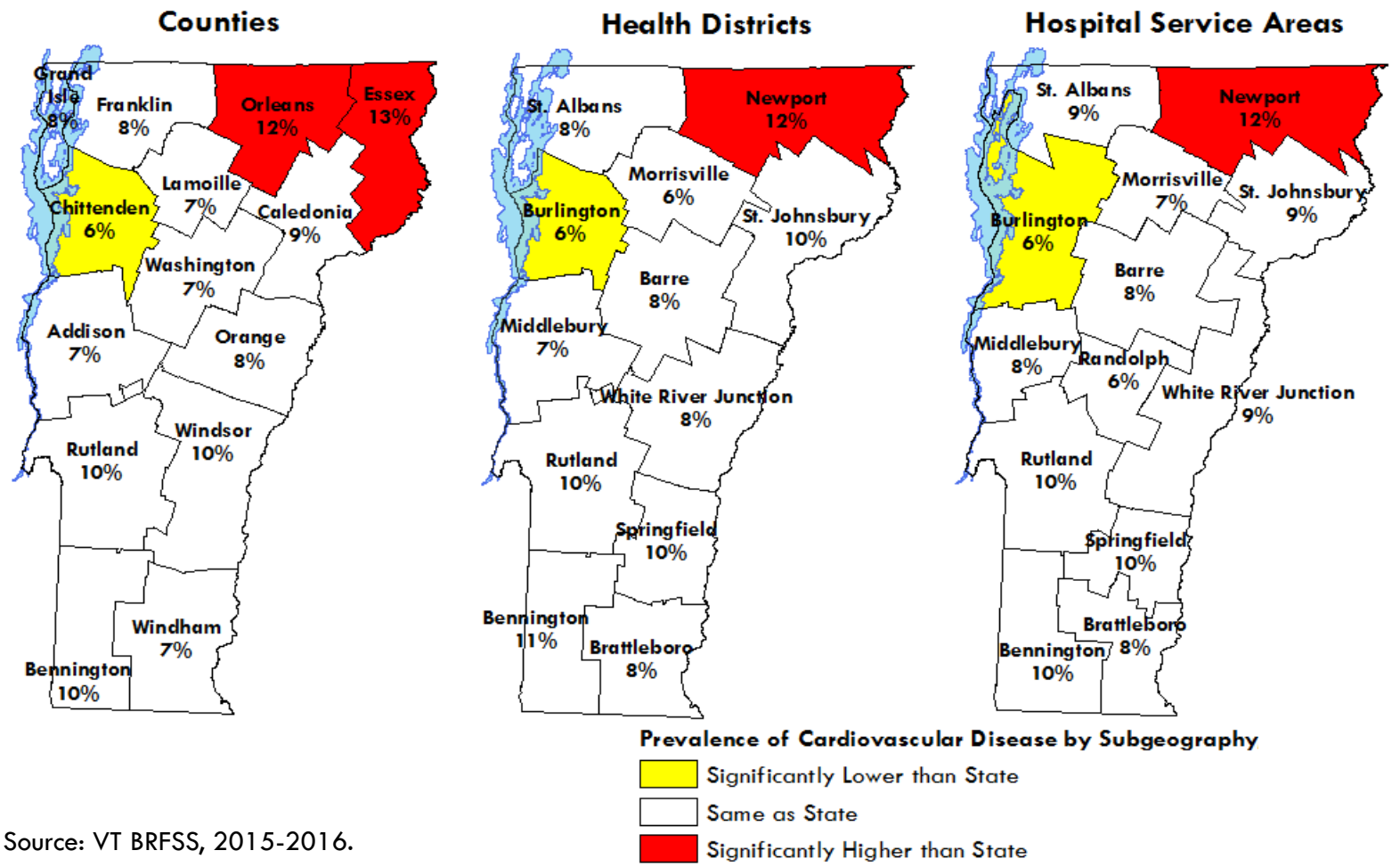
Adults with Cardiovascular Disease

- Eight percent of Vermont adults have been diagnosed with cardiovascular disease (CVD) (approximately (39,500 adults).
  - Vermont adults were about as likely to have CVD when compared to U.S. adults overall.
  - Males were significantly more likely to have CVD than females.
  - The prevalence of CVD significantly increased with advancing age.
  - Those with lower socioeconomic status were significantly more likely to have CVD.

Adult Prevalence of Cardiovascular Disease (CVD), 2016†



Source: VT BRFSS, 2016.



Source: VT BRFSS, 2015-2016.

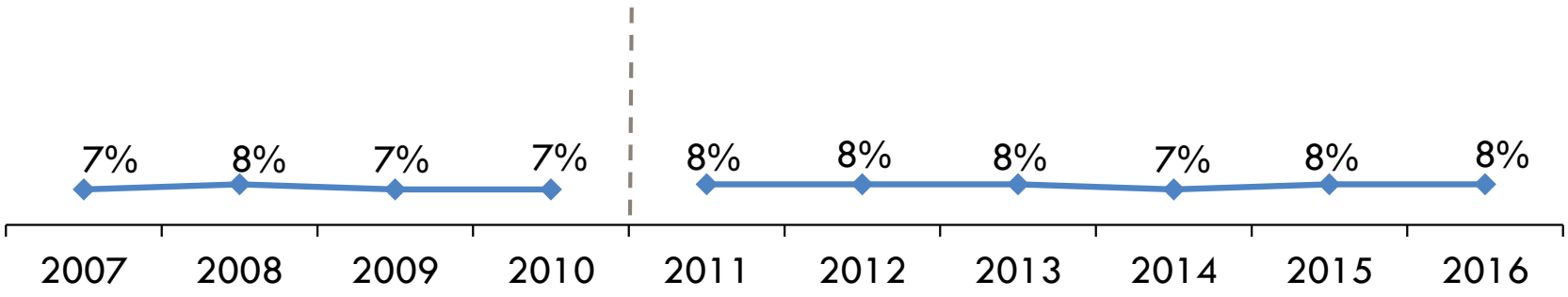
Adult Prevalence of Cardiovascular Disease by Subgeography

Regionally, the northeastern Vermont had significantly higher rates of CVD when compared to the state average.

Adult Prevalence of Cardiovascular Disease†

The prevalence of CVD in Vermont has remained stable and statistically unchanged since 2007. This includes 4% who had been diagnosed with coronary heart disease (CHD), 4% who had a heart attack, and 3% who had a stroke in 2016. The rates of CHD, heart attack, and stroke are also similar to previous years.

Prevalence of Adults with Cardiovascular Disease•

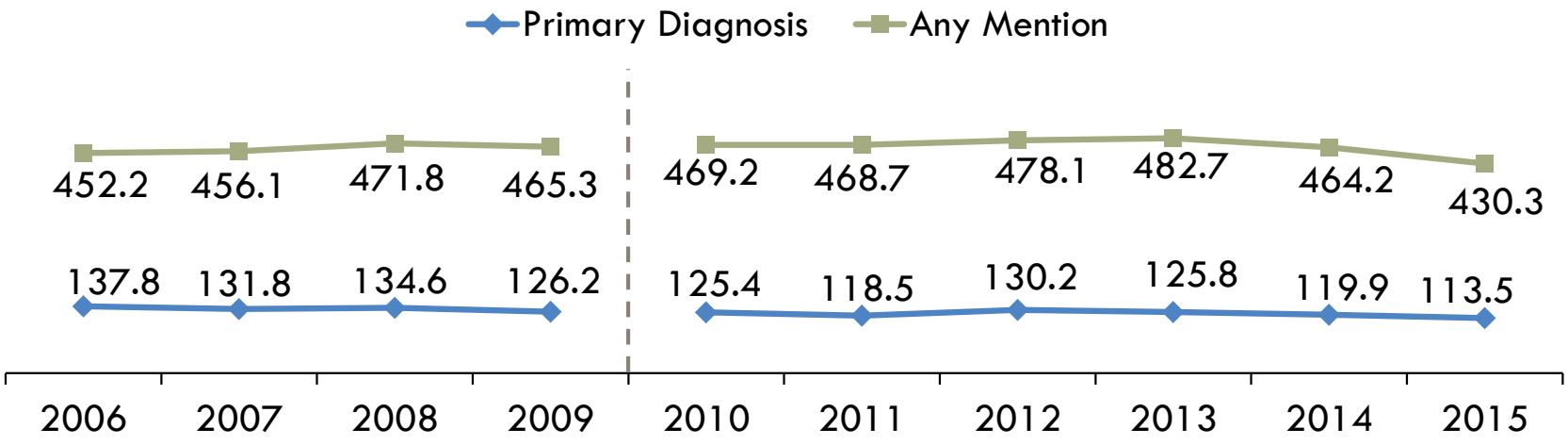


Source: VT BRFSS, 2007-2016.

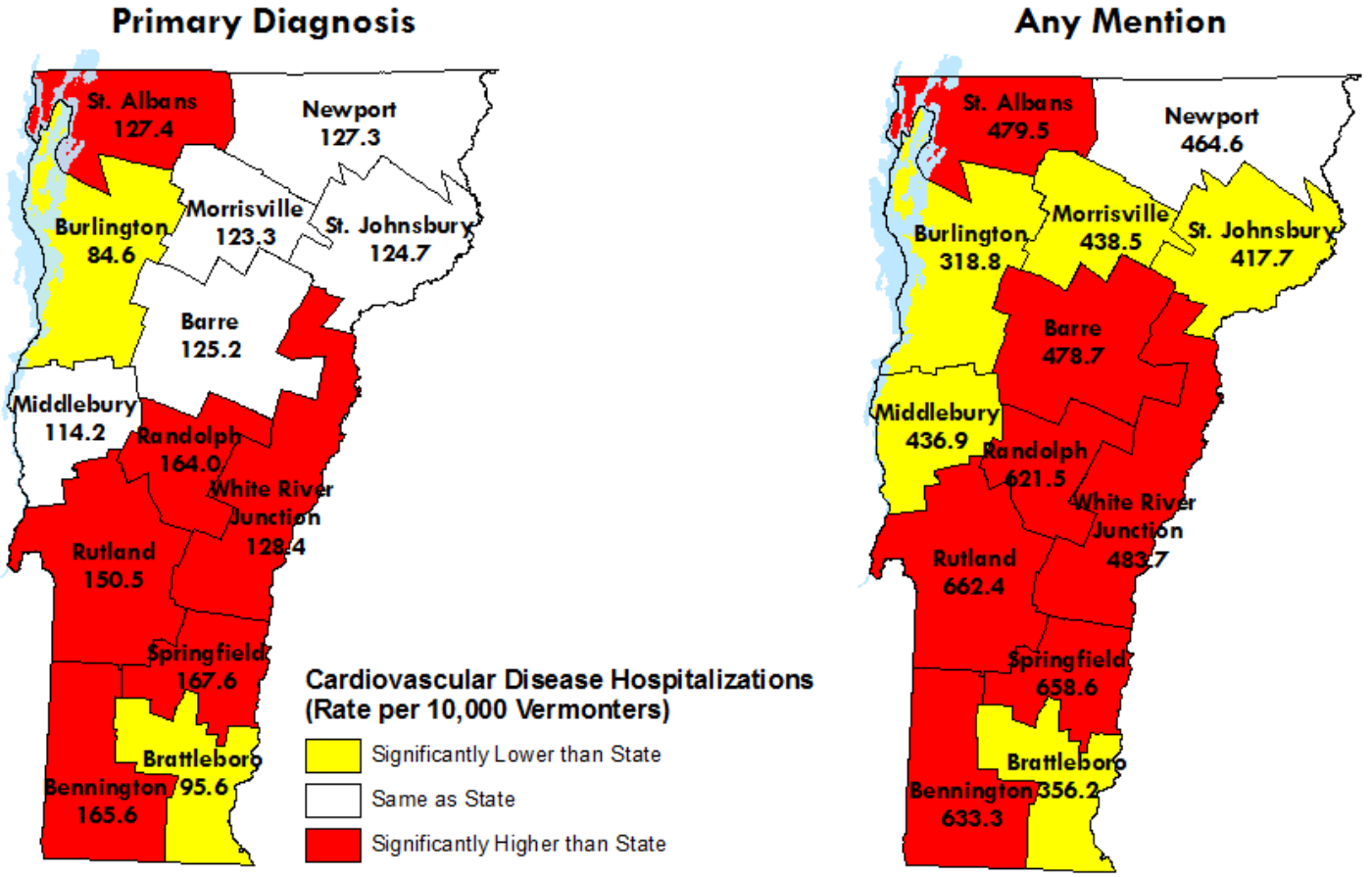
Cardiovascular Disease-Related Hospital Discharges†

- In 2015, there were 113.5 hospital discharges with a primary diagnosis of CVD for every 10,000 Vermonters (7,107 discharges). This demonstrates an improvement from previous years with the rate from 2015 significantly lower than in 2010 and 2014.
- Any mention of CVD as a factor for hospitalization occurred in 430.3 hospital discharges for every 10,000 Vermonters (26,940 discharges) indicating a substantial number of discharges with CVD as a contributing factor. This is significantly lower than in 2011 and 2014.

Hospital Discharge with a CVD Diagnosis (rate per 10,000 Vermonters)



Source: VUHDDS, 2006-2015.¤



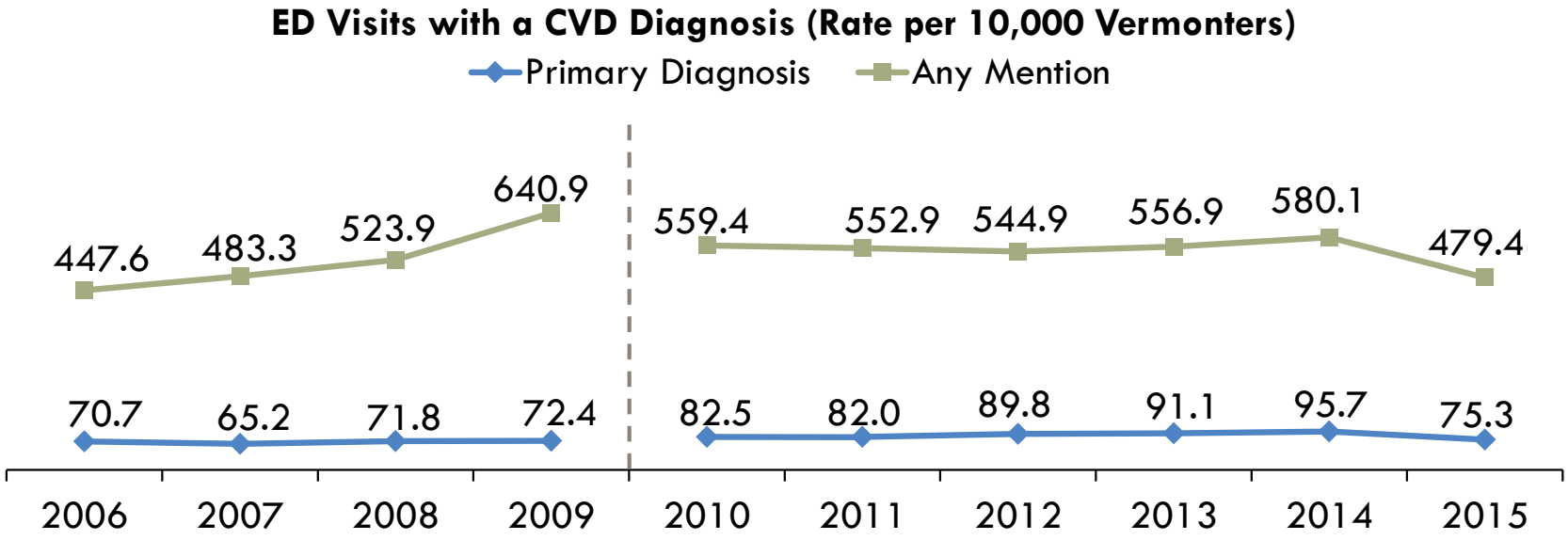
Source: VUHDDS, 2013-2015.¤

CVD-Related Hospital Discharges by Hospital Service Area (HSA)†

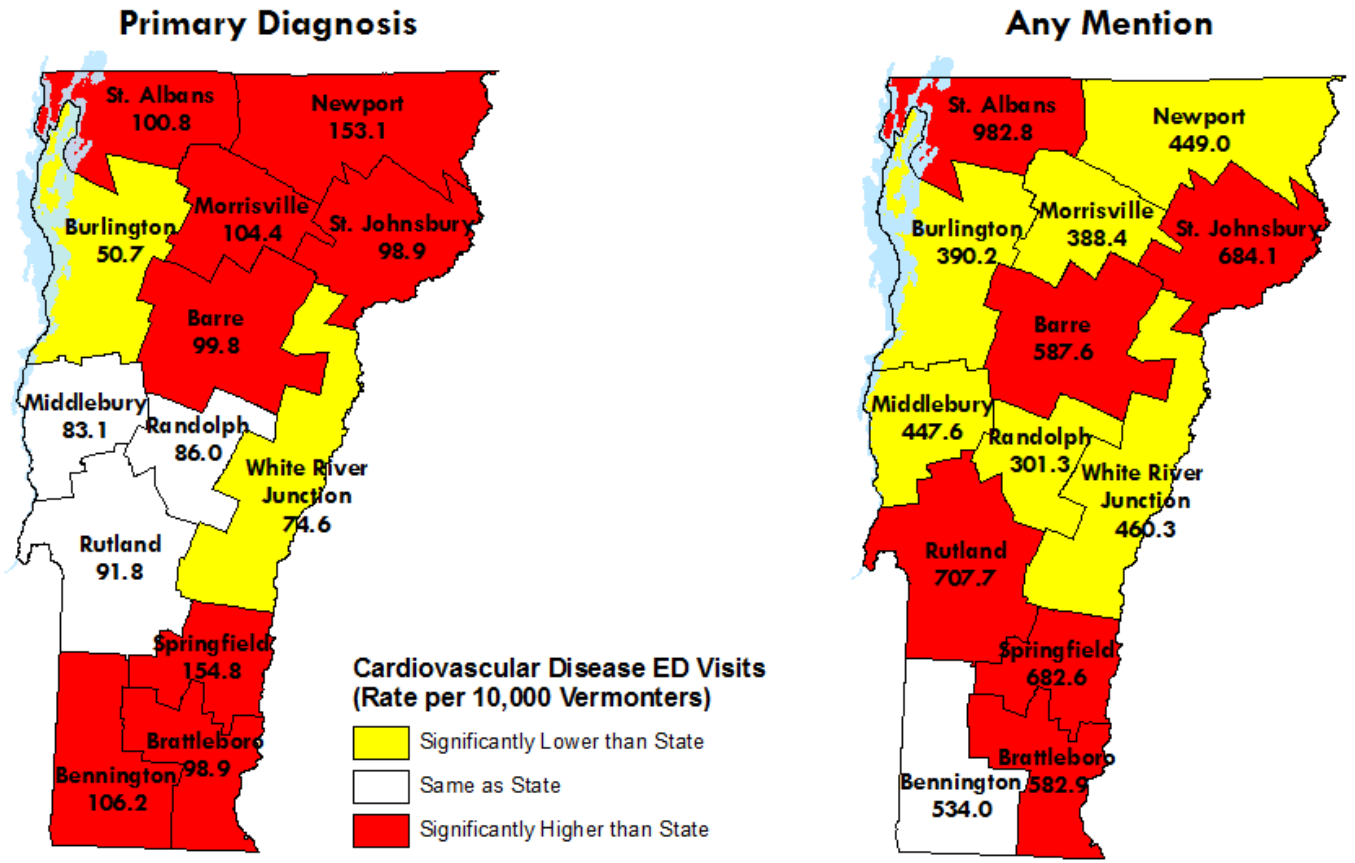
Hospital discharges with a primary diagnosis of CVD were significantly higher than the state average in central and southern Vermont as well as the St. Albans HSA. Any mention of CVD generally mirrored the rate of CVD as a primary diagnosis, with the addition of the Barre HSA as significantly higher than the state average, but was much higher throughout all HSAs while a few HSAs were of lesser significance for any mention.

Cardiovascular Disease-Related Emergency Department Visits†

- There were 75.3 ED visits with a primary diagnosis of CVD for every 10,000 Vermonters (4,716 ED visits). This was significantly lower in 2015 than every year 2010-2014.
- For every 10,000 Vermonters, 479.4 had any mention of CVD during an ED visit (30,014 ED visits). Any mention of CVD during an ED visit significantly decreased from 2014 to 2015 and was significantly lower than all years 2010-2014.
  - The higher rates for any mention of CVD indicates that it is an important contributing factor for ED visits.



Source: VUHDDS, 2006-2015.¤



Source: VUHDDS, 2013-2015.¤

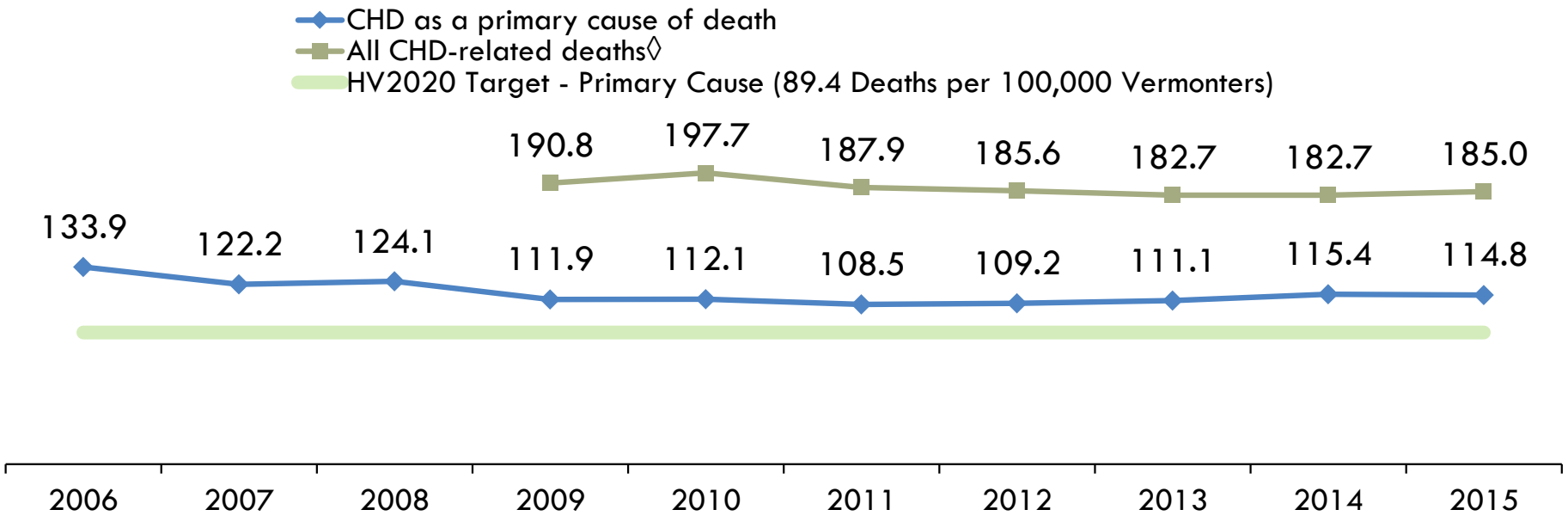
CVD-Related Emergency Department Visits by Hospital Service Area (HSA)†

Northern, northeastern, central, and southern Vermont HSAs had significantly higher rates of ED visits for CVD as a primary diagnosis when compared to the state average. St. Albans, St. Johnsbury, Barre, Springfield, and Brattleboro HSAs remained higher for any mention of CVD during an ED visit, with the addition of Rutland, while Bennington, Morrisville, and Newport were significantly lower.

Coronary Heart Disease-Related Mortality†

- The *all coronary heart disease (CHD)* related mortality for Vermont in 2015 was 185.0 deaths per 100,000 Vermonters.
- CHD deaths as a *primary cause* of death descended from 2006 to 2015. CHD mortality rose from 2012 through 2014 but begun to descend again in 2015.
- In 2015, CHD as a *primary cause* of death (114.8 deaths for every 100,000 Vermonters) was above the Healthy Vermonters 2020 target of 89.4 deaths for every 100,000 Vermonters and the 2009 baseline.

Coronary Heart Disease-Related Mortality (Rate per 100,000 Vermonters)^

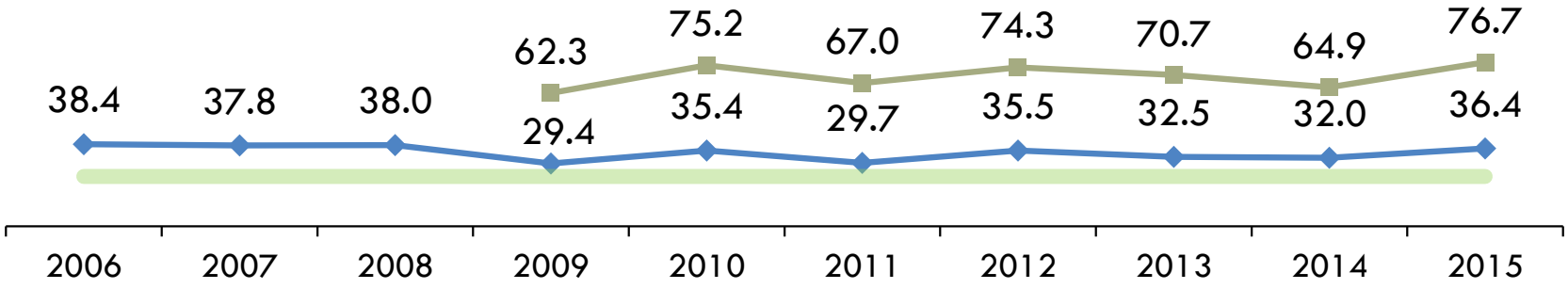


Source: Vermont Vital Statistics, 2006-2015.

Stroke-Related Mortality†

- In 2015, the *all stroke-related* death rate was 76.7 deaths for every 100,000 Vermonters.
- Stroke as a *primary cause* of death was 36.4 per 100,000 Vermonters.
- Overall, stroke as a *primary cause* of death has descended slightly from 2006 through 2015. *All stroke-related* deaths showed the same fluctuations from 2009-2012 and have steadily descended from 2012-2014, with an increase noted in 2015, which follows national trends in stalling progress of previously declining stroke mortality trends reported among states.[1]
- As a *primary cause* of death, stroke is above the Healthy Vermonters 2020 target of 23.4 deaths for every 100,000 Vermonters but below the 2009 baseline.

Stroke-Related Mortality (Rate per 100,000 Vermonters)^



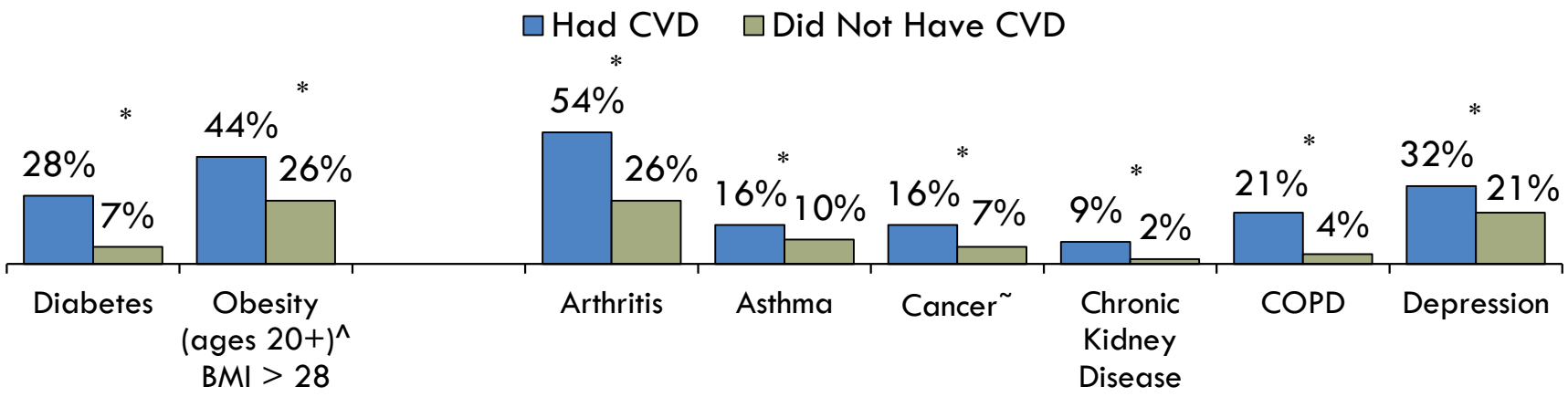
Source: Vermont Vital Statistics, 2006-2015.

[1] CDC. Preventing Stroke Deaths: Progress Stalled. *Vital Signs*. September, 2017.

Chronic Disease Comorbidities for Adults with Cardiovascular Disease

Over two in five (44%) Vermont adults with cardiovascular disease (CVD) were also obese. Almost three in ten (28%) also had diabetes. Over half (54%) of adult Vermonters who had CVD in 2016 also had arthritis. Vermont adults with CVD were significantly more likely to have all of the comorbidities below when compared to adults who did not have diabetes.

Prevalence of Chronic Disease Comorbidities among Adults with Cardiovascular Disease, 2016†

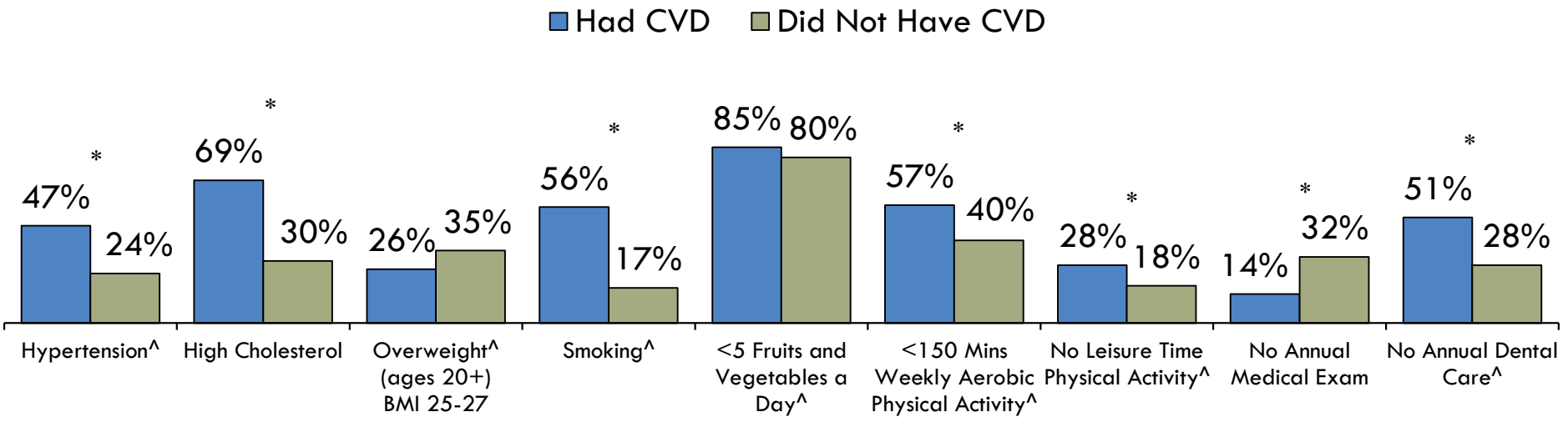


Source: VT BRFSS, 2016.

Adults with Cardiovascular Disease and Chronic Disease Risk Factors

Adults with CVD were significantly more likely to have hypertension, high cholesterol, smoke, not meet weekly physical activity recommendations, participate in no leisure time physical activity, and not receive annual dental care when compared to adults who did not have CVD. Adults who have CVD were significantly less likely to not get an annual medical exam when compared to adults who did not have CVD.

Prevalence of Chronic Disease Risk Factors among Adults with Cardiovascular Disease†



Source: VT BRFSS, 2015 (hypertension, cholesterol, and aerobic physical activity) and 2016 (overweight, smoking, leisure time physical activity, annual medical exam, and dental care).

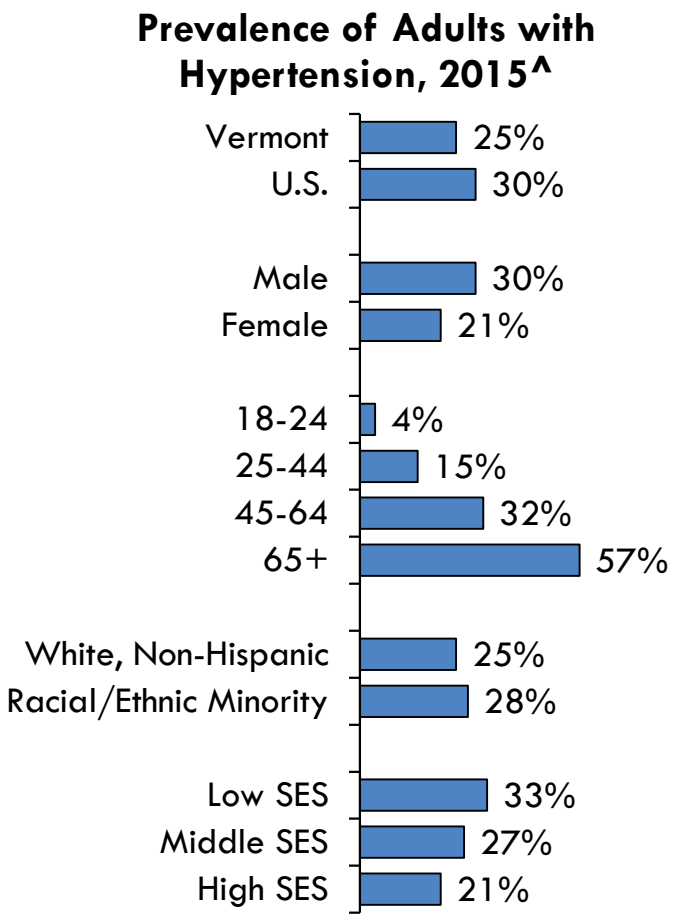
Hypertension

Hypertension

- Blood pressure normally rises and falls throughout the day. If it remains high for a long time, it can cause damage to the heart.[1]
- Having high blood pressure (hypertension) raises the risk for heart disease and stroke, which are leading causes of death in the U.S.[1] and in Vermont.[2]
  - With age, blood vessels become less flexible and increase the pressure throughout the circulatory system. This increases the risk of hypertension with advancing age.[3]
  - Hypertension can further harden the arteries which decreases blood flow, increasing the risk for additional health issues.[1]
- **There are no warning signs or symptoms for hypertension and many people do not know they have it.[1]**
- In November 2017, the American Heart Association and American College of Cardiology released new guidelines for hypertension diagnosis.[4] While important to note, **this does not impact the data presented here**, as all data presented are from before the change in guidelines.

