FOCUSMAINE

# *Cultivating Prosperity: A Strategic Plan for Growing Maine's Food Economy*

October 2024

camoin associates

# Acknowledgments

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# 1. Executive Summary

# INTRODUCTION

## Project Purpose

This project aims to develop a strategic plan to grow Maine's Food Economy, which encompasses the production, processing, and manufacturing of all food-related products within the state. The project aims to sustain recent growth trends and capture new opportunities by creating action plans informed by data, supporting existing industry initiatives, integrating technology and innovation, and aligning with environmental sustainability.

Key goals of the project include:

• Sustaining job growth and economic contributions to Maine's Food Economy.

• Building on recent successes, such as the 17% increase in food-related jobs between 2018 and 2023 and the generation of over $2.8 billion in Gross Regional Product (GRP) in 2022, roughly 3% of the state's total GRP.

• Identifying and addressing gaps in Maine's food system, such as workforce issues, access to capital, and the need for innovation.

• Conducting analyses to guide strategy development, including examining the sector's food-related infrastructure, productivity, and earnings.

• Aligning the strategy with FocusMaine's goals of accelerating growth in high-potential industries, creating quality jobs, and building a future-ready economy.

• By providing a high-level analysis of Maine's Food Economy and a SWOT analysis, the project outlines a path forward for strengthening the sector and ensuring its long-term success.

This effort included stakeholder engagement across Maine, data collection and analysis on the food economy, and strategy development. The following report details the findings of this effort, including highlighting seven key themes with actions that will have the greatest impact on improving the economy for Maine residents and businesses.

## Engagement Activities

Between October 2023 and August 2024, Camoin Associates and FocusMaine facilitated a networking event, five virtual forums, and multiple in-person and virtual strategy sessions with members of the Maine Food Economy.

Each virtual forum had 3-4 panelists or presenters that shared information, answered questions, and encouraged feedback and collaboration during the forum event. Each forum focused on key themes in the food economy, and participants were surveyed during and after the forum. Forum topics included data, technology and innovation, capital, sustainability, and marketing.

In addition to virtual forums and strategy sessions, FocusMaine and Camoin Associates conducted multiple stakeholder interviews with organizations that reviewed strategies and provided feedback with an equity and inclusion lens.

The overall objective of stakeholder engagement was to inform the development of actionable strategies by understanding business needs, barriers, and opportunities within each key theme area.

## Data Analysis

Camoin Associates conducted a series of analyses to evaluate Maine's Food Economy and to develop an action plan to catalyze growth in the industry. These analyses included:

• **Literature Review**

• **Background Analysis**

• **Situational Assessment**

• **SWOT Analysis**

• **Stakeholder Engagement**

# SWOT ANALYSIS FOR MAINE'S FOOD ECONOMY

## STRENGTHS

- Abundant natural resources, both terrestrial and marine, that are well-suited for harvesting and producing food products
- Strong job growth and economic performance in Agriculture and Food & Beverage Processing industries in recent years
- Food start-ups represent a significant driver of venture capital and innovation funding in Maine
- Strong ecosystem of organizations and industry players working to bolster the state's food sector
- Young, immigrant, LGBTQ+, and people of color moving to Maine to farm
- Growing population that is becoming younger and willing to pay more for local food

## WEAKNESSES

- Slow patent activity signals lagging integration of technology and innovation in a heritage sector
- Logistics and distribution accessibility to small producers is held back by volume constraints and geographic challenges
- Limited geographic equity to financial resources, technical assistance, and knowledge networks
- Culture of independence among growers and producers that makes collaboration difficult
- Lack of communication between producers and buyers
- Lack of cold transportation, cold storage, and processing limits producers
- The State of Maine does not have a specific, statewide plan to strengthen the food system
- Lack of bandwidth, marketing, and social media knowledge limit market reach
- Farms under conservation easement are funding-limited

## OPPORTUNITIES

- Collaborative marketing effort for Maine's food products
- Flexible capital options more tailored to agriculture and food business structures
- Expand Maine's base of core production to new product categories, such as sea vegetables, sustainable proteins, and meat processing
- Low barrier to entry occupations in the sector provide an opportunity to recruit, retool, and retain the workforce and provide career pathways in the food economy
- Creation of cooperatives to share resources among producers
- Relocate food processing from out-of-state to Maine
- Increase supply and access to housing to address workforce needs
- Sustainable packaging options, particularly bio-based and eco-friendly packaging

## THREATS

- Climate change
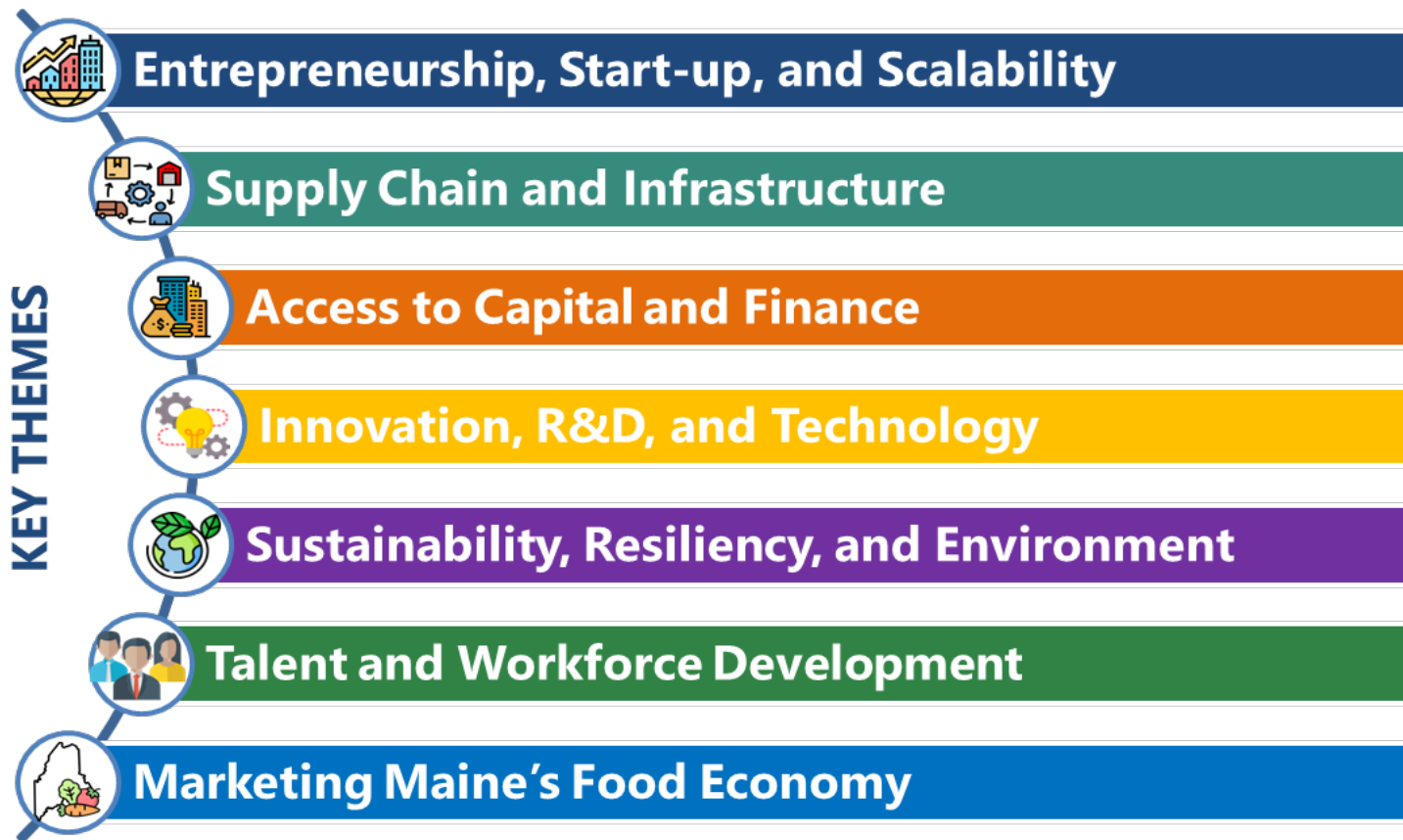- Access and availability of agricultural land
- High cost of farming equipment combined with lack of start-up funding to purchase it
- Insufficient labor to fulfill producers' needs
- Small size of local producers and high cost of technology enables other states to outpace Maine in terms of efficiency
- Lack of succession planning means a decline in the number of farmers and value-added producers

