



**NEW ENGLAND
FEEDING
NEW ENGLAND**



MASSACHUSETTS

STATE BRIEF

2023



Extreme rainfall flooded fields at [World Farmers](#) in Lancaster in July 2023.

As more frequent and intense climate change disasters imperil food supplies around the world, where our food comes from matters more than ever.

A [regional approach to food system resilience](#) is both an *investment* in our shared future and an *insurance policy* against future risks. A regional approach to food system resilience means that we work collectively to adapt, expand, and fortify New England’s food production and distribution systems to ensure the availability of adequate, affordable, and culturally appropriate food for all who call New England home.

Can the six New England states provide 30% of their food from regional farms and fisheries by 2030?

New England Feeding New England explores this question and what it will really take to grow, raise, produce, harvest, and catch more regional food and move it through a complex supply chain to our homes and other places where we eat. Our research presents an opportunity for the region: [significant changes in diet](#) (e.g., dramatically reducing consumption of ultra-processed foods and increasing fruit and vegetable consumption), a [significant increase in land in agriculture](#), [stopping the decrease in farmers and fishermen](#), and finding a way to [actually get local/regional food in the places people shop](#) are daunting challenges, but addressing them will leave our food system stronger and more resilient.








Through 7 research Volumes, New England Feeding New England lays out the case for a regional approach to food system resilience.

» <https://nefoodsystemplanners.org/>

How self-reliant is our region?

[New England Feeding New England Volume 2](#) estimates regional food self-reliance (RSR)—how much food we produce compared to how much food we consume—for the five major food groups. RSR percentages varied widely from food product to food product, showing a rather lopsided capacity for self-reliance. A small number of foods were produced in large quantities relative to consumption and had self-reliance ratios near or exceeding 100% (e.g., dairy, maple syrup, potatoes, lobster, clams). Most foods, however, had self-reliance ratios of less than 10% (e.g., beef, lettuce, wheat).

» New England Regional Self-Reliance for Major Food Groups

	 GRAINS	 VEGETABLES	 FRUITS	 DAIRY	 PROTEINS
Servings	1.6%	28.3%	8.7%	50.0%	3.2%
Calories	1.7%	41.0%	6.9%	47.4%	2.6%

Source: [Volume 2: Estimating Production for 30% Regional Self-Reliance](#). Note: vegetables consists of a significant amount of calorie-dense potatoes grown in Maine; dairy includes a significant amount of production in Vermont.

What can each New England state do to increase food security and access while building resilience for the whole region?

What strengths does Massachusetts’ food system possess and what opportunities can be pursued? What weaknesses persist and what threats loom?

This State Brief contextualizes important characteristics of Massachusetts’ food system for consideration.

For example, as New England’s economic powerhouse—it has the largest regional economy and population—Massachusetts naturally has the largest food system: it accounts for 46% of food system jobs and 45% of food system sales. After Maine, Massachusetts is the largest regional food producer, with production from fisheries, agriculture, and aquaculture. Massachusetts also accounted for 49% of New England’s retail food sales.

Dollar stores are by far the most common type of major grocery chain in Massachusetts, but the state also has a significant number of independent grocery stores, 12 food co-ops, and many corner/general stores. These smaller stores may also facilitate access to regional food.

Moving toward the 30x30 regional goal outlined in *New England Feeding New England* will require, for example, substantial investment in retaining and expanding land in agriculture in the northern states, with most of the people, political influence, and economic power based in southern New England. Massachusetts has already made significant investments in long-term food production, increasing the viability of local farms and food businesses, protecting and preserving agricultural land, and supporting working waterfronts. It now may be called upon to support regional food system development.





Massachusetts Food System Collaborative

The [Massachusetts Food System Collaborative](#) supports collective action toward an equitable, sustainable, resilient, and connected local food system in Massachusetts.

The Collaborative’s work is centered on public policy campaigns and building the capacity of food system stakeholders to engage in policy advocacy. For example, the [Campaign for Food Literacy](#) seeks to ensure access to food system education for all students.

Their priorities are driven by the [2015 Massachusetts Local Food Action Plan](#), which set goals for issues



[Healthy Incentives Program](#) (HIP) lobby day at the State House. MFSC also holds annual [Food System Forums](#) for growing their statewide network and showcasing progress.

ranging from farmland access and protection, to resilient agriculture and fishing, to public health and food security.

State Snapshot

» Top Agricultural Products by Sales, 2017

Produce—vegetables, fruits, berries—made up nearly 43% (\$209 million) of agricultural sales in Massachusetts.



VEGETABLES
23.5%



FRUITS/BERRIES
19.4%



BEDDING/GARDEN PLANTS
16.8%

includes bedding/garden plants, cut flowers, florist greens, foliage plants, potted flowering plants, etc.

» Top Seafood and Aquaculture Products by Sales, 2022

In 2022, sea scallops accounted for 58.3% (\$390,117,734) of the combined value of seafood and aquaculture sales, followed by lobster (12.3%, \$82,286,870), and farm-raised Eastern oysters (4.6%, \$31,157,117).



SEA SCALLOPS
58.3%



AMERICAN LOBSTER
12.3%



EASTERN OYSTER
4.6%

Top Manufactured Products by Sales, 2017



OTHER PRODUCTS
21.1%

(EXAMPLES: SOUP MIXES, POWDERED DRINK MIXES)



BAKERIES
15.6%



NONALCOHOLIC BEVERAGES
15.4%

» Top Retail Food Sales by Market Channel, 2017



GROCERY STORES
48.4%



RESTAURANTS/
FAST FOOD
39.5%

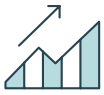


LIQUOR STORES
6.7%



DIRECT SALES
0.3%

Sources: Volume 3: Economic Impact of New England’s Food System, NOAA Fisheries, and the Atlantic Coastal Cooperative Statistics Program



Food System Economy

How big is Massachusetts' food system? What sectors are growing? What sectors are contracting?

Massachusetts' food system employs about **460,000** people and generates over **\$85.2 billion** in sales. Agriculture and fisheries employment and sales were flat or declined from 2007 to 2017. Employment and sales for every other category—except for a very slight decrease in grocery store sales—all increased from 2007 to 2017.

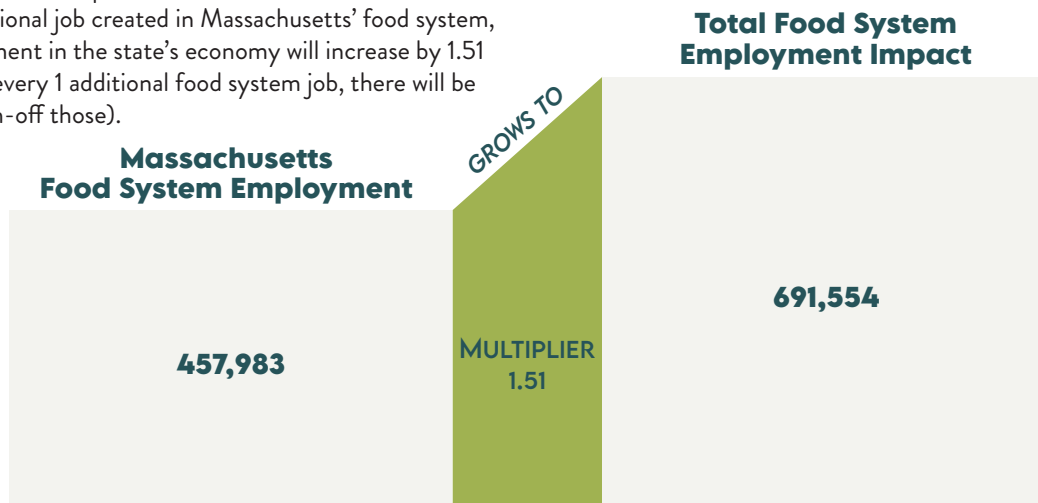
» Economic Impact of Massachusetts' Food System, 2017

	2017 Employment	% of Total	Growth from 2007- 2017	2017 Sales	% of Total	Growth from 2007- 2017
Agriculture	27,330	6.0%	-0.1%	\$516,132,000	0.6%	-2.4%
Fisheries	3,091	0.7%	-1.0%	\$652,067,000	0.8%	-0.3%
Food Manufacturing	22,318	4.9%	0.9%	\$8,546,092,100	10.0%	0.1%
Beverage Manufacturing	3,750	0.8%	4.3%	\$1,871,739,700	0.7%	4.0%
Wholesaling + Distributing	23,967	5.2%	0.4%	\$30,699,210,600	36.0%	2.0%
Stores	98,789	21.6%	0.9%	\$23,469,398,400	27.5%	-0.1%
Food Services + Drinking Places	278,738	60.9%	2.1%	\$19,496,150,600	22.9%	2.0%
TOTAL	457,983	100.0%	1.6%	\$85,250,790,400	100.0%	1.1%

Source: Volume 3: Economic Impact of New England's Food System. Note: Agriculture sales in this table includes support activities. Sales values are adjusted for inflation to 2020 dollars. Agricultural sales are adjusted using producer price indices for crops and livestock.

