

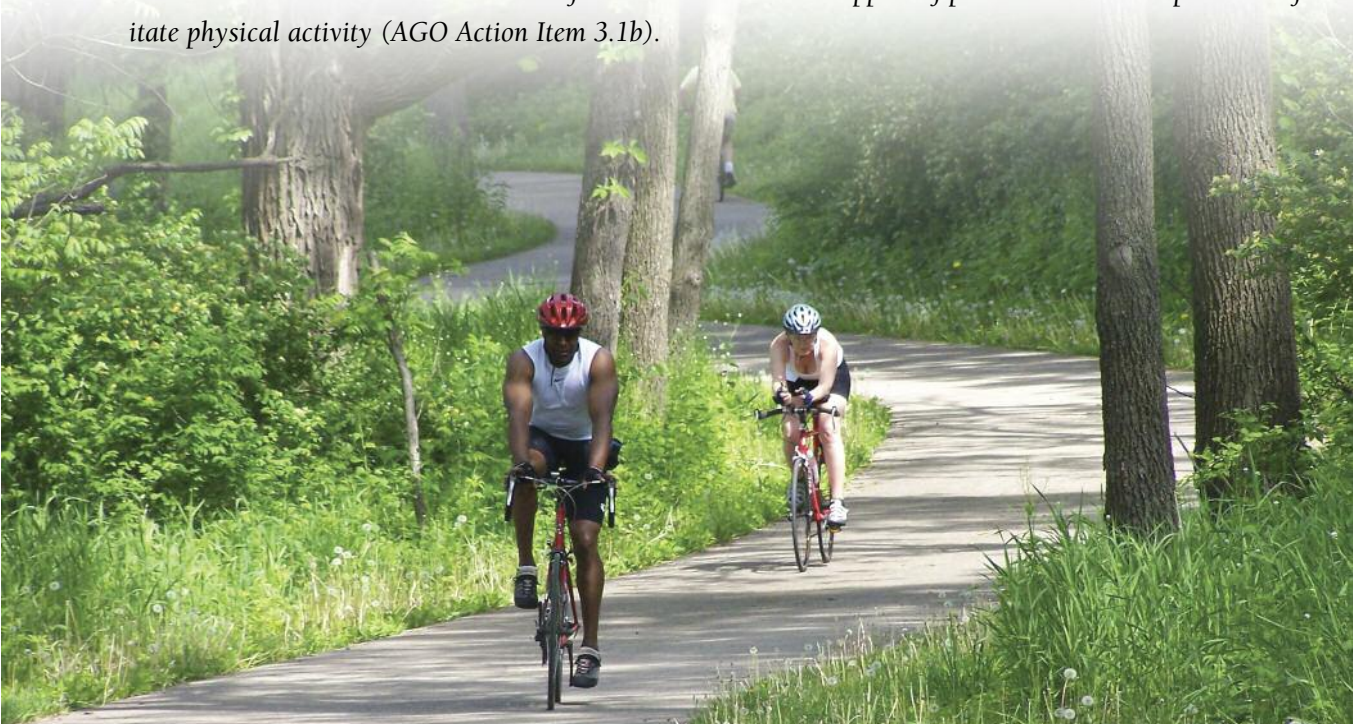
CHAPTER 3



Outdoor Recreation and Public Health

The third goal of the America's Great Outdoors (AGO) Report, "Raise Awareness of the Value and Benefits of America's Outdoors," was developed out of the public's concern that youth are lacking exposure to outdoor education. AGO sets out to partner with Let's Move Outside! to instill lasting values of health and wellness, and environmental conservation in youths.

By examining the component of health and wellness that motivates recreation and by comparing the most popular outdoor activities that yield the greatest health benefits, Chapter 3 lays the groundwork for recreation planners seeking to make outdoor recreation relevant to today's youth and Wisconsinites. Wisconsin, too, should raise public awareness of the physical and mental health benefits of the great outdoors (AGO Recommendation 3.1). Communities can look to the federal government for support of campaigns that demonstrate and advertise outdoor recreation for wellness as well as support of parks and outdoor spaces that facilitate physical activity (AGO Action Item 3.1b).



Overview

Statewide comprehensive outdoor recreation plans (SCORPs) are important documents that help guide the development of local parks and recreation. Increasingly, SCORPs are including public health and wellness as central elements of recreation planning (Bloecher and Merriam 2011), with notable efforts being made by the States of California, Indiana, and Oregon. Traditionally, SCORPs have focused on recreation supply and demand assessments as a way to guide recreation development. However, health and wellness, along with other factors, have been shown to be a critical component of how and why people recreate (see Figure 3-1). In this light, Chapter 3 is written to outline several elements important for understanding the role of outdoor recreation in fostering local public health and wellness.

The built environment plays an important role in our ability to affect public health and wellness (Gordon-Larsen et al. 2000; Frumkin et al. 2004). For example, parks, trails, and sports facilities are key local assets that allow for convenient, safe, and attractive places for people to participate in physical activities of all kinds (Sallis et al. 2006). While public health and wellness are affected by a number of social, economic, and environmental determinants, there is increasing evidence that improving access to outdoor locations favorable for physical activity can act to lower obesity levels and improve health outcomes among target populations (Campbell and Cornelissen 2004; Kelly et al. 2007; Lovasi et al. 2009).

