



# Outdoor Recreation, Health, and Wellness: Enhancing the Relationship

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# Precedence Study

2001 – R.C. Brownson et al.

2003 – R.Ewing et al.

2005 – L. D. Frank, J. F. Sallis, B.E. Saelens, et al.

2005-Rosenberger

2006 – J.F. Sallis, R. Cervero et al.

2007 – C.M. Kelly, M. Schoutman, et al.

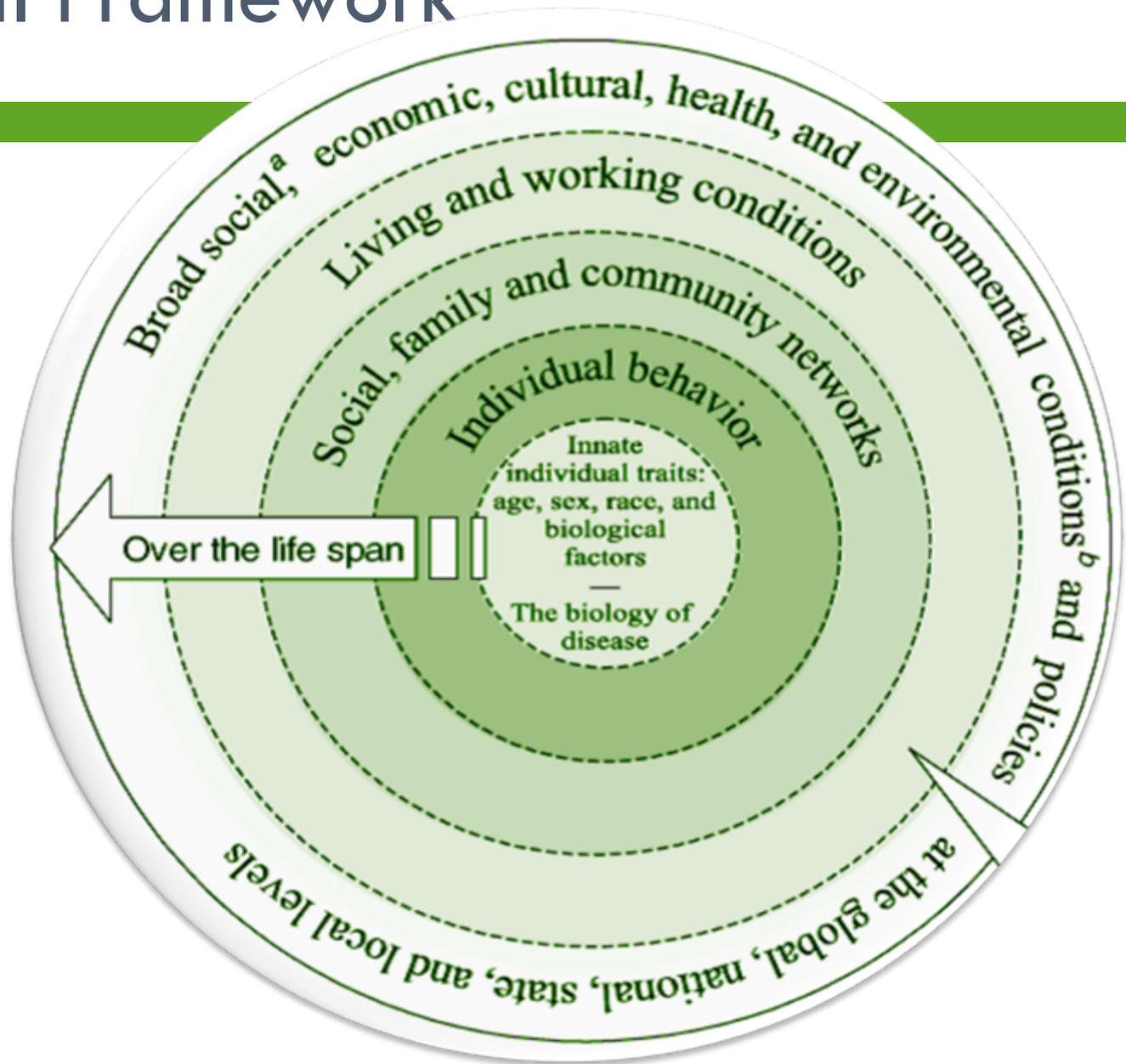
2009 – G.S. Lovasi, M.A. Hutson, et al.