» Food System Employment Multiplier

The employment multiplier calculated in Volume 3 shows that for each additional job created in Massachusetts' food system, total employment in the state's economy will increase by 1.51 jobs (i.e., for every 1 additional food system job, there will be 0.51 jobs spun-off those).



The additional 0.51 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.

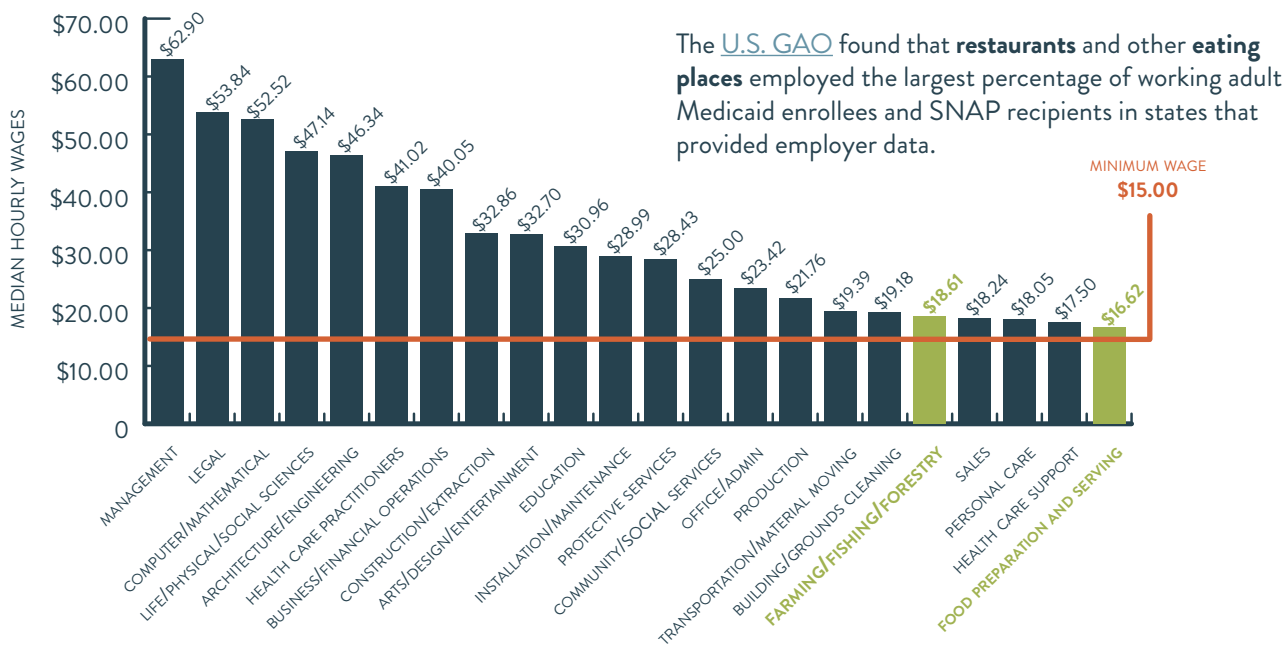


Food System Wages

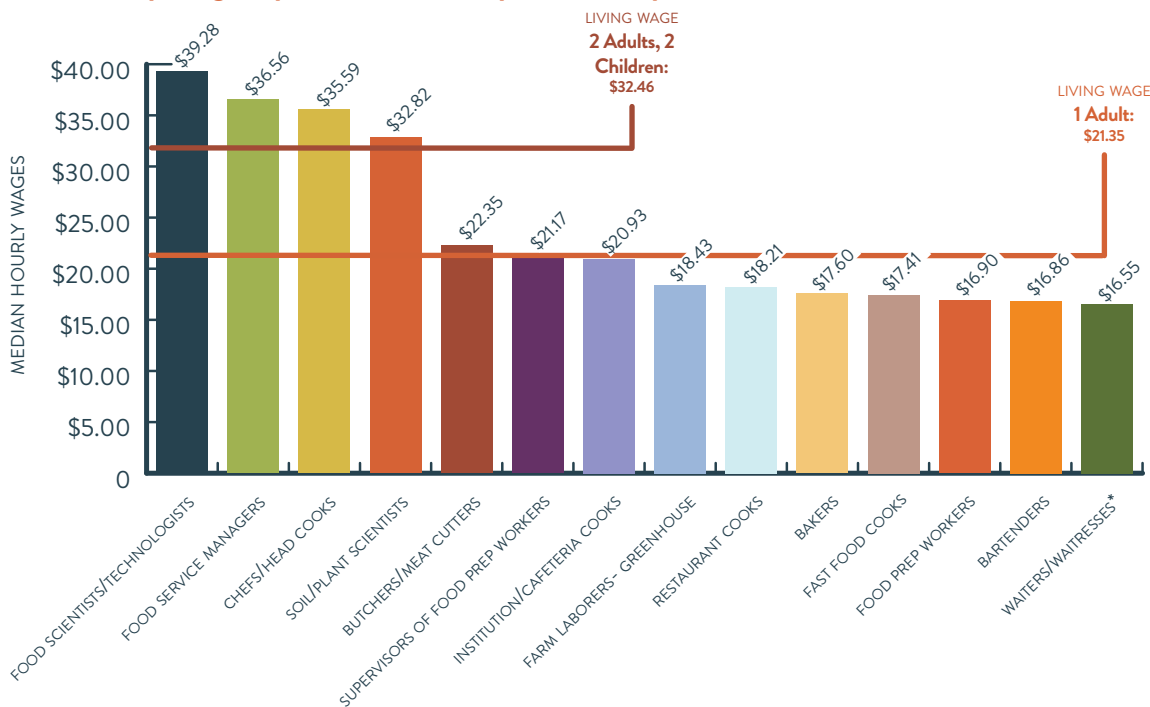
How much do food system workers in Massachusetts earn?

Wages/salaries are the most common source of income for the majority of Americans. Massachusetts food system workers, particularly food service workers, receive some of the *lowest* wages of any occupational category in the state. Massachusetts is tied with Connecticut for the *highest* minimum wage of the New England states (\$15), but median hourly wages for many food system jobs are below the living wage level for adults with no children.

