

Final: Chittenden County Public Health and Community Design Data Analysis

9.24.2012

An ECOS Analysis Report

This analysis provides a brief introduction to the role of community design in improving population health and a snapshot of the demographics, chronic health conditions and associated risk factors of the residents of Chittenden County, followed by recommendations for towns and municipalities.



ENVIRONMENT | COMMUNITY | OPPORTUNITY | SUSTAINABILITY
A SUSTAINABLE FUTURE FOR CHITTENDEN COUNTY

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Chittenden County Public Health and Community Design Data Analysis

PROVIDED BY THE BURLINGTON DISTRICT OFFICE OF THE VERMONT DEPARTMENT OF HEALTH

INTRODUCTION

The ECOS Project Steering Committee is a broadly-based 60+ member partnership committed to implementing strategies to improve Chittenden County's long-term sustainability: economically, environmentally and socially. The Steering Committee has committed to a five-phase project:

1. Adopt common goal statements
2. Analyze reports regarding economic development, housing, energy, land use and transportation, natural resources and health/human services/education
3. Develop indicators tied to the goal statements
4. Prioritize implementation actions for the next five, ten and twenty years
5. Invest in high priority implementation actions.

The results will inform regional, municipal and other plans as they are updated. This report is part of ECOS Phase Two.

The vision of the ECOS project is a **healthy**, inclusive and prosperous community.

Public Health related goals addressed by the project are:

- Decrease the proportion of residents engaging in unhealthy behaviors such as smoking and binge drinking.
- Improve the ability of Chittenden County residents to access safe, affordable, healthy food, especially locally produced.
- Increase the ability of residents to engage in physical activity.

The purpose of this report is:

1. To provide a framework for considering the impact of community design on population health in the context of Chittenden County, Vermont.
2. To compile and interpret available data into a format that regional and town planners and administrators can use to determine the health impact of their planning and decision-making.
3. To assist planners with priority setting regarding the health impacts of their planning and implementation work.
4. To provide other ECOS work groups with readily available data to guide them on the health impacts of their recommendations.

Highlights of the report:

- Health starts in our families, in our schools and workplaces, in our playgrounds and parks, and in the air we breathe and the water we drink. The conditions in which we live and work have an enormous impact on our health.
- Community design can improve population health by increasing physical activity, reducing injury, increasing access to healthy food, improving air and water quality, minimizing the effects of climate change, decreasing mental health stresses, strengthening the social fabric of a community, providing fair access to livelihood, education, and resources, reducing exposure to tobacco and alcohol advertising, reducing youth access to alcohol, and increasing smoke-free indoor and outdoor policies.
- Interventions that include the community and policies and systems level of the Vermont Prevention Model are critical to achieving individual level behavior changes that will improve health.
- Eliminating tobacco use, increasing physical activity levels and improving nutrition, and decreasing excessive alcohol consumption are priorities in decreasing the leading causes of death. Research shows that healthy community design is associated with improvements in these health behaviors.
- Within Chittenden County, there are several identified populations who experience health disparities (i.e., racial or ethnic minorities, low-income, homeless).
- Among adults and youth in Chittenden County:
 - Too many smoke or are exposed to second hand smoke.
 - Too many are not getting enough physical activity.
 - Too many are not eating enough fruits and vegetables.
 - Too many are engaging in underage and/or binge drinking.

- Towns and municipalities can use the report recommendations to improve the health, natural environment, economy, and social capital of their community.

PUBLIC HEALTH: WHAT IS IT AND WHY DOES COMMUNITY DESIGN MATTER?

Public health is the science and art of protecting and improving the health of communities. The way we design and build our communities affects our physical and mental health. Healthy community design integrates evidence-based health strategies into community planning, transportation, and land-use decisions.

Healthy community design can improve people's health by:

- Increasing physical activity.
- Reducing injury.
- Increasing access to healthy food.
- Improving air and water quality.
- Minimizing the effects of climate change.
- Decreasing mental health stresses.
- Strengthening the social fabric of a community.
- Providing fair access to livelihood, education, and resources. ¹
- Reducing exposure to tobacco advertising. ²
- Increasing smoke-free indoor and outdoor policies. ³
- Reducing exposure to alcohol advertising. ⁴
- Reducing youth access to alcohol. ⁵

It may seem unfathomable that community design can impact a population's health so markedly. From an expansive perspective the interrelatedness of these indicators is clear. Imagine a community that is designed with streets that are safe and convenient to all modes of transport, that uses alternative, renewable, clean energy to mitigate the effects of climate change and preserve or improve air quality, one that zones economic and residential development, agricultural and recreational green space with full connectivity. Such a community reduces disparity by allowing the broadest cross-section of society to engage a healthy lifestyle. Making healthy choices available to all Chittenden County residents through systematic design improvements essentially builds physical activity, social capital, access to nutritious foods and reduction in harmful behaviors back into the community and consequently back into the realm of individual choice.

Prevention

Public health is historically and inextricably linked to community planning. The leading cause of death during the industrial revolution was infectious disease. Public health laws and changes in community design improved living and working conditions and the health, safety, and welfare of the general public. While control of infectious disease continues to remain a vital part of public health, prevention efforts have expanded to include a focus on the prevention of chronic disease. And just

as community design was critical to the prevention of infectious diseases, it is critical to the prevention of chronic diseases.⁶

Prevention focuses on the proactive approach, through thoughtful planning and assessment leading to improved health and reduced cost. Preventing disease and injuries is key to improving health. When we invest in prevention, the benefits are broadly shared. Children grow up in communities, homes, and families that nurture their healthy development, and people are productive and healthy, both inside and outside the workplace. Businesses benefit because a healthier workforce reduces long-term health care costs and increases stability and productivity. Furthermore, communities that offer a healthy, productive, stable workforce can be more attractive places for families to live and for businesses to locate.⁷

In Vermont, work to improve public health and quality of life is guided by the Vermont Prevention Model (Figure 1). The prevention model illustrates that there are many factors in play that influence individual and population health.

Levels of influence

Individual: Factors that influence behavior such as knowledge, attitudes and beliefs. Strategies addressing this level of influence are designed to affect an individual's behavior.

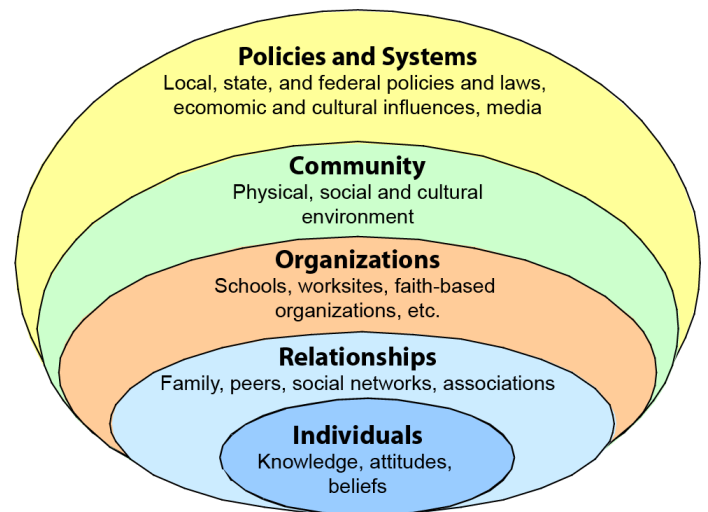
Relationships: Influence of personal relationships and interactions. Strategies addressing this level of influence promote social support through interactions with others including family members, peers, and friends.

Organizations: Norms, standards and policies in institutions or establishments where people interact such as schools, worksites, faith-based organizations, social clubs and organizations for youth and adults. Strategies addressing this level of influence are designed to affect multiple people through an organizational setting.

Community: The physical, social, and cultural environments where people live, work, and play. Strategies addressing this level of influence are designed to affect behavioral norms through interventions aimed at the physical environment, community groups, social service networks and the activities of community coalitions and partnerships.

Policies and Systems: Local, state and federal policies; laws; economic influences; media messages and national trends that regulate or influence behavior. Strategies at this level are designed to have wide-reaching impact through actions affecting entire populations.

Vermont Prevention Model



Source: Vermont Department of Health

Figure 1. VT Prevention Model.

Health promotion efforts are most likely to be effective if they are:

- Consistent with the needs and resources of the community.
- Developed with an understanding of the factors contributing to the problem.
- Designed to specifically address those factors.
- Inclusive of strategies addressing multiple levels of the model simultaneously.
- Sustainable over time.
- Age, gender and culturally appropriate.
- Evidence based or based on best and promising practices.

Table 1 provides examples of Prevention Strategies at all levels of the Vermont Prevention Model for some specific health issues: nutrition, physical activity and tobacco. Research has shown that an intervention that addresses all levels of the model simultaneously is more likely to be successful than an intervention that focuses only on one level. For example, it is easier for someone to quit smoking (or never begin to smoke) when they live with people who don't smoke, attend school on a smoke-free campus, are exposed to media messages that emphasize non-smoking as the social norm, and visit public places that are smoke-free.

	Nutrition	Physical Activity	Tobacco
Individual	Receiving a newsletter with nutrition information	Counseling received on the health risks of physical inactivity	Media literacy education provided to youth
Relationships	Participation in a healthy eating program with a co-worker	Walking groups	Youth tobacco prevention coalitions providing opportunities for youth activism and empowerment
Organizations	Worksites offering healthy, local foods in their cafeteria	Periodic school activity breaks throughout the day	Worksite policies on tobacco cessation referral
Community	Establishing a town Farmer's Market	Converting unused railways to recreation paths	Media campaigns on the perceptions of youth smoking/tobacco use
Policies & Systems	Menu Labeling at Chain Restaurants legislation	Complete Streets legislation	Expansion of policies prohibiting tobacco on campuses

Table 1. Examples of Prevention Strategies for Nutrition, Physical Activity, and Tobacco.

Just as prevention efforts must involve all levels of the Vermont Prevention Model simultaneously to increase the potential for success, they must also cut across all relational, organizational, community, and governmental sectors. Consequently the model becomes multidimensional; it involves all levels of influence in every tier of our society. The model aids us in identifying the interconnectedness of our efforts with those that may seem, at first glance, divergent. The initial disparity diminishes as we focus on solutions that, when they come to fruition, will underpin ECOS and the manner in which our region meets the future. The multi-disciplinary ECOS team operates with genuine respect for the diverse perspectives being brought to the table. Amidst that diversity is a unity of purpose that has hitherto been excluded from the planning process. The links between population health and the goals and recommendations of the other ECOS working groups which were charged to address housing, transportation, economic development & natural resources are outlined below.

HOUSING

In order to be healthy, people need a safe, pleasant, salubrious place to live. This necessity is discussed briefly in the health disparities section of this report. A more detailed analysis of housing in Chittenden County is contained in the Chittenden County Housing Needs Assessment. In particular the data on home ownership rates, ownership rates by race of household head, percent of households with racial minorities, and data on homelessness, people with disabilities, housing affordability, lead-based paint, and proximity of homes to public transportation illustrate the vital importance of housing to health. The Housing Needs Assessment report also complements our report in identifying and quantifying groups of people in Chittenden County who are likely to experience health disparities.

ECONOMY

When looking at the Economic Analyses, several connections to the health of the population can be made. Income is a measure of socioeconomic status and is a strong predictor of both an individual's and the community's health. The Economic Base Analysis discusses the trends in unemployment and how this affects future spending and economic activity and eventually decreases in business investments. Additionally, this report discusses income, both in respect to type of income, transfer vs. wages, and the sectors that seems to be growing in our county. Transfer income, which includes social security payments, student grants, and 3 Squares VT (food stamps), showed the strongest growth recently, which can be linked to more residents in our county being eligible for and receiving public assistance benefits. Employment opportunities in the retail, accommodations, and foodservice sectors are increasing in Chittenden County, however these jobs do not provide a livable wage. For examples, the average annual income in the accommodations and foodservices sector is \$13,293, and the federal poverty level for a family of four is \$22,350. The rise in both unemployment and underemployment causes social and economic consequences. These consequences combine with poor physical and mental health outcomes. From the employer side of the issue, the largest increases in wage and benefits is reported to be due to increased healthcare costs. Worksite wellness policies along with the prevention recommendations presented in this report will help to manage and even prevent

workers from developing chronic diseases, which will in turn lower health care costs to employers. Such policies have also been shown to improve employee moral and decrease turnover, which will also help the business' bottom line.

The Economic Analysis also discusses the need for proficiency in local schools in order to have a skilled workforce that will meet the needs of various sectors of employment. While the education report describes in detail the health disparities that exist for those of lower education levels, it is important to note impact of health on learning; healthy students learn better. Health-related factors such as hunger, physical and emotional abuse, and chronic illness can lead to poor school performance. Health-risk behaviors such as early sexual initiation, violence, and physical inactivity are consistently linked to poor grades and test scores and lower educational attainment. Supporting school health, and thus learning, will improve proficiency, graduation rates, and the ability to achieve higher education, which will impact the future of workforce and economy of Chittenden County.

