

Psychological & Social Benefits of Urban Trees

A Review of Scientific Studies

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urban trees & forest - economic value

Outline

Economics of Public Goods

Studies of Psychological and Social Benefits



**America's
- wildlands -
providing goods,
products &
commodities
(range animals,
wood products,
ore & minerals)**





Identification & Valuation of City Green?

■ Forest Products Industry

= market goods

excludable

identifiable ownership

expenses - revenues -
profits

■ Trees/Forests in Cities

= public goods

non-excludable

multiple “owners”

expenses - returns? -
profits?

Quantifying Forest Costs

planting

pruning

tree removal/disposal

pest and disease control

irrigation

misc. - legal, litter clean-up, admin

Putting a price on nature is a crude, risky business



BY FROMA
HARROP
*Syndicated
columnist*

WHAT price would you put on the beautiful, musical and now extinct ivory-billed woodpecker? Of course, the entire gross planetary product could not bring the bird back. It's gone.

But suppose you could fly the time machine back 60 years to the shrinking Southern swamps, where the last pairs were seen. And

said, placing a price tag on nature remains a risky business.

In his article titled, "What is Nature Worth?" Wilson doesn't dismiss such calculating out-of-hand, although he'd rather be making a moral argument. But he finds that today's economic-value assessments make for a crude measuring device. They tend to lowball the worth of a species over the long haul.

Consider the economic case for saving the endangered blue whale. The sensible environmentalist would make

for the blue whale. Gene-splicing remains in its infancy.

Likewise, our minds cannot see the potential for new pharmaceuticals on living organisms. Right now, 10 percent of the prescription drugs in the United States are derived from natural species of plants, animals and minerals. The value of over-the-counter drugs based on plants alone totals \$10 billion worldwide.

We barely know the value of wild species there, much less how they can be used. They can

... about 40 percent of the prescription drugs sold in the United States.

Why Do Benefits & Valuation Research?

Communicating “Public Value”

“Repositioning” Urban Green Space in
Municipal Budgets

Trust for Public Lands

Economic Benefits of Parks and Open Space



The Economic Benefits of Parks and Open Space: How Land Conservation Helps Communities Grow Smart and Protect the Bottom Line. Communities around the country are

learning that open space conservation is not an expense but an investment that produces important economic benefits. TPL's entire report on the economic benefits of open space is available in portable document format (pdf) or in text format by chapter.

American Planning Association

03

CITY PARKS FORUM
BRIEFING PAPERS

How cities use parks for...

Economic Development

Executive Summary

Parks provide intrinsic environmental, aesthetic, and recreation benefits to our cities. They are also a source of positive economic benefits. They enhance property values, increase municipal revenue, bring in homebuyers and workers, and attract retirees.

At the bottom line, parks are a good financial investment for a community. Understanding the economic impacts of parks can help decision makers better evaluate the creation and maintenance of urban parks.

Key Point #1

Real property values are positively affected.

Key Point #2

Municipal revenues are increased.

Key Point #3

Affluent retirees are attracted and retained.

Key Point #4

Knowledge workers and talent are attracted to live and work.

Key Point #5

Homebuyers are attracted to purchase homes.

The City Parks Forum is a program of the American Planning Association funded by the Wallace-Resden Digest Fund and the Dixie Duke Charitable Foundation.



American Planning Association

Making Great Communities Happen

Psychological & Social Benefits

Calculating Economic Value?

Trees and Property Values

- data from > 800 home sales, large front yard tree associated with increase in sales price of home (0.88% or \$1K per \$115K home value) Anderson & Cordell, 1988
- various studies, buyers willing to pay 3-7% more for residential properties with ample trees
- Hedonic pricing analysis

Landscape and Office Bldg Rents



R.J. Laverne & K. Winson,
Davey Resource Group,
September 2003, J of Arb

Landscape and Office Bldg Rents

- **Building and landscape variations**
 - 85 office buildings
 - landscape quantity, functionality, quality

- **Positive Influences**
 - quality landscape aesthetic
 - building shade

- **Outcomes**
 - 7% boost in rental rates
 - plants as visual screens reduce rates 7.5%

Kaplan, R. 1993. The Role of Nature in the Workplace. *Landscape and Urban Planning*, 26: 193-201.

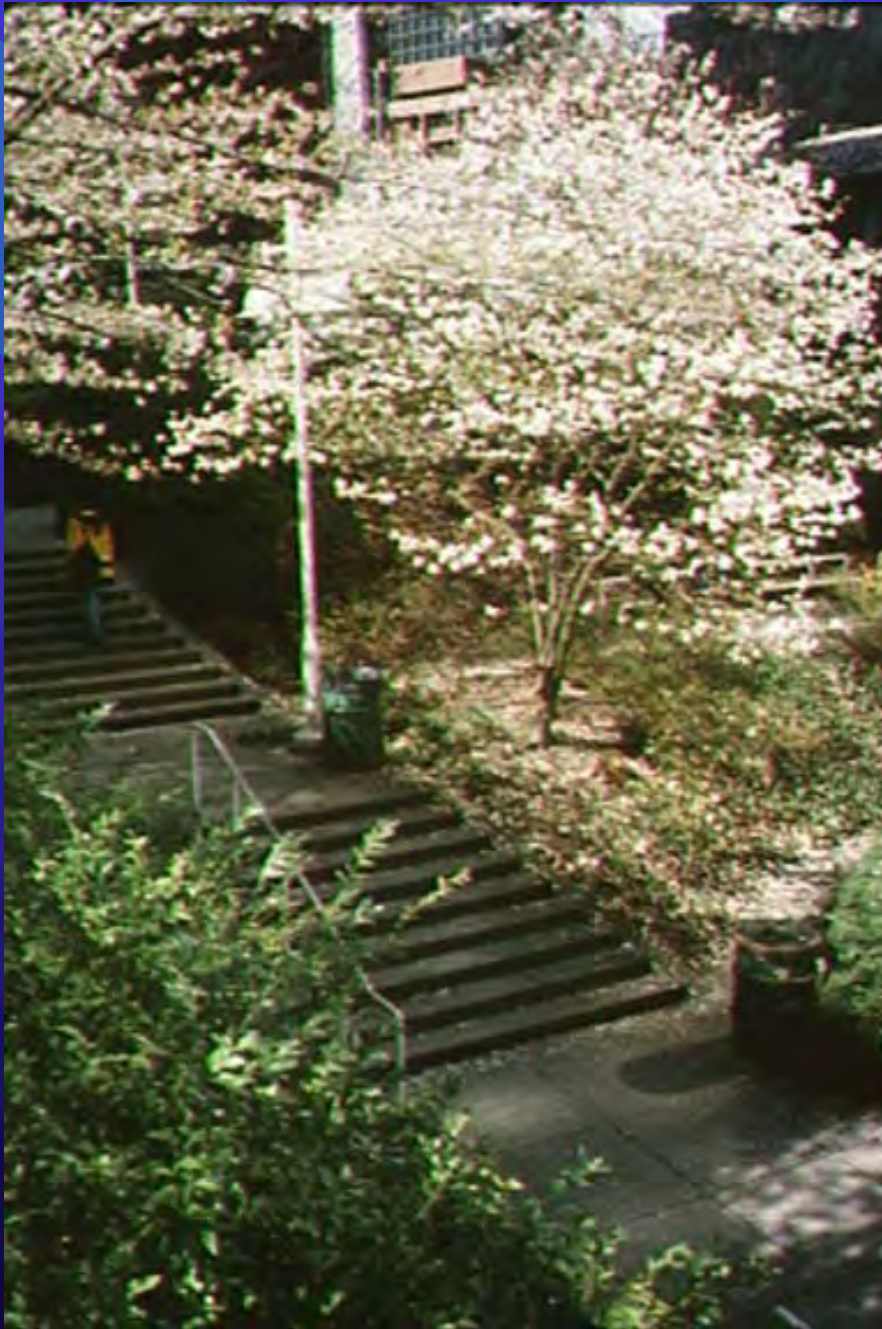
Workplace Nature Views

■ Well-being

- desk workers without view of nature reported 23% more ailments in prior 6 months

