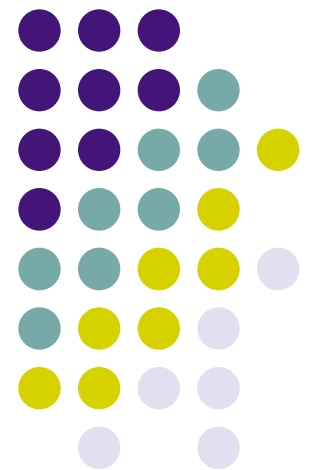


The High Line :: New York City



Green Infrastructure For Sustainable Communities

Dr. Kathleen Wolf
Research Social Scientist
University of Washington
USDA Forest Service
February 2010



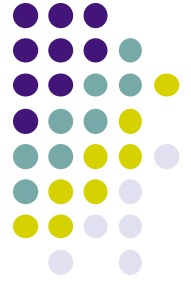
Nature & Political Change

hope, peace & inspiration



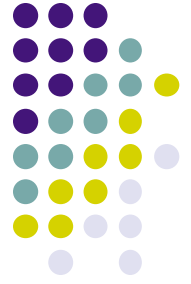
Nature & Ethics

Ann Frank: history, grief, memorial

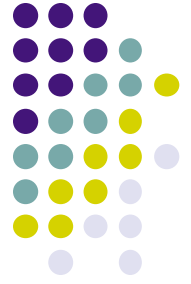


Nature & Legacy

Savannah's Candler Oak: anger, action



nature in childhood play & wonder

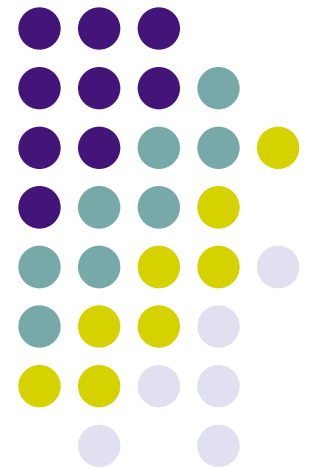


Green Infrastructure For Sustainable Communities

how?

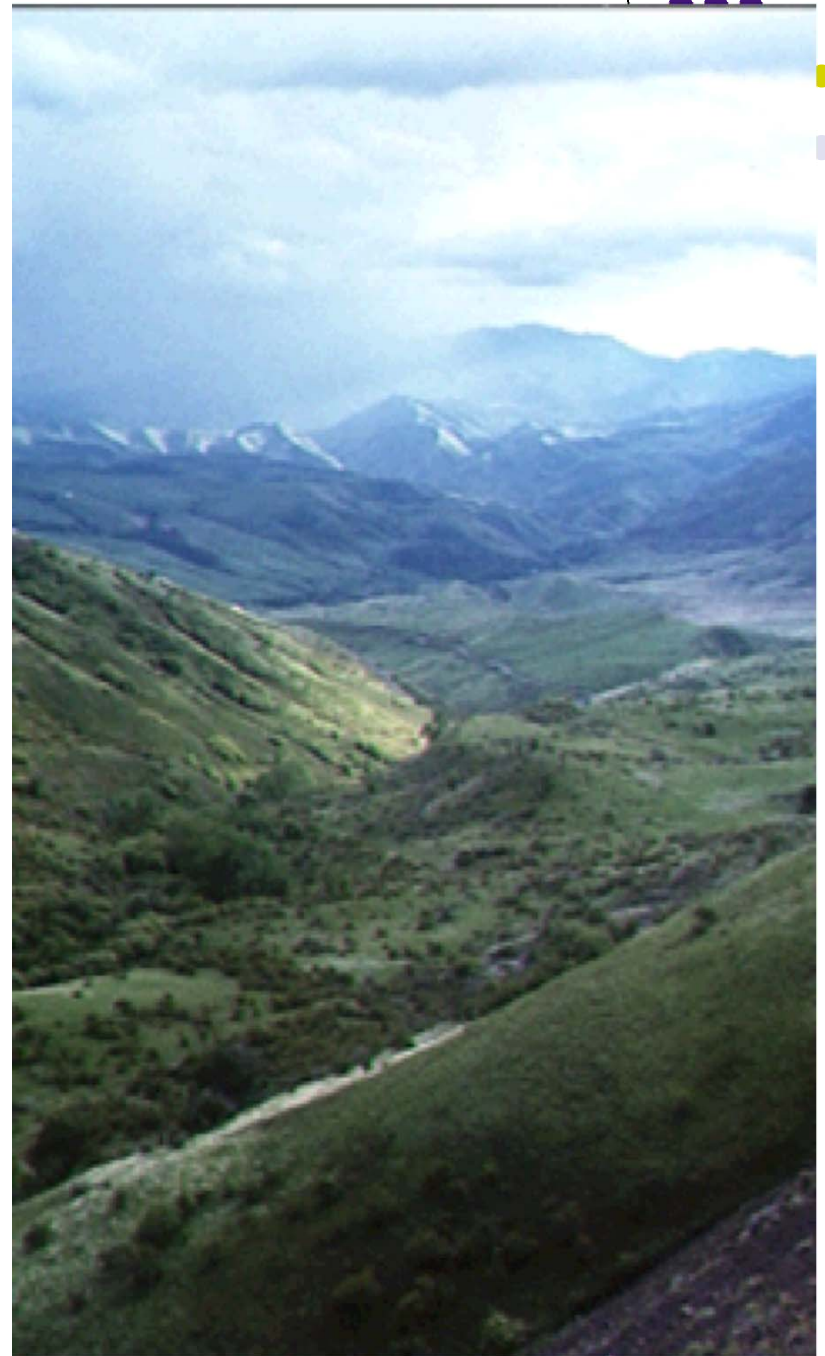
plans, strategies,
incentives, stakeholders

why?



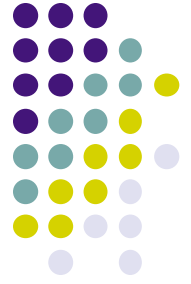
Ecosystem Services

- intangible
(vs. tangible products)
- human life support
- emerging/new markets





Urban Green Infrastructure Ecosystem Services



- Air pollutants reduction
- Nitrogen, phosphorus and sediment interception
- Carbon emissions reduction & sequestration
- Urban heat-island cooling
- Reduced “bad” ozone
- Stormwater runoff reduction
- Wildlife habitat

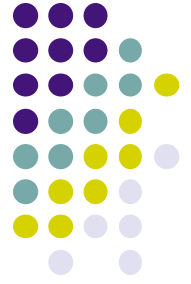
40 years of scientific study

The Livable, Competitive Place

Human Capital and Economics



- stock of skills and knowledge embodied in a person's ability to perform labor so as to produce economic value
- direct - education and training
- indirect – professional development, computer training, medical care plan, life skills workshop

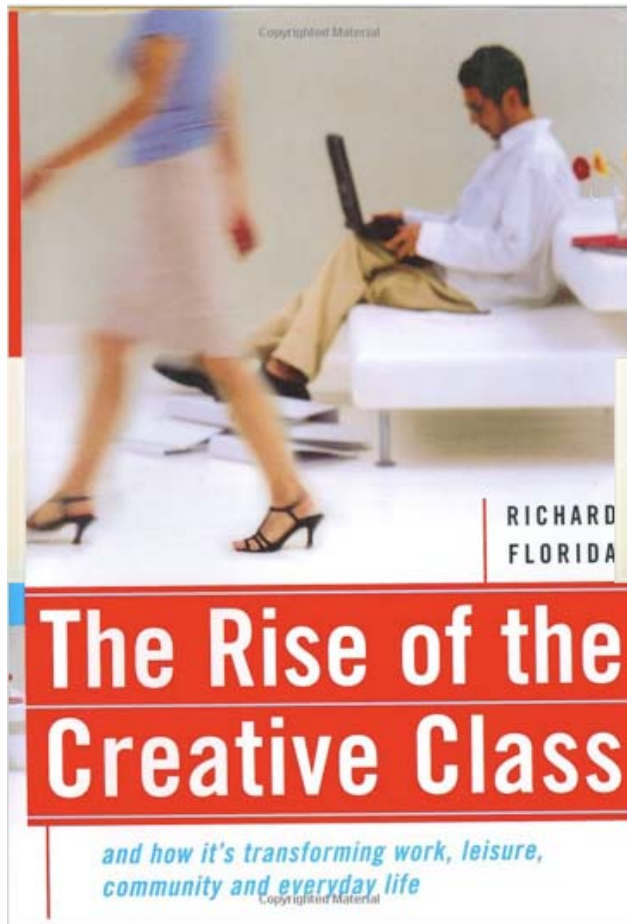


Basis of U.S. Economy?

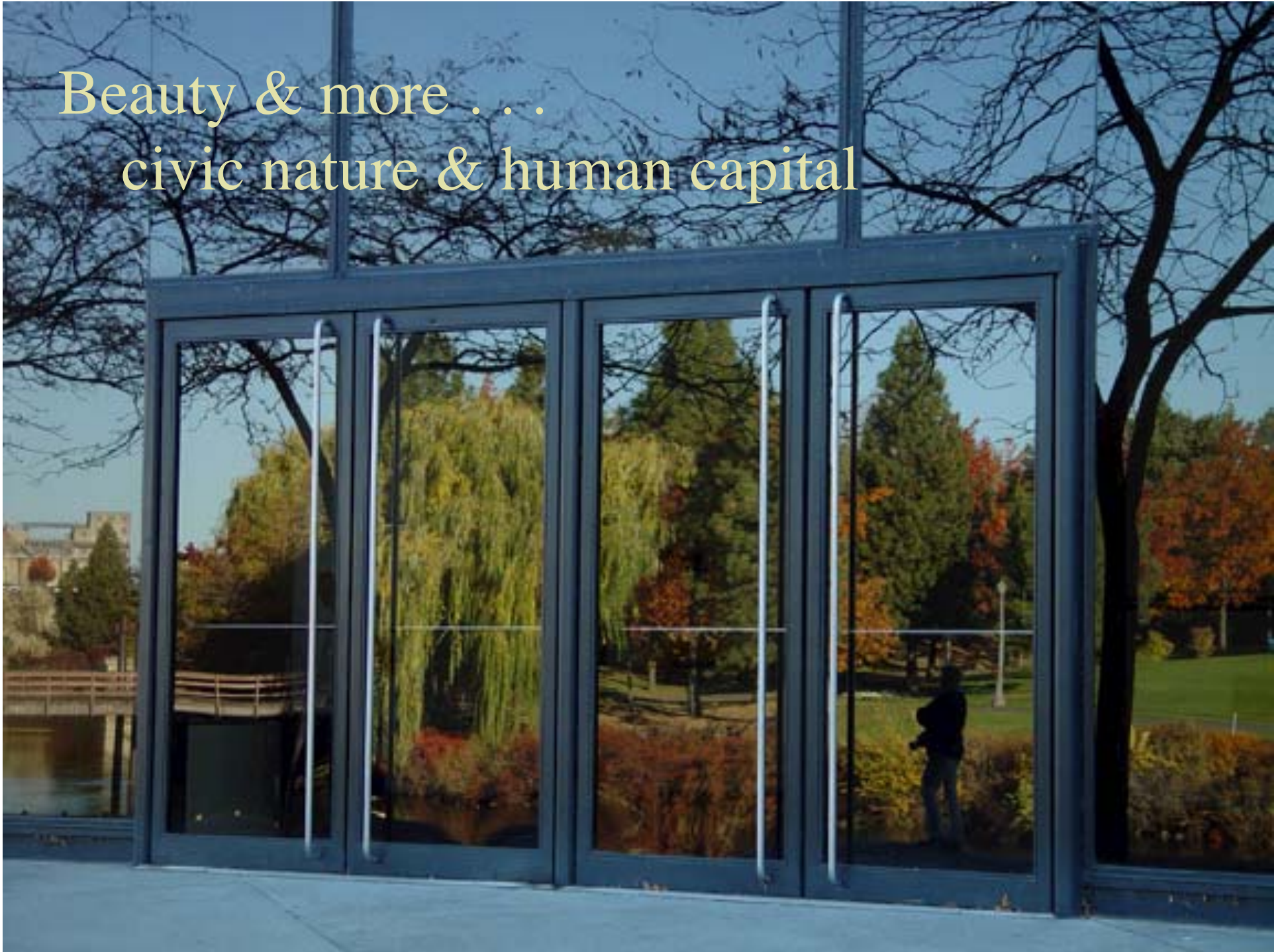
built capital – 20th century

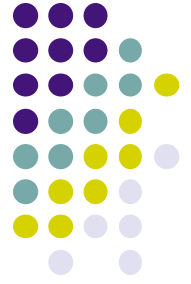
human capital – 21st century

Richard Florida the Creative Class



Beauty & more . . .
civic nature & human capital





Urban Green Infrastructure Ecosystem Services Human Health & Well Being

- restorative environments
- stress & anxiety reduction
- healing & recovery
- children & learning, ADHD
- vegetation & crime
- worker productivity
- community cohesion and resilience

