



**WEATHERING  
CHANGE**





ANTIOCH UNIVERSITY NEW ENGLAND  
**Center for Climate Preparedness  
and Community Resilience**



Strengthen communities to prepare,  
respond and recover in the face of  
climate impacts and other disruptions  
through collaborative, innovative  
solutions.

[communityresilience-center.org](https://communityresilience-center.org)

Dr. Christa Daniels  
Senior Associate, CCPCR



# Climate Change Resilience

... a series of online courses focused on the fundamentals of climate change resilience.

- Engage in each course for 4 weeks
- Enroll for graduate credit or audit the course
- Increase your skill set in climate resilience for better outcomes
- Discover solutions to local issues you face on the job or in your community.
- Register for one course or the whole series.



<http://www.communityresilience-center.org/climate-change-resilience-series/>



**Climate Impacts: Communication, Facilitation, and Stakeholder Capacity Building**

Online ( 1-credit) Course Nov 8, 2020 through Dec 12, 2020

Learning Objectives

- Identify the psychological underpinnings in communication and engagement best practices.
- Learn basic principles on crafting an effective engagement strategy and common barriers;
- Become familiar with the role of using imagery, visualization and meaningful dialogue to increase urgency and motivation to engage in a public planning process; and
- Learn how to successfully engage vulnerable populations (income, race, ethnicity, age vulnerabilities)

**For more information or to register for this course:**

<https://www.antioch.edu/new-england/resources/centers-institutes/center-climate-preparedness-community-resilience/climate-change-resilience-series/>





# Climate Change Resilience

... Sneak Preview



**Communication, Facilitation and Stakeholder Capacity Building**  
**Climate Justice and Equitable Adaptation**  
**Public Health**

<http://www.communityresilience-center.org/climate-change-resilience-series/>



**SAVE THE DATE**

## **2021 Local Solutions: Communities of Practice**



### **Climate Change: Human Stories of Hope**

**Dr. Victoria Herrmann** is the co-founder and Executive Director of Rise Up to Rising Tides. As a National Geographic Explorer, she traveled across the country in 2016 and 2017 interviewing 350 local leaders to identify what's needed most to safeguard coastal communities against the unavoidable impacts of climate change. She has testified before the U.S. Senate, contributes to The Guardian and Scientific American on climate policy, and was named one of the most 100 influential people in climate policy worldwide in 2019 by Apolitical.

**Begins Virtually March 16, 2021**

<https://lp.constantcontactpages.com/su/14YfVqA/FCOP>





Meet the challenges of a changing climate by finding information and tools to help you understand and address your climate risks.

[toolkit.climate.gov](https://toolkit.climate.gov)

Ned Gardiner, PhD  
Engagement Manager  
U.S. Climate Resilience  
Toolkit



“... without concrete climate and development action, just over 143 million people... could be forced to move within their own countries to escape the slow-onset impacts of climate change.”

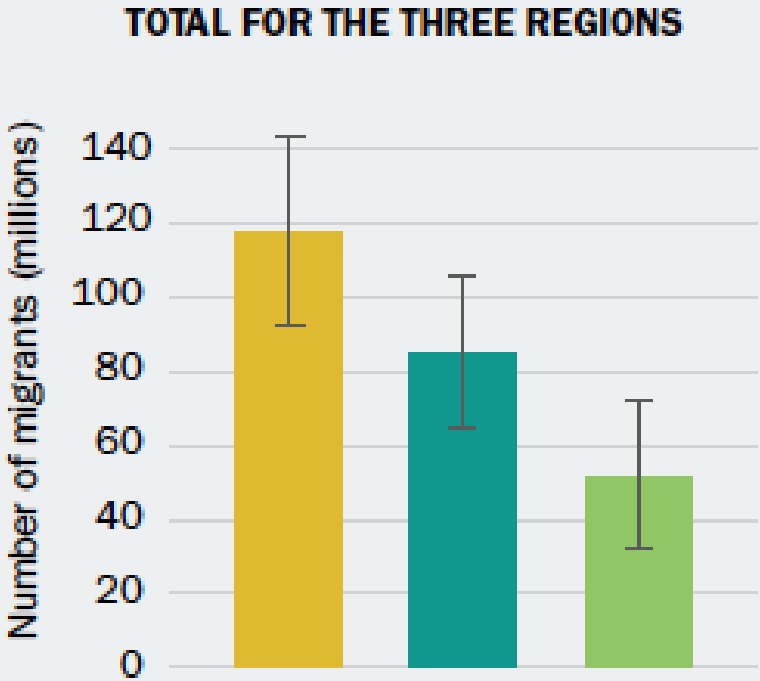


*Rigaud, Kanta Kumari; de Sherbinin, Alex; Jones, Bryan; Bergmann, Jonas; Clement, Viviane; Ober, Kayly; Schewe, Jacob; Adamo, Susana; McCusker, Brent; Heuser, Silke; Midgley, Amelia. 2018. Groundswell : Preparing for Internal Climate Migration. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/29461> License: CC BY 3.0 IGO.*



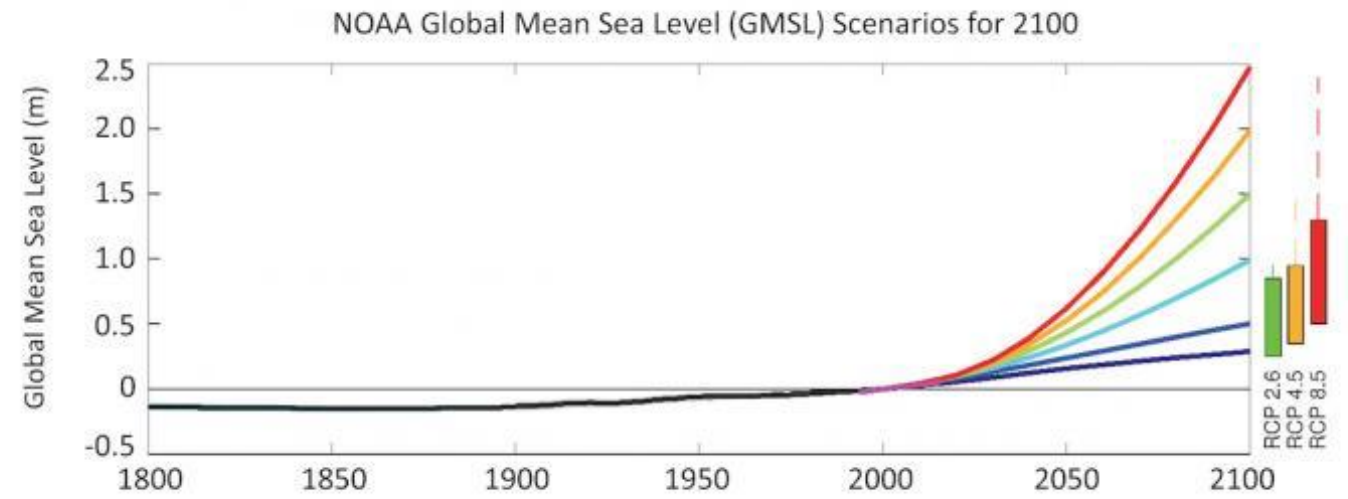
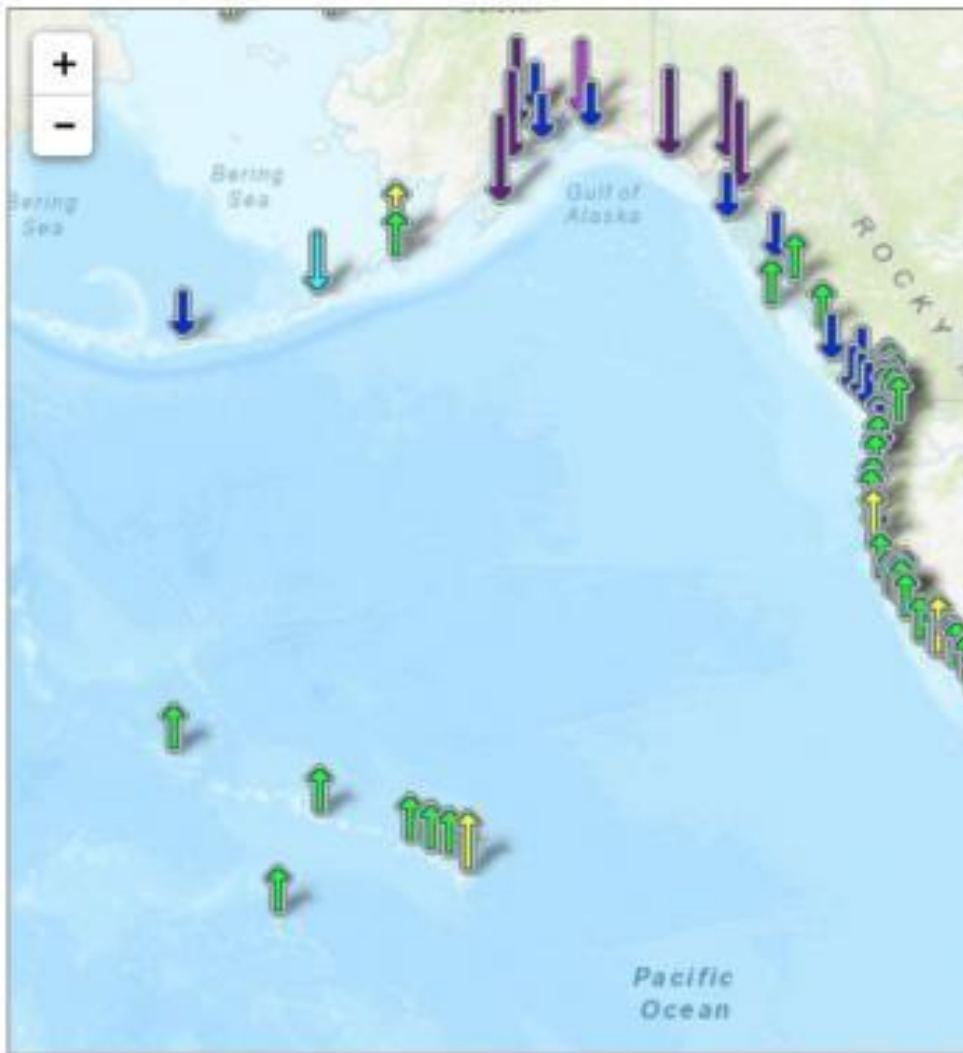
“... without concrete climate and development action, just over 143 million people... could be forced to move within their own countries to escape the slow-onset impacts of climate change.”