“An Ecological Approach To Creating Active Living Communities”



# Theoretical Framework

2020 Healthy  
People  
Socio-  
Ecological  
Model





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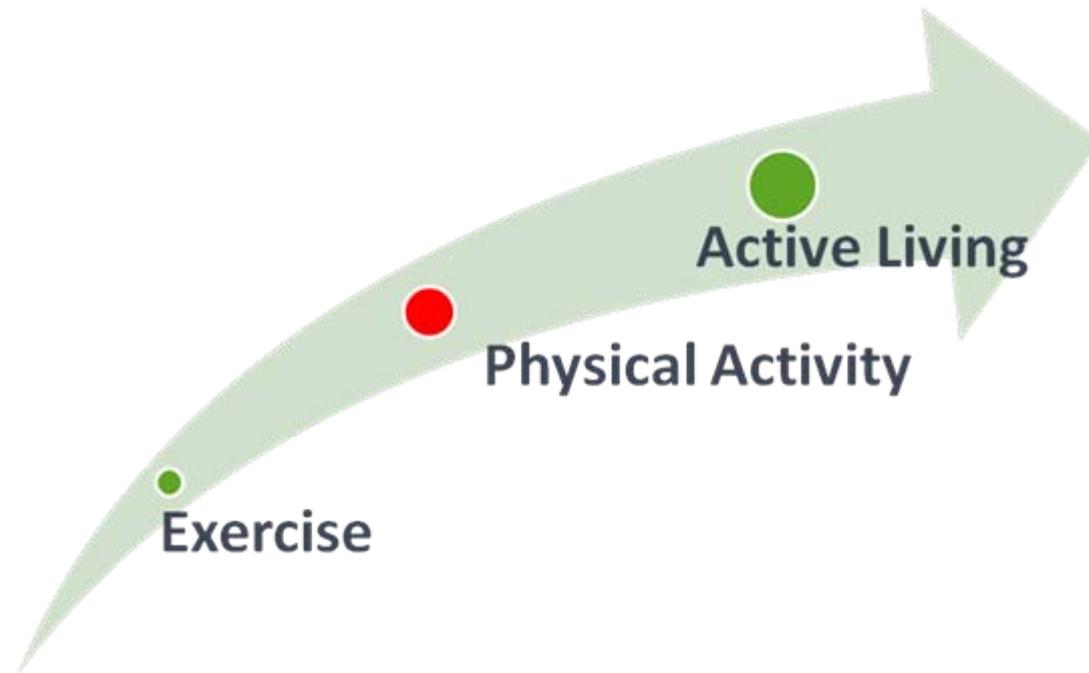
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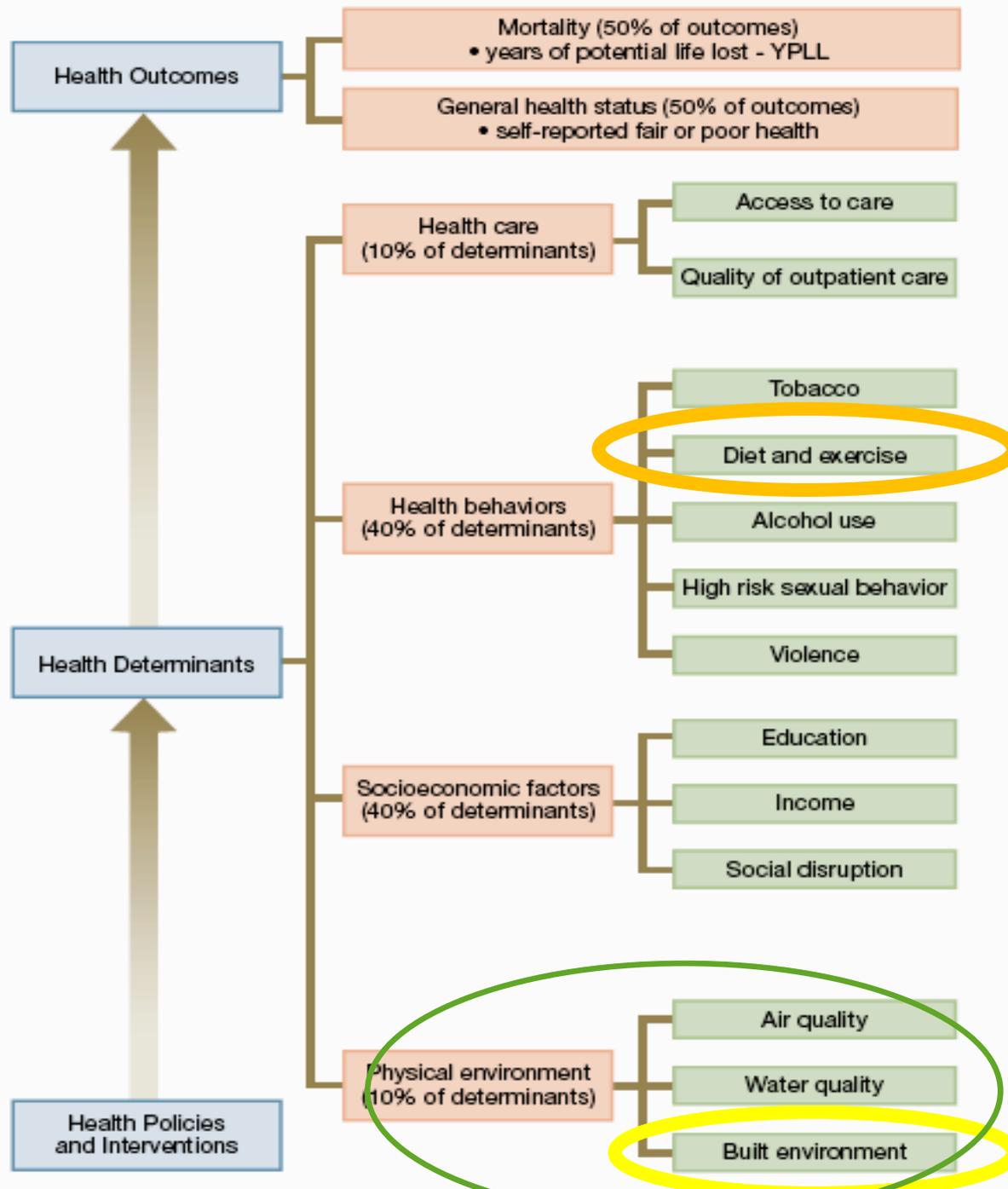
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# Theoretical Framework