30 years of scientific study

**scale ::
urban green
infrastructure**

**restorative
settings**



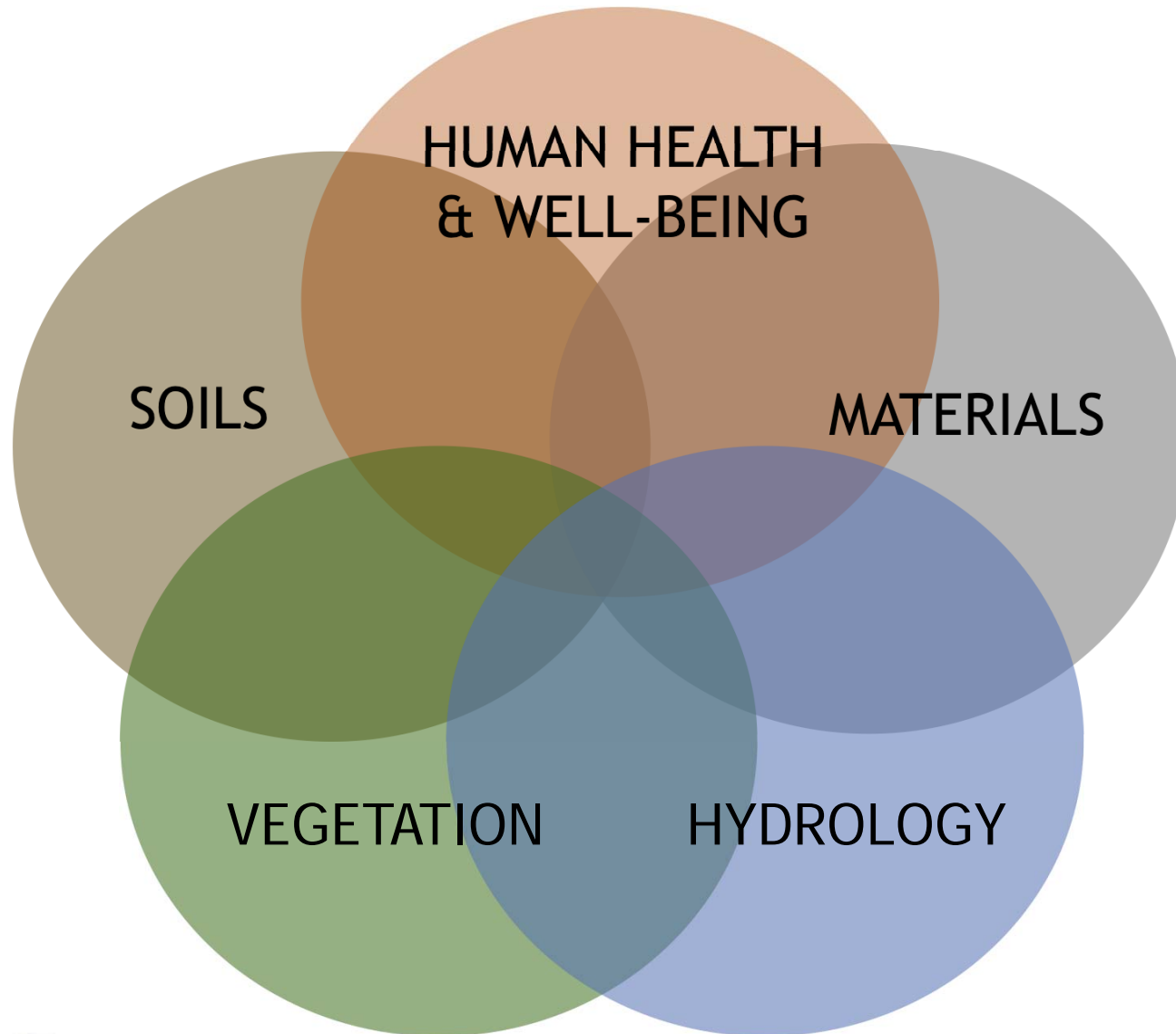
THE SUSTAINABLE SITES INITIATIVE™



An Integrated Approach



CURRENT RESEARCH



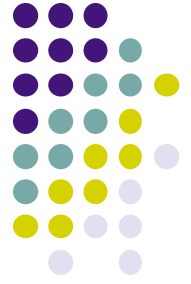
Human Health and Well-Being

*Guidelines and Performance
Benchmarks 2009*

- C 1.6 Select sites within existing communities
- C 1.7 Select sites that encourage non-motorized transportation and use of public transit
- C 2.3 Engage users and other stakeholders in site design
- C 6.1 Promote equitable site development
- C 6.2 Promote equitable use of the site
- C 6.3 Promote sustainable awareness and education
- C 6.4 Protect and maintain unique cultural and historical places
- C 6.5 Provide for optimum site accessibility, safety & wayfinding
- C 6.6 Provide opportunities for outdoor physical activity
- C 6.7 Provide views of vegetation and quiet outdoor spaces for mental restoration
- C 6.8 Provide outdoor spaces for social interaction
- C 6.9 Reduce light pollution
- C 8.6 Minimize exposure to Environmental Tobacco Smoke



Finding that study



Research Reviews



Urban Forestry/Urban Greening Research

Nature in the City


UNIVERSITY of WASHINGTON

SHARED PRODUCTS COLLABORATORS FUTURE RESEARCH REFERENCES LIST

Metro nature — including trees, parks, gardens, and open space — adds beauty to built places. The experience of nature in cities is profoundly important for many other reasons. Scientific studies tell us why. These pages describe the research...



Urban Livability

Across the ages many people have noted that the experience of nature is an important factor in creating places that are livable and, supportive for humans. Life satisfaction and a positive outlook are the products of encounters with nature and greenery in cities. [READ ABOUT THE RESEARCH](#)

RESEARCH THEMES

Urban Livability

Place Meaning and Attachment

Community Capital

Local Economics

Social Ties

Safety and Crime

Reduced Risk

Physiology & Health

Physical Activity & Health

Healing and Therapy

Mental Health and Functioning

Education and Learning

Lifecycle & Special Populations

Land Uses

CONTACT US LAST MODIFIED: MAY XX, 2009 COPYRIGHT 2009: UNIVERSITY OF WASHINGTON



Research Reviews



sponsors:
University of Washington
USDA Forest Service, U&CF Program
NGO partners

Kaplan, R. 1993. Landscape
and Urban Planning.

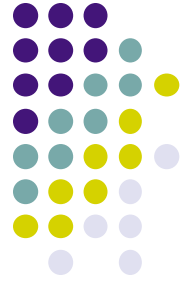
Workplace Nature Views

- **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
views &
benefits

Fukuoka City Hall, Tokyo, Japan



Urban Green Infrastructure

mental health

healing & therapy

public health

research evidence . . .

Physical Inactivity & Obesity

majority of Americans not active enough
goal-30 minutes per day of moderate activity
to reduce risk factors for chronic diseases
(heart, stroke, cancer, diabetes)
significant costs to national health services

310-580,000 deaths per year

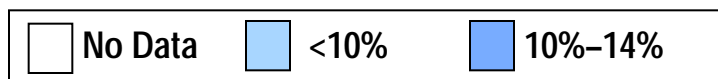
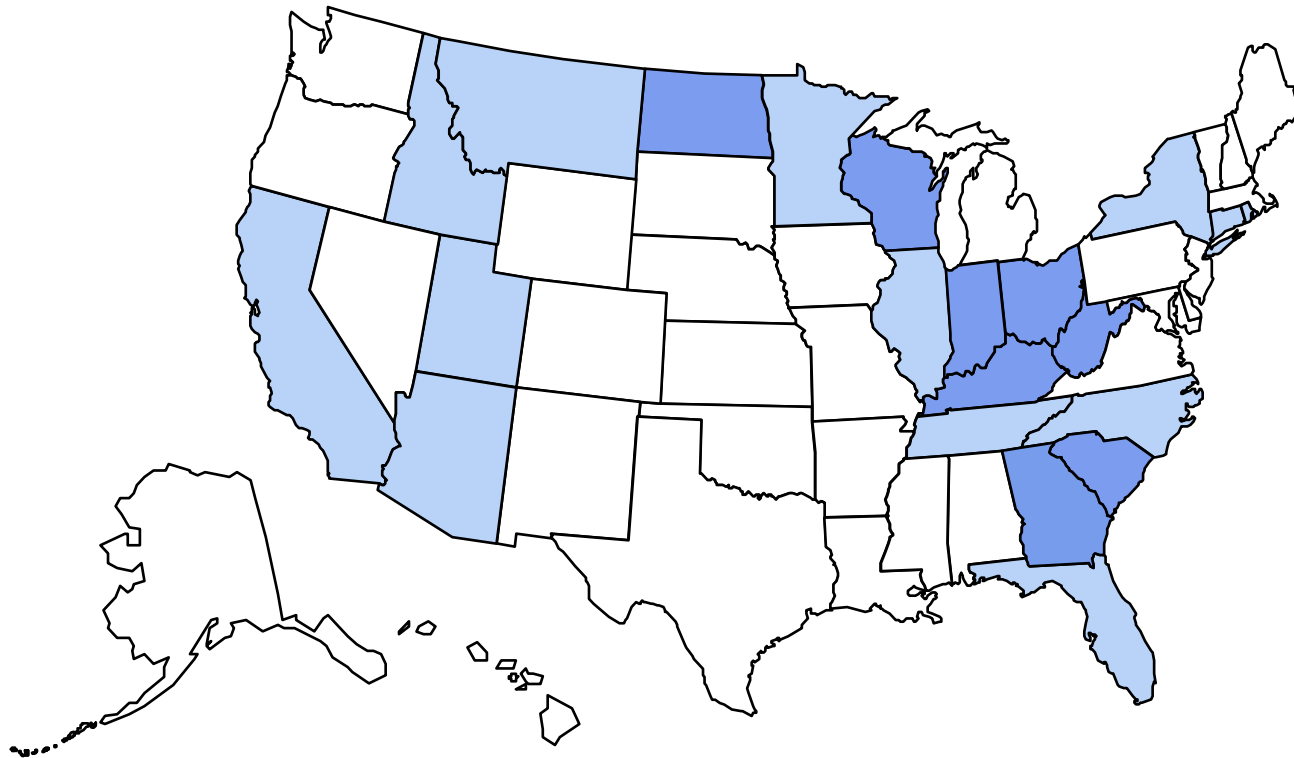
\$100 billion medical costs (1995)

9.4% of all U.S. medical costs

Obesity Trends* Among U.S. Adults

BRFSS, 1985

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

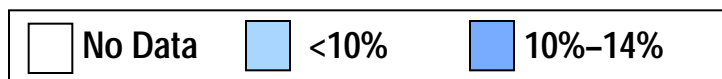
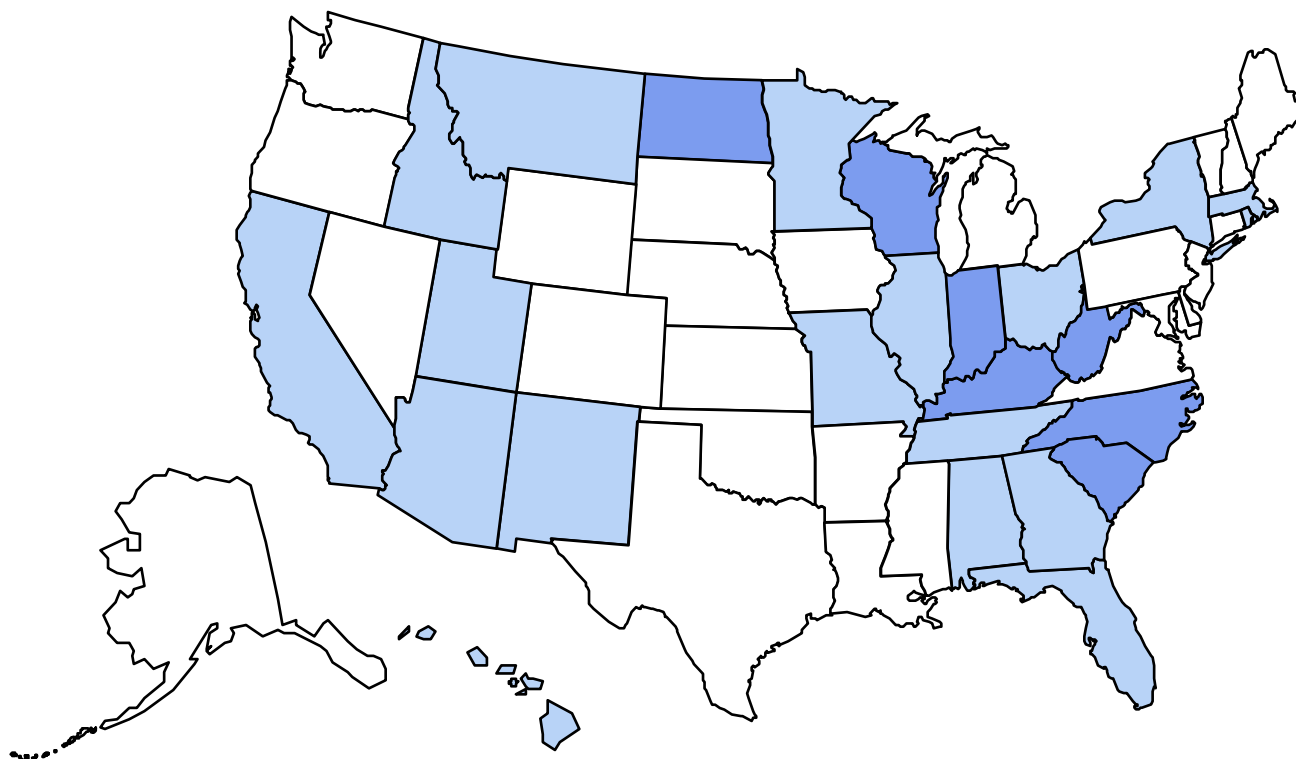


