"*One Size Fits All*" Doesn't Work for Obesity Prevention

Obesity in Wisconsin, 2015-2016

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More about the project

This report is a product of the Wisconsin Obesity Prevention Initiative. Funding for this study was provided by the University of Wisconsin School of Medicine and Public Health through the Wisconsin Partnership Program.

This report highlights obesity rate estimates by ZIP Code and age. More information and an interactive mapping tool are available at www.wihealthatlas.org.

This report is the first in a series of reports that will explore obesity among Wisconsin residents.

Obesity is a condition that touches every life in Wisconsin.

In this report, we describe new evidence of the scope of the obesity epidemic in Wisconsin. **A key finding is that in 2015-2016, 41.2% of adults and 14.8% of children statewide have obesity.**

As high as these overall numbers are, they mask another set of findings that are arguably more important for Wisconsin's long-term health and prosperity. In this report, we describe patterns of obesity rates by age and by place. We find that **there are neighborhoods in Wisconsin where children are almost six times more likely to be obese than in other nearby neighborhoods**. Obesity rates are lowest in early childhood and highest in middle age. These patterns highlight how people across Wisconsin face differences in the conditions that shape their weight and health.

Although this report starts by describing the patterns we see in obesity rates in Wisconsin, it does not stop there. We also connect readers to resources, possible solutions, and other change-makers that can help them take action.

WISCONSIN HEALTH ATLAS

School of Medicine and Public Health
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Introduction: Understanding Obesity

Most people reading this report probably already know that it's important to eat a healthy diet and be physically active in order to maintain a healthy weight. That's true, because our habits add up over time to shape our weight and health.[1] Sticking with healthy habits like being physically active, eating nutritious food, and maintaining a healthy weight helps to reduce the risk of the leading causes of death in the United States, like heart disease, diabetes, stroke, and some kinds of cancer.[2] That means living longer and facing fewer health challenges.[3–6]

But focusing only on an individual's healthy habits leaves out a big part of the story. Our choices about diet and physical activity are important, but the places and conditions in which we live can make it easier or harder to make healthy choices about what to eat and how to be physically active in our everyday life. Have you ever made a New Year's resolution to be more physically active, eat better, or lose weight? Think of all the things that affected your ability to stick with it. Did your family and friends support you? Could you afford healthy food or a gym membership? Were there convenient places for you to buy healthy foods and be active? Did your new healthier choices fit into your routine? Did you have time, energy, skills, and a place to cook healthy meals? Were you embarrassed or worried that people around you might make discouraging comments? Did you feel safe being active in your neighborhood?

In short, not all of us have it easy when it comes to making healthy choices. The choices we make are dependent on the opportunities we have, and conditions in our communities help shape our opportunities to be healthy. There are communities where opportunities to be healthy are abundant and affordable and supported, so healthy choices are relatively easy for everyone. Just as many communities have limited opportunities for affordable healthy eating and physical activity or other serious obstacles to healthy choices. In those places, residents face extra barriers and stresses that impact their ability to maintain a healthy weight and increase their chances of having obesity.

Obesity is a disease.[7,8] It is an incredibly complicated disease, and many different factors play a role.[9] There is no one solution to obesity, but there are many ways that we can work to make Wisconsin a healthier place for everyone. We do that by making healthy choices easier for all people—for all ages, all abilities, and in all communities. It will work best if everyone participates to find solutions that fit their communities' unique needs and strengths.

In the next pages, we detail how obesity differs across Wisconsin by age and place. As you explore the data, we encourage you to think about the unique challenges and opportunities in your own community, and how you might contribute to making your community a place where healthier choices are just a little bit easier for everyone.

A person's community can include where they live, work, learn, worship, and play.

Definition of Obesity

Electronic health records provide a unique source of data to monitor obesity rates. This report uses data from the electronic health records of over 1.8 million patients who had a body mass index (BMI) recorded during an outpatient visit. BMI is calculated by dividing a person's weight in kilograms by the square of their height in meters.

BMI is easy to calculate and uses measurements that are easy to take during a doctor visit. While it is not a perfect measurement of body fat, research shows that BMI is related to some negative health outcomes and other measures of body fat that are harder and more expensive to make.[10]

As a condition, obesity is defined based on BMI. This definition is different for adults and children.

Adults
For adults ages 18 and over, we define obesity as having a BMI of 30 or above. For example, a six-foot-tall adult has obesity if they weigh 220 pounds or more, and a five-and-a-half-foot-tall adult has obesity if they weigh 185 pounds or more. To calculate BMI for an adult, visit: https://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/english_bmi_calculator/bmi_calculator.html

Children
For children ages two and over, obesity is determined by comparing a child's BMI to what we would expect for their age and sex. We use the CDC's BMI-for-age growth chart to determine what BMI we would expect. Children who are at or above the 95th BMI percentile are considered to have obesity. To calculate BMI for a child or teen, visit: https://nccd.cdc.gov/dnpabmi/Calculator.aspx