NATURAL RESOURCES

Thoughtful conservation, responsible management, and judicious consumption of natural resources are integral to the health of all populations. Vermont's working landscape fortifies our economy, perpetuates the image that has come to define the Vermont brand, and provides the foundation for a thriving local food system. The health of our people depends upon clean air, a safe water supply, local food sources and accessible, proximal recreational opportunities. Traditional development patterns undermine biodiversity, perpetuate overdependence on fossil fuels, fragment land tracts to the detriment of our air and water quality, habitats and the working landscape. The adoption of more-balanced, sustainable land-use patterns can have far-reaching ramifications. Reduction in our dependence on the automobile, and the redefinition of social norms surrounding car ownership has the potential to positively impact human health. As communities strive for denser, multi-use development that honors transportation choice, the concomitant increase in mass transit and alternative transit options will improve air quality and augment opportunities for more active living. In short, there is no part of these analyses that stand alone. Each goal set forth by an ECOS workgroup has an influence, directly or indirectly, on any other facet of the plan.

THE STATE OF THE NATION: WHAT IS KILLING US?

A person's behaviors are the principal determinants of health outcomes (Figure 2). In discussions of health reform much attention is placed on health care and time spent in provider offices, which is certainly important, but, nonetheless a relatively minor factor in its overall contribution to health. However, behaviors far outweigh the clinical factors.⁸ Behaviors can be influenced, supported, or undermined by community design. Community design can also impact social circumstances, health care, and environmental exposures. For example, if recreation paths are only built in areas of moderate to high income, that reinforces the lack of opportunity for people living in low income communities to engage in physical activity. If health care facilities are sited in locations that aren't convenient to public transportation, it creates a community where only those people who have cars have the ability to easily access the health care system. Also, a child care center located on a

heavily trafficked road could expose children higher levels pollution from automobiles.

Contributors to Health

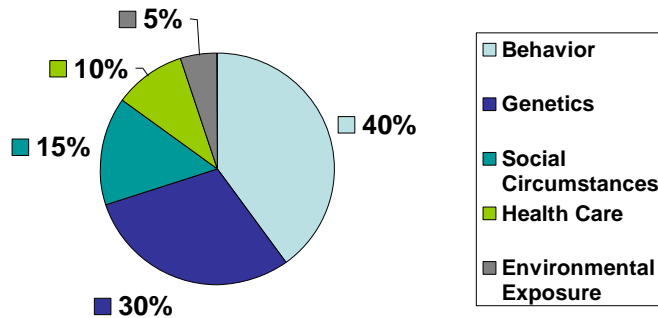
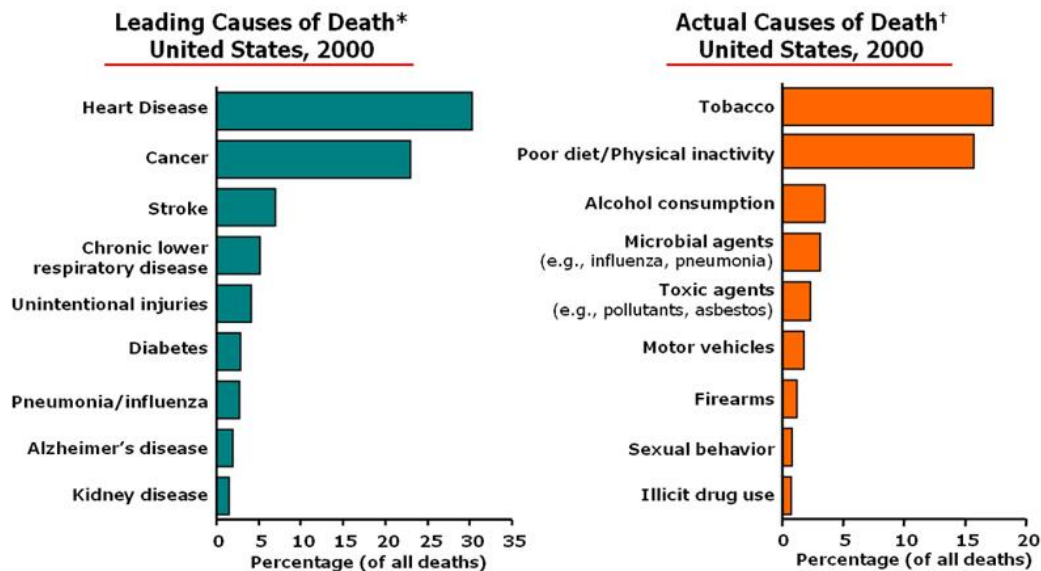


Figure 2. Contributors to Health.

Most chronic diseases have multiple potential causes and several factors and conditions that may contribute to a single death. Approximately half of all deaths that occurred in the United States in 2000 could be attributed to a limited number of largely preventable behaviors and exposures. Smoking and the deaths attributed to poor diet and physical inactivity account for about one third of all deaths in the United States (Figure 3). There is an increasing trend of overweight, and if it is not reversed, poor diet and physical inactivity will likely overtake tobacco as the leading cause of preventable cause of death.⁹



* Miniño AM, Arias E, Kochanek KD, Murphy SL, Smith BL. Deaths: final data for 2000. National Vital Statistics Reports 2002; 50(15):1-120.
 † Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the United States, 2000. JAMA. 2004;291(10):1238-1246.

Figure 3. Leading vs. Actual Causes of Death in the United States, 2000.

CHITTENDEN COUNTY PUBLIC HEALTH DATA

The data analysis presented below represent the current state of chronic diseases and risk factors for these diseases in the Chittenden County area. Though Chittenden County is often presented as the healthiest county in the state of Vermont, risk factors for chronic disease are increasing, following trends that are happening state and nation-wide.

Demographics

Chittenden County is one of 14 counties in Vermont, and is the most populated, with over 150,000 residents, which is 25% of the total state population. Chittenden County is home to the Vermont’s largest city (Burlington), largest private employer (International Business Machines), largest hospital (Fletcher Allen Health Care) and the largest institution of higher learning (The University of Vermont). Close to one-third of all the jobs in the state are located in Chittenden County. Although not the state capital, Burlington and the immediate surrounding towns serve as the economic, cultural and educational center of the state. With the highest concentration of employment, education, retail and entertainment opportunities, this is the fastest-paced and most urbanized region of the state. Chittenden County’s outer towns, however, particularly those to the east, are very rural and much more like the rest of Vermont. Table 2 provides a breakdown of age and education levels for Chittenden County.¹⁰

Demographics	
Age <18	20%
18 – 24	17%
25 – 44	26%
45 – 64	27%
65 +	10%
Education <HS	10%
HS Grad + GED	23%
Some College	31%
College Grad	36%

Table 2. Age and Education Levels of Chittenden County Residents, US Census Data and Population Estimates, Vermont Department of Health, 2009.

RISK FACTORS THAT CONTRIBUTE TO CHRONIC DISEASE & POOR HEALTH OUTCOMES

Similar to the national leading causes of death, the leading causes of death in Chittenden County are cardiovascular disease, 32%, followed by cancer, 26%.¹¹ Tobacco use and physical inactivity and poor nutrition, which contribute to obesity, are major risk factors for these diseases.

Tobacco

Nationally, about 443,000 deaths each year are attributable to smoking (Figure 4). Tobacco use is the number one cause of preventable death. The trends in smoking rates have been decreasing both at the national and state levels.¹² Since 1990, national smoking rates for adults have gone from 26% to 19% in 2010.¹³ For youth the rates have also declined: 28% in 1991 to 18% in 2011.¹⁴

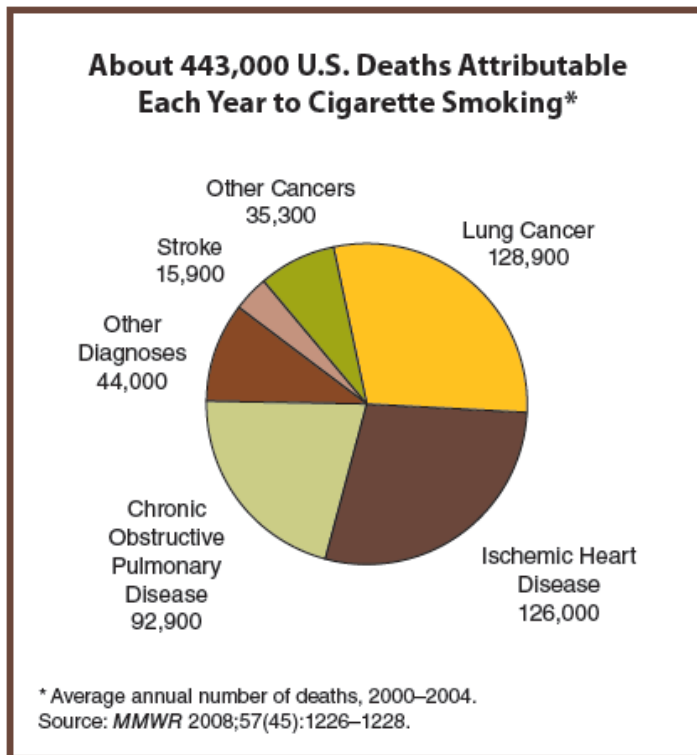


Figure 4. U.S. Deaths Attributable to Smoking, 2008.

As noted in the data below, residents locally are smoking less than the national and state average and rates continue to decline. Historically and currently, a lower proportion of local residents smoke than all Americans or Vermonters. In the Burlington Health Service Area, the 1999 3-year average of adult smoking rates is 20%.¹⁵ The dropped to 13% in 2008 (Figure 5). In Chittenden County, the 1999 smoking prevalence for youth is 19%.¹⁶ This dropped to 10% in 2011. (Figure 6). About 16% of pregnant women smoke during pregnancy in Chittenden County.¹⁷

Exposure to secondhand smoke are also shown in Figures 5 and 6. Exposure to secondhand smoke causes early death and disease in children and adults who do not smoke themselves.¹⁸ Smoke-free environments provide strong reinforcement of nonsmoking as a social norm and have been shown to decrease consumption and increase cessation rates.¹⁹

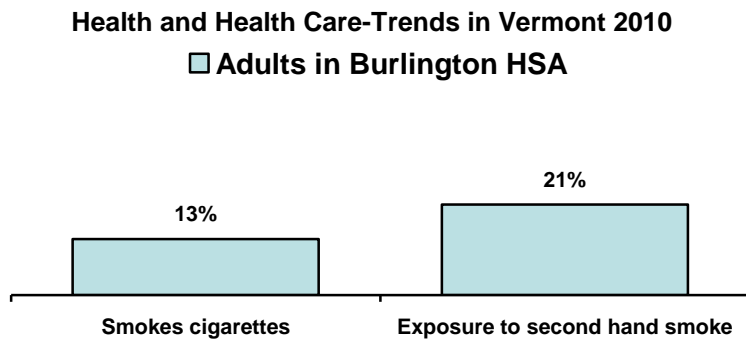


Figure 5. Smoking and Second Hand Smoke in Chittenden County Adults, 2010.

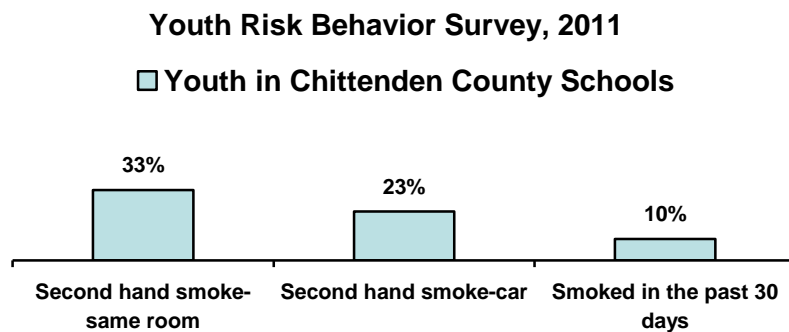


Figure 6. Smoking and Second Hand Smoke in Chittenden County Youth, 2011.