» Median Hourly Wages by Major Occupational Category, 2022



» Median Hourly Wages by Selected Food System Occupations, 2022



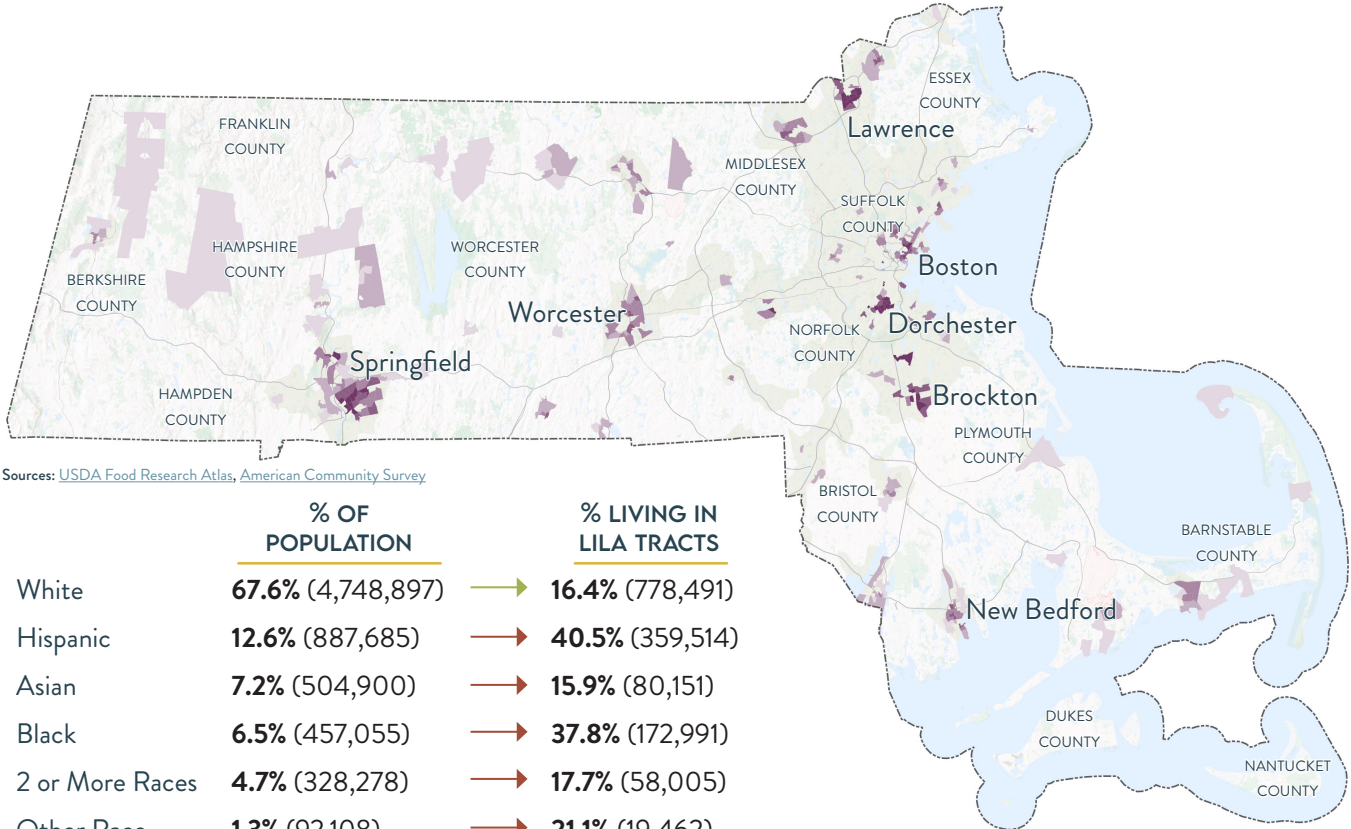
Source: U.S. Bureau of Labor Statistics, Occupational Employment and Wage Statistics, MIT, Living Wage Calculator. * wage data includes tips.



Food Access

Do Massachusetts residents have equitable access to food stores?

Hispanic/Latino, Black, Asian, Indigenous, Native Hawaiian/Pacific Islander, and Massachusetts residents of two or more races, or some “other” race—made up **32.4%** of the state’s population, but **48.8%** of its population living in low income/low access (LILA)* census tracts.



Sources: USDA Food Research Atlas, American Community Survey

	% OF POPULATION		% LIVING IN LILA TRACTS
White	67.6% (4,748,897)	→	16.4% (778,491)
Hispanic	12.6% (887,685)	→	40.5% (359,514)
Asian	7.2% (504,900)	→	15.9% (80,151)
Black	6.5% (457,055)	→	37.8% (172,991)
2 or More Races	4.7% (328,278)	→	17.7% (58,005)
Other Race	1.3% (92,108)	→	21.1% (19,462)
Indigenous	0.1% (9,387)	→	23.0% (2,157)
Hawaiian/PI	0.02% (1,607)	→	28.6% (460)

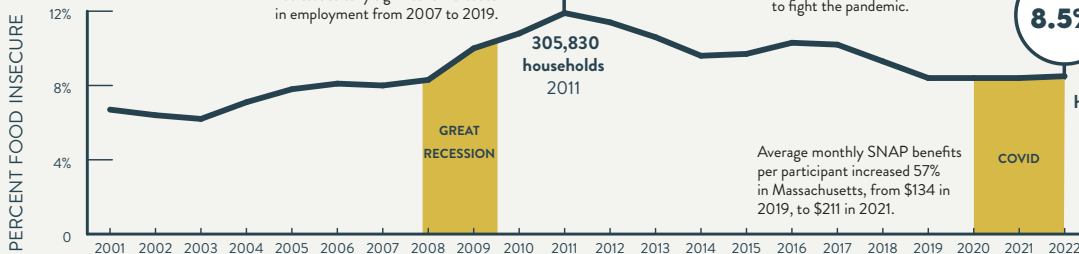
% NON-WHITE OR HISPANIC BY LILA CENSUS TRACT



A higher percentage (i.e., a more purple census tract) means that residents are more likely to be non-White, Hispanic, and/or low income with limited access to grocery stores, particularly in cities.

Food Insecurity

The Great Recession triggered higher rates of food insecurity for several years after the fact. However, Massachusetts was **1 of 3 states** that had statistically significant increases in employment from 2007 to 2019.



The COVID-19 pandemic 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.

Average monthly SNAP benefits per participant increased 57% in Massachusetts, from \$134 in 2019, to \$211 in 2021.

18.4%

However, other [research](#) estimates that as much as 18.4% of Massachusetts’ population—including 34% of its Hispanic population and 33% of its Black population—were food insecure in 2023.

Source: [Project Bread](#)



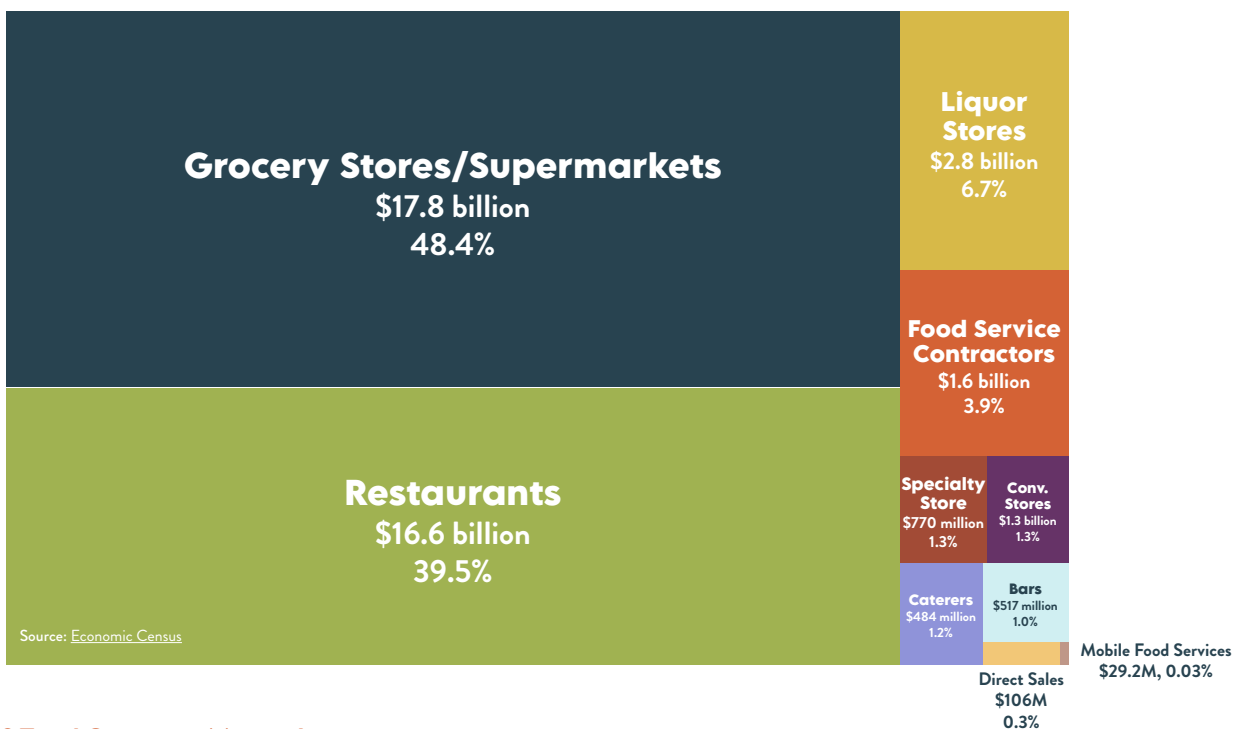
Food Expenditures

How much do Massachusetts residents spend on food? Where do they shop?

