

Overview: The use of U.S. population projections in global and environmental change applications

Brian O'Neill

National Center for Atmospheric Research (NCAR)
Workshop on Scenarios of U.S. Demographic Change
Rockville, MD; June 23-24, 2014

User Needs Session Goal

Understand key user needs for population scenarios, in order to guide the scenario production effort.

Highlight agency survey results

Example applications at different scales

Relevant characteristics of applications of population projections

Time scale

Short term (<20), medium term (20-50), long term (50+)

Spatial scale

Global, national, regional, state, county, grid cell; ecoregion, watershed, ...

Sector

Health, water, energy, agriculture, land use, labor/economy, natural disasters, ...

Population characteristics

Size, density, age, sex, urban/suburban/rural, income, education, health status, ...

Types of projections

Probabilistic, business as usual, high/low scenarios, variants, integrated scenarios, ...

Agency Use/Production of Demographic Scenarios

Ranking	Number of Agencies (offices or departments)
Very Likely	23
Likely	41
Possible	118
Very Unlikely	250

Key Agency Users:

DOC, DOE, DOI, DOT, EPA, HHS, HUD, NASA, SSA, USDA, and USGS

Predominantly medium- to long-term

Final Year of Projections	# of Projects
2025-2040	21
2041-2060*	16
2061-2100	13
Unknown	3

Predominantly national scale

Geographical Coverage	# of Projects
International/Global	6
U.S.	31
State/Regional	12
Unknown	4

Predominantly sub-state geographic resolution

Scale of Geography	# of Projects
U.S.	18
State/Regional	3
City/County/District	23
Unknown	9

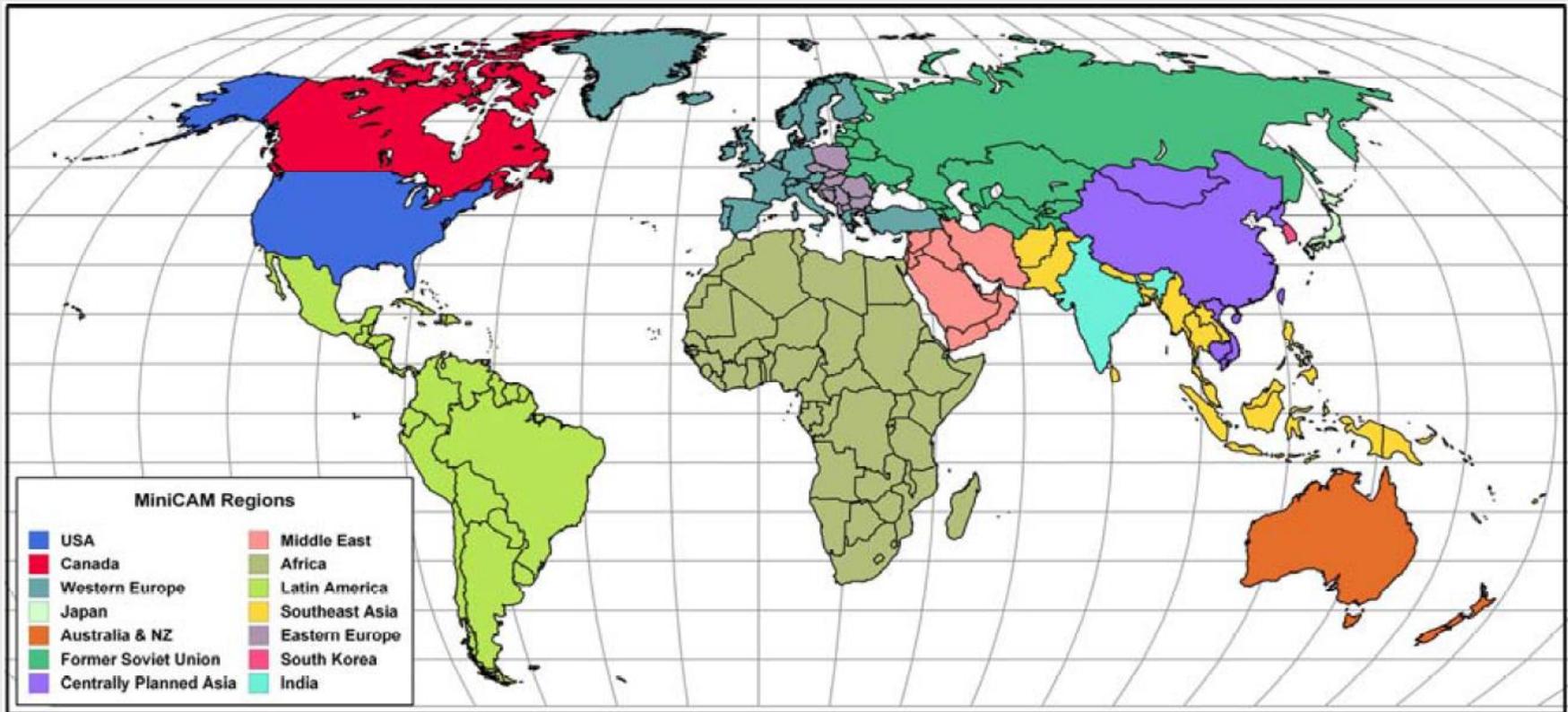
Predominantly from US Census Bureau

Source of Base Data	# of Projects
Primarily Census	27
Mix of Census and Other Sources	9
Other Source	7
Unknown	10