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 1986

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

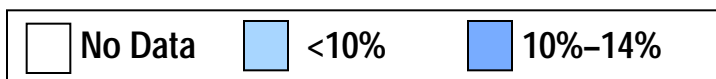
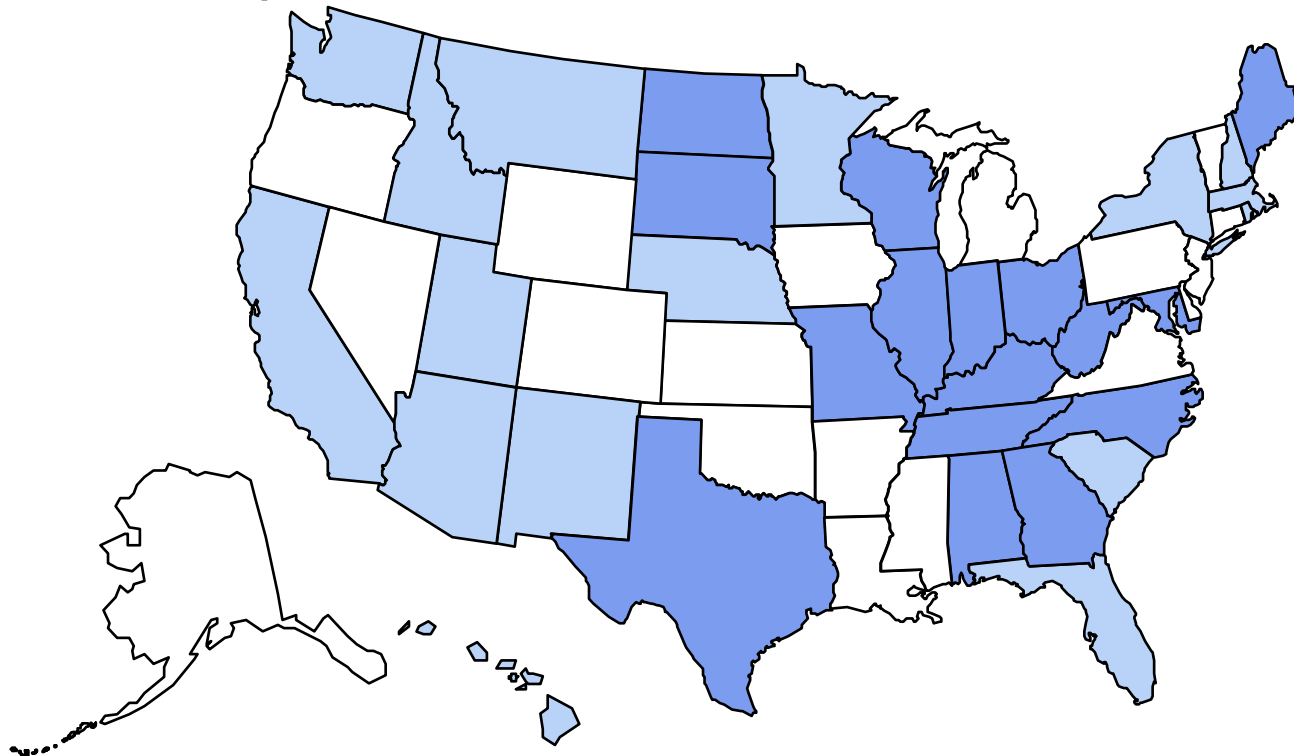


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 1987

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

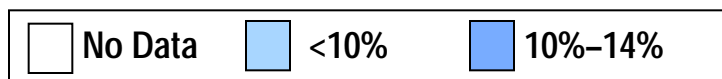
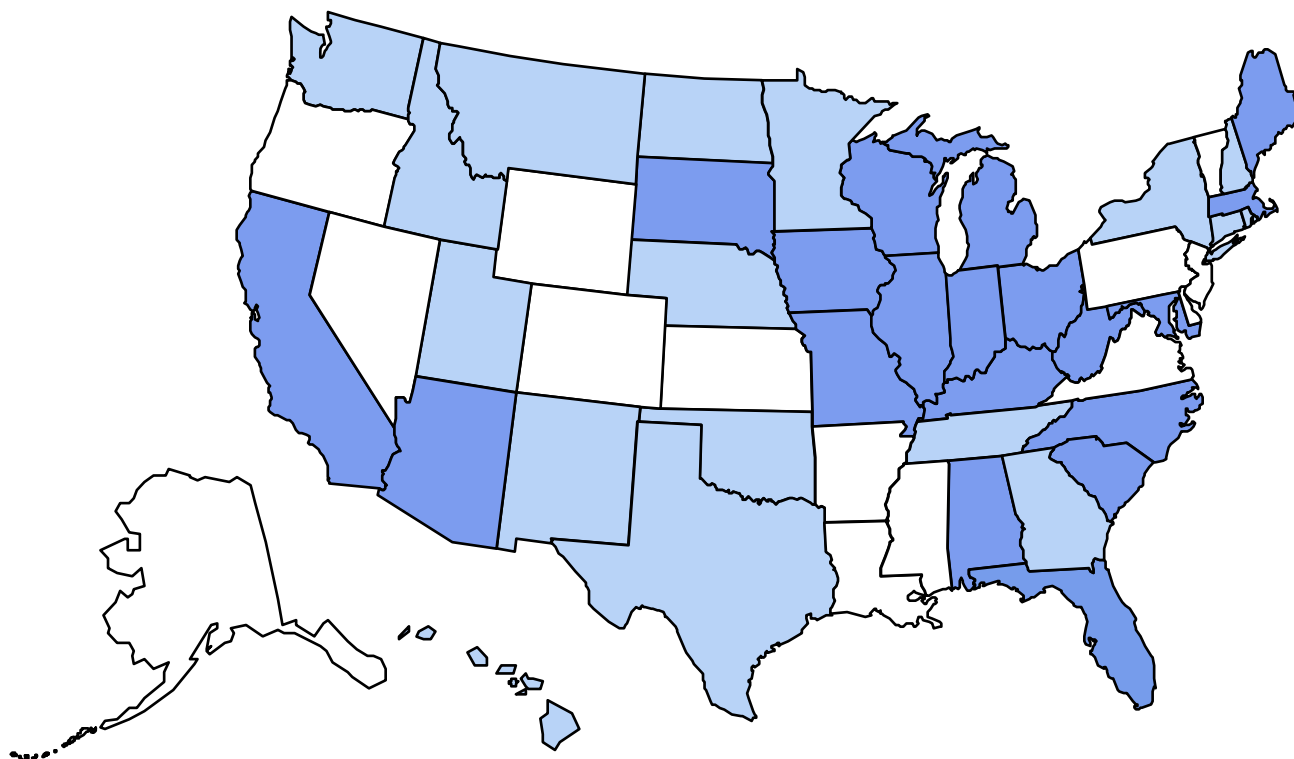


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 1988

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

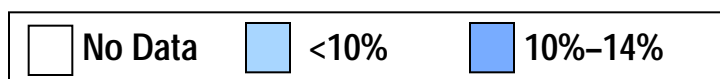
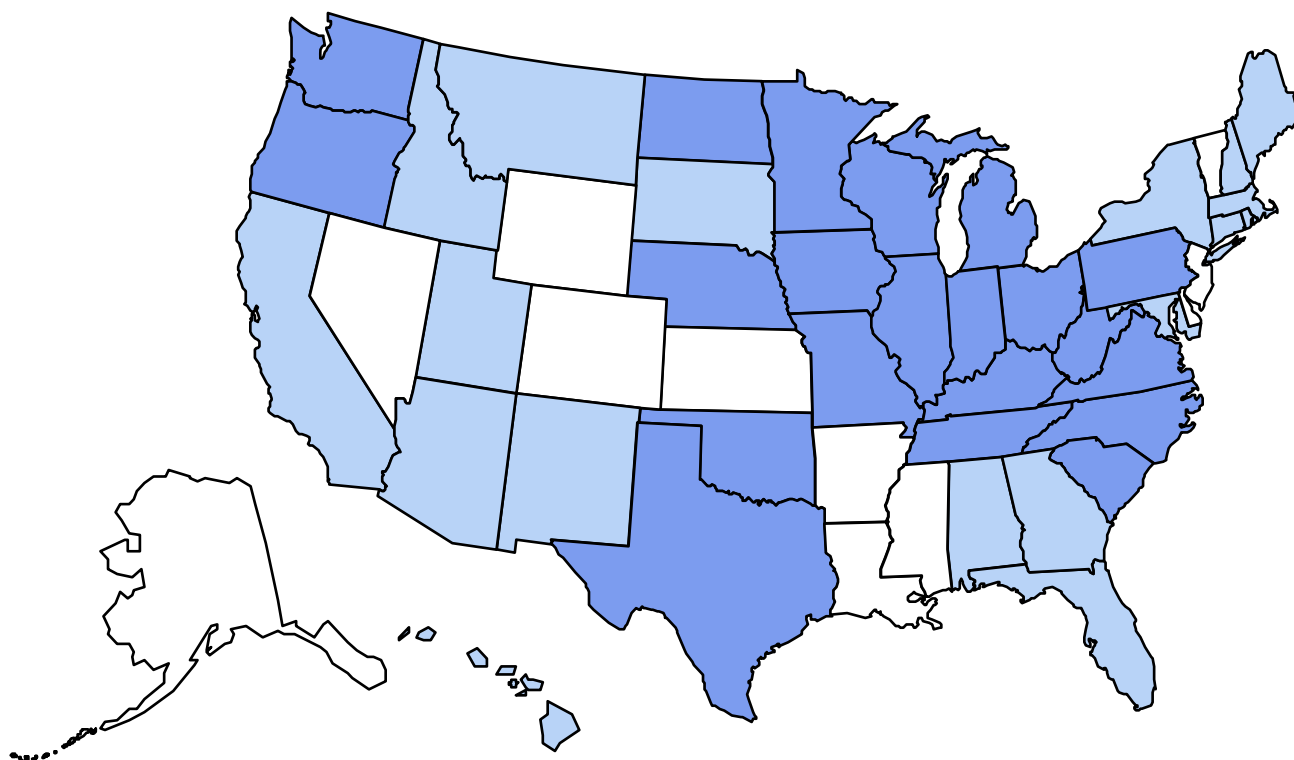


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 1989

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

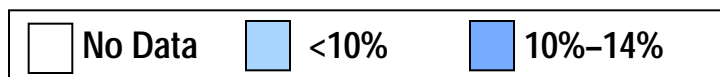
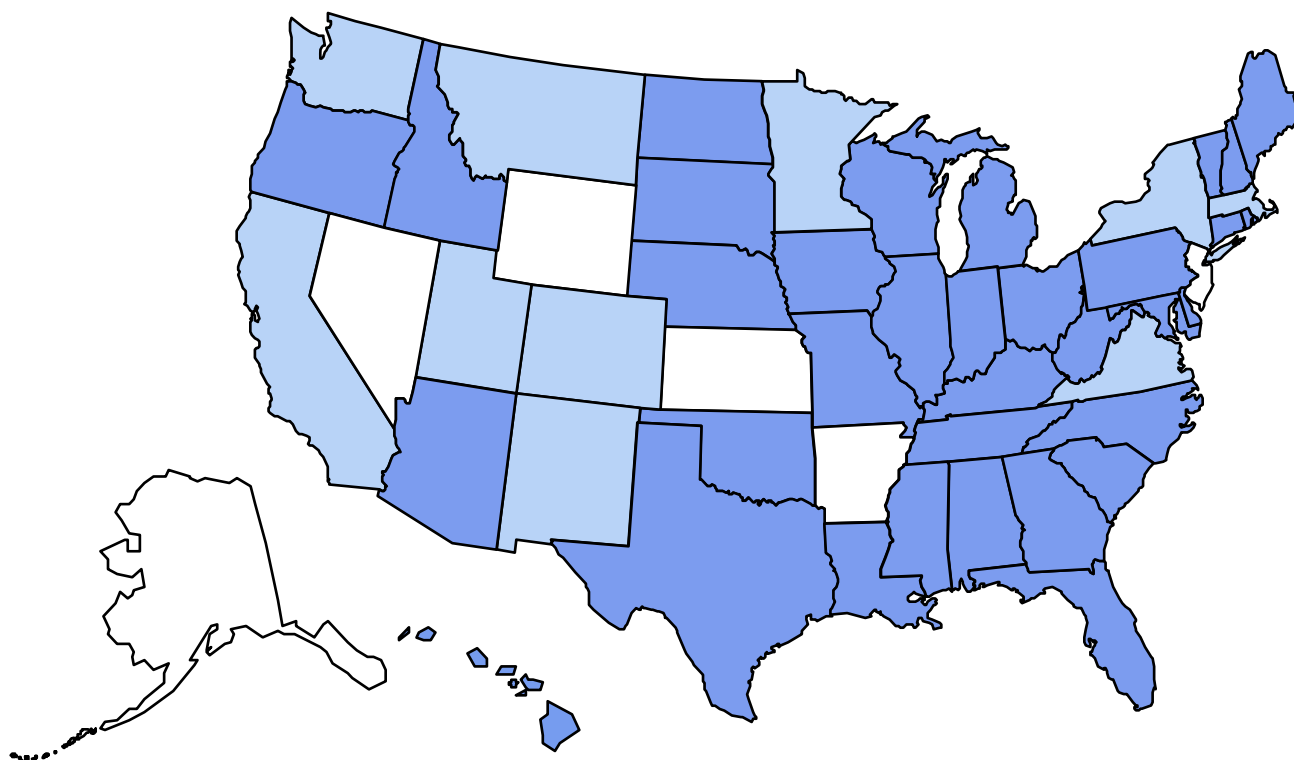


