THE 2018 NEW JERSEY SUSTAINABLE STATE OF THE STATE REPORT

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I. How to Use this Report:

The *2018 New Jersey Sustainability State of the State Report* presents a long-term vision for sustainability in New Jersey defined in terms of 57 goals and a set of measurable indicators to track progress. This report has two volumes: a narrative *Summary Report* and a supporting *Technical Report* (this volume).

Volume I – The *Summary Report* (available here) lays out a framework for defining sustainability along 14 dimensions, describes 3-5 specific goals for each dimension, and 1-5 indicators for each goal. We present an assessment of New Jersey's progress towards each goal, depicted as 'thumbs up,' 'thumbs down,' or 'needs further investigation.' This characterization is not a judgment on specific actors such as municipalities or schools, or on state government, industry, NGOs or individuals. Rather it integrates multiple indicator trends with each other and with an appraisal of current conditions at the state level in New Jersey. If the data suggest that trends are slightly positive, yet the current condition is dire and the rate of positive change is insufficient to reach the goal within a critical time frame, our assessment of progress would be negative.

Unlike the goal assessments that are an integrative and partially subjective evaluation of progress, each indicator is objectively characterized based on the data. The indicators are presented as simple arrow graphics. An up arrow is not good or bad; it simply means data shows an upward trend of whatever is being tracked. Whether the trend means progress or not depends on the nature of the trend and how we chose to display it (e.g., as desired outcome *vs.* sign of trouble).

Volume II – The *Technical Report* provides the sources, data, and other detail for each indicator presented in the *Summary Report* (see further below).

A key to the iconography (thumbs up/down, arrows, etc.) appears below on page 3.

II. Format of Volume II

For each of the 14 sustainability dimensions presented in Volume I there is a corresponding section in this report that provides the following content:

- an overarching goal statement defining a desired sustainability outcome;
- specific goals that more fully define the overarching goal;
- one or more indicators per specific goal, followed by:
    - one or more figures (table, chart or single data point) that display the data, where available;
    - data sources for each figure;
    - a narrative description of the method employed to create the indicator, as necessary (i.e., where we manipulated the data, or if the original source cited does not provide sufficient explanation);
    - supporting data, if needed to provide context.

    (*Note:* The goal statements and indicator descriptions correspond *verbatim* to those in Volume I.)

Each figure is assigned a unique number according to the following format:

dimension#.goal#.indicator#.figure#

Some indicators have multiple figures associated with them. As an example, Figure 1.2.2.1 refers to dimension 1, goal 2, indicator 2, figure 1 -- in other words, the first figure to appear after indicator 2, under goal 2, in dimension 1. In this case, Figure 1.2.2.1 is Forest Biomass.

III. How We Created this Report: Methods and Process

This report is the result of research and engagement with experts, partners, and stakeholders that began in 2013. It builds upon the initial release of the State of the State report by Sustainable Jersey in 2015.

Each Sustainable Jersey Task Force was asked to list the big picture issues that the actions and standards that they had created were intended to fix. This was the first step in defining the list of things about which Sustainable Jersey should be concerning itself and defining the full scope of the goals and indicators. Summing and integrating the responses from all of the Task Forces, we created the first list of topics. These might also be variously described as categories or goal areas. In this report we are calling these categories dimensions.

For each dimension of sustainability we worked with the Task Forces to identify:

- Accepted definitions of sustainability for the dimension, and any accepted targets that defined the level of performance that needed to be achieved
- Relevant data that were available that could be used as indicators to track progress
- Relevant experts that could be enlisted as advisors and collaborators in the work

This information was augmented with research to develop a series of White papers on each dimension. The White papers were released at Sustainable Jersey's First Sustainability Summit held on September 18, 2013. At the Summit, 200 participants divided into workshops to discuss the initial findings and to provide feedback on goals, targets, indicators to track progress, and relevant experts to enlist.

The feedback from the 2013 Summit was catalogued. Working with experts and various *ad hoc* committees and Task Forces, the new information was utilized to refine the input in the following ways:

- The input was organized into 14 dimensions
- Each dimension was further broken down into 3-6 component "goals." The goals are statements of what we want to achieve, and further define each of the elements within the dimension. For example, the Air dimension has goal statements for Indoor Air, Outdoor Air, etc.
- For each goal, we identified and gathered data that could be used to track progress
- For some indicators, no appropriate data were found
- In other cases, we located data that could be used as an indicator, but only with further analysis. Given limited time and resources, we were able to conduct this analysis for some, but not all of the potential indicators. A significant product of the report is the list of data and analysis gaps that we hope to address in the future in collaboration with partners

Each year, the final step in the process is to assess the indicators and evaluate progress toward the goals. The assessment of the goals was updated in 2018 by Sustainable Jersey staff working with an *ad hoc* committee that consists of subject matter experts and leaders.

IV. Conclusions about Data Availability

A sobering conclusion from this report is that there are more issues that we need to track than we have data sources. As we tracked down data from potential sources we found numerous instances where data existed in some form but was not available for use in this report. There were several recurring reasons:

- Data existed, but in unpublished format and were not available.
- Data existed but needed some analysis or manipulation to become an indicator that could shed light on one of the goals. In many cases these manipulations were fairly straightforward but time-consuming. In other cases they would require new research to develop and test new methods. Many types of data have a spatial component that would be usefully analyzed in a Geographic Information System (GIS).
- Data existed for numerous sporadic years, but because methodologies changed one or more times, time series comparison was not possible. In those instances we provided a single data point to serve as a baseline.

Developing a foundation of good data and information commensurate to our needs to track our progress toward sustainability and manage our response is a responsibility shared among many organizations, public and private. In the future we look forward to working with many of these organizations to develop a common resources of data and analysis to guide New Jersey's future.

V. Legend: Goals and Indicators

This report contains goals for the future and indicators to track progress.

Goals are descriptions of what we believe needs to be achieved if we are to become sustainable. They describe outcomes, or end points. For each goal we provide indicators based on empirical data that we can track to judge our progress toward the goal.

Each goal is assessed based on a judgment of how NJ is doing relative to the goal. Thumbs up is "good", thumbs down is "bad". The assessment is of New Jersey's status, not of any single policy actor, institution, or sector.

Goals

Adequate progress toward goal

Inadequate progress toward goal

Trend Unclear/More Analysis Needed. Either there is insufficient data to render a judgment, or the data does not present a clear picture of our progress.

Icons with a red dot indicate the assessment of progress has changed direction since last year. (e.g., a negative thumbs down has become a positive thumbs up).

For each indicator we simply describe the trend, but render no judgment about whether that trend is positive or negative. Up simply means the values of the data for that trend are increasing, good or bad.

Indicators

Up

Down

Flat

Baseline only. We have data that describes our recent status, but there are no data to describe our trend. In the future we will seek to add new data points were possible.

Insufficient Data/Analysis

Icons with a red dot indicate that the trend has changed direction since last year.

VI. Goal Assessments supported by Indicator Data and Analysis

Dimension 1: Biodiversity and Ecosystem Services

Goal

New Jersey's mosaic of natural, agricultural, and developed landscapes supports their full complement of species and genetic biodiversity. There are sufficient areas of land, coast, and sea maintained and managed to provide necessary ecosystem services and permanent, seasonal, and transient habitats for New Jersey's species to survive in place, migrate and, over the long term, adapt and evolve.

	1. New Jersey's mosaic of natural, agricultural, and developed land supports its full complement of species and biodiversity.

	1.1.1 Bird Species Diversity Five out of six species of indicator birds representing different New Jersey habitats and regions are declining. Declining: Baltimore Oriole, Eastern Towhee, Black and White Warbler, Grasshopper Sparrow, and Red Knot. Flat/ indeterminate trend: Black-crowned Night Heron.

The 'full complement of biodiversity' refers to native species and ecological communities (habitats) plus valued species that occur locally due to human management or that may migrate into the state in response to climate change. Biodiversity manifests at multiple levels, from ecological community to species to sub-species genetic diversity. The various scientific indices of diversity demand more data than are available (except for specialized studies, none statewide). In lieu of such comprehensive measures, we selected a set of bird species to represent the major habitat types and physiographic, or landscape, regions of New Jersey. Birds were chosen to stand in for these habitats and the suite of other species also dependent upon them because of the excellent time series data that are almost uniquely available for them. (At the same time, the fact that most are migratory and thus depend on habitats outside New Jersey part of the year, inserts another layer of complexity into the assessment.)

We consulted with a panel of experts at the New Jersey Department of Environmental Protection, the NJ Audubon Society, and Rutgers University to help select leading indicator species. The 2016 committee decided to revise the selection of species in the 2015 report.

The species selected were based on discussions between Sustainable Jersey staff and these experts; they do not represent a scientific of expert consensus, but rather a good first approximation for tracking the status of major habitats statewide. In future years, the *ad hoc* panel will continue to deliberate upon the best indicator species selection, as well as consider other approaches to tracking biodiversity and ecosystem health.

Species were selected based on the following criteria:

- They are species that breed in habitats that occur in New Jersey, and are highly responsive to changes in these habitats.
- They are relatively abundant, easy to detect, and have longitudinal data sets providing an adequate number of observations and data to be statistically significant.
- Wherever possible, they are a popular and culturally important species.

An accurate population census was available for the Red Knot. For the Baltimore Oriole, Eastern Towhee, Black and White Warbler, Black-crowned Night Heron and Grasshopper Sparrow population trend estimates come from the North American Breeding Bird Survey. (Additional data are provided to supplement the assessment for the heron.)

The six species we track, the breeding habitats and the regions they represent, are:

Red Knot – coastal shore; Delaware Bay

Black-crowned Night Heron – wetland; Mid-Atlantic Coastal Plain and Delaware Bay

Eastern Towhee – successional-scrub; Pinelands

Black-and-white Warbler – woodland (upland forest); Skylands (Highlands+ Ridge and Valley),

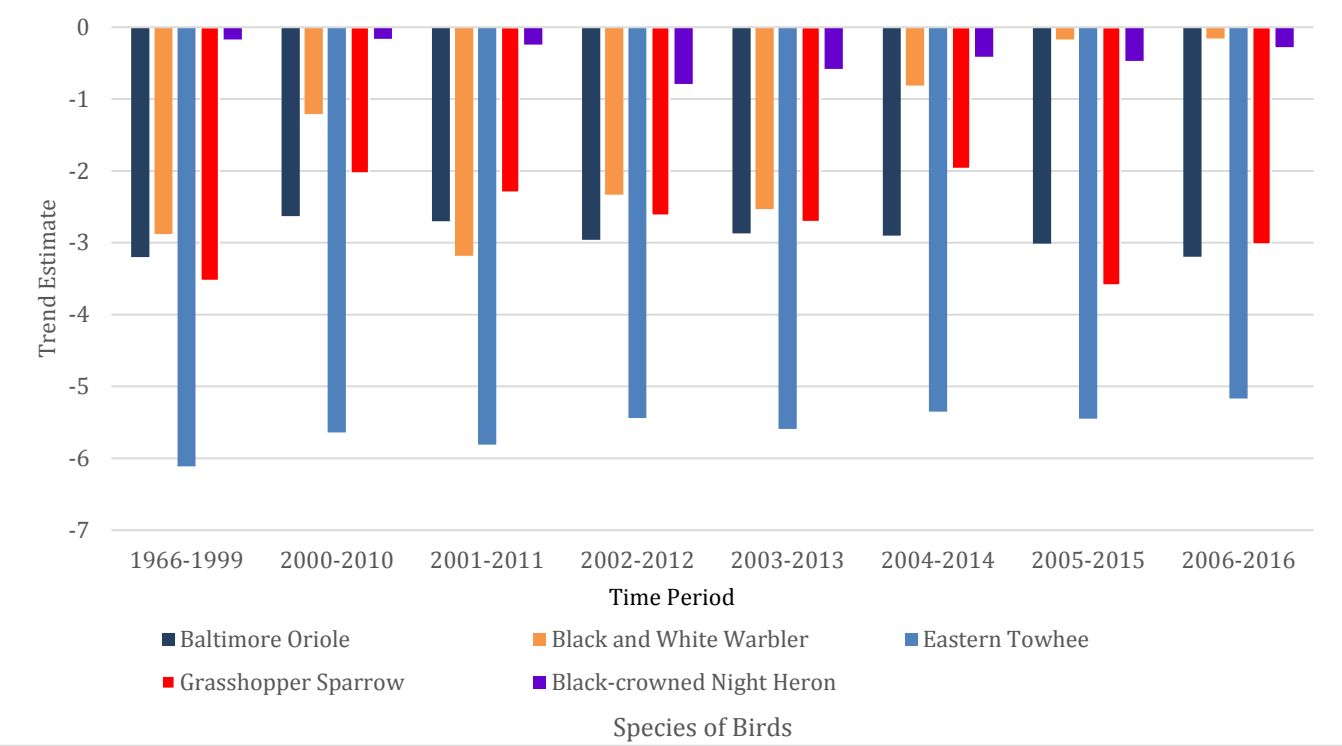
Baltimore Oriole – woodland; Piedmont

Grasshopper Sparrow – grasslands; statewide

Major potential extensions of this indicator include increasing the number and specificity of habitats (e.g., freshwater marshes, vernal pools), monitoring population data for other fauna (e.g., amphibians), and including plant species or communities. The species and habitats selected ultimately reflect the values of those doing the selecting.

Population trend data for 5 out of 6 species are declining. The trend for the Black-crowned Night Heron is better described as flat, or indeterminate. Population trend data from the North American Breeding Bird Survey (Fig. 1.1.1.1) show a negative trend for all of the species covered. Since the statistical significance is weaker for the Black-crowned Night Heron than for the others, we supplement that with aerial survey data (Fig. 1.1.1.2). Those data oscillate without a clearly discernable trend.

Figure 1.1.1.1 Population Trends of NJ Birds



Source: USGS Patuxent Wildlife Research Center, Trend Analysis Form: http://www.mbr-pwrc.usgs.gov/bbs/trend/tf13.html and https://www.mbr-pwrc.usgs.gov/bbs/

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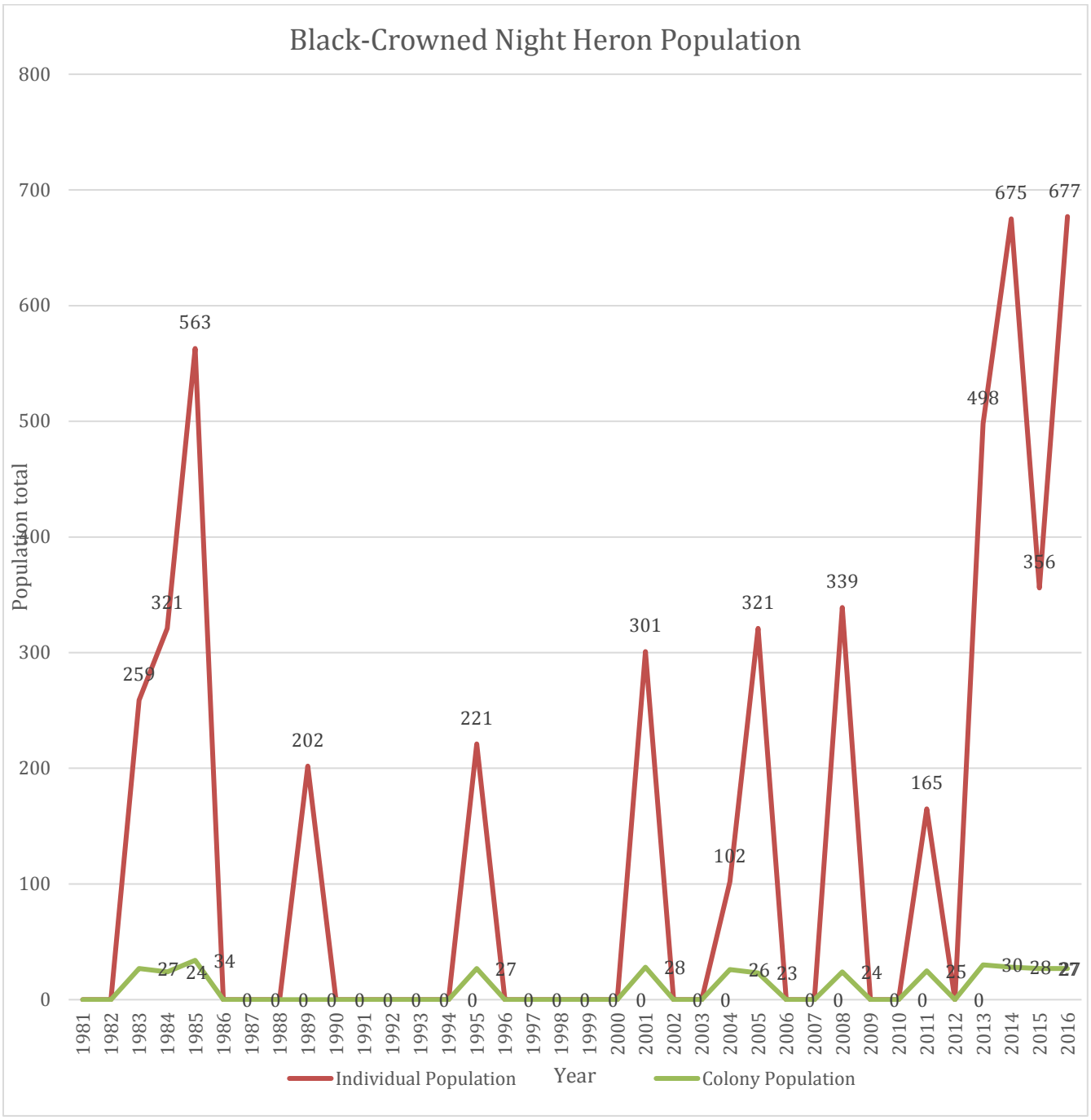
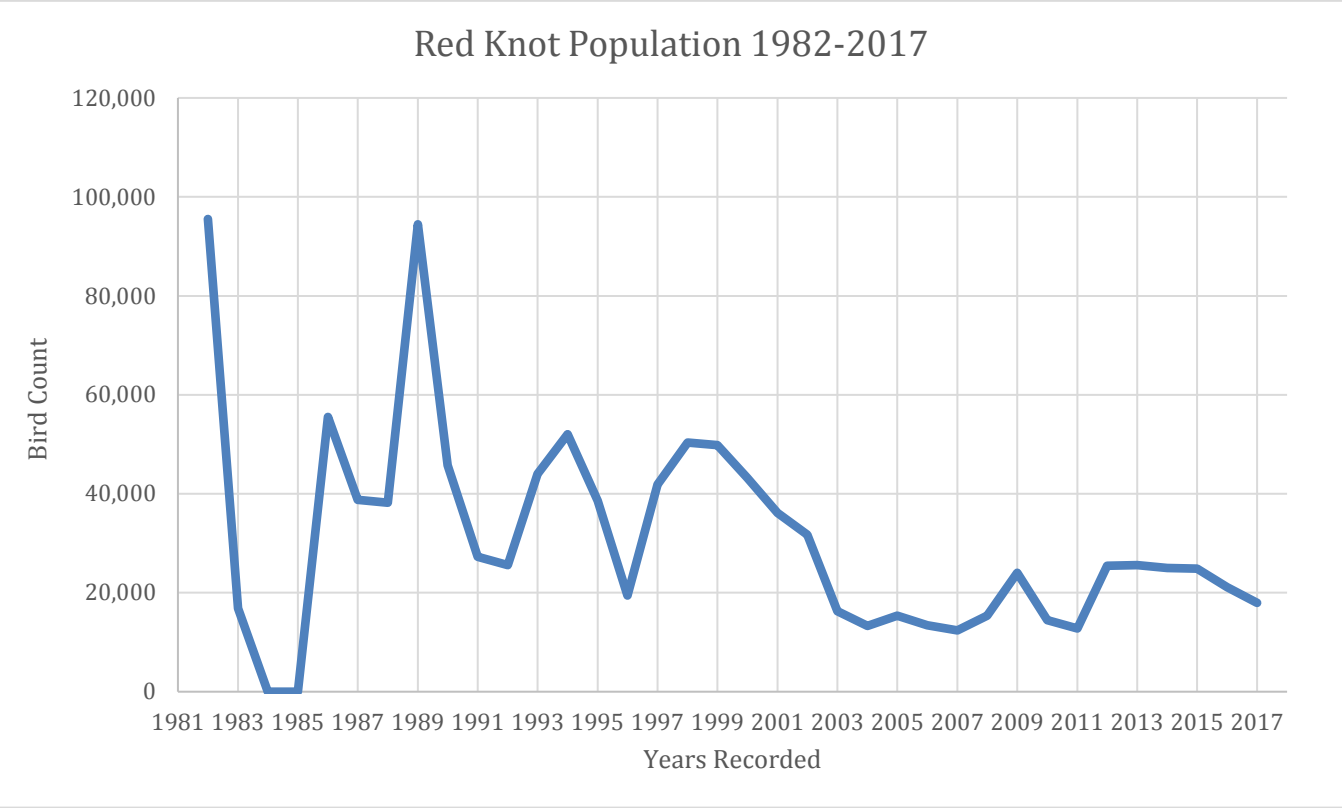
Figure 1.1.1.2



Source: Breeding Bird Breeding bird - https://www.mbr-pwrc.usgs.gov/bbs/ Source: NJDEP, Division of Fish and Wildlife, Endangered and Nongame Species Program. *Species of Greatest Conservation Need (SGCN) Research and Management*. Interim Report for Project Year September – August, 2015. Interim Report Federal Aid in Wildlife Restoration. W-70-R-1. F11AF00901.

The NJDEP conducts an intensive annual survey of breeding pairs of the endangered Red Knot. The population has declined overall since the 1980s, showing some signs of partial recovery since its nadir in the early 2000s.

Figure 1.1.1.3 Red Knot Population



Source: NJ DEP, Division of Fish and Wildlife, Endangered and Nongame Species Program, and U.S Geological Survey, Patuxent Wildlife Research Center- https://www.mbr-pwrc.usgs.gov/bbs/

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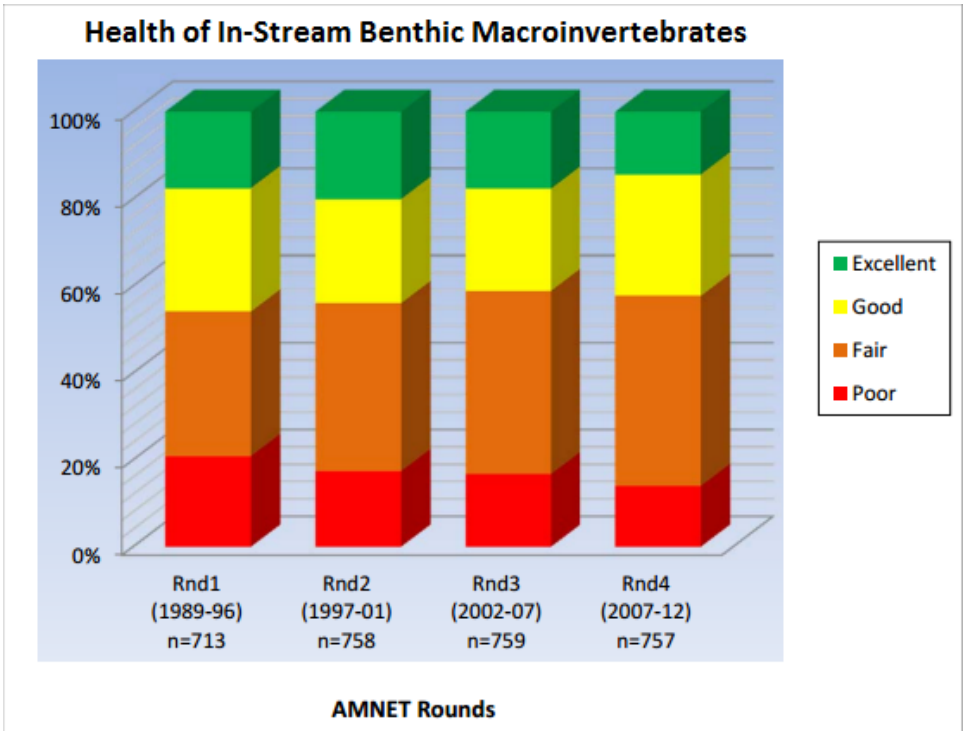
1.1.2 River and Stream Biodiversity

Surveys of stream-bed life (benthic macroinvertebrates) show that the number of stretches of New Jersey rivers and streams whose health is rated as "excellent" is in decline. The number rated "poor" is also in decline. Thus, we are cleaning up the worst offenders, but failing to protect our pristine areas.

Figure 1.1.2.1 River and Stream Biodiversity



Source: NJDEP. 2014. 2012 New Jersey Integrated Water Quality Monitoring and Assessment Report (Submitted to USEPA: July 30, 2014; Approved: September 25, 2014).

https://www.nj.gov/dep/wms/wmtrends3.html

2. There is **sufficient land, appropriately managed**, to provide essential ecosystem services and to allow species to adapt and migrate in response to climate change.

Ecosystem services embrace "all contributions of ecosystems to human wellbeing." They include material outputs (e.g., food, water, timber), regulating services (e.g., flood control, carbon storage, soil fertility), maintenance of genetic diversity, and upholding of cultural and quality-of-life values (aesthetics, recreation, spiritual solace) (TEEB 2010), The Economics of Ecosystems and Biodiversity: Ecological and Economic Foundations. (Ed, Pushpam Kumar. Earthscan, London and Washington.) While biodiversity is often counted as an ecosystem service, the species with which we share our state have an intrinsic value that is not reducible to their service to humans.

Ecosystem services appear in numerous dimensions of sustainability, since they are the integral outcomes of functional landscapes. This is especially true of water provision. Healthy watersheds produce the regulated flows of clean water that are essential to both human and non-human species. Watershed function represents an area of tight coupling between the Biodiversity and Ecosystem Services dimension and the Water dimension (see below).

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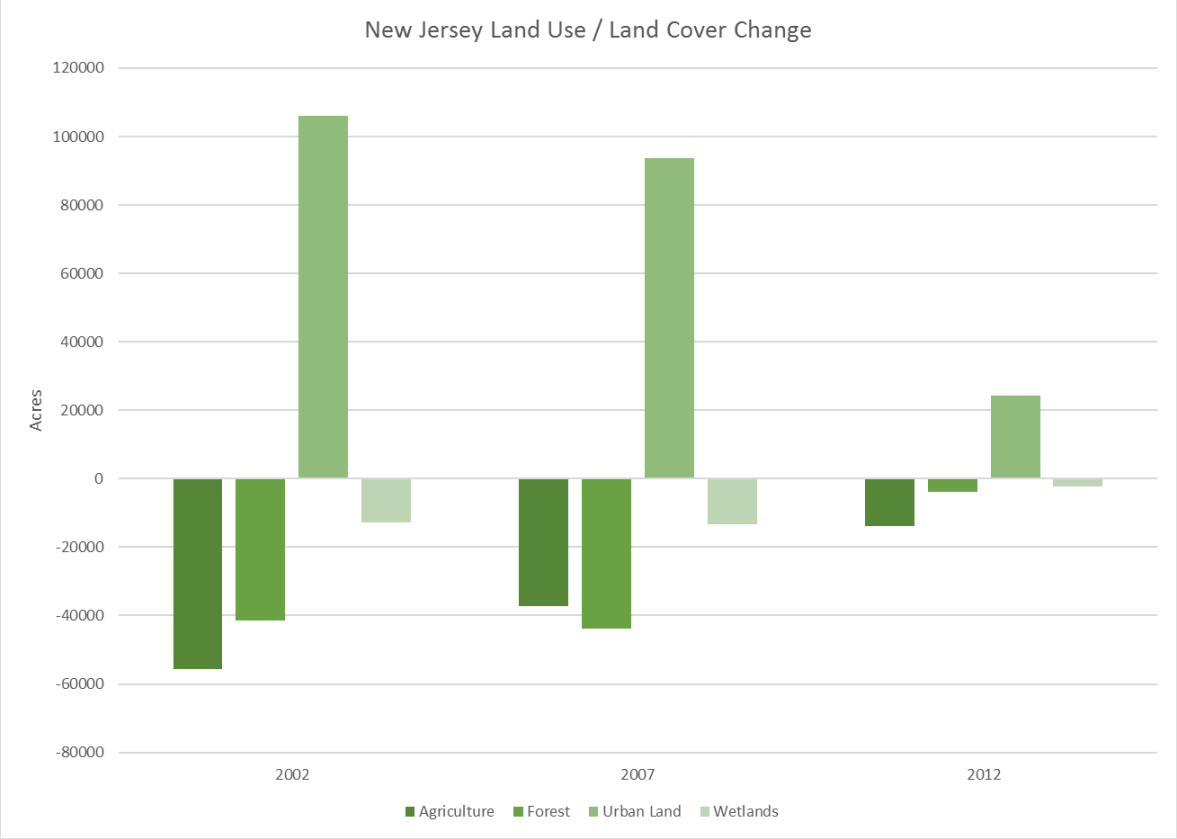
1.2.1 Conversion of Land from Open to Developed

The amount of land in New Jersey that is developed is increasing at the expense of forest, wetlands, and agricultural land.

Increasing the number and specificity of the habitats would make this a more powerful indicator.
Note that acreage indicators do not directly track the *quality* of the habitat. Adaptation to the pressures of climate change and other disruptions (invasive species, fragmentation) requires active, adaptive management. The outcomes of management practices will eventually be reflected in the biodiversity and watershed integrity indicators (i.e., water quality and how well species are surviving).

Figure 1.2.1.1 Land Use/Land Cover Change



Source: NJDEP, Bureau of Geographic Information Systems, Digital Downloads, Land Use/Land Cover Level I Data Analysis, 1995/97-2002 and 2007-2012. http://www.nj.gov/dep/gis/digidownload/metadata/lulc12/lulc12statisticstables.htm

1.2.2 Forest Biomass (growth)

The biomass of living trees in New Jersey (not acres of forest, but volume of trees on forested land) is increasing.

Growing forest biomass provides a crude measure of forest health. (For example, a forest invested with the Southern Pine Bark Beetle, currently invading the NJ Pinelands, would demonstrate a low to negative growth rate). Growing forest biomass also reflects increased carbon sequestration and storage. If tree stands were always fully replaced after harvest or fire, an increase in forest biomass would represent net, permanent carbon sequestration.

Figure 1.2.2.1 New Jersey Live Tree Biomass

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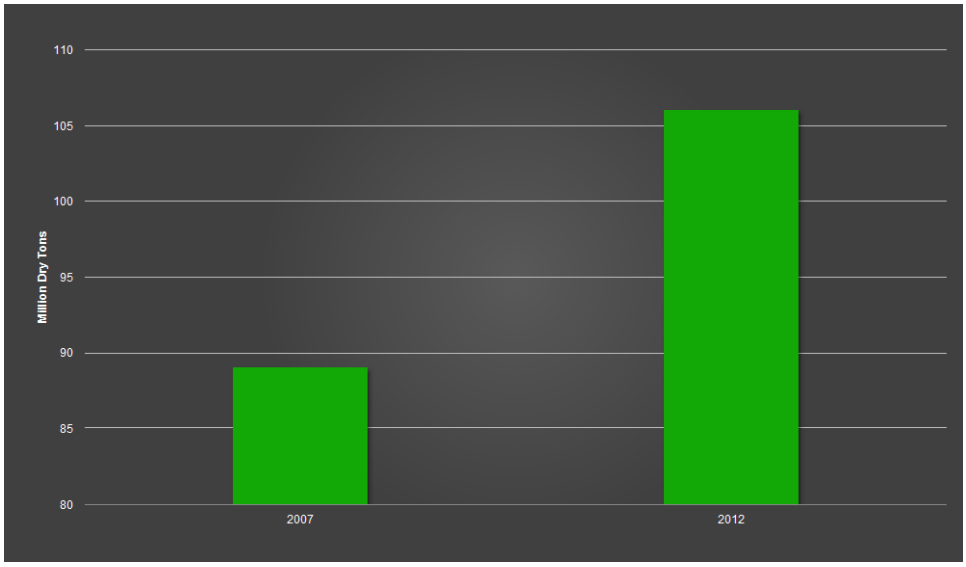


Total aboveground biomass on live trees greater than 5 in. dbh on timberland in New Jersey

Source: Oswalt, Sonja N.; Smith, W. Brad; Miles, Patrick D.; Pugh, Scott A. 2014. Forest Resources of the United States, 2012: a technical document supporting the Forest Service 2015 update of the RPA Assessment. Gen. Tech. Rep. WO-91. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office. 218 pp.

1.2.3 Impervious Surface

The amount of land in New Jersey that is covered with impervious surface (paved and built upon) continues to increase.

Increase in impervious cover is a proxy for development impact (loss of forest, wetland, and farm) and, at the same time, a measure of watershed integrity.

Figure 1.2.3.1 Impervious Surface

	Acres	Percent (of land area)
1986	428,617.00	8.97%
1995	458,548.00	9.59%
2002	490,000.00	10.25%
2007	508,681.00	10.66%
2012	515,085.00	10.79%

Source: Hasse, J. and R. Lathrop. 2016. http://gis.rowan.edu/projects/luc/changinglandscapes2010.pdf

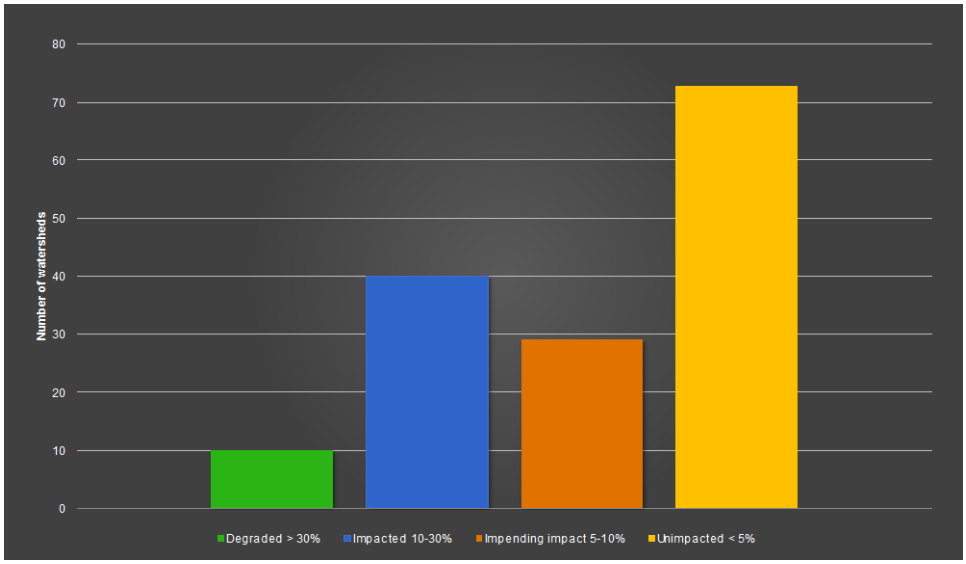
1.2.4 Watershed Disturbance

In 2002, one third of New Jersey's watersheds had over 10% impervious cover and were considered significantly impacted.

"Research has shown that the water quality and environmental condition of a watershed is demonstrably related to the amount of impervious surface within the watershed. A landmark paper by Arnold & Gibbons (1996)* described the relationship. Watersheds with less than ten percent impervious surface cover are generally considered unimpacted. At levels greater than ten percent impervious surface watersheds show signs of impact. As impervious surface reaches thirty percent and beyond, water quality has typically become seriously degraded." (Hasse, J.and R. Lathrop. 2010. Tracking New Jersey's Dynamic Landscape: Urban Growth and Open Space Loss 1986-1995-2002: 37-28.) (*Their citation: Arnold, C. L. Jr. & Gibbons, J.C. (1996). Impervious Surface Coverage – The Emergence of a Key Environmental Indicator. Journal of the American Planning Association. 62(2):243-258).

Although the remote sensing data needed to update this analysis are available through 2012, the funding has not been in place to continue the work at this level of spatial detail.

Figure 1.2.4.1 Impervious Cover by Watershed



Source: Hasse, J. and R. Lathrop. 2008. *Tracking New Jersey's Dynamic Landscape: Urban Growth and Open Space Loss 1986-1995-2002.* Rowan University Geospatial Research Lab and Center for Remote Sensing and Spatial Analysis, Rutgers University.

	3. All NJ residents benefit from the ecosystem services provided across the natural, agricultural, and developed landscapes of the state. They should enjoy access to open space, along with trees and other green amenities in their neighborhoods.

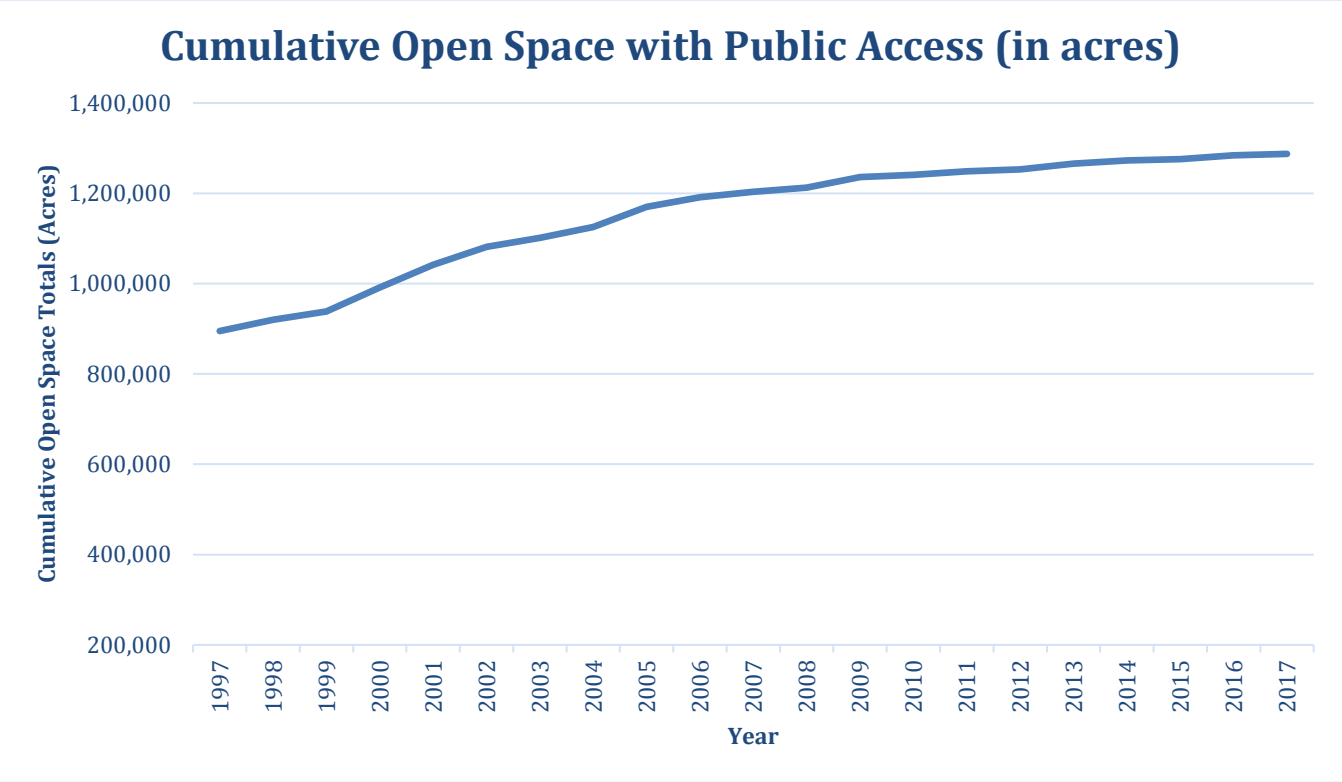
	1.3.1 Urban Tree Canopy The percent of urban and community land in New Jersey with a tree canopy was 37.7% in 2001.

Data are periodically being collected as part of the Forest Inventory Analysis undertaken by the USDA Forest Service in partnership with state agencies (NJDEP in New Jersey). However, there will be a substantial time lag before the update of urban forest cover estimate based will be complete.. Other sources are available, but it is not possible to display a trend since they are single data points (not time series) and use different methodologies.

	1.3.2 Preserved Public Open Space The number of acres of land in recreation areas, parks, and open space that is permanently preserved and open to the public is growing, although at a steadily diminishing rate as the amount of unprotected land remaining decreases.

Figure 1.3.2.1 Cumulative Open Space with Public Access (in acres)

BIODIVERSITY AND ECOSYSTEM SERVICES



Data provided by New Jersey Green Acres (May 2017). https://www.nj.gov/dep/greenacres/openspace.html

Although the trend is still weakly positive, the rate of increase of total amount of permanently preserved and open is flattening out as the amount of unprotected land remaining decreases. As development continues to occur, habitats become increasingly fragmented, watersheds become increasingly disturbed and the population of the state continues to grow. As a result we are getting further from the goal of providing ecosystem services across the landscape and enjoyment of access to preserved open space to all resident.,

1.3.3.1 Proximity to Open Space

As of 2013, 64% of the population of Northern New Jersey had good access to a park or public open space (defined as living within a half mile for urban dwellers and one mile for rural residents).

This GIS analysis has been done for a baseline year by the Regional Plan Association and presented in a background paper for the Together North Jersey project (**Freudenberg, R.** et al. September 2013. *Baseline Assessment Topic Report Land Use & Design* for *Together North Jersey Regional Plan for Sustainable Development*). The data on parks and open space are available for the analysis to be extended to Southern Jersey. It would be arguably appropriate to extend the radius for rural residents and/or parse the rural to urban spectrum in different ways.

2013: 64% of northern New Jersey population lives near to a park or public open space

Dimension 2: Water

Goal

New Jersey's water system provides an adequate and affordable supply of clean and safe drinking water for everyone, while also safeguarding water sources to ensure sufficient quality and supply to support healthy ecosystems and biodiversity.

Figure 2.0.1.1

Many new chemicals and prescription drugs, for which we do not test routinely, are appearing in drinking water. In 2014, the State of NJ reported that toxic perfluorinated compounds were present in 67% of water systems sampled. NJ DEP, 2014. *Occurrence of Perfluorinated Chemicals in Untreated New Jersey Drinking Water Sources.* http://www.nj.gov/dep/watersupply/pdf/pfc-study.pdf

1. Drinking water from wells and public water systems is clean and safe for human consumption.

1.1.1 Public Water Supply Compliance

The percentage of community water systems meeting current standards is high. While the small number with chemical contamination has fluctuated, compliance with microbiological contamination standards improved steadily from 2011 to 2016.

Although the standards for known contaminants are met consistently, there are many potential contaminants that are unknown or untested for, such as traces of pharmaceuticals or suspected endocrine disrupters.

A comprehensive statewide indicator would have to incorporate water quality data for well water, however, comprehensive private well testing data is not publically available.

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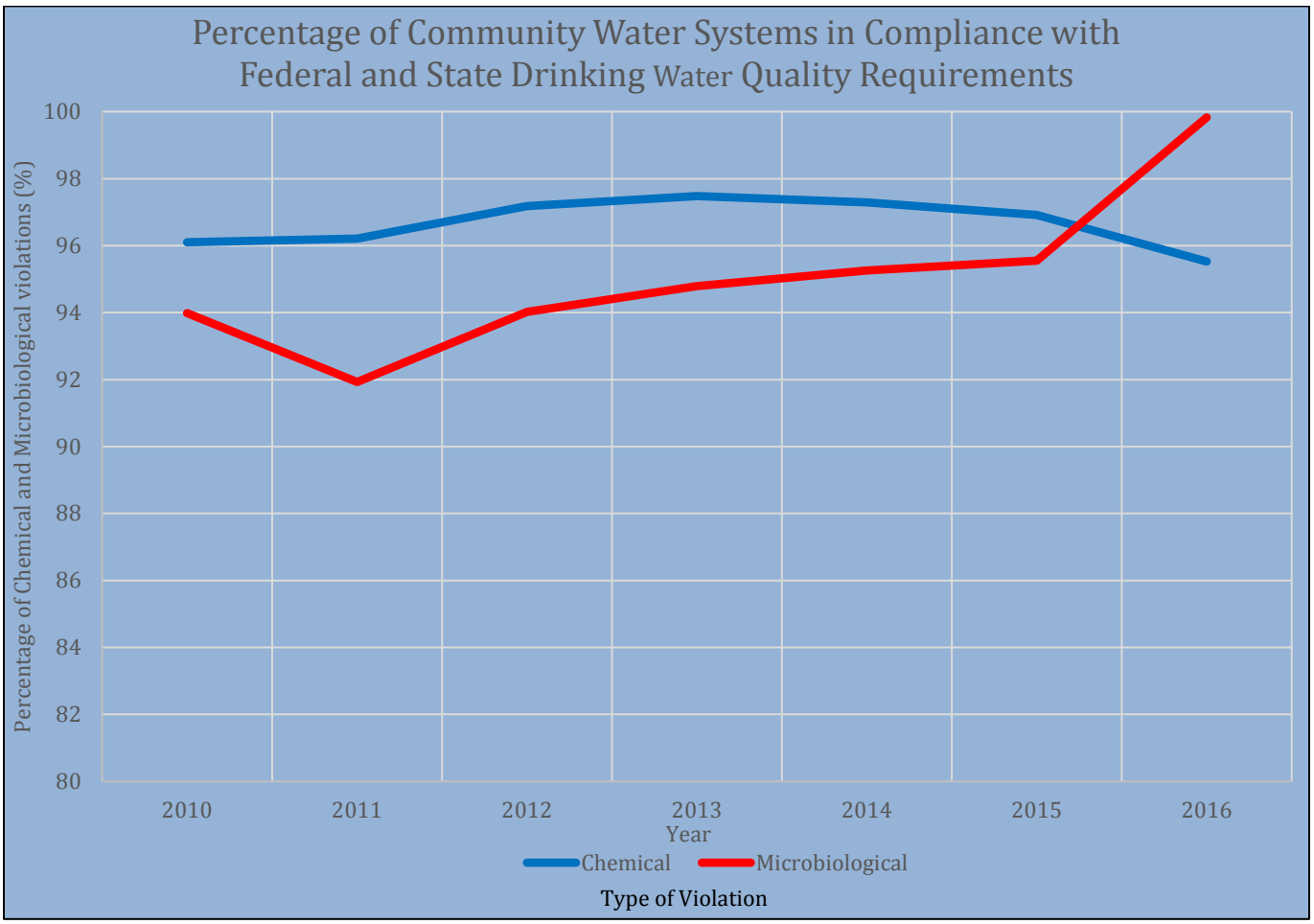
Figure 2.1.1.1 Percentage of Community Water Systems in Compliance with Federal and State Drinking Water Quality Requirements



Source: NJ Department of Health, NJ State Health Assessment Data, Environmental Public Health Tracking Indicator Report, Community Water Systems Compliance https://www26.state.nj.us/doh-shad/indicator/view_numbers/DrinkingWater.YearStd.html

?	**1.2.1 Tap Water Quality** There are no readily available statewide data on the quality of water as it comes from the tap despite concerns about lead and other major contaminants that can be introduced as water moves through pipes to faucets in homes, schools, and other institutions.

