

## NBEP Social Science Working Group – 2021 Recap

### Overview

In 2021, the [NBEP Social Sciences Working Group](#) met virtually in February, July, and November to advance the [Social Sciences Working Group Framework and Criteria](#).

Because social science as a field/topic is broad, a common theme to Working Group discussions over the course of 2021 was ensuring that NBEP identified specific entry points to social science that leveraged partners' expertise in a way that helps advance and achieve the program's mission. For example, topics like public health and the economy are important, but certain aspects could easily stray from NBEP's core focus and are perhaps already adequately addressed by partner entities.

The objective of the first meeting in February 2021 was to solidify goals for the group based on initial conversations in October 2020 and develop an approach for continued discussion. Participants in the meeting agreed that each theme in the Framework requires individual focus and consideration. This could be accomplished via a Discussion Series where work group members lead conversations about their area(s) of expertise, brainstorm project ideas and research questions, and identify outcomes/outputs that are attainable in the next ten years.

Discussion Series Themes:

- Advance the role of social science in the region
- Increase exchange/collaboration between social science researchers
- Strengthen integration from watershed to coastal to offshore
- Build exchange/collaboration between social science researchers and local groups
- Develop social science funding mechanisms
- Tracking (indicators and metrics)

The second meeting in July was held with just a handful of Working Group members able to participate. The objective of the meeting was to advance the Tracking (indicators and metrics) Theme by identifying social science indicators that NBEP could include in its next Status & Trends report in 2024. By identifying potential metrics now, NBEP staff and Working Group members could work together over the next few years to synthesize and interpret data for a suite of new social science indicators that the program would track and update. Participants also discussed opportunities for social science to provide contextual information (i.e., move beyond a metrics-only approach). Working Group members could be enlisted to help NBEP use storytelling as a valid approach to documenting social science topics.

At the November meeting, Working Group members drilled into potential metrics and available data for three categories of social science indicators: Public Access, Exposure to Climate Impacts, and Coastal & Bay Economies. Each of these categories was framed and supported by data such that they relate directly to the NBEP mission and would resonate with NBEP stakeholders. [View the synopsis of potential indicators and supporting datasets](#).

The following material has been distilled from those Working Group discussions and proposes a way forward for priority social science indicators. Whereas NBEP staff will take the lead on

compiling and synthesizing data, Working Group members can assist with data/trends interpretation and developing messaging for target audiences during future meetings.

### Public Access

Public Access has been identified as an important topic by Vision 2032 Work Groups. The “Number of Public Beach, Park, and Open Space Access Points” is a metric that is well-supported by data and partners in the region. RI CRMC and Save the Bay are currently updating the rights-of-way and shoreline access points databases, a process that NBEP could leverage. In addition, there appear to be ample data available regarding inland public parks and state management areas to supplement the coastal access data. A Public Access indicator could also be supplemented or enhanced by additional information about the quality aspect of access points such as available parking, impaired waters, and beach closures.

### Exposure to Climate Impacts

This category does not seek to capture raw measurements of public health and wellbeing (which are more completely and appropriately communicated by organizations and entities other than NBEP), but instead reflects elements of environmental conditions and community characteristics that could impact public health and wellbeing.

Exposure to extreme heat can be characterized using “Heat Advisories” from the National Weather Service and Tree Cover data. Each of these metrics is broadly understandable by the general public and relevant to both urban and rural communities. Number, location, and access to cooling centers, as well as the number of heat stroke emergency room visits could be used to supplement these metrics.

Community-level characteristics, such as the number of municipalities participating in resiliency programs, number of towns that have completed a low-impact development checklist, or area of new development allowed in flood zones would reflect how communities are or are not protecting their residents from climate impacts.

### Coastal & Bay Economies

Several economic indicators are relevant to some of the focal themes of the Social Science Work Group and align with NBEP’s mission. The Cost of Beach Closures to local economies can be roughly estimated from visitation data and beach closure data and compared with the cost of local infrastructure upgrades (e.g., stormwater infrastructure, sewerage). Commercial Fish Landings is also a metric of interest, as it resonates with the public, and could be adapted to incorporate climate change themes (i.e., are southern species being caught more often in recent years?) or improving water quality (i.e., what are the environmental and economic impacts of the growth in the RI aquaculture industry?).