■ Job Satisfaction

- less frustrated and more patient
- higher overall job satisfaction and enthusiasm



employee
health & the
corner office:

indirect
\$\$ benefits

Roger Ulrich. Texas A & M. Studies on nature and medical recovery

Wellness & Healing

- **Surgery Recovery**
 - shorter post-operative stays
 - less use of potent pain drugs, better attitude

- **Lifestyle Recovery**
 - attentional fatigue restored
 - relationships and career coping

Cimprich, B. 1992. Attentional Fatigue Following Breast Cancer Surgery. *Research in Nursing and Health* 15, 199-207



Healing Gardens
- institutional design

LIVING MEMORIALS PROJECT

what's
new

about

projects

toolbox

links

contact us

USDA FOREST SERVICE 

The resonating power of trees

will be used to bring people together and create lasting, living memorials to the victims of terrorism, their families, communities, and the nation. This project will support community-driven efforts that remember those who died and those who served others, while also memorializing an event that was significant worldwide.



**Americans travel 2.3 billion miles per day on
urban freeways & highways**

Parsons, R., Tassinary, L., G., Ulrich, R. S., Hebl, M. R., and M. Grossman-Alexander. 1998. The view from the road: Implications for stress recovery and immunization. *Journal of Environmental Psychology* 18:113-140.

Roadside Landscape & Traffic Stress Response

- **Roadside Features - Driving Simulations**
 - Forest, golf course, strip mall
- **Physiological Response**
 - E.g. heart beat, blood pressure
- **Results**
 - Nature scenes - return to baseline faster, less response to new stressors
 - Immunization effect

Stress and Body Response

impaired immune system
sleep interruption
heightened ailments (acne, ulcers)
more likely to have accidents
inhibited memory

Ulrich-views of nature reduce stress respons



Chicago Public Housing with & without green spaces



Wm. Sullivan
& F. Kuo
University of
Illinois



Human-Environment Research Laboratory

www.herl.uiuc.edu

lower levels of fear
less violent & aggressive behavior
fewer reported crimes
more self-discipline for girls
reduced ADHD symptoms
better neighbor relationships
better coping with life's challenges





Literature Review & Research

Psychosocial
Development

Nature
Experience

How Do Forest Work
Experiences Aid Positive
Development of Youth?

measurement tools
youth development
partnerships

**Psychosocial
Dynamics**

**Nature
Experience**

**Abnormal or
pathological
issues**

**Intuitions
about
benefits**

**Positive youth
development**

**Therapy &
development**

Bridge Concepts

**Nature is integral to youth
development**

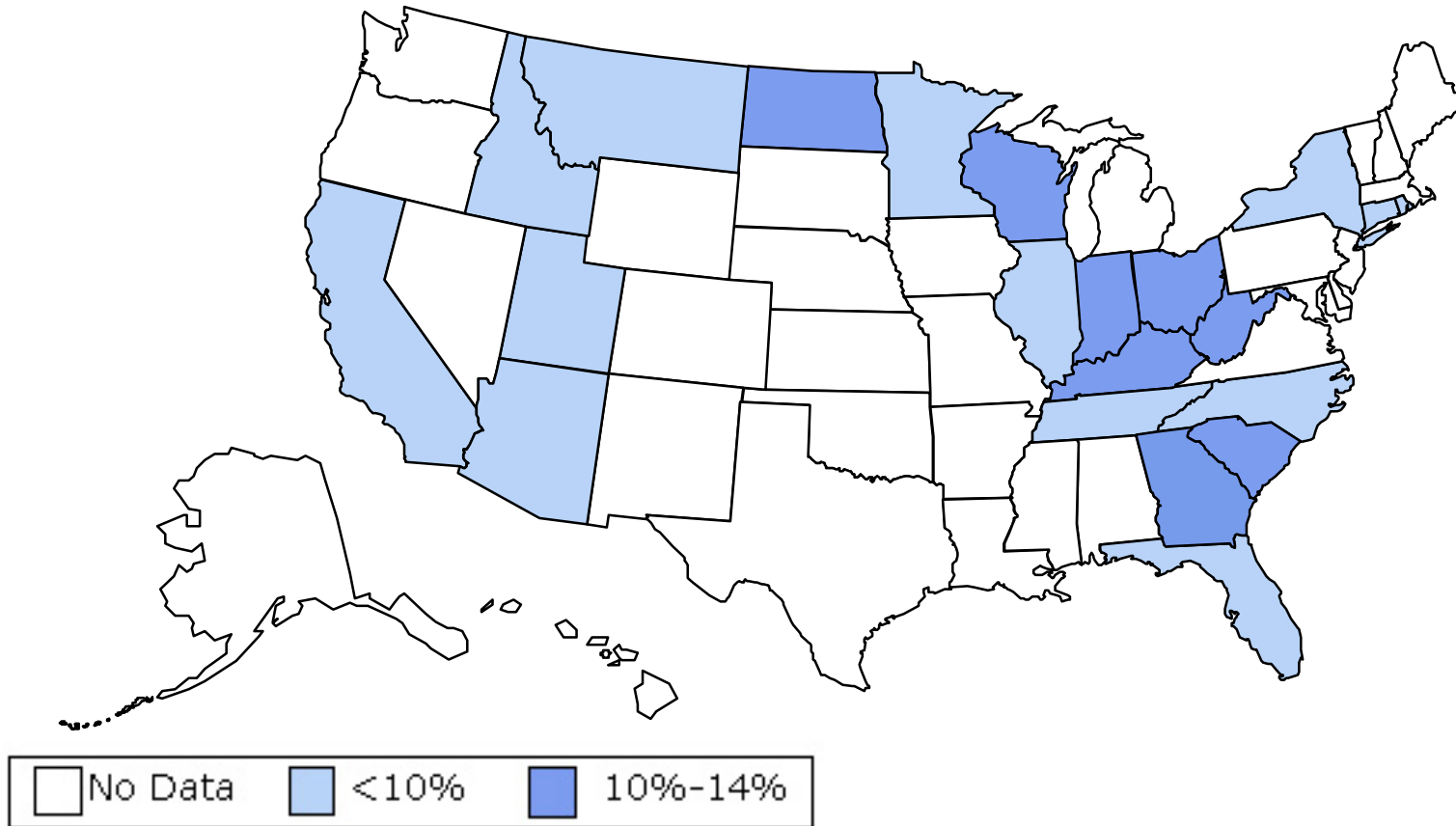
USFS & Centers for Disease Control

Americans, physical activity & obesity

Obesity Trends* Among U.S. Adults

BRFSS, 1985

(*BMI ≥ 30 , or ~ 30 lbs overweight for 5'4" woman)