$$\text{BMI} = \frac{\text{weight in kilograms}}{\text{height in meters}^2}$$

Calculating Obesity Rates

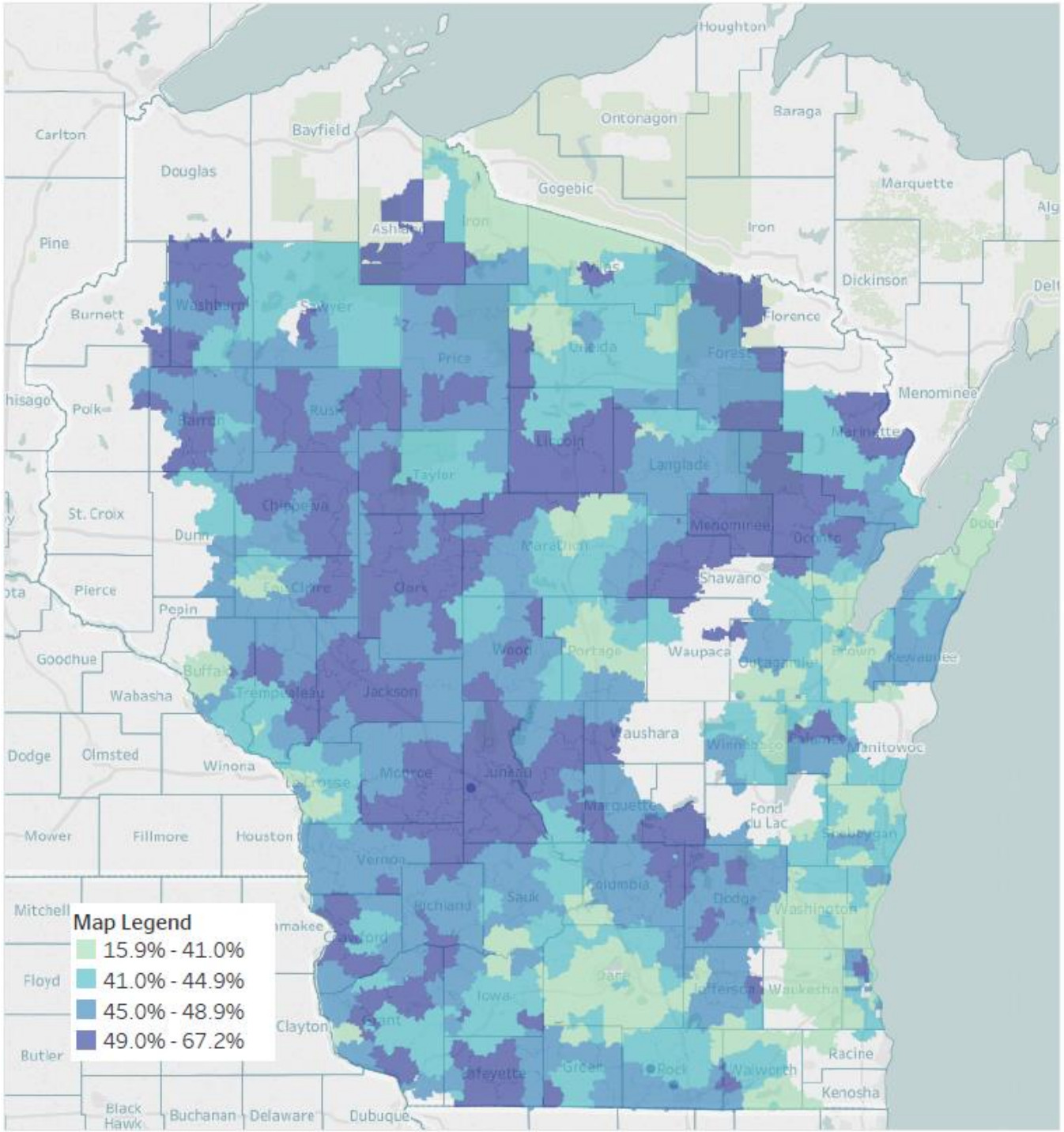
Throughout this report, we talk about obesity rates. An obesity rate is the percentage of people in a population who have obesity.

The estimates in this report reflect unadjusted obesity rates among patients that had an outpatient visit with a participating healthcare system in 2015 or 2016. See Appendix A for detailed methods.

We do not include overweight in these estimates.
We also do not include pregnant women.

$$\text{Obesity Rate} = \frac{\text{Number of patients with obesity}}{\text{Number of patients with a recorded BMI}}$$

Obesity varies by ZIP Code. Place Matters.



Where you live has a big impact on your opportunities to maintain a healthy weight.

Adult Obesity Rates

People living in ZIP Codes throughout Wisconsin have very different rates of obesity. Adult obesity rates ranged from 15.9% to 67.2% statewide. That means the ZIP Codes with the highest rates of adult obesity have rates over 4 times as high as ZIP Codes with the lowest rates. See Figure 1, at left.

Figure 1. Map of adult obesity rates, ages 18 and over, by ZIP Code: Wisconsin, 2015-2016

Maps are based on data from Wisconsin Collaborative for Healthcare Quality, 2015-2016

Childhood Obesity Rates

Differences by place are even more striking among children. Childhood obesity rates ranged from 5.8% to 38.5%. That's about six times as high in ZIP Codes with the highest obesity rates compared to those with the lowest. See Figure 2, at right.