Pessimistic (Reference) More Inclusive Development More Climate-Friendly





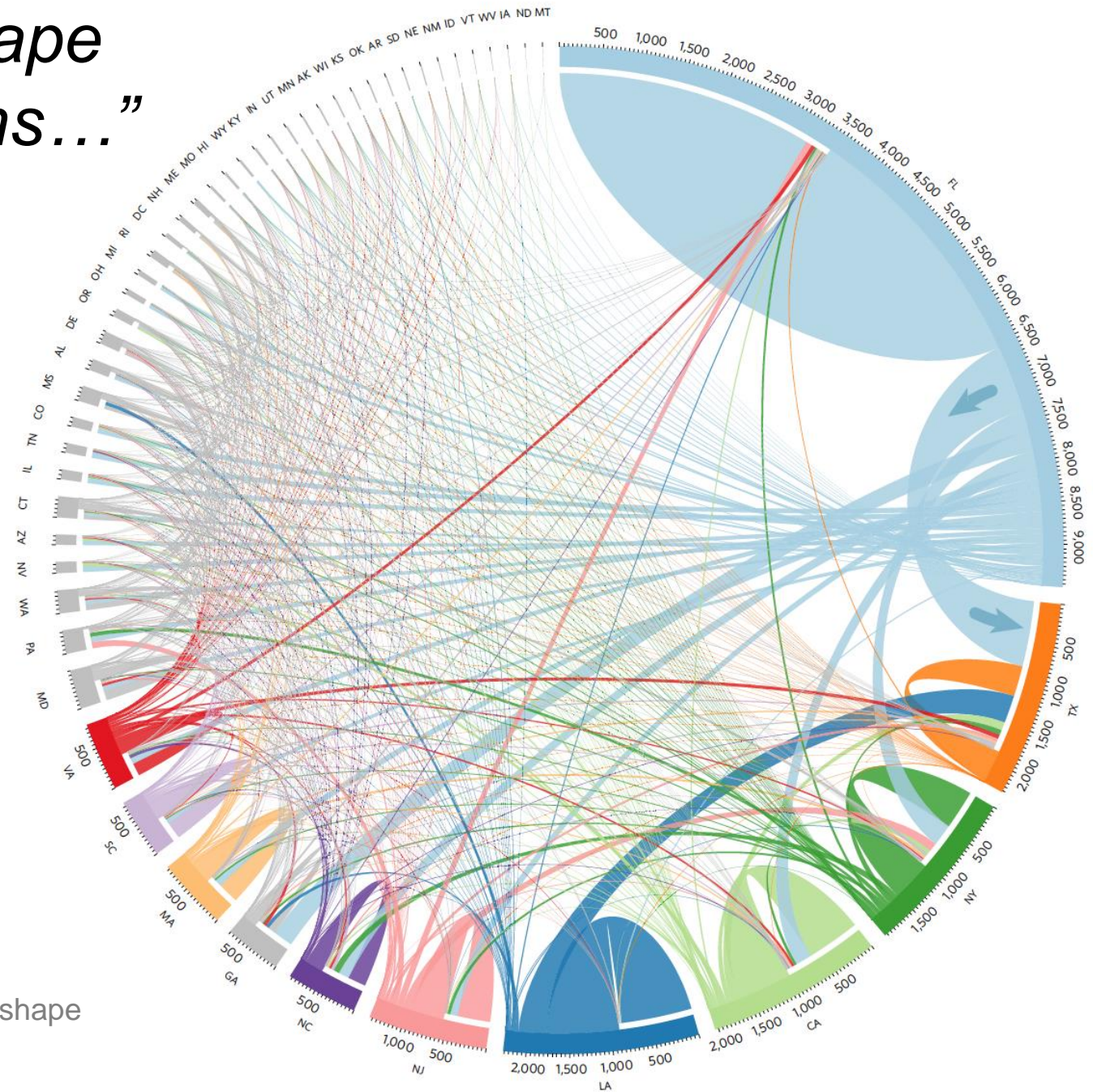
*“... climate change will reshape future population distributions...”*





*“... climate change will reshape future population distributions...”*

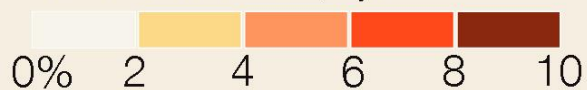
- Most migration is **internal**
- Sea Level Rise impacts **landlocked communities**
- **top ten “outflow states”**:  
Florida, Texas, New York, California,  
Louisiana, New Jersey, North Carolina,  
Massachusetts, South Carolina, and  
Virginia



Hauer, Matt. (2017). Migration induced by sea-level rise could reshape the US population landscape. Nature Climate Change. 7. 10.1038/nclimate3271.