Example: Global projections

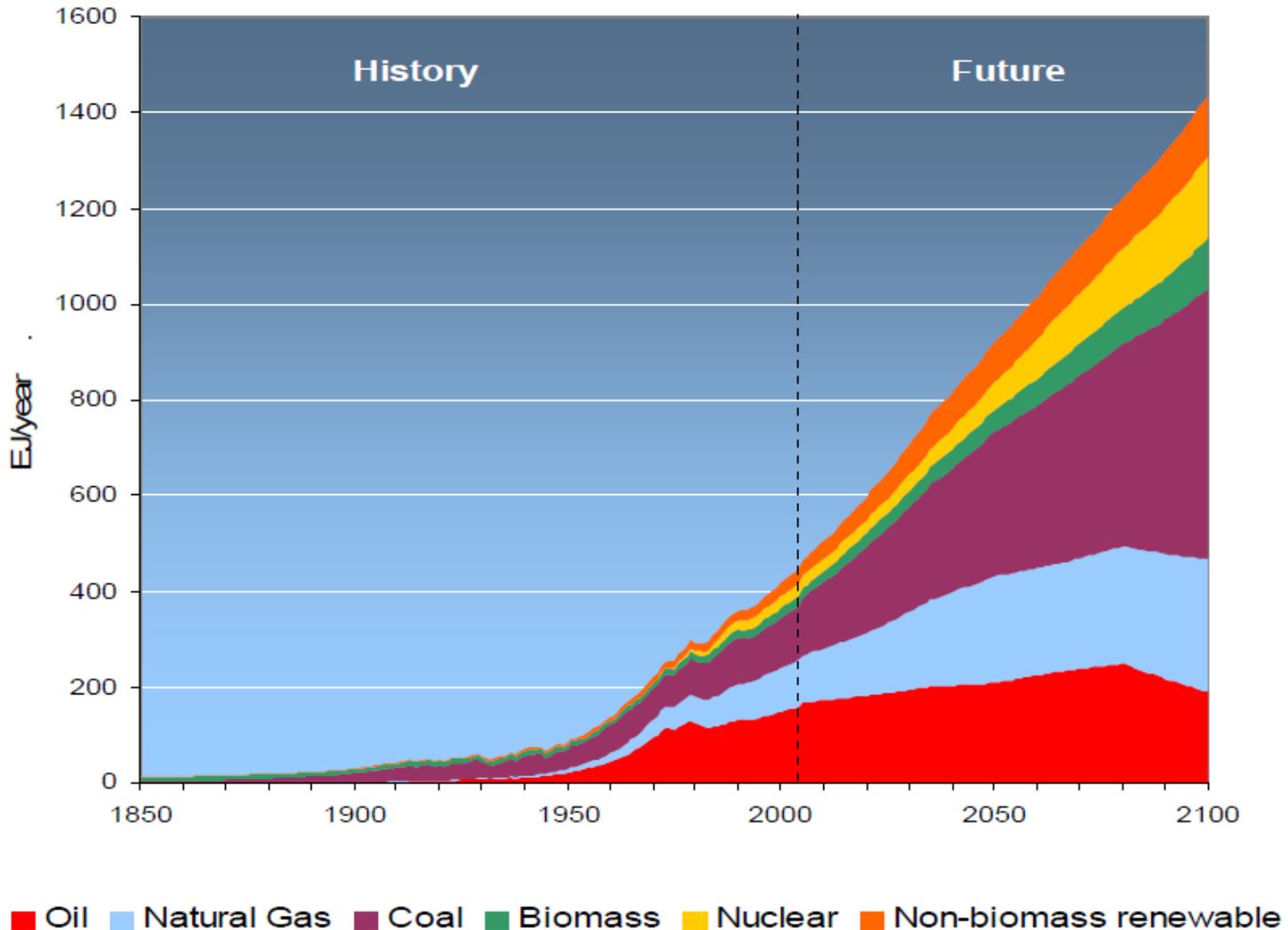
DOE Integrated Assessment Modeling

DOE Global Change Assessment Model (GCAM)