Additionally, research has shown that use of cigarettes and alcohol raise the risk of later use of illicit drugs, over 90% of adult cocaine users between the ages of 18 and 34 had smoked cigarettes before they began using cocaine. A recent study showed that nicotine makes the brain more susceptible to cocaine addiction. These findings suggest that lowering smoking rates in young people might help reduce cocaine abuse.²⁰

Poor Nutrition and Physical Inactivity

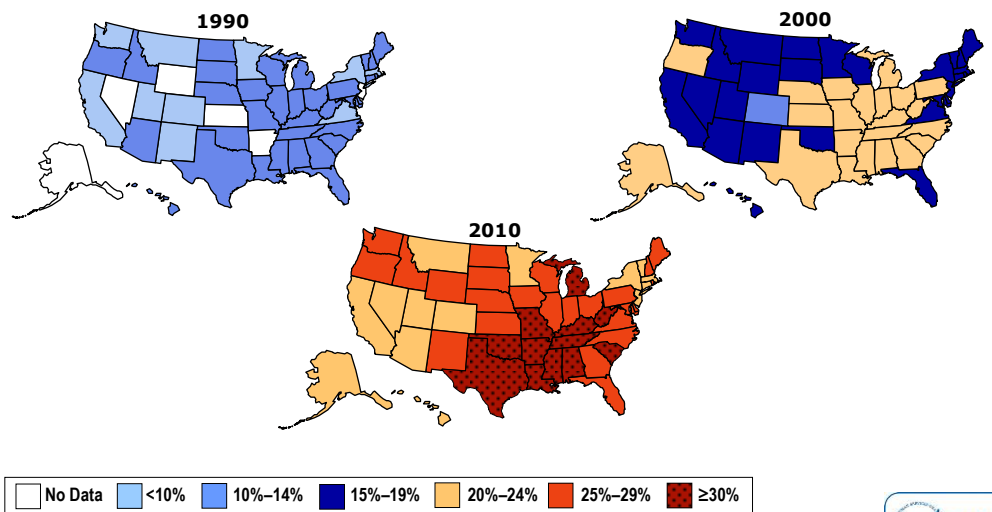
Being overweight greatly increases a person’s risk for many chronic diseases, including high blood pressure, diabetes, osteoarthritis, heart disease and stroke, gallbladder disease, arthritis, sleep disturbances, breathing problems and certain cancers.¹⁸

Nationally, there has been a dramatic increase in obesity in the United States during the past 20 years and rates remain high. In 2010, no state had a prevalence of obesity less than 20%, 36 states had a prevalence of 25% or more, and 12 of these states had a prevalence of 30% or more. Vermont has one of the lower obesity rates in comparison to the rest of the nation, but Figure 7 illustrates that Vermont's obesity rate is also in an upward trend. Vermont's adult obesity rate increased from 11% in 1990 to 18% in 2000, and then up to 24% in 2010.¹⁵ Similarly, though Chittenden County has the lowest rate in the state, trend data show that over time, rates continue to increase. The 3-year adult obesity prevalence in Chittenden County increased from 14% in 1999 to 20% in 2009.¹⁵

Obesity Trends* Among U.S. Adults

BRFSS, 1990, 2000, 2010

(*BMI ≥ 30 , or about 30 lbs. overweight for 5'4" person)



Source: Behavioral Risk Factor Surveillance System, CDC.



Figure 7. National Obesity Trends.

Achieving and keeping a healthy weight requires a balanced, low-calorie diet and more physical activity. Even modest weight loss for people who are overweight can lower risk for chronic disease.¹⁸

Over two thirds of adults in the Burlington Health Service Area (HSA) do not eat the minimum recommended amount of fruits and vegetables each day, four out of ten don't achieve the minimum recommended levels of physical activity, and 14% engage in no leisure time physical activity (Figure 8).²¹ Approximately 3 quarters of Chittenden County youth do not eat the recommended amount of fruits and vegetables nor engage in 60 minutes of physical activity daily. (Figure 9).¹⁶

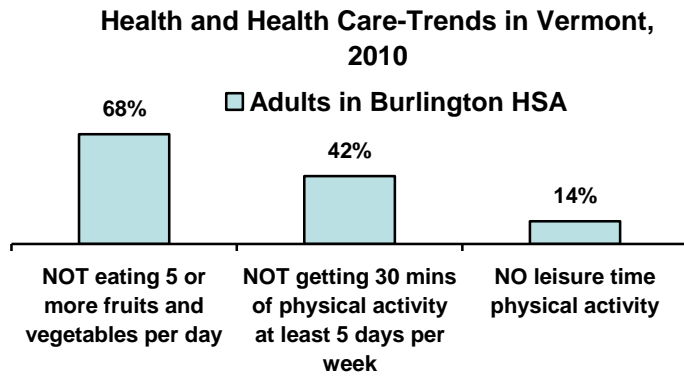


Figure 8. Nutrition and Physical Activity Among Adults, 2010.

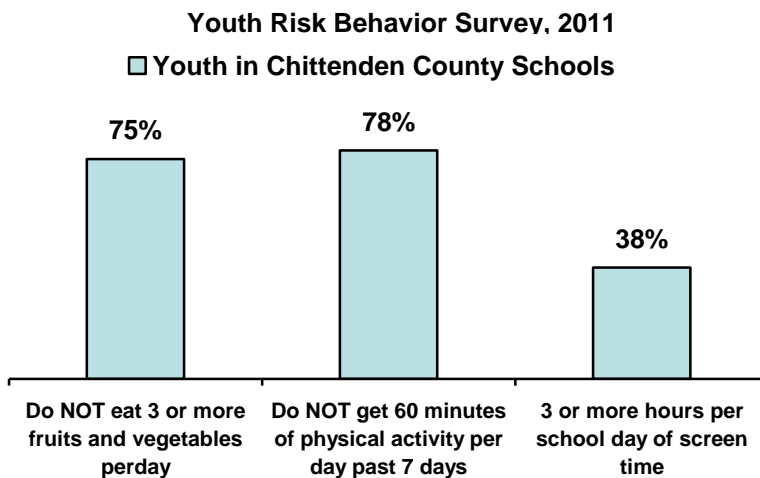


Figure 9. Nutrition and Physical Activity Among Youth, 2011.

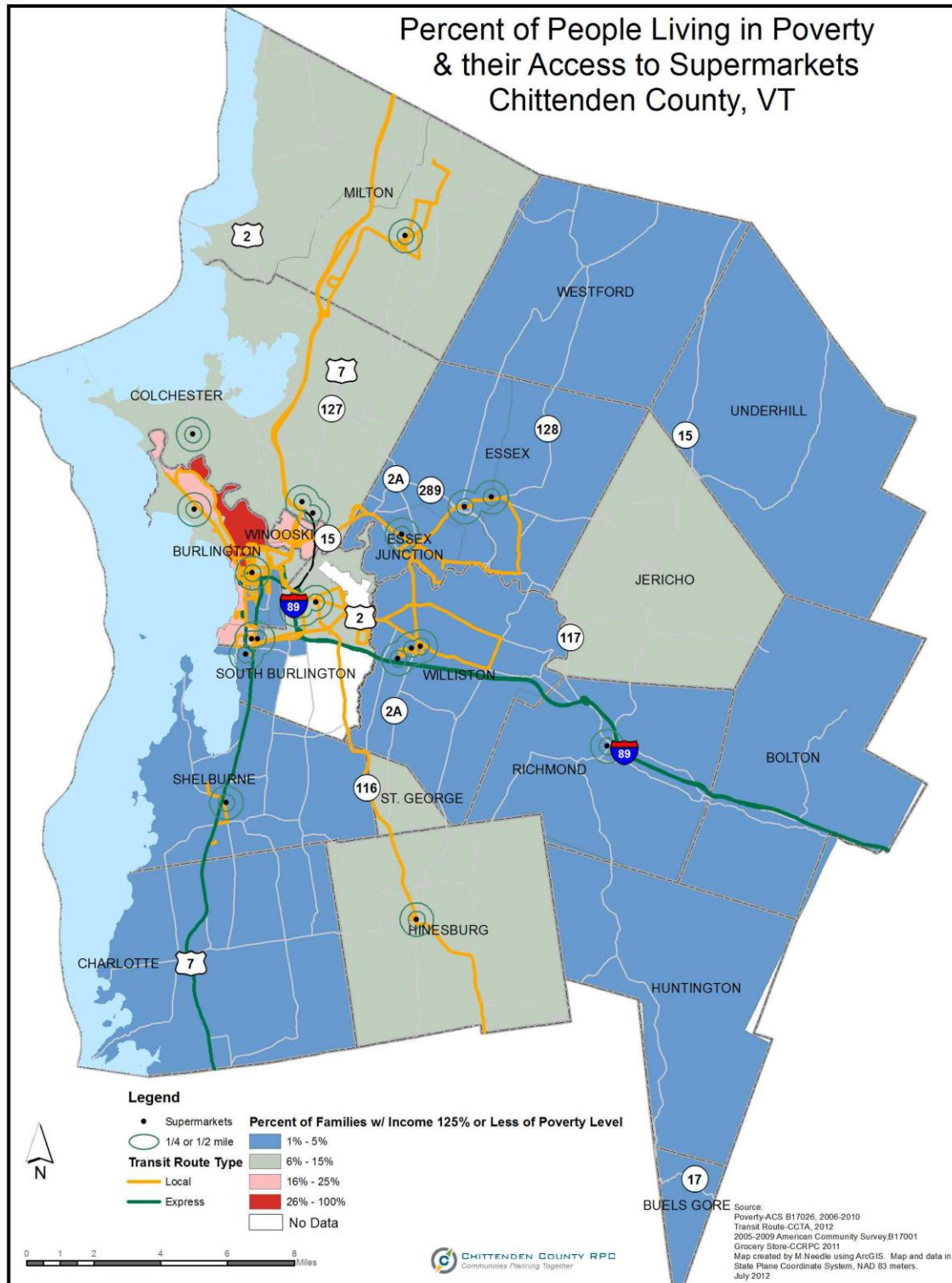
Research shows that people living in highly walkable, mixed-use communities are more than twice as likely to get 30 or more minutes of daily exercise as those living in auto-oriented, single-use areas. As street connectivity and residential density increases, the amount of physical activity typical residents get each day increases.²²

Additionally, access to public transportation also positively impacts physical activity levels. People who used public transportation for any reason were less likely to be sedentary or obese than adults who did not use public transportation. With few exceptions, proximity to public transit stops was linked to higher transit use and higher levels of physical activity among adults.²³

Residents in communities with a more imbalanced food environment typical of "food deserts" (large geographic areas with no or distant grocery stores) have more health problems and higher mortality than residents of areas with a higher proportion of grocery stores, when other factors are held constant. Outcomes worsen when the food desert has high concentrations of nearby fast food alternatives.²⁴

Mapping is a tool that can be used to illustrate opportunities and barriers in a community to accessing the services and resources they need to choose healthy behaviors. Map A on the next page shows grocery store proximity to public transit lines in Chittenden County. Higher concentrations of stores are located in the urban core and surrounding towns as compared to the more rural areas of the county. This is not a complete map of the food system as food is available from many sources other than grocery stores but it does provide a glimpse at food access in Chittenden County. The map is overlaid with poverty data.

Areas of the county with higher percentages of residents living below the federal poverty line appear to have good geographical access to stores with the exception of Colchester, which has no public transit to grocery stores. Additionally, some routes are express having limited and sporadic schedules. In looking at Table 3, there is a wide range of access to a supermarket within walking distance. While Burlington has roughly half of its residents within a ½ mile, Winooski has as little as 3.2% of its household within the same distance.^{25, 26} Furthermore there is no safe walking route to the closest supermarket, which is actually in the town of Colchester. By nature, residents in the rural areas of the county would need a car to access a supermarket. Map B on the following page compares supermarket access with car ownership.

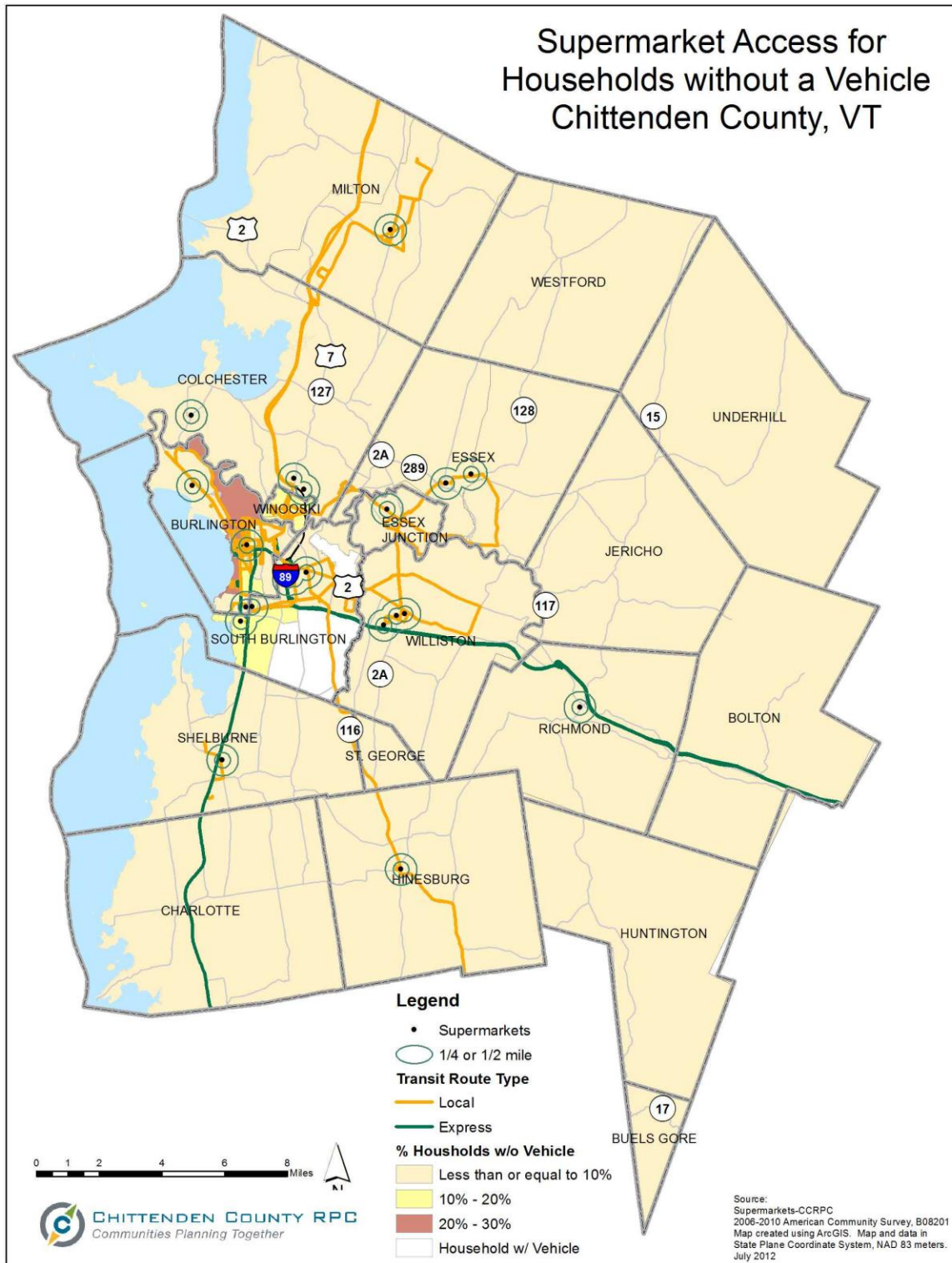


Map A. Access to Supermarkets in Chittenden County.