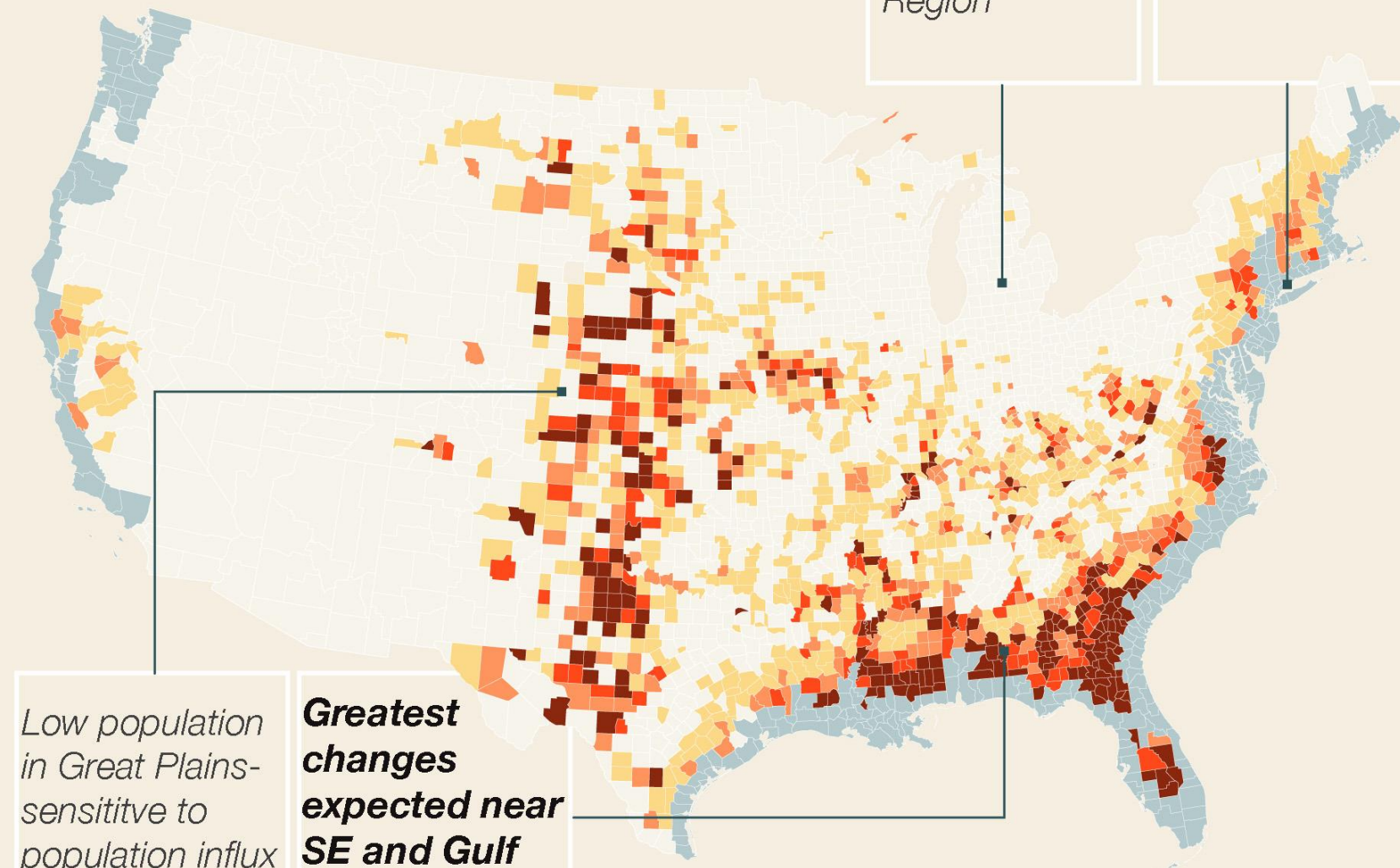


Population increase of incoming migrants,  
due to sea level rise, by 2100



1.8m SLR. Data from Dilkina et al. (2020)

<https://qz.com/1895263/how-cities-can-prepare-to-support-climate-migrants/>



*Few immigrants  
expected to  
Great Lakes  
Region*

*East Coast more  
susceptible  
than West Coast*

*Low population  
in Great Plains-  
sensitive to  
population influx*

**Greatest  
changes  
expected near  
SE and Gulf  
coasts**



REUTERS/BRIAN SNYDER



By Tim McDonnell & Amanda Shendruk

September 1, 2020 See article on Quartz





# More Than Just Data



## U.S. Climate Resilience Toolkit

[Steps to Resilience](#)[Case Studies](#)[Tools](#)[Expertise](#)[Regions](#)[Topics](#)

## Coasts

Climate change is affecting social, economic, and environmental systems along U.S. coasts. Ongoing global sea level rise—a result of warming oceans and melting land ice—is increasing the exposure of natural ecosystems and the built environment to high-tide flooding, storm surge, and coastal erosion.

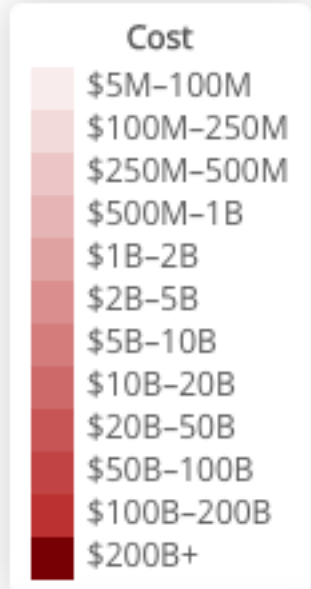
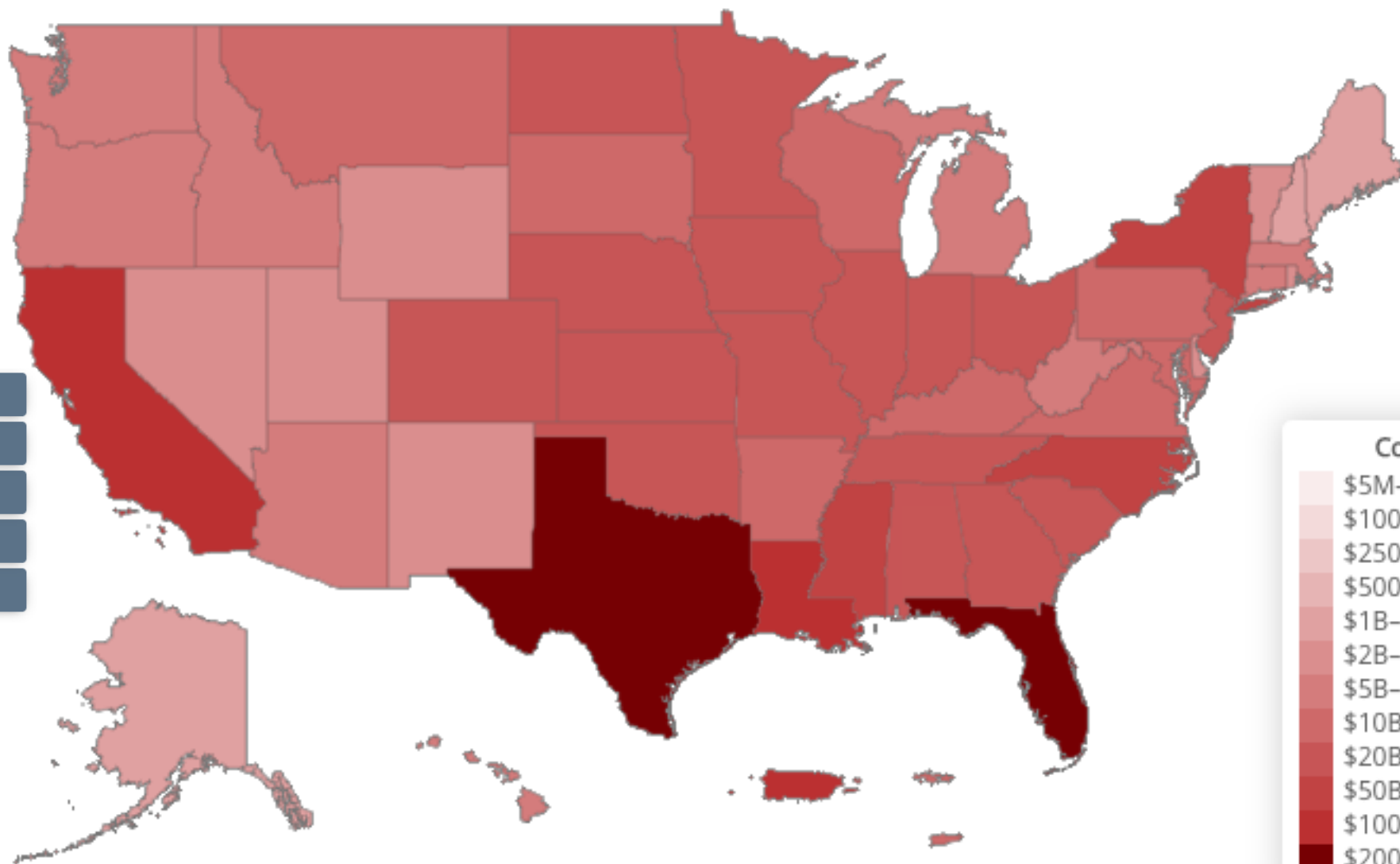