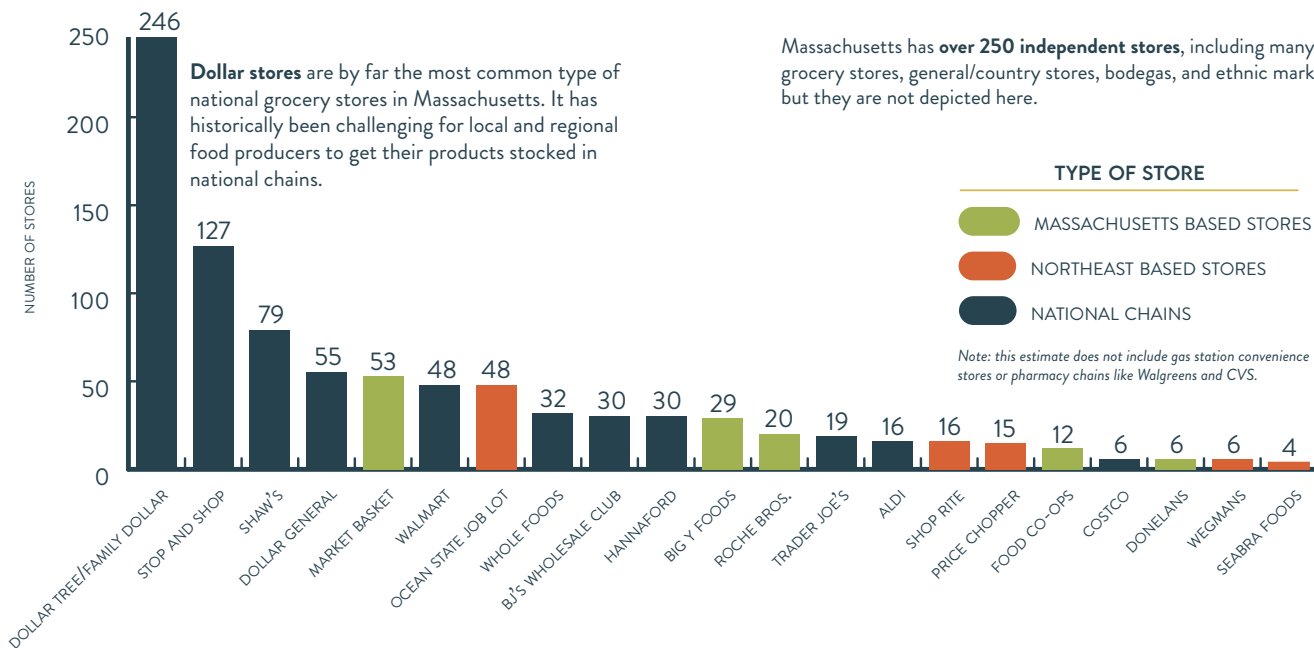
Massachusetts residents spent over **\$41.9 billion** at stores and restaurants in 2017. Grocery stores (48.4%) and restaurants (36.0%)—which includes full-service and fast food restaurants—accounted for 84.4% of total sales. Direct sales from farmer to customer made up 0.3% of total retail sales.

Food Stores and Services Sales, 2017

TOTAL = \$41.9 BILLION



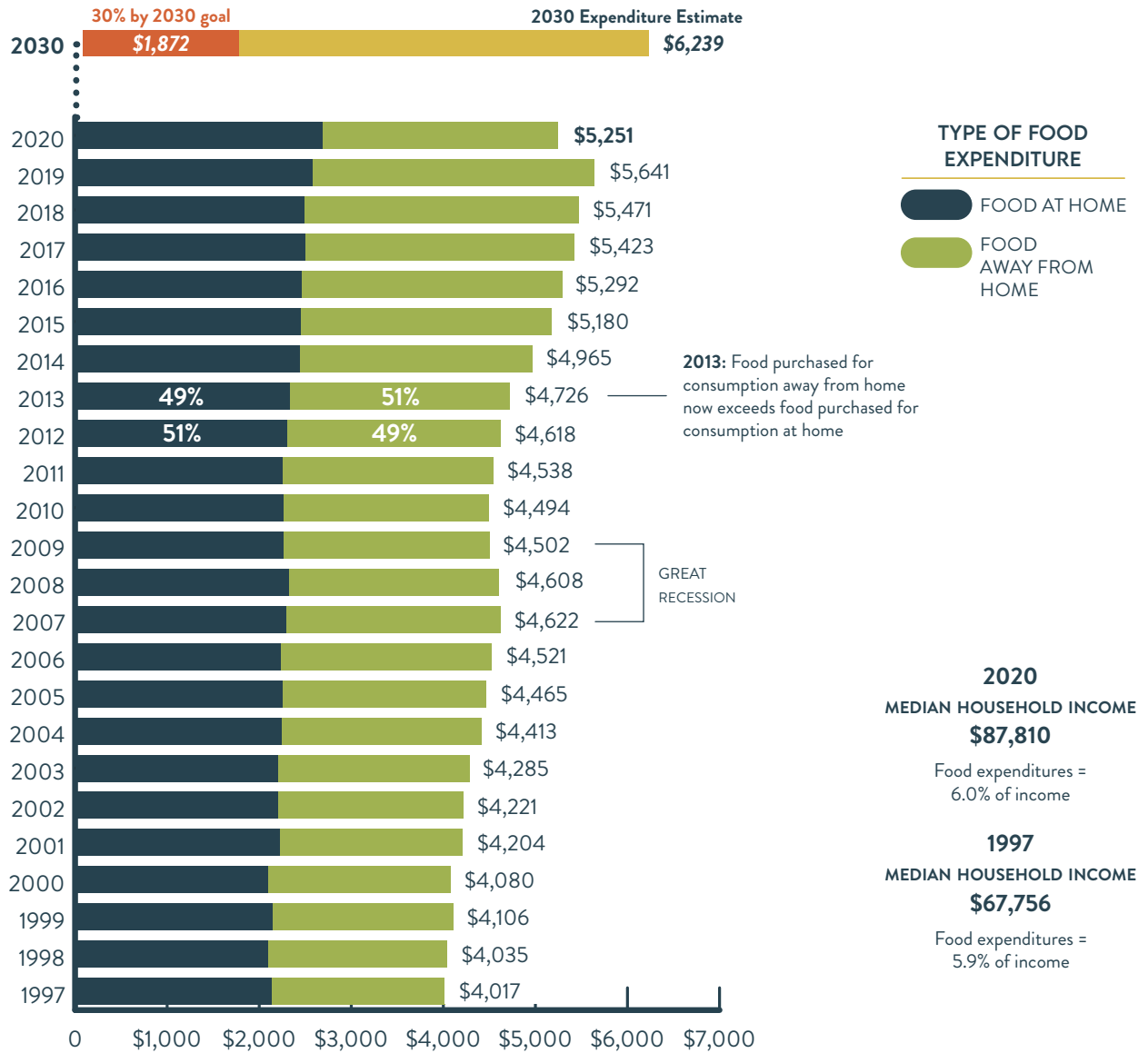
Count of Food Stores in Massachusetts



What would it take to meet a 30% food expenditure goal?

#16

Massachusetts had the sixteenth highest per capita food expenditures (**\$5,251**) of any state in the country in 2020. With an average annual food expenditure growth rate of 1.8% from 1997 to 2020—and population increase to 7,012,000 by 2030—per capita food expenditures may reach **\$6,239** by 2030. About **\$1,872** per capita would then have to be spent on regional food to meet our 30% goal.



Northeast consumer expenditure data indicates that ultraprocessed food and beverage products make up the top 3 food expenditure categories, followed by fresh fruit.



MISCELLANEOUS FOODS
\$1,147 (18.7%)

Frozen prepared meals, canned food, chips, desserts, etc.



BAKERY PRODUCTS
\$585 (9.5%)

Bread, crackers, cookies, cakes, pies, doughnuts, etc.