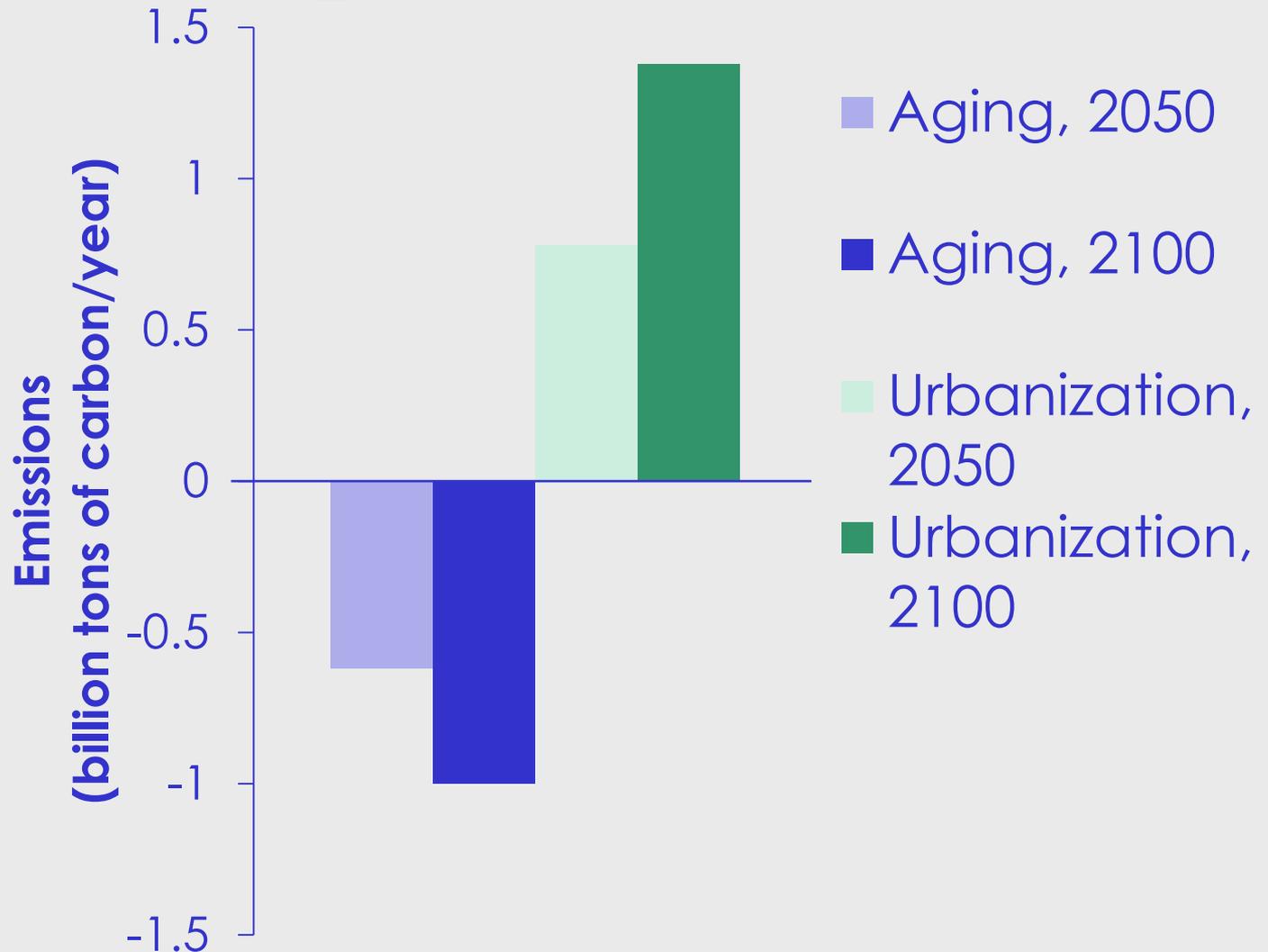


Example: Global projections

DOE Integrated Assessment Modeling



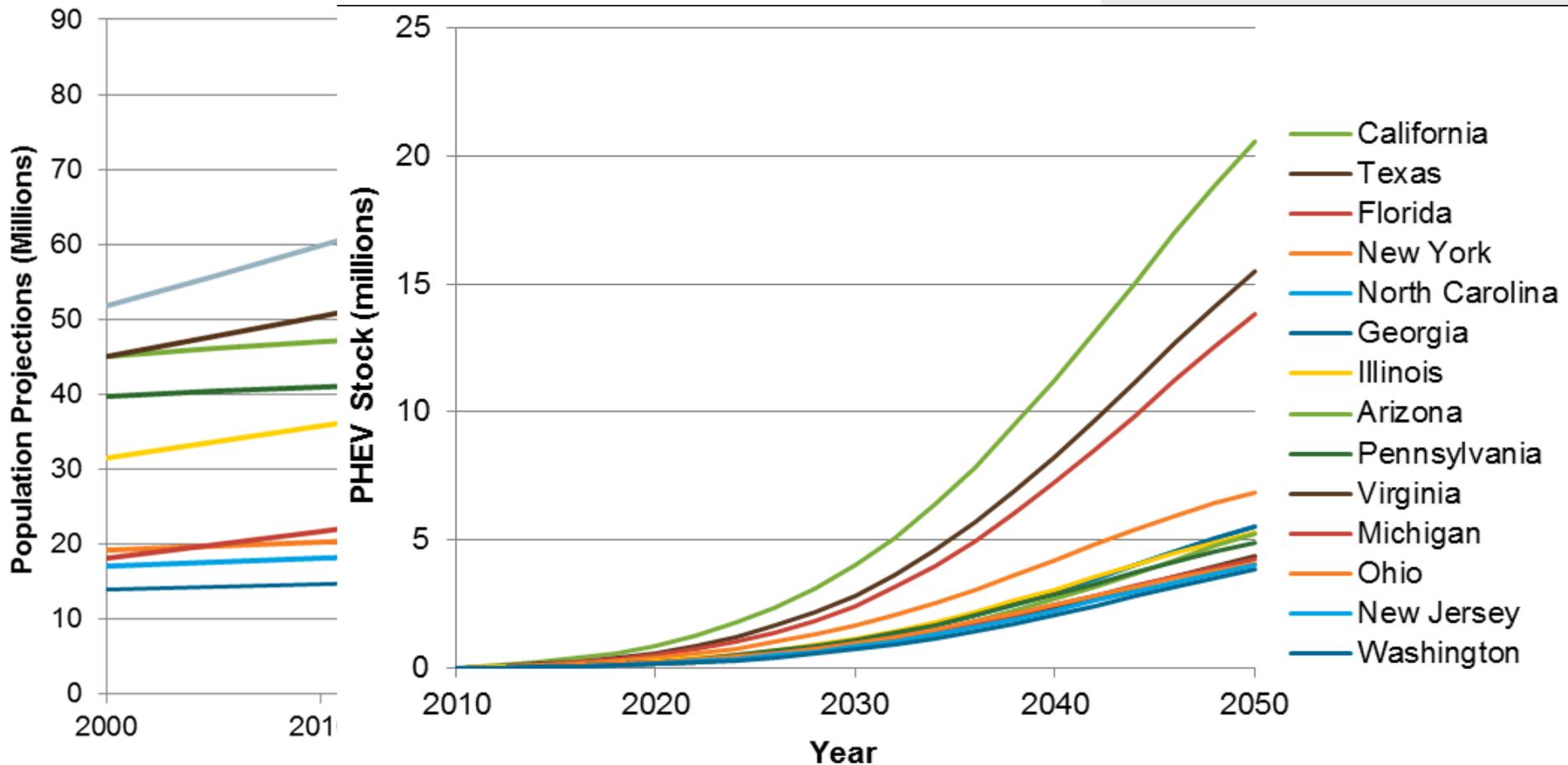
Influence of urbanization and aging on CO₂ emissions



Example: National projections

NREL Renewable Electricity Futures Study

US Census Bureau state projections \longrightarrow Projections of electric vehicle population.