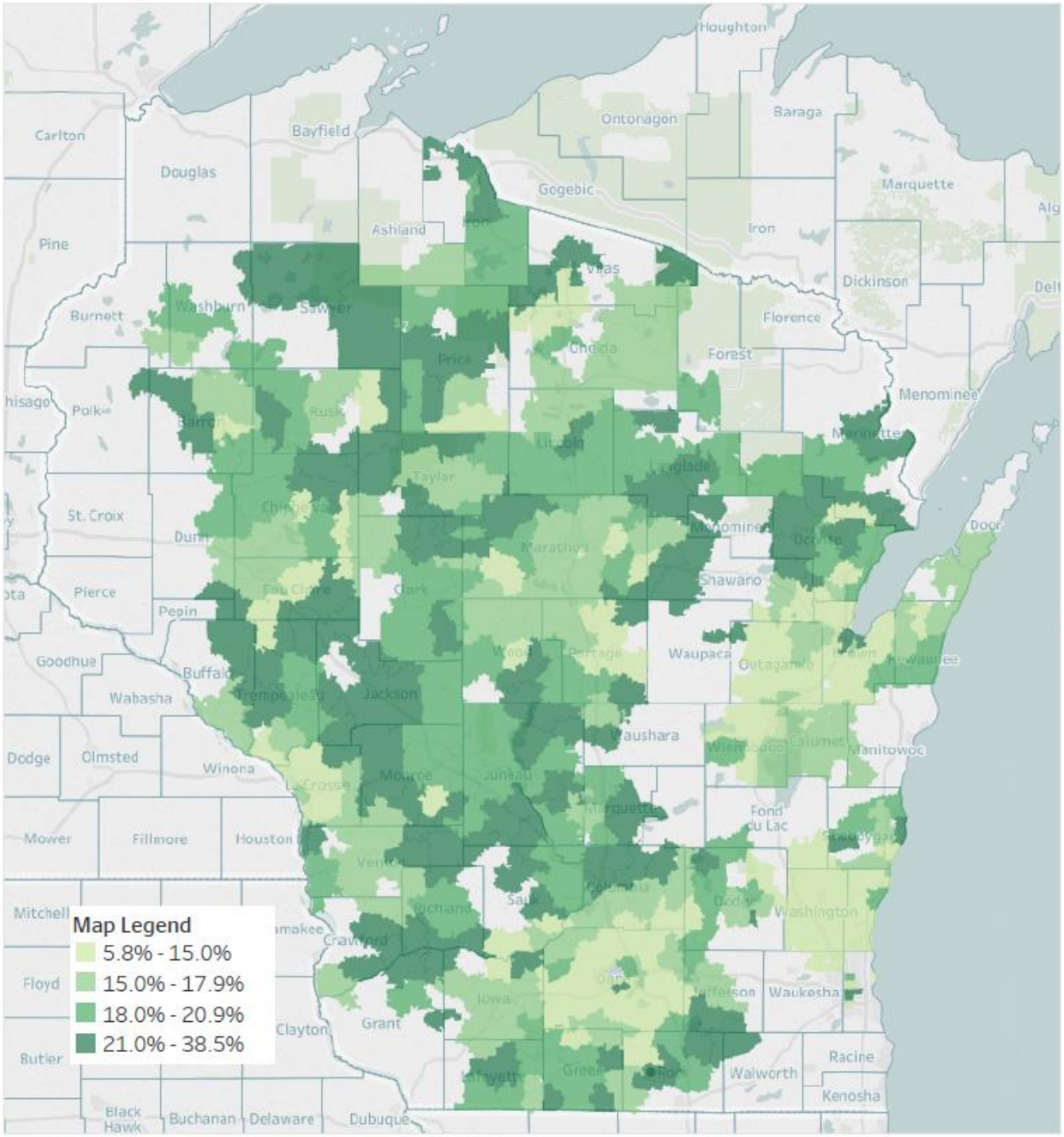


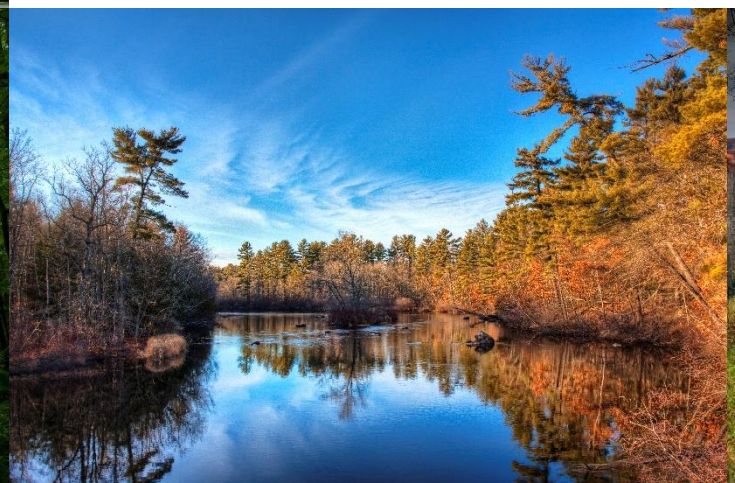
Figure 2. Map of childhood obesity rates, ages 5 to 17, by ZIP Code: Wisconsin, 2015-2016

Maps are based on data from Wisconsin Collaborative for Healthcare Quality, 2015-2016

Find Out More

Our online mapping tools let you dive deeper into the obesity maps. You can view maps by age group and gender, and get more information on a ZIP Code.

Visit us online at www.wihealthatlas.org to use the mapping tools.



Healthy Weight for all Places

Differences by Place

Obesity rates vary both across the state and within communities. Neighborhood conditions play a big part in maintaining a healthy weight. Some neighborhoods in Wisconsin have great options for healthy, active living, like easily accessible parks and recreation opportunities and places to buy or grow fruits, vegetables, and other healthy foods. Other neighborhoods have few transportation and housing options, a lack of job opportunities, few or no places to buy affordable, healthy food, and few safe places to be physically active. In these places, Wisconsinites have fewer options and less opportunity to engage in healthy behaviors.