👎	**2. Water quality in streams, lakes, and wetlands** is sufficient to support native species and ecosystem functions, and safe for human recreation and fish consumption.

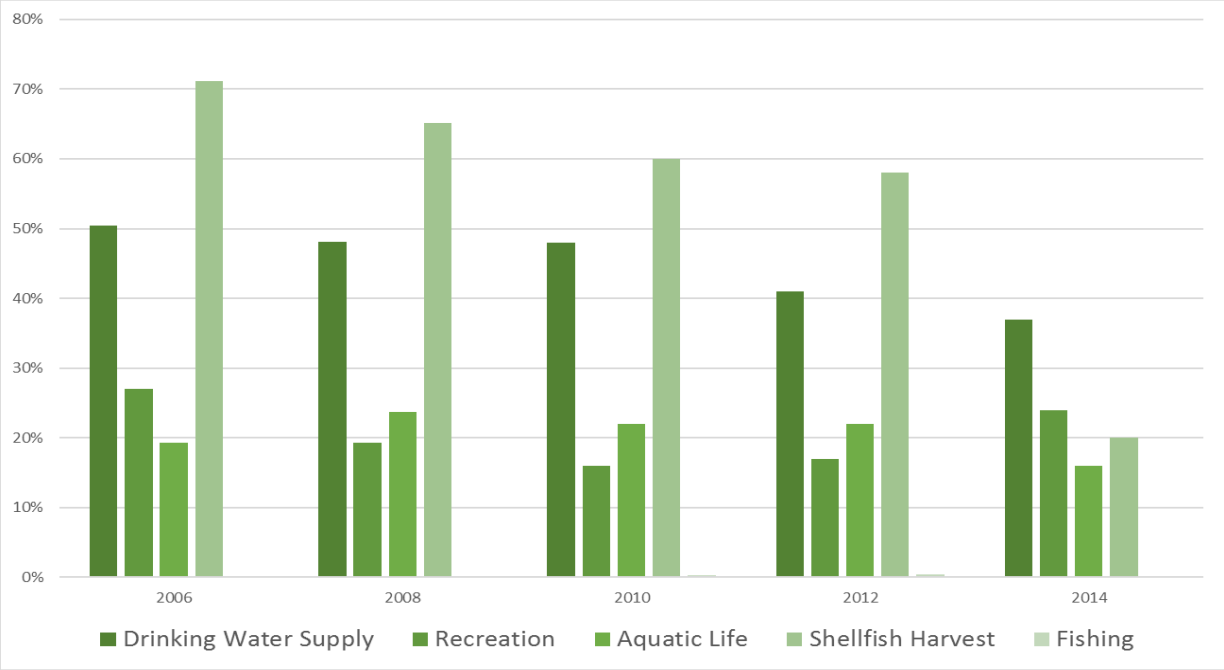
WATER

2.2.1 Surface Water Quality

The portion of NJ's water bodies that meet quality standards for various uses is declining. Fewer than 20% of water bodies in New Jersey are rated as "fully supporting" recreational use and fewer than 1% are safe for fishing for consumption.

There is no statewide source for groundwater quality, which would be an additional indicator needed for a comprehensive indicator. A proxy could be the number of violations per watershed/population, or trend in conditions for contaminants, assessed by the Ambient Ground Water Quality Monitoring Network.

Figure 2.2.1.1 Percentage of State Waters that Fully Support Designated Uses



Source: NJDEP. 2014. 2012 New Jersey Integrated Water Quality Monitoring and Assessment Report (Submitted to USEPA: July 30, 2014; Approved: September 25, 2014).

http://www.nj.gov/dep/wms/bears/docs/2012_integrated_report.pdf; https://www.state.nj.us/dep/wms/bears/2014_integrated_report.htm

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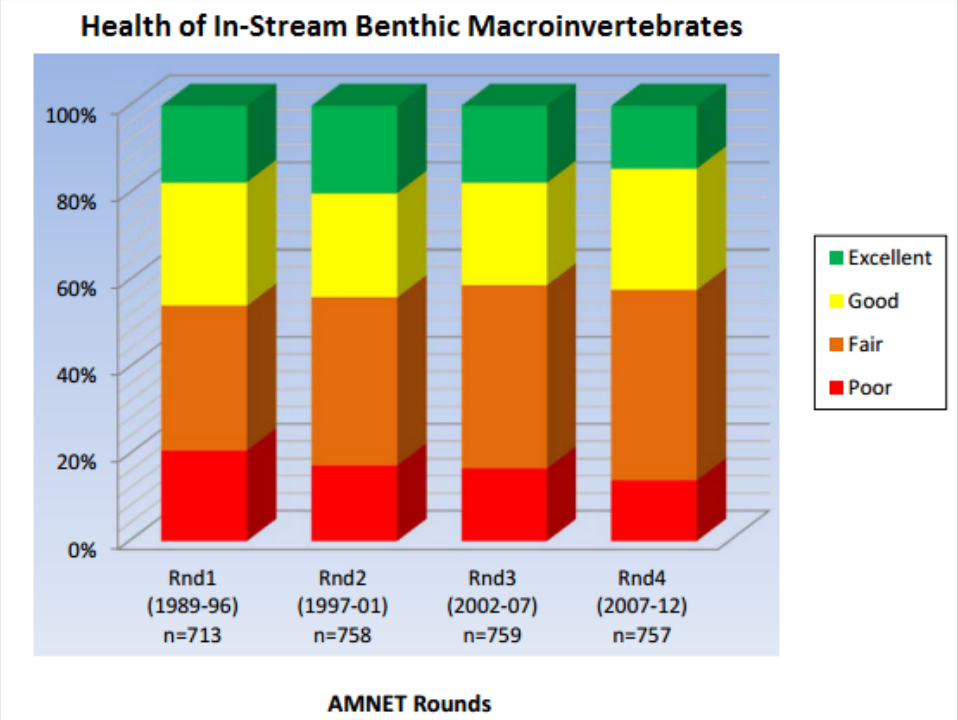
?	2.2.2.1 River and Stream Biodiversity Surveys of streambed life (benthic macroinvertebrates) show that the number of stretches of New Jersey rivers with health rated "excellent" is in decline. The number rated "poor" is also in decline.

Figure 2.2.1.2 Index of Aquatic Biodiversity and Health



Source: NJDEP. 2014. 2012 New Jersey Integrated Water Quality Monitoring and Assessment Report (Submitted to USEPA: July 30, 2014; Approved: September 25, 2014). https://www.nj.gov/dep/wms/wmtrends3.html

👎	3. Water supply, including stream flow and groundwater recharge, is sufficient both for human uses (household, agricultural, and recreational) and for ecosystems, providing for healthy aquatic and riparian habitat and biodiversity.

B	2.3.1 Surface Water Flow Four of ten NJ watersheds had impaired surface water flow from 2000-2009. This figure would be higher if we accounted for sensitive species and critical water supply regions, this figure would be higher.

In brief, this indicator displays the percent of watersheds where water use from unconfined aquifers and stream baseflow sources were no greater than 25% of the Low Flow Margin for that watershed in the year of peak demand over a 5-10 year period. The baseline value is for the 2000-2009 period.

This indicator is calculated using an Excel workbook (DGW 14-1) provided online by the NJGWS that allows the user to enter a "Low Flow Margin" (LFM) and then view the Net Water Availability ("**Current % Available Used**) for named watersheds (HUC-11 level). At

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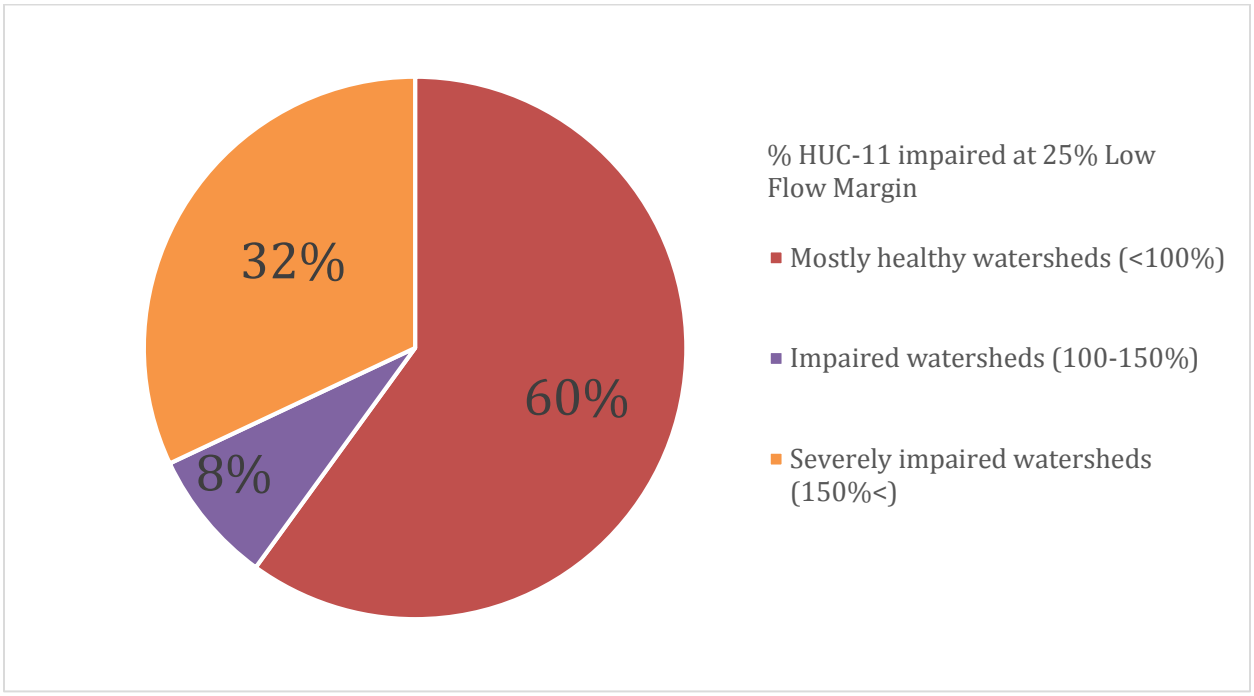
the given LFM, if the "**Current % Available Used**" is 100% or more, that means that the watershed is stressed (unable to supply the LFM consistently). The default setting is 25% LFM, a measure of the seasonal minimum left for ecosystems after human withdrawals; 25% has been unofficially adopted as a statewide floor (pending the release of the NJ Statewide Water Supply Plan).

While 25% is reasonable for a statewide standard, for highly sensitive streams a lower threshold would be necessary. For example, the Highlands Regional Master Plan specifies a LFM of 5%.

This worksheet supplies data over a ten-year period (2000-2009). Assessments of streamflow should be made over 5-10 years + to smooth out the effects of annual variations in weather. This indicator describes the % of HUC-11 watersheds for which the Current % Available Used is greater than or 100% (at a LFM of 25%), i.e., those that displayed impaired surface water flow over this time period. Subsequent values will be based on a rolling five-year window

Figure 2.3.1.1 **Percent of Watersheds with Impaired Flow**



Source: NJDEP, Division of Water Supply and Geoscience, Digital Geodata Series, Computer Workbook Investigating Water Availability in New Jersey on a Watershed Management Area Basis, DGS 14-1 https://www.state.nj.us/dep/njgs/geodata/index.htm

?	2.3.2 Ground Water Level There are currently no statewide data readily available that show the condition of all our groundwater and aquifers, although there are regional indications of concern.

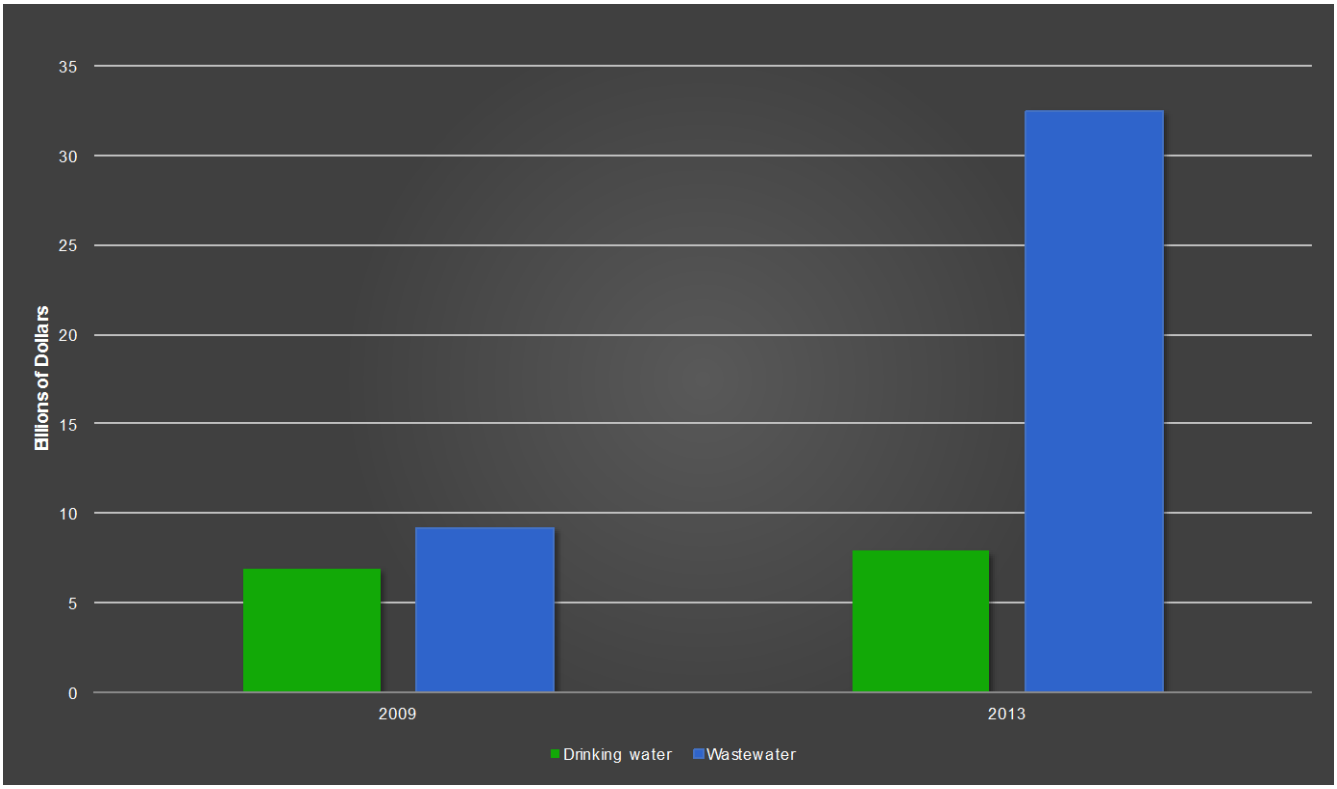
Although tracked and highly regulated by DEP, there are currently no statewide data readily available that show the condition of all our groundwater and aquifers. There are regional indications of concern.

👎	4. The water system, including infrastructure for water supply, stormwater and wastewater, provides adequate capacity and functions at needed standards. It is resilient to climate change, taking future demands and vulnerabilities into account.

WATER

2.4.1 Backlog of Infrastructure Upgrades
The estimated cost of upgrading our existing infrastructure to a basic regulatory compliance standard is over forty billion dollars, and climbing.

Figure 2.4.1.1 **Estimated Cost of NJ Water Infrastructure Upgrade**



Source: Council of New Jersey Grantmakers. April 2013. Facing Our Future: Infrastructure Investments Necessary for Economic Success. www.cnjg.org/facing-our-future.

2.4.2 Making Infrastructure Resilient to Climate Change
There is currently no analysis that provides a comprehensive estimate of the cost of upgrading our water infrastructure beyond mere compliance to achieve resilience to the impacts of climate change.

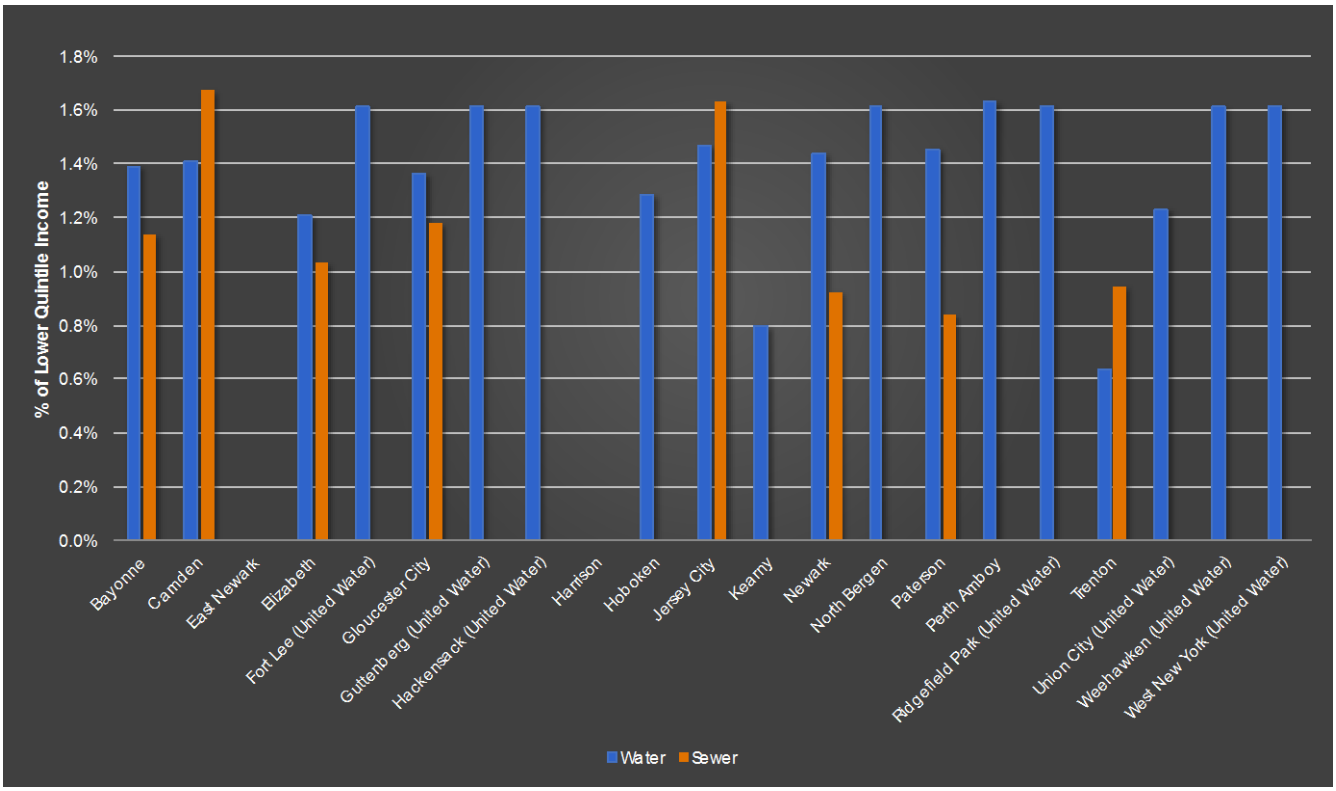
5. Access for all New Jerseyans to water resources for all necessary uses is universally affordable and fairly distributed now and across generations.

2.5.1 Affordability of Water to Low Income People and Communities
The cost of water and sewer currently is not a major strain on household budgets for low-income earners.

WATER

The US EPA guidance for sewer system affordability recommends that water bills should not exceed 2.5% of household income and that total annual sewer costs not exceed 1.75% of household income for the municipality or system. Calculations for the lowest income quintile show that, as of 2013, these thresholds were nor exceeded in the Combined Sewer Overflow municipalities and districts, which also encompass the most income-constrained urban areas. Data for our calculations were drawn from van Abs *et al.* 2014. *Water Infrastructure in New Jerseys CSO Cities: Elevating the Importance of Upgrading New Jerseys Urban Water Systems.* Prepared for New Jersey Future.

Figure 2.5.1.1 Water and Sewer Cost as Percent of Lowest Income Quintile Threshold



Source: van Abs et al. 2014. *Water Infrastructure in New Jerseys CSO Cities: Elevating the Importance of Upgrading New Jerseys Urban Water Systems.* Prepared for New Jersey Future

Calculation: % of lower quintile income = annual household sewer plus water costs divided by $26,799 (top of the lowest quintile).

2.5.2 Cost Burden For Municipal Water System Upgrades

The cost of needed upgrades, if implemented, would put a major strain on the state's poorest cities and their residents. Although this detailed analysis has not been done statewide, it is clear that this challenge is significant for municipalities across the state.

The estimated costs and need for upgrading the water infrastructure for the 21 New Jersey municipalities that have combined sewer systems that discharge through Combine Sewer Overflow are presented in van Abs et al. 2014. *Water Infrastructure in New Jersey's CSO Cities: Elevating the Importance of Upgrading New Jersey's Urban Water Systems.* Prepared for New Jersey Future. Van Abs et al. point out that these include all the state's larger cities and most concentrated poverty, with the least capacity to pay for costly repairs. However, we have no comparable data from the rest of the state. Small municipalities generally have little capacity to take on and pay for costly infrastructure upgrade.

AGRICULTURE AND SOILS

Dimension 3: Agriculture and Soils

Goal

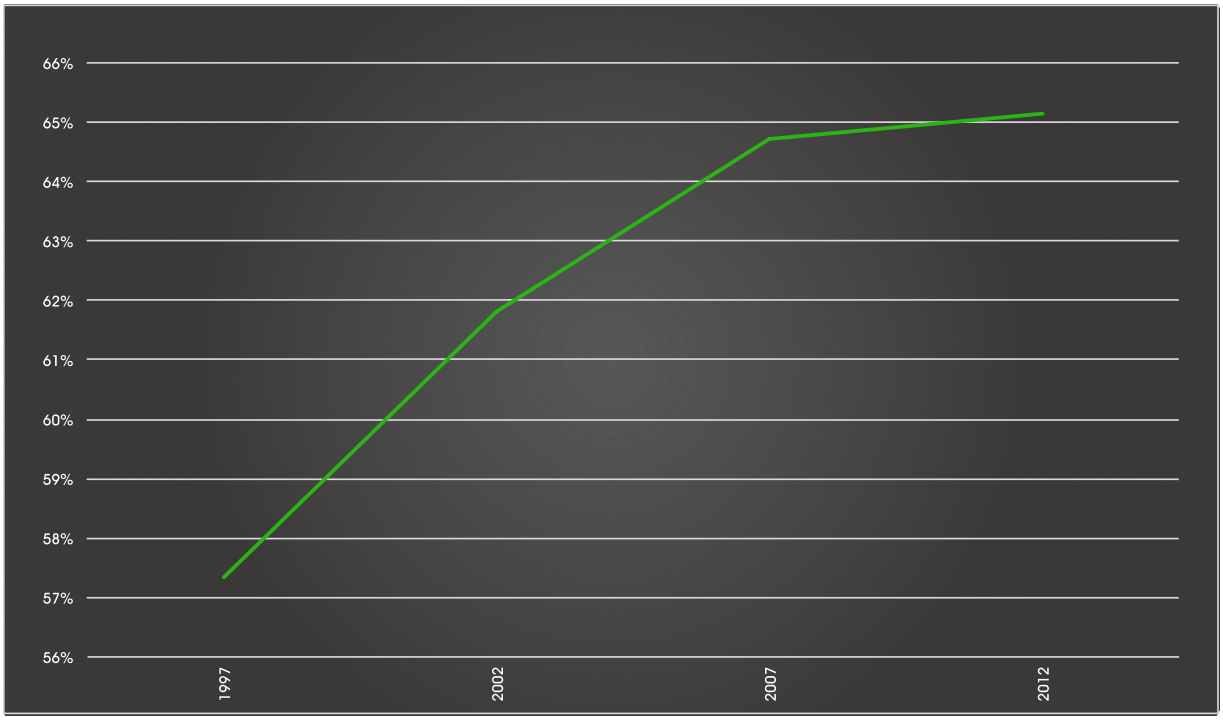
We want a system of agriculture that protects and restores soils, limits pollution that harms the environment and threatens human health, and plays a role in mitigating climate change. It should also be economically viable in order to provide an attractive livelihood necessary for maintaining farming as a sustainable way of life.

	1. Agricultural practices protect and restore environmental quality and the natural resource base. This includes minimizing pollution associated with agriculture and conserving and restoring soils under agriculture as a key economic and environmental asset.

	3.1.1 Land Treated with Commercial Fertilizers The percentage of agricultural acres under cultivation that are treated with commercial fertilizers – primarily containing nitrogen and phosphorous – is increasing.

Nitrogen and phosphorus in agricultural runoff contribute to water quality problems, including serious eutrophication leading to algal blooms that choke off oxygen and life in bays, lakes and ponds. This local problem also ties into a critical global problem. The biogeochemical cycles of nitrogen and phosphorus have been identified as critically limiting "planetary boundaries" defining "a safe operating space for humanity" (Steffen, W. et al. 2015. Planetary boundaries: Guiding human development on a changing planet. *Science Express*. sciencemag.org/content/early/recent / 15 January 2015 / Page 1 / 10.1126/science.1259855).

Figure 3.1.1.1 % of Farmland Treated with Commercial Fertilizer



Source: 2007, 2012 Census of Agriculture, National Agricultural Statistics Service.

AGRICULTURE AND SOILS

3.1.2 Topsoil Erosion
There is currently no reliable data or analysis that tracks tons of topsoil lost every year due to erosion in New Jersey.

2. Agricultural practices mitigate climate change by optimizing carbon storage in soils and plants. Greenhouse gas emissions are minimized in the use of chemical fertilizers and in pest control. Agriculture prioritizes regional markets to lower transport costs, and over the long term agriculture transitions towards eliminating the use of nonrenewable resources.

3.2.1 Carbon Stored in Soils
There are no reliable statewide data that track the total amount of carbon stored in soils under agriculture.

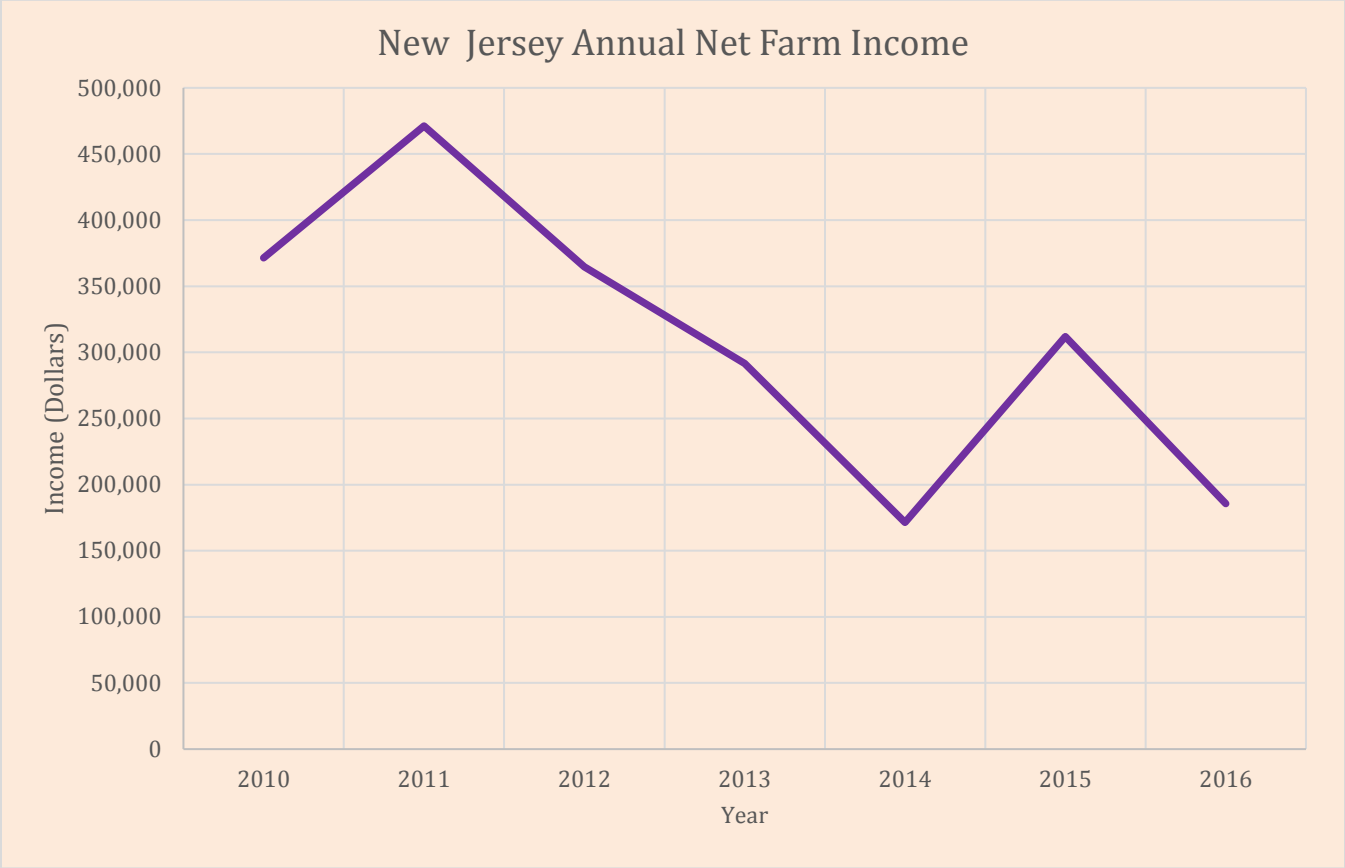
3.2.2 Carbon Emissions
There is currently no accepted and readily applicable method to track the carbon intensity of the agriculture system in terms of output of food (dollars, tons, or calories) per unit of greenhouse gas emitted, while controlling for other related factors.

Crop harvests and petrochemical inputs (fuel, fertilizer) could plausibly be measured by mass/volume or dollar value, with significantly different results arising from the choice of method. The scale of the operations considered also make a major difference in the carbon intensity finding, as does the movement of prices. There is not yet an established convention about how to make such a calculation comparable and meaningful.

3. Agriculture is economically viable and provides a sustainable livelihood. Farming livelihoods are strengthened by enhancing quality of life for farmers, improving working conditions and wages and providing access to farmland at a reasonable cost.

3.3.1 Income from Farms
Net farm income in New Jersey has displayed a downward trend since 2006.

Figure 3.3.1.1 New Jersey Annual Net Farm Income



Source: US Department of Agriculture, Economic Research Service. Farm Income and Wealth Statistics (lookup tables).

https://data.ers.usda.gov/reports.aspx?ID=17830

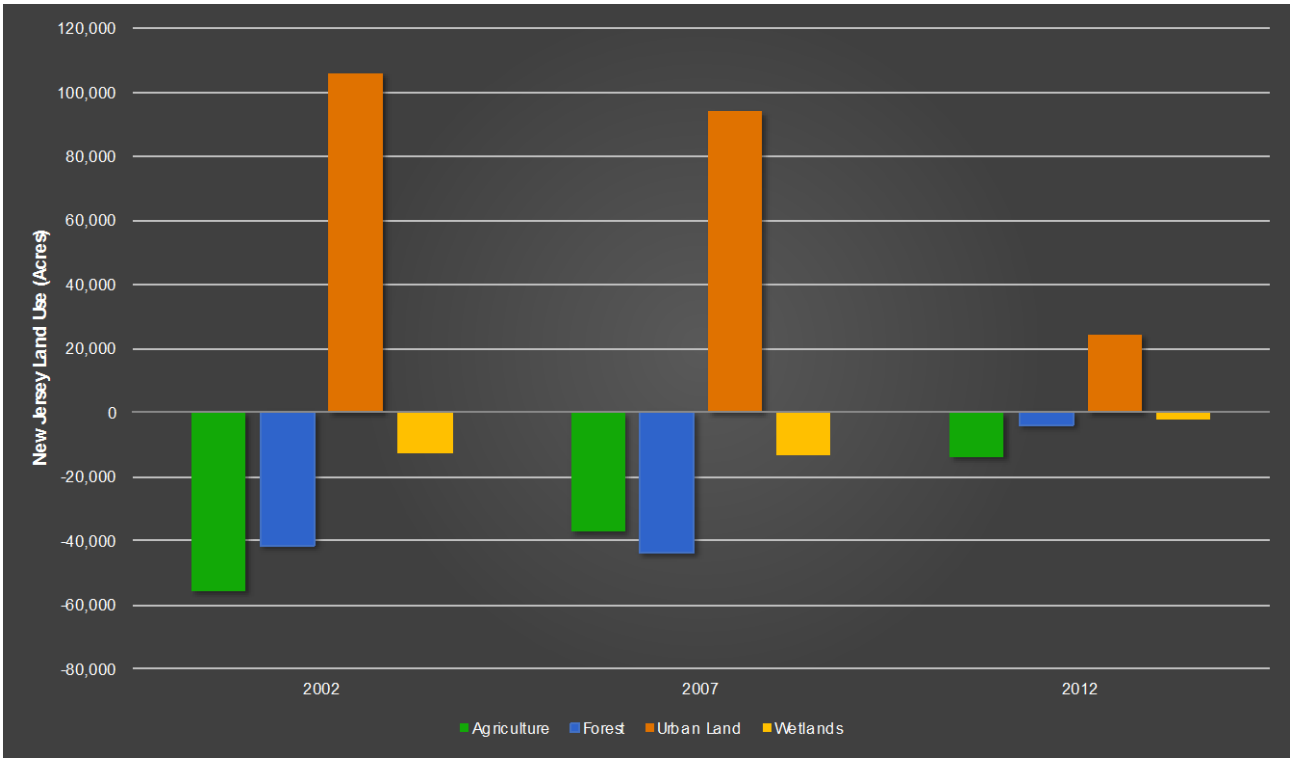
Numbers are adjusted for inflation and expressed in 2011 dollars.

AGRICULTURE AND SOILS

3.3.2 Land in Agriculture

The acres of land dedicated to farm and agricultural use is declining as urban and developed land use increases.

Figure 3.3.2.1 Land Use/Land Cover Change



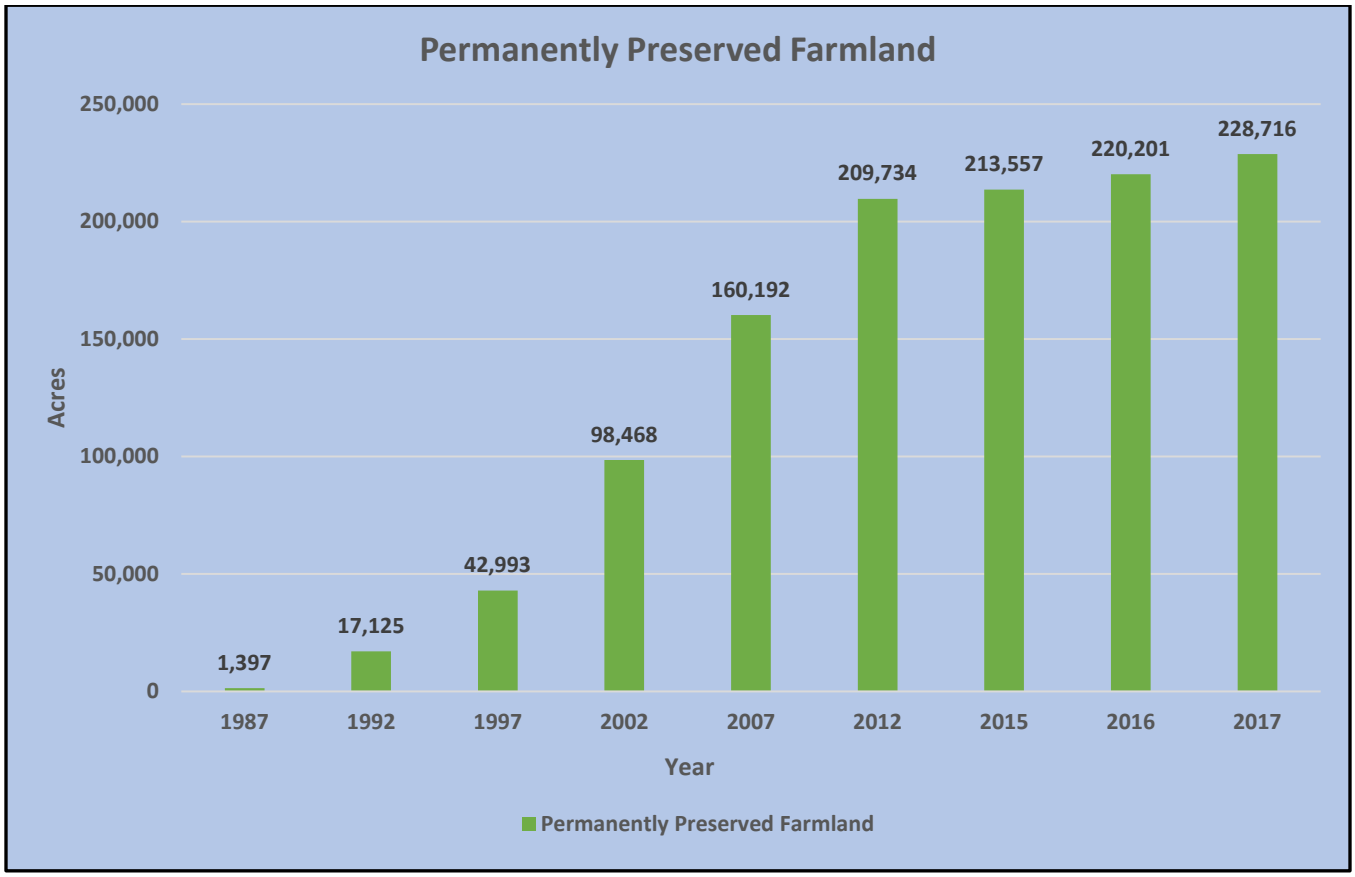
Source: NJDEP, Bureau of Geographic Information Systems, Digital Downloads, Land Use/Land Level I Data Analysis, 2007-2012 .http://www.nj.gov/dep/gis/digidownload/metadata/lulc12/lulc12statisticstables.htm

AGRICULTURE AND SOILS

	3.3.3 Preserved Farmland The number of acres of farmland that have been permanently preserved is increasing, although at a slower rate in the past two years.

Our indicator is the number of acres of preserved land in farms, which has been increasing, as shown in the figure below. However, the total number of land in farms as defined by the US Department of Agriculture has been declining at a much steeper rate.

Figure 3.3.3.1 Preserved Farmland



Source: State of New Jersey Department of Agriculture, State Agriculture Development Committee
https://www.nj.gov/agriculture/sadc/farmpreserve/resources/
and http://www.nj.gov/agriculture/sadc/farmpreserve/progress/stats/preservedsummary.pdf

AIR QUALITY

Dimension 4: Air Quality

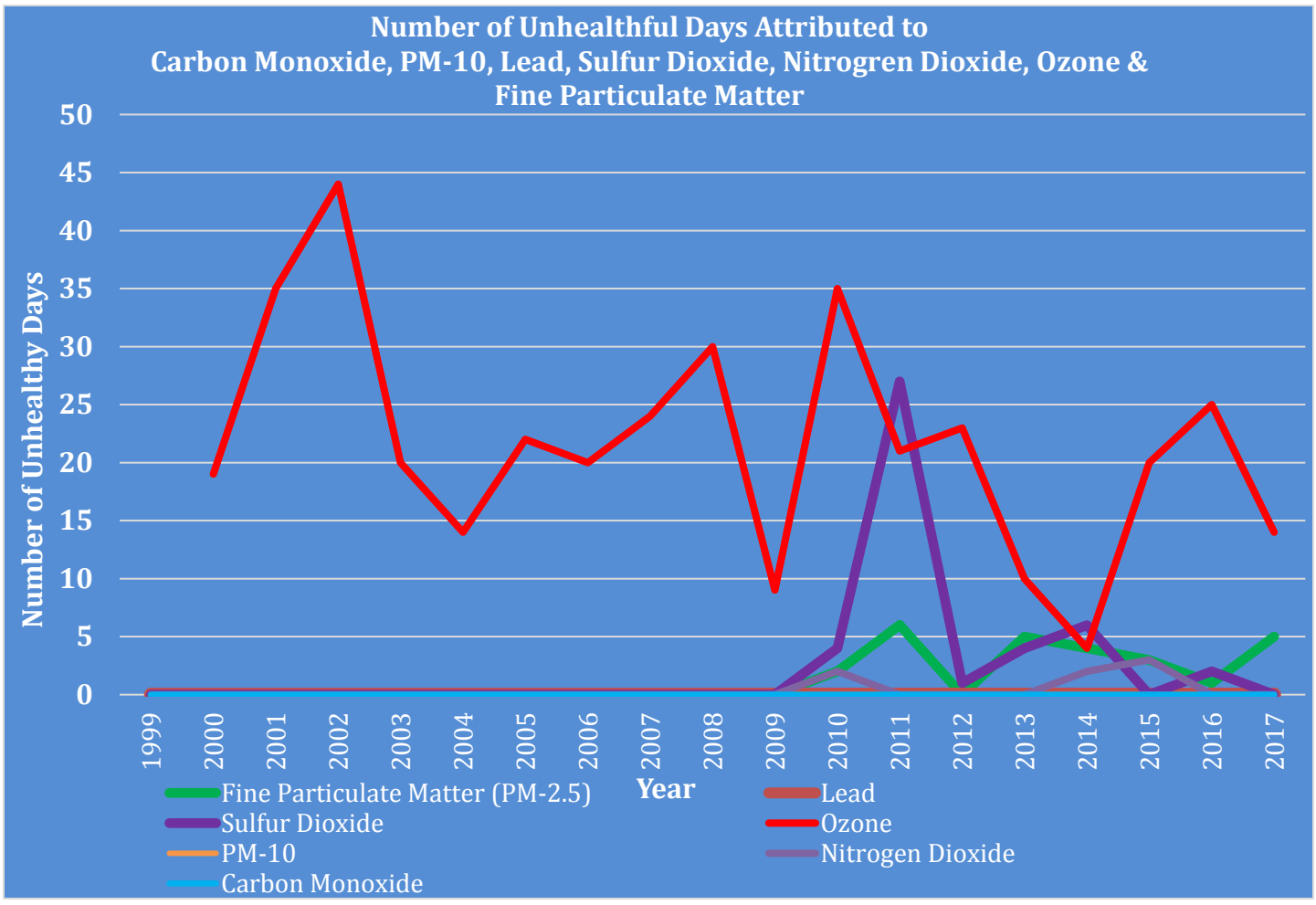
Goal

We want indoor and outdoor air quality to be healthy for people and the environment with no significant threats posed to vulnerable populations such as children, the elderly, and low-income and minority communities. Greenhouse gas (GHG) emissions are also a form of air pollution that must be curtailed.

	1. Outdoor air quality is healthy for all segments of the human population and does not harm the natural environment.

	4.1.1 Unhealthful Air Quality Days The number of days when major air pollutants have negatively affected respiratory health in parts of New Jersey has fluctuated, but levels of ozone in particular remain a concern.

