Europe's 2050 environment agenda
A transitions perspective

Wilson Center, Washington DC, October 30, 2014

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European Environment Agency (EEA)

European Environment Agency

Short introduction to the EEA

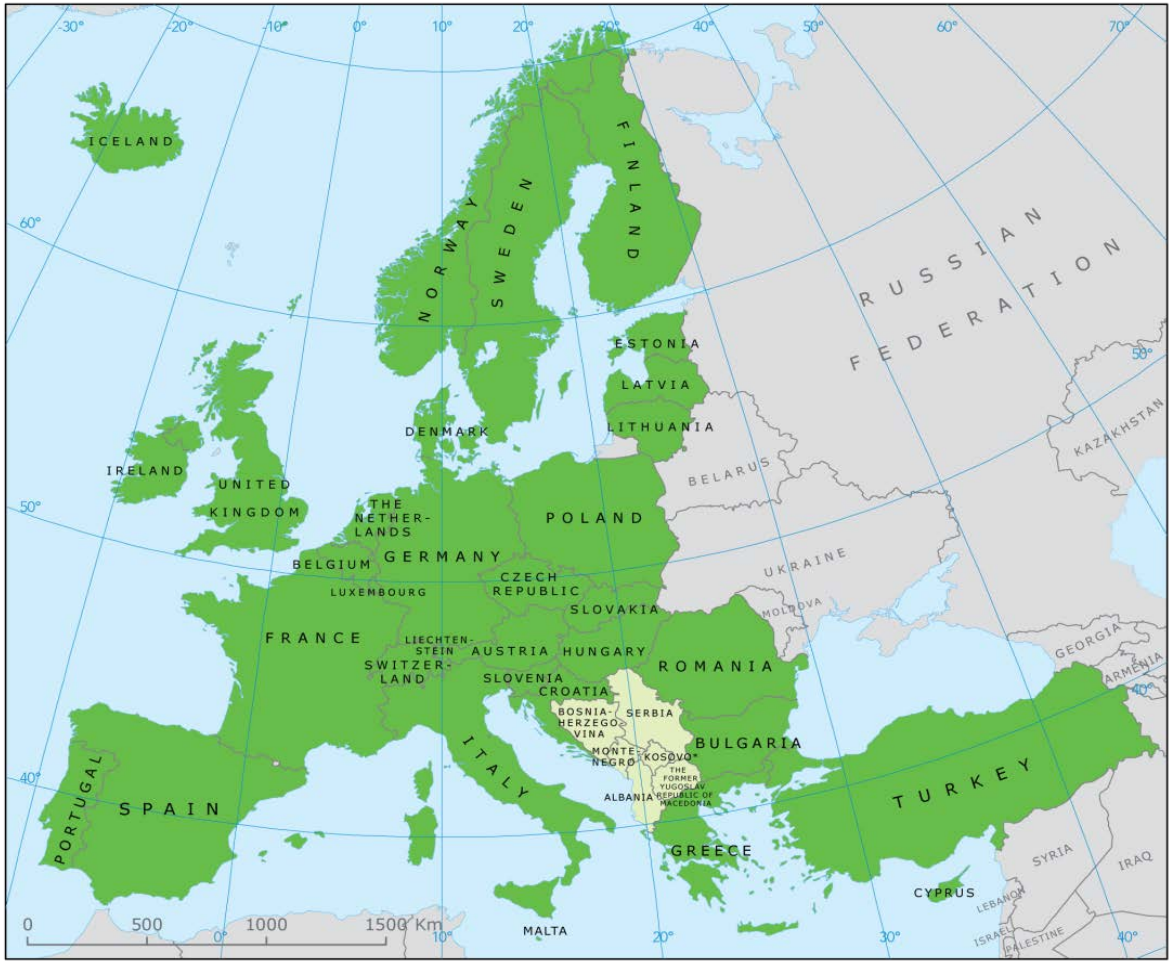
What?

The provision of relevant, reliable, timely, and targeted and information to policy-making agents and the public.

Why?

To help achieve significant and measurable improvements in Europe's environment and to support sustainable development.

33 member countries



EEA coverage

Member countries

Cooperating countries

*Kosovo under UNSCR 1244/99

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Key goals – EEA Work Programme 2014-2018

- To be the prime source of knowledge at European level **informing the implementation of** European and national **environment and climate policies**;

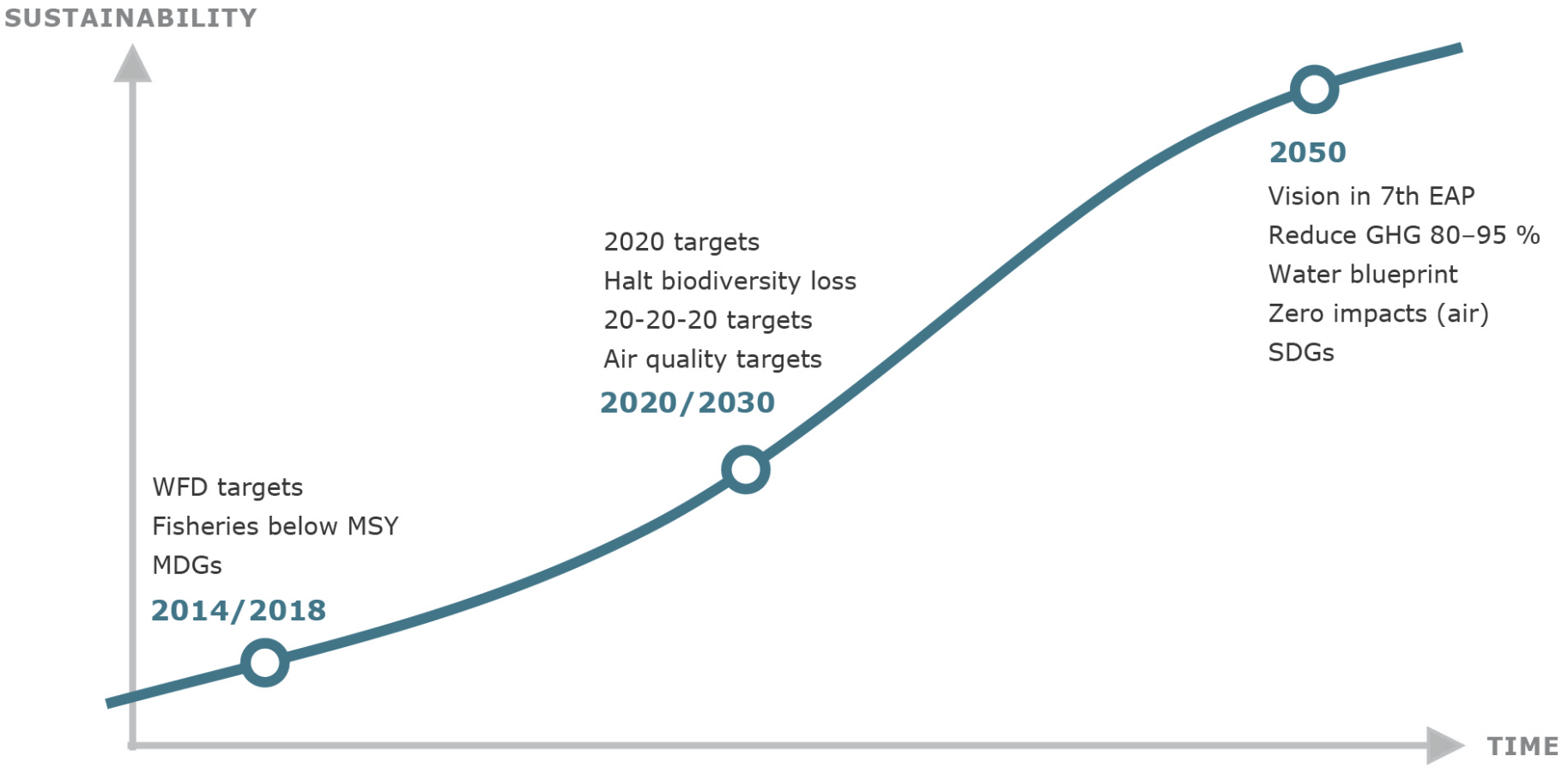
- To be a leading knowledge centre on the knowledge needed to **support long term transition** challenges and objectives;

- To be the lead organisation at European level facilitating **knowledge-sharing and capacity -building** in the field of environment and climate change.

EEA flagship assessments since 1995: State and outlook of Europe´s environment (SOER)

Increased complexity of problem definition, analysis, and response.

The developing policy framework



2014–2018 Thematic policies timelines and deadlines

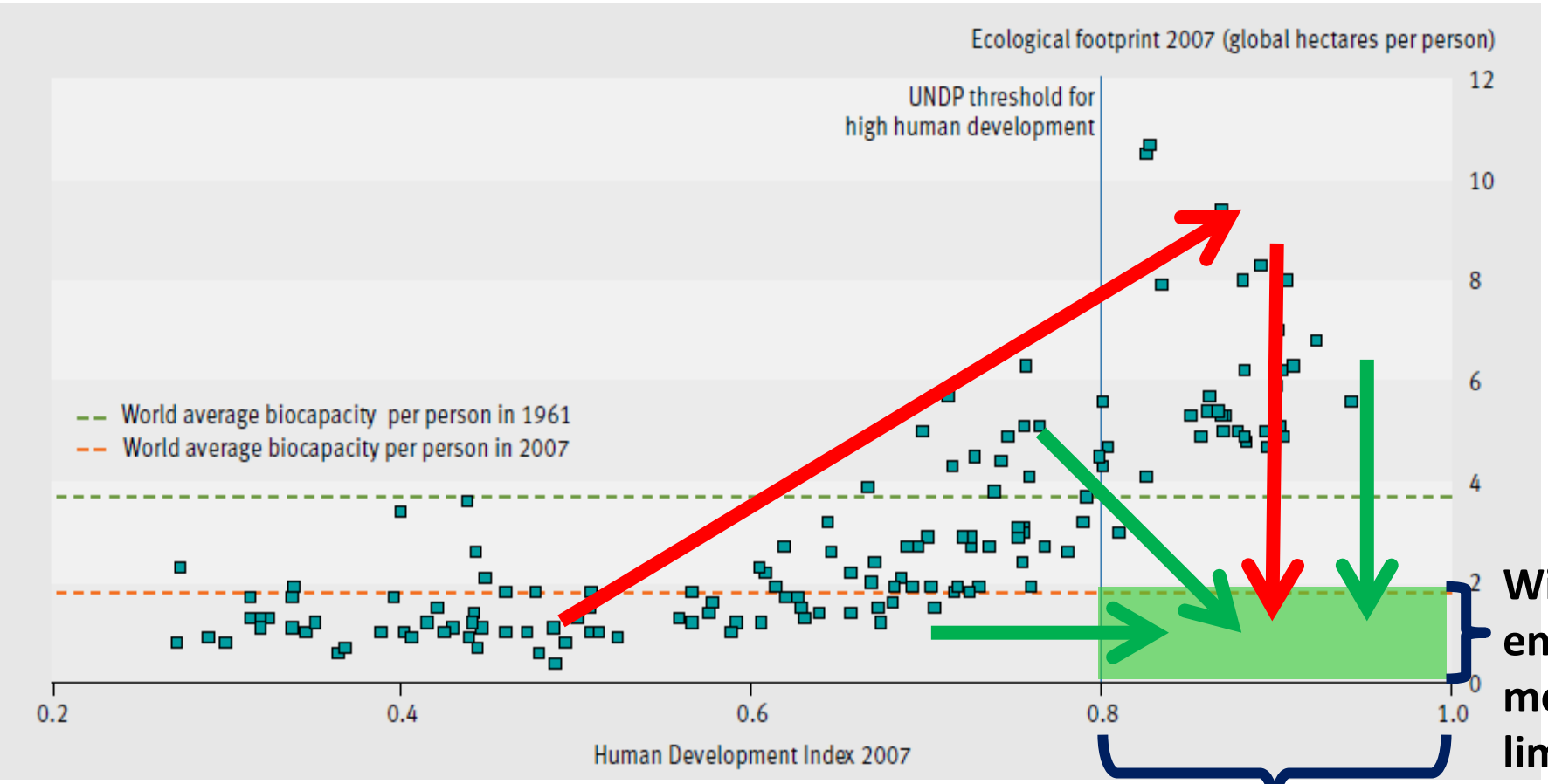
2020/2030 Comprehensive policies (Europe 2020, 7th EAP), or specific targets

2050 Long-term visions and targets with a societal transition perspective

Europe's developing long-term environmental policy agenda

- 2050 as a time horizon
- Important policy innovation
- Post-2008
- Agenda for 'fundamental' change
- Increasingly embedded in EU policies in various domains

Why(1) The twin challenge



UNEP 2012 - GEO5

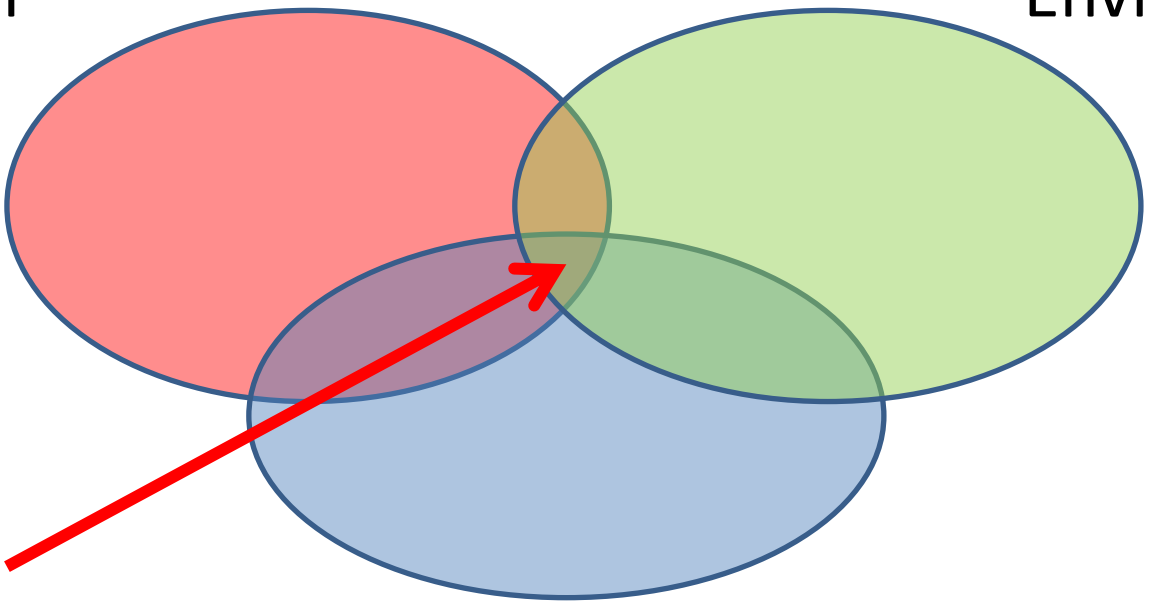
Why(2)? MDG:Our development model appears successful

- The proportion of people living in extreme poverty has been halved at the global level
- The hunger reduction target is within reach
- Over 2 billion people gained access to improved sources of drinking water since 1990
- The proportion of slum dwellers in the cities and metropolises of the developing world is declining

...but 'development' has damaged the environment

- Global emissions of carbon dioxide (CO_2) have increased by more than 46 per cent since 1990
- Nearly one third of marine fish stocks have been over-exploited
- Many species are at risk of extinction, despite an increase in protected areas

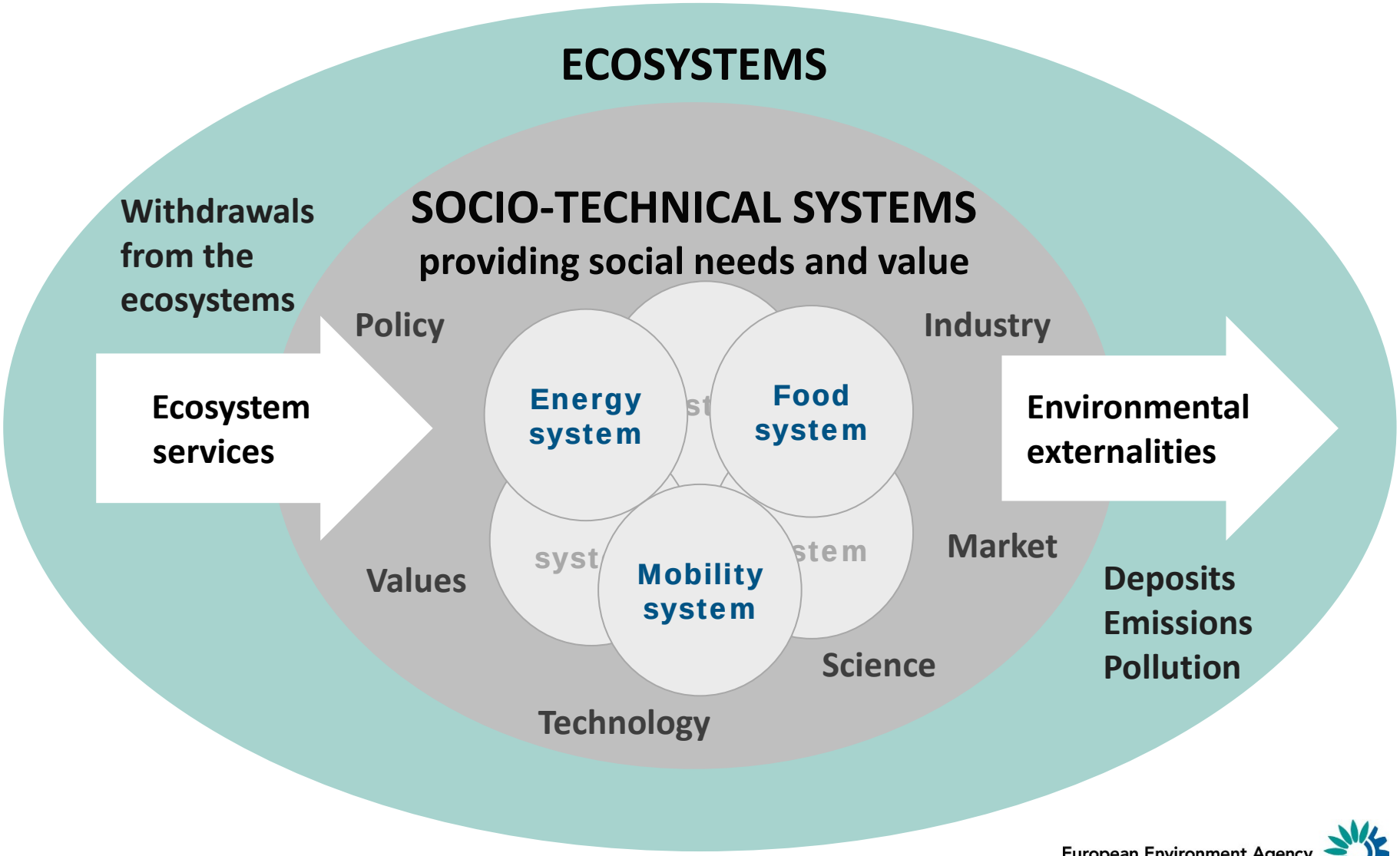
Why(3)? ‘Living well’ within ‘**ecological limits**’



Sustainable development?

Of course not!

Why(3)? Living well within ecological limits (7EAP)



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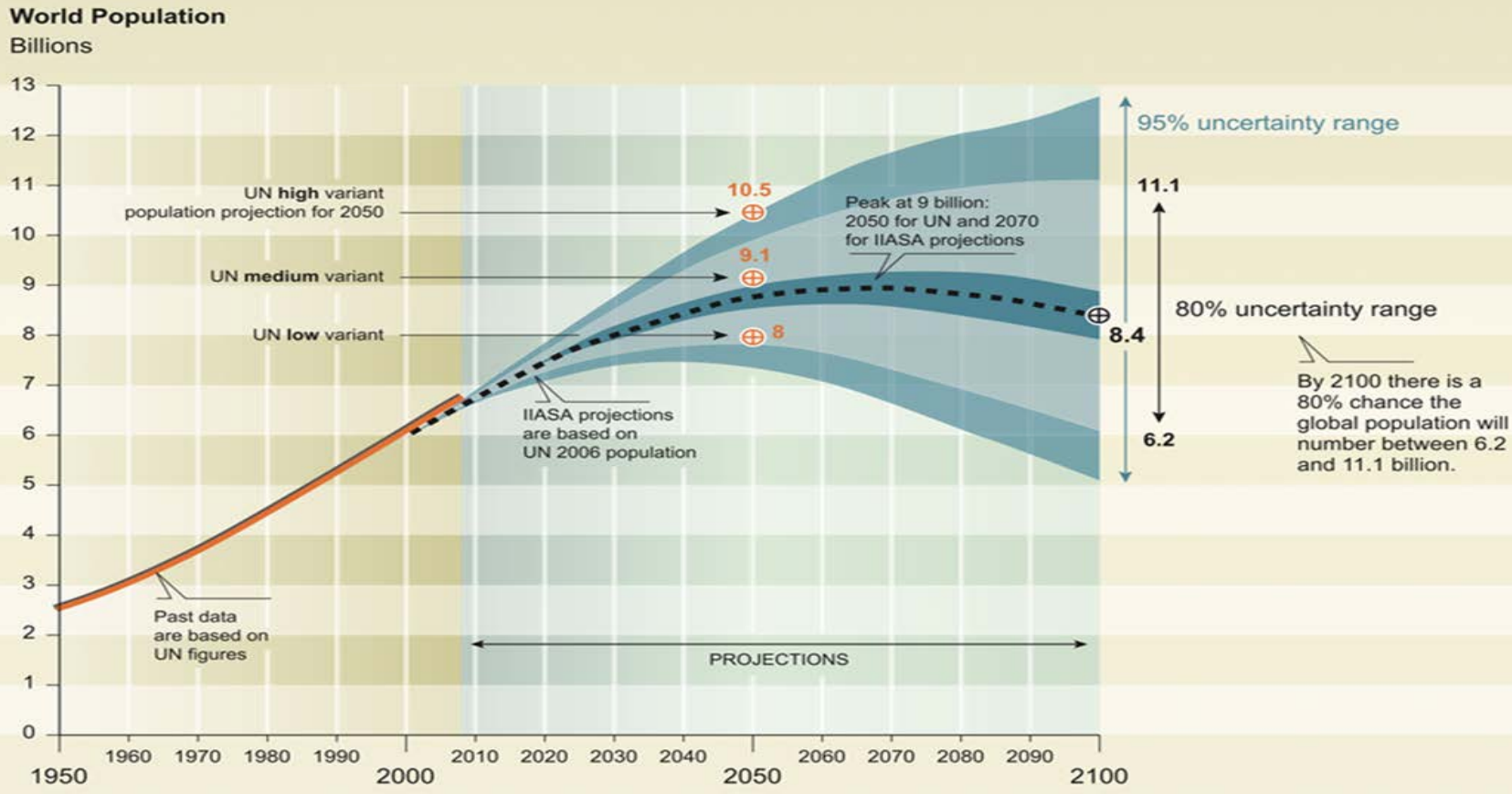
Looking forward towards 2050-2100