Residential segregation and other forms of structural racism have contributed to creating differences in opportunities to be healthy.[11–13] Addressing these unfair systems, policies, and practices is crucial in closing the gaps in obesity rates that we see within Wisconsin.[14] Strategies that focus only on reducing the obesity rate overall without addressing differences between places and groups have the potential to increase those differences.[15] Everyone has a role to play in shaping opportunities for good health. And lifting up the voices of those most affected by poor health can often lead to meaningful change.

Rural Places

On average, rural communities have higher rates of obesity than urban areas.[16,17] Some of this difference is because rural residents tend to be older, have less education, and have less access to health care, factors that we know are associated with higher obesity rates.[18]

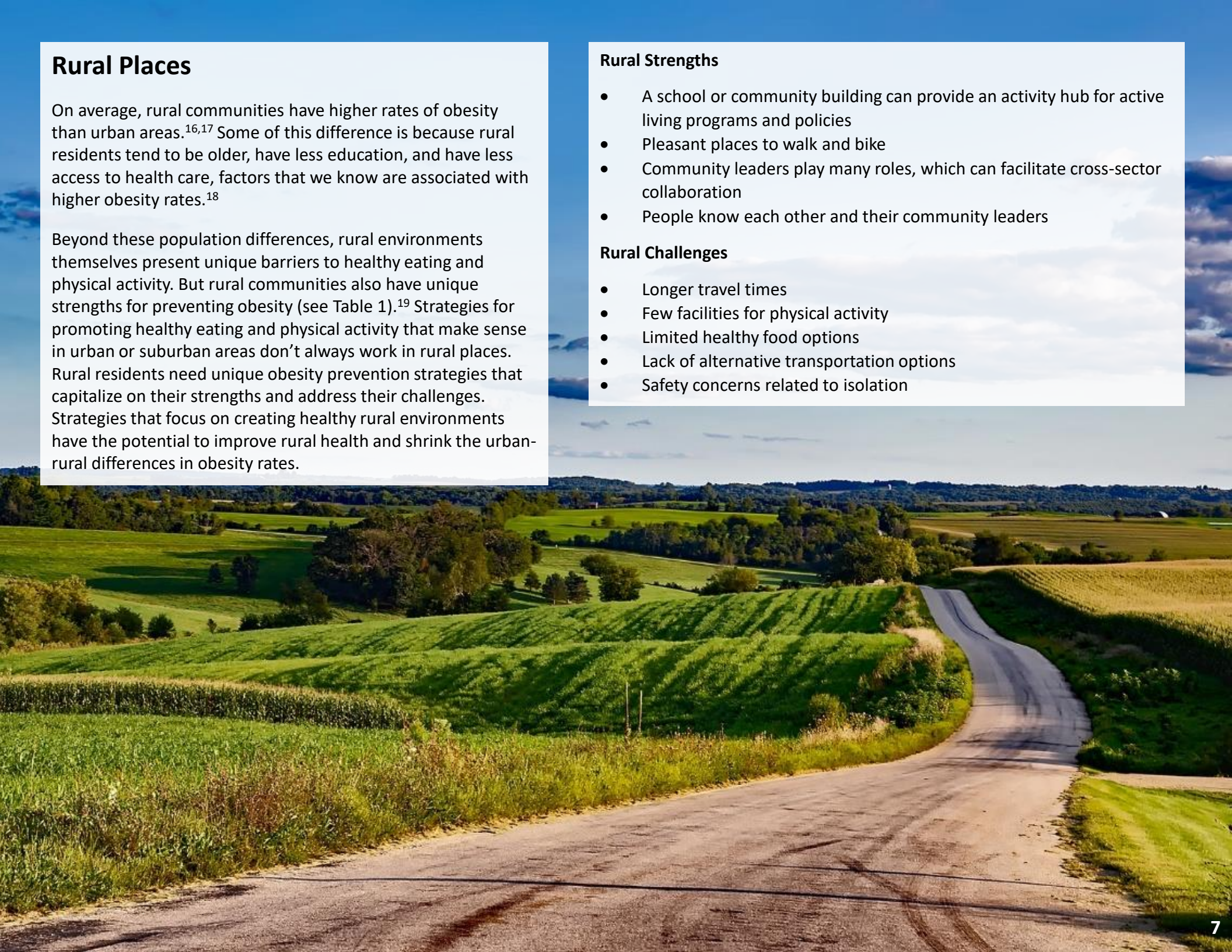
Beyond these population differences, rural environments themselves present unique barriers to healthy eating and physical activity. But rural communities also have unique strengths for preventing obesity (see Table 1).[19] Strategies for promoting healthy eating and physical activity that make sense in urban or suburban areas don't always work in rural places. Rural residents need unique obesity prevention strategies that capitalize on their strengths and address their challenges. Strategies that focus on creating healthy rural environments have the potential to improve rural health and shrink the urban-rural differences in obesity rates.