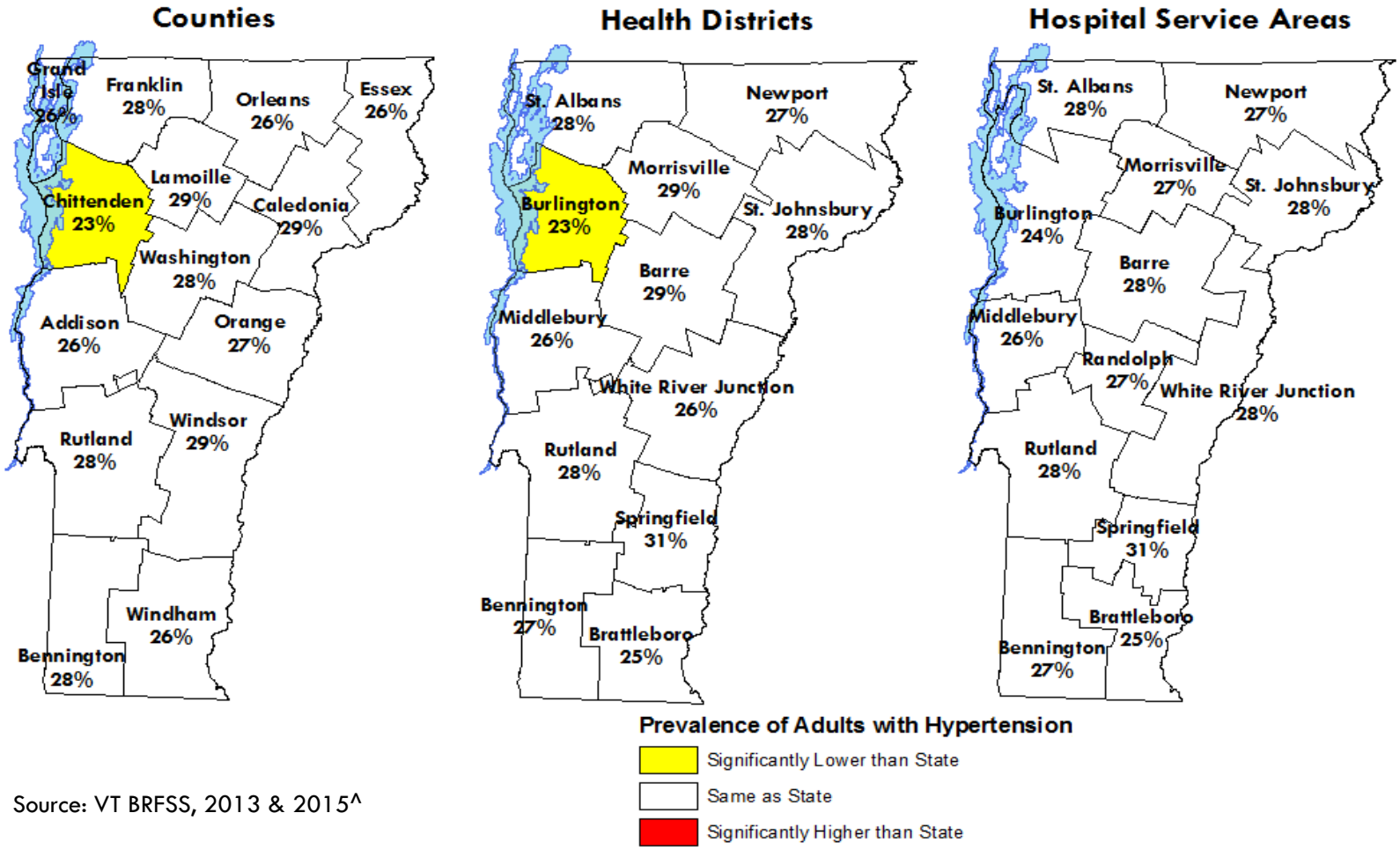
Source: [1]Centers for Disease Control and Prevention, High Blood Pressure, July 7, 2014.
[2]Vermont Vital Statistics, 2015.
[3]American Heart Association, Understand Your Risk for High Blood Pressure, September 4, 2014.
[4]American College of Cardiology/American Heart Association, November 2017.

Adult Vermonters with Hypertension†



- In 2015, 25% of Vermont adults had been diagnosed with hypertension (approximately 147,600 adults).[1]
  - Vermont adults were significantly less likely to have hypertension than U.S. adults overall.
  - Males were significantly more likely than females to have hypertension.
  - The likelihood of hypertension increases significantly with advancing age.
  - The prevalence of hypertension increases significantly with decreasing socioeconomic status.
- Up to 1 in 5 adults may have hypertension and not know it.[2] This means, approximately 71,700 additional Vermont adults may have hypertension and not be aware of it.

Source: [1]VT BRFSS, 2015.
[2] Centers for Disease Control and Prevention. 2012. *MMWR*; 61(35):703-709.



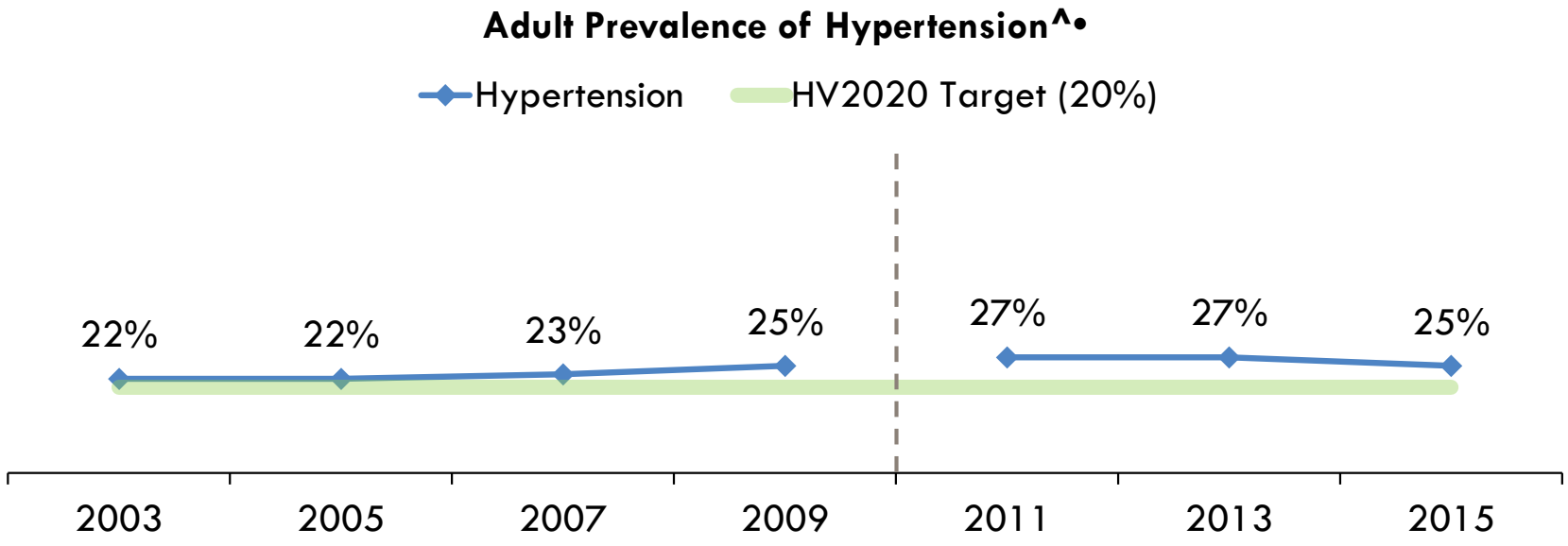
Source: VT BRFSS, 2013 & 2015^

Adult Rates of Hypertension by Subgeography†

Regionally, rates of hypertension in Chittenden county and the Burlington health district were significantly lower than the state average rate (25%). All other regions showed rates statistically similar to the state average.

Adult Prevalence of Hypertension†

The prevalence of hypertension in Vermont has remained statistically unchanged since 2003. The prevalence of hypertension is above the Healthy Vermonters 2020 target of 20% and at the 2009 baseline.

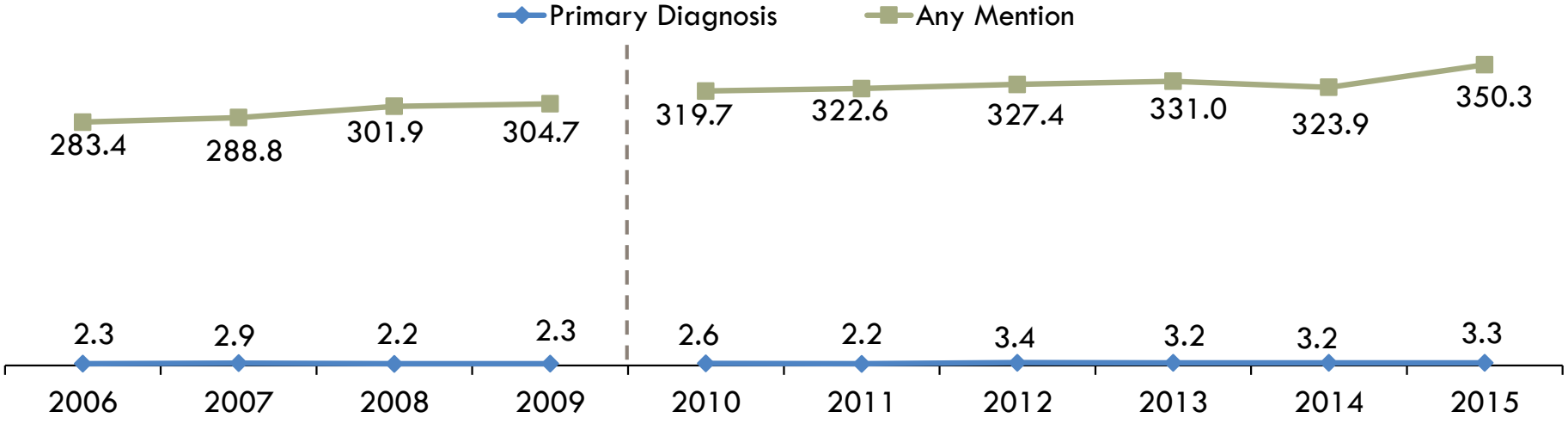


Source: VT BRFSS, 2003-2015.

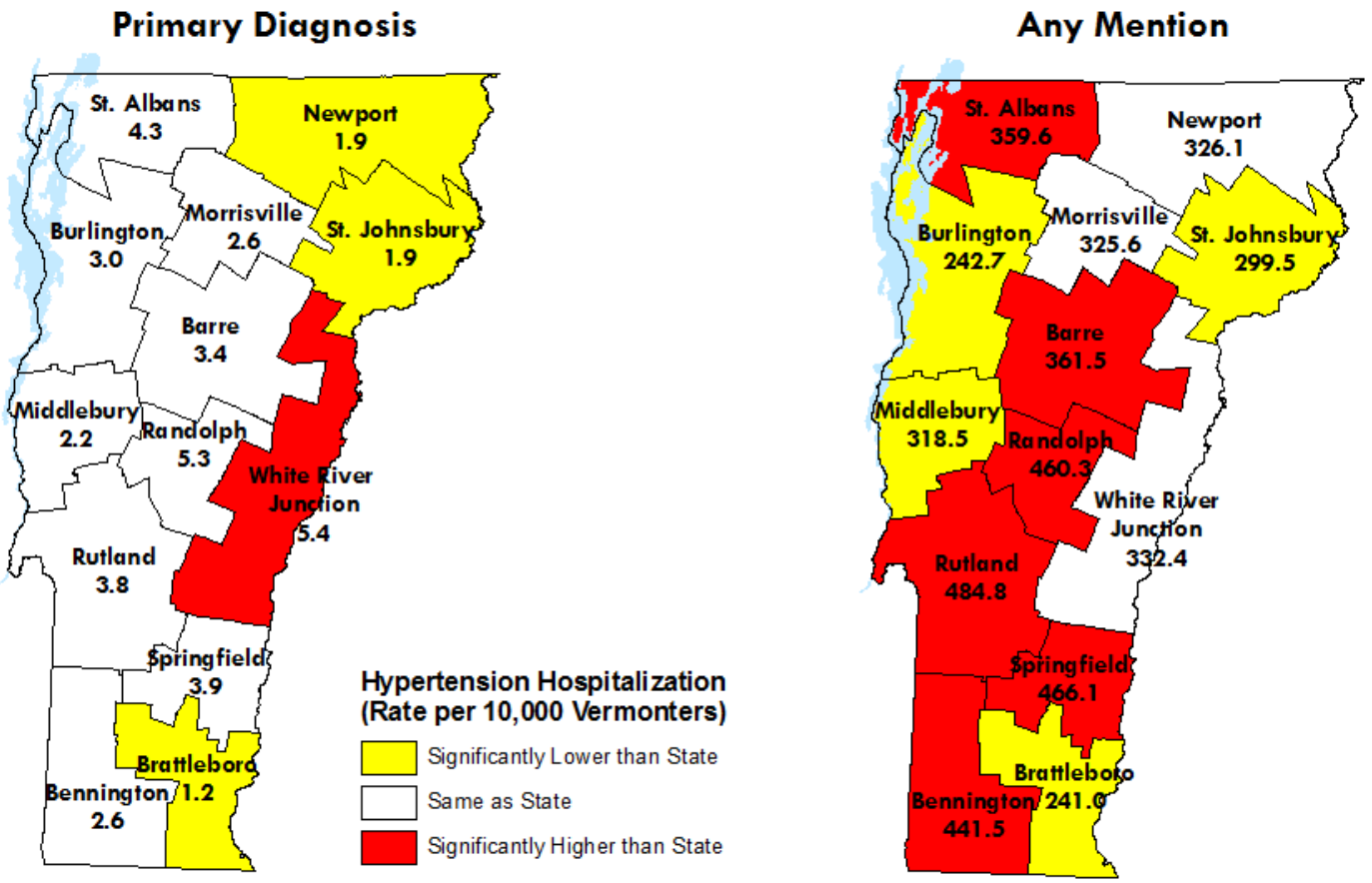
Hypertension-Related Hospital Discharges†

- In 2015, there were 3.3 hospital discharges with a primary diagnosis of hypertension for every 10,000 Vermonters (207 discharges).
- Any mention of hypertension as a factor for hospitalization occurred in 350.3 hospital discharges for every 10,000 Vermonters (21,933 discharges), indicating hypertension is a common contributing factor for hospitalization.
- There were no statistically significant changes from 2010 to 2015 in the trend for hypertension as a primary diagnosis. Any mention of hypertension during hospitalization increased significantly from 2010 to 2015 and 2014 to 2015.

Hospital Discharges with a Diagnosis of Hypertension (rate per 10,000 Vermonters)



Source: VUHDDS, 2006-2015.¤



Source: VUHDDS, 2013-2015.¤

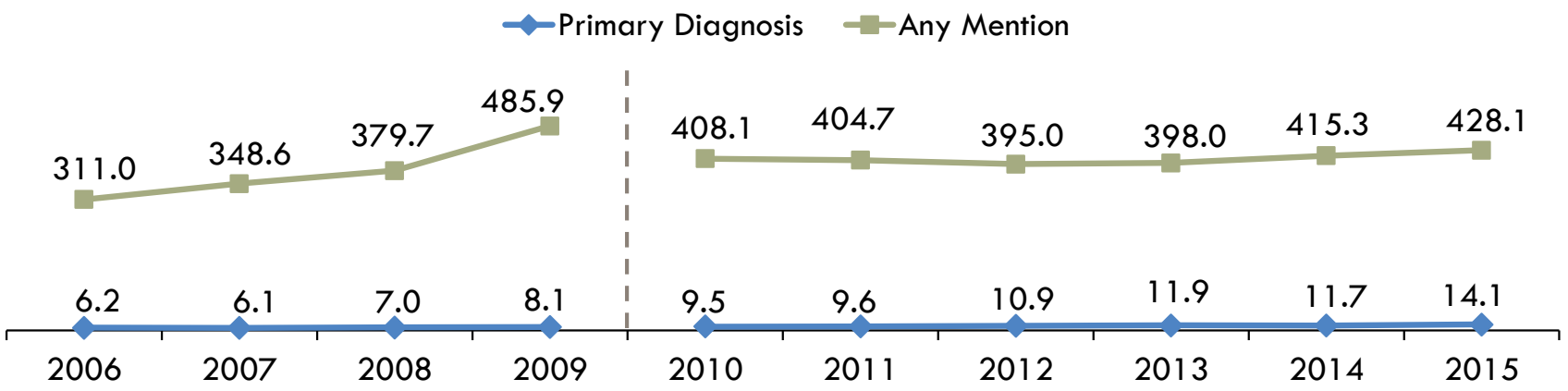
Hypertension-Related Hospital Discharges by Hospital Service Area (HSA)†

The White River Junction HSA was significantly higher than the state average for hypertension as a primary diagnosis for hospitalization. For any mention of hypertension, the St. Albans, Barre, Randolph, Rutland, Springfield, and Bennington HSAs were significantly higher than the state average, while White River Junction was of lesser significance.

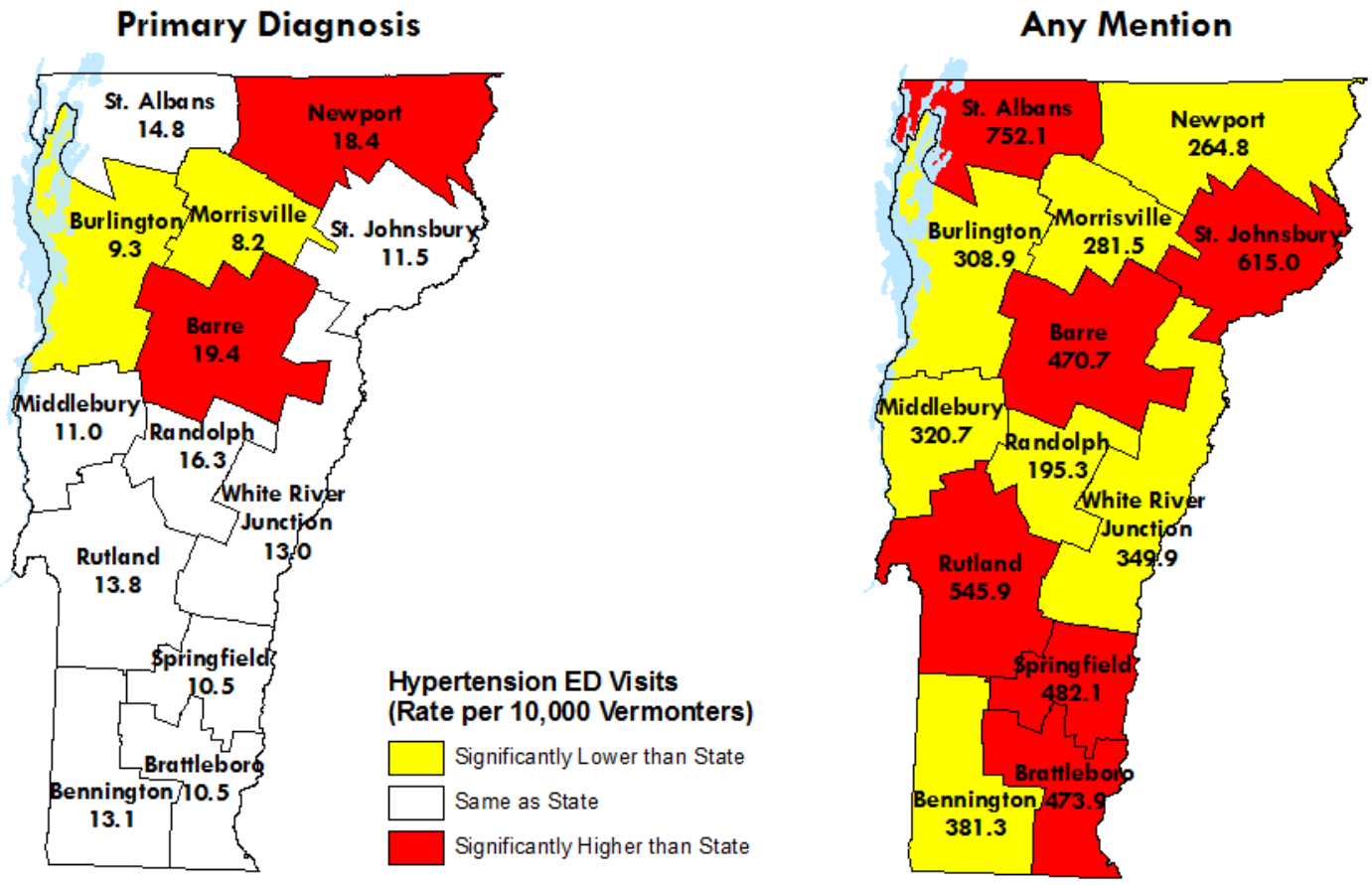
Hypertension-Related Emergency Department Visits†

- In 2015, there were 14.1 ED visits with a primary diagnosis of hypertension for every 10,000 Vermonters (882 ED visits).
- For every 10,000 Vermonters, 428.1 had any mention of hypertension during an ED visit (26,802 ED visits), indicating hypertension is a common contributing factor for ED visits among Vermont residents.
- As a primary diagnosis for an ED visit, hypertension significantly increased form 2014 to 2015. Any mention of hypertension during an ED visit significantly increased from 2010 to 2015 and 2014 to 2015.

ED Visits with a Diagnosis of Hypertension (rate per 10,000 Vermonters)



Source: VUHDDS, 2006-2015.¤



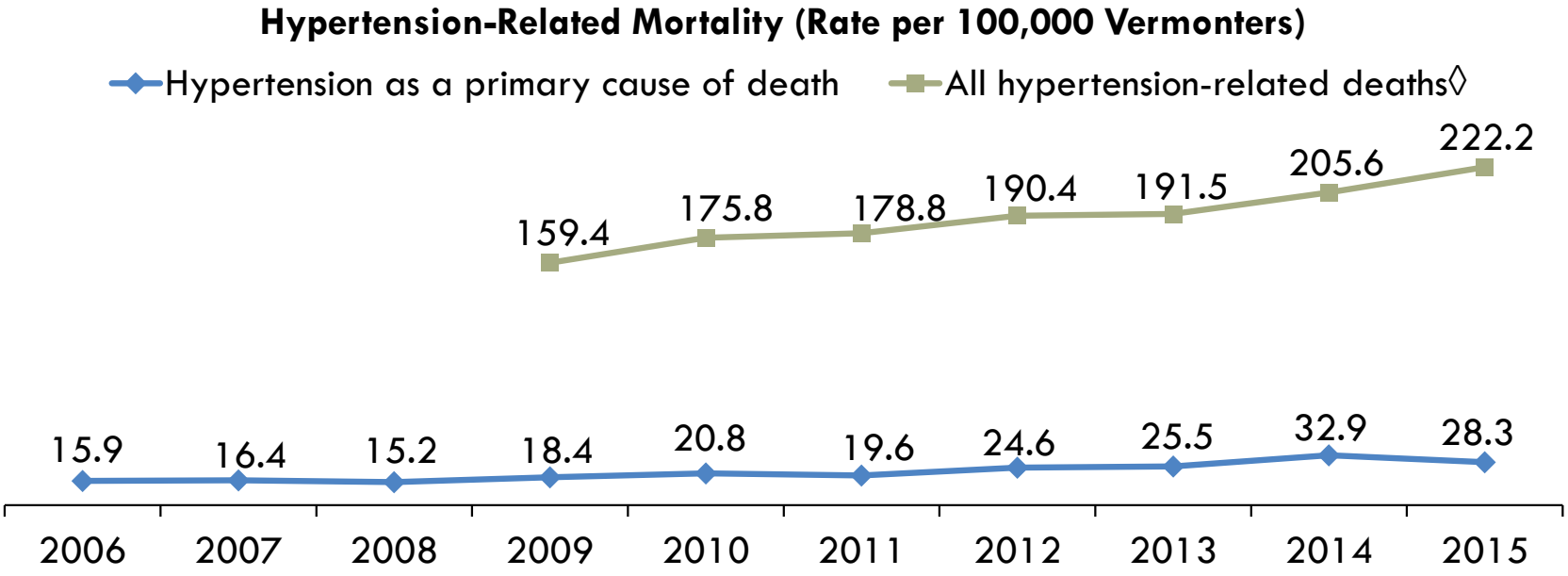
Source: VUHDDS, 2013-2015.^¤

Hypertension-Related Emergency Department Visits by Hospital Service Area (HSA)†

Regionally, the Newport and Barre HSAs had significantly higher rates of ED visits with a primary diagnosis of hypertension compared to the state average while Burlington and Morrisville were consistently lower. For any mention of hypertension, Barre remained higher than the state average while Newport was lower. St. Albans, St. Johnsbury, Rutland, Springfield and Brattleboro were also significantly higher.

Hypertension-Related Mortality†

- Hypertension as a *primary cause* of death in 2015 (28.3 deaths per hundred thousand Vermonters) remains low in Vermont.
- *All hypertension related* deaths has increased from 2009-2015 indicating hypertension as a contributing factor for mortality is increasing, potentially driving an increase in all hypertension-related deaths.

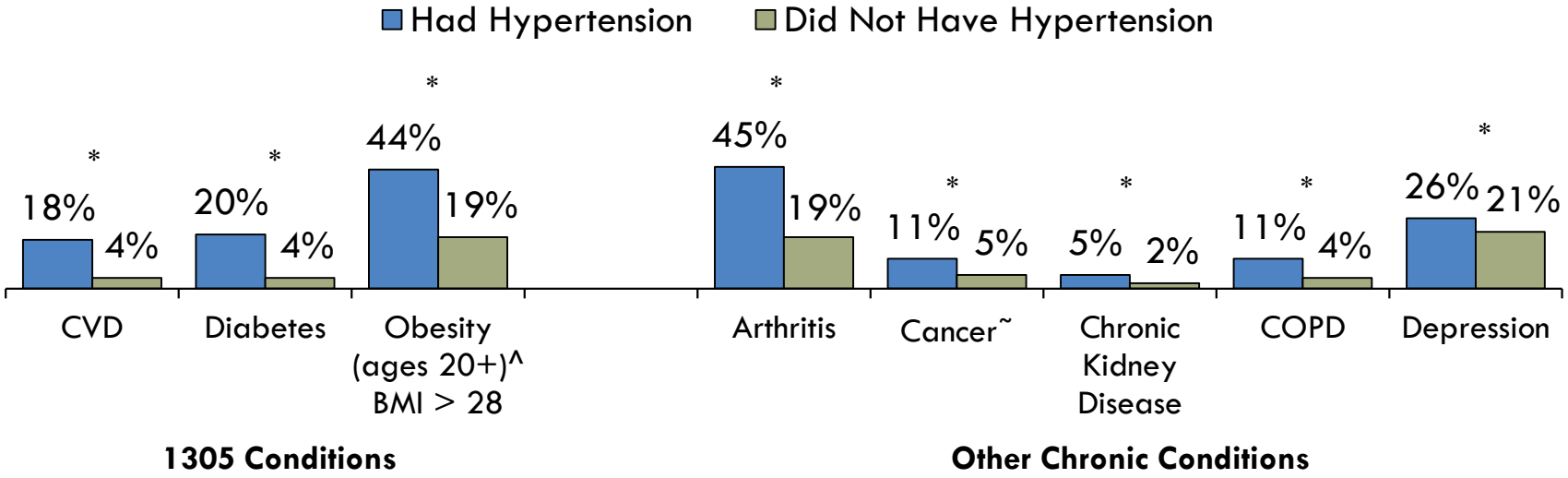


Source: Vermont Vital Statistics, 2006-2015.

Chronic Disease Comorbidities for Adults with Hypertension†

Close to half of Vermont adults who had hypertension were also obese (44%); less than half as many also had CVD (18%) or diabetes (20%). Close to half of all Vermont adults with hypertension also had arthritis (45%). Adults with hypertension were significantly more likely to have arthritis, cancer, COPD, chronic kidney disease, CVD, depression, diabetes, or be obese than adults who did not have hypertension. There was no significant difference in the prevalence of asthma (data not shown) between adults who had and did not have hypertension.

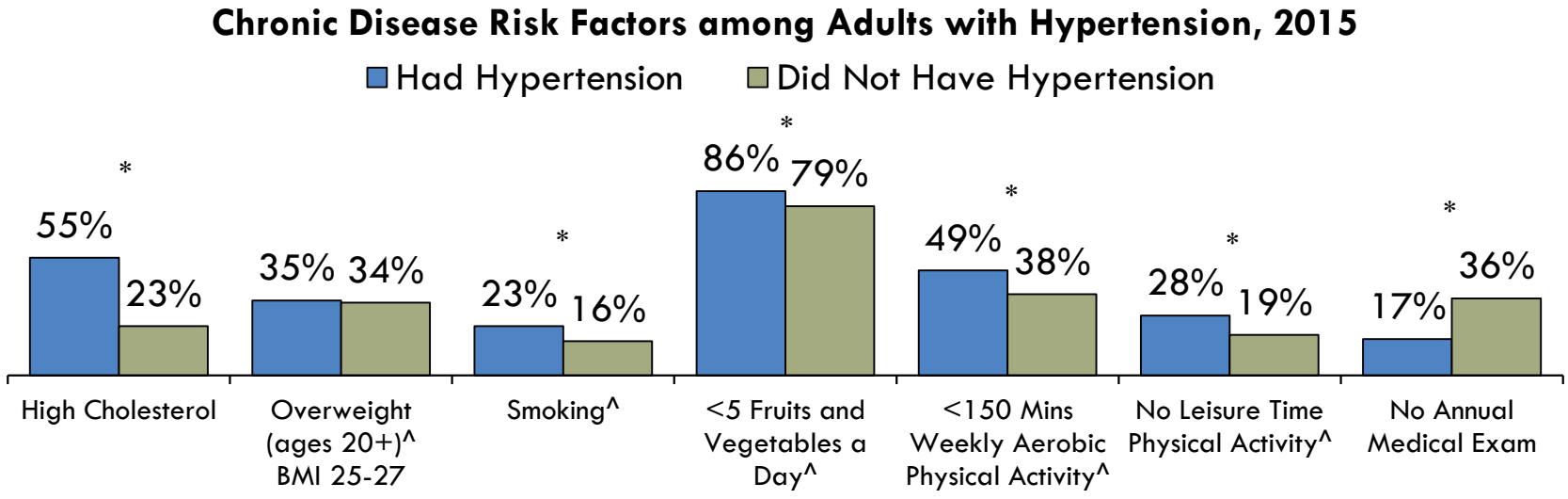
Prevalence of Comorbid Chronic Diseases among Adults with Hypertension, 2015



Source: VT BRFSS, 2015.

Adults with Hypertension and Other Chronic Disease Risk Factors†

Vermont adults with hypertension were significantly more likely to have high cholesterol, smoke, consume less than 5 fruits or vegetables a day, not meet weekly physical activity recommendations, or participate in no leisure time physical activity when compared to adults who did not have hypertension. Adults with hypertension were more likely to get an annual medical exam than those who did not have hypertension.

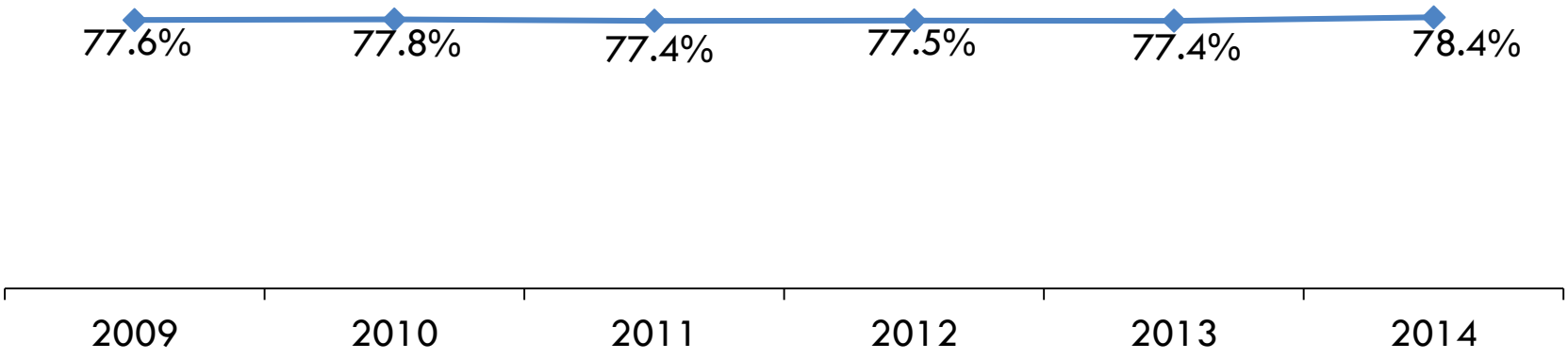


Source: VT BRFSS, 2015.

Antihypertensive Medication Adherence

Medication adherence is measured using "proportion of days covered" (PDC). PDC refers to the proportion of days an insured person has medication in relation to the number of days they should have it from their first prescription date through the end of the calendar year. In 2014, close to one in eight (78%) Vermont adults 18-64 who were continuously enrolled in a prescription drug benefit plan during the year were at least 80% adherent to their blood pressure medication regimen. Adherence rates were statistically similar between commercial and Medicaid claims from 2009 to 2014.

Proportion of Insured Vermont Adults 18-64 With Hypertension Who Are At Least 80% Adherent with their Antihypertensive Medication Regimens



Source: VHCURES, 2009-2014.