### Next Steps

In 2022, the Social Sciences Working Group will meet to briefly recap 2021 work and initiate the Discussion Series, with particular interest toward topics that can help advance and build on the three categories of social science indicators described above.

# Social Science Indicators

We selected three categories of Social Science indicators for work group discussion and consideration: Public Access, Climate, and Economy. Below, each category is briefly described, and several indicator options are presented. For each potential indicator, a definition, available data, and options for reporting trends are presented.

## Public Access

Public Access is a topic that has been identified as important by Vision 2032 Work Groups. A Public Access indicator could be defined several ways using a variety of datasets. Some options are presented below:

### Number of Access Points

#### What is the indicator and what does it tell you?

- Reflects the availability of public open spaces (e.g., parks, beaches) to residents and visitors
- RI CRMC has a goal to designate at least one public right-of-way for each mile of shoreline
- Can be defined as the number access points, number of parks/beaches, or number of acres of open space within [distance] of an individual's residence OR density of any of the above per unit area (e.g., watershed, municipality, state)
- It is worth considering quality of the points to be accessed (e.g., consider if a beach is frequently closed)

#### What data are available?

- [RI CRMC Rights-of-Way and Public Access](#)
- The [Trust for Public Land \(TPL\) ParkServe](#) reports access data by city (e.g., how many parks in a city).
- [RI DEM Outdoor Recreation Map](#)
- [Public Access to the Waters of Massachusetts](#)
- [MA DCR Inland Beaches](#)
- [CT Coastal Access Guide](#)

#### How do you measure trends?

- Track changes in the number of residents per park.
- Track changes the acres of parkland per 1,000 residents.
- Track changes in the number of parks in region.
- Track changes in the percentage of land used for parks in the region.
- Track changes in number and/or quality of access points.

## Distance to Parks and Public Spaces (miles)

### What is the indicator and what does it tell you?

- Physical proximity to open space is an important measure of access.
- It is worth considering quality of the open space.

### What data are available?

- The [National Recreation and Park Association](#) provides performance reviews for regional parks and recreation agencies (e.g., number of residents per park).
- The [Trust for Public Land \(TPL\) ParkServe](#) reports access data by city (e.g., percentage of residents within a 10 min walk of a park).
- [RI DEM Outdoor Recreation Map](#) and [RIGIS](#)
- [MassGIS](#)
- [CT DEEP Land Conservation and Outdoor Recreation](#)

### How do you measure trends?

- The ParkServe “10-minute walk” identified walkable service areas using a nationwide walkable road network dataset provided by Esri. The analysis identifies physical barriers such as highways, train tracks, and rivers without bridges, and chooses routes without barriers.
- More generally, determine the road/path distances required for residents to access parks via any method.
- Identify new barriers or removed barriers.

## Transportation to Access Points

### What is the indicator and what does it tell you?

- How easy is it for people to get to parks or open space?
- Is public transportation available and convenient for access to those spaces?

### What data are available?

- [RIGIS RIPTA Bus Routes](#)
- [MassGIS MBTA Bus Routes and Stops](#)
- [MassGIS MBTA Rapid Transit](#)
- [RI DEM Outdoor Recreation Map](#)
- [RI CRMC Rights-of-Way and Public Access](#)
- [Public Access to the Waters of Massachusetts](#)
- [MA DCR Inland Beaches](#)
- [CT DEEP Property Access Locations](#)
- [CT DOT Service and Fare Equity Analysis](#)

### How do you measure trends?

- Percentage of park entrances within walking distance of transit stops or other community amenities if for places without public transportation.

- Number of hours when a park is open and no buses or trains arrive at stops within 2 blocks of the park.
- Percentage of parks programs for which participants could arrive via public transit within 30 minutes of start time and with transit stops within two blocks of park entrance.
- Number of cross-promotional materials between parks and transportation systems such as a greenways network, carpools or shuttles, made available to the general public.

## Climate

Managing climate change impacts to human and natural systems is one of the goals outlined in the 2012 CCMP. New social science indicators that are oriented to climate change can help address this goal.