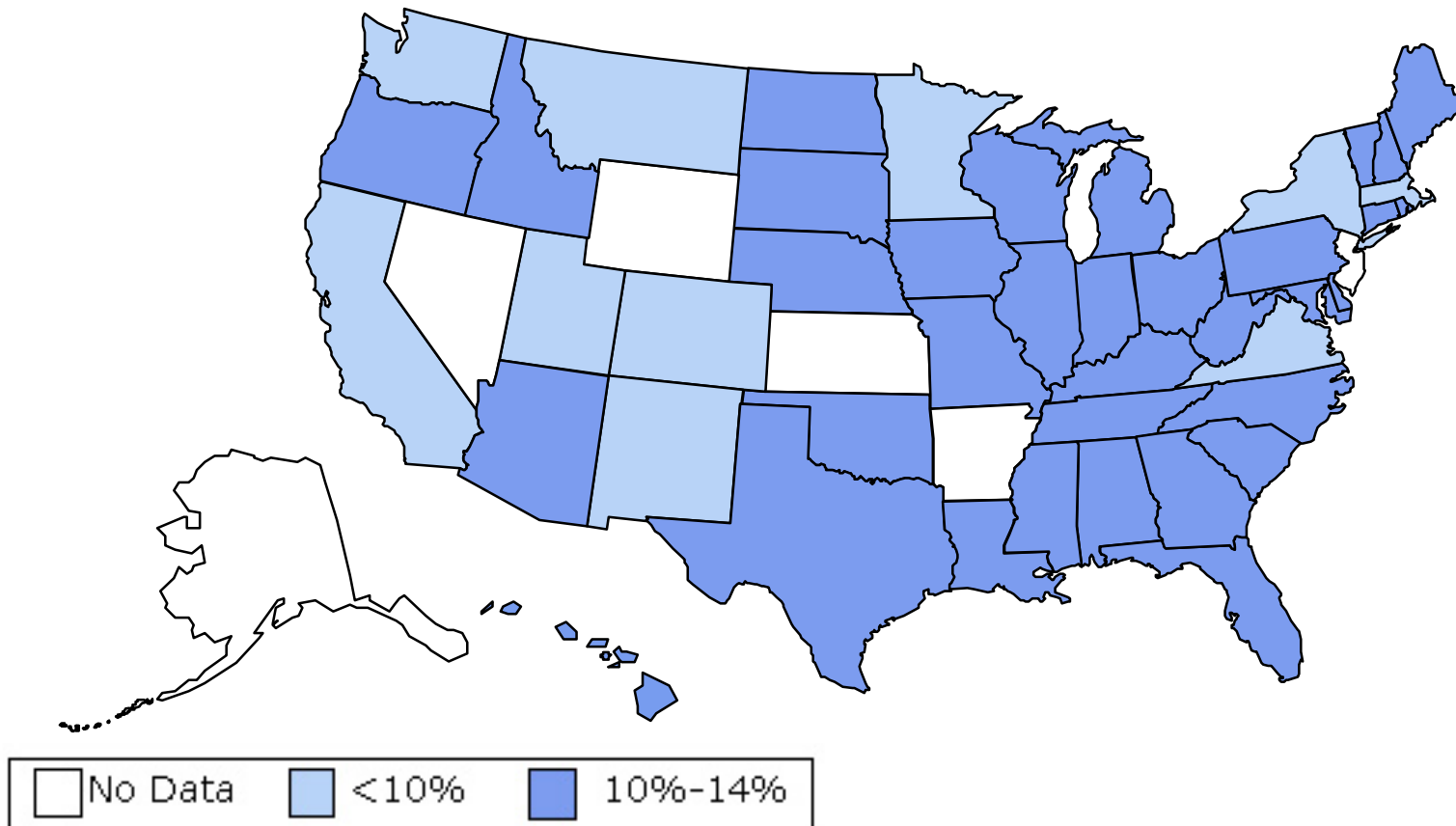
Source: Mokdad A H, et al. *J Am Med Assoc* 1999;282:16, 2001;286:10.