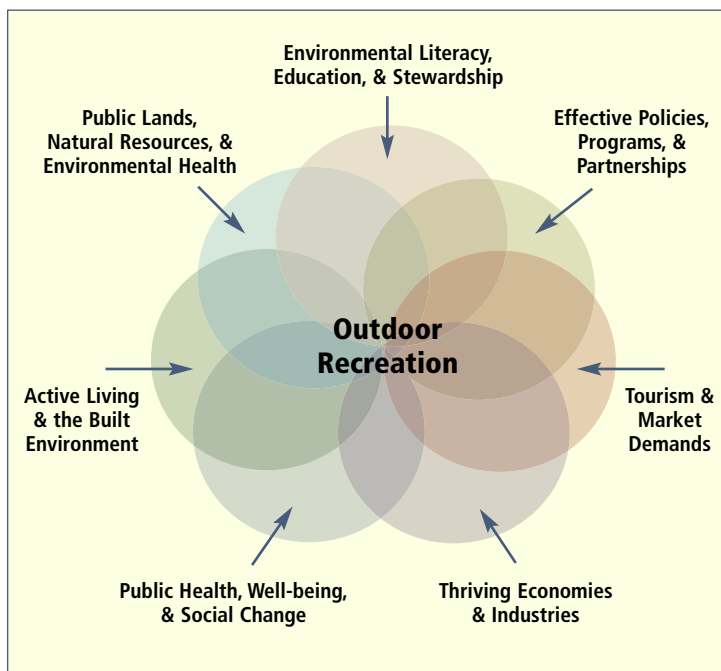
The Connection Between Public Health and Wellness, MET, and Outdoor Recreation¹

Outdoor recreation encompasses a wide variety of activities, each of which has a different level of physical activity. In many cases, health and wellness outcomes can be improved through participation in activities that require higher levels of physical exertion. This section will explore how different types of outdoor recreation compare for their level of physical exertion and how recreation sites across Wisconsin provide opportunities for different types of outdoor activity. The primary question being addressed in this section is straightforward: how do outdoor recreation facilities relate to recreation activities and health and wellness metrics?

To answer this question, various outdoor recreation activities appropriate to Wisconsin were arranged by their relative levels of physical exertion. Available secondary data on outdoor recreation activities were arranged to provide a ranked list of caloric exertion rates for a specific period of time. Further, an inventory of recreation sites offering activities with the most health benefits provides an opportunity to prioritize recreational sites.

A variety of data sources were used to address these issues. The Centers for Disease Control and Prevention (CDC) is a source of secondary quantitative and qualitative data regarding the relative and absolute intensity of physical activities. For the rankings, health benefits of activities are measured as the ratio of work metabolic rate during recreation to resting metabolic rate, known as MET. This measure of metabolic intensity of various physical activities is found in research from the American College of Sports Medicine journal, *Medicine & Science in Sports & Exercise* (Ainsworth et al. 2000). This data was used to rate the metabolic intensity of

Figure 3-1: **Converging Elements Related to Outdoor Recreation**



Source: Bloechner and Merriam 2011 as originally presented in the Colorado SCORP.

¹ This section is taken from work done during the fall of 2010 by students of the UW-Madison Graduate Planning Workshop (URPL 912). Their report, entitled *Outdoor Recreation, Health, and Wellness: Enhancing the Relationship through SCORP* (Birringer, et al. 2010), contains a complete description of this effort and can be accessed online at <http://www.urpl.wisc.edu/people/marcouiller/courses/912/3final.pdf>.

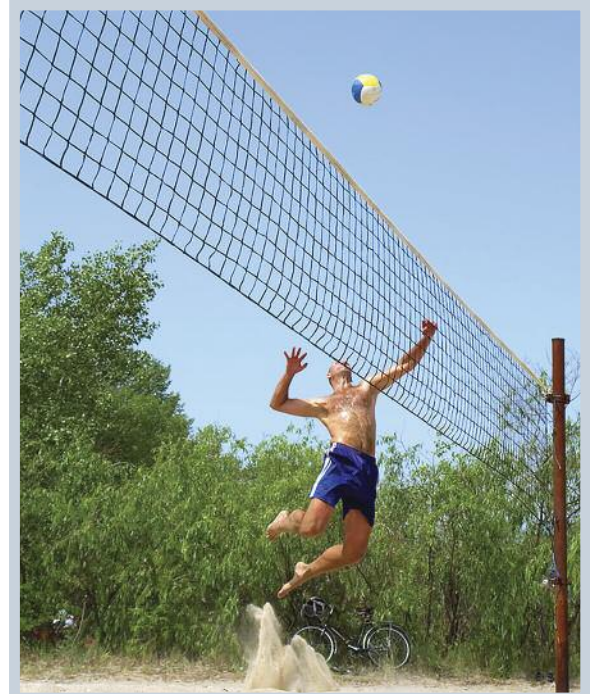
Wisconsin outdoor recreation activities. Activities were then ranked in terms of those with the most health benefits (high intensity), medium benefits (moderate intensity), and least benefits (low intensity). The metabolic intensity research and data is widely accepted among specialists in the exercise and public health fields (Ainsworth et al. 1993). This data is commonly used to create calculators that determine the amount of calories burned during exercise.