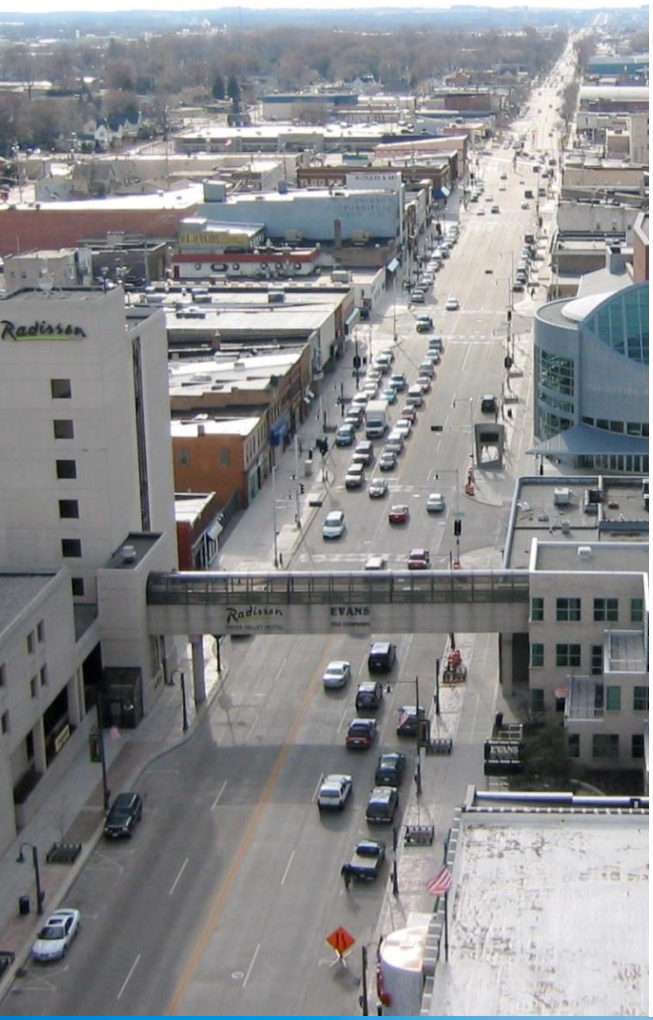
Rural Strengths

- A school or community building can provide an activity hub for active living programs and policies
- Pleasant places to walk and bike
- Community leaders play many roles, which can facilitate cross-sector collaboration
- People know each other and their community leaders

Rural Challenges

- Longer travel times
- Few facilities for physical activity
- Limited healthy food options
- Lack of alternative transportation options
- Safety concerns related to isolation





Urban Places

While urban areas have lower obesity rates than rural areas overall, there are big differences in obesity rates *within* cities. Milwaukee and Madison have some of the ZIP Codes with the lowest obesity rates statewide. However, neighboring ZIP Codes can have obesity rates twice as high.

Overall, urban environments tend to have more features that make it easier to stay physically active and eat a healthy diet compared to rural areas. They have a higher population density and residents tend to have better access to key facilities, such as grocery stores and parks.[19] However, not all urban residents have the same access to these health-promoting benefits. Differences between neighborhoods in the physical environment,[20,21] food environment,[22] community safety,[23] poverty,[11,24-26] employment,[27] education,[25] and income[28] help explain differences in healthy behaviors and obesity rates.[14]

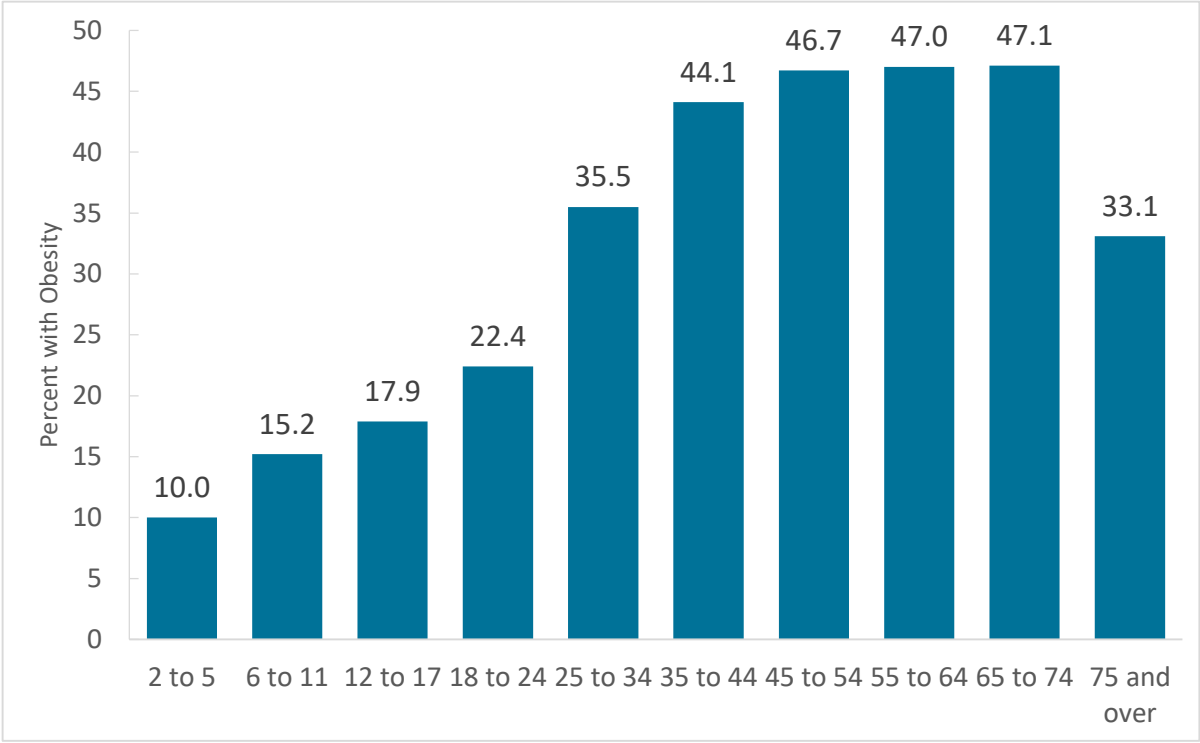
Strategies that work to reduce obesity in urban areas have the potential to reduce the differences we see in obesity rates within neighborhoods. Engaging residents of places with higher rates of obesity can help to create urban environments that give everyone a fair chance to be healthy.