Obesity Trends* Among U.S. Adults

BRFSS, 1990

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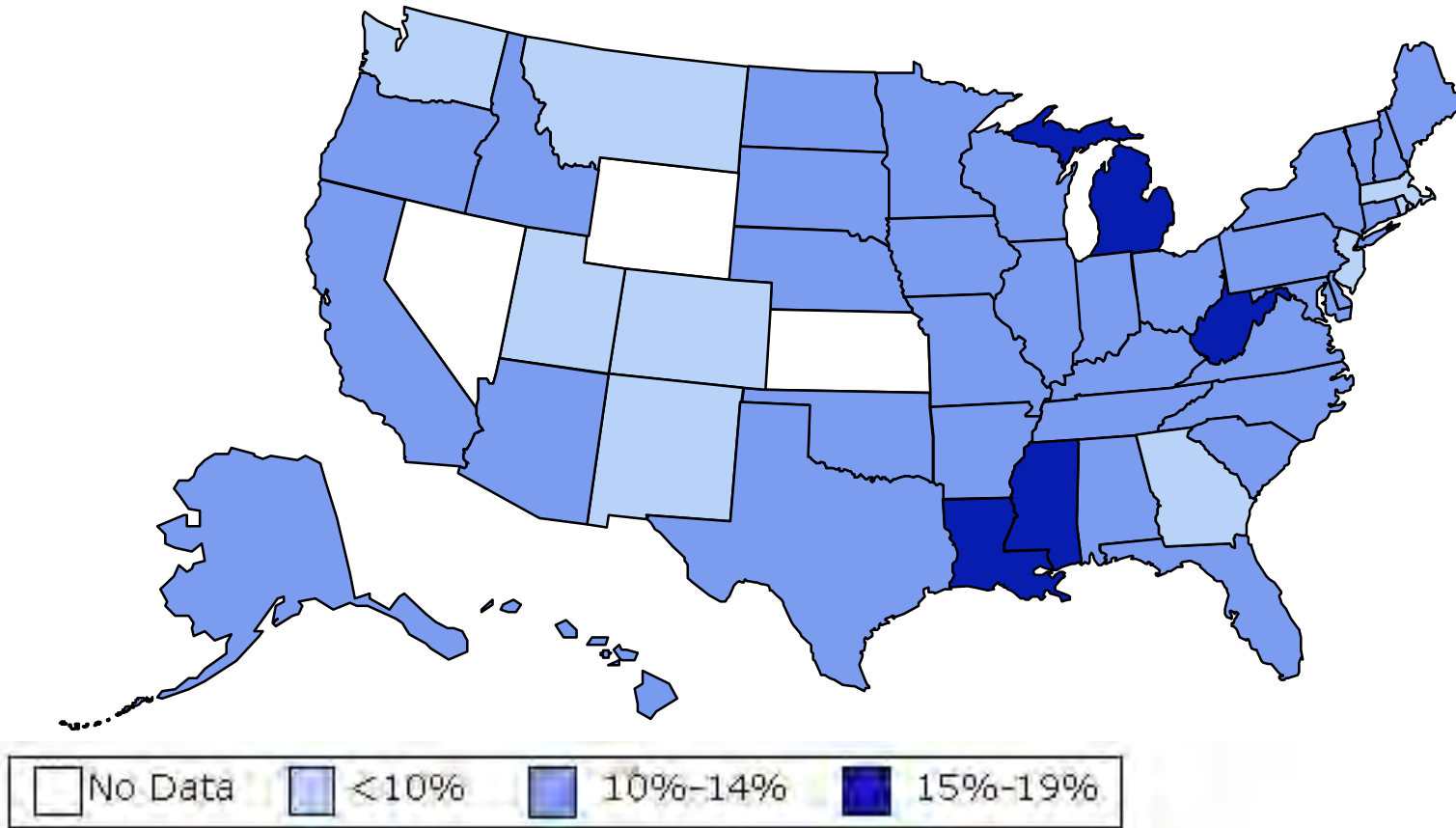
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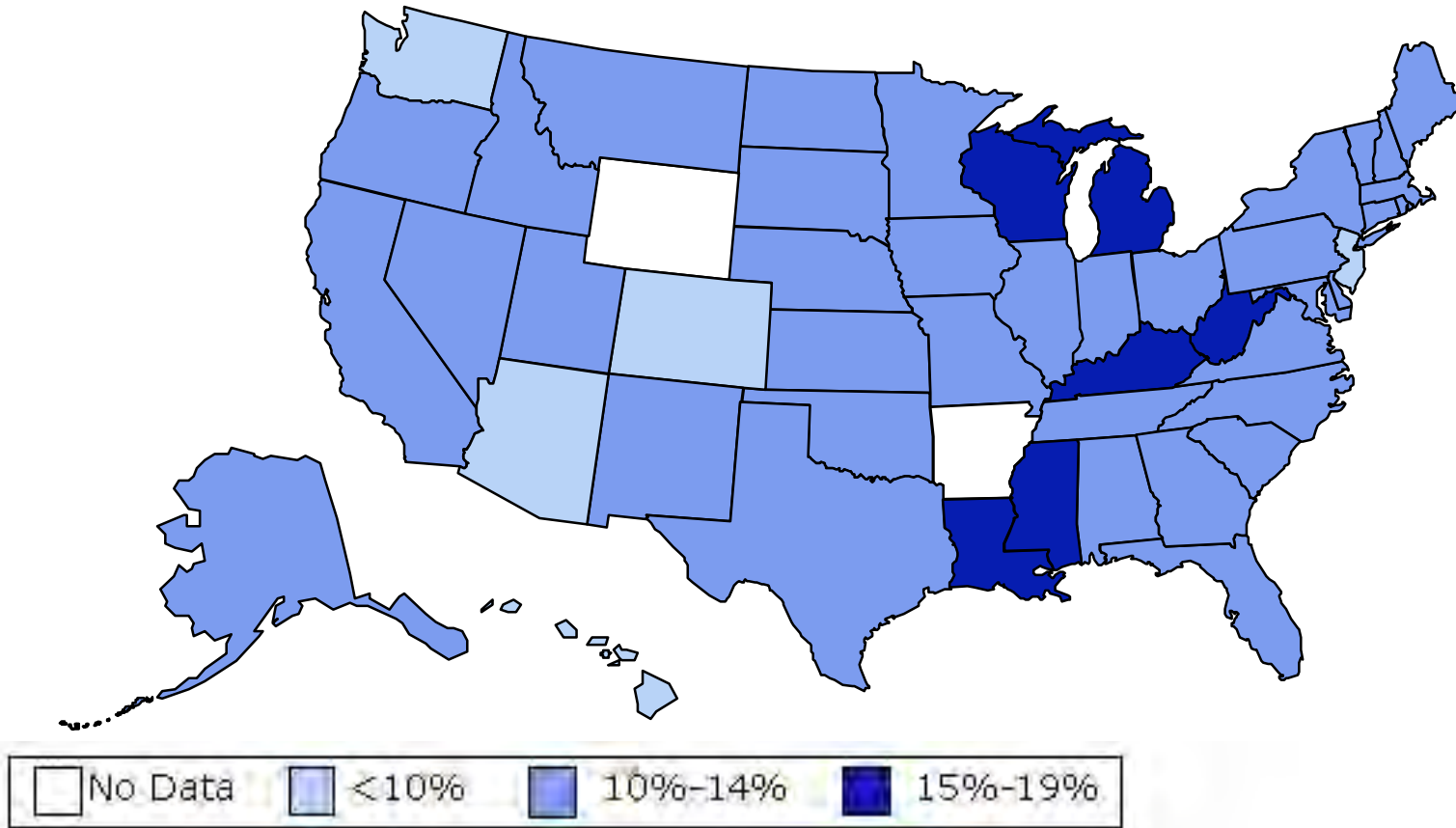