# ACTION PLAN CATALYZERS

Using input from business owners, partners, past research, and best practices, we created an action plan to catalyze growth in Maine's food economy. This plan outlines actions organized by seven (7) key themes that aim to highlight actions that will have the greatest impact on improving the economy for Maine residents and businesses.

The seven key themes address both challenges and opportunities in the food economy. Actions within each theme are prioritized as high (3), higher (2), or highest (1) based on factors like stakeholder input, timing, and potential impact. The impact of each action is influenced by ecosystem capacity, available resources, implementation time, and its effect on the food economy. **Ten actions, known as "Catalyzers," are identified as essential for unlocking or enabling other actions.** These "Catalyzers" are of the highest priority because they form the foundation for the success of subsequent actions. **Food Economy Catalyzers are included in this Executive Summary; however, please see the detailed action plan in Chapter 4. Action Framework.**

**KEY THEMES**

- Entrepreneurship, Start-up, and Scalability
- Supply Chain and Infrastructure
- Access to Capital and Finance
- Innovation, R&D, and Technology
- Sustainability, Resiliency, and Environment
- Talent and Workforce Development
- Marketing Maine's Food Economy

# ACTION PLAN CATALYZERS

Catalyzers are organized by Key Theme, the overarching Action, and the Sub-Action that supports the Action.

| Key Theme | Action | Sub-Action |
|---|---|---|
| **Entrepreneurship, Start-up, and Scalability** | 1. Create a Maine Food Entrepreneurs Resource Council to coordinate programming, events, networking, and communications for organizations supporting businesses and entrepreneurs. | 1.1 Create and fund a Maine Food Entrepreneurs Resource Council. Bring together the food entrepreneurship groups in Maine to collaborate, share resources, build a mentorship network, and coordinate communication. This group should work with the promotional council to help promote these opportunities to aspiring and current entrepreneurs in and outside of Maine. |
| **Entrepreneurship, Start-up, and Scalability** | 2. Invest and expand existing organizations' technical and organizational capacity to support more start-ups and entrepreneurs within existing programming. | 2.2 Expand and support technical assistance programs that help entrepreneurs identify target markets, customers, funding resources, marketing strategies, business planning, and certifications. |
| **Supply Chain & Infrastructure** | 1. Assess interest and feasibility of the potential of cooperative producer models to meet supply chain needs through shared facilities, equipment, and shared services. | 1.1 Collaborate with partners to identify small-medium-sized producers willing to work together in a cooperative or similar system. Examine models and best practices in other states. Create a model agreement to support and promote businesses to share equipment, supplies, transportation modes, etc. |
| **Supply Chain & Infrastructure** | 3. Increase the supply and availability of food and beverage production, processing, cold storage, co-packing, and warehousing facilities throughout the state where gaps exist. | 3.1 Conduct a statewide market and feasibility study of existing facilities, supply and demand, existing gaps, and financial feasibility. Research and develop findings and insights for best practices and experiences in the development of and access to facilities and their business models. |

# ACTION PLAN CATALYZERS

| Key Theme | Action | Sub-Action |
|---|---|---|
| Access to Capital and Finance | 1. Enhance technical assistance and improve communication about existing capital resources through partnerships and food system networks. | 1.1 Meet with local businesses to listen to their needs, identify gaps, and determine the best way to get capital-related information and assistance to them. |
| Access to Capital and Finance | 4. Expand existing networks by allocating funding resources to support underserved businesses in accessing capital. | 4.1 Form a small business advisory committee of underrepresented entrepreneurs to advise on accessing capital, policy, programming, and broadening capital networks |
| Innovation, R&D, Technology | 1. Catalyze a comprehensive transformation in innovation, R&D, and technology across Maine's food-related economy to accelerate the state's advancement into the future of food. | 1.1 Work with industry and research partners to define and scope a comprehensive program initiative to transform the industry through the development and adoption of technology and innovation for accelerated industry growth and competitiveness. A comprehensive, transformative program is defined as having statewide potential, involving multiple partners representing industry, research organizations, business, and workforce support entities, and creating new capacity for opportunities related to innovation and technology. |
| Sustainability, Resiliency, and Environment | 3. Make grants for sustainability and resiliency efforts available, accessible, and low barrier. | 3.1 Work with partners to fund sustainability and resiliency grant programs and certifications to offset transition costs, market research, and life cycle assessments. |

# ACTION PLAN CATALYZERS

| Key Theme | Action | Sub-Action |
|---|---|---|
| **Talent and Workforce Development** | 1. Develop a strong understanding of workforce needs, available programming and its impact, and training and attraction gaps in the food system. | 1.1 Analyze workforce needs and gaps to strategically plan future programming and support. |
| **Marketing Maine's Food Economy** | 1. Create a Maine Food Promotional Council to promote Maine food products and brands and connect these efforts to local tourism. | 1.1 Explore modeling the Maine Food Promotional Council informed by best practices and lessons learned from other states. |

**Note:** Please see **Chapter 4. Action Framework** for more details on methodology, additional Food Economy Actions, and Sub-Actions.

# 2. Literature Review

**Purpose** | Reviewing past research and current initiatives allows us to identify common themes, potential opportunities, and gaps in Maine's food system. Key ideas and themes that appeared multiple times during the literature review are outlined below.

### Increased focus on sustainable practices

Several reports highlight the growing need to support and improve sustainable agriculture and aquaculture practices. This growing need pairs with recent research that indicates consumers, especially younger consumers, are willing to pay more for sustainably grown food. These studies also indicate, however, that many brands fail to adequately market their sustainability practices, and as a result, they are poorly received. Providing Maine's producers with the knowledge and tools needed to tell their sustainability stories may be an opportunity.

