

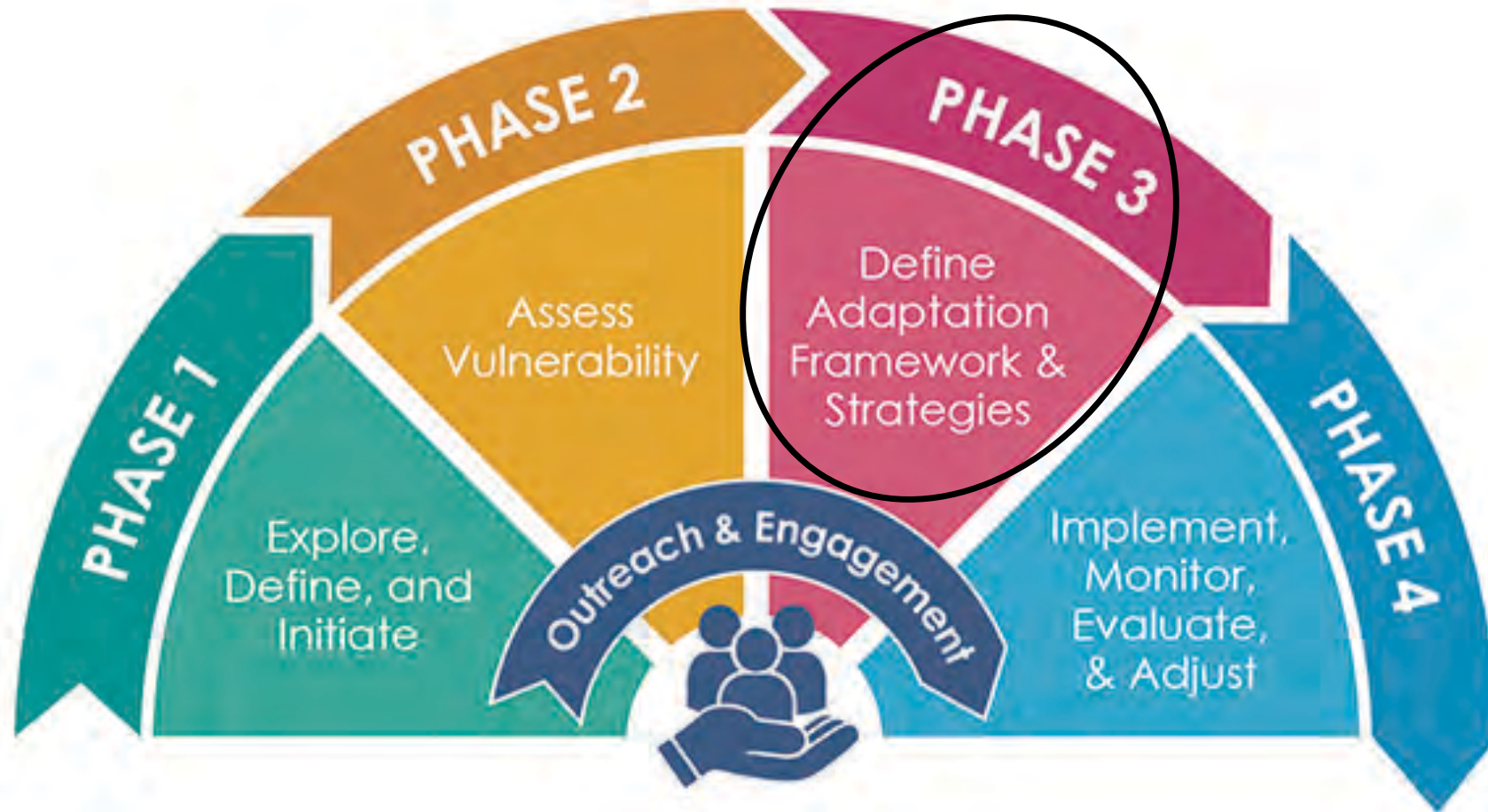


Introduction to Adaptation Strategies

Jessi Kershner



Adaptation Planning Process

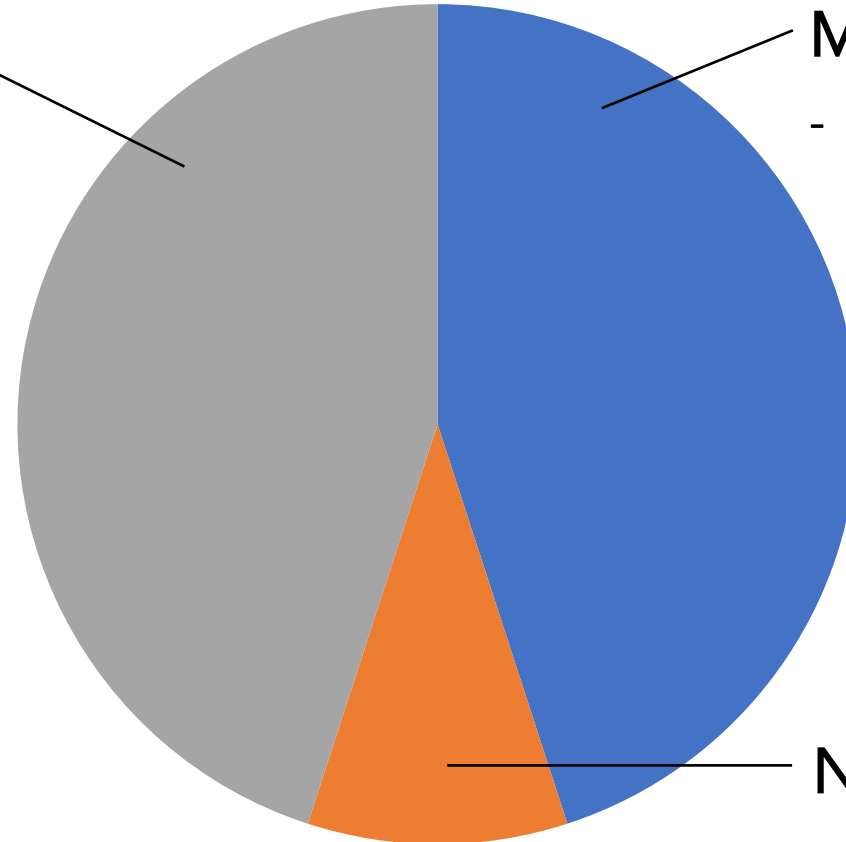


Decision Making in a Changing Climate



Current/same activities

- Educate public on water conservation



Modifications to current activities

- Plant drought-tolerant vegetation around county buildings