Example: National projections

NCAR Spatial Projections and Exposure

National Projection

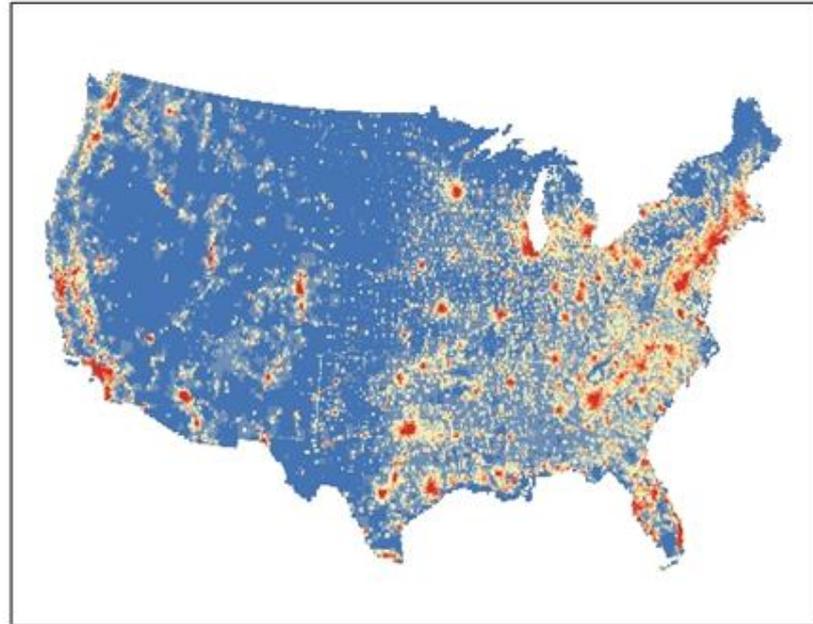


Regional Projection

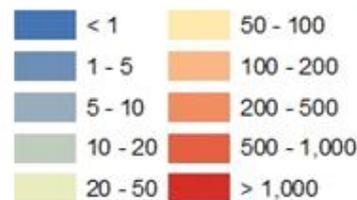


Gridded Projection

NCAR Projection, 2100

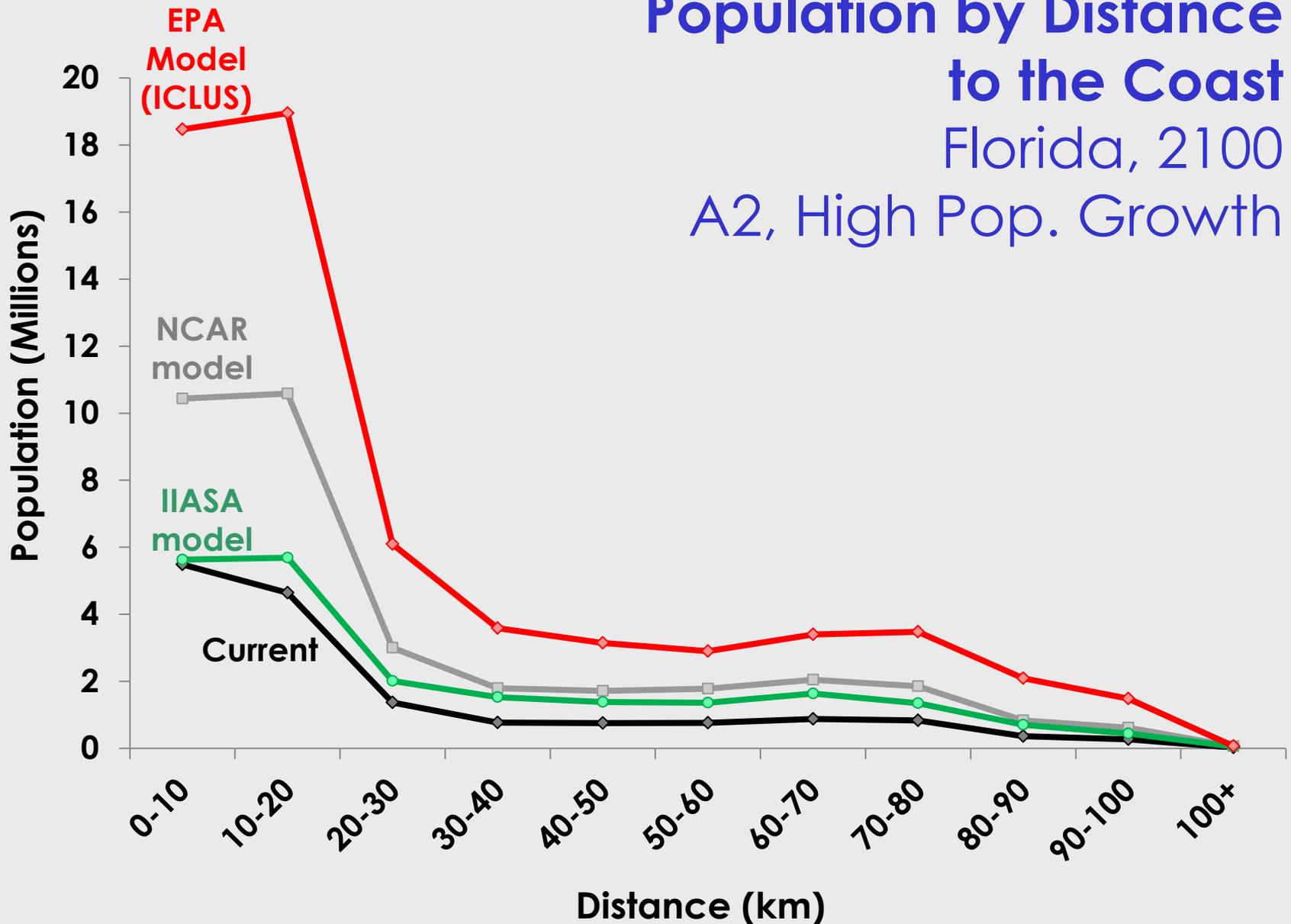


Population Density (km²)



