

Preparing the Great Lakes Region for Equitable Growth in a Changing Climate



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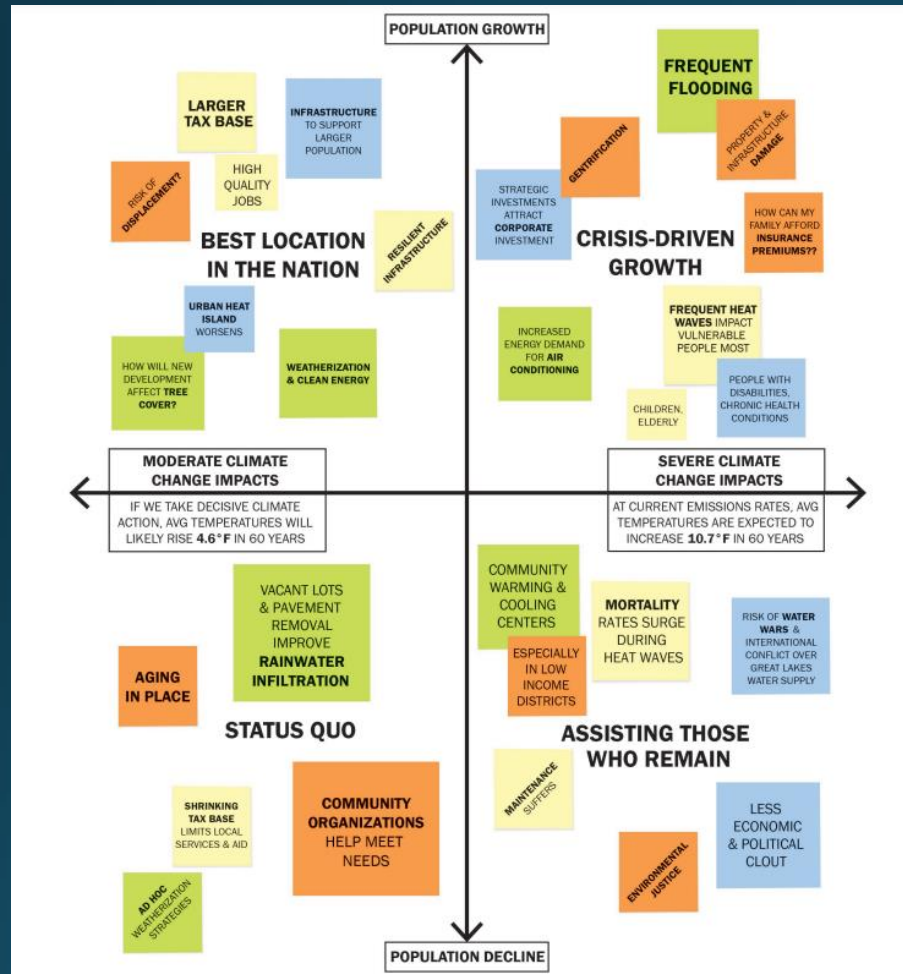
Reference Resources

AMERICAN SOCIETY OF
ADAPTATION PROFESSIONALS

American Society of Adaptation Professionals

- Climate and Demographic Change in the Great Lakes Region: a Narrative Literature Review of Opportunities and Opportunity Barriers
- <https://adaptationprofessionals.org/resources/typologies-of-perspectives-needs-and-challenges-of-climate-in-migration-to-the-great-lakes-region/>
- Additional Resources on Climate Migration & Receiving Communities:
- <https://adaptationprofessionals.org/climate-migration-and-climate-opportunities-projects-2/>

Reference Resources



Lincoln Land Institute

Exploratory Scenario Planning for Climate In-Migration

A Guide for Cities in the Great Lakes Region

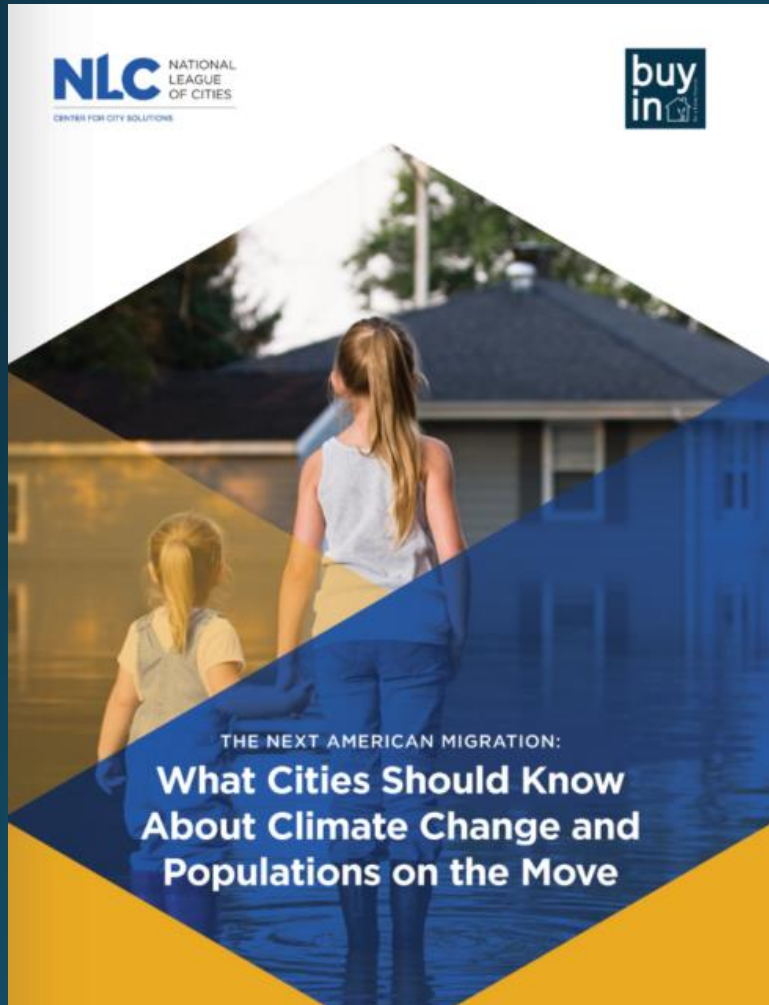
<https://www.lincolninst.edu/publications/working-papers/exploratory-scenario-planning-climate-in-migration>