Population growth

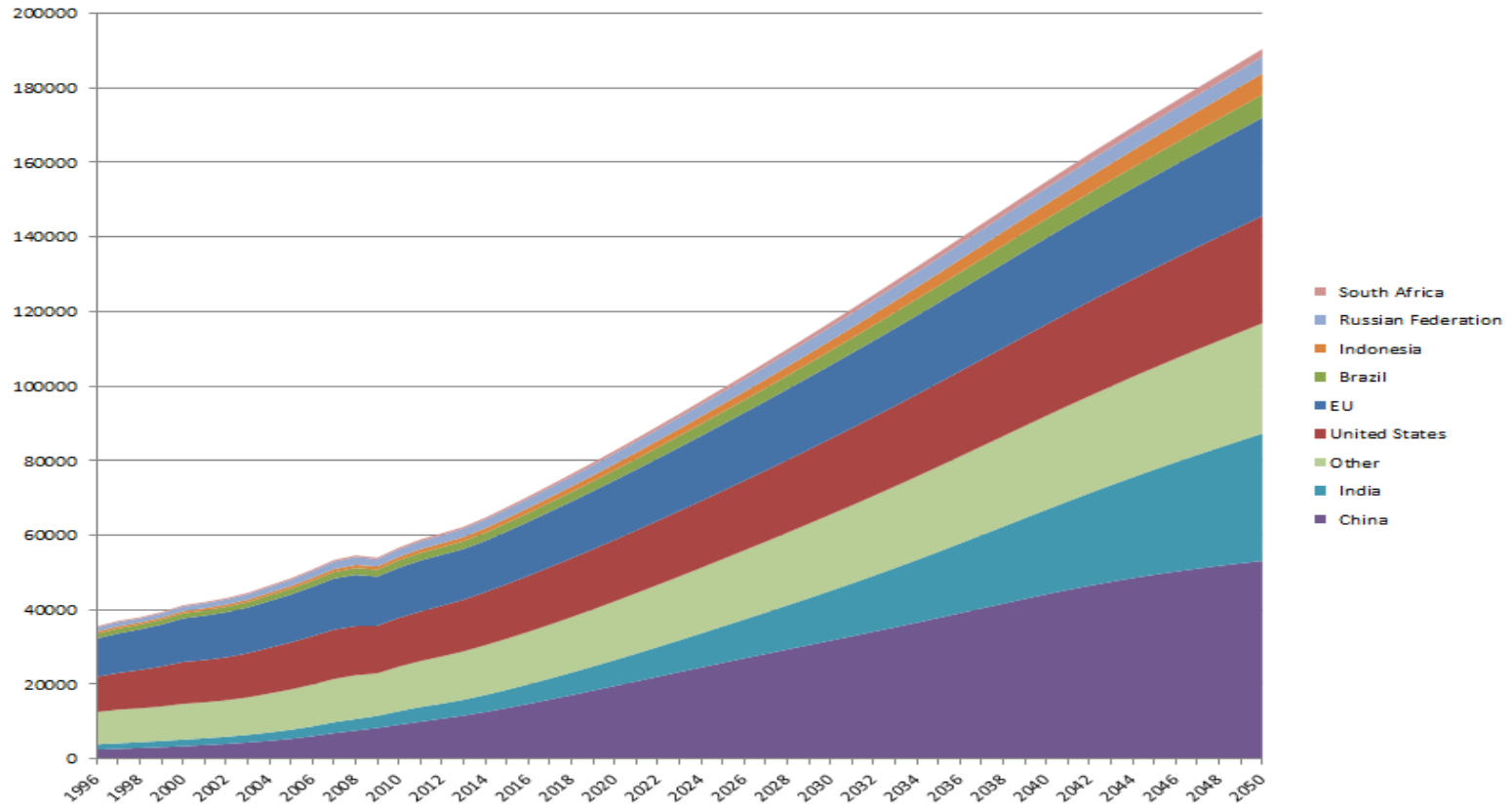


Note: the UN Population Division studies fertility-evolution scenarios to produce high, medium and low variant figures, whereas the IIASA bases its calculations on assumptions for fertility, mortality and migration (the latter only affecting regional projections).

Sources: Lutz W., Sanderson W. and Scherbov S., *2007 Probabilistic World Population Projections*, International Institute for Applied Systems Analysis (IIASA); UN Population Division, *World Population Prospects: The 2008 Revision*.

Continued economic growth

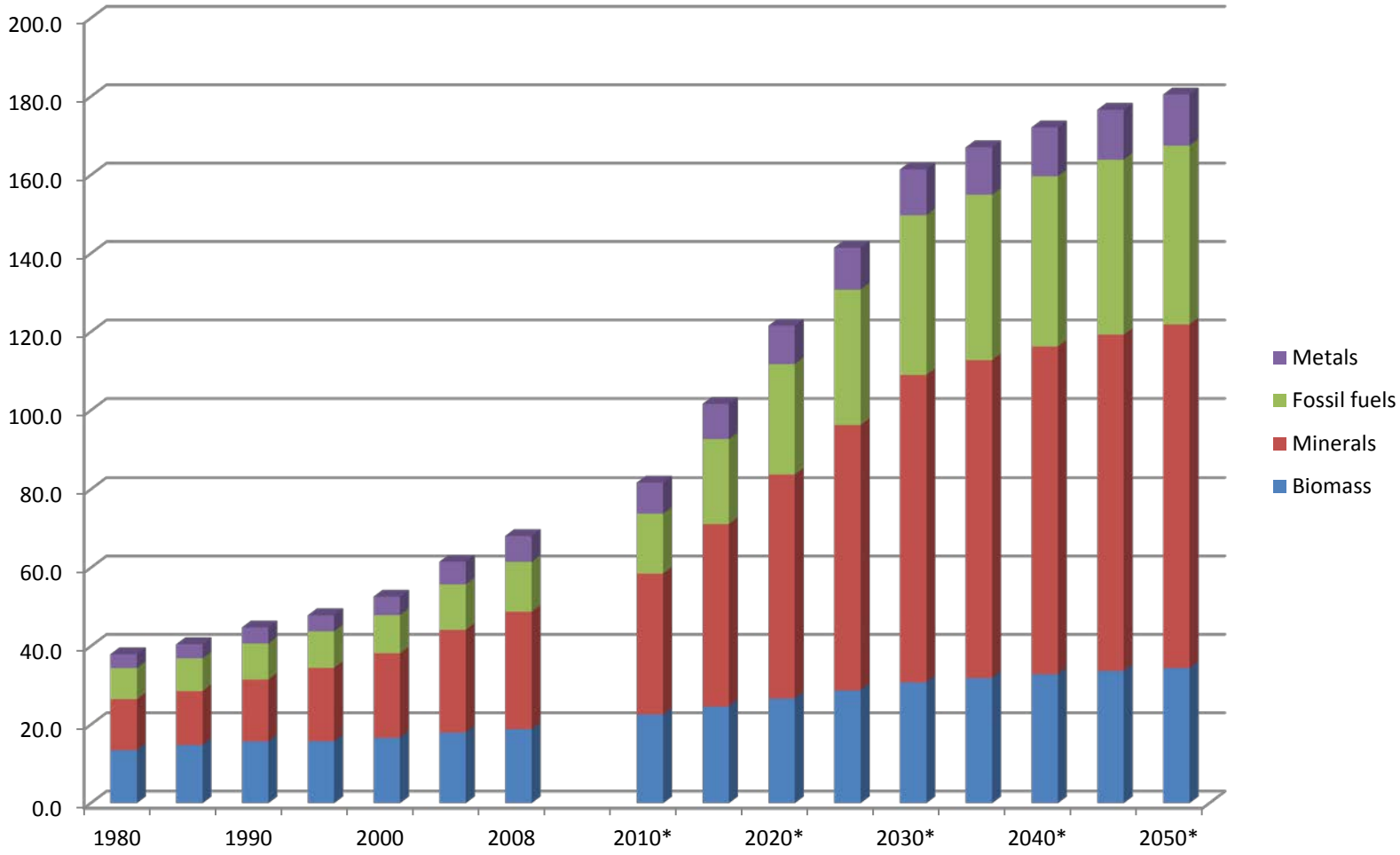
Past and projected global economic output (2005 USD PPP), 1996–2050



Note: gross domestic product expressed in billion 2005 US dollars at purchasing power parity.

Source: OECD 2013: 'All Statistics - OECD iLibrary'.

Resource use



Note: *projection

SERI (2013): SERI Global Material Flows Database. 2013 Edition.
Available at: www.materialflows.net

Systems thinking and transitions

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Point of departure

Societal challenges as ‘persistent problems’ (Loorbach 2007)

e.g. Climate change, biodiversity loss, ecosystem degradation, resource depletion

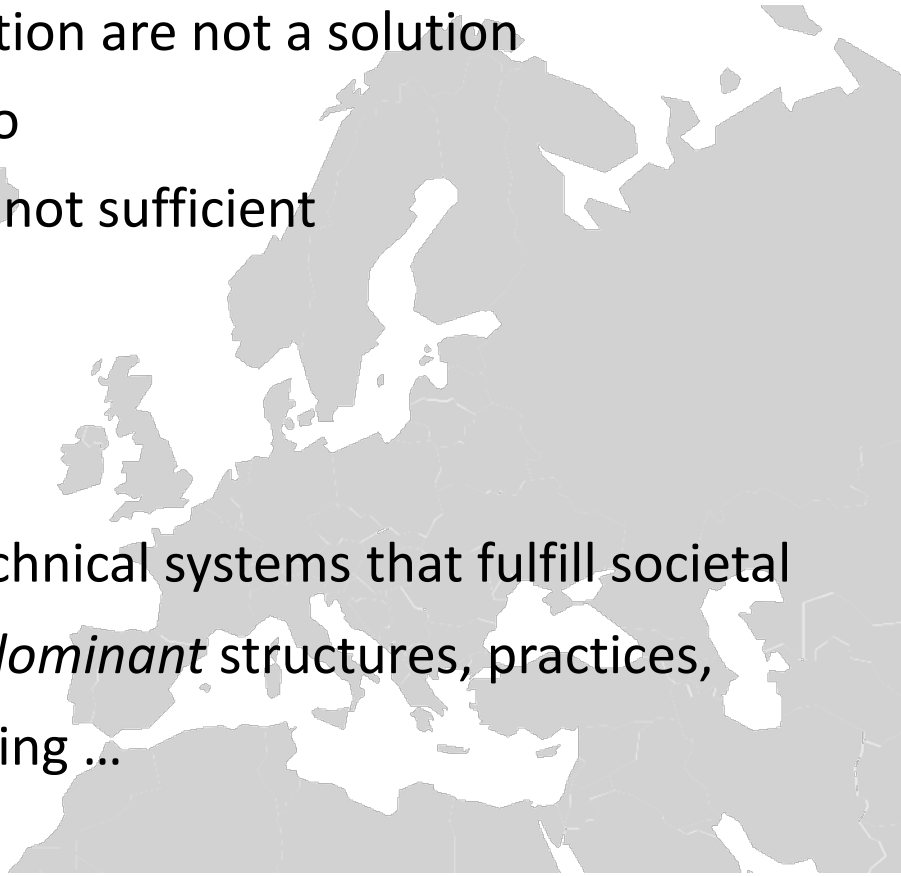
- complex
- interdependent
- uncertain
- deeply embedded in societal structures
- difficult to formulate solutions, manage or steer




The need for transitions

Persistent problems demand fundamental solutions

- Regular policy offers no solutions
- Market creation and commodification are not a solution
- The efficiency paradigm will not do
- So, incremental institutionalism is not sufficient



=> **Transitions**

= fundamental shifts in the socio-technical systems that fulfill societal needs, through profound changes in *dominant* structures, practices, technologies, policies, lifestyles, thinking …

Systems thinking



- consist of:
  - **Structure**: material infrastructure, technology, institutions, economic reality
  - **Culture**: dominant images, values, paradigms
  - **Practices**: routines, 'normal' system behaviour
- are linked to societal functions
- present certain dysfunctions

Fundamental changes at systemic level: 'system innovation'

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Fundamental changes at systemic level: 'system innovation'

Systems thinking


- **Practices**: routines, ‘normal’ system behaviour

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Fundamental changes at systemic level: ‘system innovation’

Systems thinking

Socio-technical systems (Rotmans & Loorbach 2010)

- consist of:
  - **Structure**: material infrastructure, technology, institutions, economic reality
  - **Culture**: dominant images, values, paradigms
  - **Practices**: routines, 'normal' system behaviour
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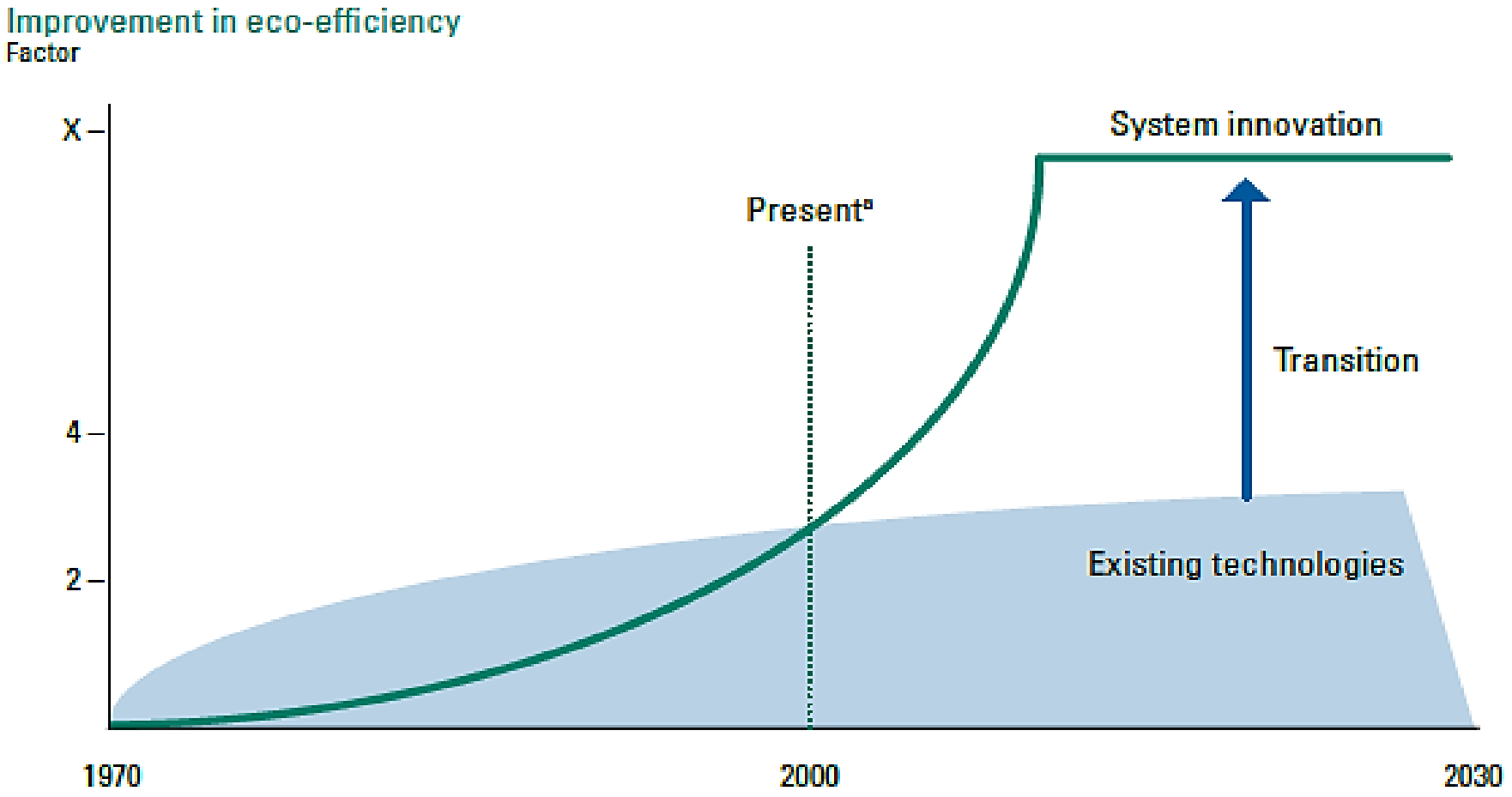
- present certain dysfunctions

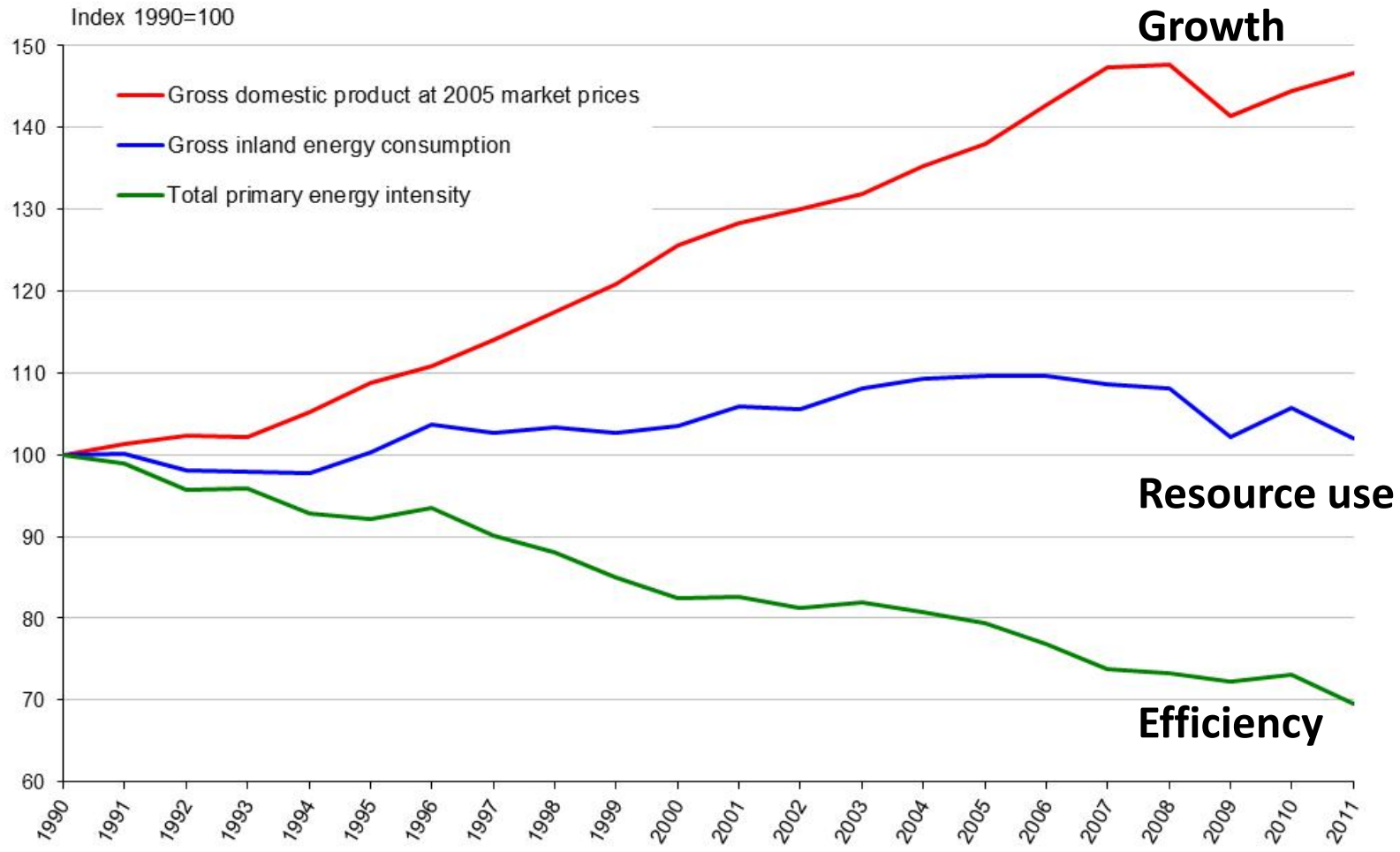


Efficiency gains in existing technologies only gets us so far



Source: based on UNEP 20011

EU energy efficiency has increased, but we are far from a low-carbon economy



Source: EEA (CSI 028)

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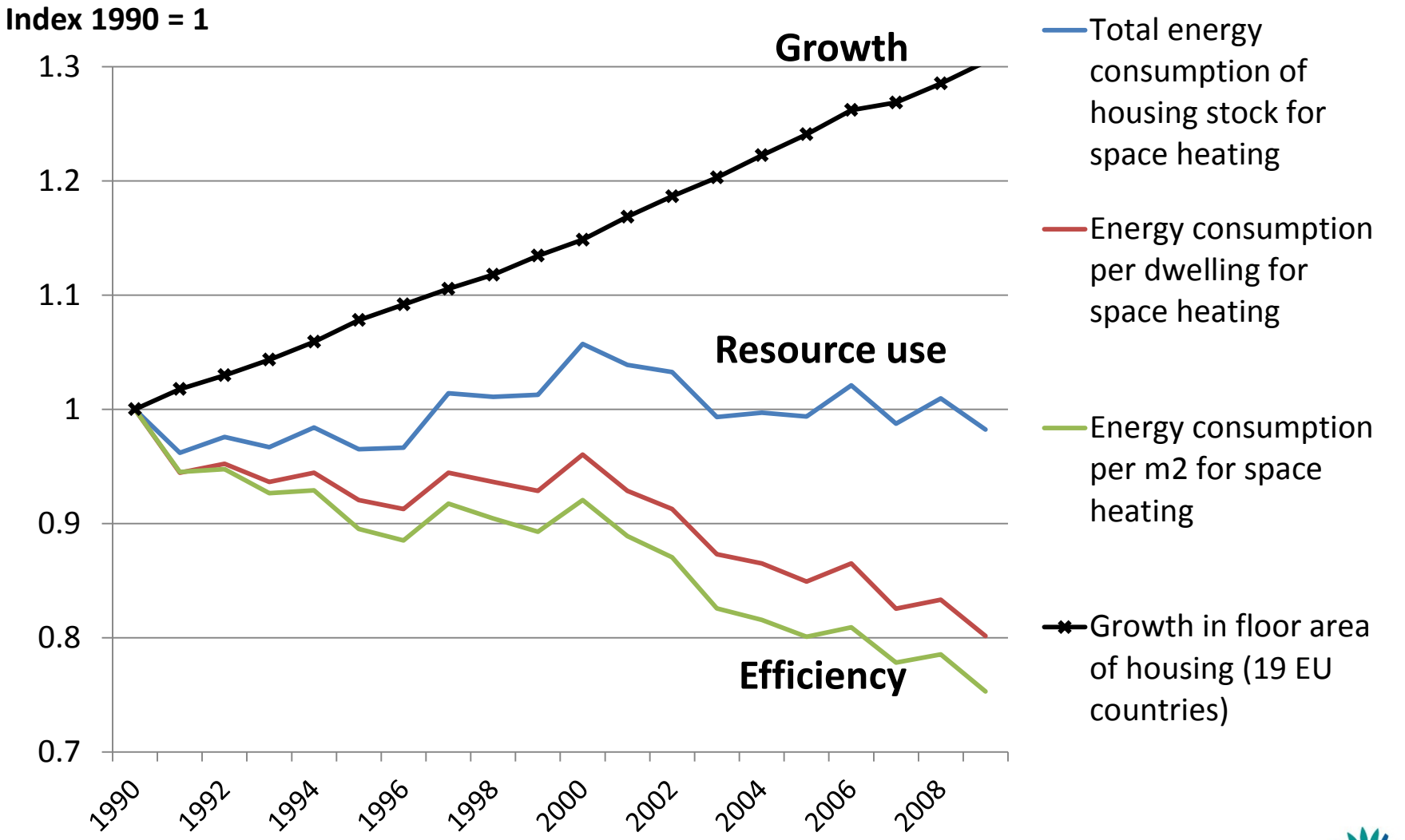
Homes (EU) are now more energy efficient, but also much larger, increasing pressures on land, water and materials