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 1990

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

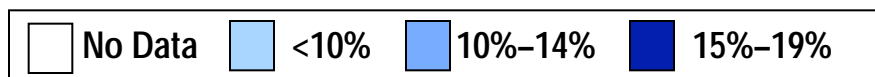
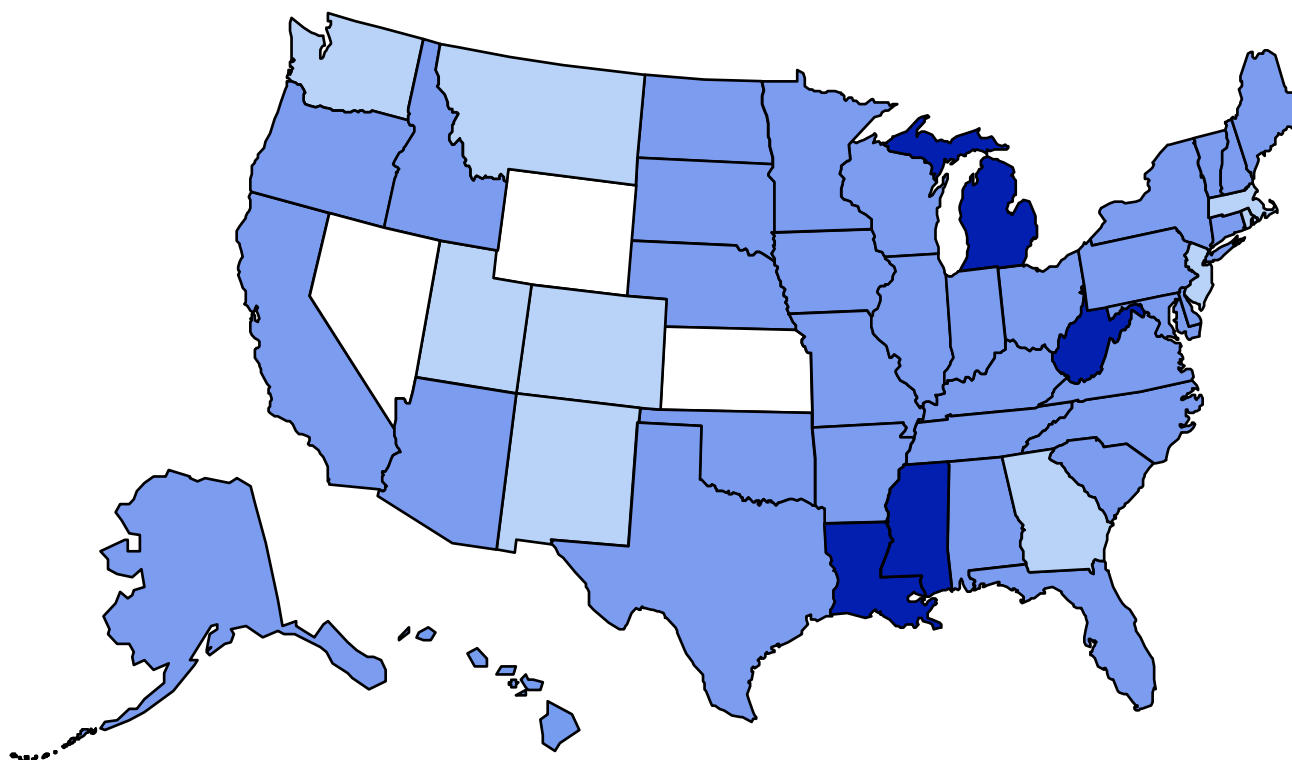


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 1991

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

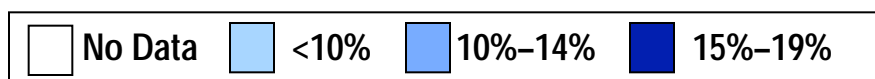
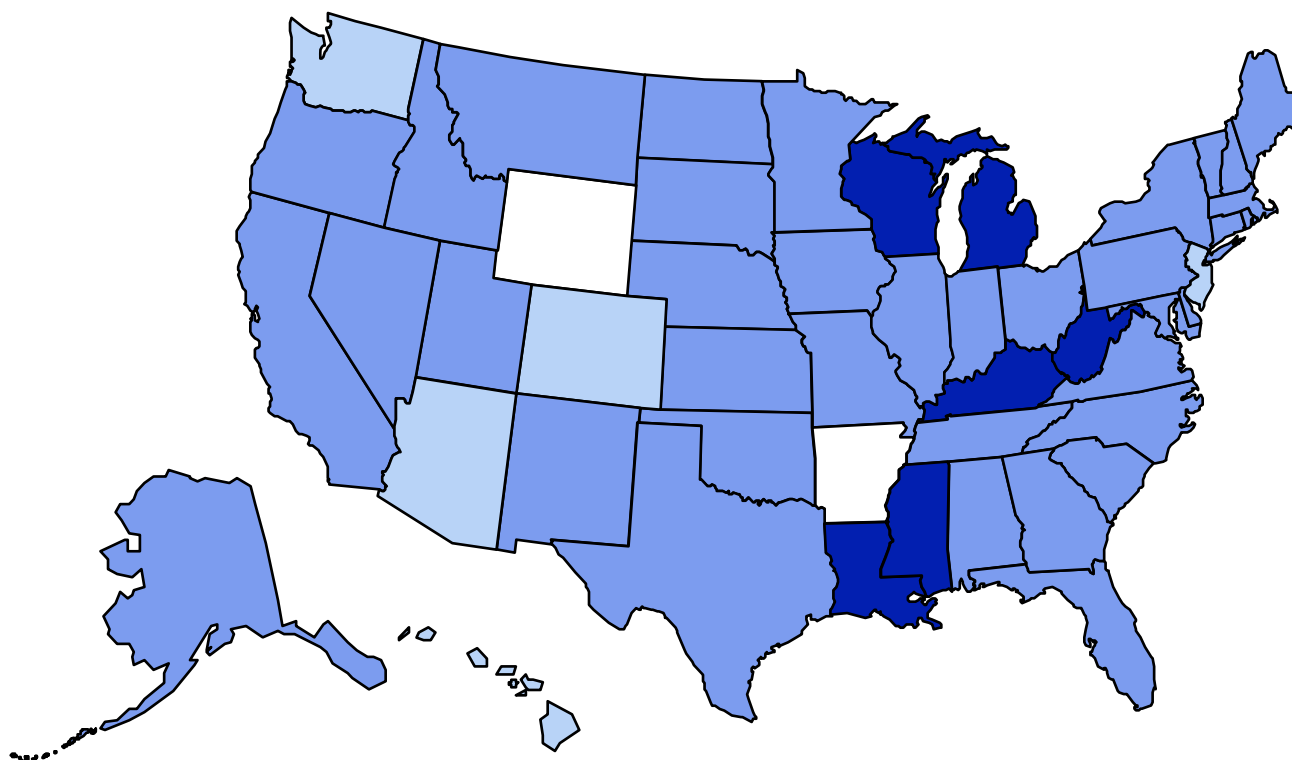


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 1992

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

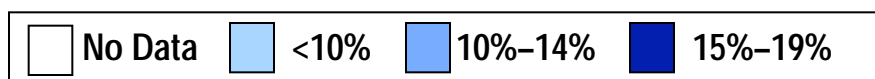
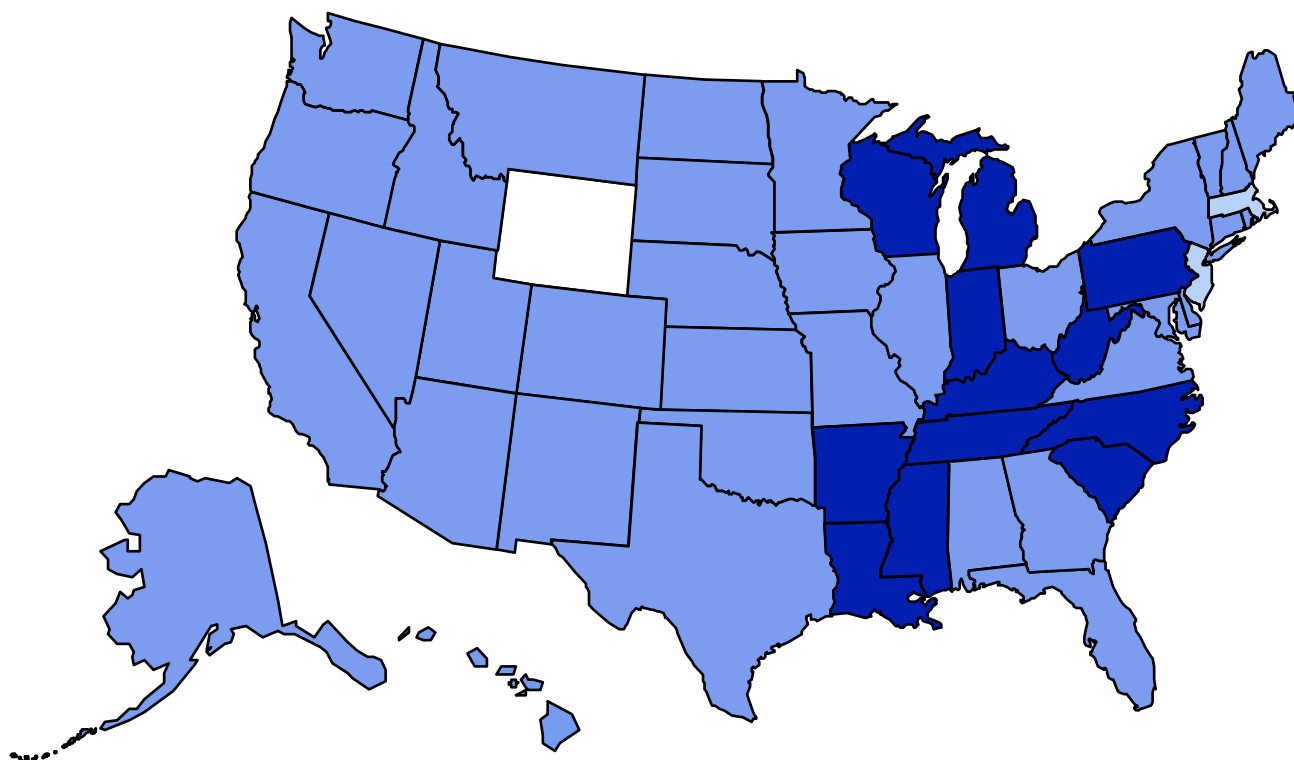


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 1993

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

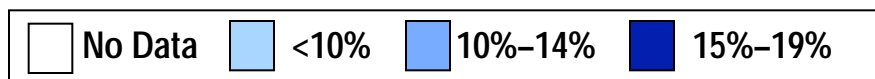
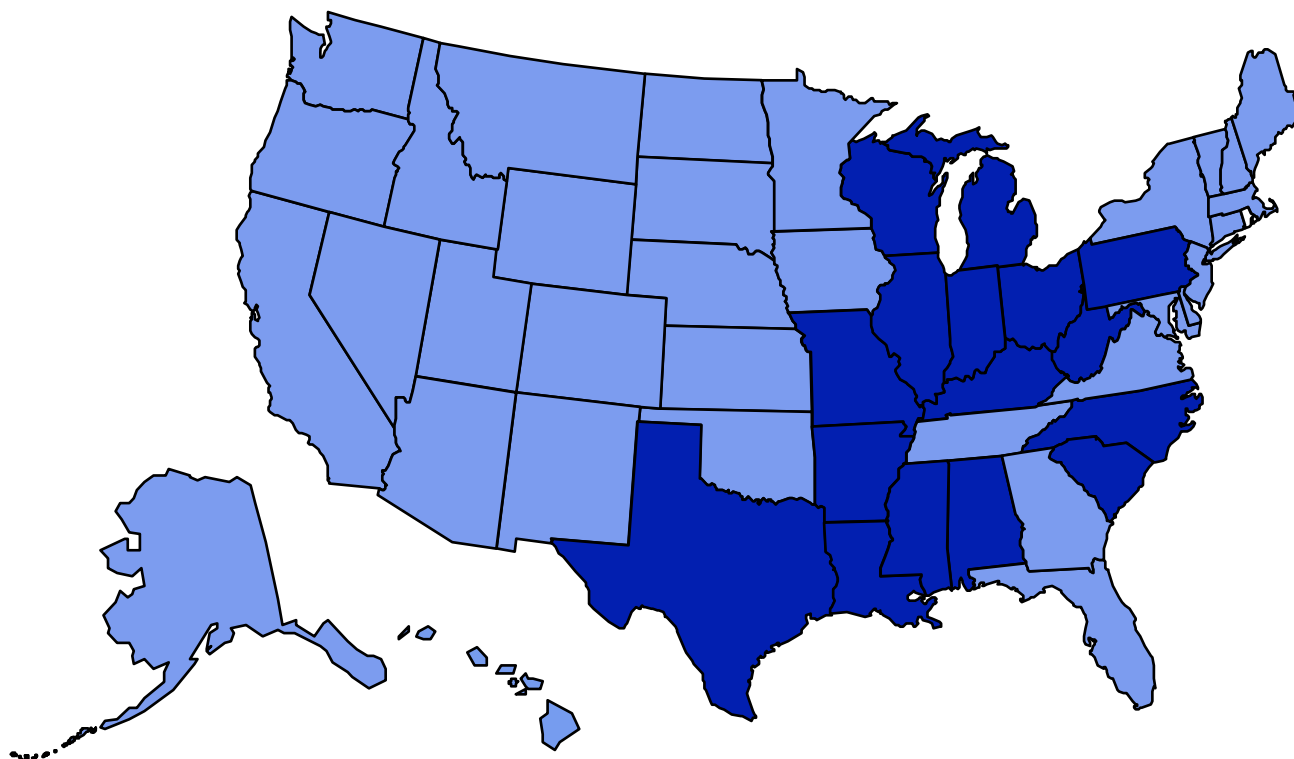