NONALCOHOLIC BEVERAGES
\$576 (9.4%)

Soda, coffee, tea, ice, sports drinks, etc.



FRESH FRUIT
\$467 (7.6%)

Source: Consumer Expenditure Survey



Climate Change

How will climate change impact Massachusetts' food system?

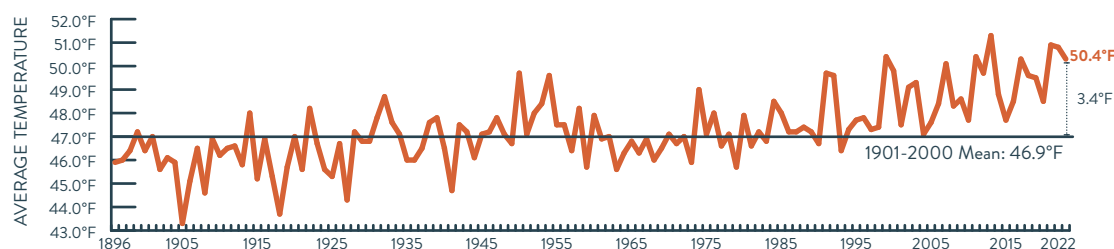
Food system activities like cultivating crops, raising livestock, and land use changes, are major drivers of climate change *and* food systems are particularly vulnerable to a changing climate. [July 2023](#) was the warmest month on record and major changes are already underway across Massachusetts and New England:

- » **Loss of Seasonality:** less distinct seasons, milder winters, earlier spring conditions, and more unpredictable and extreme weather are expected to impact agricultural production. For example, [excessive rainfall](#) in 2023 has created wet and muddy fields that made harvesting challenging, if not impossible.



The average temperature in Massachusetts in 2022, 50.4°F, was 3.5°F higher than the average temperature during the previous century. **Massachusetts was the sixth warmest state in the country in 2022.**

» Air Temperature Anomaly



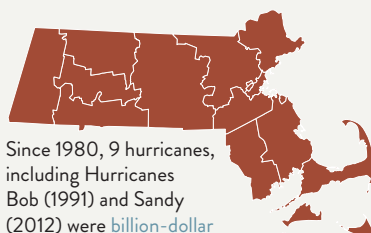
Source: NOAA [National Centers for Environmental Information](#)

- » **Threats to Health:** increases in heat and humidity, ground-level ozone pollution, air pollution from wildfires, mold, pollen season, vector-borne diseases (e.g., Lyme disease), and gastrointestinal illnesses from waterborne and foodborne contaminants can lead to more illness and death.

» Projected Climate Risks

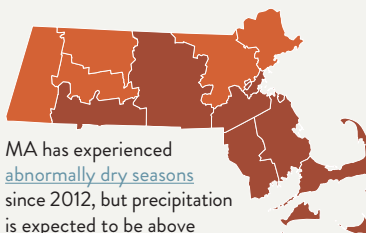
VERY HIGH
 HIGH
 MEDIUM
 LOW
 NO RISK

HURRICANES



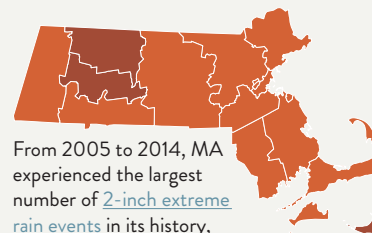
Since 1980, 9 hurricanes, including Hurricanes Bob (1991) and Sandy (2012) were [billion-dollar disasters](#) that impacted Massachusetts.

WATER STRESS



MA has experienced [abnormally dry seasons](#) since 2012, but precipitation is expected to be above normal over this century.

EXTREME RAIN



From 2005 to 2014, MA experienced the largest number of [2-inch extreme rain events](#) in its history, about 30% above the long-term average.

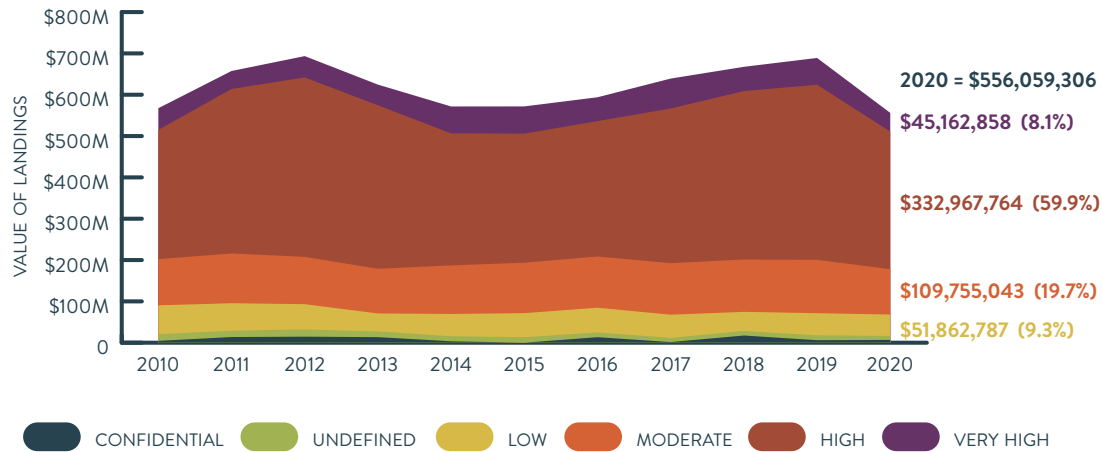
Source: Stuart A. Thompson and Yaryna Serkez, September 18, 2020, "[Every Place Has Its Own Climate Risk. What Is It Where You Live?](#)" *The New York Times*. Based on data from Four Twenty Seven.

- » **Ocean Under Threat:** the Atlantic Ocean supports tourism, recreation, and economic activities, including fisheries. 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. For example, [research](#) indicates that ocean acidification depresses the growth of juvenile sea scallops, a species of economic and cultural importance in Massachusetts.

68%

About 68% of Massachusetts' seafood catch in 2020 (mostly sea scallops) was classified as having **very high or high** vulnerability to changes in abundance or distribution due to climate change.

» **Climate Vulnerability of Massachusetts Catch**



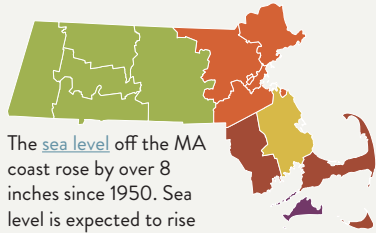
Source: NOAA Fisheries, [Northeast Vulnerability Assessment](#)

- » **Risks to Cities:** the Northeastern U.S. is home to densely populated cities, including [Boston](#), rural communities, critical transportation corridors and infrastructure, and culturally and historically significant sites. Climate change impacts, including from flooding, hurricanes, and sea level rise can damage infrastructure, displace populations, strain our emergency response system, and unevenly affect historically marginalized and low-income communities. Source: Fourth National Climate Assessment, [Chapter 18: Northeast](#)

» **Projected Climate Risks**

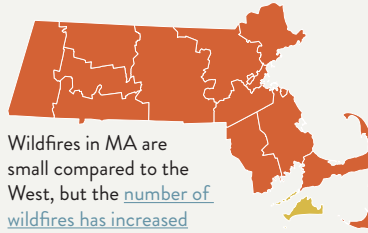
VERY HIGH HIGH MEDIUM LOW NO RISK

SEA LEVEL RISE



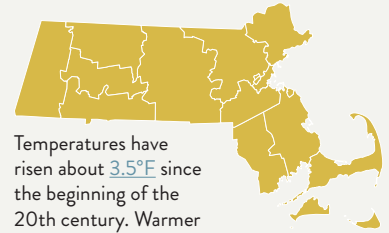
The [sea level](#) off the MA coast rose by over 8 inches since 1950. Sea level is expected to rise by 6 inches by 2032. Sea level near [Martha's Vineyard](#) is projected to rise 1 to 6 feet by 2100.

WILDFIRE



Wildfires in MA are small compared to the West, but the [number of wildfires has increased](#) in recent years due to drought conditions.