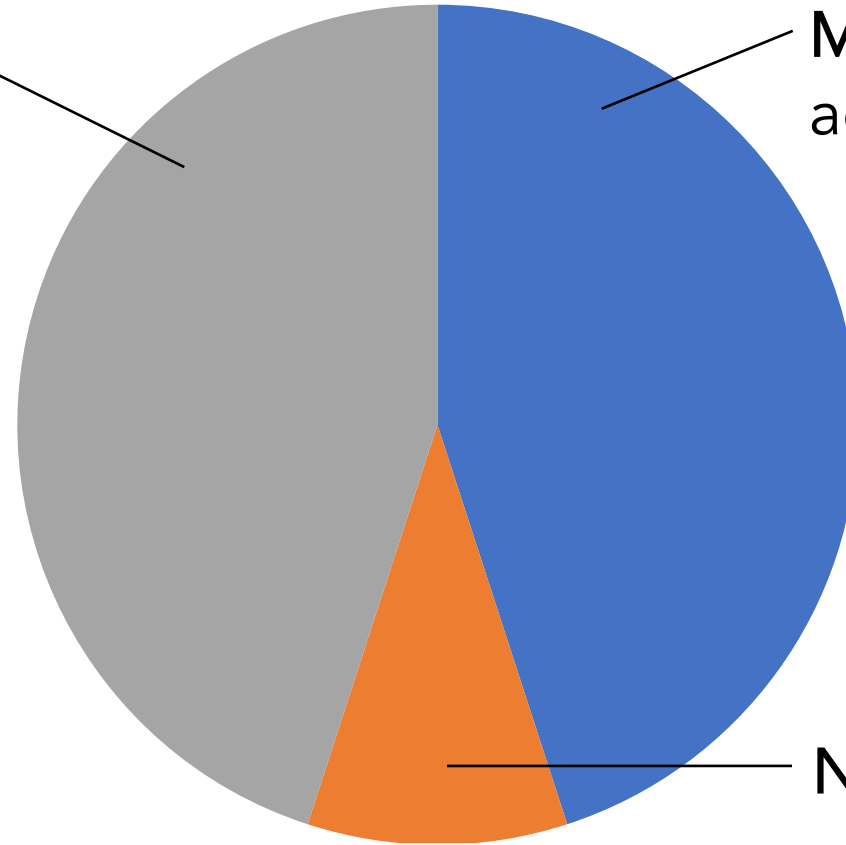
New/different activities

- Assess potential climate change-induced population migration within and to the county



Current/same activities

Modifications to current activities



New/different activities

Adaptation reflects the intentional consideration of climate change...**but activities are not always different.**