# 1980-2020\* Billion-Dollar Weather and Climate Disaster Cost (CPI-Adjusted)



- 1 Explore Hazards
- 2 Assess Vulnerability & Risks
- 3 Investigate Options
- 4 Prioritize & Plan
- 5 Take Action





# Logistics



If you have a question, please write it in the Q&A section (not Chat) and select to All Panelists, so we can see the questions.



If you are having technical difficulty, please use Chat and send to Host, so we can address the issue with you directly.



The presentation will be recorded and posted to the Antioch website within a week [www.communityresilience-center.org](http://www.communityresilience-center.org)





WEATHERING  
CHANGE



Anna Marandi  
National League of  
Cities



Elena Mihaly  
Conservation Law  
Foundation



Raleigh Tacy  
Antioch University  
New England





**WEATHERING  
CHANGE**



Anna Marandi  
National League of  
Cities





**CITIES**  
**ARE**  
**ESSENTIAL**



# Birds Eye View: Cities and Climate Migration

Anna Marandi (NLC) and Kelly Leilani Main (Buy-In)





# Kelly Leilani Main! (Buy-In)





# News and Reports

CITYLAB

## 'Climate Gentrification' Will Deepen Urban Inequality

A new study investigates the intersection of climate change and real estate, and finds that higher elevations bring higher values.



July 2020

## CLIMATE CHANGE

### A Climate Migration Pilot Program Could Enhance the Nation's Resilience and Reduce Federal Fiscal Exposure

#### What GAO Found

GAO identified few communities in the United States that have considered climate migration as a resilience strategy, and two—Newtok, Alaska, and Isle de Jean Charles, Louisiana—that moved forward with relocation. Newtok, for example, faced imminent danger from shoreline erosion due to thawing permafrost and storm surge (see figure). Literature and experts suggest that many more communities will need to consider relocating in coming decades.

Americans are becoming climate migrants before our eyes

Alex Domash

The Guardian

While the US closes the doors on climate migrants from abroad, it must acknowledge that the problem has already come home



▲ The US response to climate displacement today must recognize a collective responsibility towards all those affected by climate change. Photograph: Samuel Corum/AFP/Getty Images

ENERGY NEWS NETWORK

NEWS

## Will climate change prompt mass migration to Midwest?

HOME > POLITICS > POLITICS NEWS

## Welcome to the Age of Climate Migration

Extreme weather due to climate change displaced more than a million people from their homes last year. It could soon reshape the nation

By JEFF GOODELL

RollingStone



FEBRUARY 25, 2018 4:26PM ET

The New York Times Magazine

## HOW CLIMATE MIGRATION WILL RESHAPE AMERICA

Millions will be displaced. Where will they go?

San Francisco Chronicle

'The fires are coming for you': These Californians found Oregon no longer an escape

## Oregon misstated evacuation figures in chaos of wildfires

September 23, 2020

ScienceNews  
INDEPENDENT JOURNALISM SINCE 1921

CLIMATE

## What data do cities like Orlando need to prepare for climate migrants?

The challenges of predicting where people will go to escape flooding, wildfires and drought

NEWS

CLIMATE IN CRISIS

## Move to Buffalo? With Earth warming, northern cities could become oases.

"People tuned in to climate change are asking the question, 'Where is it safe to live in the long term?'" one climate scientist said.

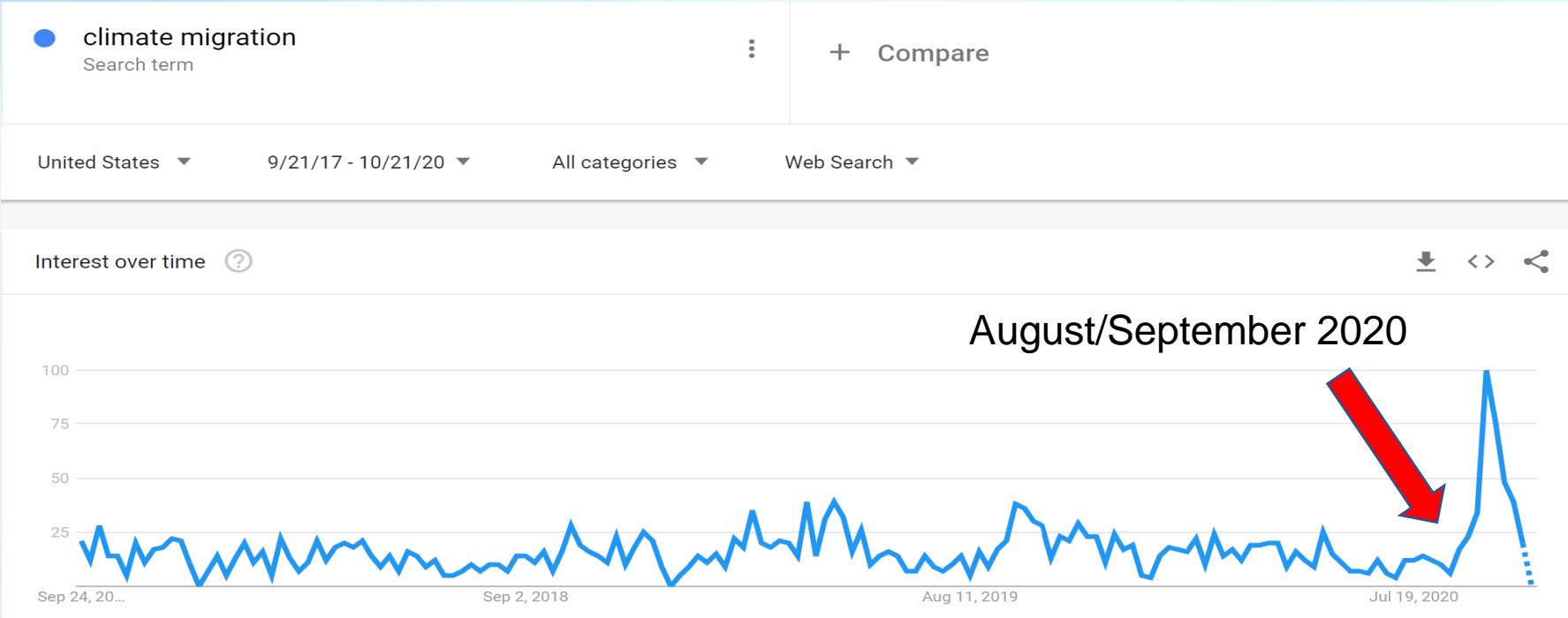
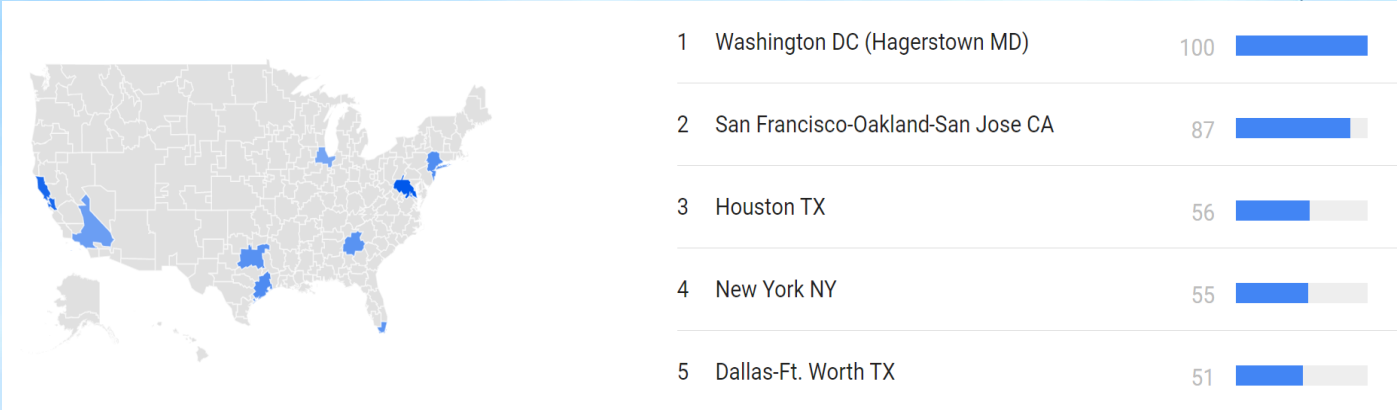
NATIONAL LEAGUE OF CITIES