HEAT STRESS



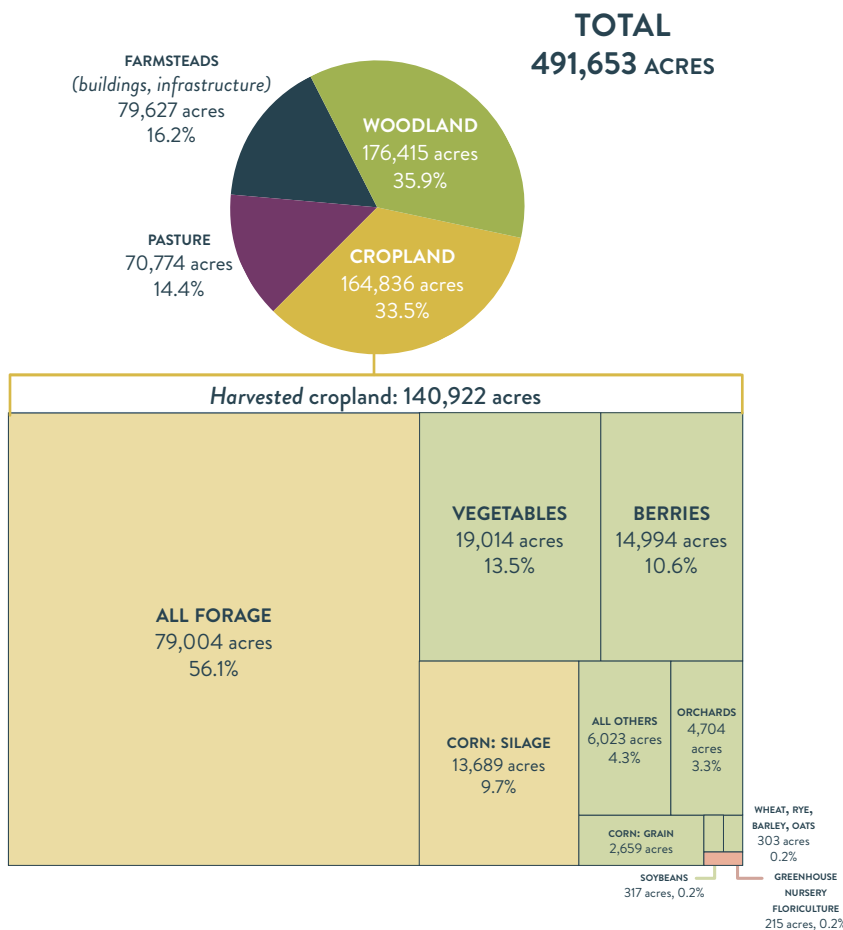
Temperatures have risen about [3.5°F](#) since the beginning of the 20th century. Warmer temperatures increase vulnerability for agriculture and densely populated cities.

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.

Agriculture

What kinds of agricultural products does Massachusetts grow/raise? How have land uses changed over time?

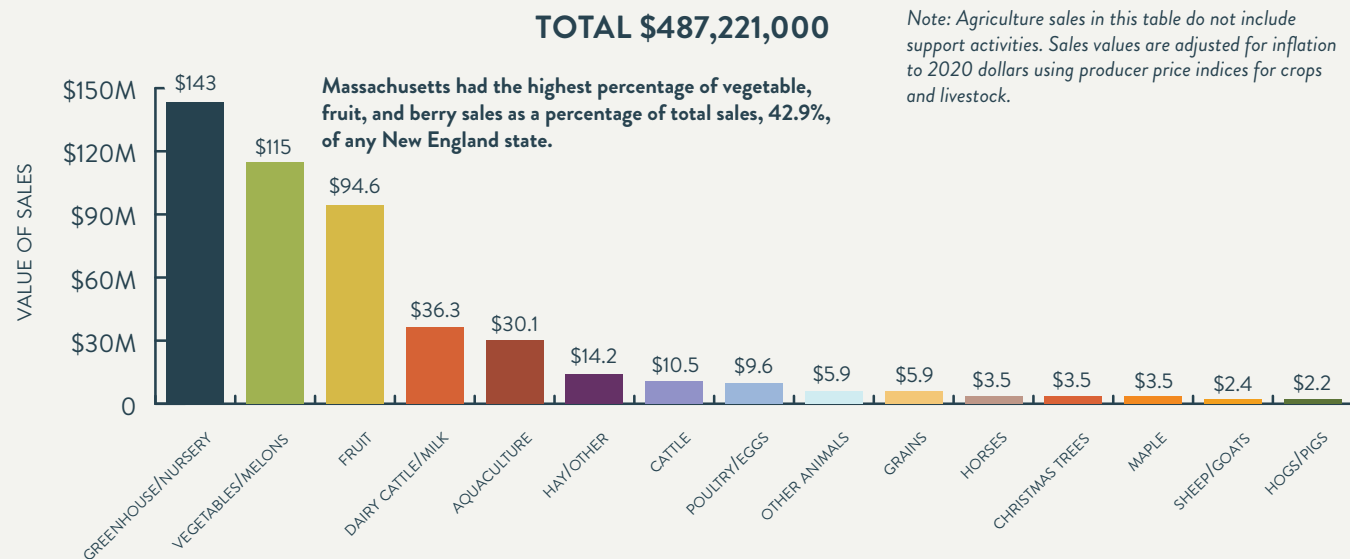
Land in Agriculture



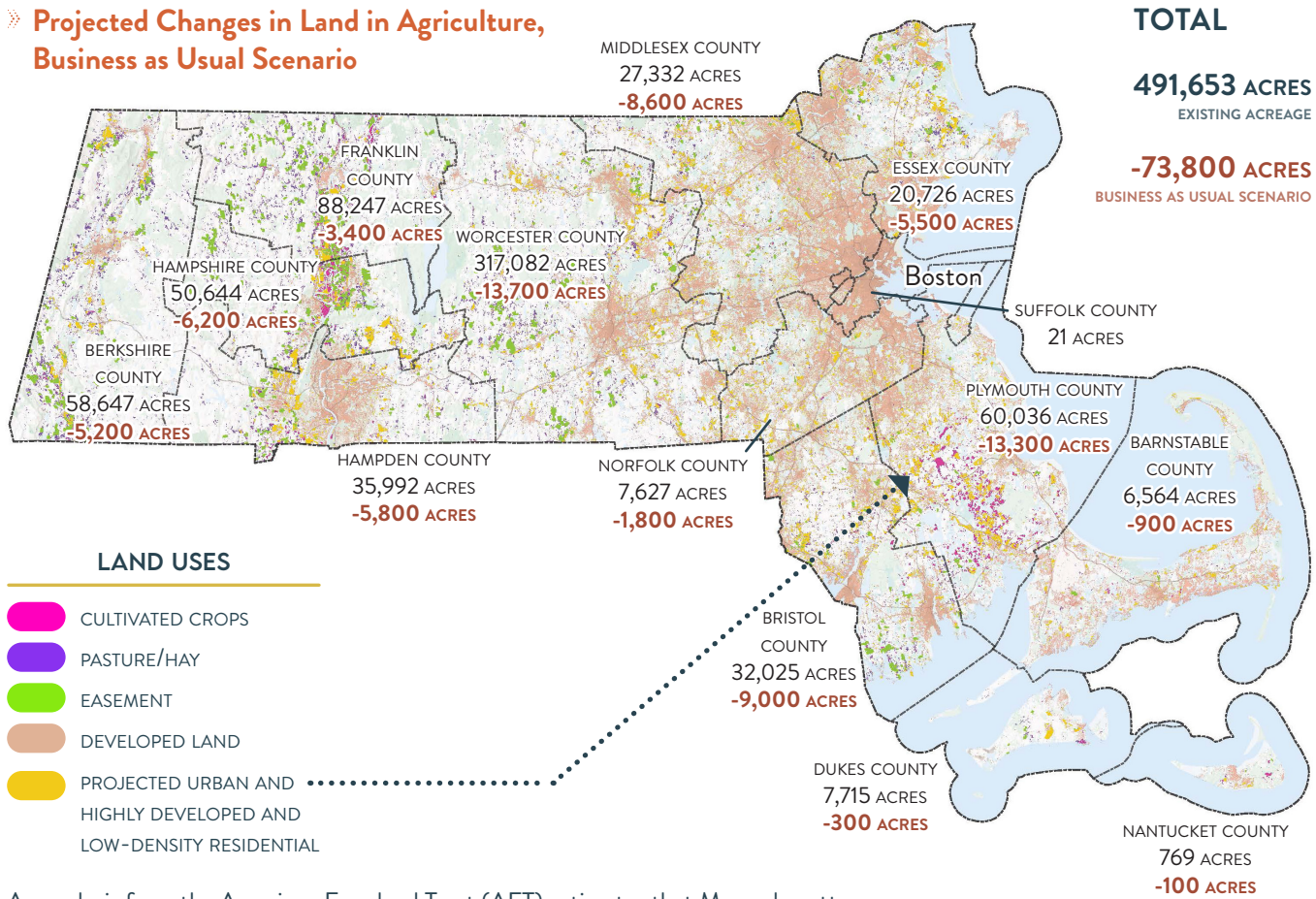
- #2** Massachusetts is the second largest producer of cranberries in the United States, after Wisconsin
- 77%** Cropland decreased from 703,000 acres in 1945 to 165,000 acres in 2017
- 71%** Pastureland decreased from 247,000 acres in 1945 to 71,000 acres in 2017