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 1994

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

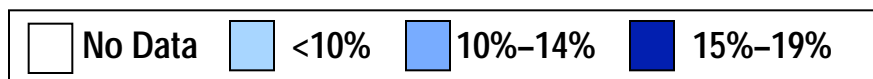
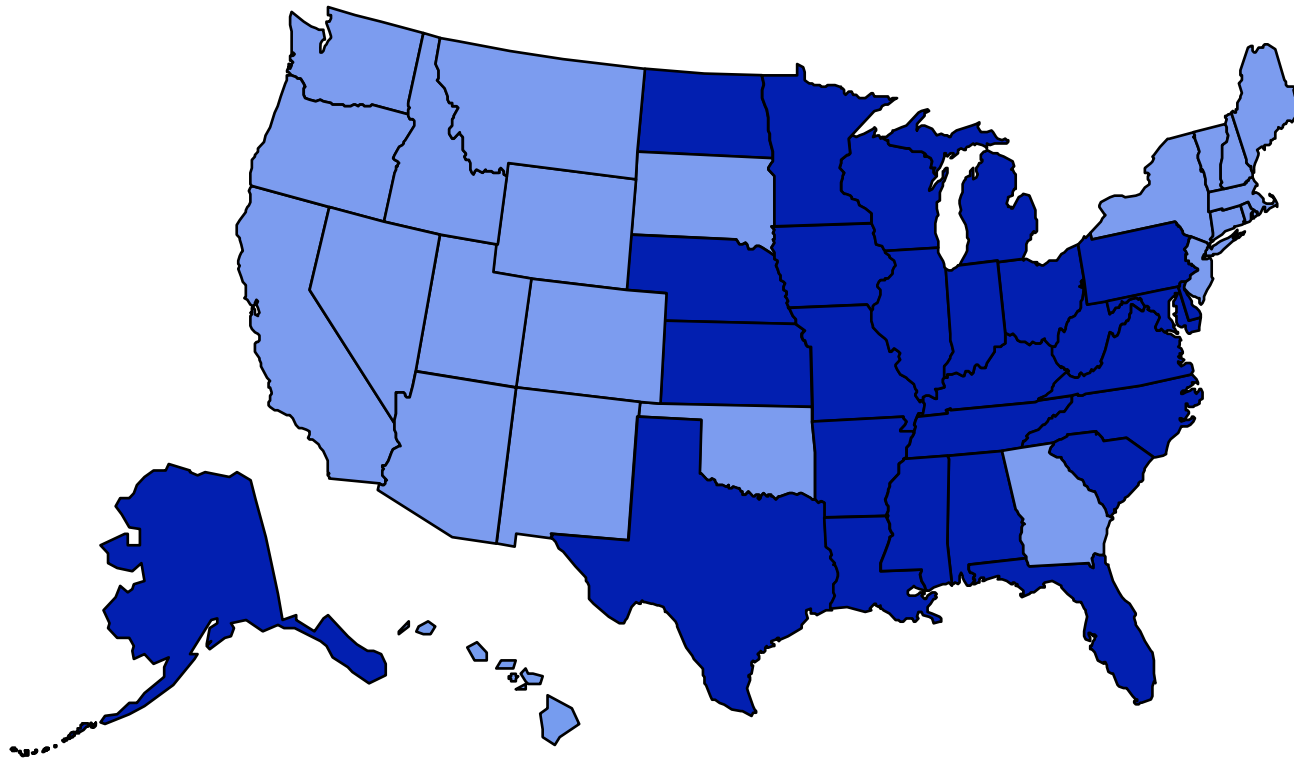


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 1995

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

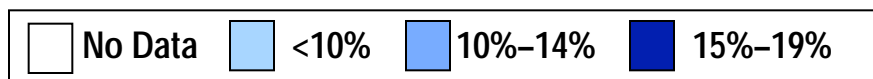
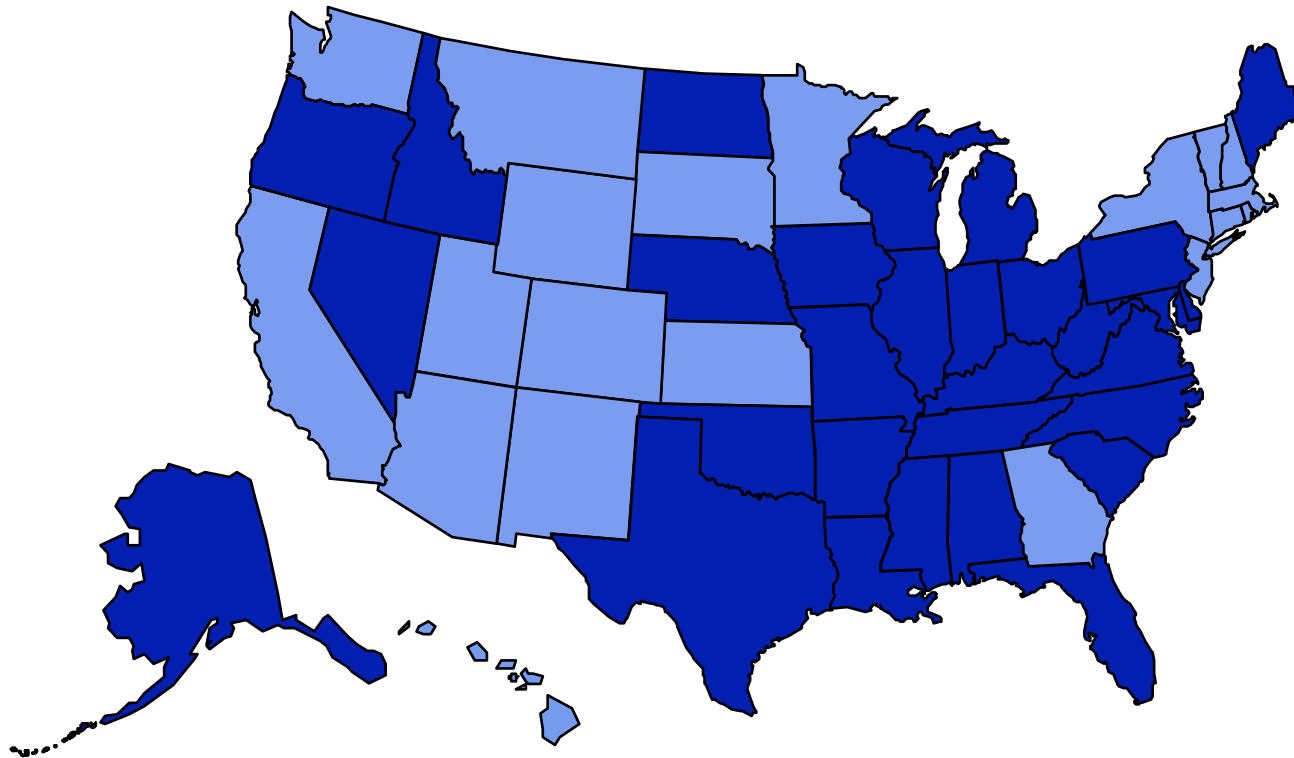


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 1996

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

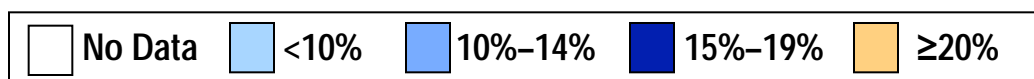
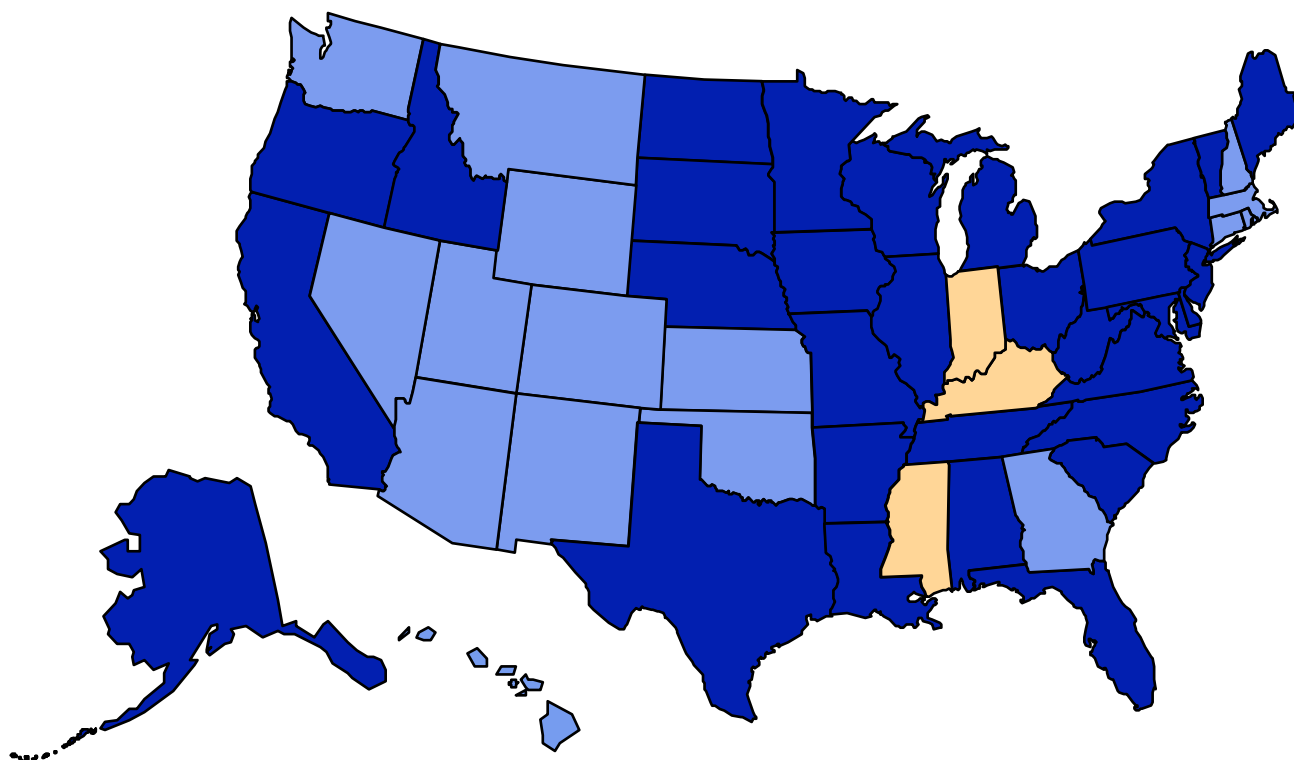


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 1997

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

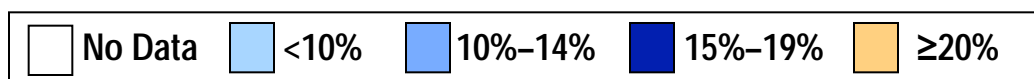
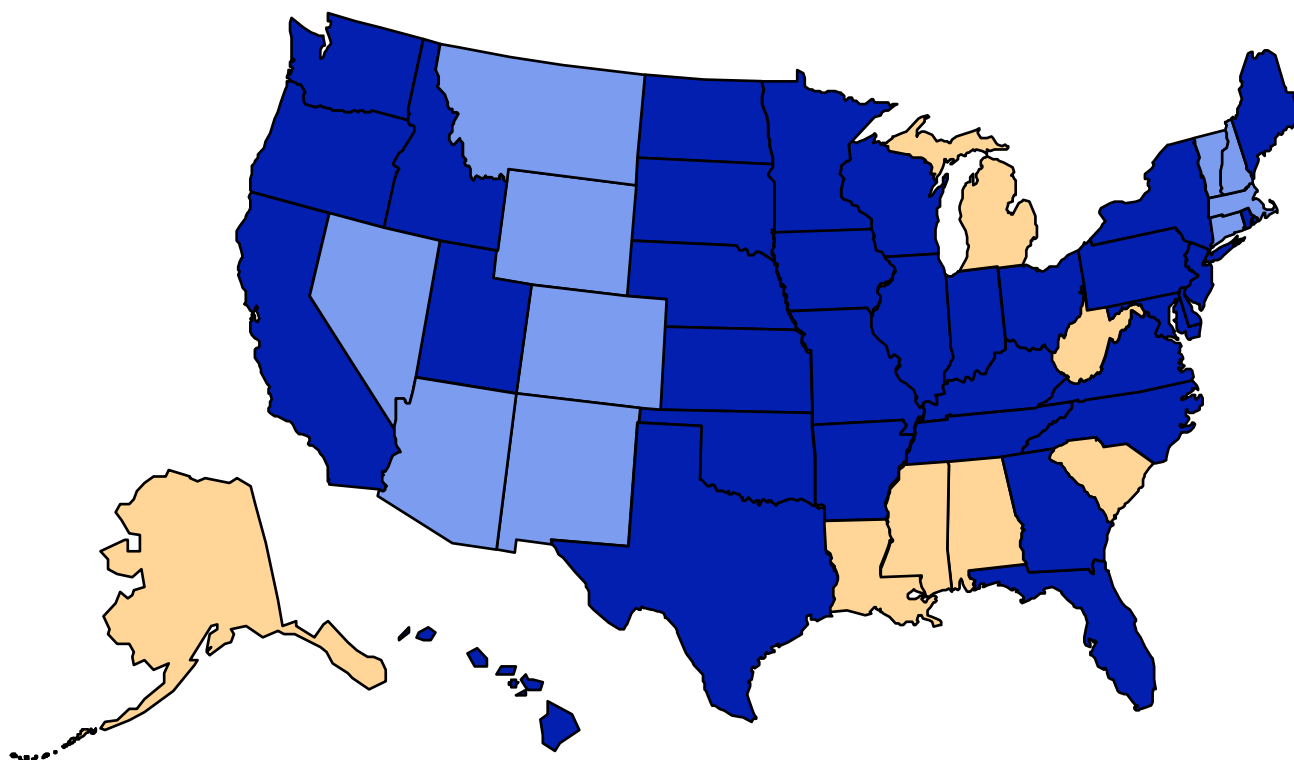