Figure 4.1.1.1 Number of Unhealthy Air Days



AIR QUALITY

Source: NJ Department of Health, NJ State Health Assessment Data, Environmental Public Health Tracking Indicator Report, Ozone, Fine Particulate Matter, and Air Quality. https://www26.state.nj.us/doh-shad/indicator/CatEPHT.html

Source: NJ Department of Environmental Protection, 2015 Air Quality Index Report, http://njaqinow.net/App_Files/15rpt.htm and data from Olga Boyko, Division of Air Quality, Bureau of Air Monitoring (Olga.Boyko@dep.nj.gov). http://njaqinow.net/App_Files/2016/AQI%202016.pdf

	2. Indoor air quality does not pose a significant direct or indirect health threat for any segment of the population - in particular to sensitive populations such as children, the elderly, or the immune-compromised.

	4.2.1 Exposure to Unhealthful Indoor Air There are currently no statewide data that track the quality of indoor air.

	3. There is equitable distribution of environmental harms from air pollution such that they do not disproportionately burden any social group defined by class, race, location, age, or other factor.

	4.3.1 Distribution of Air Pollution There are currently no readily available statewide data that track the relative exposure of different communities and social groups.

Particulate matter emissions from diesel traffic are concentrated along particular routes used by commercial trucks. The populations of the areas through which these routes pass are generally low-income and majority people of color. Residents experience high rates of asthma and other respiratory ailments and bear the risk of negative health effects from exposure to the associated toxic and carcinogenic forms of pollution. Moreover, these exposures contribute to the cumulative impacts from compounding forms of environmental toxicity measured by the *cumulative impacts indicator* discussed under the Waste dimension (see below).

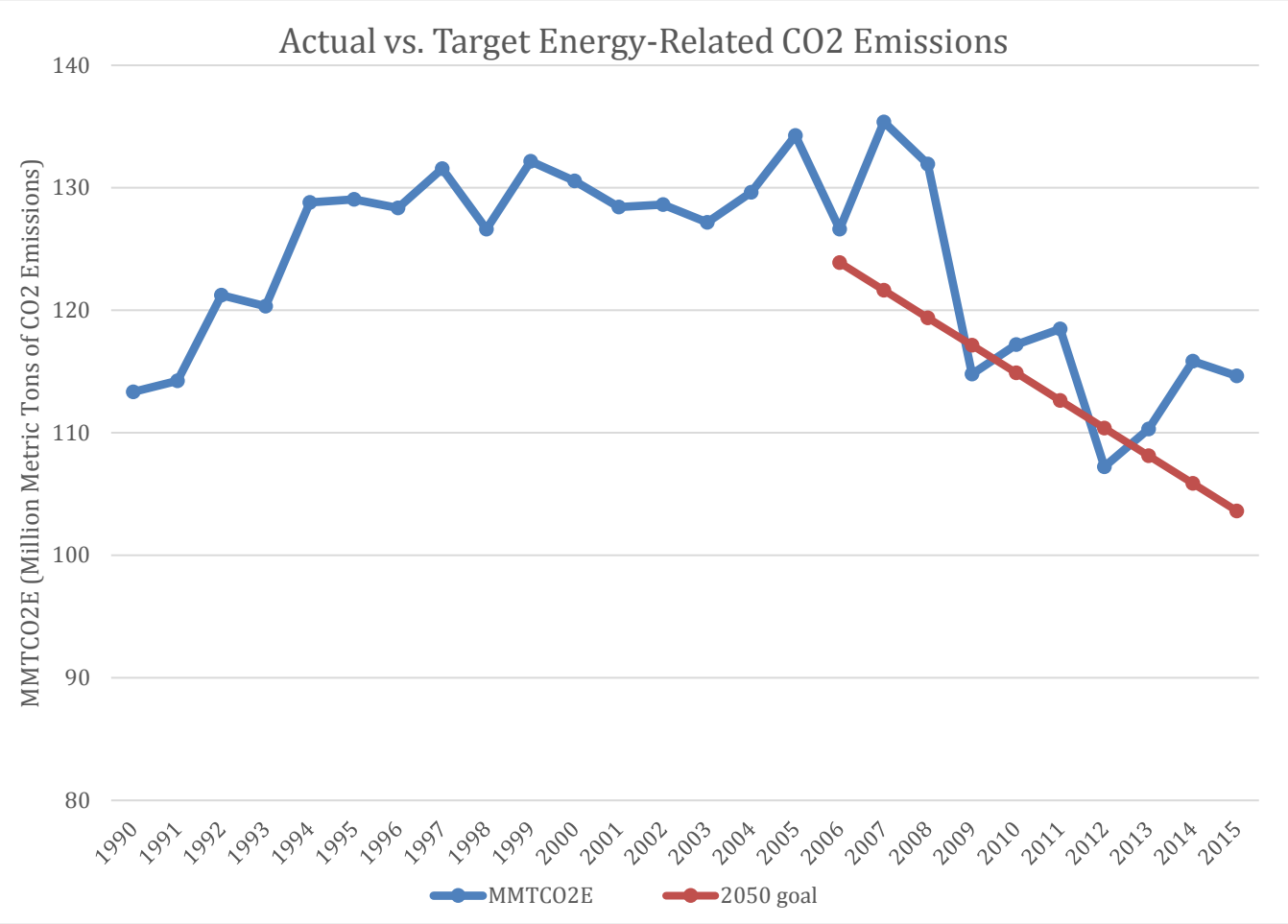
(Clean Air Task Force, Diesel Soot Health Impacts, New Jersey: http://www.catf.us/projects/diesel/dieselhealth/state.php?site=0&s=34. Kagawa, J. 2002. Health effects of diesel exhaust emissions–a mixture of air pollutants of worldwide concern, Toxicology.181-182: 349-353. McCreanor, J. et al. 2007. Respiratory Effects of Exposure to Diesel Traffic in Persons with Asthma. N Engl J Med. 357:2348-2358. December 6, 2007. DOI: 10.1056/NEJMoa071535).

	4. Greenhouse gases are reduced commensurate with New Jersey doing our part to avoid catastrophic global climate change.

	4.4.1 Greenhouse Gas Emissions from Energy Annual greenhouse gas emissions from energy consumption have declined since 2006. Yet, the recent upturn in emissions takes us further off the critical path established by state policy as the rate of reduction necessary to do our part in avoiding the worst impacts of climate change.

(See Figure 13.1.1.1)

Figure 4.4.1.1 Actual Total vs. Target, Energy-Related CO_2 Emissions



Source: US EPA State Inventory and Projection Tool https://www.epa.gov/statelocalclimate/download-state-inventory-and-projection-tool. Select and download “All State Inventory Tool Modules" option, save and run the full model using NJ as the state chosen.
Source for 2050 goal and Mark Warner's model based on Mark Warner's model, Overview of The New Jersey Energy Flow Map, June 10, 2015. Sustainability Institute, The College of New Jersey. http://www.sustainablejersey.com/fileadmin/media/Grants_and_Resources/Resources/Energy_Flow_Model_Overview.pdf.

Despite the small downturn between 2014 and 2015 (the most recent year for which data were available), the New Jersey’s GHG emissions are still considerably higher than needed to keep pace with target enshrined in state policy.

HEALTH

Goal

We want a future where all the people of New Jersey enjoy good health and a good quality of life, with minimal loss of life and function due to preventable disease, and where these standards are supported by access to affordable, high-quality healthcare.

Figure 5.0.1.1

(Refers to call-out box in Summary report). Source for comparison of New Jersey cancer incidence vs. survival rates: U.S. Cancer Statistics Working Group. United States Cancer Statistics: 1999–2011 Incidence and Mortality Web-based Report. Atlanta (GA): Department of Health and Human Services, Centers for Disease Control and Prevention, and National Cancer Institute; 2014. Available at: www.cdc.gov/uscs

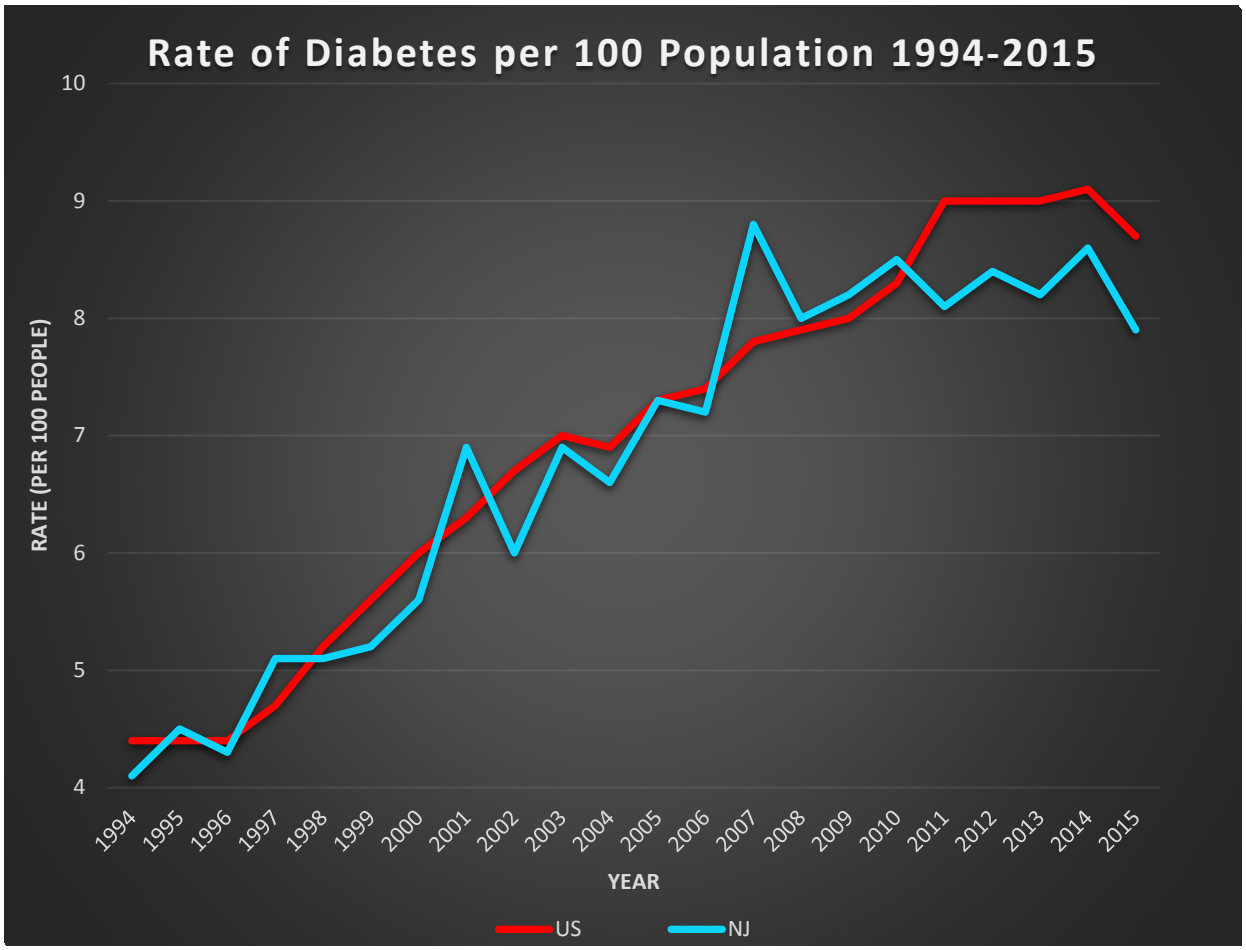
	1. The people of New Jersey **good health and long lives**, characterized by mental well-being and freedom from preventable disease and injury.

	5.1.1 Diabetes The growth in incidence of diabetes in New Jersey has stabilized since 2008.

Diabetes rates show diagnosed diabetes cases for every 100 members of population. Death rate (Fig. 5.2.1.1) is per 100,000 population and is the sixth leading cause of death in New Jersey and the third among the black population.

HEALTH

Figure 5.1.1.1 Rate of Diabetes per 100 population



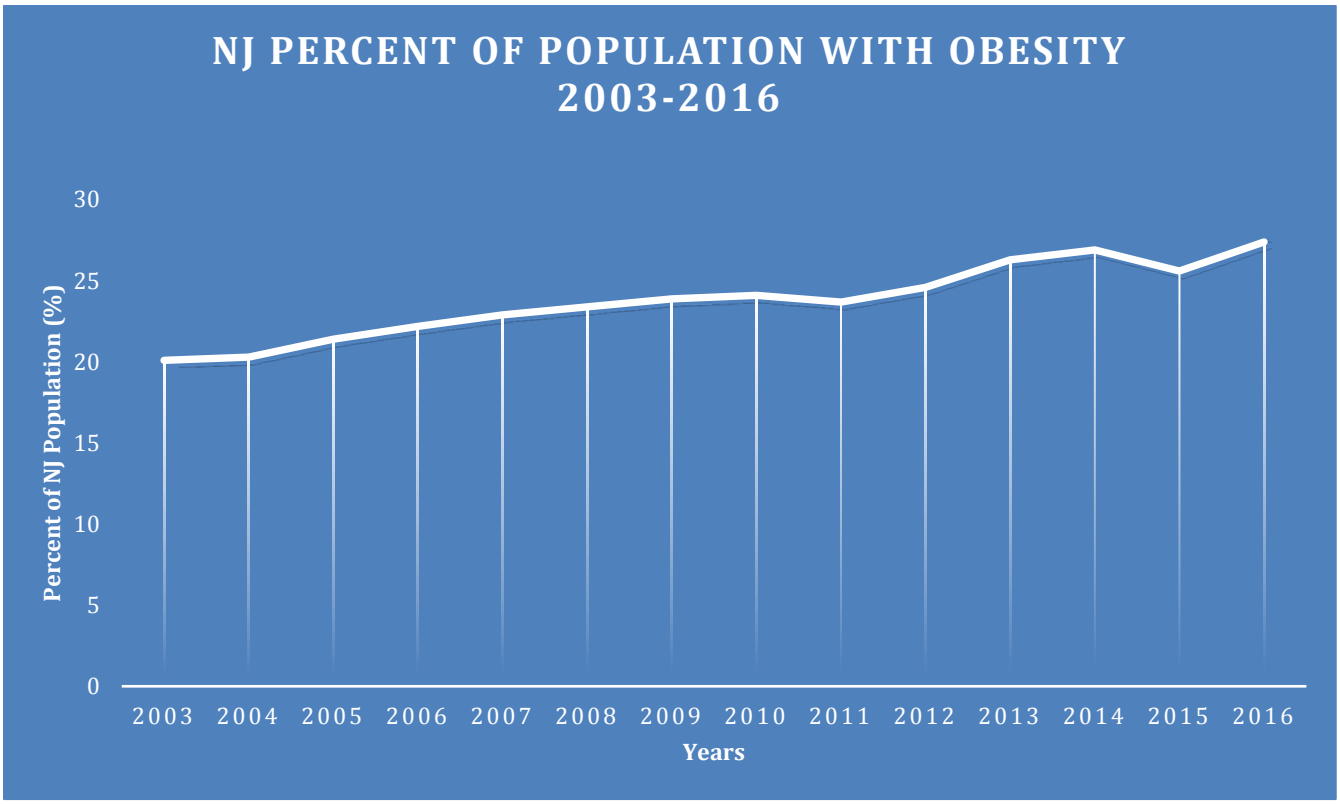
Source: Centers for Disease Control and Prevention, National Diabetes Surveillance System, Diagnosed Diabetes in Adults Age-Adjusted Rates per 100 population https://gis.cdc.gov/grasp/diabetes/DiabetesAtlas.html

5.1.2 Obesity

The portion of the population that is obese has risen past the point where, more than one out of four adults in New Jersey is considered medically obese.

HEALTH

Figure 5.1.2.1 Percent of Population with Obesity



Source: NJ Department of Health, NJ State Health Assessment Data, Environmental Public Health Tracking Indicator Report, Data List for Percentage of Adults Who Are Obese, New Jersey and U.S., 2001-2013. https://www26.state.nj.us/doh-shad/indicator/view_numbers/Obese.2020.html

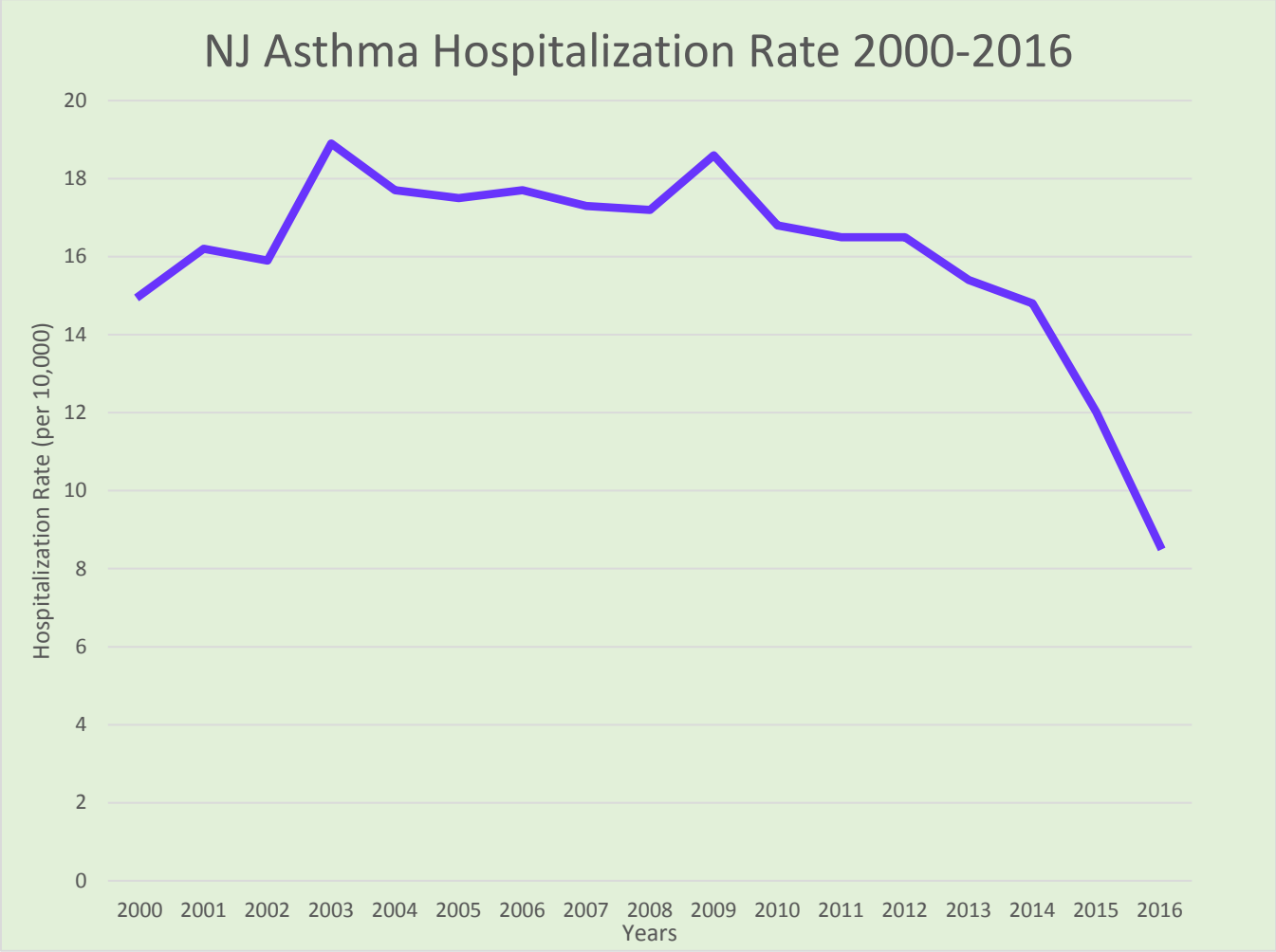
https://stateofobesity.org/adult-obesity/

HEALTH

5.1.3 Asthma

The rate of hospitalizations for acute asthma has continued to decline since 2009.

Figure 5.1.3.1 NJ Asthma Hospitalization per 10,000 population



Source: NJ Department of Health, NJ State Health Assessment Data, Environmental Public Health Tracking Indicator Report, Complete Indicator Profile of Asthma Hospitalizations and Emergency Department Visits https://www26.state.nj.us/doh-shad/indicator/complete_profile/NJEPHTAsthmaHosp.html?PrinterFriendly=x

HEALTH

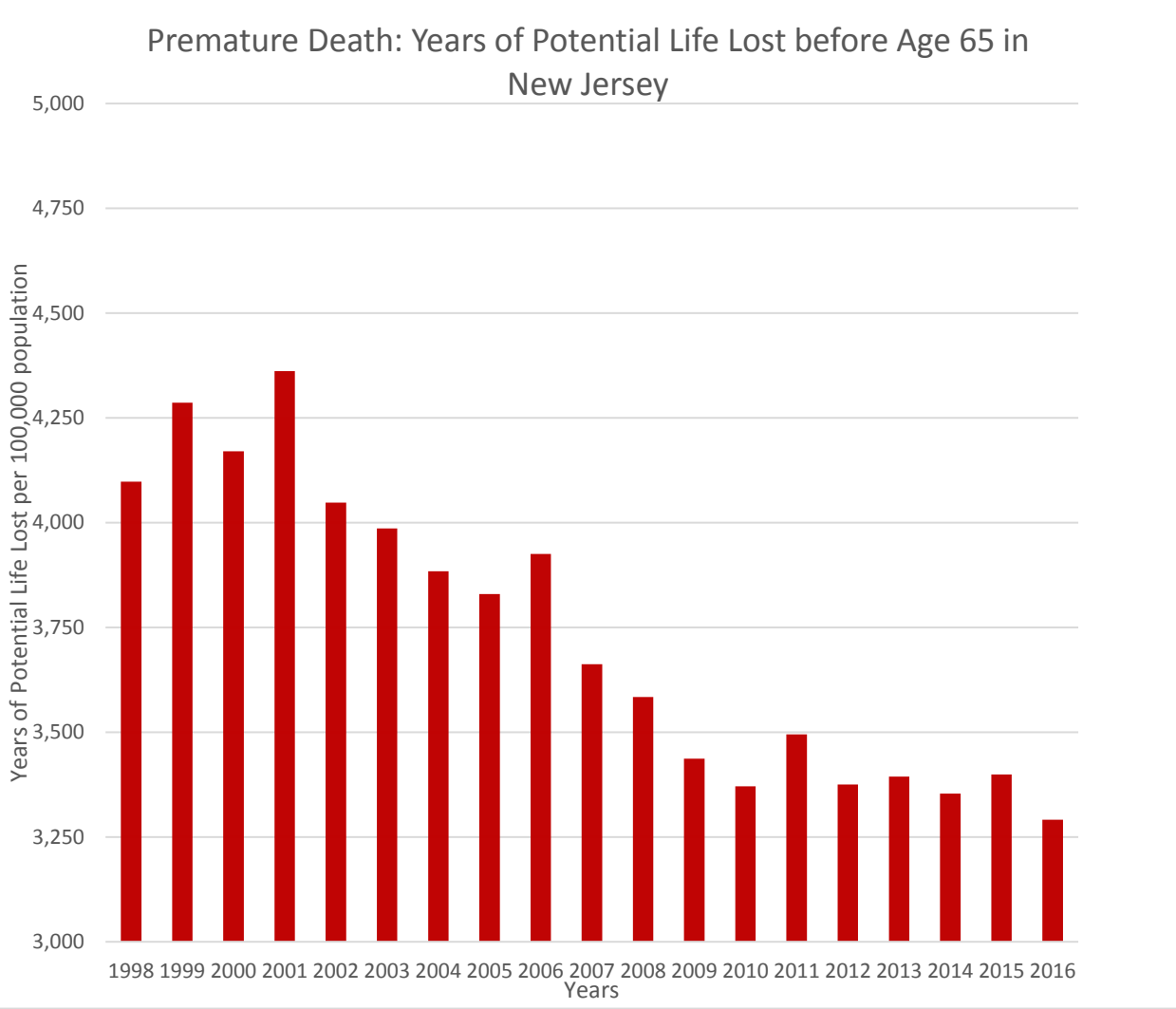
5.1.4 Premature Death

The number of years of potential life lost to New Jerseyans who died before reaching the age of 65 decreased.

"Year of Potential Life Lost (YPLL) is a measure of the number of years not lived by each individual who died before reaching a predetermined age, such as 65. This measure weights deaths at younger ages more heavily than deaths at older ages; the younger the age at death, the greater the number of years of potential life lost due to preventable causes.

YPLL is a significant indicator because it tends to emphasize the deaths of younger individuals whereas mortality rates tend to have illnesses that affect the elderly as a focus. It is also useful because it is more sensitive to policy change than mortality rate, in that mortality rate changes slowly and small changes in healthcare or gun violence can incur immediate changes in years lost for that year making it a more useful instrument for longitudinal studies and measuring policy impact." (NJ Department of Health, NJ State Health Assessment Data, Environmental Public Health Tracking Indicator Report, 2014).

Figure 5.1.4.1 Years of Potential Life Lost in New Jersey



Source: NJ Department of Health, NJ State Health Assessment Data, Environmental Public Health Tracking Indicator Report, Data List for Years of Potential Life Lost (YPLL) Before 65 Years of Age, by Race/Ethnicity, New Jersey, 1998-2016 (HNJ2010). https://www26.state.nj.us/doh-shad/indicator/view_numbers/YPLL.RaceEth.html

HEALTH

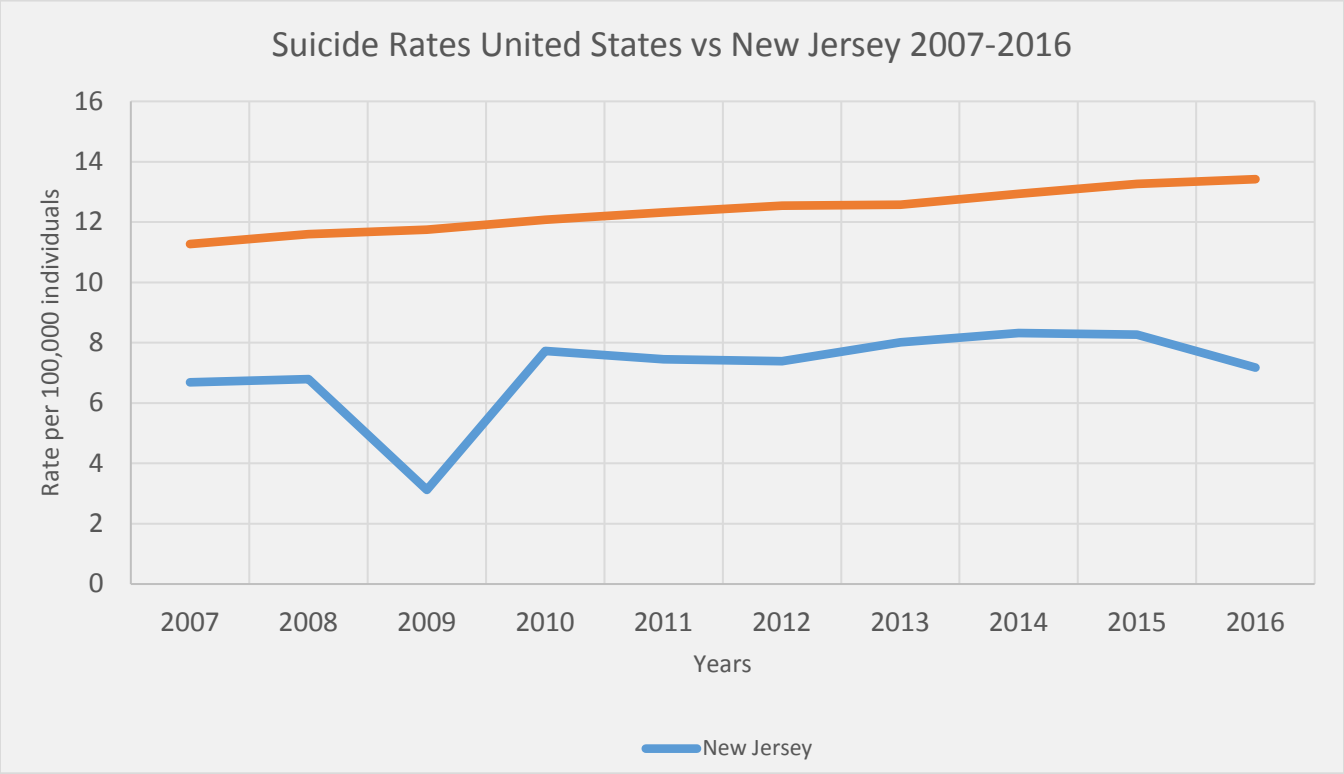
5.1.5 Suicide Rates by Year in New Jersey

After years of growth, the suicide rate among New Jersey residents has levelled off.

This indicator is new in 2016. The rising rate of suicides is a clear indication of distressing circumstances and poor mental health among a growing number of New Jerseyans.

HEALTH

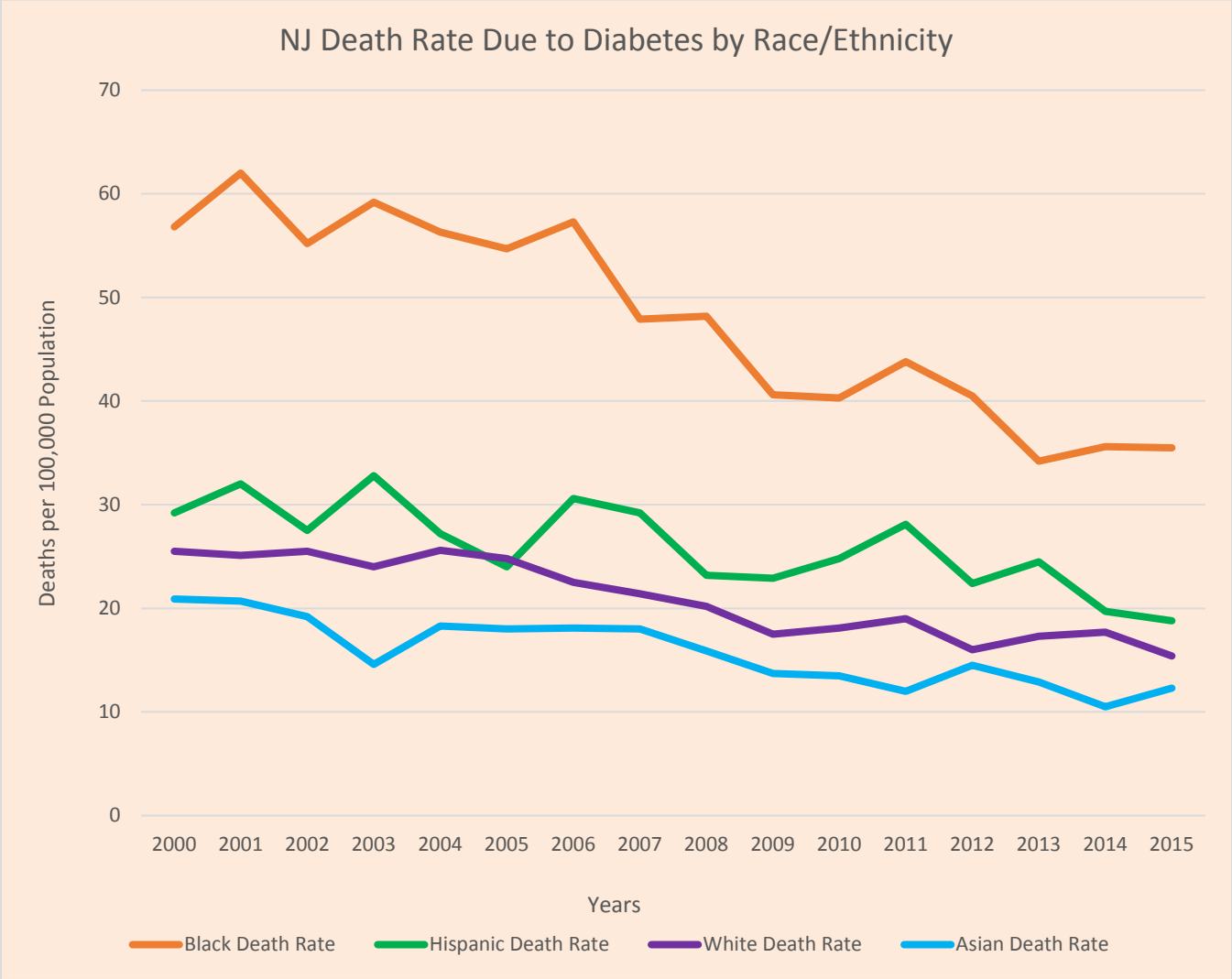
Figure 5.1.5.1 Suicide Rates by Year in New Jersey



Source: American Foundation for Suicide Prevention https://afsp.org/about-suicide/suicide-statistics/

	2. There are no significant **disparities in health** outcomes across racial and ethnic categories.
	5.2.1 Disparities in Diabetes After narrowing for more than a decade, the disparity in rates of Type 2 Diabetes between people classified as White, Hispanic, Black, and Asian stabilized in 2013.

Figure 5.2.1.1 Diabetes Deaths per 100,000 population



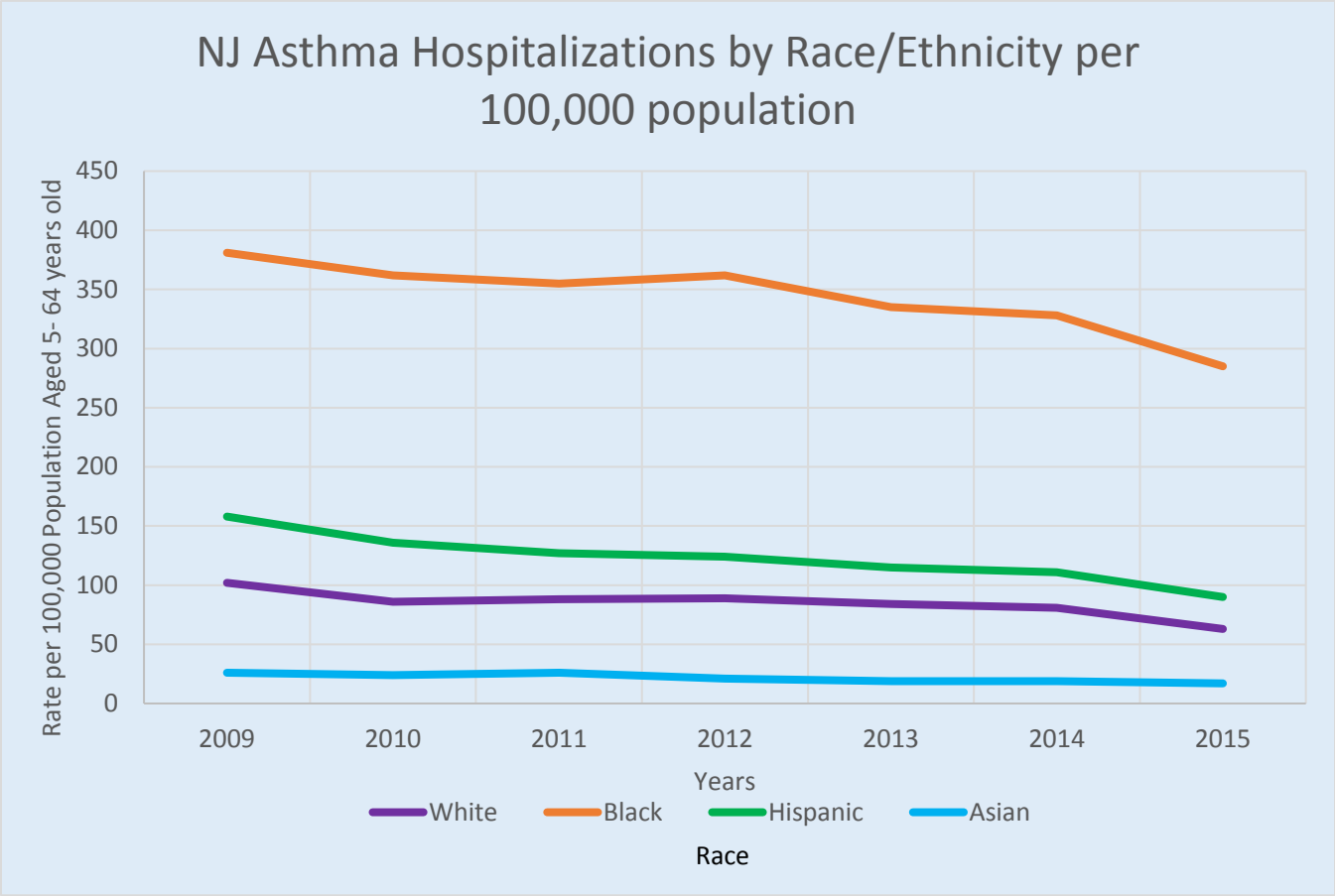
Source: Age-Adjusted Death Rate due to Diabetes by Year and Race/Ethnicity, New Jersey, 2000-2016 https://www26.state.nj.us/doh-shad/indicator/view/DiabetesDeath.RETrend.html

Death rate from diabetes (Fig. 5.2.1.1) is shown per 100,000 population and is the sixth leading cause of death in New Jersey and the third among the black population.

	5.2.2 Disparities in Asthma

	The disparity in rates of hospitalization for cases of asthma between people classified as White and those classified as Hispanic or Black has been decreasing.

Figure 5.2.2.1 NJ Asthma Hospitalizations by Ethnicity per 100,000 population*



*Population of people aged 5-64 year

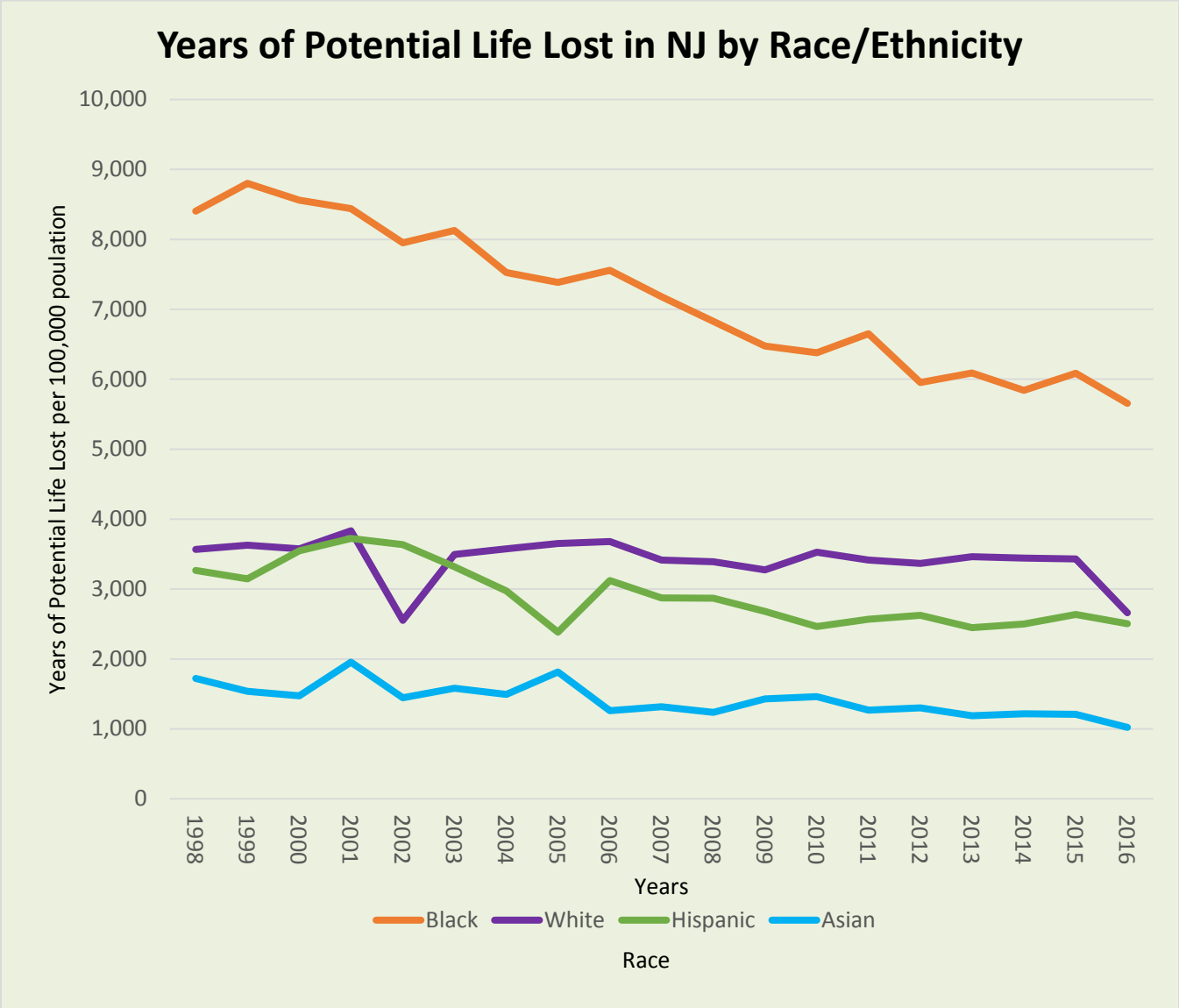
Source: Population Estimates, State Data Center, New Jersey Department of Labor and Workforce Development

Uniform Billing Patient Summary, Division of Health Care Quality and Assessment, New Jersey Department of Health

https://www26.state.nj.us/doh-shad/indicator/view/NJEPHTAsthmaHosp.Hosp5to64.html

⟷	5.2.3 Disparities in Premature Death Improvement has stalled after almost a decade of slow decline in the disparity in number of years of life lost due to preventable disease between people classified as African American compared with the White, Hispanic, and Asian population.

Figure 5.2.3.1 Years of Potential Life Lost by Race and Ethnicity



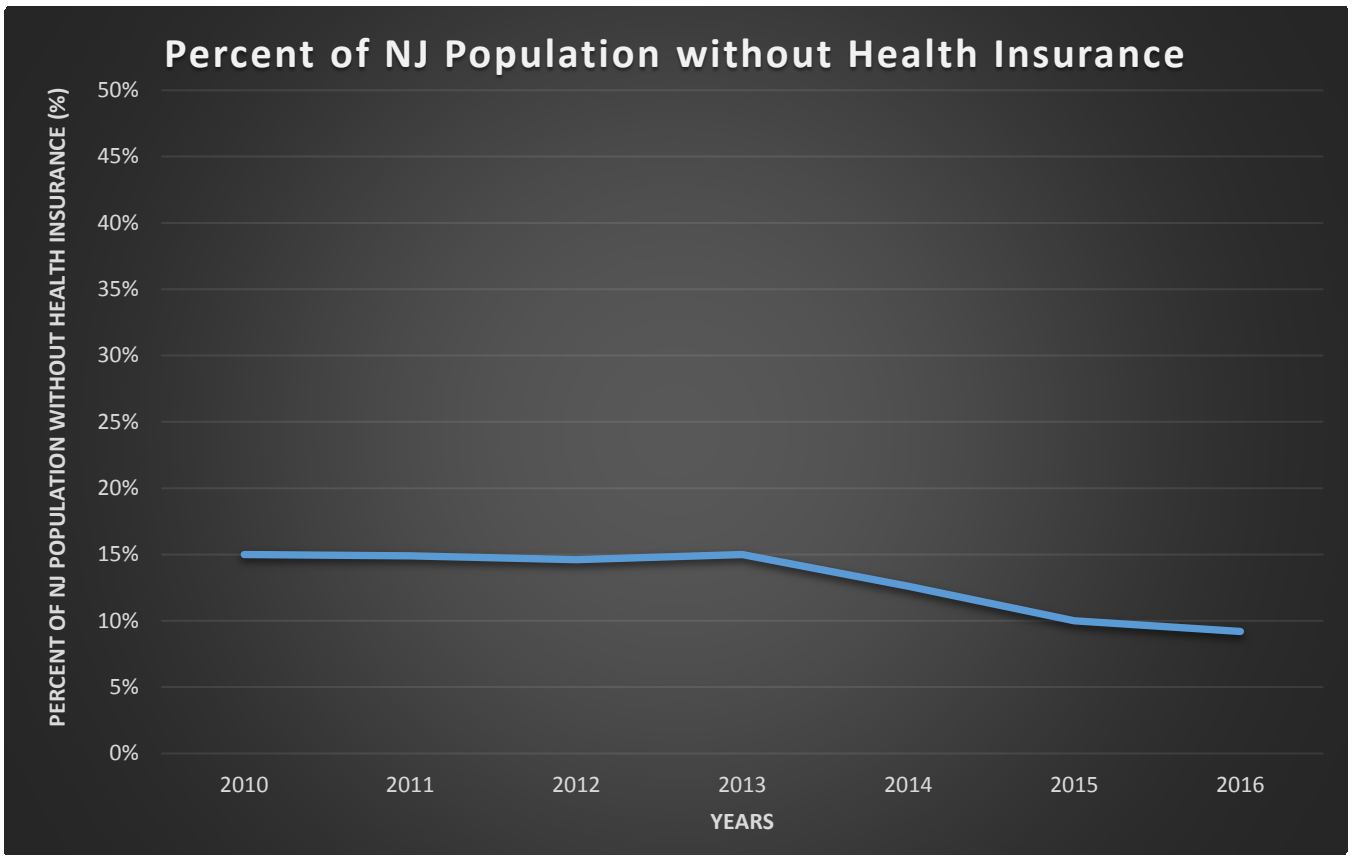
Source: NJ Department of Health, NJ State Health Assessment Data, Environmental Public Health Tracking Indicator Report, Data List for Years of Potential Life Lost (YPLL) Before 65 Years of Age, by Race/Ethnicity, New Jersey, 1998-2016 (HNJ2010) https://www26.state.nj.us/doh-shad/query/builder/mort/MortStateICD10/Count.html

HEALTH

	3. All NJ residents have equitable access to an affordable, high-quality, robust healthcare system.

	5.3.1 People without Health Insurance The portion of the population that does not have health insurance has decreased since 2013.