Healthier Wisconsin  
(UW Population Health Institute)  
Conceptual Model





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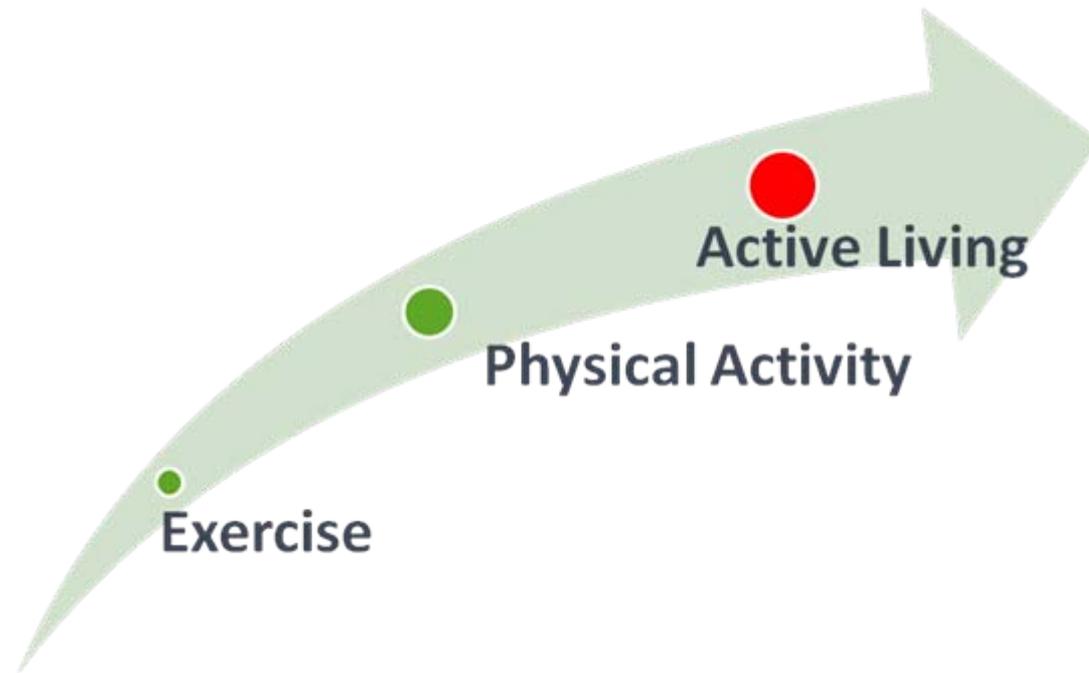
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# Problem Statement

