



Preparing for the Impacts of a Changing Climate on Public Health in New Jersey: A Workshop for Public Health Practitioners

njadapt.rutgers.edu

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Rutgers Climate Institute

June 3, 2016

Today's Workshop

- Enhance public health practitioners' understanding of climate change in New Jersey and related public health impacts to foster public health preparedness in response to a changing climate.
- Learn from colleagues about leading practices to address public health impacts of climate change around the U.S.
- Identify New Jersey challenges and opportunities to address public health impacts of climate change.
- Further a dialogue to enhance capacity for climate change preparedness in New Jersey's public health community.

Preparing New Jersey For Climate Change

“New Jersey Climate Adaptation Alliance”

njadapt.rutgers.edu



New Jersey Climate Adaptation Alliance

The **New Jersey Climate Adaptation Alliance** was formed in response to a diverse group of stakeholders who came together on November 29, 2011 at Rutgers University to participate in the conference "Preparing NJ for Climate Change: A Workshop for Decision-Makers."

A changing climate and rising sea levels will have a devastating impact on New Jersey's economy, the health of our residents, the State's natural resources, and the extensive infrastructure system that delivers transportation services, energy and clean water to millions of New Jerseyans. The Alliance will focus on climate change preparedness in key impacted sectors (public health; watersheds, rivers and coastal communities; built infrastructure; agriculture; and natural resources) through:

- ◆ Conducting outreach and education of the general public and targeted sectoral leaders;
- ◆ Developing recommendations for state and local actions through collaboration with policymakers at the state, federal and local levels;
- ◆ Undertaking demonstration and pilot projects in partnership with the private sector, local governments, non-governmental organizations, and others;
- ◆ Identifying science, research and data needs; and

WHAT'S NEW?

The 8th Annual Sustainable Raritan River Conference
 "RU on the Raritan" will be held on **Friday, June 10th, 2016** at the **Douglass Student Center, Rutgers University**. Complete details [here](#).

2016 James J. Gallagher Family Fellows



Kate Millsaps Jeremy Glover

Rutgers graduate students Kate Millsaps and Jeremy Glover named 2016 James J. Gallagher Family Fellows. Read [more here](#).

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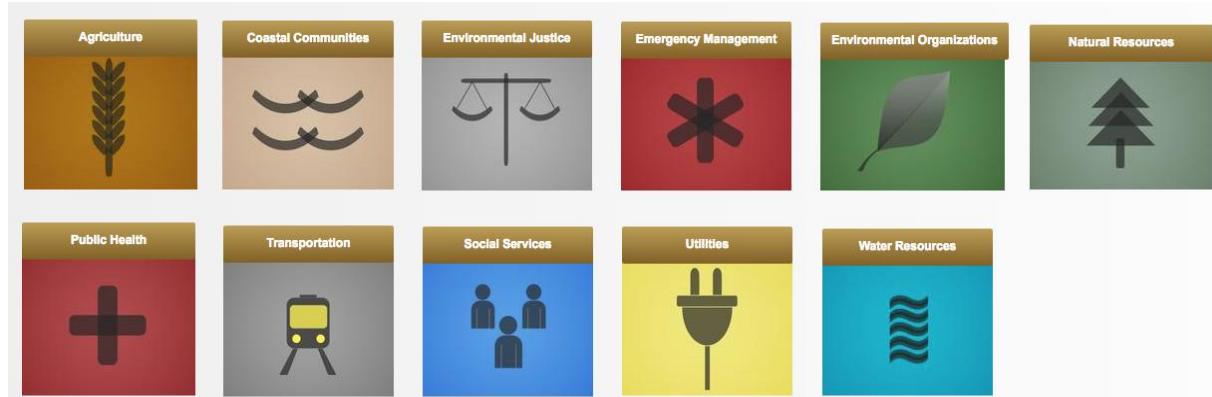
The New Jersey Climate Adaption Alliance has convened a Climate Change and Public Health Working Group which is holding a half-day workshop on June 3. Click [here](#) to register.