Recreation planning and park design have been shown to affect use; characteristics and specific features found in parks are important in fostering the use of these public spaces for physical activity. Features in trails and parks (playground equipment, sports facilities, etc.) have been shown to enhance that property's use for physical activity (Kaczynski et al. 2008). Alternative forms of outdoor recreation have differing levels of physical activity as measured by metabolic rate (calories burned in a given period of exercise) standardized using relative metabolic intensity (MET). The MET of a variety of physical activities has been thoroughly documented within the sports medicine literature and includes both non-motorized (Ainsworth et al. 1993; Ainsworth et al. 2000) and motorized (Burr et al. 2010; COHV 2010²) forms of outdoor recreation. The exercise quality and happiness elements play a role in public health and wellness outcomes.

Energy expenditure data compiled from multiple published sources as "indirect calorimetry" (Ainsworth et al. 2000) was used. It should be noted that the metabolic intensity data is limited in its use for estimating calories burned during an activity for specific individuals. The research provides standardized intensity levels that do not account for differences in body mass, gender, etc. Therefore, individual differences in energy expenditure can be large. For the purposes of this research, standardized metabolic intensities are adequate for developing a ranking of relative health benefits of recreation activities for the population as a whole.

MET data was translated to caloric expenditure by multiplying an individual's weight (in kilograms) by the METs for the activity and the duration of the activity. For example, a 60-kg individual bicycling for leisure (4 METs) for 40 minutes expends the following: $60\text{kg} \times 4 \text{ METs} \times (40/60\text{min}) = 160 \text{ calories}$ (Ainsworth et al. 1993).

² Canadian Off-Highway Vehicle Distributors Council (COHV) ATV & ORM Health Benefit Study Fact Sheet can be found at: http://www.orra-access.com/site/DocServer/2010_ATV ORM_Health_Benefit_Fact_Sheet2.pdf?docID=321.



Specific features found in parks are important to fostering the use of these public spaces for physical activity.

The 2005-2010 Wisconsin SCORP demand data provided a basis to understand common outdoor recreational activities in Wisconsin. These activities were then matched with their respective energy expenditures to create a ranking of the health benefits of physical activities.

Calculations for caloric expenditures are based on a 30-minute duration with respect to different body weights. Sample calculations based on standard BMI table at which an individual is considered obese at varying heights is detailed in Appendix C. Since one goal of the 2011-2016 Wisconsin SCORP is to improve public health by increasing physical activity, obesity weights are important to include in these calculations.

The relative health benefits of Wisconsin recreation activities in terms of METs are summarized in Table 3-1. Activities that are considered light intensity have less than 3 METs, moderate intensity activities have between 3 and 6 METs, and vigorous intensity activities have more than 6 METs. Some recreation activities (e.g., bicycling, running, etc.) have multiple MET values, depending on the speed and intensity of the activity. In these cases, a moderate speed was assumed.

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Table 3-1: Recreation Activity Intensities by Appropriate Facility Type

Facility	Activity	MET	Facility	Activity	MET	
Water – lakes, streams, fishery areas, boat launches, marinas, piers, trout streams, waterfalls, whitewater rafting rivers	Canoeing	7	Ski hills	Snowshoeing	8	
	Rowing	7		Sledding	7	
	Scuba diving	7		Skiing, downhill	6	
	Ice skating outdoors	7		Snowboarding	6	
	Beaches, shoreline	Swimming in lakes, streams, etc.	6	Local parks, parkland	Inline skating	12.5
		Waterskiing	6		Running	9
		Rafting	5		Handball outdoors	8
		Snorkeling	5		Bicycling	8
		Kayaking	5		Volleyball, outdoors	8
		Fishing, general, warm water	3		Football	8
		Sailing	3		Sledding	7
		Windsurfing	3		Tennis	7
		Surfing	3		Racquetball	7
		Boating, power boat	2.5		Soccer	7
		Ice fishing	2		Hiking, general	6
		View/photograph scenery and wildlife	2		Basketball	6
		Visit a waterside	2		Skateboarding	5
		Sightseeing	2		Baseball	5
		Boat tours or excursions	2		Softball	5
	Family gathering	1.5	Walking for pleasure		3.5	
Picnicking	1.5	Disc golf	3			
Forested land (state parks or natural areas, forest reserves, trust lands, wildlife and wilderness areas)	Volleyball, outdoors	8	Trails – single- or multi-use	Visit a dog park to walk a pet	3	
	Walking for pleasure	3.5		Yard games, e.g., horseshoes	2.5	
	Fishing, general, warm water	3		View/photograph scenery and wildlife	2	
	Camping	2.5		Family gathering	1.5	
	View/photograph scenery and wildlife	2		Picnicking	1.5	
	Visit a waterside	2		Attend outdoor concerts, plays, etc.	1.5	
	Sightseeing	2		Attend outdoor sports events	1.5	
	Family gathering	1.5		Trails – snow	Inline skating	12.5
	Picnicking	1.5			Running	9
	Rock climbing	9.5			Mountain biking	8.5
Orienteering	9	Bicycling			8	
Mountain biking	8.5	Cross-country skiing			8	
Mountain climbing	8	Snowshoeing			8	
Skiing, cross-country	8	Backpacking			7	
Snowshoeing	8	Dog sledding			7	
Backpacking	7	Hiking, general			6	
Dog sledding	7	Horseback riding			4	
Hiking, general	6	Walking for pleasure	3.5			
Walking for pleasure	3.5	Snowmobiling	3.5			
Geocaching	3.3	Off-road motorcycling	2.5			
Camping	2.5	Off-road driving with an ATV	2.5			
View/photograph scenery and wildlife	2	View/photograph scenery and wildlife	2			
Visit a wilderness or primitive area	2	Sightseeing	2			
Sightseeing	2	Snowshoeing	8			
Gather mushrooms, berries, etc.	2	Skiing, cross-country	8			
Family gathering	1.5	Dog sledding	7			
Picnicking	1.5	Snowmobiling	3.5			
		Off-road driving with an ATV	2.5			