Source: SCP023 indicator (draft)

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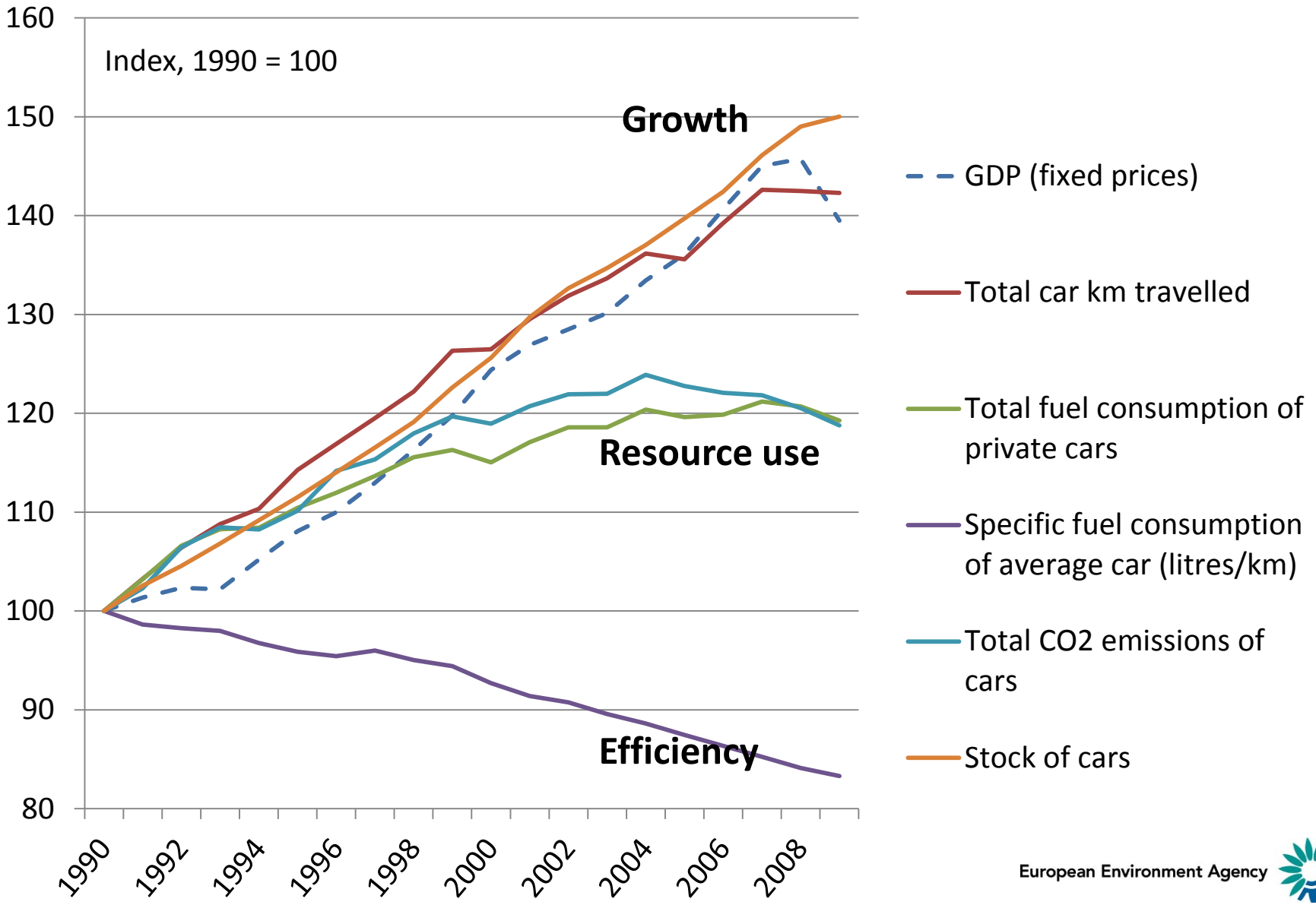
Cars (EU) are more efficient but contribute to a range of negative impacts on people's quality of life in cities



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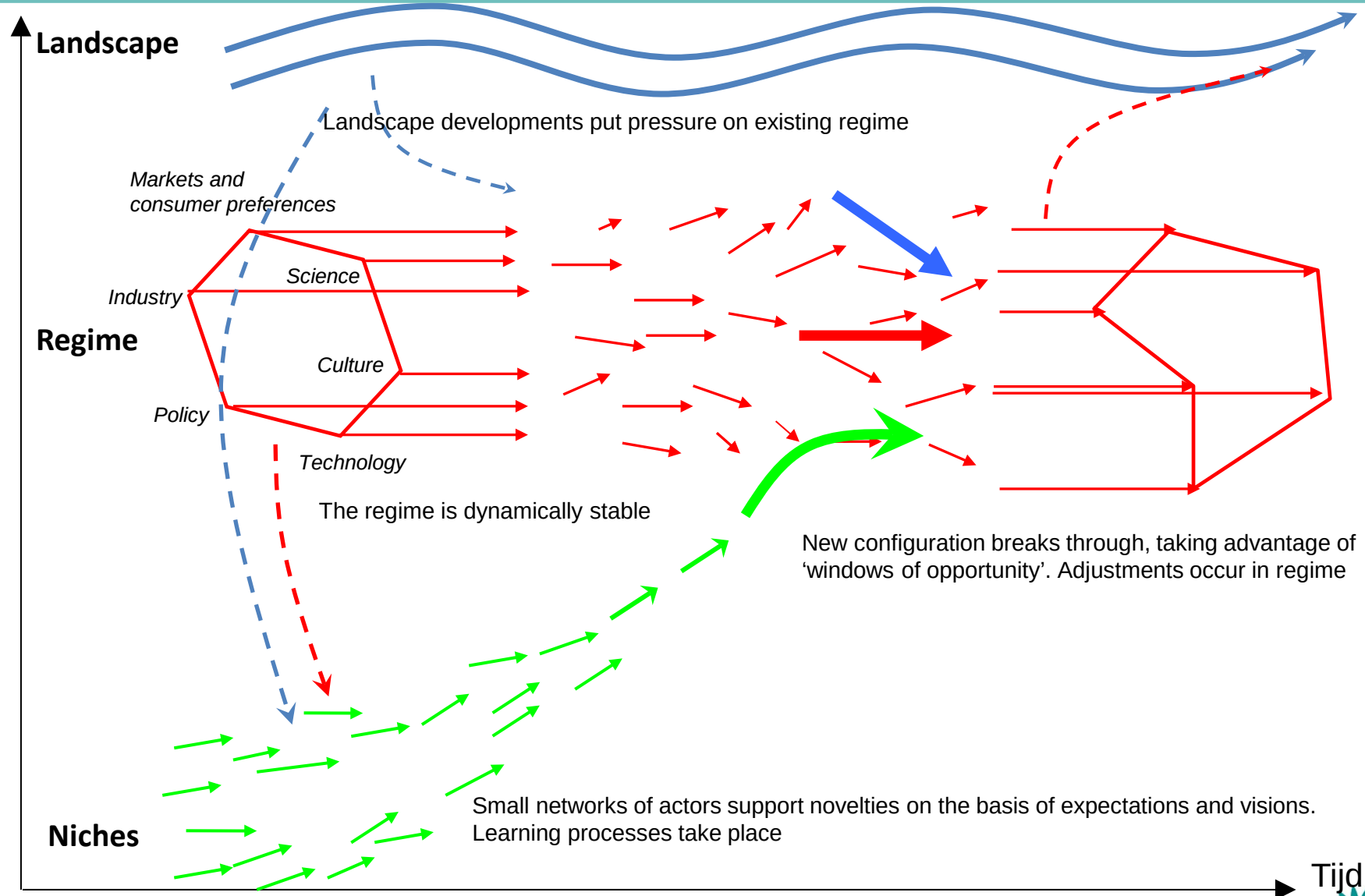
To reach ambitious environmental visions

Not just incremental efficiency gains ...

nor new technologies only ...

… but also a different systemic (re-) thinking.

Transitions perspective



Source: based on Geels & Schot (2007)

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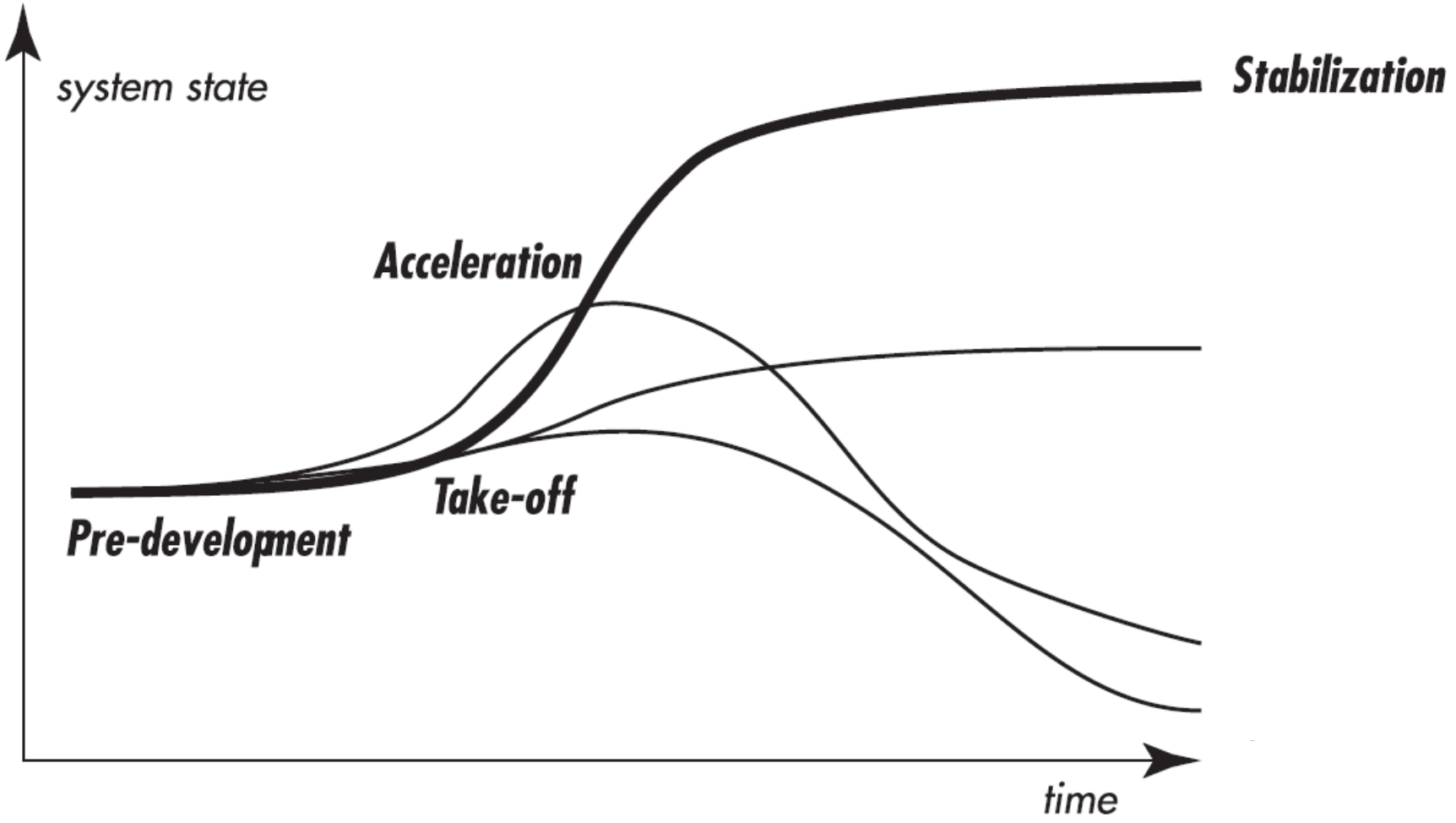
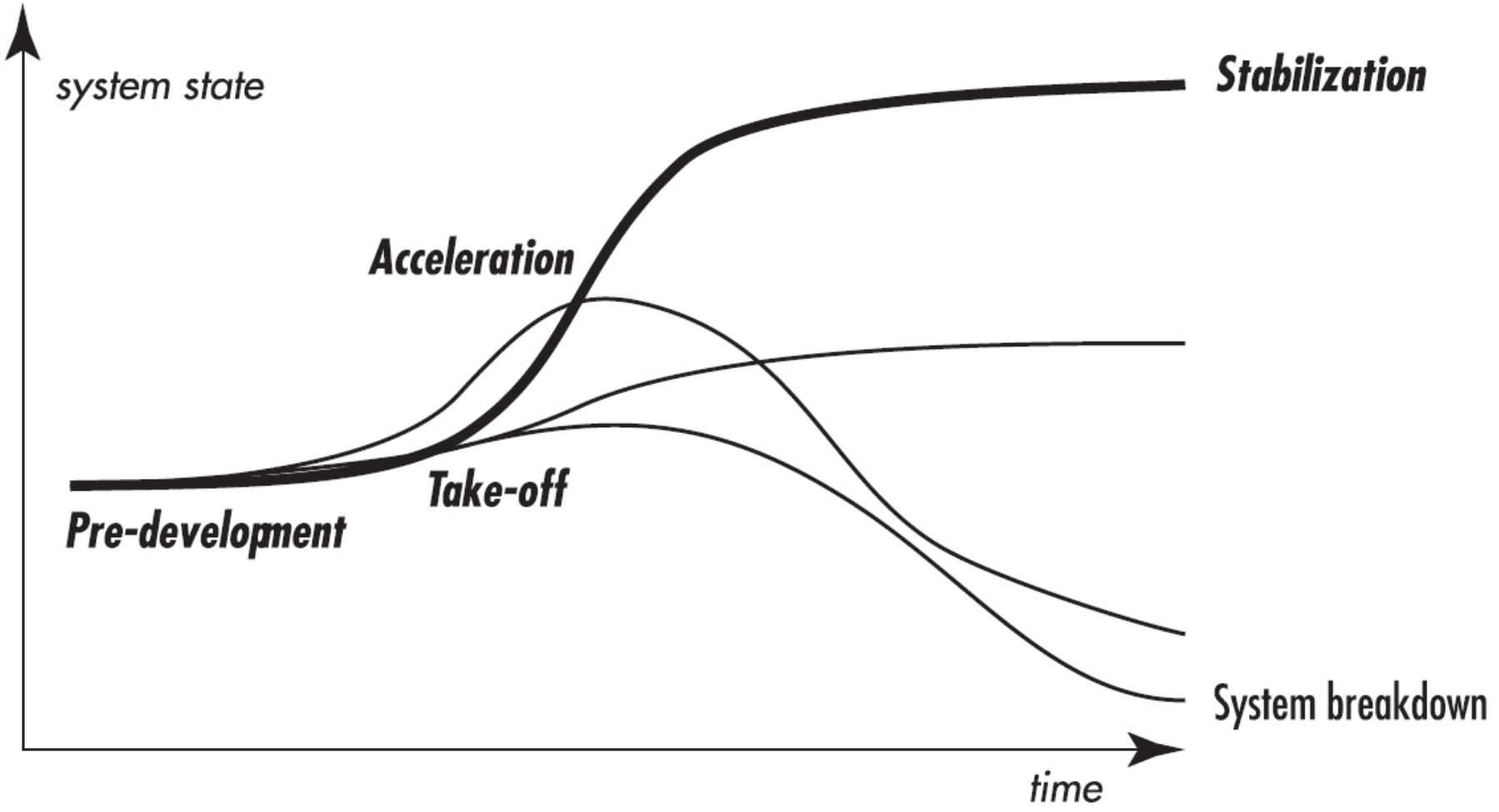
Multi-phase trajectory



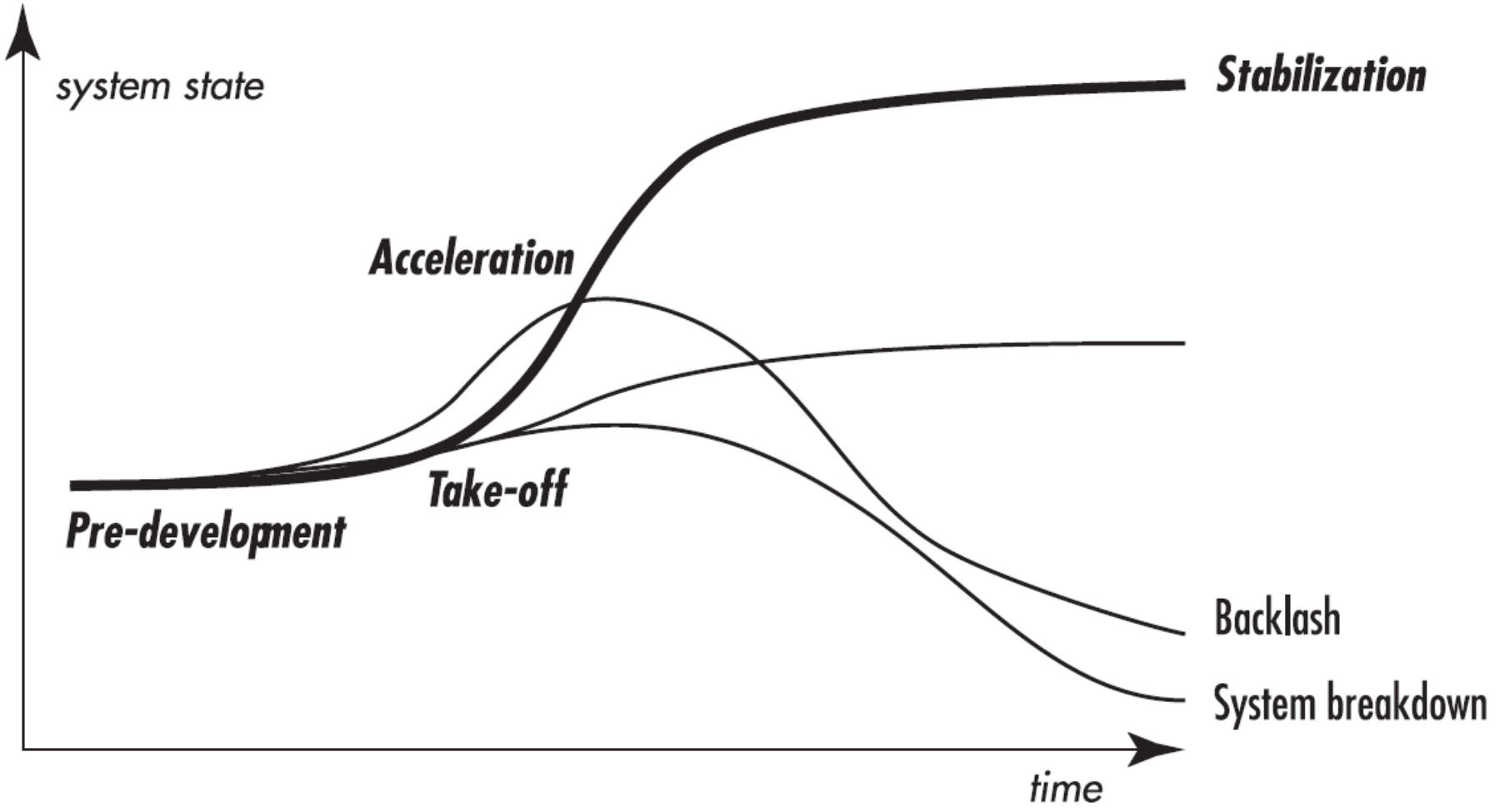
Source: van der Brugge & de Haan (2005)

Multi-phase trajectory



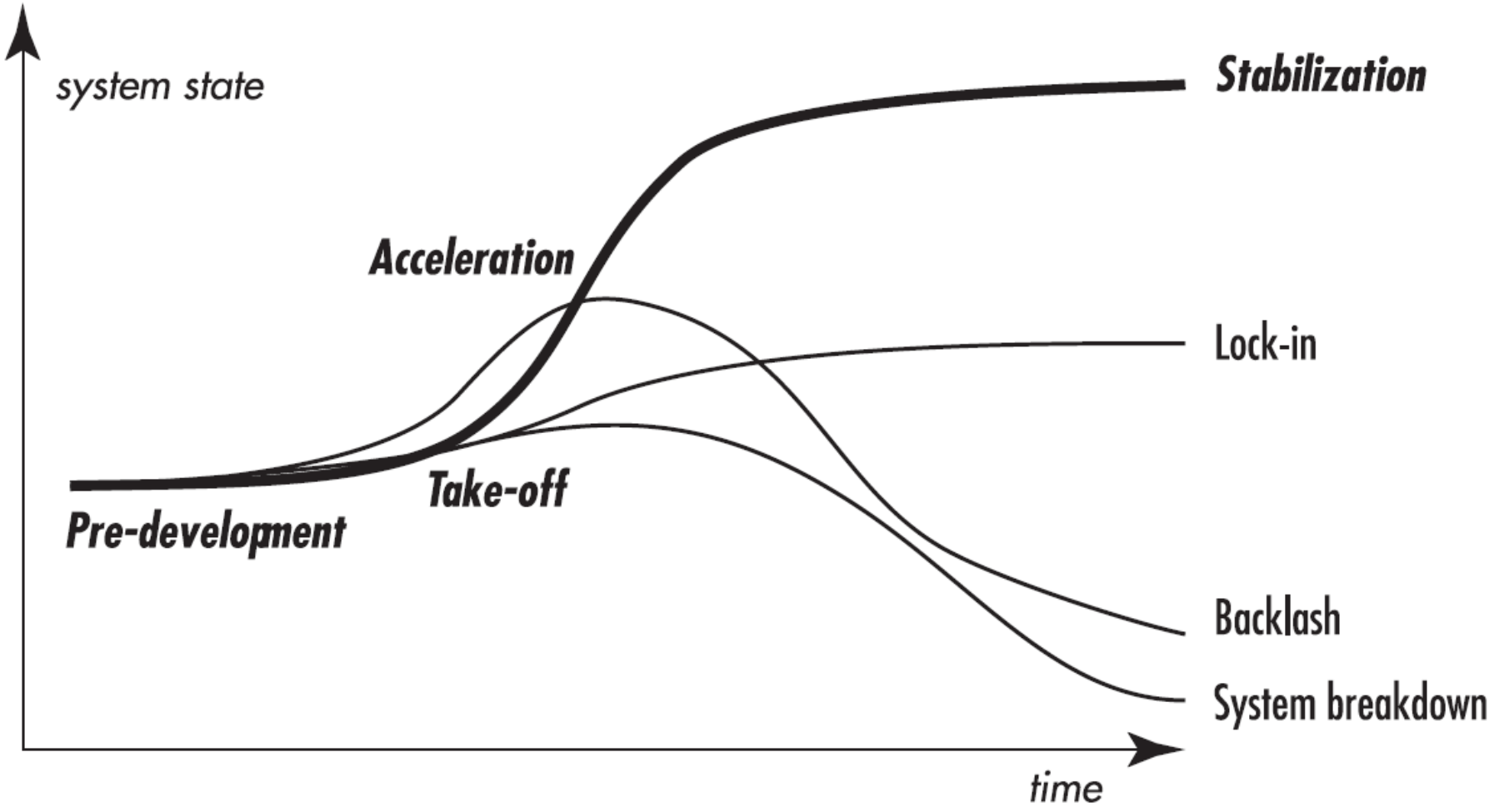
Source: van der Brugge & de Haan 2005

Multi-phase trajectory



Source: van der Brugge & de Haan (2005)