## Data Sources:

2000 – 2005  
SCORP

2008 UW  
Population  
Health Institute  
County Health  
Rankings

2000 Census

- *“Is there any correlation at the county level between the overall availability of outdoor recreation facilities, the county demographic distribution, and the county health overall ranking?”*
- Building on existing literature, data was analyzed for relevant correlations and relationships

# Choice of Data

Analysis was data driven due to time constraints & complexity of empirical problem

- State-wide demographic & health metrics
- Recreation supply based on availability to statewide population
- Two methods:
  - Spatial analysis
  - Statistical Regression analysis

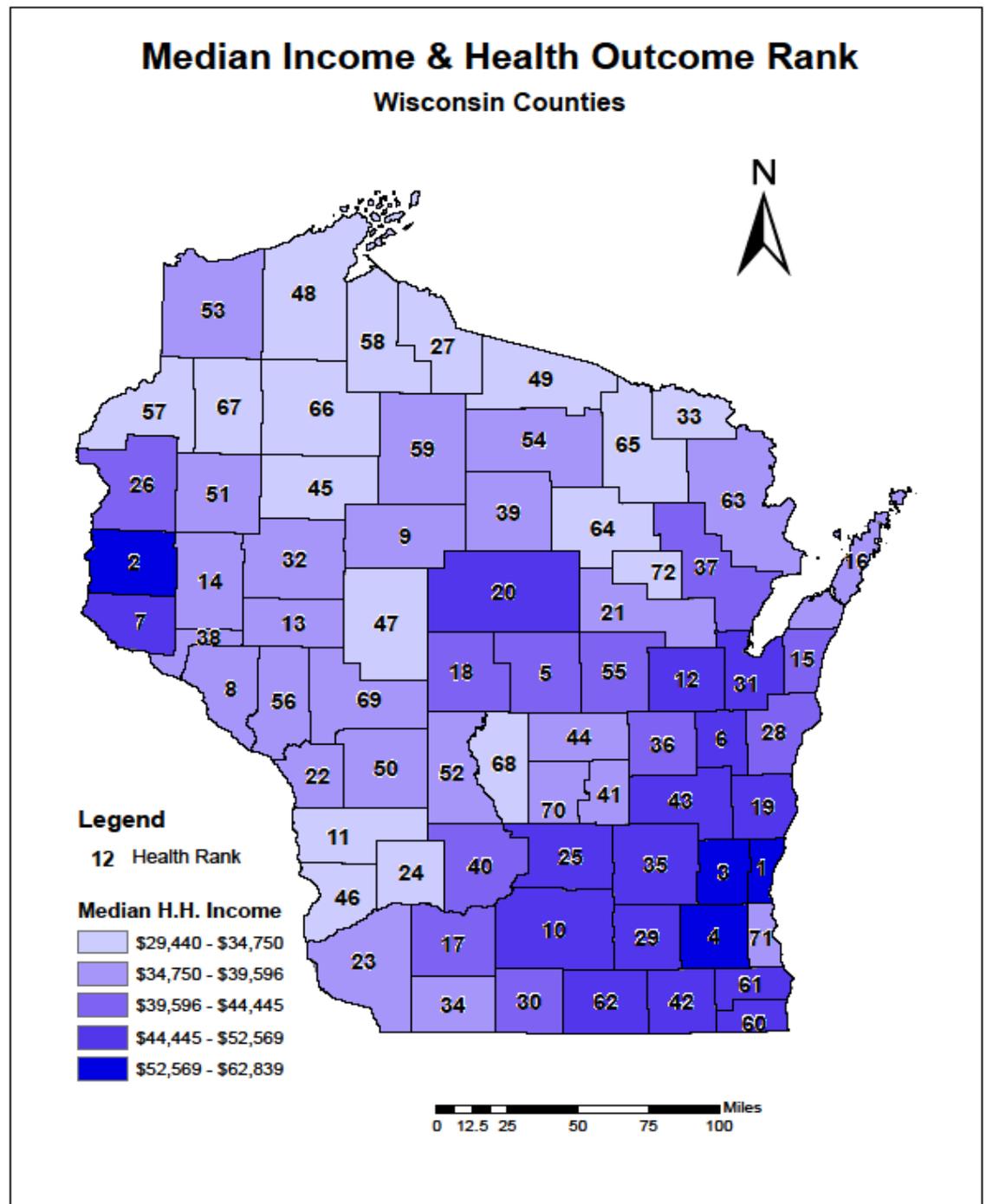
# Analytical Methods

## Spatial Analysis

2 variables

Data sets:

Health  
Ranking  
and  
Demographic



# Analytical Methods

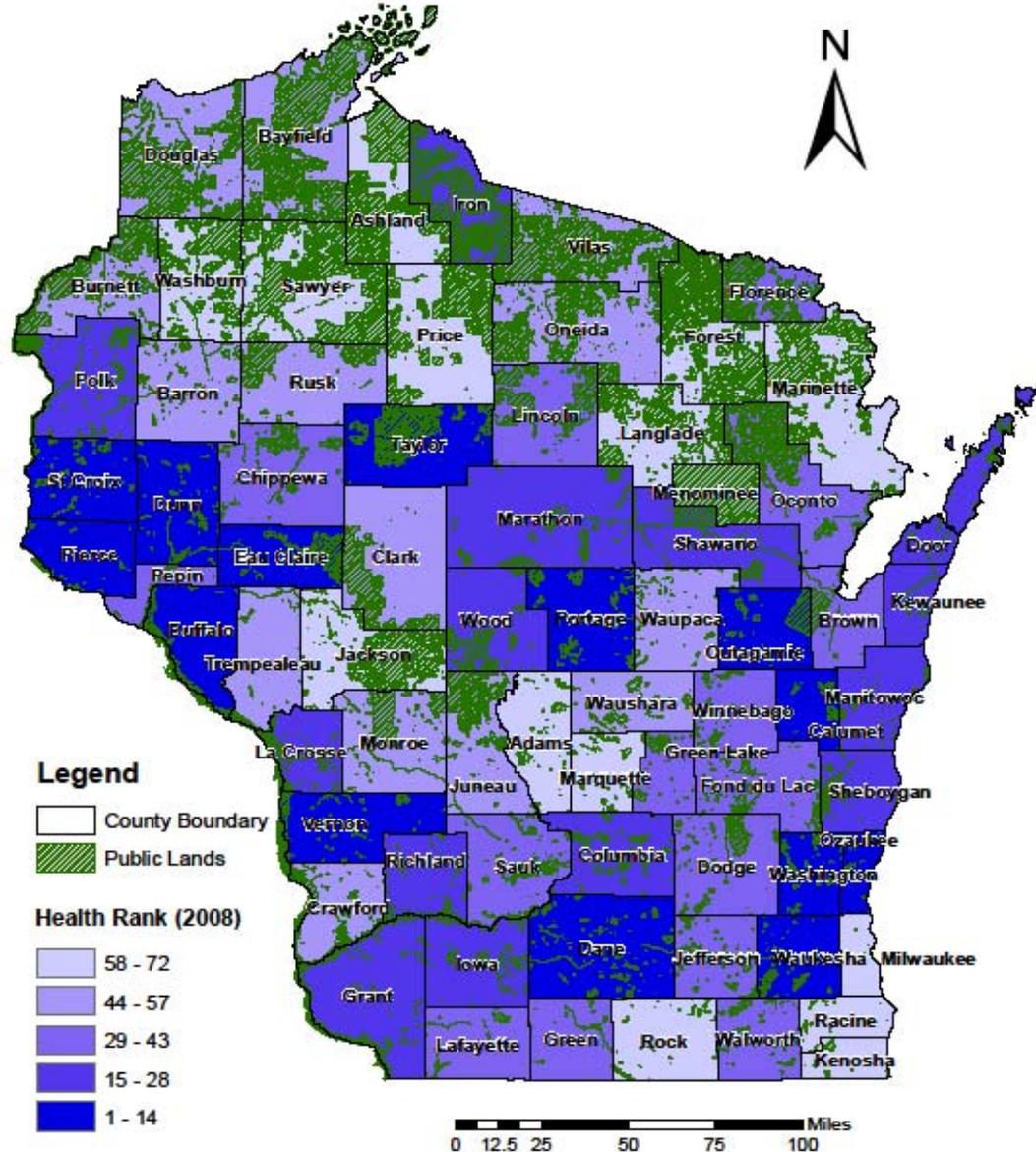
## Spatial Analysis

2 variables

Data sets:

Health  
Ranking  
and  
Recreation  
Supply

## Health Outcome Rank & Public Lands Wisconsin Counties



# Analytical Methods

## Statistical Regression Analysis

### Multiple Variables

#### Sample variables include:

- **Obesity Rate** - % of residents with BMI  $\geq 30$
- **Age** - % of residents 65 or older
- **Education** - % of residents with bachelor's degree
- **Parks** - # of parks within a county
- **Park availability** – acres of parks per resident
- **Land Use** – Housing Density, Rural pop/Urban pop
- **Hiking Trails** – miles within a county

# Results

## Statistical Regression Analysis

### Multiple Variables

(cont'd)

- Every model suggested a link between obesity and education
- Every model suggested a link between obesity and age
- Research DID NOT support the existence of a link between a particular measure of recreation supply and obesity

# Caveats, Limitations , & Conclusions

Quantity of  
Primary Data

Data  
Accuracy

Updated  
Information

Level of  
correlation  
hard to  
establish

- Existing primary data is too limited and the duration of analysis restricted collection of new primary data
- Discrepancy between three data sets (timeframes, etc.)
- Correlation is minimal; more complex statistical model would yield more findings
- Identification of statistical confounding and interaction need further investigation
- Opportunity exists for more research

# 2011-2016 SCORP Planning Element

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- Outdoor Recreation, Health, and Wellness:  