Obesity

Obesity

- A body weight that is **excessively high** in relation to height is known as obesity.
- Obesity is a complex health issue resulting from several behavioral and genetic factors.
  - Behaviors such as dietary patterns, level of physical activity, and use of medications can increase the risk of obesity.
  - Contributing societal factors include the nutrition and physical activity environment (e.g. supermarket within 5 miles, walkable community), education and skills, and food marketing/promotion.
- Obesity is associated with poorer mental health outcomes, reduced quality of life, and numerous chronic health conditions that are the leading causes of death in the U.S. and worldwide including diabetes, heart disease, stroke, and some cancers.
- Obesity is a leading cause of preventable death in the U.S.

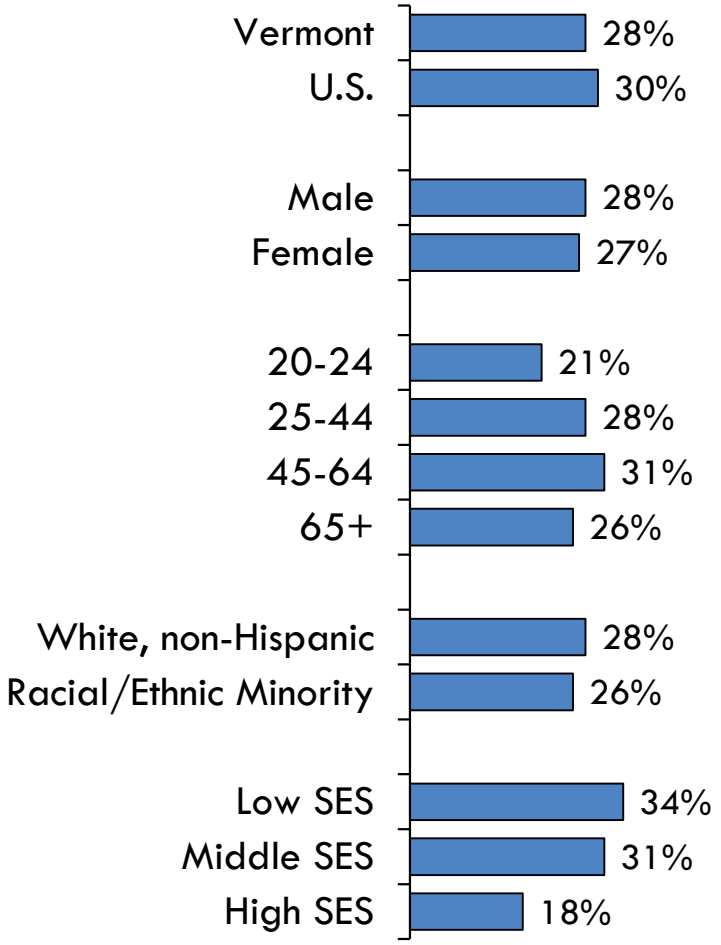
Source: Centers for Disease Control and Prevention, Adult Obesity Causes & Consequences, March 5, 2018.

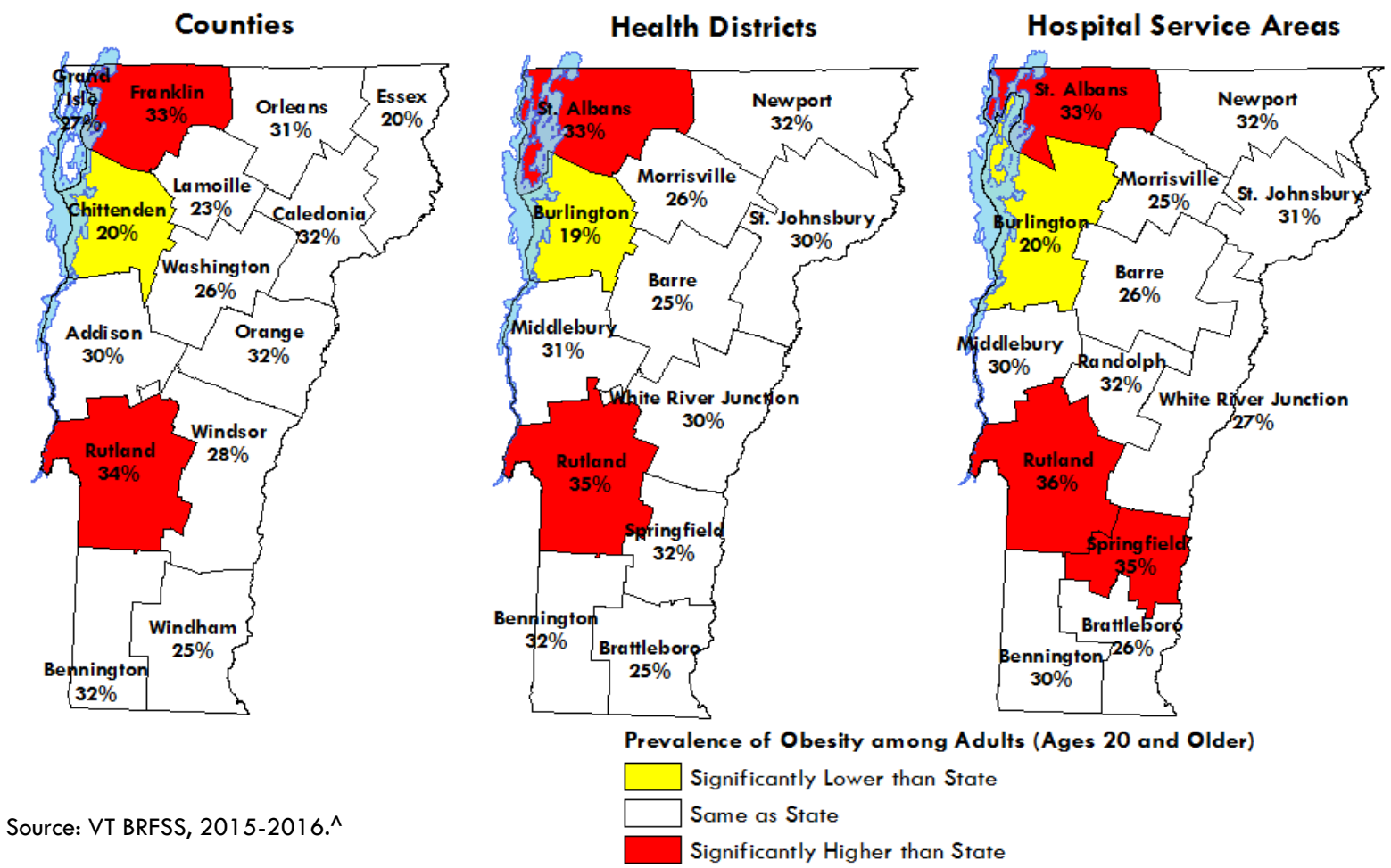
Obesity among Adults 20 Years and Older†

- About three in ten (28%) Vermont adults were obese (approximately 125,700 adults).
  - Vermont adults were significantly less likely to be obese than U.S. adults overall.
  - The prevalence of obesity increases with decreasing socioeconomic status. Adults living at a low SES were more likely to be obese than those living at a higher SES.

Source: VT BRFSS, 2016

Adults (ages 20+) Who Are Obese, 2016^





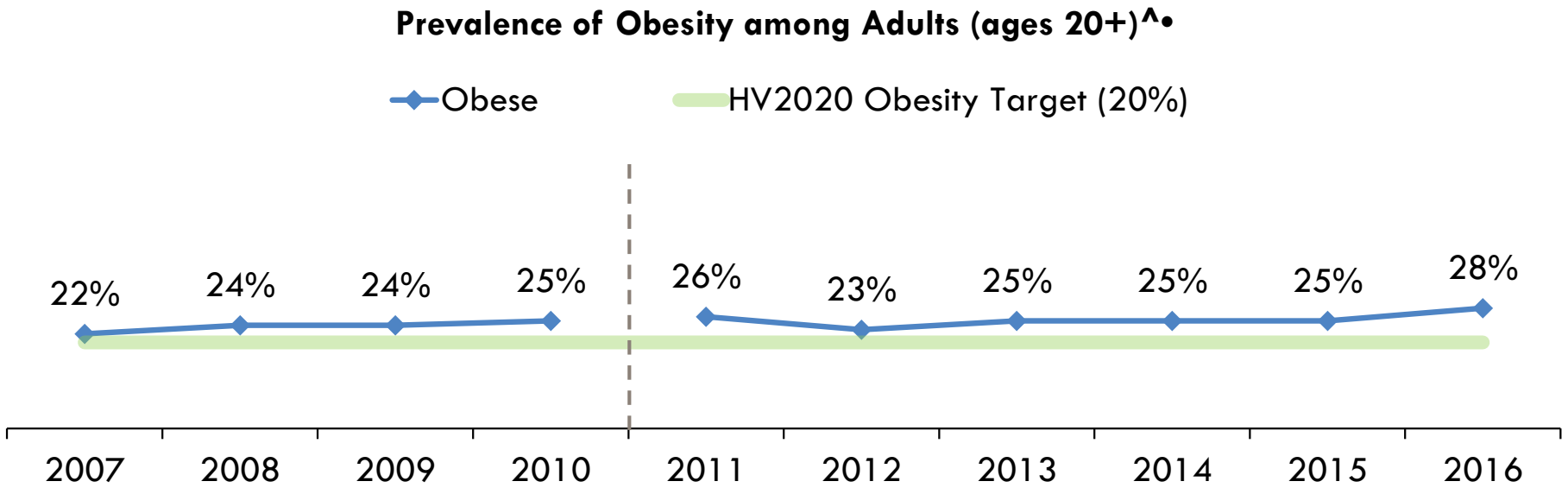
Source: VT BRFSS, 2015-2016.^

Adult Prevalence of Obesity by Subgeography†

Regionally, areas near Rutland and Franklin counties, as well as the Springfield hospital service area (HSA) tend to have obesity rates higher than the average state prevalence of obesity among Vermont adults ages 20+ (28%).

Adult Prevalence of Obesity†

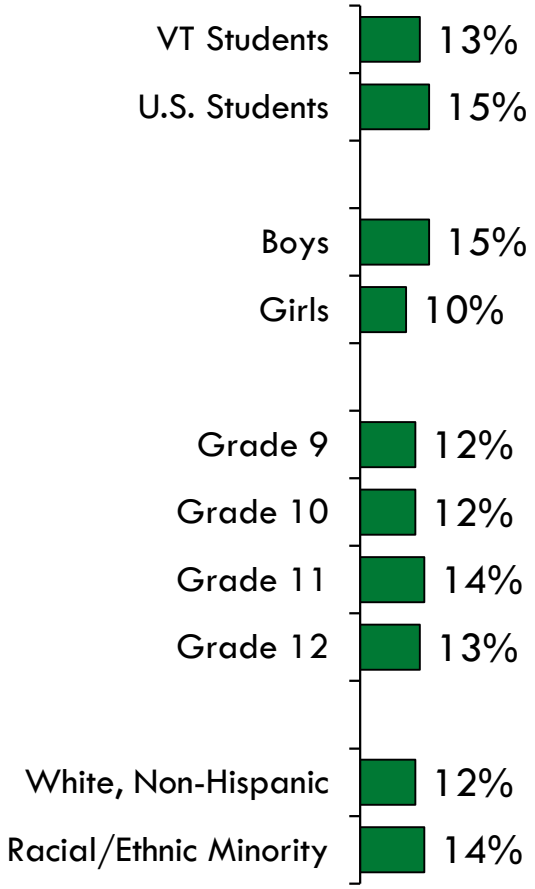
Though the prevalence of obesity increased from 2015 to 2016, the prevalence of obesity among Vermont adults shows no statistically significant changes from 2007 through 2016. The rate of obesity remains above the HV2020 target of 20%.



Source: VT BRFSS, 2007-2016.

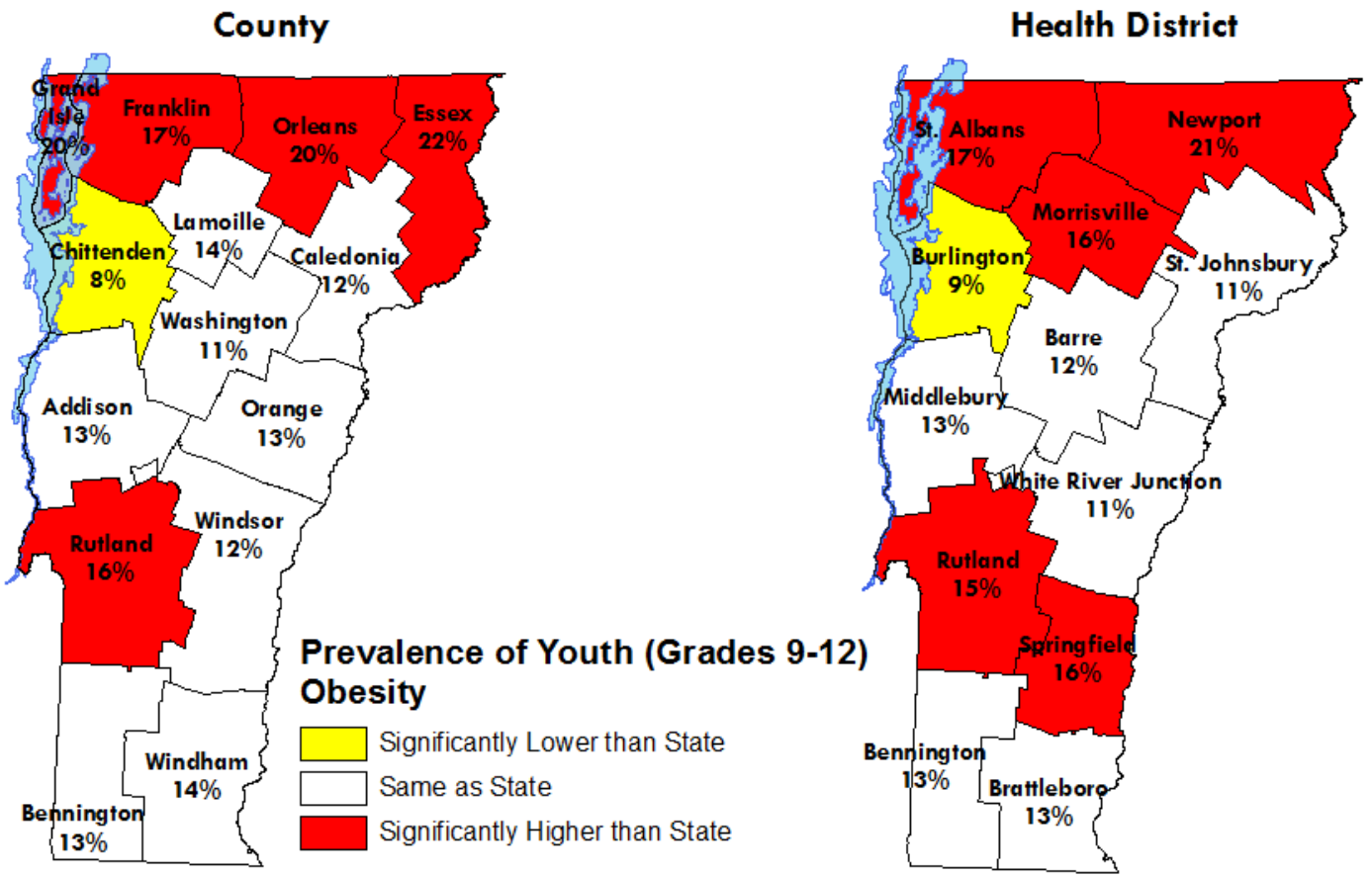
Obesity Among Youth in Grades 9-12†

Prevalence of Obese Youth in Grades 9-12, 2017§



- One in eight (13%) Vermont youth in grades 9-12 were obese (approximately 3,100 students).
  - Vermont high school students were significantly less likely than U.S. high school students to be obese.
  - Boys were significantly more likely than girls to be obese.

Source: VT YRBS, 2017.



Source: VT YRBS, 2017.

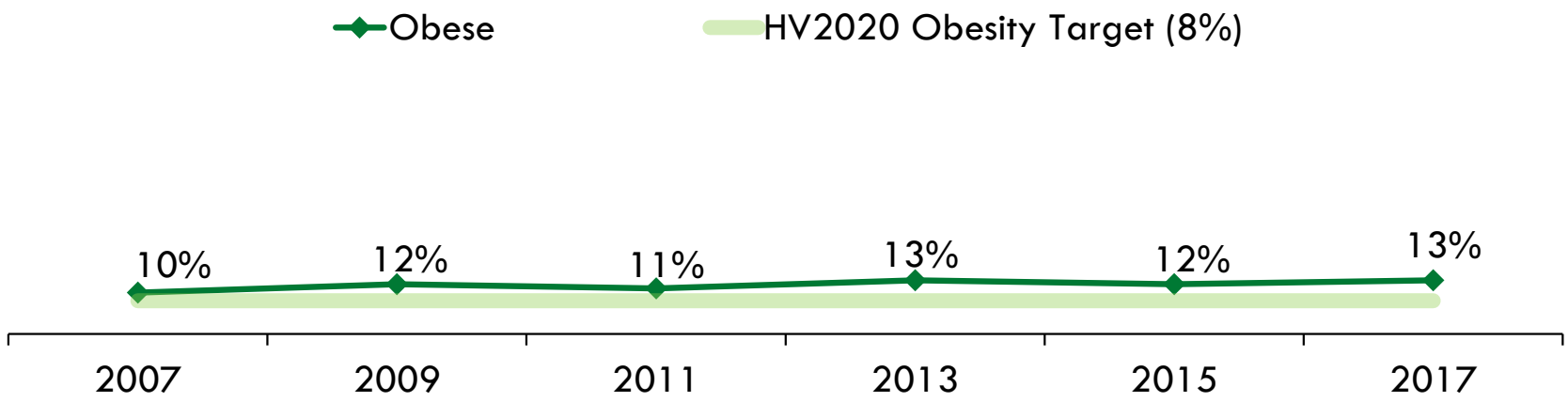
Youth (Grades 9-12) Prevalence of Obesity by Subgeography

Regionally, northern Vermont youth (grades 9-12) had significantly higher rates of obesity when compared to the state average. Additionally, Rutland county and the Rutland and Springfield health districts were higher than the state average.

Prevalence of Obesity among Youth in Grades 9-12†

The prevalence of obesity among Vermont youth grades in 9-12 has not changed significantly from 2007 to 2017. The prevalence of obesity among Vermont youth remains above the Healthy Vermonters 2020 target of 8%.

Prevalence of Youth Grades in 9-12 who are Obese§



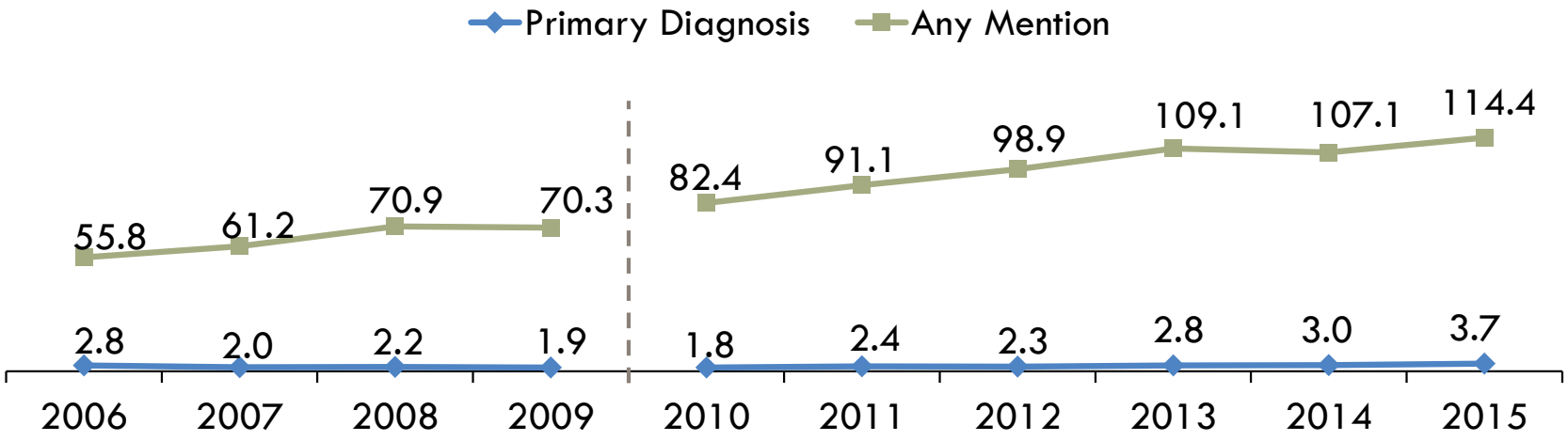
Source: VT YRBS, 2007-2017.

Obesity-Related Hospital Discharges†

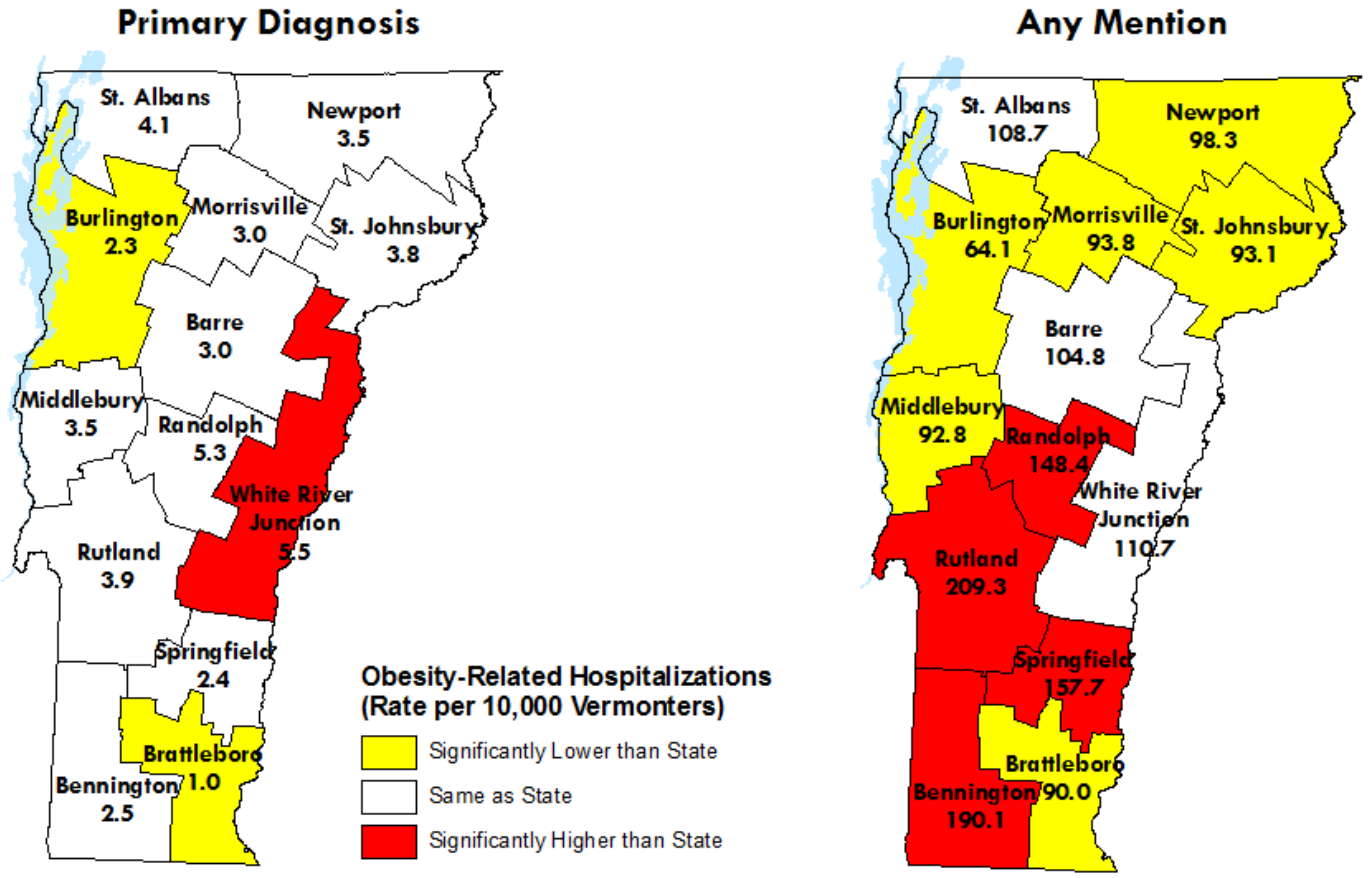
In 2015, there were 3.7 hospital discharges with a primary diagnosis of obesity for every 10,000 Vermonters (230 discharges). The trend for obesity as a primary cause of hospitalization significantly increased from 2010 to 2015 but was similar from 2014 to 2015. Any mention of obesity as a factor for hospitalization occurred in 114.4 hospital discharges for every 10,000 Vermonters (7,159 discharges). This is significantly higher than in previous years.

VDH Program experts believe the increases in obesity-related hospitalizations is not necessarily indicative of an emergent ascending trend but better detection in healthcare encounters due to more detailed coding practices, reflecting the growing appreciation of obesity as a gateway to other chronic conditions.

Hospital Discharges with an Obesity Diagnosis (per 10,000 Vermonters)



Source: VUHDDS, 2006-2015.¤



Source: VUHDDS, 2013-2015.¤

Obesity-Related Hospital Discharges by Hospital Service Area (HSA)†

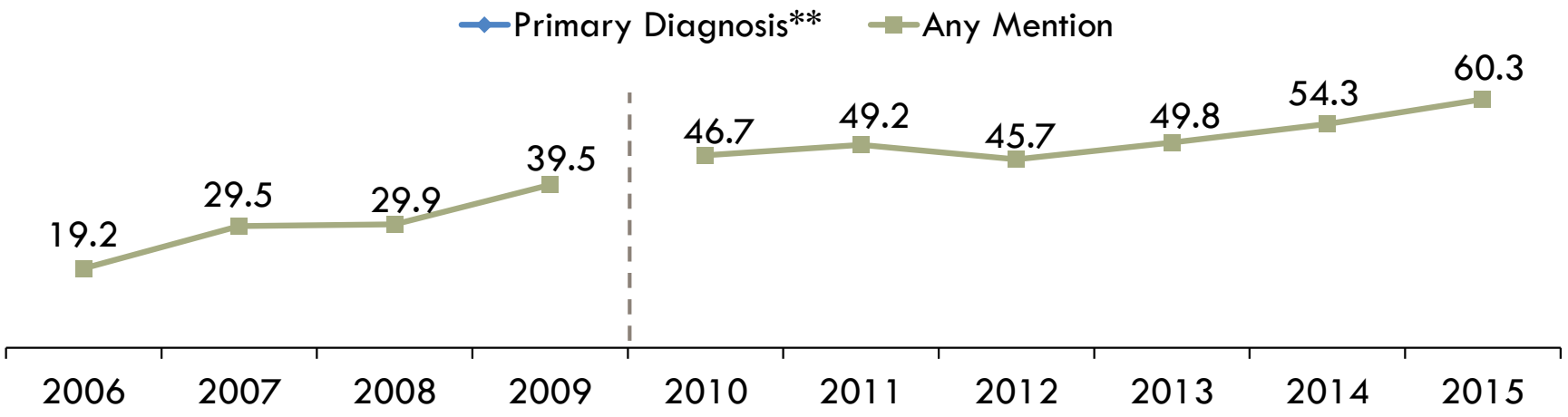
The White River Junction hospital service area (HSA) had a significantly higher rate of obesity as a primary cause for hospitalization compared to the state average. Any mention of obesity was significantly higher in the Randolph, Rutland, Springfield, and Bennington HSAs when compared to the state average.

Obesity-Related Emergency Department Visits†

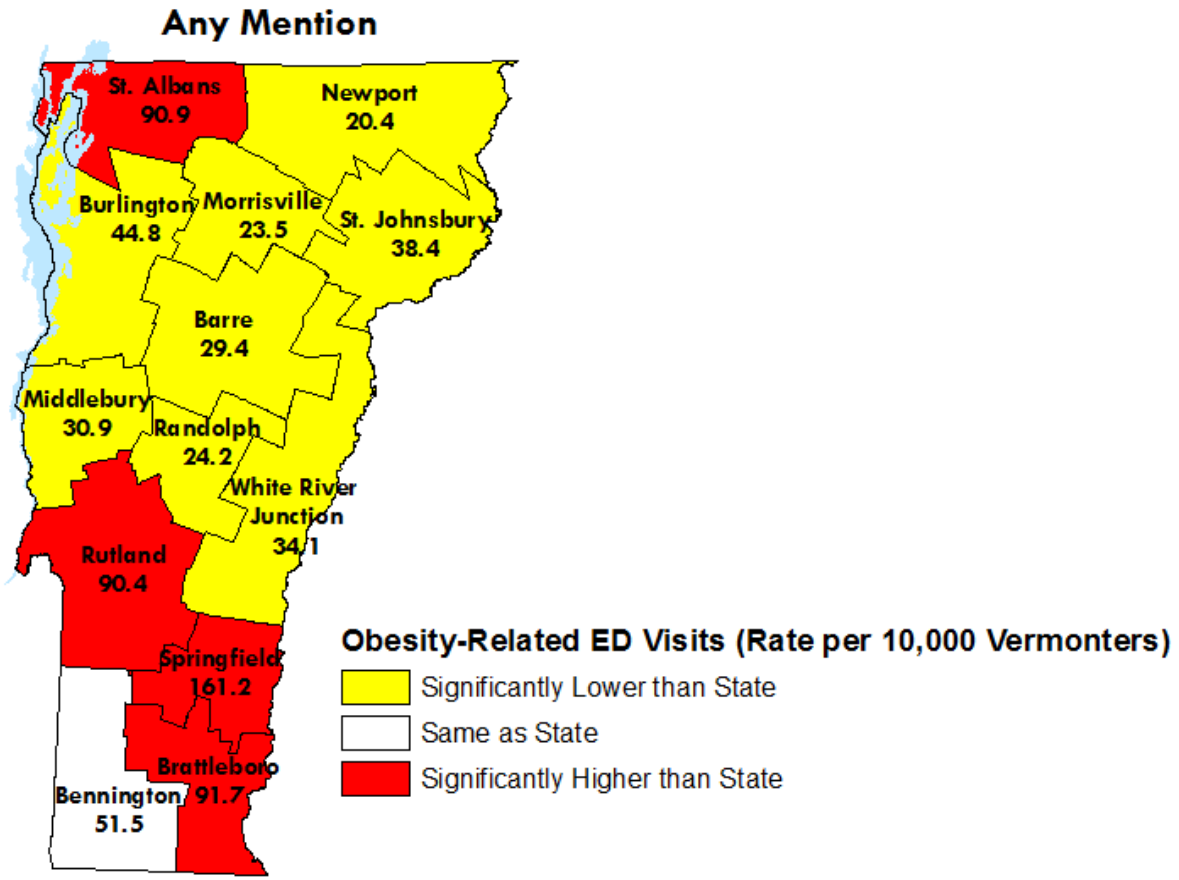
In 2015, 60.3 out of every 10,000 Vermont residents visited an ED with a health condition where obesity was mentioned (3,775 ED visits). ED visits with any mention of obesity have risen steadily from 2006 to 2015, with a statistically significant increase from 2014 to 2015. Obesity was very rarely diagnosed as a primary cause for ED visits and the total number of visits did not meet the reporting threshold.

VDH Program experts believe the increases in obesity-related hospitalizations is not necessarily indicative of an emergent ascending trend but better detection in healthcare encounters due to more detailed coding practices, reflecting the growing appreciation of obesity as a gateway to other chronic conditions.

ED Visits with Any Mention of Obesity (Rate per 10,000 Vermonters)



Source: VUHDDS, 2006-2015.¤



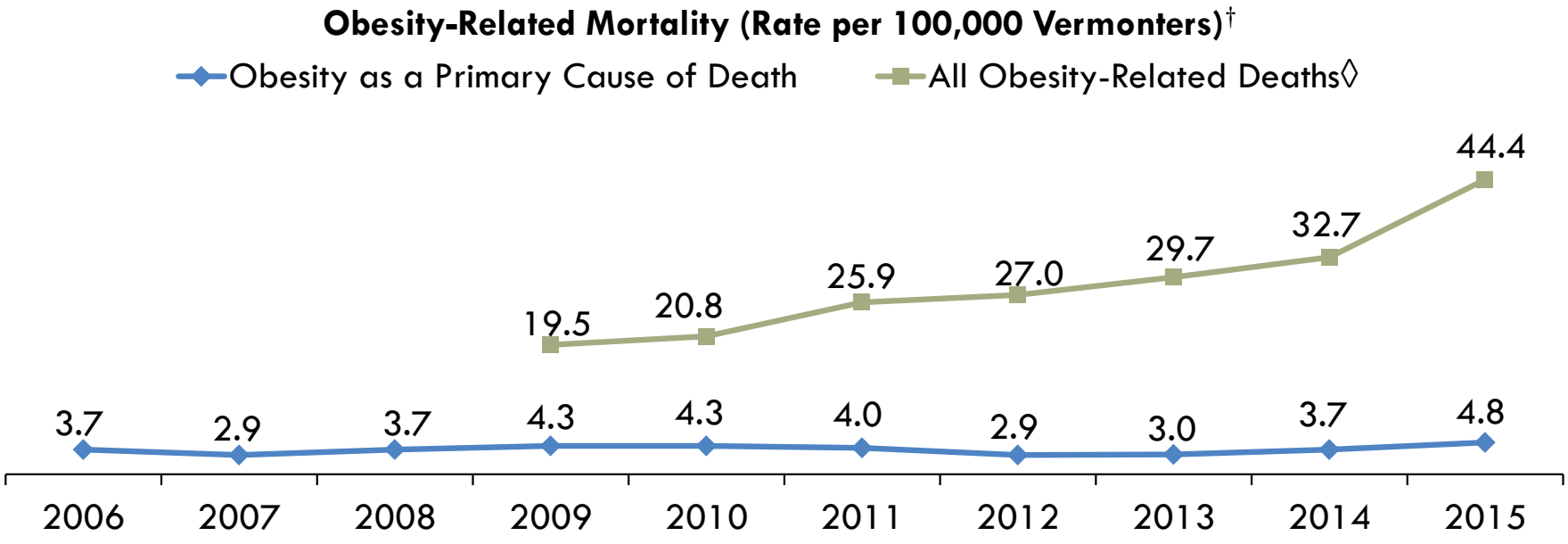
Source: VUHDDS, 2013-2015.¤

Obesity-Related Emergency Department Visits by Hospital Service Area (HSA)†

Obesity as a primary diagnosis for ED visits was too small to be reported. However, rates for any mention of obesity were significantly higher in the St. Albans, Rutland, Springfield, and Brattleboro Hospital Service Areas (HSAs). The rate for the Springfield HSA (161.2 per 10,000 Vermonters) was more than two times the statewide rate (60.3 per 10,000 Vermonters).