Acres for animal feed equaled **65.8% (92,693 acres)** of harvested cropland and 18.9% of total land in agriculture. Massachusetts had the highest percentage of total farmland devoted to fruits (3.3%), second highest for berries (10.6%), and third most for vegetables (13.5%) of the New England states.

Agricultural Sales, 2017



Projected Changes in Land in Agriculture, Business as Usual Scenario



TOTAL
491,653 ACRES
 EXISTING ACREAGE
-73,800 ACRES
 BUSINESS AS USUAL SCENARIO

LAND USES

- CULTIVATED CROPS
- PASTURE/HAY
- EASEMENT
- DEVELOPED LAND
- PROJECTED URBAN AND HIGHLY DEVELOPED AND LOW-DENSITY RESIDENTIAL

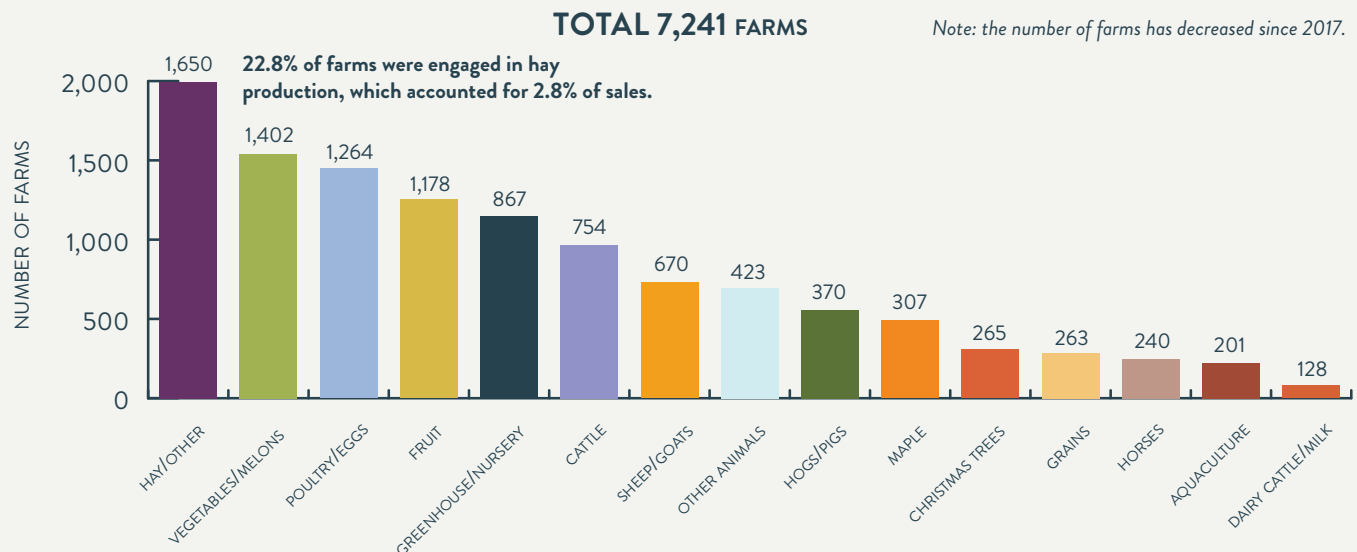
An analysis from the American Farmland Trust (AFT) estimates that Massachusetts could lose an additional **73,800 acres** by 2040 under a “Business as Usual” development scenario and **89,400 acres** under a “Runaway Sprawl” scenario.

AFT projects that **Worcester, Plymouth, and Bristol** counties will experience the biggest decreases in land in agriculture.

Source: American Farmland Trust, [Farms Under Threat 2040: Choosing an Abundant Future](#)

#3 Massachusetts had the third highest average farm real estate value, **\$15,200 per acre**, of any state in the country in 2022.

Number of Farms Engaged in Each Category, 2017



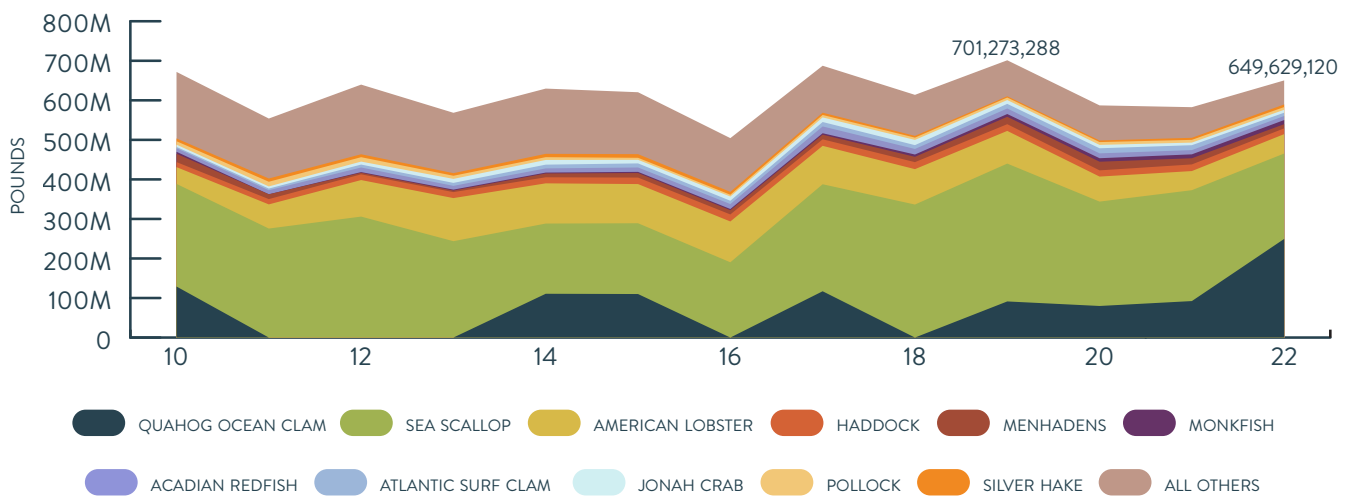
Fisheries

What kinds of seafood products does Massachusetts harvest?

58% Dozens of species are caught or harvested by Massachusetts fishermen/lobstermen, but sea scallops account for the majority of sales (58% in 2022) and 33% of pounds landed. Sea scallop harvests have been relatively consistent over the past 12 years, but ocean acidification and warming are expected to increasingly impact production.