The Nature Conservancy of New Jersey
 The Nature Conservancy of New Jersey

- Policymakers
- Private & Public Sector Practitioners
- Business Leaders
- Nongovernmental Organizations
- Academics
- Work Via Existing Delivery Systems
- Facilitated by Rutgers University
- Pre-dated Sandy
- Follows Strategic Workplan and Advisory Committee Direction

Sector-Based Approach

- Working Briefs
- Stakeholder Engagement Report
- Gap Analysis
- Policy Considerations
- Other supporting analyses
- Best Practices guides



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NJ Climate Adaptation Alliance
March 2014

A Summary of Climate Change Impacts and Preparedness Opportunities for the Public Health Sector in New Jersey

This report is one of a series of working briefs prepared by the New Jersey Climate Adaptation Alliance to provide background information on projected climate impacts for six major sectors in New Jersey, including agriculture, built infrastructure (utilities and transportation), coastal communities, natural resources, public health, and water resources. These working briefs present information to be used throughout the Alliance's deliberations to develop recommendations for state and local public policy that will enhance climate change preparedness and resilience in New Jersey. These briefs are living documents that are periodically updated. This document updates a prior version from January 2013. For more information about the Alliance and its activities, visit <http://njadapt.rutgers.edu>.

This report provides an assessment of public health-based perspectives on the topic of adaptation planning for climate change in New Jersey, including a description of health care facilities and services in the state, existing emergency response capacities and communications systems, and other applicable descriptive information. Current New Jersey efforts as well as current and planned adaptation practices and strategies in other states are presented as the basis for a series of recommendations to address additional needs as a starting point for discussion and prioritization of comprehensive adaptation planning for New Jersey.

Public Health Resources in New Jersey

New Jersey has a population of approximately 8.7 million people, with 14% of the population (1.1 million people) aged 65 and over, and 25% of the population (2.1 million people) aged 18 and under.¹ Seventeen percent of New Jersey residents have incomes below the Federal Poverty Level as measured by the U.S. Department of Health and Human Services' (HHS) poverty guidelines.² Insurance coverage levels in New Jersey are on par with the nation as a whole: 54% have health insurance through employers; 25% are covered through Medicare or Medicaid; 4% are covered by individual plans, and 16% of residents in the state are uninsured.³

Public health and treatment in New Jersey is provided by a range of acute and long-term care facilities and agencies, including hospitals, federally qualified health care centers (FQHCs), nursing homes and assisted living facilities, home health and hospice agencies, local health departments, Emergency Medical Services, the NJ Medical Reserve Corps, and the NJ Office of Emergency Management. Most facilities are licensed and regulated by the New Jersey Department of Health (DOH). These are 73 hospitals in New Jersey with a capacity of 2.4 beds per 1,000 people,⁴ 362 certified nursing facilities with approximately 31,000 beds,⁵ and 20 FQHCs.⁶ According to a 2008 report by the New Jersey Commission on Rationalizing Health Care Resources, "overall average occupancy rates of New Jersey hospitals is above the national average, but in every hospital market area of New Jersey it is still below the normative 80% to 85% range considered 'full occupancy'." The Commission concluded that hospitals in New Jersey are in poorer financial condition than those in other states. New Jersey hospitals perform worse than the national average on:

1. Kaiser Family Foundation (2012)
2. Kaiser Family Foundation (2012)
3. Kaiser Family Foundation (2012)
4. Kaiser Family Foundation (2012)
5. Kaiser Family Foundation (2012)

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NJ Climate Adaptation Alliance

Stakeholder Engagement Report: Public Health Climate Change Preparedness in New Jersey

March 2014

Prepared for the New Jersey Climate Adaptation Alliance by
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NJ Climate Adaptation Alliance

Climate Change Preparedness in New Jersey: Best Practices for Public Health Officers