Table 3-1: Recreation Activity Intensities by Appropriate Facility Type (continued)

Facility	Activity	MET
Sports facilities – indoor and outdoor	Football	8
	Volleyball	8
	Handball	7.5
	Soccer	7
	Tennis	7
	Paintball	6
	Basketball	6
	Baseball	5
	Softball	5
	Skateboarding	5
Outdoor ice rinks	Ice hockey outdoors	8
	Ice skating outdoors	7
Public hunting lands	Hunting, big game	6
	Hunting, migratory bird	6
	Hunting, small game	5
Golf courses, driving ranges, resorts, and country clubs	Golf	4.5
Horseback riding stables, facilities, trails	Horseback riding	4
Public outdoor swimming pools	Swimming in an outdoor pool	4
Disc golf courses	Disc golf	3
Dog parks	Visit a dog park to walk a pet	3
ATV parks	Off-road riding with an ATV	2.5
Shooting ranges (archery, guns, etc.)	Target shooting	2.5
Dirt bike/motocross tracks	Off-road motorcycling	2.5
Campgrounds	Camping	2.5
Arboretums	Running	9
	Bicycling	8
	Skiing, cross-country	8
	Snowshoeing	8
	Hiking, general	6
	Geocaching	3.3
	View/photograph scenery and wildlife	2
	Driving for pleasure	2
	Visit nature centers	2
	Sightseeing	2
	Gather mushrooms, berries, etc.	2
	Nature-based educational programs	2
	Playgrounds	Basketball
Yard games		2.5
Picnicking		1.5
Lighthouses	View/photograph scenery	2
	Visit historic sites	2
Nature centers	Visit nature centers	2
	Nature-based educational programs	2
Outdoor water/theme parks	Swimming, pool	4
	Visit outdoor theme/water park	2
Zoos	Walking for pleasure	3.5
	View/photograph wildlife	2
	Nature-based educational programs	2
	Visit nature centers	2
Caves	Visiting a cave	2
	View/photograph scenery and wildlife	2
	Visit prehistoric/archeological sites	2

The 2005-2010 Wisconsin SCORP supply dataset was used to compile a list of the types of recreation facilities and the recreation activities that typically occur within each facility. The ranking of recreation activities relative to health benefits, compiled in the first task, was then used to determine the types of recreation facilities that provide the most potential health benefits to Wisconsin residents and recreation users. This provides an opportunity to make recommendations regarding future recreation facilities that provide the most potential health benefits, particularly in areas of the state experiencing poor health.

The NSRE 2005-2009 data set was also used as a data source, providing participation rates for a variety of recreation activities. Along with health benefits, participation rates from the NSRE 2005-2009 data set representing recreation needs were used to differentiate recommendations in terms of feasibility.

Different types of recreation facilities cater to different recreation activities. Recreation facilities from the previous Wisconsin SCORP were sorted into categories as seen in Table 3-1. Some facilities (e.g., ATV parks and shooting ranges) provide for a single recreation activity while others provide for multiple activities.