Defining Adaptation



Adaptation strategies aim to reduce the negative effects or take advantage of the opportunities provided by climate change.

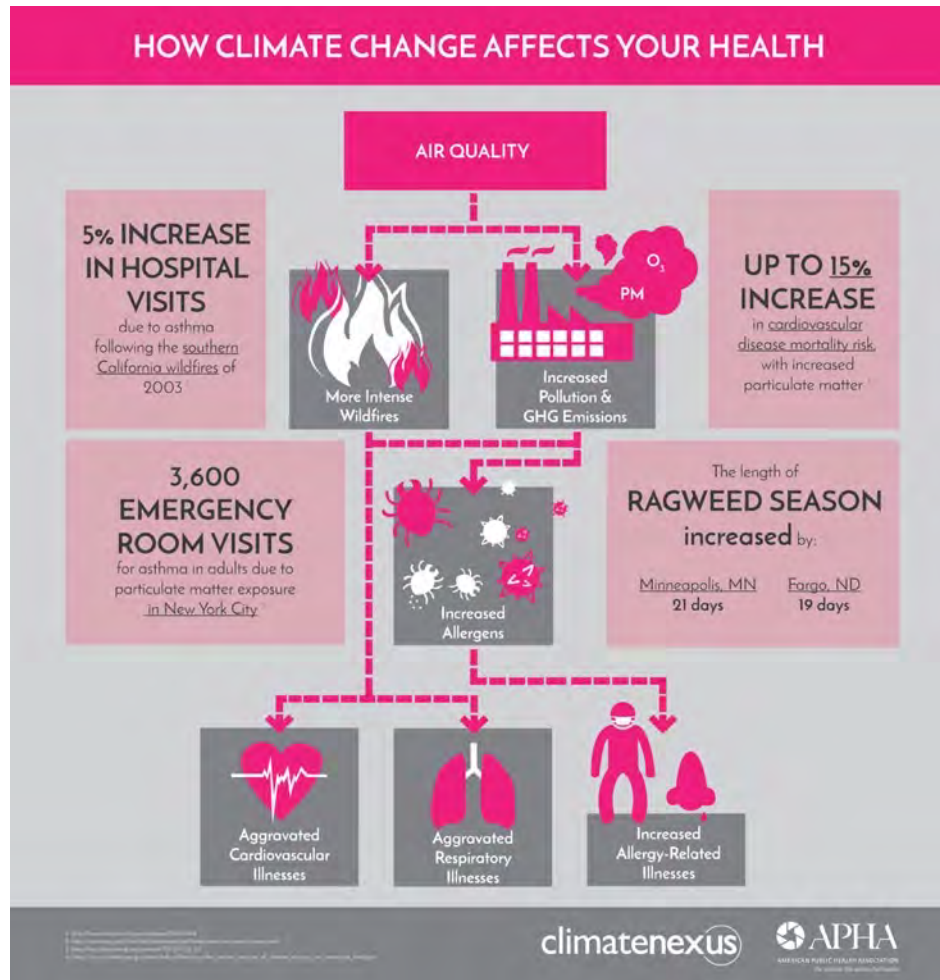
Adaptation strategies can reduce the vulnerability and/or increase the resilience of human, built, and natural systems to climate change.