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Reference Resources



National League of Cities - What Cities Should Know About Climate Change and Populations on the Move
<https://www.nlc.org/resource/the-next-american-migration-what-cities-should-know-about-climate-change-and-populations-on-the-move/>

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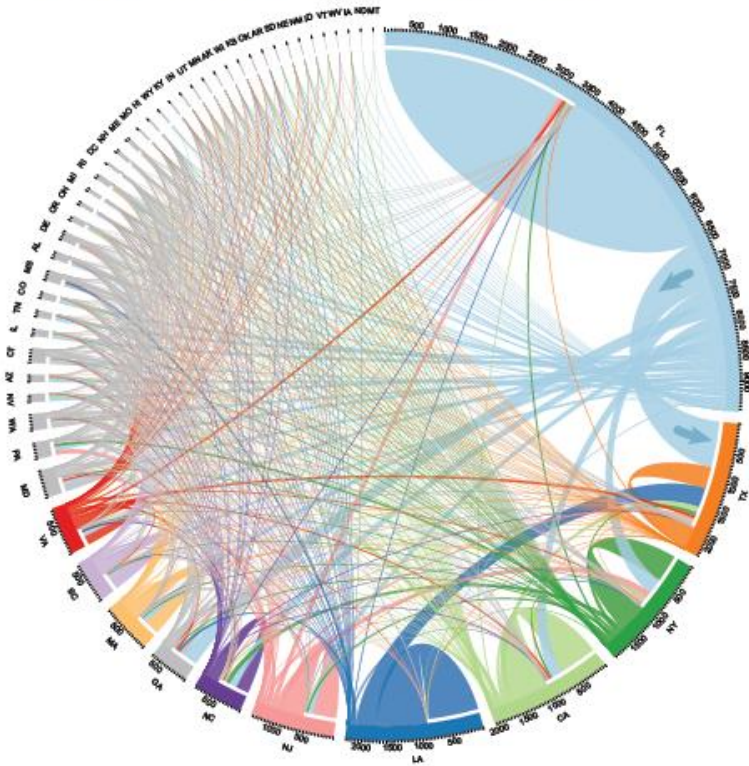
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Reference Resources

Migration induced by sea level rise could reshape the U.S. population landscape



Source: Hauer, M. E. (2017). Migration induced by sea-level rise could reshape the US population landscape. *Nature Climate Change*, 7(5), 321-325.

Authors & Contact:

Matt Hauer, PhD

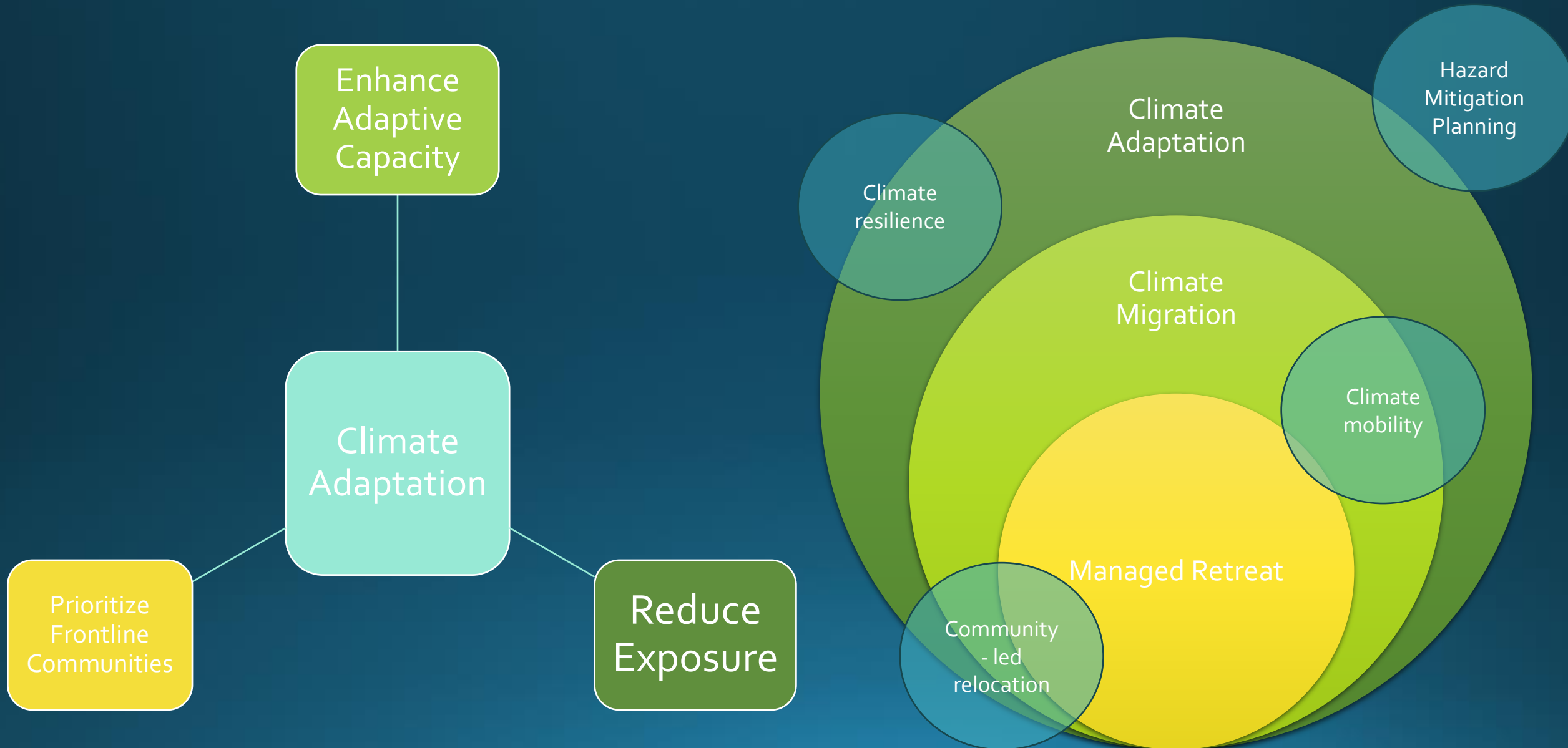
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What is Climate Migration?