### Heat Islands

#### What is the indicator and what does it tell you?

- A measure of the extent to which urban areas re-emit solar energy more than natural landscapes and outlying areas with fewer structures and more greenery.

#### What data are available?

- [NASA's Moderate Resolution Imaging Spectroradiometer \(MODIS\)](#) measures surface temperature by seven solar and three thermal spectral bands when there are clear skies. Each pixel has a 1km resolution.
- [NOAA's Advanced Very High Resolution Radiometer \(AVHRR\)](#) determines surface temperature. The ground resolution is about 1.1 km.
- [Landsat Thematic Mapper and Enhanced Thematic Mapper Plus](#) provide thermal infrared imagery and data that can be used to calculate surface temperature and urban heat island. The Landsat Thematic Mapper was active from 1982-2012 on a 16-day repeat cycle. The Enhanced Thematic Mapper has collected images since 1999 on a 16-day repeat cycle.
- [NOAA Centers for Environmental Information](#) provides daily maximum and minimum temperatures.
- The [National Weather Service stations](#) can provide local weather statistics for temperature.
- The [NCEP/NCAR Reanalysis Project](#) (National Center for Environmental Prediction/National Center for Atmospheric Research) uses an analysis/forecast system to perform data assimilation using past data from 1948 to the present. The data set provides 4-times daily, daily, and monthly values for surface and air temperature.

#### How do you measure trends?

- “Assessments focused primarily on energy-related impacts of heat islands typically compare the temperature in the overall urban area with the temperature in the surrounding rural area to determine how much additional energy demand is caused by the urban heat island” (<https://www.epa.gov/heatislands/measuring-heat-islands>).
- “Assessments focused on health-related impacts of heat islands typically focus on assessing the differences in air temperatures among different locations within the city (i.e., identifying hot spots)” (<https://www.epa.gov/heatislands/measuring-heat-islands>).

## Number of Days Above 90 Degrees

### What is the indicator and what does it tell you?

- This indicator describes extreme heat events.
- A similar metric is “heat waves” and is defined as “a period of two or more consecutive days when the daily minimum apparent temperature (the actual temperature adjusted for humidity) in a particular city exceeds the 85th percentile of historical July and August temperatures (1981–2010) for that city.” ([EPA Heat Wave](#))
- For Rhode Island, a heat wave is considered 3 consecutive days of outside temperatures above 90 degrees ([RI Heat Wave](#)).
- In Massachusetts, a “heat wave” is usually defined as a period of three or more consecutive days above 90 °F ([MA Heat Wave](#)).
- In Connecticut, a “heave wave” is considered at least 3 consecutive days of outside temperatures above 90 degrees ([CT Extreme Heat](#)).

### What data are available?

- [NOAA Centers for Environmental Information](#) provides daily maximum and minimum temperatures.
- The [National Weather Service stations](#) can provide local weather statistics for temperature.
- The [NCEP/NCAR Reanalysis Project](#) (National Center for Environmental Prediction/National Center for Atmospheric Research) uses an analysis/forecast system to perform data assimilation using past data from 1948 to the present. The data set provides 4-times daily, daily, and monthly values for surface and air temperature.

### How do you measure trends?

- This indicator examines trends over time in four key characteristics of heat waves in the United States:
  - Frequency: the number of heat waves that occur every year.
  - Duration: the length of each individual heat wave, in days.
  - Season length: the number of days between the first heat wave of the year and the last.
  - Intensity: how hot it is during the heat wave.

## Heat-Related Hospital Visits

### What is the indicator and what does it tell you?

- This indicator tracks how often people are hospitalized because of heat exposure

### What data are available?

- The Center for Disease Control and Prevention (CDC) tracks [Emergency Department Visits for Heat Stress](#) but the CDC Tracking Network suppresses data for counties with non-zero counts less than 6 and population less than 100,000 to protect confidentiality.

### How do you measure trends?

- The data can be 1) age-adjusted rate of emergency department visits for heat stress per 100,000 population, 2) crude emergency department visits for heat stress per 100,000 population, or 3) number of emergency department visits for heat stress.

## Number of Municipalities Participating in Resiliency Programs

### What is the indicator and what does it tell you?

- The number of municipalities participating in a climate resiliency or mitigation program would illustrate regions need and/or desire to prepare for the impacts of a changing climate. This indicator may be skewed toward coastal municipalities that are likely to see the biggest and most direct impacts of climate change.