Population by Distance to the Coast

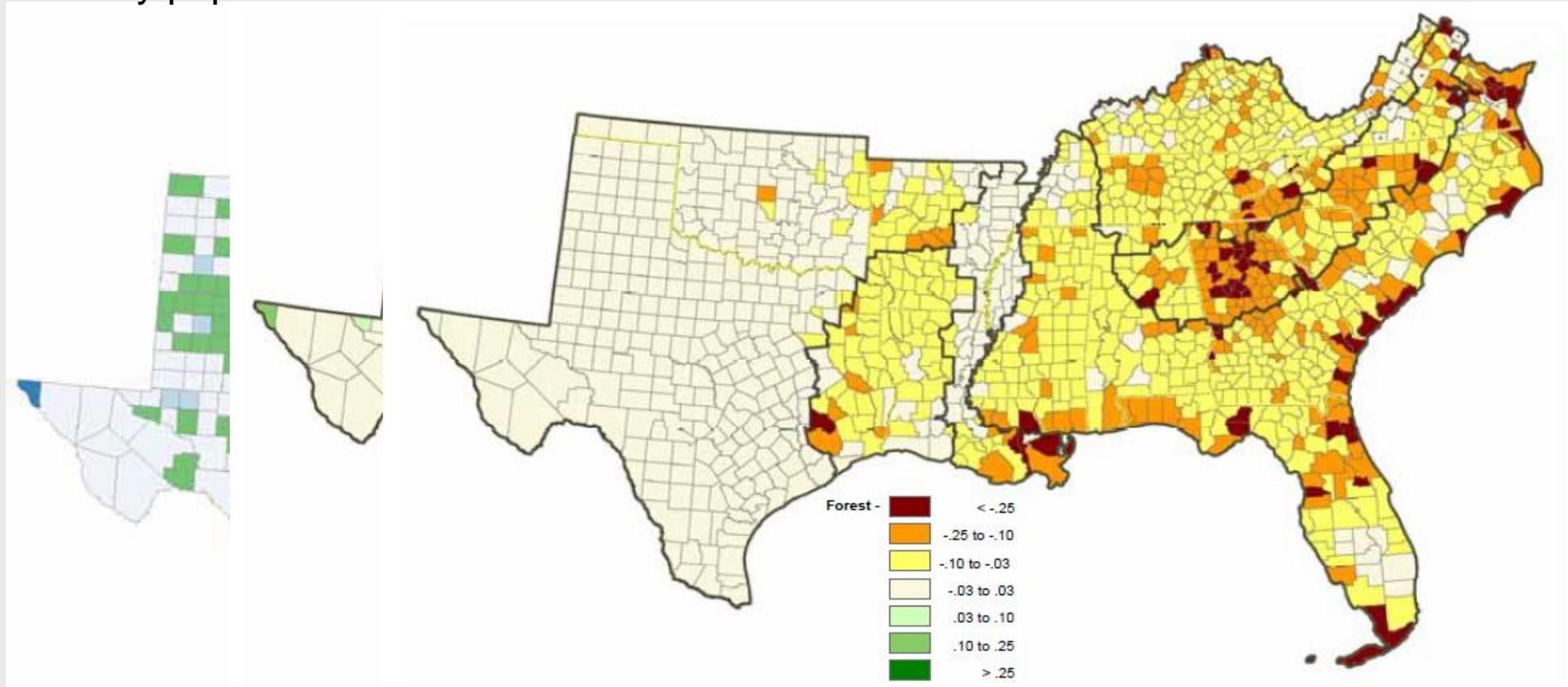
Florida, 2100
A2, High Pop. Growth



Example: Regional/state projections

USDA Southern Forest Futures Project

County population → Urban land use → Forest land use



The Third National Climate Assessment



Goal

- Enhance the ability of the United States to **anticipate, mitigate, and adapt** to changes in the global environment.

Vision