General types of adaptation activities:

- Programmatic
- Plans, regulations, policies
- Capital improvement/infrastructure projects
- Knowledge/evaluation
- Coordination/collaboration



Strategies aimed at creating new or expanding existing programs, activities, or initiatives



Examples:

- Integrate climate into health programs and create a website that details health risks exacerbated by climate change and provides information that helps residents prepare for and respond to impacts
- Create Community Emergency Response Team training and offer ongoing training to residents to improve local hazard preparedness, response, and recovery
- Develop low-income energy programs
- Establish a shuttle system to cooling centers

Plans, Regulations, and Policy Development



Strategies aimed at developing or revising policies, plans, regulations, or guidelines



Examples:

- Increase parks in underserved areas
- Provide backup power for cooling centers
- Create hazard recovery plans and prioritize restoration of vital facilities and assets
- Take regular inventory of emergency facility needs (e.g., cooling centers, temporary shelters)

Capital Improvement/Infrastructure Projects



Strategies designed to address physical and functional deficiencies or needs in the built and natural environment



Problem: Roofs absorb heat energy and become very hot.
Source: Heat Island Group, Lawrence Berkley National Lab.

Solution: Increase roof reflectivity/emissivity.

Examples:

- Construct water storage facilities and install efficient plumbing fixtures and equipment in buildings to conserve water
- Use green infrastructure for stormwater management
- Install heat-reducing roof
- Update emergency services communications equipment



Strategies that aim to gather information about climate changes, impacts, and/or management effectiveness

- May be a precursor to implementing another type of strategy



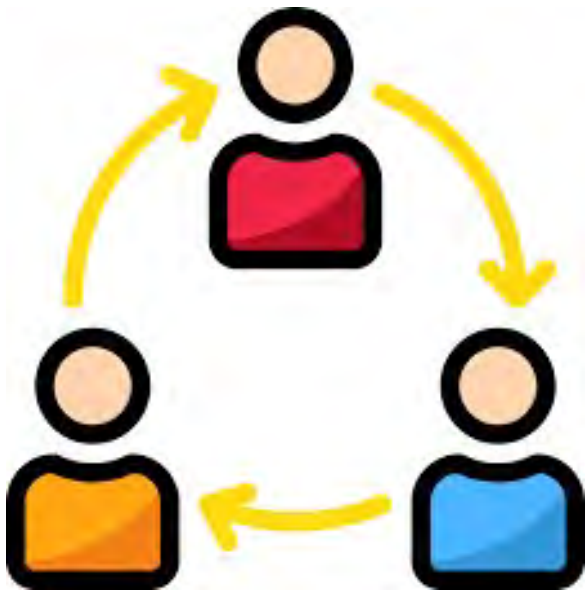
Examples:

- Assess and improve the adaptive capacity of people who are most vulnerable to climate change-exacerbated hazards (e.g., homeless, elderly, those living in high-risk areas or working in high-risk situations)
- Explore feasibility of supply side diversification, resilient electrical distribution infrastructure, and facilitate access to local, decentralized renewable energy
- Assess food security, food systems, and vital services to strengthen and diversify local and regional food systems

Collaboration/Coordination



Strategies that focus on initiating or expanding partnerships and relationships, communicating and sharing information, expanding awareness, or coordinating across organizational, jurisdictional, or political boundaries



