

RI FOOD SYSTEM FACTBOOK

2024



RI FOOD
POLICY
COUNCIL



The Rhode Island Food Policy Council is an independent network with a mission to create a more equitable, accessible, economically vibrant, and environmentally sustainable food system in the Ocean State. We are committed to equity and justice.

We appreciate the generous support of Rhode Island Foundation, Henry P. Kendall Foundation, Angell Foundation, Island Foundation, 11th Hour Racing Foundation, UNFI Foundation, and Point32Foundation and the partnership of state agencies serving on the RI Interagency Food and Nutrition Policy Advisory Council.

Starting in 2024, the Rhode Island Food System Factbook will serve as the primary annual publication of the Rhode Island Food Policy Council. The Factbook provides a data-driven landscape of the status of Rhode Island's food system, incorporating the best available research and data. Information is presented for the state of Rhode Island, and for each city and town.

The Factbook tracks the progress of about 40 indicators across five areas of food system health and well-being:

- **Food System Economy**
- **Food Access and Security**
- **Agriculture and Land Use**
- **Commercial Fisheries and Aquaculture**
- **Climate Change**

Copies of the 2024 Factbook are available for free download at www.rifoodcouncil.org/factbook and hard copies may be ordered by emailing us at info@rifoodcouncil.org and putting 'Factbook' in the subject line. In addition, you can visit our online dashboard at rifoodcouncil.org/dashboard to explore and download individual indicators anytime.

Table of Contents



Food System Economy

Total Rhode Island Employment, 2002-2022.....	3
Food System Employment, 2002-2022.....	4
Food System Businesses, 2002-2022.....	4
Median Hourly Wages, 2022.....	5
Economic Impact of Rhode Island’s Food System, 2017.....	6
Economic Impact Snapshot, 2017.....	6
Retail Food Sales, 2017.....	7
Count of Food Stores in Rhode Island.....	7
Per Capita Food Expenditures, 1997-2020.....	8
Median Household Income by Race/Ethnicity, 2017-2021 (5-Year Average)....	8



Food Access and Security

Percent of Rhode Islanders in Poverty, 2001-2021.....	9
Food Insecurity (USDA), 2001-2022.....	10
Food Insecurity (RI Life index), 2020-2022.....	10
Receipt of SNAP by Race/Ethnicity and County, 2017-2021.....	11
SNAP Participation and Benefits, 2002-2022.....	11
Average Number of People Served by Charitable Food System.....	12
Low Income Low Access Census Tracts by Race/Ethnicity.....	12

Table of Contents



Agriculture and Land Use

Major Agricultural Land Uses in Rhode Island, 1945-2012.....	13
Land in Agriculture by County, 2017.....	14
Number of Farms and Sales by Economic Class, 2017.....	14
Farmer Race and Age Demographics, 2017.....	14
Agricultural Sales, 2017.....	15
Number of Farms Engaged in Each Category, 2017.....	15
Projected Changes in Land in Agriculture.....	16
New England Farm Land Real Estate Values, 2006-2022.....	16



Commercial Fisheries and Aquaculture

Commercial Seafood Landings, 2002-2022.....	17
Value of Commercial Seafood Landings, 2002-2022.....	18
Value Per Pound of Commercial Seafood Landings, 2002-2022.....	18
Gross Sales of Rhode Island’s Seafood Sector, 2016.....	19
Employment in Rhode Island’s Seafood Sector, 2016.....	19
Aquaculture Production, 2002-2022.....	20

Table of Contents



Climate Change

Greenhouse Gas Inventory, 1990-2020.....	21
Average Annual Temperature, 1896-2023.....	22
Air Temperature Anomaly, 1896-2023.....	22
North Atlantic Daily Sea Surface Temperature, 1981-2023.....	23
Climate Vulnerability of Rhode Island Seafood Catch, 2010-2020.....	23
Billion-Dollar Weather and Climate Disasters, 1980-2023.....	24
Projected Climate Risks.....	25
Food Waste, 2015.....	26



Municipal Data

Municipal Fact Sheets.....	27
----------------------------	----



Data Discussion

Missing Pieces.....	31
Data Sources.....	33
Economic Impact Methodological Discussion.....	35

FOOD SYSTEM FACTBOOK

The Rhode Island Food Policy Council works with hundreds of members and partners across the state in public, private, and nonprofit sectors to build a more just and resilient food system. We focus on **People** (food access and nutrition security), **Prosperity** (food business and economic development), and **Planet** (food, climate, and environment).

The goal of this annual Factbook, along with the regularly updated [Municipal Fact Sheets](#) and [RI Food Systems Metrics Dashboard](#) available on our website, is to share detailed analysis of major trends to help Rhode Islanders make sense of strengths, weaknesses, opportunities, and threats affecting our food system.

Our purpose in providing these resources is based on a simple value proposition: We believe that annual publication of this Factbook will elevate food system issues in Rhode Island and educate our key decision makers, resulting in better food policy, an improved regulatory environment and more public and private investment in our farmers, fishers and food businesses.

Is Rhode Island's food system moving in the right direction? How can we know?

Using data from publicly available sources, the Food System Factbook visualizes big picture trends across five categories and poses key questions for each:

- **Food System Economy:** How big is Rhode Island's food system? What sectors are growing? What sectors are contracting?
- **Food Access and Security:** What are the trends in food security in Rhode Island? What are the disparities in how Rhode Islanders are impacted by food access challenges?
- **Agriculture and Land Use:** What kinds of agricultural products does Rhode Island grow/raise? Is Rhode Island's agricultural sector growing or contracting?
- **Commercial Fisheries and Aquaculture:** What kinds of seafood products does Rhode Island harvest? Are commercial fishing and aquaculture production growing or contracting?
- **Climate Change:** How is climate change impacting Rhode Island's food system?

Viewed comprehensively, we can see many bright spots in Rhode Island's food system, including the economic impact of wholesaling and distribution, growth in food processing and manufacturing, the importance of direct sales to local producers, and growth in aquaculture production. At the same time, as the smallest state with the highest cost of agricultural land in the nation, Rhode Island faces significant risks to long-term food production through land development and climate change. Every dataset with demographic information also reveals that Hispanic, Black, Indigenous, and Rhode Islanders of two or more races are disproportionately impacted by inequities in income, poverty, food security, farm and land ownership, and more.

HOW TO USE THE FOOD SYSTEM FACTBOOK

You can use this data to help achieve your mission:

- Set strategic goals for your organization
- Establish measurable objectives for your projects and programs
- Add key facts to grant proposals
- Emphasize a trend during public speaking opportunities
- Support your views in testimony at the State House

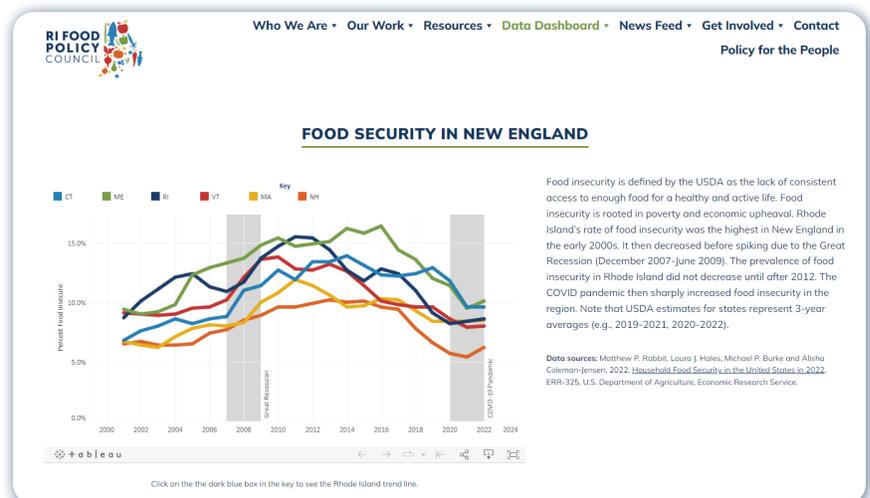
Key Features

- ✓ Trusted sources, clear citations
- ✓ Regularly updated data
- ✓ Interactive charts
- ✓ Easy to understand descriptions

Big picture trends are noted throughout:

POSITIVE TREND	NEGATIVE TREND	NO TREND
Employment increase	Poverty increase	Food insecurity rate
Greenhouse gas emissions decrease	Land in agriculture decrease	<i>No trend may mean that an indicator has not changed over time, or that only a snapshot in time is depicted.</i>

Indicators are also dynamically depicted on the RIFPC Data Dashboard



Food System Economy



How big is Rhode Island's food system? What sectors are growing? What sectors are contracting?

Rhode Island's food system employs over **73,000** people at more than **8,300 businesses**, and generates about **\$12 billion** in sales. We estimate that Rhode Island's food system jobs account for about **12.6%** of all jobs and **6.1%** of businesses in the state, but this is likely an undercount due to data limitations. An economic impact analysis conducted as part of [New England Feeding New England](#) indicates that \$12 billion in sales is equal to about **20%** of Rhode Island's state GDP.

Although total food system employment increased by about **32%** from 2002 to 2022, it is important to note that agriculture and fisheries employment decreased in this time-frame. Food services (e.g., restaurants) account for the majority of food system jobs and are typically some of the **lowest paid jobs** in the state. Rhode Islanders also have the 5th highest per capita food expenditures in the country, and this disproportionately impacts BIPOC residents.

KEY STATS

>**73,000** jobs

>**8,300** businesses

>**\$12 billion** total sales

\$13.94 median hourly wage

Food Preparation and Serving major occupational category

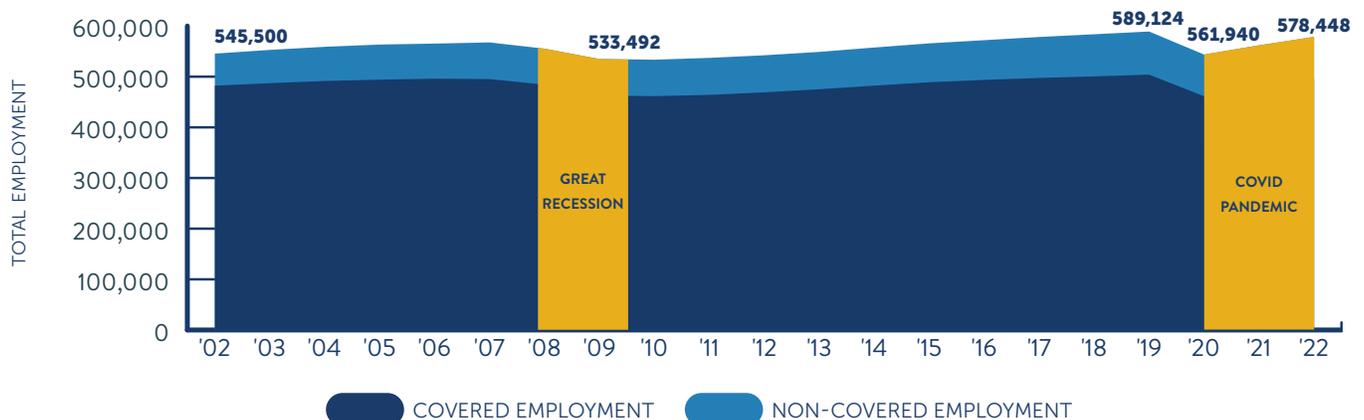
\$6.5 billion retail food sales

\$6,341 per capita food expenditures

TOTAL RHODE ISLAND EMPLOYMENT, 2002-2022



Total employment in Rhode Island increased **6.0%** from 2002 (545,500) to 2022 (578,448). Employment dipped to its lowest level in 2010, due to the Great Recession. Over the past 20 years, employment was highest in 2019, then dramatically decreased due to the COVID-19 pandemic in 2020, before rising again in 2022.

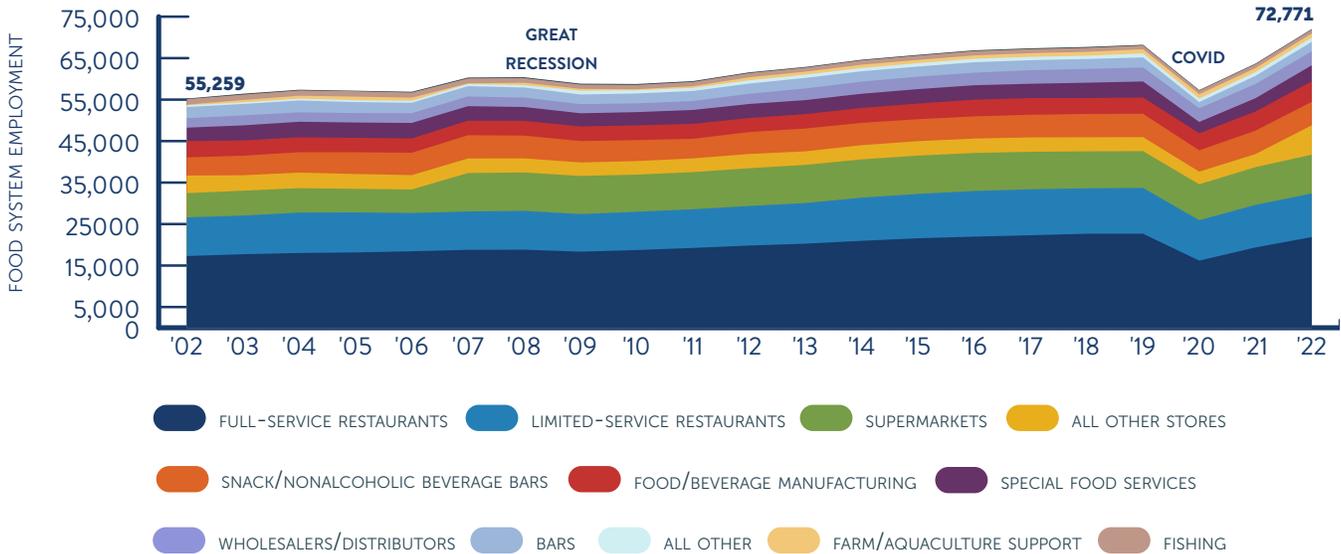


Sources: U.S. Bureau of Labor Statistics [Total Nonfarm Employment](#) (via FRED) and U.S. Census Bureau [Nonemployer Statistics](#). The U.S. Bureau of Labor Statistics provides estimates of covered employment—work that is covered by unemployment insurance benefits. Non-covered employment, or nonemployer statistics, refers to jobs that are excluded from unemployment insurance reporting requirements. Non-covered employment is mostly made up of sole proprietors and partnerships with no paid employees. Combining both data sources together provides a more comprehensive picture of employment in Rhode Island. Farm employment is not captured very well by either data source. Estimates of the number of farmers and hired farmworkers are produced every 5 years by the USDA Census of Agriculture and are not shown in this figure.

FOOD SYSTEM EMPLOYMENT, 2002-2022



Total food system jobs in Rhode Island increased from $\approx 55,259$ in 2002 to $\approx 72,771$ in 2022. Food system jobs account for about **12.6%** of all jobs in Rhode Island. This is likely an undercount because we are unable to specify all possible food system jobs (e.g., “general freight trucking” accounts for over 1,500 jobs in Rhode Island. Although all food ultimately moves via transportation, we can’t specify trucking jobs that are exclusively for food distribution). “Food services and drinking places” (e.g., restaurants, fast food, institutional food services, bars) account for the majority of food system jobs - about 45,000 jobs.

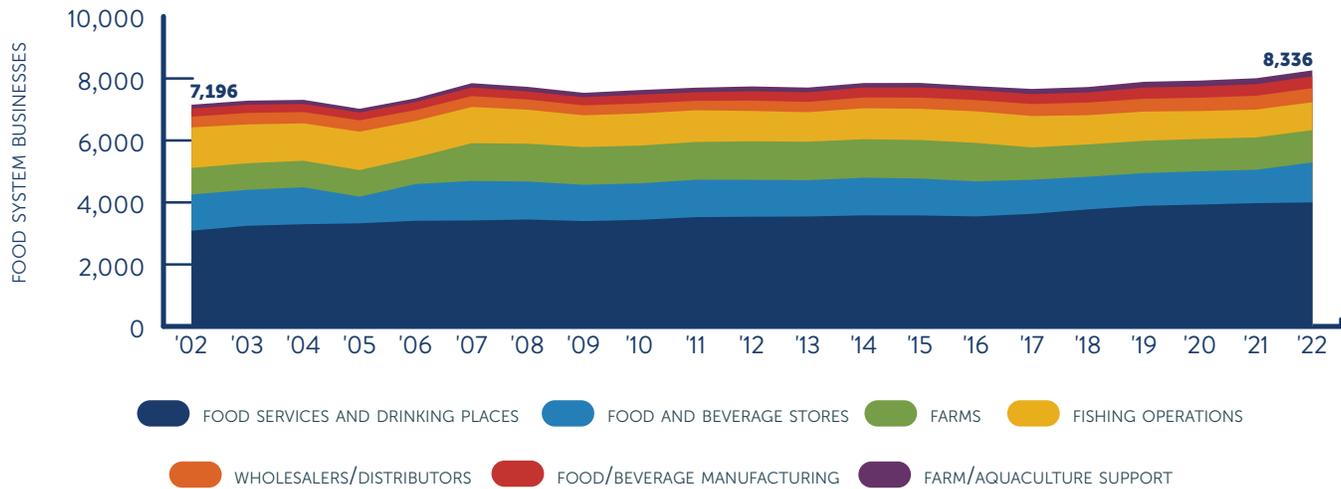


Sources: U.S. Bureau of Labor Statistics [Quarterly Census of Employment and Wages](#), and U.S. Census Bureau [Nonemployer Statistics](#). Estimates of the number of farmers and hired farmworkers are produced every 5 years by the USDA Census of Agriculture and are not shown in this figure. “All other stores” includes convenience stores, specialty food stores, liquor stores, health food stores, vending machine operators, and warehouse clubs and supercenters. “All other” includes community food services (e.g., food pantries), solid waste collection, and agricultural market and commodity regulation.

FOOD SYSTEM BUSINESSES, 2002-2022



Food system businesses in Rhode Island increased from $\approx 7,196$ in 2002 to $\approx 8,330$ in 2022. “Food services and drinking places” (e.g., restaurants, fast food, institutional food services, bars) account for the majority of food system jobs - over 4,000 businesses.