### Growing emphasis on local/regional eating

The *New England Feeding New England* report and other reports outline the need for Mainers to increase their consumption of locally grown food, specifically emphasizing increasing seafood consumption.[1] Eating locally grown food can have positive environmental impacts, and research shows that consumers are willing to pay more for the Maine brand. A recent study out of the University of Maine found that consumers associate the Maine brand with "natural outdoor beauty" and that individuals are willing to pay 22% more for Maine products and services. Smaller producers, however, often struggle to get grocery stores and retail outlets to sell their products. Addressing the barriers between regional producers and local retailers could aid in increasing regional eating.

### A need for public understanding

Recent engagement efforts with crop and dairy farmers identified a disconnect between the state's producers and consumers.

Maine's producers want to increase public awareness and highlight how farming can benefit the community, the environment, and the economy. Improving and personalizing operations and product marketing may help bridge the understanding gap. Providing tools to producers to help them tell the public about their unique operations in an appealing and concise way could potentially help create that public understanding.

### The need for policy support

The literature indicates a need for policy support at both state and federal levels. Federal support includes updating past legislation and creating a way to streamline new and innovative practices that come out of R&D efforts. State and local policy support should look to protect natural resources for producers. This includes considering how a policy may impact farm water quality, water quantity, and overall soil health. By identifying and addressing state legislation that hinders efficient production practices, Maine can better support and bolster its food production.

### The need for expanding the food economy workforce

Many of the reports highlight efforts to increase the size of the workforce, whether through attraction, apprenticeships, journeyperson programs, or other methods. These reports cite the need for a strong food economy workforce in Maine to support future goals, such as producing a higher share of Maine's food. Ensuring that there are enough farmers, producers, and other workers to make these goals possible is crucial and can be accomplished through programs like MOFGA's apprenticeships and journeypersons programs and intentional attraction and retention efforts.

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[1] We acknowledge that shifting to a more regionally sourced diet is not currently feasible for all Mainers due to budget constraints.

# LITERATURE REVIEW

**Background** | Understanding the current landscape of Maine's food economy is imperative to supporting its future success and those who are impacted by it. This literature review will identify gaps in understanding, guide our research, and inform our strategic planning.

## Review of Existing Literature

### Maine Economic Development Strategy 2020-2029 [2]

Published in late 2019, this was Maine's first ten-year economic development strategy in more than two decades. The report identifies talent and innovation as the two key drivers of economic growth and proposes various actions to attract, retain, and develop a skilled and diverse workforce, as well as promote innovation across sectors and regions. Additionally, the plan sets three quantitative goals for 2030: 1) grow the average annual wage by 10%, 2) attract 75,000 people to Maine's talent pool, and 3) increase value added per worker by 10%.

The strategy identifies four thematic areas where Maine has current strengths, growing global demand, and potential for job creation:

- Food and Marine
- Forest Products
- Making and Manufacturing
- Technical Services

Food and Marine includes Agriculture, Food Production, Aquaculture, and Marine Technology. The global demand for safe, climate-responsible food sources is growing dramatically. This global trend intersects with Maine's strengths in marine resources, food, manufacturing, and technical services. The report identifies that the United States imports approximately 95% of its salmon, and Maine has the opportunity to grow salmon and fill this need without freezing or airfreight.

Maine has the potential to be a leader in developing new and sustainable ocean fisheries and products. The state is currently a leader in veterinary science, and this knowledge and talent base can continue to develop the life sciences area, which acts as a base for many industries.

### Maine Innovation Economy Action Plans (MIEAP)

The 2010 plan included Forest Products & Agriculture and Marine Technology & Aquaculture as two of the state's key innovative sectors. The following paragraphs summarize the findings of the 2017 and 2023 MIEAPs.

#### 2017 [3]

The 2017 plan outlines three main strategies for supporting innovation within the state, including:

1. Growing R&D capacity by:
    a. Increasing R&D performed at the state's research institutions.
    b. Increasing R&D performed in the private "for profit" sector.
    c. Increasing cooperative research agreements with National Laboratories and between Maine R&D institutions and Maine companies.
    d. Supporting efforts to increase high-speed internet access across the state.
2. Increasing human capital through:
    a. Recruiting and retaining new skilled workers.
    b. Increasing the skill level of the existing workforce.

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[2] https://www.maine.gov/decd/sites/maine.gov.decd/files/inline-files/DECD_120919_sm.pdf

[3] https://www.mainetechnology.org/wp-content/uploads/2018/08/MSTP_16pp_E_EB-EDITS-updated.pdf

c. Increasing cooperative research agreements with National Laboratories and between Maine R&D institutions and Maine companies.

d. Supporting efforts to increase high-speed internet access across the state.

3. Cultivating entrepreneurship and innovation within enterprises by:

a. Increasing the number of knowledgeable entrepreneurs.

b. Increasing the number of new business starts and businesses scaling across the state and the number of innovators within existing businesses.

c. Celebrating the successes of Maine entrepreneurs.

2023: [4]

This plan expands on previous action plans and lays out a vision for a "resilient, innovation-driven economy that creates opportunities for all Maine people," including strategies to increase R&D, strengthen pathways to commercialization, prepare the innovation workforce, promote resilience to climate change, and strengthen the state's R&D ecosystem. Unlike the previous plans, the 2023 strategy separates the state's target innovative sectors into two categories, detailed below. Heritage industries correspond directly to established target sectors, while the high-growth industries identified in the plan represent intersecting activities that combine elements of the technology sectors in new and creative ways.

1. Heritage Industries: Agriculture, Aquaculture & Marine Fisheries, and Forestry & Forest Products

2. High-growth target sectors: Aerospace, Artificial Intelligence, Advanced Building Products, Algae and Algal Products, Biochemicals, Biomanufacturing, Biomedicine and Engineering Advances, Healthy Aging, Offshore Wind, and Tidal Energy

While the strategies outlined in the 2017 and 2023 MIEAPs broadly support the goals of FocusMaine, they do not specifically identify ways to grow the state's food economy or increase Maine's presence in the emerging Food Tech industry.

## Food Product Manufacturing Export Profile [5]

In 2022, Maine's DECD and Camoin Associates produced an updated overview of Maine's Food Product Manufacturing industry that showed:

1. "In 2020, 24% of Maine's nearly $1.8 billion in food manufacturing sales occurred within the state, while the other 76% of sales were exported to consumers outside Maine."

2. "Maine's food manufacturing industry accounted for 5,687 jobs in 2020 – a decrease of 1% (58 jobs) from its total employment in 2015. The industry is projected to grow 2% (92 jobs) by 2026."

3. "Among the six New England states, Maine has the third highest percentage of food manufacturing exports, at 76% of total industry sales."

4. "Maine ranks in the middle of the New England states in terms of total food sales per capita, at $1,302. This is greater than Connecticut, New Hampshire, and Rhode Island but less than Massachusetts and Vermont. Maine ranks only behind Vermont in terms of food sales per GDP."