Municipality	Households w/in ¼ mile	% of households	Households w/in ½ mile	% of households
Burlington	1847	11.5%	7508	46.6%
Colchester	140	2.2%	560	8.9%
Essex	190	2.4%	631	8.0%
Essex Junction	182	4.7%	975	25.1%
Hinesburg	186	10.0%	329	18.9%
Milton	50	1.3%	432	11.1%
Richmond	229	14.4%	334	21.1%
Shelburne	77	2.7%	296	10.3%
South Burlington	967	12.1%	2486	31.1%
Williston	59	1.7%	309	8.8%
Winooski	0	0%	113	3.2%

Table 3, Number and percentage of households at ¼ and ½ mile from a supermarket., American Community Survey 2006-2010, US Census 2010.

Towns not listed do not have any households within walking distance to a supermarket. They are: Bolton, Buel's Gore, Charlotte, Huntington, Jericho, St. George, Underhill, and Westford.

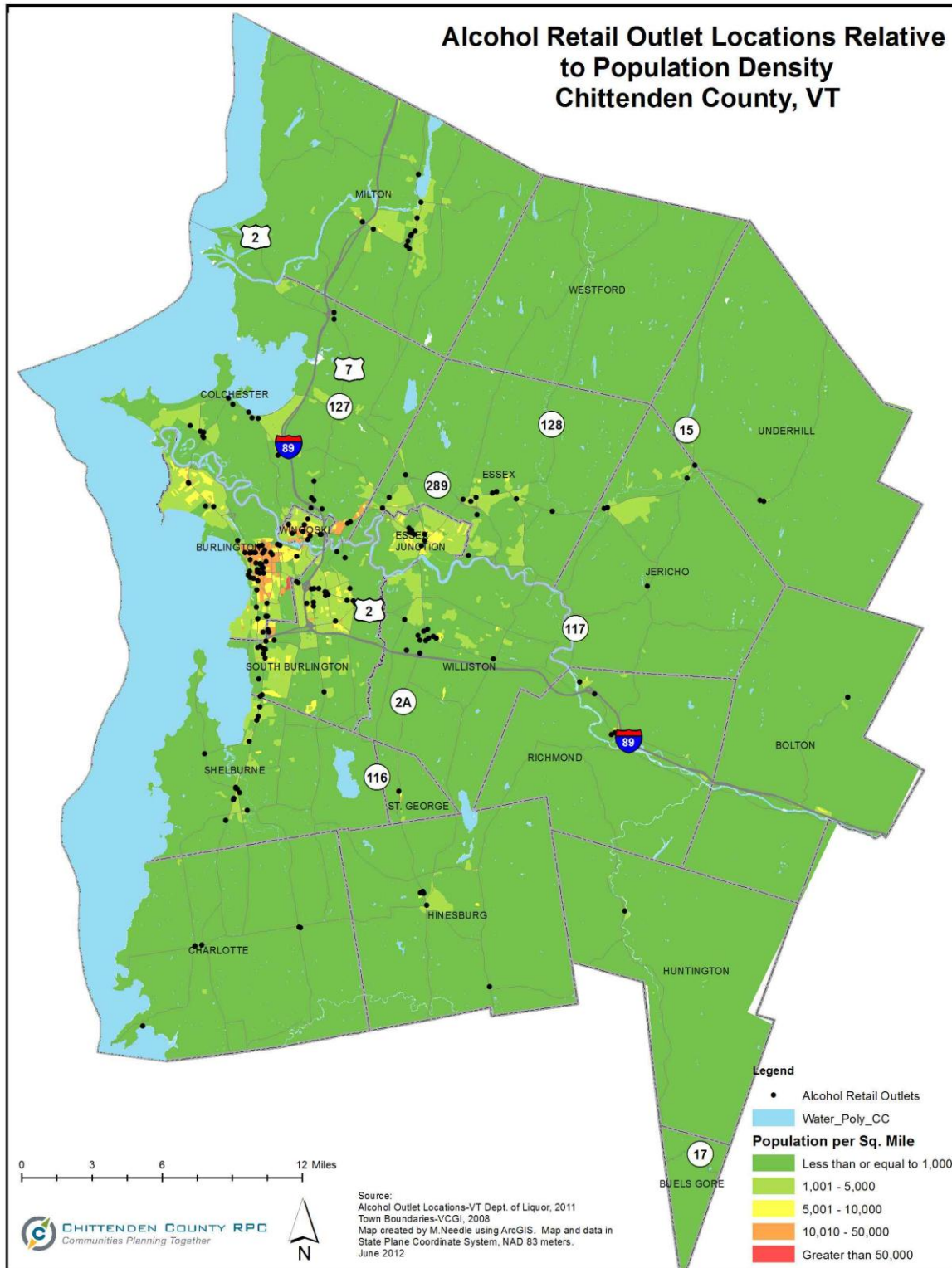


Map B. Car Ownership in Relationship to Supermarket Location in Chittenden County.

Alcohol

Alcohol is a major factor in many preventable causes of fatalities—such as motor vehicle crashes, suicides, domestic violence, and unintentional injuries. It also contributes to chronic disease and cancers.²⁷ The age when a young person starts drinking is a strong predictor of alcohol dependence.¹⁸ In Chittenden County, in 2011, 11% of high school youth report having their first drink, other than a few sips, before the age of 13.¹⁶

Map C, on the next page, shows alcohol retail outlet locations relative to population density by census block. Map D shows the inset of the urban core for a clearer picture. Winooski has the highest density of retail outlets that sell alcohol, followed by Burlington and South Burlington in the next tier, and then Essex Junction. It should be noted that this map does not provide a complete picture of access to purchasing alcohol as it does not include bars, restaurants and other venues where alcohol can be purchased. But outlet density is an important data point to look at in terms of public health and community design. Research from Texas and Ohio has shown that alcohol outlet density is the single greatest predictor of violent crime in neighborhoods, greater than other social and economic factors.^{28,29} Cirrhosis deaths, suicide, and assaults all increase when alcohol density increases.³⁰



Map C: Alcohol Outlets and Population Density.



Map D: Alcohol Outlets and Population Density in the Urban Core.

In 2010, the statewide adult prevalence of binge drinking (defined as 5 or more drinks on one occasion for men, and 4 or more drinks on one occasion for women) was 17%, however in the Burlington HSA prevalence was slightly worse (Figure 10).²¹ About one-third of youth reported drinking alcohol in the past 30 days, while about one-fifth rode in a car with someone who had been drinking, in 2011 (Figure 11).¹⁶

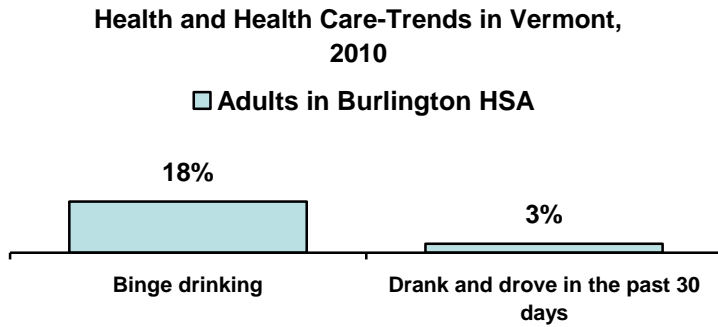


Figure 10. Alcohol Risk Behaviors Among Adults, 2010.

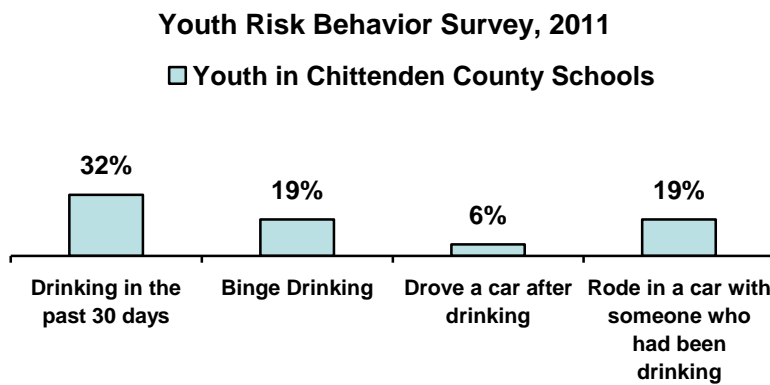


Figure 11. Alcohol Risk Behaviors Among Youth, 2011.

It is not challenging for youth to access alcohol with about half of the students reporting someone gave it to them and another 27% reporting they gave someone money to buy it for them (Figure 12).¹⁶

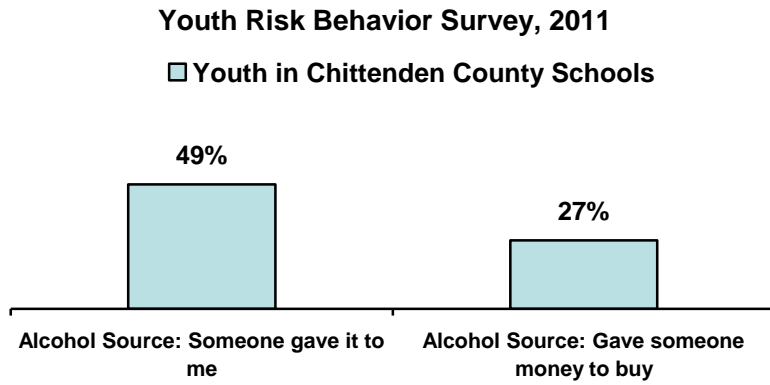
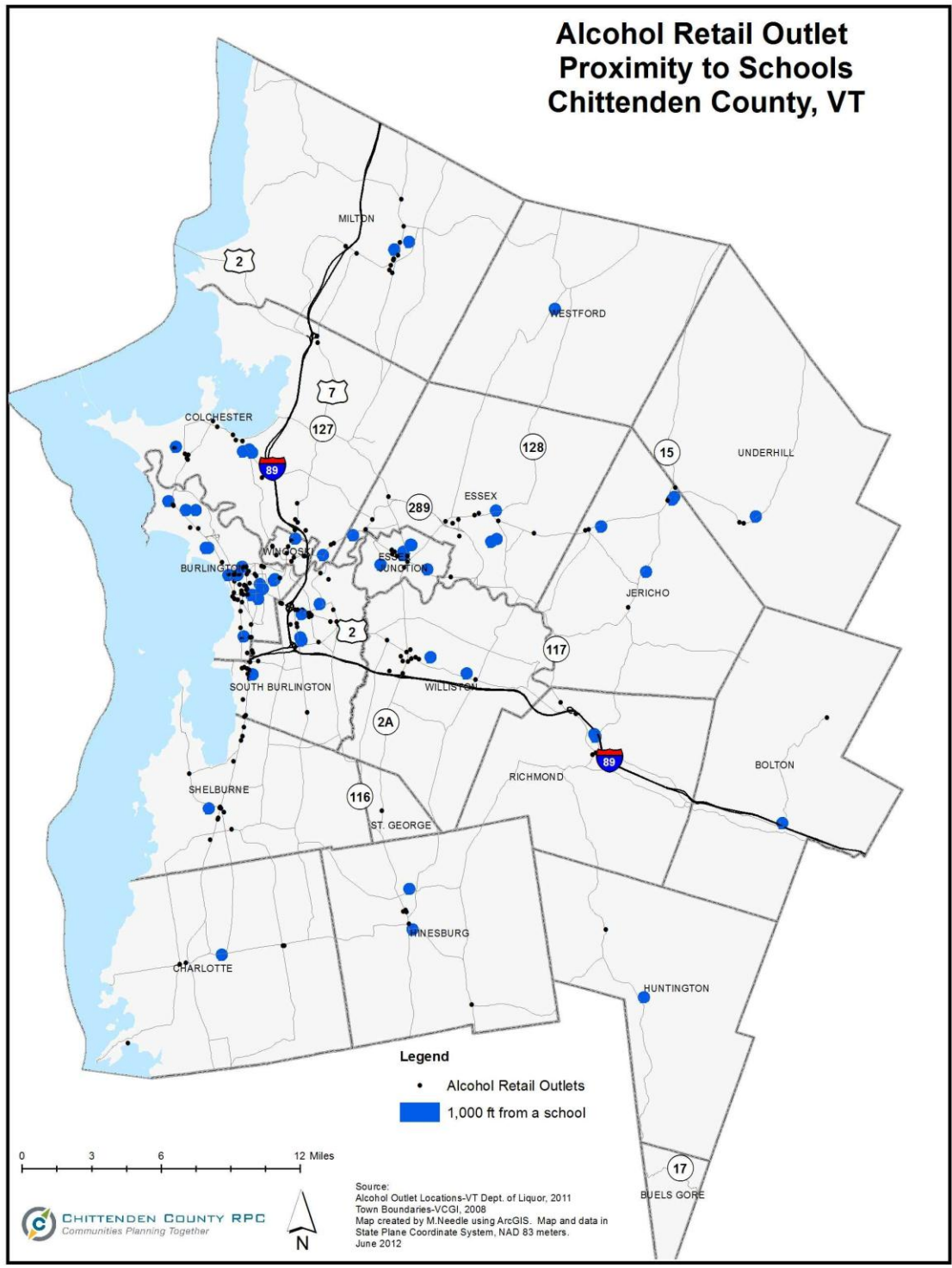