Multi-phase trajectory



Source: van der Brugge & de Haan (2005)

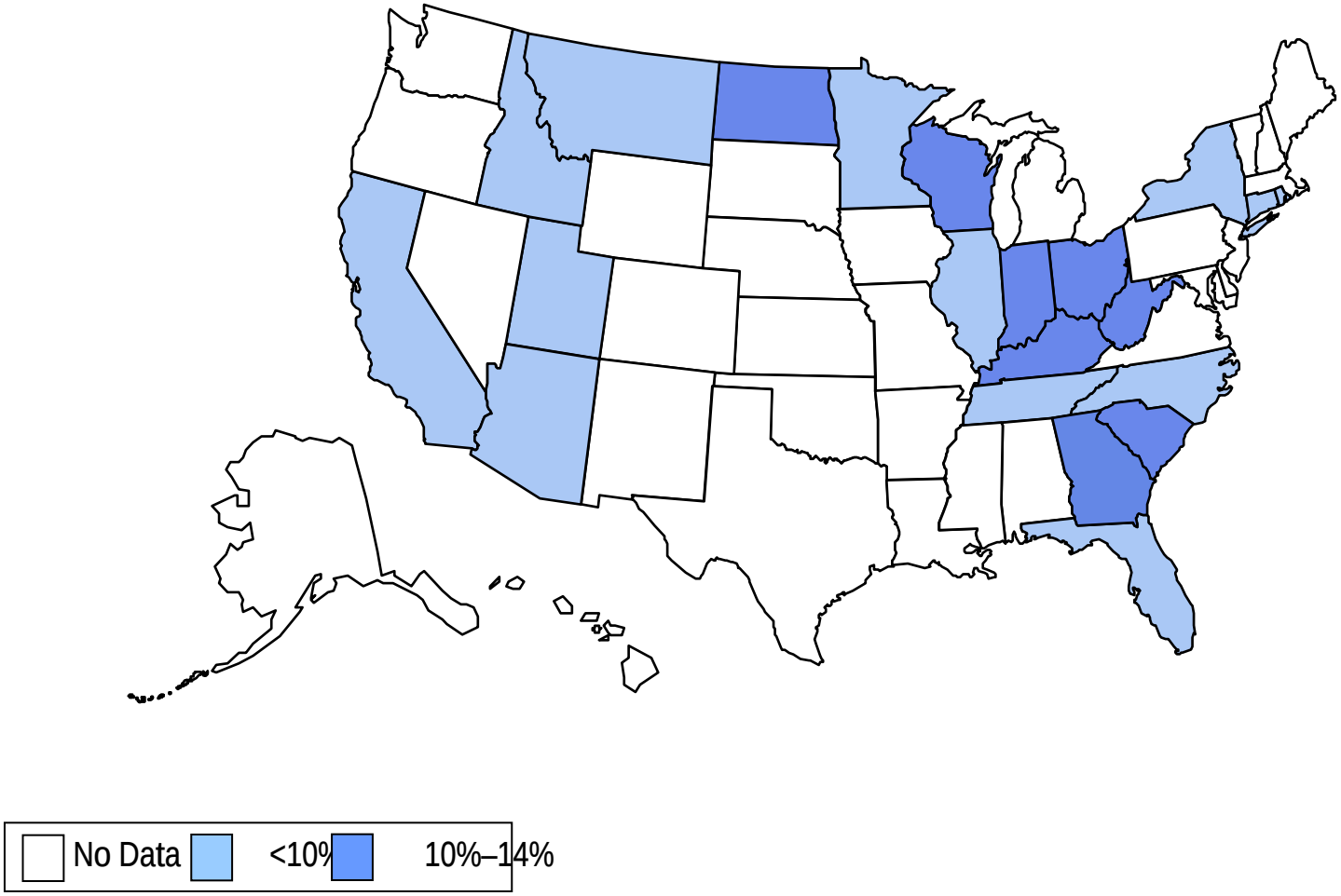
Rapid change in socio-technical systems

- ‘Communication’: internet since 1990
- Obesity in the US as indicator of complex and multi-dimensional socio-technical system change since 1980s

Obesity Trends* Among U.S. Adults

BRFSS, 1985

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



Obesity Trends* Among U.S. Adults

BRFSS, 1986

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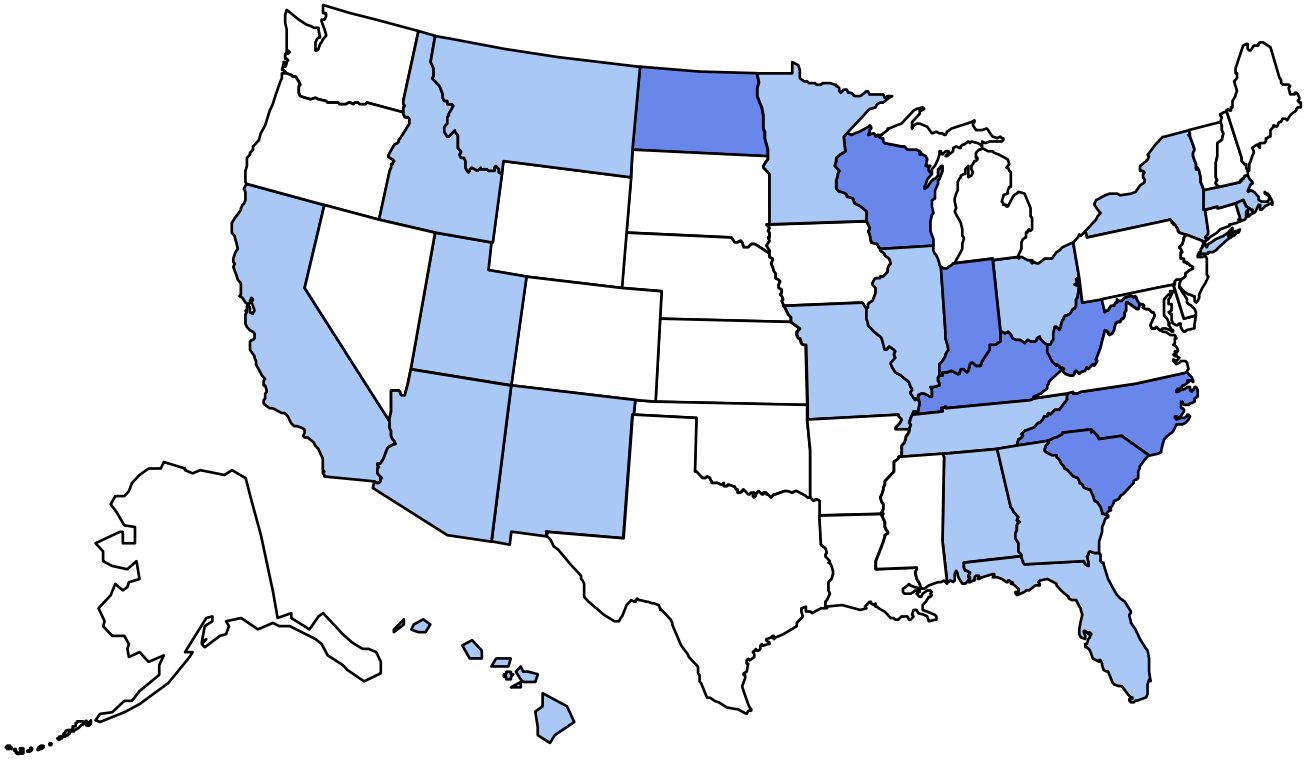

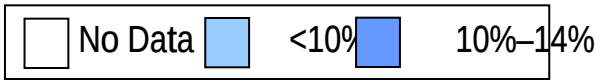

Obesity Trends* Among U.S. Adults

BRFSS, 1987

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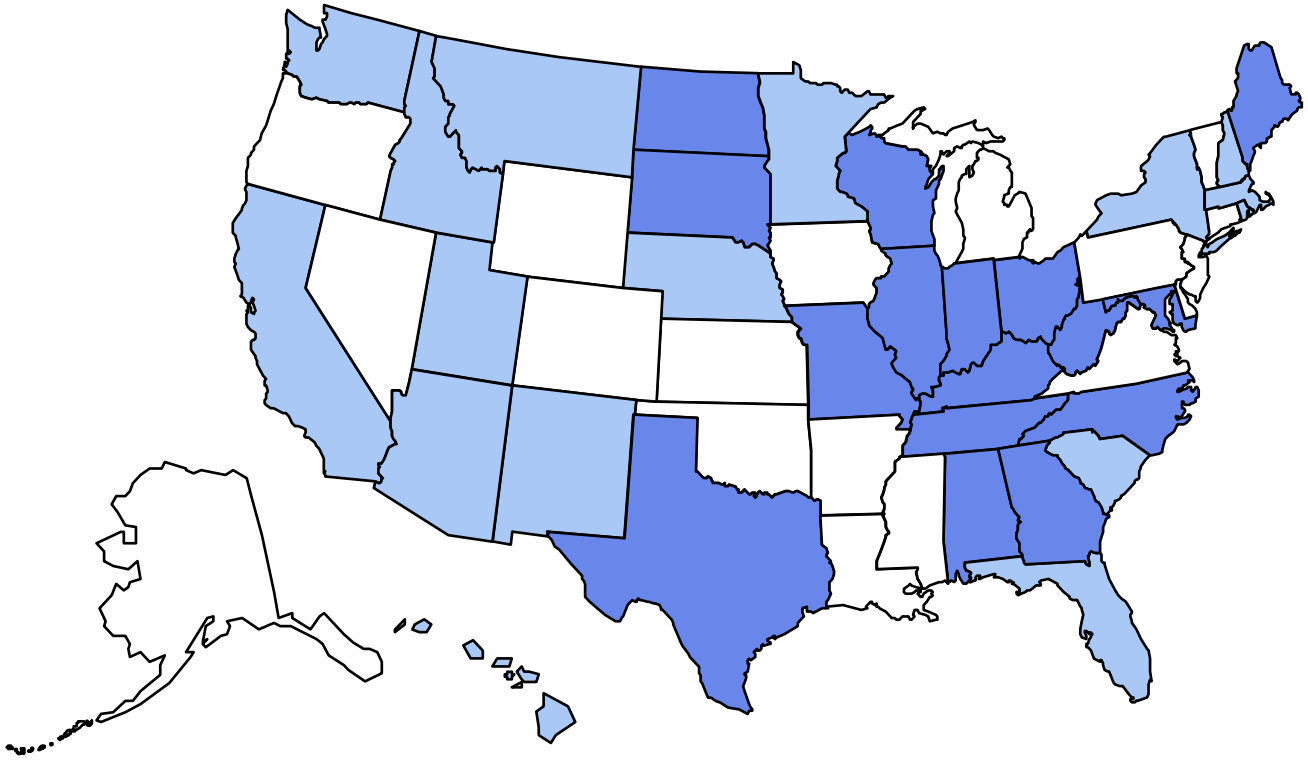

Obesity Trends* Among U.S. Adults

BRFSS, 1988

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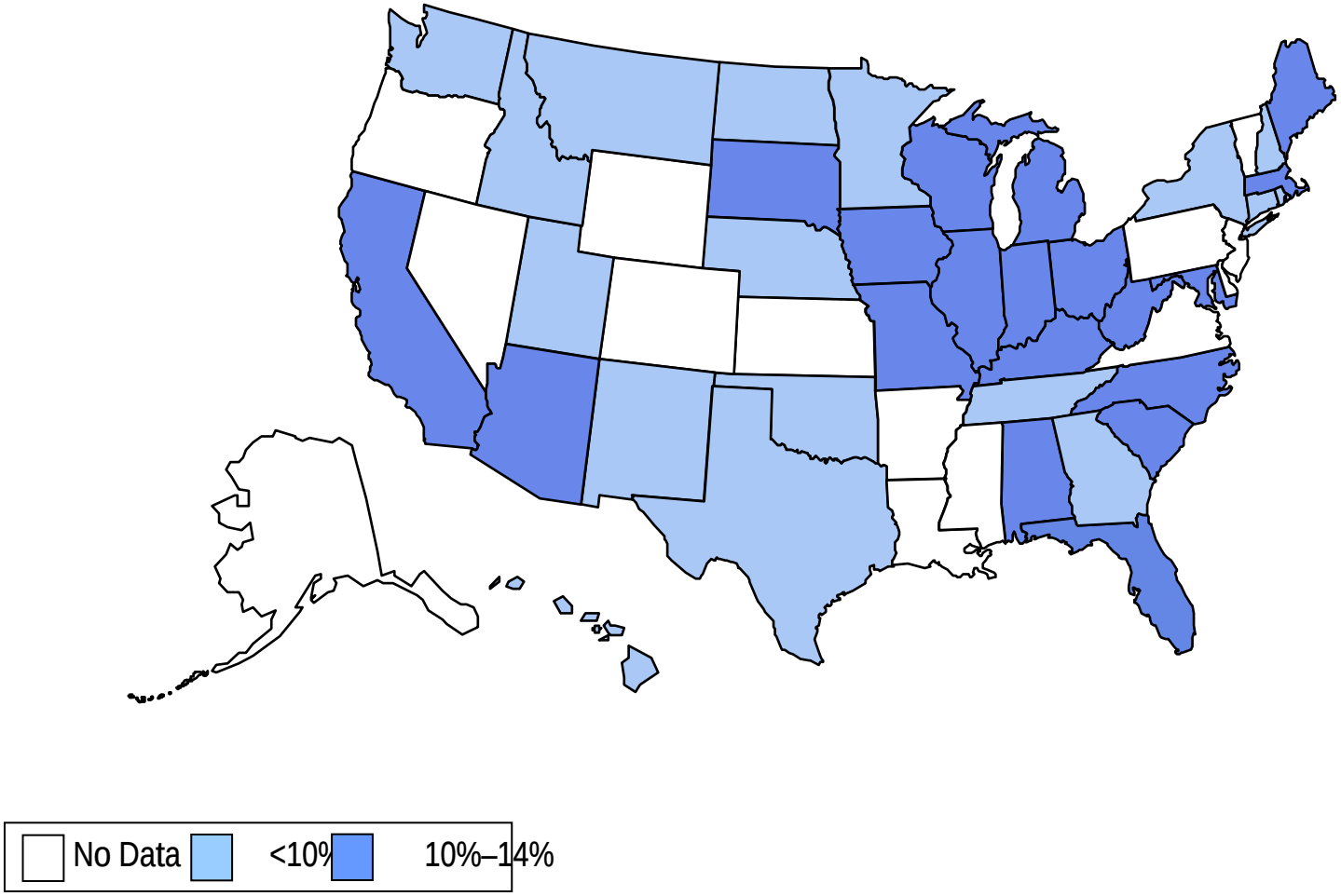

Obesity Trends* Among U.S. Adults

BRFSS, 1989

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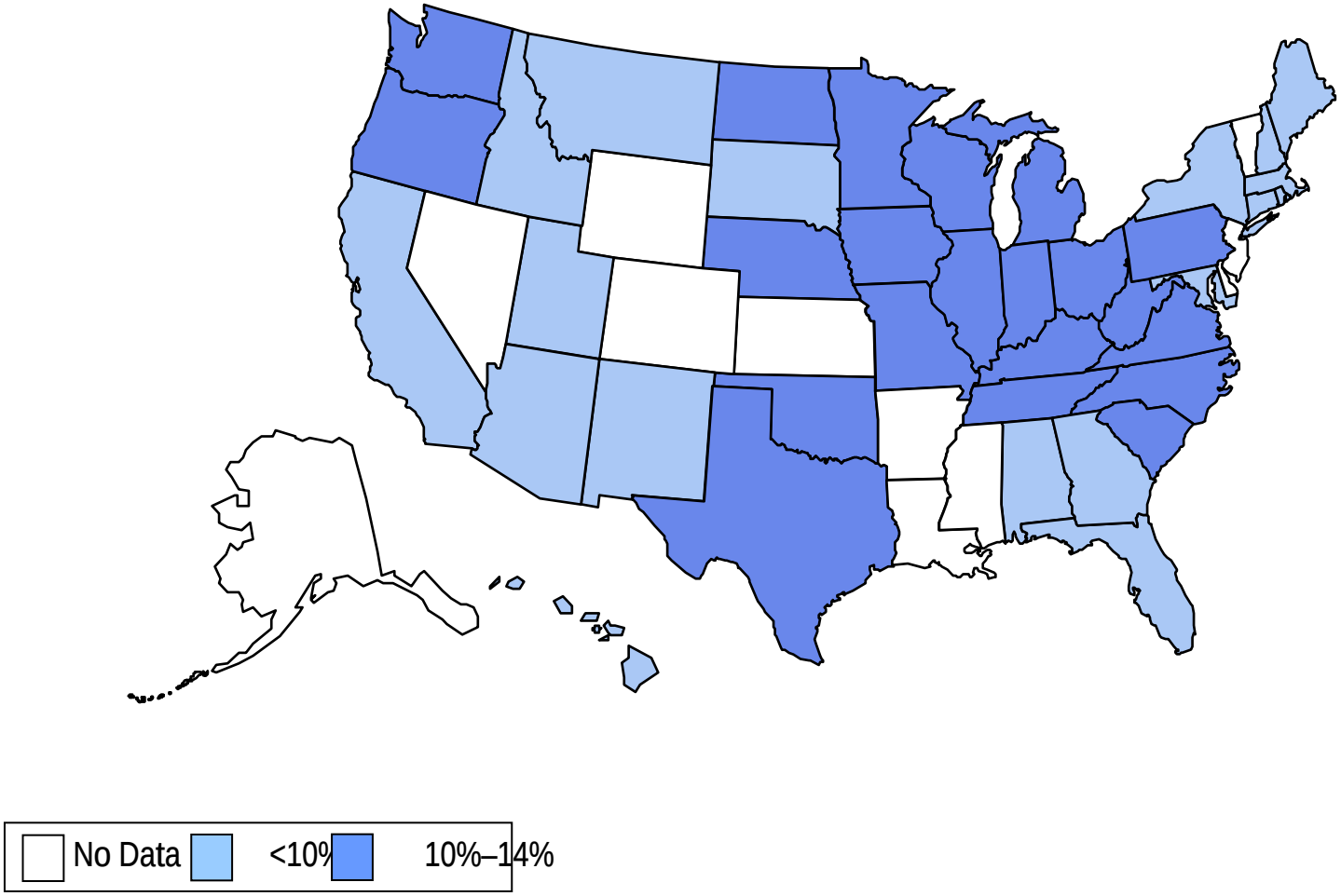

Obesity Trends* Among U.S. Adults

BRFSS, 1990

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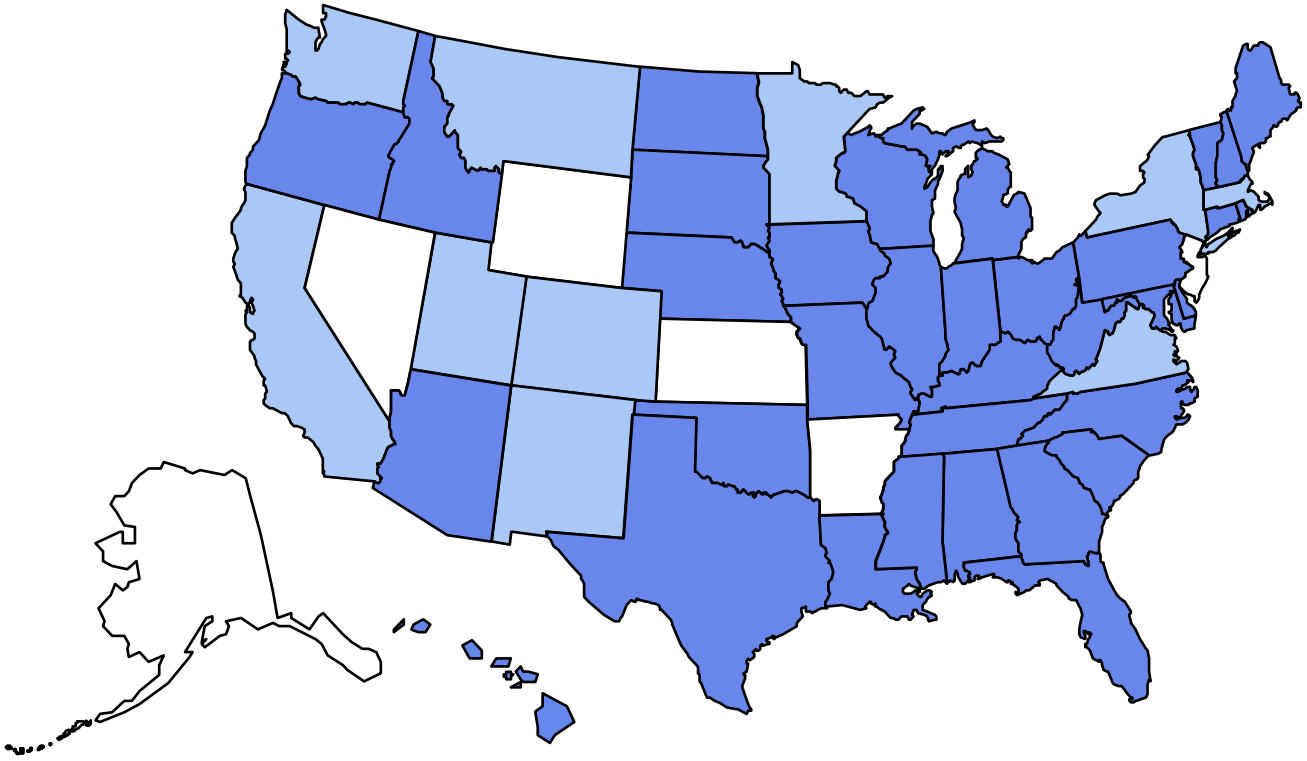