buy in  
use a better approach

CITIES ARE ESSENTIAL

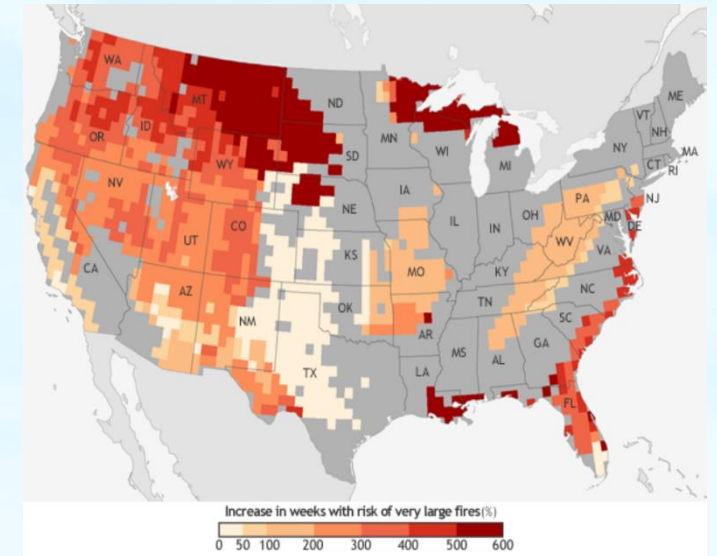
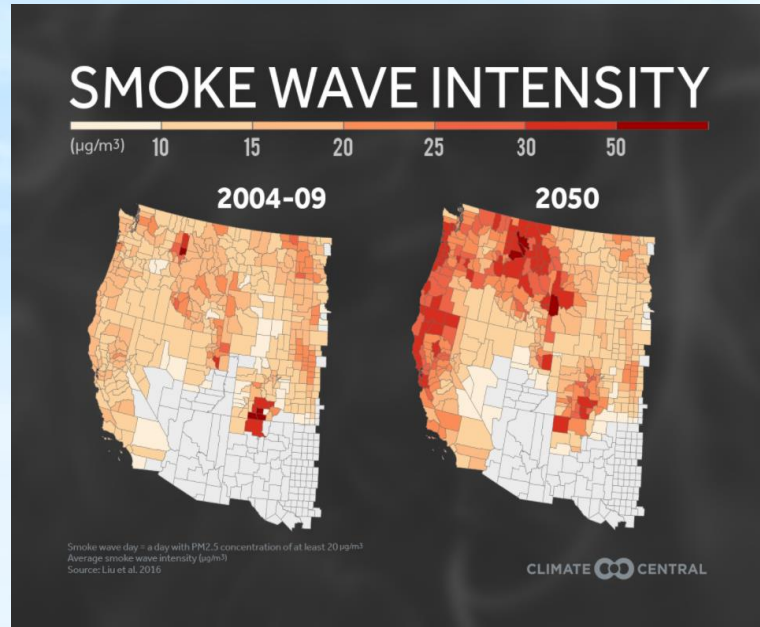


# Searching for Answers





# High Hazard Regions (Western States)



Unaffordability = Increased Risk

<https://www.marketwatch.com/story/as-wildfires-burn-up-the-west-coast-where-should-displaced-residents-move-2020-09-21>

Projected Smoke Risk

<https://medialibrary.climatecentral.org/resources/2020-smoke-waves>

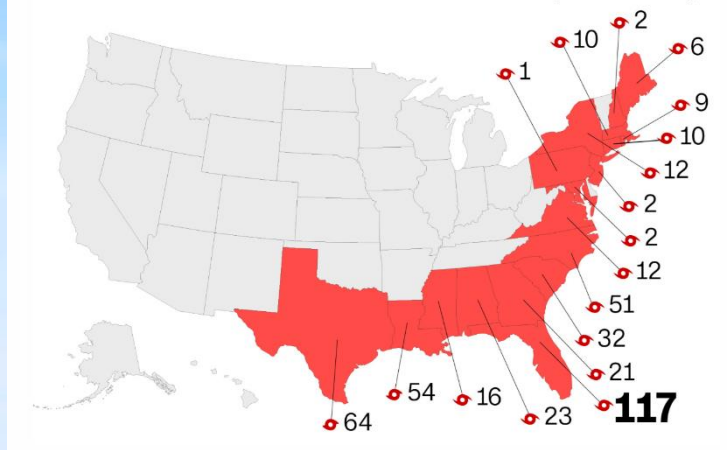
Projected Wildfire Risk

<https://www.climate.gov/news-features/featured-images/risk-very-large-fires-could-increase-sixfold-mid-century-us>



# High Hazard Regions (Southeast / Sun Belt)

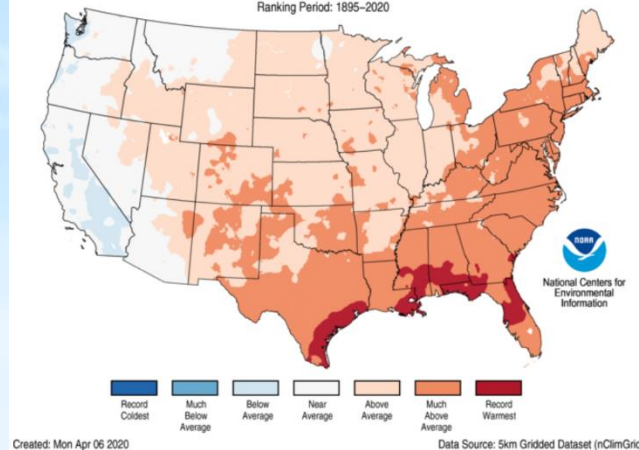
Direct hurricane hits on US mainland (1851-2017)



## Hurricanes

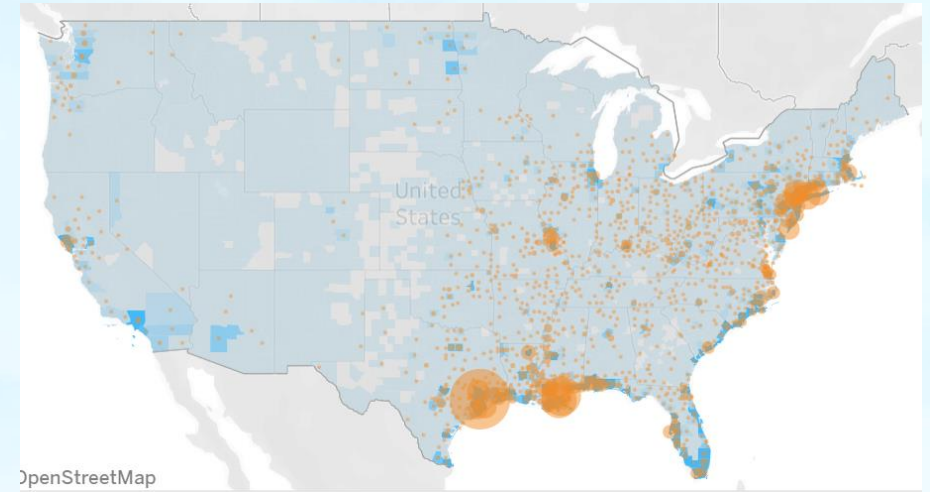
<https://www.cnn.com/2017/09/11/us/hurricanes-landfall-by-state-trnd/index.html>