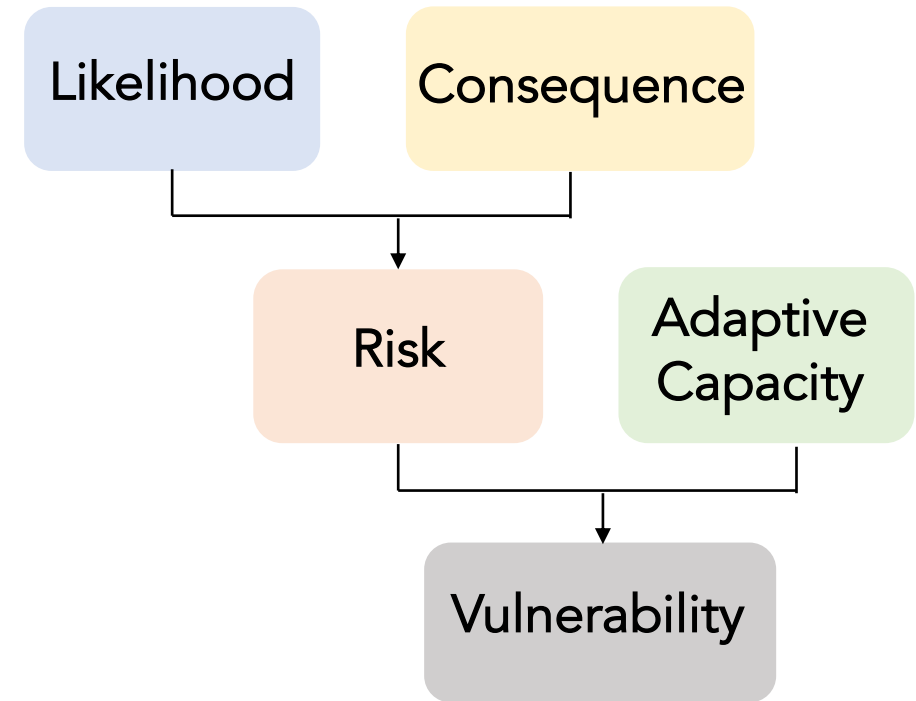
Examples:

- Identify a county building or site that's safe, accessible, and well-known to serve as a temporary coordination center, and widely publicize its location
- Encourage neighborhoods to become familiar with residents who have skills and tools to assist others with special needs, should residents need to provide emergency response (e.g., develop maps and inventories of neighborhood assets)
- Work with local medical providers and hospitals to ensure that medical facilities are prepared to meet periods of increased demand

Using Vulnerability Results in Adaptation Planning



- ↓ Likelihood
- ↓ Consequence
- ↑ Adaptive Capacity





↓ Likelihood (limit change)

- Increase shading and heat-mitigating materials on pedestrian walkways, transit stops, and around county facilities
- Reduce stormwater runoff within residential neighborhoods that flood frequently
- Increase organic matter content and water retention in soils within urban and agricultural settings (e.g., by planting perennials)





↓ Consequence (minimize effects)

- Site outside the floodplain and/or require that new or renovated buildings utilize flood-protection measures (e.g., raised finished-floor levels and temporary flood barriers)
- Retrofit or reroute pedestrian/bicycle trails and bridges in areas that are subject to repetitive flooding
- Implement early detection monitoring of invasive species and remove detected species immediately





↑ Adaptive Capacity (improve ability to cope w/change)

- Offer professional development opportunities for staff to develop their technical expertise and skills to prepare for and respond to climate change impacts
- Create policies that encourage solar and other renewable energy generation
- Build partnerships between public, private, and nonprofit sectors to provide critical services to vulnerable populations



Examples?



UP NEXT!

Case Study #1: Trabuco Creek Restoration



Existing restoration project focused on improving stream and riparian habitat quality, sustainability, and function



Primary project activities included removing barriers to fish passage (e.g., non-functioning fords and dams), adding channel complexity, and removing invasive vegetation

Purpose was to **re-evaluate project goals and activities** in light of climate impacts and vulnerabilities to determine if **planned activities help reduce impacts** and **identify additional activities** that could also help minimize vulnerabilities

Case Study #1: Trabuco Creek Restoration



STEP 1. IDENTIFY CLIMATE + NON-CLIMATE IMPACTS

- Flooding, drought, invasive plants, recreation



STEP 2. DETERMINE WHETHER/HOW PLANNED ACTIVITIES REDUCE IMPACTS

- ACTION: Add channel complexity
 - ✓ Slows floodwaters to minimize erosion/scour
 - ✓ Increases water availability by creating pools
- ACTION: Remove invasive vegetation
 - ✓ Increases habitat quality and functioning
 - ✓ Reduces erosion risk



STEP 3. IDENTIFY ADDITIONAL ACTIVITIES

- ACTION: Manage recreation in sensitive areas
 - ✓ Maintains habitat quality and functioning
 - ✓ Reduces erosion risk
- ACTION: Build a system water budget to better manage water and multiple uses
 - ✓ Increases habitat availability and connectivity and maintains water availability