Obesity-Related Mortality

Obesity as a primary cause of death were low and stable from 2006 to 2015 compared to all obesity-related deaths, which were significantly higher. Conversely, all obesity-related deaths rose significantly from 2009 through 2015. The mortality rate also rose significantly from 2014 to 2015, which represents a 36% increase in the all obesity-related mortality rate. This indicates that obesity as a contributing factor of death is increasing, potentially driving an increase in all obesity-related deaths.

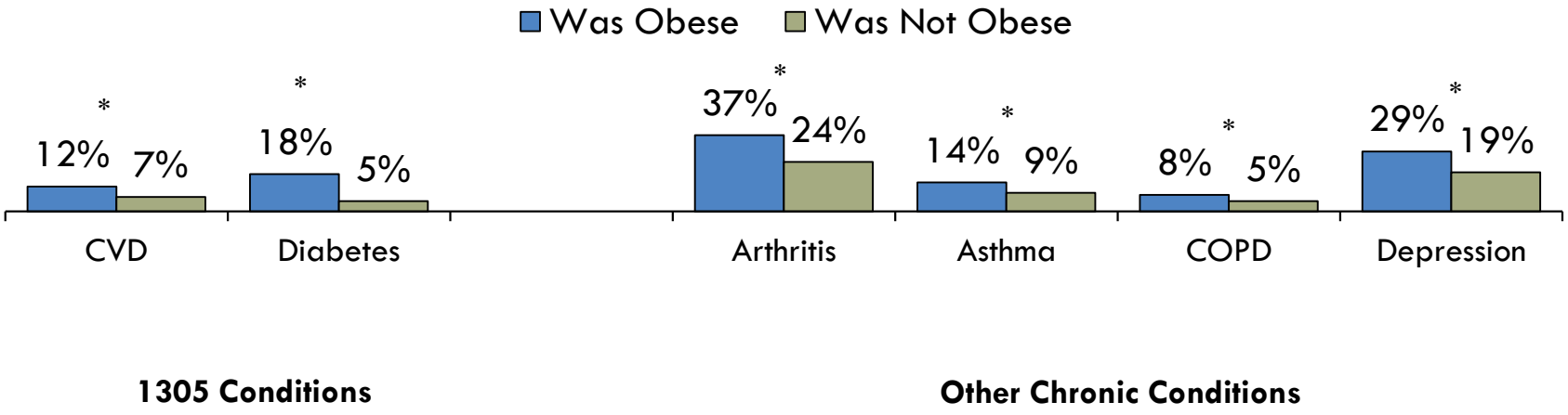


Source: Vermont Vital Statistics, 2006-2015.

Obese Adults and Chronic Disease

About one in five Vermont adults who was obese also had ever been diagnosed with diabetes (18%) and one in eight (12%) also had cardiovascular disease (CVD). Over a third (37%) of obese Vermont adults also had arthritis. Obese Vermont adults were significantly more likely to have CVD, diabetes, arthritis, asthma, COPD, or a depressive disorder than those who were not obese. There was no significant difference in the prevalence of cancer and chronic kidney disease (data not shown) between adults who were and were not obese.

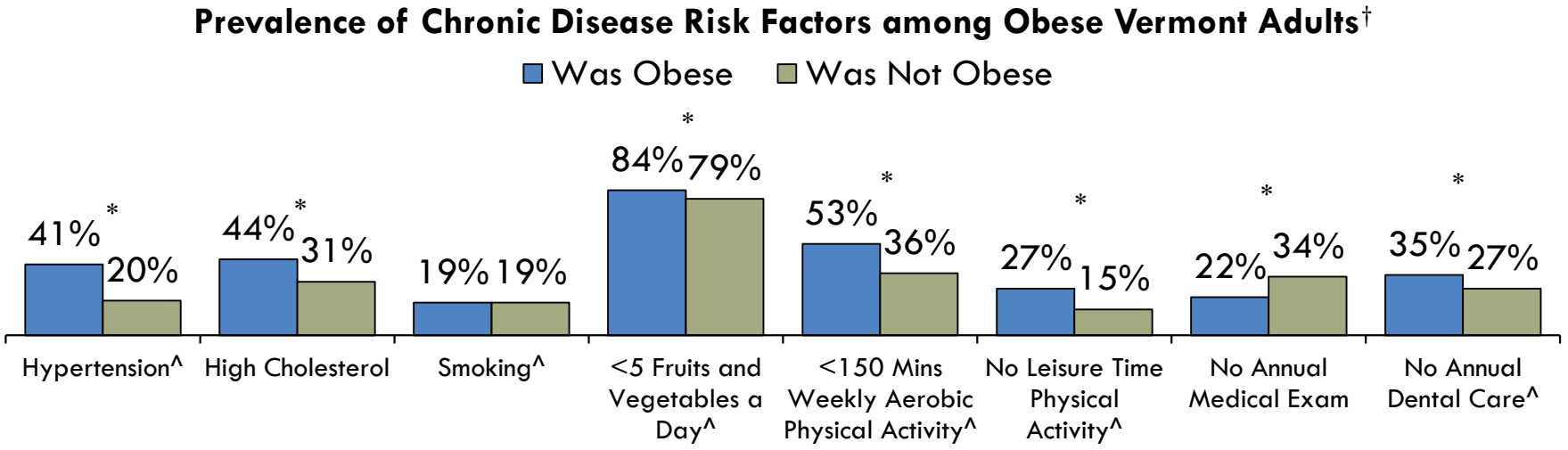
Comorbid Chronic Conditions among Obese Vermont Adults, 2016†



Source: VT BRFSS, 2016.

Risk Factors for Chronic Disease among Obese Adults

Vermont adults who were obese were significantly more likely to have hypertension, high cholesterol, consume less than 5 fruits or vegetables a day, participate in less than 150 minutes of physical activity a week, participate in no leisure time physical activity, and not receive annual dental care. Vermont adults who were obese were significantly less likely to not receive an annual medical exam when compared to adults who were not obese (obese Vermont adults were more likely to receive an annual medical exam).



Source: VT BRFSS, 2015 (hypertension, cholesterol, nutrition, aerobic physical activity) and 2016 (smoking, leisure time physical activity, medical exam, and dental care).

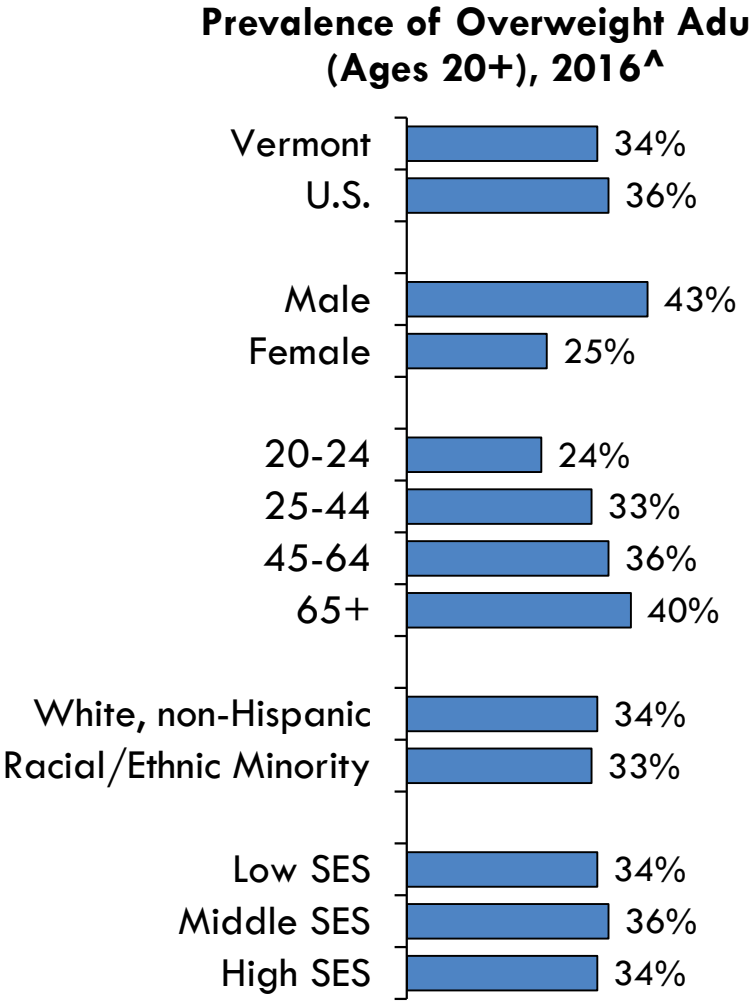
Overweight

Overweight

- A weight that is higher than what is considered healthy for a given height is described as overweight.
- Excess weight gain leading to overweight is a complex health issue resulting from several behavioral, societal, and genetic factors.
  - Behaviors can include dietary patterns, level of physical activity, and use of medications.
  - Contributing societal factors include food and physical activity environment, education and skills, and food marketing/promotion.
- Being overweight leads to a greater risk of obesity and is associated with numerous chronic health conditions and poorer health outcomes.

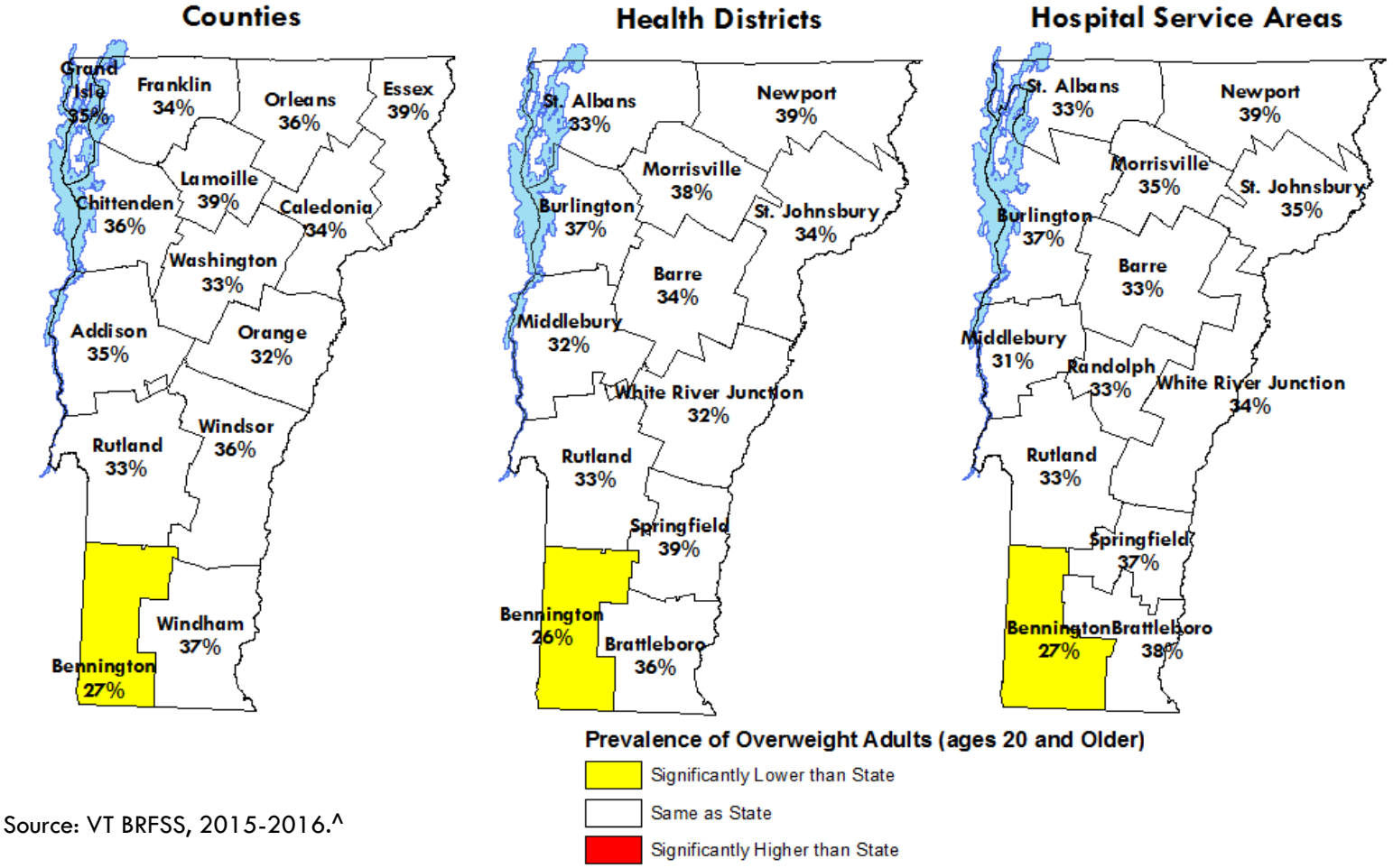
Source: Centers for Disease Control and Prevention, Adult Obesity Causes & Consequences, March 5, 2018.

Prevalence of Overweight Adults (ages 20+)†



- Over a third (34%) of Vermont adults were overweight (approximately 158,300 adults).
  - The prevalence of overweight among Vermont adults was similar to that of U.S. adults overall.
  - Men were significantly more likely to be overweight than women.
  - Vermont adults 20-24 were significantly less likely to be overweight than those 45 and older. Adults 25-44 were significantly less likely than those 65 and older to be overweight.

Source: VT BRFSS, 2016.



Source: VT BRFSS, 2015-2016.^

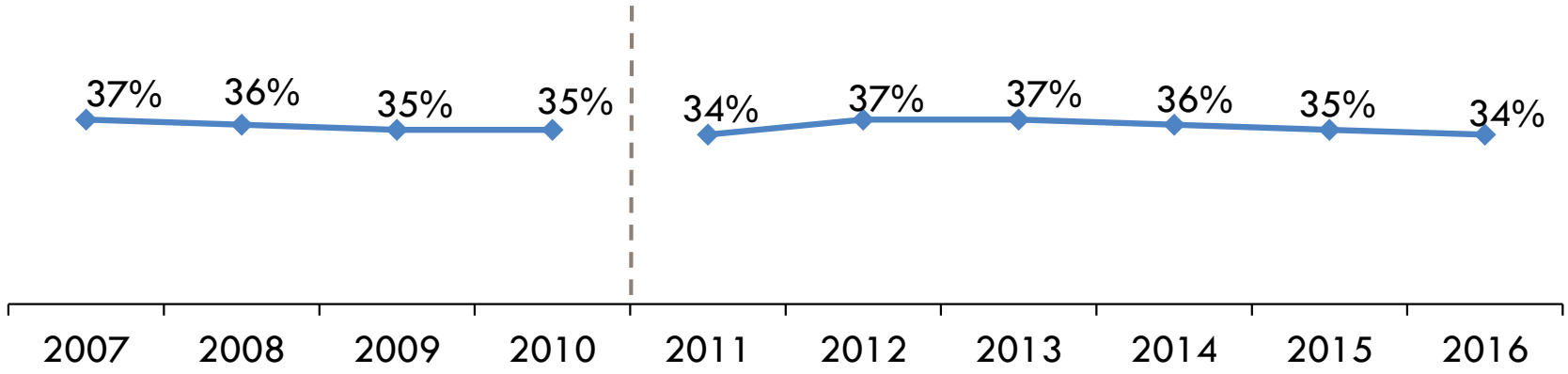
Adult Overweight Prevalence by Subgeography†

The prevalence of overweight adults was similar across all state regions when compared to the state average, except the southwestern corner of the state where overweight was significantly lower than the state average.

Adult Prevalence of Overweight†

The prevalence of overweight Vermont adults was 34% in 2016 and has remained stable from 2007-2016. The prevalence of overweight among Vermont adults is significantly higher than the prevalence of obesity (34% vs. 28%). Being overweight increases the risk of obesity; over a third of Vermont adults 20 and older are at risk of becoming obese.

Prevalence of Adults (ages 20+) who are Overweight^•



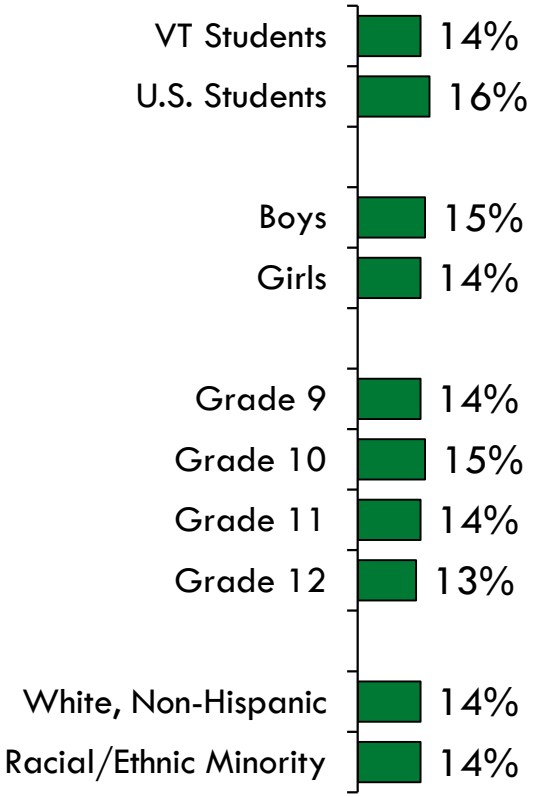
Source: VT BRFSS, 2007-2016.

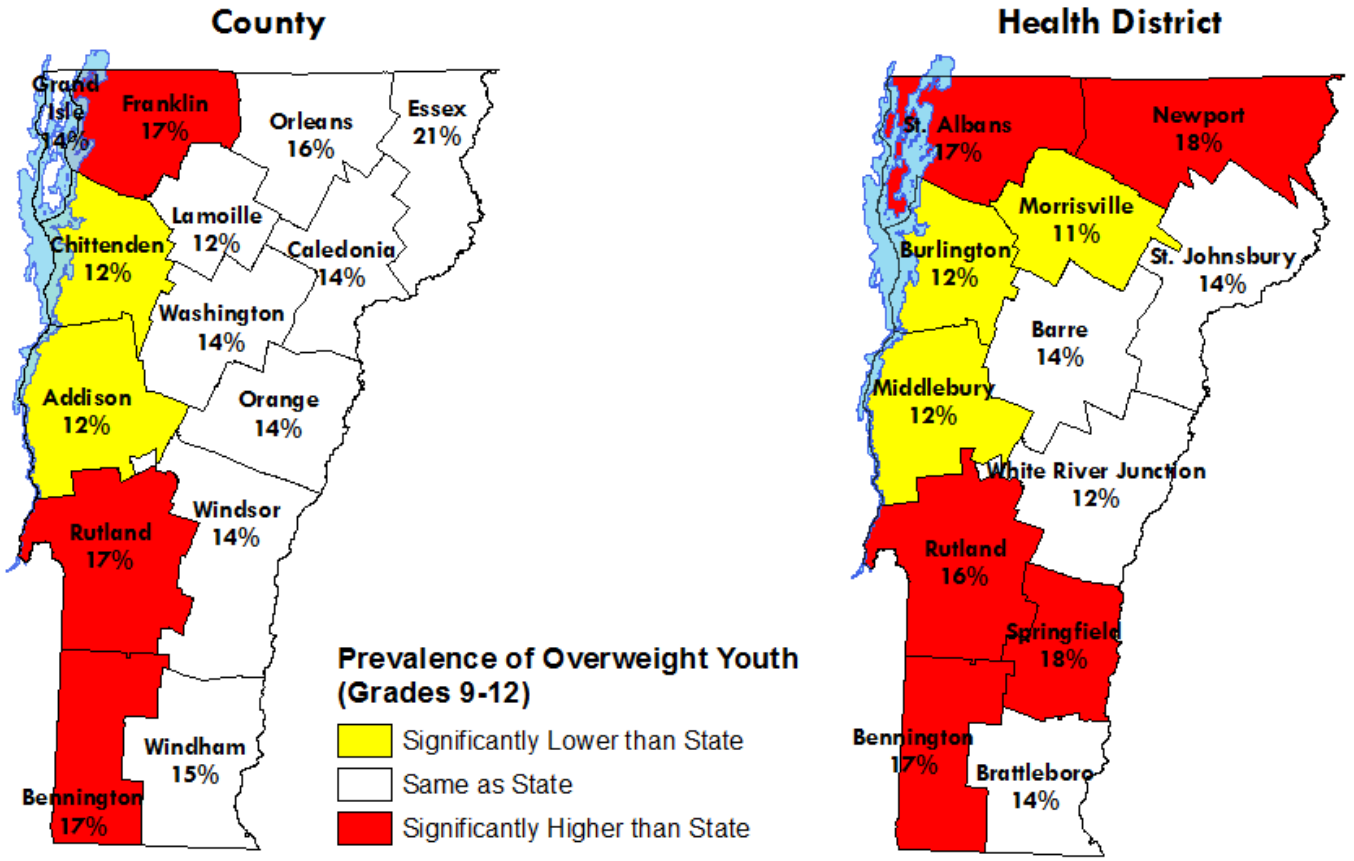
Prevalence of Overweight Youth in Grades 9-12†

- One in seven (14%) Vermont youth in grades 9-12 were overweight (approximately 3,500 students).
  - Vermont high school students were significantly less likely to be overweight than U.S. high school students overall.
  - Boys and girls were equally likely to be overweight.

Source: VT YRBS, 2017.

Prevalence of Overweight Youth Grades in 9-12, 2017§





Source: VT YRBS, 2017.

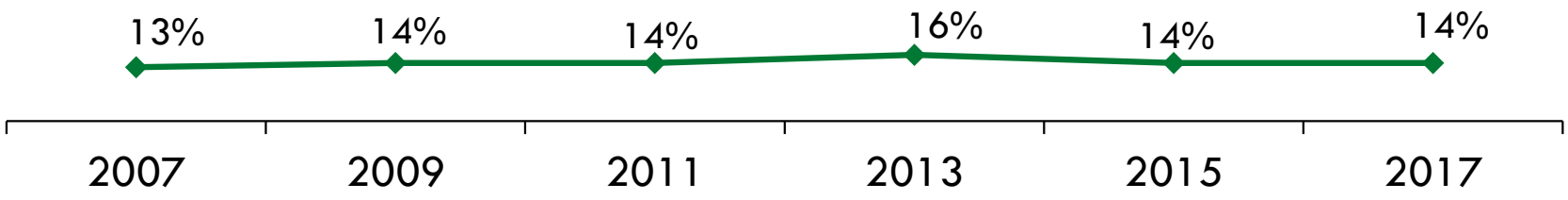
Youth (Grades 9-12) Overweight Prevalence by Subgeography

Franklin, Rutland, and Bennington counties as well as the St. Albans, Newport, Rutland, Springfield, and Bennington Health Districts showed a significantly higher prevalence of overweight youth (grades 9-12) compared to the state average (14%).

Prevalence of Overweight Youth in Grades 9-12†

The prevalence of overweight among Vermont youth remained stable from 2015 to 2017. Since 2011 the prevalence of overweight youth has been significantly higher than the prevalence of obese youth (14%-16% vs. 11%-13%). As overweight is a risk factor for obesity, approximately 14% of Vermont youth are at risk of becoming obese.

Prevalence of Overweight Youth in Grades 9-12§

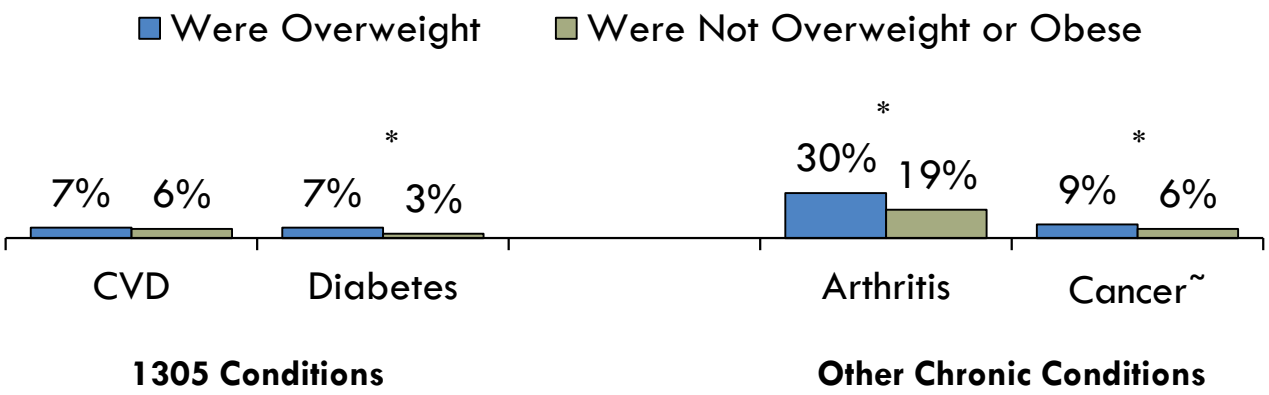


Source: VT YRBS, 2007-2017.

Overweight Adults and Chronic Disease

Seven percent of Vermont adults who were overweight also had cardiovascular disease (CVD) and seven percent also had diabetes. One in three Vermont adults who were overweight also had arthritis (30%) and almost one in ten (9%) were ever diagnosed with cancer. Overweight adult Vermonters were significantly more likely to have diabetes, arthritis, and cancer than adults who were not overweight or obese. There was no significant differences in the prevalence of CVD, chronic kidney disease, chronic obstructive pulmonary disease (COPD), asthma, or depression between adults who were overweight and those who were not overweight or obese (data not shown).

Comorbid Chronic Conditions among Overweight Adult Vermonters, 2016†

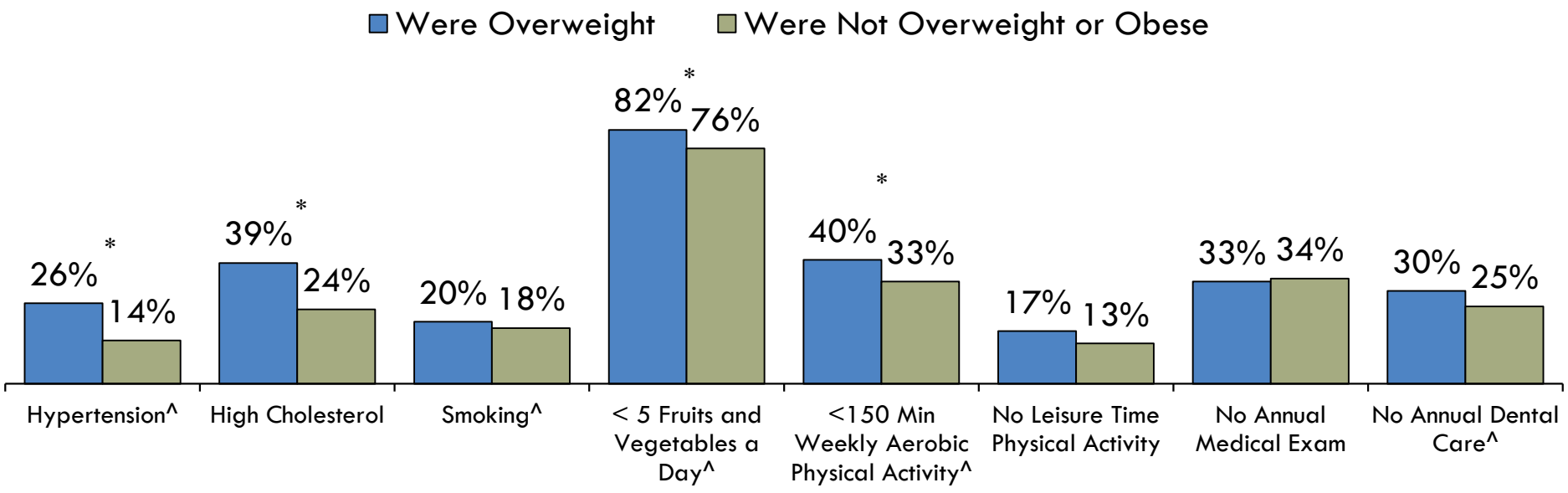


Source: VT BRFSS, 2016.

Overweight Adults and Risk Factors for Chronic Disease

Vermont adults who were overweight were significantly more likely to have hypertension, high cholesterol, consume less than 5 fruits or vegetables a day, and participate in less than 150 minutes of aerobic physical activity a week than adults who were not overweight or obese.

Prevalence of Chronic Disease Risk Factors among Overweight Vermont Adults†



Source: VT BRFSS, 2015 (hypertension, cholesterol, nutrition, aerobic physical activity) and 2016 (smoking, leisure time physical activity, medical exam, and dental care).

Physical Activity

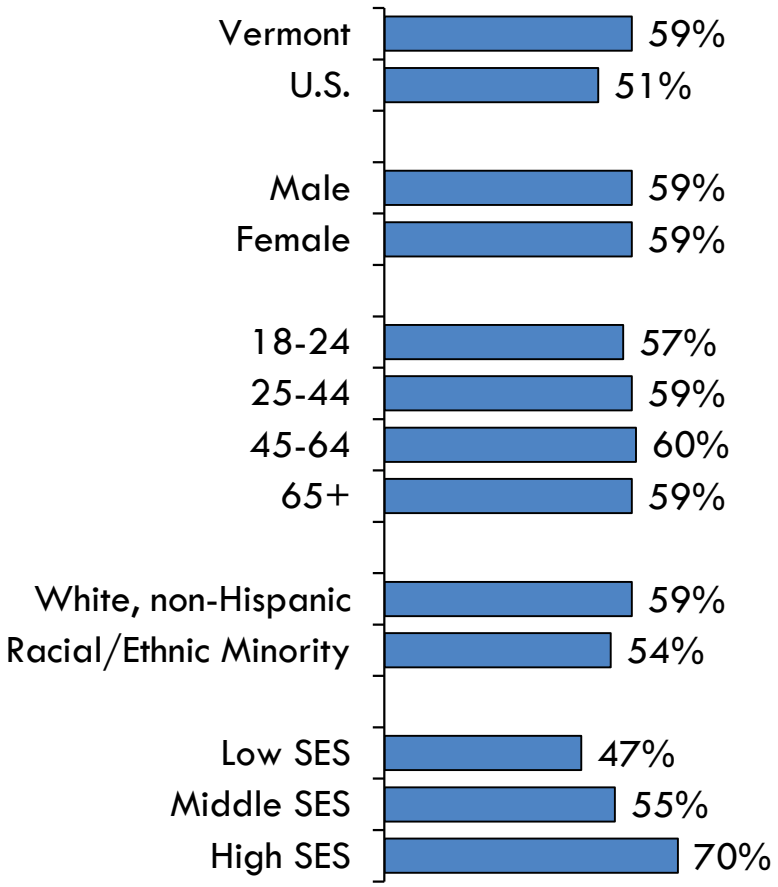
CDC Guidelines for Physical Activity

- Recommendations for **Adults**[1]
  - Average of 150 minutes of moderate intensity aerobic physical activity or 75 minutes of vigorous activity each week.
  - Muscle strengthening exercises at least twice a week.
- Recommendations for **Children and Teens**[1]
  - Each day's total activity (moderate-vigorous) should add up to at least 60-minutes.
  - Participate in vigorous activity at least 3 times a week.
  - Engage in at least 3 days of muscle and bone-strengthening exercises.
- Limit Screen Time[2]
  - Less than one hour a day for kids 2-5 years old.
  - For parents of kids and teens 5-18 years old, place consistent limits on the use of any media.

Source: [1]U.S. Department of Health & Human Services Office of Disease Prevention and Health Promotion
[2]American Academy of Pediatrics. Media Use in School-Aged Children and Adolescents. Pediatrics. 2016; 138(5):e20162592.