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[4] https://umaine.edu/mieab/wp-content/uploads/sites/686/2023/11/Maine-Innovation-Economy-Action-Plan.pdf

[5] https://www.maine.gov/decd/sites/maine.gov.decd/files/inline-files/Market%20Profile%20%20-%20Food%20Product%20Exports%20-%20State%20of%20Maine%20DECD%20%28003%29.pdf

# LITERATURE REVIEW

### Maine Climate Action Plan: Maine Won't Wait (2020)[6]

Created by Maine's Climate Council, the 2020 plan addresses the state's strategy to combat climate change and increase Maine's resiliency to the changing climate. Several recommendations related to the food economy are present within the report, including:

1. Advancing policies that protect Maine's natural resource-based industries, including forestry, agriculture, and aquaculture.

2. Promoting and providing financial support to sustainable agricultural practices and in-state food systems.

3. Supporting Maine's fishing and aquaculture businesses as they change and evolve with the changing ocean ecosystem.

In addition to the three recommendations listed above, Maine's climate plan includes several non-food-related recommendations such as embracing electric vehicles, supporting clean-energy innovation, engaging with Maine communities to better understand the local impacts of the changing climate, and more.

Given the direct link of Maine's food economy to natural resources, the environment, and climate change, continued coordination and integration with the work of the Climate Council and related stakeholders will be critical for identifying and acting on challenges and opportunities.

### New England Feeding New England Report, Volumes 1-4[7]

Produced by the New England State Food System Planners Partnership in 2023, the four-volume *New England Feeding New England Report* aims to answer four questions.

Volume 1: *If we ate in a healthier, more resilient way, could more of our food be supplied by regional production?*

The volume concluded that a "switch to resilient eating" would require New Englanders to reduce their average daily calorie intake from 2,940 to 2,320 per day. Additionally, it would require significant increases in produce and seafood consumption accompanied by significant decreases in processed sugar and red meat consumption.

Volume 2: *Could the six New England states meet a goal of supplying 30% of the region's food by 2030?*

New England's population is projected to reach 15.6 million by 2030. In order for the region to produce 30% of its food servings, it would need to maximize the use of 401,000 underutilized acres and add 588,000 acres of agricultural land.

Volume 3: *Do we have the right mix of industries to ramp up food production?*

New England's food system employs around one million individuals, which accounts for roughly 10% of the region's jobs. The region's food system is responsible for 11% of total sales or roughly $190 billion. Regional employment and sales in agriculture and fisheries, however, are stagnant or declining.

Volume 4: *What market channels offer the best opportunities for sourcing local and regional food products?*

84% of New England's food sales are captured in grocery stores, fast food outlets, restaurants, and warehouse clubs. Smaller producers often have a harder time accessing these markets.

In place of strategies or recommendations, the four-volume report concluded with a series of roughly 40 strategic questions. These questions are designed to help the New England region reach its goal of producing 30% of its food supply by 2030.

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[6] https://www.maine.gov/climateplan/sites/maine.gov.climateplan/files/inline-files/MaineWontWait_December2020_printable_12.1.20.pdf

[7] Report Components | New England Feeding New England (nefoodsystemplanners.org)

# LITERATURE REVIEW

**State of Maine Agriculture Report Series Dairy Sector Report[8]**

The Dairy Sector Report from Maine Farmland Trust presents challenges that Maine dairy farmers are facing and opportunities to strengthen the Maine dairy sector and support a robust future.

The challenges facing Maine dairy farmers include rising production costs coupled with low output prices, an aging industry population with little succession planning, and a decrease in farms and farmland.

Opportunities for policy and market intervention include supporting Maine's Dairy Stabilization Program, which provides cash payments to dairy farmers; expanding processing capability in Central Maine, which would lower production and transportation costs for farmers largely located in Central Maine; and exploring regional pricing, which means setting prices based on regional production costs and market signals.

These challenges and opportunities are important considerations as Maine dairy farmers struggle with tight margins and an unknown future.

**Everyone at the Table: Maine's Roadmap to End Hunger[9]**

Maine's Roadmap to End Hunger was commissioned by the Maine Department of Agriculture, Conservation & Forestry and aims to identify the root causes of hunger in Maine and look for ways to troubleshoot them. The report stresses that food insecurity is not about a lack of food but a presence of economic insecurity.

The overarching mission is to "respond to the urgency of hunger and food insecurity today" and prevent "food insecurity and hunger tomorrow by changing the conditions that hold the problem in place."

The proposed goals include building infrastructure and capacity to allow for implementation; ensuring access to "healthy, culturally appropriate food" supporting economic security and opportunity; framing the issue as a responsibility of the collective society and amplifying the voices of those impacted; and addressing underlying structural inequities to close the gap.

The report shares strategies to reach these goals and focuses on building income and resources to fight hunger.

**Start ME Up: From Portland to Presque Isle, an entrepreneur's guide to the Maine region[10]**

This brief article from Mainebiz shares resources for entrepreneurs in the following areas of Maine: Portland, Brunswick, Skowhegan, Augusta & Waterville, Bangor & Orono, Presque Isle, and Auburn & Lewiston.

For each area, the article includes coworking spaces, coffee shops, networking opportunities, livability information, and insider tips.

**The Economic Impacts of the Maine Seafood Sector[11]**

This report comes from the Middlebury Institute of International Studies at Monterey Center for the Blue Economy and the University of Southern Maine Center for Business and Economic Research and estimates the "economic impacts of the commercial seafood sector and core value chain components on the state of Maine and substate regions" The report found the following:

The seafood sector, particularly retail seafood, lobster harvesting, and seafood processing, contributed over $3.2 billion to the Maine economy in 2019.

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[8] https://www.maine.gov/decd/sites/maine.gov.decd/files/inline-files/January%202016%20Comprehensive%20Evaluation%20of%20Maines%20Incentive%20and%20Investment.pdf

[9] maines-roadmap-to-end-hunger.pdf
[10] Start ME Up: From Portland to Presque Isle, an entrepreneur's guide to Maine regions | Mainebiz.biz
[11] SeaMaine-Seafood-Market-Report.pdf

The seafood sector supported over 33,300 jobs statewide in 2019, 23,846 of which were employed directly in the seafood sector. The largest areas of seafood employment were harvesting (12,700) and retail seafood outlets (8,550).

The seafood sector is the largest natural resource-based sector in the Maine economy and supported an estimated $449 million in tax revenues in 2019.

In 2019, the seafood sector supported over 10,000 jobs in the midcoast region and accounted for 45% of all direct jobs in the Downeast region.

### Maine Seafood Market Report: Unlocking the Potential of Maine's Thriving Seafood Sector[12]

The Maine Seafood Market Report: Unlocking the Potential of Maine's Thriving Seafood Sector report was designed to be a resource for the SEA Maine Market Development Committee and act as a strategic tool for seafood and aquaculture companies in Maine. The report found that in 2021,

- Economic output for the state's seafood sector was approximately $3.2 billion and represented 33,000 jobs.
- Maine seafood sales totaled $904.1 million (lobster made up $305 mil.).
- 94% of sales took place "out of state."
- Aquaculture and fishing jobs in Maine more than doubled from 2016-2021. The increase was primarily the result of shellfish farming.
- Fishing and aquaculture employment is significantly more concentrated in Maine compared to the rest of the nation.