No Data | <10% | 10%–14%

Obesity Trends* Among U.S. Adults

BRFSS, 1991

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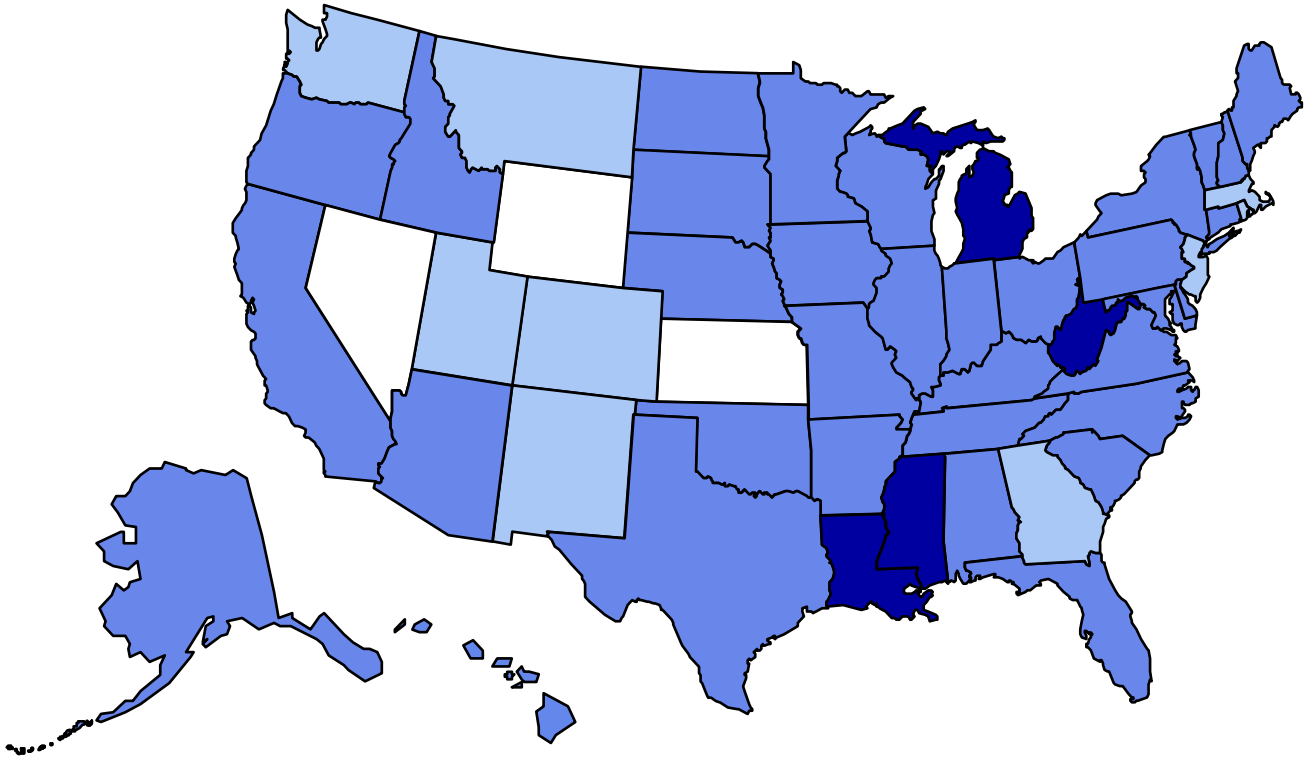

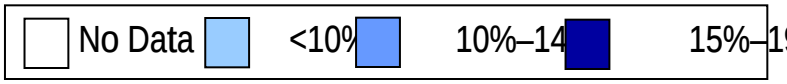

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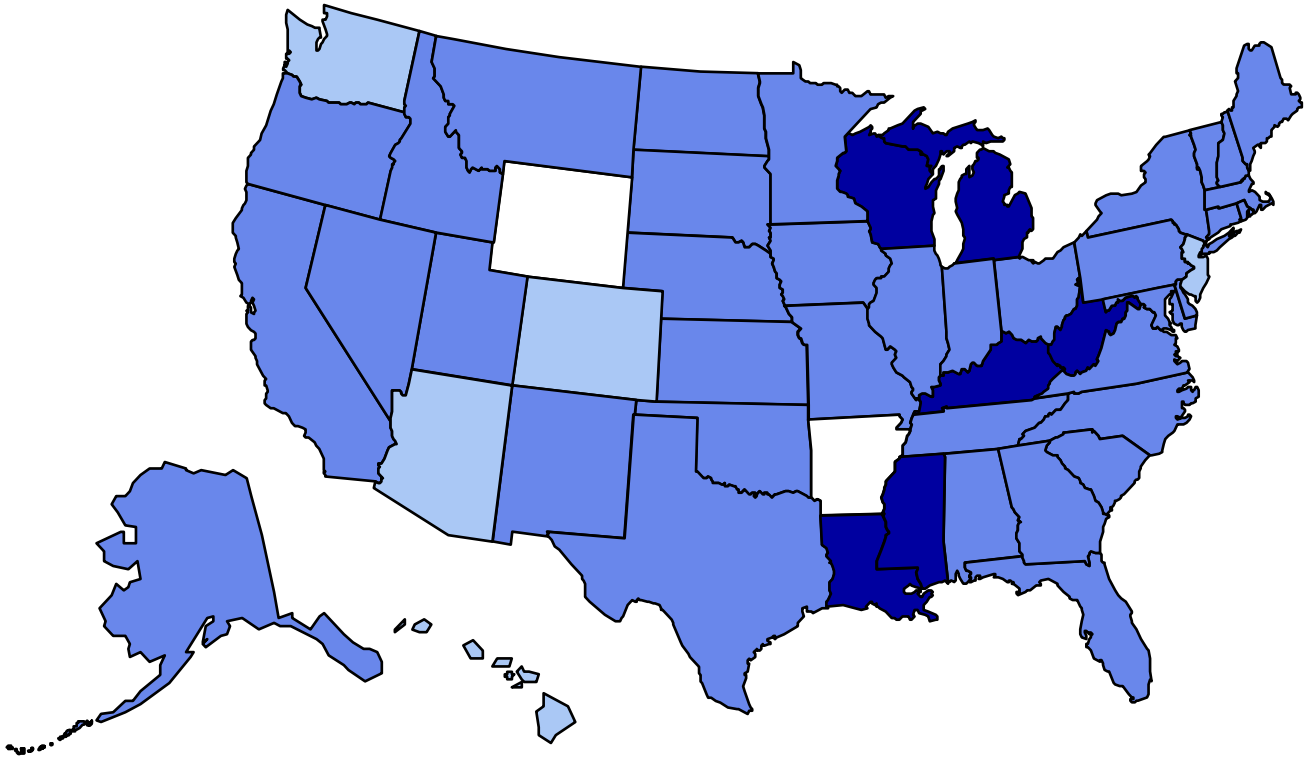

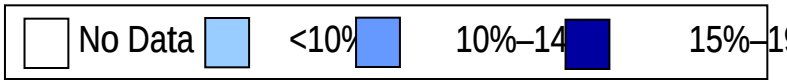

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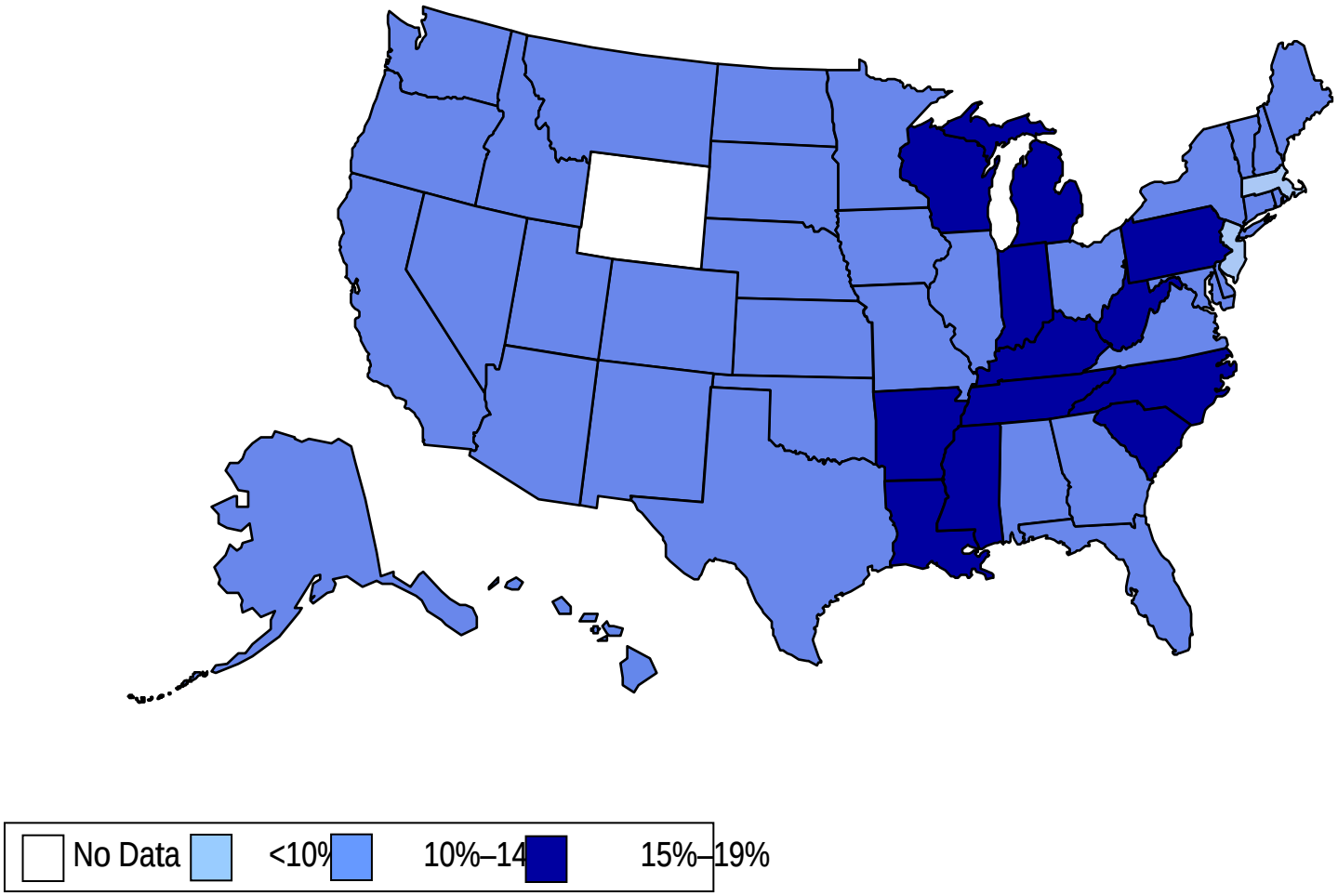

Obesity Trends* Among U.S. Adults

BRFSS, 1994

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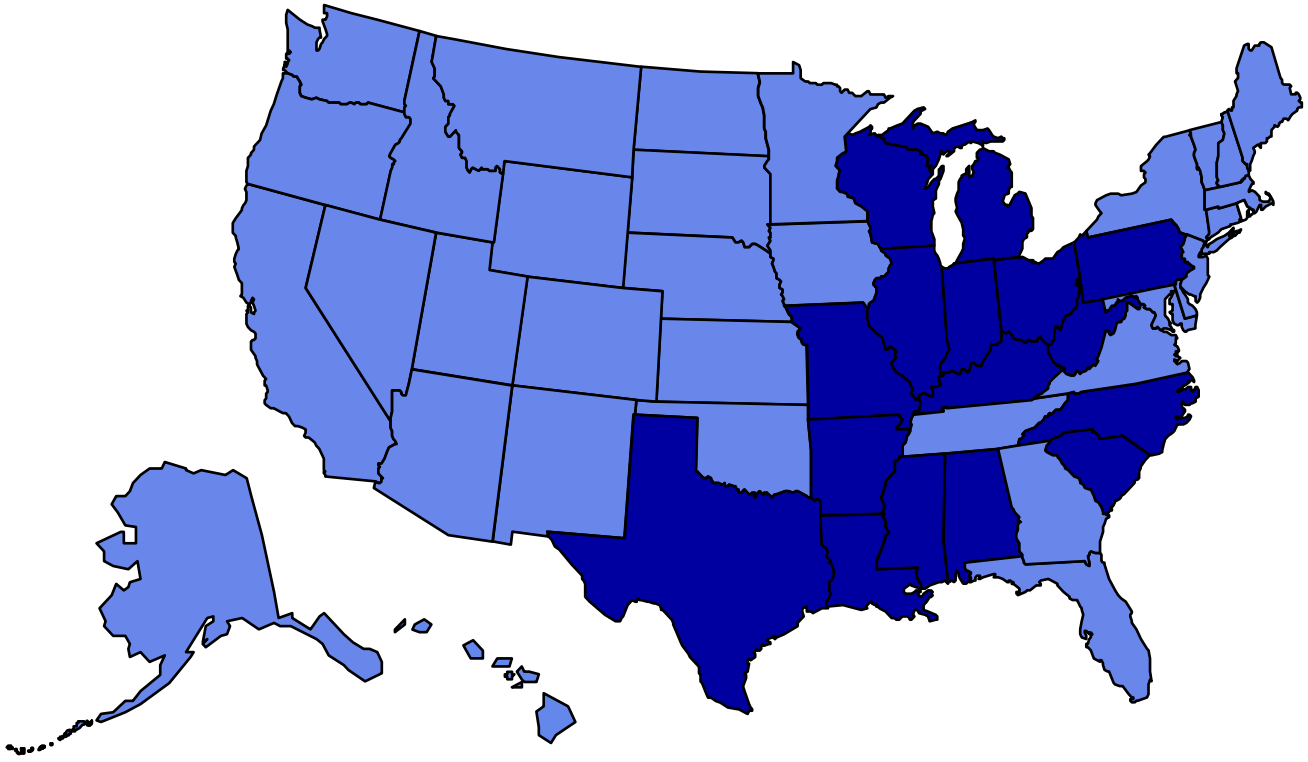

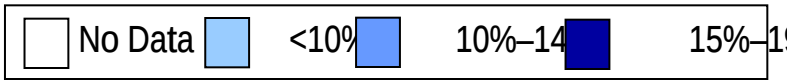

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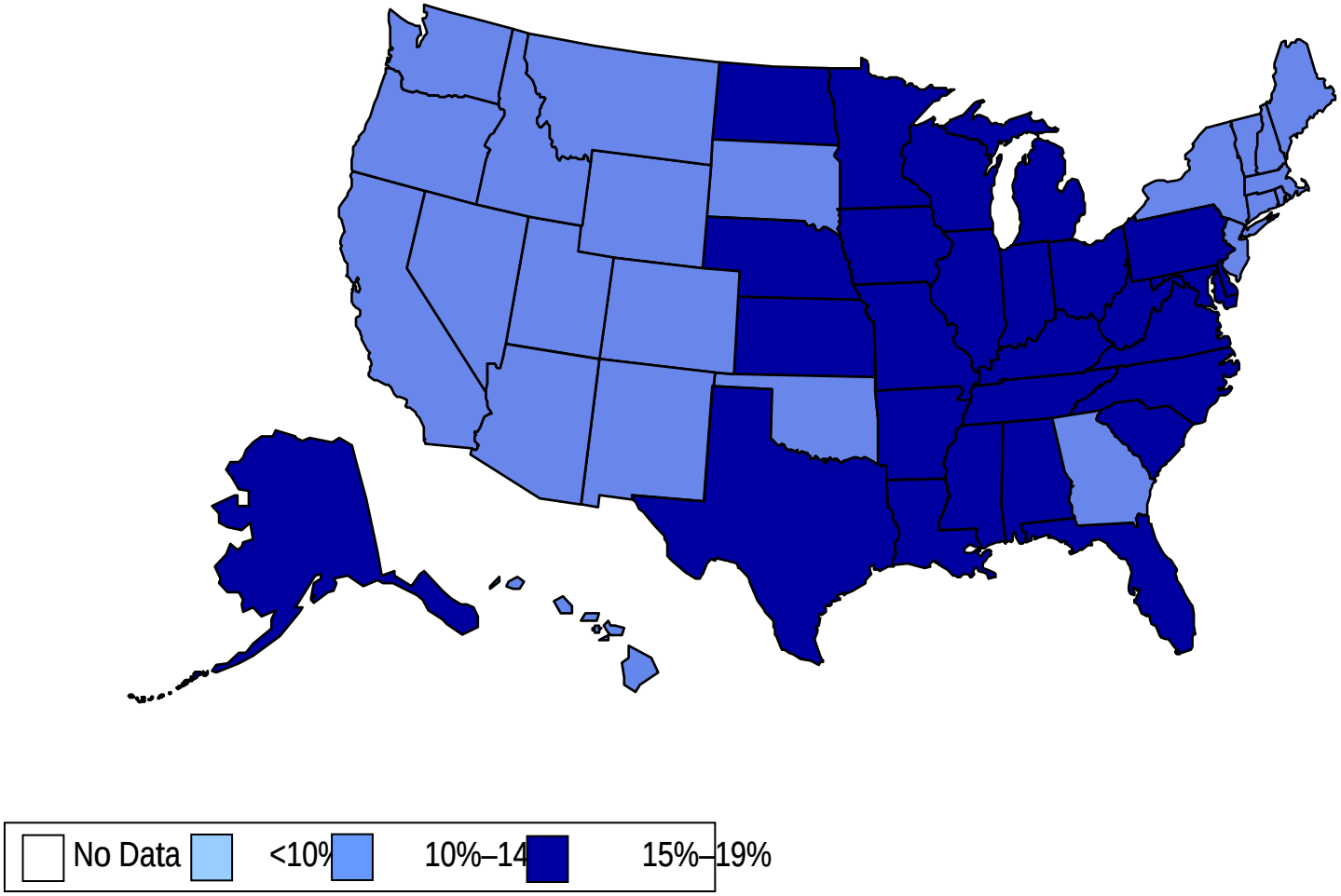

Obesity Trends* Among U.S. Adults

BRFSS, 1996

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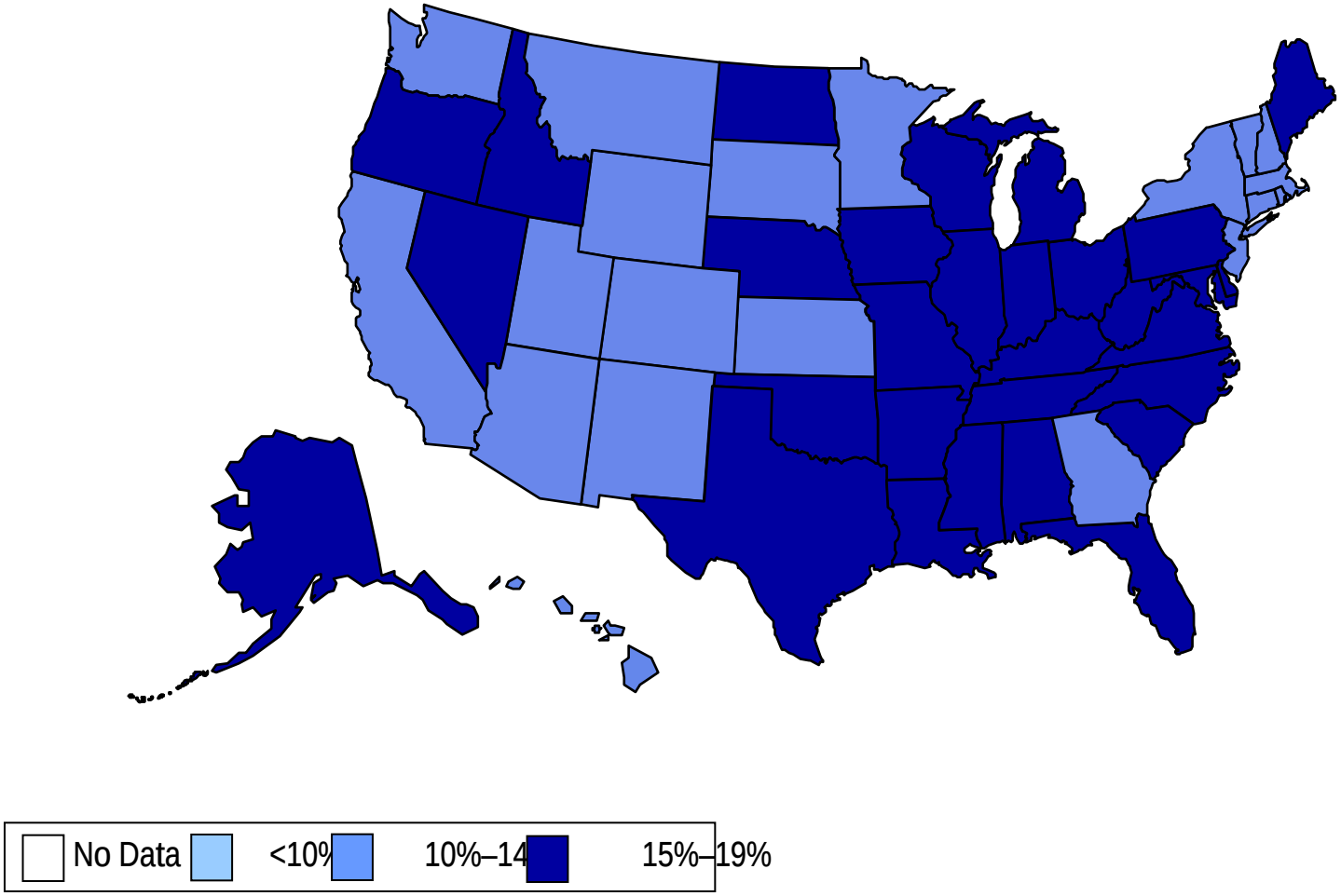
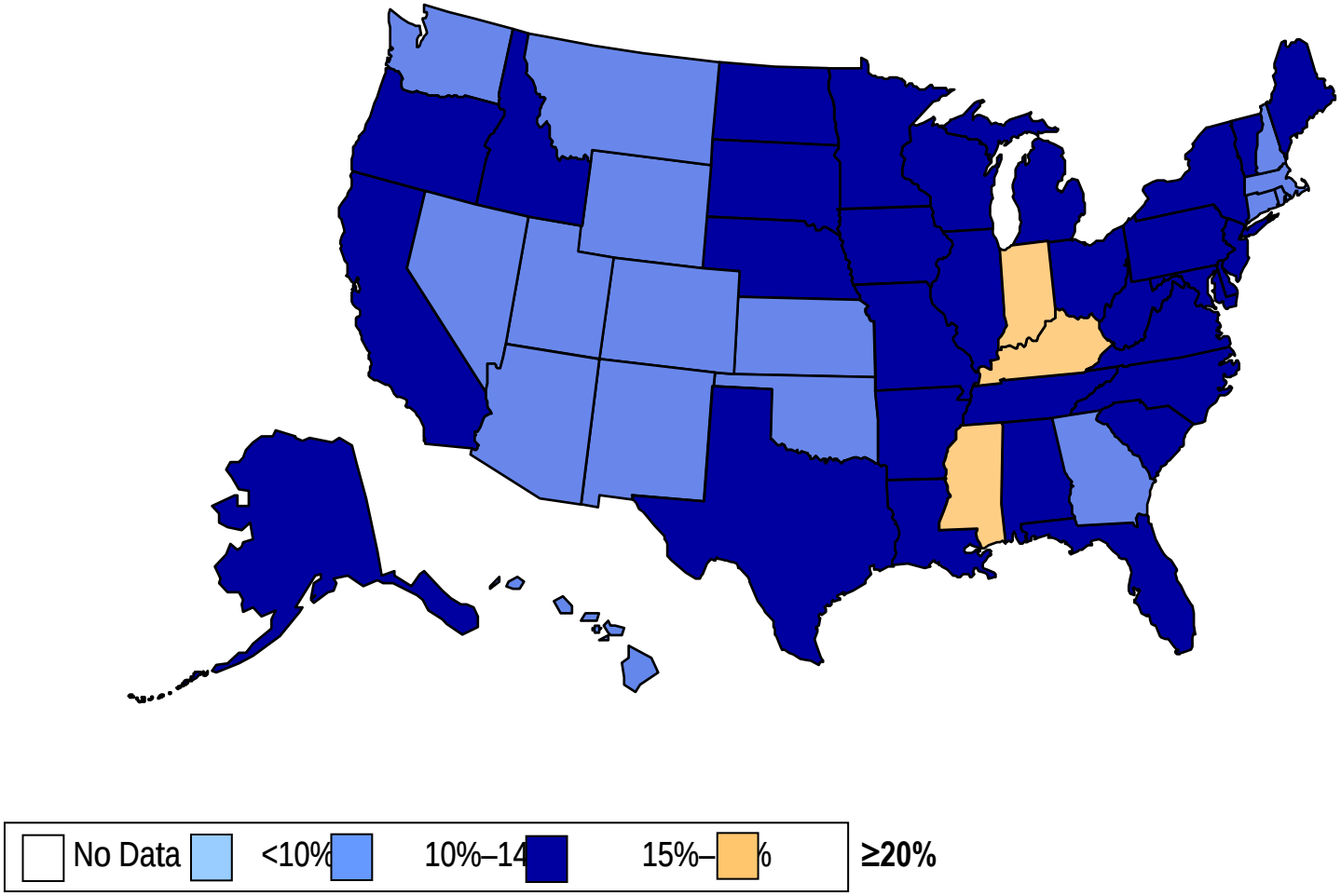