Figure 5.3.1.1 Percentage of Uninsured Population



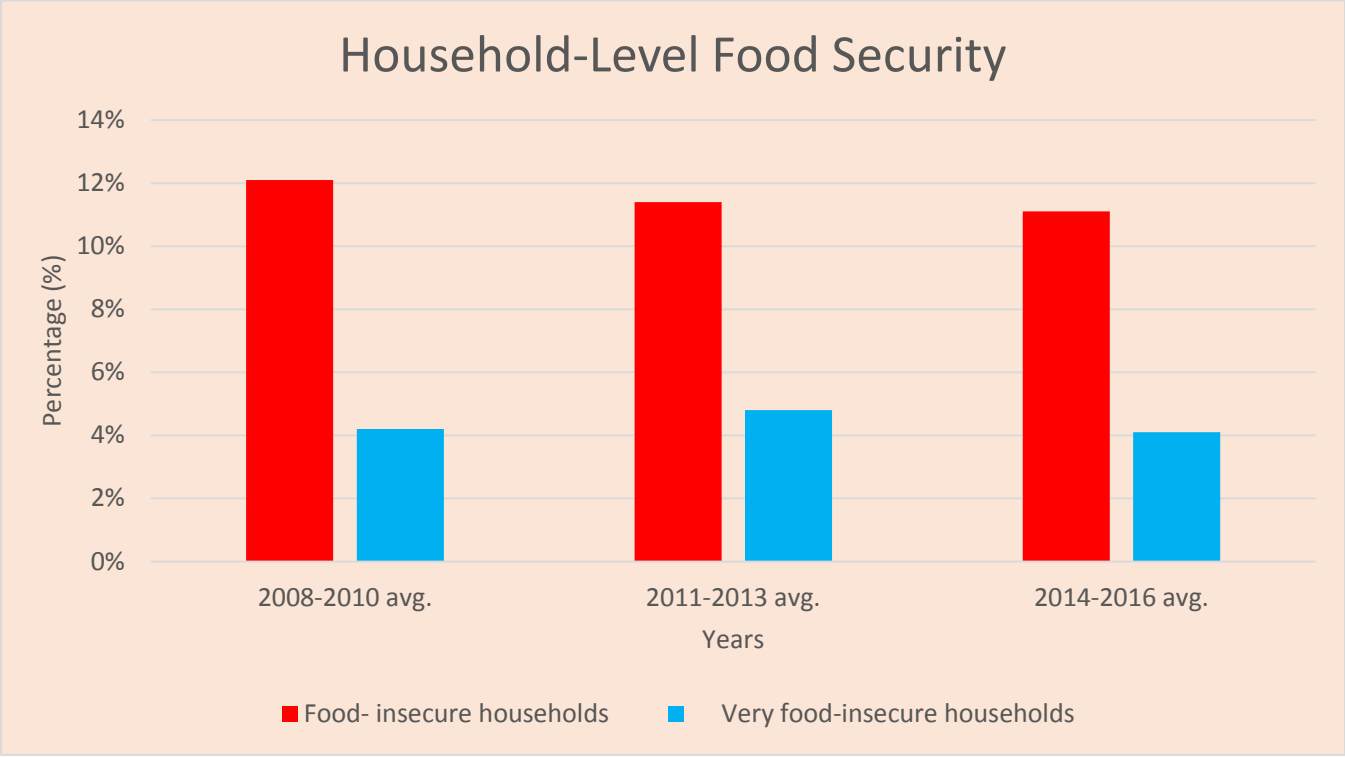
Source: NJ Department of Health, NJ State Health Assessment Data, Environmental Public Health Tracking Indicator Report, https://www26.state.nj.us/doh-shad/indicator/view/HealthInsCov.Un65.html and https://www.census.gov/quickfacts/fact/table/nj/DIS010216#viewtop

HEALTH

	4. People of NJ have access to sufficient, healthy, and nutritious food.

	5.4.1 Household Food Insecurity The percentage of households in New Jersey that experience low or very low food security has begun to decline.

Figure 5.4.1.1 Household-level Food Insecurity



Source: USDA Economic Research Service, State Fact Sheet. http://www.ers.usda.gov/data-products/state-fact-sheets/state-data.aspx?StateFIPS=34&StateName=New%20Jersey#P5892d47e40874358914bac72a894d1c7_3_39iT0

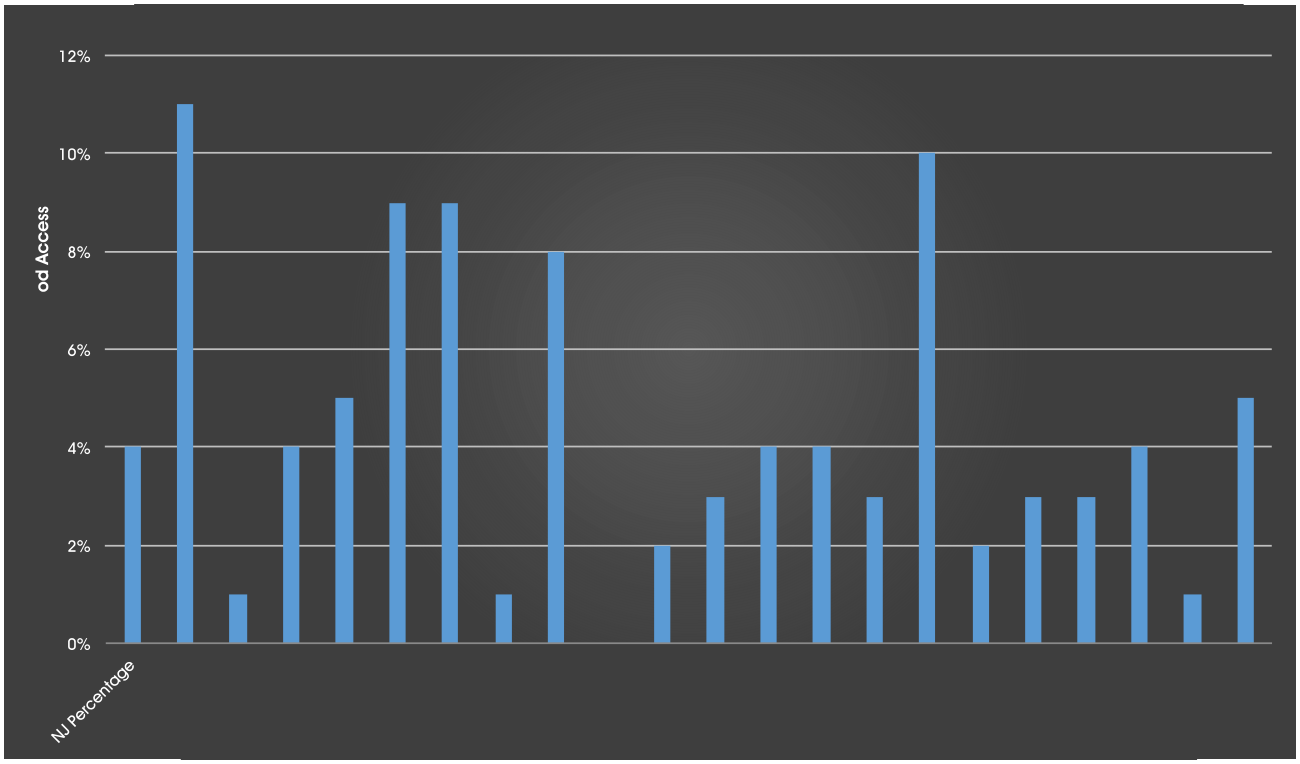
HEALTH

	5.4.2 Access to Healthy Food Choices Over the 2010–2015 time period, only roughly 4% of low-income New Jerseyans lived close to a grocery store.

These data were obtained from the Robert Wood Johnson County Health Rankings, which cites as its source the USDA Food Environment Atlas. These data are only available for 2010. It would not be expected that the density of grocery store locations would change rapidly.

The County Health Rankings show significant disparities in access (0-11%) among counties.
Clearly, the presence of a nearby grocery store is an incomplete proxy for 'access to healthy food.' Groceries stores may offer limited selections of healthy, fresh and nutritious food, and what they offer may not be affordable to many households.

Figure 5.4.2.1 Limited Access to Healthy Food by County, 2010



Source: United States Department of Agriculture: Economic Research Service https://www.ers.usda.gov/data-products/food-environment-atlas/documentation/#access and https://www.ers.usda.gov/data-products/food-environment-atlas/data-access-and-documentation-downloads.aspx

Robert Wood Johnson County Health Rankings: http://www.countyhealthrankings.org/app/new-jersey/2015/measure/factors/83/data

EDUCATION AND HUMAN DEVELOPMENT

Dimension 6: Education and Human Development

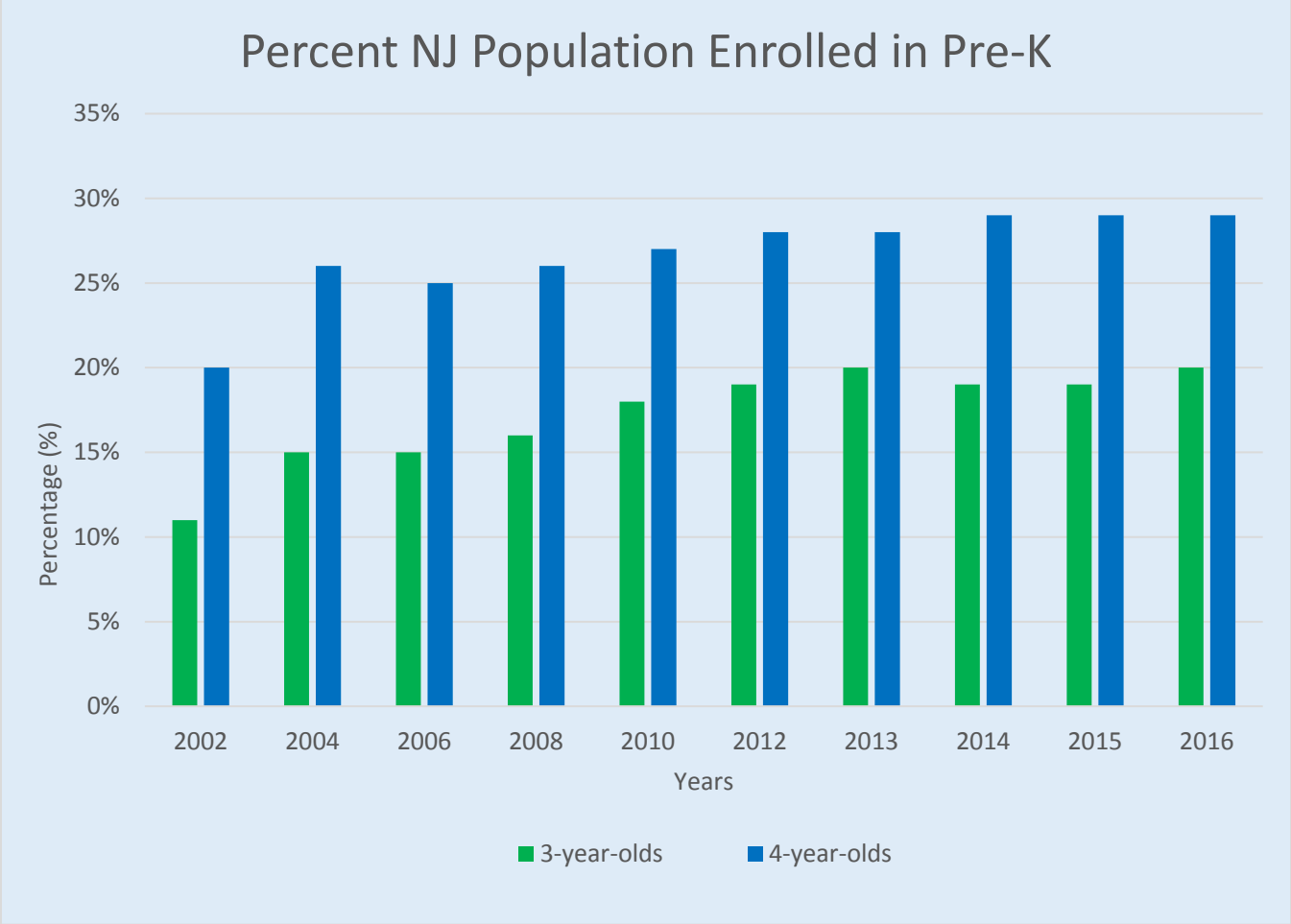
Goal

We want quality lifelong education, equally accessible to all New Jerseyans, that provides individuals with knowledge and skills necessary for employment, careers, and personal fulfillment. It should also provide capacity for critical thinking and civic engagement, with an understanding of social, economic, and ecological systems.

	1. A quality education is provided to the people of New Jersey, equipping them with the knowledge, skills, and capacities to enable successful careers, civic engagement, and personal fulfillment.

	6.1.1 Access to Pre-School The increasing trend in the percentage of children attending preschool has levelled off for the last several years.

Figure 6.1.1.1 Pre-school Enrollment

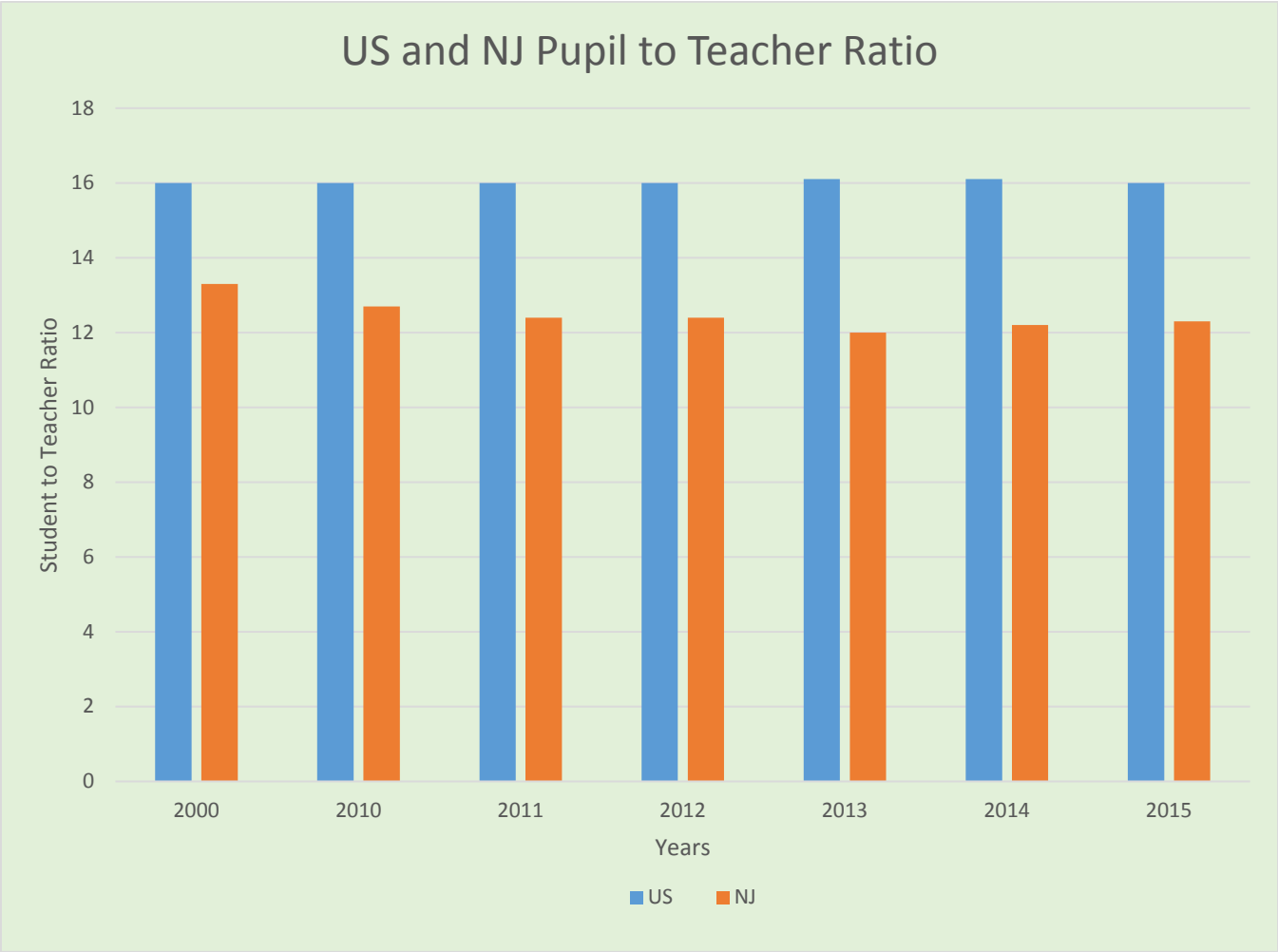


Source: National Institute for Early Education Research, The State of Preschool 2015. http://nieer.org/yearbook

6.1.2 Student/Teacher Ratio

The number of students per teacher in New Jersey schools has plateaued, remaining well below the U.S. average.

Figure 6.1.2.1 Student to Teacher Ratio



Source: National Center for Education Statistics, Common Core of Data, State Nonfiscal Public Elementary/Secondary Education Survey Data. https://nces.ed.gov/ccd/stnfis.asp

6.1.3 Basic Skills

After years of improving student performance, average scores in New Jersey on a national standardized test for basic English and Math skills at the 8th grade level declined slightly in 2015 and then recovered, in tandem with the U.S. average. NJ scores continue to compare favorably with those of the country as a whole.

Figure 6.1.3.1 Reading scores, 8th grade: NJ and US

Source: National Center for Education Statistics, NAEP Data Explorer. Retrieved from http://nces.ed.gov/nationsreportcard/naepdata/report.aspx

Source: National Center for Education Statistics, NAEP State Profiles. Retrieved from https://www.nationsreportcard.gov/profiles/stateprofile?chort=1&sub=RED&sj=AL&sfj=NP&st=MN&year=2017R3

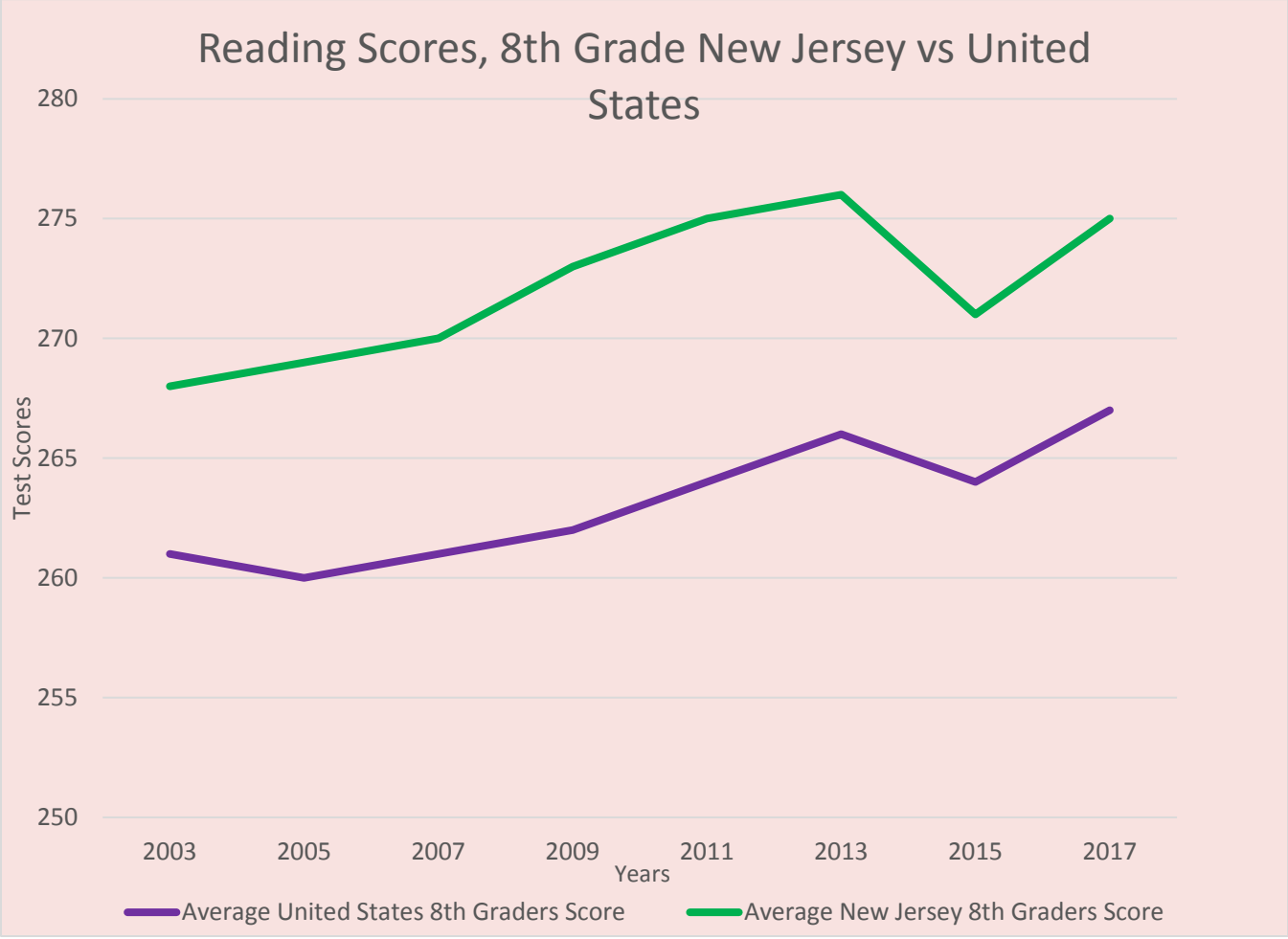
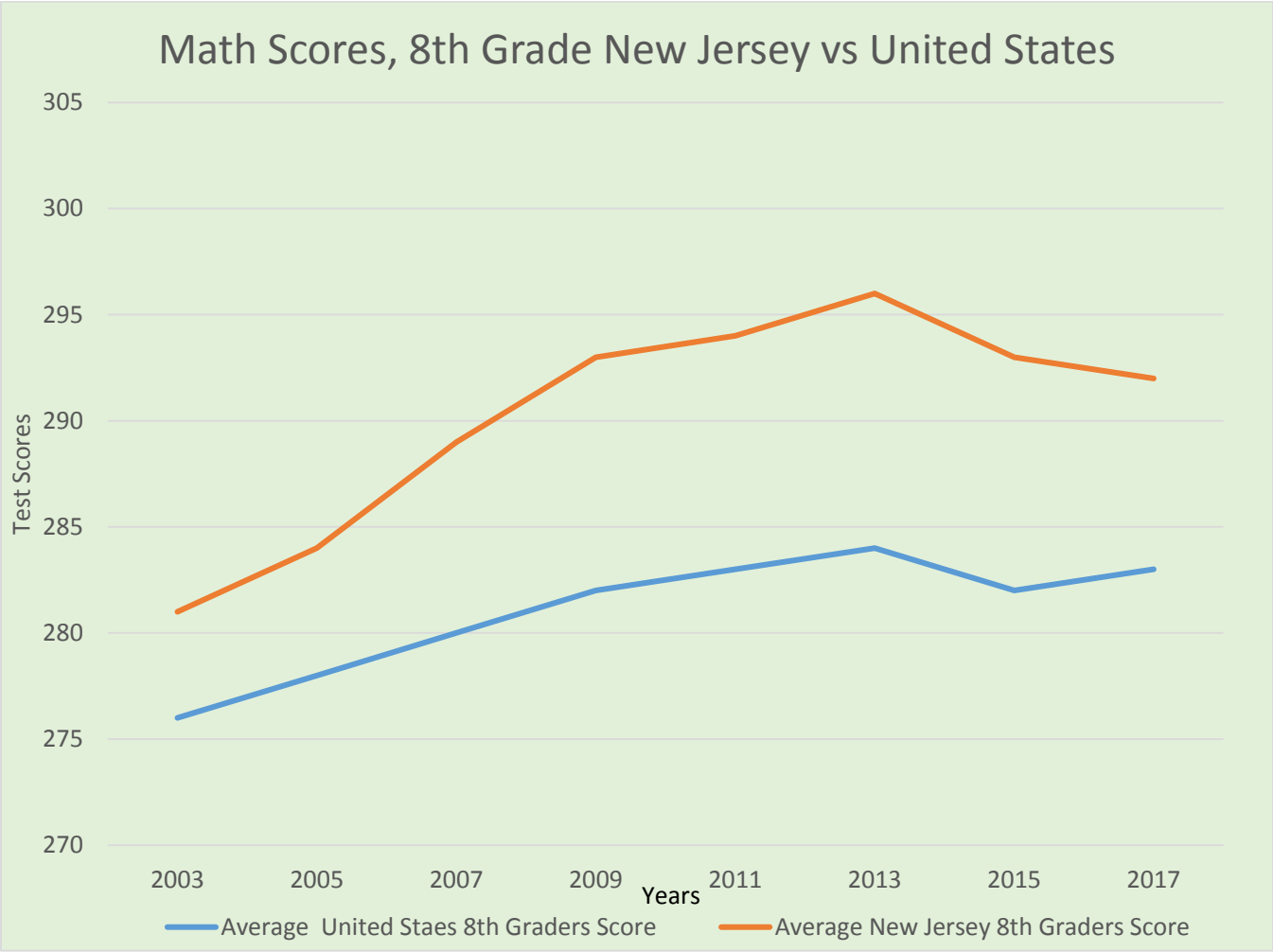


Figure 6.1.3.2 Math scores, 8th grade: NJ and US

Source: National Center for Education Statistics, NAEP Data Explorer. Retrieved from http://nces.ed.gov/nationsreportcard/naepdata/report.aspx

EDUCATION AND HUMAN DEVELOPMENT

Source: National Center for Education Statistics, NAEP State Profiles. Retrieved from http://nces.ed.gov/nationsreportcard/states/

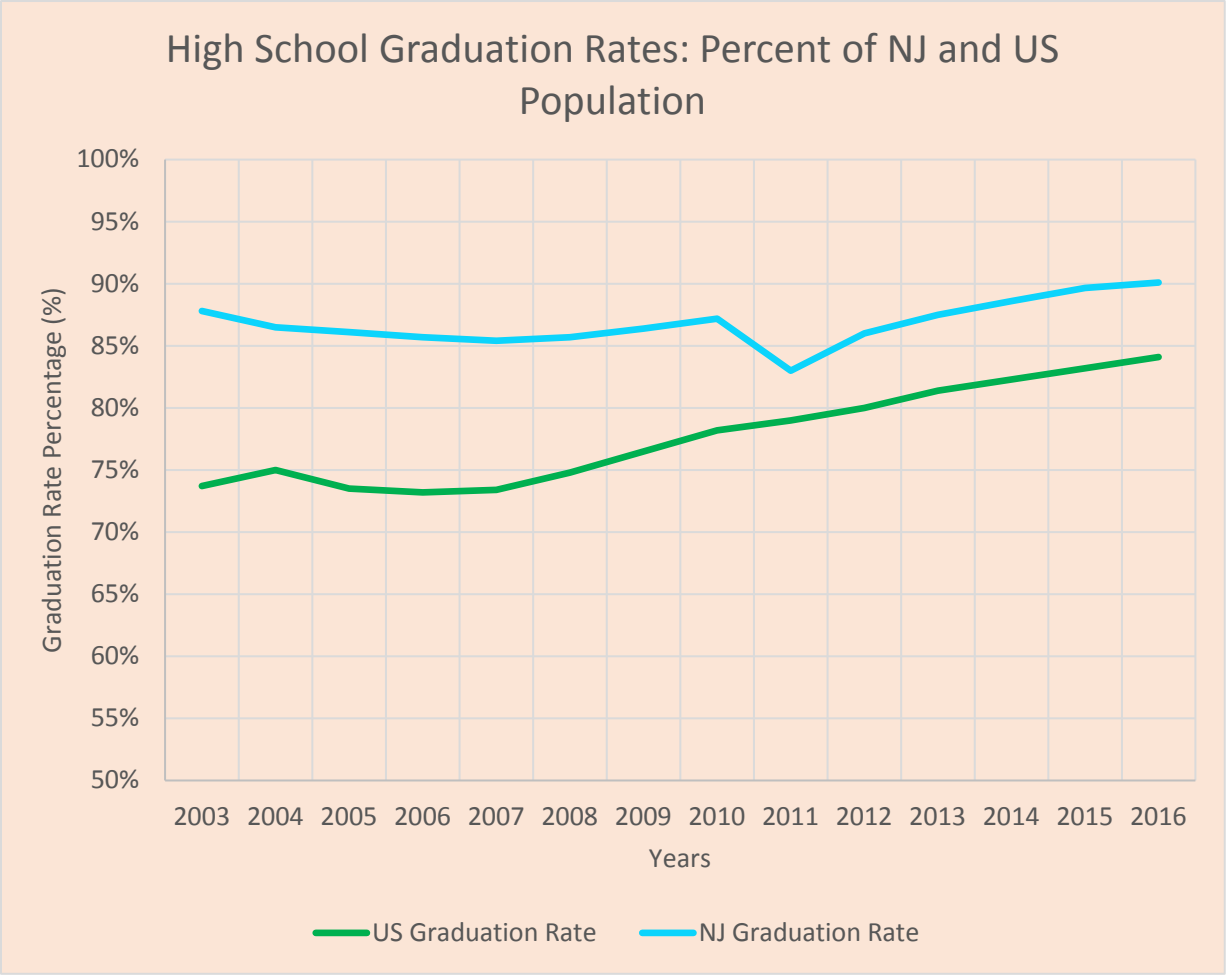


6.1.4 High School Graduation Rates

The percentage of New Jersey students successfully completing high school within four years of entry is high and increasing.

EDUCATION AND HUMAN DEVELOPMENT

Figure 6.1.4.1 Graduation Rates: NJ and US



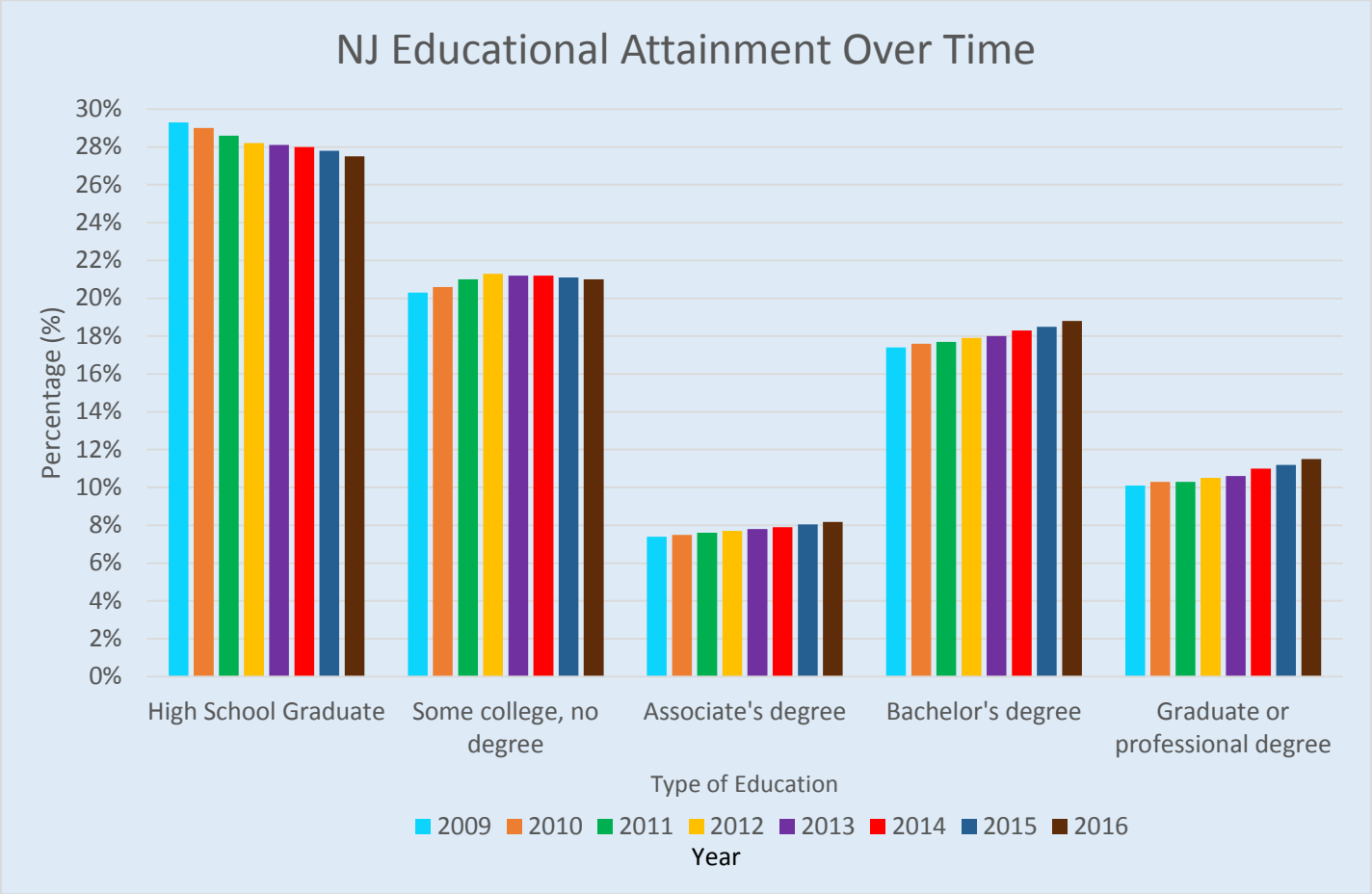
Source: National Center for Education Statistics, Common Core of Data, public high school 4-year adjusted cohort graduation rate (ACGR). https://nces.ed.gov/ccd/tables/ACGR_RE_and_characteristics_2015-16.asp

*In the 2011 school year, the ACGR replaced the AFGR (averaged freshman graduation rate) as the nationwide way for reporting graduation rates. While it is not a complete departure from the AFGR method, direct comparisons should not be made; the data were included here as an informal comparison. The ACGR is thought to provide greater accuracy and thus accountability for states.

EDUCATION AND HUMAN DEVELOPMENT

6.1.5 Educational Attainment
The percentage of people attending college and attaining advanced degrees has steadily risen.

Figure 6.1.5.1 NJ Educational Attainment over Time



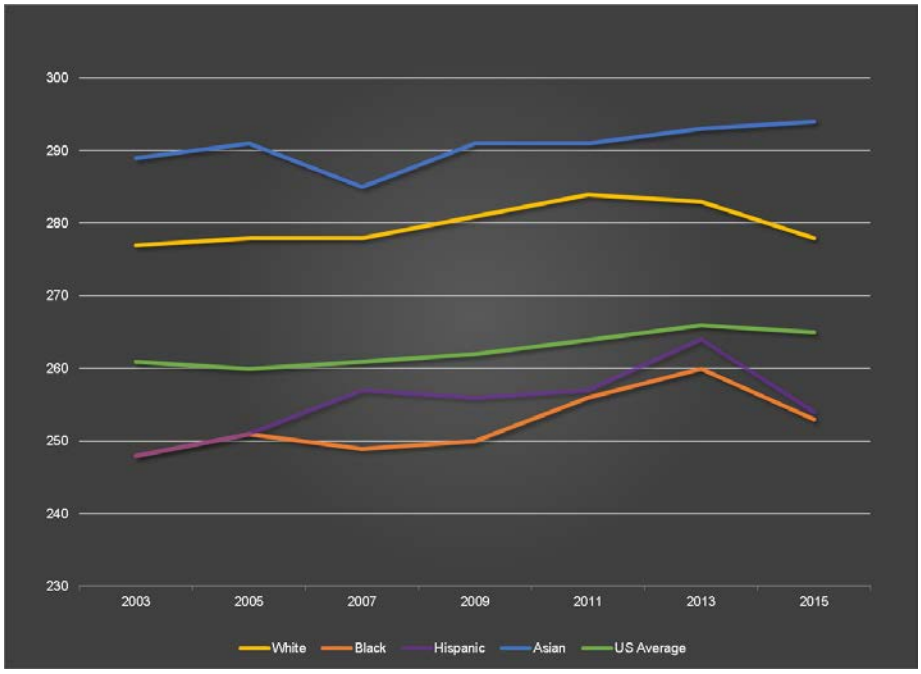
Source: U.S. Census, Department of Commerce, American Community Survey
http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_13_5YR_S1501&prodType=table
This is for the population 25 and older. Professional is defined as percentage with Master's, Professional, or Doctoral degrees. They are considered estimates because they use sampling techniques.

2. Disparities in educational outcomes due to poverty and other disadvantages are addressed and reduced.

6.2.1 Disparities in Basic Skills
The substantial gaps in performance on standardized tests (8th grade level English and Math skills, NAEP) have narrowed among White, Black, and Hispanic students. The scores of Asian students have risen relative to everyone else.

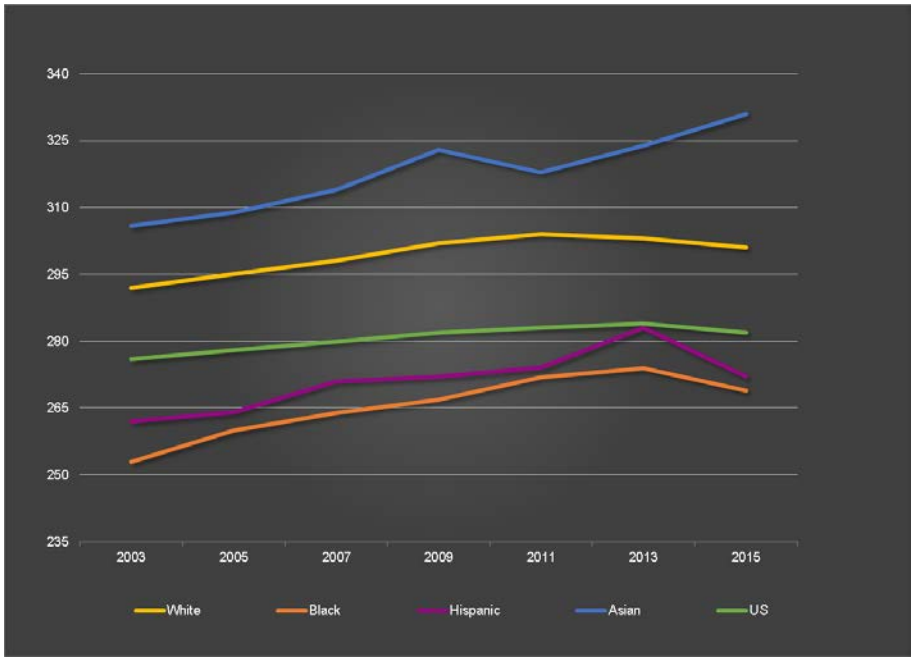
It would be valuable to track disparities in test scores on the basis of family incomes well as by race and ethnicity. Given the disproportionate number of non-white and non-Asian households that are low-income and/or concentrated in highly urban school districts in New Jersey, race and ethnicity stand in as proxies for a number of additional socioeconomic variables. Whatever the complex of causes, these outcomes are clearly inequitable.

Figure 6.2.1.1 Disparity in reading scores, 8th grade



Source: National Center for Education Statistics, NAEP Data Explorer. Retrieved from https://www.nationsreportcard.gov/profiles/stateprofile/overview/NJ?cti=PgTab_OT&chort=2&sub=RED&sj=NJ&fs=Grade&st=MN&year=2017R3&sg=Gender%3A+Male+vs.+Female&sgv=Difference&ts=Single+Year&tss=2015R3-2017R3&sfj=NP

Figure 6.2.1.2 Disparity in math scores, 8th grade

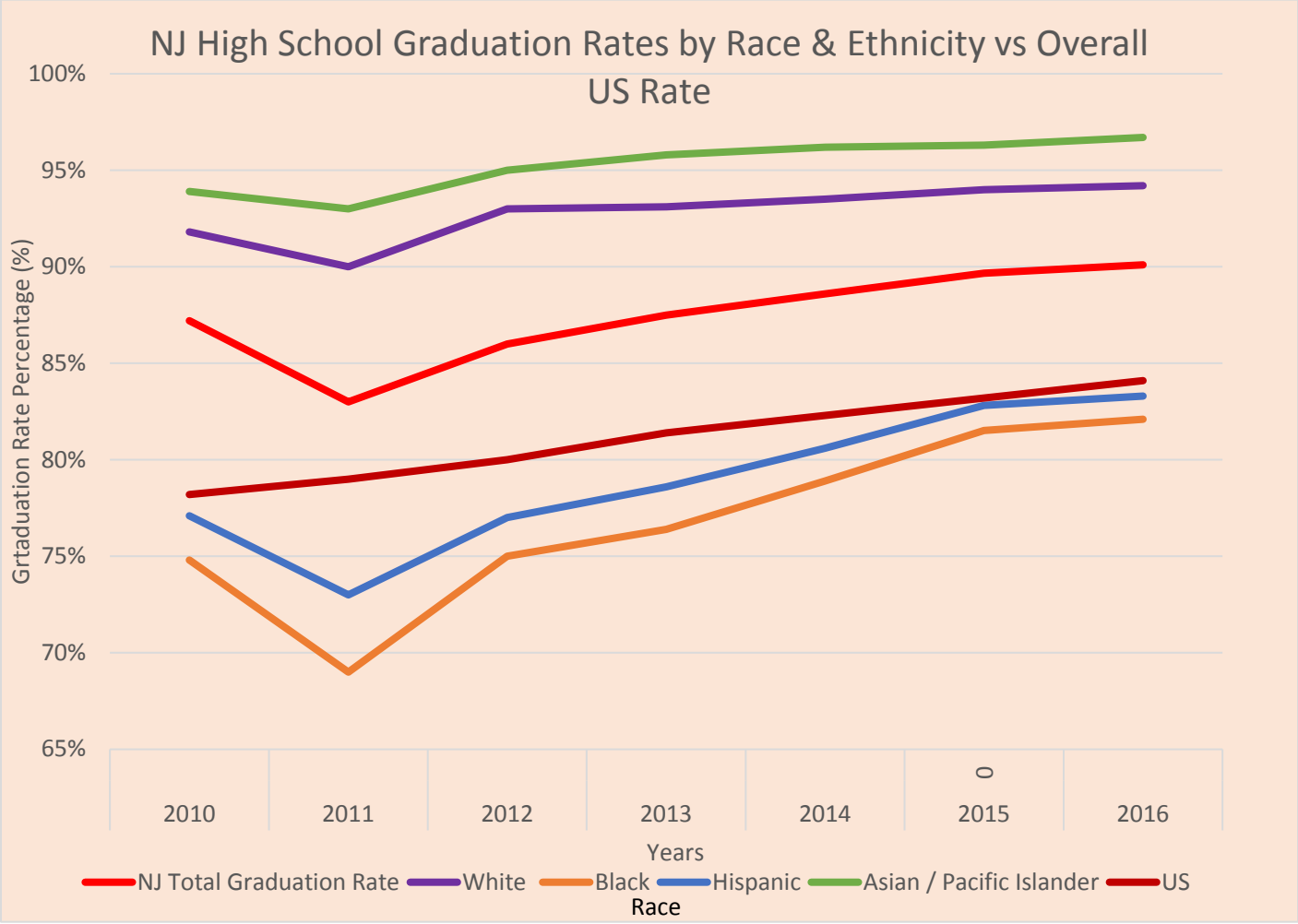


Source: National Center for Education Statistics, NAEP Data Explorer. Retrieved from https://www.nationsreportcard.gov/profiles/stateprofile/overview/NJ?cti=PgTab_OT&chort=2&sub=RED&sj=NJ&fs=Grade&st=MN&year=2017R3&sg=Gender%3A+Male+vs.+Female&sgv=Difference&ts=Single+Year&tss=2015R3-2017R3&sfj=NP

EDUCATION AND HUMAN DEVELOPMENT

6.2.2 Disparities in High School Graduation Rates
The gaps in high school graduation rates among White, Black, Hispanic, and Asian students have decreased.