### Securing the Future of Maine's Organic Farms[13]

The Maine Organic Farmers and Gardeners Association (MOFGA) published this impact report in 2016 to show the growth of Maine organic farming resulting from MOFGA's Beginning Farmer Training Programs, including their Apprenticeships and Journeyperson programs. They report that in the last ten years, over 1,500 people have completed the Apprenticeship program, and 230 have completed the Journeyperson Program. The new farmers are farming over 10,000 acres in all 16 counties, creating 800 paid jobs. This report demonstrated that MOFGA's farmer education programs are "fueling Maine's new agriculture economy, creating new jobs, and reinventing the face, role, and possibility of farming in Maine."

### Results from a Statewide Engagement Process: Maine Farmers' Needs & Priorities[14]

This 2019 report presents the results of statewide engagement with farmers looking into needs and priorities for success. This report is intended to inform decision-makers and agricultural service providers.

Recurring themes in the engagement included the need for support to meet business needs; more information, resources, and education to support farm operations; profitability; education for consumers regarding the value of farms to the community, environment, and economy; greater investment in research and development; and protection for farm resources, such as soil management and health.

The main takeaway was the need to bolster profitability. This can be achieved by making information and resources more available to farmers and changing external factors that limit profitability and influence business needs.

[12] SeaMaine-Seafood-Market-Report.pdf
[13] Microsoft Word - MOFGA JP Report_Final 2.16_150ppi.docx

[14] Results from a Statewide Engagement Process: Maine Farmers' Needs & Priorities (insert "May 2019" one line below (website-files.com)

# LITERATURE REVIEW

## 2023 US Brand Sustainability Benchmark Report[15]

This sustainability benchmark report for the US Food & Grocery Industry finds that consumers are switching to more sustainable options in all categories. This is especially true for young people.

However, the sustainability performance of many brands does not match consumer expectations. Many brands need to do more to tell the story of their sustainability practices, as they go unrecognized and are, therefore, poorly received. This report demonstrated that sustainability is good for business, especially in the Food & Grocery industry.

## Fork Food Lab 2.0: Market Analysis[16]

In this market analysis, the author shares that in 2019, Fork Food Lab had 50 members, supporting 152 jobs and generating $10.8 million in earnings. Overall, the lab was generating an annual 10:1 return on investment. At the time, the lab reported physical constraints such as not having enough space, unacceptable levels of humidity for baking, and the reduced efficiency caused by a two-story layout. Now, Fork Food Lab is expanding from a 5,200 square foot space to a 30,000 square foot space in South Portland and will have indoor and outdoor areas, theater-style seating, standing room, table seating, and the capacity to host weddings, classes, conferences, and events. This will allow the lab to continue to serve as an incubator for small local food businesses and help to grow the Maine Food Economy.

## Fork Food Lab 2.0: COVID-19 Addendum[17]

This COVID-19 addendum examines the demand for local food during the pandemic. The author found that during the pandemic, consumers cooked more from scratch at home, were willing to pay more for local food, prioritized healthy eating, and opted for frozen food over the deli.

Additionally, the author found that sales increased for meat, seafood, dairy, ethnic food, to-go meals, and plant-based foods. Sales of fermented products declined.

Almost half of Fork Food Lab members reported that they were growing and profitable, the majority saw higher demand during the pandemic, and some even reported having their best year yet. Many expanded capacity, pivoted markets and distribution channels, developed new products, and started their businesses.

While the pandemic took a toll on many, it also opened doors for local food businesses and changed market trends, offering opportunities.

## FocusMaine: Strengthening the Food and Agriculture Cluster for Greater Impact[18]

A 2021 analysis found that FocusMaine "can leverage its role as convener to catalyze interconnectedness, innovation, and growth for Maine's agriculture and food cluster." Action items include establishing a clear vision for economic growth and gathering key actors to understand the resources and roles required to advance the food system sustainably and equitably.

Additionally, the report recommends that FocusMaine "align its assets, network, and priorities to support cluster growth." Following these recommendations will help create a cohesive vision for cluster development, technological advancement, and competitiveness.

[15] Glow, NielsenIQ
[16] Fork Food Lab
[17] Fork Food Lab
[18] FocusMaine

# LITERATURE REVIEW

## Trends Shaping the Future of Food in 2023[19]

This report looks at trends driving the national food economy in 2023 toward sustainability and health. For each trend, the author explains what is driving change, what the current technology is in the related area, and existing opportunities.

The ten trends identified are automation, digitization, alternative inputs, optimization, decentralization, food waste solutions, sustainable packaging, novel ingredients, cultivated protein, and the convergence of food and healthcare.

The opportunities presented in this report include incorporating robots to take on agricultural tasks such as weeding, measuring soil health, detecting diseases, etc., utilizing digital technologies on farms to leverage data into valuable insights, switching to fertilizer alternatives, optimizing supply chain logistics using optimization technologies, and more. Technology is a major player in the future of food, and this report delves into those technologies.

## Maine Brand Study[20]

This study from the University of Maine looked at the Maine brand to determine not only what it means to people but also to understand its influence and find if it "confers a competitive advantage in the marketplace". The results show that businesses and consumers define the Maine brand by its "natural outdoor beauty, people, products and place" and that consumers are willing to pay 22% more for Maine products and services. The Maine brand also appears to have a positive effect on workforce attraction, especially for outdoor brands.

## Maine's Food Sector: Industry Profile[21]

This 2023 report from the Department of Economic and Community Development highlights strengths, challenges, and opportunities for the Maine food sector.

The strengths of Maine's food economy include strong employment growth, particularly for agriculture, seafood, and food manufacturing, and a strong export market, with 70% of agriculture and food manufacturing and 94% of fish leaving the state.

Challenges for Maine's food economy include climate change, PFAS in the water and land, tight fishing regulations, low production volume, and infrastructure needs.

However, the opportunities in this area may be a remedy for some of these challenges. For example, building out warehousing and logistics infrastructure will allow for growth in the sector, and there is strong demand for Maine food in the Northeast, South Atlantic, Illinois, and New York State. New technologies will increase efficiency and quality, and sustainable packaging will make products more attractive to consumers. With consumer preferences shifting toward sea vegetables, sustainable protein, and plant-based foods, Maine food has a clear opportunity to expand.

## The Innovative Feed Enhancement and Economic Development (IFEED) Act[22]

The IFEED Act aims to modernize the U.S. Food and Drug Administration's regulatory authority over animal feed. The act is designed to accelerate the commercialization of innovative feed ingredients that improve animal gut health, help the environment, and create quality jobs. As a coastal state, Maine is uniquely positioned to benefit from this legislation by introducing blue economy solutions to agriculture. The Bigelow Laboratory for Ocean Science in East Boothbay is leading large-scale animal feed research and has secured $7 million in funding to study algae and other ocean-related feed solutions. The bill has bipartisan support and is currently making its way through Congress.