Prepared by the New Jersey Climate Adaptation Alliance
May 2014

Climate change impacts present a range of challenges for public health in New Jersey. Warmer temperatures will cause a decline in air quality due to increasing levels of ozone, particulate matter, and pollen, resulting in an increase in asthma and other respiratory diseases. These impacts may be especially pronounced in urban areas already subject to the heat island effect. More high heat days will increase heat-related illness, especially among the elderly. As temperatures and humidity rise, certain vector-borne and zoonotic diseases will likely expand their ranges and become more common in New Jersey, including Lyme disease and West Nile virus. More frequent coastal flooding and intense precipitation events will have a wide range of health impacts, including direct morbidity and mortality from flood and storm events, food and water contamination, mold and mildew exposure, inability to access pharmacies or other health resources during power outages, and mental health disorders resulting from the stress of extreme weather events. These impacts will exacerbate existing public health challenges in New Jersey such as poor air quality, aging infrastructure, high energy costs, and socioeconomic vulnerability. Certain groups, particularly children, the elderly, and the poor are more vulnerable to the health impacts posed by climate change.

Incorporating consideration of future climate projections, including changes in flooding, temperature and precipitation will strengthen ongoing efforts of public health officers to prepare for a changing climate. Information on climate change impacts, as well as trends and projections for New Jersey, can be found via the New Jersey Climate Adaptation Alliance at: <http://climatechange.rutgers.edu/njadapt>.

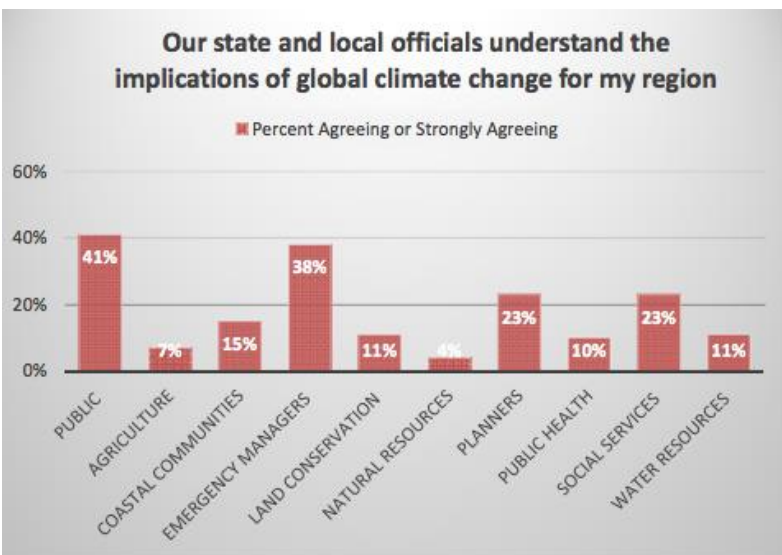
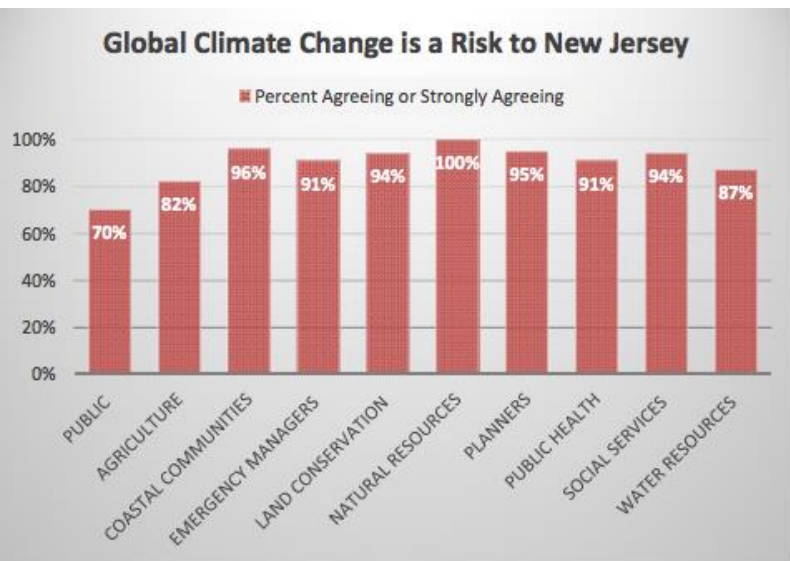
What can public health officers do to prepare for and adapt to climate change in New Jersey?