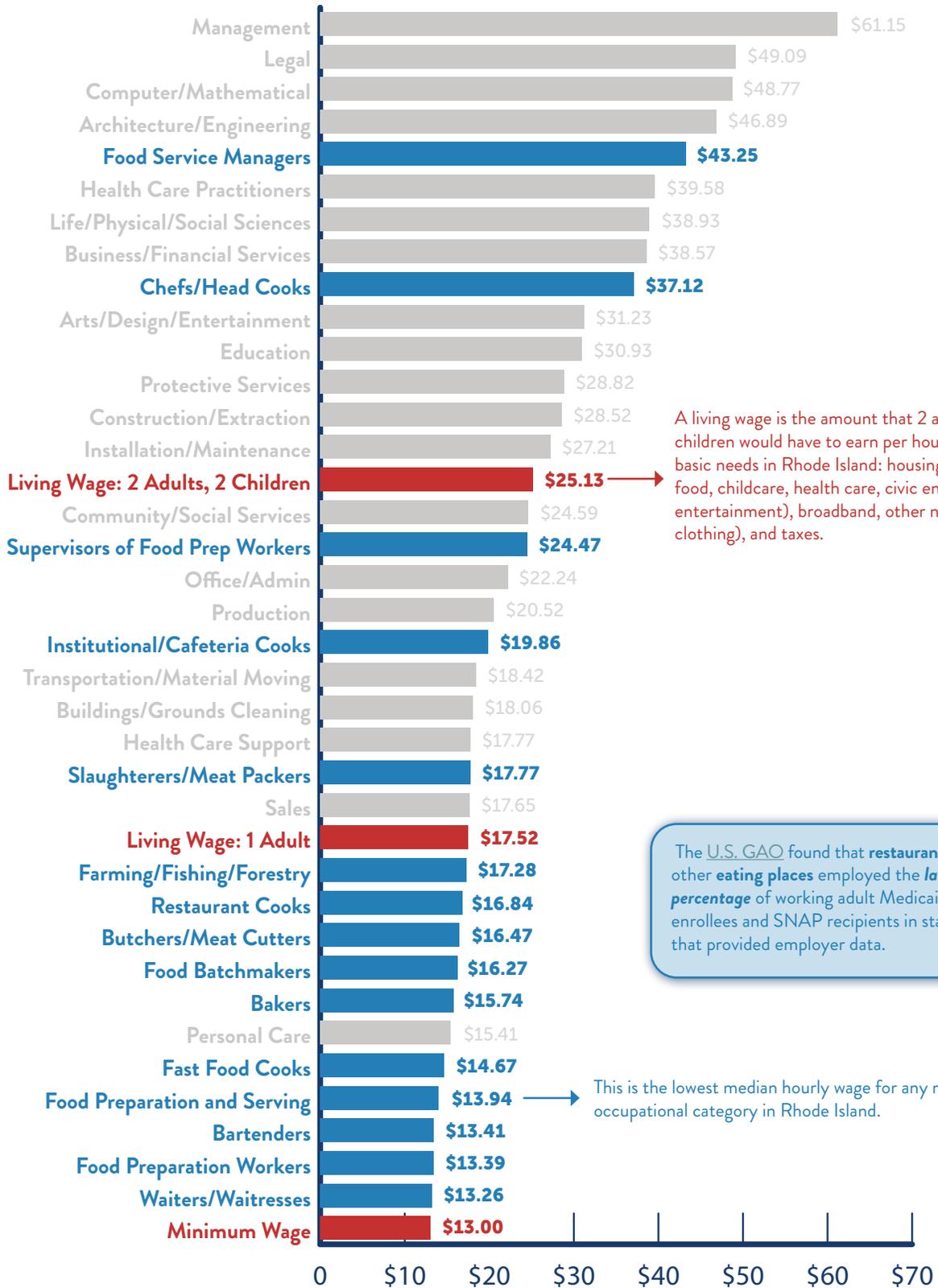


Sources: U.S. Bureau of Labor Statistics [Quarterly Census of Employment and Wages](#), U.S. Census Bureau [Nonemployer Statistics](#), and USDA [Census of Agriculture](#). Other categories are not shown on this figure because they would be difficult to see.

MEDIAN HOURLY WAGES, 2022



Although wages for most occupations have *increased* in recent years and are above Rhode Island’s minimum wage, it is also the case that most food system jobs received some of the lowest wages of any jobs in Rhode Island. In fact, “[Food Preparation and Serving Occupations](#)” received the **lowest median hourly wage** of any major occupation, and most food system jobs are paid below a living wage.



A living wage is the amount that 2 adults with 2 children would have to earn per hour to meet 8 basic needs in Rhode Island: housing, transportation, food, childcare, health care, civic engagement (e.g., entertainment), broadband, other necessities (e.g., clothing), and taxes.

The U.S. GAO found that **restaurants** and other **eating places** employed the **largest percentage** of working adult Medicaid enrollees and SNAP recipients in states that provided employer data.

This is the lowest median hourly wage for any major occupational category in Rhode Island.

Sources: U.S. Bureau of Labor Statistics, [Occupational Employment and Wage Statistics](#), MIT, [Living Wage Calculator](#). Wage data includes tips.

ECONOMIC IMPACT OF RHODE ISLAND'S FOOD SYSTEM, 2017



Agriculture and fisheries employment and sales were flat or declined from 2007 to 2017. Employment and sales at grocery stores decreased slightly. Food manufacturing employment decreased slightly, while sales were up. The reverse was true in beverage manufacturing, where employment increased and sales decreased. Employment and sales in wholesaling and distribution and food services all increased.

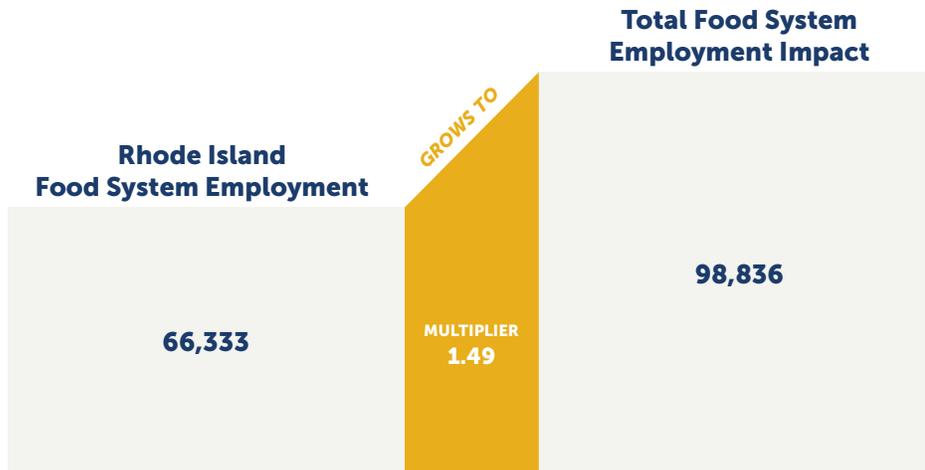
	2017 Employment	% of Total	Growth from 2007- 2017	2017 Sales	% of Total	Growth from 2007- 2017
Agriculture	3,726	5.6%	0.1%	\$62,873,200	0.5%	-3.8%
Fisheries	988	1.5%	-2.0%	\$109,856,000	0.9%	-0.6%
Food Manufacturing	2,359	3.6%	-0.5%	\$645,825,000	5.4%	1.9%
Beverage Manufacturing	367	0.6%	0.6%	\$83,628,900	0.7%	-16.1%
Wholesaling + Distributing	3,477	5.2%	2.5%	\$5,119,564,200	43.0%	8.4%
Stores	11,265	17.0%	-0.3%	\$3,118,531,100	26.2%	-0.8%
Food Services + Drinking Places	44,151	66.6%	0.9%	\$2,774,747,000	23.3%	1.5%
TOTAL	66,333	100.0%	0.6%	\$11,915,025,300	100.0%	2.5%

Source: New England Feeding New England, *Volume 3: Economic Impact of New England's Food System*. Note: Agriculture sales in this table includes support activities. Agricultural sales are adjusted using producer price indices for crops and livestock. The data, sources, and methods used for this particular analysis were consistent for the six New England states, allowing for comparisons. Sales values were adjusted for inflation to 2020 dollars.

Economic Impact Snapshot, 2017

NO TREND

The employment multiplier—a measurement of how important an industry is to other industries in a region—shows that for each additional job created in Rhode Island's food system, total employment in the state's economy will increase by **1.49 jobs** (i.e., to the 1 additional food system job, we will have 0.49 jobs spun-off those).



The additional one-half job (in aggregate) is actually a set of fractional jobs spread over the entire economy, the result of linked activity in other food system and nonfood system sectors. These include jobs in transportation, utilities, finance, trade, and government.

Top Manufactured Products by Sales, 2021



ANIMAL PROCESSING
\$309,037,196
34.7%



OTHER PRODUCTS
\$249,417,123
28.0%
(e.g., snack foods, coffee roasting)



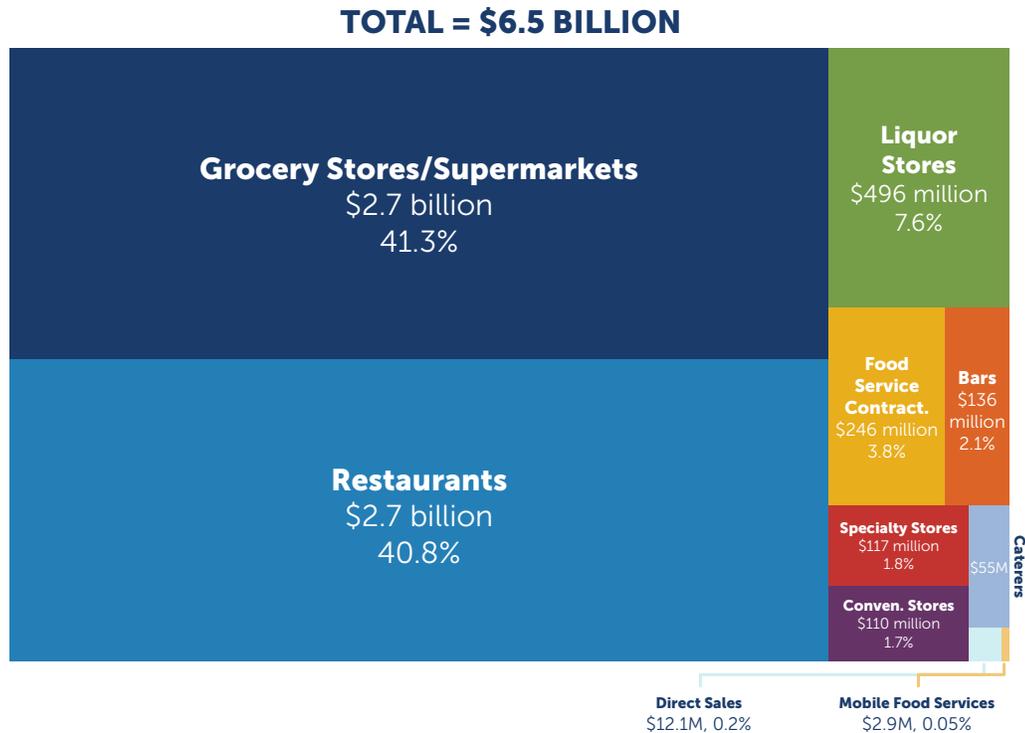
BAKERIES
\$140,613,728
15.8%

Source: U.S. Census Bureau *Annual Survey of Manufactures*.

RETAIL FOOD SALES, 2017



Total food sales increased by **13.9%** from 2012 (\$5.7 billion) to 2017 (**\$6.5 billion**). Note that direct sales—from farmer to consumer via farmstands, CSAs, and farmers markets—accounted for 0.2% of total retail food sales.

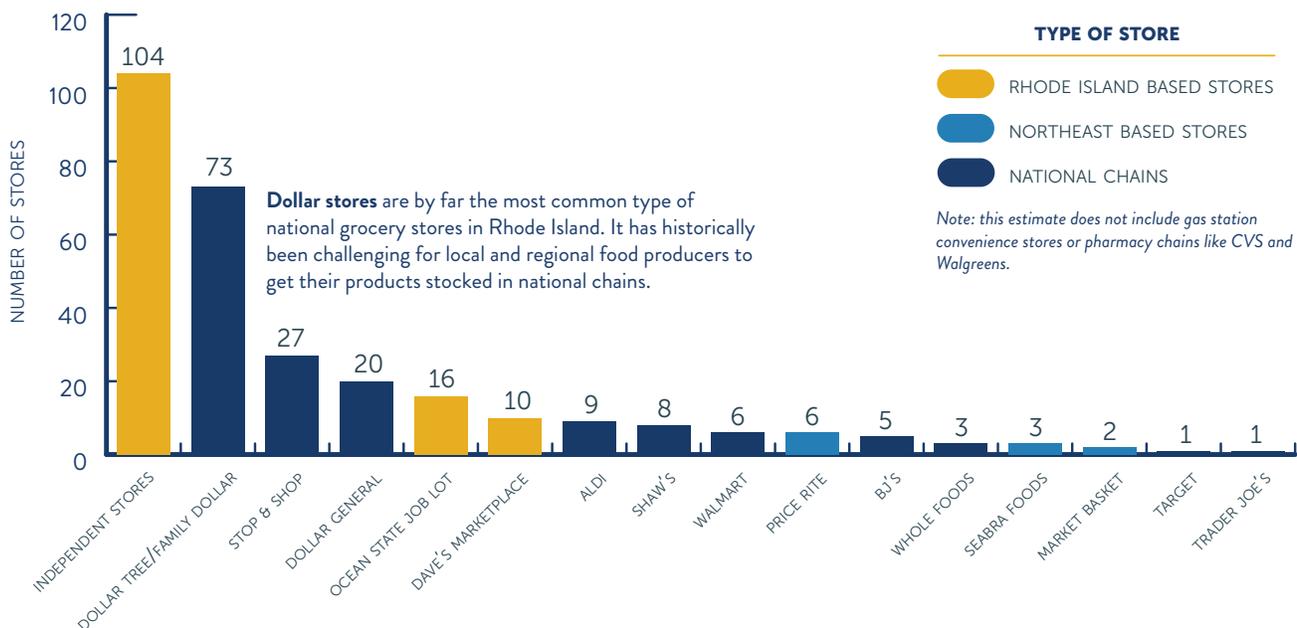


Source: U.S. Census Bureau *Economic Census*. Note: In contrast to the economic impact analysis conducted for New England Feeding New England, these sales values are reported in 2022 dollars (i.e., the difference between \$5,893,278,100 in 2020 dollars and \$6,509,159,848 billion in 2022 dollars).

Count of Food Stores in Rhode Island

NO TREND

Rhode Island has **over 100** independent stores, including many specialty stores (e.g., ethnic meat markets), corner stores, and small grocery stores like Roch’s Fresh Foods in West Greenwich. A Rhode Island dollar chain store, Ocean State Job Lot has 16 locations, while Dave’s Fresh Marketplace has 10 locations.

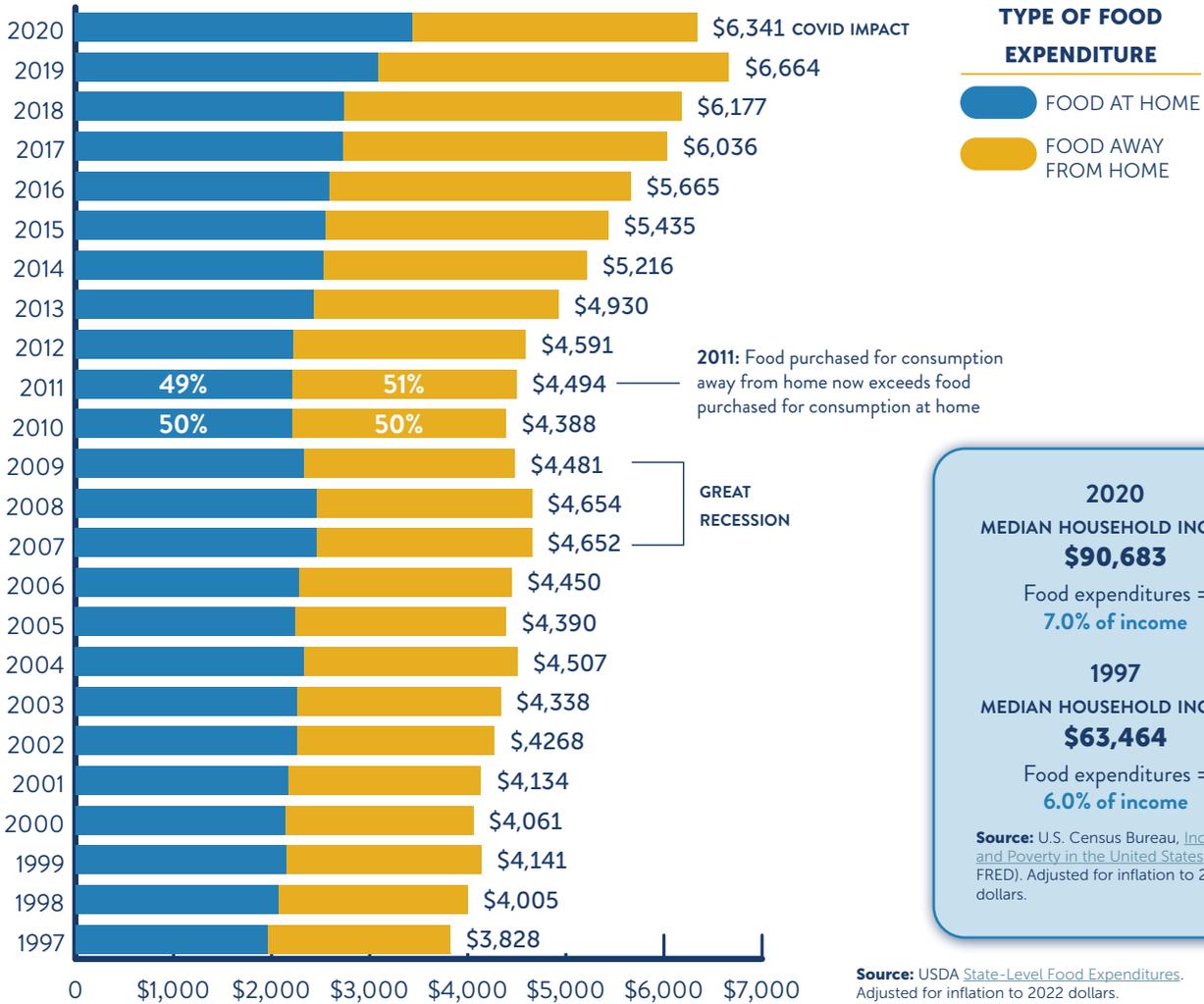


Source: Rhode Island Department of State and Google search.