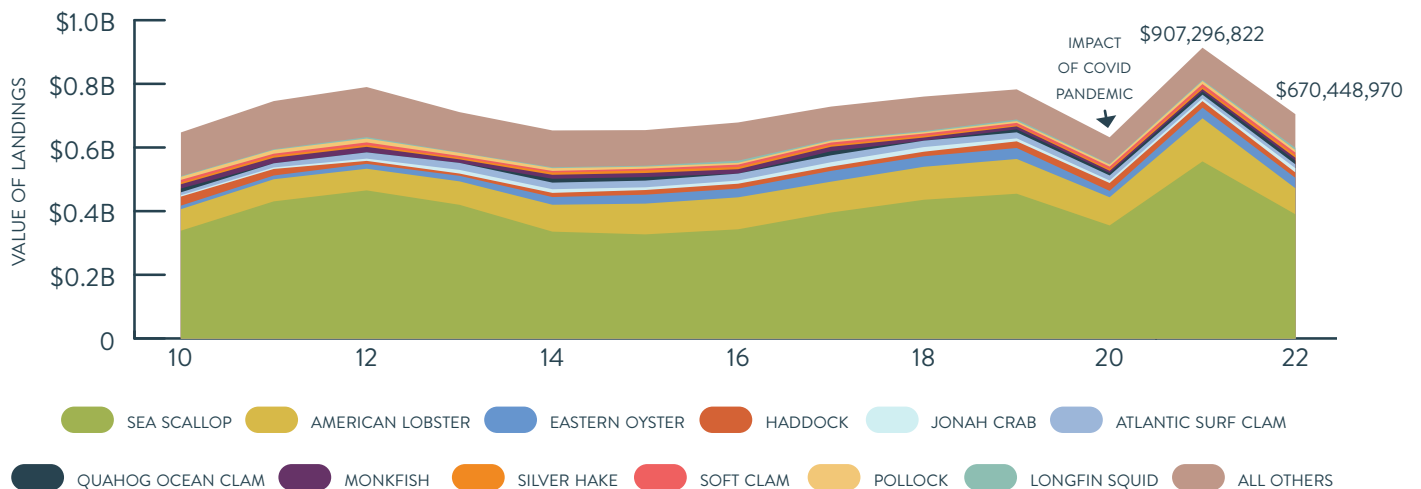


» Pounds of Commercial Seafood Landings



Source: NOAA Fisheries and the Atlantic Coastal Cooperative Statistics Program

» Value of Commercial Seafood Landings



Source: NOAA Fisheries and the Atlantic Coastal Cooperative Statistics Program. Depicted in 2022 dollars.

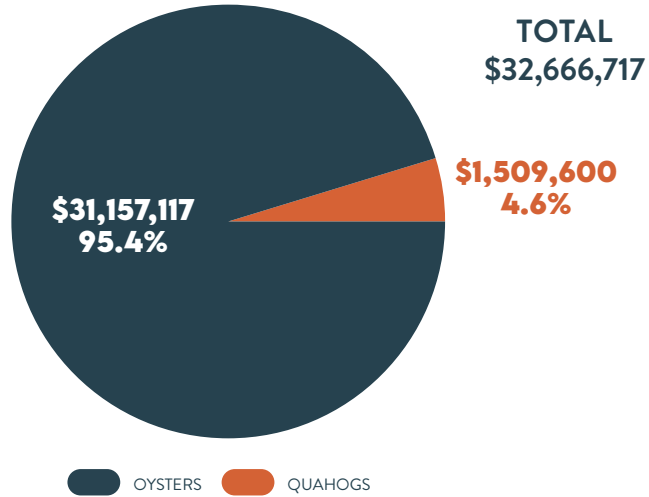


Aquaculture

Value of Aquaculture Production, 2022

In 2022, Massachusetts had more than **1,358 acres** of shellfish farms. Oysters account for the majority of shellfish sales (**\$31.2 million**), followed by Quahogs (**\$1.5 million**).

Source: Massachusetts Division of Marine Fisheries, [2022 Annual Report](#)



Food Waste

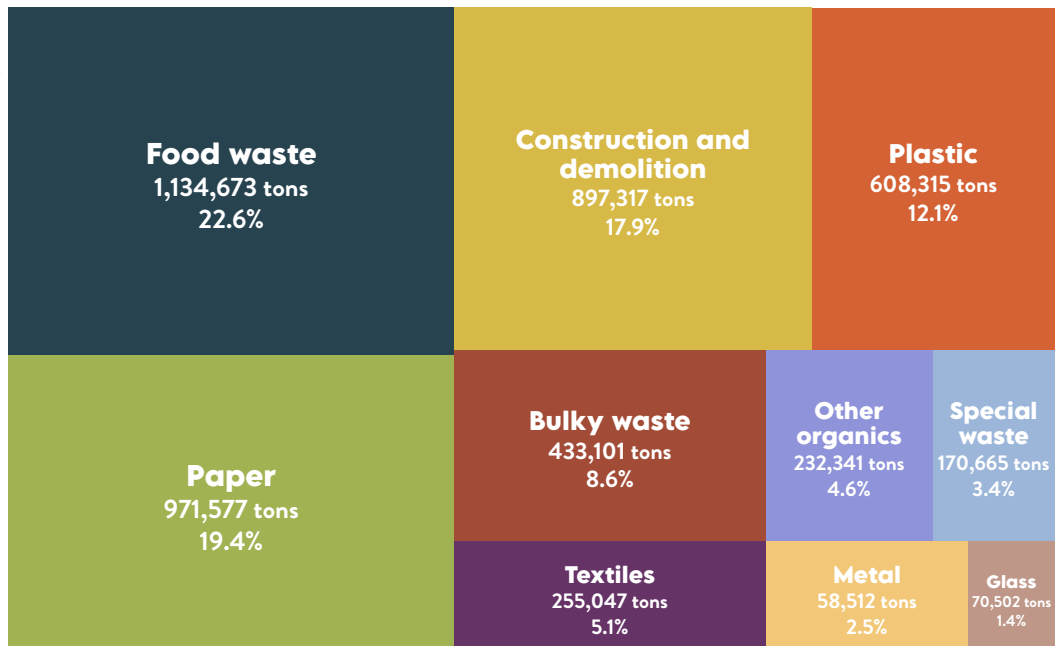
How much food waste is landfilled in Massachusetts?

A [2030 Solid Waste Master Plan](#) reported waste disposal data for 2018. It found that food waste is the most common material in Massachusetts' municipal waste stream at over 1.1 million tons, despite [Massachusetts Department of Environmental Protection](#) regulations that ban food wastes from businesses and institutions that generate more than ½ ton per week.

Landfilled Food Waste

5,018,082 TONS TOTAL MSW

1,134,673 TONS FOOD WASTE



Source: Massachusetts Department of Environmental Protection, October 2021, [Massachusetts 2030 Solid Waste Master Plan: Working Together Toward Zero Waste](#)

Key Massachusetts Strengths, Weaknesses, Opportunities, and Threats

STRENGTHS

Significant consumer base with demonstrated commitment to purchasing local food

Historically innovative farming sector with opportunities to farm on a range of soil types and in a range of numerous climatic conditions

Extensive support system of engaged nonprofit organizations, businesses, state and federal agency staff and legislators

Significant state investment demonstrating the importance of the local food system to state food security, climate, and equity goals

Important commercial seafood industry including New Bedford, the most valuable fishing port in the U.S.

WEAKNESSES

Low pay in many food systems jobs

Inadequate opportunities for low-income consumers to support a healthy, culturally appropriate, nourishing diet

Persistent racial, class, and gender inequities in the local food system

Increased frequency of extreme weather events leave food production, distribution, and access vulnerable to disruptions

Greater demand than production capacity in most food sectors

Inadequate Extension and other technical assistance resources

OPPORTUNITIES

Increasing state and local government support for local food systems issues through existing, scalable programs that support both food security and increased production

Soon to be released state Farmland Action Plan

Innovative means of connecting farmers with markets and consumers with locally-grown foods

Growing efforts to educate children and consumers about the local food systems

THREATS

Development pressure, climate migration, high land costs, and aging farmer population all threaten land-based production capacity

Warming Gulf of Maine threatens \$670 million annual seafood industry

Lack of centering of equity by many stakeholders and processors leads to distrust and disengagement by community members whose work and input are necessary for the creation of a sustainable, equitable, resilient food system

Next Steps in 2030: What Can Massachusetts do to Meet the 30% by 2030 Goal?

Areas of priority include:

- » Significantly increase purchases of Agricultural Preservation Restrictions to permanently protect more farmland, as identified in multiple state plans
- » Increase investments in production infrastructure
- » Build relationships with independent, regional and national grocery chains and distributors to get more local food into more traditional points of sale
- » Strengthen relationships between racially and geographically diverse communities, as well as between all sectors of the food system, to gain trust, share expertise and build momentum for food system change.