Obesity Trends* Among U.S. Adults

BRFSS, 1997

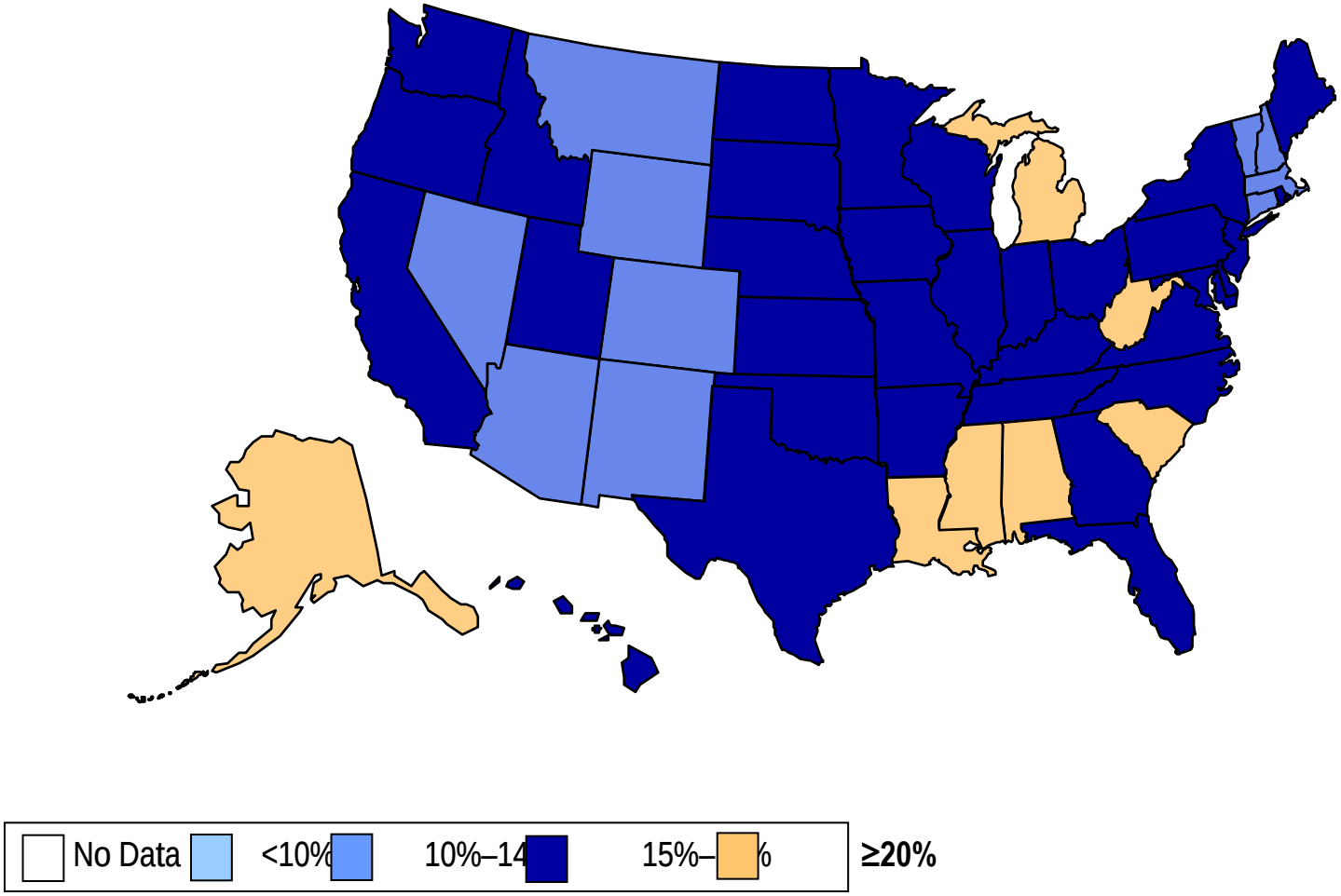
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)



Obesity Trends* Among U.S. Adults

BRFSS, 1998

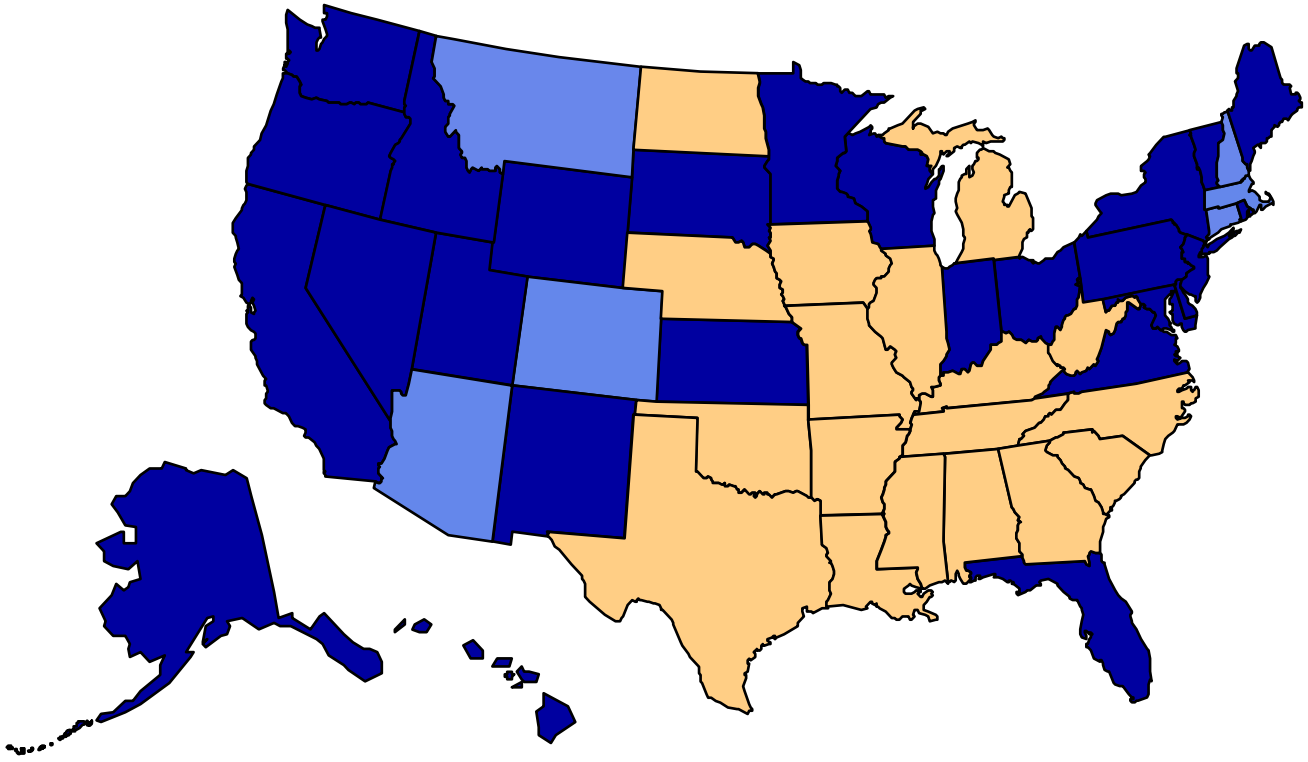
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)



Obesity Trends* Among U.S. Adults

BRFSS, 1999

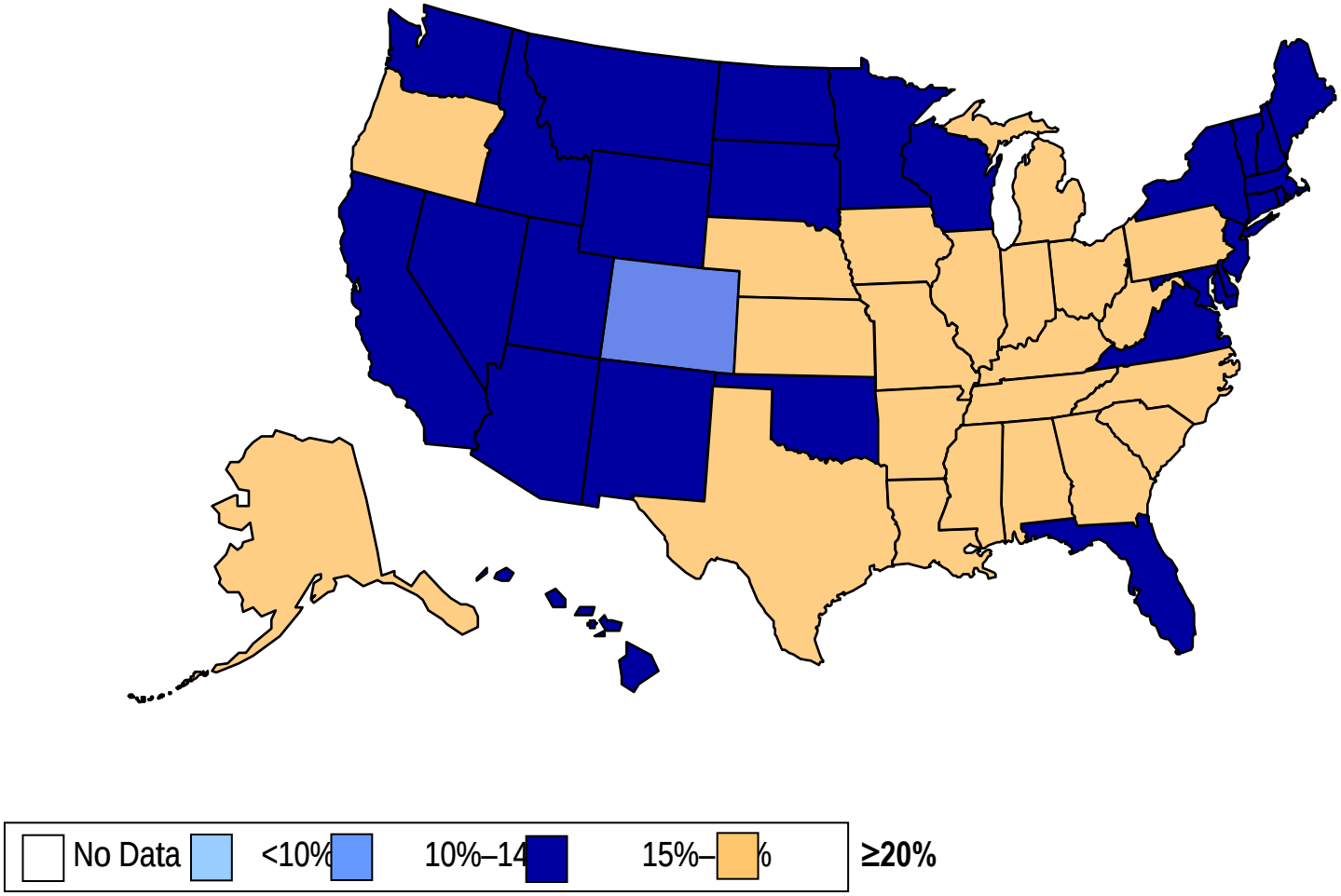
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)



Obesity Trends* Among U.S. Adults

BRFSS, 2000

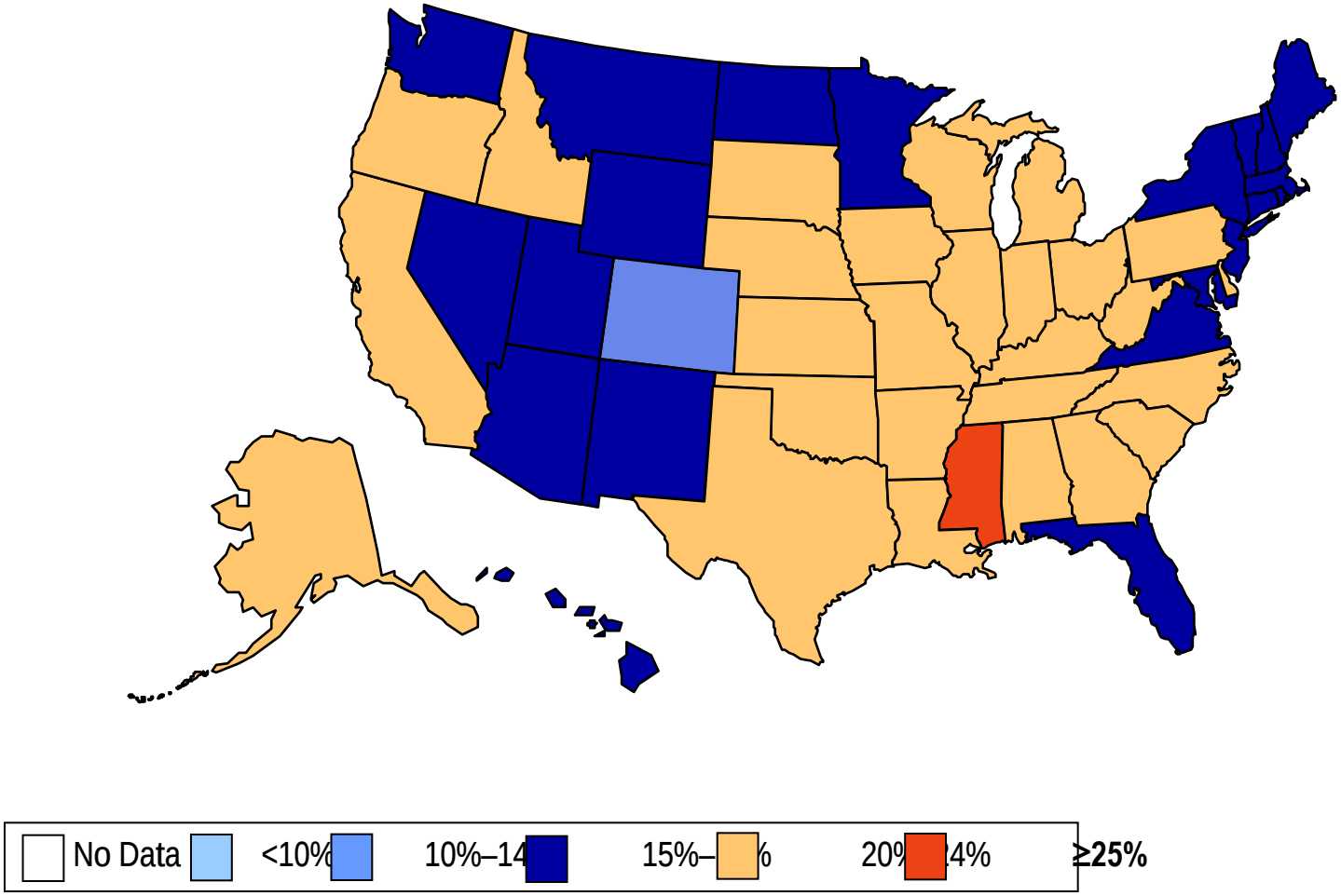
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)



Obesity Trends* Among U.S. Adults

BRFSS, 2001

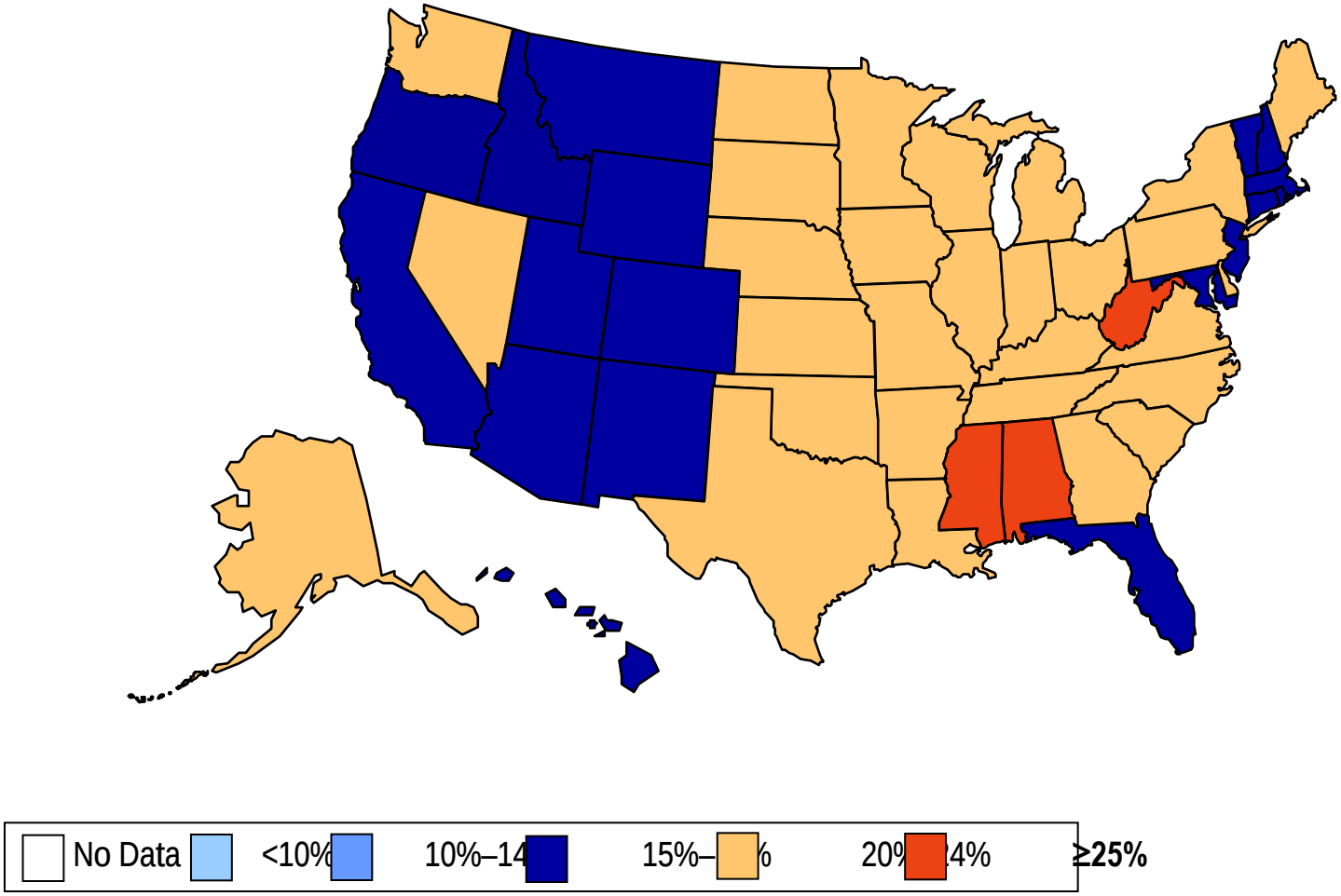
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)