Now

Protect existing property

Example: Pervious pavement

2-5 Years

Protect property owners

Example: Floodplain buyout

10 Years

Change development patterns

Example: Shoreline master plan

30-50 Years

Capital improvements

Example: New water treatment plan

Next rain event

Next big flood

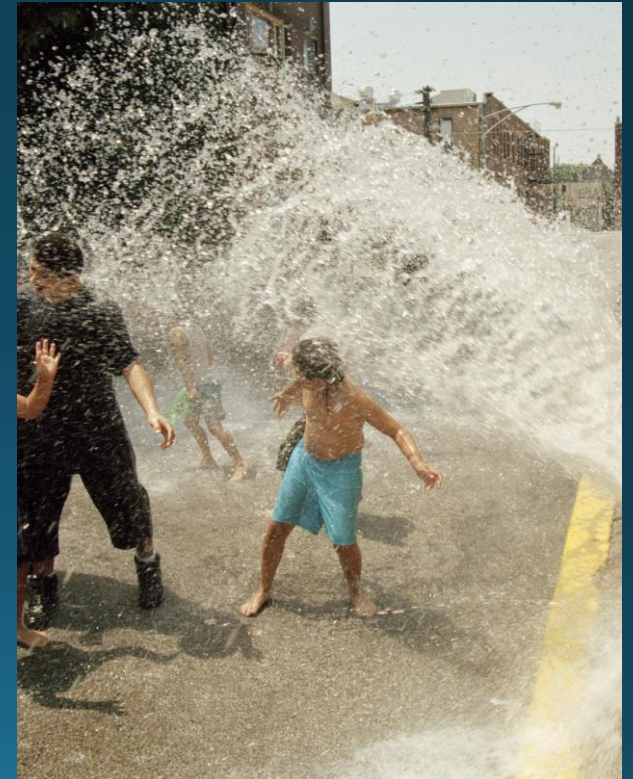
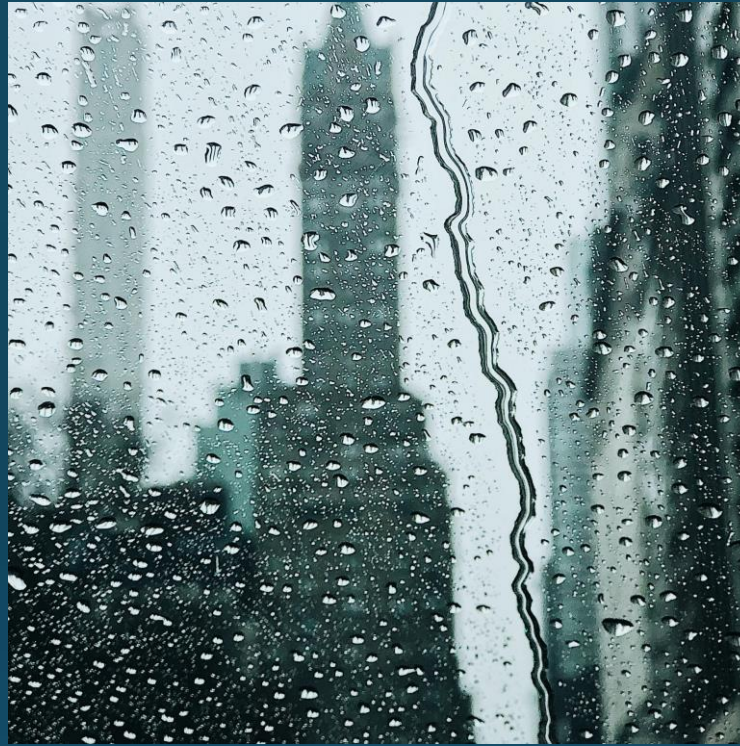
Sea level rise & changing coastal erosion

Climate migration

How does adaptation relate to emergency management, land use law and other planning processes?

Climate Change in the GLR

- 2.1°F Increase in Temperature
- 30% Increase in Precipitation
- Lake Temperature & Level Fluctuations



Climate Migration in the Great Lakes Region - Project Approach



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- **Why:** Address the research, practice, and action gaps for in-migration/receiving communities
- **How:**
 - Foster **exchange, collaboration, and innovation** between siloed areas of research & practice
 - Involve **end users** from the beginning
 - Infuse principles of **justice and equity** in project design and implementation
 - Address both **challenges and opportunities**

Build foundational knowledge | Create new tools for Great Lakes & beyond | Catalyze investment and research

Climate Migration in the Great Lakes Region - Project Approach

Develop Methodologies

For predicting in-migration to the Great Lakes Region and New York State

+

Gather stakeholder and rightsholder perspectives

To understand and center affected people in the conversation

+

Provide outreach and education

To increase awareness and understanding of this topic

Desired Impact

Establish the foundation for socially just and environmentally sound growth in climate receiving regions

Key Project Lessons:

- Climate induced migration is a nascent, under-researched topic.
 - In-migration is an under resourced area of an under-researched topic.
- Demography is simple, but human action is complex and climate impacts are uncertain.
- Predictions do not capture climate induced change
- We cannot decouple 'sending' and 'receiving' communities
- The Great Lakes Region is not prepared to receive climate migrants

The Great Lakes as a Migration Destination / Receiving Region



Why the hype?

- Room for growth
- Abundant freshwater
- Relatively mild climate impacts

Beyond the hype

- Resistance to growth
- Acute environmental and social justice issues
- Poor infrastructure quality

Can climate migrants offset Michigan's population woes? Maybe, experts say

Is Michigan prepared to be a climate refuge?

by Ryan Patrick Hooper January 4, 2023

MLive reporters Lindsay Moore and Sheri McWhirter join CultureShift to discuss how Michigan is preparing for climate migrants and the impact on current residents and ecology.