PER CAPITA FOOD EXPENDITURES, 1997-2020



Rhode Island had the **fifth highest per capita food expenditures (\$6,341)** of any state in the country in 2020. The annual growth rate for median household incomes in Rhode Island from 1997 to 2020 was 1.6%, while the annual growth rate for food expenditures was 2.2% from 1997 to 2020. Consequently, Rhode Island experienced a modest increase in per capita food expenditures as a percent of median household income (i.e., from 6.0% in 1997 to 7.0% in 2020).



2020
MEDIAN HOUSEHOLD INCOME
\$90,683
 Food expenditures = **7.0% of income**

1997
MEDIAN HOUSEHOLD INCOME
\$63,464
 Food expenditures = **6.0% of income**

Source: U.S. Census Bureau, [Income and Poverty in the United States](#), (via FRED). Adjusted for inflation to 2022 dollars.

Source: USDA [State-Level Food Expenditures](#). Adjusted for inflation to 2022 dollars.

Median Household Income by Race/Ethnicity, 2017-2021 (5-year Average)

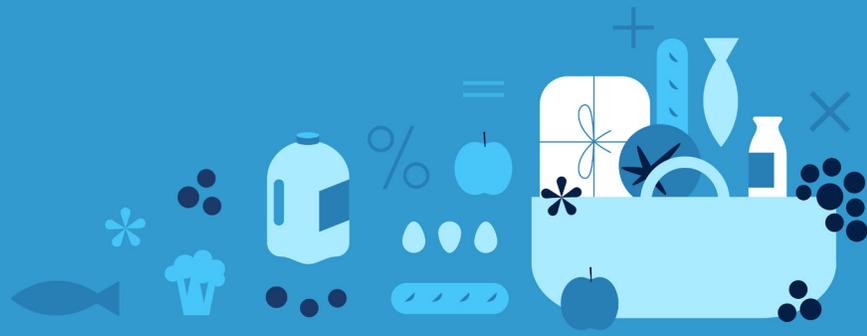


Although food is the **third highest expense**—after housing and transportation—for all demographics, it is the case that Hispanic, Black, Indigenous, Native Hawaiian/Pacific Islander, and Rhode Islanders of 2 or more, or other races, start off with **much lower** median household incomes than Asian and White Rhode Islanders.



Source: U.S. Census Bureau American Community Survey, [Table B19013: Median Household Income](#) and [Table B25006: Race of Householder](#).

Food Access and Security



What are the trends in food security in Rhode Island? What are the disparities in how Rhode Islanders are impacted by food access challenges?

Rhode Island, like the rest of the country, has essentially made no progress reducing food insecurity rates over the past 20 years. The Great Recession increased the percentage of Rhode Islanders in poverty—and the percentage of food insecure Rhode Islanders—for several years. These percentages then decreased for several years before the COVID-19 pandemic elevated them once again.

There are different methodologies for measuring food insecurity, with two depicted here: the [RI Life Index](#) estimated higher rates of food insecurity for all Rhode Island households—particularly Hispanic and Black households—than the official [USDA food insecurity](#) estimates. The [Rhode Island Community Food Bank](#) also tracked a steep increase in people served by the charitable food system as a result of the COVID-19 pandemic.

BIPOC Rhode Islanders make up 30.1% of the state’s population, and 30.4% of BIPOC households received SNAP benefits, compared to 10.1% of White households. Nearly 51% of BIPOC residents also live in [low-income low-access census tracts](#), compared to 18.1% of White Rhode Islanders.

KEY STATS

11.2% in poverty

>8.6% food insecure

77,500 people served by food bank

30.4% of BIPOC households received SNAP benefits

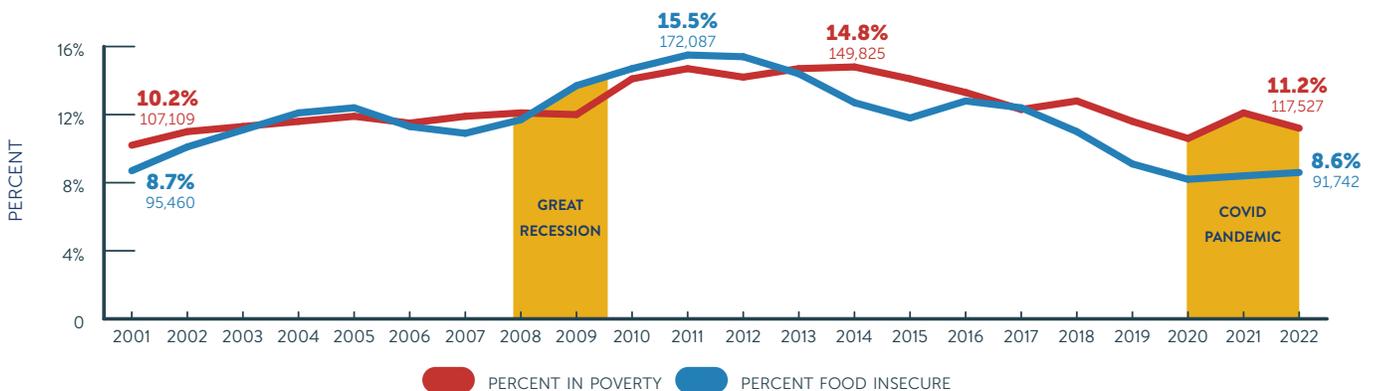
50.7% of BIPOC residents live in LILA census tracts

PERCENT OF RHODE ISLANDERS IN POVERTY, 2001-2021

NEGATIVE TREND



The percent of Rhode Islanders in poverty gradually increased from 2001 to 2009. Poverty then jumped several percentage points due to the Great Recession and lingered at over **14%** for six years. Poverty then decreased from 2014 to 2019, although it did not go below the percentage in 2001. The COVID-19 pandemic then spiked the percent of Rhode Islanders in poverty to **12.1% (126,971 people)**, before decreasing to **11.2% (117,527 people)** in 2022. **Food insecurity in Rhode Island mirrors poverty trends.**

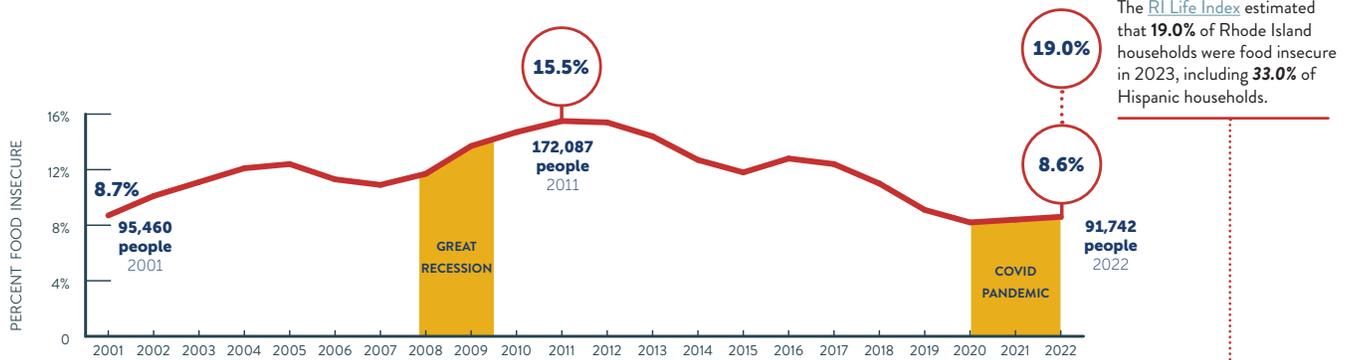


Sources: U.S. Census Bureau [Small Area Income and Poverty Estimates](#) (via FRED) and [USDA Economic Research Service, Household Food Security in the United States](#), multiple years.

FOOD INSECURITY (USDA), 2001-2022

NO TREND

From 2020 to 2022, the average percentage of food insecure households in Rhode Island was **8.6%**, compared to an average of 8.7% from 1999 to 2001. The prevalence of food insecurity in Rhode Island was statistically significantly **lower** than the national average from 2020 to 2022, but essentially no progress was made from 2001 to 2022. In the past 20 years, food insecurity was highest in 2011, as a result of a slow recovery from the Great Recession. The COVID-19 pandemic also triggered economic hardship across the country, but USDA estimates of food insecurity were not noticeably higher from 2020 to 2022. What explains this? The [federal government rapidly fortified the social safety net](#) to fight the pandemic. Most additional federal benefits have subsequently ended.



The [RI Life Index](#) estimated that **19.0%** of Rhode Island households were food insecure in 2023, including **33.0%** of Hispanic households.

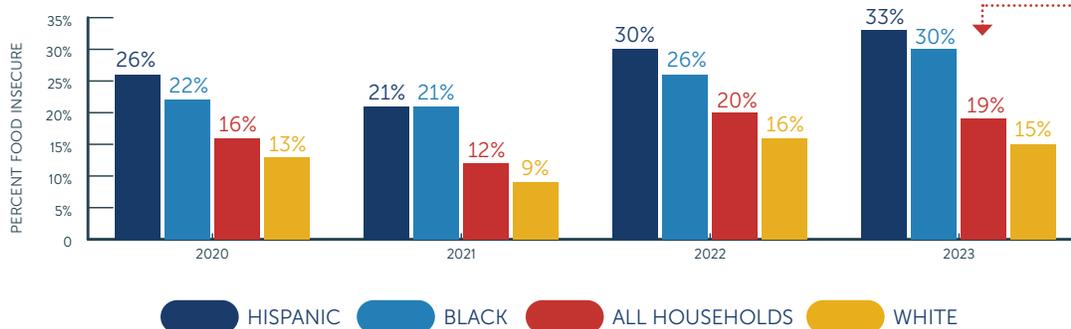
Source: USDA Economic Research Service, [Household Food Security in the United States](#), multiple years. USDA estimates of food insecurity are based on 18 questions contained in the Food Security Supplement administered by the Current Population Survey to about 50,000 households across the country. State-level estimates are obtained by averaging 3 years of data (e.g., 2020-2022) to generate large enough sample sizes for each State to produce reliable estimates. Response rate for 2022 = 70.4%. Note: number of households were converted into number of people.

FOOD INSECURITY (RI LIFE INDEX), 2020-2022

NEGATIVE TREND



The [RI Life Index](#) asks Rhode Islanders two types of food security questions: actual experiences about food security and perceptions of community access to nutritious food. Unfortunately, questions about actual experiences with food security were not asked in 2019, so we do not have a pre-COVID estimate. Available data suggests that Hispanic and Black Rhode Islanders had higher percentages of food insecurity than White Rhode Islanders at the start of the COVID pandemic. Percentages of food insecure Rhode Islanders then decreased in 2021, probably due to alignment with an uptick in federal benefits. Percentages of food insecurity for Hispanic and Black Rhode Islanders then increased in 2022 and 2023, possibly as some federal benefits ended.



Respondents were asked to respond “almost always true,” “true most of the time,” “sometimes true,” or “never true” to two statements: 1) *We worried whether our food would run out before we got money to buy more in the last 12 months;* and 2) *The food we bought just didn’t last and we didn’t have money to get more.* Percentages reflect respondents who answered “almost always true,” “true most of the time,” and “sometimes true.”

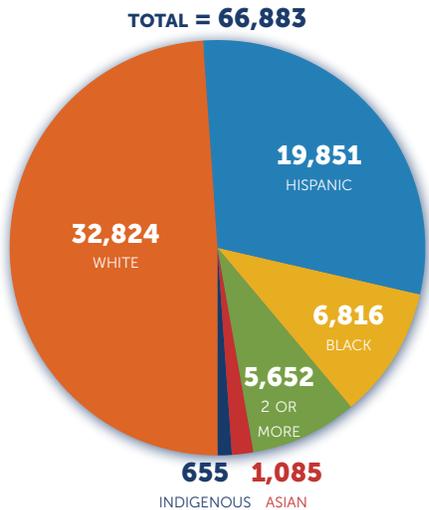
Source: [RI Life Index](#). The RI Life Index was created by Blue Cross & Blue Shield of Rhode Island and the Brown University School of Public Health in 2019. It has been administered to over 2,000 Rhode Islanders every year since 2019. The response rate for 2022 was 6.4%.

RECEIPT OF SNAP BY RACE/ETHNICITY AND COUNTY, 2017-2021

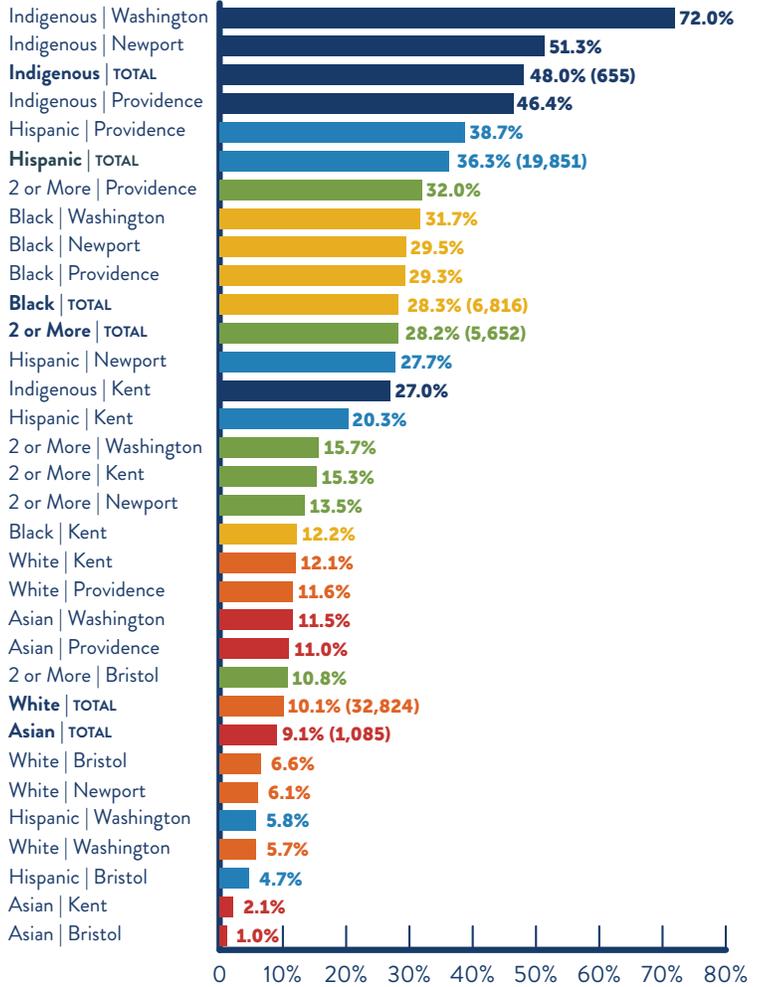
From 2017 to 2021, an average of **15.3% (66,883)** of Rhode Island households received Supplemental Nutritional Assistance Program (SNAP) benefits to supplement their grocery budgets. White Rhode Islanders make up the majority of the [state's population](#) (69.9%) and, consequently, the largest number of SNAP recipients in Rhode Island were White. But only 10.1% of White households received SNAP benefits. In contrast,

- > Hispanic Rhode Islanders make up 17.6% of the state's population and 36.3% of Hispanic households received SNAP benefits.
- > Black Rhode Islanders make up 9.1% of the state's population and 28.3% of Black households received SNAP benefits.
- > Rhode Islanders of 2 or more races make up 3.1% of the state's population and 28.2% of these households received SNAP benefits.
- > Indigenous Rhode Islanders make up 1.2% of the state's population and 48.0% of Indigenous households received SNAP benefits.
- > Asian Rhode Islanders make up 3.7% of the state's population and 9.1% of Asian households received SNAP benefits.

AVERAGE NUMBER OF HOUSEHOLDS RECEIVING SNAP BENEFITS BY RACE/ETHNICITY



PERCENT OF RACE/ETHNICITY RECEIVING SNAP BY COUNTY

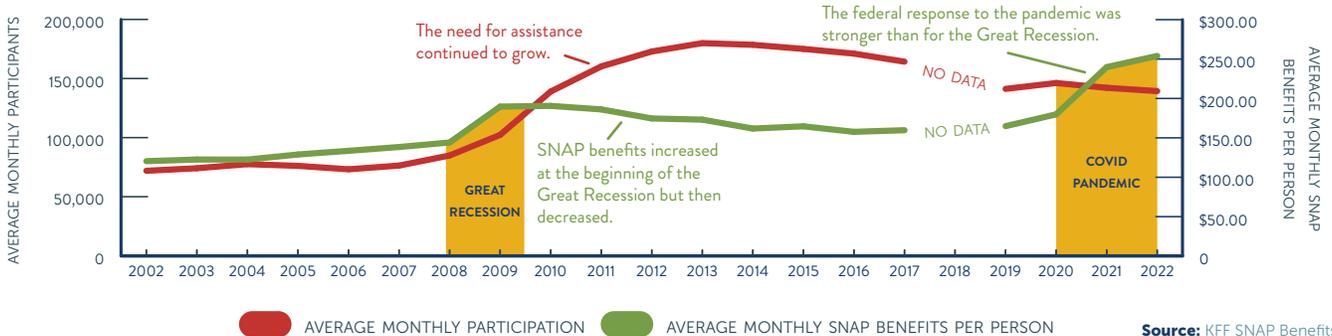


Source: U.S. Census Bureau American Community Survey, [Receipt of Food Stamps/SNAP in Past 12 Months by Race of Householder](#).

SNAP PARTICIPATION AND BENEFITS, 2002-2022



Periods of economic turbulence that increase unemployment and poverty also triggered the need for supplemental assistance. With the Great Recession, the need for assistance remained high for many years after its official end. Benefits introduced during the COVID pandemic—such as universal school meals and funding for emergency food delivery systems—may have reduced families' need for SNAP benefits. However, these benefits have mostly ended and it seems likely that monthly participation will have increased when data for 2023 is available.

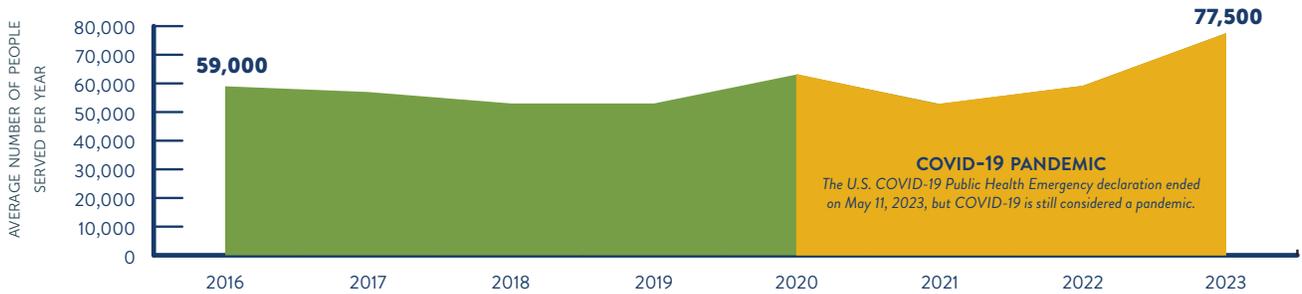


Source: KFF SNAP Benefits.