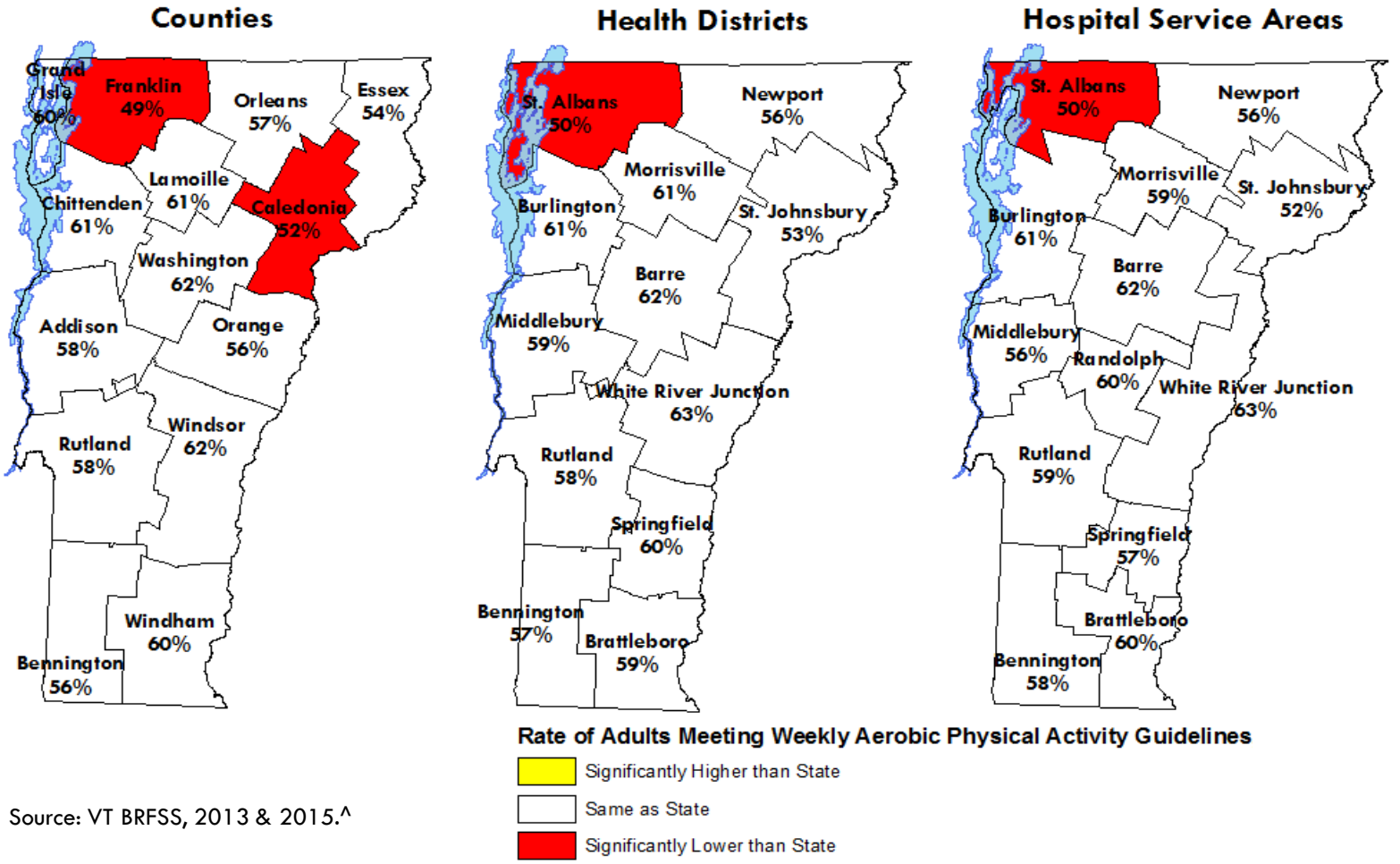
Adults Meeting CDC's Weekly Aerobic Physical Activity Guidelines†

Adults Meeting Weekly CDC Aerobic Physical Activity Guidelines, 2015^



- Close to six in ten Vermont adults (59%) met aerobic physical activity guidelines (approximately 263,200 adults).
  - Vermont adults were significantly more likely to meet aerobic physical activity guidelines than the U.S. adults overall.
  - Meeting aerobic physical activity guidelines increases with increasing socioeconomic status (SES).

Source: VT BRFSS, 2015.



Source: VT BRFSS, 2013 & 2015.^

Adults Meeting Weekly Aerobic Physical Activity Guidelines by Subgeography†

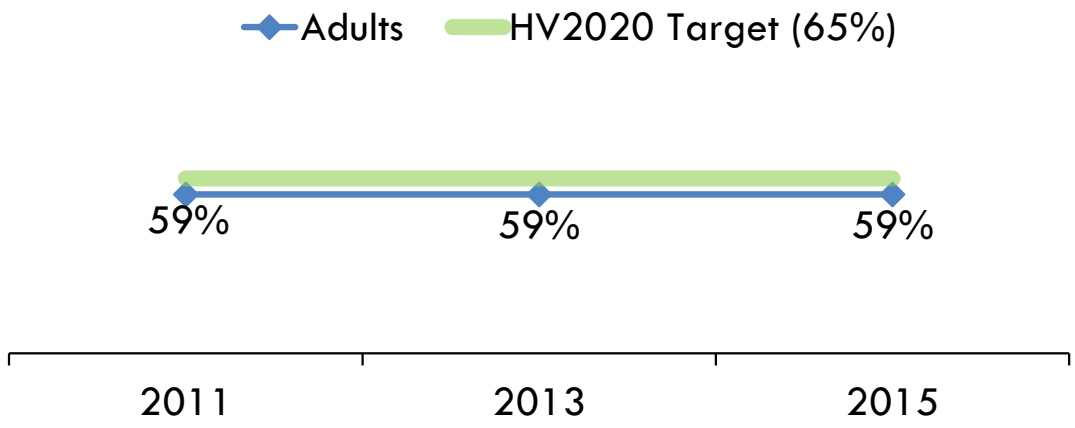
Regionally, Franklin and Caledonia Counties were significantly lower than the state average for adults meeting CDC's weekly aerobic physical activity guidelines. The St. Albans Health District and Hospital Service Area (HSA) were also lower than the state average.

Adults Meeting CDC's Weekly Aerobic Physical Activity Guidelines†

Adult Vermonters **meeting weekly aerobic physical activity guidelines** remains similar to previous years. Prevalence remains below the Healthy Vermonters 2020 target of 65%.

Less than two in ten (18%) Vermont adults in 2016 **did not participate in any leisure time physical activity,** significantly lower than the 21% in 2015, but above the Healthy Vermonters 2020 goal of 15% (data not shown).

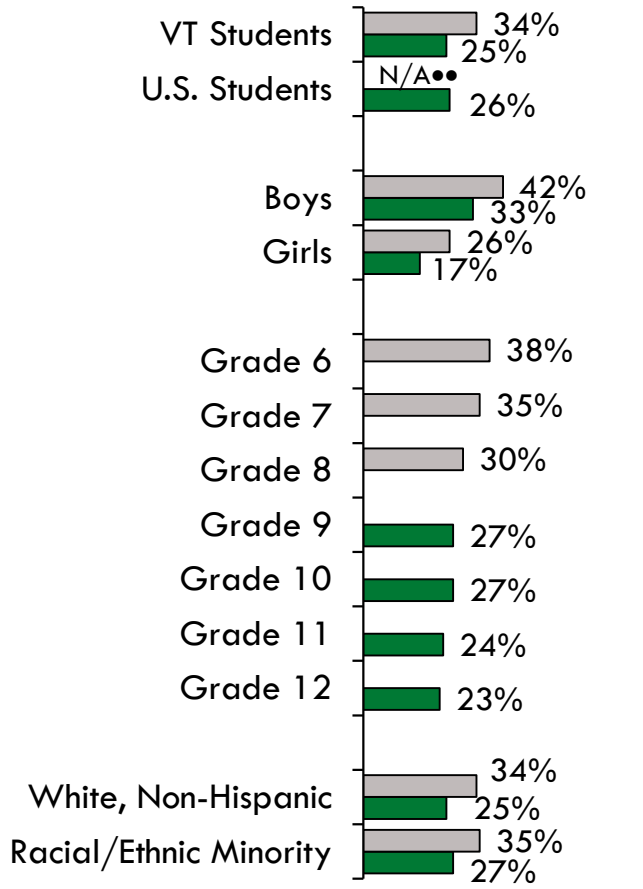
Adults Who Met CDC's Weekly Aerobic Physical Activity Recommendations, 2011-2015^•



Source: VT BRFSS, 2011-2015.

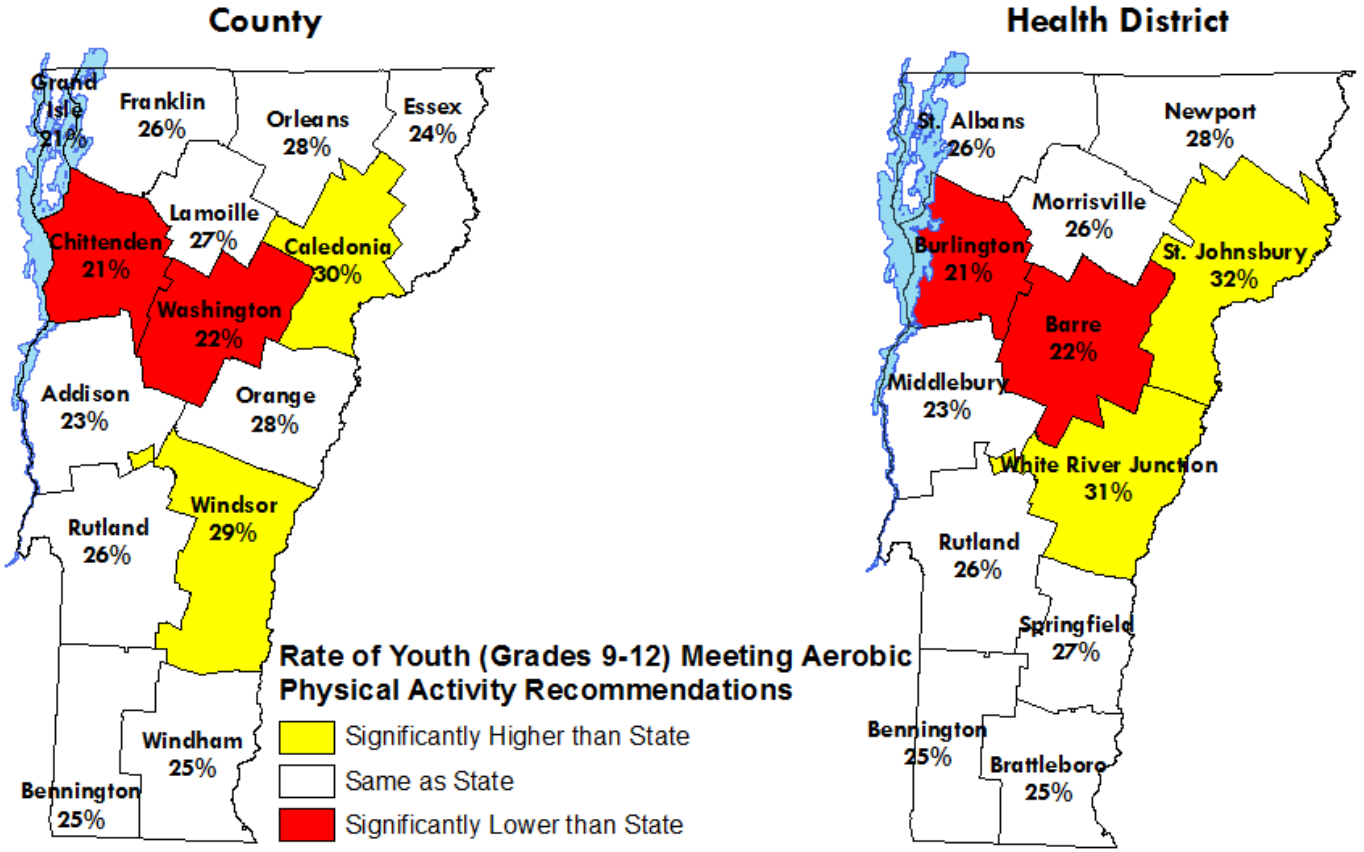
Youth Meeting CDC's Daily Aerobic Physical Activity Guidelines

Youth Engaging in 60+ Minutes of Physical Activity a Day, 2017†



- Over a third of youth in grades 6-8 (34%) and a quarter of youth in grades 9-12 (25%) participated in at least 60 minutes of daily physical activity (approximately 5,500 and 6,800 students, respectively).
  - Youth in grades 6-8 were significantly more likely than those in grades 9-12 to meet physical activity recommendations.
  - Girls were significantly less likely to participate in 60+ minutes of daily physical activity than boys.
  - Participation in at least 60 minutes of physical activity decreased as grade in school increased.

Source: VT YRBS, 2017.



Source: VT YRBS, 2017.

Youth (Grades 9-12) Who Met Daily Aerobic Physical Activity Guidelines by Subgeography

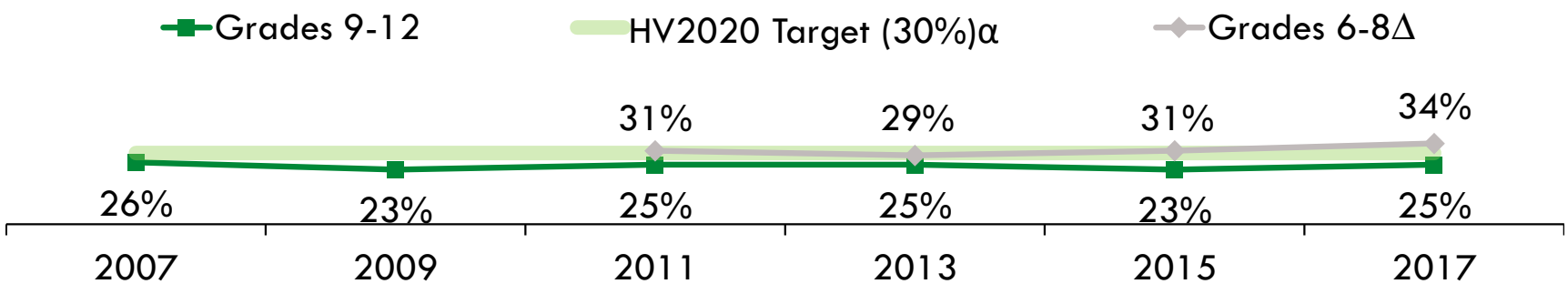
Chittenden and Washington counties along with the Burlington and Barre Health Districts were significantly lower for youth meeting CDC's daily aerobic physical activity recommendations.

Youth Meeting Aerobic Physical Activity Guidelines†

The prevalence of middle school students participating in at least 60 minutes of aerobic physical activity a day significantly increased between 2015 and 2017; while for high school students it was statistically similar. The proportion of high school students participating in at least 60 minutes of aerobic physical activity a day remains below the HV2020 target of 30%.

Of all secondary school students in 2017, 13% of high schoolers and 7% of middle schoolers reported no days with at least 60 minutes of physical activity; statistically similar to previous years.

Rate of Youth, in Grades 6-12, Participating in at least 60 Minutes of Physical Activity a Day



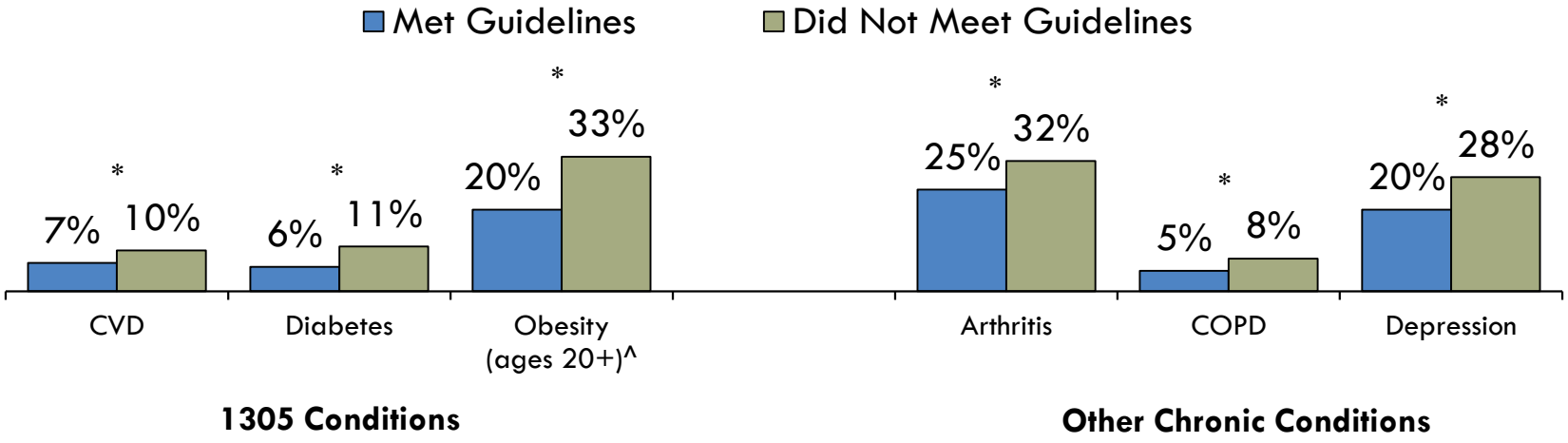
Source: VT YRBS, 2007-2017.

Prevalence of Chronic Diseases among Adults who Met CDC's Weekly Physical Activity Recommendations

Adult Vermonters who met CDC's weekly aerobic physical activity recommendations were significantly less likely to have CVD, diabetes, be obese, have arthritis, COPD or a depressive disorder when compared to Vermont adults who did not meet them.

There was no significant difference in the prevalence of asthma, cancer, and chronic kidney disease among Vermont adults who met the weekly physical activity recommendations and those who did not (data not shown).

Prevalence of Chronic Disease among Adults Meeting CDC's Weekly Aerobic Physical Activity Recommendations†

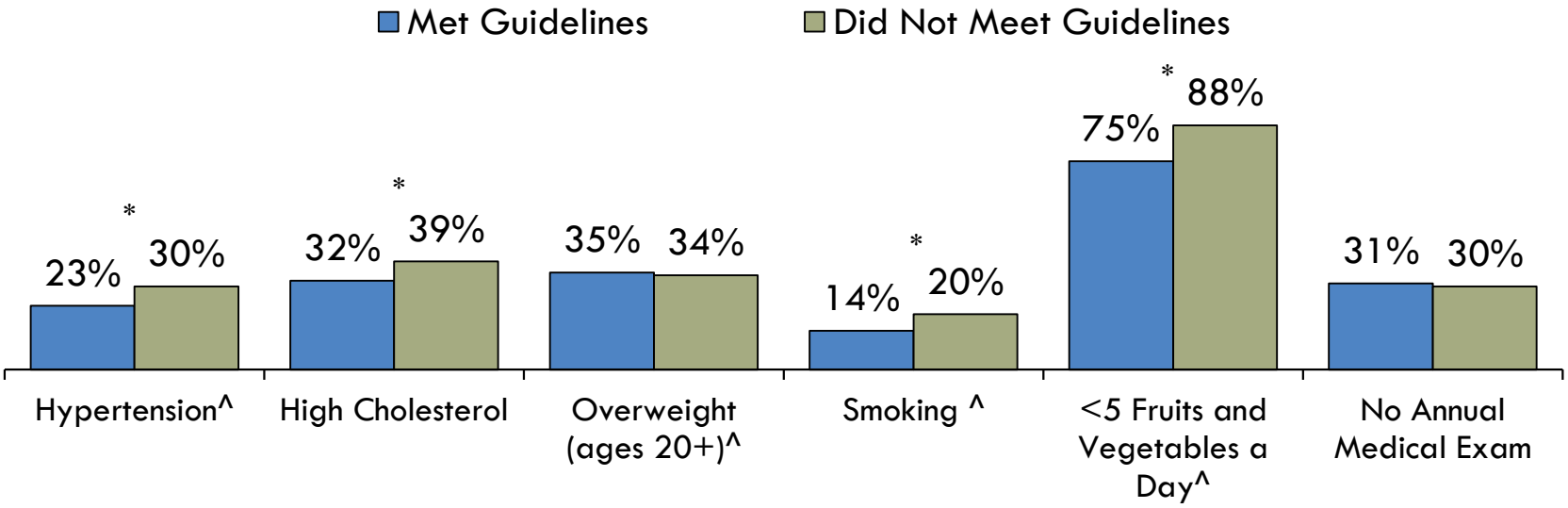


Source: VT BRFSS, 2015.

Chronic Disease Risk Factors among Adults Who Met CDC's Weekly Aerobic Physical Activity Guidelines

Adults who met CDC's weekly aerobic physical activity guidelines were significantly less likely to have hypertension, high cholesterol, smoke, or consume less than five fruits or vegetables a day when compared to adults who did not meet the weekly guidelines.

Prevalence of Chronic Disease Risk Factors among Adults Meeting the Recommended Weekly Hours of Physical Activity†

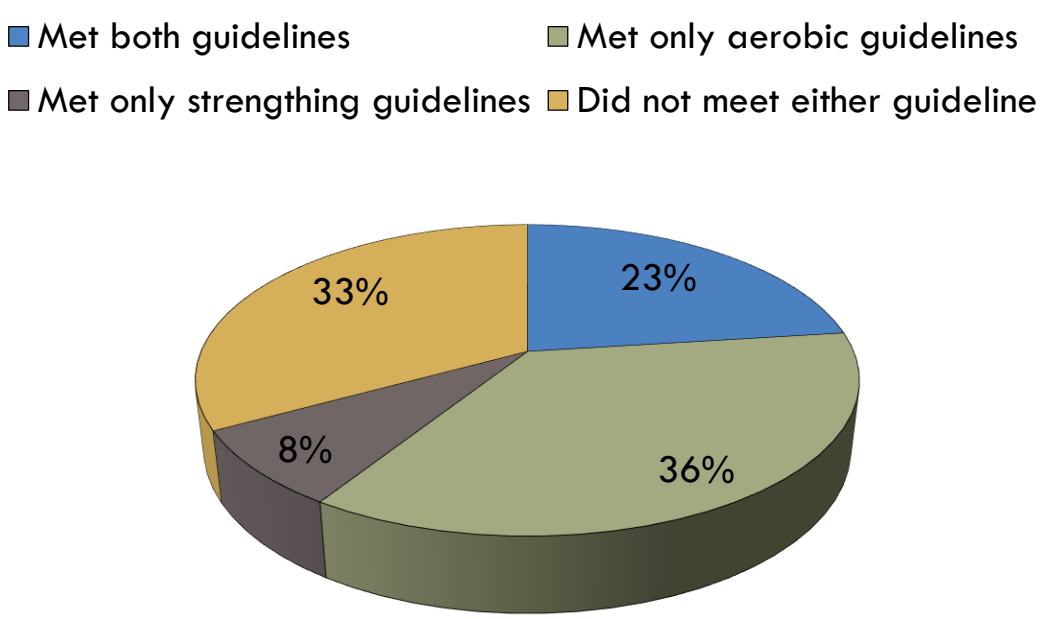


Source: VT BRFSS, 2015.

Adult Aerobic and Muscle Strengthening Physical Activity

- Only about 1 in 4 (23%) Vermont adults met both sets of physical activity guidelines in 2015.
- This is similar to previous years.
- The majority of adult Vermonters either met only aerobic physical activity guidelines (36%) or did not meet any physical activity guidelines (33%).

Rate of Adults Engaging in Aerobic and Muscle Strengthening Exercises



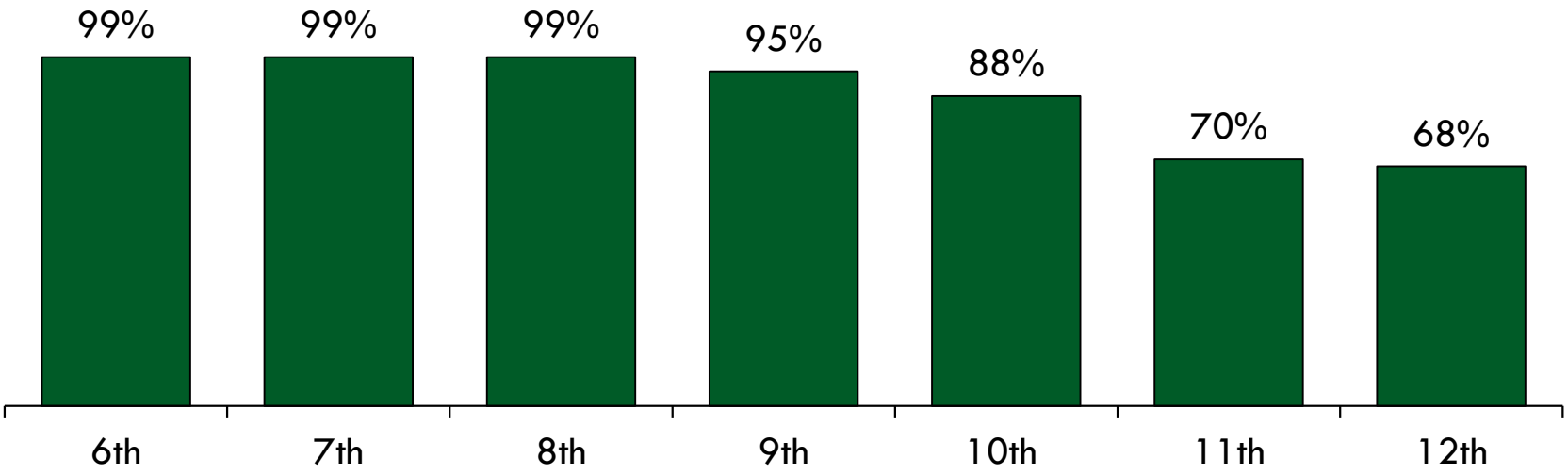
Source: VT BRFSS, 2015

Physical Activity in Secondary Schools

Physical Activity in Secondary Schools – Required Physical Education

Almost all secondary schools require physical education courses to be taught in grades 6 through 8. After 8th grade, the proportion of Vermont secondary schools that required students to take physical education courses decrease. The lowest rates were seen among 11th and 12th grades where seven in ten schools required students in those grades to take physical education classes (70% and 68%, respectively). As part of required physical education, 82% of schools taught students about balancing food intake and physical activity (data not shown).

Secondary Schools Requiring Physical Education Classes, 2016

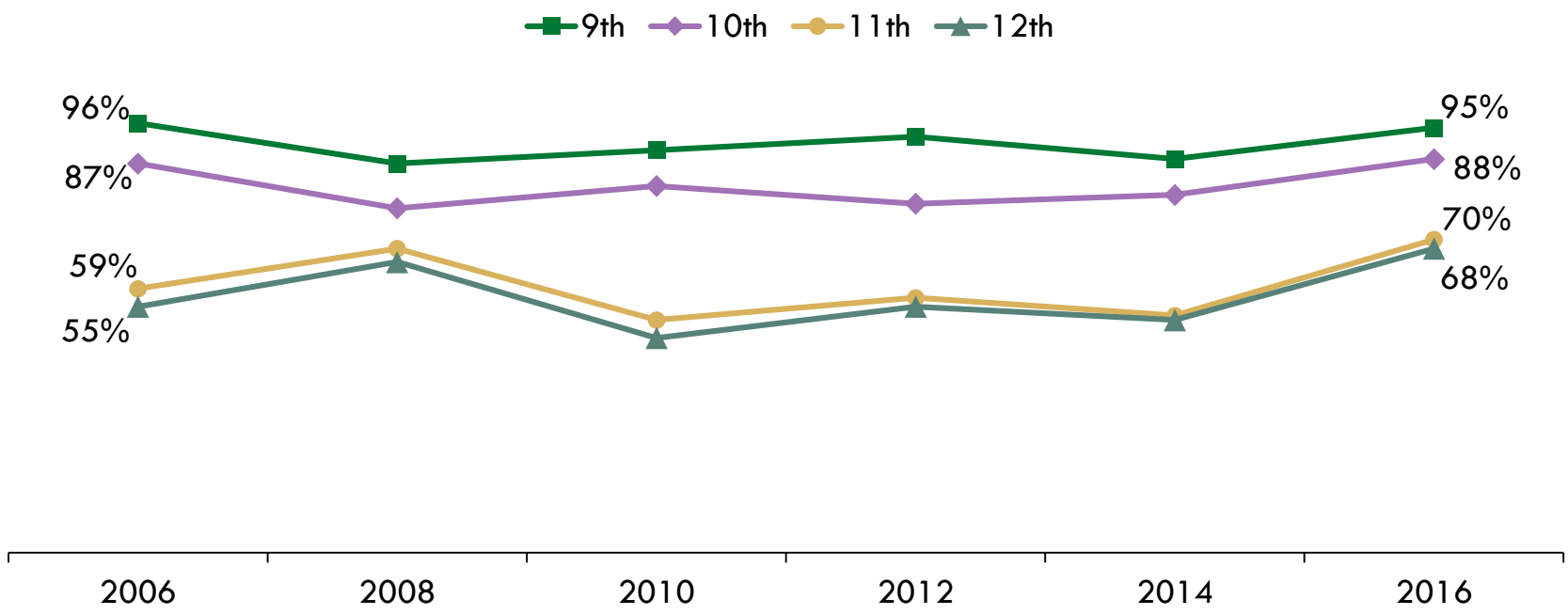


Source: VT SHP, 2016.

Physical Activity in Secondary Schools – Required Physical Education

The percent of schools requiring physical education in grades 9-12 has significantly increased since 2012, with the largest increases in 11th and 12th grades. Since 2014 physical education in grades 6-8 remains stable with nearly all (99%) schools requiring it in all grades.

Percent of Vermont Secondary Schools Requiring Physical Education, By Grade

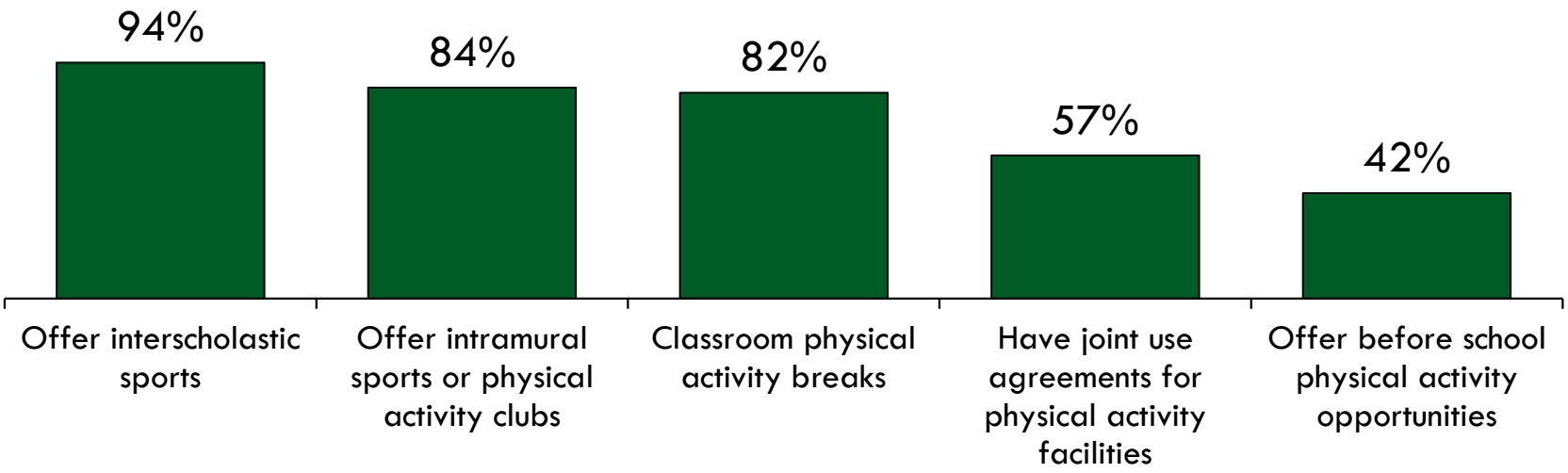


Source: VT SHP, 2006-2016.

Physical Activity in Secondary Schools – Opportunities

Almost four in five (79%) Vermont secondary schools had a school health council which assessed the availability of physical activity opportunities for students in 2016. Vermont secondary schools provided students with a variety of different opportunities for physical activity during and outside of school hours. The majority of secondary schools offered interscholastic sports (94%) while less than half (42%) offered before school physical activity opportunities.

Opportunities for Physical Activity in Secondary Schools, 2016

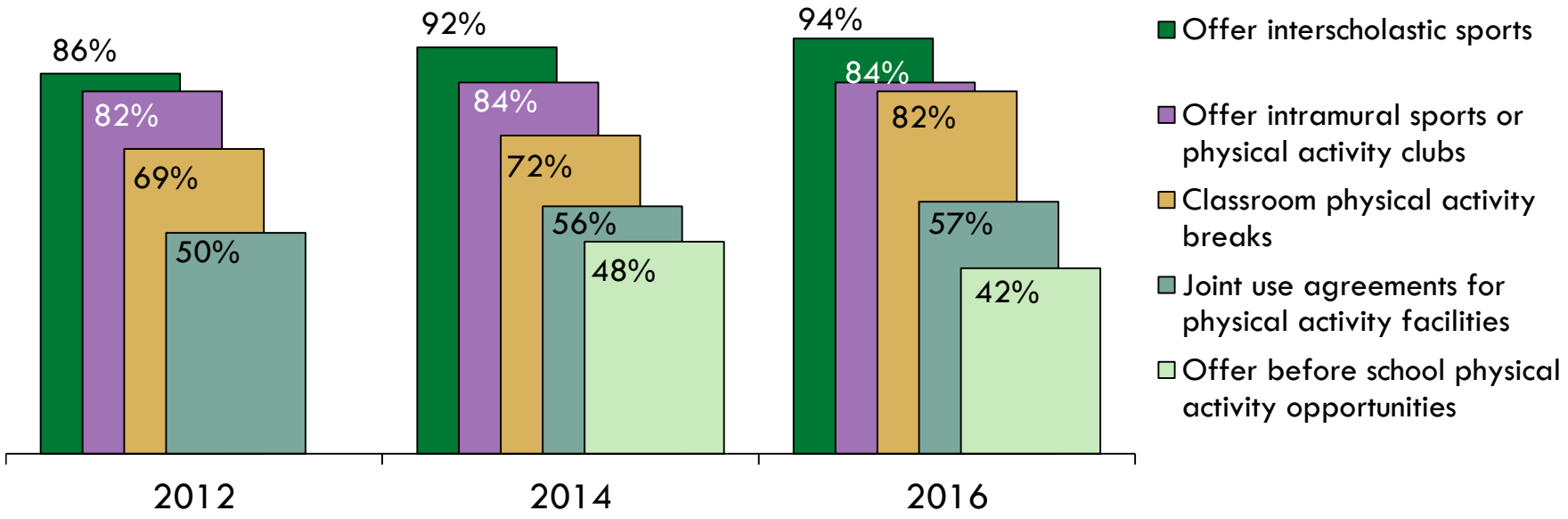


Source: VT SHP, 2016.

Physical Activity in Secondary Schools – Opportunities

The percentage of schools that offer students the opportunity for physical activity breaks in the classroom during the school day increased significantly from 2014 to 2016. Schools that offered students the opportunity to participate in physical activity before school decreased significantly from 2014 to 2016.

Trend of Opportunities for Physical Activity in Vermont Secondary Schools



Source: VT SHP, 2012-2016.