CLIMATE • CLIMATE
Go Midwest, Young Man

Where Americans Can Move To Avoid Climate Change

*Want to Escape Global Warming?
These Cities Promise Cool Relief*

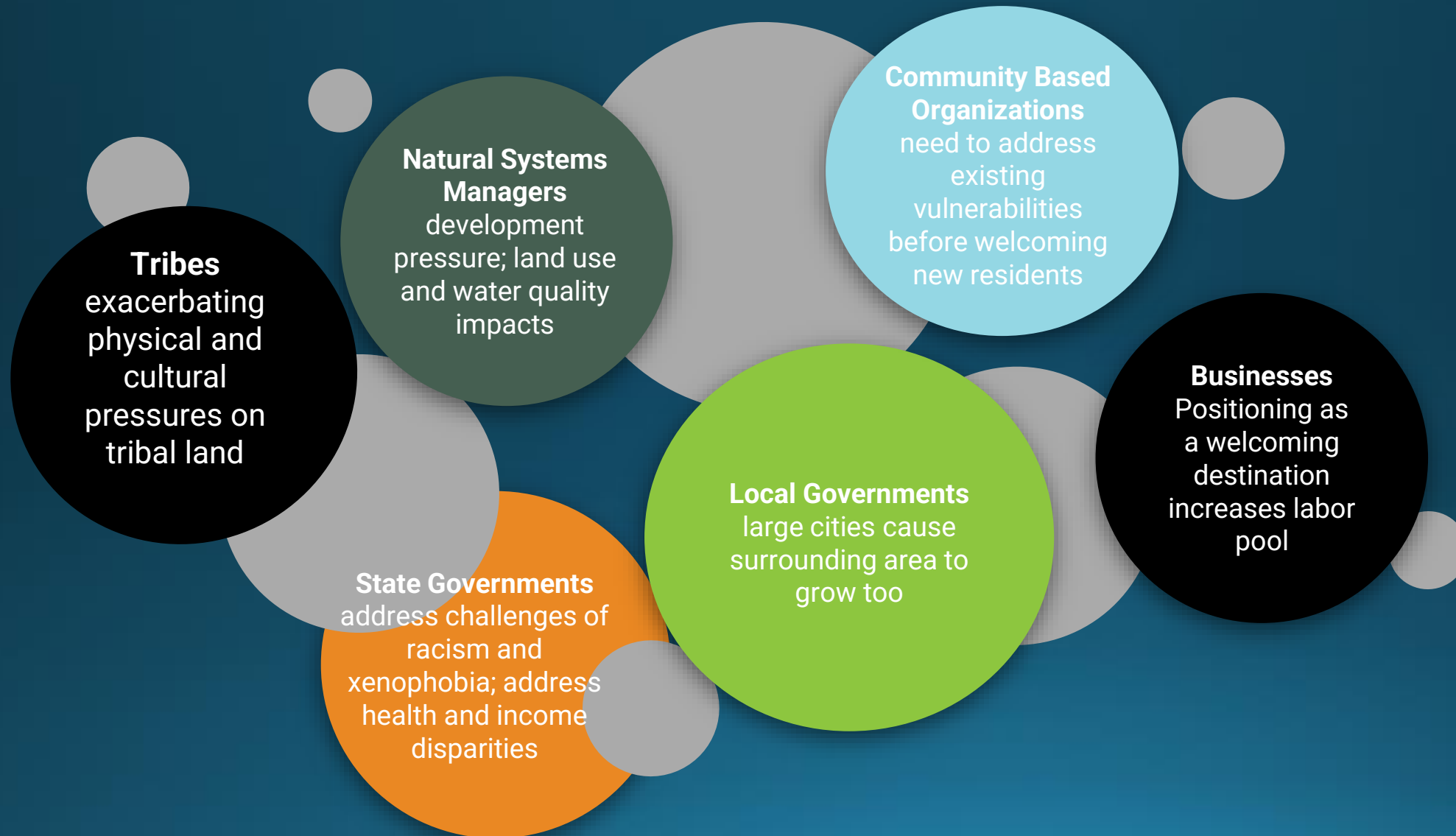
Move To Michigan As Soon As Possible



Douglas A. McIntyre
Published August 20, 2022 12:15 pm
Last October, author Parag Khanna released a book titled "Move: The Forces Uprooting



Stakeholder and Rightsholder Perspectives



The Great Lakes Region is not prepared

- Lack of coordinated climate adaptation strategy for the multilateral region
- Deep historic and contemporary injustices committed against Black and Indigenous People and recent immigrants.
- Significant division between standards and care of infrastructure in the US & Canada
- Fear of new immigration driven by media and external forces

The Great Lakes Region is not prepared, but there is still time.