AVERAGE NUMBER OF PEOPLE SERVED BY CHARITABLE FOOD SYSTEM



In 2023, the [Rhode Island Community Food Bank](#) estimates that a record number of Rhode Islanders—**77,500**—sought assistance through the Food Bank and its network of 143 member agencies. High food prices and the ending of emergency SNAP benefits in 2023 are thought to be the primary drivers of the increased need for food assistance.

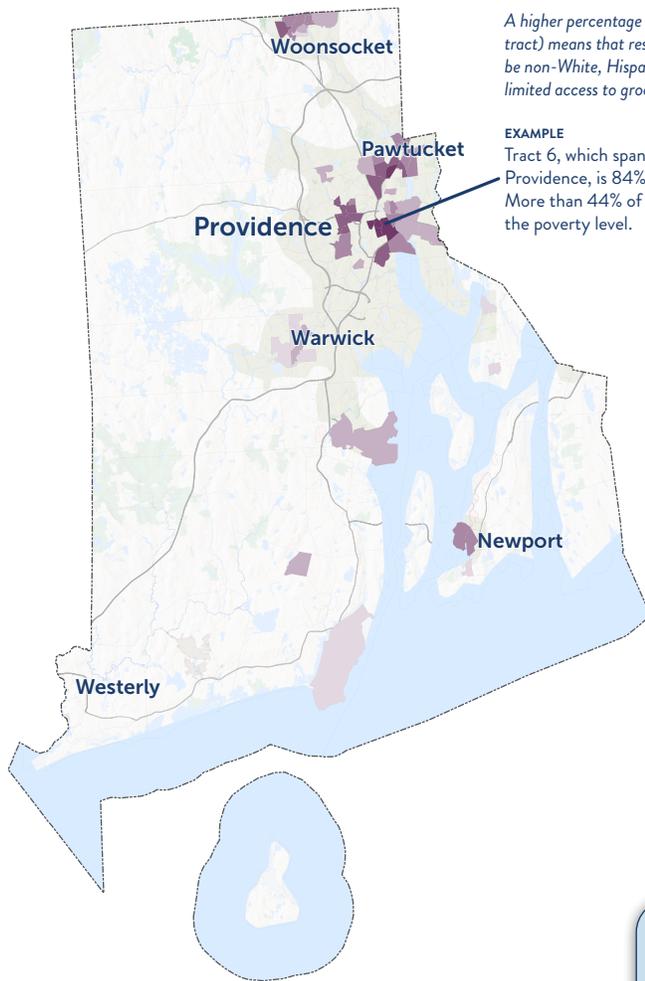


Source: Rhode Island Community Food Bank, [Status Report on Hunger in Rhode Island](#), multiple years.

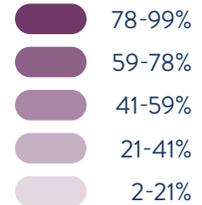
LOW-INCOME LOW-ACCESS CENSUS TRACTS BY RACE/ETHNICITY

NO TREND

Hispanic/Latino, Black, Asian, Indigenous, Native Hawaiian/Pacific Islander, and Rhode Islanders of two or more races or some “other” race—made up 30.1% of the state’s population, but 51.3% of its population living in low-income low-access (LILA)* census tracts.



% NON-WHITE OR HISPANIC BY LILA CENSUS TRACT



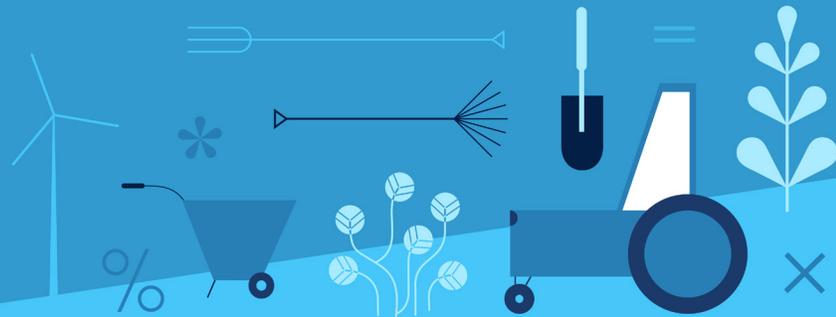
* **Low-Income Low-Access (LILA)** = Where a large proportion of the residents have low-incomes and are more than 1/2 mile from a food source for urban populations, and over 10 miles for rural populations.

	% OF POPULATION	% LIVING IN LILA TRACTS
White	69.9% (764,520)	→ 18.1% (138,751)
Hispanic	17.6% (192,497)	→ 46.5% (89,481)
Black	9.1% (99,530)	→ 28.4% (28,325)
Asian	3.7% (40,468)	→ 31.0% (12,541)
Indigenous	1.2% (13,124)	→ 8.4% (1,098)
Hawaiian/PI	0.2% (2,187)	→ 3.2% (70)

Research by [Kathryn De Master](#) and [Jess Daniels](#) argues that the concept of “food deserts” and the LILA map overemphasize proximity to supermarkets and transportation and miss the important contributions of corner markets, bodegas, and other smaller stores. Using Providence as a case study, they emphasize that market basket surveys of all stores in an area can provide a more nuanced picture of foodscapes. Future versions of the Data Dashboard and Factbook can include this type of analysis.

Sources: USDA Food Research Atlas, American Community Survey.

Agriculture and Land Use



What kinds of agricultural products are grown/raised in Rhode Island? Is Rhode Island's agricultural sector growing or contracting?

Due to its small land area, Rhode Island had the lowest amount of land in agriculture—**56,864 acres**—and agricultural sales—**\$69.3 million**—of any state in 2017. A consequence of Rhode Island's relatively small land base, coupled with intense development pressure, is that it has the most expensive farm land in the country: **\$17,500 per acre**.

Rhode Island is heavily invested in inedible products. **Greenhouses/nurseries/floriculture accounted for 20.8% (217) of farms and 49.6% (\$32.9 million) of sales in 2017.** Acreage for vegetables, fruits, berries, and corn for grain equaled a mere **21.7% (3,106 acres)** of harvested cropland and 5.5% of total land in agriculture.

Note that an [independent analysis](#) of 2012 data estimated agricultural sales of about \$239 million, compared to \$59.6 million estimated by the USDA. Potential reasons for this large discrepancy are discussed on page 35.

KEY STATS

56,864 acres

1,043 farms

\$69.3 million total sales

\$12.1 million direct sales
2017 estimate from USDA

\$238.9 million total sales
2012 estimate from Dr. Sproul

56.9 average age of farmers

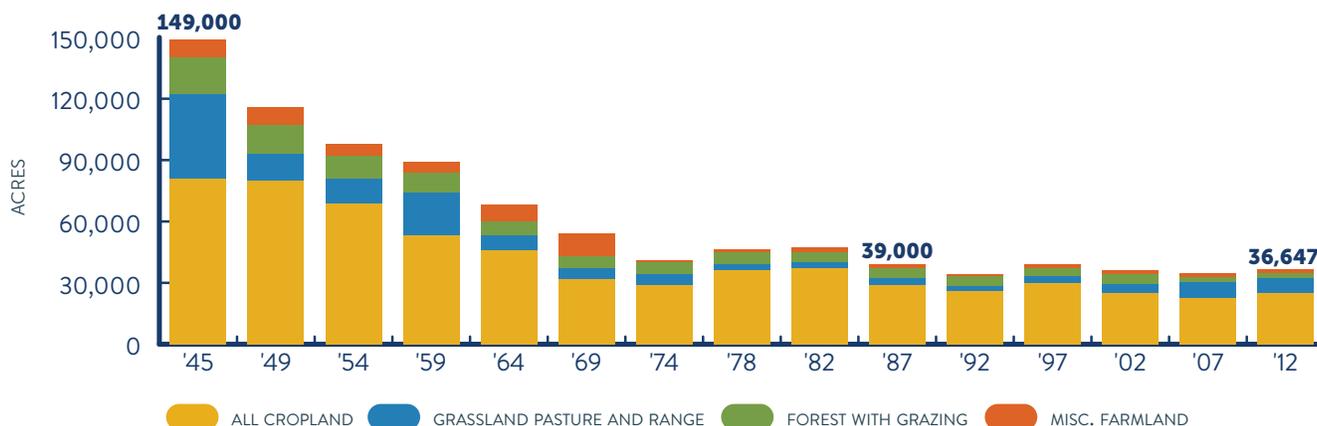
98% of farmers are White

\$17,500 average price per acre

MAJOR AGRICULTURAL LAND USES IN RHODE ISLAND, 1945-2012



The [USDA's Major Land Uses series](#) is the "longest running, most comprehensive accounting of all major land uses of public and private land in the United States." This series shows a steep decrease in land in agriculture in RI after World War II that flattens out around 1987. Since then, acreage has remained ≈36,000 acres, comprised mostly of cropland.

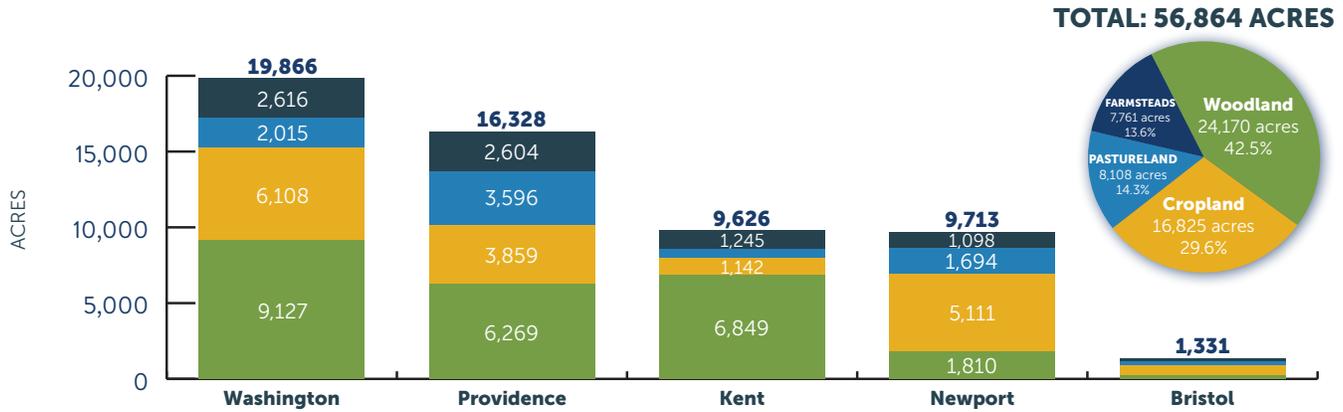


Source: USDA [Major Land Uses](#). Data for 2017 has still not been published. Note: the Major Land Uses series designates "forest with grazing" and not the total amount of forest land (i.e., "woodland") owned by farmers, as we will see in the next figure on page 14.

LAND IN AGRICULTURE BY COUNTY, 2017



The [2017 Census of Agriculture](#) estimates a slightly larger amount of land in agriculture than the Major Land Uses series because it includes *all* woodland owned by a farm. Land in agriculture decreased from 69,589 acres in 2012 to **56,864 acres** in 2017. Washington (35%) and Providence (28.7%) contain the majority of agricultural land.

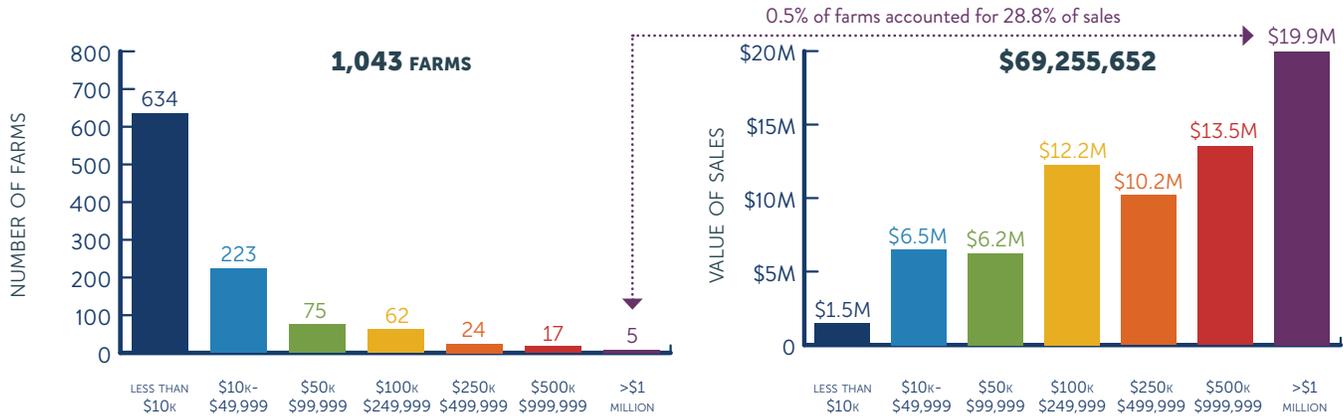


Source: USDA 2017 Census of Agriculture, [Land in Farms](#).

NUMBER OF FARMS AND SALES BY ECONOMIC CLASS, 2017



As with most states in the country, a [fundamental scale asymmetry](#) is evident in Rhode Island agriculture: Small farms make up the majority of farms but they have comparatively limited sales. A small number of large farms generate the majority of sales.



Source: USDA 2017 Census of Agriculture, [Market Value](#).

FARMER RACE AND AGE DEMOGRAPHICS, 2017

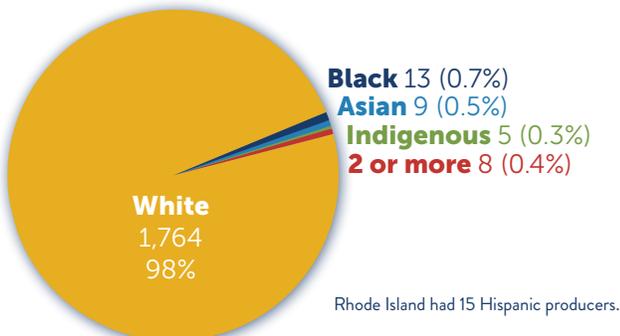


White Rhode Islanders make up 69.9% of the state's population but **98%** of all farm producers.

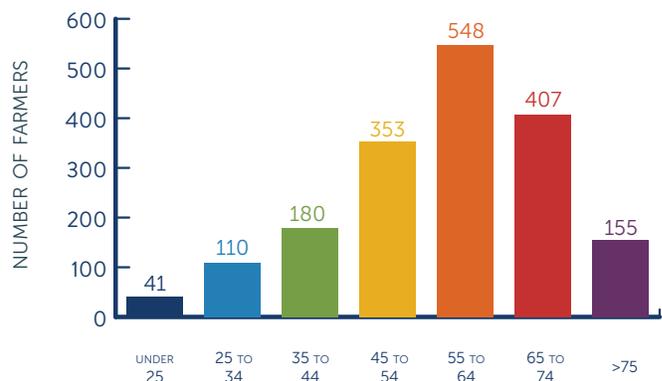


About 62% of Rhode Island farmers are over the age of 55. The average age of farmers in 2017 was 56.9.

TOTAL: 1,794 PRODUCERS



Source: USDA 2017 Census of Agriculture, [Selected Producer Characteristics by Race](#).

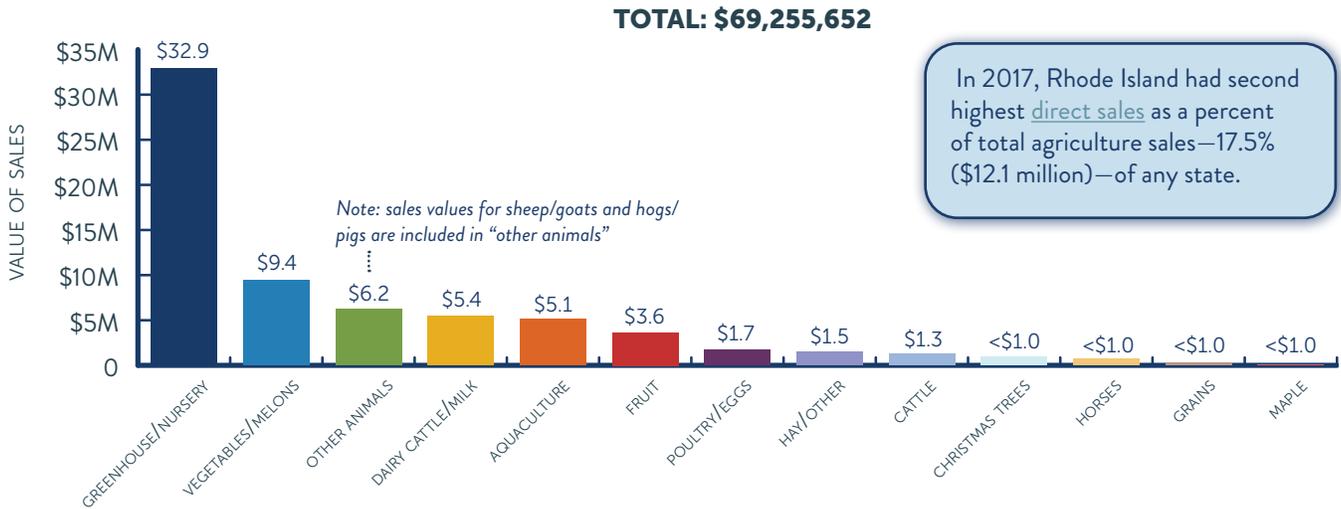


Source: USDA 2017 Census of Agriculture, [Selected Producer Characteristics](#).

AGRICULTURAL SALES, 2017



Agricultural sales in Rhode Island decreased from \$93.0 million in 2007, to \$69.3 million in 2017. With its limited landmass, Rhode Island is heavily invested in **inedible products**. Greenhouses/nurseries/floriculture accounted for 20.8% of farms and 49.6% of sales. Acreage for vegetables, fruits, berries, and corn for grain equaled **21.7% (3,106 acres)** of harvested cropland, 5.5% of total land in agriculture, and 9.7% of sales. Note that an independent analysis of agricultural sales in Rhode Island using a sample of 229 farms estimated sales of \$238.9 million in 2012. Potential reasons for this discrepancy are discussed on page 35.