[19] trends-future-food-2023 (s2gventures.com)
[20] Maine Brand Study (https_umaine.edu)
[21] PowerPoint Presentation (maine.gov)
[22] Text - S.1842 - 118th Congress (2023-2024): Innovative FEED Act | Congress.gov | Library of Congress

# LITERATURE REVIEW

**Maine Food Convergence 2021-2022 Report[23]**

This report shares the challenges and opportunities identified and collaborations created during the 2021 Maine Food Convergence, a month-long series of virtual discussions designed to bring racial justice and equity to the forefront of issues including food systems, climate, communities, and local economies. This work aims to create social and racial equity and inclusivity in the Maine food system.

Through a state-wide survey, the planning process, and the Convergence itself, the authors of the report found that participants, a majority of whom identified as "eaters," followed by "other," "non-profit/community group members" and "producers" desired a stronger connection with local farmers and producers, state and federal government, and distributors.

They found that people were most interested in incorporating more local food onto plates at Maine institutions (such as schools and hospitals), followed by increasing the amount of local food available in supermarkets, and finally, government subsidies to lower the price of locally produced food.

The three tracks covered by the Convergence included expanding local agriculture and seafood markets; supporting abundance, equity, and resilience in fishing and farming, and breaking down the barriers to good health for all.

While each Convergence track resulted in multiple key action areas, the following are the priority actions identified across all three tracks:

- Promote equity and support tribal sovereignty
- Support processing infrastructure and food hubs
- Advocate for a thriving wage for all
- Increase promotion and consumer awareness of local foods
- Build relationships between local buyers and local producers of seafood

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[23] MFCP_Report_2021-2022.pdf (squarespace.com)

# 3. Situational Assessment

# OVERVIEW

**Purpose |** This situational Assessment focuses on leveraging insights from stakeholder engagement and comprehensive data to assess the current state of the food economy. Through this approach, we seek to determine aspects that should be retained, modified, discarded, or innovated upon, focusing on fostering resilience and facilitating sustainable long-term growth.

This assessment is organized by five priority areas, which are listed below.

**1.** MAINE'S FOOD ECONOMY OVERVIEW

**2.** SUPPLY CHAIN GAP ANALYSIS

**3.** WORKFORCE & TALENT TRENDS

**4.** ACCESS TO CAPITAL & INNOVATION

**5.** LEVERAGING THE MAINE BRAND

# 1. MAINE'S FOOD ECONOMY

## KEY FINDINGS

- **Jobs** | Over the past five years, the **number of jobs in Maine's food economy has grown** by approximately 17% or 3,450 jobs. Job growth in Maine's food economy significantly outpaced the state's overall job growth, which increased by roughly 3% during the same period. In 2023, the Food Economy's 15 industries supported 23,191 jobs in Maine, accounting for approximately 3% of the state's total jobs. During the same period, the food economy's 15 industries accounted for around 2% of total US jobs.

- **Average Earnings per Job** | Average earnings for jobs in the Food Economy ($54,475) were below the state's average earnings ($69,946) over the past five years.

- **GRP** | The Food Economy's Gross Regional Product (GRP ) was more than **$2.8 billion in 2022**, contributing **roughly 3% of the state's total GRP.**

- **Leading & Emerging Industries**

  - **Leading** | Bakeries & Tortilla Manufacturing, Sugar & Confectionary Product Manufacturing, Beverage Manufacturing, Fishing, and Crop Production are **leading industries** in the Food Economy.

  - **Emerging** | Animal Production* & Grain and Oilseed Milling

- **Cold Storage Real Estate** | The vacancy rate of cold storage facilities is 3.7% in 2023. Since 2021, vacancy rates have decreased, indicating that the demand for cold storage facilities has increased. While some space is available, cold storage facilities are concentrated in Southern Maine. Additional cold storage space is needed across the entire state to increase value-added processing capacity.

- **Food Processing Real Estate** | While the demand for food processing facilities has varied over the past five years, there is currently a 1.8% vacancy rate for food processing facilities across the state. This means that there is limited space available for new processing plants. Prioritizing the redevelopment of current industrial properties presents new growth opportunities.

## CHALLENGES & OPPORTUNITIES

### Challenges

- Climate change impacts on harvest sustainability and consistency
- Low-volume producers face barriers to accessing distribution and logistics networks
- Gaps in the supply chain are a missed opportunity for Maine businesses to capture value in the Food Economy supply chain

### Opportunities

- Direct-to-consumer markets and e-commerce platforms are an opportunity for Maine producers to access new markets
- Bio-based and eco-friendly packaging is becoming more dominant in the market
- Sea vegetables offer an opportunity to capture value-add and diversify Maine's marine economy
- Sustainable proteins and plant-based foods are growing in popularity and have led to increased demand for sustainable seafood products and plant-based meat alternatives
- Land-based aquaculture can help to increase seafood production across various species

* Aquaculture and related industries are included under NAICS 1120 Animal Production. Fishing industries are classified separately under NAICS 1141. Both NAICS 1120 and 1141 are examined in this section of the report.

# MAINE'S FOOD ECONOMY: OVERVIEW

The table below summarizes the four-digit NAICS industries used to evaluate Maine's Food Economy. As of 2023, the **Food Economy's 15 industries supported 23,191 jobs, accounting for approximately 3% of the state's total jobs**. During the same period, average earnings for jobs in the Food Economy ($54,475) were below the state's average earnings ($69,946). Looking specifically at the manufacturing-related industries, Dairy Product Manufacturing offers the highest average earnings per job. The largest share of workers in this industry are Packaging and Filling Machine Operators and Tenders. Conversely, Sugar and Confectionery Product Manufacturing has the lowest average earnings, and its largest share of workers are Retail Salespersons. The Food Economy's Gross Regional Product (GRP) was more than $2.8 billion in 2022, contributing roughly 3% of the state's total GRP. [23] As of 2022, **Maine's GRP per job** was $107,607, while the **GRP per job in the Food Economy** was above the state level at $121,185. GRP per job for the Nation's Food Economy, however, is above Maine's level, averaging $140,050 per job in 2022.