Nutrition

Nutrition Recommendations

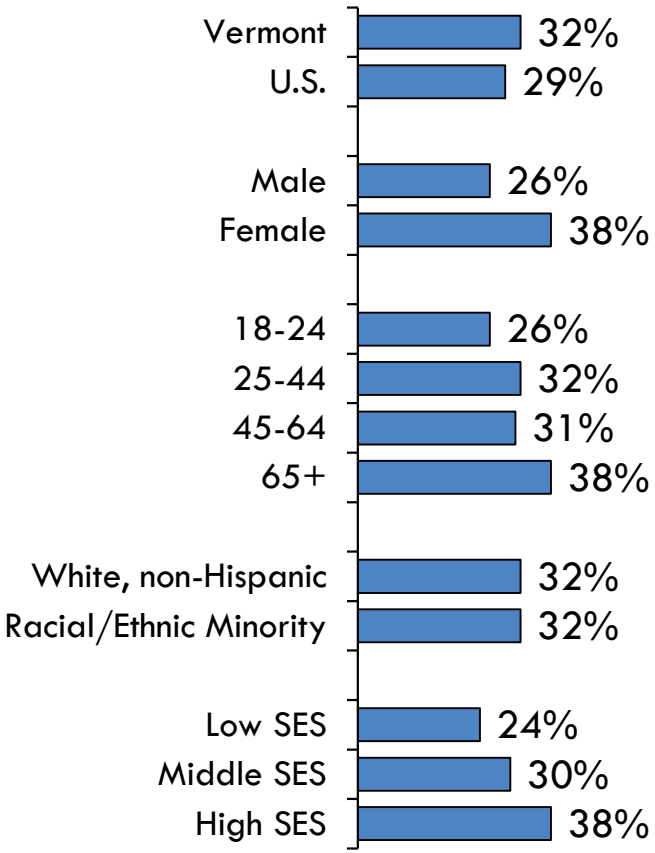
- Fruits and vegetables are essential to a healthy diet. They are generally low in fat and calories, and high in nutrients. These foods are a major source of important vitamins and nutrients that can help reduce the risk of some types of cancer, heart disease, and stroke.
- To get the nutrients needed for a healthy diet the CDC recommends that each day a person should consume:
  - At least **2 Servings of Fruit**.
  - At least **3 Servings of Vegetables**.
- Consumption of sugary drinks (e.g. soda, energy/fruit/sports drinks) should be limited. They have little nutritional value and are high in calories.

Consumption of 2 or More Fruits a Day

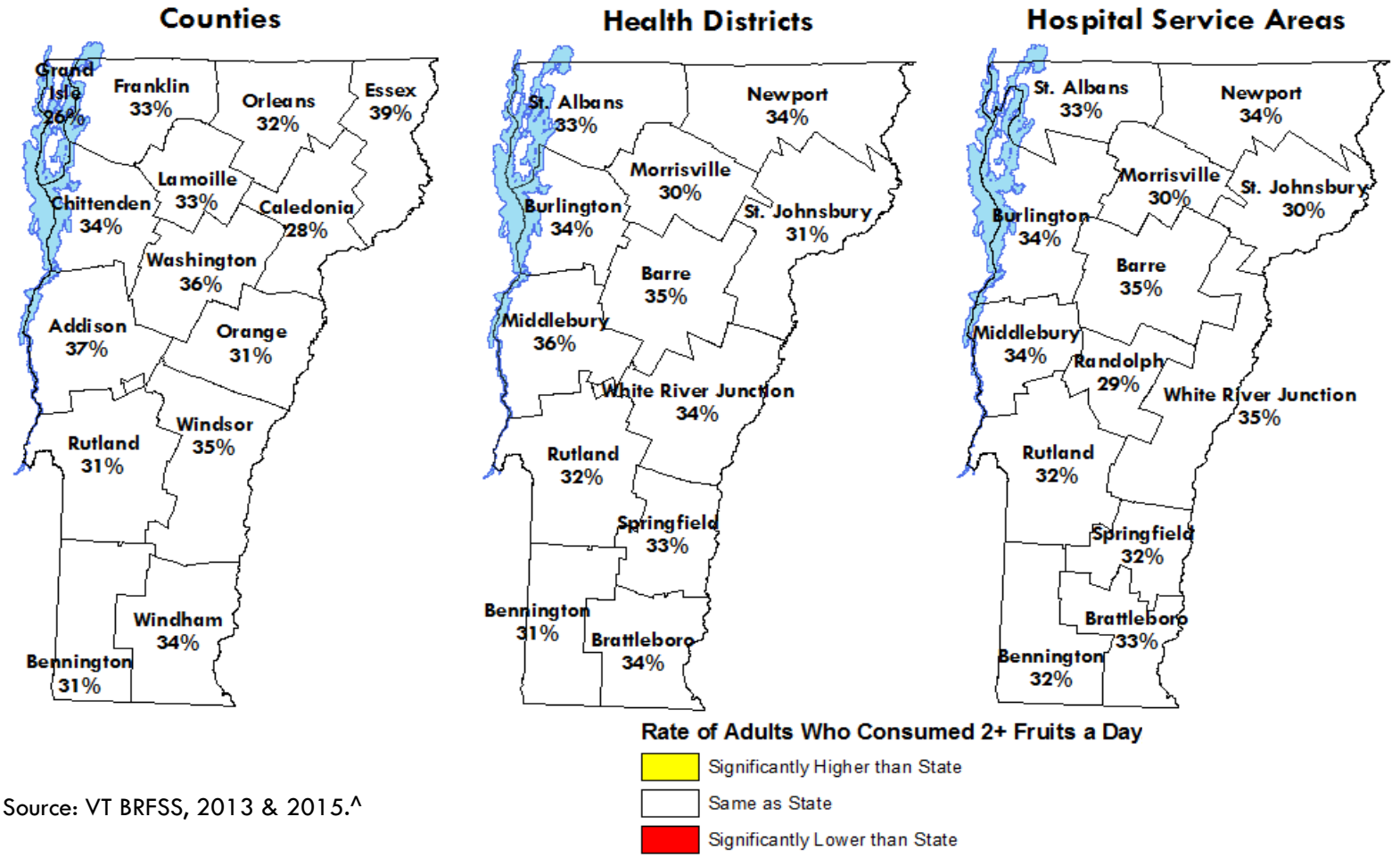
Adults Who Consumed 2 or More Fruits a Day†

- 32% of adult Vermonters (approximately 147,500 adults) consumed two or more fruits a day.
  - Vermont adults were significantly more likely to consume two or more fruits a day than U.S. adults.
  - Males were significantly less likely than females to consume two or more fruits a day.
  - Adults 65 and older were less likely than those 18-24 and more likely than those 45-64 to consume 2 or more fruits a day.
  - Adult Vermonters with a low SES were less likely to consume two or more fruits a day than those living at a high SES.
  - Adults were significantly more likely to consume two or more fruits a day than three or more vegetables a day (see page 123 for adult vegetable consumption).

Prevalence of Adults Who Consumed 2 or More Fruits a Day, 2015^



Source: VT BRFSS, 2015.



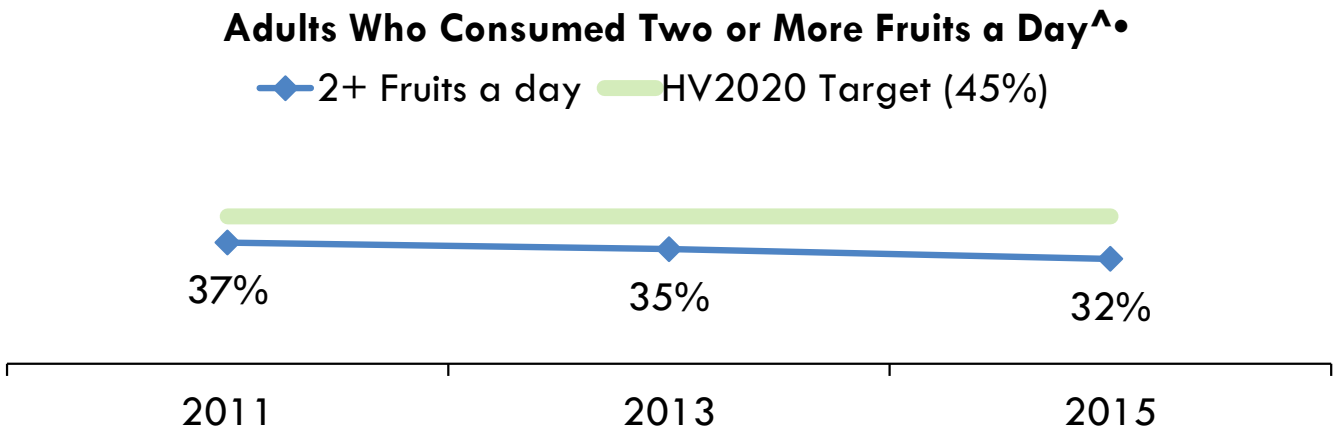
Source: VT BRFSS, 2013 & 2015.^

Adults Who Consumed 2 or More Fruits a Day by Subgeography†

All state regions had similar rates of adults who consumed two or more fruits a day when compared to the statewide average.

Adults Who Consumed 2 or More Fruits a Day†

The proportion of Vermont adults who consumed two or more fruits a day was similar to previous years and is below the Healthy Vermonters 2020 target of 45%.

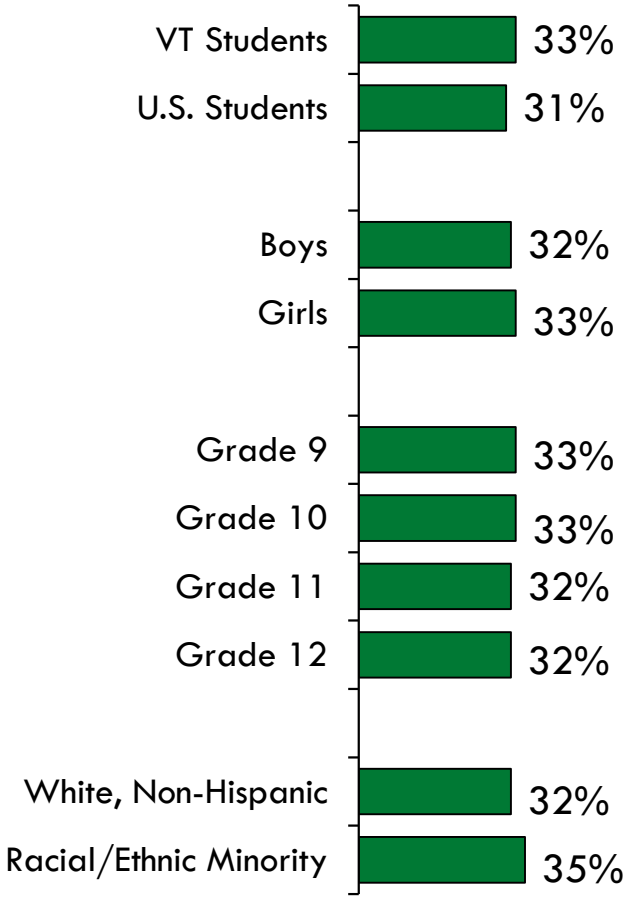


Source: VT BRFSS, 2011-2015.

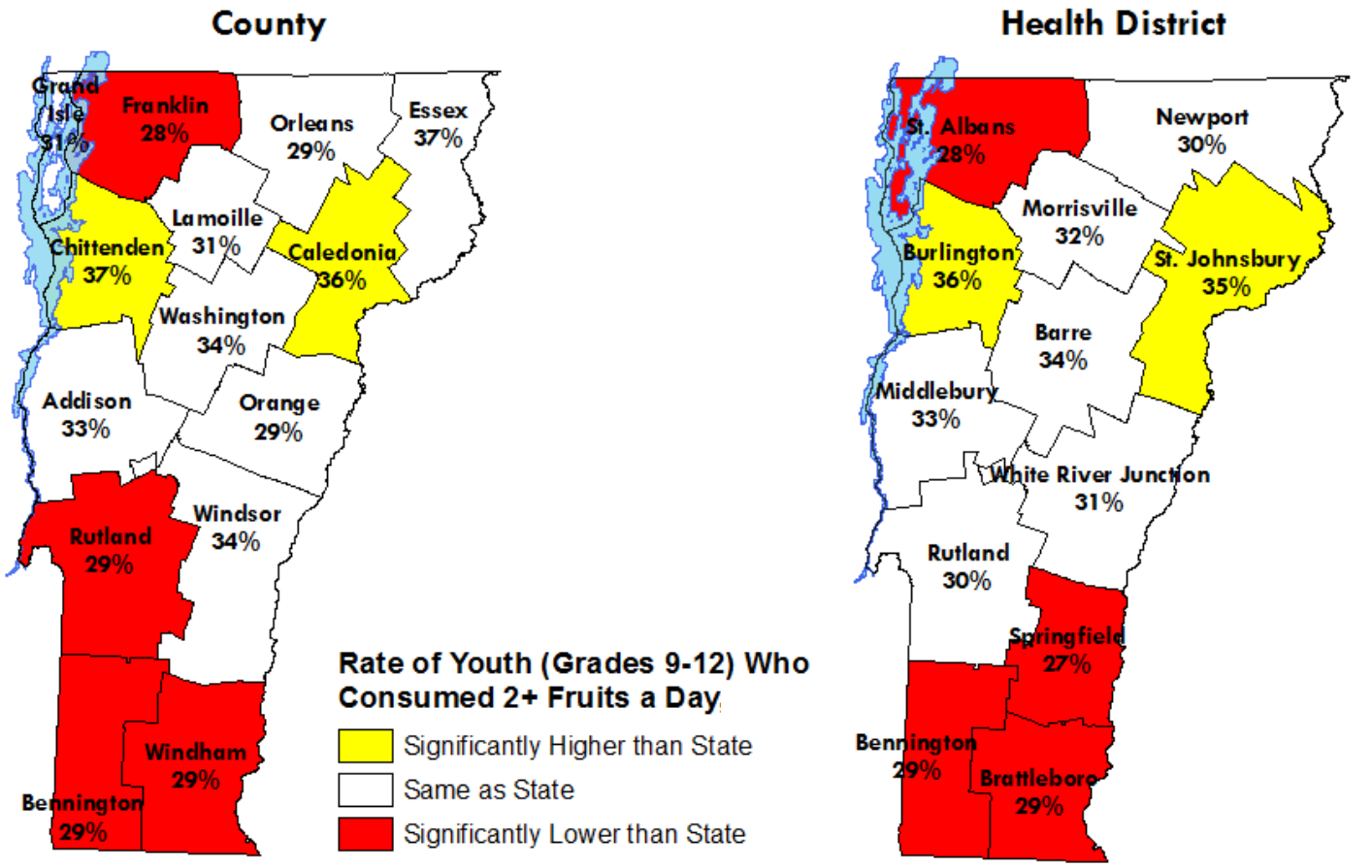
Youth in Grades 9-12 Who Consumed 2 or More Fruits a Day†

- 33% of Vermont youth (approximately 8,800 students) consumed two or more fruits a day.
  - There were no differences in the consumption of two or more fruits a day between Vermont youth and U.S. youth overall.
  - Students of color were significantly more likely to consume two or more fruits a day than white, non-Hispanic youth.
  - Vermont youth were significantly more likely to consume two fruits a day than three vegetables (see page 117 for youth vegetable consumption).

Youth in Grades 9-12 Who Consumed 2 or More Fruits a Day, 2017§



Source: VT YRBS, 2017.



Source: VT YRBS, 2017.

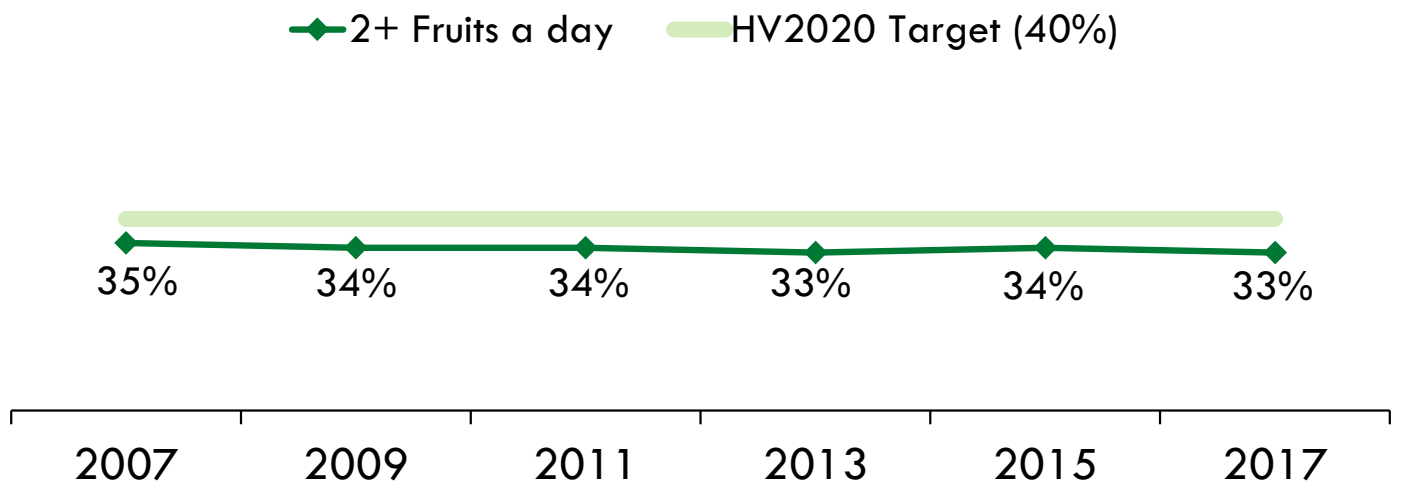
Youth (Grades 9-12) Who Consumed 2 or More Fruits a Day by Subgeography

Regionally, youth in northwestern and southern Vermont were less likely to consume two or more fruits a day when compared to the state average.

Youth in Grades 9-12 Who Consumed 2 or More Fruits a Day†

Vermont youth who consumed two or more fruits a day has significantly decreased from 2015 to 2017. The proportion of Vermont youth who consumed two or more fruits a day was below the Healthy Vermonters 2020 target of 40%.

Youth (Grades 9-12) Who Consumed 2 or More Fruits a Day§



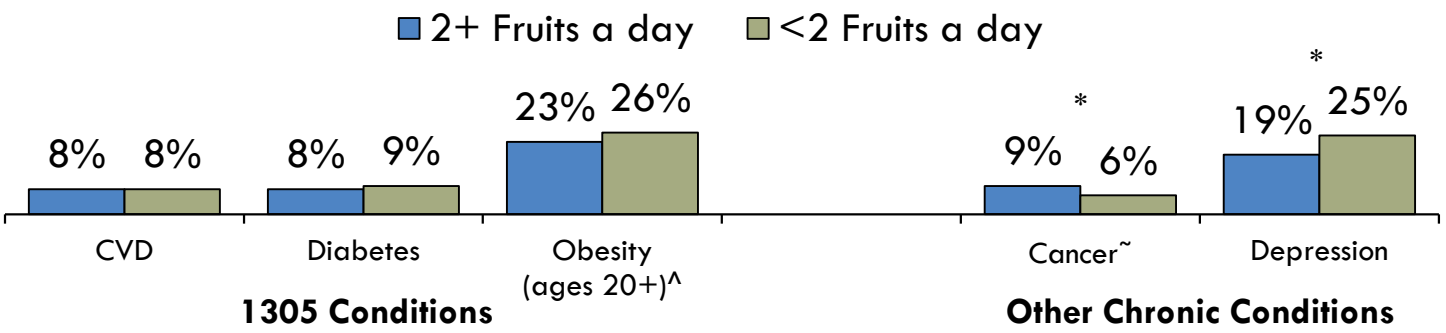
Source: VT YRBS, 2007-2017.

Prevalence of Chronic Diseases among Adults Who Consumed 2 or More Fruits a Day

Vermont adults who consumed two or more fruits a day were significantly less likely to have a depressive disorder than adults who consumed less than two fruits a day. Adults who consumed two or more fruits a day had a significantly higher prevalence of ever having had cancer than those who consumed less than two fruits a day. Research indicates that fruit and vegetable intake tends to increase after a cancer diagnosis. Therefore, Vermonters who have previously been diagnosed with cancer may be choosing to lead healthier lives as evidenced by eating more fruit.

There were no significant differences in the prevalence of arthritis, asthma, chronic kidney disease (data not shown), CVD, diabetes, or obesity between adults who consumed two or more fruits a day and those who consumed less than two day.

Chronic Disease among Adults Who Consumed Two or more Fruits a Day, 2015†

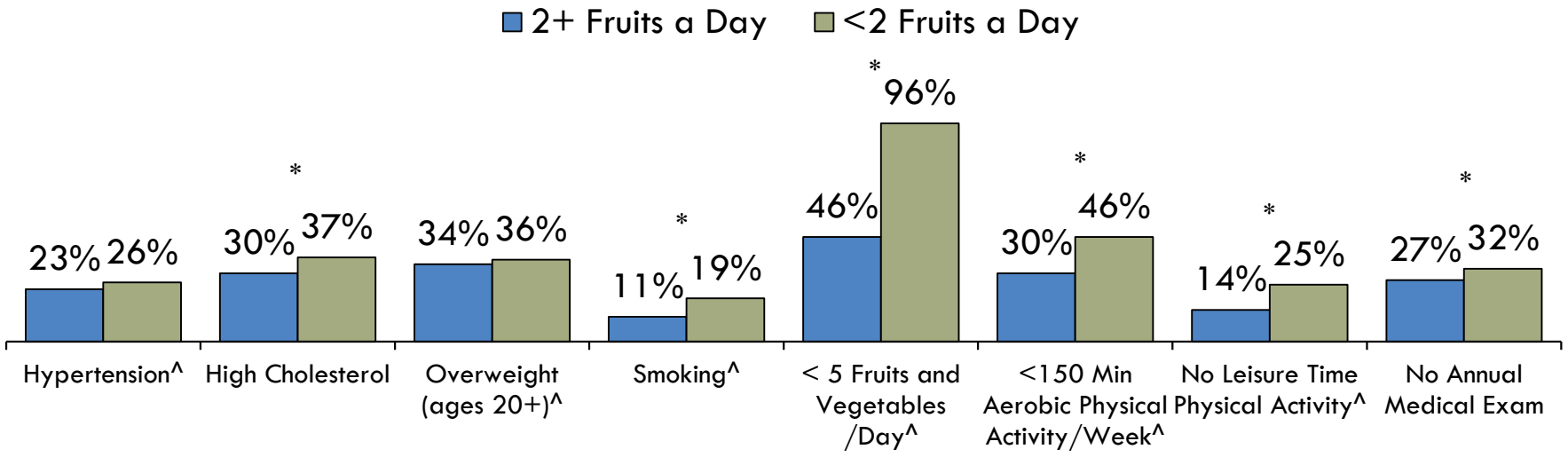


Source: VT BRFSS, 2015.

Prevalence of Chronic Disease Risk Factors among Adults Who Consumed 2 or More Fruits a Day

Adults who consumed two or more fruits a day were significantly less likely to have high cholesterol, smoke, consume less than five fruits or vegetables a day. They were also less likely to participate in less than 150 minutes of weekly aerobic physical activity, have no leisure time physical activity, and not seek annual medical care. There were no statistical differences in the prevalence of hypertension or overweight among adults who consumed two or more fruits a day and those who did not.

Prevalence of Chronic Disease Risk Factors among Adults Who Consumed Two or More Fruits a Day, 2015†



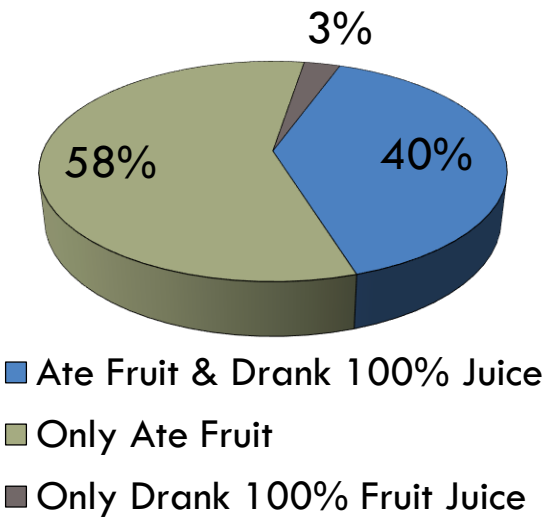
Source: VT BRFSS, 2015.

How Adults and Youth Met 2 or More Fruits a Day†

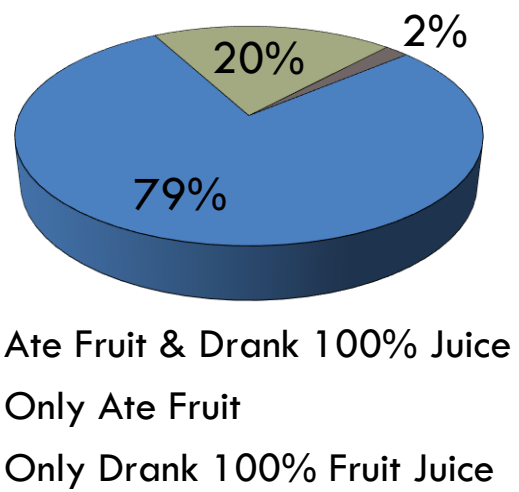
Adults who met daily fruit consumption recommendations did so by eating fruit alone (58%). Fewer ate fruit and drank 100% juice (40%). Significantly more adults ate fruit alone in 2015 than in 2013 (58% vs. 51%) while fewer ate fruit and drank 100% juice in 2015 (40% vs. 46%).

Youth (grades 9-12) most frequently met their daily recommended fruit intake by eating fruit & drinking 100% fruit juice (79%). Significantly fewer ate fruit & drank 100% juice in 2017 than did in 2015 (84%). Consumption of fruit only has increased significantly over time; 10% in 2013, 14% in 2015, and 20% in 2017.

Adults who consumed 2+ Fruits a Day, 2015^



Youth (grades 9-12) who consumed 2+ Fruits, 2017 §

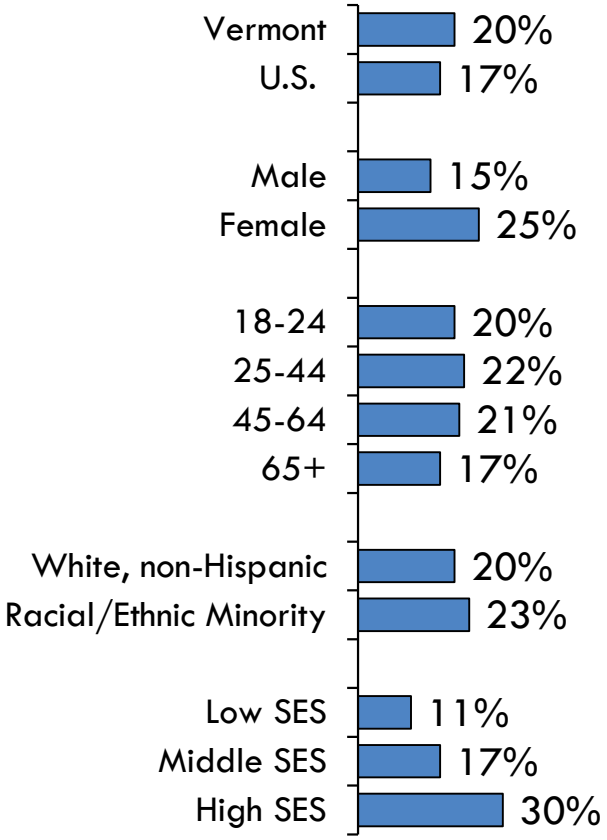


Source: VT BRFSS, 2015; VT YRBS, 2017.

Consumption of 3 or More Vegetables a Day

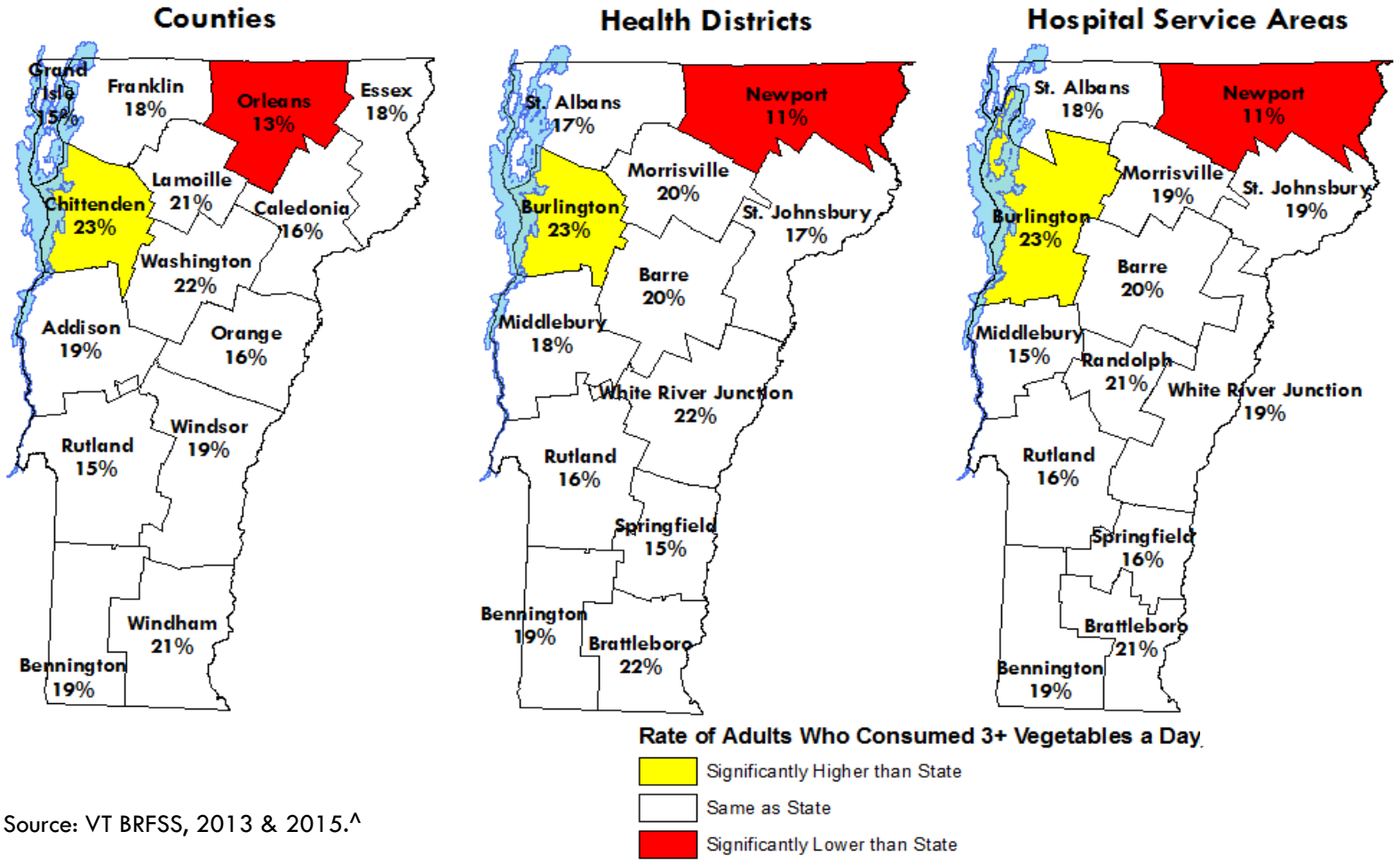
Adults Who Consumed 3 or More Vegetables a Day†

Prevalence of Adults Who Consumed 3 or More Vegetables a Day, 2015^



Source: VT BRFSS, 2015.

- 20% of Vermont adults (approximately 90,600 adults) consumed three or more vegetables a day.
  - Vermont adults were significantly more likely than U.S. adults to consume three or more vegetables a day.
  - Males were significantly less likely than females to consume three or more vegetables a day.
  - Adults who consumed three or more vegetables a day increased significantly with increasing SES.
  - Adults were significantly less likely to consume three or more vegetables a day than two or more fruits a day than (see page 113 for adult fruit consumption).



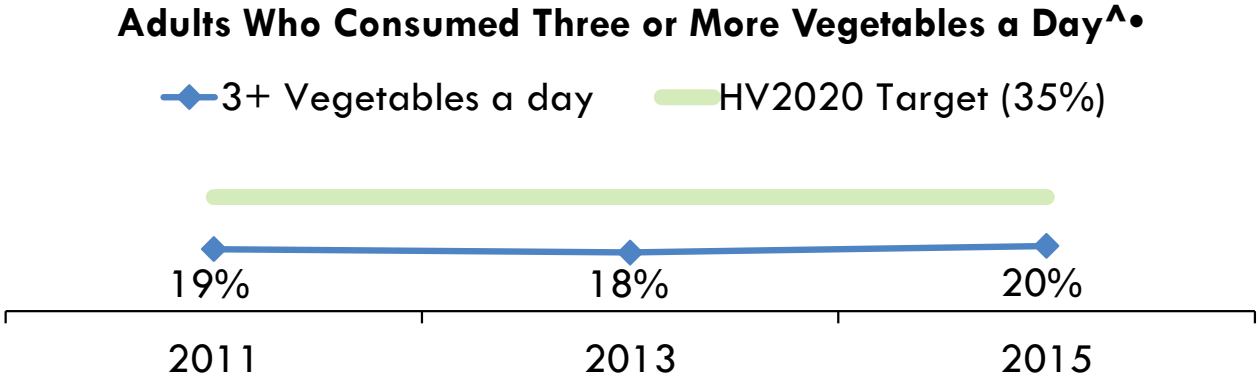
Source: VT BRFSS, 2013 & 2015.^

Adults Who Consumed 3 or More Vegetables a Day by Subgeography†

Regionally, Orleans county and the Newport Health District and Hospital Service Area (HSA) were significantly lower than the state average for adults who consumed three or more vegetables a day.

Adults Who Consumed 3 or More Vegetables a Day†

The rate of Vermont adults who consumed three or more vegetables a day was similar to previous years. The proportion of Vermont adults who consumed three or more vegetables a day is below the Healthy Vermonters 2020 target of 35%.