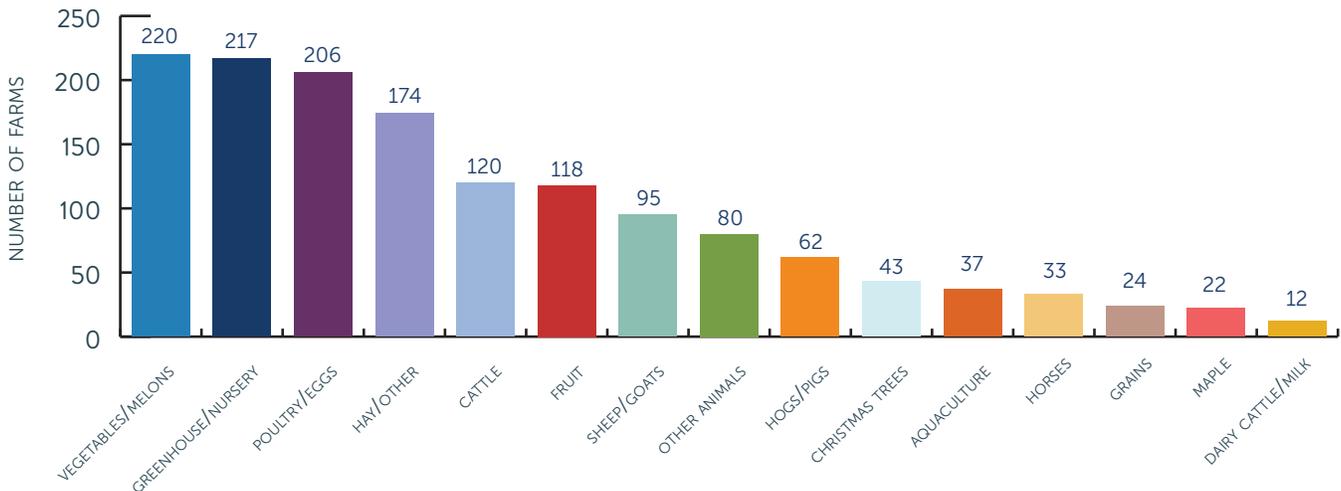


Source: USDA 2017 Census of Agriculture. Note: In contrast to the agricultural sales figures depicted on page 6, this figure is adjusted for inflation to 2022 dollars. Agriculture sales in this figure also do not include agricultural support activities.

NUMBER OF FARMS ENGAGED IN EACH CATEGORY, 2017



The number of farms in Rhode Island decreased from 1,219 in 2007, to 1,043 in 2017. Note that most farms are engaged in more than one type of agricultural activity. The bars in this figure are not mutually exclusive. A little more than 21% of all farms in Rhode Island grow vegetables/melons, 20.8% are greenhouses/nurseries, and 19.7% raise poultry/eggs.



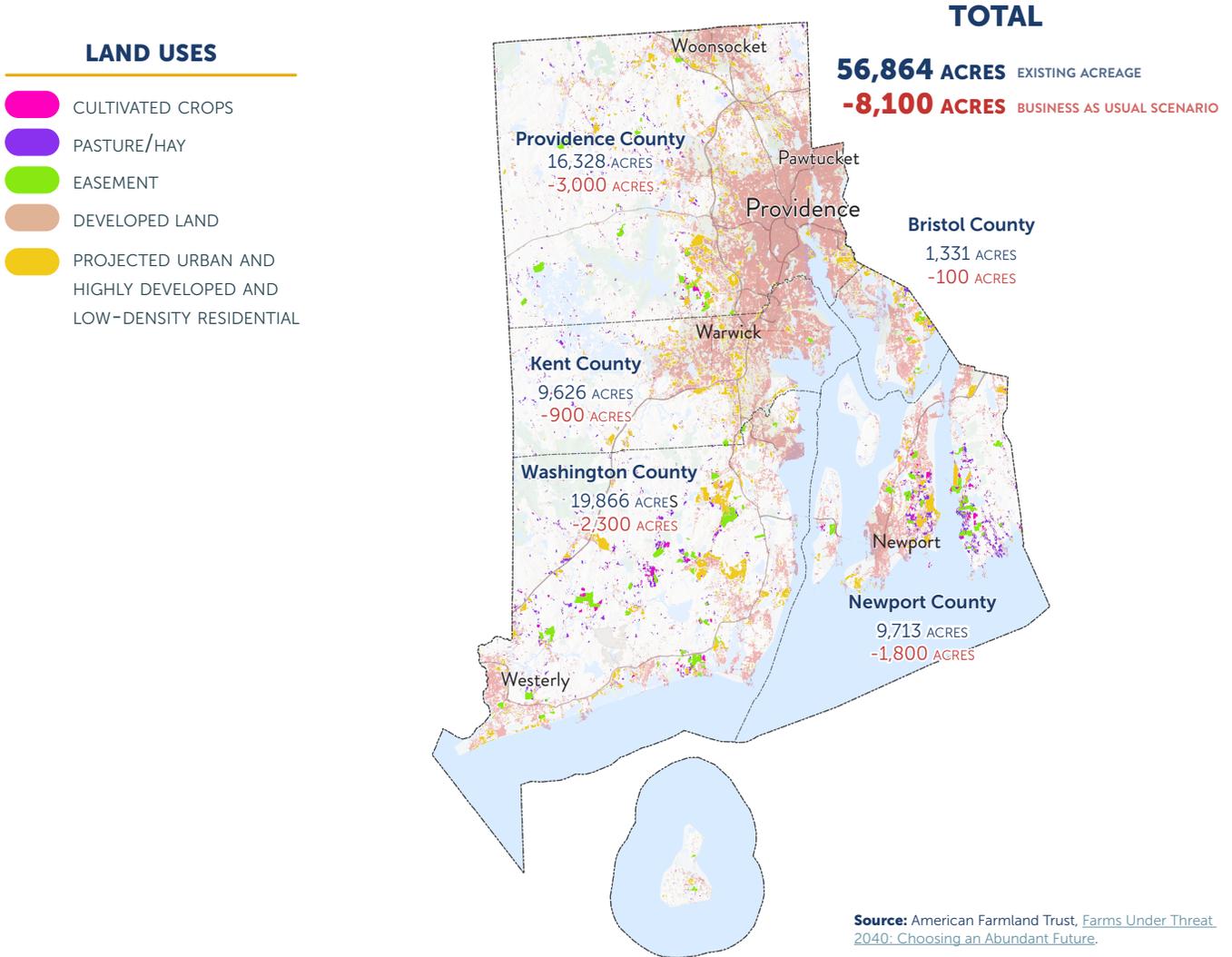
Source: USDA 2017 Census of Agriculture. Note: the number of farms has likely decreased since 2017.

PROJECTED CHANGES IN LAND IN AGRICULTURE, BUSINESS AS USUAL SCENARIO

NEGATIVE TREND



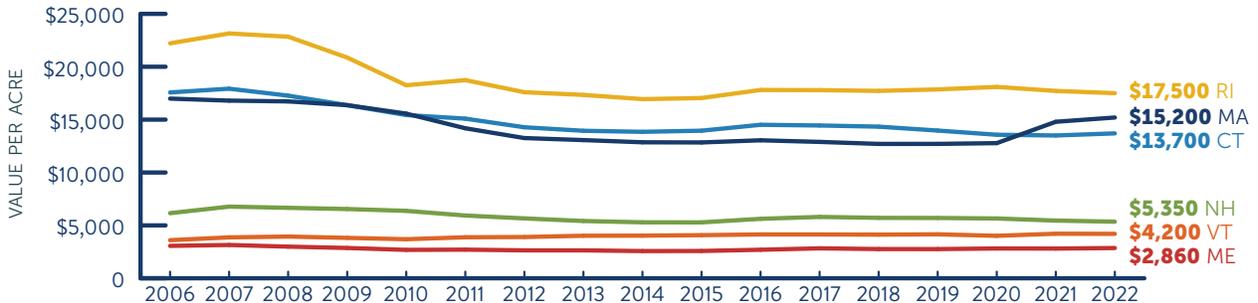
An analysis from the American Farmland Trust (AFT) estimates that Rhode Island could lose an additional **8,100 acres** by 2040 under a “Business as Usual” development scenario (equal to a 14.2% decrease in available farmland) and **9,900 acres** under a “Runaway Sprawl” scenario. AFT projects that **Providence, Washington, and Newport** counties will experience the biggest decreases in land in agriculture.



NEW ENGLAND FARM LAND REAL ESTATE VALUES, 2006-2022

NO TREND

The average price per acre of farm land in Rhode Island has hovered around **\$17,000** for the past 12 years. This is the highest average price per acre in the country.



Source: USDA National Agricultural Statistics Service, August 2022, *Land Values 2022 Summary*. Reported in 2022 dollars.

Commercial Fisheries & Aquaculture



What kinds of seafood products does Rhode Island catch and harvest? Are commercial fishing and aquaculture growing or contracting?

More than 100 species are caught or harvested by Rhode Island fishermen, but **14 species account for the majority of seafood pounds and sales.** Rhode Island has the second largest and most diversified fishing port in the region—Point Judith—supported by a state-owned port infrastructure that prioritizes the needs of the commercial fishing industry. However, local markets are lacking for many of these species, and currently most of Rhode Island’s catch is shipped overseas for processing, a situation that makes it difficult for local and New England consumers to access Rhode Island’s fresh local fish.

Eastern oysters, the most valuable seafood species harvested in Rhode Island, account for about 98% of all aquaculture production.

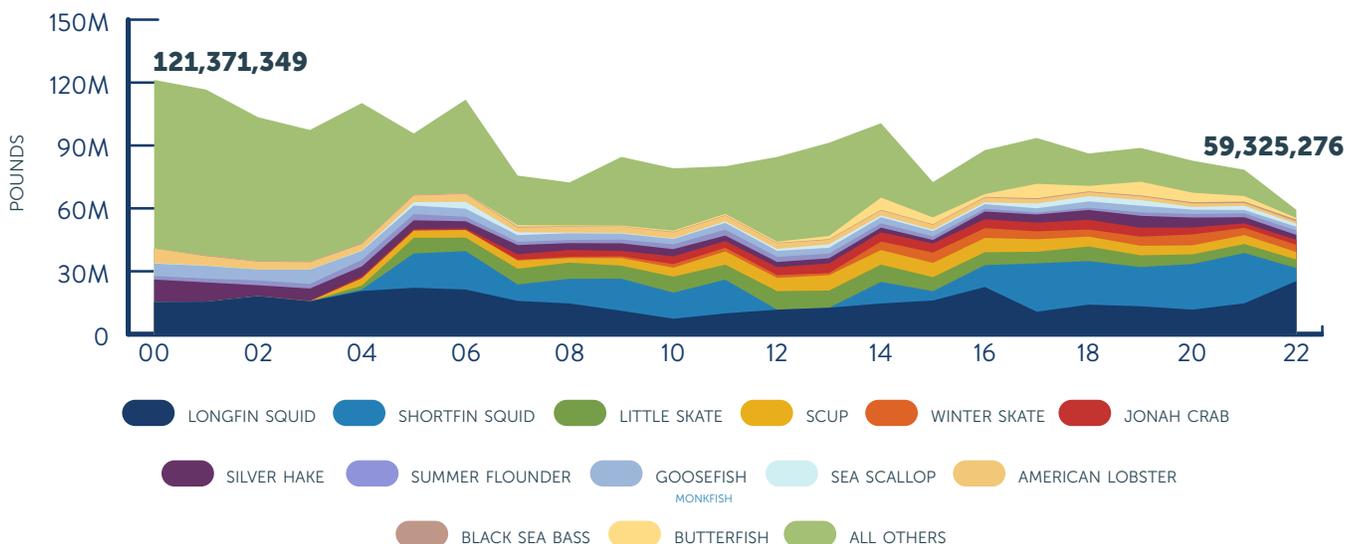
KEY STATS

- 59.3 million** lbs landed
- \$107 million** seafood landings
- \$575 million** seafood sector sales
- 3,100** total seafood sector jobs
- 374** acres in aquaculture
- \$8.3 million** aquaculture sales

COMMERCIAL SEAFOOD LANDINGS, 2002-2022



Total pounds of seafood landed by Rhode Island fishers decreased by **51.1%** from 2002 (121 million pounds) to 2022 (59 million pounds), although seafood landings have been **relatively consistent** over the past 12 years. Together, longfin and shortfin squid accounted for 53% of pounds landed in 2022.

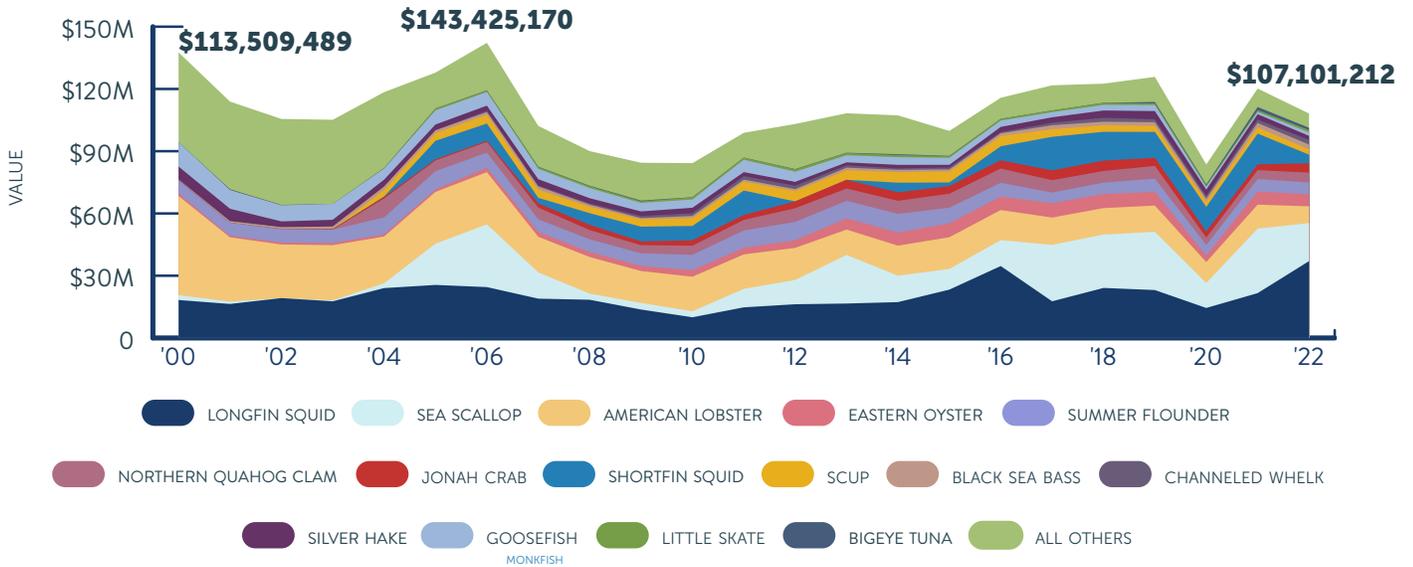


Sources: NOAA Fisheries and the Atlantic Coastal Cooperative Statistics Program.

VALUE OF COMMERCIAL SEAFOOD LANDINGS, 2002-2022

NO TREND

Except for a spike in 2006 and a valley in 2020 due to the COVID-19 pandemic, the total value of seafood landed by Rhode Island fishers has been **relatively consistent** over the past 22 years at over \$100 million. Together, longfin and shortfin squid accounted for 53% of pounds landed in 2022. Longfin squid (34.6%) and sea scallop (17.1%) accounted for more than half of the value.

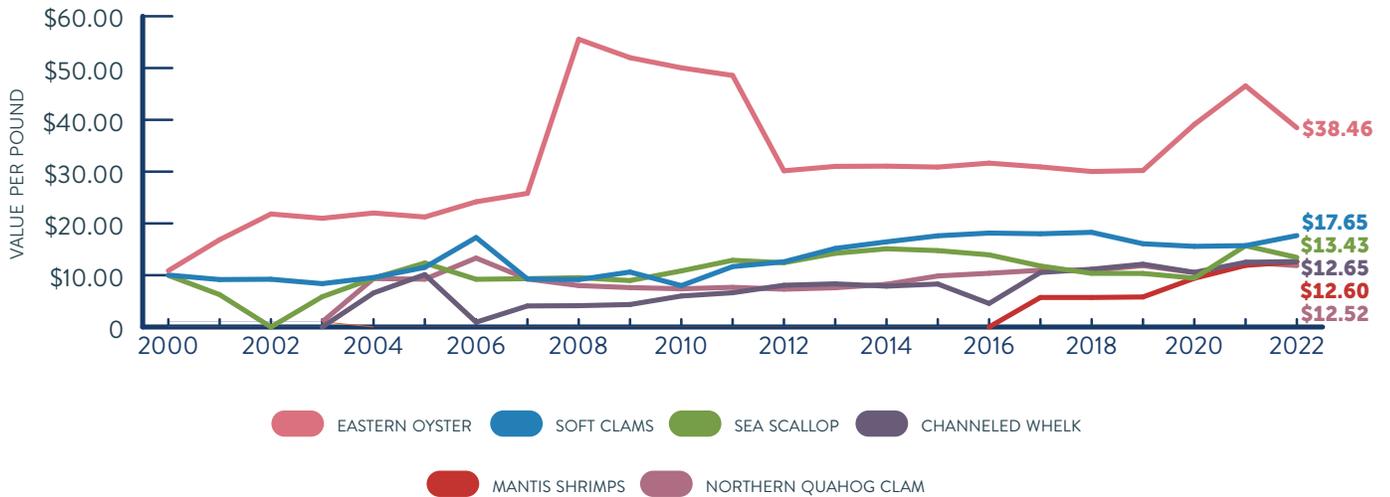


Sources: NOAA Fisheries and the Atlantic Coastal Cooperative Statistics Program. Adjusted for inflation to 2022 dollars.

VALUE PER POUND OF COMMERCIAL SEAFOOD LANDINGS, 2002-2022

POSITIVE TREND

Although squid, skate, hake, and others are the most commonly caught species by Rhode Island fishers, **Eastern oysters (\$38.46 per pound)** are, by far, the most valuable species grown, cultivated, or harvested. In 2022, they accounted for 0.3% of harvested pounds but 5.4% of the value of sales. Soft clams (\$17.65), sea scallops (\$13.43), and channeled whelk (\$12.65) also had high per pound values.