Understanding and Enhancing the Relationship
  - Health benefits of recreation activities
  - Recreation activities and facilities



# Focus of Study

- How do outdoor recreation facilities relate to recreation activities and health and wellness metrics?
  - Task 1: *What specific outdoor recreation activities found in Wisconsin have the least and most health benefits?*
  - Task 2: *How do recreation facilities relate to recreation activities and what types of facilities are recommended to improve health in Wisconsin?*

# Task 1: Health Benefits of Outdoor Recreation

*What specific outdoor recreation activities have the least and most health benefits?*

- Method: Activities ranked according to metabolic intensity (METs)
- MET data obtained from research recommended by the UW Dept. of Kinesiology
- Calorie expenditures calculated from METs
- Activities grouped in three categories: vigorous, moderate, light intensity

# Task 1: Health Benefits of Outdoor Recreation

- Vigorous intensity activities provide the most health benefits
- Examples (30 min duration):

Recreation Activity	METs			
	Vigorous (>6)	Calories Burned:	Calories Burned:	
	Moderate (3-6)	160 lbs	180 lbs	
	Light (<3)		200 lbs	
Inline skating (roller blading)	13	455	511	568
Rock climbing	11	400	450	500
Running, cross country	9	327	368	409
Mountain biking or BMX	9	309	348	386
Mountain climbing	8	291	327	364
Bicycling, general	8	291	327	364
Skiing - cross-country	8	291	327	364
Snowshoeing	8	291	327	364
Ice hockey outdoors	8	291	327	364
Backpacking	7	255	286	318
Canoeing, rowing, moderate effort	7	255	286	318
Sledding	7	255	286	318
Ice skating outdoors	7	255	286	318