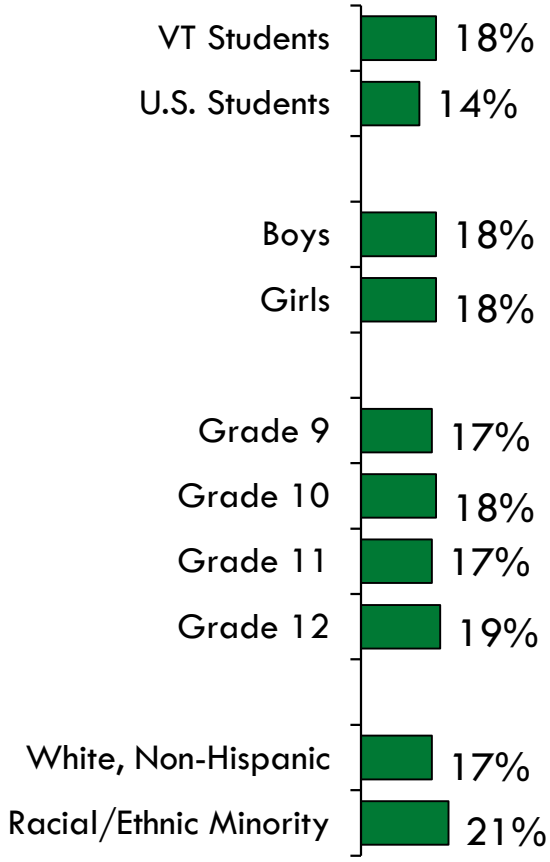


Source: VT BRFSS, 2011-2015.

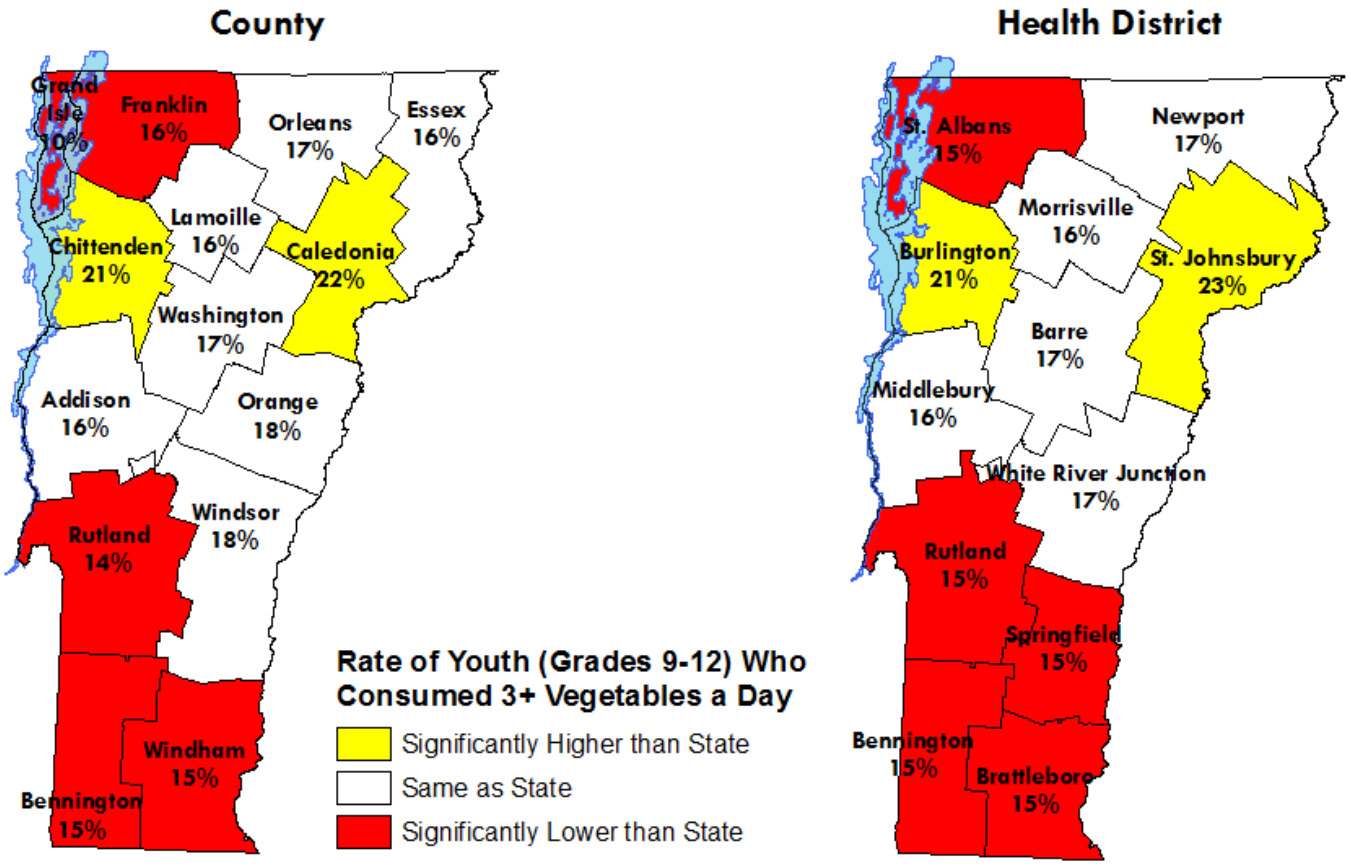
Youth in Grades 9-12 Who Consumed 3 or More Vegetables a Day†

- 18% of Vermont youth in grades 9-12 (approximately 4,800 students) consumed three or more vegetables a day.
  - Vermont youth were significantly more likely than U.S. youth overall to consume three or more vegetables a day.
  - Students of color were significantly more likely to eat three or more vegetables a day than white, non-Hispanic youth.
  - Vermont youth were significantly more likely to consume two fruits a day than three vegetables (see page 108 for youth fruit consumption).

Youth in Grades 9-12 Who Consumed 3 or More Vegetables a Day, 2017§



Source: VT YRBS, 2017.



Source: VT YRBS, 2017.

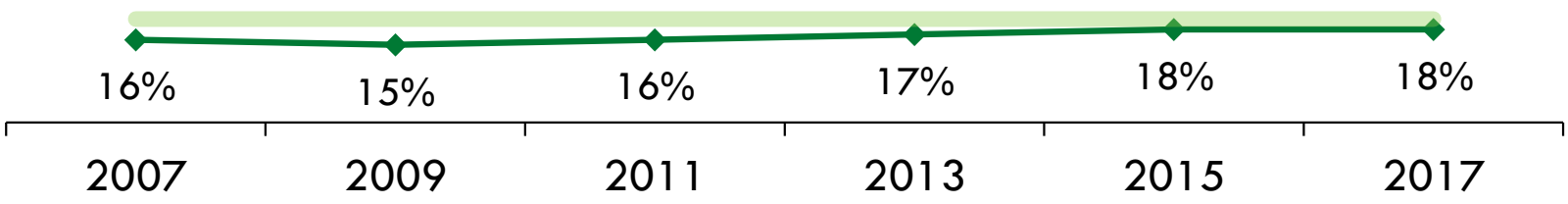
Youth (grades 9-12) Who Consumed 3 or More Vegetables a Day by Subgeography

Regionally, areas in northwestern and southern Vermont had significantly lower rates of consuming three or more vegetables a day than the state average

Youth in Grades 9-12 Who Consumed 3 or More Vegetables a Day†

Vermont youth in grades 9-12 who consumed three or more vegetables a day has remained stable for about the past decade. Youth who consumed three or more vegetables a day remains below the Healthy Vermonters 2020 target of 20%.

Youth in Grades 9-12 Who Consumed 3 or More Vegetables a Day§



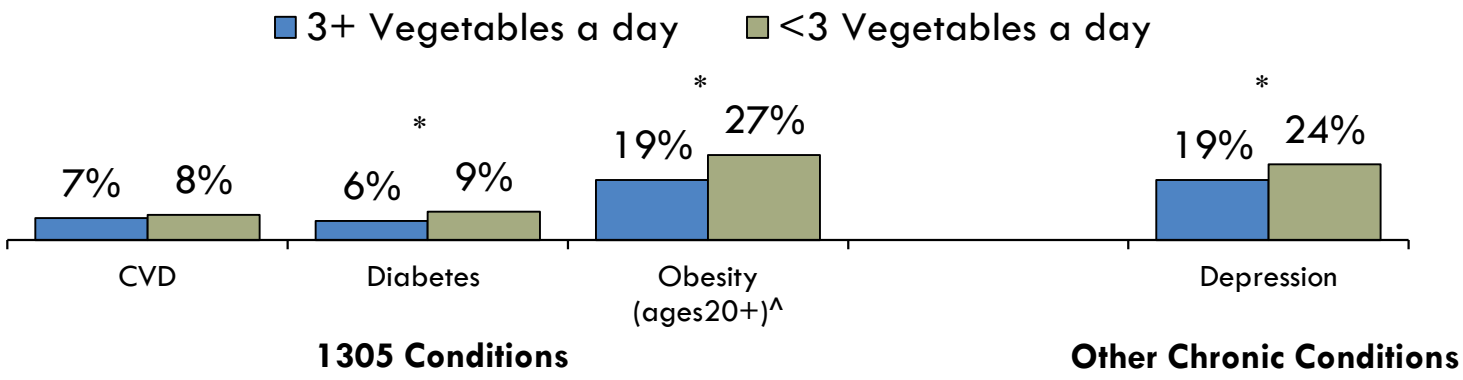
Source: VT YRBS, 2007-2017.

Prevalence of Chronic Disease among Adults Who Consumed 3 or More Vegetables a Day

Adults who consumed three or more vegetables a day were significantly less likely to have diabetes, be obese, or have depressive disorder when compared to adults who consumed less than three vegetables a day.

There were no significant differences in the prevalence of arthritis, asthma, cancer, chronic kidney disease, COPD (data not shown), or cardiovascular disease (CVD) between adults who consumed three or more vegetables a day and those who consumed less than three a day.

Chronic Disease among Adults Who Consumed 3 or More Vegetables a Day, 2015†

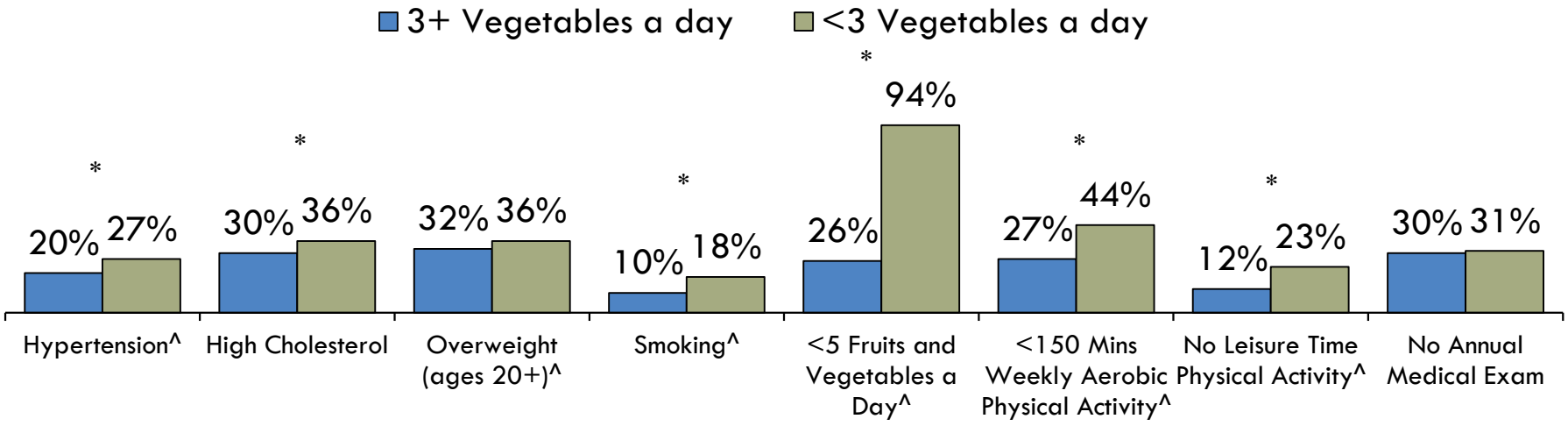


Source: VT BRFSS, 2015.

Prevalence of Chronic Disease Risk Factors among Adults Who Consumed 3 or More Vegetables a Day

Adults who consumed three or more vegetables a day were significantly less likely to have hypertension, high cholesterol, smoke, consume less than five fruits and vegetables a day, participate in less than 150 minutes of weekly aerobic physical activity, or have no leisure time physical activity when compared to adults who consumed less than three vegetables a day.

Prevalence of Chronic Disease Risk Factors among Adults Who Consumed 3 or More Vegetables a Day, 2015†



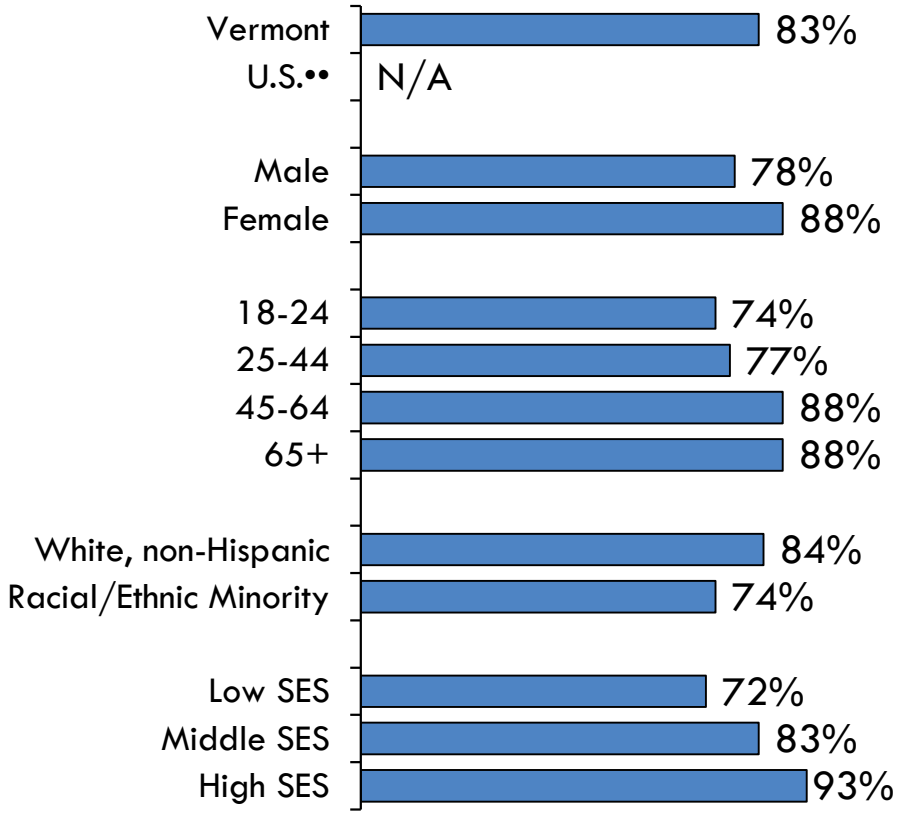
Source: VT BRFSS, 2015.

Consumption of Less Than 1 Soda/Sugar Sweetened Beverage a Day

Adults Who Consumed Less Than 1 Soda/ Sugar-Sweetened Beverage a Day

- 83% of Vermont adults (approximately 369,700 adults) consumed less than one soda/sugar-sweetened beverage a day.
  - Women were significantly more likely to consume less soda/sugar-sweetened beverages a day than men.
  - Adults 45 and older were significantly more likely than adults 18-44 to consume less soda/sugar-sweetened beverages a day.
  - White, non-Hispanic adults were more likely to consume less soda/sugar-sweetened beverages a day.
  - Consumption of less than one soda/sugar-sweetened beverage a day was more likely with increasing SES.
  - Vermont adults were more likely to consume less than a sugar-sweetened beverage (93%) than less than one soda (90%).

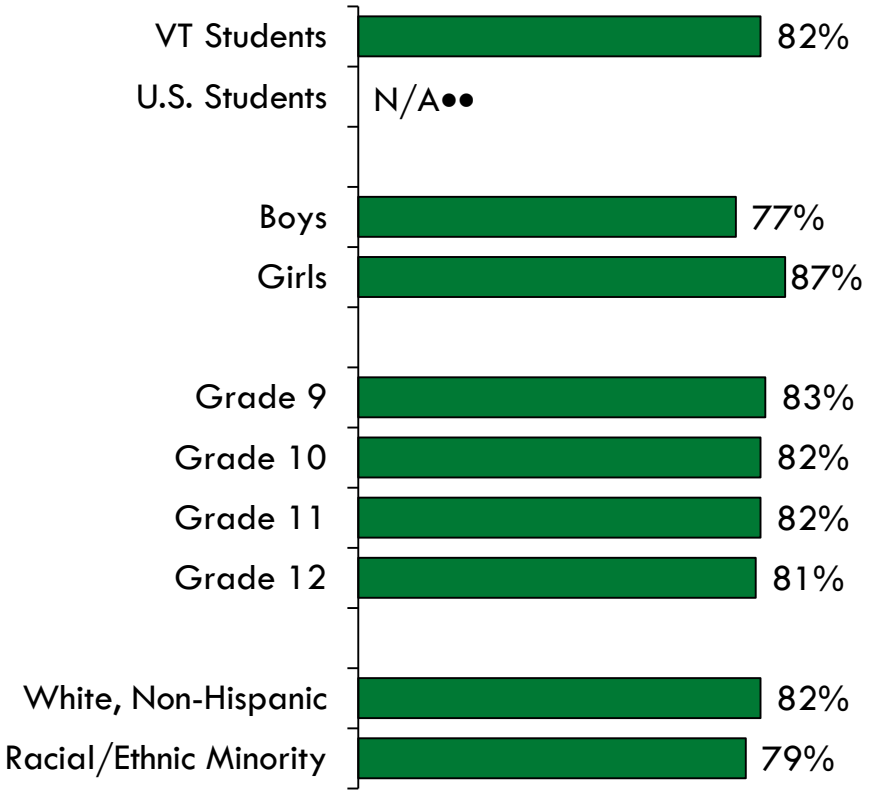
Prevalence of Adults Who Consumed Less Than One Soda/Sugar-Sweetened Beverage a Day, 2013†



Source: VT BRFSS, 2013.

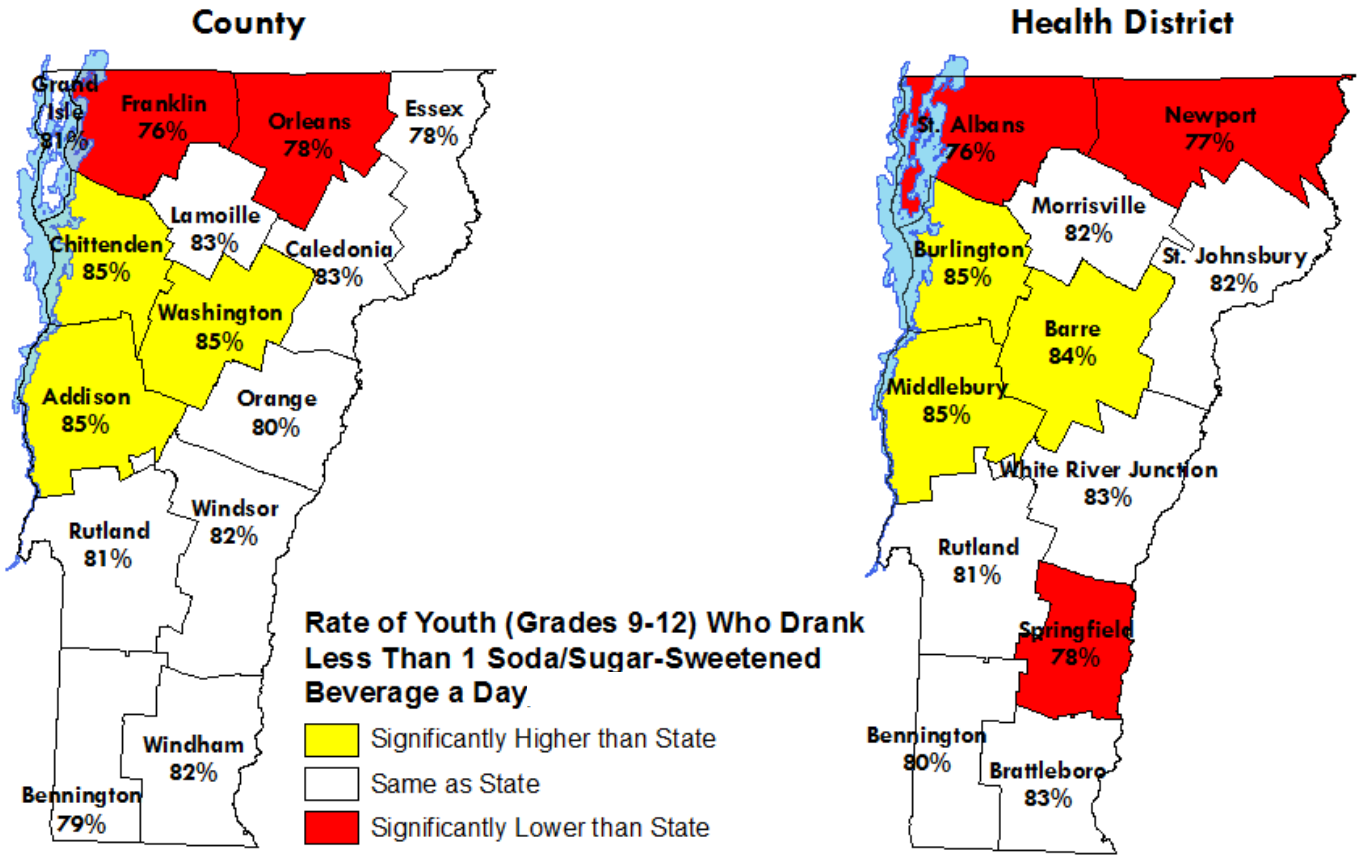
Youth in Grades 9-12 Who Consumed Less Than 1 Soda/Sugar-Sweetened Beverage a Day

Prevalence of Youth in Grades 9-12 Who Consumed Less Than One Soda/Sugar-Sweetened Beverage a Day, 2017†



Source: VT YRBS, 2017.

- 82% of Vermont youth in grades 9-12 (approximately 22,000 students) drank less than one soda/sugar-sweetened beverage a day.
  - Girls were significantly more likely than boys to consume less than one soda/sugar-sweetened beverage a day.
  - There were no differences in the consumption of less than one soda/sugar-sweetened beverage consumption by grade.
  - White, non-Hispanic students were more likely than students of color to consume less than one soda/sugar-sweetened beverage a day.



Source: VT YRBS, 2017.

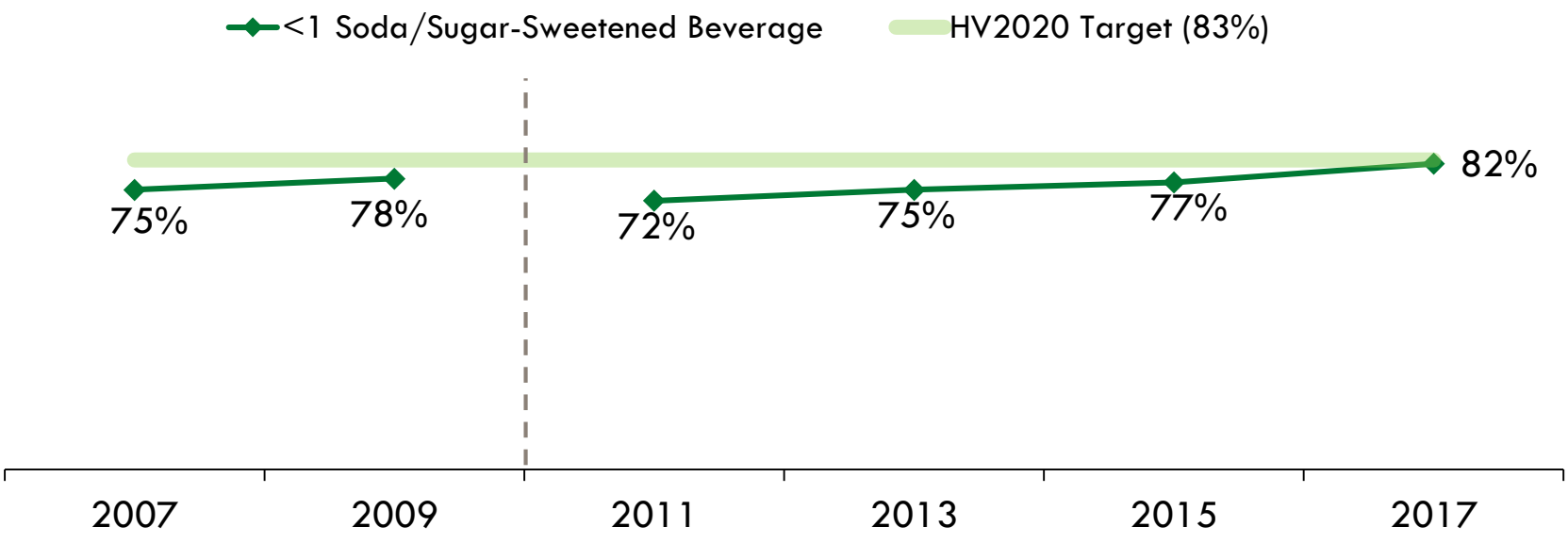
Youth (Grades 9-12) Who Consumed <1 Soda/Sugar-Sweetened Beverage a Day

Franklin and Orleans counties along with the St. Albans, Newport, and Springfield health districts showed a significantly lower than state average consumption for youth (grades 9-12) who drank less than one soda/sugar-sweetened beverage a day.

Youth in Grades 9-12 Who Consumed Less Than 1 Soda/Sugar-Sweetened Beverage a Day†

The prevalence of Vermont youth who consumed less than one soda/sugar-sweetened beverage a day increased significantly from 2015 to 2017. Youth who consumed less than one soda/sugar-sweetened beverage a day is approaching the Healthy Vermonters 2020 target of 83%.

Prevalence of Youth Who Consumed Less Than One Soda/Sugar-Sweetened Beverage a Day.+



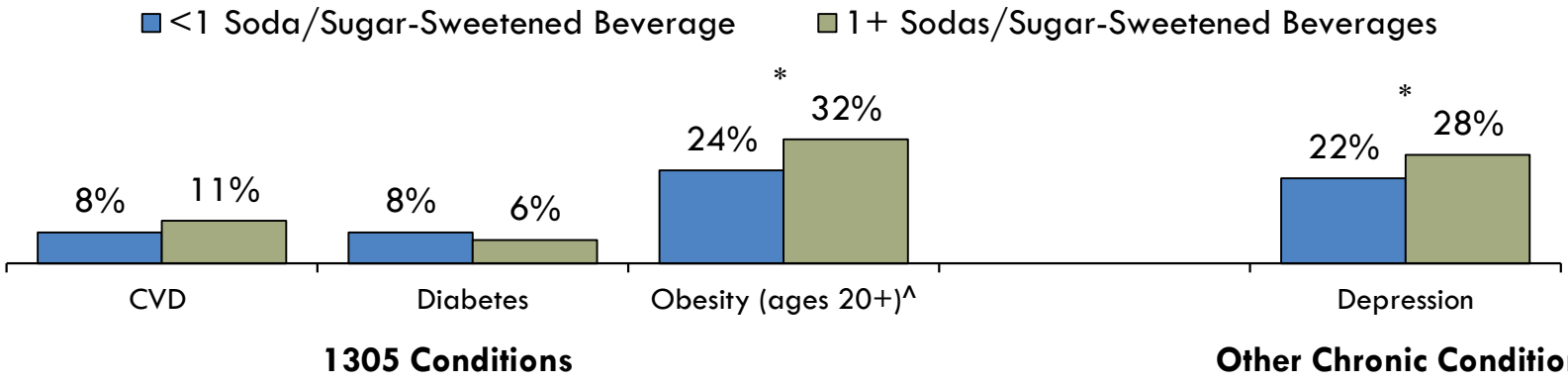
Source: VT YRBS, 2007-2017

Prevalence of Chronic Diseases among Adults Who Consumed Less Than 1 Soda or One Sugar-Sweetened Beverage

Adult Vermonters who consumed less than one soda/sugar-sweetened beverage a day were significantly less likely to be obese or have a depressive disorder when compared to those who consumed one or more a day.

There was no significant difference in the prevalence of arthritis, asthma, cancer, chronic kidney disease, COPD (data not shown), CVD, or diabetes between adults who consumed less than one soda/sugar-sweetened beverage a day and those that consumed one or more a day.

Prevalence of Chronic Disease among Adults who Consumed Less Than One Soda/Sugar-Sweetened Beverage a Day, 2013†

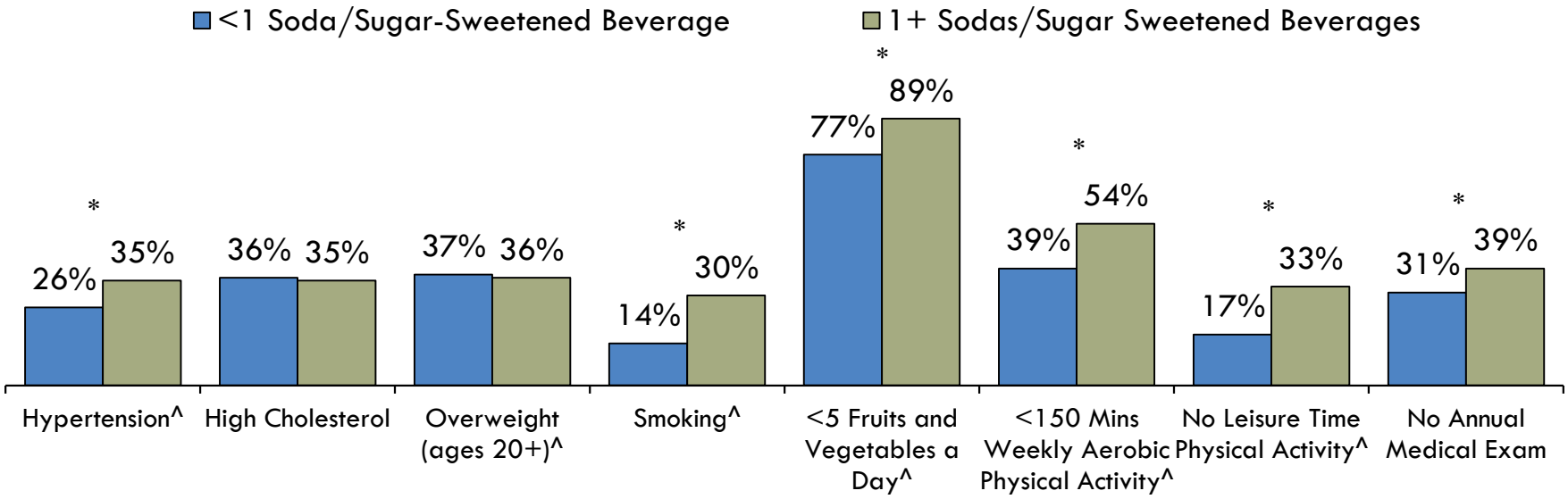


Source: VT BRFSS, 2013.

Prevalence of Chronic Disease Risk Factors among Adults Who Consumed Less Than 1 Soda/Sugar-Sweetened Beverage a Day

Vermont adults who consumed less than one soda/sugar-sweetened beverage a day were significantly less likely to have hypertension, smoke, consume less than five fruits and vegetables a day, participate in less than 150 minutes of aerobic physical activity a week, participate in no leisure time physical activity, and not receive an annual medical exam when compared to adults who consumed one or more sodas/sugar-sweetened beverages a day.

Chronic Disease Risk Factors among Adults Who Consumed Less Than One Soda/Sugar-Sweetened Beverage a Day, 2013†

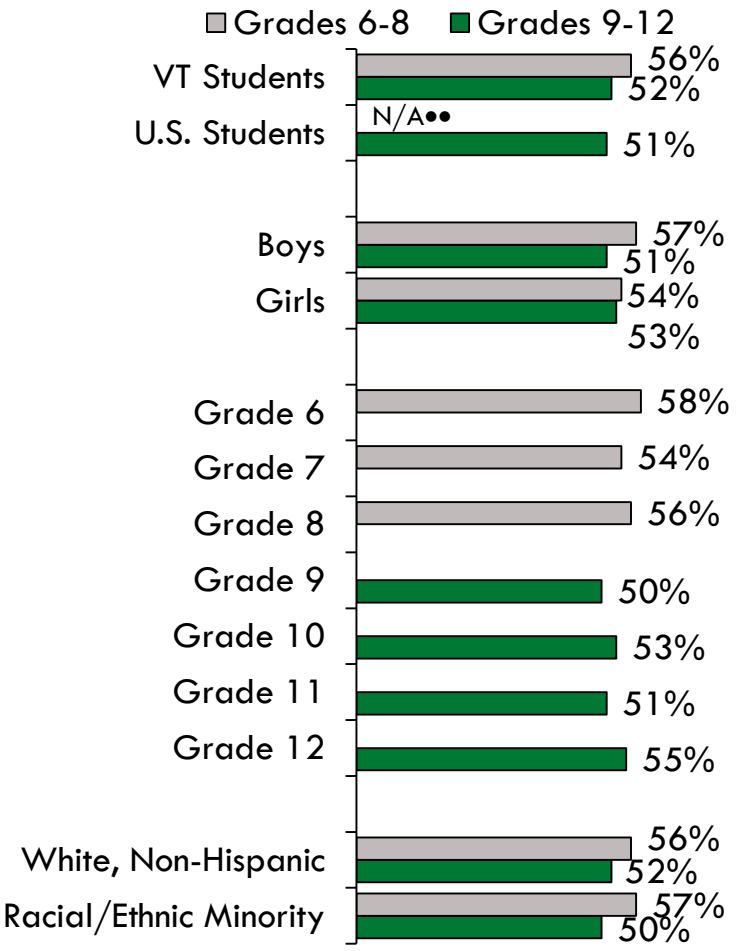


Source: VT BRFSS, 2013.