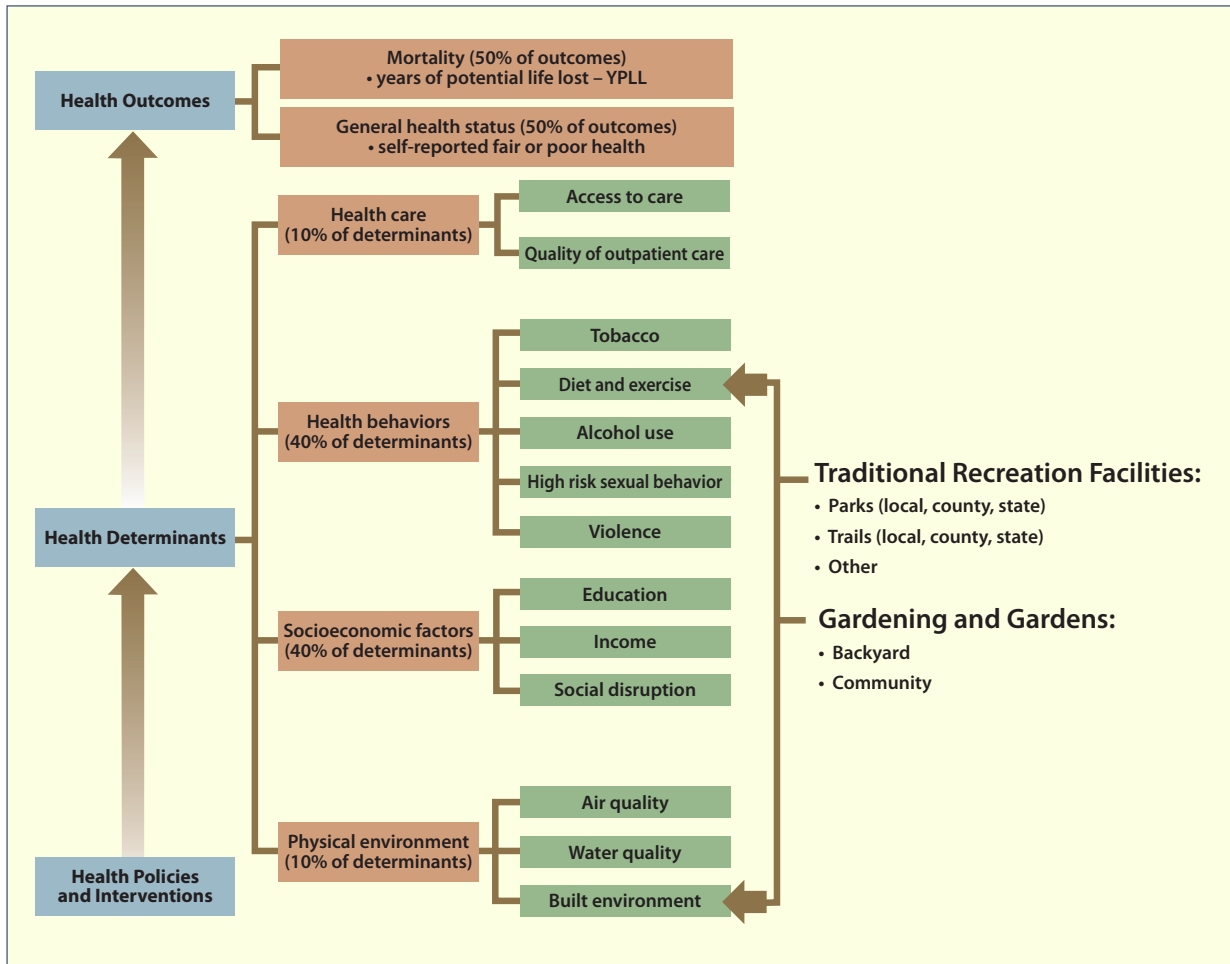
The intensities and relative health benefits of the activities in Table 3-1 combined with appropriate facility types can be used to help prioritize future investments in outdoor recreation that provide high potential for healthy activities. A more detailed list can be found in Appendix C.

The Supply of Outdoor Recreation and its Relation to Public Health and Wellness³

Improving public health outcomes through policy requires an understanding of health determinants (the factors that affect public health and wellness). These determinants include health care, health behaviors, socioeconomic factors, and the physical environment. Health determinants are in turn associated with a variety of behavioral, demographic, and environmental attributes as summarized in Figure 3-2.



Figure 3-2: **Conceptual Relationships Between Local Public Health and Wellness Outcomes**



Source: Adapted from Peppard et al. 2008.

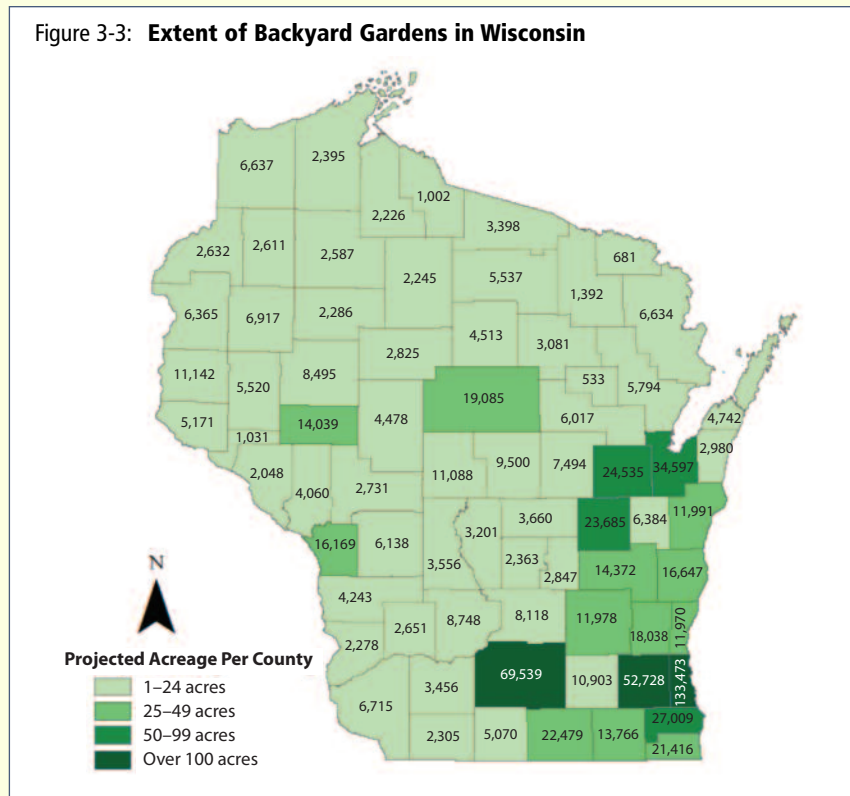
³ This section is taken from two sources. First and foremost, there is work done during the fall of 2010 by students of the UW-Madison Graduate Planning Workshop (URPL 912). The report, entitled *Outdoor Recreation, Health, and Wellness: Understanding Key Relationships* (Bernardinello et al. 2010), contains a full description of this effort and can be accessed online at <http://www.urpl.wisc.edu/people/marcouiller/courses/912/2final.pdf>. Second, a subsequent manuscript entitled *Outdoor Recreation Planning for Public Health and Wellness: A Spatial County-level SCORP Assessment for Wisconsin* (Marcouiller et al. 2011) was presented at the ISSRM Annual Conference, June 2011 in Madison, WI.