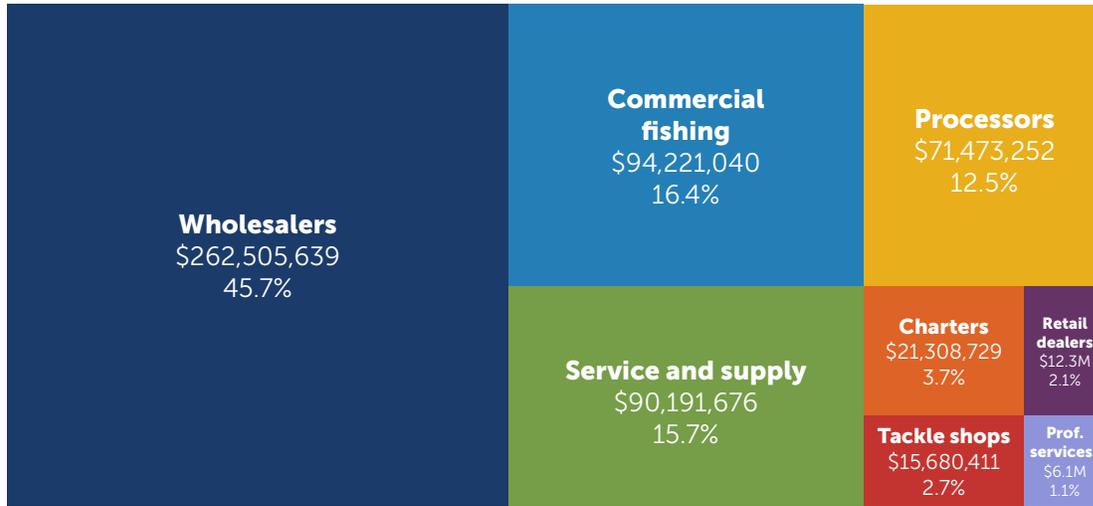
Sources: NOAA Fisheries and the Atlantic Coastal Cooperative Statistics Program. Adjusted for inflation to 2022 dollars.

GROSS SALES OF RHODE ISLAND'S SEAFOOD SECTOR, 2016

NO TREND

Dr. Thomas Sproul (formerly at the University of Rhode Island) estimated nearly **\$575 million** in sales from Rhode Island's seafood and fisheries sector in 2016. Wholesalers (e.g., importers and exporters, brokers) generated 45.7% (\$274 million) in sales, followed by commercial fishing (16.4%, \$98.5 million) and service and supply businesses (e.g., nets, commercial tackle and gear, boat and equipment maintenance).

TOTAL = \$573,853,999



Source: Dr. Thomas Sproul and Clayton Michaud, 2019, [The Economic Impact of Rhode Island's Fisheries and Seafood Sector](#), University of Rhode Island.

EMPLOYMENT IN RHODE ISLAND'S SEAFOOD SECTOR, 2016

NO TREND

Dr. Sproul estimated a little more than **3,100 jobs** in Rhode Island's seafood and fisheries sector in 2016. Commercial fishing accounted for more than half of seafood and fisheries employment (1,711 jobs), followed by wholesalers (20%, 617 jobs), and processors (7%, 215 jobs).

TOTAL = 3,147

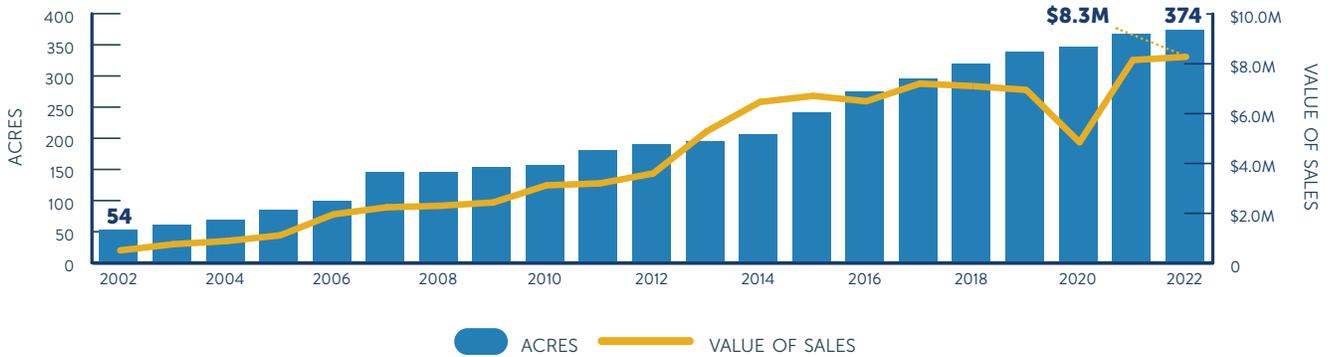


Source: Dr. Thomas Sproul and Clayton Michaud, 2019, [The Economic Impact of Rhode Island's Fisheries and Seafood Sector](#), University of Rhode Island.

AQUACULTURE PRODUCTION, 2002-2022



Eastern oysters, the most valuable seafood species coming out of Rhode Island waters, account for about 98% of all Rhode Island aquaculture production. Rhode Island has experienced steady growth in its aquaculture industry over the past 20 years, from 54 acres in 2002, to **374 acres in 2022**. Aquaculture sales were \$448,000 in 2002 and over \$6.1 million in 2019. Sales dipped dramatically in 2020 due to the COVID-19 pandemic since most Eastern oysters are served in restaurants. Sales subsequently rebounded to **over \$8 million** in 2021 and 2022.



Source: [Coastal Resources Management Council](#). Reported in 2022 dollars.

Climate Change



How is climate change impacting Rhode Island's food system?

Food system activities like cultivating crops, raising livestock, and land use changes, are major drivers of climate change and food systems are particularly vulnerable to climate change. Less distinct seasons, milder winters, earlier spring conditions, and more unpredictable weather are expected to impact agricultural production. For example, drought in 2022 harmed the yield and quality of crop production, leading to a [USDA natural disaster declaration](#) for the entire state. **Long term estimates suggest that the overall climate in Rhode Island will become wetter and warmer in coming decades.** The Atlantic Ocean also supports tourism, recreation, and economic activities, including fisheries. [Some evidence](#) shows that **cold-water iconic fishery species like cod, winter flounder, hake, and lobster are migrating out of Rhode Island waters, while warm-water species like scup, butterfish, black sea bass, and winter squid are moving in.**

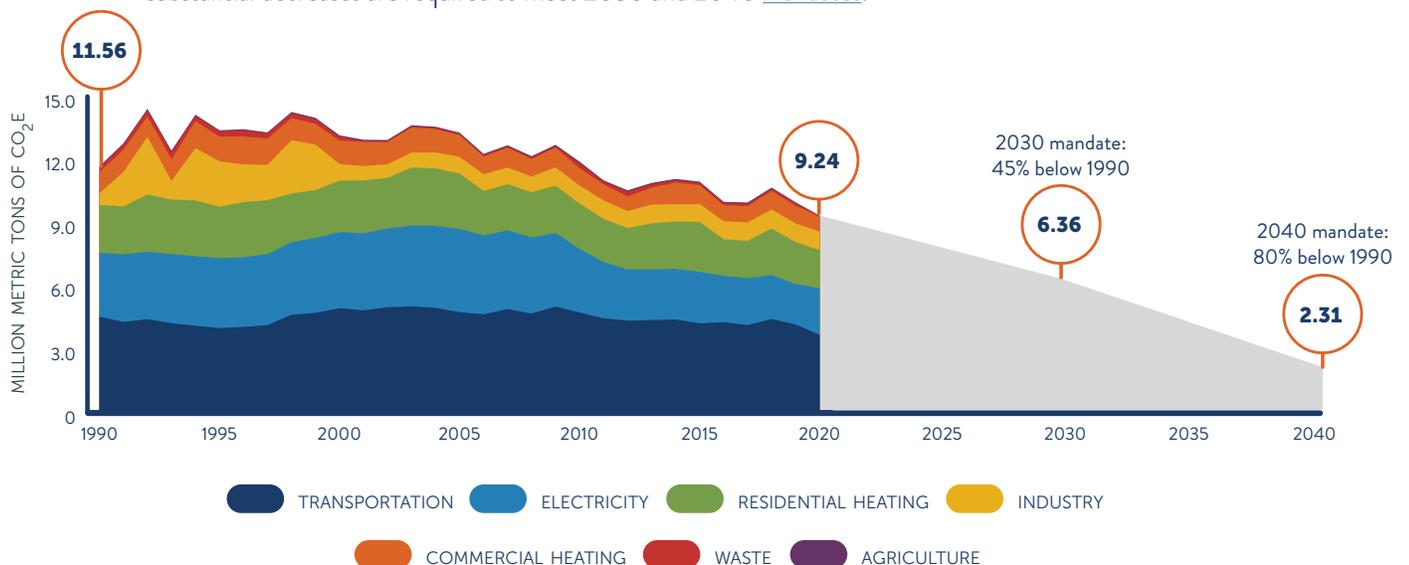
KEY STATS

- 2023** warmest year on record globally
- 4.1°F** RI air temperature anomaly in Dec 2023
- 77.7°F** North Atlantic surface temp.
- 32** billion-dollar weather disasters
- ≈100,000 tons** food waste
2015 data

GREENHOUSE GAS INVENTORY, 1990-2020



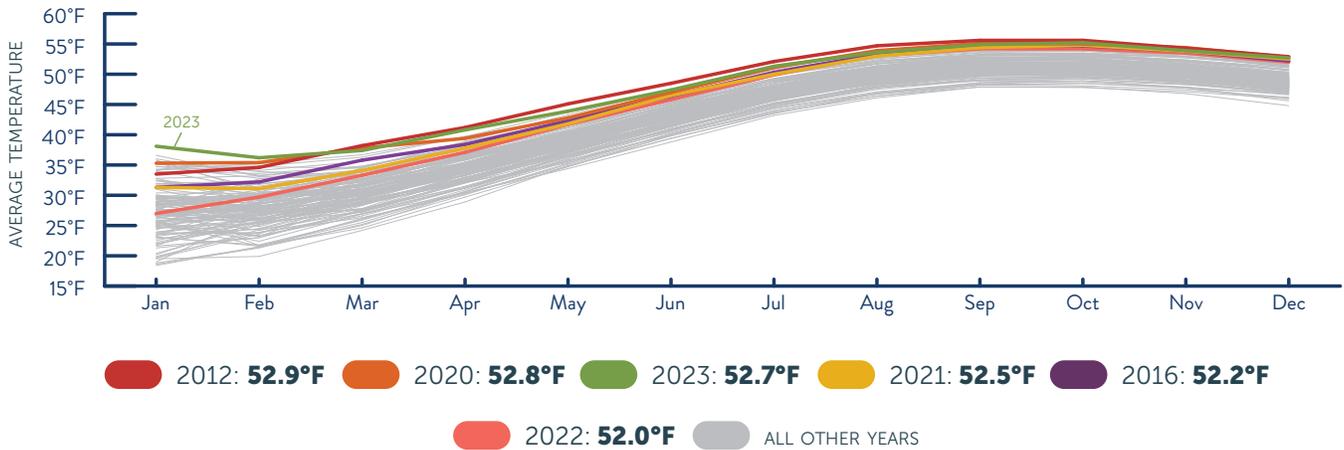
Net greenhouse gas emissions decreased **20.1%** from 11.56 MMCO₂e in 1990, to **9.24 MMCO₂e in 2020**. Transportation continues to be the largest source of emissions in Rhode Island. Emissions reductions for transportation from 2019 to 2020 are likely due to pandemic restrictions on travel (e.g., -79.6% for aviation emissions). Additional substantial decreases are required to meet 2030 and 2040 [mandates](#).



AVERAGE ANNUAL TEMPERATURE, 1896-2023



The six warmest years on record in Rhode Island—**2012, 2020, 2023, 2021, 2016, 2022**—have happened in the past 11 years. Globally, 2023 was the warmest year on record, and the third warmest year on record in Rhode Island. As the [Fifth National Climate Assessment](#) warns, “the more the planet warms, the greater the impacts.”

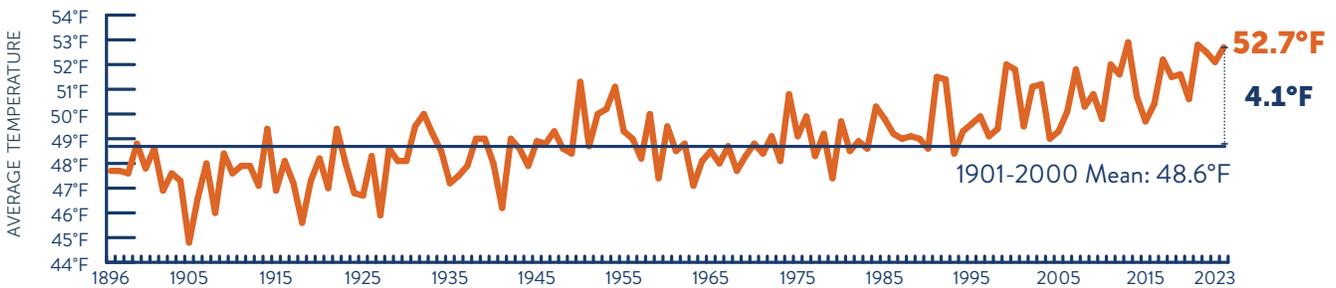


Source: NOAA National Centers for Environmental Information, [Climate at a Glance: Statewide Haywoods](#).

AIR TEMPERATURE ANOMALY, 1896-2023



Temperature anomalies are used to indicate how much a temperature departs from a reference period. In this case, the average temperature in Rhode Island from January 2023 to December 2023, **52.7°F**, was **4.1°F higher** than the average temperature during the previous century. The six New England states had the largest average temperature anomalies in the country, and Rhode Island had the third largest average air temperature anomaly in the country.

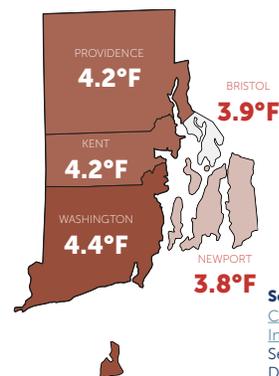


Source: NOAA, [National Centers for Environmental Information](#), Rhode Island Average Temperature, December–November.

STATE AIR TEMPERATURE ANOMALY RANK, 2023

- | | | | |
|---------------------|---------------|---------------|---------------|
| 1. VT: 4.5°F | 9. PA: 3.4°F | 17. KY: 2.5°F | 22. SC: 1.9°F |
| 2. CT: 4.3°F | 9. TX: 3.4°F | 17. NM: 2.5°F | 23. OR: 1.6°F |
| 2. ME: 4.3°F | 10. LA: 3.3°F | 18. AL: 2.4°F | 24. WY: 1.5°F |
| 2. MA: 4.3°F | 11. IL: 3.2°F | 18. ND: 2.4°F | 25. AZ: 1.4°F |
| 2. NH: 4.3°F | 12. FL: 3.1°F | 18. WV: 2.4°F | 25. ID: 1.4°F |
| 3. RI: 4.1°F | 12. IN: 3.1°F | 19. GA: 2.3°F | 26. CO: 1.3°F |
| 4. WI: 4.0°F | 12. MS: 3.1°F | 19. TN: 2.3°F | 27. UT: 0.9°F |
| 5. NJ: 3.9°F | 12. OH: 3.1°F | 19. WA: 2.3°F | 28. CA: 0.8°F |
| 6. MI: 3.8°F | 13. IA: 3.0°F | 20. KS: 2.2°F | 29. NV: 0.5°F |
| 6. MN: 3.8°F | 14. MO: 2.9°F | 20. NC: 2.2°F | |
| 7. DE: 3.7°F | 15. MT: 2.8°F | 20. OK: 2.2°F | |
| 7. NY: 3.7°F | 16. VA: 2.7°F | 20. SD: 2.2°F | |
| 8. MD: 3.6°F | 17. AR: 2.5°F | 21. NE: 2.1°F | |

COUNTY AIR TEMPERATURE ANOMALY, 2023



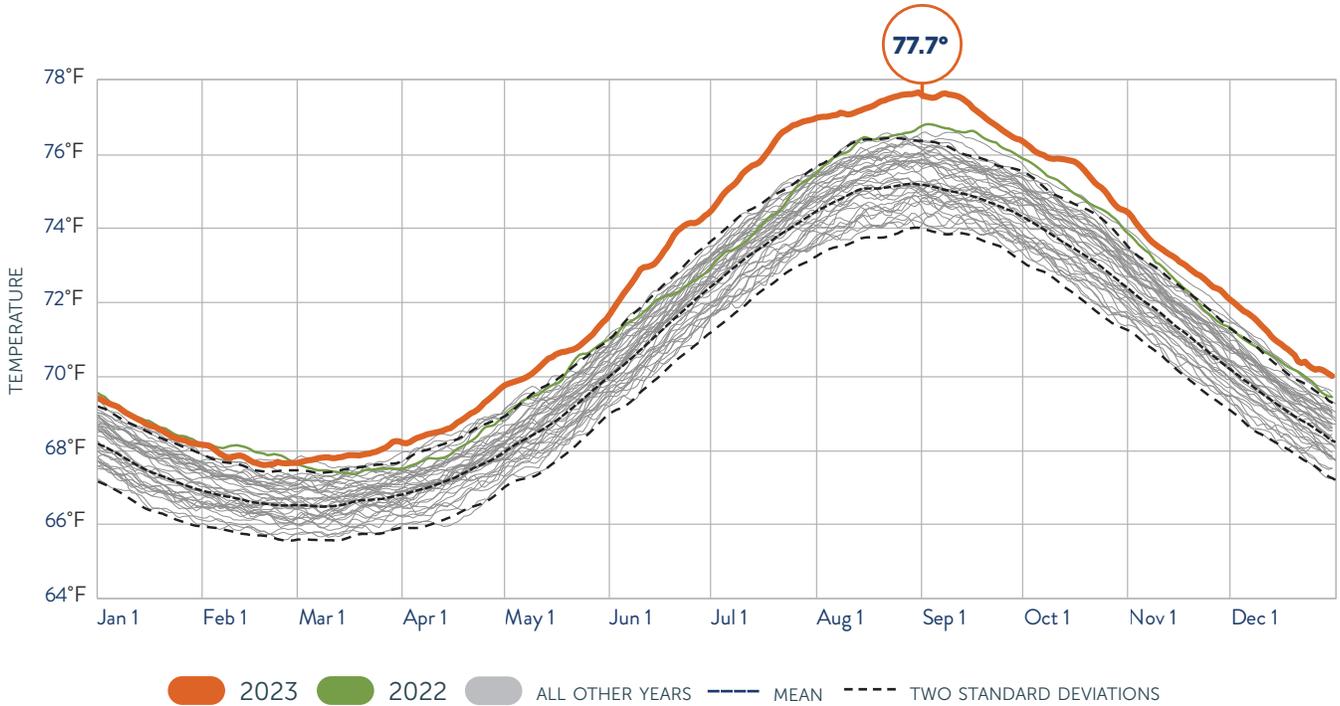
Source: NOAA, [National Centers for Environmental Information](#), Statewide Mapping, January 2023 - December 2023.