# Task 1: Health Benefits of Outdoor Recreation

- Moderate and Light intensity activities provide fewer health benefits
- Examples (30 min duration):

Recreation Activity	METs			
	Vigorous (>6) Moderate (3-6) Light (<3)	Calories Burned: 160 lbs	Calories Burned: 180 lbs	Calories Burned: 200 lbs
Hiking, cross country	6	218	245	273
Swimming in lakes, streams, etc.	6	218	245	273
Skiing - downhill	6	218	245	273
Snowboarding	6	218	245	273
Hunting, general	5	182	205	227
Kayaking	5	182	205	227
Golf	5	164	184	205
Visit a dog park to walk a pet	3	109	123	136
Sailing	3	109	123	136
Windsurfing	3	109	123	136
Surfing	3	109	123	136
Disc golf, frisbee general	3	109	123	136
Playing catch	3	91	102	114
Visit a wilderness or primitive area	2	73	82	91

## Task 2: Recreation Facilities and Related Activities

*How do recreation facilities relate to activities and what types of facilities are recommended to improve health in Wisconsin?*

- Relate recreation facilities to activities and the health benefits of these activities
- General recommendations include providing facilities that cater to activities with significant health benefits and sufficient demand

# Policy Implications

- Knowles-Nelson Stewardship Fund
  - Increase the portion of funds available for improvement and construction of recreation facilities
- Land & Water Conservation Fund (LWCF) Program
  - Consider the health benefits of activities and the relative health metrics of a community when selecting projects for funding
- Recreational Trails Program
  - Set aside a portion of funds for communities with poor health metrics and a lack of recreation trails

# Limitations

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- Physical Health Benefits:
  - Individual variability in calories burned
- Mental Health:
  - Variability and difficult to measure



## Further Research: Spatial Analysis of Facilities

*Where should recreational facilities be placed that will maximize health benefits?*

- Relate health benefits of recreation activities and facilities to facility location quotients
- Compile recommendations for specific counties with poor health metrics or a lack of facilities
- Problem:
  - Non-representative sample size of participation (demand) for most counties

# Recommendations

## □ Trails

- Plan for entire corridors
- Develop multi-tread and multi-use trails to avoid user conflicts

## □ Water

- Support improved access to lakes, streams, etc. and facilities that cater to these activities
  - Piers, boat launches, rental facilities

Activity	METs
Inline skating	12.5
Running	9
Mountain biking	8.5
Bicycling	8
Walking	3.5



Activity	METs
Canoeing	7
Rowing	7
Scuba diving	7
Swimming	6
Waterskiing	6
Snorkeling	5
Kayaking	5

# Recommendations

## ❑ Snow activities

- Designate some trails for non-motorized uses in order to make people feel safe and increase participation

## ❑ Outdoor ice rinks

### ■ High-intensity activities

- Ice skating, hockey
- Involve neighborhood associations with maintenance tasks
  - The City of Madison started this last year

Activity	METs
Snowshoeing	8
CC Skiing	8
Dog sledding	7
Sledding	7
Snowmobiling	3.5
Off-road ATV	2.5

Activity	METs
Ice skating	8
Ice hockey	7



# Recommendations

- Sports facilities
  - Partner with private sports facilities to increase participation while efficiently managing public funds
    - Ex: Provide financial incentives if the facility is open to the public one night a week
- Team sport leagues
  - Create fields in open spaces for recreation sports leagues

Activity	METs
Football	8
Volleyball	8
Handball	7.5
Soccer	7
Tennis	7
Basketball	6
Baseball/Softball	5



# Recommendations

- Equipment
  - Rent out second-hand and donated equipment at major parks
    - Skis, snowshoes, etc
- Improve public awareness of the health benefits of outdoor recreation activities
  - DNR website
    - Calorie-burning calculator
    - Health and wellness tips



# Recommendations

- Park fee discounts
  - Discounts for local residents, “park stamps” for low-income visitors
  
- Youth Recreation
  - School programs, learning materials at parks
  - Encourage participation at an early age to combat childhood obesity



# Thank You