The Winning Combination of Outdoor Recreation and Public Health Benefits: Gardening



Gardening is one of the most popular recreational activities in the United States and provides many benefits, including improved access to fresh produce, increased physical activity, and community-building. A recent recreation participation survey suggests that almost 70% of Wisconsin adults garden or landscape for pleasure. This makes gardening the second most popular recreation activity in the state, second only to walking. General gardening results in a MET value of 4.0, categorizing it as a moderate intensity activity. Findings estimate Wisconsin has 11,000 acres of land used for gardening. The state’s growing season lasts about half the calendar year (95-200 frost-free days).

Gardening activities can be divided into two categories: backyard and community. Around 90% of gardening takes place in backyard gardens and recent research suggests that 35% of Wisconsin households maintain a backyard garden. Community gardens are plots of land gardened by groups of people. Community gardens are found in 66 counties in Wisconsin, and the state has a total of 448 community gardens. Prominent examples include Growing Power in Milwaukee and Troy Gardens in Madison.



Numbers within county boundaries reflect estimated number of backyard gardens, while shading reflects total county acreage in backyard gardens (Foster 2011).

Benefits of Gardening (continued)

One particularly valuable aspect of gardening as an outdoor activity is its potential to keep an individual engaged frequently over a growing season. Someone who goes for a walk one day may have little reason to continue doing so with regularity. Someone who plants a garden, however, is motivated to continue tending to that garden over the course of the year. This leads to frequent, regular, and ongoing physical activity.

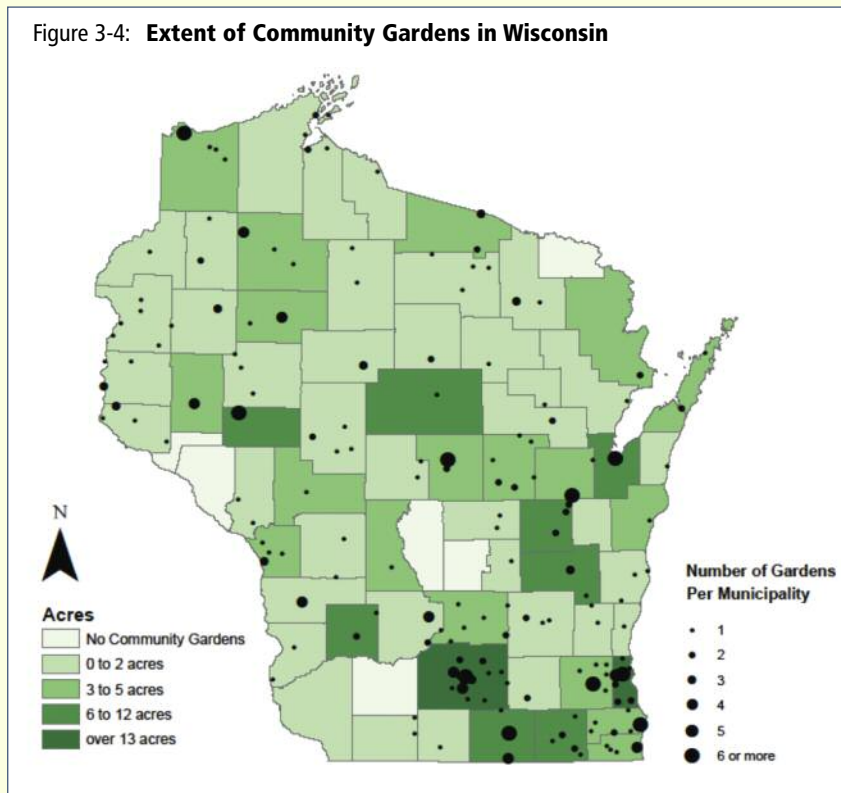
Among other outdoor recreation activities, gardening is relatively unique in its connection to personal nutrition. Only hunting, fishing, and foraging activities have a similarly direct connection to eating habits. It has been estimated that Wisconsin gardeners produced 800 million pounds of food in 2010. By providing access to fresh fruits and vegetables, gardening promotes healthier eating habits. More fresh produce means that gardeners are more likely to make home-cooked meals, which are typically lower in salt and sugar, and contain fewer excess calories.

Gardening's integration of active living and

healthy eating make it a natural fit with the White House's Let's Move! Initiative. This initiative was launched by First Lady Michelle Obama and aims to tackle rising levels of childhood obesity through increasing physical activity and improving eating habits. Indeed, one component of the campaign includes promoting the creation of community gardens across the country. In 2009, a 1,100-square foot vegetable garden was installed on the White House lawn to serve as a model for American households.