Figure 6.2.2.1 Graduation Rate Disparity



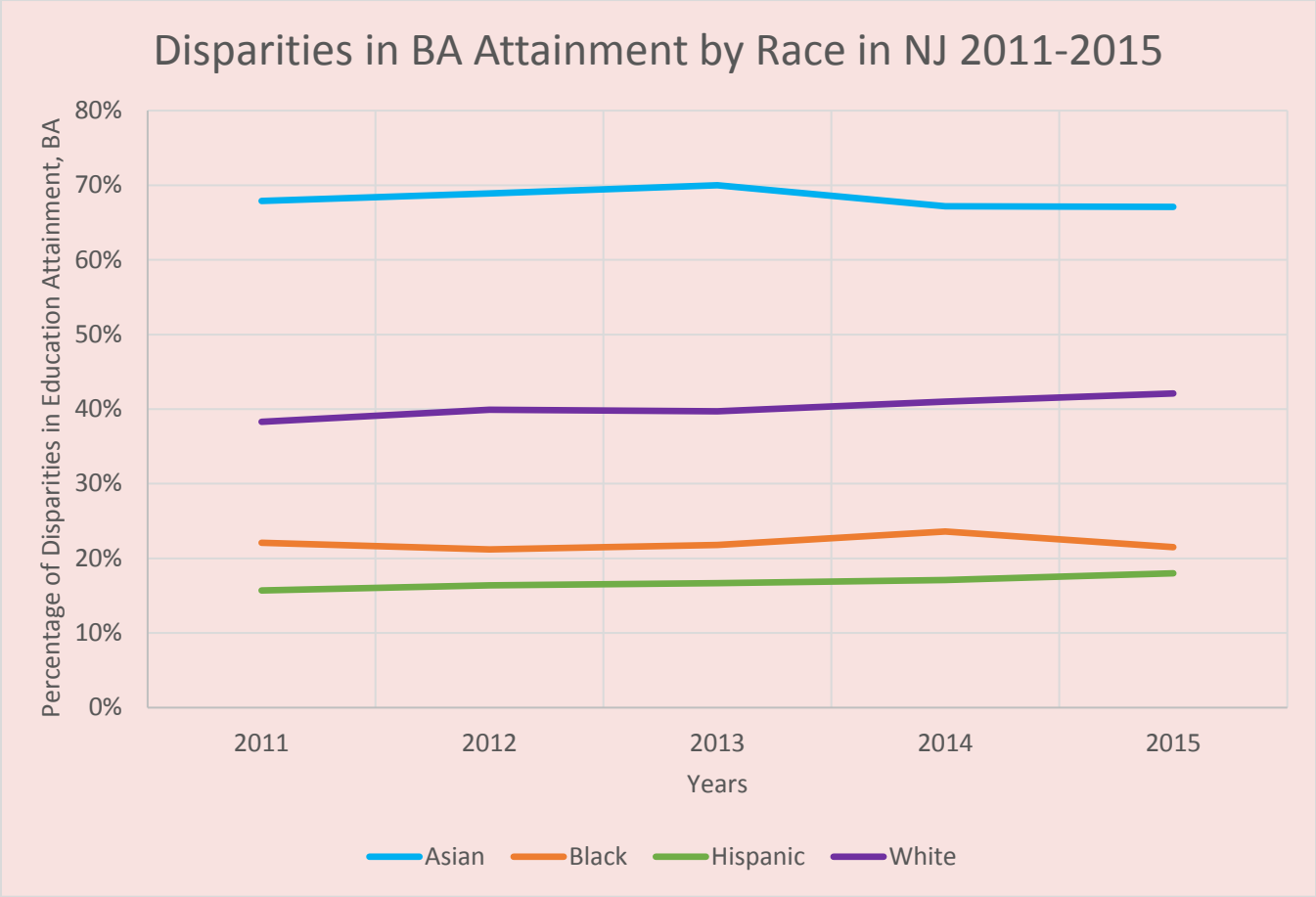
Source: National Center for Education Statistics, Common Core of Data, Public high school 4-year adjusted cohort graduation rate (ACGR). https://nces.ed.gov/ccd/data_tables.asp

EDUCATION AND HUMAN DEVELOPMENT

6.2.3 Disparities in Educational Attainment

The gap in rates of people attaining a Bachelors degree is not changing significantly among the White, Black, Hispanic, and Asian populations.

Figure 6.2.3.1 Disparities in B.A. Attainment by Race



Source: U.S. Census, Department of Commerce, American Community Survey
https://nces.ed.gov/programs/digest/d15/tables/dt15_104.85.asp

EDUCATION AND HUMAN DEVELOPMENT

	3. The people of NJ have access to **life-long learning** opportunities allowing them to find, (re)train for, and create employment in a changing economy that evolves to meet sustainability challenges.

	**6.3.1 Access to Community College** There are no readily available data that can be aggregated statewide to assess adequate funding of community colleges and their ability to offer affordable courses and degrees.

	**6.3.2 Vacancy Rates in High Skill Jobs** There are currently no reliable statewide data that show the difficulty employers have in filling high-skill jobs due to lack of qualified candidates in the workforce.

	4. New Jerseyans **understand and apply sustainability concepts** such as the interrelation of social, economic, and ecological systems; system dynamics and thresholds; human interdependence; and intergenerational responsibility.

	**6.4.1 Sustainability Knowledge** There are no readily available data in New Jersey to assess the knowledge levels of students and adults on key sustainability concepts that would enable them to make good decisions for the future.

SOCIAL CAPITAL

Dimension 7: Social Capital

Goal

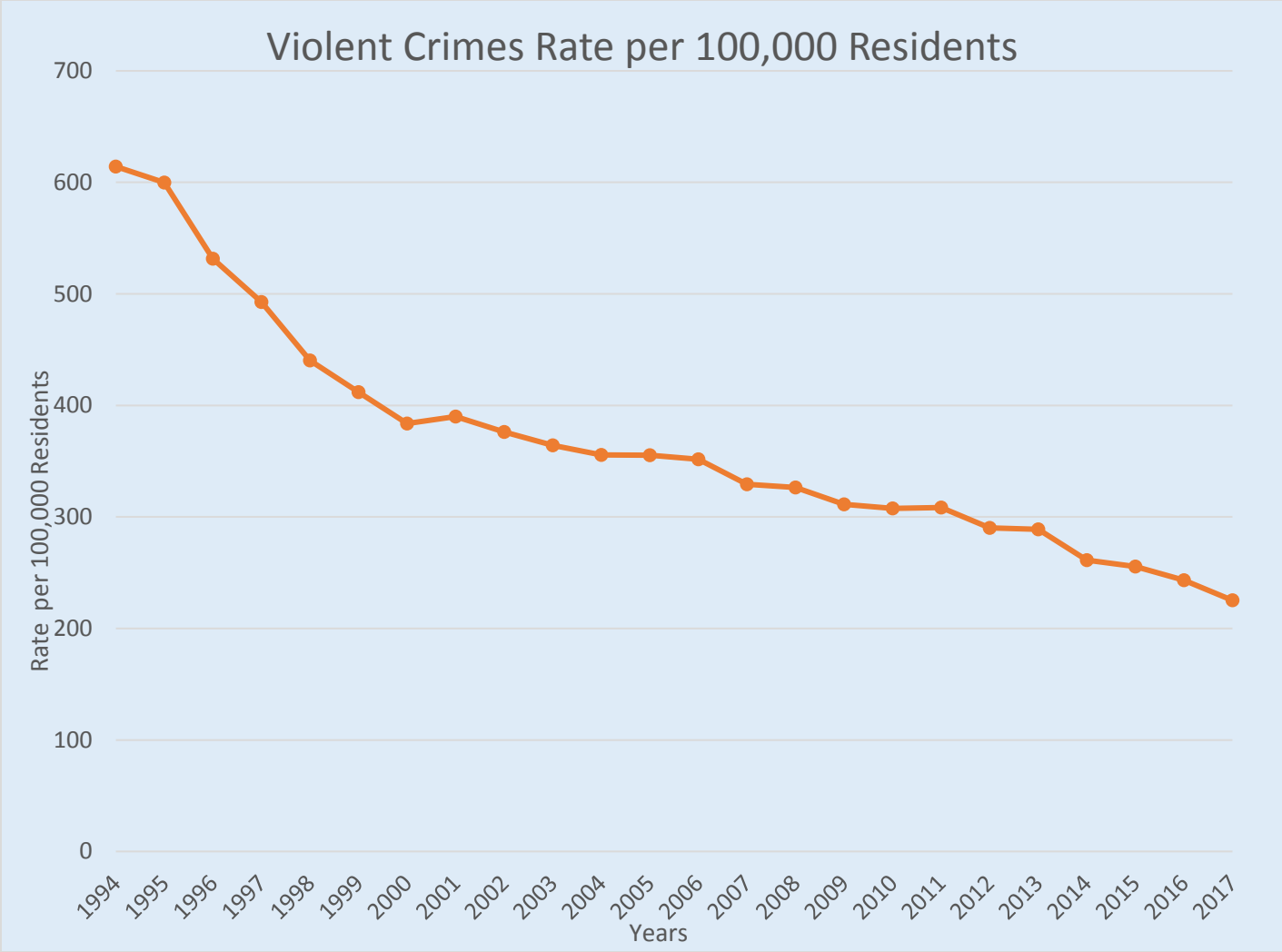
We want to see people and diverse social organizations across New Jersey acting together to solve collective problems. We envision vibrant, inclusive and safe communities that offer rich opportunities in the arts, recognition of diverse cultural and historical heritages, and the enjoyment of recreational and natural amenities.

	1. New Jersey's communities are safe and inclusive.

	7.1.1 Violent Crime The rate of violent crime reported in New Jersey has been steadily declining. This statistic conceals the range of local variation in public safety.

Figure 7.1.1.1 Violent Crime Rate

SOCIAL CAPITAL



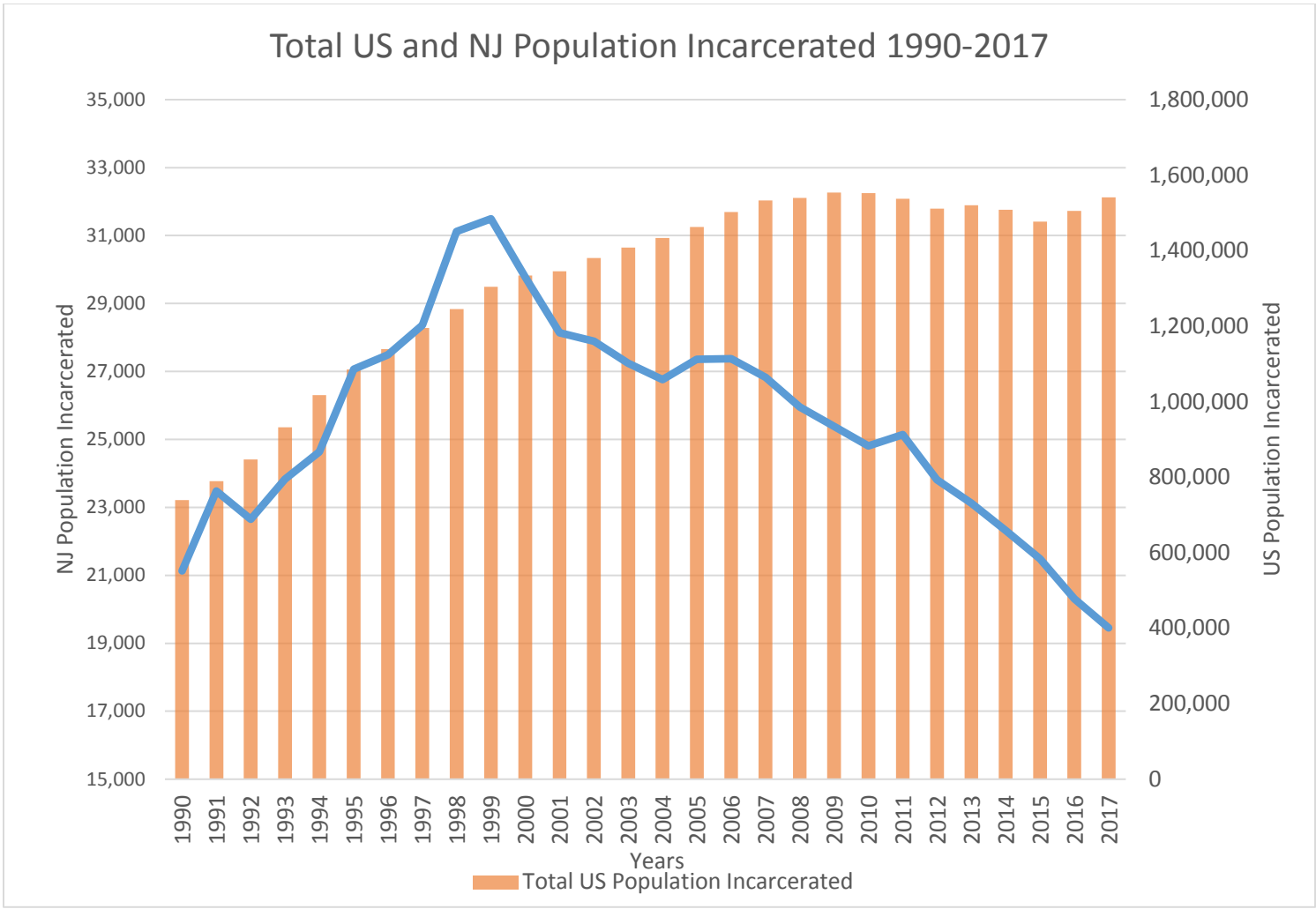
Source: State of New Jersey, Division of State Police, "Uniform Crime Report State of New Jersey 2017."
https://www.njsp.org/ucr/pdf/current/20180312_crimetrend_2017.pdf
http://www.njsp.org/ucr/uniform-crime-reports.shtml

7.1.2 Incarcerated Population

In stark contrast with the country as a whole, the size of the incarcerated population in NJ continues to shrink, This is particularly good news given the racial and ethnic disparities in incarceration rates.

The proportion of the population of NJ in prison began to outstrip the national trend in 1997, peaking in 1999. The state thereafter led the nation in the rate of decrease of the total incarcerated population. The total US population in prison began to decrease over a decade later in 2010.

Figure 7.1.2.1 Total NJ and US Population Incarcerated

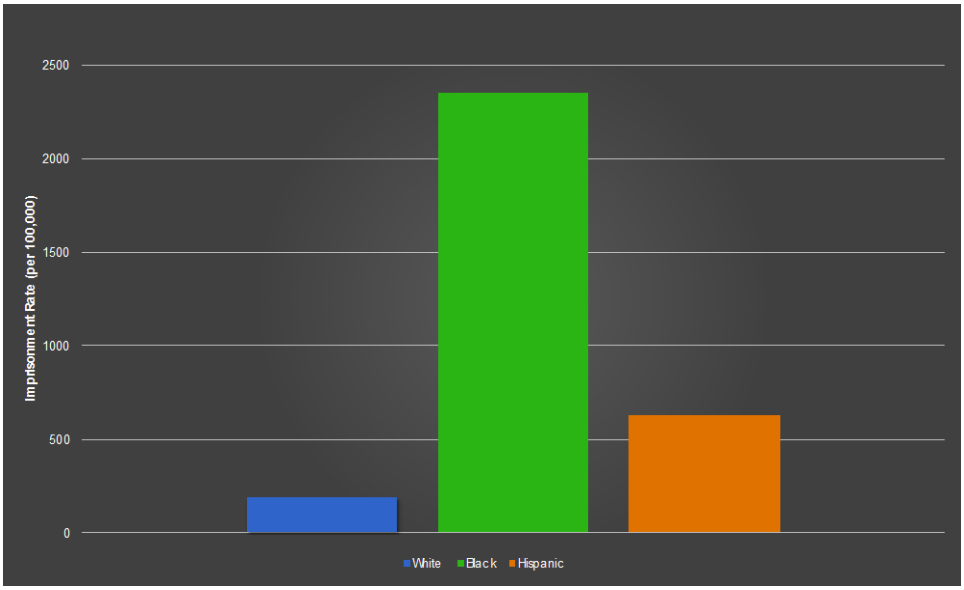


Source: The Sentencing Project; Bureau of Justice Statistics, Prison Population 1980-2011 Map http://www.sentencingproject.org/map/map.cfm

Source: New Jersey Department of Corrections http://www.state.nj.us/corrections/pages/offender_stats.html

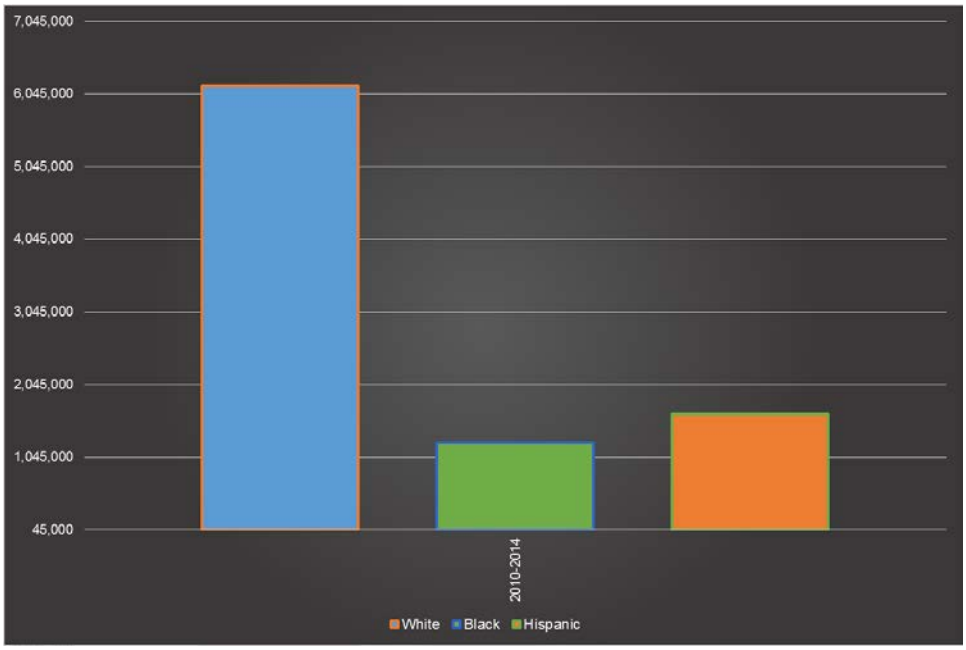
Fig. 7.1.2.2 demonstrates the striking racial imbalance in prison populations in New Jersey. The disparity is even more striking in light of the fact that Black and Hispanic populations comprise only a fraction (not much more than one-tenth) the size of the white population (Fig. 7.1.2.3).

Figure 7.1.2.2 2005 Imprisonment Rate (per 100,000 population) by Race



Source: The Sentencing Project; Bureau of Justice Statistics, Prison Population 1980-2011 Map http://www.sentencingproject.org/map/map.cfm

Figure 7.1.2.3 New Jersey Population by Race



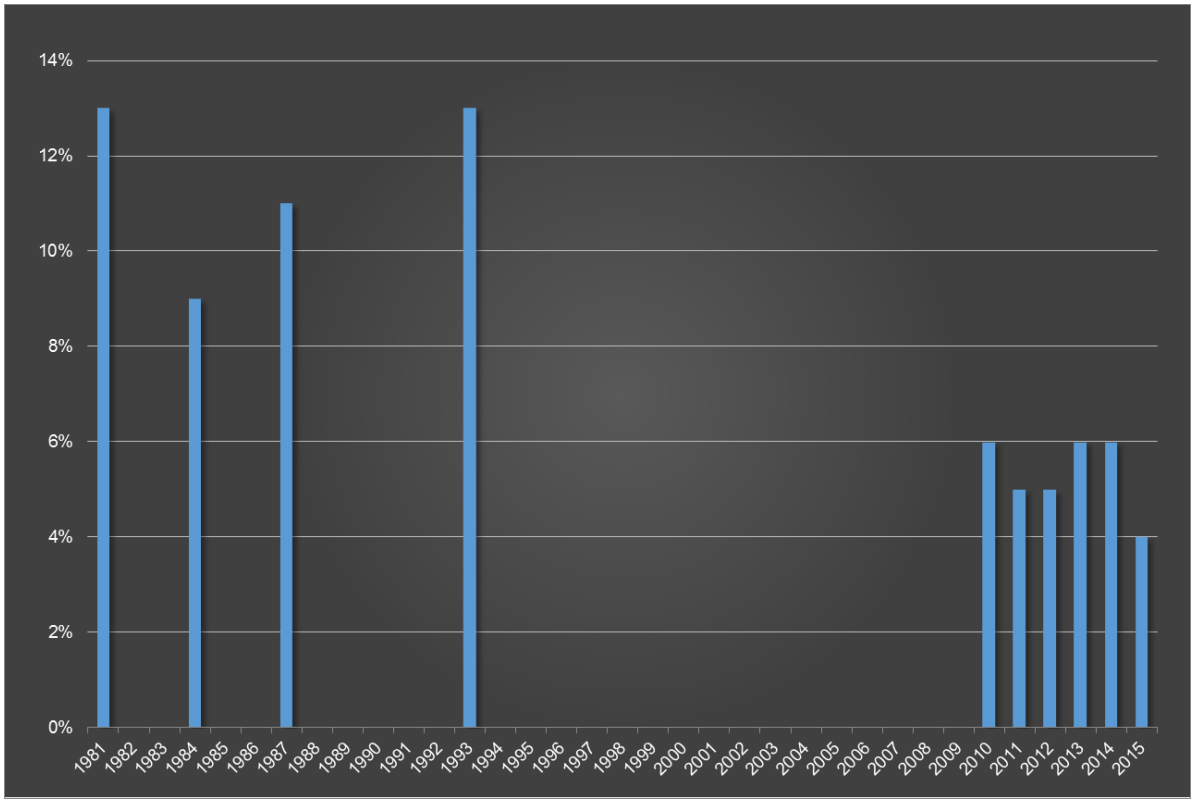
Source: ACS DEMOGRAPHIC AND HOUSING ESTIMATES 2014 American Community Survey 1-Year Estimates http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_14_1YR_DP05&prodType=table

7.1.3 Feeling Unsafe

The percentage of people that say they feel unsafe at night in their neighborhood has decreased.

SOCIAL CAPITAL

Figure 7.1.3.1 Percentage of Residents Feeling "Not At All Safe" In Their Neighborhoods
at Night



Source: Monmouth University Polling Institute, Monmouth University Poll West Long Branch, NJ 07764.
https://www.monmouth.edu/search/?q=views+on+quality+of+life

If community safety is attained by excluding particular social segments, then the result is social exclusion.

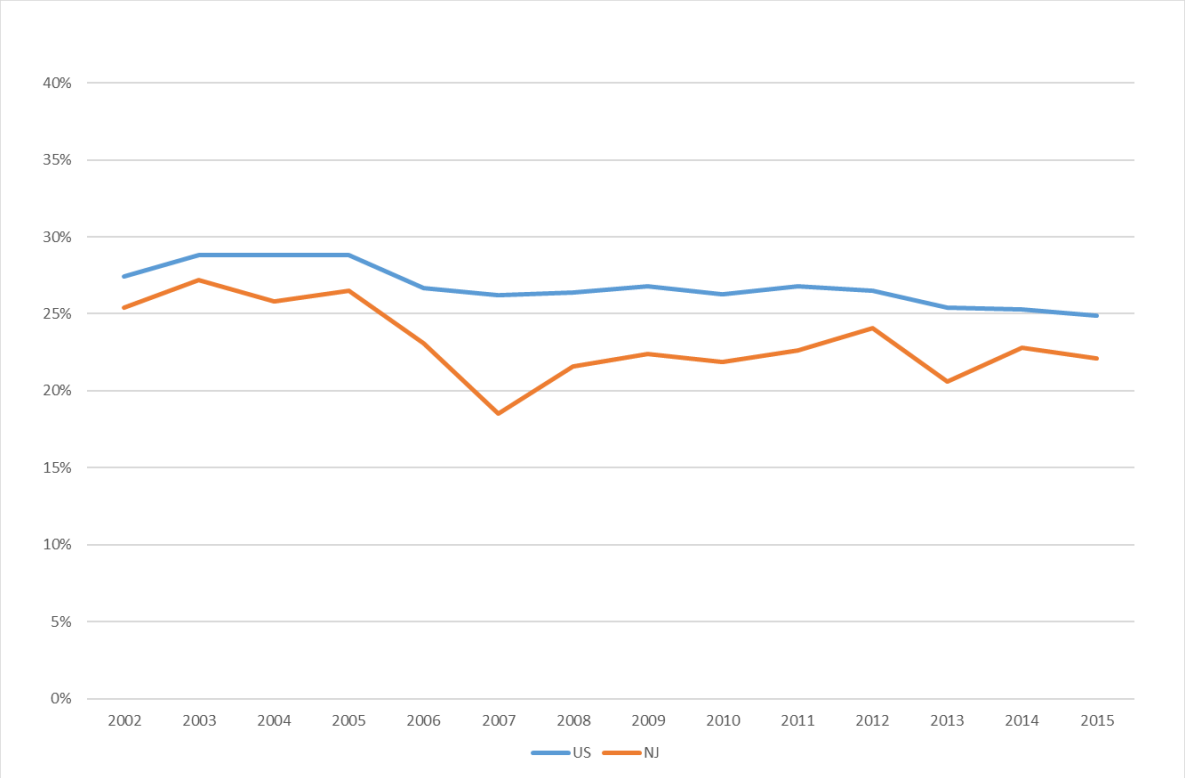
	2. Social organizations have the leadership, resources, and institutional capacity to amplify the effectiveness of people in solving social and environmental problems.

	7.2.1 Organizational Effectiveness We currently have no state-level measures of quality for civic associations and non-profit organizations or assessments for the performance of the sector as a whole in building capacity to collaborate and solve problems.

	7.2.2 Volunteerism New Jerseyans volunteer at a rate that has declined over the last decade, remaining below the national average.

Figure 7.2.2.1 Volunteering Rate: NJ and US

SOCIAL CAPITAL



Source: Corporation for National and Community Service; Volunteering America Data, https://www.nationalservice.gov/vcla/state/new-jersey

3. Communities and neighborhoods enjoy high levels of citizen engagement and an inclusive sense of identity and place. They host a variety of community events and public venues that bring people together.

7.3.1 Civic Engagement

There are currently no statewide data sources on the number, focus, and participation rate of community-based organizations. Informal forms of cooperation are even more difficult to track.

7.3.2 Community Events

Although the number of permits issued for festivals, public shows, and other community events could be tracked, there are no data that show whether people have access to quality events meaningful to them.

7.3.3 Public Gathering Spaces

Although the number of public venues such as community centers could be counted, there are currently no data that assess how well our need for public gathering spaces is being met.

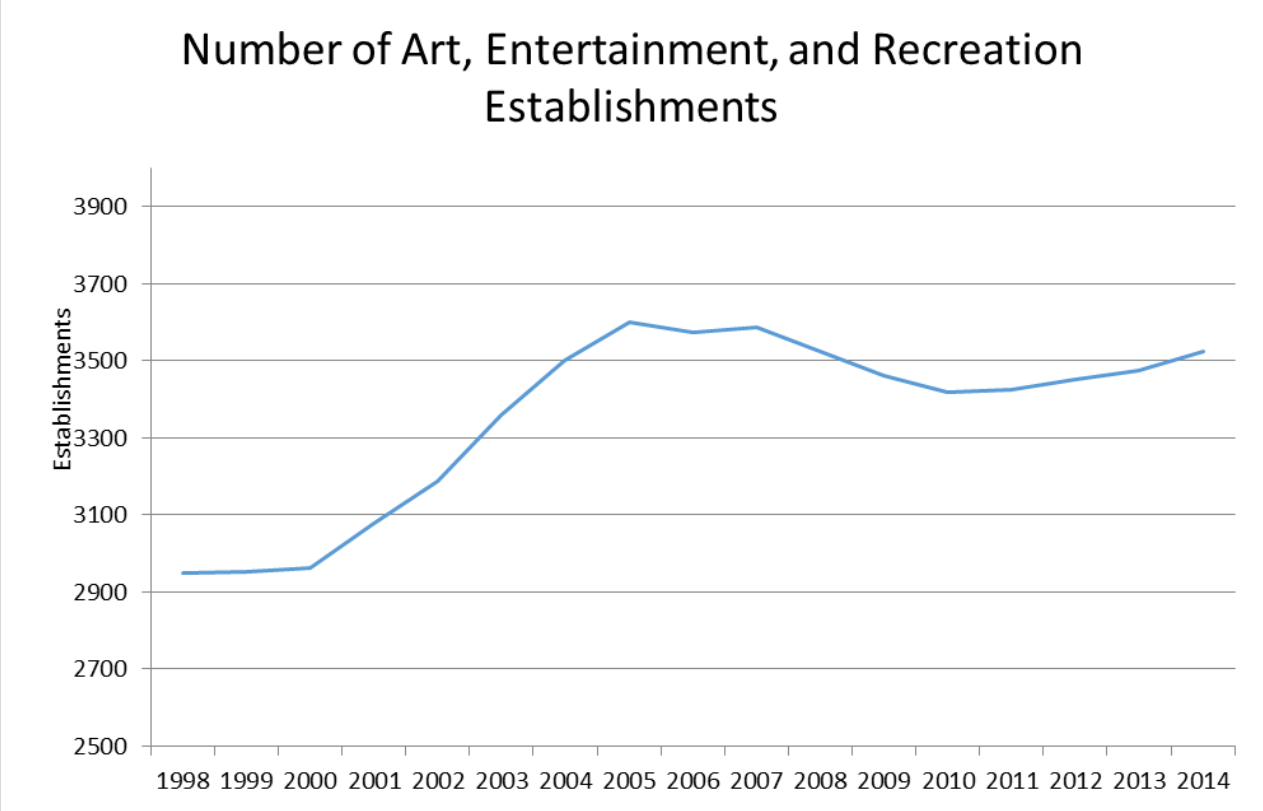
SOCIAL CAPITAL

4. Exposure to the arts, recognition of diverse cultures and histories, and recreational opportunities are abundant and accessible throughout New Jersey.

7.4.1 Arts Establishments and Employment

The number of organizations, businesses, self-employed individuals, and employees in the arts and music industry declined during the recession, but is now increasing.

Figure 7.4.1.1 Number of Artists and Establishments



Source: US Census, County Business Patterns; https://www.census.gov/epcd/susb/2000/nj/NJ71.HTM

7.4.2 Cultural and Historical Heritage

There are currently no quantifiable data that allow us to track how well we are preserving and building our state's diverse cultural heritage.

SOCIAL CAPITAL

7.4.3 Proximity to Open Space

As of 2013, 64% of the population of Northern New Jersey had good access to a park or public open space (defined as living within a half mile for urban dwellers and one mile for rural residents).

This GIS analysis has been done for a baseline year by the Regional Plan Association and presented in a background paper for the Together North Jersey project (**Freudenberg, R.** et al. September 2013. *Baseline Assessment Topic Report Land Use & Design* for *Together North Jersey Regional Plan for Sustainable Development*). The data on parks and open space are available for the analysis to be extended to Southern Jersey. It would be arguably appropriate to extend the radius for rural residents and/or parse the rural to urban spectrum in different ways.

Figure 7.4.3.1 Proximity to Open Space

In 2013, the percentage of the population in Northern New Jersey that has good access to a park or public open space was 64%.

GOVERNANCE

Dimension 8: Governance

Goal

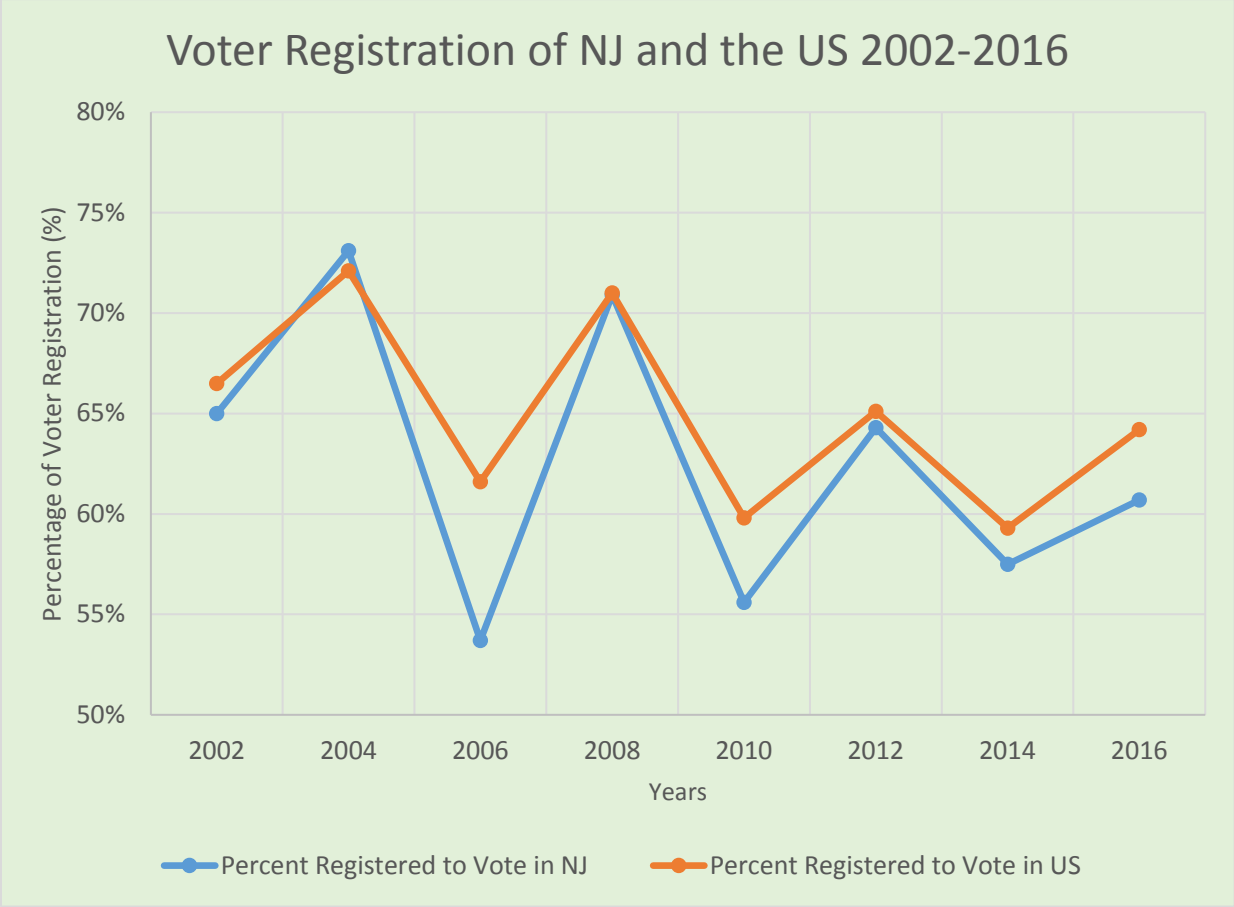
We envision a New Jersey in which empowered people take responsibility for informing themselves and where they exercise their rights to participate effectively in public decision-making. This will be a New Jersey where elected officials reflect, represent and respond to diverse constituencies, think beyond short term electoral cycles, and seek the common good, and where government institutions are effective, efficient, transparent, and accountable.

1. All people of NJ are empowered to participate equally in the formal and informal processes of government at all levels.

8.1.1 Voter Registration

The percentage of the eligible population that is registered to vote has leveled off after period of modest growth.

Figure 8.1.1.1 Voter Registration: NJ and US

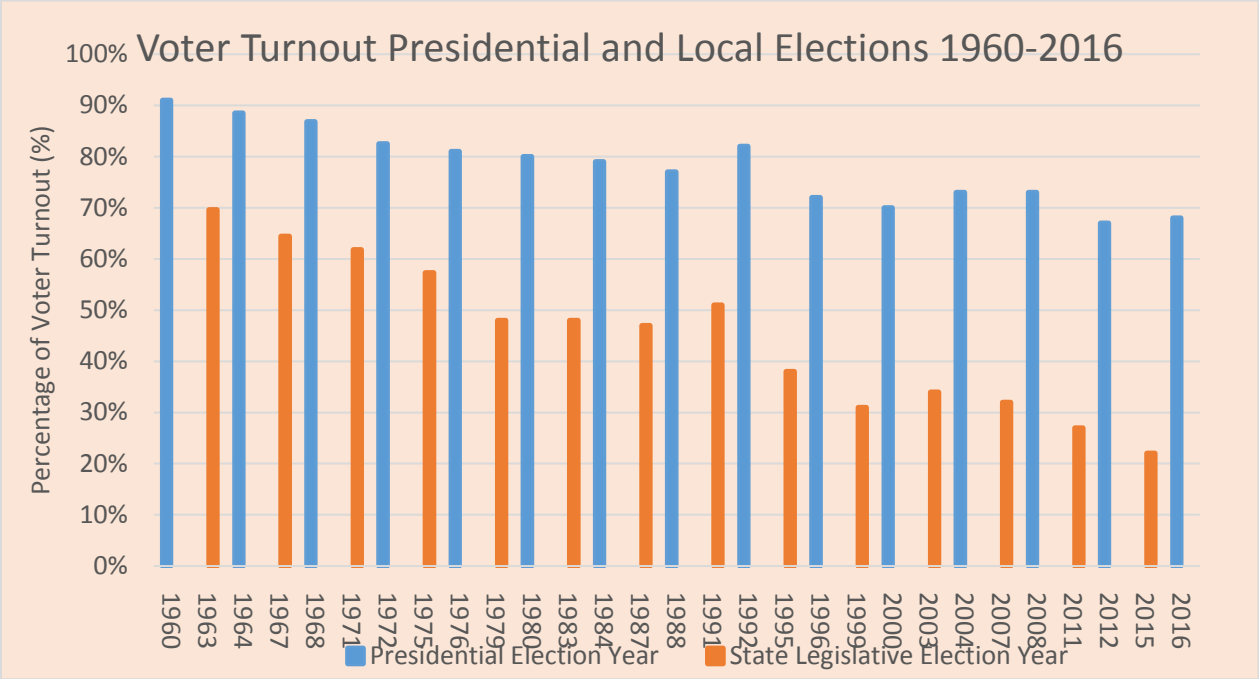


Source: US Census Current Population Survey, Voting and Registration Supplement. https://www.census.gov/topics/public-sector/voting/data/tables.2010.html

GOVERNANCE

	8.1.2 Voter Turnout Voter turnout, particularly in local and state elections, continued its decades-long decline.

Figure 8.1.2.1 Voter Turnout: Presidential vs. non-presidential elections



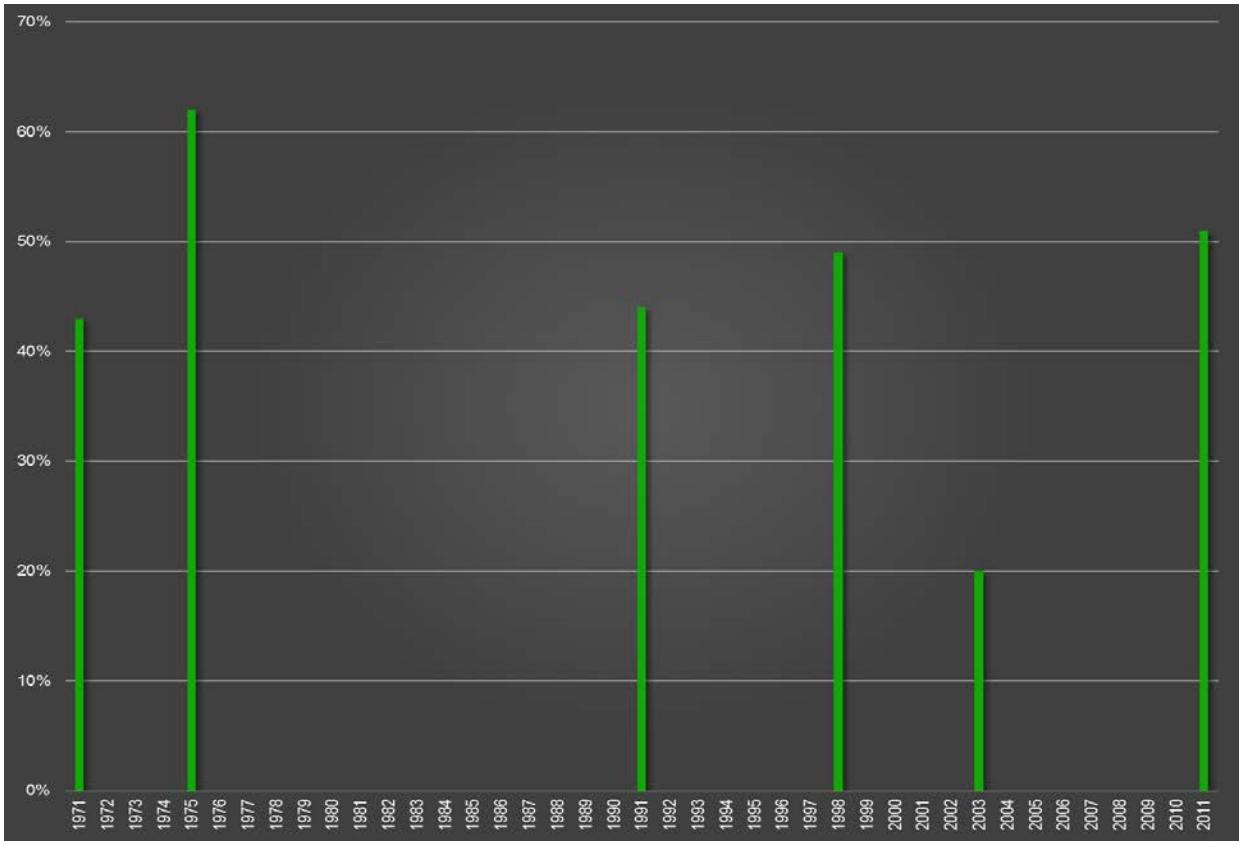
Source: New Jersey Department of State, Election Information and Results Archive.
http://www.njelections.org/election-information-archive.html. (Aggregated all county data).

GOVERNANCE

8.1.3 Informed Electorate

The percentage of voters who are aware of the party controlling the NJ State Legislature has varied over time, with no clear trend.

Figure 8.1.3.1 Percentage aware of party controlling New Jersey Legislature



Source: Monmouth University Poll, Q8. https://www.monmouth.edu/polling-institute/documents/monmouthpoll_nj_101811.pdf/

8.1.4 Inclusive Decision-Making Bodies

No statewide data are readily available on the composition of all elected and appointed governing bodies by gender, race, ethnicity or socioeconomic status.

Outside of elected representatives (see 8.2), our governing system relies on many boards, commissions, and advisory bodies that wield significant influence at the municipal, county and state level.

8.1.5 Political Mobilization

No statewide data provide a comprehensive account of how actively members of the public contact politicians, attend and speak at planning meetings and political hearings, act as part of political or issue advocacy groups, or otherwise mobilize politically to promote their interests and values.

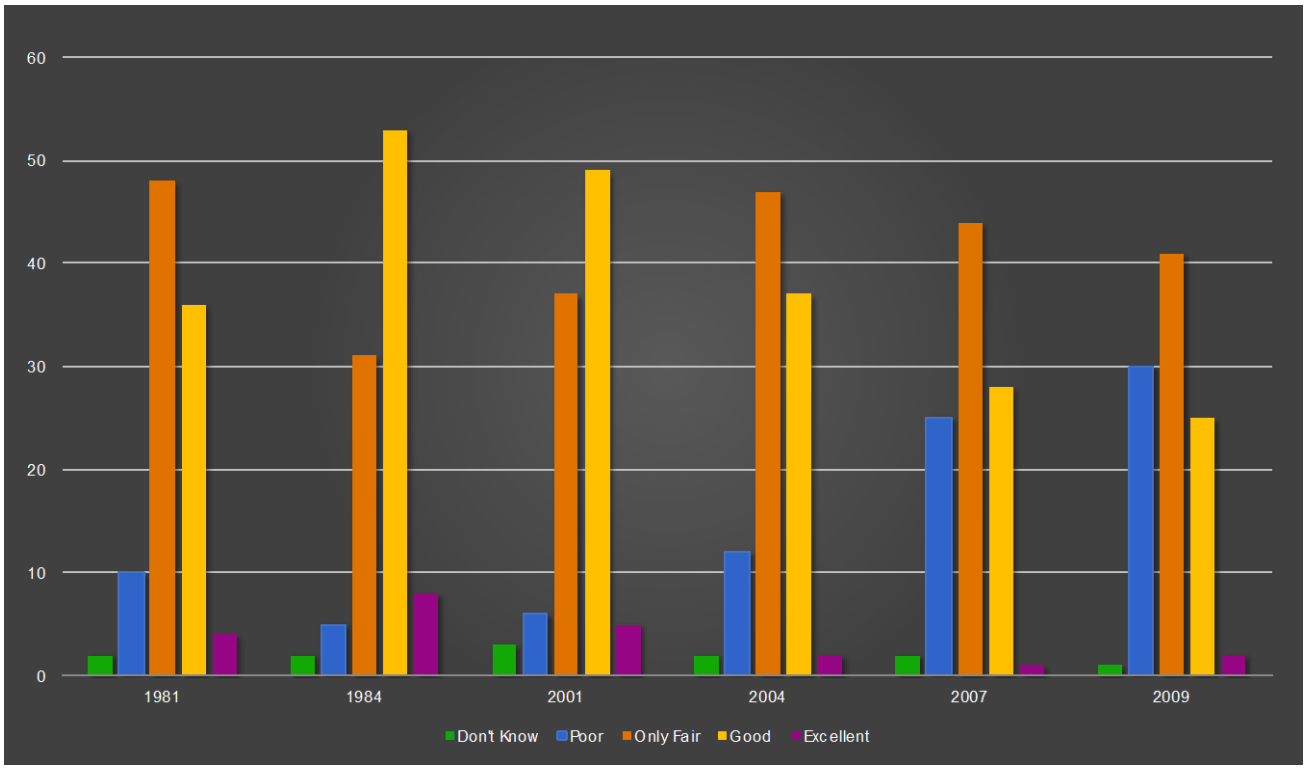
GOVERNANCE

2. Elected representatives are accountable and transparent in their decision-making and promote the welfare of all their constituents. The composition of elected bodies generally reflects the racial, ethnic and gender make-up of the electorate.