Youth Water Consumption

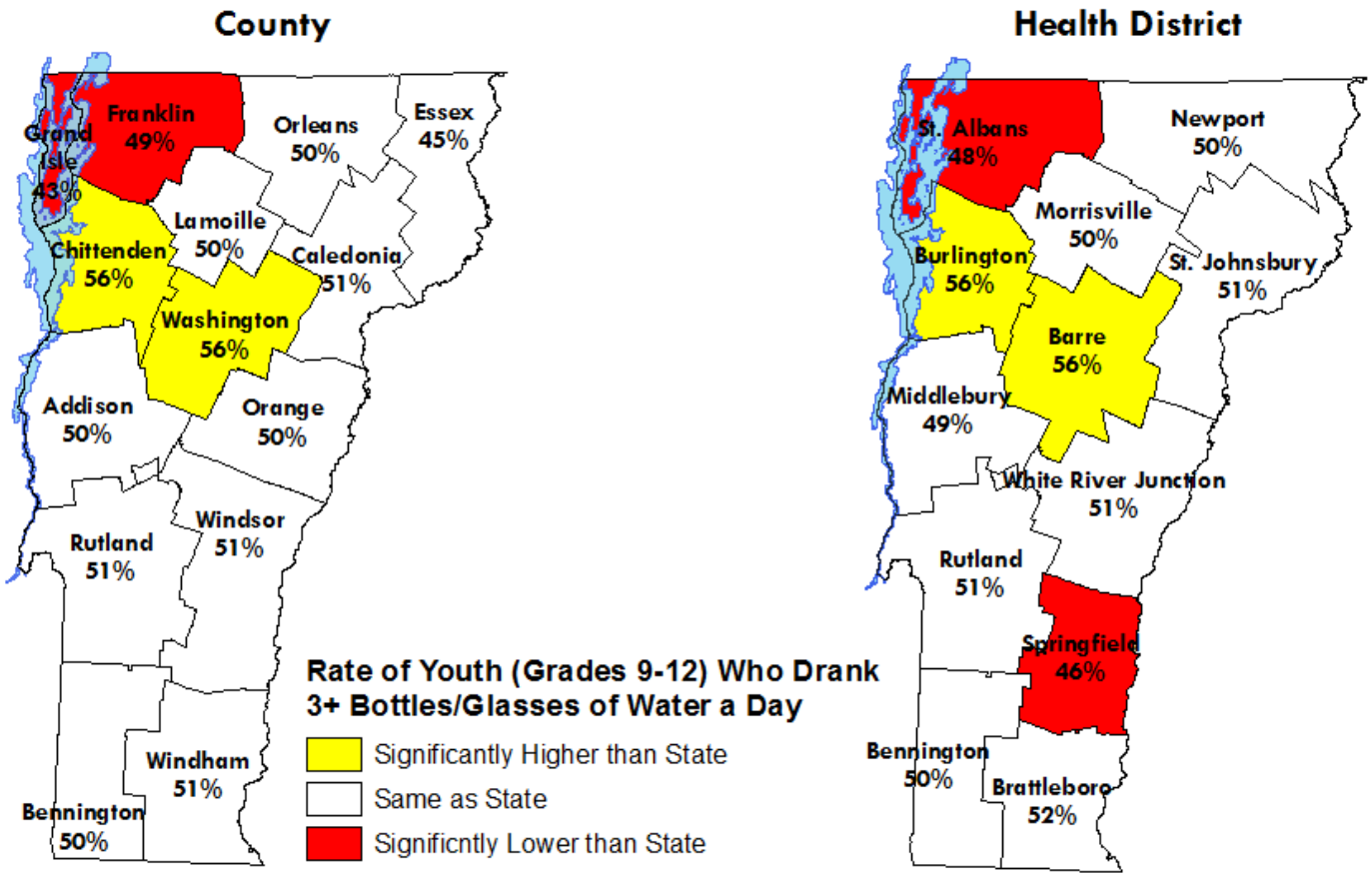
Youth in Grades 6-12 Who Consumed 3 or More Bottles or Glasses of Water a Day

Prevalence of Youth in Grades 6-12 Who Consumed Three or More Bottles or Glasses of Water a Day, 2017†



- About half (52%) of youth (grades 6-8) and close to three in five (56%) youth in grades 9-12 consumed three or more bottles or glasses of water a day (approximately 13,900 and 9,200 students, respectively).
  - High school boys were significantly less likely to have consumed three or more bottles/ glasses of water a day than high school girls. In contrast, middle school boys were more likely than middle school girls to do the same.
  - 6th graders were more likely to consume three or more bottles/glasses of water a day than 7th graders and 9th graders were less likely than older students.

Source: VT YRBS, 2017.



Source: VT YRBS, 2017.

Youth (Grades 9-12) Who Consumed 3 or More Bottles/Glasses of Water a Day

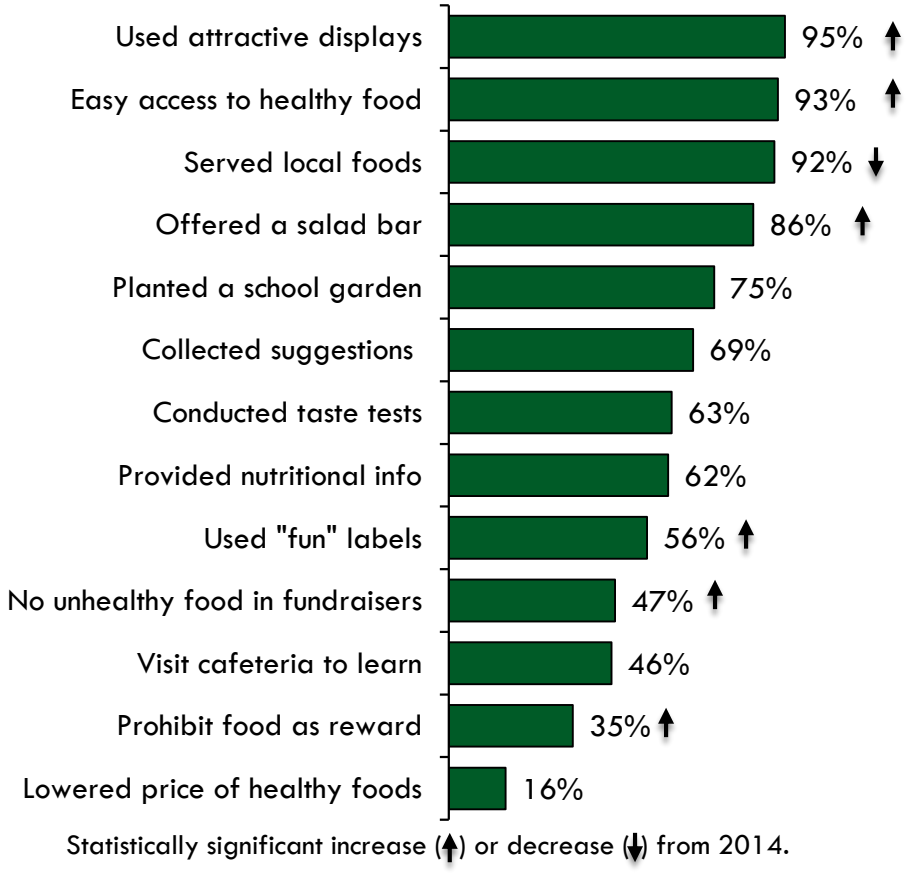
Franklin County along with the St. Albans and Springfield health districts showed a significantly lower rate of youth who drank three or more bottles/glasses of water a day than the state average. Chittenden and Washington Counties along with the Burlington and Barre health districts had significantly higher consumption.

Nutrition in Schools

Nutrition in Secondary Schools – Promoting Healthy Eating

- 74% of Vermont secondary schools did not sell "less healthy" foods or beverages. This was significantly higher than the 2014 rate of 60% (data not shown).
- To promote healthy eating, the majority of Vermont schools used attractive displays (95%). They also frequently located foods near the cashier where they were easy to access (93%) or served local foods (92%).
- 62% of schools provided nutrition or caloric information in the cafeteria.
- Only 16% of schools lowered the price of nutritious items and increased the price of less nutritious foods.
- The proportion of schools that prohibit unhealthy food in fundraisers almost doubled from 2014 to 2016 (25% vs. 47%).

Efforts Used in Secondary Schools to Promote Healthy Eating, 2016†

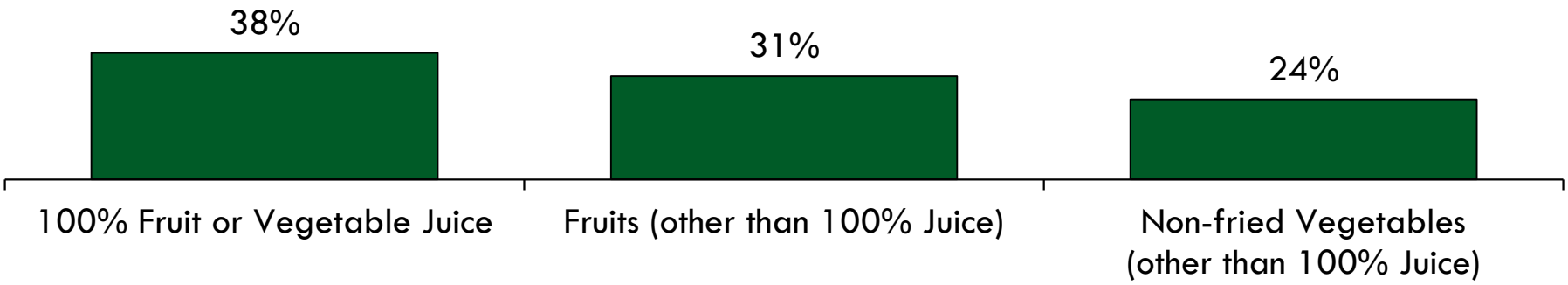


Source: VT SHP, 2016.

Nutrition in Secondary Schools – Vending Machines

Forty-six percent of secondary schools allow students to purchase foods and beverages from vending machines or snack bars. This is a significant decrease from 80% in 2008 as well as 55% in 2014. Secondary schools most commonly have 100% fruit or vegetable juice (38%) available in their vending machine, 31% have fruits (other than 100% juice) available, and they least commonly had non-fried vegetables (24%) available. The proportion of schools providing 100% fruit or vegetable juice, fruit (other than juice), and non-fried vegetables in their vending machines is similar to 2014. One-quarter (24%) of secondary schools offered both fruits and vegetables for purchase from their vending machines (data not shown).

Secondary Schools with Fruit and Vegetable Options in their Vending Machines, 2016

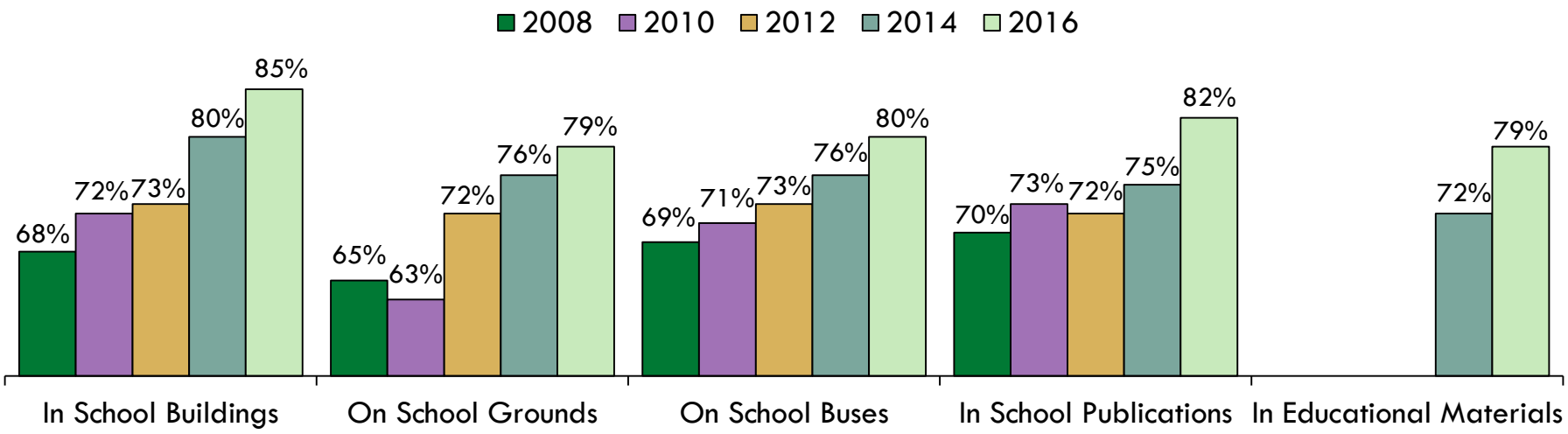


Source: VT SHP, 2016.

Nutrition in Secondary Schools – Junk-Food Advertising

In 2016, 73% of schools prohibited all forms of advertising for candy, fast food, and soft drinks in the five possible locations asked about on the survey where advertisements could be posted. This is significantly higher than the 66% who did in 2014. Schools most commonly ban advertisements within school buildings (85%). Prohibiting junk-food advertising in school buildings, on school buses, in school publications, and in educational materials significantly increased from 2014 to 2016. The trend of prohibiting junk-food advertisement by schools has significantly increased since 2008 in all areas.

Trend of Junk-Food Advertising in Vermont Secondary Schools, 2008-2016

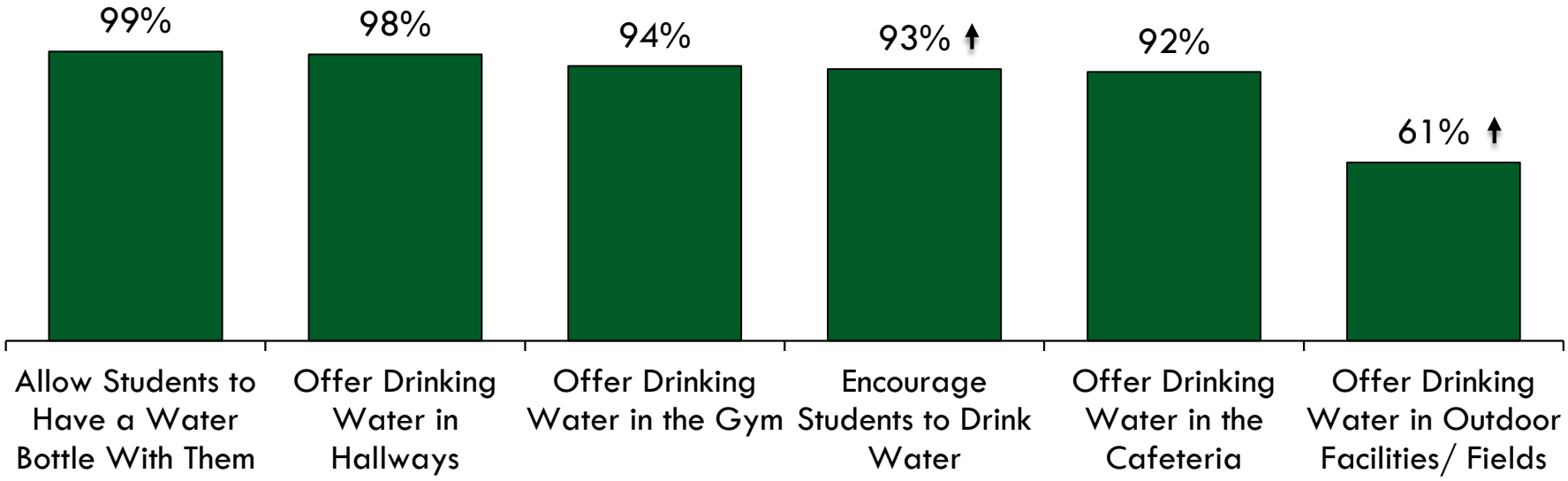


Source: VT SHP, 2008-2016.

Nutrition in Secondary Schools – Free Access to Drinking Water

The majority of Vermont secondary schools encourage students to drink plain water (93%). This is significantly higher than the 86% who did in 2014. Schools allow and provide access to drinking water in a variety of locations throughout the school and grounds. Allowing students to have a water bottle (99%) or offering drinking water in hallways (98%) were the most common approaches. However, only roughly half of schools (54%) offer access to free drinking water in outdoor physical activity facilities and sport fields.

Secondary Schools Providing Students with Free Access to Drinking Water†



Source: VT SHP, 2016.

Statistically significant increase (↑) or decrease (↓) from 2014.

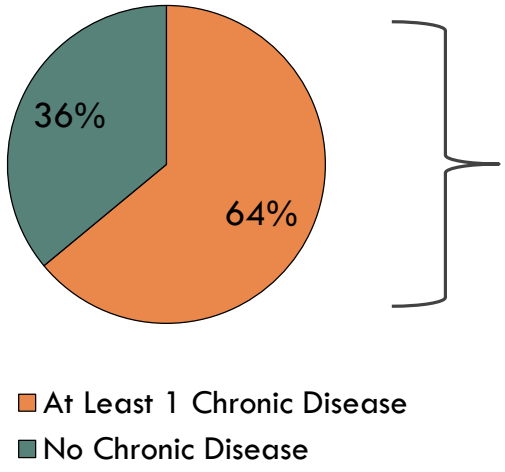
Multiple Chronic Conditions

Adult Prevalence of Multiple Chronic Conditions

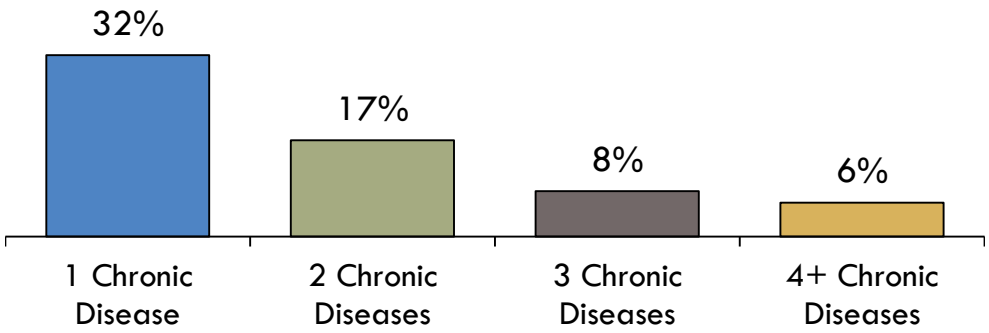
Overall, 64% of all Vermont adults had at least one chronic disease in 2016. Chronic diseases assessed included arthritis, asthma, cancer, cardiovascular disease, chronic kidney disease, chronic obstructive pulmonary disorder, depressive disorder, diabetes, and obesity.

Of adult Vermonters living with at least one chronic disease, 55% had at least one 1305-related chronic disease (these include: cardiovascular disease, diabetes, and obesity).

Vermont Adults With At Least One Chronic Condition, 2016



Adult Prevalence of the Number of Chronic Diseases They Have

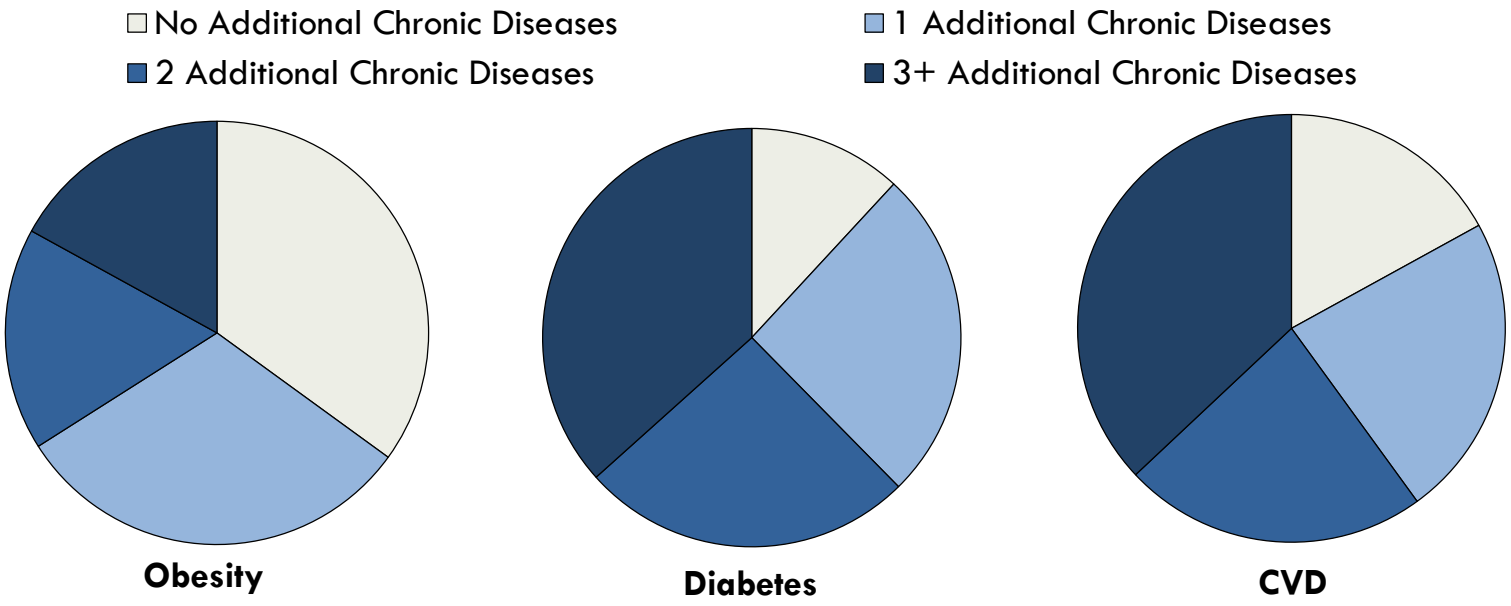


Source: VT BRFSS, 2016.

Proportion of Vermont Adults with Multiple Chronic Diseases among Those Having1305 Chronic Conditions

Obesity is a gateway condition to more severe chronic disease such as diabetes or CVD. Vermont adults with obesity are more likely to experience only obesity or have one additional chronic disease than two or more additional chronic diseases. Those who have diabetes and CVD are more likely to have two or more additional chronic diseases. Each of the following graphs represents all Vermont adults who have been diagnosed with the chronic disease displayed below it.

Proportion of Vermonters with Multiple Chronic Diseases Among Those Diagnosed with a 1305 Chronic Diseases, 2016



Source: VT BRFSS, 2016.

Conclusion

Conclusion

- Chronic disease is responsible for the majority of deaths in Vermont and leads to increased healthcare encounters as well as decreased quality of life as a result of largely preventable medical conditions.
- High levels of chronic disease and certain behaviors are related. Three behaviors (poor nutrition, tobacco use, and physical inactivity), lead to 4 chronic diseases (diabetes, cardiovascular disease, lung disease, and cancer) that result in more than 50% of deaths in Vermont.
- With greater access to healthy food options and opportunities for physical activity, the prevalence of risk factors for chronic disease in Vermont decreased. As these risk factors are reduced the impact of chronic disease can be diminished.
- Changing the environment to promote healthy behaviors in communities, workplaces, and schools through policies that make the healthy option the easiest one, will help reduce the negative impact of chronic disease including the financial burden on individuals and communities.

Data Sources

Data Sources and Notes

Behavioral Risk Factor Surveillance System (BRFSS): Vermont tracks risk behaviors using this telephone survey of adults. The results are used to plan, support, and evaluate health promotion and disease prevention programs. Since 1990, Vermont, along with the 49 other states and three territories, has participated in the BRFSS with the Centers for Disease Control and Prevention (CDC). Approximately 7,000 Vermonters are randomly and anonymously selected annually. An adult (18 or older) in the household is asked a uniform set of questions. The results are weighted to represent the adult population of the state.

- *Federal poverty level (FPL):* is a measure calculated from annual household income and family size. FPL is used to determine eligibility for government assistance programs.
- *Socioeconomic Status (SES):* is a measure calculated from FPL and level of education. People living below 250% FPL and having a high school or less education, for example, are considered low income, often unable to meet basic needs.

Youth Risk Behavior Survey (YRBS): Every two years since 1993, the Vermont Department of Health's Division of Alcohol and Drug Abuse Program, and the Agency of Education's Coordinated School Health Programs have sponsored the YRBS. The YRBS measures the prevalence of behaviors that contribute to the leading causes of death, disease, and injury among Vermont youth in grades 6-12. The YRBS is part of a larger effort to help communities increase the "resiliency" of young people by reducing high-risk behaviors and promoting healthy behaviors.

School Health Profiles (SHP): Every two years since 2002 the Vermont Agency and Education and Department of Health have worked together to collect data from secondary schools containing any grades from six through twelve. School principals and lead health educators answer questions about current health policies and health education practices in their schools.

Data Sources and Notes

Vermont Vital Statistics: The Vermont Department of Health vital statistics system tracks Vermont births and deaths. The Department of Health also receives abstracts for Vermont resident births and deaths that occur in other states which allows the Department to do statistical analyses of vital events involving all Vermont residents, including those events which occurred outside of the state. Underlying cause of death refers to the condition is listed as the first mortality code, indicating it was the primary cause leading to death. All deaths related to a condition refers to when it is listed as any of the twenty possible mortality codes.

Vermont Uniform Hospital Discharge Data Set (VUHDDS): Hospital and emergency department discharge data are collected from in-state hospitals and from hospitals in bordering states. Only Vermont residents were included in this analysis. A primary diagnosis of a condition refers to when that condition is listed as the first diagnosis code. Any mention of the condition refers to when the condition in question is listed as any of the twenty available diagnosis codes. Patients admitted to the hospital from the emergency department are included in the hospital discharge data set and are not included in the emergency department data set.

Green Mountain Care Board (GMCB) Vermont Health Care Uniform Reporting and Evolution System (VHCURES): Vermont's All-Payer Claims Database that contains most medical and pharmacy claims and eligibility data for Vermonters insured by an insurance provider (public or private) who reports to the State of Vermont. Due to various laws and regulations, not all claims are reported to the state by payers. As a result of this, and the fact that medical care that did not generate an insurance claim do not appear here, data generated from VHCURES are estimates of healthcare utilization among insured Vermonters. All analyses, conclusions, and recommendations provided here from VHCURES are solely those of the Department of Health and not necessarily those of the GMCB.

Data Sources and Notes

United States Renal Data System (USRDS): The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) funds the USRDS which is a national data system collecting, analyzing, and distributing information about chronic kidney disease (CKD) and end-stage renal disease (ESRD) in the United States. Data are received by USRDS through collaboration with the Centers for Medicare & Medicaid Services (CMS), United Network for Organ Sharing (UNOS), and ESRD networks. Data are made available publicly through the USRDS.

Confidence Intervals Used For Statistical Comparisons: A confidence interval represents the range in which a parameter estimate could fall which was calculated based on the observed data. For this analysis, a 95% confidence interval was used, meaning that one can be 95% confident that the true value of the parameter being examined falls within the specified confidence interval. Statistical significance was assessed by comparing the confidence intervals of different groups. If the confidence intervals from two groups do not overlap, the estimate was considered to be significantly different from the another.

Age-Adjustment: Measures are adjusted for age for all data sources if they are Healthy Vermonters 2020 measures or if Healthy People 2020 indicates a measure should be age-adjusted. Age-adjustment groupings come from those determined by Healthy People 2020. To ensure consistency, whenever a subset of an age-adjusted measure is calculated it is also age-adjusted.

For additional information

Vermont Diabetes Prevention:
http://healthvermont.gov/wellness/diabetes
http://myhealthyvt.org/
Data Resources: http://healthvermont.gov/health-statistics-vital-records/surveillance-reporting-topic/diabetes

Vermont Cardiovascular Disease Prevention:
http://healthvermont.gov/wellness/heart-disease
http://ladiesfirstproviders.vermont.gov/
Data Resources: http://healthvermont.gov/health-statistics-vital-records/surveillance-reporting-topic/cardiovascular-disease

Vermont Physical Activity and Nutrition and Obesity Prevention:
http://healthvermont.gov/mymoment/
http://healthvermont.gov/wellness/physical-activity-nutrition
Data Resources: http://healthvermont.gov/health-statistics-vital-records/surveillance-reporting-topic/physical-activity-and-nutrition

School Health
http://healthvermont.gov/wellness/physical-activity-nutrition/school-and-early-child-care
Worksite Wellness
http://healthvermont.gov/wellness/physical-activity-nutrition/workplace

3-4-50 Vermont: Drive Down Chronic Disease
http://healthvermont.gov/3-4-50

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Appendix

Prevalence of Chronic Disease by Income and Level of Education†

Socioeconomic Factor		CVD	Diabetes	Obesity (ages 20+)^
Income	Low (<$25K)	15%	15%	35%
	Middle ($25K-<$50K)	8%	8%	27%
	High ($50K-<$75K)	6%	8%	25%
	Highest ($75K+)	4%	4%	24%
Level of Education	High School or Less	12%	12%	33%
	Some College	6%	8%	31%
	College+	5%	5%	19%

Source: Vermont Behavioral Risk Factor Surveillance System 2016.

Chronic Disease Comorbidities by Adult Obesity Status†

Chronic Disease	Were Obese	Were Not Obese
Arthritis*	37%	24%
Asthma*	14%	9%
Cancer~	8%	8%
Cardiovascular Disease (CVD)*	12%	7%
Chronic Kidney Disease	4%	2%
COPD*	8%	5%
Depression*	29%	19%
Diabetes*	18%	5%

Source: Vermont Behavioral Risk Factor Surveillance System 2016.

Prevalence of Risk Factors by Income and Level of Education†

Socioeconomic Factor		Hypertension^	Prediabetes	Overweight (ages 20+)^
Income	Low (<$25K)	32%	8%	32%
	Middle ($25K-<$50K)	27%	6%	36%
	High ($50K-<$75K)	26%	7%	36%
	Highest ($75K+)	23%	4%	37%
Level of Education	High School or Less	30%	7%	34%
	Some College	25%	6%	36%
	College+	21%	4%	34%

Source: Vermont Behavioral Risk Factor Surveillance System 2014 (prediabetes), 2015 (Hypertension), and 2016 (overweight).

Prevalence of Protective Factors by Income and Level of Education†

Socioeconomic Factor		150+ Mins Weekly Aerobic Physical Activity^	2+ Fruits a Day^	3+ Vegetables a Day^	<1 Soda/Sugar-Sweetened Beverage a Day
Income	Low (<$25K)	48%	26%	16%	73%
	Middle ($25K-<$50K)	56%	30%	17%	82%
	High ($50K-<$75K)	65%	32%	21%	88%
	Highest ($75K+)	65%	36%	26%	90%
Level of Education	High School or Less	49%	25%	12%	76%
	Some College	58%	33%	21%	83%
	College+	70%	38%	29%	92%

Source: Vermont Behavioral Risk Factor Surveillance System 2015 (physical activity and fruit/vegetable consumption) and 2013 (soda/sugar-sweetened beverages).

Chronic Disease Comorbidities for Adults by Hypertension Status†

Chronic Disease	Had Hypertension	Did Not Have Hypertension
Arthritis*	45%	19%
Asthma	13%	10%
Cancer~*	11%	5%
Cardiovascular Disease*	18%	4%
Chronic Kidney Disease*	5%	2%
COPD*	11%	4%
Depression*	26%	21%
Diabetes*	20%	4%
Obesity (ages 20+)^*	44%	19%

Source: Vermont Behavioral Risk Factor Surveillance System 2015.

Chronic Disease Comorbidities for Adults by Overweight Status†

Chronic Disease	Were Overweight	Were Not Overweight or Obese
Arthritis*	30%	19%
Asthma	10%	8%
Cancer~*	9%	6%
Cardiovascular Disease	7%	6%
Chronic Kidney Disease	3%	2%
COPD	5%	5%
Depression	20%	18%
Diabetes*	7%	3%

Source: Vermont Behavioral Risk Factor Surveillance System 2016.

Chronic Disease Comorbidities for Adults by Amount of Weekly Physical Activity†

Chronic Disease	Met CDC Weekly Aerobic Physical Activity Guidelines	Did Not Meet CDC Weekly Aerobic Physical Activity
Arthritis*	25%	32%
Asthma	10%	12%
Cancer~	7%	8%
Cardiovascular Disease*	7%	10%
Chronic Kidney Disease	2%	3%
COPD*	5%	8%
Depression*	20%	28%
Diabetes*	6%	11%
Obesity (ages 20+)^*	20%	33%

Source: Vermont Behavioral Risk Factor Surveillance System 2015.

Chronic Disease Comorbidities for Adults by Amount of Fruit Consumed per Day†

Chronic Disease	2+ Fruits a Day	<2 Fruits a Day
Arthritis	28%	27%
Asthma	10%	11%
Cancer~*	9%	6%
Cardiovascular Disease	8%	8%
Chronic Kidney Disease	3%	3%
COPD	5%	7%
Depression*	19%	25%
Diabetes	8%	9%
Obesity (ages 20+)^	23%	26%

Source: Vermont Behavioral Risk Factor Surveillance System 2015.

Chronic Disease Comorbidities for Adults by Amount of Vegetables Consumed per Day†

Chronic Disease	3+ Vegetables a Day	<3 Vegetables a Day
Arthritis	27%	28%
Asthma	10%	11%
Cancer~	8%	7%
Cardiovascular Disease	7%	8%
Chronic Kidney Disease	2%	3%
COPD	5%	7%
Depression*	19%	24%
Diabetes*	6%	9%
Obesity (ages 20+)^*	19%	27%

Source: Vermont Behavioral Risk Factor Surveillance System 2015.

Chronic Disease Comorbidities for Adults by Amount of Soda/Sugar Sweetened Beverage Consumed per Day†

Chronic Disease	<1 Soda/Sugar-Sweetened Beverage a Day	1+ Sodas/Sugar-Sweetened Beverages a Day
Arthritis	29%	26%
Asthma	11%	15%
Cancer~	8%	8%
Cardiovascular Disease	8%	11%
Chronic Kidney Disease	2%	3%
COPD	5%	8%
Depression*	22%	28%
Diabetes	8%	6%
Obesity (ages 20+)^*	24%	32%

Source: Vermont Behavioral Risk Factor Surveillance System 2013.