### What data are available?

- This data could be found by directly contacting the municipalities or through the Rhode Island Infrastructure Bank that runs a [Municipal Resiliency Program](#). Massachusetts has a similar program called the [Municipal Vulnerability Preparedness \(MVP\) program](#). Additionally, Massachusetts Coastal Zone Management administers the [Massachusetts Coastal Resilience Grant Program](#) which would have a record of the municipalities participating in the program.

### How do you measure trends?

- Tracking the number of regional municipalities participating in the programs over time would show how the impacts of climate change are becoming accepted or realized. Some of these changes may be complicated by local politics, but the general pattern would demonstrate at the very least need to have a planned response to potential climate-related emergencies.

## Economy

Several economic indicators could be relevant to some of the focal themes of the Social Science Work Group, such as ensuring just and equitable prioritization and allocation of resources.

## Cost of Beach Closures (\$ annually)

### What is the indicator and what does it tell you?

- This indicator characterizes the lost revenue or societal value due to pathogen-related beach closures. It relies on beach visitation data to determine the change in beach visits on a closed day versus an open day. The cost portion would consider actual dollars spent (Tourism Revenue), modelled societal value (Non-market value), or both types combined.

### What data are available?

- Beach visitation data is not broadly collected in the region, but EPA ACESD has developed models to predict beach visitations based on cell phone location data (needs to be purchased).
- Beach closure data can be found at the [Rhode Island Department of Health](#), [Massachusetts Department of Public Health](#), and [EPA's BEACON 2.0 – Beach Advisory and Closing on-line Notification website](#).
- Tourism Revenue information can be found on the [NOAA's ENOW Explorer](#) and on the [National Ocean Economics Program website](#).
- Resources for Non-market value estimations can be found on the [National Ocean Economics Program website](#) and EPA ACESD (N. Merrill, K. Mulvaney, and M. Mazzotta - *Valuing Coastal Beaches and Closures Using Benefit Transfer: An Application to Barnstable, Massachusetts*, 2018)

### How do you measure trends?

- Although the economic portion of this indicator is critical to understanding the cost of beach closures, the primary factor is the number of beach closures. The revenue (both market and non-market) and visitations can be difficult to quantify and/or have significant error estimations, but beach closures are consistently tracked across the region.

## Ratio of Seasonal Workers Salary to Affordability to Live

### What is the indicator and what does it tell you?

- This indicator is intended to demonstrate if seasonal tourism-related employment (and the associated wages) is sufficient to sustain the required workforce. This indicator is complex in that tourism can affect property values and the standard of living in tourist areas.

### What data are available?

- Data for seasonal workforce wages can be found on the [National Ocean Economics Program website](#) (on the county level) and on the [Bureau for Labor Statistics website](#).
- Data for housing affordability can be found on the [U.S. Census Bureau Housing Affordability website](#).
- The [U.S. Department of Housing and Urban Development Geospatial Data Storefront](#) hosts several datasets regarding fair housing and community indicators.



- The National Association of Realtors has a [Housing Affordability Index](#) (determines a family’s ability to obtain a mortgage).

#### **How do you measure trends?**

- Though this indicator is somewhat circular in nature (i.e., tourism impacts affordability), a “livable” threshold could be set to determine whether the salaries of seasonal employees is sufficient for their living options. The [Housing Affordability Index methodology](#) could be used as a general guide the calculations.

#### Commercial Fish Landings (pounds of fish per year)

##### **What is the indicator and what does it tell you?**

- This indicator would solely quantify the amount of fish caught (in pounds) without considering the effort involved to try and capture the broad scale economic impact while diminishing other factors like environmental conditions.

##### **What data are available?**

- There are several data sources that could be considered:

[The Atlantic Coastal Cooperative Statistics Program \(ACCSP\) Data Warehouse](#)

[NOAA Fisheries Annual commercial landings statistics](#)

[RI DEM Commercial Reporting](#)

[MA DMF commercial fish landings](#)

##### **How do you measure trends?**

- Plot yearly landings (in pounds) for everything, fish, shellfish, or indicator species.