Figure 12. Alcohol Source Among Youth, 2011.

Map E on the following page shows the schools of Chittenden County with a 1000 foot buffer around them in relationship to alcohol retail outlets. This map shows that alcohol outlets are commonly found within 1000 feet or very close by in many communities. Alcohol outlets are associated with increased alcohol advertising. Greater exposure to alcohol advertising contributes to an increase in drinking among underage customers.³¹



Map E: Alcohol Outlets Proximity to Schools.

ENVIRONMENTAL HEALTH

In addition to the behavioral risks noted above, exposure to toxic substances also impacts human health and is something that can be impacted by community design. Environmental health is a branch of public health which examines environmental factors that adversely impact human health or the ecological balances essential to long-term human health and the health of the environment, whether natural or man-made.³²

Outdoor Air Quality

Particle pollution, or particulate matter (PM), refers to particles that are in the air, including dust, dirt, soot and smoke, little drops of liquid, and other particles so small that you cannot see them. Smaller particles (PM 2.5) are the most problematic because they are more likely to adversely impact human health. As noted in the Natural Resources Analysis report, air in Chittenden County (and throughout Vermont) meets National Ambient Air Quality Standards (NAAQS) and is considered clean. In 2010, Chittenden County had an average ambient concentration of PM 2.5 of $7.1 \mu\text{g}/\text{m}^3$.³³ This is below the standard of $15 \mu\text{g}/\text{m}^3$ ³⁴ and has been steady since 2000. Being exposed to any kind of particulate matter may cause

- increased emergency department visits and hospital stays for breathing and heart problems,
- breathing problems,
- asthma symptoms to get worse,
- adverse birth outcomes, such as low birth weight,
- decreased lung growth in children,
- lung cancer, and
- early deaths.

Sensitive people, including older adults, people with diseases such as asthma or congestive heart disease, and children, are more likely to be affected by contact with PM 2.5.³⁵ Though levels of PM 2.5 are low, keeping them at safe levels is crucial to maintaining public health.

High concentrations of ozone near ground level can be harmful to people, animals & vegetation. Ozone can aggravate asthma, exacerbate chronic lung diseases such as emphysema and bronchitis, and can damage cells that line the lungs. While the effects of ozone can be worse in older adults, children, individuals with lung disease, and exercising adults, everyone incurs a health risk with exposure to ozone.³⁶ Exposure to ozone depends mainly on the location of housing and employment and time spent outside. Many scientific studies have linked ground-level ozone contact to varied problems, such as

- lung and throat irritation,
- wheezing and breathing difficulties during exercise or outdoor activities,
- coughing and pain when taking a deep breath,
- aggravation of asthma, bronchitis, and emphysema, and
- a higher chance of getting respiratory illness like pneumonia or bronchitis.³⁷

In Chittenden County, from 2000 to 2010, there was an average of 2.3 days with the maximum 8-hour ozone concentration above the NAAQS of 0.075 ppm.³⁸ Although ground level ozone concentrations in Chittenden County are low, action is necessary to prevent increases toward consistently unhealthy levels.

Healthy Homes: Indoor Air Quality, Drinking Water, Lead, and Radon

A healthy home is well-ventilated, dry, clean, safe, maintained, environmentally sustainable, and free of pests, toxins, and dangerous gases. These safe and healthy living conditions help prevent disease and injury, support mental health and well-being, and promote social connections within the community.³⁹

INDOOR AIR QUALITY

Housing is a social determinant of health, meaning that the quality of the housing in which one lives impacts a wide range of outcomes.⁴⁰ How a home is designed, constructed, and maintained; ultimately affects the health of its occupants. The presence/lack of safety devices, quality of indoor air and water; presence/ absence of certain chemicals or materials, behaviors of resident individuals, and community characteristics are all to be taken into consideration when assessing indoor air quality.⁴¹

DRINKING WATER

Safe drinking water is part of a healthy home and a healthy community. Under the federal Safe Drinking Water Act, all municipal and other public water supplies must be tested regularly for bacteria, man-made chemicals, naturally occurring radioactivity, and certain naturally occurring compounds. Schools on their own wells are also public water supply systems, and are tested routinely.⁴²

There are no requirements for the testing of private residential wells. However, to ensure that drinking water is safe, the Vermont Department of Health recommends the following testing schedule:

- Total coliform bacterial test: every year
- Inorganic chemical test: every five years
- Gross alpha radiation screening test: every five years

In Chittenden County, 132,157 residents are on a public (either ground or surface) water supply. This represents approximately 84% of the population.⁴³

Water fluoridation prevents tooth decay mainly by providing teeth with frequent contact with low levels of fluoride throughout each day and throughout life. Even today, with other available sources of fluoride, studies show that water fluoridation reduces tooth decay by about 25 percent over a person's lifetime.

Community water fluoridation is not only safe and effective, but it is also cost-saving and the least expensive way to deliver the benefits of fluoride to all residents of a community. For larger communities of more than 20,000 people, it costs about 50 cents per person annually to fluoridate the water. It is also cost-effective because every \$1 invested in this preventive measure yields approximately \$38 savings in dental treatment costs.⁴⁴

In Chittenden County, the towns of Bolton, Huntington, Westford, and Charlotte do not fluoridate their municipal water supply.⁴⁵

LEAD

Lead is a highly toxic metal that has been commonly used in many household, industrial and automobile products, including paint, solder, batteries, brass, car radiators, bullets, pottery, etc. Lead can cause serious health problems, especially for infants, children, and pregnant women. Too much lead in the body can cause damage to the brain, kidneys, nervous system and red blood cells.

People who work in jobs that involve lead (such as renovating older homes or manufacturing lead-acid batteries) are at risk of lead poisoning. Workers can also bring lead home on shoes and work clothes, thereby placing family members at risk.

Young children are at highest risk because their developing bodies absorb lead more easily. Lead dust exposure can have life-long health effects such as lowering a child's IQ. In adults, lead can cause high blood pressure, increase the risk of miscarriage for pregnant women, and result in decreased fertility in men.⁴⁶

In 1978, lead was banned from residential paint. The Vermont Lead Law was passed in 1996 and updated in 2008 (18 VSA Chapter 38). The law requires that landlords of older buildings and child care facility owners take steps to help prevent children from being exposed to lead. If a residential rental property or child care facility was built before 1978, the owner of the property or the property management company is required to comply with the Vermont Lead Law.⁴⁷

In Chittenden County, 65.7% of homes were built before 1979 and are likely to contain lead paint.³³ In 2007, of 1,546 children tested, 167 had elevated blood lead levels greater than or equal to 5 µg/dL and eight had greater than or equal to 10 µg/dL.³³ There is no safe level of blood lead level.

RADON

Radon is a naturally occurring radioactive gas. There are no known health effects connected with brief exposure to radon. However, over a lifetime, breathing air with too much radon increases a person's risk of getting lung cancer. The risk is increased even more for a smoker exposed to radon. According to a report by the National Academy of Sciences, radon is estimated to cause between 15,000 and 22,000 lung cancer deaths per year. It is the second leading cause of lung cancer after smoking.

Radon is present in soil, air and water. However, soil is the main contributor of radon in homes. The amount of radon that escapes from the soil into a home's air depends on many factors including geology, soil type, and building construction.

Elevated levels of radon have been found in all types of homes in every area of Vermont. The likelihood of a radon problem cannot be predicted by the style, age, or location of a house. Houses can act like large chimneys, with warm air rising and escaping out upper floor windows and through cracks in the attic. This creates a vacuum at the lowest level of the house, which can pull the radon from the soil into the house.

Well water that contains radon may increase the level of radon gas in a home. Actions like taking showers, doing laundry or running the dishwasher can release radon into the air. It generally takes 10,000 picocuries per liter (pCi/L) in water to increase the radon level in air by 1.0 pCi/L.

The Vermont Department of Health Radon Program offers free radon test kits to residents of Vermont. Based on the results of 4,400 tests that have been done across Chittenden County as of November 2011 (which are voluntary, self-selected tests), the average radon level is 1.7 pCi/L. The EPA has set 4 pCi/L as the standard for radon mitigation in homes.⁴⁸ Building radon resistant homes in future development is a way to reduce exposure.

Environmental Health in Schools

The Envision program was created by the legislature in 2000 as part of the School Environmental Health Act (Act 125) to assist schools in creating and implementing environmental health management plans.

The goal of the Envision program is to assist schools in creating and implementing environmental health management plans. The program does this by educating schools on environmental health issues and providing a sustainable means to identify, prevent, and "problem-solve" potential environmental health and indoor air quality (IAQ) issues by addressing the minimum guidelines called for in Act 125. Since 2003 schools from seven school districts/supervisory unions in Chittenden County have received grants and/or technical assistance from the Vermont Department of Health Envision program.⁴⁹

CHRONIC DISEASE- ADULTS

Behavioral risk factors and exposure to toxic substances, as outlined in this report, impact the rates of chronic diseases. Chronic diseases, such as heart disease, stroke, cancer, diabetes, and arthritis, are among the most common, costly, and preventable of all health problems in the U.S. Nationally, 7 out of 10 deaths among Americans each year are from chronic diseases. Heart disease, cancer and stroke account for more than 50% of all deaths each year.⁹ In the Burlington HSA, almost half of residents have a chronic disease (this is consistent with national data) and almost 1 in 5 have two or more chronic diseases (Figure 13). The most common chronic disease is arthritis, followed by obesity, and asthma (Figure 14).²¹

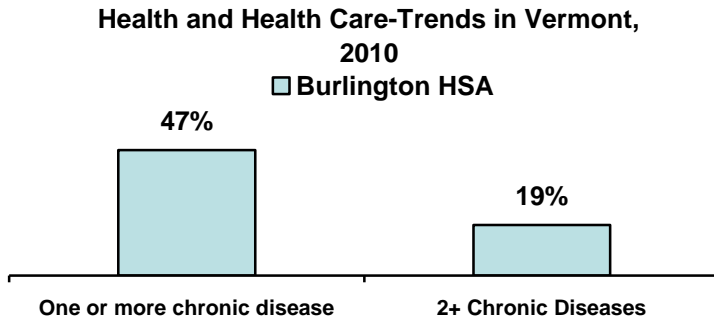


Figure 13. Prevalence of Chronic Disease, 2010.

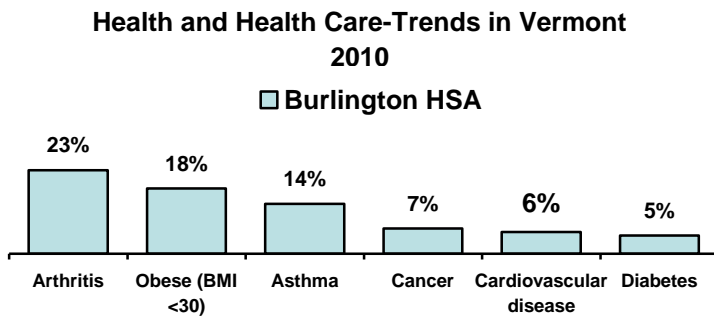


Figure 14. Prevalence of Common Chronic Diseases , 2010.