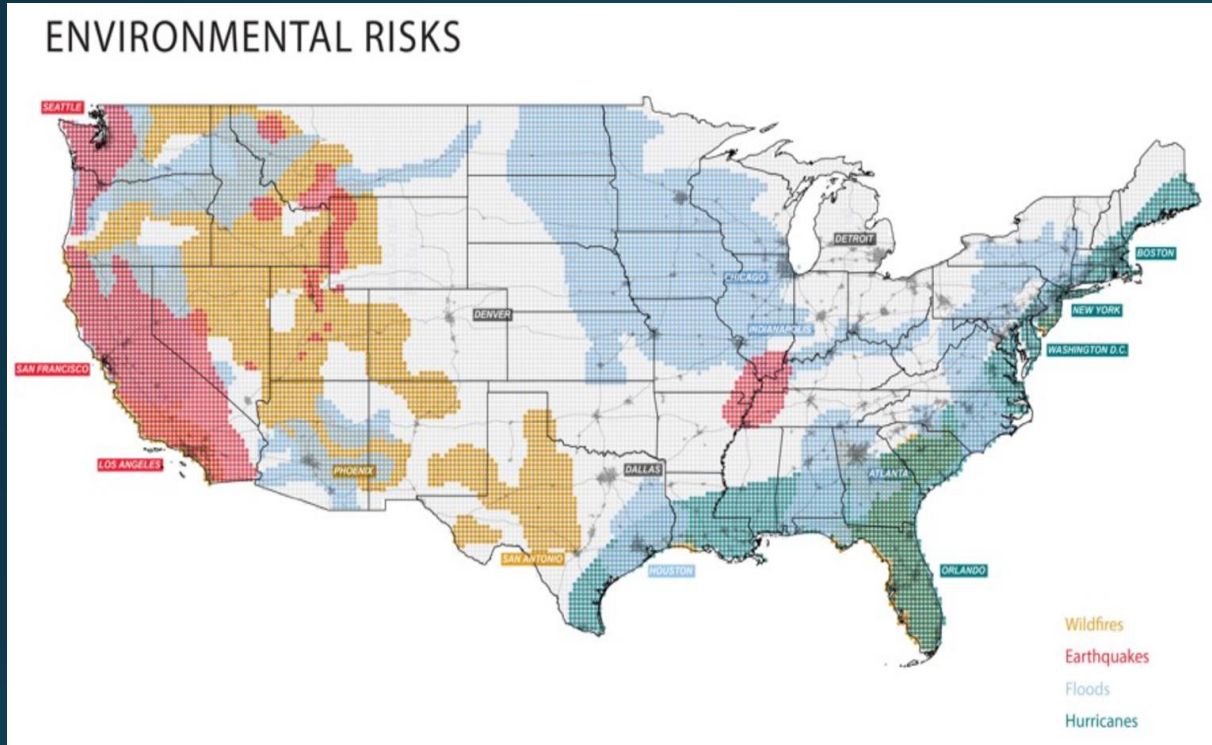
- We can **form a coordinated adaptation strategy**, collaboratively with Tribes and First nations.
- We can **center and prioritize BIPOC communities**, local expertise and knowledge, and lived experience.
- We can **invest in infrastructure and policies** which contribute to shared wellbeing of people across this Region
- We can **develop a culture of welcoming**, by addressing our past failure, facing our current challenges, and preparing for a new future, together.
- We can **adopt a proactive approach to preparing for climate change**, breaking the disaster cycle, and moving toward equitable resilience.

“Sending” and “Receiving” designations change based on scale of analysis



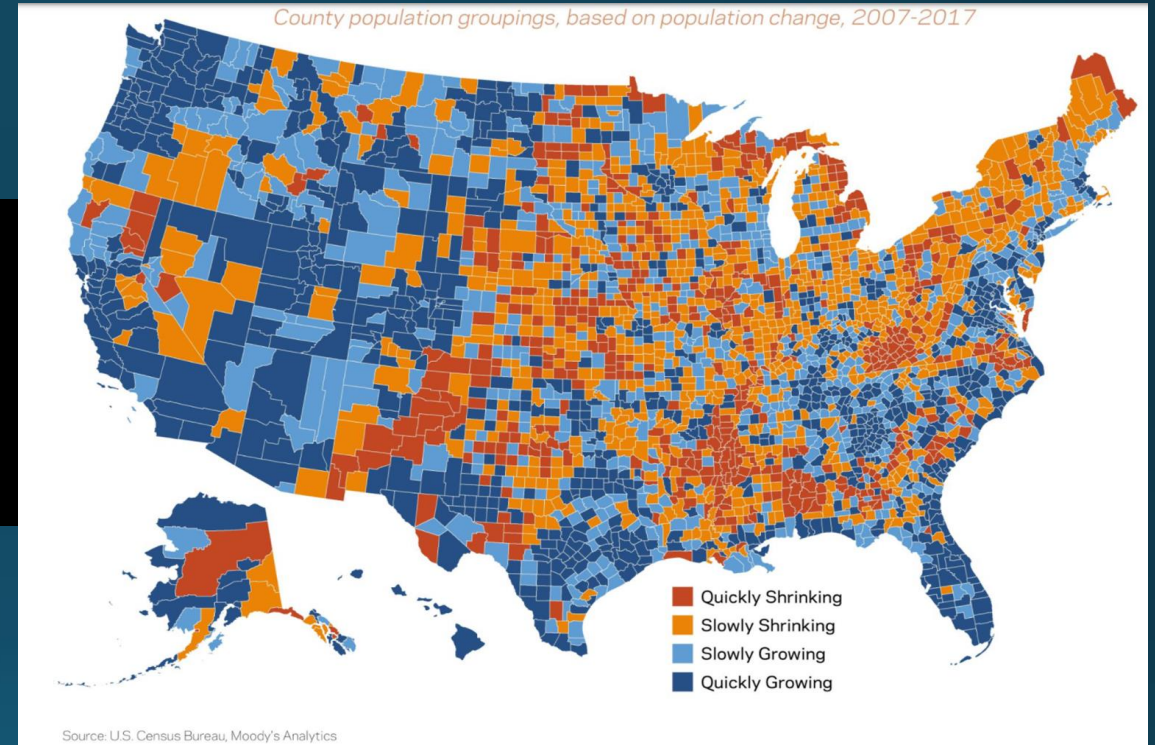
WXYZ - Detroit

Climate Projections and Demographic Trends Collide



Overall climate risks (and earthquakes)

<https://mcharg.upenn.edu/2100-project-atlas-green-new-deal>



Fastest growing & shrinking counties

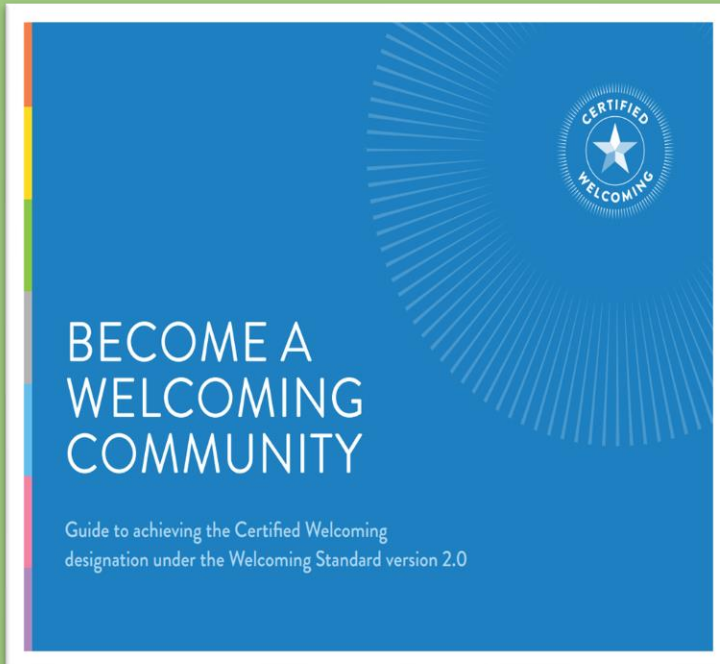
<https://eigorg.maps.arcgis.com/apps/Cascade/index.html?appid=b9416c27eb0542279do1ef66f3fbb617>