Source: NOAA, [National Centers for Environmental Information](#), County Time Series, January 2023 - December 2023.

NORTH ATLANTIC DAILY SEA SURFACE TEMPERATURE, 1981-2023



Sea surface temperatures in the North Atlantic in **2023 were the warmest on record**. Oceans absorb the majority of the heat caused by climate change. Warmer ocean temperatures—the [Northeast Continental Shelf is warming much faster than the global average](#)—sea level rise, acidification, and increased storm frequency and intensity all threaten marine ecosystems and the communities that depend on them in Rhode Island.

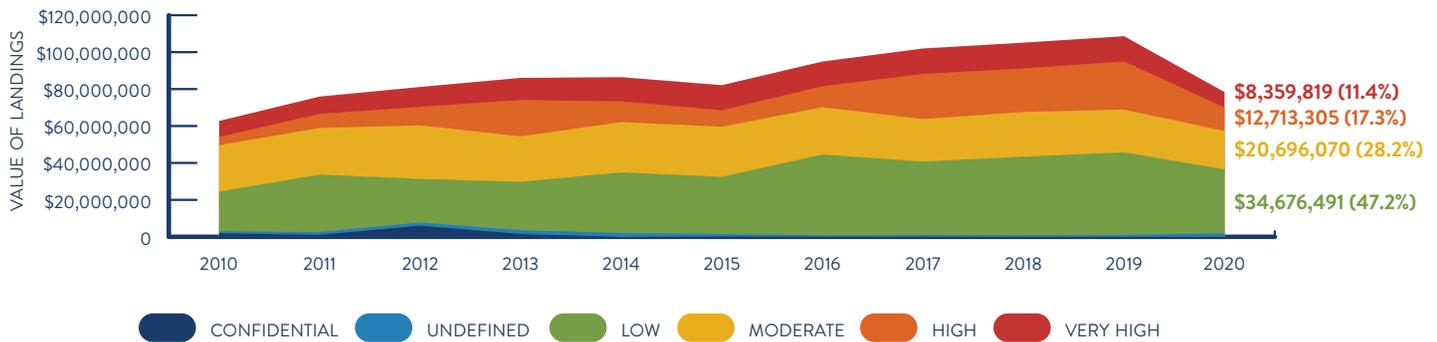


Source: Birkel, S.D., Daily Sea Surface Temperature, [Climate Reanalyzer](#), Climate Change Institute, University of Maine, USA.

CLIMATE VULNERABILITY OF RHODE ISLAND SEAFOOD CATCH, '10-'20



About **29%** of the value of Rhode Island's seafood catch in 2020 (e.g., sea scallops) was classified as having **very high** or **high** vulnerability to changes in abundance or distribution due to climate change.

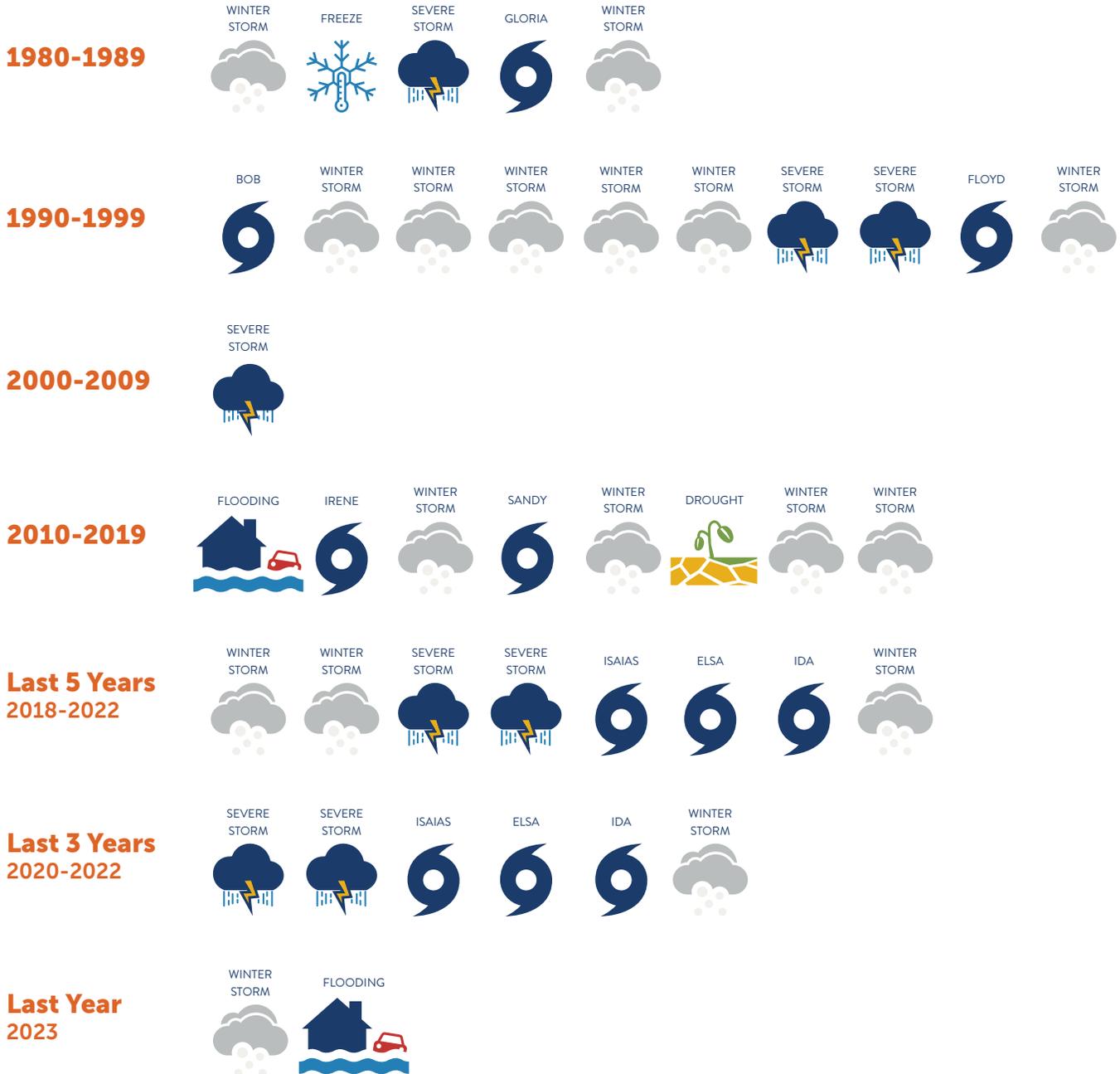


Source: NOAA Fisheries, [Northeast Vulnerability Assessment](#).

BILLION-DOLLAR WEATHER AND CLIMATE DISASTERS, 1980-2023



NOAA's [Billion-Dollar Weather and Climate Disasters](#) dataset indicates that the United States has sustained 373 disasters since 1980 that have cumulatively cost over \$2.645 trillion. Rhode Island has experienced **31 events**, with a total cost between **\$2-\$5 billion**. Note that the cost of each billion-dollar weather and climate disaster are borne by multiple states, particularly in the tightly clustered Northeast. While winter storms have been the most common type of billion-dollar disaster, tropical cyclones/hurricanes are the costliest type of disaster. In the 29 years from 1980 to 2009, Rhode Island experienced 3 hurricanes. In the 13 years between 2010 and 2023, the state has experienced 5 hurricanes.



Source: NOAA National Centers for Environmental Information, [U.S. Billion-Dollar Weather and Climate Disasters](#).

PROJECTED CLIMATE RISKS



A 2020 analysis identified the top climate risk in every county of the United States. The highest risks for Rhode Island counties were deemed the destructive power of hurricanes and the possibility of water stress and drought.



HURRICANES

Hurricanes Ida (2021), Isaias (2020), Sandy (2012), Irene (2011), Floyd (1999), Bob (1991), Gloria (1985), and Tropical Storm Elsa (2021) were all [billion-dollar disasters](#) that impacted Rhode Island.



WATER STRESS

Rhode Island has experienced more [abnormally dry days](#) during the past 10 years than it did in the early 2000s. This includes an extreme drought in 2020 and 2022.



SEA LEVEL RISE

From the 1930s to 2022, sea level increased by about 1 foot at [Providence](#) and [Newport](#) tidal gauges. Sea level is likely to additionally increase by more than [1 foot](#) in the Northeast by 2050.



EXTREME RAIN

Annual precipitation and extreme precipitation events in Rhode Island have been [above average](#) in recent years.



WILDFIRE

Wildfires are not very common in Rhode Island but several brush fires broke out in [April 2023](#) due to dry conditions.



HEAT STRESS

The observed number of [hot days](#) in Rhode Island has increased compared to the long-term average since the 1990s.



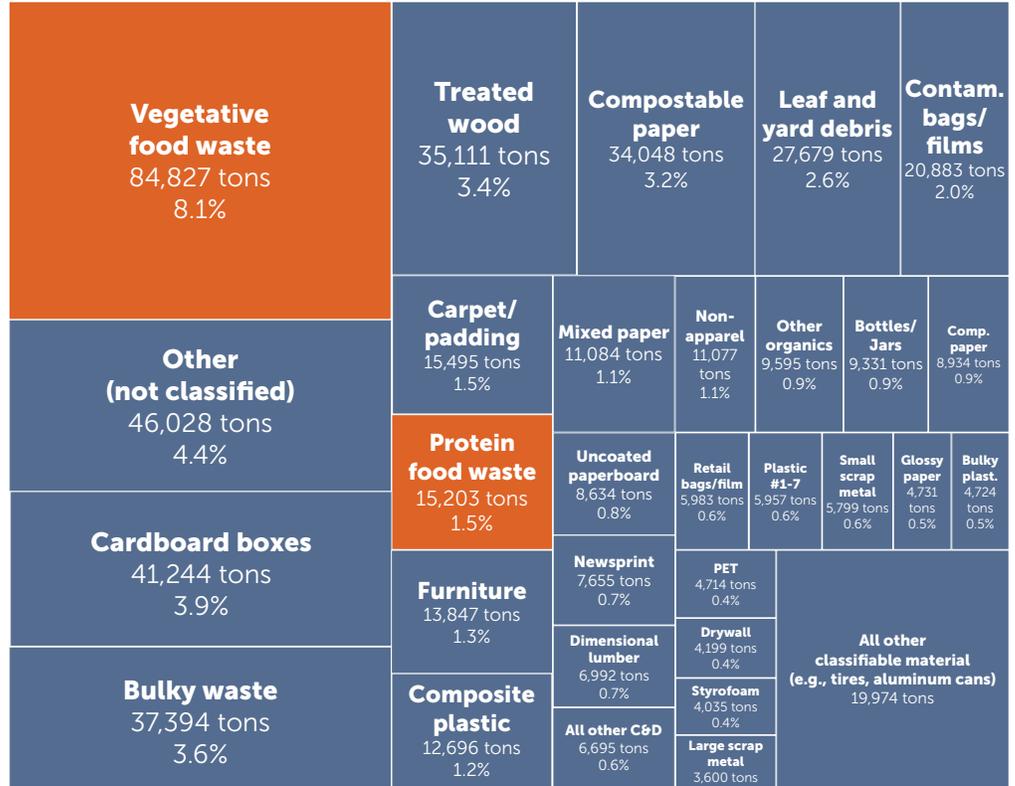
Source: Stuart A. Thompson and Yaryna Serkez, September 18, 2020, ["Every Place Has Its Own Climate Risk. What Is It Where You Live?,"](#) *The New York Times*. Based on data from Four Twenty Seven.

FOOD WASTE, 2015

NO TREND

A 2015 “Waste Characterization” study found that food waste (vegetative and protein) is the top single material in Rhode Island’s municipal waste stream at **100,000 tons (2 million pounds)**. Residential food waste accounted for 60.6% (60,677 tons) of total food waste, while industrial, commercial, and institutional food waste accounted for 39.4% (39,453 tons). As food waste decomposes, methane—a greenhouse gas 28 times as potent as carbon dioxide at trapping heat—is emitted. While food is landfilled by the ton each day, thousands of people in Rhode Island simultaneously experience food insecurity.

528,168 TONS TOTAL MSW
100,030 TONS FOOD WASTE
60,577 TONS RESIDENTIAL FOOD WASTE
39,453 TONS INDUSTRIAL, COMMERCIAL, INSTITUTIONAL FOOD WASTE



Source: DSM Environmental Services, 2015, [Rhode Island Solid Waste Characterization Study](#)

Municipal Data



Where can community leaders find food system information about their community?

RIFPC has prepared local food system fact sheets for every city and town in the state, providing municipal leaders with recent and relevant indicators. The data can be a useful guide for community conversations on areas in need of additional support and investment.

RESOURCES

- [Municipal Fact Sheets](#)
- [Planning Accessible, Equitable, and Resilient Municipal Food Systems](#)
- [Data Dashboard](#)

Municipal Fact Sheets



Food System Economy

Build the Food System Economy: The process of growing, manufacturing, distributing, and selling food encompasses a broad range of industries and sectors, collectively called the food system economy. The data presented here can help municipalities understand the current impacts, future opportunities, and potential challenges to growing the community's food system economy.

EXAMPLE: PROVIDENCE

	City	State
Restaurants	851	4,081
Farmers Markets	16	71
Food Markets	258	1,155
SNAP Dollars + Cash Benefits at Farmers Markets	\$184,310	\$237,130
Food Processors	78	603
Food Distributors	15	151
Annual Municipal Fee to Landfill Residential Food Waste	\$710,076	\$3,552,689



Land Use & Sustainability

Plan a Sustainable Municipality: More than any other level of government, municipalities maintain broad control of their land use and its related sustainability impacts. The data presented under Land Use & Sustainability may be used to understand how land is currently being used and to create alternative plans that account for the need to have a sustainable and resilient local food system.

	City	State
Aquaculture Farms	0	84
Commercial Fisheries	9	720
Farms	29	1,043
Annual Tons of Residential Food Waste	15,108	75,589
Food Waste Recycling Facilities	1	4
Public School District Purchases Locally Grown Produce	Yes	39



Food Access & Security

Improve Food Access & Security: Providers of free and low cost food options interface with the community in different ways to meet people where they are. The data in Food Access & Security can help municipalities identify how community members access these critical resources and evaluate how to maximize the impacts of Federal food assistance programs.

	City	State
Congregate Meal Sites	22	74
Food Pantries	35	133
SNAP Participants	27,712	89,100
Students Enrolled in Free/Reduced Meals	22,958	140,721
WIC Participants	7,242	18,379

FOOD ECONOMY INDICATORS

City/Town	Restaurants	Farmers Markets	Food Markets	SNAP/Cash Benefits at Farmers Markets	Food Processors	Food Distributors	Annual Muni. Fee to Landfill Residential Food Waste
Barrington	30	0	5	\$0.00	4	0	\$57,790.17
Bristol	73	2	21	\$8,061.00	10	4	\$82,879.87
Burrillville	37	2	7	\$1,516.00	7	1	\$46,929.60
Central Falls	70	2	24	\$2,630.00	8	1	\$58,230.31
Charlestown	33	1	12	\$0.00	5	5	\$6,753.94
Coventry	65	1	22	\$0.00	5	1	\$113,654.48
Cranston	283	3	82	\$1,458.00	36	18	\$245,398.44
Cumberland	73	0	24	\$0.00	8	1	\$107,136.66
East Greenwich	87	1	15	\$7,016.00	10	1	\$43,208.14
East Providence	155	3	43	\$2,268.00	18	5	\$142,909.86
Exeter	22	0	4	\$0.00	6	0	\$18,529.34
Foster	10	0	7	\$0.00	2	1	\$18,579.28
Glocester	16	1	5	\$0.00	7	0	\$25,894.13
Hopkinton	21	0	9	\$0.00	3	0	\$17,8126.33**
Jamestown	24	0	7	\$0.00	3	1	\$23,549.68
Johnston	110	3	35	\$0.00	15	4	\$171,224.01
Lincoln	63	0	10	\$0.00	11	2	\$74,982.76
Little Compton	15	0	6	\$0.00	8	3	\$17,520.89
Middletown	126	0	19	\$6,552.00	23	5	\$29,260.32
Narragansett	94	1	12	Not Available	20	16	\$44,386.29
New Shoreham	65	0	7	\$0.00	5	3	\$42,578.22
Newport	200	2	21	\$7,790.00	8	1	\$60,765.97
North Kingstown	89	3	21	\$0.00	20	12	\$67,957.58
North Providence	89	1	27	\$0.00	6	0	\$103,391.94
North Smithfield	38	1	12	\$0.00	3	3	\$35,838.52
Pawtucket	233	2	73	\$0.00	48	3	\$272,070.89
Providence	851	16	258	\$184,310.00	78	15	\$710,075.63
Portsmouth	43	0	15	\$0.00	1	4	\$14,266.25
Richmond	24	0	12	\$0.00	3	0	\$13,078.08
Scituate	22	2	14	Not Available	7	0	\$36,638.11
Smithfield	100	4	24	Not Available	10	1	\$56,267.14
South Kingstown	129	3	31	\$3,600.00	29	6	\$50,052.62
Tiverton	51	1	21	\$0.00	18	2	\$66,458.00
Warren	79	2	49	\$245.00	84	5	\$39,441.59
Warwick	302	2	85	Not Available	29	19	\$269,082.94
West Greenwich	21	0	7	\$0.00	1	1	\$13,298.15
West Warwick	82	1	27	Not Available	6	1	\$96,299.83
Westerly	142	0	39	\$696.00	6	4	\$17,8126.33**
Woonsocket	116	2	45	\$6,809.00	28	4	\$98,182.58
TOTAL	4,018	71	1,155	\$237,130	603	151	\$3,552,689