- Advance an **inclusive, broad-based, and sustained process** for assessing and communicating scientific knowledge of the impacts, risks, and vulnerabilities associated with a changing global climate in support of decision-making across the United States.



Sectors

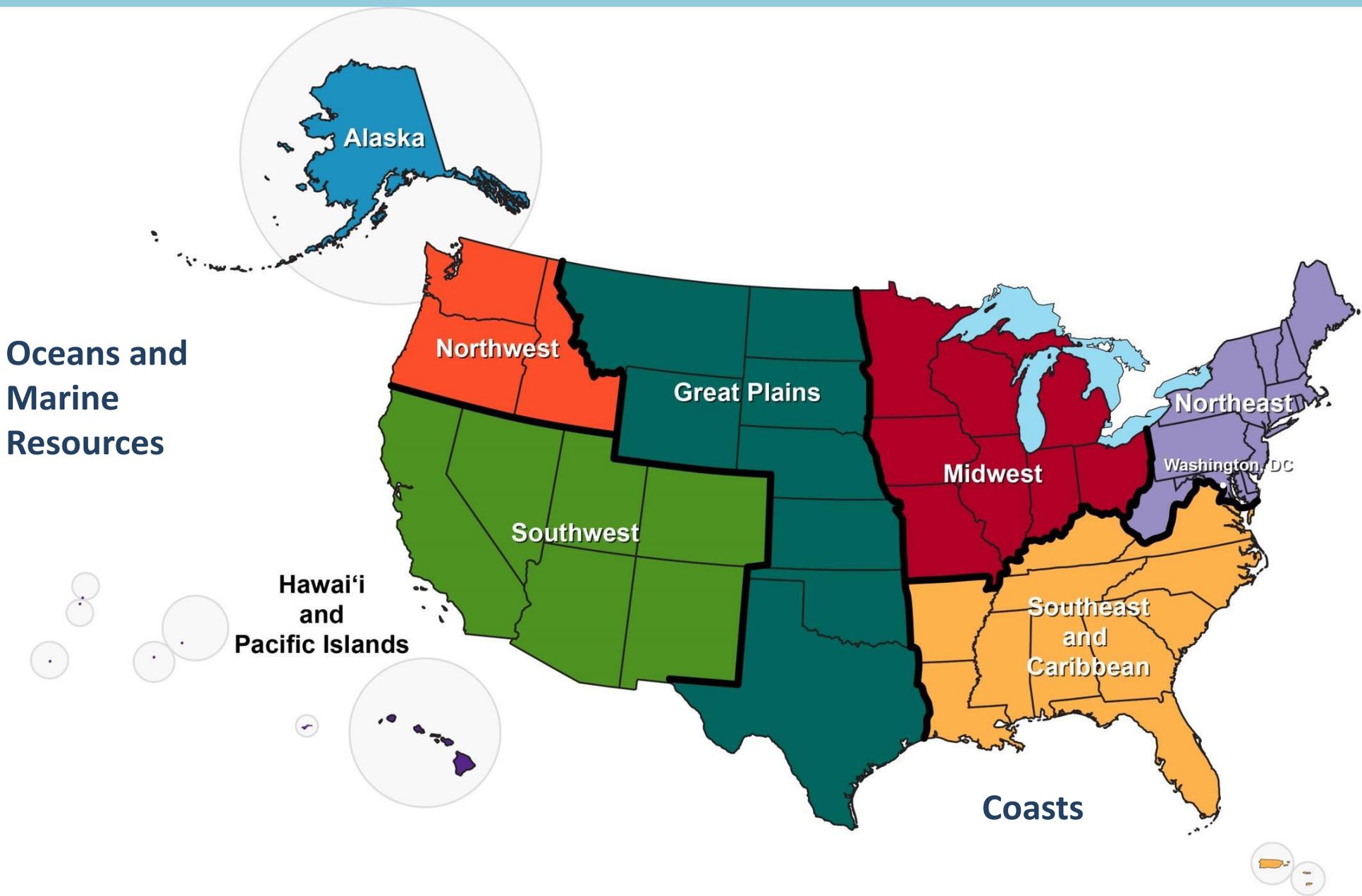
- Water Resources
- Energy Supply and Use
- Transportation
- Agriculture
- Forestry
- Ecosystems and Biodiversity
- Human Health