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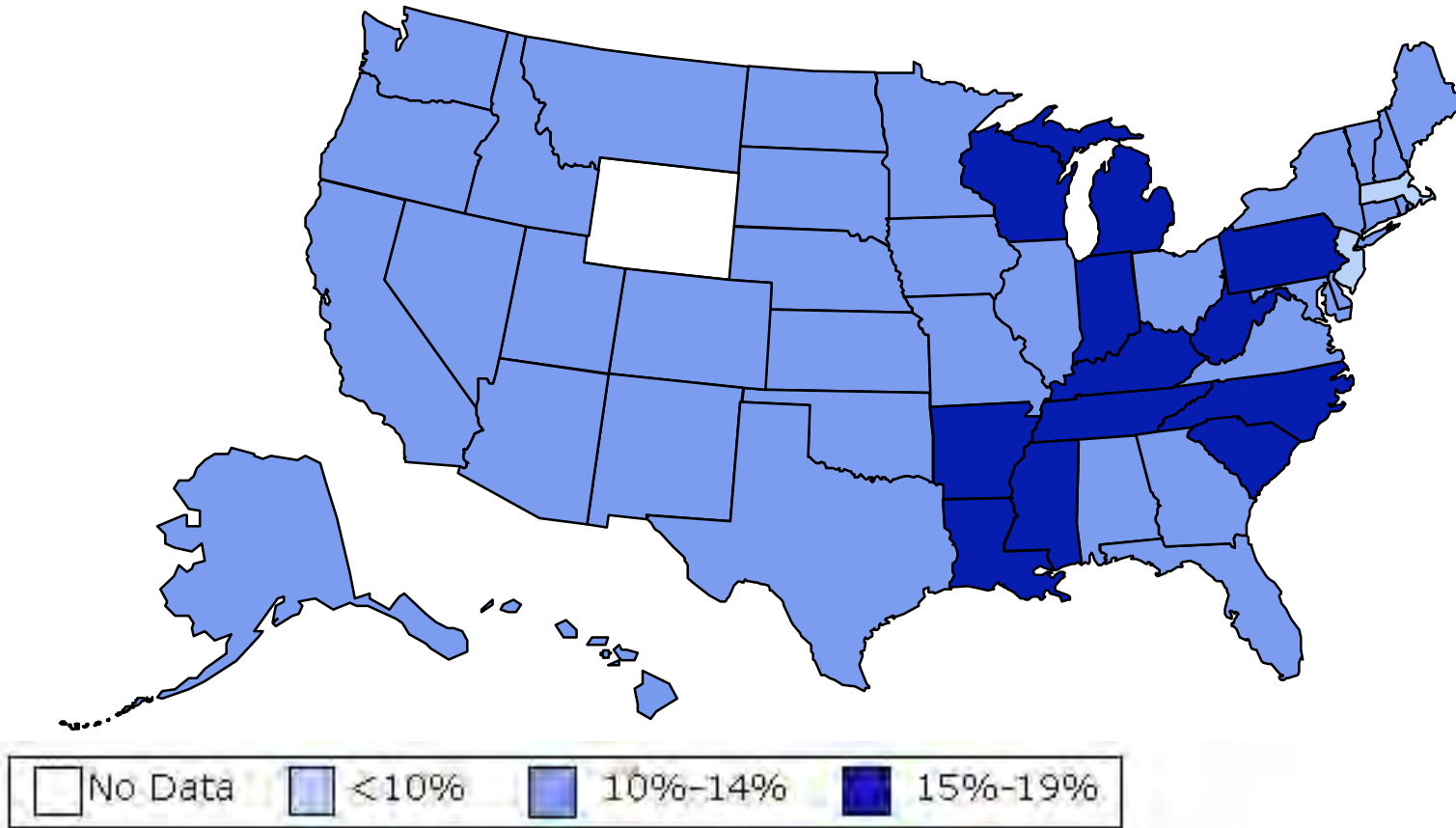
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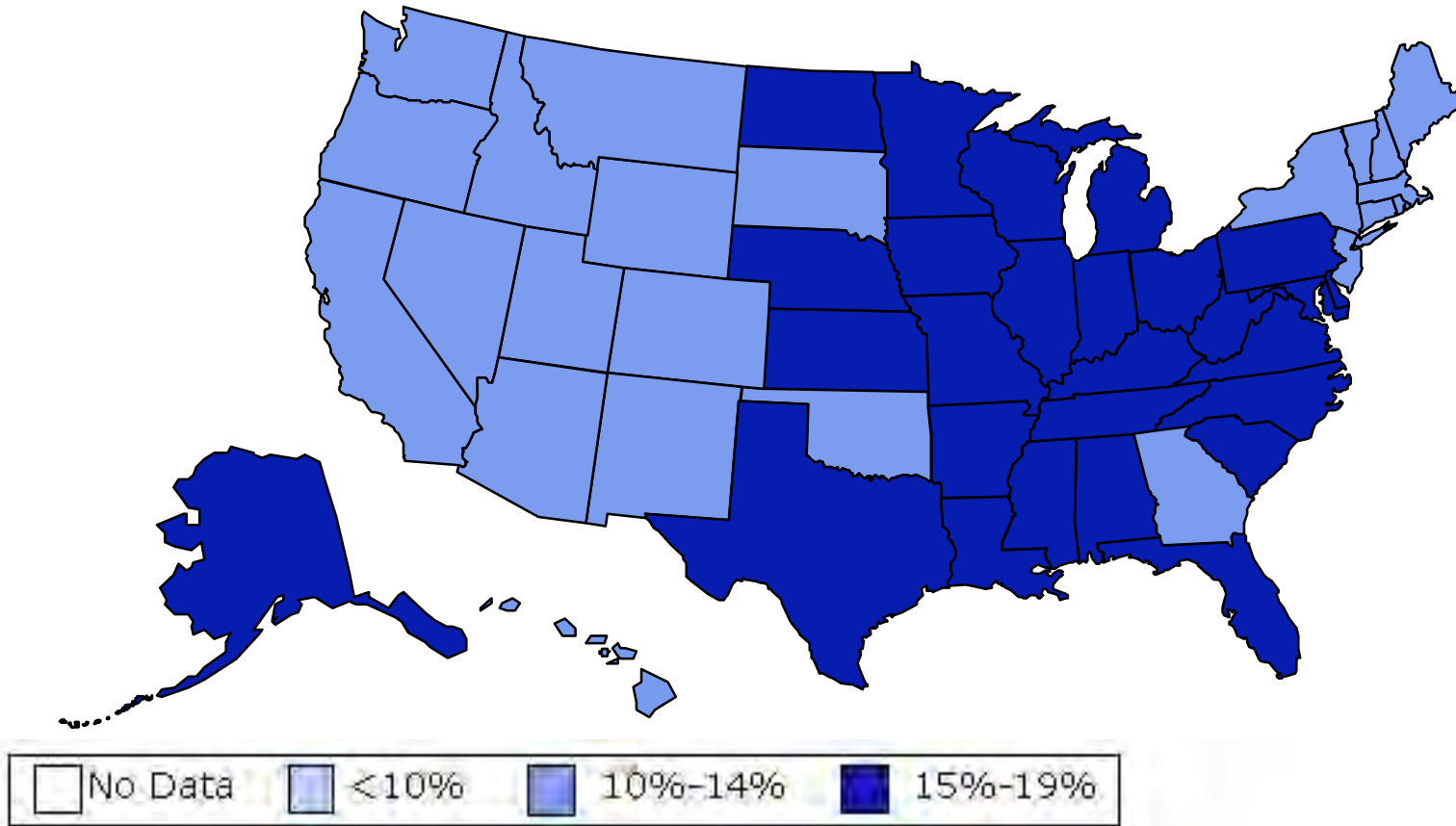
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Obesity Trends* Among U.S. Adults