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 1998

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

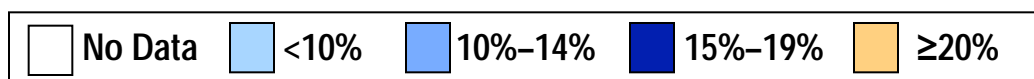
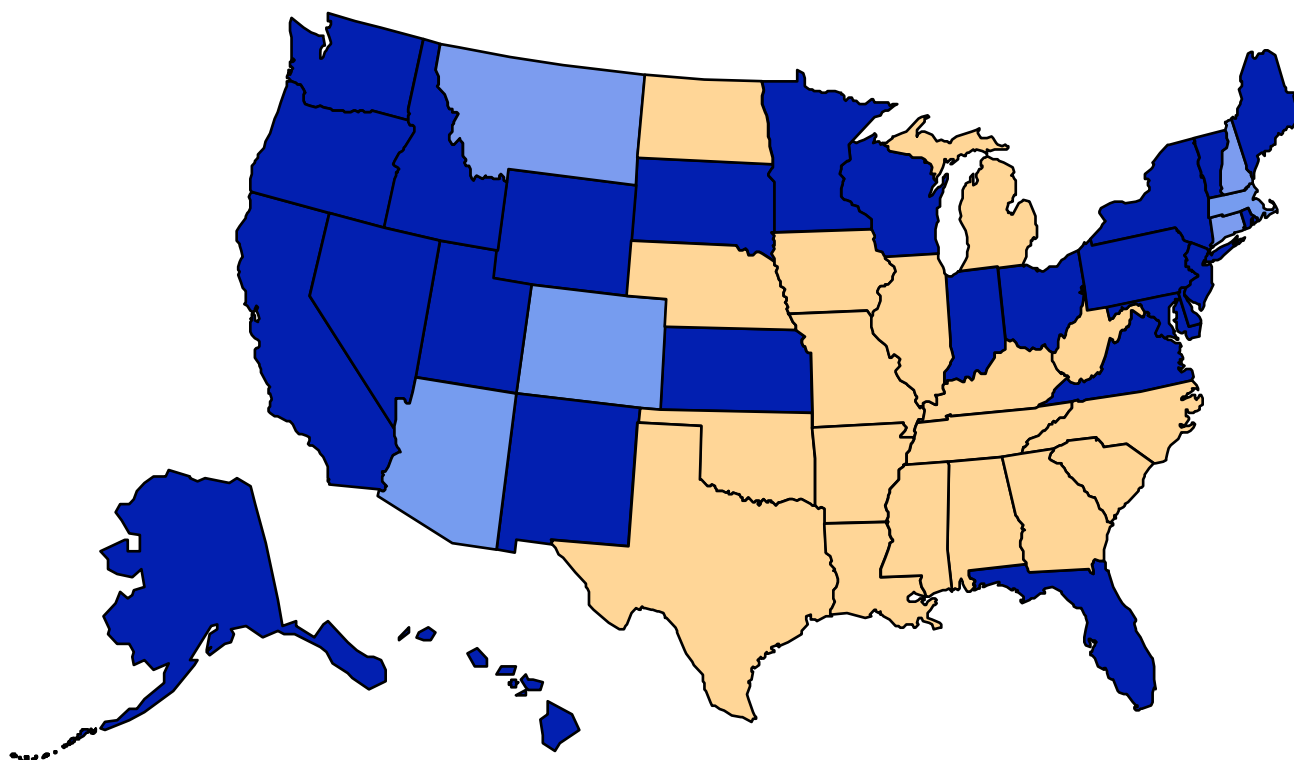


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 1999

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

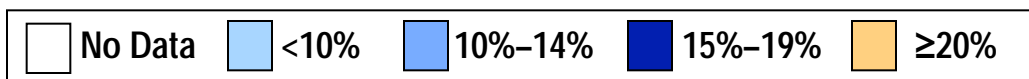
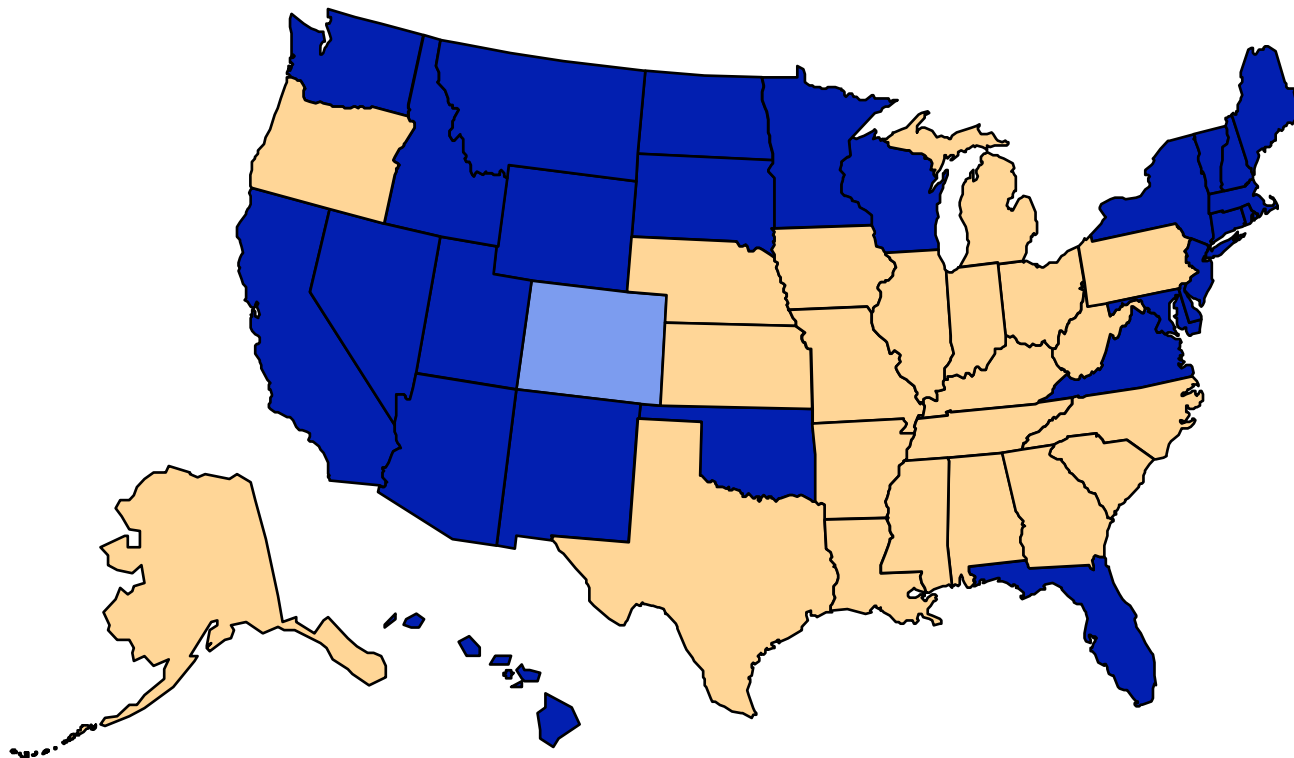


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 2000

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

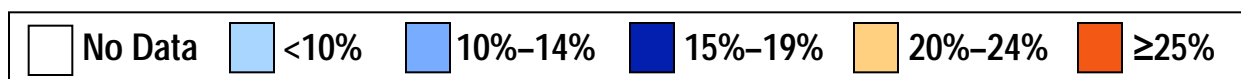
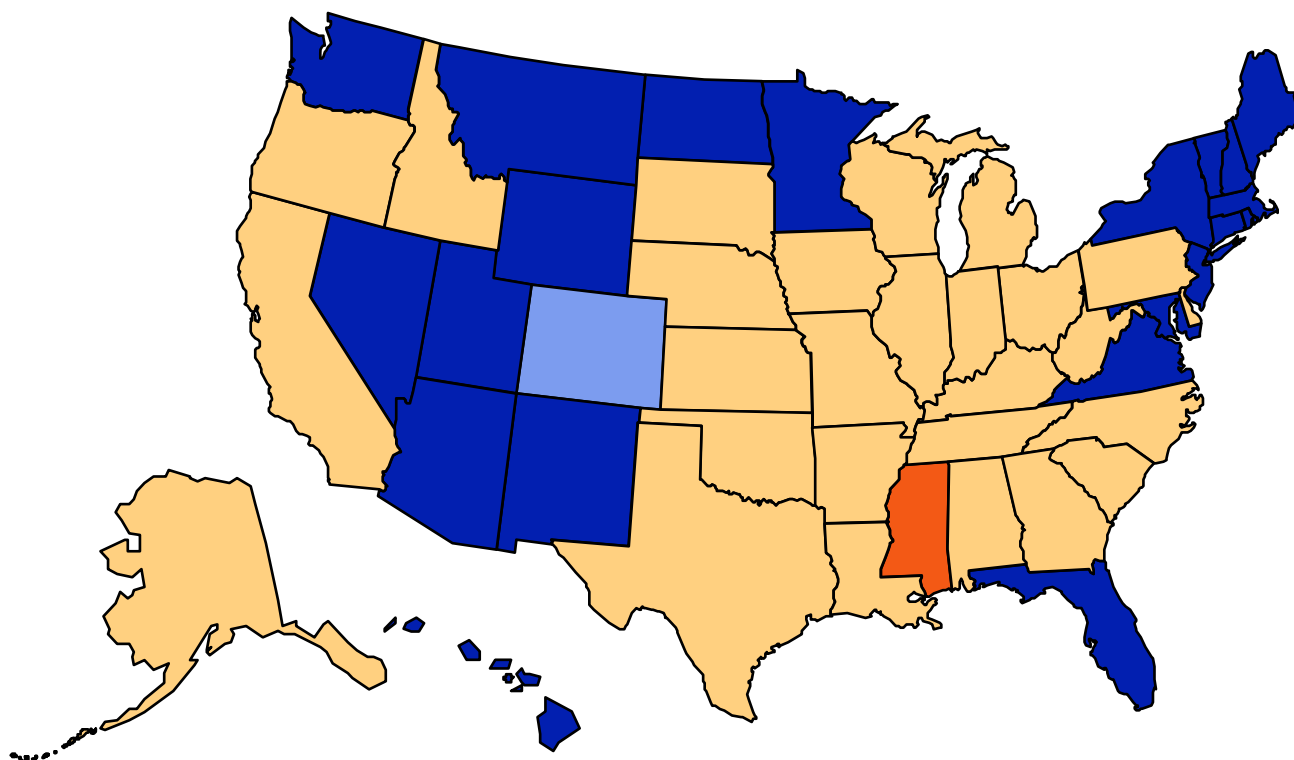


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 2001

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

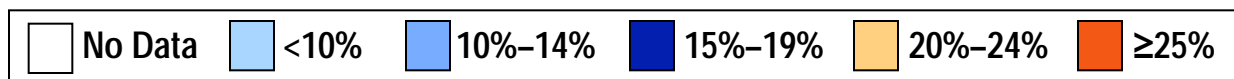
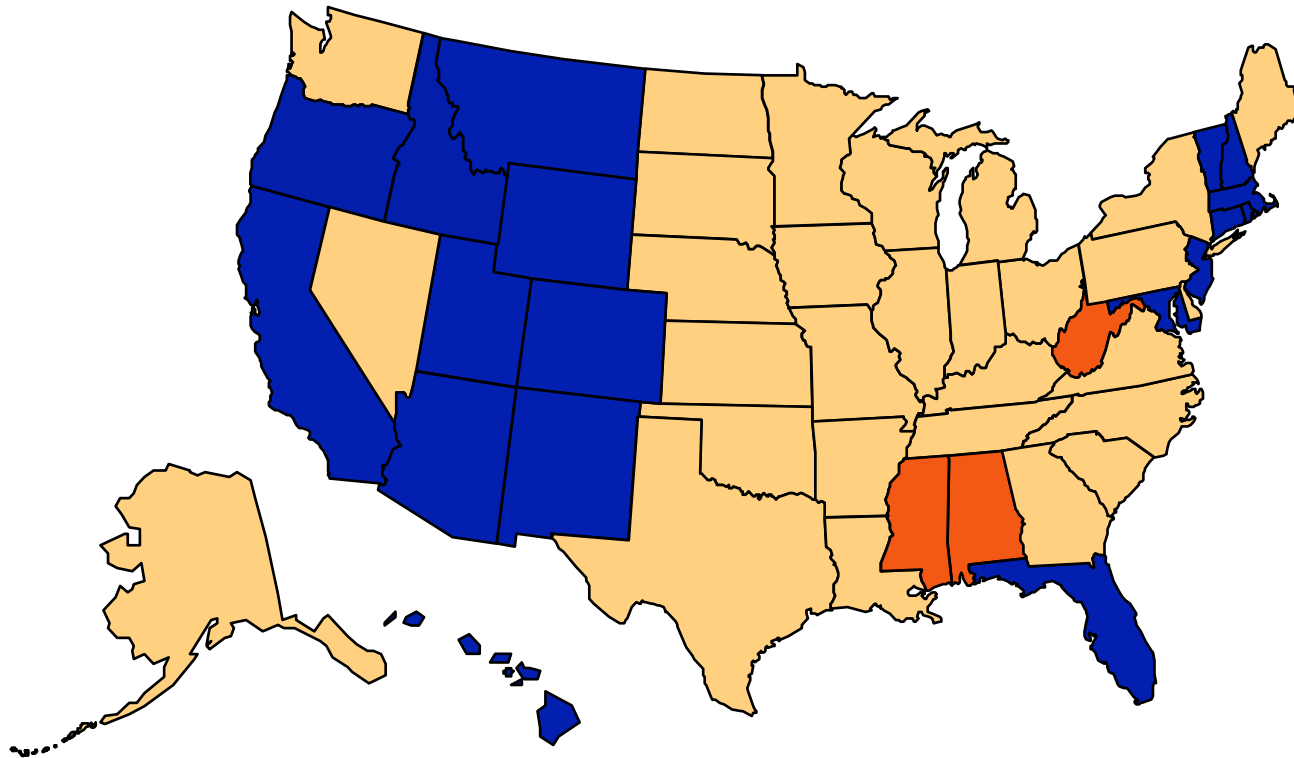