Obesity develops over a lifetime. Age matters.

Statewide, obesity rates among children ages 2 to 17 was 14.8%. Childhood obesity rates were lowest among 2 to 5 year olds (10.0%), and highest among 12 to 17 year olds (17.9%). Adults ages 18 and over had an obesity rate of 41.2%. Obesity rates were progressively higher among older age groups, until they leveled out in middle age. Adult obesity rates were lowest among young adults ages 18 to 24 (22.4%), and highest among adults between ages 45 and 74. Obesity rates were lower among the oldest age group, ages 75 and older. See Figure 3, below. For statewide estimates by age group and gender, see Appendix B.

Weight gain happens over a lifetime. Prenatal issues such as maternal weight gain, gestational diabetes, and high or low birthweight can impact weight and obesity among both infants and mothers.[29,30] Children today are three times more likely to have obesity than children were in the 1960's and 70's.[31] Across childhood and early adulthood, we see obesity rates are higher among older age groups. Obesity rates continue to climb until middle age. Lower obesity rates among patients ages 75 and over may be due to shorter life expectancies among those with obesity.

Figure 3. Obesity rates by age: Wisconsin, 2015-2016



Obesity rates were not significantly different among the 45-54, 55-64, and 65-74 age groups.
Based on data from Wisconsin Collaborative for Healthcare Quality, 2015-2016.

Healthy Weight for All Ages

Strategies to prevent obesity need to address all of the places that people spend their time to make sure those environments support healthy eating and physical activity, starting from birth. That includes the places we grow, play, learn, live, and work. There are many strategies to prevent obesity at all ages, and many groups throughout Wisconsin are already hard at work making their communities healthier.

Settings for Obesity Prevention can Include:

- Hospitals
- Child Care & Early Education
- Schools
- Workplaces
- Restaurants & Stores
- Places of Worship
- Neighborhoods
- Government Facilities

You are the solution you've been looking for

Obesity prevention works best when partners from multiple sectors work together to create healthy policies, systems, and environments to support physical activity and nutrition.

Communities across Wisconsin are coming together to identify and use strategies that work with their unique strengths and needs. Every Wisconsin community is unique, and so the strategies that they use may be, too. Strategies should focus on creating policies, systems, and environments that make healthy choices easier anywhere Wisconsinites live, work, learn and play. Efforts to address obesity should engage families, communities, local businesses, schools, health systems, and individuals affected by obesity to guide their work and increase their impact. Together, we can reduce obesity and make sure every Wisconsinite lives in an environment that actively supports achieving and maintaining a healthy weight.

Multi-Sector Partners can include:

- Public Health Professionals
- Professional Planners
- Healthcare Systems, Providers, & Clinics
- Local Businesses
- Schools
- Early Child Care Centers
- Parks & Recreation
- Government Agencies
- Local Leaders
- Faith Communities
- Farmers
- Chefs & Restaurants
- Academic Partners
- And many more!

Take Action: Connect

Health champions throughout Wisconsin are already working together to make healthy eating and physical activity more accessible, easy, and fun.

Wisconsin Department of Health Services
Find out more about nutrition and physical activity coalitions in your area:
https://www.dhs.wisconsin.gov/physical-activity/resources/coalition-webs.htm

healthTIDE
Join a statewide network of partners to learn from others and amplify your efforts:
https://www.healthtide.org/