8.2.1 Voter Approval

Voter approval of the NJ State Legislature has declined steadily since 2001.

Figure 8.2.1.1 Perception of Quality of NJ Government



Source: Monmouth Universtiy Gannett New Jersey Poll Q1. https://www.monmouth.edu/polling-institute/documents/monmouthpoll_nj_101811.pdf/

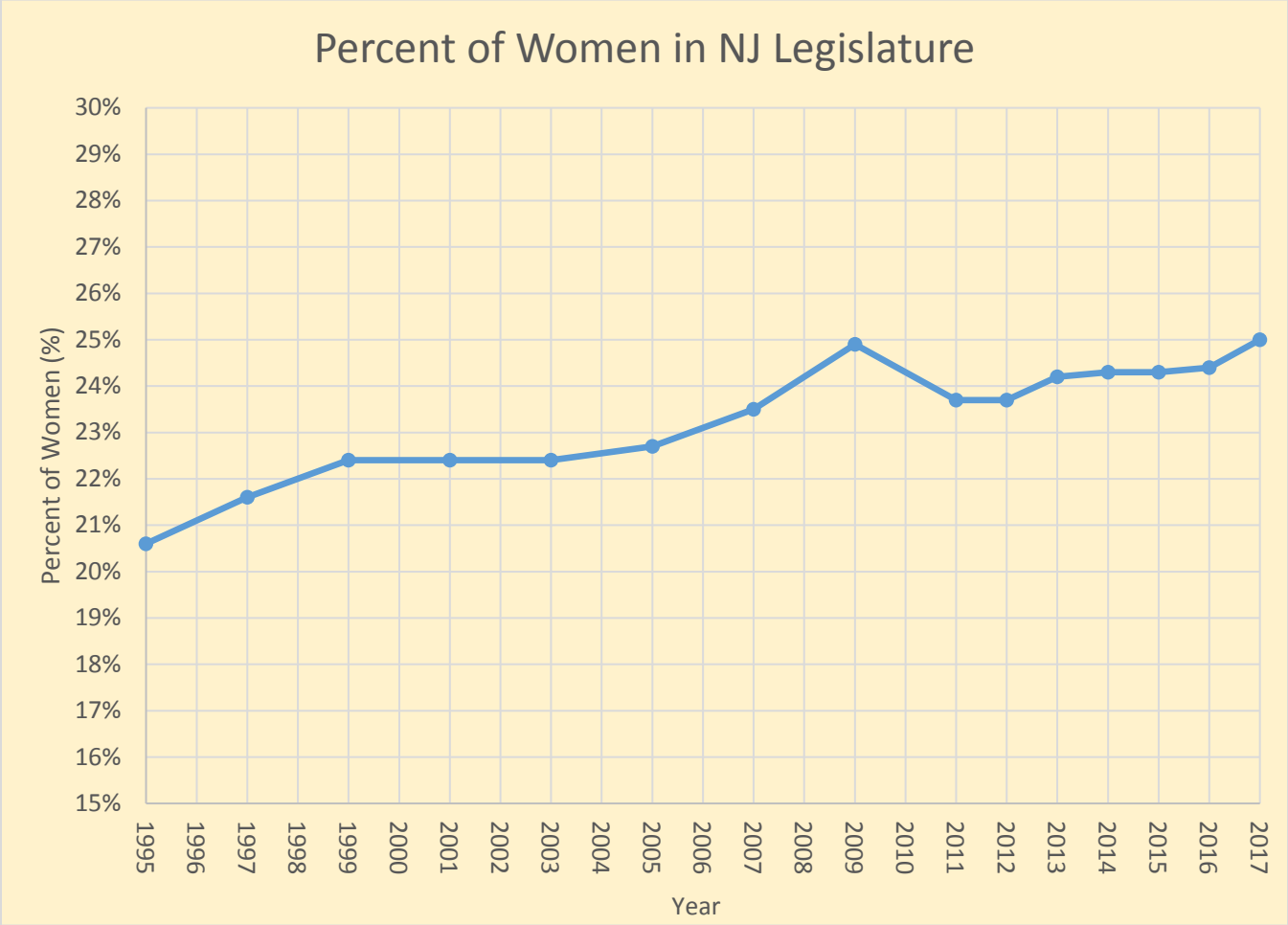
8.2.2 Representativeness of Legislature

While still short of equality, the gender composition of the State Legislature has improved. Data on the racial and ethnic composition of the Legislature over time are not readily available.

Data are available for women serving in the NJ State Legislature, as shown in Figure 8.2.2.1. There has been significant recent improvement, however the level remains well below 50%. No comprehensive data are publicly available for the representation of blacks and Latinos in the Legislature.

Figure 8.2.2.1 Women in NJ Legislature

GOVERNANCE



Source: NCL: National Conference of State Legislatures http://www.ncsl.org/legislators-staff/legislators/womens-legislative-network/women-in-state-legislatures-for-2018.aspx

?	**8.2.3 Broad-Based Campaign Financing** Data are not readily available to assess trends in the degree to which political campaigns in New Jersey are broadly and transparently funded.

	3. Government institutions justly, consistently and efficiently provide services, carry out regulation and enforcement, provide timely, accurate and relevant information, act upon citizen input, and redress grievances.

?	**8.3.1 Government Effectiveness and Efficiency** There are no readily available statewide measures, or even accepted definitions, of the effectiveness and efficiency of government in New Jersey.

ECONOMY

Dimension 9: Economy

Goal

New Jersey's economy provides a stable or rising standard of living along with economic opportunity and social mobility for all. New Jersey's business sector is dynamic, innovative, competitive, employs an expanding workforce, and minimizes its environmental impacts.

1. Businesses produce goods and services in a manner that makes **efficient use of natural resources**, maximizes reuse of materials, and minimizes waste and pollution.

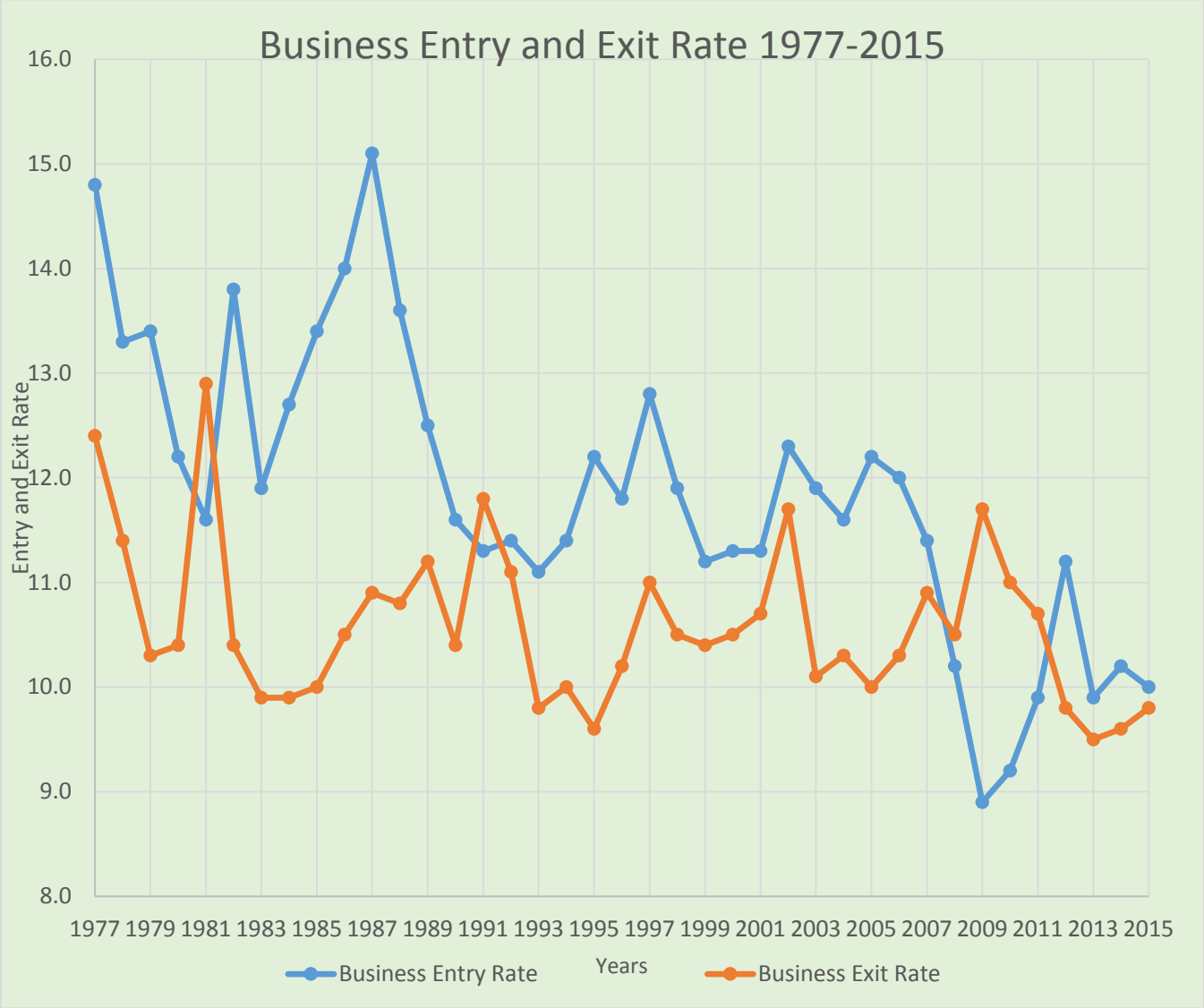
9.1.1 Resource Consumption and Waste per Dollar
Currently there is no readily available summary measure that shows how many resources the economy consumes to produce a dollar. However, we can see the relationship by examining our economic performance against the performance of the Natural Capital, Energy and Waste indicators.

2. **The business sector is robust**, with fair competition and low barriers to entry in the market for new ventures and new ideas. Private and public investment is made into research and development at levels sufficient to foster innovation. The business sector invests in building the skills and productivity of the workforce.

9.2.1 Business Starts and Failures
Over the past 15 years, the rate of both new businesses starts and failures has declined, suggesting a drop in the overall dynamism and vigor of the economy.

ECONOMY

Figure 9.2.1.1 Entry/Exit rate for business establishments



Source: Census Bureau https://www.census.gov/ces/pdf/BDS_StatBrief4_Exit_Survival.pdf

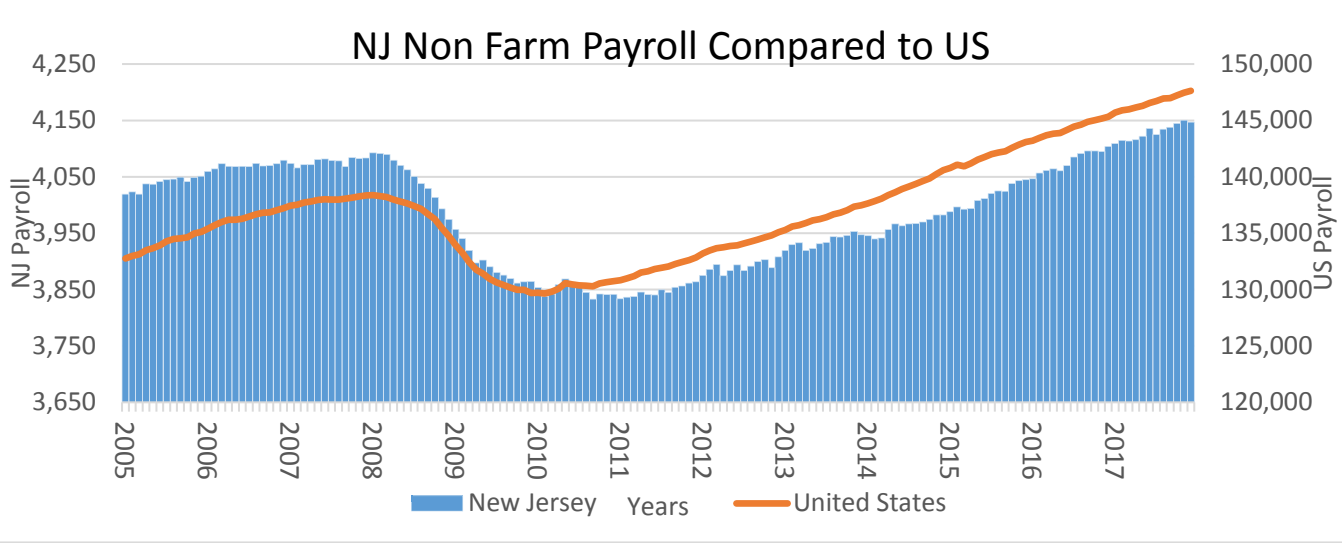
ECONOMY

9.2.2 Payrolls

Non-farm payrolls are increasing as NJ's economy recovers from recession. However, the increase is slower for NJ than for the U.S. economy as a whole.

The figure below comparing the total non-farm payroll for the state to the US as a whole illustrates how "the New Jersey economy has underperformed the national economy during the current economic expansion" (Wooster, J. (Chief Economist). 2015. *Economic Snapshots, New Jersey: Post-Recession Payroll Employment Trends by Sector (April 2015)*, p. 2). Total employment for state and the nation both peaked in 2008, then dropped sharply during the recession. However, whereas the broader national economy recovered all the jobs lost by April 2014, it took three more years for lagging recovery in NJ had to do so. It remains to be seen if this points to structural weaknesses in the NJ economy that might undermine sustainable livelihoods for state workers.

Figure 9.2.2.1 Non-Farm Payroll: NJ and US



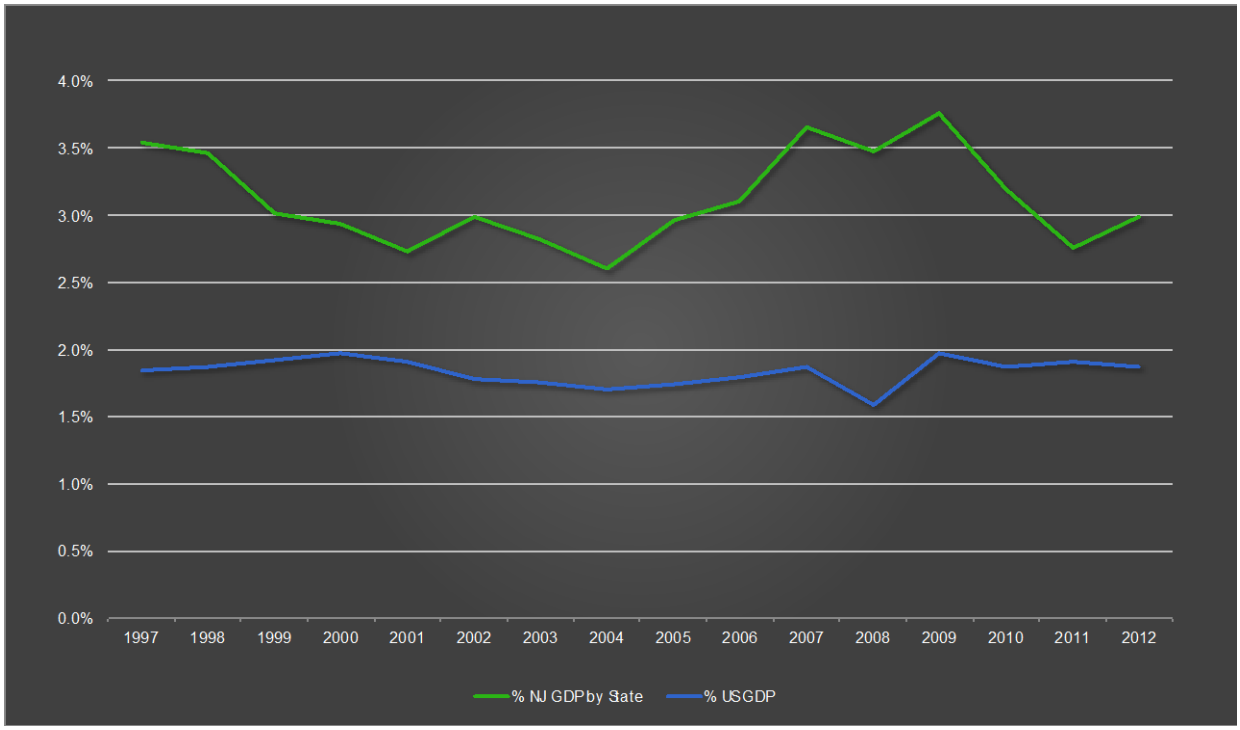
Source: Bureau of Labor Statistics https://www.bls.gov/sae/data.htm

9.2.3 Investment in Innovation and Research

The percentage of our Gross State Product that is invested into research and development by NJ businesses, government, and academia has oscillated over time with no clear trend. Coming out of the recent recession, New Jersey's rate began to slip in relation to the U.S. average.

ECONOMY

Figure 9.2.3.1 Investment in R&D as % of GDP: NJ vs. U.S.



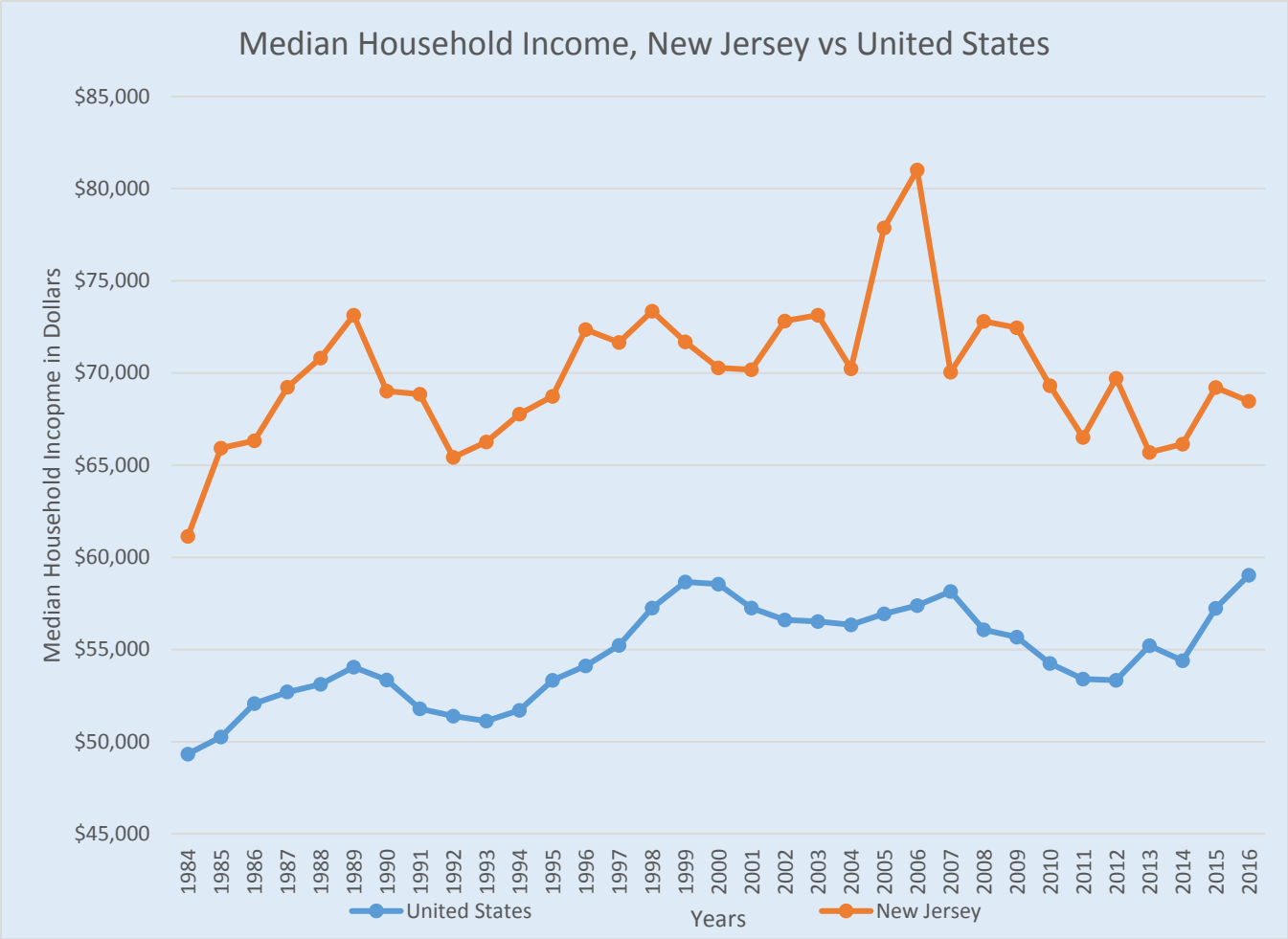
Source: http://lwd.dol.state.nj.us/labor/lpa/industry/gsp/gsp_index.html
Source: National Science Foundation, National Center for Science and Engineering Statistics, Business R&D and Innovation Survey, 1997-2012; http://www.nsf.gov/statistics/srvyindustry/about/brdis/

	3. Household **income is adequate to meet needs** and keeps pace with the basic cost of living; poverty is significantly reduced as a result.

	9.3.1 Median Income The median income of New Jersey's households has fluctuated since 2011 and remains well above the US average.

ECONOMY

Figure 9.3.1.1 Median Income, New Jersey vs. United States



Source: U.S. Census, Median Household Income By State- Single Year Estimates. https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-income-households.html

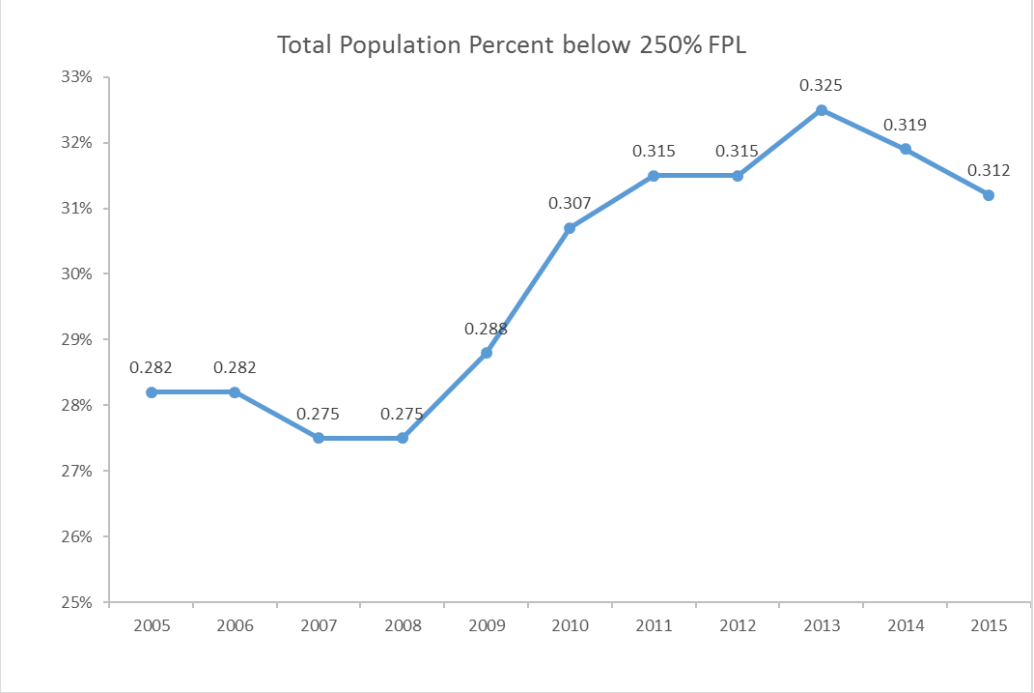
9.3.2 Poverty

After steadily increasing since 2008, the percentage of households living below the Real Cost of Living (an alternative measure of income calculated as 250% of the Federal Poverty Line) began to dip in 2013.

ECONOMY

Figure 9.3.2.1 Percentage of Population Below 250% of the Federal Poverty Line

People begin to suffer significant deprivation when their income is well above the official Federal Poverty Level. For New Jersey, where the cost of living is among the highest in the nation, the state-specific "Real Cost of Living" (RCL) has been calculated at 250% of the FPL on the basis of a widely used "self-sufficiency standard." For a given household composition, this figure includes only basic needs in housing, food, health care, transportation, child care, taxes and other essentials, with no savings or luxuries (Legal Services of New Jersey. 2014. *What is Poverty?*).



Source: American Community Survey, PUMS Data Analysis, New Jersey 2005 to 2016

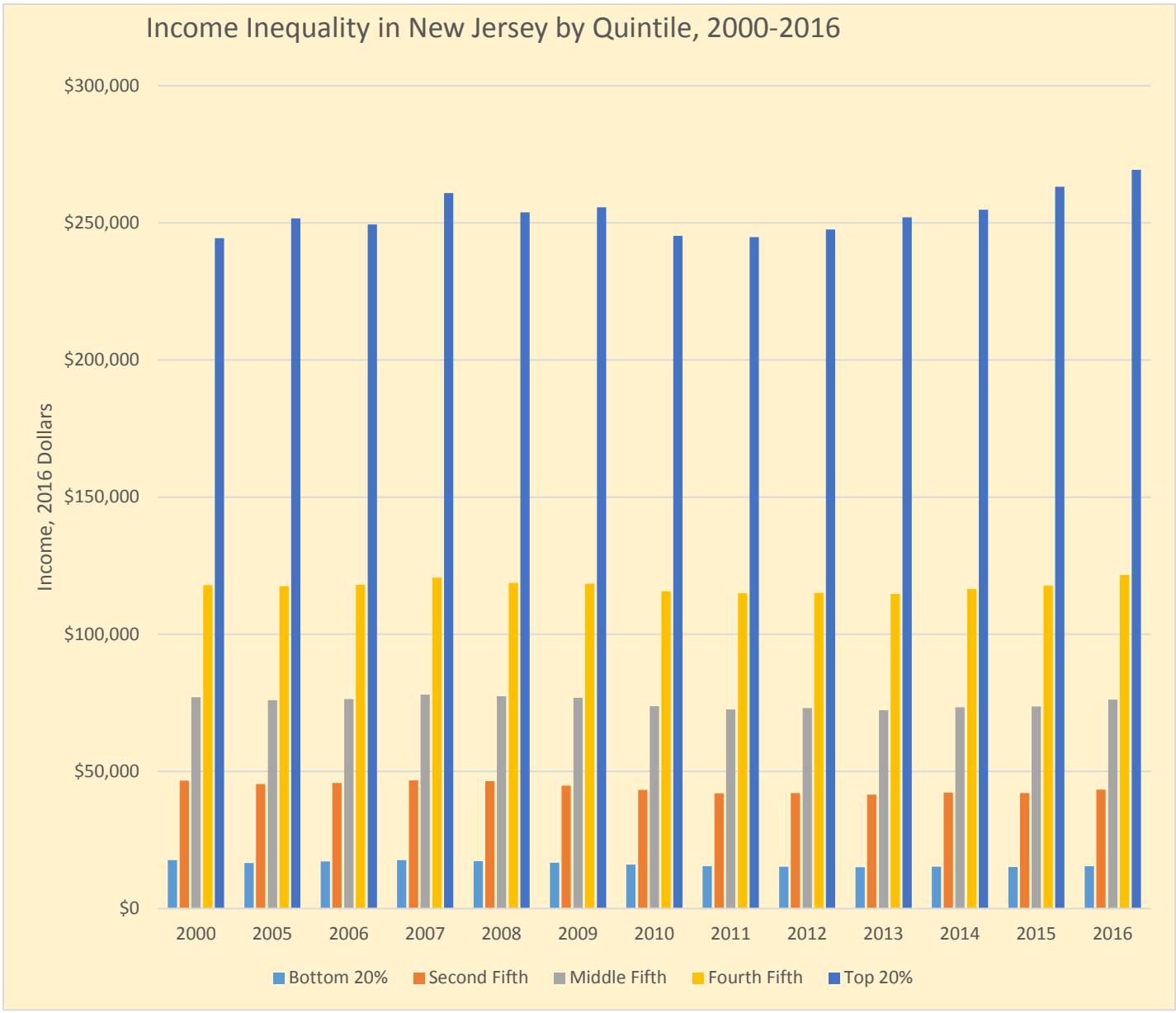
https://talkpoverty.org/state-year-report/new-jersey-2017-report/, https://www.lsnj.org/NJPovertybyArea.aspx#/geography/state

	4. Wealth and income inequality does not reach a level that undermines economic opportunity, social mobility and democratic participation.

	9.4.1 Distribution of Income The proportion of total take-home pay that goes to the top 20% of earners has continued to increase during and after the recession.. At the same time, the share of the pie that goes to the bottom 20% continues to fall.

ECONOMY

Figure 9.4.1.1 Income Inequality in New Jersey by Quintile, 2000-2014



Source: American Community Survey data 2016 1-year estimates
https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_B19081&prodType=table

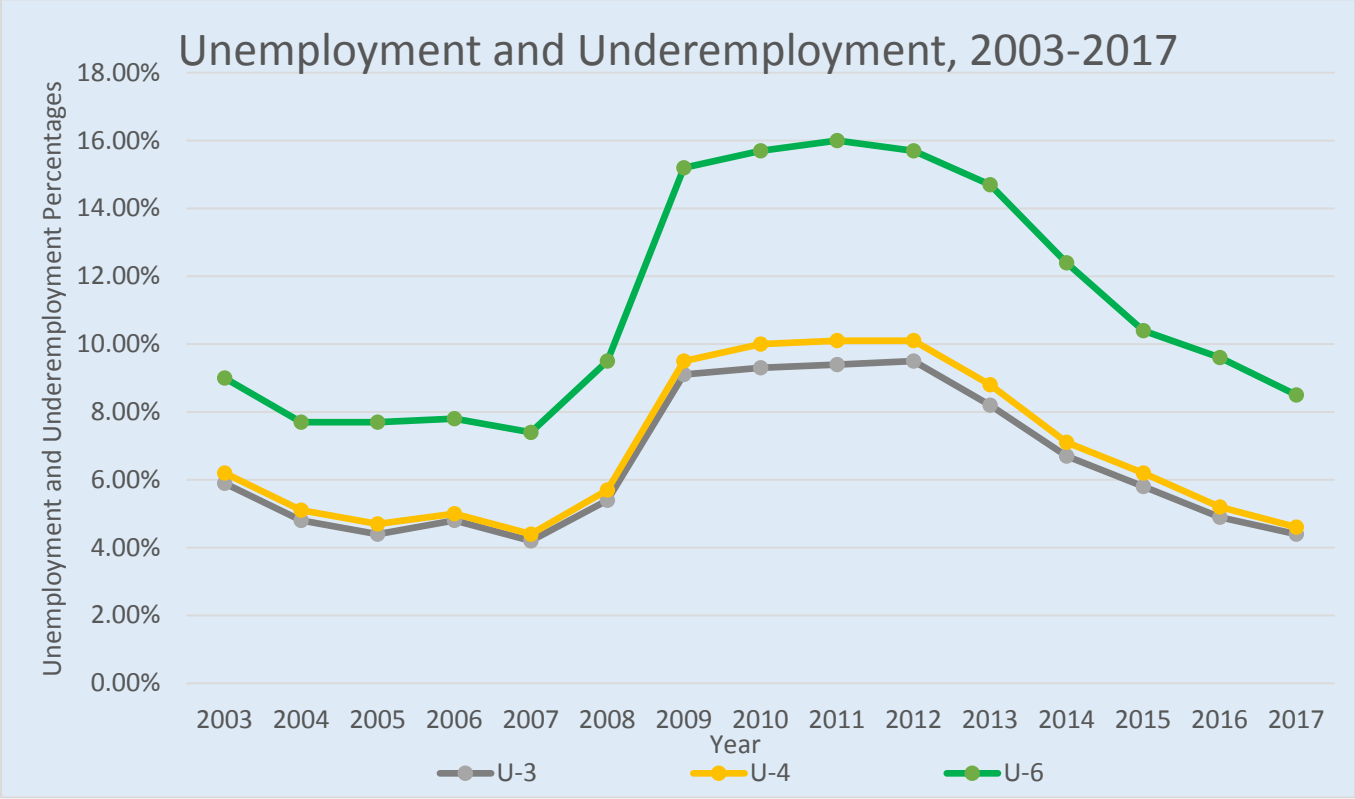
ECONOMY

5. The NJ economy supplies **diverse**, **quality jobs** and livelihood opportunities sufficient to support families with a standard of living adequate to meet household needs, while allowing for leisure time.

9.5.1 Unemployment & Underemployment

The official unemployment rate finally recovered to near pre-recession levels. Workers who had given up looking for work during the recession have lately been rejoining the labor force and finding jobs. Notably, the portion of workers that are underemployed (i.e., working part time jobs while wishing to work full-time) remains much higher than before the recession.

Figure 9.5.1.1 Alternative Measures of Labor Underutilization, 2003-2017



Legend

U-3, total unemployed, as a percent of the civilian labor force (this is the definition used for the **official unemployment rate);**
U-4, total unemployed plus **discouraged workers**, as a percent of the civilian labor force plus discouraged workers; and
U-6, total unemployed, plus all marginally attached workers, **plus total employed part time for economic reasons**, as a percent of the civilian labor force plus all marginally attached workers

Source: Bur
https://www.bls.gov/news.release/srgune.nr0.htm

ECONOMY

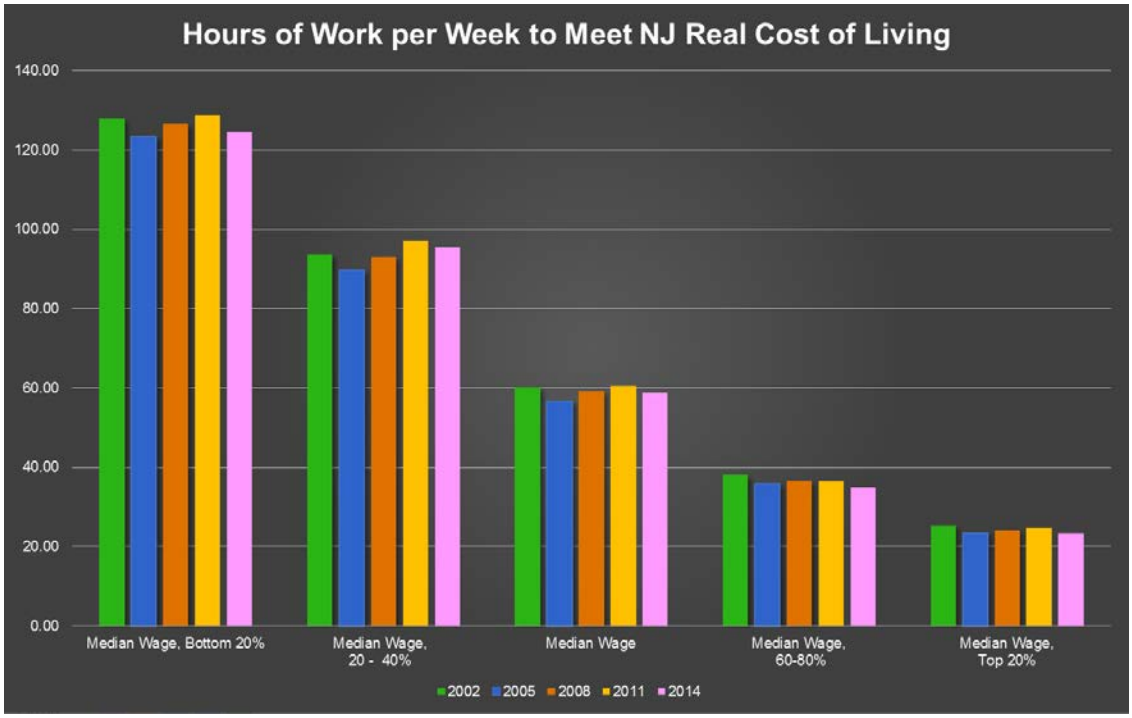
As a general practice, discouraged workers are not considered part of the labor force, and are thus not counted in most official unemployment rates.

9.5.2 Hours Worked to Make a Living

The number of hours that a person must work to meet the basic living expenses has recently declined. For workers whose wages are in the bottom 40%, however, even two full-time jobs are insufficient to meet the basic needs of the household.

As the graph below illustrates, two adults heading a two-child household, each of whom brought home wages at the middle of the lowest 20% wage-earning bracket in New Jersey, would have to work a total of over 120 hours a week just to meet the Real Cost of Living (see 9.3.2.1 above). Even two parents earning the median wage would have to work well over forty hours a week apiece. From 2002 to 2013 (even after the recession ended), the number of hours to "break-even" had been rising for all but the top 20% of earners. In 2014, there was a slight improvement for all groups.

Figure 9.5.2.1 Hours of Work per Week to Meet NJ Real Cost of Living



Source: Legal Services of New Jersey May 2014 edition of The Real Cost of Living in New Jersey http://poverty.lsnj.org/Pages/RCL2013.pdf

HOUSING

Dimension 10: Housing

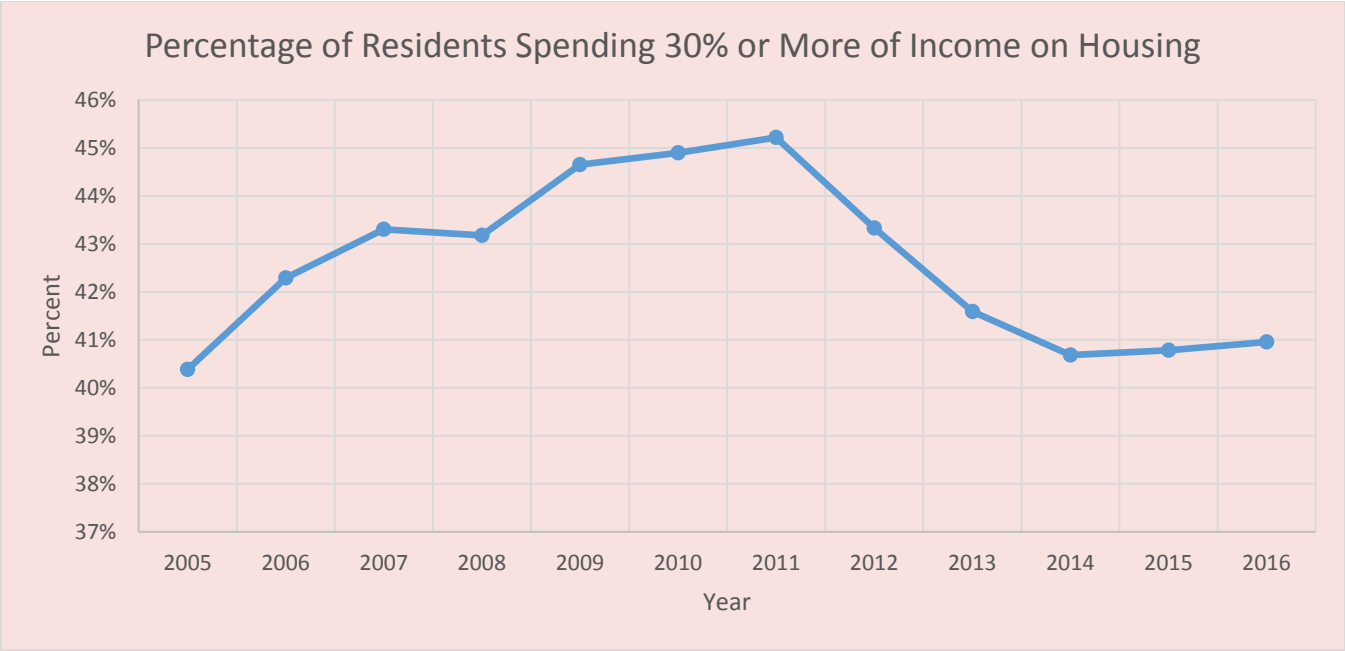
Goal

We envision that all New Jerseyans should have a choice among a mix of safe, affordable, and high-quality housing options, in locations and built according to standards that will be resilient in the face of climate change.

1. New Jersey residents have **affordable housing** choices.

10.1.1 Lack of Affordable Housing
After dropping since 2011, the number of New Jersey residents spending more than 30% of their income on housing has recently begun to inch upwards.

Figure 10.1.1.1 Percentage of Residents Spending 30% or More of Income on Housing



Source: TENURE BY HOUSING COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME IN THE PAST 12 MONTHS Universe: Occupied housing units (Table B25106) http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_11_1YR_B25106&prodType=table#none

2. All New Jerseyans have housing choices that provide a **safe and healthy environment**.

10.2.1 Unsafe and Unhealthy Housing
In 2009, 2.9% of owners and 10.2% of renters in the North Jersey region lived in housing that had moderate or severe deficiencies.

HOUSING

The Department of Housing and Urban Development collects data for selected metropolitan areas. These data are for the Northern New Jersey metropolitan area only, which has the majority of urban housing stock. While, this analysis could be extended to cover parts of southern New Jersey by getting data from the Philadelphia metropolitan area, such information is not available for rural parts of the state.

Figure 10.2.1.1 North Jersey Housing Deficiencies

	2009
Owners	2.9%
Renters	10.2%

Source: American Housing Survey for Selected Metropolitan Areas: 2009. (2011). US Department of Housing and Urban Development and US department of Commerce.

	3. All New Jersey **housing is resilient** in terms of design and location to the impacts of climate change.

B	**10.3.1 Housing Threatened by Sea Level Rise** In 2013, there were approximately 30,000 residential parcels predicted to become newly exposed to coastal flooding risks (sea level rise and storm surge) by the year 2050. The value of those parcels was assessed at $9.4 billion at that time.

This analysis is detailed in a report entitled "NJ Coastal Flood Exposure Assessment" prepared in 2014 by R. Lathrop et al. of the Center for Remote Sensing and Spatial Analysis of Rutgers University and posted on the NJAdapt web site (http://www.njadapt.org/about.html; direct link (accessed June 2015) http://nebula.wsimg.com/371031cafb163d05b7f380c712c8ed54?AccessKeyId=ACB457C88AE224CE0A00&disposition=0&alloworigin=1).

This report used the best available information to model the exposure of coastal properties to flooding at mean high tide (Federal Emergency Management Authority) and/or storm surge (SLOSH model, National Weather Service) along the entire coastline of New Jersey, excepting only the Delaware River basin portions. (Note that the excluded area means the values derived are an underestimate of damage statewide). The number of parcels and estimated Net Taxable Value (assessed 2013 value of land + structure(s)) exposed to flooding was determined from a GIS (Geographic Information System) in which the water-level data are overlain on Mod-IV tax data from the NJ Department of Treasury. If a parcel was completely or partially exposed to flooding the parcel was counted as affected and the entire value of the parcel was included.

The projections for 2050 add to the baseline year (2000) an expert consensus projection of sea level rise, which ranges from 1.0 to 2.4 feet for the three categories of exposure employed in the analysis. Our housing resilience indicator is the number of “newly exposed” parcels, i.e., difference between the number of parcels affected in 2050 and the number affected in the baseline year.

This assessment is again an underestimate as it does not take into account population growth or new development. Similarly, since the behavior of the housing market would introduce even more variability, the assessed property values are left constant and in 2013 dollars. Given the uncertainties involved in the projections, the values derived were rounded to the nearest 1,000 and $100 million.

Regardless of the wide margins, the value of the indicator (30,000 parcels) represents an increase of over 8% in only 15 years and indicates a mounting level of vulnerability (or loss of resilience) for NJ coastal housing. (The associated property values should be considered supplementary to the number of parcels, the primary indicator. While the number of parcels is a physical measure directly related to exposure, several additional assumptions are required to impute property values.)

This indicator will track the degree to which housing decisions are made which increase, or degrade, coastal resilience. Adaptive, risk-minimizing actions at the global scale leading to aggressively rapid reductions in GHG emissions would eventually move the

needle towards resilience/sustainability, but over a longer time scale than 15 years. At the local level, adaptive, risk-minimizing behaviors would include elevating houses and relocation away from flood risk. In order for the 'housing resilience indicator' to reflect steps to increase resilience in place, however, it would be necessary to incorporate data on home improvements (e.g., building permits). Other empirical data that would improve this indicator would include periodically re-calculating property values based on updated property assessments.

The topic of coastal exposure and resilience is of much interest in a rapidly evolving field, so there are sure to be opportunities in the near future to further improve upon this indicator by using more sophisticated modeling of flood and storm risk.