1. **Assess vulnerability and capacity within your jurisdiction.** Identify the likely impacts of climate change in your area and the potential health outcomes associated with those changes. For example, urban areas may be most vulnerable to air quality impacts, while coastal communities are at high risk for flooding. Identify specific health hazards in your community, such as brownfield properties vulnerable to flooding that could cause contamination during storm events, or combined sewer systems that release untreated sewage into local water bodies during heavy rainfalls. Collaborate and work with community leaders, government officials and organizations as part of the assessment process. Investigate past responses to similar health threats and assess the strengths and weaknesses of those responses. Assess the capacity of your jurisdiction to deal with the projected health effects of climate change, including existing strategic plans and training initiatives. | http://www.cakes.org/sites/default/files/roads_for_change.pdf
2. **Identify and locate vulnerable populations in your community.** Minority and environmental justice communities, the poor, undocumented immigrants, the elderly, and people with physical and mental disabilities may be disproportionately vulnerable to climate change and environmental hazards. Determine where in your community vulnerable residents live. Focus on eliminating health disparities by ensuring that

Resilience
Preparing New Jersey for Climate Change
Policy Considerations from the New Jersey Climate Adaptation Alliance

June 2014

Comparison Among Sector Stakeholders



Source: NJCAA 2013 *Surveys of Stakeholder Groups Climate Change Preparedness in NJ*

Public Health Stakeholders

- **Public Health Focus Group and On-line survey (NJACCHO)**
- **Targeted Interviews Reps**
 - NJ Hospital Association
 - NJ Primary Care Association
 - Health Care Association NJ
 - LeadingAge
 - NJ ACOG
 - NJ AA Pediatrics
 - NJ AA Family Practice
 - NJ AC of Physicians
- **Expert Interviews**
 - Occupational Health MD (Rutgers)
 - Risk Analysis & Public Health (Rutgers)
 - Vector-Borne Disease (Rutgers)
 - Toxic Materials (Rutgers)
 - Epidemiologist (CDC)
 - U.S. EPA Program Manager

See: NJCAA 2014 *Stakeholder Engagement Report: Public Health Climate Change Preparedness in NJ*



Resilience

Preparing New Jersey for Climate Change

Policy Considerations from the New Jersey Climate Adaptation Alliance



June 2014

Table 1: Climate change policy recommendations

1.0 - Strengthen climate change preparedness and adaptation in New Jersey through the establishment of a statewide climate adaptation policy that is designed to significantly reduce New Jersey's vulnerabilities to a changing climate through actions that direct integration of science-based standards into state policies, programs and regulations and that direct actions consistent with the statewide policy be taken by State agencies, regional and local planning authorities and commissions, municipal and county government.

	RECOMMENDATIONS	SECTORS	INITIAL STEPS
1.1	Establish a statewide Climate Change Working Group through legislative or executive action to foster statewide preparedness planning, coordinate scientific and technical assessment of potential climate change impacts to the citizens and environs of New Jersey and to frame adaptation policy.		✓
1.2	Form a Science and Technical Advisory Panel (STAP) within the Climate Change Working Group to rapidly develop a climate impact assessment.		✓
1.3	Use the climate impact assessment to inform consistent development and adoption of statewide climate adaption policy.		
1.4	Incorporate consideration of a changing climate into long-term planning that governs regulations, program operations, and funding allocation decisions with discrete outcomes, necessary resources, staff development and schedules for implementation.		
1.5	Incorporate climate change policy into capital planning and decision making of state agencies, regional and local planning authorities and commissions, municipal and county governments.		
1.6	Conduct a comprehensive evaluation of policies and regulations governing New Jersey's coastal zone in light of identified risks to a changing climate.		
1.7	Convene a working group of experts to consider the outcomes of the statewide climate impact assessment on certain geographic areas of the state, including urban communities and the Delaware Bayshore, as well as on certain populations that are particularly vulnerable to a changing climate.		✓
1.8	Revise the Municipal Land Use Law to require a master plan element that addresses natural hazards such as climate change.		
2.1	Develop and enhance tools to restrict or discourage future development and redevelopment in areas at high risk to the impacts of current and future storms, flooding and sea level rise.		