We must keep justice and equity at the forefront

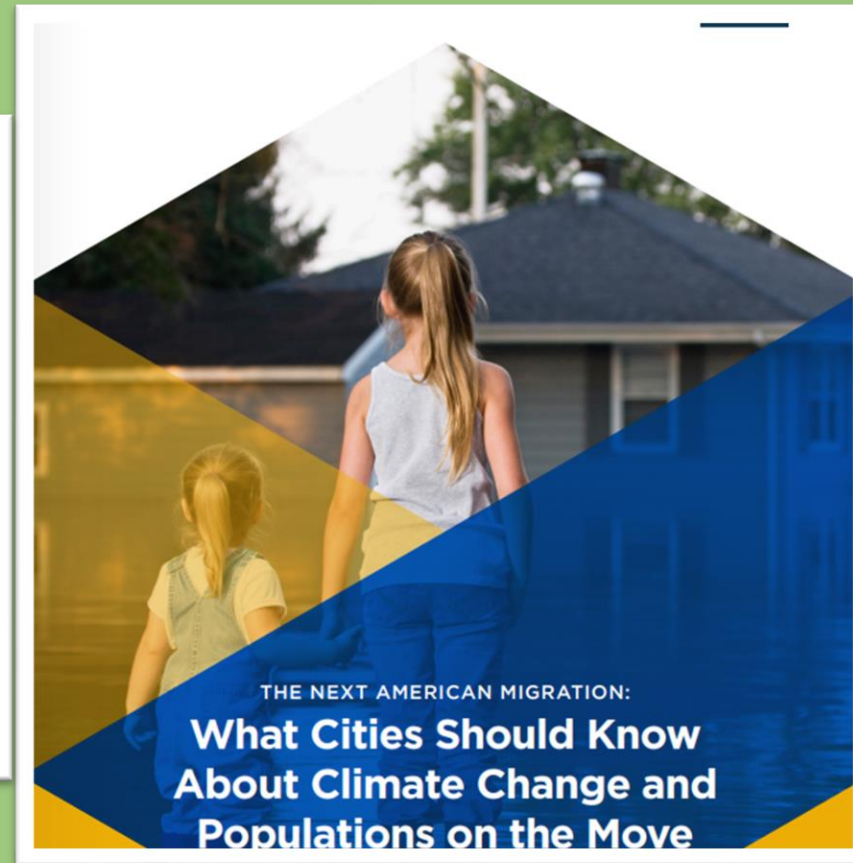
- Who gets to migrate?
- Exacerbating existing inequalities
- Gentrification and displacement
- Social and physical infrastructure needs for current and new residents

“ *People with power are more likely to move from other places in the U.S., bringing their power with them. So you'll see all the negative impacts of gentrification - historic erasure, political displacements, other displacements...*

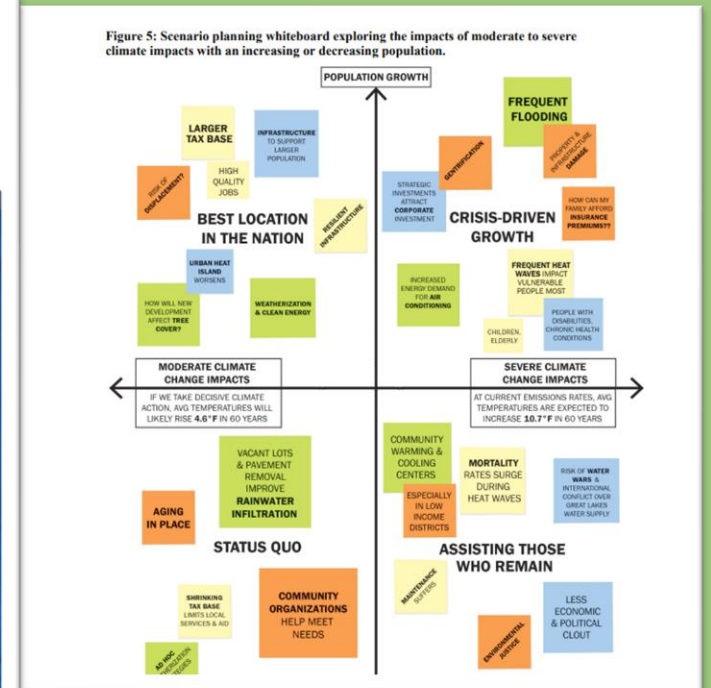
”



Welcoming America Toolkit



NLC's Climate Migration framework



Scenario planning process & guidelines for GLR Cities

Type	Characteristics	Implications
Vulnerable Cities	<ul style="list-style-type: none"> • May currently be experiencing rapid growth • High exposure to climate hazards • Smaller and possibly under-resourced • Climate adaptation may be second to other funding priorities 	<ul style="list-style-type: none"> • Will eventually experience declining tax revenue & out-migration • Possible credit downgrade (risk!) • Tightening municipal budgets will impact service provision (schools, roads, etc.)
Recipient Cities	<ul style="list-style-type: none"> • Marginally to significantly less vulnerable to climate risks than neighboring communities (e.g., located at a higher elevation, inland, or away from the WUI) • Grappling w/ its own share of stressors such as housing crisis, water scarcity 	<ul style="list-style-type: none"> • Less likely to receive post-disaster \$ • Existing stressors + rapid influx can quickly become a crisis • Smaller cities disproportionately affected
Climate Destinations	<ul style="list-style-type: none"> • Less exposure • Access to fresh water • Affordable housing availability (for now) • Legacy Cities are great candidates • Expressed desire to grow • Investing in mitigation and resilience 	<ul style="list-style-type: none"> • Must protect/create existing housing stock to prevent displacement • Community-driven strategies • Enhance existing sustainability and resilience programs • Competitive advantage for investment