**Industry Summary for Maine's Food Economy, 2018-2023**

| NAICS | Description | 2018 Jobs | 2023 Jobs | Avg. Earnings Per Job | 2023 Employment Concentration | 2022 GRP | GRP Per Job |
|---|---|---|---|---|---|---|---|
| 1110 | Crop Production | 4,033 | 6,260 | $43,724 | 1.68 | $639,807,209 | $102,213 |
| 1120 | Animal Production (includes aquaculture) | 1,816 | 1,991 | $43,218 | 1.01 | $150,664,626 | $75,662 |
| 1141 | Fishing | 5,116 | 5,129 | $62,532 | 43.05 | $645,675,970 | $125,897 |
| 1151 | Support Activities for Crop Production | 1,050 | 1,097 | $33,443 | 0.52 | $55,702,662 | $50,786 |
| 1152 | Support Activities for Animal Production | 109 | 134 | $36,412 | 0.72 | $11,952,016 | $89,499 |
| 3111 | Animal Food Manufacturing | 85 | 73 | $78,082 | 0.23 | $15,949,449 | $218,784 |
| 3112 | Grain and Oilseed Milling | 56 | 81 | $77,688 | 0.29 | $19,655,004 | $243,735 |
| 3113 | Sugar and Confectionery Product Manufacturing | 231 | 368 | $37,419 | 1.06 | $27,747,942 | $75,307 |
| 3114 | Fruit and Vegetable Preserving and Specialty Food Manufacturing | 1,295 | 1,211 | $69,017 | 1.58 | $160,717,628 | $132,740 |
| 3115 | Dairy Product Manufacturing | 520 | 476 | $83,547 | 0.68 | $78,893,632 | $165,605 |
| 3116 | Animal Slaughtering and Processing | 486 | 573 | $62,388 | 0.24 | $63,907,316 | $111,581 |
| 3117 | Seafood Product Preparation and Packaging | 744 | 689 | $61,161 | 4.82 | $56,848,627 | $82,478 |
| 3118 | Bakeries and Tortilla Manufacturing | 1,627 | 1,887 | $47,183 | 1.23 | $109,157,694 | $57,844 |
| 3119 | Other Food Manufacturing | 634 | 592 | $61,762 | 0.54 | $75,818,352 | $127,987 |
| 3121 | Beverage Manufacturing | 1,938 | 2,631 | $71,731 | 1.88 | $697,950,464 | $265,292 |
| | **Total** | **19,741** | **23,191** | **$54,475** | **--** | **$2,810,448,592** | **$121,185** |

**Note:** Support activities for Animal Production includes operations that offer breeding services, boarding services, sheep shearing, etc. Support Activities for Crop Production includes soil preparation, crop harvesting services, farm management services, etc.

**Source:** Lightcast

[23] Gross Regional Product (GRP) measures *the total value of goods and services produced in a region.*

# MAINE'S FOOD ECONOMY: KEY METRICS

The adjacent chart displays how the industries in Maine's Food Production and Expansion Sector performed between 2018-2023. Each industry is classified as **leading, emerging, maturing**, or **lagging**.

**Leading industries** experienced job growth over the last five years and have a location quotient* greater than 1.

**Emerging industries** saw positive job growth over the last five years but have a location quotient of less than 1.
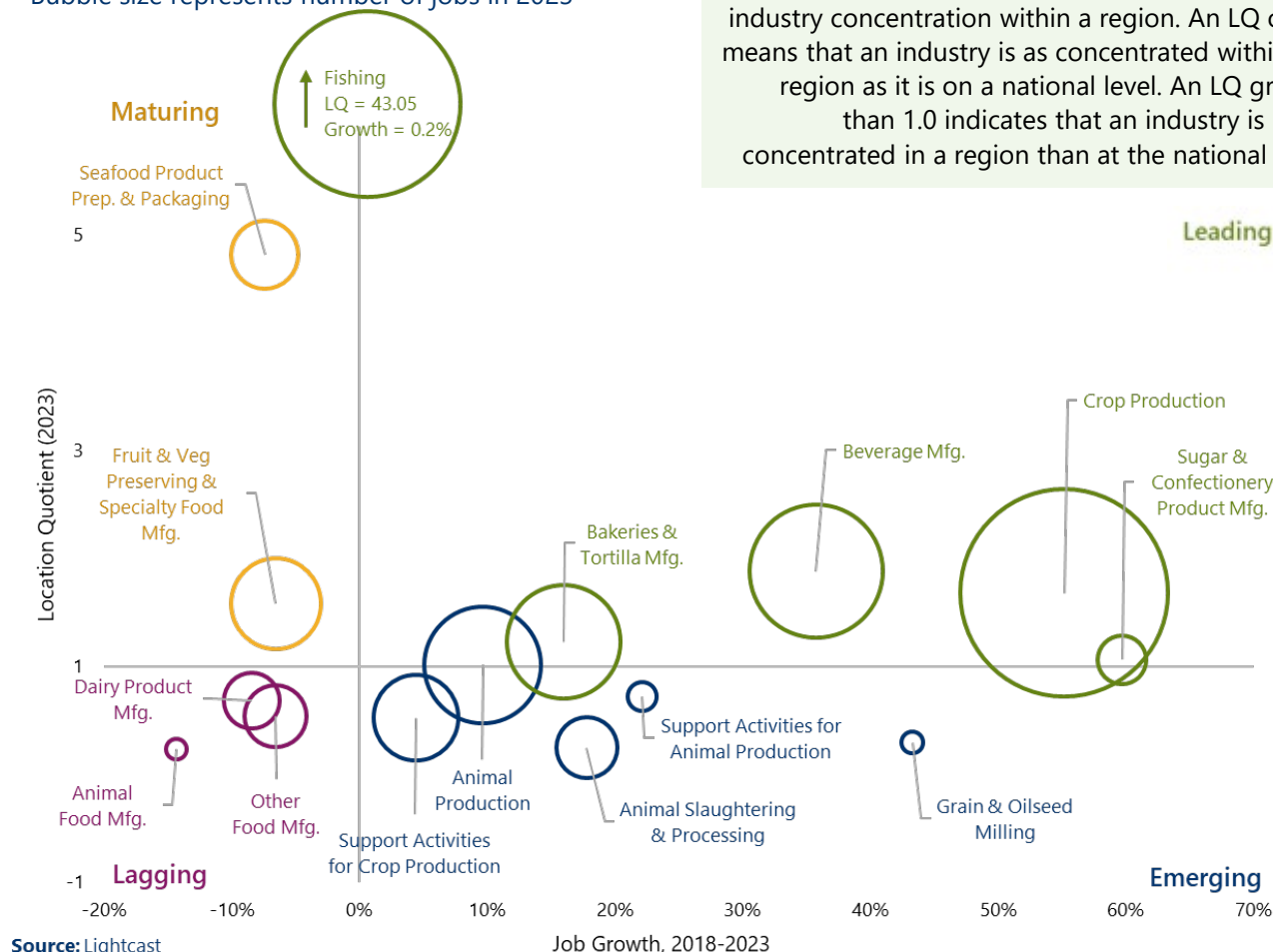
**Maturing industries** have a location quotient greater than 1 but had negative job growth over the last five years.

**Lagging industries** have a location quotient of less than 1 and saw negative job growth over the last five years.

Bakeries & Tortilla Manufacturing, Sugar & Confectionary Product Manufacturing, Beverage Manufacturing, Fishing, and Crop Production are leading industries in the Food Economy. Crop Production experienced the largest increase in total jobs, growing by 2,226 positions during the five-year period.

**Key Metrics for Industries in the Food Economy**
Bubble size represents number of jobs in 2023

**\*Data Note:** Location Quotient is a measure of industry concentration within a region. An LQ of 1.0 means that an industry is as concentrated within the region as it is on a national level. An LQ greater than 1.0 indicates that an industry is more concentrated in a region than at the national level.



**Maturing**

Fishing
LQ = 43.05
Growth = 0.2%

Seafood Product Prep. & Packaging

Leading

Fruit & Veg Preserving & Specialty Food Mfg.

Crop Production

Beverage Mfg.

Sugar & Confectionery Product Mfg.