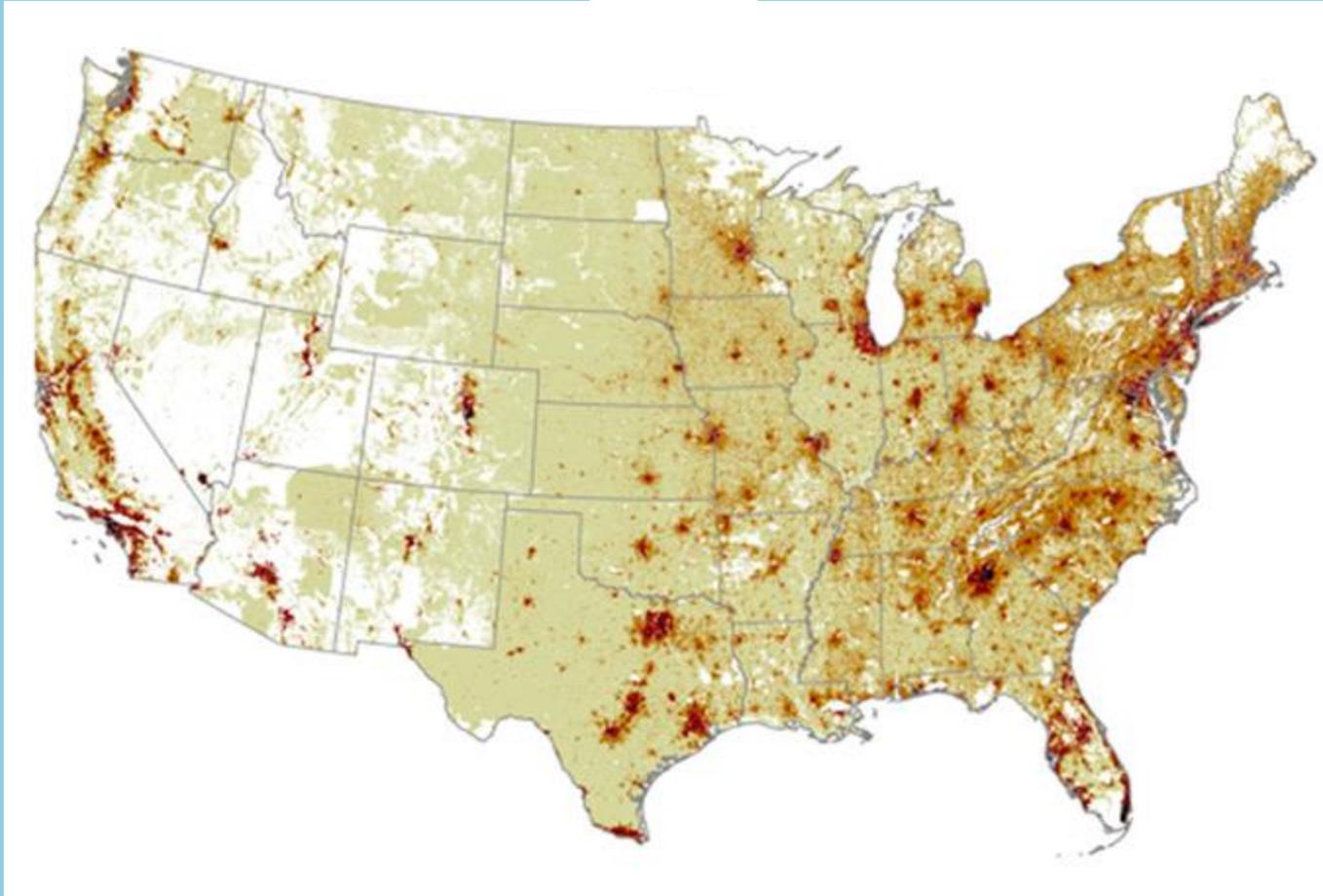
U.S. Global Change Research Program

**National Climate
Assessment**

Regions & Biogeographical Cross-Cuts



Population and Housing Scenarios from ICLUS



Bierwagen et al., 2010.