** Represents combined number for Westerly-Hopkinton

LAND USE AND SUSTAINABILITY INDICATORS

City/Town	Aquaculture Farms	Commercial Fishers	Farms	Annual Tons of Residential Food Waste	Food Waste Recycling Facilities	Public School District Purchases Locally Grown Produce
Barrington	0	15	3	1,230	0	Yes!
Bristol	1	78	19	1,763	0	Yes!
Burrillville	0	0	29	999	0	Yes!
Central Falls	0	0	0	1,239	0	Yes!
Charlestown	20	38	33	144	1	Yes!
Coventry	0	35	36	2,418	0	Yes!
Cranston	0	18	51	5,221	0	Yes!
Cumberland	0	10	36	2,280	0	Yes!
East Greenwich	0	27	12	919	0	Yes!
East Providence	0	7	1	3,041	0	Yes!
Exeter	0	14	41	394	0	Yes!
Foster	0	7	52	395	0	Yes!
Glocester	0	2	43	551	0	Yes!
Hopkinton	0	0	57	3,790**	0	Yes!
Jamestown	6	12	12	501	0	Yes!
Johnston	0	8	29	3,643	1	Yes!
Lincoln	0	3	8	1,595	0	Yes!
Little Compton	1	8	51	1,595	0	Yes!
Middletown	2	13	15	623	0	Yes!
Narragansett	14	45	22	944	0	Yes!
New Shoreham	9	1	2	906	0	Yes!
Newport	0	19	3	1,293	0	Yes!
North Kingstown	11	43	44	1,446	0	Yes!
North Providence	0	7	1	2,200	0	Yes!
North Smithfield	0	2	12	763	1	Yes!
Pawtucket	0	9	2	5,789	0	Yes!
Providence	0	9	29	15,108	1	Yes!
Portsmouth	13	30	21	304	0	Yes!
Richmond	0	5	44	278	0	Yes!
Scituate	0	4	54	780	0	Yes!
Smithfield	0	4	16	1,197	0	Yes!
South Kingstown	2	8	64	1,065	0	Yes!
Tiverton	1	30	87	1,414	0	Yes!
Warren	0	36	13	839	0	Yes!
Warwick	1	146	21	5,725	0	Yes!
West Greenwich	0	1	9	283	0	Yes!
West Warwick	0	1	0	2,049	0	Yes!
Westerly	3	21	24	3,790**	0	Yes!
Woonsocket	0	4	1	2,089	0	Yes!
TOTAL	84	720	856	75,589	4	39

** Represents combined number for Westerly-Hopkinton

FOOD ACCESS & SECURITY INDICATORS

City/Town	Congregate Meal Sites	Food Pantries	Meals on Wheels Home Delivery Recipients	SNAP Participants	Students Enrolled in Free or Reduced Meals	WIC Participants
Barrington	0	1	36	265	3,375	39
Bristol	0	1	62	844	3,124	125
Burrillville	7	7	7	782	2,227	83
Central Falls	0	2	47	3,314	2,877	1,054
Charlestown	0	2	29	293	3,152*	672
Coventry	1	3	94	1,814	4,524	262
Cranston	0	4	227	5,679	10,324	1,244
Cumberland	0	2	78	1,428	4,508	210
East Greenwich	0	0	39	444	2,579	36
East Providence	1	3	194	3,599	5,026	603
Exeter	0	0	7	220	1,580	33
Foster	0	2	24	192	239	22
Glocester	1	1	2	337	555	30
Hopkinton	0	1	3	358	3,152*	121
Jamestown	1	1	14	120	483	6
Johnston	0	2	33	2,386	3,199	414
Lincoln	1	1	49	1,019	3,191	195
Little Compton	0	2	7	73	237	11
Middletown	1	0	46	712	2,094	151
Narragansett	0	1	37	435	1,267	22
New Shoreham	0	0	0	18	134	0
Newport	12	5	73	1,797	2,075	397
North Kingstown	1	2	48	1,134	3,953	125
North Providence	0	3	118	2,803	3,530	362
North Smithfield	0	0	28	437	1,645	116
Pawtucket	7	21	207	10,018	8,657	2,031
Providence	22	35	118	27,712	22,958	7,242
Portsmouth	1	0	54	495	2,403	74
Richmond	0	1	7	267	3,152	7
Scituate	0	1	6	294	1,226	30
Smithfield	0	1	18	294	2,379	115
South Kingstown	4	2	11	858	2,860	105
Tiverton	1	1	68	657	1,717	95
Warren	1	1	6	736	3,124	95
Warwick	1	5	279	5,030	8,302	672
West Greenwich	1	0	6	167	1,580	37
West Warwick	3	6	103	3,250	3,586	436
Westerly	3	5	63	1,322	2,489	161
Woonsocket	6	8	131	7,181	5,884	1,571
TOTAL	79	133	3,029	89,100	140,721	18,379

** Represents data for the entire Charinho district

Data Discussion



MISSING PIECES

Federal, state, and county data sources are used throughout the Data Dashboard and the Food System Factbook because they are conveniently available, released at known times, and allow for comparability between locations. Unfortunately these sources do not tell the whole story. There is a lot of information we would like to know about our food system, especially regarding equity, that is simply not being collected. Below we share some high priority items on our data “wish list.”

Food System Economy

Occupational Segregation: Low wages disproportionately impact women, Black, and Hispanic Americans, and one of the reasons is in part because **women, Black, and Hispanic workers are concentrated in the lowest paying segments and sections of the food services industry.** Microdata from the American Community Survey could be used to depict occupational segregation in Rhode Island by race, ethnicity, and gender for all occupations, as was done in [San Diego County](#).

Financing Underserved Entrepreneurs and Businesses: There are many sources of public and private capital accessed by farms, fishers, and food businesses. We would like the percentage of these funds committed to historically undercapitalized enterprises to be tracked and reported.

Food Access & Security

Data Refinement: The USDA, RI Life Index, and Feeding America arrive at different estimates of the number of food insecure Rhode Islanders because they use different methodologies. The Rhode Island Community Food Bank uses the higher RI Life Index estimate. Future work for RIFPC and its partners could be to reconcile these estimates. Likewise, some [researchers](#) suggest that the USDA’s Low-Income Low-Access framework misses the important contributions of corner markets, bodegas, and other smaller stores. Market basket surveys of all stores in an area can provide a more nuanced picture of food access challenges.

Agriculture & Land Use

Climate-Smart Agriculture: We do not have a clear picture of investments that have been made in [climate-smart](#), or regenerative, agriculture in Rhode Island, and which have a clear relationship to the state’s food system. For example, [California Climate Investments](#) provides details of all projects funded to mitigate and adapt to climate change. Stakeholders could also attempt to inventory all types of indoor food production in the state.



Commercial Fisheries & Aquaculture

Demographics and Needs of Fishers: Unlike data on Rhode Island farmers produced by the Census of Agriculture, we do not have detailed demographic information about fishers. The [Commercial Fisheries Research Foundation](#) has conducted research on a wide variety of topics. A needs assessment of Rhode Island fishers could elaborate opportunities for support services.



Climate Change

Inventory of Climate Change Impacts on Food System Businesses: We do not have an easy-to-access inventory of how climate change is impacting food system businesses through weather-related disasters, supply chain disruptions, health problems, and more. An annual compilation of climate change impacts would help to direct technical assistance, funding, and business services.

DATA SOURCES

Indicators for entire populations that are consistently and regularly measured and available at county- and state-levels were used to analyze food system trends in Rhode Island.

Data Sources	Availability	Purpose
Food System Economy		
U.S. Census Bureau: Economic Census	2017 Conducted every 5 years.	The Economic Census is the official five-year measure of American businesses, providing comprehensive statistics at the national, state, and local levels. Key data: food system employment, establishments, sales.
U.S. Census Bureau: Nonemployer Statistics	2020 Usually published annually with lag.	This is an annual series that provides national, state, and county data for businesses that have no paid employees. Key data: food system employment, establishments, sales.
U.S. Bureau of Labor Statistics: Quarterly Covered Employment and Wages	2023 Published monthly/annually with lag.	This is a federal/state cooperative program that publishes monthly employment and quarterly wage data. Key data: food system employment, establishments, sales.
U.S. Bureau of Labor Statistics: Occupational Employment and Wage Statistics	2022 Published annually with lag.	This program generates employment and wage estimates for about 830 occupations for the country, states, and metropolitan areas. Key data: median hourly wages.
Rhode Island Department of Labor and Training: Data Center	2022 Published annually with lag.	The RIDLT collects and analyzes data from federal and state sources. Key data: employment, unemployment, wages, industry and employment projections.
Rhode Island Secretary of State Corporate Database	Current year.	This is a searchable database of businesses incorporated in Rhode Island. Key data: name and number of active businesses.
Food Access & Security		
U.S. Department of Agriculture: Economic Research Service	2022 Published annually with lag.	The USDA ERS provides many types of data and analyses, including the Food Expenditure Series and official estimates of food insecurity . Key data: percent food insecure, state-level food expenditures.
U.S. Bureau of Labor Statistics: Consumer Expenditure Survey	2022 Published annually with lag.	The Consumer Expenditure Survey provides data on expenditures and income by certain demographic characteristics. Key data: food expenditures.
Rhode Island Community Food Bank	2023 Published annually.	The RICFB highlights important food access trends. Key data: number of people served by the charitable food system.
RI Life Index	2023 Published annually.	The RI Life Index is an annual survey of over 2,000 Rhode Islanders. Key data: access to nutritious food and food security.
Feeding America	2021 Publication schedule unclear.	Feeding America generates estimates based on the American Community Survey. Key data: food insecurity by county, money necessary to meet food needs.

Data Sources	Availability	Purpose
Agriculture and Land Use		
U.S. Department of Agriculture: Census of Agriculture	2017 Conducted every 5 years.	This is a “complete count of U.S. farms and ranches and the people who operate them.” <i>Key data: number of farms, land in agriculture, crop and livestock data, farmer demographics, economic data.</i>
U.S. Department of Agriculture: National Agricultural Statistics Service New England Field Office	2021 Crop reports are filed weekly.	The New England Field Office provides monthly Crop Progress and Condition Reports for the six states and Annual Statistical Bulletins . <i>Key data: number of farms, land in agriculture, crop and livestock data, soil moisture and temperature data.</i>
U.S. Department of Agriculture: Major Land Uses	2012 Data for 2017 to be published in 2024.	This is the longest running, most comprehensive accounting of all major uses of land in the U.S. <i>Key data: acres in cropland, grassland pasture and range, forest-used land grazed, and miscellaneous farmland.</i>
Commercial Fisheries and Aquaculture		
National Oceanic and Atmospheric Administration: Commercial Fisheries Landings (Fisheries One Stop Shop)	2022 Published annually with lag.	This is a federal/state cooperative program that collects species, pounds, and sales values of fish and shellfish that are landed in the U.S. <i>Key data: pounds and sales values for fish and shellfish landed in Rhode Island.</i>
Atlantic Coastal Cooperative Statistics Program: Data Warehouse	2022 Published annually with lag.	This is a database of Atlantic coast fishery data that collects species, pounds, and sales values of fish and shellfish. <i>Key data: pounds and sales values for fish and shellfish landed in Rhode Island.</i>
RI Coastal Resources Management Council: Aquaculture Annual Reports	2022 Published annually with lag.	This annual report quantifies growth in Rhode Island’s aquaculture industry. <i>Key data: number of sites, acres under cultivation, sales values.</i>
Climate Change		
U.S. Global Change Research Program: Fifth National Climate Assessment	2023 Usually published every 4 years.	Chapter 18 of the National Climate Assessment summarizes major trends in the Northeast. <i>Key data: number of farms, land in agriculture, crop and livestock data, soil moisture and temperature data.</i>
NOAA National Centers for Environmental Information: State Climate Summaries 2022	2022 Publication schedule unclear.	This is a summary of major climate change impacts by state. <i>Key data: trends in temperature, precipitation, sea level rise, etc.</i>
NOAA National Centers for Environmental Information: Statewide Time Series	2022 Data is updated monthly.	This source provides estimates of air temperature and precipitation from 1895 to the present. <i>Key data: temperature anomalies.</i>
NOAA National Centers for Environmental Information: Billion-Dollar Weather and Climate Disasters	2023 Updated as disasters occur.	This source tracks weather events that cause more than \$1 billion in damages. <i>Key data: number of billion-dollar disasters, types of disasters, costs of disasters.</i>
National Oceanic and Atmospheric Administration: Northeast Vulnerability Assessment	2016	This source estimates fish and shellfish vulnerability to climate change. <i>Key data: name and value of species by vulnerability rank.</i>

ECONOMIC IMPACT METHODOLOGICAL DISCUSSION

Estimates of agricultural sales from the Census of Agriculture and research conducted by former University of Rhode Island researcher Dr. Tom Sproul arrived at substantial discrepancies in 2012: \$66,472,905 compared to \$297,307,233, respectively. What explains these differences?

Census of Agriculture (2007 and 2012)

The United States Department of Agriculture’s Census of Agriculture, performed under the National Agricultural Statistical Service (NASS), is a complete count of U.S. farms, ranches, and the people who operate them conducted every 5 years in each state. The study includes small growers and examines land use and ownership, operator characteristics, production practices, income and expenditures. NASS uses capture-and-recapture methods, also known as dual system estimation and often found in the study of conservation biology, in order to represent what it believes to be the complete picture of the American agricultural industry. Essentially, NASS counts farms each five years in the Census of Agriculture, but it also counts them each year in their June Area Survey (JAS). While the JAS surveys a much smaller pool of farms, USDA utilizes its findings to match those two datasets and identify what proportion of farms were counted twice in each study. The JAS does not take place everywhere—NASS only visits 0.6% of land area from their census—however the USDA asserts that dual system estimation has the capacity to account for the remaining 99.4%. From there, the USDA claims it is able to calculate an estimation of the total number of farms. Once this research is conducted, NASS produces a report for each state and county that details the character of its agricultural industry, providing figures that describe its economic impact, scope, and key demographic characteristics of its operators. In Rhode Island, the 2017 Agricultural Census reported a decrease in number of farms (1,043, -16%) and farm size (58,864 acres, -18%) but an increase in farm income (\$5,733,000, +66.8%).

The 2012 Economic Impact Study of Rhode Island Plant-Based Industries and Agriculture

Former University of Rhode Island researchers, agricultural economist Dr. Tom Sproul and Brandon Elsner, performed their own measures of the [economic impact of Rhode Island’s plant-based industries and agriculture](#). The research team highlighted a few reasons for perceived inaccuracies in the Federal data: USDA’s objective is not to evaluate the economic impact of the sector, rather, it is interested in estimating the “market value of agricultural products sold,” which does not include value-added products and farmer-provided services. To encompass these neglected portions of the industry, this study integrates statistical estimates and aggregated listings of businesses at the state level with qualitative observations of individual businesses. Observations were sourced from a questionnaire administered in 2011 by the RI Nursery and Landscape Association, the RI Turfgrass Foundation, the RI Agricultural Partnership and the URI College of Business and supplemented by business listings downloaded from the ReferenceUSA database as well as aggregate data from 2007 Census of Ag, RI Secretary of State’s Office (for landscape and other contractors), and the RI DEM (for retail nurseries, farm and garden supply stores, and florists). Utilizing their sample of 2014 agricultural firms, Sproul and Elsner calculated conservative estimations of number of jobs, value of gross sales, and value of farm revenues, with value-added products now accounted for. They found that Rhode Island’s gross farm sales approximately amounted to over \$100,000,000 greater than USDA estimates (\$161,855,500) and that Rhode Island farms employed almost 10% more workers than the NASS had calculated (1,790 jobs).

The Economic Impact of Rhode Island Plant-Based Industries and Agriculture: An Update to the 2012 Study

Two years after publishing his prior study, Dr. Sproul conducted a second round of [research](#) that updated 2012 figures and provided estimates that were not confined to the lower bound. Utilizing 2007 and 2012 Census of Agriculture data, purchased marketing research data, and the Bayesian statistical inference model, Sproul attempted to fine-tune the 2012 numbers in order to prioritize accuracy over conservatism. The results: a 47% increase in gross sales/farm revenues (\$238,900,000), and a 43% increase in jobs (2,563 jobs). The calculations amount to four times the agricultural output estimates and 1.4 times the jobs estimates provided by the 2012 Census of Agriculture, putting forth a claim that the NASS data grossly underestimates the facts and figures of Rhode Island agriculture's economic impact.

Discrepancies and Possible Causes

These two sets of research contain notable disparities in their resulting figures: Dr. Sproul's estimates—the first round of which he asserts are conservative in their computation, and the second, more realistic—present a state food system far larger in scope than that which the USDA and NASS offer in their data. URI research estimates gross sales that surpass the Census of Agriculture figures by over \$150 million. While the causes for these differences cannot be isolated for certain, the two studies' contrasting methodologies provide some clarity. While the NASS relies on dual system estimation, Sproul combines local surveys, state official numbers, industry-standard databases, and Bayesian statistical modeling. Perhaps the expanded scope in data sourcing in Sproul's research can account for the expanded scope of his results. Additionally, the Census of Agriculture excludes certain aspects of the agricultural industry that Sproul does take into account: the USDA does not count sales and income from value-added products, which, according to Sproul, Rhode Island farms are highly dependent on “to overcome tax rates and agricultural land values that are among the highest in the country.”

In conversation with Dr. Sproul, the economist provided further justification for the gaps in numbers. He shared that in not counting family members as employees, in misconstruing certain operations as farms, and in conducting surveys with a high nonresponse rate where extensive data extrapolation is utilized, the USDA could be painting a very inaccurate picture of Rhode Island farms. Sproul provided the example of nonresponding vineyards, which the Census of Agriculture often counts as wholesale table grapes—a very different type of farm operation that is not nearly as lucrative. Another important distinction between the two data sources described in this report are their aims. Dr. Sproul is interested in producing an overview of the economic impact of the state's plant-based industries, which include agriculture along with other green-related sectors, such as landscaping services. The USDA on the other hand, in conducting the Census of Agriculture, strives to provide a comprehensive count of United States farms and their operators. In doing so, the Census of Agriculture provides demographic information about producers that go beyond the scope of Sproul's work. In developing our own Data Dashboard, the Rhode Island Food Policy Council is committed to centering equity and diversity in our state's foodscape, and therefore could benefit from the expanded breadth of the Census. However, the perceived inaccuracies in the NASS's economic and operational data prompt RIFPC to question a complete reliance on the Census of Agriculture for these more community-oriented indicators. Fortunately, engagement with organizations in our community, such as the Rhode Island Food Bank, the African Alliance of Rhode Island, and the Narragansett Food Sovereignty Initiative, may be able to supplement this data.

**RI FOOD
POLICY
COUNCIL**



The Rhode Island Food Policy Council is building a more just and resilient food system for all Rhode Islanders.

rifoodcouncil.org    