Figure 10.3.1.1 Housing Threatened by Sea Level Rise

Residential parcels predicted to be newly exposed to coastal flooding and storm surge by 2050 30,368
Assessed Property Value (2013) $9.3 Billion

TRANSPORTATION

Dimension 11: Transportation

Goal

We want a New Jersey transportation system that efficiently moves people and goods where they need to go at an affordable cost, is accessible to all, and that imposes only minimal impact on the environment. The system must be properly maintained, and it should be reliable, as well as resilient to current and anticipated threats such as climate change.

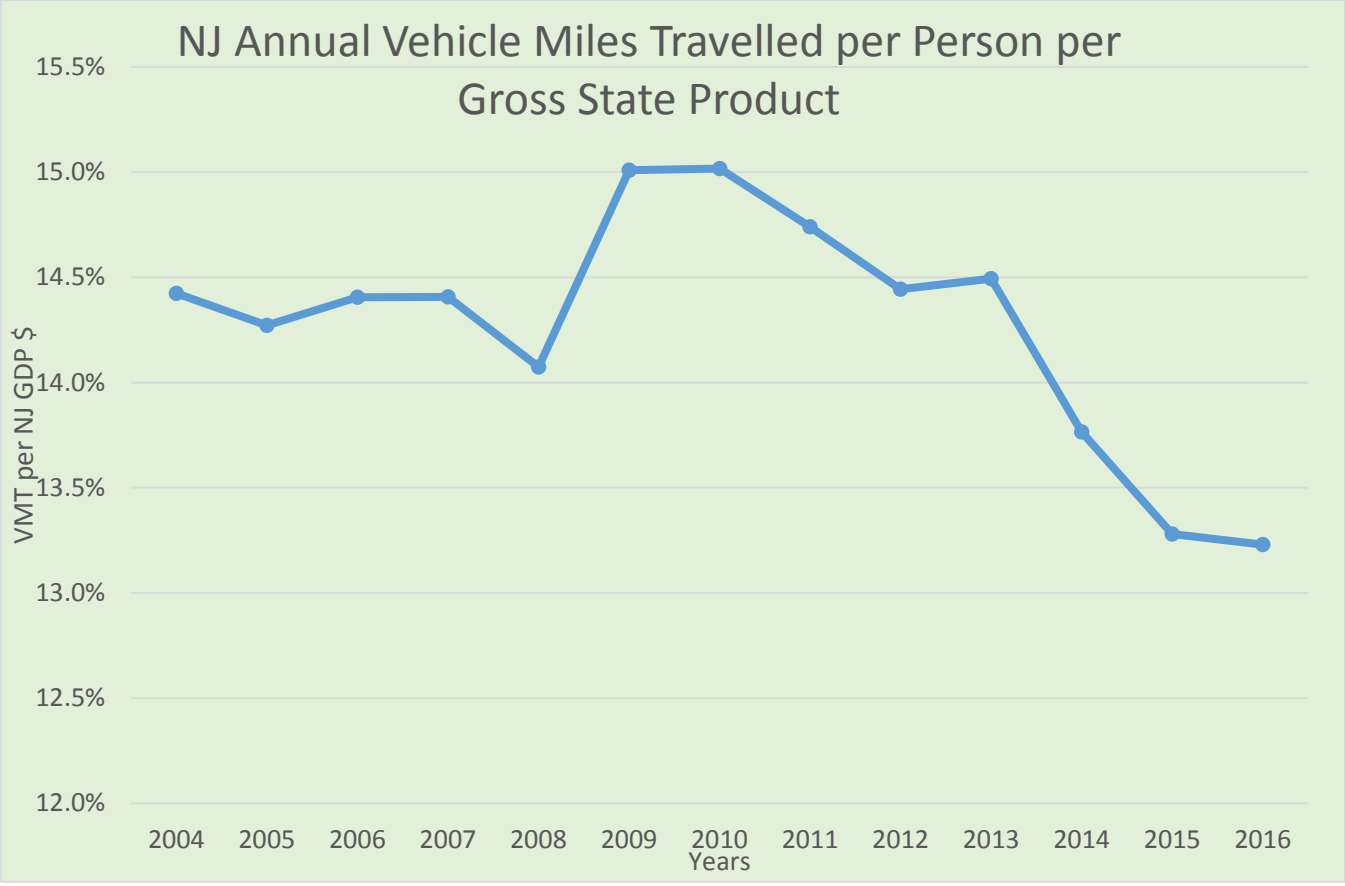
1. The transportation system enables the **efficient movement** of people and of the goods necessary to support a robust regional economy.

11.1.1 Vehicles Miles Traveled Per Dollar of GSP

The number of miles New Jerseyans drive for each dollar created in the economy (Gross State Product) has declined significantly since 2013.

Vehicle Miles Travelled (VMT) per person annually is a proxy for the efficiency of the transportation system. The more miles we have to drive to accomplish daily tasks, the less efficient and more costly the system in economic, environmental and personal terms. Because VMT growth tracks population growth and economic performance (generally declining during recession) it is presented here in Figure 11.1.1.1 normalized for Gross State Product (GSP) in chained 2009 dollars.

Figure 11.1.1.1 Annual Vehicle Miles Travelled per Person per Gross State Product



Source of VMT data: NJ Department of Transportation, http://www.state.nj.us/transportation/refdata/roadway/pdf/hpms2016/prmvmt_16.pdf

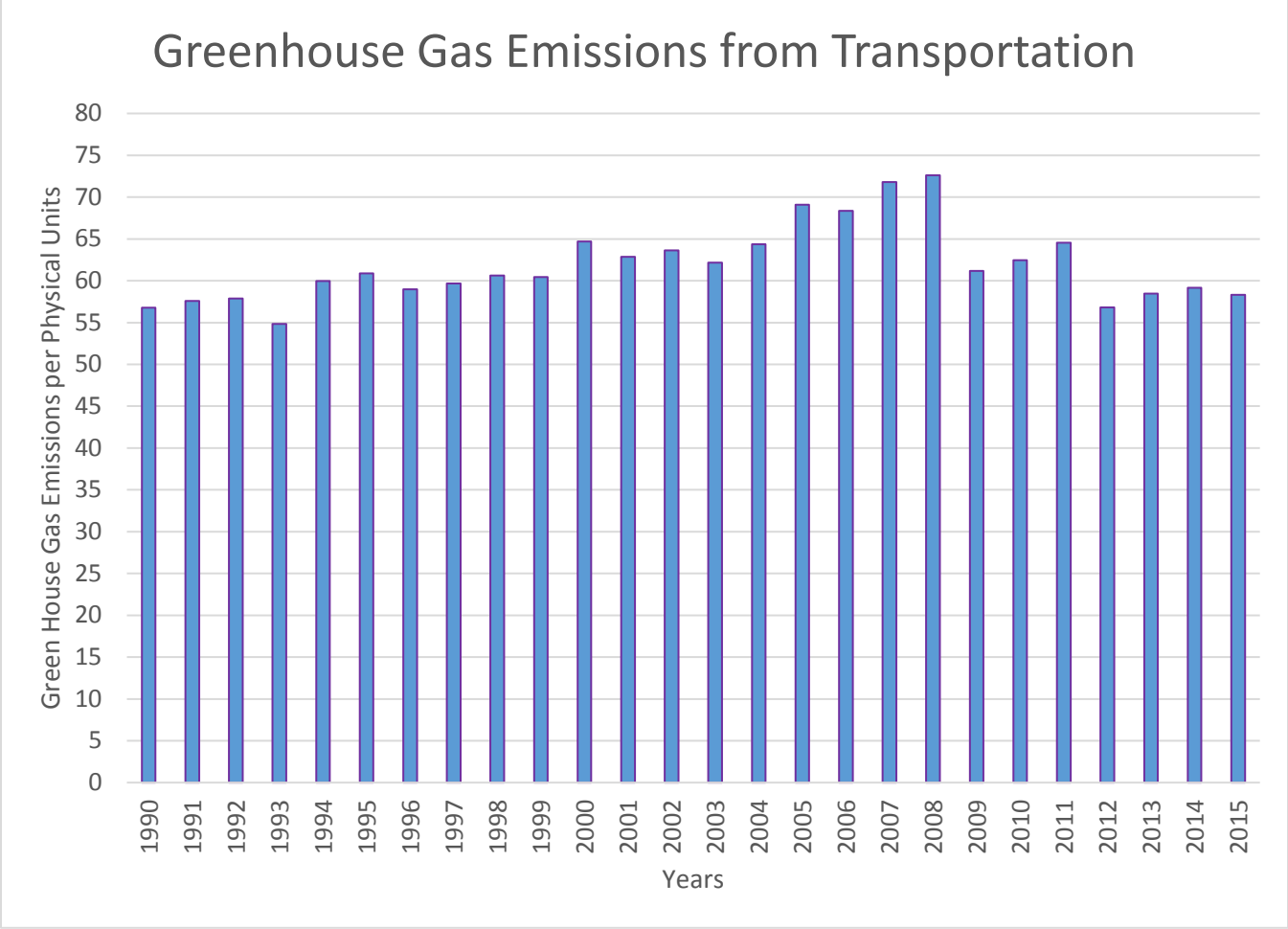
TRANSPORTATION

Economic data (GSP): https://fred.stlouisfed.org/series/NJNGSP

	2. Environmental impacts are minimized in the planning and construction of transportation infrastructure.

	11.2.1 Greenhouse Gas Emissions from Transportation Annual GHG emissions produced by the transportation sector steadily rose from 1990-2007, but have returned to near 1990 levels in the past few years.

Figure 11.2.1.1 Greenhouse Gas Emissions from Transportation



Source: EIA, State Energy Data System (SEDS) 1960-2016, New Jersey. https://www.eia.gov/state/seds/sep_use/total/pdf/use_NJ.pdf
Source: US EPA State Inventory and Projection Tool https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool

	3. Transportation infrastructure is maintained to a functional and structurally sound standard.

TRANSPORTATION

11.3.1 Transportation Infrastructure Conditions
Estimated cost of covering short-term critical transportation infrastructure needs:
$21.3 billion dollars (in 2013)

Source: Council of New Jersey Grantmakers. April 2013. Facing our Future: Infrastructure Investments Necessary for Economic Success. https://www.cnjg.org/facing-our-future

4. Transportation infrastructure is reliable and resilient to the anticipated impacts of climate change such as extreme heat, high winds, and worsening coastal and inland flooding.

11.4.1 Road Exposure to Coastal Flooding
The miles of major roads exposed to coastal flooding are expected to increase more than 7% by 2050, according to current sea level rise predictions. The cost to bring the entire transportation system up to a standard resilient to climate change is unknown.

Like the housing resilience indicator (see discussion under 10.3.1.1), this indicator is drawn from the report entitled "NJ Coastal Flood Exposure Assessment" prepared in 2014 by R. Lathrop *et al*. of the Center for Remote Sensing and Spatial Analysis of Rutgers University and posted on the NJAdapt web site (http://www.njadapt.org/about.html; direct link: http://nebula.wsimg.com/371031cafb163d05b7f380c712c8ed54?AccessKeyId=ACB457C88AE224CE0A00&disposition=0&alloworigin=1 (accessed June 2015).

This model projects that 724 miles of roads in New Jersey's coastal counties will be exposed to storm surge and tidal flooding in 2050, representing a more than 7% increase due to projected sea level rise. The fact that 641 miles of these are needed for evacuation routes is a cause of additional concern.

This value is but a small fraction of the total effort and cost required to make our entire transportation infrastructure resilient – including redesign of the road network, mass transit, measures to make biking and walking more safe, efficient and appealing. The complexity and political nature of the decisions required to enact such major change make it difficult to construct a meaningful and objective comprehensive transportation resilience indicator of this sort. A political process of dialogue accompanied by ongoing planning exercises may over time move towards a consensus on priorities that may make it possible to develop such an indicator.

Figure 11.4.1.1 CO_2 Road Exposure to Coastal Flooding

Increase in miles of major roads exposed to coastal flooding expected to increase 7% by 2050

5. Transportation is accessible and affordable to all segments of society, including low-income households.

11.5.1 Accessibility of Transit
Although data exist to calculate the percent of urban and suburban households living within 0.5 mi of a regular transit stop, this type of analysis has not yet been done statewide.

11.5.2 Transportation Affordability
There are no readily available statewide data and analysis showing the percent of households spending more than 15% of income on transportation.

DEVELOPMENT PATTERNS

Dimension 12: Development Patterns

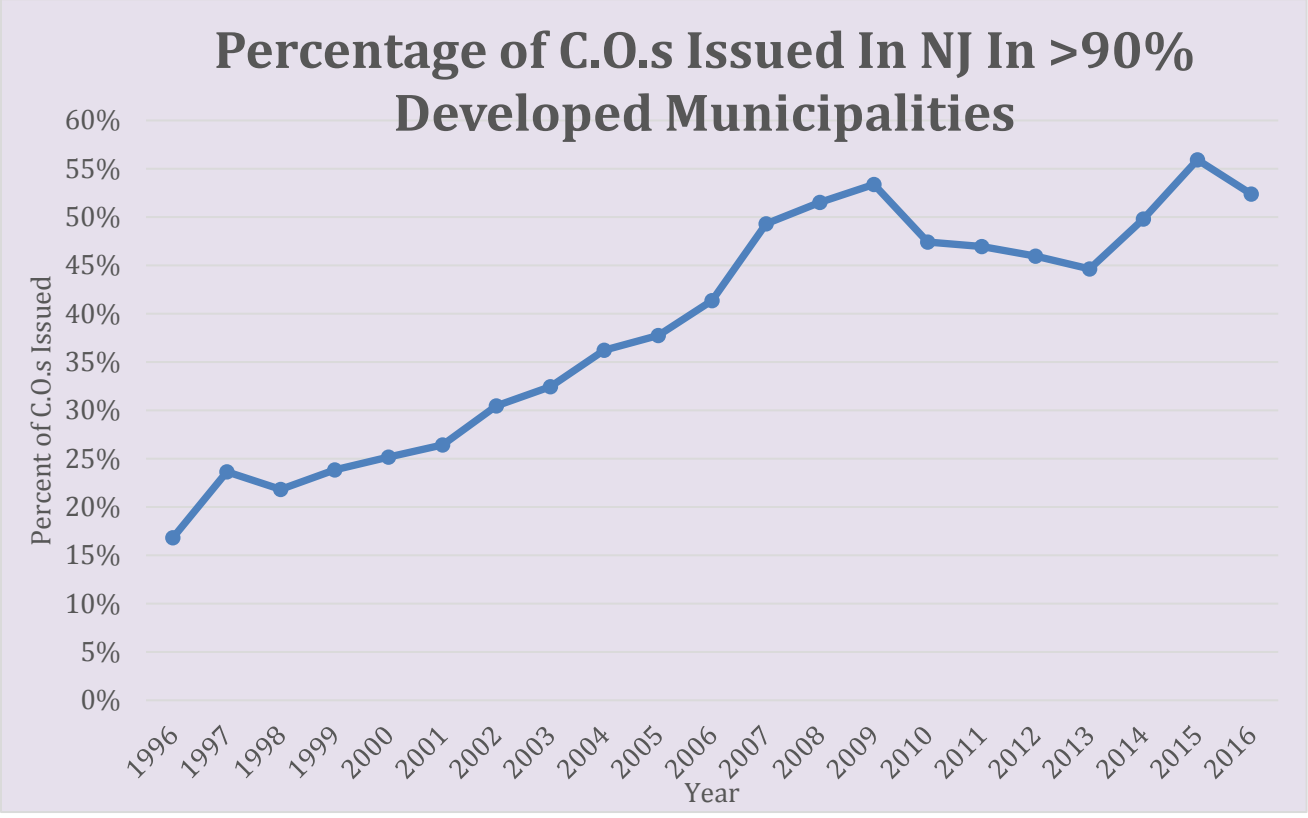
Goal

We envision a New Jersey where open space is protected and publically accessible. Existing developed areas and infrastructure are optimized and people, businesses and infrastructure are located in places that are safe and resilient to the impacts of climate change.

	1. Existing developed areas and infrastructure absorb the majority of development; underutilized spaces such as brownfields are reclaimed.

	12.1.1 New Development in Existing Built Areas The portion of new housing units in NJ issued certificates of occupancy in areas that are already mostly developed (>90% built out) has increased significantly, but the trend recently showed signs of reversal.

Figure 12.1.1.1 Percentage of C.O.s Issued In NJ In >90% Developed Municipalities



Source: EIA, State Energy Data System (SEDS) 1960-2015, New Jersey. https://www.eia.gov/state/seds/sep_use/total/pdf/use_NJ.pdf

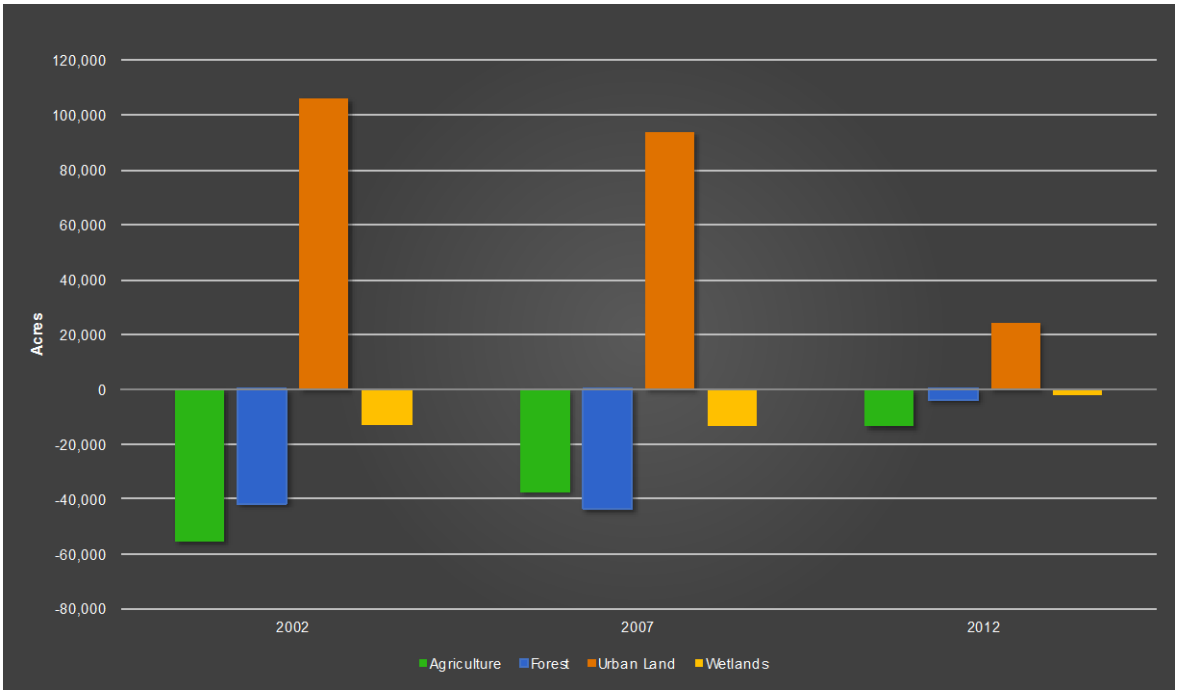
DEVELOPMENT PATTERNS

Open spaces, trees, and natural areas should be retained, restored, and/or created in and to protect biodiversity and ecosystems.

12.2.1 Conversion of Land from Open to Developed

A growing proportion of land in New Jersey is developed and urbanized relative to lands remaining as forests, wetlands, and farms.

Figure 12.2.1.1 New Jersey Land Use / Land Cover Change



Source: NJDEP, Bureau of Geographic Information Systems, Digital Downloads, Land Use/Land Cover Level I Data Analysis, 1995/97-2002 and 2007-2012. http://www.state.nj.us/dep/gis/lulc02statisticstables.htm and http://www.nj.gov/dep/gis/digidownload/metadata/lulc12/lulc12statisticstables.htm

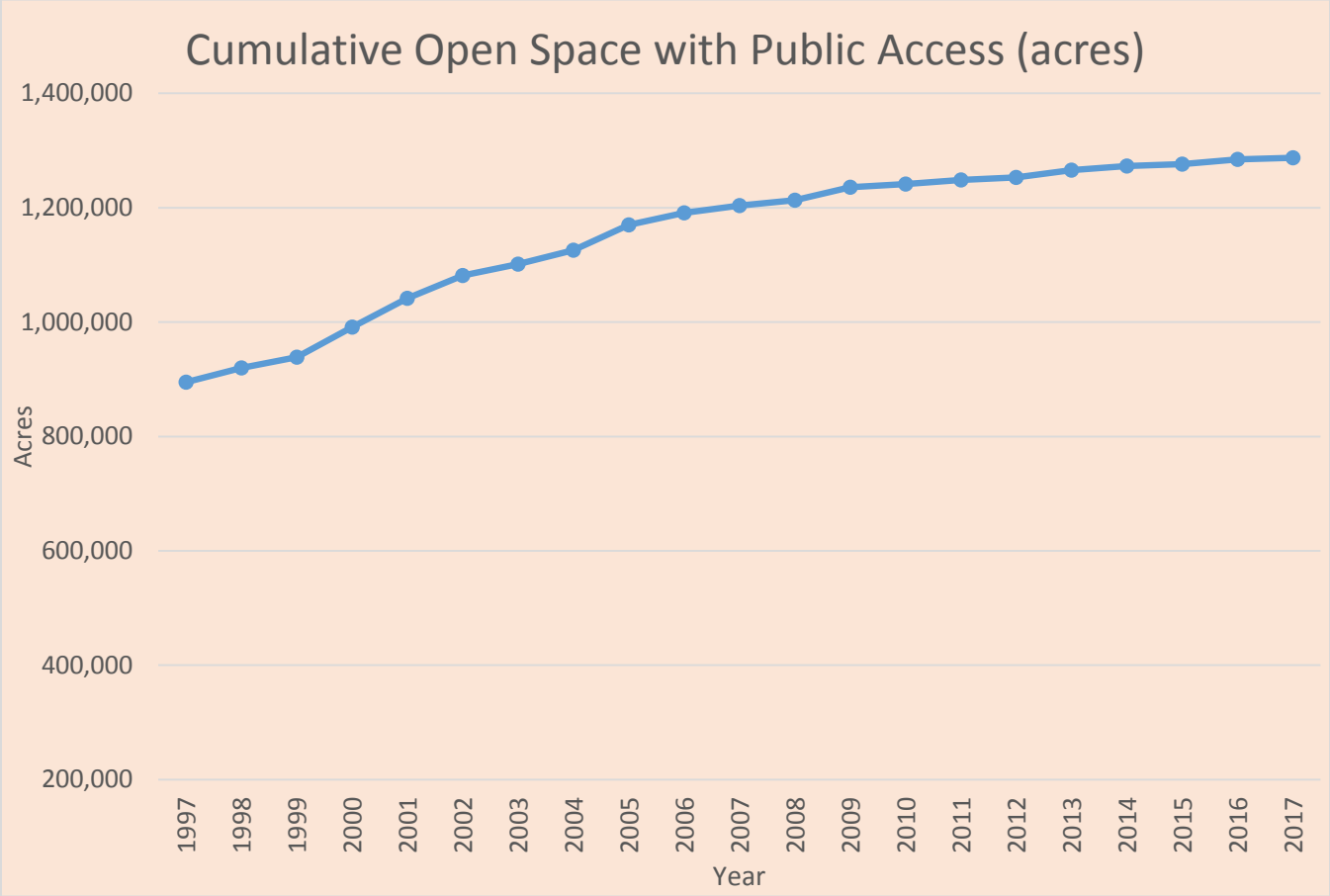
3. Access to open space, trees, and natural areas is provided to all New Jerseyans for recreation, and is integrated into neighborhoods and our daily lives. In developed areas, access to green space and recreational opportunities enhance the quality of life.

12.3.1 Preserved Open Public Space

The number of acres of land in recreation areas, parks, and open space that is permanently preserved and open to the public is increasing, although at a steadily diminishing rate as the amount of unprotected land remaining decreases.

DEVELOPMENT PATTERNS

Figure 12.3.1.1 Cumulative Open Space with Public Access (in Acres)



Source: Data provided by New Jersey Green Acres. https://www.nj.gov/dep/greenacres/openspace.html

12.3.2 Proximity to Open Space

As of 2013, 64% of the population of Northern New Jersey had good access to a park or public open space (defined as living within a half mile for urban dwellers and one mile for rural residents).

This GIS analysis has been done for a baseline year by the Regional Plan Association and presented in a background paper for the Together North Jersey project (**Freudenberg, R.** et al. September 2013. *Baseline Assessment Topic Report Land Use & Design* for *Together North Jersey Regional Plan for Sustainable Development*). The data on parks and open space are available for the analysis to be extended to Southern Jersey. It would be arguably appropriate to extend the radius for rural residents and/or parse the rural to urban spectrum in different ways.

DEVELOPMENT PATTERNS

Figure 12.3.2.1 Proximity to Open Space

In 2013, the percentage of the population in Northern New Jersey that has good access to a park or public open space was 64%.

12.3.3 Urban Tree Canopy

The portion of urban and community land in New Jersey with a tree canopy was 37.7% in 2001.

Data are periodically being collected as part of the Forest Inventory Analysis undertaken by the USDA Forest Service in partnership with state agencies (NJDEP in New Jersey). However, the intensive analysis required to derive a solid estimate of urban forest cover from the data means that there is a substantial time lag. Other sources are available, but it is not possible to display a trend since they are single data points (not time-series), collected using different methodologies.

Figure 12.3.3.1 Urban Tree Canopy

In 2001, the percentage of Urban and Community Land in New Jersey with a tree canopy was 37.7%.

4. Development is resilient to the impacts of climate change. The spatial arrangement of buildings, transportation networks, other infrastructure, and interstitial open space absorbs the impacts of climate change with minimal disruption.

12.4.1 Development at Risk due to Sea Level Rise

In 2013, there were approximately 32,000 residential, commercial and industrial properties predicted to become newly exposed to coastal flooding risks (sea level rise and storm surge) by the year 2050. Their property value was assessed at $11 billion at that time.

Like the housing resilience indicator (see discussion under 10.3.1.1), this indicator is drawn from the report entitled "NJ Coastal Flood Exposure Assessment" prepared in 2014 by R. Lathrop *et al.* of the Center for Remote Sensing and Spatial Analysis of Rutgers University and posted on the NJAdapt web site (http://www.njadapt.org/about.html; direct link (accessed June 2015) http://nebula.wsimg.com/371031cafb163d05b7f380c712c8ed54?AccessKeyId=ACB457C88AE224CE0A00&disposition=0&alloworigin=1).

The only difference from the housing resilience indicator is that the development patterns indicator incorporates industrial and commercial as well as residential properties.

Figure 12.4.1.1 Development at Risk due to Sea Level Rise

Residential, commercial and industrial parcels predicted to be newly exposed to coastal flooding and storm surge by 2050:

DEVELOPMENT PATTERNS

32,687
Assessed value (2013): $11 billion

ENERGY

Dimension 13: Energy

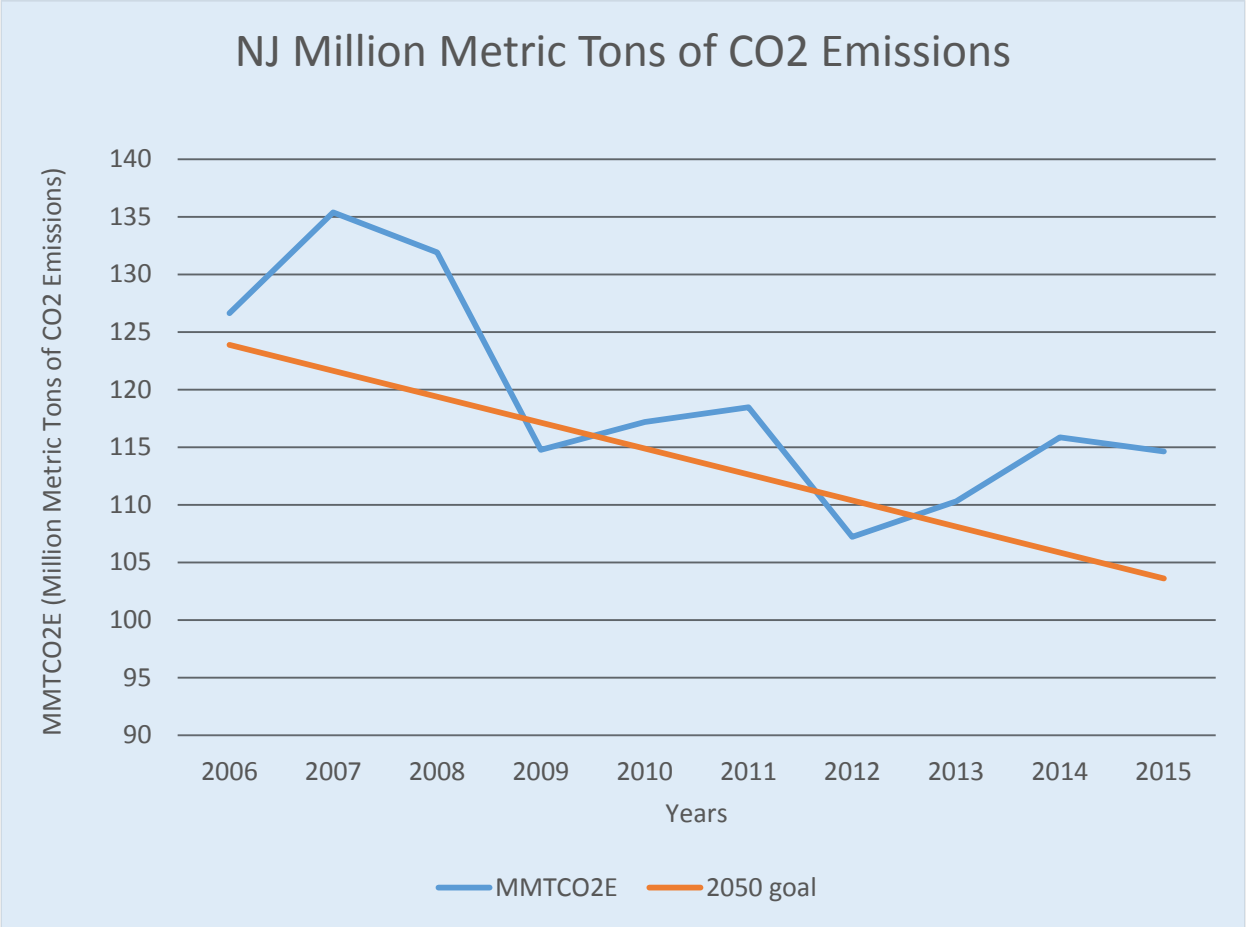
Goal

We want to see New Jersey with clean sources of energy available when and where needed over the long term, in forms that are safe for people and the environment, affordable, and resilient to market shifts and other shocks from a changing world.

	1. Negative impacts from extraction, production, and consumption of energy on environmental, social, and human health are minimized. Greenhouse gas (GHG) emissions are reduced in time to help avoid catastrophic climate change.

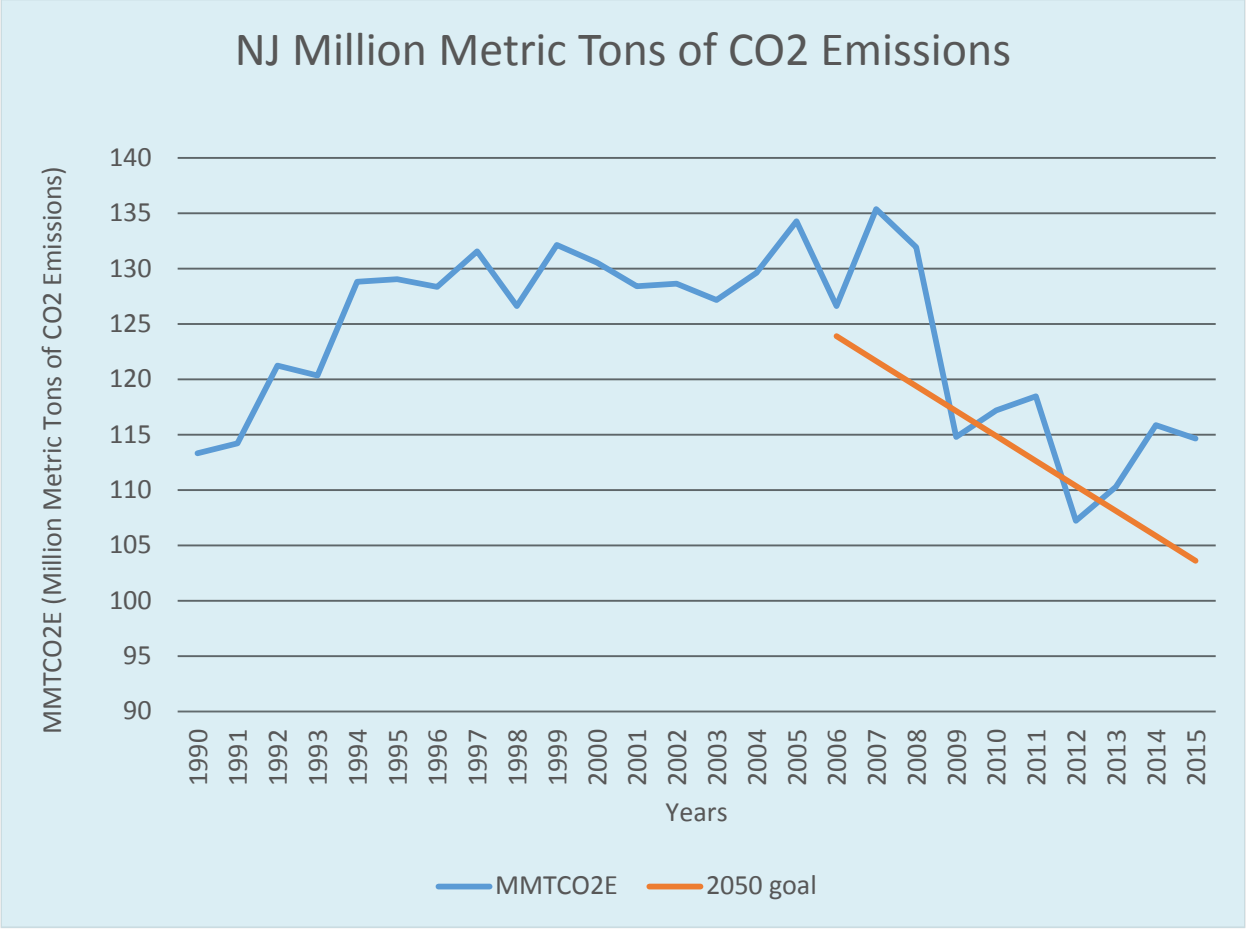
	13.1.1 GHG emissions from energy Annual greenhouse gas emissions from energy consumption have declined since 2006. Yet, the recent upturn in emissions has taken us off the necessary trajectory, established by state policy, to avoid the worst impacts of climate change.

Figure 13.1.1.1 Actual Total vs. Target, Energy-Related CO_2 Emissions (2006-Current)



Source: EPA GHG Tools, In (R:\MunicipalLUCenter\SUSTAINABLE JERSEY\Energy Team\GOLD TEAM DOCUMENTS\EPA Greenhouse Gas Tools)
Source for 2050 goal and Mark Warner's model based on Mark Warner's model, Overview of The New Jersey Energy Flow Map, June 10, 2015. Sustainability Institute, The College of New Jersey.
http://www.sustainablejersey.com/fileadmin/media/Grants_and_Resources/Resources/Energy_Flow_Model_Overview.pdf

Figure 13.1.1.2 Actual Total vs. Target, Energy-Related CO_2 Emissions (1990-Current)



Source: EPA GHG Tools, In (R:\MunicipalLUCenter\SUSTAINABLE JERSEY\Energy Team\GOLD TEAM DOCUMENTS\EPA Greenhouse Gas Tools)
Source for 2050 goal and Mark Warner's model based on Mark Warner's model, Overview of The New Jersey Energy Flow Map, June 10, 2015. Sustainability Institute, The College of New Jersey.
http://www.sustainablejersey.com/fileadmin/media/Grants_and_Resources/Resources/Energy_Flow_Model_Overview.pdf.

Source: US EPA State Inventory and Projection Tool https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool Select and download "All State Inventory Tool Modules" option, save and run the full model using NJ as the state chosen.

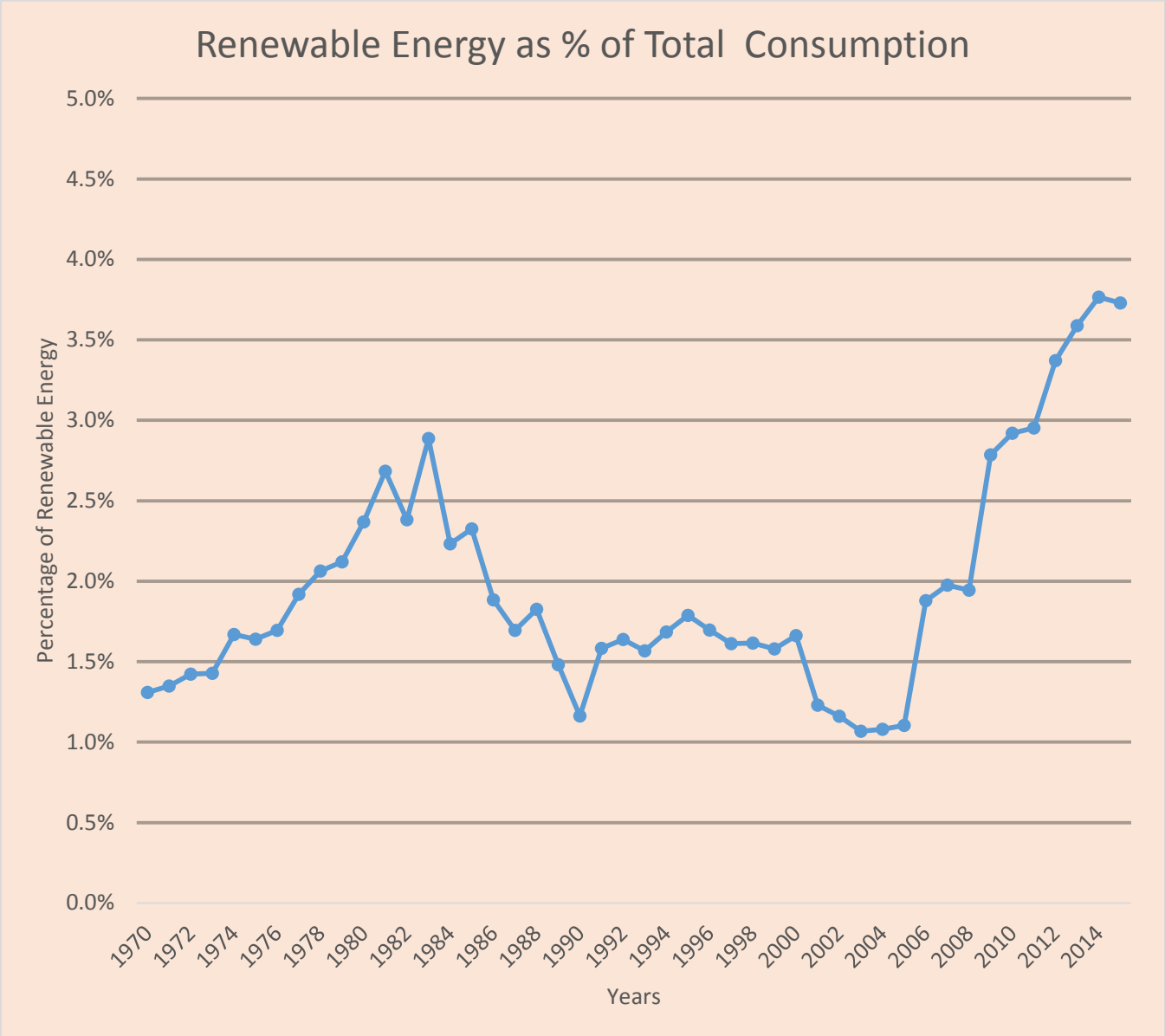
Despite the small downturn between 2014 and 2015 (the most recent year for which data were available), the New Jersey's GHG emissions are still considerably higher than needed to keep pace with target enshrined in state policy.

ENERGY

	2. Vulnerabilities are reduced through a transition to a diverse mix of safe, renewable energy sources that are relatively invulnerable to disruption or depletion over the long term.

	13.2.1 Energy from Renewable Sources The portion of NJ's total energy that comes from renewable sources rose steadily from 2003 until it took a slight downward turn in 2015.

Figure 13.2.1.1 Energy from Renewable Sources as a Fraction of Total Energy



. Source: EIA, State Energy Data System (SEDS) 1960-2015, New Jersey. https://www.eia.gov/state/seds/sep_use/total/pdf/use_NJ.pdf

Search for Table C3. Primary Energy Consumption Estimates.Download the PDF that contains the data for all states for the most recent year. Locate Total amount of Energy from Renewables column for NJ, and divide by the Total Energy Used column for NJ.

ENERGY

	**3. The distribution** of costs and benefits of the energy system is equitable. The needs of all people and segments of the economy are met consistently at affordable and predictable costs.

	**13.3.1 Affordability of Energy** There are currently no readily available data and analysis showing the percentage of households that spend more than 6% of their budgets on energy.

	**4. Resilient, diverse, and reliable energy infrastructure** delivers quality energy when and where it is needed, with minimal vulnerability to threats, both gradual (e.g., sea level rise, infrastructure aging) and sudden (e.g., extreme weather, supply disruptions).

	**13.4.1 Outages and Reliability** There are currently no readily available statewide data and analysis showing the percentage of time that energy is unavailable in the quantity and quality needed to end consumers.

ENERGY

	**13.4.2 Vulnerability to Climate Change** There is no available statewide measure of the probability of energy infrastructure failure due to climate change-related factors (such as flooding, extreme weather, changes in water supply).

	**5. Risks to human health** from the extraction, production, and consumption of energy are minimized.

	**13.5.1 Health Risks from the Energy System** There is no available composite measure of the risks posed by all harmful energy-related emissions, and waste together with public health and safety incidents.

Dimension 14: Waste

Goal

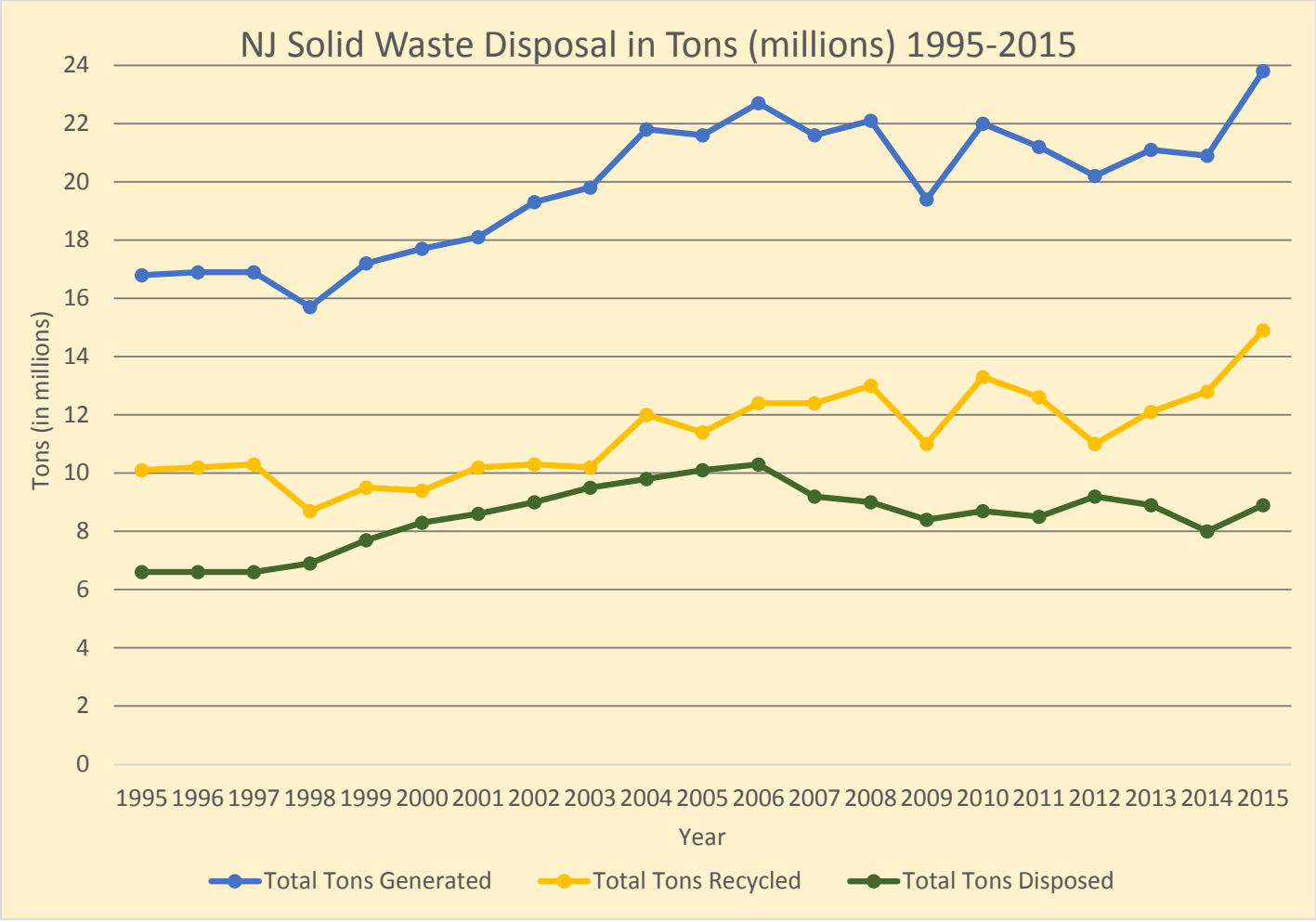
We want a system that provides the goods and services we need, and that minimizes the production and accumulation of waste. A sustainable system will reuse and recycle as much of the waste stream as possible. The system must also ensure that all hazardous waste is safely disposed of, and that no particular populations of people are unfairly burdened with exposure to waste hazards or with cumulative impacts.