BRFSS, 1995

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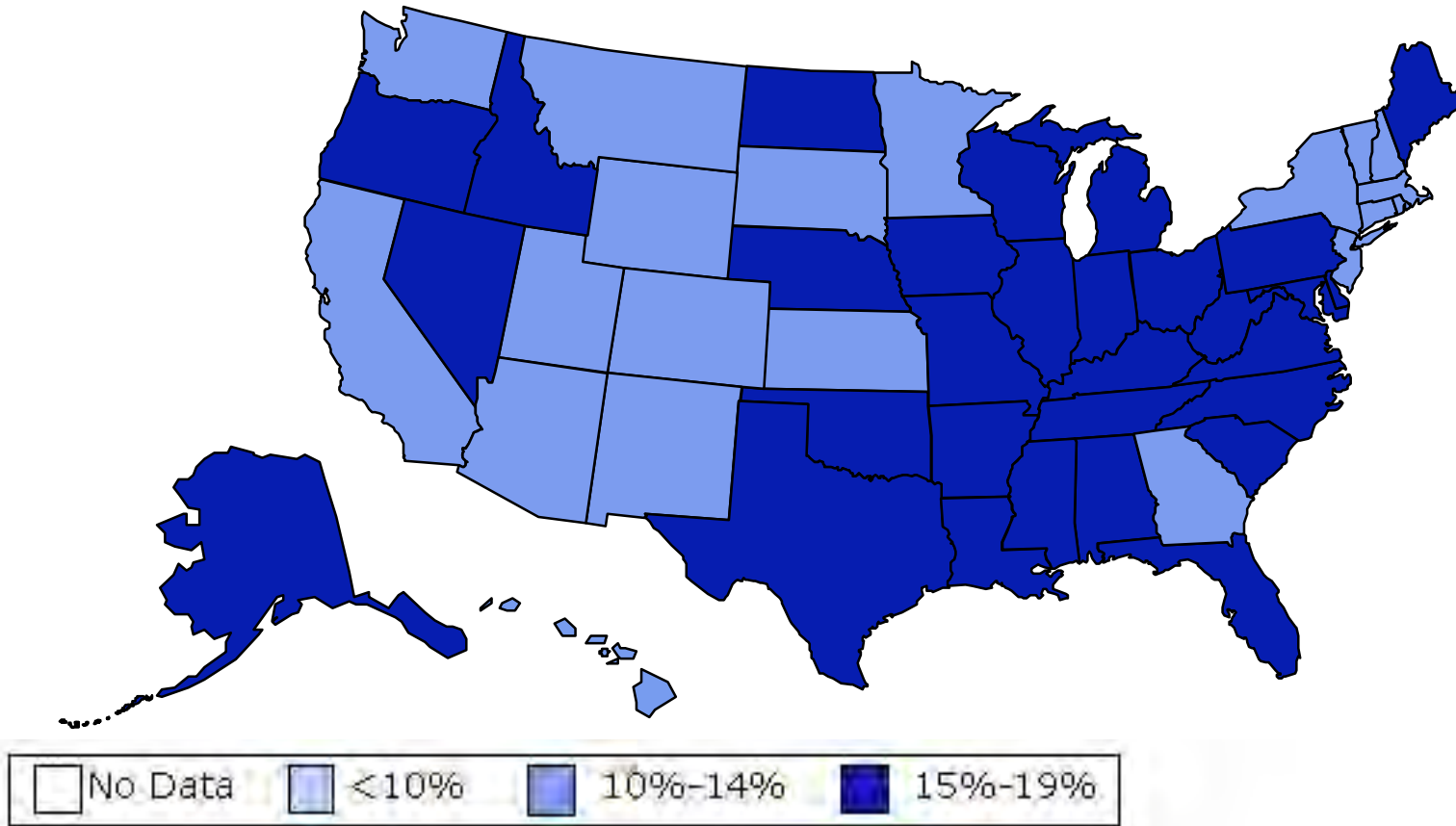
Source: Mokdad A H, et al. *J Am Med Assoc* 1999;282:16, 2001;286:10.