2.0 - Implement standards, regulations and policies that apply a risk management approach to identify people, places and assets (including natural capital) most at risk to climate stressors and direct investment to risk reduction efforts as well as uses that are compatible with a changing climate.

ICON KEY Agriculture Coastal Communities Built Infrastructure Natural Resources Public Health Water Resources



WHAT IS NJADAPT?

NJADAPT is an online tool that can be helpful to multiple audiences for varied purposes. It can be used by the general public, government officials, businesses, and non-governmental professionals to understand how a changing climate is affecting and will continue to affect various populations, places and assets in New Jersey. In addition, it is helpful to local officials, concerned citizens and other New Jerseyans who wish to integrate high quality data about conditions of a changing climate into state and community planning and decision-making.

NJADAPT is constantly being improved. It is being built to support planning and decision-making related to all impacts of a changing climate including sea level rise, temperature changes, precipitation changes, inland flooding, and drought. In its current Version 1 form, NJADAPT is focused on coastal flooding, storm surge and sea level rise. Over time, additional data will be added to the site on other climate impacts along with improved functionality to make it easier to use. More reports and videos summarizing climate change impacts in New Jersey will be added regularly as well. Sign up [here](#) to be notified when [new updates](#) are made for this site.

QUICK LINKS

Coastal Hazard Profiler
Creates maps that show people, places, and assets exposed to coastal flooding.

NJ FloodMapper
Visualization tool for local communities who need to make decisions concerning flooding hazards and sea level rise.

Getting To Resilience
Online self-assessment process is a tool to assist communities to reduce vulnerability and increase preparedness.

Coastal Hazard Profiler

Exposure Profiler Select Map Collect Tips for Using These Maps Resources Help

1 Saved Maps

Choose Community Exposure

Choose a section below to view maps showing different aspects of community exposure to flood hazards. Pick and choose the best maps to get the flood exposure conversation started in your community. You can also view our map services.

Environment Map

Natural areas provide important benefits to coastal communities, including hazard protection, flood storage, water quality maintenance, fisheries support, and recreational opportunities. Communities can increase resilience by protecting natural areas along the coast that are exposed to flooding and adjacent inland areas.

Infrastructure Map

Community infrastructure, including roads, bridges, and water and sewer systems, can be damaged by coastal flooding. Communities should first assess infrastructure vulnerabilities and associated environmental and economic issues to determine what steps are needed to protect these assets.

Society Map

Understanding the populations that live in or near coastal flood-prone areas is an important information need, since residents who are elderly, who live in high-density areas, or who are impoverished may merit special considerations.

NJ FLOODMAPPER

CURRENT MAP STORIES (CLICK TO WATCH)

Coastal Flood Exposure Assessment

Story Map: Coastal Flood Exposure

New Jersey Coastal Flooding Exposure Assessment
Coastal communities in New Jersey face an increasing amount of flood risk due to sea level rise. Using a mapping model developed by a team at Rutgers University, this map story illustrates how coastal flood exposure may increase in the future. For full report click [HERE](#).

Monetary Damages

Entering Twp of Toms River

Monetary Damages for Coastal Flooding: Toms River Case Study
Toms River was severely impacted by Hurricane Sandy. This map story examines how Sandy's storm surge affected property values, as well as how those values may be affected by future flooding due to sea level rise. For full report click [HERE](#).

Salt Marsh and Sea Level Rise

Modeling the Fate of New Jersey's Salt Marshes Under Future Sea Level Rise
Sea level rise in New Jersey and elsewhere could substantially affect coastal wetlands. This map story, developed through a partnership of several programs at Rutgers University, explores how sea level rise may affect the salt marshes along the New Jersey coast. For full report click [HERE](#).