Communities interested in creating a new garden may consider seeking grant money to help start the project. Federal grant programs, such as the People's Garden Grant Program (PGGP), could be a potential funding source. The PGGP, which is administered by the U.S. Department of Agriculture, assists in the creation of locally-sponsored, self-sufficient gardens. Projects that benefit their communities are collaborative in nature, and incorporate sustainable practices are eligible for grants of up to \$150,000.

Figure 3-4: **Extent of Community Gardens in Wisconsin**



Circles within county boundaries reflect estimated number of community gardens, while shading reflects total county acreage in community gardens (Foster 2011).

Physical and mental health of the user is often cited as a primary benefit of outdoor recreation facilities (Rosenberger et al. 2009). However, supporting evidence of spatial relationships between local public health and recreation facilities is not that simple. Data often suggests strong correlations between health and wellness, and local income and educational status. Data may show counter-intuitive, often inverse, relationships between public health and the presence of local outdoor recreational facilities. While these previous research results suggest the need for more rigorous empirical methods, there also could be actual linkages that are at best, marginal, and at worst, non-existent. Ongoing research focused on health determinants involves complex, multifaceted, and often imprecise public health metrics. Data shown in Figure 3-2 suggests that roughly 10 percent of health determinants involve the physical environment, which also includes air and water quality. Further, Figure 3-2 suggests that roughly 40 percent of health determinants involve health behaviors; these determinants include diet and exercise along with tobacco and alcohol use, high risk sexual behavior, and violence. Isolating parks and recreation planning as causal to improved public health outcomes is indeed a complex empirical problem that exists within a broad set of determinants.

The next question that is addressed deals with current recreation supply and its relationship to local health and wellness metrics. Specifically, how does the supply of outdoor recreation relate to the health and wellness of surrounding populations? To answer this question, formal spatial models were developed that specified and

tested hypothetical relationships between local health and wellness metrics, and the presence and use of outdoor recreation facilities. This was done using spatial statistical modeling of county-level data from previous Wisconsin SCORP supply assessments, NSRE place-based estimates of outdoor recreation demand, census estimates of socio-demographic control elements, and government agency estimates of local public health and wellness.

This work follows in the footsteps of other states attempting to link public health and wellness with recreation. A West Virginia spatial analysis identified key attributes that link parks and recreation with public health and wellness outcomes (Rosenberger et al. 2005). For Wisconsin, two different approaches were taken. The first analysis attempted to explain local public health and wellness in region i (county) using demographic controls and local built environment attributes reflective of parks and recreation. This first type of analysis reflects relationships that explain local public health and wellness outcomes as a function of demographics and local environmental attributes following work of Peppard et al. (2008), Rosenberger et al. (2005), and Rosenberger et al. (2009). The first analysis can be described by equation 1 below.

$$(1) \text{ Public health and wellness}_i = f(\text{demographic controls}_i + \text{built environmental attributes}_i)$$

The second type of analysis used to explain the presence of local parks and recreation as a function of demographic controls and local public health and wellness is specified in equation 2.

$$(2) \text{ Built environmental attributes}_i = f(\text{public health and wellness}_i + \text{demographic controls}_i)$$

These two specifications were analyzed using standard ordinary least squares regression models as specified in equation 3,

$$(3) y = X\beta + \epsilon$$

where y denotes the vector of response variables, X denotes the matrix of explanatory variables, β denotes regression coefficients of the explanatory variables, and ϵ denotes the vector of error terms that are independent but identically distributed. Operational ordinary least squares (OLS) models for each type are outlined in scalar form in equations 4 and 5,

$$(4) PHW_i = \beta_0 + \beta_1 D1_i + \beta_2 D2_i + \dots + \beta_n PR_i + \epsilon$$

$$(5) PR_i = \beta_0 + \beta_1 D1_i + \beta_2 D2_i + \dots + \beta_n PHW_i + \epsilon$$

where PHW represents various public health and wellness outcome metrics (rate of adult obesity, premature death rate, poor mental health days per month, etc.), D



How does the supply of outdoor recreation relate to the health and wellness of surrounding populations?

represents demographic controls (education, age structure, income, race, etc.), and PR represents local parks and recreation attributes (number of parks, miles of trails, walkability access, etc.). Once again, *i* denotes region, which for this work was limited to the state of Wisconsin and its 72 counties. One benefit of county-level geography is that it allows the use of an array of data sources for both public health and outdoor recreation.

Three broad types of data were assessed for appropriateness in specifying explanatory models. These included (1) public health and wellness metrics, (2) relevant demographic controls, and (3) outdoor recreation supply. In total, 10 demographic control variables, 5 public health and wellness outcomes, and over 30 recreation supply metrics were examined. The assessment of variables included multi-faceted criteria involving theoretical consistency, high metabolic activity, and the level of spatial variation. The final selection criteria resulted in the model results outlined fully in Appendix D (variables listed in Table D-1, their descriptive statistics in Table D-2, and regression results in Table D-3 and D-4).