U.S. Global Change Research Program
**National Climate
Assessment**

User Needs Session, Monday p.m.

Application of state projections

David Egan-Robertson

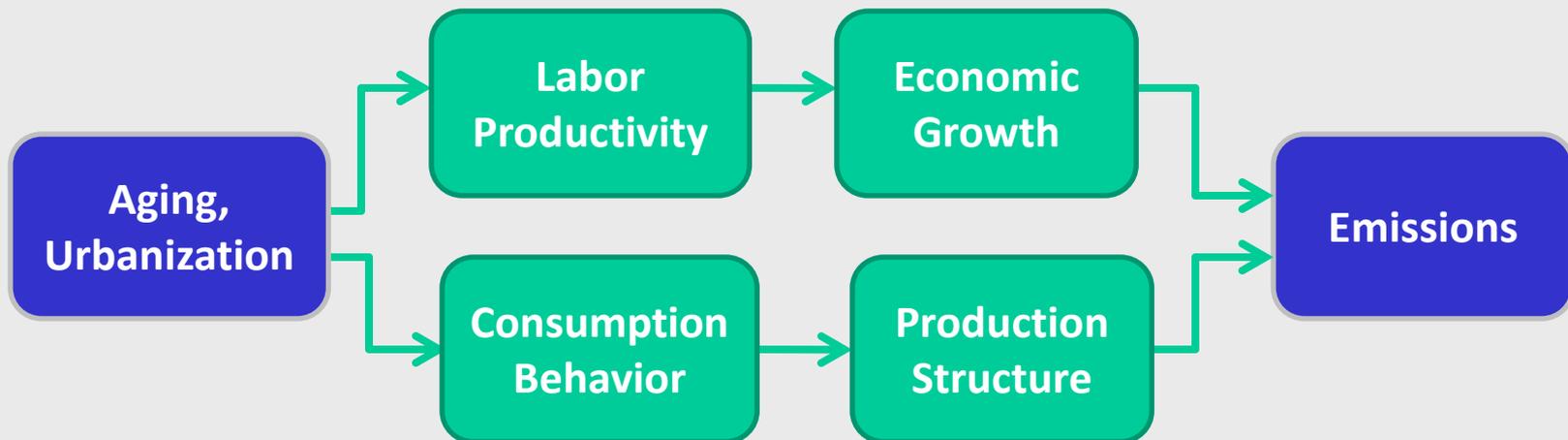
Application to climate change impacts and vulnerability

Ben Preston

Application to U.S. climate and health

John Balbus

Demographic Effects on Greenhouse Gas Emissions



Third National Climate Assessment

Climate Change Impacts in the United States

- <http://nca2014.globalchange.gov> -

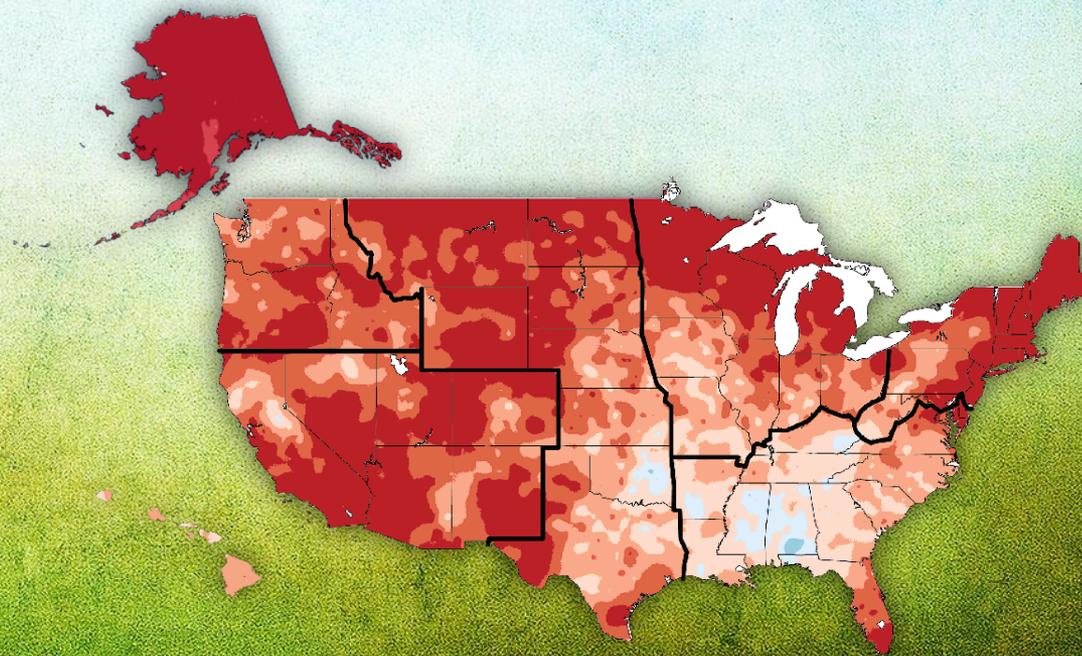
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