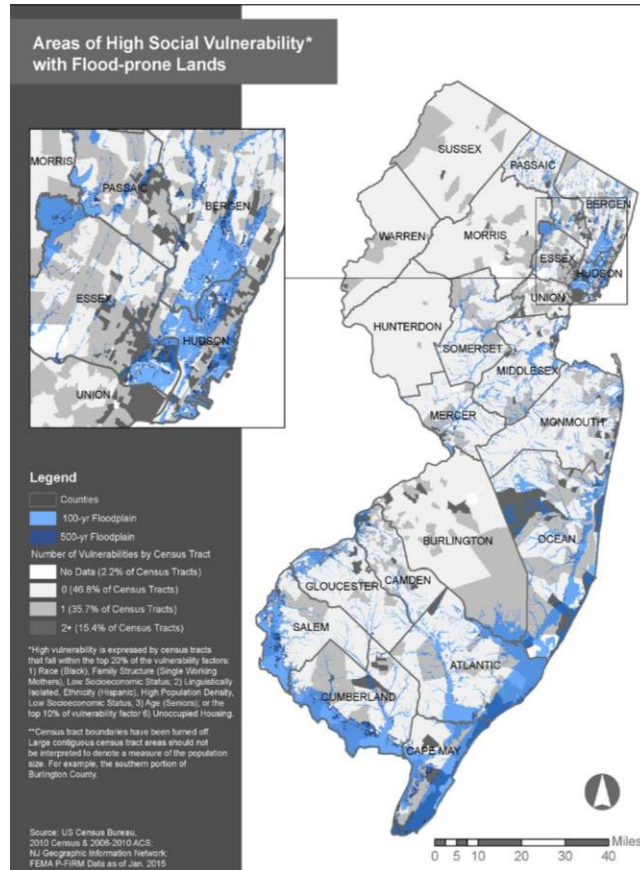
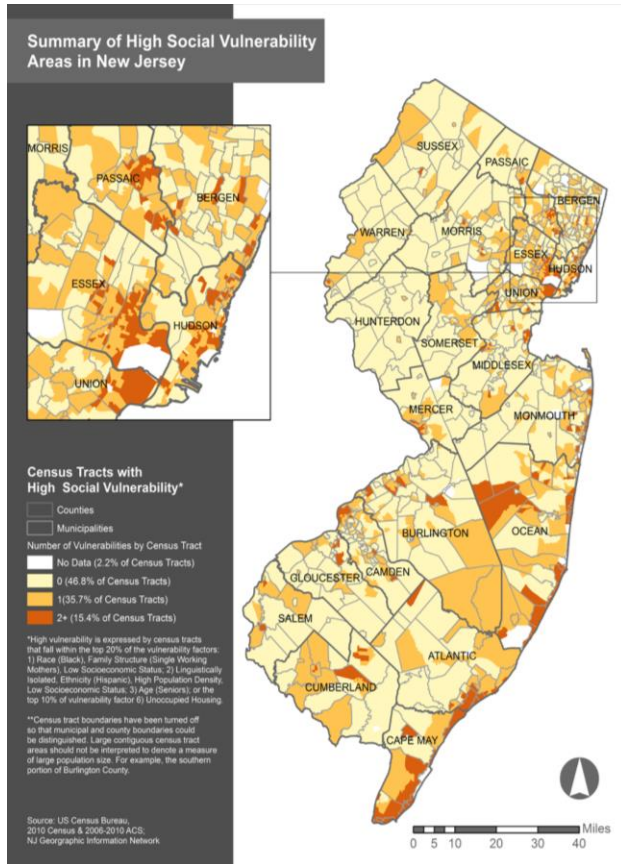
Newark's East Ferry Section