Specifically, the spatial models that used premature death and adult obesity as dependent variables had the highest amounts of explained variation (see Table D-3). In these models, education, income, race, and age were important statistically significant variables. The total number of parks, mileage of trails, or percent of walking access was insignificant in explaining local public health and wellness outcomes. When models were re-specified to look for local elements that explain the presence of recreational facilities (parks and trails), results again suggested that education and race were significant (Table D-4). Our best model failed to show that local health and wellness played a part.

It is important to note that insignificant findings for linking local public health and wellness outcomes to the presence of local parks, trails, and walking access could have several implications. First, these results could suggest that the simple presence of outdoor recreation facilities does not necessarily imply use that leads to improved local health and wellness outcomes. Second, it is important to remember that previous decisions about location of recreation facilities may have been based on other, non-health related reasons and not solely based on improving local health and wellness. Insignificant findings of such a relationship could confirm this fact. Finally, insignificant findings could imply a need for further empirical research; perhaps on a finer grained spatial level that accounts for sub-county, community, and/or neighborhood analyses.



Explaining local public health and wellness is complex, and clear relationships with the built environment are difficult to isolate.

This spatial modeling did generate several conclusions that are difficult to ignore. Results of various model specifications suggest that (1) socio-economic elements were indeed significant in explaining local public health and wellness outcomes across the state of Wisconsin, (2) spatial association exists for most relevant modeling variables and is most often marked by clustering within analogous regions along the urban-rural continuum, (3) explaining local public health and wellness is indeed complex, and clear relationships with the built environment are difficult to isolate, and (4) model specification matters to the development of robust estimates that relate outdoor recreation with public health and wellness.

There is ample opportunity for further research along these lines. Extensions and refinements in both geographic specificity and model specification are obvious next steps. Further, this analysis does not account for obvious benefits associated with available local parks and recreation opportunities on the mental health and wellness of Wisconsinites. Metrics that reflect local mental health and wellness outcomes are not well developed. Certainly, further research is needed that extend beyond physical health and wellness outcomes to include the calming effects of outdoor recreation. Future work that examines the impact of parks, trails, and public open spaces on local quality-of-life, the availability of solitude, natural aesthetics, quiet, and peaceful environments throughout Wisconsin would aid in parks and recreation planning. We are confident that results of this extended research agenda will support, recognize, and confirm that local parks and trails are central assets of local community well-being.

Summary

After compiling an inventory of popular Wisconsin recreation activities, comparing their associated health metrics using caloric burning potential, and placing them into appropriate facility categories, activities with the most vigorous metabolic rates included both nature- and urban-based activities. While some of these recreation activities featured adequate participation levels or substantial increases in participation from five years prior, the greatest participation levels were seen in low-intensity activities that burn less calories and offer fewer health benefits. In order to encourage greater participation in activities that yield greater health benefits, the following recommendations are offered, sorted by facility type:



Activities with the most vigorous metabolic rates included both nature- and urban-based activities.

Trails

Plans should be created for entire corridors. Multi-tread trails should be constructed to avoid conflict between users. For example, walkers and runners can use gravel trails while bikers ride on adjacent paved trails. Signage should indicate the separation of users.

Water

Water-based activities tend to have significant health benefits (swimming, kayaking, etc.) The DNR should fund and support improved access to lakes, streams, and other bodies of water, as well as facilities that cater to these activities (such as piers, boat launches, rental facilities, etc.). Wisconsin is home to countless lakes and streams, and it is important to ensure access to these amenities.

Snow

Non-motorized snow sports were generally ranked as moderate to high intensity and are therefore beneficial to health. Motorized uses, while more popular, have fewer health benefits. Trails should be separated between these two usage types, with certain trails designated for non-motorized uses only. This will make users feel safe and help to increase participation.

Ice Rinks

Outdoor rinks cater to ice skating and hockey, both of which are high-intensity activities. Municipalities should construct rinks or use existing ponds. Rinks are relatively inexpensive to build, and they have the benefit of increasing park usage during the winter. Maintenance can be an issue because snow on the rinks is removed only after streets are cleared, which leads to poor ice conditions. Municipalities should involve neighborhood associations and other groups with shoveling and maintenance tasks. The City of Madison started this initiative in 2011, and the program has been successful with active neighborhood groups.

Sports Facilities

Organized sports (such as basketball, soccer, and football) are high and moderate intensity activities with good participation levels. Government entities should try to partner with private sports facility providers in order to increase participation while efficiently managing public funds. For example, a municipality may give a sports complex incentives through Tax Increment Financing (TIF) or other means if they are open one night a week to the public.

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Team Sport Leagues

Some high-intensity team sports are growing in popularity (particularly handball, football, volleyball, and soccer). If existing open space is available, fields should be created for use by recreation sports leagues.

Safety

Safety can be addressed through increased police presence, increased street lighting, traffic safety, and a decrease in the amount of vacant buildings. These changes will make residents feel safer traveling to and from recreation sites, and using parks and open spaces. More people using recreation sites will help to increase physical activity rates of Wisconsin residents. Safety can also be promoted through using bike paths to connect residential areas to local schools, which would provide students with a safe route to walk or bike to school. This is consistent with Wisconsin's Safe Routes to School Program, which works to promote healthy lifestyles in young children by giving them options other than cars to get to school. This program is funded through the revised Federal Transportation Act.



There are both personal and built environment factors that influence outdoor recreation preferences and health outcomes.