Mean Temperature Percentiles  
March 2020  
Ranking Period: 1895-2020



## Heat (March 2020)

<https://www.ncei.noaa.gov/news/national-climate-202003>



## Severe Repetitive Flooding Losses

<https://www.nrdc.org/resources/losing-ground-flood-visualization-tool> (Anna Weber)



# Demographic Trends

- **Western and Southern states:**
  - Growth in small towns
  - Rapid growth in large cities (particularly Sun Belt)
- **Northeastern and Midwestern states:**
  - Small towns declining in population
  - Cities experienced minimal growth
  - Mid-sized cities saw relative stability
- **Most XXL cities saw declines**
- **Pandemic is accelerating existing trends**


These are the fastest growing cities in America — and they are not N.Y. or San Francisco



<https://www.census.gov/newsroom/press-releases/2020/south-west-fastest-growing.html>







# SF → FL?

[HOME](#) | [ABOUT US](#) | [RESOURCES](#) | [PODCAST](#) | [SUCCESS STORIES](#) | [CONTACT](#) [12-STEP RELOCATION EBOOK](#)


## What can \$500K buy you outside of the Bay Area?




### HUNTSVILLE, AL




 3,263 sq ft  4 BD  3 BA




### JACKSONVILLE, FL



 3,155 sq ft  5 BD  4 BA

### ORLANDO, FL

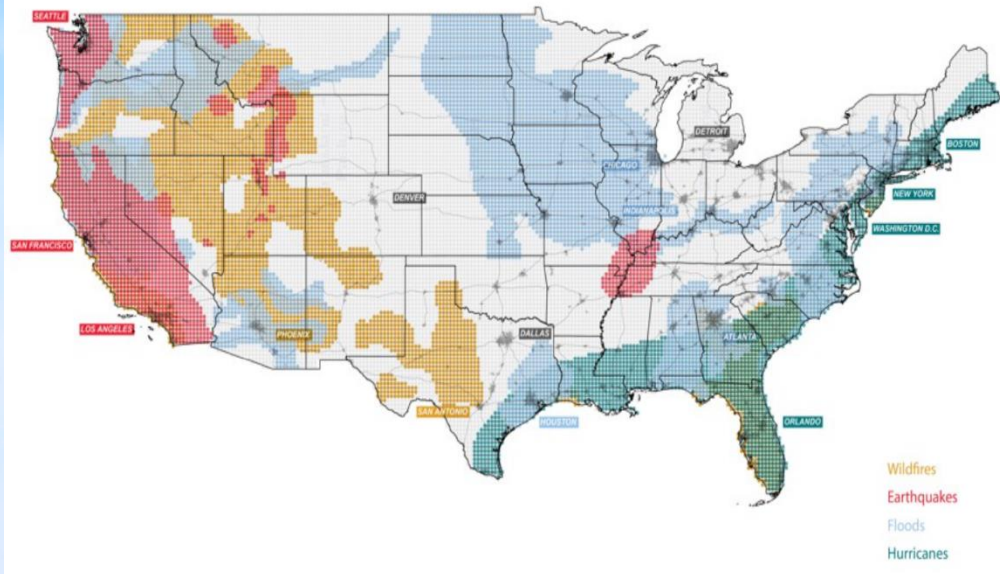


 3,529 sq ft  5 BD  4 BA



# Climate Projections and Demographic Trends Collide

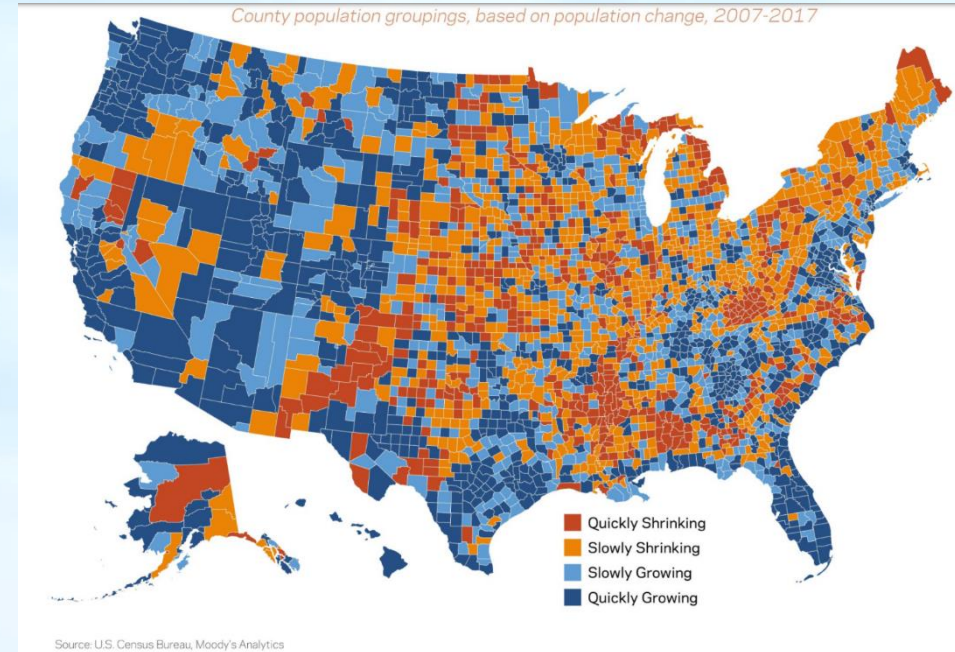
## ENVIRONMENTAL RISKS



Overall climate risks (and earthquakes)

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

County population groupings, based on population change, 2007-2017



Fastest growing & shrinking counties

<https://eigorg.maps.arcgis.com/apps/Cascade/index.html?appid=b9416c27eb0542279d01ef66f3fbb617>