Newark - East Ferry

FUTURE MAP STORIES

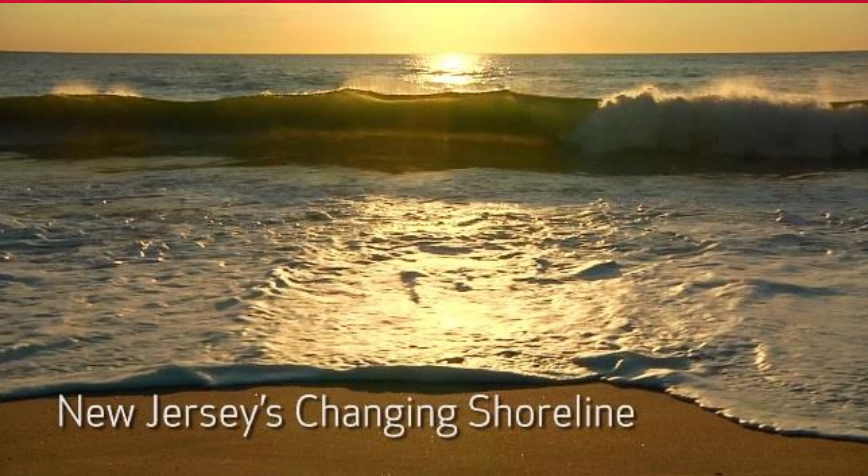
- FEMA Q3 to PFIRM Changes and SLR
- Historic Shoreline Delineation
- Pollution Sources and Flood Hazards
- Populations Vulnerable to Climate Change in New Jersey: Update of a Statistical Analysis
- Transportation and Climate
- Understanding Climate Change and Flood Risk for New Jersey's Senior Citizens

High Social Vulnerability and Flood Risk

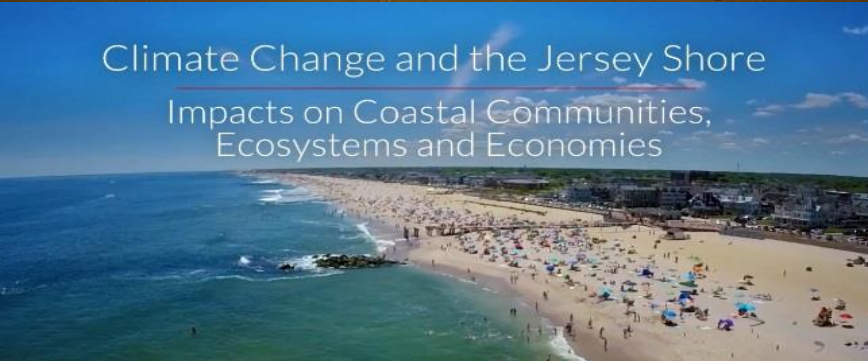


Factors Related to High Social Vulnerability

- race (black), family structure (single parent, female-headed), and low socioeconomic status
- linguistic isolation, ethnicity (Hispanic), high population density, and low socioeconomic status
- age (seniors)
- high percentages of unoccupied housing (Source: Pflücke et al. 2015)



New Jersey's Changing Shoreline



Climate Change and the Jersey Shore
Impacts on Coastal Communities,
Ecosystems and Economies



Climate Change and Flood Risk
for New Jersey's Senior Citizens

Videos and Story Maps



New Jersey Populations
Vulnerable to Climate Change

See njadapt.rutgers.edu and njadapt.org



New Jersey and Climate Change
Impacts and Responses

Climate Change And Public Health Working Group BRACE: Climate and Health Profile Report

NJ Public Health Association

**NJ Association of County and
City Health Officials**

Rutgers School of Public Health

NJ Society for Public Health Education

NJ Department of Health

NJ Mental Health Association

NJ Local Boards of Health Association

NJ Visiting Nurse Association

**NJ Association of Public Health Nurse
Administrators**

NJ Hospital Association

County Health Rankings and Roadmaps

**NJ Chapter American Academy of
Pediatrics**

NJ Environmental Justice Alliance

NJ Health Initiatives

Drexel University School of Public Health

NJ Environmental Health Association

NJ Medical School

**Rutgers Robert Wood Johnson Medical
School**