Obesity Trends* Among U.S. Adults

BRFSS, 2002

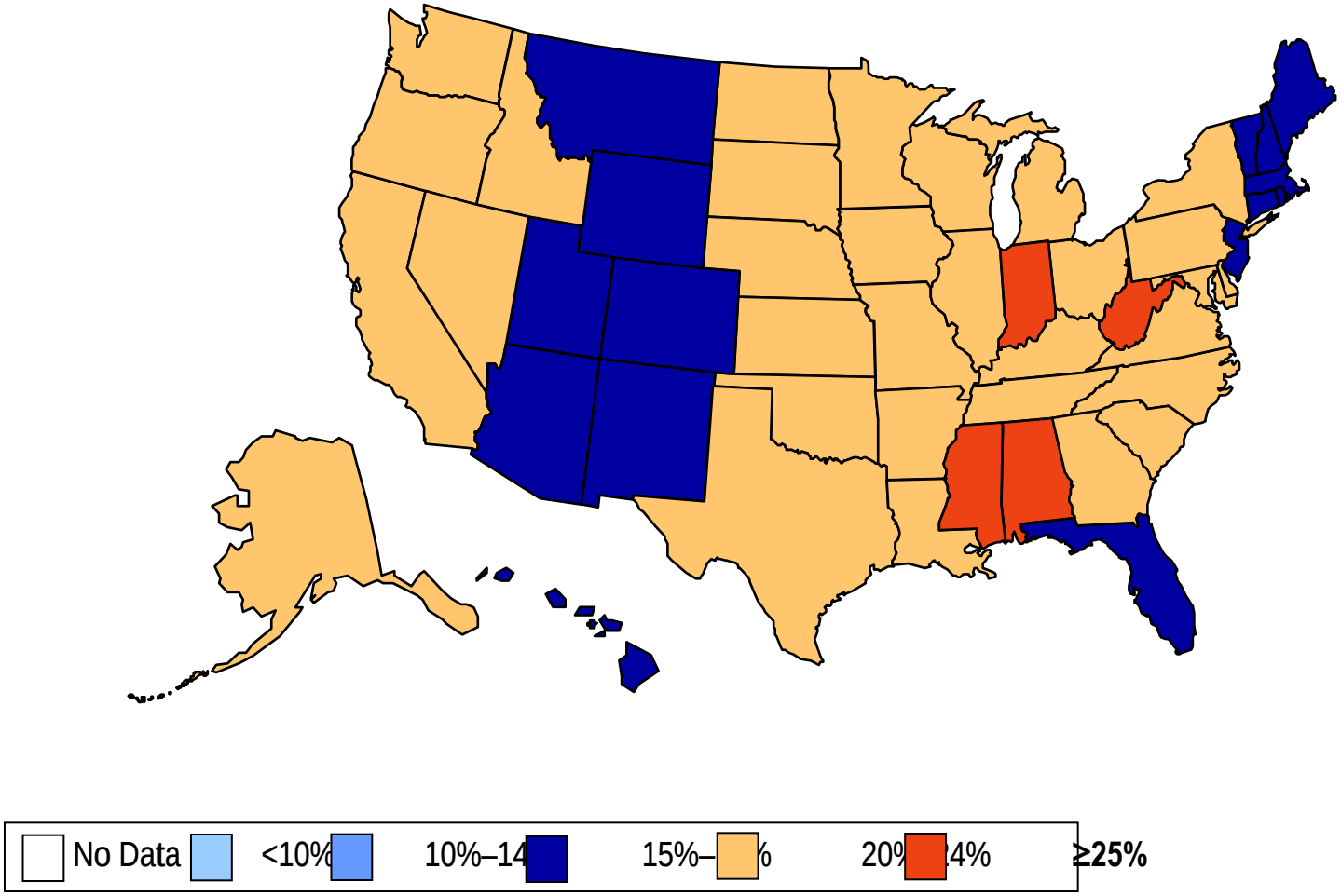
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)



Obesity Trends* Among U.S. Adults

BRFSS, 2003

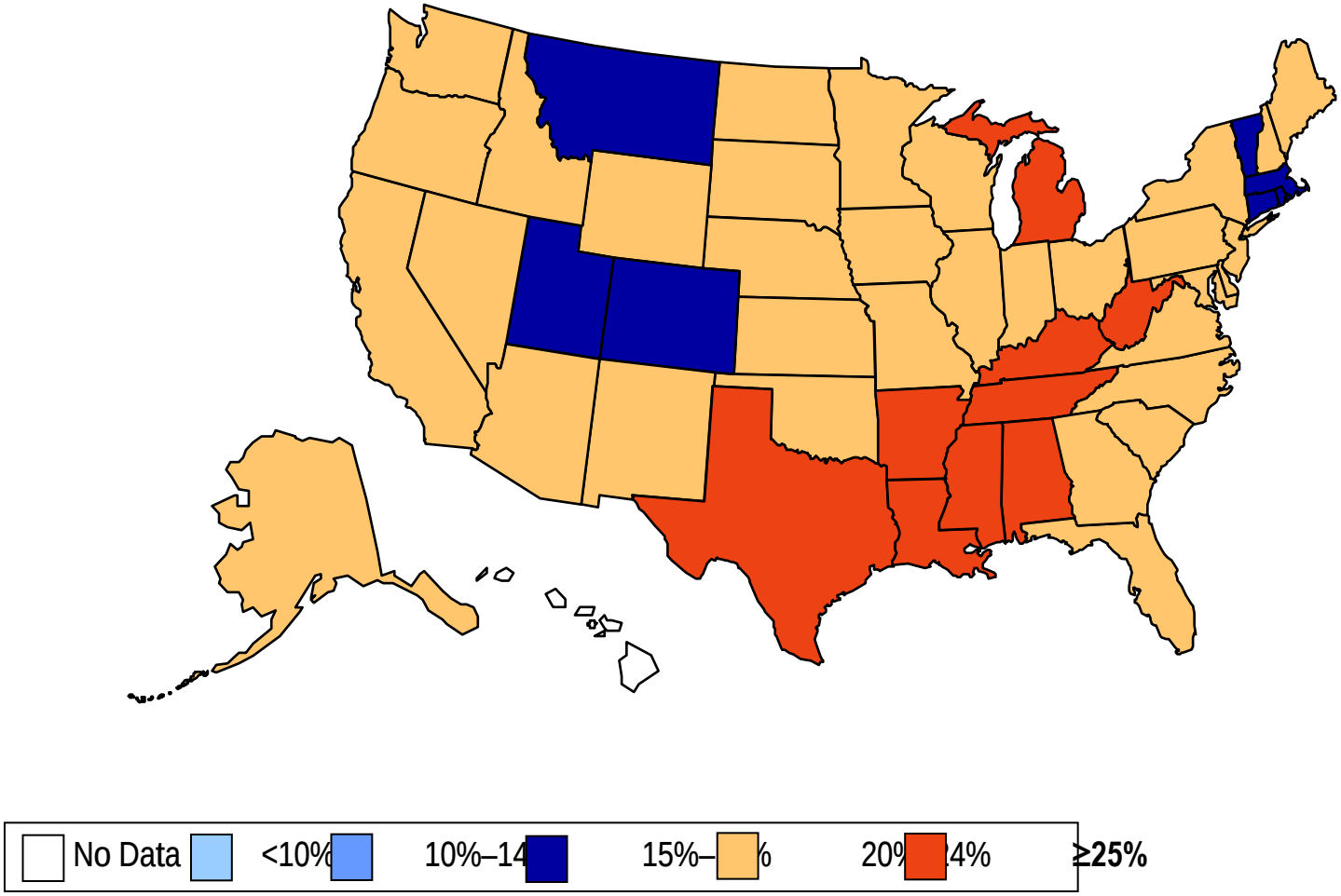
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)



Obesity Trends* Among U.S. Adults

BRFSS, 2004

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



Obesity Trends* Among U.S. Adults

BRFSS, 2005

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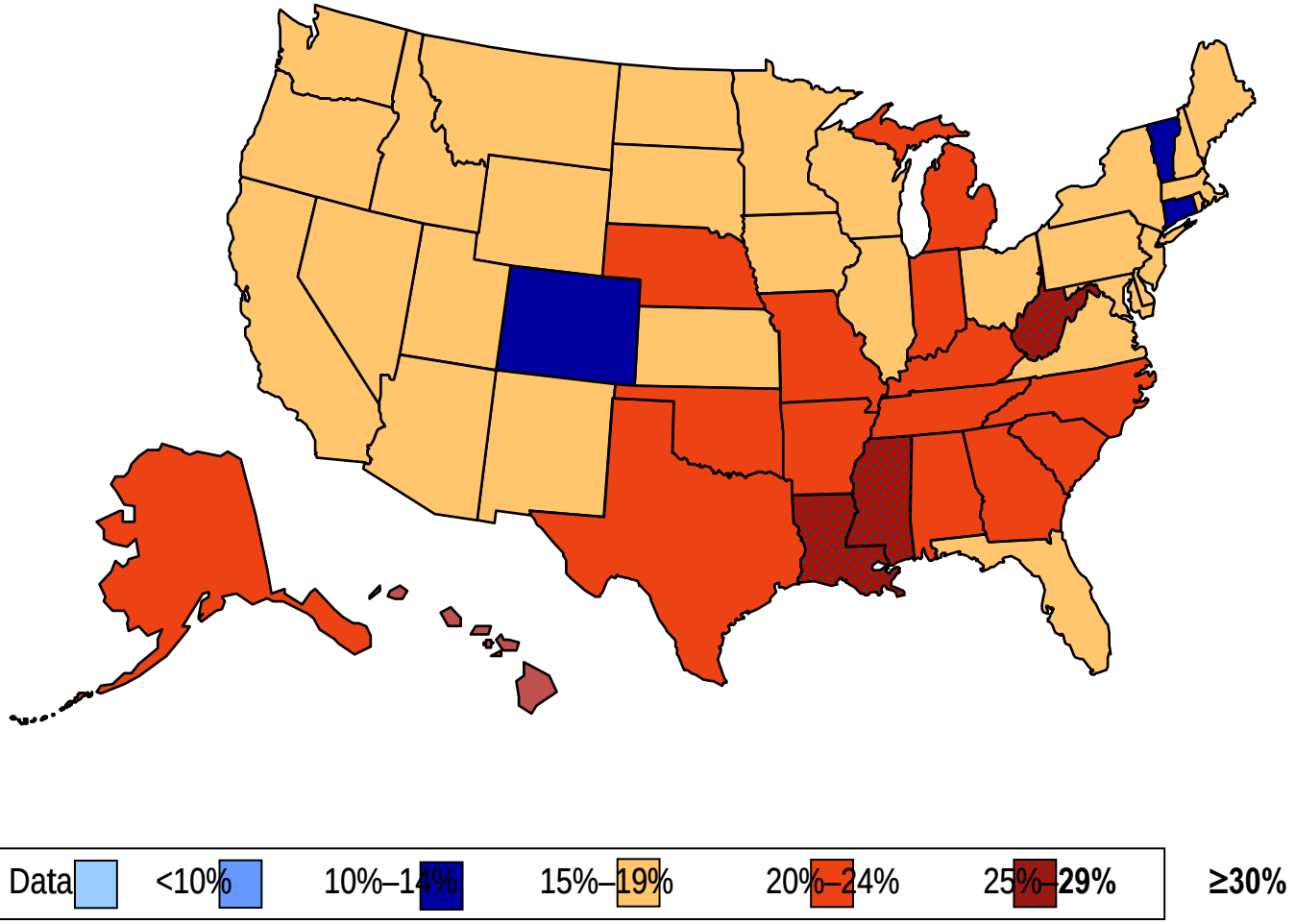
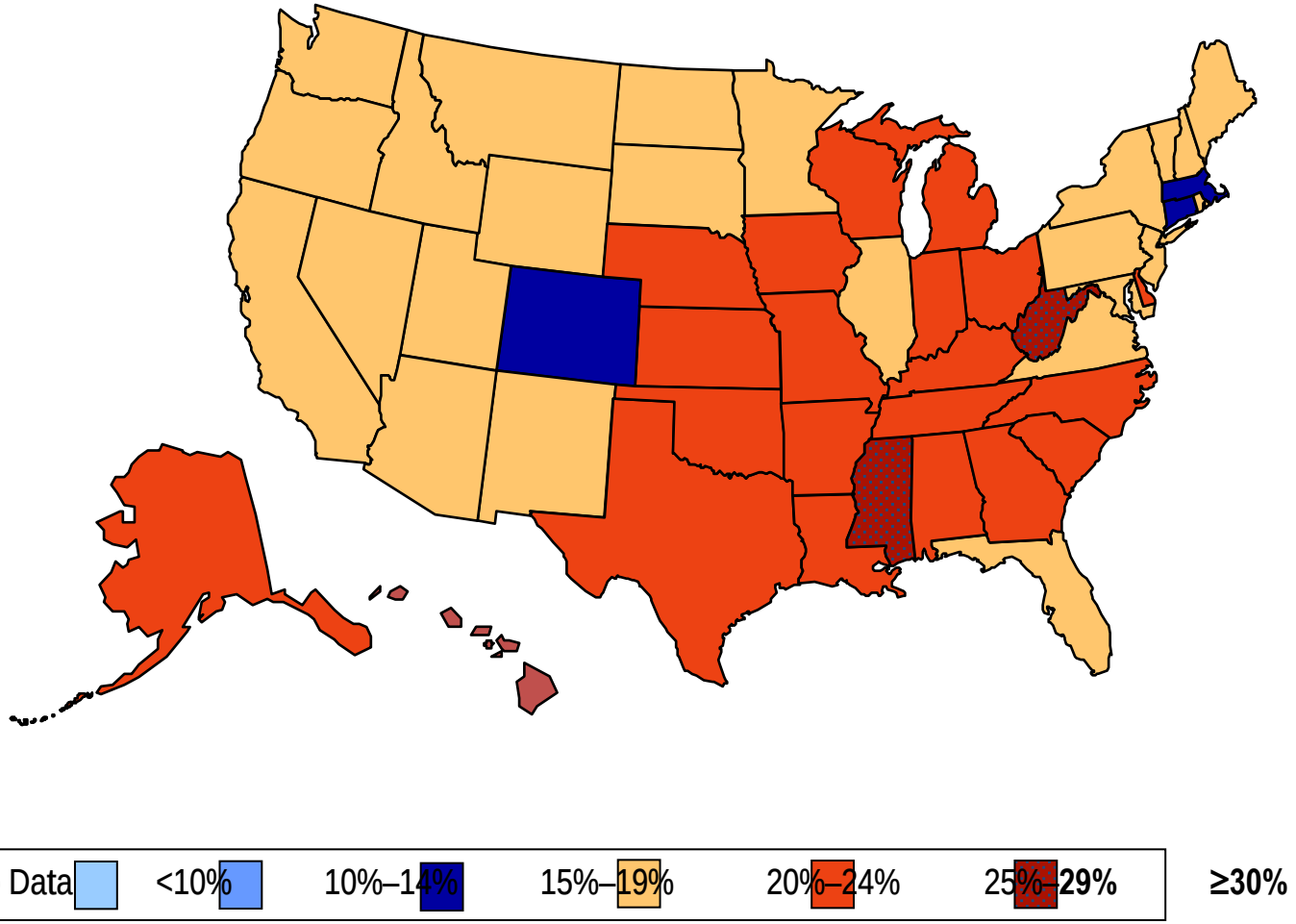


Obesity Trends* Among U.S. Adults

BRFSS, 2006

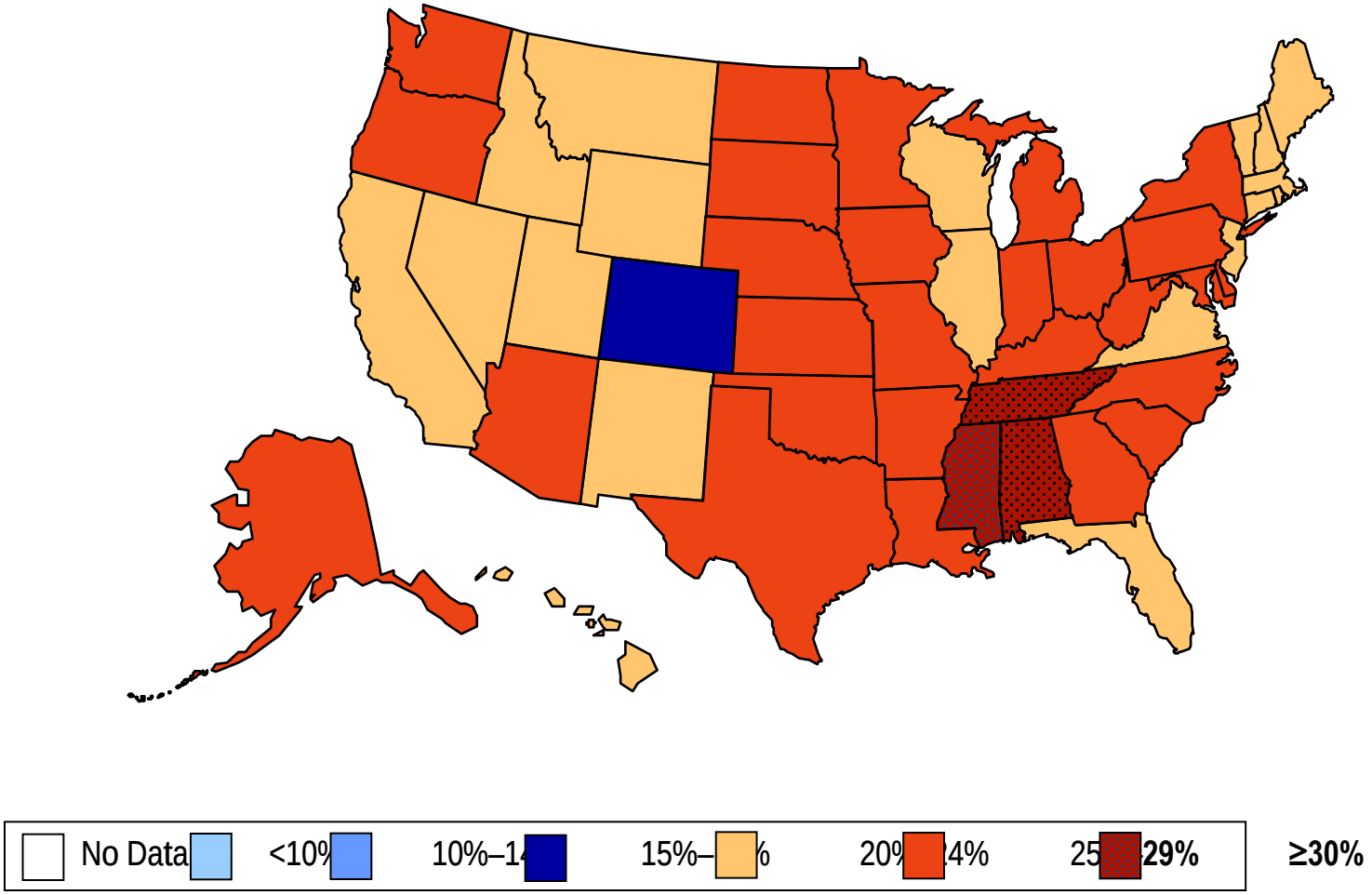
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)



Obesity Trends* Among U.S. Adults

BRFSS, 2007

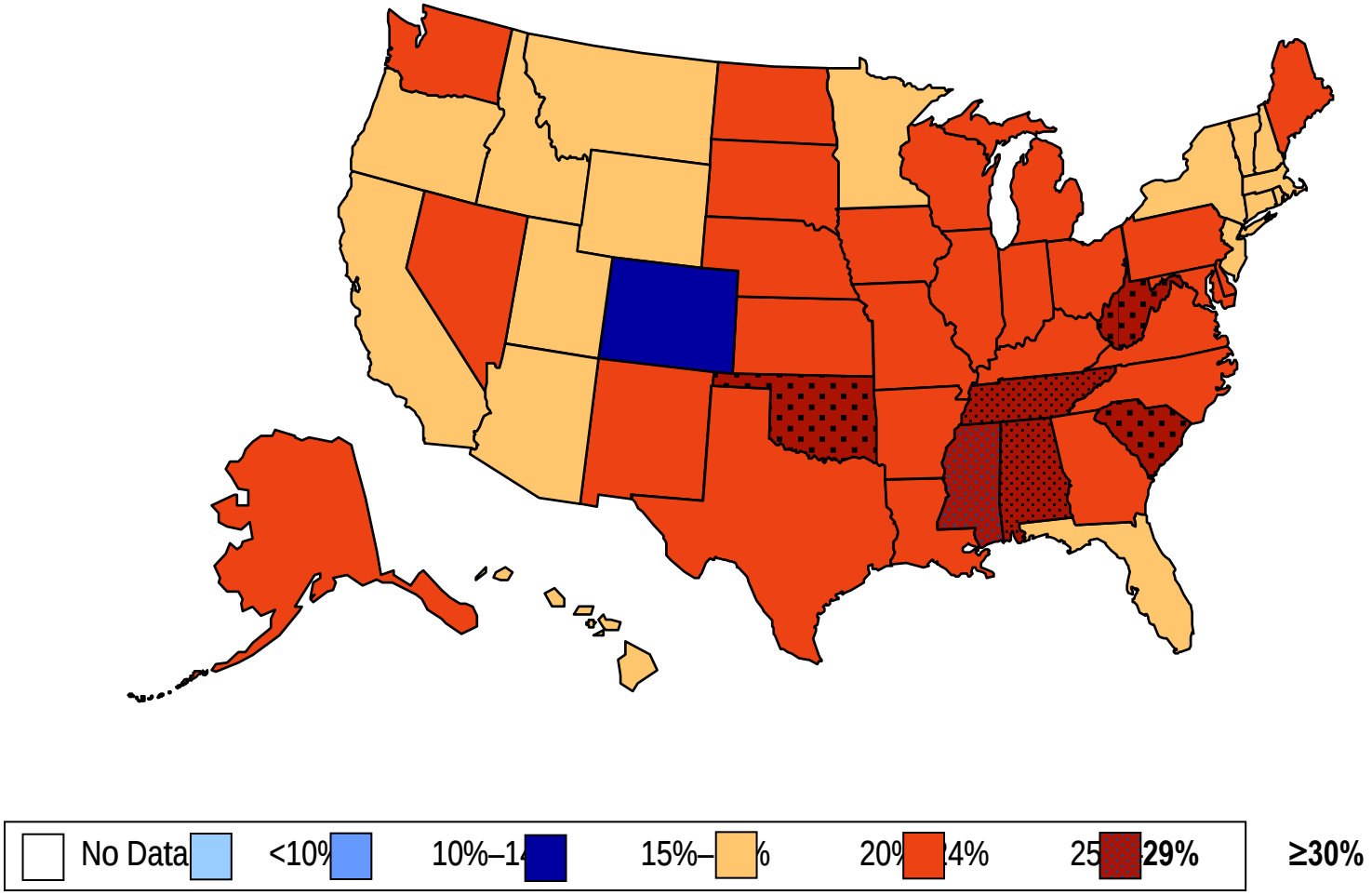
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)