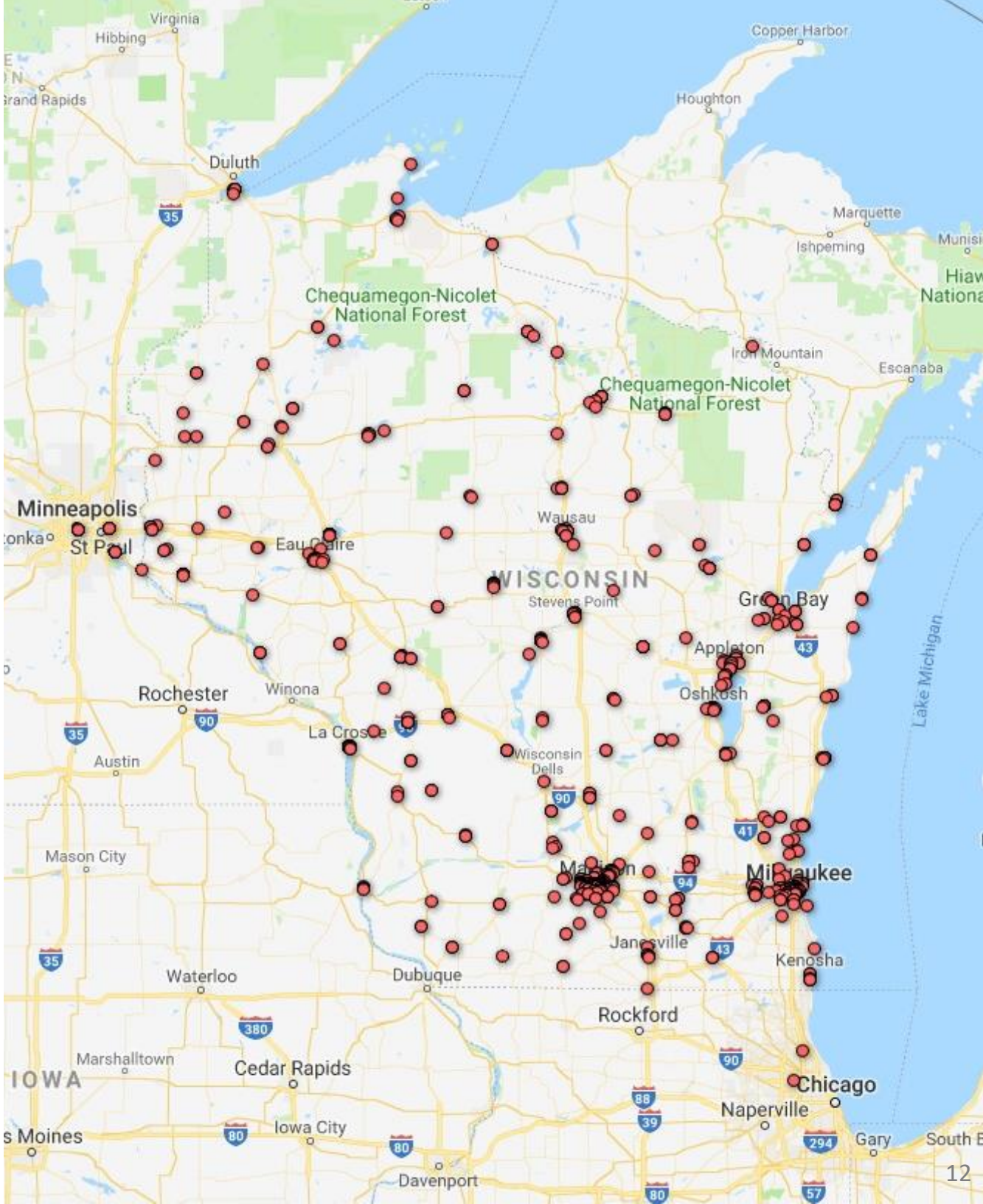


Figure 4. healthTIDE partners working statewide to increase opportunities for healthy eating and active living.

Take Action: Find Strategies that Work for You

Looking for more ideas on strategies that will work in your area?

Mobilize for Health
Get help planning your local grassroots health improvement initiative and find strategies with Mobilize for Health: https://mobilizeforhealth.org/

UW-Madison Population Health Institute
Review a list of 74 different evidence-informed healthy eating and physical activity strategies: http://whatworksforhealth.wisc.edu/factor.php?id=12

Wisconsin Department of Health Services
Explore strategies by setting and learn about the Wisconsin Nutrition, Physical Activity, & Obesity State Plan: https://www.dhs.wisconsin.gov/physical-activity/index.htm

Find community-focused resources for improving Wisconsin's health: https://healthy.wisconsin.gov/

Centers for Disease Control and Prevention
Read more about state and local programs and community efforts to prevent obesity, along with tips for healthy living: https://www.cdc.gov/obesity/strategies/index.html

Summary

Using body mass index information recorded during outpatient visits provides a unique opportunity to create obesity rate estimates based on measured height and weight. Using records from 1.8 million patients allows us to provide estimates of obesity rates for narrow age bands and for ZIP Codes. This information can be used by local change-makers to inform their efforts as they work together to make Wisconsin healthier for all residents.

Obesity was not equal among patients of different ages and living in different places. Obesity is lowest among young children, highest among middle-aged adults, and lower among older adults ages 75 and over. This pattern of increasing obesity from early childhood through middle age mirrors previous findings both in Wisconsin and nationally.[32,33] Obesity is a chronic condition that unfolds over a lifetime of weight gain. Prevention efforts need to address obesity throughout the life course, including the prenatal period.

Rural and urban places alike have high rates of obesity. There are big differences in obesity rates across the state, and even within neighborhoods. Communities across Wisconsin have different strengths and face different challenges when it comes to creating environments that make it easier for everyone to maintain a healthy weight. Together, we can find solutions that work.

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Appendix A. Methods

Data Acquisition and Processing

The Wisconsin Health Atlas Obesity Map project uses data on body mass index (BMI), age, sex, billing ZIP Code, and payer from individuals who visited a participating health care system in 2015 and 2016. BMI is recorded in health systems' electronic health records as part of routine care. Health care systems securely transfer de-identified data to the Health Innovation Program (HIP), where the data are combined and stored on a secure server. Obesity Prevention Initiative staff prepare and aggregate data to create ZIP Code level estimates of obesity rates. These aggregated estimates are then removed from the HIP secure server for use on the Wisconsin Health Atlas website.

Data Quality

Participating health care systems review data for quality assurance before it is submitted to HIP for inclusion in the Wisconsin Health Atlas Obesity Map project. Obesity Prevention Initiative (OPI) staff further review submitted data for compatibility across systems. One record per patient from each health care system is used to create the obesity rate estimates. Pregnant women are excluded.

Definitions

Body Mass Index (BMI): Equal to weight in kilograms divided by height in meters squared.

Obesity: Obesity is defined differently for adults and children. For adults (ages 18 and over), obesity is defined as having a Body Mass Index of 30 or higher. For children (ages 5 to 17), obesity is defined based on the 2000 CDC Growth Charts. A child is considered to have obesity if their BMI is at or above the 95th percentile for their age in months and sex. For more information about obesity definitions, visit: http://www.cdc.gov/obesity/

Numerator: The total number of individuals with a valid BMI value that classifies them as having obesity, for a given geographic location (ZIP Code or statewide), age group, and (if applicable), and/or sex.

Denominator: The total number of individuals with a valid BMI value for a given geographic location (ZIP Code or statewide), age group, and (if applicable), and/or sex.