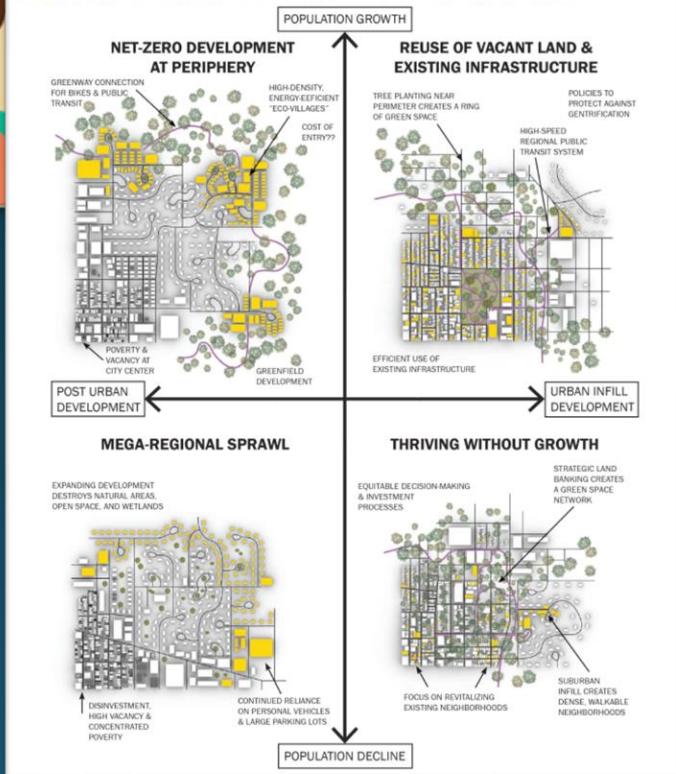
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Recommendations for Climate Destinations

- Protect and invest in affordable housing
- Examine how population growth could impact your existing sustainability goals
- Create incentives and funding for low-income homeowners to make climate-friendly/adaptation investments
- Invest in public transportation and multi-modal transportation

Figure 7: Scenario planning maps exploring the growth or decline of regional population and whether growth is concentrated in existing cities or at the outer edges of a region





Who will we become?

It's a pretty radical idea that your belonging in a place isn't conditional, it's just a given. I believe that there is way for the inflection point of demographic change to prompt communities to step back and say 'who do we want to be?

Can we be a welcoming place not only for the new people who've arrived here but also for the people who've lived here all their lives?'

- Rachel Perric, Welcoming America

Upcoming Research & Work Ideas

Strengthening Connections Across Sectors & Geographies









- Identifying policy partners at state, regional, and federal level to engage this topic
- Networking research teams and communities
- Forging connections between leaving and receiving communities
- Supporting municipal staff to bring this conversation to their communities

Building Capacity for Climate Adaptation Professionals

- Continuing to center community leaders and those with lived experience of migration and its impacts in this work.
- Transferring lessons on what is known and unknown to local adaptation professionals
- Developing an introduction to climate migration as an adaptation strategy to be understood by climate adaptation professionals

Local institutions have both a heightened burden and opportunity to prepare for climate migration. Communities in the region may poise themselves to gain back population and economic growth while reinforcing larger climate resilience efforts and addressing historic, entrenched issues—like economic segregation—that harm growth. Partnerships with other cities or peer institutions, academic institutions, and philanthropic and for-profit organizations will be key.

Billion-dollar events to affect Great Lakes States (IL, IN, MI, MN, OH, PA, NY, WI) from 2018 to 2021 (CPI-Adjusted)

Disaster Type	Events	Events/Year	Percent Frequency	Total Costs	Percent of Total Costs	Cost/Event	Cost/Year
 Drought	1	0.3	2.9%	\$1.0B	2.2%	\$1.0B	\$0.2B
 Flooding	2	0.5	5.9%	\$6.3B	14.1%	\$3.1B	\$1.6B
 Freeze	--	--	--	--	--	--	--
 Severe Storm	24	6.0	70.6%	\$20.6B	46.2%	\$0.9B	\$5.1B
 Tropical Cyclone	4	1.0	11.8%	\$15.1B	33.9%	\$3.8B	\$3.8B
 Wildfire	--	--	--	--	--	--	--
 Winter Storm	3	0.8	8.8%	\$1.6B	3.6%	\$0.5B	\$0.4B
 All Disasters	34	8.5	100.0%	\$44.6B	100.0%	\$1.3B	\$11.1B

[†]Deaths associated with drought are the result of heat waves. (Not all droughts are accompanied by extreme heat waves.)

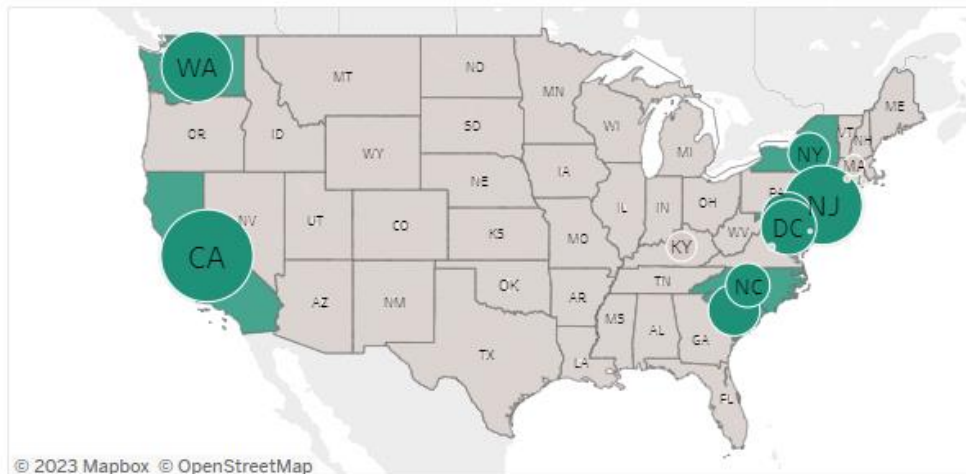
Flooding events (river basin or urban flooding from excessive rainfall) are separate from inland flood damage caused by tropical cyclone events.

