WHO IS VULNERABLE TO SEA LEVEL RISE?
Identifying populations most vulnerable to the health burdens of climate change is an important step in developing state and local adaptation plans. Publicly available data can be used to assess the health-related vulnerability for sea level rise. Some examples of vulnerability data for Massachusetts are provided below.

| 79 cities and towns in Massachusetts have MEMA coastal storm surge zones¹ | In 2016, 10.3% of MA residents had active Asthma² |
| 14.1% of coastal residents are age 65 or older³ |
| 12.9% of coastal residents live below the poverty line³ |

HOW CAN WE ASSESS VULNERABILITY TO CLIMATE HAZARDS?
Climate vulnerability is a function of:

- **Potential impacts** from *exposure* (contact with the climate hazard) and *sensitivity* (e.g., age, pre-existing health conditions, social disparities) that may increase or decrease health impacts
- **Adaptive capacity** – factors that influence the ability to respond and recover from climate impacts

The next page provides information to assess exposure, sensitivity, and adaptive capacity to reduce climate change impacts. This information should be considered when planning actions to reduce health risks from sea level rise in Massachusetts communities.
WHAT ARE THE FACTORS THAT INFLUENCE VULNERABILITY TO SEA LEVEL RISE?

Assessment of community-specific vulnerabilities will inform adaptation planning efforts. By considering these factors, communities can increase health equity and resilience to climate change impacts. The MA Environmental Public Health Tracking Portal provides helpful tools and community-specific vulnerability data: [https://matracking.ehs.state.ma.us/](https://matracking.ehs.state.ma.us/).

### SOCIODEMOGRAPHIC
- People over age 65
- People over age 65 and living alone
- Children under age 5
- People of Color
- People who are living below the poverty line
- People experiencing homelessness
- People with limited knowledge of English

### ENVIRONMENT
- Degraded water quality
- Coastal erosion
- Ecosystem damage
- Damage to aquatic and agricultural resources
- Loss of shoreline and recreational land

### PRE-EXISTING HEALTH CONDITIONS
- Adults with respiratory disease (e.g., asthma, COPD) and/or cardiovascular disease
- Children with respiratory disease (e.g., asthma)
- People using medical equipment that requires electrical power or medications that require refrigeration
- People with physical disabilities or special needs
- People with mental health challenges

### PRE-EXISTING HEALTH CONDITIONS
- Interruption of utilities (e.g., electric, phone, internet)
- Failure of wastewater treatment systems
- Loss of safe drinking water
- Disruption of transportation and communication systems
- Loss of access to medical services
- Property damage and displacement of homes and businesses

### Intervention Strategies for Reducing the Health Impacts of Sea Level Rise

- Identify vulnerable populations and health issues in your community using the DPH Community Profiles, and other tools available on the EPHT website: [https://matracking.ehs.state.ma.us/planning_and_tools/index.html](https://matracking.ehs.state.ma.us/planning_and_tools/index.html)
- Increase the use of climate and weather information in managing storm water/flood risk and individual events
- Identify and map vulnerable locations and populations using MDPH’s Climate Change Vulnerability Mapping Tool [https://mass.gov/dph/climate-vulnerability-map](https://mass.gov/dph/climate-vulnerability-map)
- Identify critical facilities and infrastructure at risk from flooding (e.g., water and sewer facilities susceptible to intrusion) and implement modifications that decrease potential flood damage and/or relocate critical infrastructure from vulnerable areas
- Assess capability to deploy power generators and water pumps to medical facilities
- Encourage preparedness in the home, schools, workplace, and healthcare facilities
- Develop communication and outreach plans to raise awareness of evacuation routes, flood zones, and response plans
- Support implementation of MDPH’s Mass in Motion and other Wellness programs to increase community resilience
- Implement actions to prepare for storms from DPH’s Community Sanitation Program
- Promote actions to address and prevent water damage and mold growth following a storm or routine tidal flooding
- Incorporate information on sea level rise into coastal planning, transportation, and public works projects
- View the Massachusetts State Hazard Mitigation and Climate Adaptation Plan for information on adaptation strategies
- View the Massachusetts Climate Change Adaptation Report, Chapter 6: “Human Health and Welfare” for health adaptation strategies

1. Massachusetts Emergency Management Agency Surge Maps for Massachusetts Communities, available via [https://www.mass.gov/info-details/hurricane-resources-for-emergency-managers](https://www.mass.gov/info-details/hurricane-resources-for-emergency-managers)

For more information about the public health impacts of climate change in Massachusetts contact:
Massachusetts DPH | Bureau of Environmental Health | Environmental Toxicology Program
250 Washington Street, Boston, MA 02108
Phone: 617-624-5757 | Fax: 617-624-5183 | TTY: 617-624-5286
Websites: [https://www.mass.gov/climate-and-health](https://www.mass.gov/climate-and-health); [https://matracking.ehs.state.ma.us/Climate-Change/index.html](https://matracking.ehs.state.ma.us/Climate-Change/index.html)

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