Obesity Trends* Among U.S. Adults

BRFSS, 2008

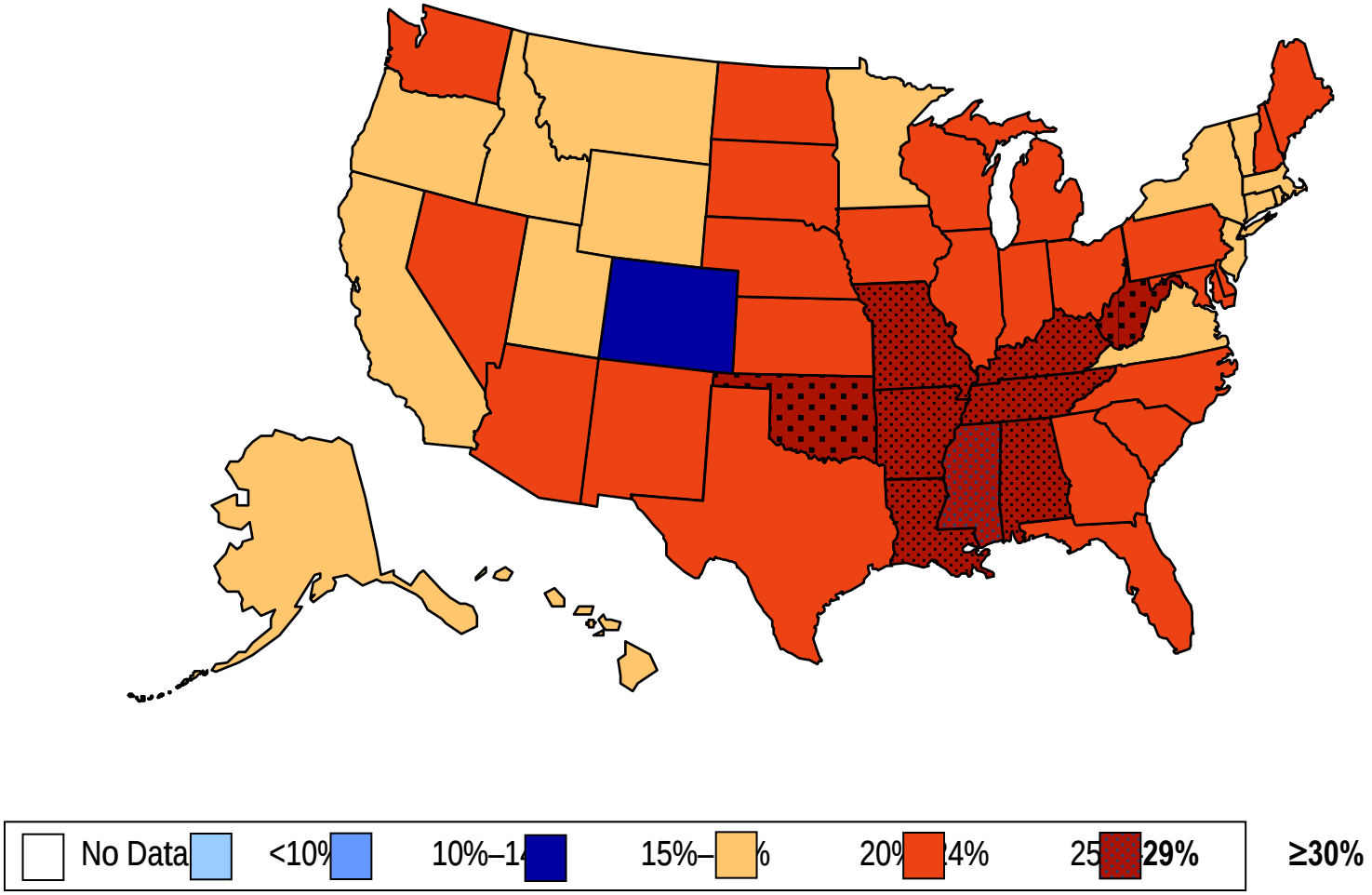
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)



Obesity Trends* Among U.S. Adults

BRFSS, 2009

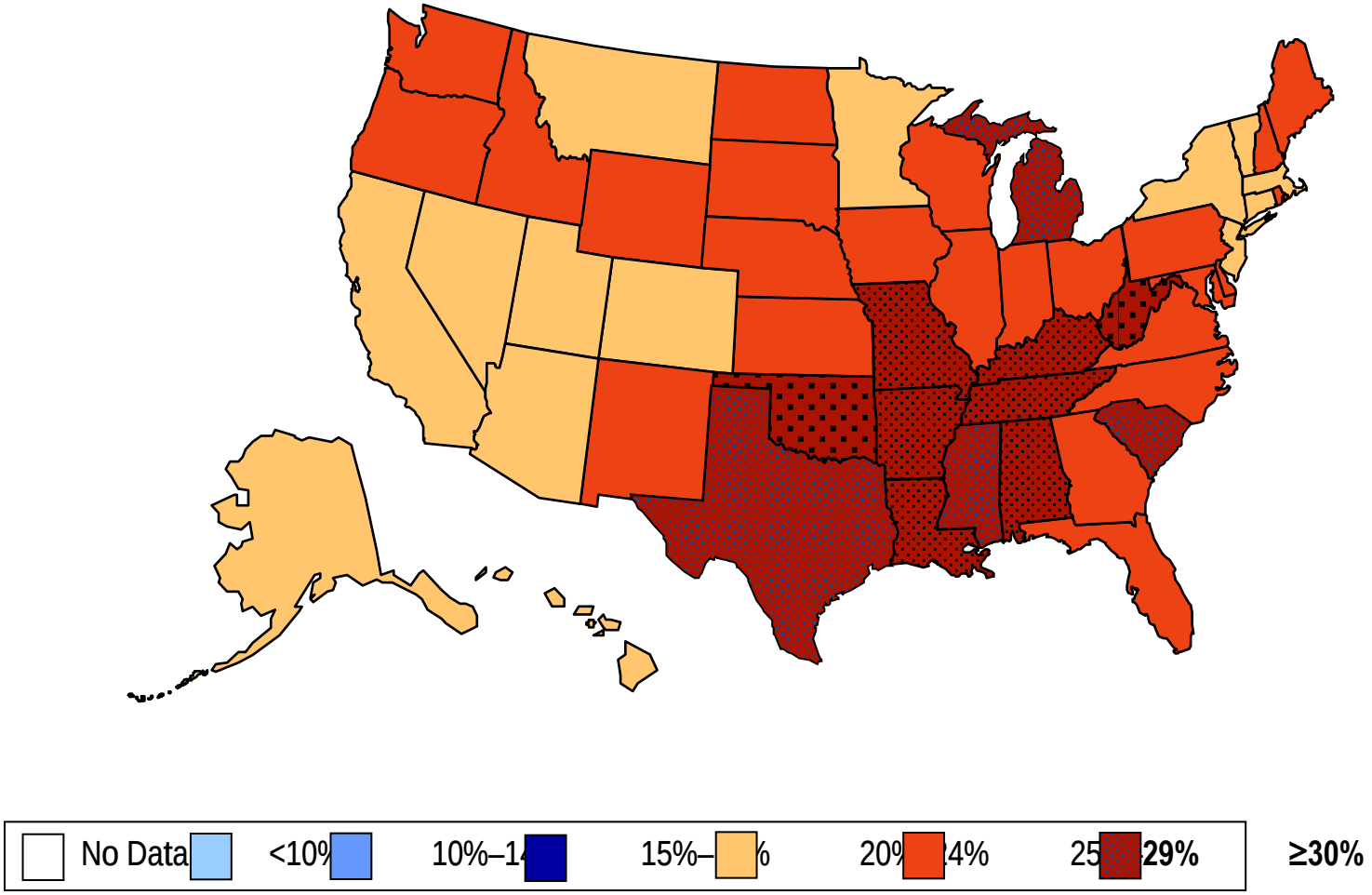
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)



Obesity Trends* Among U.S. Adults

BRFSS, 2010

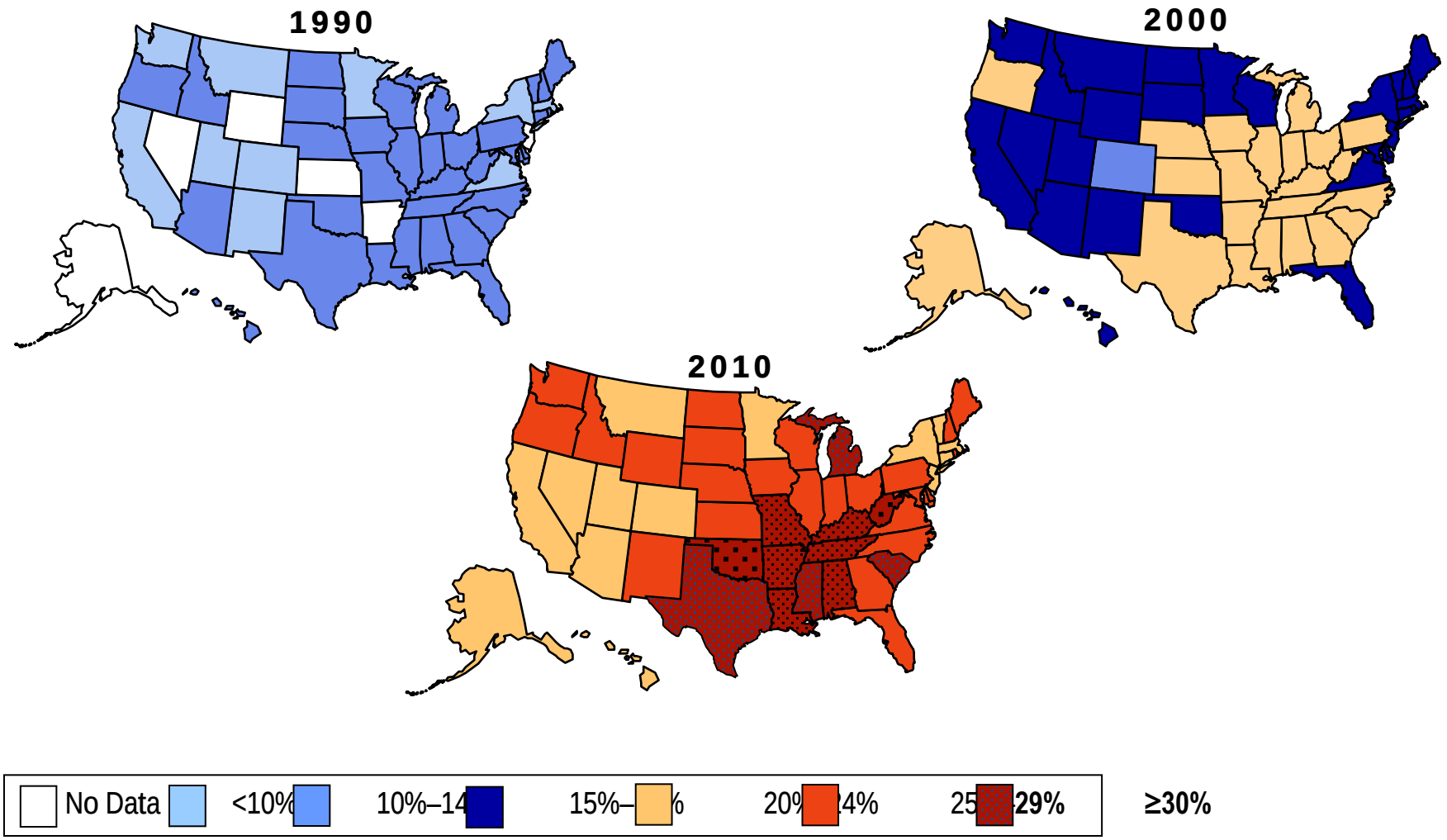
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)



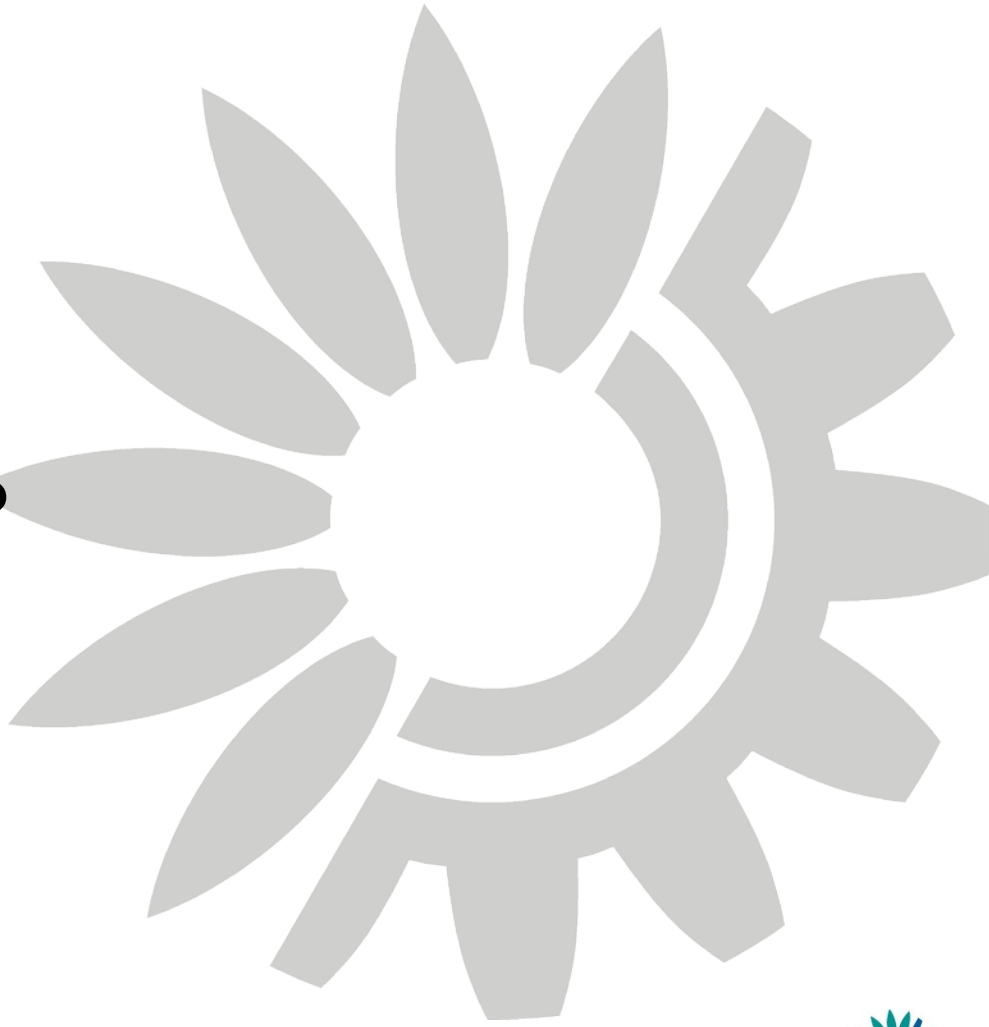
Obesity Trends* Among U.S. Adults

BRFSS, 1990, 2000, 2010

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



International transition politics?



European Environment Agency

Transitions discourse: UN

"The world is moving through a **Great Transition**. This transition is economic, as the digital revolution advances and as new powers and groups emerge […] The Great Transition is also developmental, as we seek a more sustainable path […] And our ecological footprint is overstepping the Earth's boundaries."

Ban Ki-moon (2012), *The Pursuit of Peace at a Time of Global Transition*

"We view the implementation of green economy policies by countries that seek to apply them for the **transition towards sustainable development** as a common undertaking […] We recognize the importance of a **just transition**"

Rio+20 (2012), *The Future We Want*

"However, the **process of transition** may be slowed by the problem of '**lock-in**' owing to the capital-intensive nature of many manufacturing processes and long plant lives".

UNEP (2011), *Towards a Green Economy*

Global regimes with (2050) transitional dimension

- UNFCCC
- UNCCD
- UNCBD
- Rio+20

- Long-term vision
- Recognise systemic complexity
- Link with economic realities

- Yet, often lacking performance

Long-term policy-making in the EU

European Environment Agency

Long-term perspective in EU policy-making

Sustainable development as one of the driving elements

Why is it difficult?

- Short-term electoral cycles
- Future generations are hard to take into account
- Delayed effect of long-term decisions
- Current economic crisis
- …
- It touches the core of our socio-technical systems!
  - What and who we are
  - Political economy
  - Path dependencies and lock-ins

And yet, transitions discourse in the EU

"[…] the economic downturn can also be seen as an opportunity […] for investing in the competitiveness of the European economy to facilitate its **transition to a knowledge-based, safe and sustainable, renewable-energy focused, energy-efficient and low-carbon economy**"

Competitiveness Council Conclusions (28.05.2009)

"To tackle these challenges and turn them into opportunities our economy will require a **fundamental transformation** within a generation – in energy, industry, agriculture, fisheries and transport **systems**, and in producer and consumer behaviour"

European Commission (2011), *Roadmap to a Resource Efficient Europe*

"[…] risks of major **systemic collapse**"

Commission staff working paper (2011)

"[…] the shift towards a sustainable and responsible resource-efficient European economy and society will require, in addition to technological innovation, **innovation at the level of our socio-economic system**, i.e. new governance models, new business and education models, new consumption patterns, and lifestyles geared towards the sustainable management of resources."

Environment Council Conclusions (19.12.2011)

European policies recognise the challenge
and embrace ambitious visions for a sustainable society

"In 2050, we live well, within the planet's ecological limits. Our prosperity and healthy environment stem from an innovative, circular economy where nothing is wasted and where natural resources are managed sustainably, and biodiversity is protected, valued and restored in ways that enhance our society's resilience. Our low-carbon growth has long been decoupled from resource use, setting the pace for a global safe and sustainable society."

Source: 7th Environmental Action Programme

Other EU policies offer similar perspectives: Europe 2020 Strategy, EU Energy Roadmap 2050, Roadmap to a Resource Efficient Europe, Roadmap for a competative low carbon economy in 2050, etc.

EU Roadmaps 2050

A Roadmap for moving to a competitive low carbon economy in 2050	DG Climate Action
Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system (Transport White Paper)	DG Mobility and Transport
Roadmap to a Resource Efficient Europe	DG Environment
Energy Roadmap 2050	DG Energy

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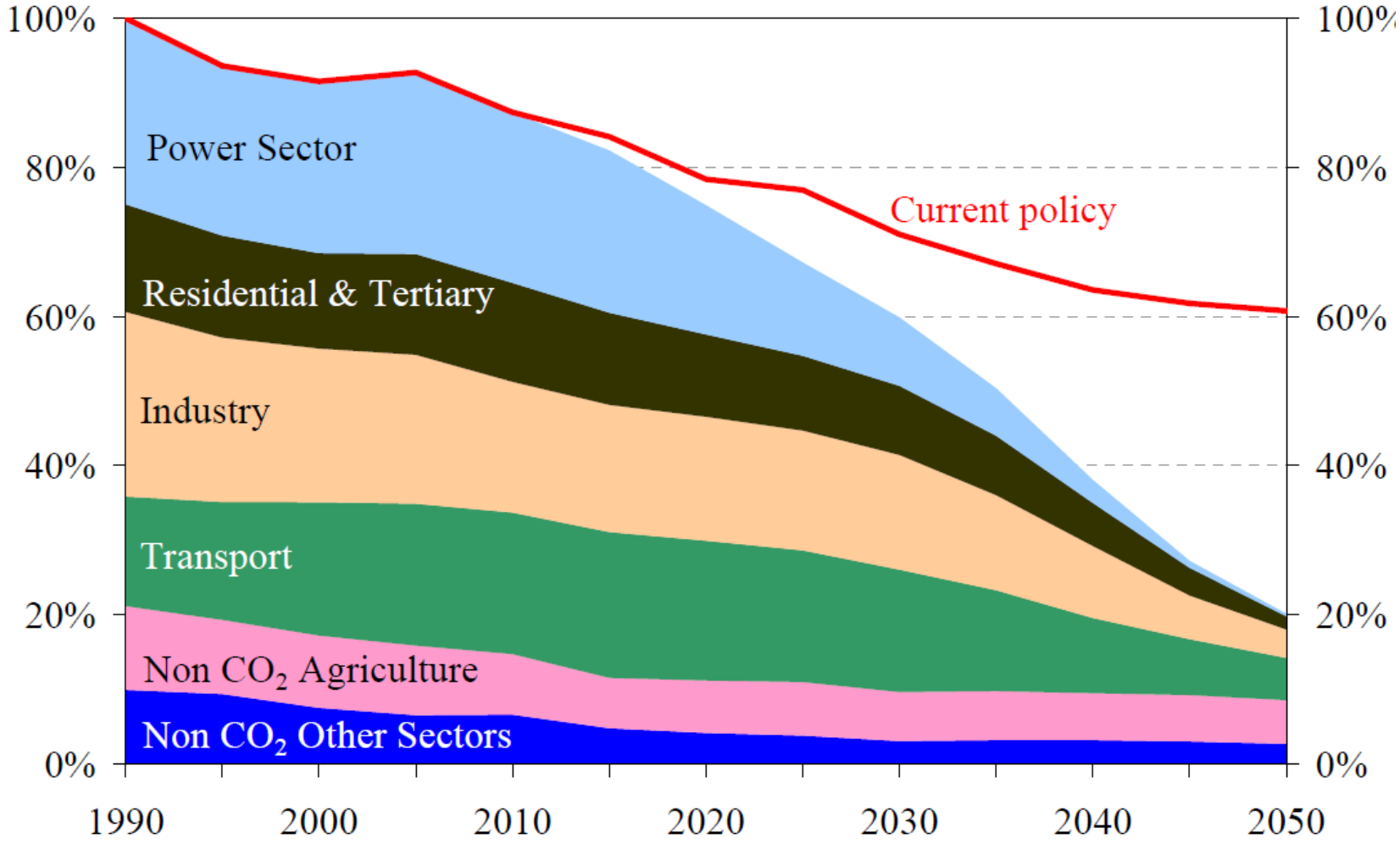
EU GHG emissions towards an 80 % reduction

(100% = 1990)



Source: European Commission (2011a)

European Environment Agency

EU Roadmaps 2050

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Roadmap to a Single European Transport Area

"Growing transport and supporting mobility while reaching the 60% emission reduction target"

"Action cannot be delayed. Infrastructure takes many years to plan, build and equip – and trains, planes and ships last for decades – the choices we make today will determine transport in 2050."

"Technological innovation can achieve a faster and cheaper transition to a more efficient and sustainable European transport system by acting on three main factors: vehicles' efficiency through new engines, materials and design; cleaner energy use through new fuels and propulsion systems; better use of network and safer and more secure operations through information and communication systems."

"Innovation can also play a role in promoting more sustainable behaviour."

"gradual phasing out of 'conventionally-fuelled' vehicles from the urban environment"

"By 2050, complete a European high-speed rail network"

"avoid imposing excessive burdens on EU operations
which could compromise the EU role as 'global aviation hub' "

EU Roadmaps 2050

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Roadmap to a Resource Efficient Europe

Long-term vision 2050

By 2050 the EU's economy has grown in a way that respects resource constraints and planetary boundaries, thus contributing to global economic transformation. Our economy is competitive, inclusive and provides a high standard of living with much lower environmental impacts. All resources are sustainably managed, from raw materials to energy, water, air, land and soil. Climate change milestones have been reached, while biodiversity and the ecosystem services it underpins have been protected, valued and substantially restored.

Milestones 2020

- o consumption and production
- o waste
- o research and innovation
- o environmentally harmful subsidies
- o taxation
- o ecosystem services
- o biodiversity
- o water
- o air
- o land and soils
- o marine resources
- o food
- o buildings
- o mobility

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Conclusions

1. EU has adopted a number of policies with a 2050 horizon
2. These are gradually having an impact on Member States and 2020/30 policies
3. The efficiency paradigm will not suffice to reach the stated goals
4. Transitions thinking offers a lense to conceptualize and frame future policy developments and broader social change
5. Serious reflection regarding knowledge needs are essential