OVERWEIGHT, OBESITY, & ASTHMA- YOUTH

Being overweight or obese as an adolescent greatly increases a person’s risk for being overweight or obese as an adult.⁵⁰ One in five students in Chittenden County schools are either overweight or obese (Figure 15).¹⁶

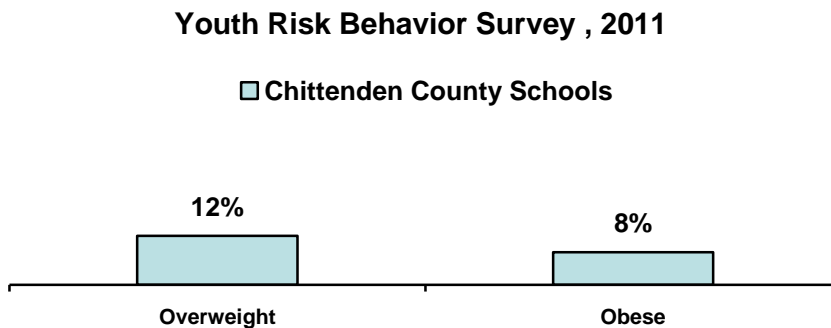


Figure 15. Overweight and Obesity Among Youth, 2011.

Asthma is a chronic disease of the medium and small airways in the lung. These airways are hypersensitive to certain “triggers” in the environment. The Institute of Medicine reviewed medical literature for causes and triggers of asthma. It found that second-hand tobacco smoke, mold, pest infestation, dust mites, cold air, dry heat, and poor ventilation can all trigger asthma. Exposure to chronic dampness is a health hazard that puts an individual at significant risk for asthma. With 140 inches of annual precipitation, Vermonters are at high risk for living in a home that is damp and potentially contaminated with mold. Sufficient national epidemiologic evidence is available to show that the occupants of damp or moldy buildings, both houses and public buildings, are at increased risk of respiratory symptoms, respiratory infections, and exacerbation of asthma.³⁹ Research shows that children living near heavily trafficked roads experience decreased lung function, greater rates of hospitalization for asthma attacks,⁵¹ and greater risk for all kinds of cancer.⁵² Asthma rates for youth are 8-9% in Chittenden County (Figure 16).^{15, 53}

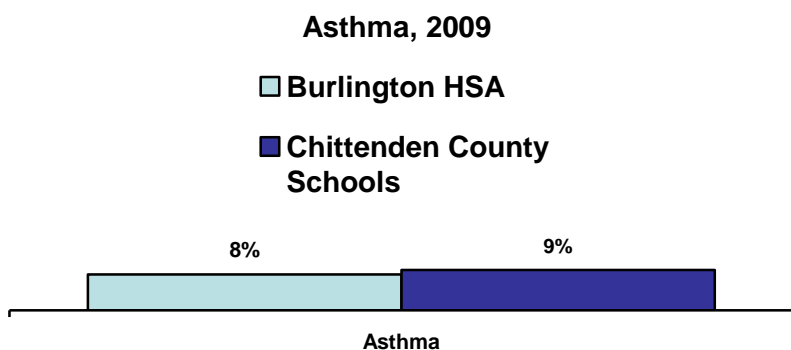


Figure 16. Youth asthma data from Behavioral Risk Factor Surveillance System Asthma Call back Surve, 2005-2009 and School Nurse Report Survey, 2009.

MENTAL HEALTH

The prevalence of moderate to severe depression among adults in the Burlington HSA is 6%, though 34% characterized their mental health as “not good” at least 1 day of the past 30 days (Figure 17).²¹ A portion of youth in Chittenden County high schools also report feelings of sadness and hopelessness as well as purposeful self harm (Figure 18).¹⁶

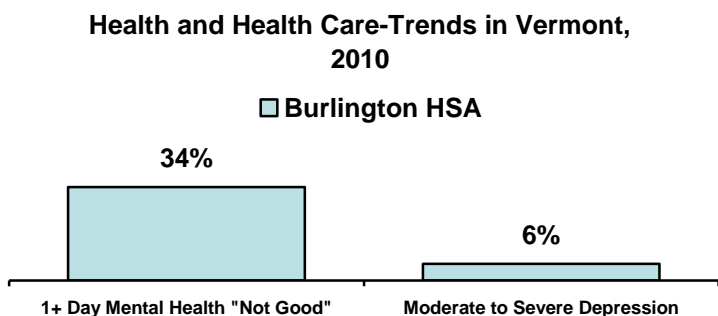


Figure 17. Mental Health, Among Adults, 2010.

Youth Risk Behavior Survey , 2011

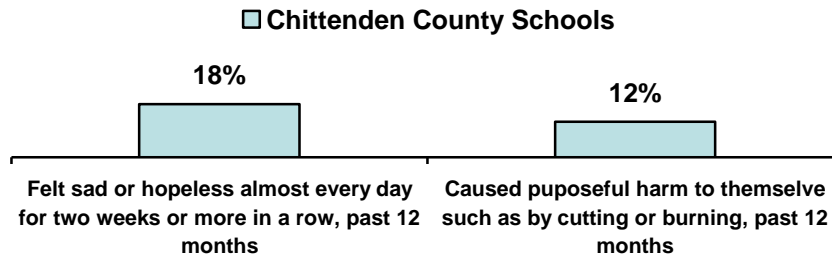


Figure 18. Mental Health Among Youth, 2011.

Co-location of mental health and primary care services is a way to facilitate access to mental health services. In Chittenden County, there are some medical providers with mental health services on site. There are also behavioral health specialists on the Blueprint Community Health Team, which serves as an extension of the primary care office for some patients. The HowardCenter, the Agency of Human Services designated agency for community mental health services in Chittenden County, is incorporating primary care at locations around the county as well. Zoning to allow for the placement of substance abuse and mental health treatment facilities in locations with close proximity to public transit can also improve the access to meet the mental health needs of the community.

For youth, the HowardCenter provides services in early child care and schools. Therapeutic Child Care services are intended to provide outcome-based, planned combinations of intervention, consultation, and education services within high quality child care settings to improve child care staff's and parent's skills and abilities to support optimal social, emotional, and behavioral development of the young children in their care. Therapeutic Child Care services must be delivered in accordance with guidance provided by the Child Development Division of Vermont. Though this program, clinicians are based in six child care centers in Chittenden County.

The HowardCenter also has agreements with each of the nine public school districts and supervisory unions in Chittenden County, to provide behavioral health support. The School Services program has 51 school service clinicians (SSC) working in 46 different public schools in Chittenden County serving grades EEE (Early Essential Education) through high school. This is in addition to school counselors and substance abuse professionals.

In 2010, 590 adults were served by mental health outpatient programs.⁵⁴ In 2012, 874 students were served through Howard Center's social work services and 67 students were reached through therapeutic child care services⁵⁵

HEALTH DISPARITIES

The prevalence of certain risk factors for chronic disease is increasing amongst some Chittenden County residents. The bounty of good health is not shared equally by all populations in the county. A health disparity is a measure of health that sets one group of people apart from another, amounting to real differences in years of healthy life. Too many Chittenden County residents, especially those with lower socioeconomic status and/or residents identifying as a racial or ethnic minority, experience health disparity that is largely preventable.

Income is the most common measure of socioeconomic status, and a strong predictor of the health of an individual or community. Lower income Vermonters report higher rates of depression and chronic conditions, such as obesity, asthma, heart disease, stroke and diabetes. They are also less likely to have regular physical activity and more likely to become obese than people with higher incomes- this trend starts early in childhood. Data also reveals that residents of lower socioeconomic status are also more likely to smoke.⁵⁶

Chittenden County has relatively higher median income and education level than other Vermont counties. Given that income and education are strong predictors of health, it is not surprising that many health indicators rank Chittenden County as the healthiest county in the state. Upon closer inspection of the data, the income disparity within our county is evident.

In 2000, 21% of Chittenden County residents were living at less than 200% of the federal poverty level.¹⁸ Many of these individuals participate in federal and state public assistance programs in order to meet basic needs. Assistance is provided through subsidized health care (Medicaid and Dr. Dynasaur for children and pregnant and post-partum women), financial assistance, and food assistance via 3SquaresVT (formally Food Stamps). The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides nutrition counseling, breastfeeding support, and a monthly food package to eligible participants. Table 4 shows the number of Chittenden County participants in key public assistance programs.⁵⁷ Currently in Vermont, all families that meet WIC eligibility requirements are able to participate in the program if they choose.

	Number served
State Health Care	31,803
3SquaresVT	16,441
Reach Up Financial Assistance	3,379
WIC	2,704

Table 4. Participation in Public Assistance, Economic Services and WIC Data. Vermont State Agency of Human Services. 2011.

The WIC program by definition serves low-income families (those who are at 185% of the federal poverty level or eligible for Medicaid/Dr.Dynasaur). WIC data from 2009 show that Chittenden

County has the highest percentage of WIC participants living in poverty--71% are living at or below 100% of the federal poverty level, while statewide 57% of participants are living at or below 100% of the federal poverty level.⁵⁸ For a family of four, the poverty level is currently set at an annual income of \$22,350.⁵⁹ Additionally, WIC data shows that a higher percentage of Chittenden County WIC participants had no income at their most recent clinic visit (7.9%) compared to the statewide average (4.8%).⁶⁰

Poverty can lead to poor nutrition and restricts healthy living options. Food insecurity is defined as the lack of access to enough food to fully meet basic needs at all times due to lack of financial resources. Children living in food insecure homes are at greater risk for poor quality diets, nutritional deficiencies, obesity, developmental delays, poor academic performance, and increase in aggression, depression, and hyperactive behavior. One in seven children in Chittenden County is food insecure.⁶¹ In addition to living in areas that may not have easy access to supermarkets with inexpensive and good quality produce, meats, and dairy products, those living in poverty and with food insecurity are more likely to be obese for several reasons. Limited resources require families to purchase inexpensive foods that are sustaining: typically foods high in fat and calories. Families in poverty often skip meals to stretch the food budget and may overeat when food is available. Also, low-income families are often working several jobs and have little time to prepare meals and may rely on convenience and “fast foods” that are high in calories. Low-income children may not have access to safe or supervised physical activities after school or during vacations.⁶²

Participation in federal nutrition assistance programs can improve food security. In Chittenden County, while all public schools participate in the School Lunch and School Breakfast programs, participation in the Child and Adult Care Feeding Program (CACFP) is much lower. CACFP serves nutritious meals and snacks to eligible children and adults who are enrolled for care at participating child care centers, day care homes, and adult day care centers. CACFP also provides meals and snacks to children and youth who participate in afterschool care programs or reside in emergency shelters. In 2012, only 20% (27 of 138) child care centers are enrolled in CACFP. Only seven sites are enrolled in the Afterschool Meals Program, six of those sites being located in Burlington and one in Winooski.⁶³ When schools close for the summer, students who receive school breakfast, lunch, and/or afterschool snack/dinner are at increased risk for food insecurity. Summer food programs provided vital nutrition and enrichment programs to children at risk of experiencing health and education disparities. In 2012, there were sixteen Chittenden County sites offering a summer food program (eight in Burlington, one in Colchester, three in Milton, and four in Winooski).⁶⁴

Preventing obesity begins at birth through breastfeeding. Low income women are less likely to breastfeed. In Vermont overall, 87% of mothers initiate breastfeeding. Only 80% of mothers who participate in WIC initiate breastfeeding, compared to 93% of mothers who do not participate in WIC.³⁶ The American Academy of Pediatrics recommends that women breastfeed exclusively for the first six months, and breastfeeding should be continued for at least the first year of life and beyond for as long as mutually desired by mother and child.⁶⁵ In Vermont, only 68% of mothers report breastfeeding at least eight weeks. The number drops to 53% for mothers who participate in WIC and reaches 80% for mothers who do not participate in WIC. Employment is now the norm for U.S. women of childbearing age. In 2009 nationally, 50% of all mothers with children younger than

12 months were employed. Sixty-nine percent of those employed worked full-time (35 or more hours per week). Employed women currently are less likely to initiate breastfeeding, and they tend to breastfeed for a shorter length of time than women who are not employed. Most employed mothers who are lactating must express milk at work for their children and should be provided with accommodations to do so. In Vermont, 13% of mothers report returning to work or school as a reason for stopping breastfeeding. This number drops to 7% for mothers participating in WIC, and reaches 22% for mothers who do not participate in WIC.⁶⁶