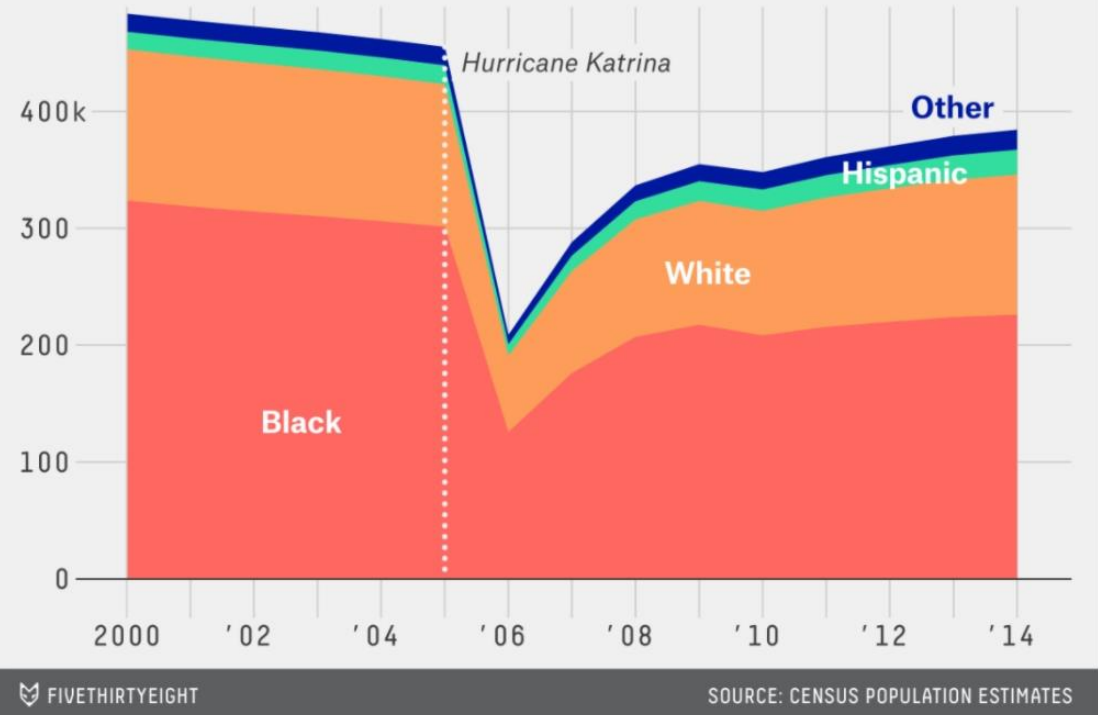


# Racial and Socioeconomic Inequity

- Disparities in federal aid at individual and community levels
- Access to or no option BUT buyout
- Displacement within receiving communities
- Disparities *among* cities (smaller cities have less resources, capacity)
- Growing equitably (not just wealthy urbanites)
- Wealthy communities self-advocate

## A Smaller, Whiter City

New Orleans population by race and ethnicity





# Local Barriers

- Short terms for elected officials (1, 2, or 4 years)
- Competing priorities
- Limitations on local decision-making (Dillon's Rule states)
- Limited capacity, time, expertise, and interest (fear?)
- “We need numbers!”
- C – O – V – I – D – 1 – 9
- Revenue loss (even pre-pandemic)
- Complexity
- Politics
- For “Shrinking Cities” – tax base / revenue loss
- No frameworks at ANY level of government, no guidance (but it's coming!)





# Normalizing the Concept

- Simplicity
- Reframing the threats
  - Shrinking sustainably
  - Changes to revenue generation
  - Investing in equitable policies, resilience, sustainability
- New inter-scalar collaborations (within states, between states, federal coordination)
- Leveraging pandemic / economic fallout
- Don't panic, look at data, tell local stories



Vila family left Puerto Rico in 2017 for Orlando post Maria.

<https://www.sciencenews.org/article/climate-change-migrants-destination-cities-data-orlando>



## Our Typology

*Type 1:* The New Shrinking City

*Type 2:* The Reluctant Recipient

*Type 3:* The Climate Destination



Type	Characteristics	Examples	Considerations
<b>1. The New Shrinking City</b>	<ul style="list-style-type: none"> <li>Under threat</li> <li>Much of the community is exposed</li> <li>May lack staff capacity or expertise on related issues</li> </ul>	<ul style="list-style-type: none"> <li>Tyrell County, NC</li> <li>Warren, RI</li> <li>Norfolk, VA</li> <li>Small coastal communities</li> </ul>	<ul style="list-style-type: none"> <li>Proactive planning will rely on state and fed resources</li> <li>City may have other priorities</li> <li>Lower income/BIPOC disproportionately impacted when city services are strained</li> </ul>
<b>2. The Reluctant Recipient</b>	<ul style="list-style-type: none"> <li>Urban center in high hazard region</li> <li>Marginally less vulnerable than neighboring communities</li> <li>Has its own share of stresses</li> </ul>	<ul style="list-style-type: none"> <li>Orlando, FL</li> <li>Chico, CA</li> <li>Atlanta, GA</li> <li>Phoenix, AZ</li> <li>Flagstaff, AZ</li> </ul>	<ul style="list-style-type: none"> <li>Less/no funding from state/fed</li> <li>Existing stressors can quickly become a crisis</li> <li>Smaller cities disproportionately affected</li> <li>Lower income/BIPOC disproportionately impacted</li> </ul>
<b>3. The Climate Haven</b>	<ul style="list-style-type: none"> <li>Less exposed</li> <li>Access to fresh water</li> <li>Affordable housing</li> <li>Possibly post-industrial (e.g., originally designed to be bigger)</li> <li>Some adaptive capacity</li> </ul>	<ul style="list-style-type: none"> <li>Duluth, MN</li> <li>Buffalo, NY</li> <li>Cincinnati, OH</li> <li>Rochester, NY</li> <li>Burlington, VT</li> </ul>	<ul style="list-style-type: none"> <li>Must protect/create existing housing stock to prevent displacement</li> <li>Community-driven strategies / working with residents and CBOs</li> <li>Must invest in community cohesion, leverage existing sustainability and resilience programs</li> </ul>



# Other Examples

- Large cities like Houston and New York?
- Ann Arbor, MI?
- Consider a spectrum, or degree of “fit”
- Your city, you decide...



# To What End?

- For use in vulnerability assessments, climate adaptation plans
- Scenario planning
- Charettes, visioning exercises, community-led planning efforts
- Communicating risk with elected officials, other city stakeholders
- Normalization



# Gaps and Areas to Explore

- Shrinking sustainably / city revenue models
- Equity discussions related to retreat
- State/federal funding for receiving communities (and better coordination)
- Opportunities for Type 3 & Legacy Cities (beyond Duluth and Buffalo)
- Integrating climate-related migration into local, state, fed plans
- Coordinating across sectors to acknowledge, support this growing field
- For Type 1 and Type 2 cities: more data, case studies, articles
- Risk disclosure



# Thanks!

**Contact:**

**Anna Marandi (NLC)**  
**[marandi@nlc.org](mailto:marandi@nlc.org)**

**Kelly Leilani Main (Buy-In)**  
**[kelly@buy-in.org](mailto:kelly@buy-in.org)**





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Elena Mihaly  
Conservation Law  
Foundation





# **Vermont as a Climate Haven: Who will come and how can we we prepare?**

Elena Mihaly  
Senior Attorney  
Conservation Law Foundation



# About CLF



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**For a thriving New England**

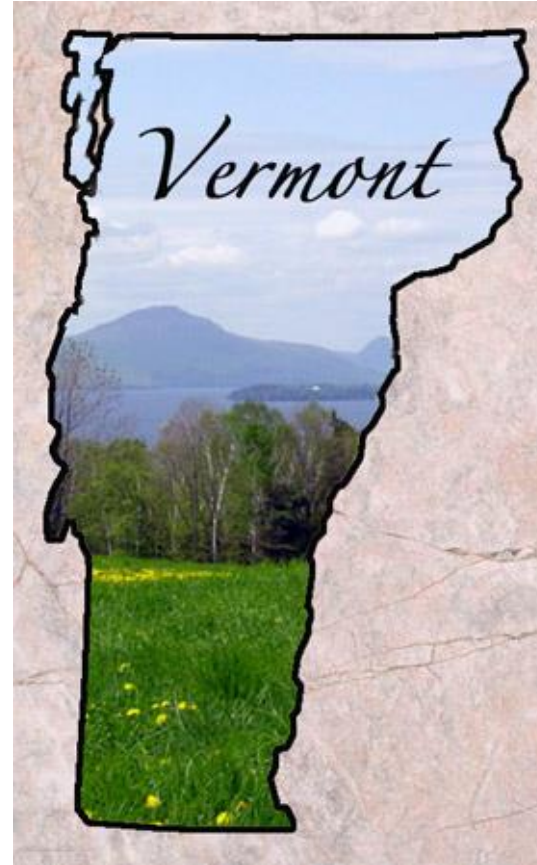
## Our Mission

CLF protects New England's environment for the benefit of all people. We use the law, science and the market to create solutions that preserve our natural resources, build healthy communities, and sustain a vibrant economy.