The confidence interval (CI) probabilities (75%, 90% and 95%) represent the uncertainty associated with the disaster cost estimates. Monte Carlo simulations were used to produce upper and lower bounds at these confidence levels ([Smith and Matthews, 2015](#)).

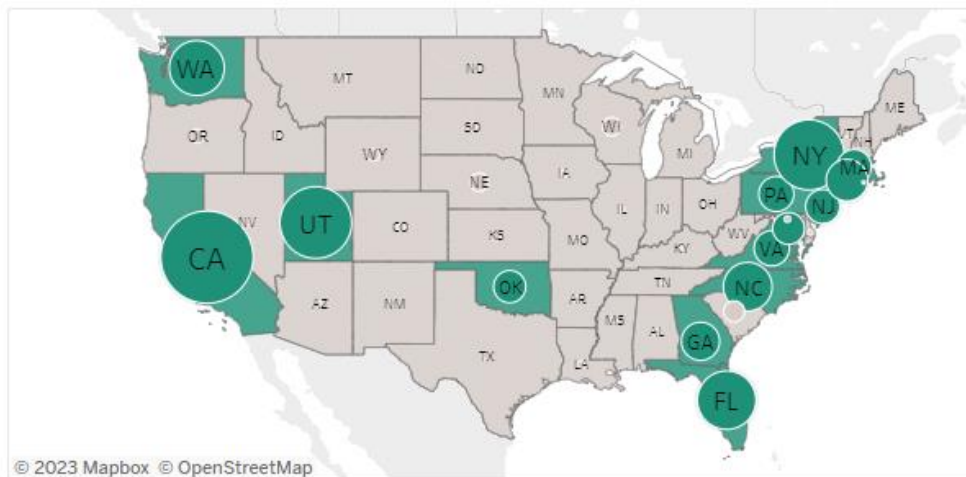
FEMA BRIC Funds by State

Successful Proposals: < \$20M > \$20M

FY2020



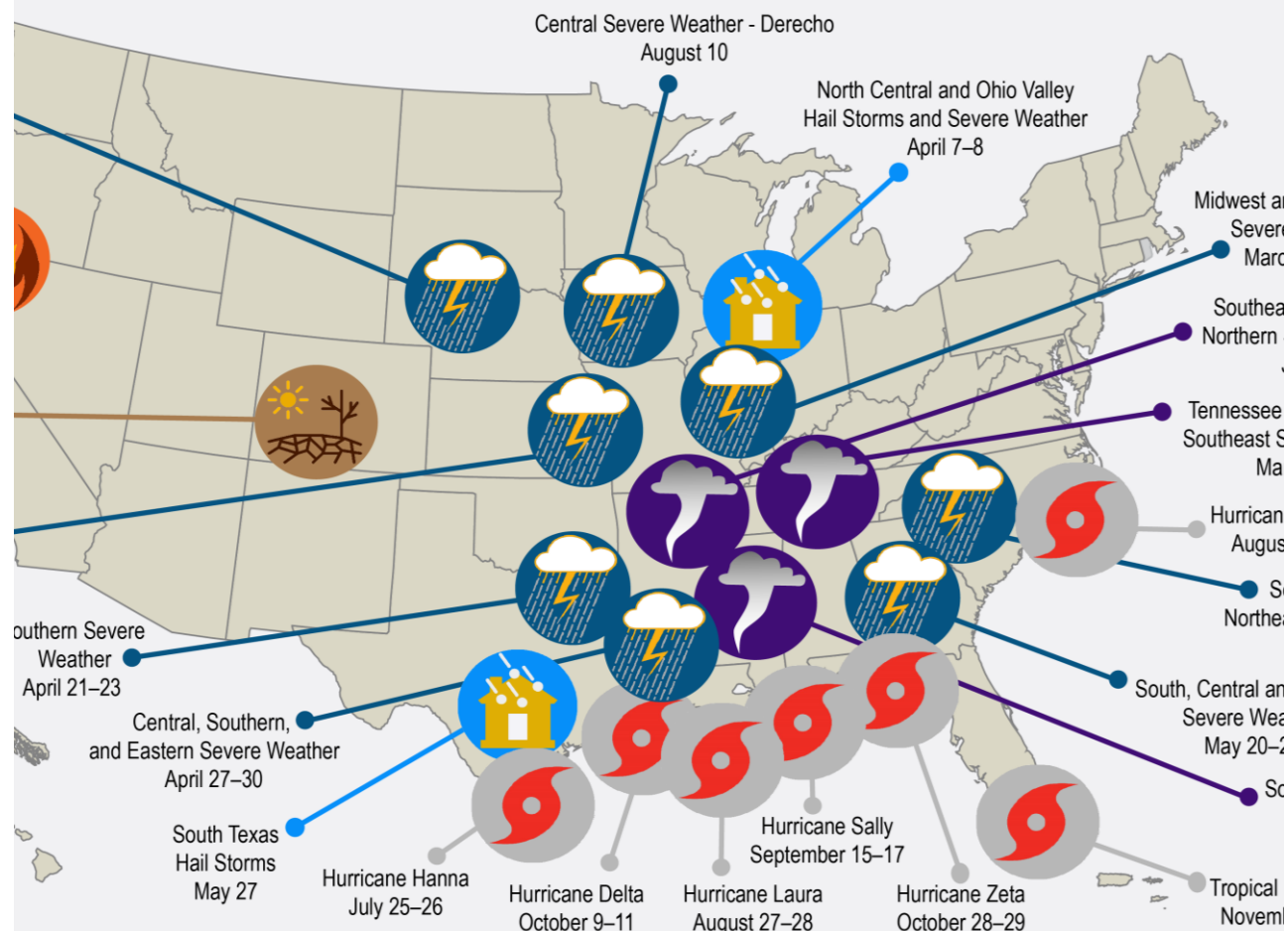
FY2021



Data Source: FEMA

 HEADWATERS ECO

2020 Billion-Dollar Weather and Climate Disasters



the approximate location for each of the 22 separate billion-dollar weather and climate disasters that impacted the United States during 2020.