Obesity Trends* Among U.S. Adults

BRFSS, 1996

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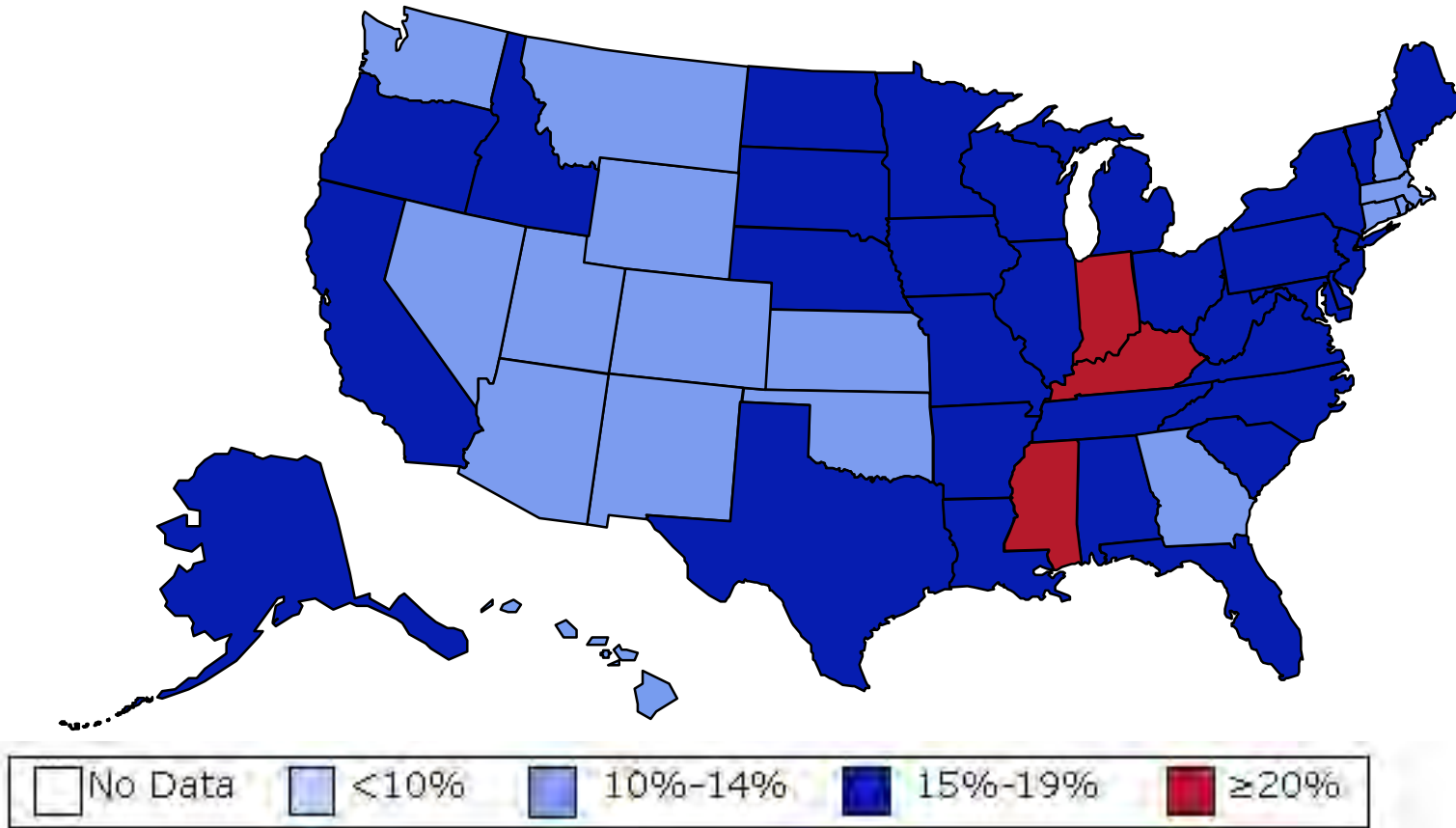
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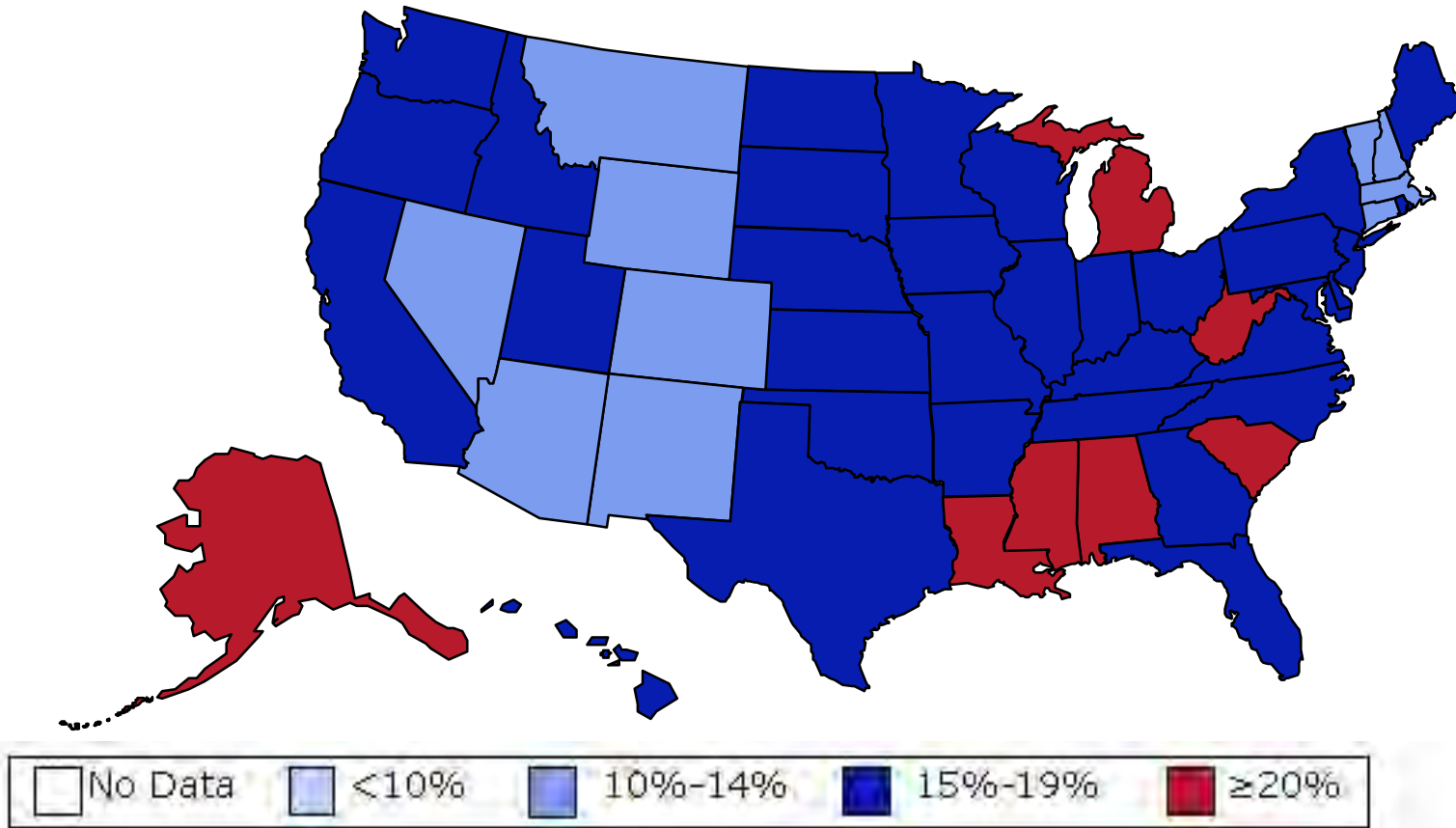
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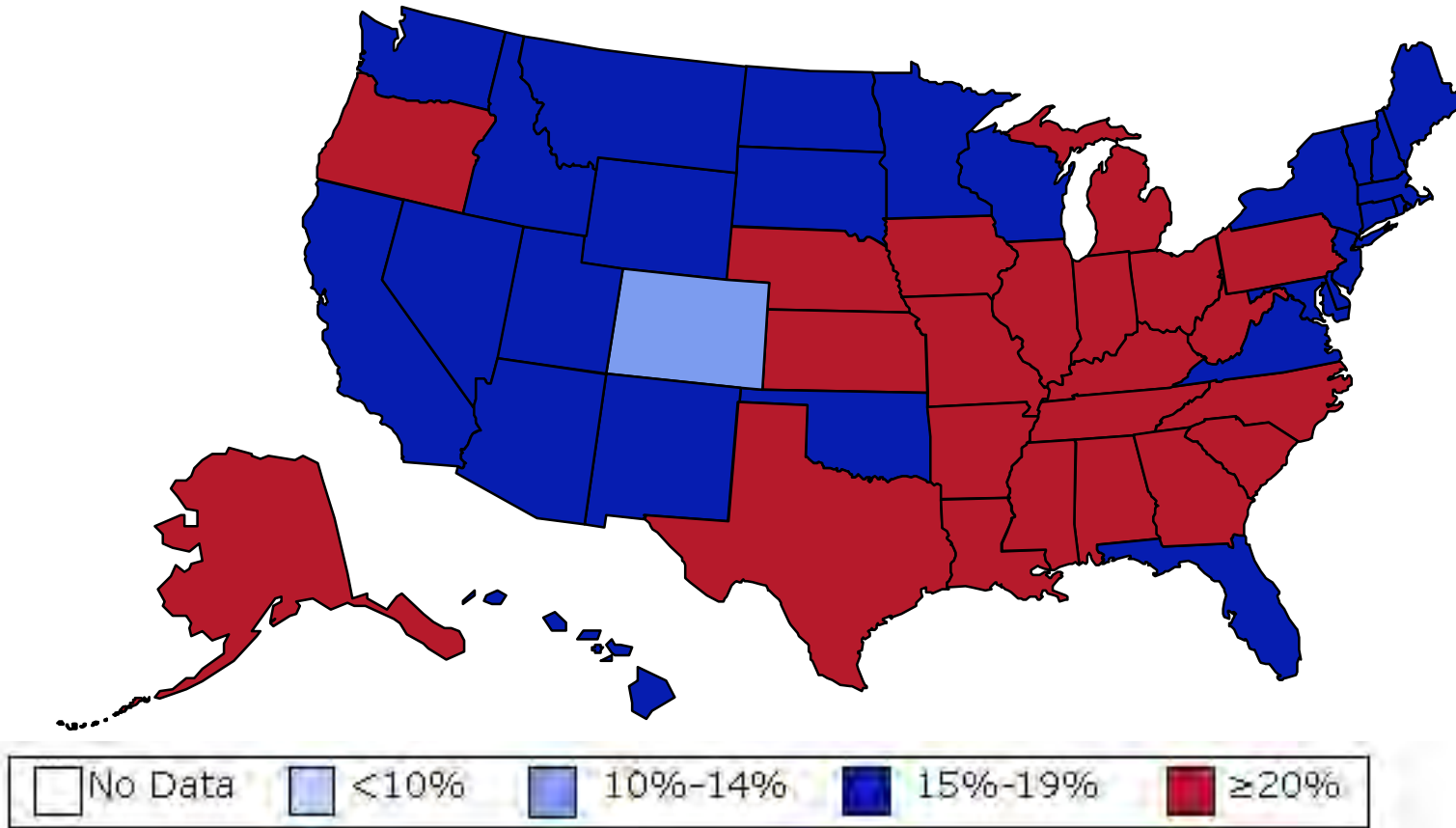
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Obesity Trends* Among U.S. Adults