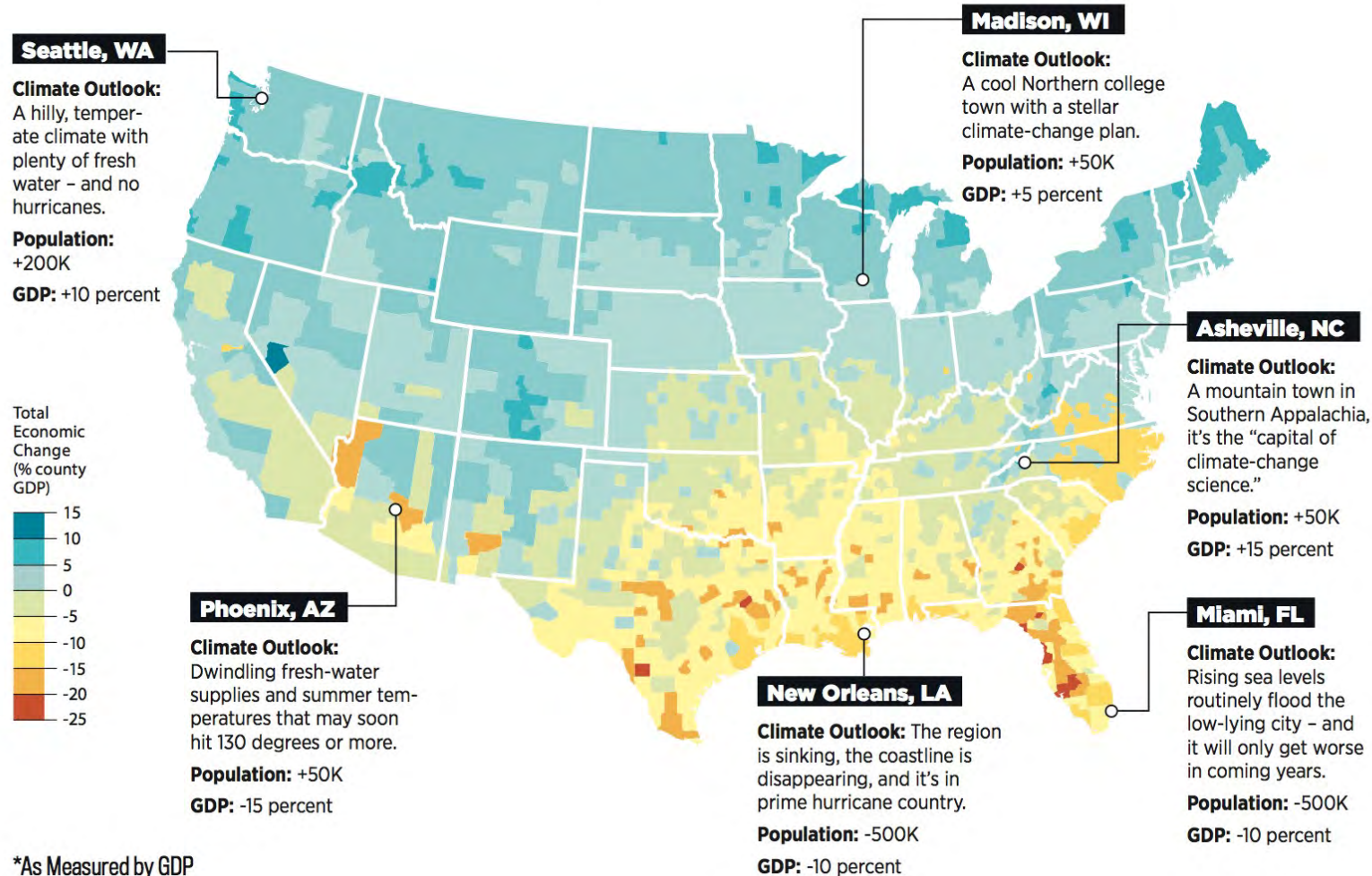


Questions?



The Winners

A look at the movement of wealth and people among American cities by 2080



This material is based upon work supported by the National Science Foundation under Grant No. 1811534. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

*As Measured by GDP

<https://www.rollingstone.com/politics/politics-news/welcome-to-the-age-of-climate-migration-202221/>