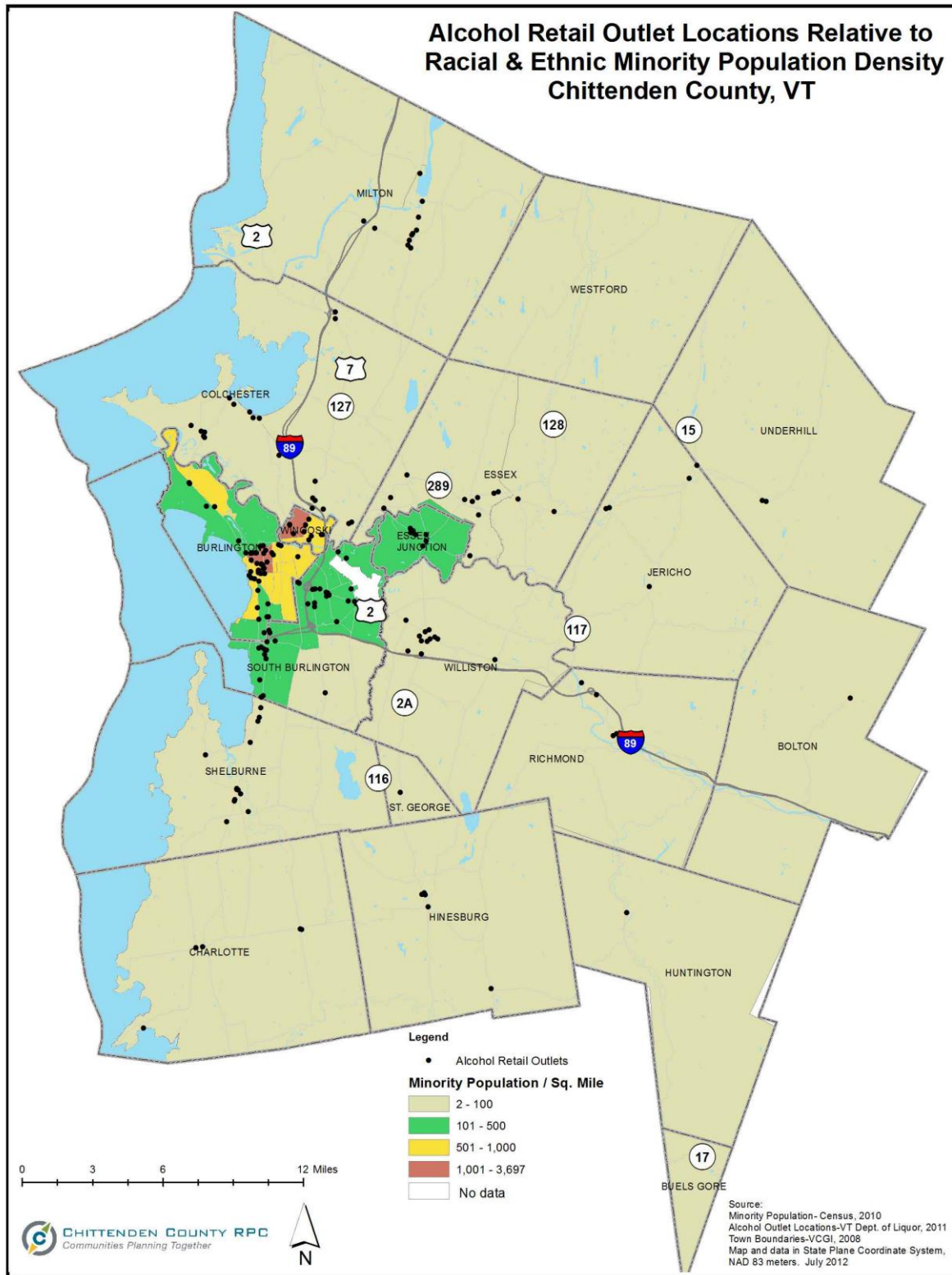
In addition to income, health disparities exist for those of racial or ethnic minority. Chittenden County has 13,697 residents who are from a racial or ethnic minority, representing 8.7% of the population, the highest percentage of any county in the state.²⁶ Nine percent of the county’s WIC caseload has a preferred language other than English, and 17% of Burlington School District⁶⁷ and 31% of Winooski School District students are English language learners.⁶⁸ Since 1989, a total of 5,967 refugees have been resettled in Vermont, primarily in Chittenden County. The Bhutanese and Burmese are largest ethnic groups to be resettled in the most recent years (since 2008).⁶⁹ Within Chittenden County high schools, youth of racial or ethnic minority report higher rates of various risks as evidenced by the following measures in Table 5.⁷⁰

Reported Behavior	Racial or ethnic minority n=763	White non-Hispanic n=4041
Safety belt use (never, rarely, or sometimes)*	18%	9%
Skipped meals to lose weight (during the past 30 days)	19%	18%
Skipped school due to feeling unsafe on route to or at school (during past 30 days)*	9%	3%
Threatened or injured with a weapon at school (during the past 12 months)*	13%	5%
Was bullied (during past 30 days)*	20%	15%
Physical fighting (during past 12 months)*	29%	19%
Smoked cigarettes (during past 30 days)*	16%	9%
Binge drinking (during past 30 days)	22%	19%
Marijuana use (during past 30 days)*	29%	22%
Cocaine use (during past 30 days)*	12%	2%
Heroin use (ever)*	11%	1%
Misuse Prescription Drugs (ever)*	19%	12%
Attempted suicide (during past 12 months)*	8%	3%

*Statistically different

Table 5. Disparities in Reported Youth Risks in Chittenden County, Youth Risk Behavior Survey, 2011.

Map F shows the concentration of alcohol retail outlets and the racial and ethnic minority populations in our county. The map shows there is a heavier concentration of outlets where residents of racial or ethnic minority live.

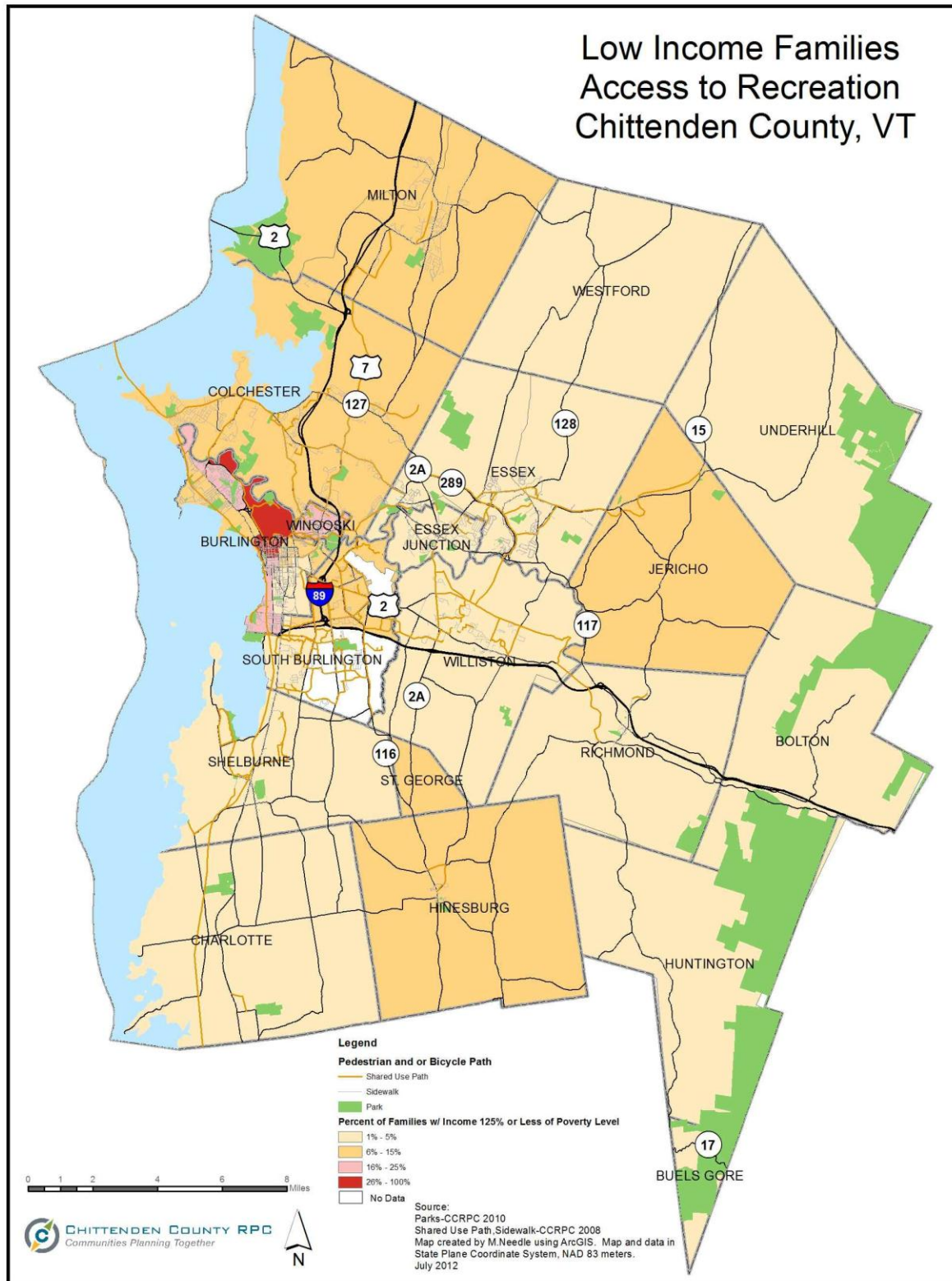


Map F: Alcohol Outlets and Racial and Ethnic Minority Population Density

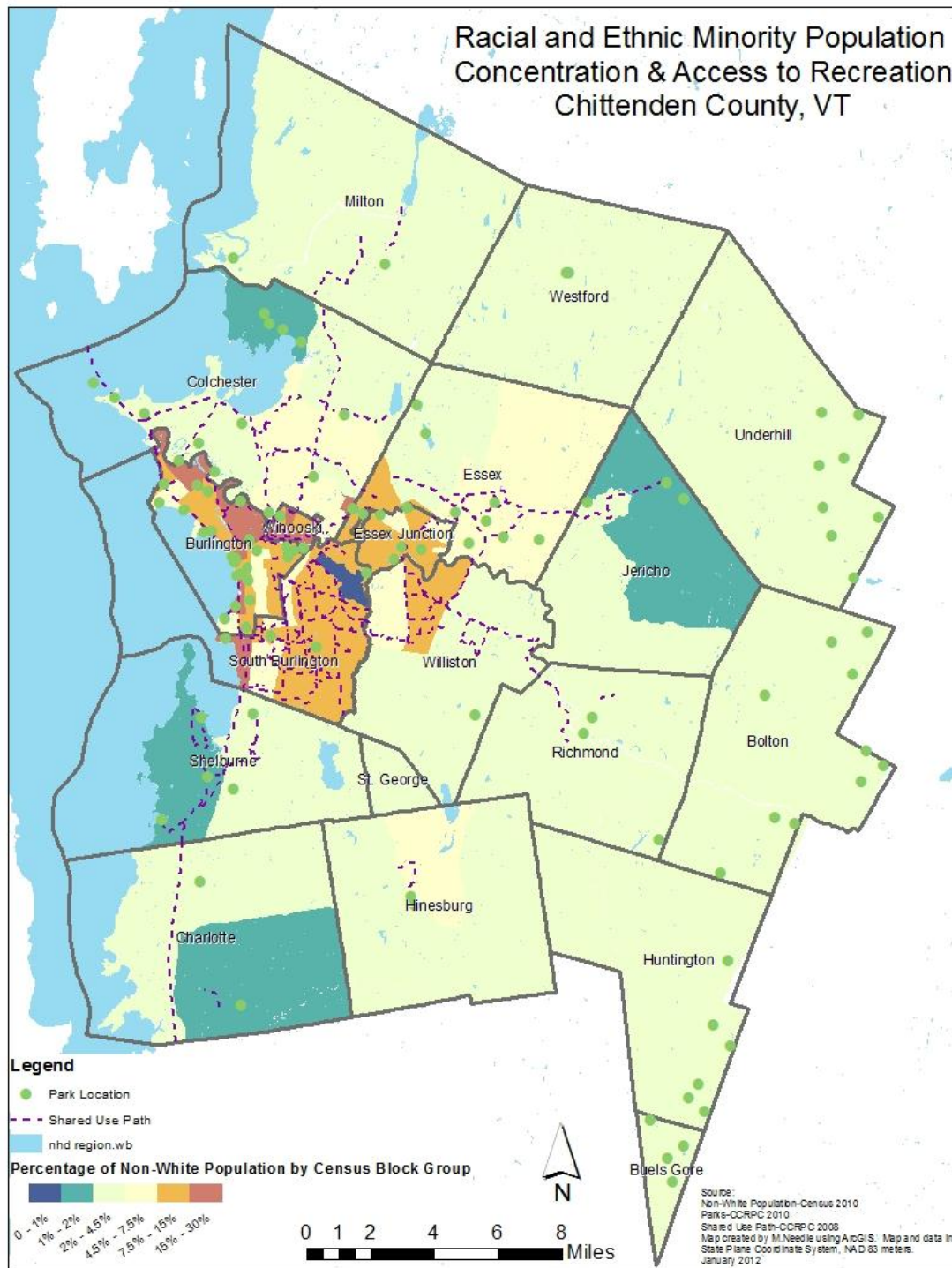
Depression correlates closely with income, education, and employment; people with lower incomes and less education report depression more often than those with higher socioeconomic status.⁵⁶

In addition to parks and green space providing opportunities for physical activity, closeness to green space and nature can relieve stress.⁷¹ A study which investigated the relationship between morbidity and the amount of natural land around a residential environment found that the prevalence rates for several diseases were lower where there were more natural environments. Furthermore, there was a strong association between depression and anxiety and the amount of nature in people's lives, especially for children.⁷²

On the next page, Map G shows public park location in Chittenden County. Similar to Map A that shows location of grocery stores, there is a higher density of public parks in the urban core and surrounding towns, with generally less density in the more rural parts of Chittenden County. However, park density is not as sparse in Underhill, Bolton, Huntington, and Buel's Gore as compared to the rest of rural Chittenden County. Overlaid on Map G is the percent of the population below poverty. Both Winooski and Burlington, which have the highest percentages of the population living below the poverty level, have comparatively high densities of park, which is a community design strength. Map H, on the following page, overlays the concentration of the non-white population against public parks. Again, there is a community design strength in that areas of the county that have the highest percentages of the population that are non-white are also the areas that have comparatively high densities of public parks.