# Vermont's Amenities

- Fairly inexpensive land
- Plentiful groundwater resources (??)
- Clean air (i.e., no wild fires)
- Safe from sea level rise & storm surge
- Relatively close to Boston/NYC



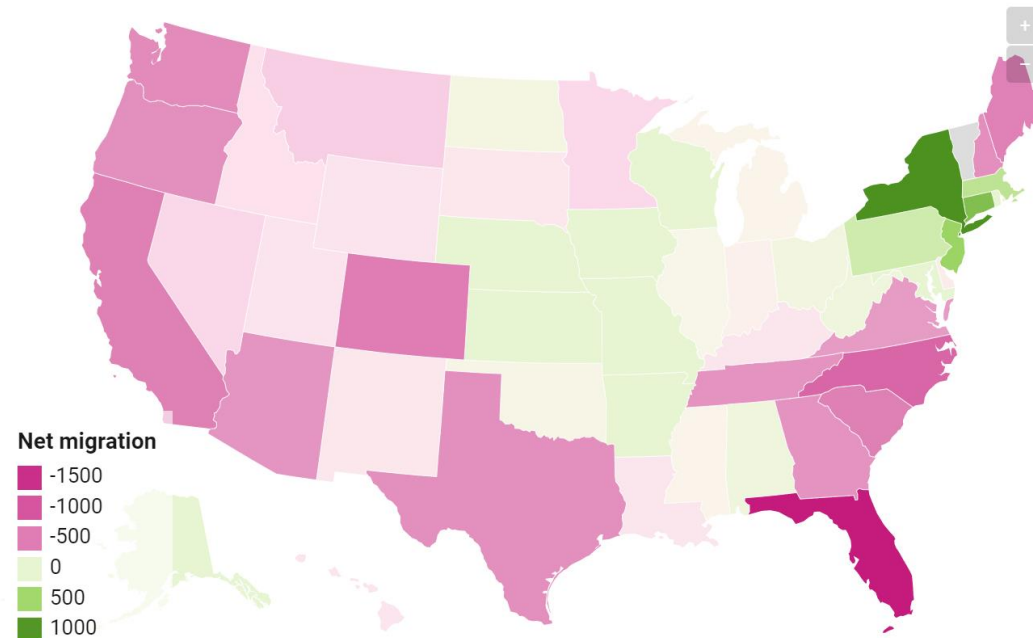


# Vermont's Status Quo

- The [state's 2018 hazard mitigation plan](#) mentions in-state migration as a possible future climate change concern, but it does not get more than a passing mention.
- Gov. Phil Scott took some heat at a press conference in 2017 for suggesting that climate change [could provide an “economic boon” for Ver](#)

## Vermont's losses and gains, 2011-2016

Positive indicates more households moved to Vermont from there. Negative means more households left Vermont to move there.



Only includes households that filed a tax return.

Map: Erin Petenko • Source: IRS SOI tax returns • [Get the data](#) • Created with [Datawrapper](#)



# The 2019 Resilient Vermont Conference

## Norwich University, Friday and Saturday, June 7–8, 2019



### PEOPLE: Mack Hall 005

*Getting Ready for New Neighbors: Climate Migration and Vermont*

#### PANELISTS

- Marc Mihaly, Professor and Dean Emeritus, Vermont Law School
- Edward A. Thomas, Esq., President, Natural Hazard Mitigation Association
- **Moderator:** Kate McCarthy, Sustainable Communities Program Director, Vermont Natural Resources Council

“Climigration.” Is it just another hip *portmanteau*, or is it a trend on the rise? This panel and group discussion will explore the concept of “climate migration” and ask whether and how Vermont should be preparing for a future influx of climate refugees. As sea levels rise, and fire, drought, or other climate impacts make parts of the country uninhabitable, is Vermont likely to see a population boom? Who would come to Vermont? How would that impact our culture, natural resources, and communities? And what are the tangible ways we can begin preparing for the possibility? This session will begin with a brief panel to help frame the issue, followed by a facilitated, participatory workshop.



## Themes/Questions from Climate Migration Panel

- Where do we want to put 400,000 new people in Vermont?
- What does this mean for rural communities and a housing market that's already unaffordable for many?
- How do we keep VT looking like it is?
- Will Vermont embrace a younger, more diverse population?
- 20% of VT towns have no zoning – how does this impact immigration?
- More than 200 communities in the state lack community sewer systems



## Next Steps

- Start introducing the word “climigration” into our communities – informal, family and friends
- #VT2070
- Consider climigration in statewide 5-yr housing needs assessment?
- Get away from language of “them” vs. “us” – moving towards “we.”
- Need rich state conversations around class/race/ethnic diversity – structural inequities in place today will only deepen with larger population.





## Climate change: Could ‘climigration’ help reverse Vermont population trends?

By **Elizabeth Gribkoff**

Sep 17 2019

- Young family moved to VT from MT due to concerns over increased wildfires and attendant poor air quality
- Young couple moved to VT from Washington DC for the state’s “abundant groundwater and resilient communities”
- Family moved to VT from Missoula, MT for quality of life, abundant water, and lack of wildfires



# COVID population impacts on VT



- In March 2020, U.S. Postal Service data show requests to forward mail to Vermont addresses jumped 70 percent from the previous year
- Dr. Fauci praises VT's handling of COVID
- Houses being bought throughout VT sight unseen at a fast pace
- School enrollment significantly increased, especially in ski towns like Okemo's Ludlow, VT.



SUMMER 2020

# VERMONT ENVIRONMENTAL REPORT



## Pandemic Rush to Vermont Highlights Future Climate Migration Issues



VERMONT'S INDEPENDENT VOICE

# SEVEN DAYS

**5** Reasons to Become a  
City Market Member  
[Learn more »](#)

PAID POST



NEWS ARTS+LIFE HOME+DESIGN FOOD CANNABIS MUSIC MOVIES EVENTS JOBS OBITUARIES CLASSIFIEDS PERSONALS

SPECIAL REPORTS ▶ Coronavirus Prisons Eldercare Climate Crisis GUIDES ▶ Best of VT Parenting Dining New to Burlington Staytripper



NEWS + OPINION » CORONAVIRUS

SEPTEMBER 09, 2020

## The New Vermonters: Fleeing COVID-19, Newcomers Find Temporary — or Permanent — Refuge in the Green Mountains

By [CHELSEA EDGAR](#) [@CHEDGAR31](#), [COURTNEY LAMDIN](#) and [SASHA GOLDSTEIN](#)



# HOW CLIMATE MIGRATION WILL RESHAPE AMERICA

Millions will be displaced. Where will they go?

The millions of people moving north will mostly head to the cities of the Northeast and Northwest, which will see their populations grow by roughly 10 percent, according to one model. Once-chilly places like Minnesota and Michigan and Vermont will become more temperate, verdant and inviting. Vast regions will prosper; just as





September 26, 2020





# Takeaways

- Collect **more research/data** on both forecasts and how many “COVID migrants” end up staying in VT (will they survive mud season?)
- Build more — and **more affordable — housing**
- **Invest in infrastructure like sewer and water** in villages to comfortably accommodate growing populations.
- Strengthen policies that **better manage development outside of town centers** (avoid default of rural sprawl that fragments forests and farmland)
- Identify and address **structural social and racial inequities** in housing, healthcare, access to amenities, and more
- Opportunity point: major strain on our resources or enhance the state for everyone?
- **We can handle it, if we plan for it!**







WEATHERING  
CHANGE



Raleigh Tacy  
Antioch University  
New England



Jessica Poulin  
Antioch University  
New England



Shameika Hanson  
The Nature Conservancy



# Goals

- Demographics
- Receiving Areas
- Impacts on Natural/Social Resources
- Policy/Planning



# Process

- Initial work by Emma Okell
- Literature Review
- Guiding Questions
- Research & Analysis



# **Demographics & Motivations**

- Migration as necessity
- Migration as choice
- Vermont characteristics



## **Receiving Areas**

- Chittenden & Washington counties
- Rural Vermont



# Migration Impacts

- Gentrification
- Development Sprawl
- Land use conflicts
- Local displacement



## **Policy & Planning**

- Migration is regional and cause-specific
- Community investment
- Long-term planning
- Guided facilitation





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The Weathering Change  
Webinar Series will return  
in January 2021