	1. Solid waste production is minimized in New Jersey.

	14.1.1 Solid Waste Generation The total amount of municipal solid waste generated in NJ per year oscillated from about 2003 to 2015, when it began to turn upwards.

(Same figure applies to indicator 14.1.1.2 (recycling) below)

Figure 14.1.1.1 Solid Waste in NJ: Generated, Recycled, Disposed

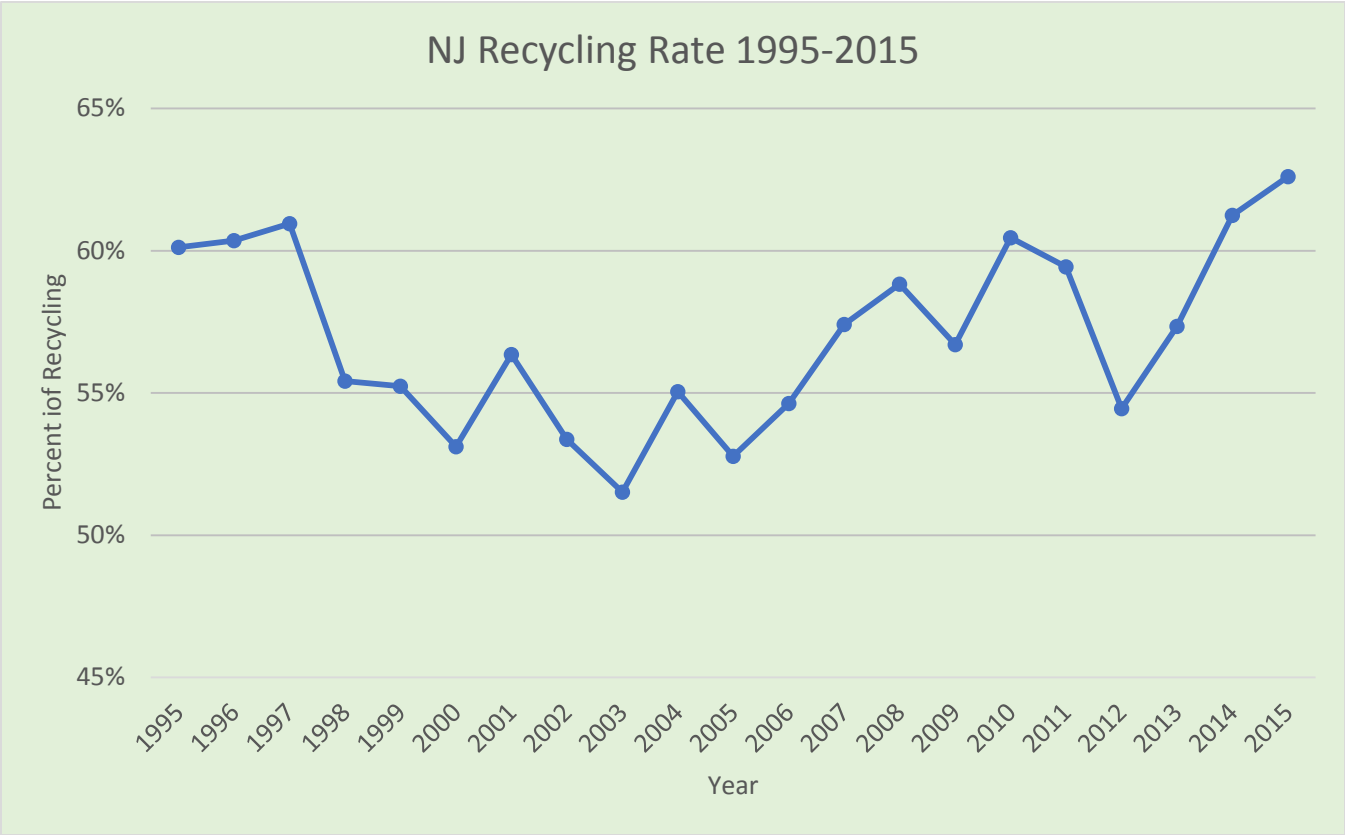


Source: NJ DEP, Division of Solid and Hazardous Waste and 2012 Total Municipal Recycling Tonnage for NJ and NJ Solid Waste Database Trends (through 2010) and 2012 Generation, Disposal, and Recycling Rates in NJ (in tons)
http://www.state.nj.us/dep/dshw/recycling/stat_links/trends_table.pdf
http://www.state.nj.us/dep/dshw/recycling/stats.htm
http://www.state.nj.us/dep/dshw/recycling/stat_links/2012finalreport.pdf

	2. Reuse and recycling of the waste that is produced are maximized.

	14.2.1 Recycling and Disposal The percentage of municipal waste in NJ that is recycled has risen in recent years, finally exceeding 1995 levels in 2014.

Figure 14.2.1.1 NJ Recycling Rate



Source New Jersey Department of Environmental Protection, Department of Solid and Hazardous Waste:
http://www.nj.gov/dep/dshw/recycling/stat_links/2015disposalrates.pdf
http://www.nj.gov/dep/dshw/recycling/stat_links/2014disposalrates.pdf

	3. The production of hazardous waste is minimized and that which is produced is disposed of in ways that are safe for both humans and the environment. Past contamination is cleaned up.

14.3.1 Toxic Chemical Releases

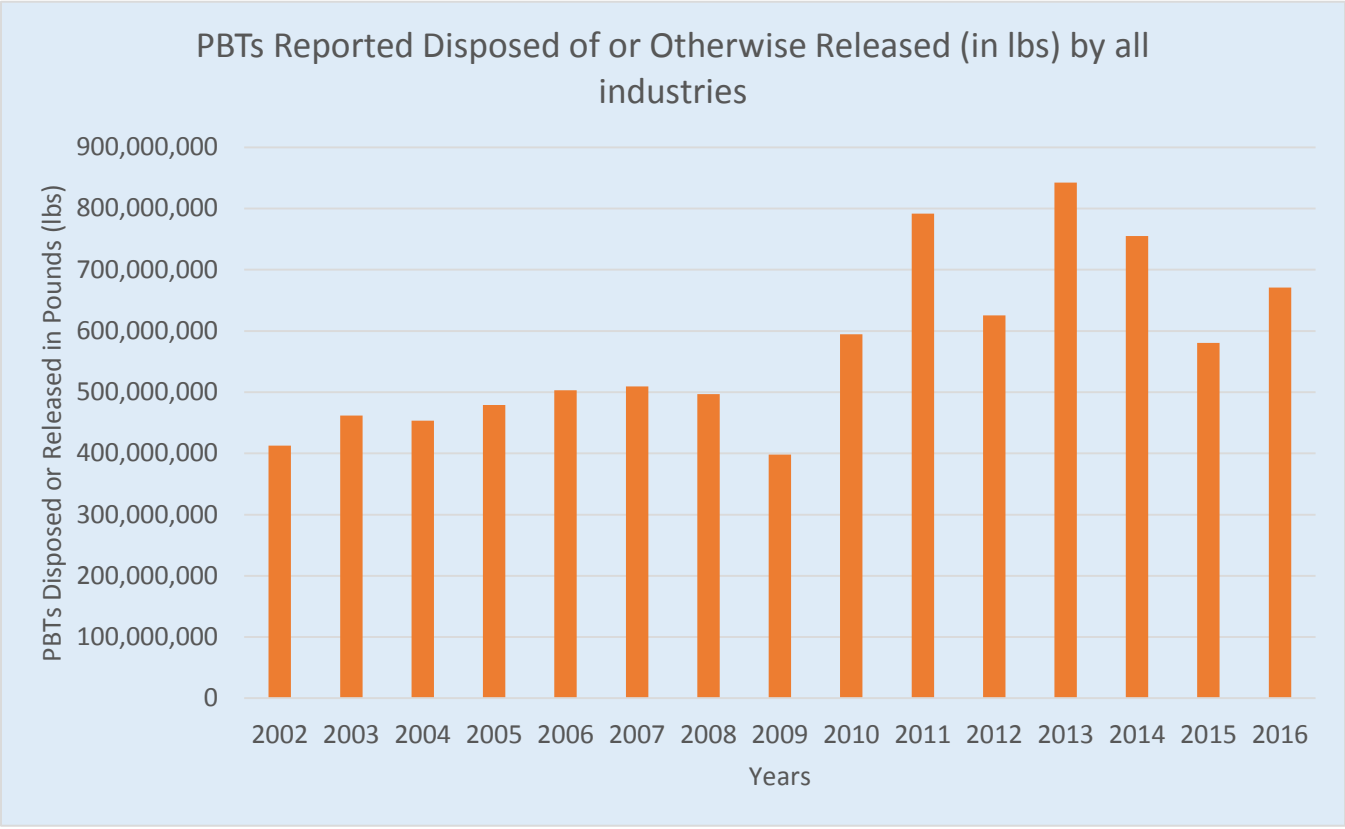
Annual releases of the four categories of chemical compounds accumulating in the environment that are considered the most toxic (dioxin, lead, mercury, and polycyclic aromatic compounds) have generally fluctuated or increased since 2008.

The massive spike in 2015 of total PBTs reported disposed of or released was due to operations conducted by one waste handler (see Figure 14.3.1.1). While an increase in Persistent, Bioaccumulative and Toxic Chemicals (PBTs) indicates a great deal of past production of hazardous waste (bad), it also indicates that a great deal of clean-up is now going on (good). However, processing cannot render much of that material completely inert and harmless, so it must be stored somewhere – whether parked in New Jersey, or shipped out of state, it represents a threat to health and sustainability (bad).

Sudden increases in releases and disposal of lead (see Figure 14.3.1.2) primarily account for the spikes in total PBTs reported disposed or released in both 2012-2013 and 2015. Lead and lead compounds constituted over 96% by weight of annual releases/disposal during that time period. This points to a major limitation of this indicator. Reporting toxic releases in terms of total pounds of a variety of chemicals does not reflect their relative toxicity to human beings and animals. Releases of dioxins amount to only a fraction of a pound per year) yet the health impacts are potentially severe (see data for 2013-15 in Figure 14.3.1.3). Mercury is another element whose proportionate toxicity far exceeds the small amount of waste it constitutes by weight (see Figure 14.3.1.4).

The fact that the trends for different sub-indicators often move in different directions in a given year make it difficult to come up with a global assessment ('thumb') that fairly represents sustainability progress. Other indicators, such as total toxic releases tracked by the TRI, would help round out the picture, but would at the same time add further complexity. Given all these factors, the expert panel concluded that a decisive determination could not be made based on the data presented, hence the "magnifying glass" (i.e., needs more data and investigation) was selected to represent New Jersey's progress in the arena of toxic waste.

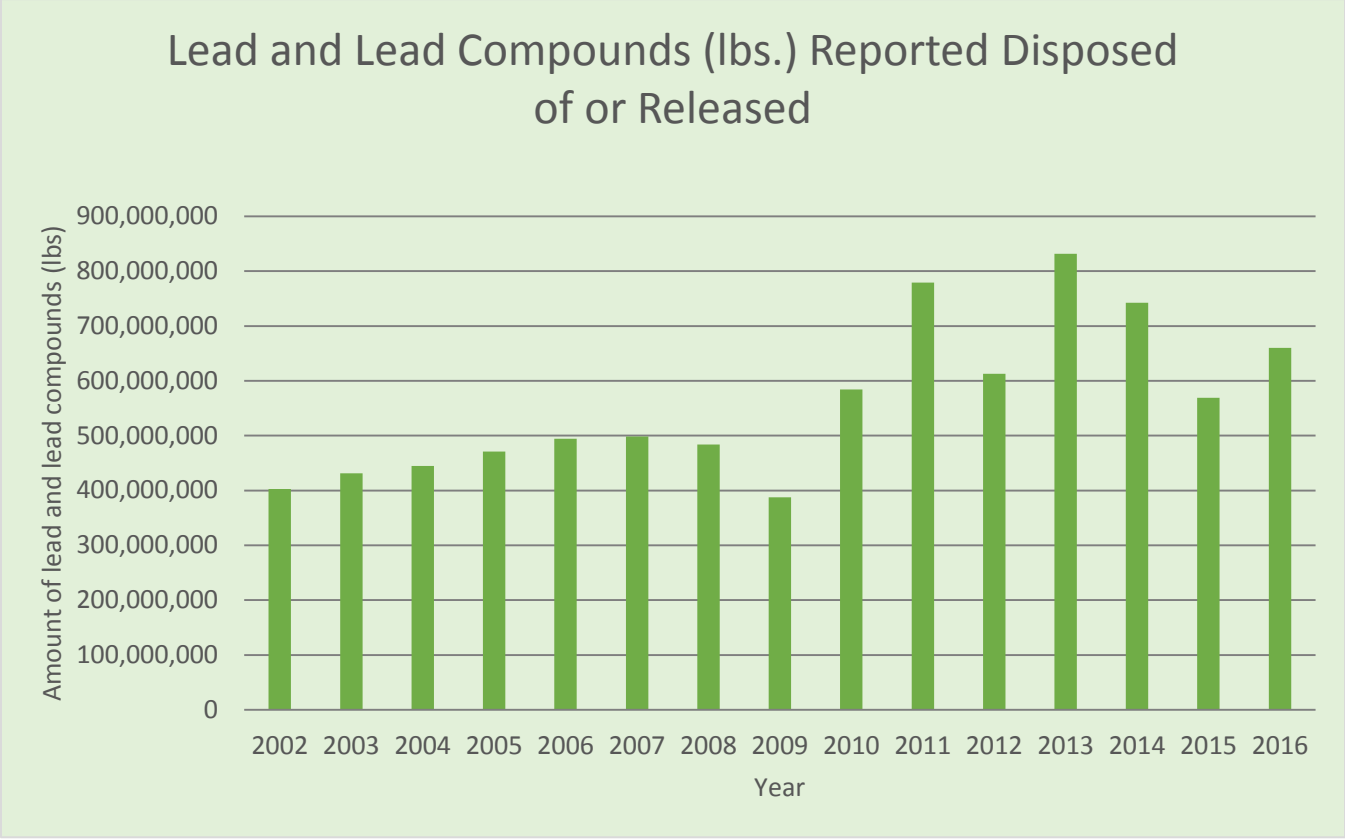
Figure 14.3.1.1 PBTs (lbs). Reported Disposed of or Released



Source: EPA United States Environmental Protection Agency. Data was collected by searching for Chemical Groups and then selection PBT (Persistent Bioaccumulative, and Toxic) Chemicals. The data for PBT was found in the totals of the data, to find data for other years a new report must be created. URL is for 2016 Report: https://iaspub.epa.gov/triexplorer/release_chem?p_view=USCH&trilib=TRIQ1&sort=_VIEW_&sort_fmt=1&state=All+states&county=All+counties&chemical=PBT_IND&industry=ALL&year=2016&tab_rpt=1&fld=RELLBY&fld=TSFDSP

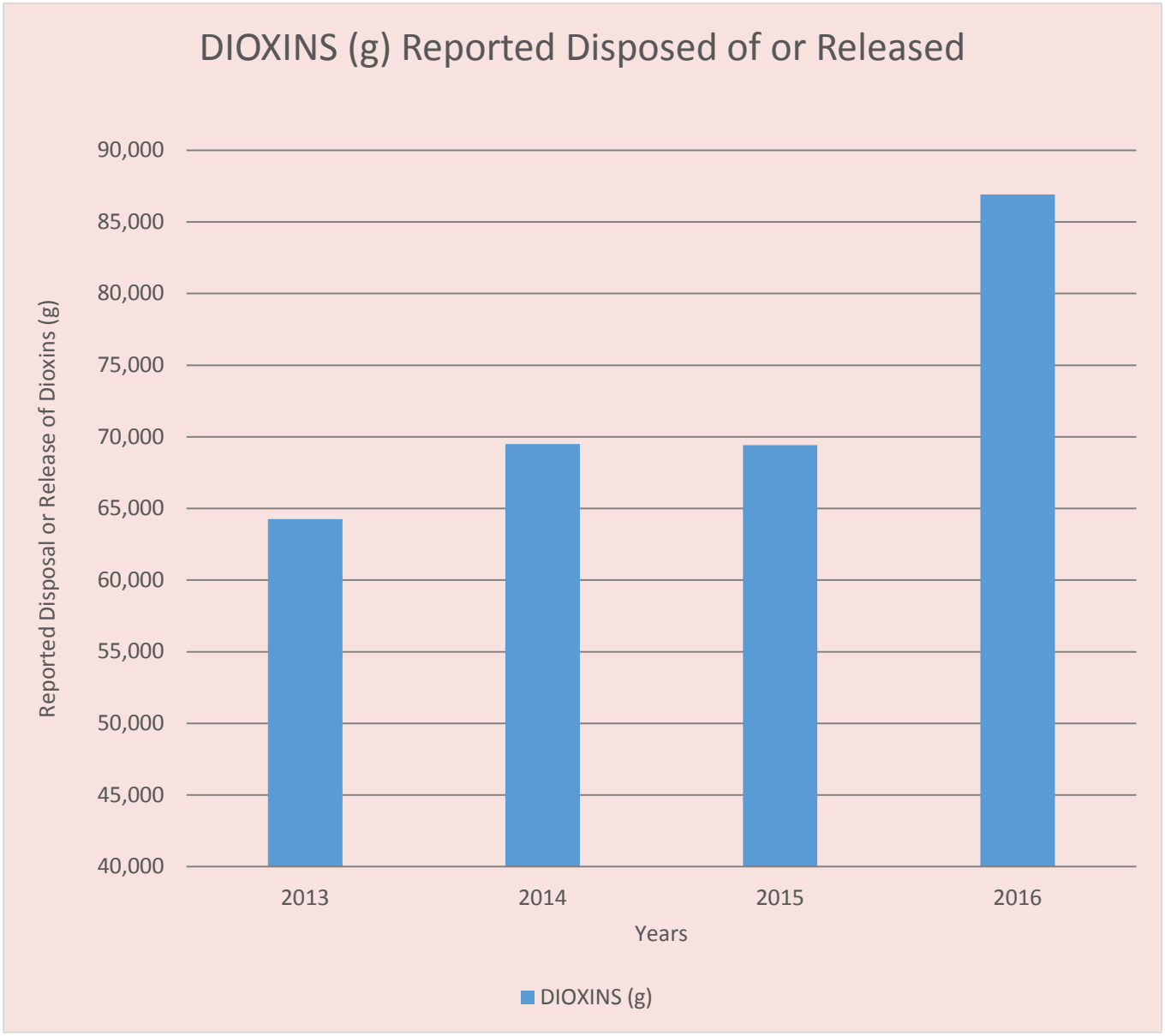
Emily Nering, Region 2 Toxics Release Inventory Coordinator, EPA (nering.emily@epa.gov) provided and helped interpret the data for 2014-2015.

Figure 14.3.1.2 Lead and Lead Compounds (lbs.) Reported Disposed of or Released



Source: EPA United States Environmental Protection Agency. Data was collected by searching for Chemical Groups and then selection PBT (Persistent Bioaccumulative, and Toxic) Chemicals. The data for Lead and Lead Compounds was found in the PBT data table, to find data for other years a new report must be created. URL is for 2016 Report:
https://iaspub.epa.gov/triexplorer/release_chem?p_view=USCH&trilib=TRIQ1&sort=_VIEW_&sort_fmt=1&state=All+states&county=All+counties&chemical=PBT_IND&industry=ALL&year=2016&tab_rpt=1&fld=RELLBY&fld=TSFDSP
Emily Nering, Region 2 Toxics Release Inventory Coordinator, EPA (nering.emily@epa.gov) provided and helped interpret the data for 2014-2015

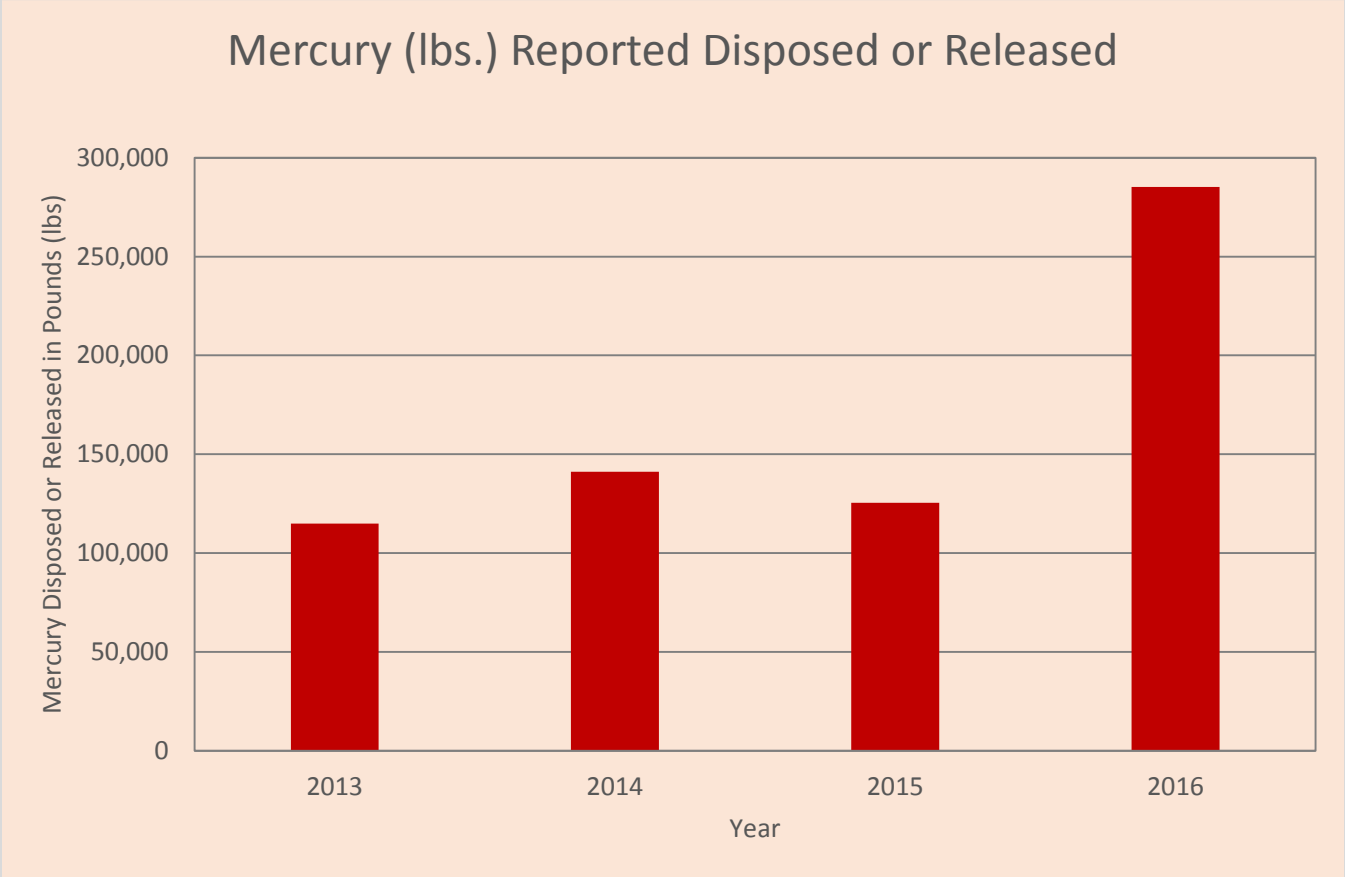
Figure 14.3.1.3 Dioxin and Dioxin-Like Compounds (g) Reported Disposed of or Released



Source: EPA United States Environmental Protection Agency. Data was collected by searching for Chemical Groups and then selection PBT (Persistent Bioaccumulative, and Toxic) Chemicals. The data for Dioxins was found in the PBT data, to find data for other years a new report must be created. URL is for 2016 Report: https://iaspub.epa.gov/triexplorer/release_chem?p_view=USCH&trilib=TRIQ1&sort=_VIEW_&sort_fmt=1&state=All+states&county=All+counties&chemical=PBT_IND&industry=ALL&year=2016&tab_rpt=1&fld=RELLBY&fld=TSFDSP

Emily Nering, Region 2 Toxics Release Inventory Coordinator, EPA (nering.emily@epa.gov) provided and helped interpret the data for 2014-2015

Figure 14.3.1.4 Mercury (lbs.) Reported Disposed of or Released



Source: EPA United States Environmental Protection Agency. Data was collected by searching for Chemical Groups and then selection PBT (Persistent Bioaccumulative, and Toxic) Chemicals. The data for Mecury was found in the PBT data, to find data for other years a new report must be created. URL is for 2016 Report: https://iaspub.epa.gov/triexplorer/release_chem?p_view=USCH&trilib=TRIQ1&sort=_VIEW_&sort_fmt=1&state=All+states&county=All+counties&chemical=PBT_IND&industry=ALL&year=2016&tab_rpt=1&fld=RELLBY&fld=TSFDSP

Emily Nering, Region 2 Toxics Release Inventory Coordinator, EPA (nering.emily@epa.gov) provided and helped interpret the data for 2014-2015.

14.3.2 Contaminated Sites

The total number of contaminated sites that are newly identified, newly closed, and the total number of sites overall, has been oscillating with no clear trend.

There are two metrics that comprise this indicator: the NJDEP list of 'known contaminated sites' and the US EPA National Priority List of 'Superfund sites.'

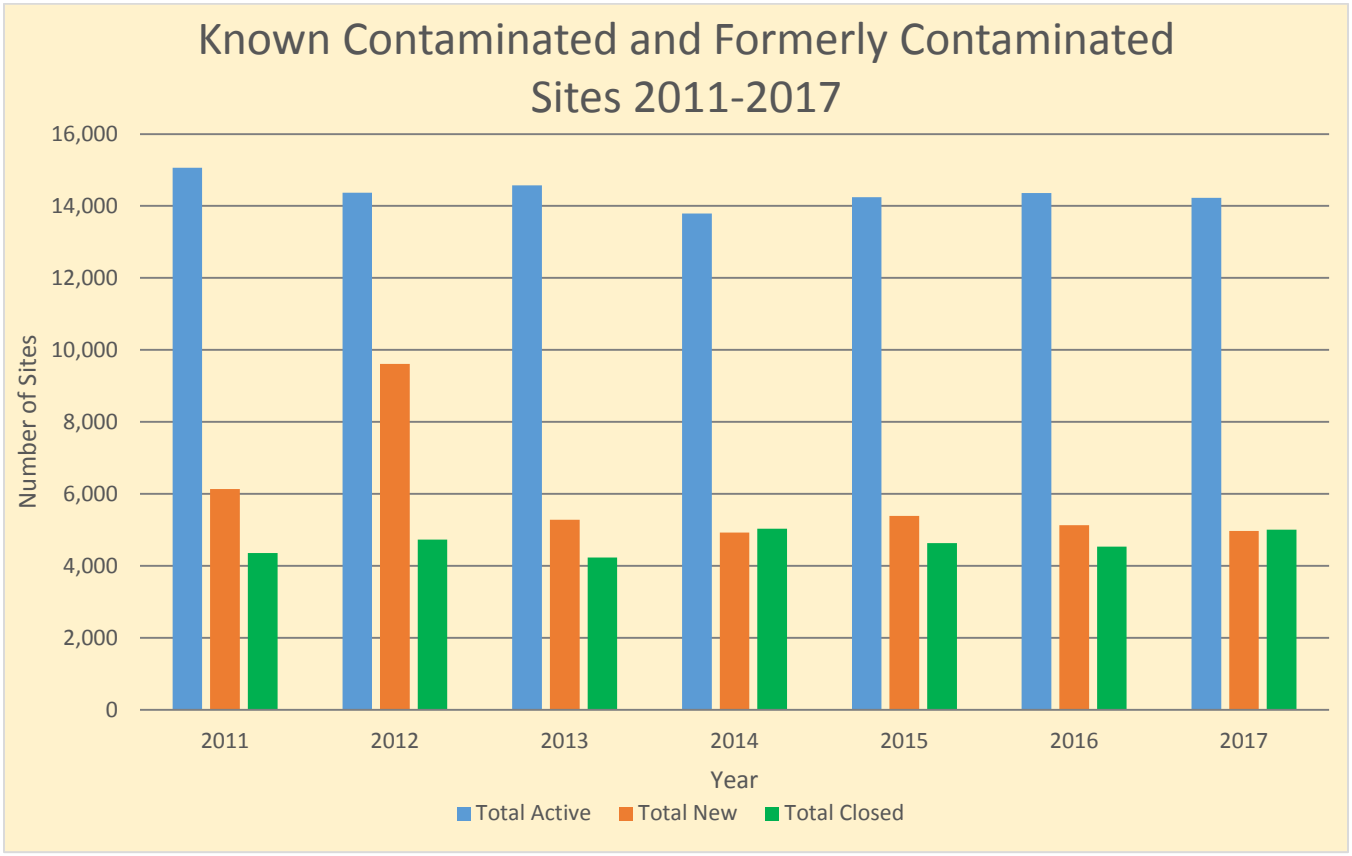
Recent trends in the number of sites in state that the NJDEP identifies as contaminated (active) and those contaminated sites that have been remediated (closed*) are show in Figure 14.3.2.1. (Note that in some 'closed' cases some residual contamination remains at the site, since an institutional/engineering control was left in place to ensure that the site is protective of public health and the environment). An increase in the number of active sites is primarily due to new sites being discovered (as opposed to newly contaminated sites). This is as much a reflection of effort in searching for them on the part of the agency as it is of the prevalence of toxics in the landscape. At the same time, the number of remediated sites has been growing, indicating successful clean-up efforts.

Figure 14.3.2.2 documents these trends for the previous period, 1994 (when the effort began) to 2010. The initial dramatic increase in the 'site universe' was primarily due to new sites being discovered. After peaking in 2015, the change in the total number has leveled, indicating rough parity between the number of new and closed contaminated sites.

In 1980, the federal government enacted a program (the Comprehensive Environmental Response Compensation and Liability Act) that provided financial and technical assistance needed to clean up the nation's most seriously contaminated sites, commonly known

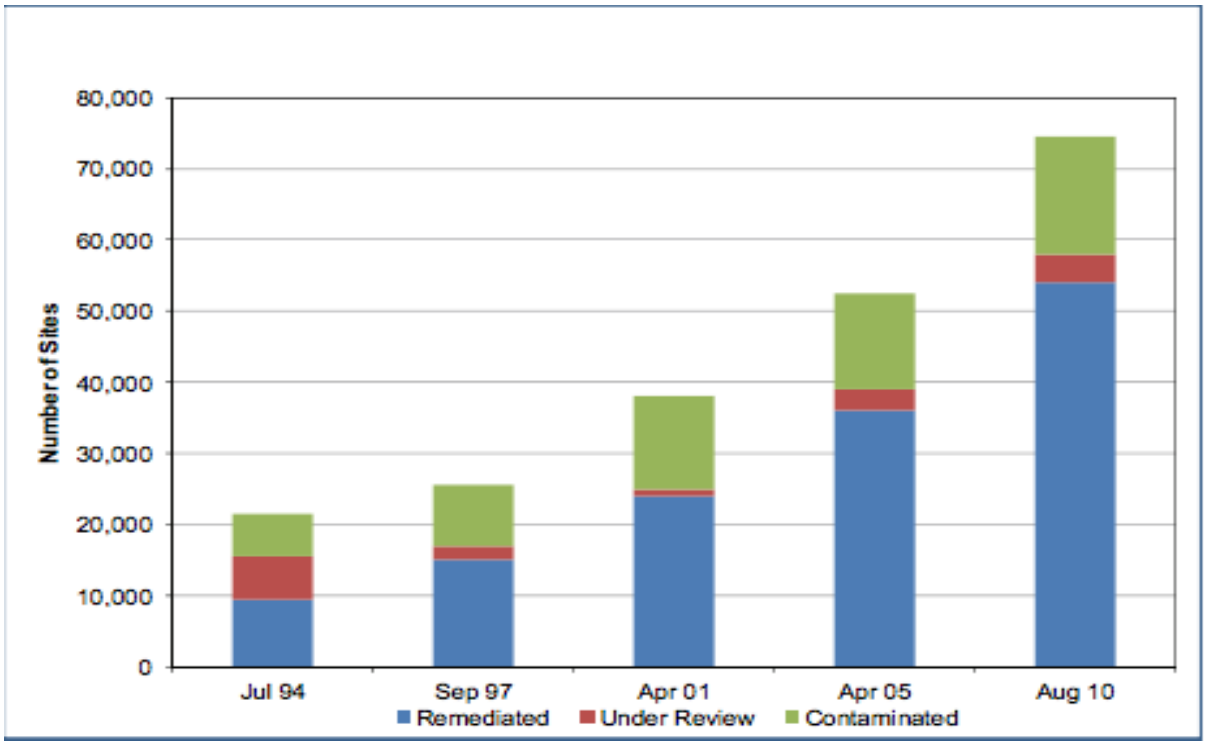
as Superfund. The increase in this 'site universe' (illustrated in Figure 14.3.2.3) is also primarily due to new sites being discovered (as opposed to newly contaminated sites). Relative to the size of the problem, the rate of progress in clean-up of Superfund sites in New Jersey can be deemed unsatisfactory.

Figure 14.3.2.1 Known Contaminated and Formerly Contaminated Sites (2011-2016)



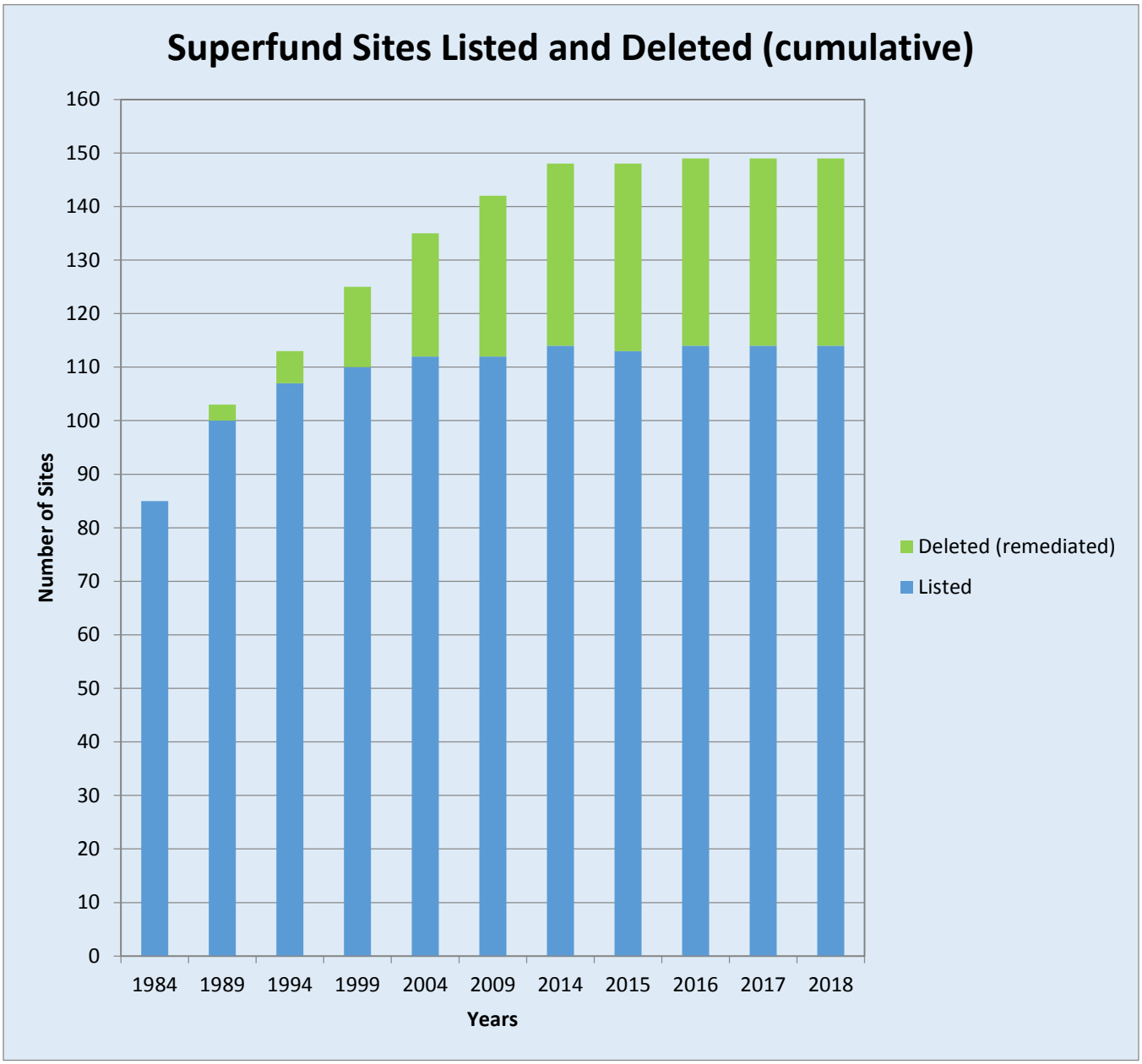
Source: Sana Qureshi, NJDEP Site Remediation Program (Sana.Qureshi@dep.nj.gov)
http://www.nj.gov/dep/dsr/trends/pdfs/site.pdf

Figure 14.3.2.2 Known Contaminated and Formerly Contaminated Sites (1994-2010)



Source: NJDEP. 2011, Environmental Trends Report: Site Remediation. http://www.nj.gov/dep/dsr/trends/pdfs/site.pdf

Figure 14.3.2.3 Superfund Sites Listed and Deleted (cumulative)



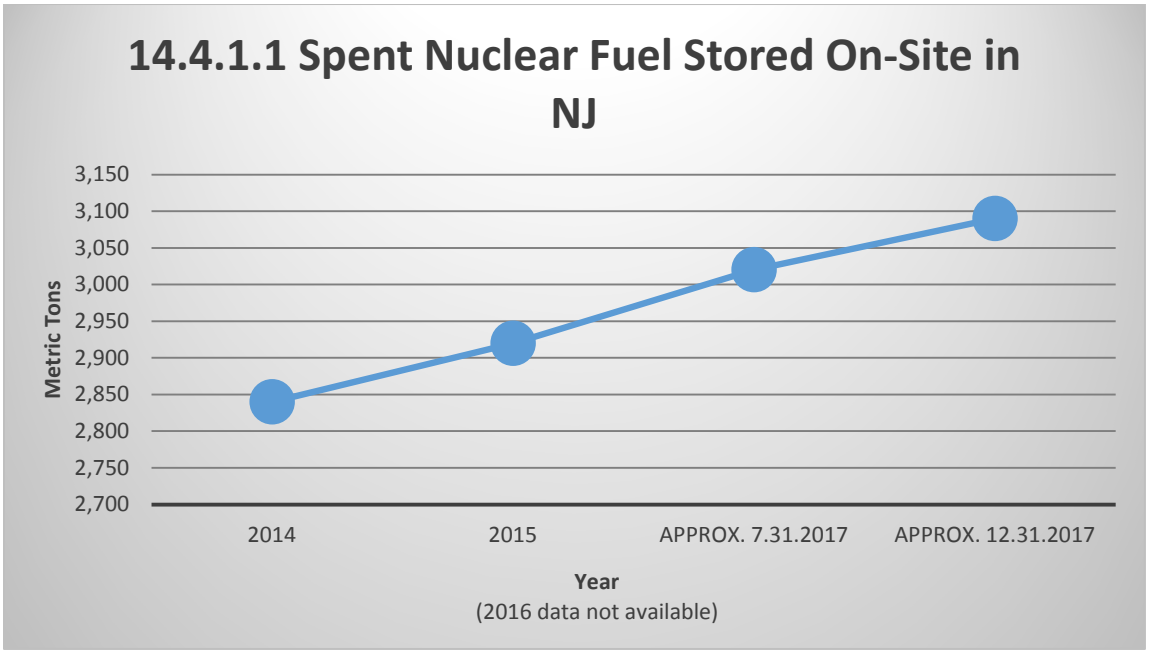
Source: EPA, Final National Priorities List (NPL) Sites via Superfund Enterprise Management System (SEMS) database in Envirofacts
Federal Fiscal Years (Oct1-Sept 30)
Data obtained by Kristin Giacalone, Information Management Coordinator, Emergency and Remedial Response Division, US EPA Region 2
https://www.epa.gov/superfund/search-superfund-sites-where-you-live
http://www.epa.gov/superfund/sites/query/queryhtm/nplfin.htm#NJ

	4. Nuclear waste must be stored in facilities that are safe and reliable, away from population centers, and that are able to keep nuclear waste safely contained over a time frame commensurate with the lifespan of radioactivity.

↑	**14.4.1 Spent Fuel** The total amount of spent nuclear fuel stored onsite at nuclear power plants is increasing in New Jersey. There is still no long-term storage solution.

According to the Nuclear Energy Institute, New Jersey holds used nuclear fuel at nuclear plant sites "safely and securely managed in steel-lined, water-filled concrete pools or in concrete and steel containers awaiting consolidated storage and disposal by the US Department of Energy." However, the original design and construction of nuclear energy facilities provided for used fuel storage for a decade or two, not for long-term storage. Federal law required the U.S. Department of Energy to begin moving used fuel from plant sites in 1998, but it has not yet begun to do so.

Figure 14.4.1.1 Spent Nuclear Fuel Stored On-site in NJ



Data Source: Nuclear Energy Institute (NEI).
https://www.nei.org/resources/fact-sheets/new-jersey

5. There is an **equitable distribution** of the impacts on human health of all forms of toxic pollution and waste disposal. Remaining harmful emissions and contaminated sites must not be unfairly concentrated near particular residential areas.

14.5.1 Cumulative Impacts

There is ample evidence that exposure to environmental hazards is concentrated in minority and low-income communities, but there is currently no statewide analysis available showing the relative exposure of different segments of our population.

Cumulative health risks result from the combined effects of multiple environmental stressors, including chronic and acute environmental pollution (old contaminated sites, routine emissions, new spills) as well as the compounding effects of poverty, poor housing and lack of access to adequate healthcare. The strong implications for social (in)equity of such cumulative impacts motivate the environmental justice movement in New Jersey as well as globally. The phenomenon of 'cumulative impacts,' widely cited in the broader literature, has also been demonstrated in New Jersey (Östlin P, Schrecker T, Sadana R, Bonnefoy J, Gilson L, Hertzman C, et al. (2011) Priorities for Research on Equity and Health: Towards an Equity-Focused Health Research Agenda. PLoS Med 8(11): e1001115. doi:10.1371/journal.pmed.1001115;

The 2009 Environmental Justice Advisory Council report to the NJDEP grew out of Environmental Justice Executive Order No. 131 (EO-131). In it Governor Corzine recognized that "the cumulative exposure to pollution from multiple sources creates a disproportionate impact on the health, well-being and quality of life of persons living in some minority and poor communities in New Jersey." He mandated that departments, agencies, commissions, and all other bodies of the State's executive branch review programs for human or environmental health to ensure they meet the needs of these "environmental justice communities." The DEP responded by preparing a plan that includes increased compliance and enforcement in environmental justice communities as well as the targeting assistance to pilot environmental justice communities.

Subsequently, the DEP has made progress in developing a cumulative impacts assessment tool that would pull together in one place the many pertinent spatial (GIS) data layers kept by different state agencies and divisions. However, it has not yet been released. The problem is not then so much a lack of data on environmental exposure as it is of incomplete analysis (and dissemination). Having such data in an accessible Geographic Information System (GIS) would inform the more challenging research task of correlating exposure with observed health outcomes and exploring causal links.

Sources:
http://www.nj.gov/dep/ej/ejcouncil.html#reports:
Environmental Justice Advisory Council (EJAC) to the NJ Department of Environmental Protection. March 2009. "Strategies for Addressing Cumulative Impacts in Environmental Justice Communities.)

Commissioner Mark N. Mauriello. July 2009 Response to the Environmental Justice Advisory Council's March 2009 Report: "Strategies for Addressing Cumulative Impacts in Environmental Justice Communities (pdf)

A Preliminary Screening Method to Estimate Cumulative Environmental Impacts - December 22, 2009 (NJDEP)