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 2002

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

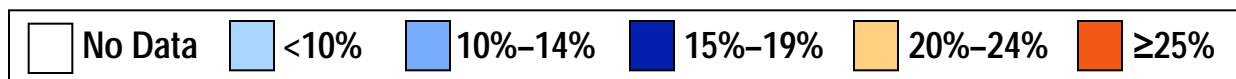
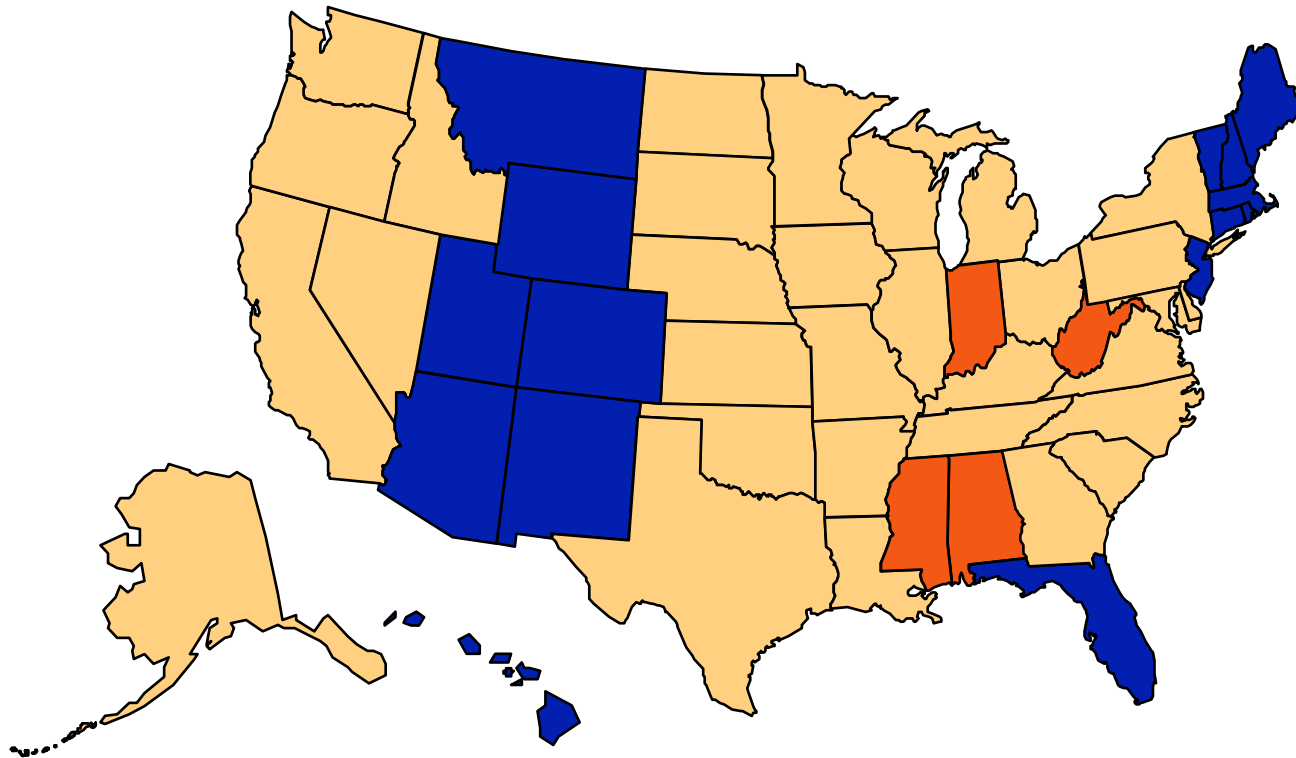


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 2003

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

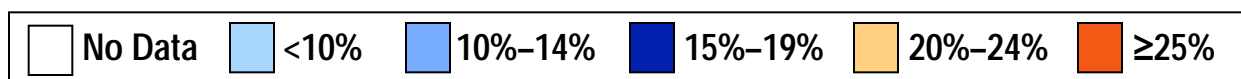
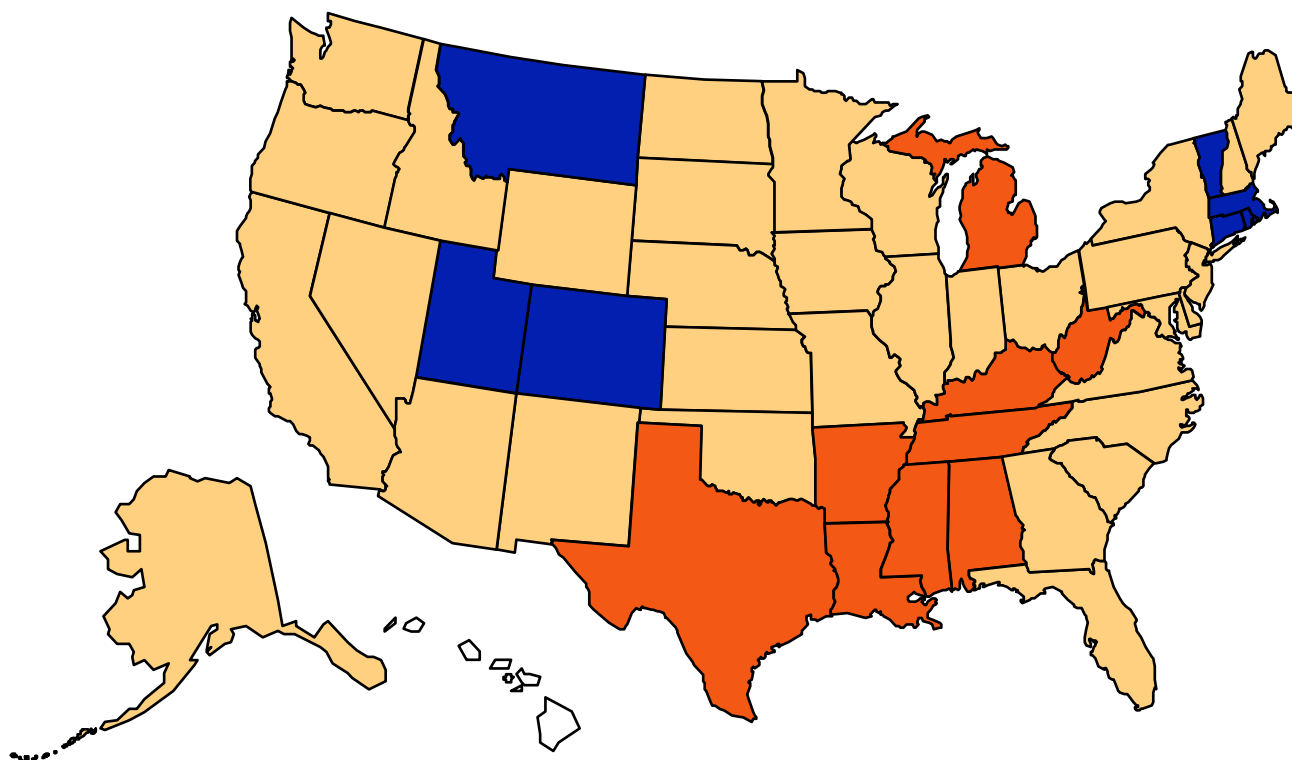


Source: CDC Behavioral Risk Factor Surveillance System.

Obesity Trends* Among U.S. Adults

BRFSS, 2004

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

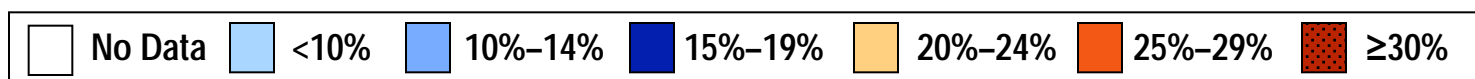
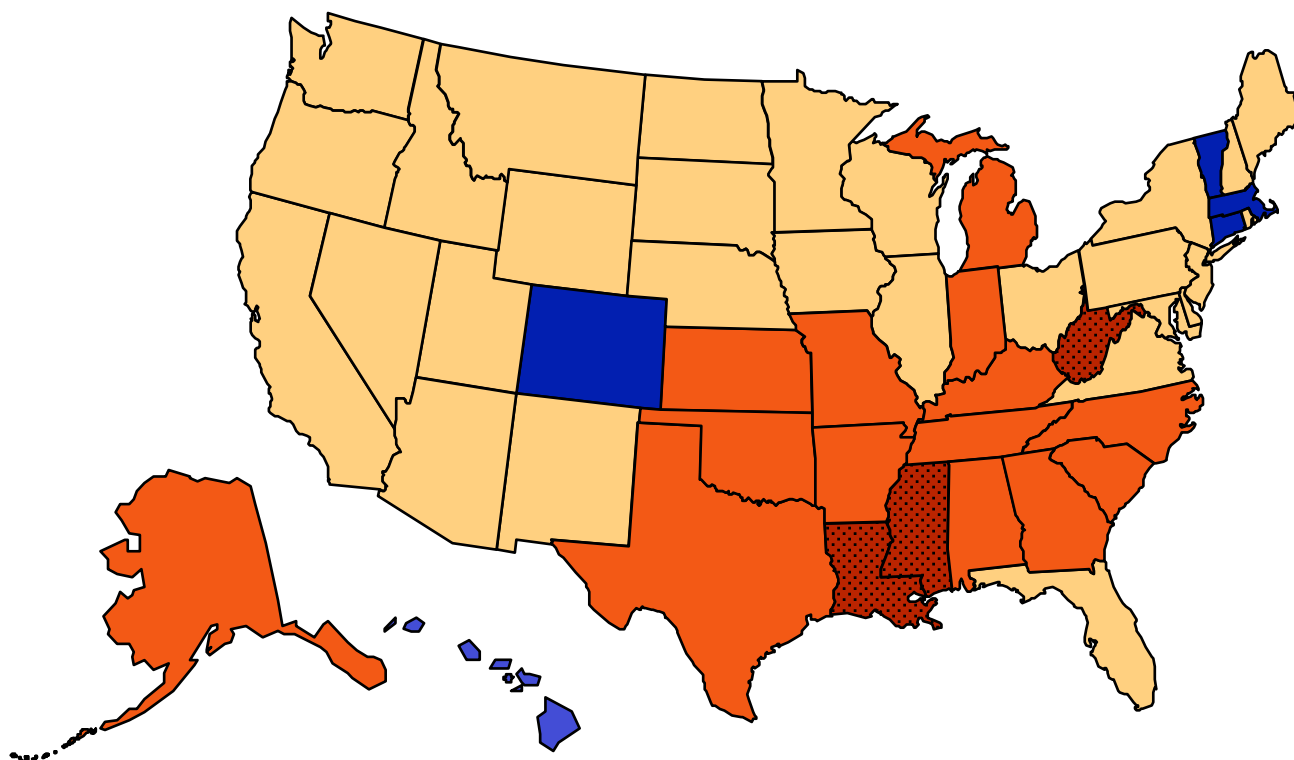


Source: Behavioral Risk Factor Surveillance System, CDC.

Obesity Trends* Among U.S. Adults

BRFSS, 2005

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

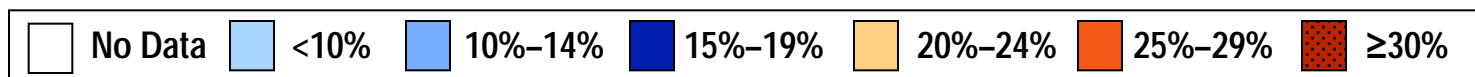
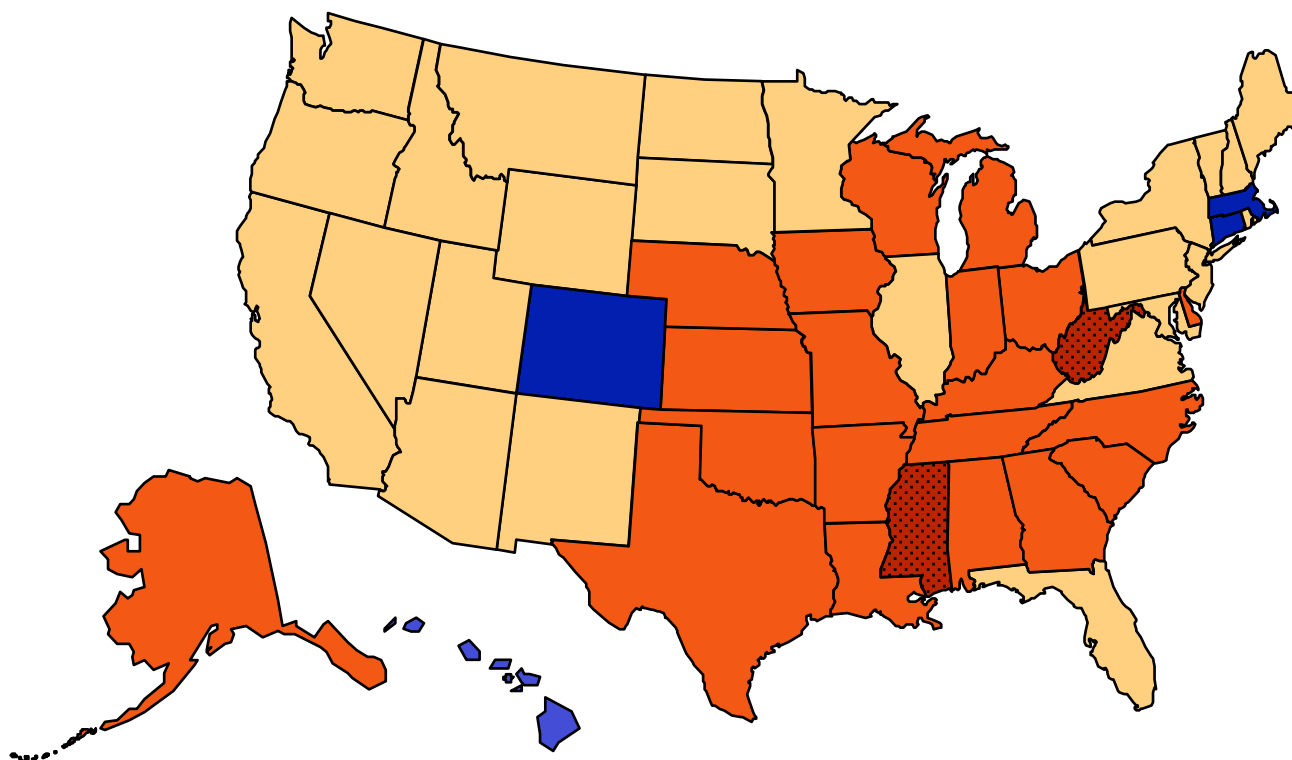


Source: Behavioral Risk Factor Surveillance System, CDC.