BRFSS, 2000

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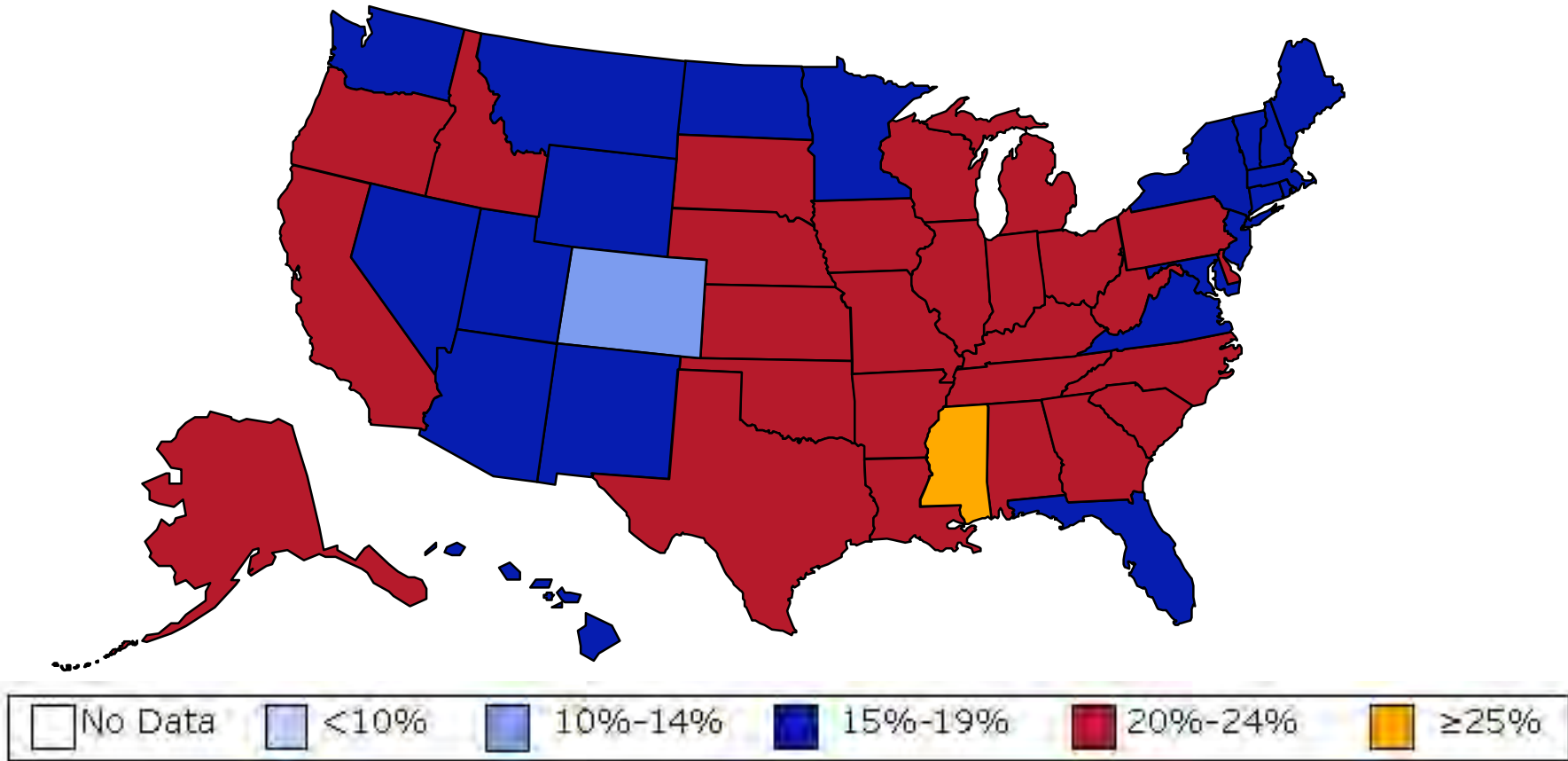
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Obesity Trends* Among U.S. Adults

BRFSS, 2001

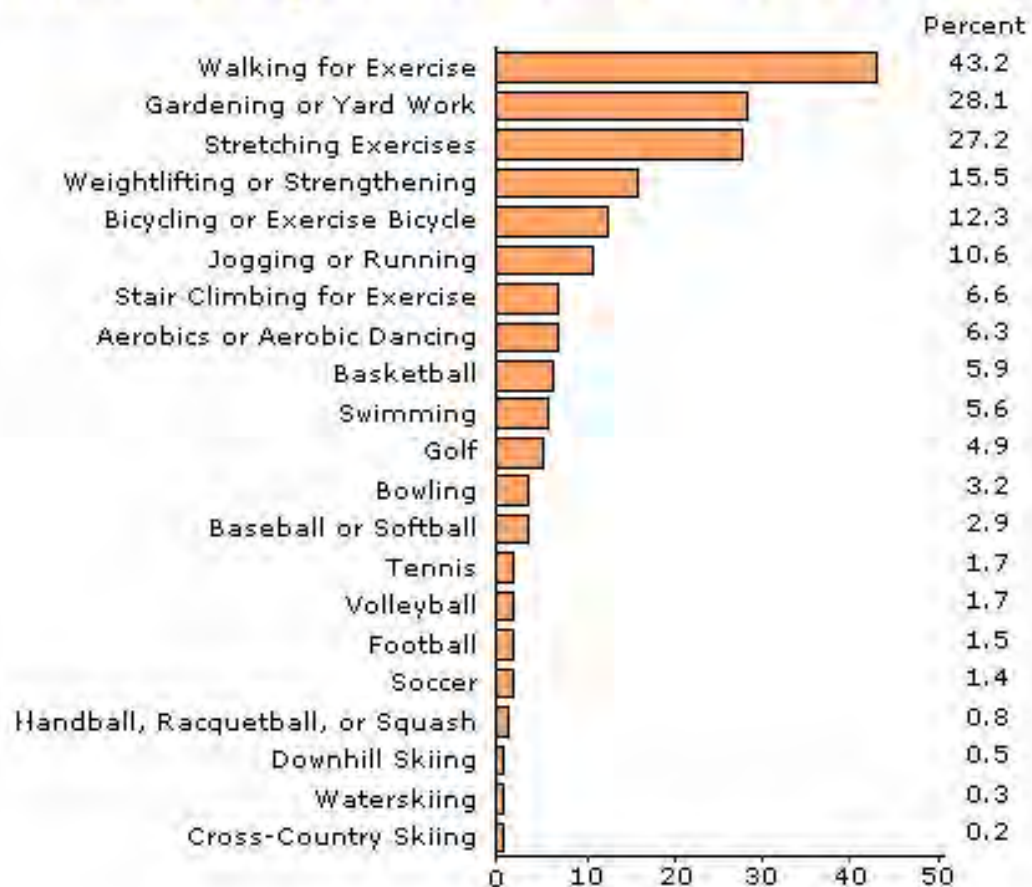
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Participation in Physical Activities Adults Aged 18 Years and Older



National Interview Health Survey-1998



**Trees and nature
create more
walkable places -
more activity
= less weight gain**

Summary - Urban Nature Economics

Valuation Studies and Research

region

city

local or neighborhood

Urban Tree & Forest Products

environmental services

human services

market & non-market measures