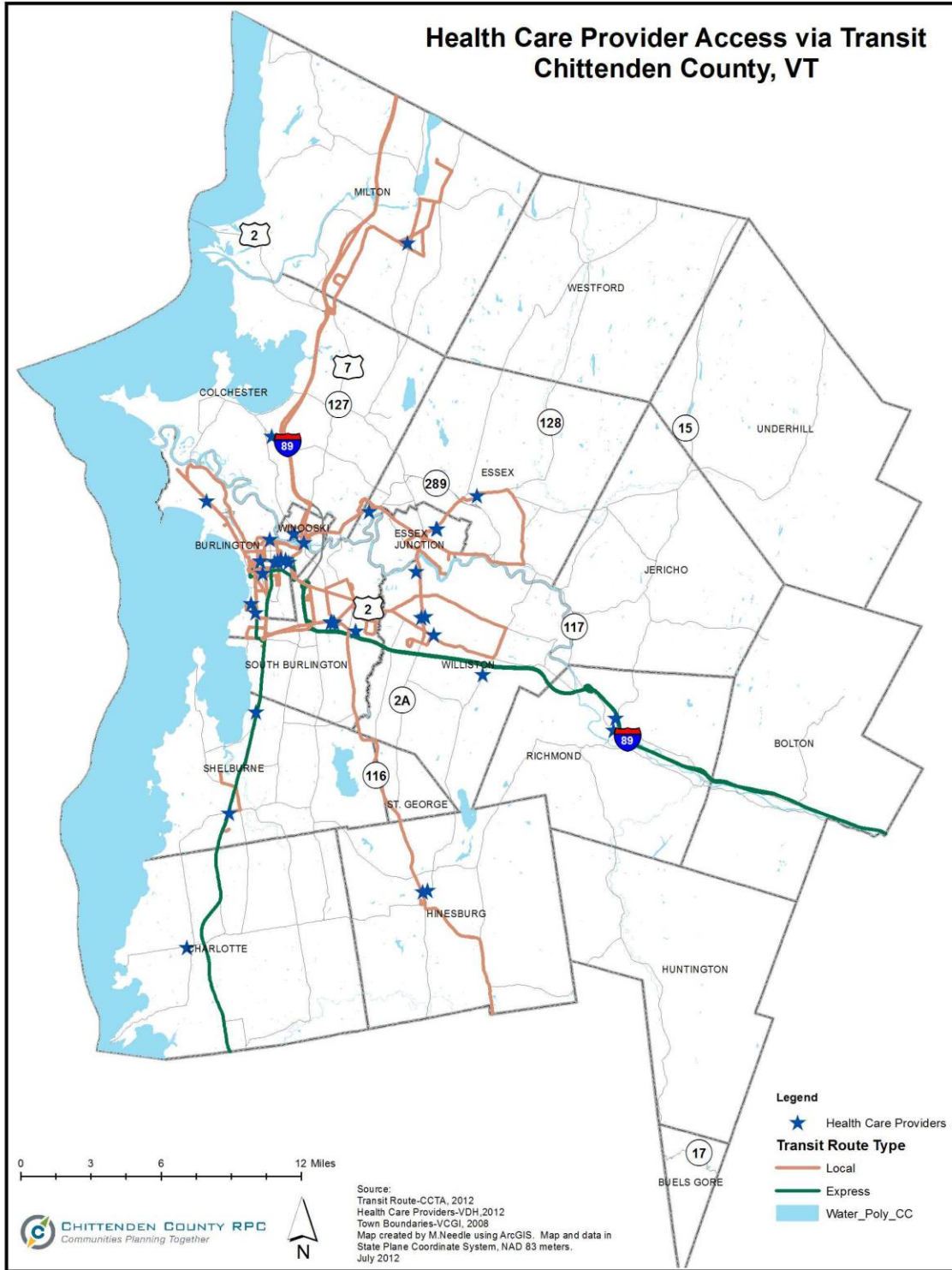
Map G. Access to Recreation and Poverty.



Map H. Access to Recreation and Race.

ACCESS

Good access to health care can influence a person's use of health care services and improves overall health.⁵⁶ On first glance, the Access to Health Care map, (Map I), shows very good access to medical providers by public transit. This is important for residents who live near a bus route and do not own a car. However, it should be noted that some are challenged by infrequent scheduling. Some routes are express and only run a peak commuting times, which may not be helpful to get to a medical appointment. Residents on Medicaid health insurance who do not live on a local bus route are able to use a cab, covered by Medicaid, for medical appointments.



Map 1: Access to Health Care Providers.

RECOMMENDATIONS

Health starts where we live, learn, work, and play. All Chittenden County residents should have the opportunity to make the choices that allow them to live a long, healthy life, regardless of their income, education, race, or ethnic background. Community design is a tool that can raise the bar for everyone. The recommendations below are action-oriented steps that towns and municipalities can take to improve the health of their residents and communities.

The recommendations are derived from evidence-based strategies of the Centers for Disease Control and Prevention and the Substance Abuse and Mental Health Services Administration. The recommendations also support Vermont-specific desired outcomes. Healthy Vermonters 2020 is the framework that identifies health priorities for Vermont. This framework is used to measure the health status of Vermonters, to set goals for improved health outcomes, and to compare Vermont to the rest of the nation. Healthy community design work that towns and municipalities engage in will contribute to achieving the Healthy Vermonters 2020 objectives listed below:

1. Reduce tobacco use by adults and adolescents.
2. Reduce proportion of nonsmokers exposed to secondhand smoke.
3. Establish laws on smoke-free indoor air that prohibit smoking in public places and worksites.
4. Reduce the proportion of adults (20+), children, and adolescents who are obese.
5. Increase the proportion of fruits and vegetables in the diets of the population.
6. Reduce household food insecurity and in doing so reduce hunger and obesity.
7. Increase the proportion of infants who are breastfed.
8. Increase the proportion of adults and adolescents who meet current federal physical activity guidelines for aerobic physical activity and for muscle strengthening activities.
9. Reduce the proportion of adults who engage in no leisure time physical activity.
10. Reduce proportion of persons engaging in binge drinking of alcoholic beverages.
11. Reduce blood lead levels in children.
12. Reduce Hospitalizations for Asthma
13. Increase the proportion of homes with high radon levels that have an operating radon mitigation system.
14. Increase the proportion of schools that have an indoor air quality management system.
15. Increase the proportion of persons served by community water systems who receive a supply of drinking water that meets the regulations of the Safe Drinking Water Act.
16. Increase the proportion of the population served by community water systems with optimally fluoridated water.

Recommendations to towns and municipalities for providing residents with the opportunity to be healthy where they live, learn, work, and play:

1. Use Health Impact Assessment (HIA) at the regional, municipal, agency, and organizational level to assure that planning decisions maintain or improve the public health. As defined by the World Health Organization, HIA is a combination of procedures, methods, and tools by

which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.

2. Support residents in choosing to live tobacco free through the following actions:

Create municipal policy to:

- Restrict retail store tobacco placement so that tobacco products are kept out of consumer view.
- Restrict retail store tobacco advertising.
- Restrict the number, location, type and/or density of tobacco retail outlets in a community.

Create a policy or ordinance to:

- Designate public parks, beaches, and other open-air places as tobacco-free.
- Designate campuses of secondary education institutions and health care organizations as tobacco-free.
- Designate outdoor events as tobacco-free.
- Designate business campuses as tobacco-free.
- Designate new multi-unit apartment/condominium buildings as tobacco-free. In the case of complexes, designate half of the multi-unit structures as tobacco-free.

3. Support residents in choosing to achieve national recommendations for physical activity and nutrition through the following actions:

- Enhance mixed used development to improve opportunity and access to physical activity and healthy food. Municipalities should regularly and periodically conduct an assessment to identify policies or infrastructure that limits mixed use development. Assessment results should be used to revise policy and develop plans to address infrastructure barriers.
- Create policies and environmental supports for pedestrian and bicycle friendly communities.
- Create policies and environmental supports to improve access to parks, recreation facilities, and open space.
- Create policies and environmental supports to increase access to healthy, safe, local foods.
- Create policies and environmental supports to protect the civil right of mothers to breastfeed in places of public accommodation (schools, restaurants, stores, and other facilities serving the general public).
- As workplaces themselves, municipalities should, at a minimum, achieve bronze level recognition as Breastfeeding Friendly Employers, and develop a plan for achieving silver and then gold level recognition.

4. Support residents in choosing to be free from alcohol abuse and addiction through the following actions:

- Reduce, or limit the increase of, alcoholic beverage outlet density through licensing or zoning.

Create a policy or ordinance to:

- Prohibit or restrict the sale of alcohol in public places and at community events.
- Prohibit or restrict alcohol-industry sponsorship of community events.
- Restrict alcohol advertising and product promotion.
- Maintain or expand existing limits on hours of legal sale of alcohol.

5. Support residents in choosing to live, work, go to school, and play in a healthy environment through the following actions:

- Encourage participation of the Town Health Officer in community planning efforts.
- Encourage homeowners and landlords whose buildings are supplied with water from private sources to have water tested in accordance with Vermont Department of Health recommendations.
- Fluoridate public water supplies.
- Ensure that Vermont's Lead Law is followed concerning lead-safe work practices or create a local ordinance to underscore lead-safe practices and promote lead safety
- Encourage all residents to test their homes for radon and install a radon mitigation system if levels are over 4 pCi/L.
- Incorporating radon resistant features in construction of new homes.
- Promote proper installation, use, maintenance, and replacement of smoke detectors and carbon monoxide detectors.
- Encourage schools to participate in the school environmental health program, Envision, which aims to improve environmental health and indoor air quality in schools.

6. Support residents in choosing to receive preventative health and mental health care through the following actions:

- Co-locate medical and mental health facilities in areas with easy access via active transportation and public transit.
- Review zoning regulations to minimize barriers for individuals seeking residential supports in their community.
- Actively engage with advocacy and consumer groups to work to dispel stereotypes and stigma associated with mental health challenges.
- Consider how town social service support dollars can benefit community members with mental health challenges.

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APPENDIX A:

A note about the data. This report relies primarily on sources of data that are already available either through publicly accessible data websites, or through direct requests to organizations that do not currently publicly provide the specific data on an ongoing basis. For municipal and regional planning purposes, data at the county or town level would be the most useful, but is often unavailable. When available, Chittenden County data is used. Some data is not available by county but is available by the Burlington Health Service Area (HSA). Below are the lists the towns included in Chittenden County and the towns included in the Burlington HSA. When county or HSA data is not available, we have used state-level data. Because of the low sample size, we are not able to obtain data on health measures at the town level. We do have some demographic and infrastructure data mapped by town, which was done by the Chittenden County Regional Planning Commission using publicly accessible data.

Chittenden County catchment area vs. Burlington Health Service catchment area

<u>County</u>	<u>HSA</u>
Bolton	
	Buel's Gore
Burlington	Burlington
	Cambridge
Charlotte	Charlotte
Colchester	Colchester
Essex	Essex
	Fairfax
	Ferrisburg
	Fletcher
	Grand Isle
Hinesburg	Hinesburg
Huntington	Huntington
Jericho	Jericho
Milton	Milton
	Monkton
	North Hero
Richmond	Richmond

St. George	St. George
Shelburne	Shelburne
South Burlington	South Burlington
	Starksboro
	South Hero
Underhill	Underhill
Westford	Westford
Williston	Williston
Winooski	Winooski