Obesity Trends* Among U.S. Adults

BRFSS, 2006

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

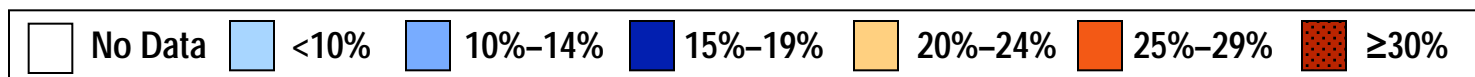
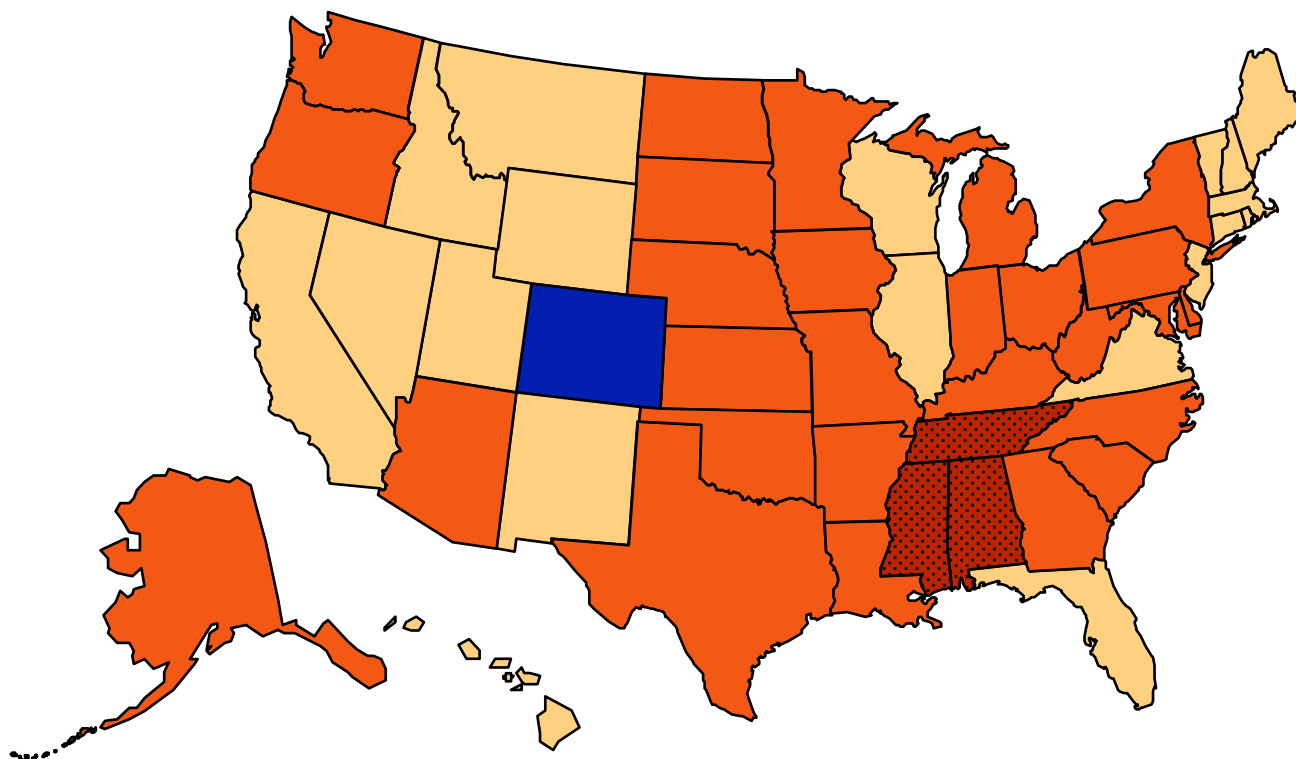


Source: Behavioral Risk Factor Surveillance System, CDC.

Obesity Trends* Among U.S. Adults

BRFSS, 2007

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

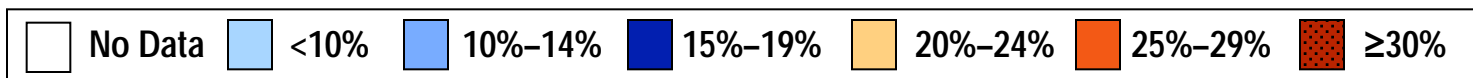
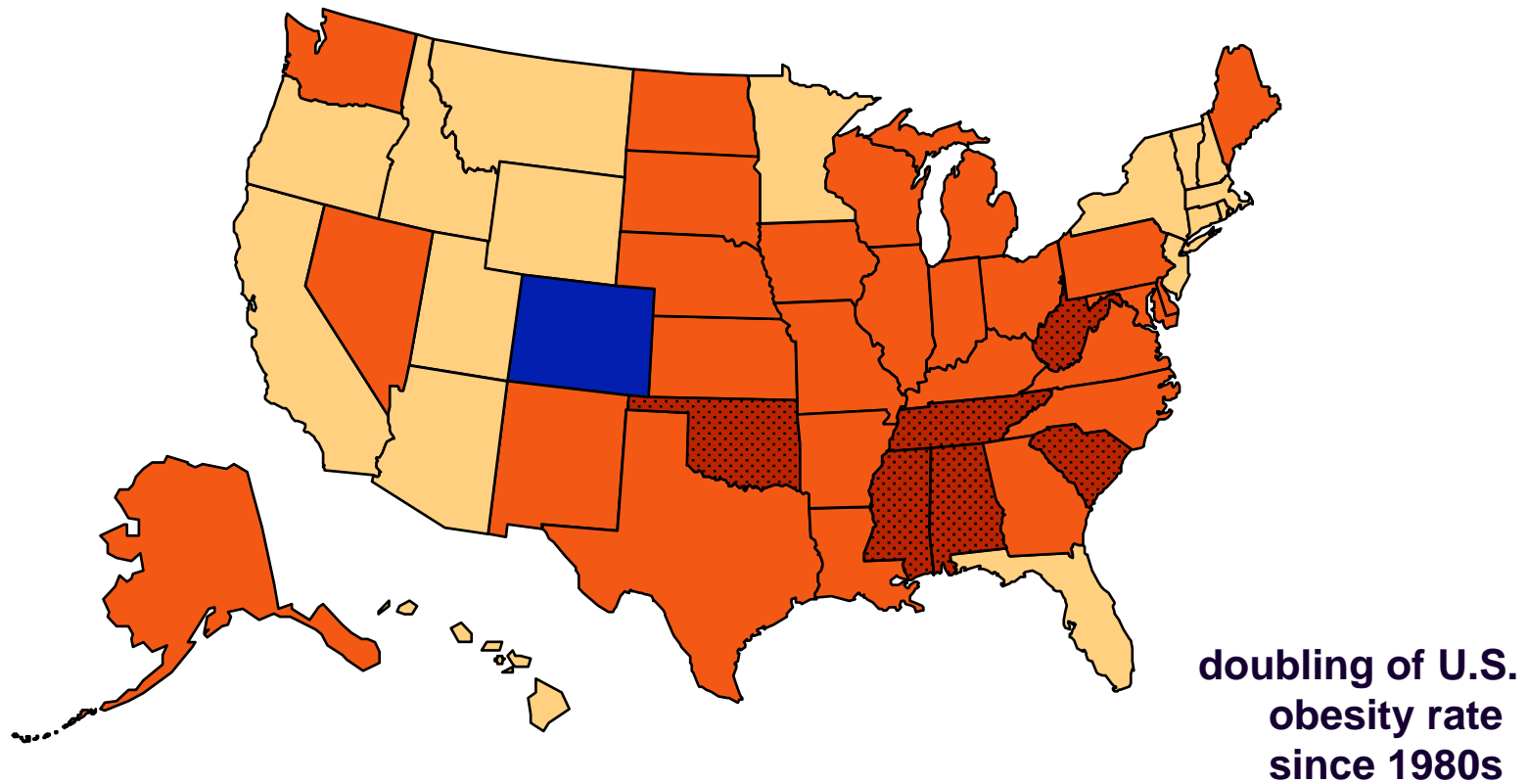


Source: Behavioral Risk Factor Surveillance System, CDC.

Obesity Trends* Among U.S. Adults

BRFSS, 2008

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



Source: Behavioral Risk Factor Surveillance System, CDC.



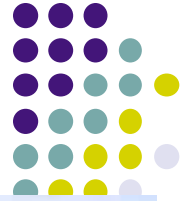
• CANINE CONSTITUTIONAL



Tom Saville / Chicago II

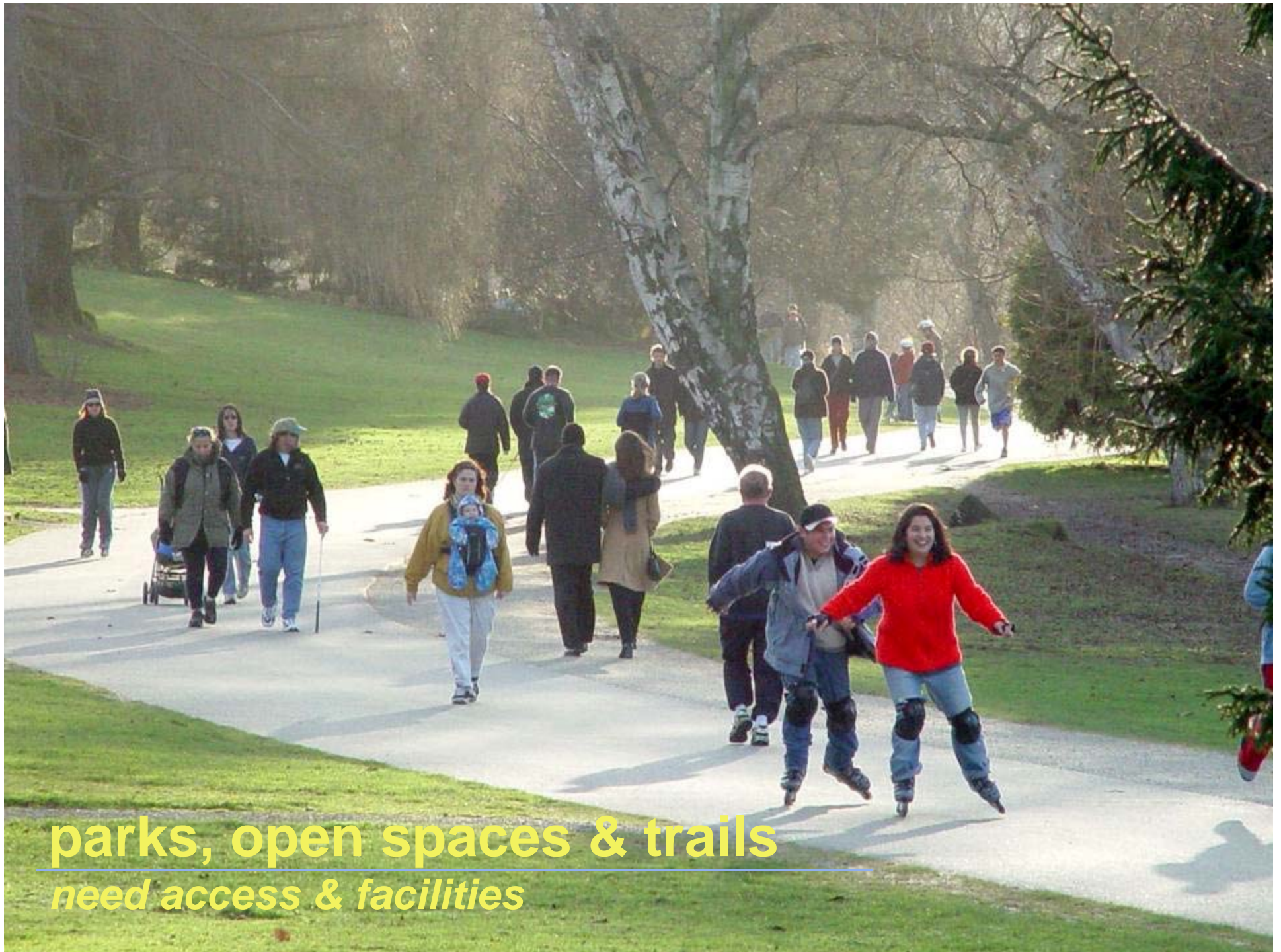
A brisk walk in the park keeps Macey II in shape between dog shows. His owner, Columbus resident Cathy Stumbo, got up early

to give her 3-year-old Doberman his regular workout. They typically log 15 miles in Berliners Park.





Durham, NC



parks, open spaces & trails
need access & facilities



make room for pedestrians
+ walk to school, Naderi et al. 2008, ITE Jrnl



walkability = quality of place!

Nature, Human Health & Walkable Neighborhoods



- Environments: Neighborhood Streets (Tokyo)
 - tree – lined streets
 - nearby parks
 - vs. barren streetscapes
- Outcomes: Elderly People & Walking
 - less illness
 - lower mortality rate

Takano, Nakamura, Watanabe. 2002.
Journal of Epidemiology & Community Health

Urban Green Infrastructure

- ecosystem services
- research evidence
- human health & well being



**investment
in human
capital**



Human Dimensions of Urban Forestry and Urban Greening

*featuring research on peoples'
perceptions and behaviors
regarding nature in cities*



What's New?

Nature and Consumer Environments

Research about how the urban forest influences business district visitors.

Trees and Transportation

Studies on the value of having quality landscapes in urban roadsides.

Civic Ecology

Studies of human behaviors and benefits when people are active in the environment.

Policy and Planning

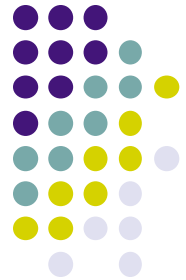
Integrating urban greening science with community change.

Urban Forestry and Human Benefits

More resources, studies and links . . .

Research Director
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