Coverage: Estimates the percentage of a population that is included in the available, valid patient data. Coverage is calculated by dividing the total number of patients in a ZIP Code by the estimated population size of the ZIP Code. ZIP Code population sizes are approximated using the 2015 American Community Survey (ACS) 5-year population estimates for ZIP Code Tabulation Areas. Coverage is calculated separately for adults and children for each ZIP Code. For more information on the American Community Survey, visit: https://www.census.gov/programs-surveys/acs/

Insufficient Data: ZIP Codes estimates are suppressed when there is not enough data available to create an estimate. This helps us ensure patient anonymity and estimate stability. Insufficient data is defined in five ways:

1. Coverage less than 10%: The number of included individuals is less than 10% of the ACS estimated population size for the age group, sex and ZIP Code.
2. Numerator less than 10: Estimates based on a numerator of less than 10 individuals.
3. Denominator less than 30: Estimates based on a denominator of less than 30 individuals.
4. Population size less than 30: The ACS estimated population size for the age group, sex and ZIP Code is less than 30 individuals.
5. Relative Standard Error (RSE) greater than 30%: The standard error of the obesity rate estimate is equal to or greater than 30% of the estimate.

Confidence Interval: 95% Wilson (score) confidence intervals are calculated for each estimate.

Unadjusted Obesity Rate Estimates: Gives the approximate percent of the population in the ZIP Code, age, and sex group with obesity.

Limitations

These obesity rate estimates are based on patient populations and reflect those who sought care from participating health care systems during 2015 and 2016. Only individuals who received care during the submitted period were included in these data, and estimates may not accurately reflect the prevalence of obesity in the Wisconsin population.

BMI values are based on heights and weights recorded during patient encounters. There are no standard practices for height and weight measurement across health systems and clinics. Some variation may occur in height and weight measurements based on the clothing and/or shoes that a patient wore during their height and weight measurement.

While estimates include only one visit per patient per health care system, it is possible that patients sought care from more than one reporting system. Such visits would be included as duplicate measurements.

Not all health care organizations that provide care to Wisconsin residents currently participate in this project. This results in limited or missing data for some ZIP Codes.

The geographies used to define coverage for ZIP Codes do not perfectly coincide. The ZIP Code Tabulation Area (ZCTA) boundaries are defined by the U.S. Census Bureau and are composed for Census blocks in which a majority of residents fall into a certain ZIP Code. For more information, see: https://www.census.gov/geo/reference/zctas.html

Disclaimers

Because of limitations in the available data, unadjusted obesity rate estimates presented by the Wisconsin Health Atlas may not be representative of the true obesity rate in the population.

System Notes

These data represent individuals who visited a participating health care system during the included period and had a valid BMI measurement recorded. They may not be representative of the entire population of a ZIP Code.

Valid BMI measurements are based on visits during which a valid height and weight were recorded.

All data sharing and preparation was conducted in accordance with Health Insurance Portability and Accountability Act (HIPAA) regulations to ensure privacy and confidentiality.

Participating Healthcare Systems

The Wisconsin Obesity Surveillance Partnership is a collaborative effort of the Wisconsin Obesity Prevention Initiative, the Health Innovation Program, and the Wisconsin Collaborative for Healthcare Quality.

This project is made possible by the participation of health care organizations throughout the state. These organizations provide us with data that we use to create obesity rate estimates. We are proud to partner with:

- Aspirus
- Ascension
- Froedtert & The Medical College of Wisconsin
- Gundersen Health System
- Marshfield Clinic
- Mayo Clinic Health System
- Mercyhealth
- Prevea Health
- ProHealth Care
- SSM Health
- ThedaCare
- UnityPoint Health
- UW Health

The Wisconsin Obesity Surveillance Partnership welcomes new data partners. For more information, please contact us at wihealthatlas@hslc.wisc.edu.

WISCONSIN HEALTH ATLAS

Health Innovation Program
Integrating healthcare research and practice

WCHQ
Wisconsin Collaborative for Healthcare Quality

Wisconsin Partnership Program
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

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Appendix B. Statewide Obesity Rates by Age Group and Gender

This appendix contains statewide estimates of unadjusted obesity rates by age group and gender.

For detailed estimate tables by ZIP Code, please visit our website at: https://www.wihealthatlas.org/

Table 1. Statewide obesity rates by age group and gender, Wisconsin, 2015-2016

	Percent with obesity (Number of patients)		
Age Group	Overall	Female	Male
2-5	10.0 (83,235)	9.4 (40,112)	10.5 (43,123)
6-11	15.2 (109,686)	14.3 (52,588)	16.1 (57,098)
12-17	17.9 (115,150)	16.3 (57,853)	19.5 (57,297)
18-24	22.4 (128,322)	23.6 (76,348)	20.7 (51,974)
25-34	35.5 (204,605)	36.0 (123,679)	34.6 (80,926)
35-44	44.1 (215,337)	43.0 (123,393)	45.5 (91,944)
45-54	46.7 (263,198)	44.7 (145,472)	49.3 (117,726)
55-64	47.0 (298,854)	45.4 (158,486)	49.0 (140,368)
65-74	47.1 (225,988)	46.2 (120,953)	48.1 (105,035)
75 and over	33.1 (186,095)	32.3 (106,903)	34.2 (79,192)
All Children (2-17)	14.8 (308,071)	13.8 (150,553)	15.8 (157,518)
All Adults (18 and over)	41.2 (1,522,399)	40.1 (855,234)	42.7 (667,165)