Bakeries & Tortilla Mfg.

Dairy Product Mfg.

Support Activities for Animal Production

Animal Food Mfg.

Other Food Mfg.

Animal Production

Animal Slaughtering & Processing

Grain & Oilseed Milling

Support Activities for Crop Production

Location Quotient (2023)

**Lagging**

**Emerging**

Job Growth, 2018-2023

**Source:** Lightcast

Referring to the emerging industries, jobs in Animal Production increased by 10%, growing from 1,816 to 1,991. The industry is currently on the line between emerging and leading. Jobs in Grain and Oilseed Milling grew by 43%, but the industry still only supported 81 jobs in 2023. **Overall, five of the sector's fifteen subsectors are considered to be emerging.**

Seafood Product Preparation & Packaging and Fruit & Vegetable Preserving & Specialty Food Manufacturing are more concentrated in Maine than in the US, but both industries experienced job declines during the study period.
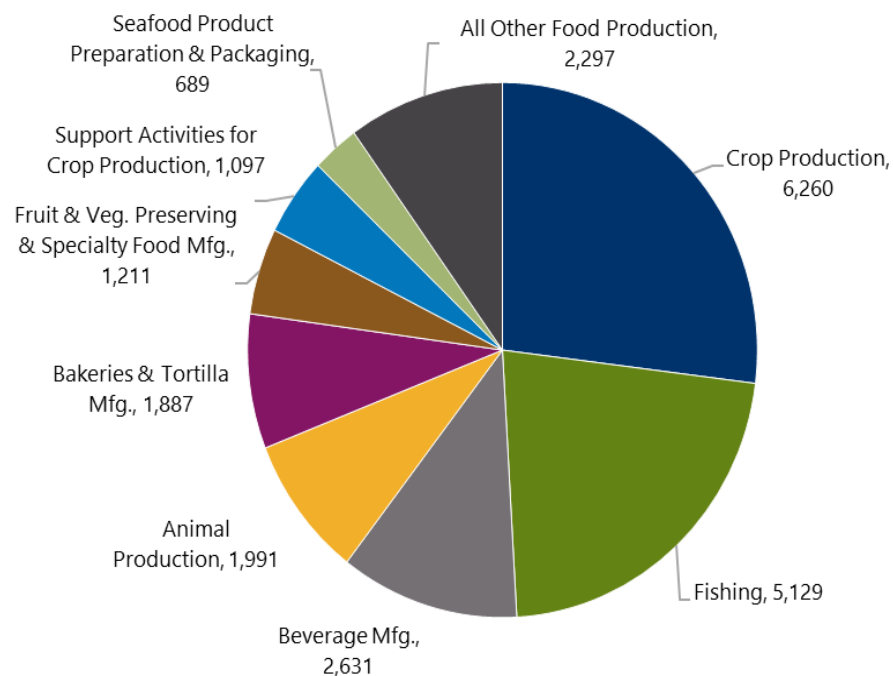
Three industries of interest, Dairy Product Manufacturing, Animal Food Manufacturing, and Other Food Manufacturing, have a low concentration and experienced job losses between 2018-2023.

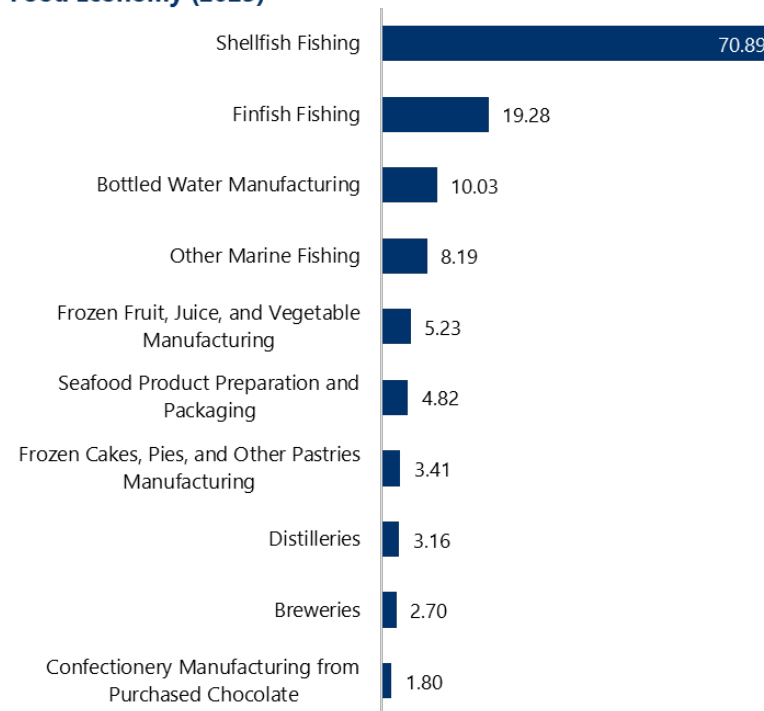# MAINE'S FOOD ECONOMY: JOBS

## Job Distribution

In 2023, Maine's Food Economy directly supported 23,191 jobs. From 2018-2023, the number of jobs in the Food Economy increased by 17%, or 3,450 jobs. **Crop production had the largest share of jobs** and an LQ of 1.7, meaning it **was 1.7 times more specialized** than expected for an economy of Maine's size. The **fishing industry (which includes both shellfish and finfish) had the second-largest share of jobs** and an LQ of 43.1, indicating that the industry is highly concentrated in the state.

### Distribution of Jobs in Maine's Food Economy, 2023



Pie chart labels:
- Crop Production, 6,260
- All Other Food Production, 2,297
- Seafood Product Preparation & Packaging, 689
- Support Activities for Crop Production, 1,097
- Fruit & Veg. Preserving & Specialty Food Mfg., 1,211
- Bakeries & Tortilla Mfg., 1,887
- Animal Production, 1,991
- Beverage Mfg., 2,631
- Fishing, 5,129

**Source:** Lightcast

### Top Location Quotients for Industries in Maine's Food Economy (2023)



| Industry | LQ |
|---|---|
| Shellfish Fishing | 70.89 |
| Finfish Fishing | 19.28 |
| Bottled Water Manufacturing | 10.03 |
| Other Marine Fishing | 8.19 |
| Frozen Fruit, Juice, and Vegetable Manufacturing | 5.23 |
| Seafood Product Preparation and Packaging | 4.82 |
| Frozen Cakes, Pies, and Other Pastries Manufacturing | 3.41 |
| Distilleries | 3.16 |
| Breweries | 2.70 |
| Confectionery Manufacturing from Purchased Chocolate | 1.80 |

**Source:** Lightcast

## Location Quotient

Examining the Food Economy's industries at the six-digit NAICS level revealed that **Shellfish Fishing and Finfish Fishing are primarily responsible for the Fishing industry's high LQ**. The number of jobs in shellfish fishing increased by 1% during the five-year study period. Average earnings in this industry reached $59,650, which was still below the state's average of $69,946. Finfish fishing jobs declined between 2018 and 2023; however, average earnings in the industry were $73,552, well above the state's average.

As of 2023, **Bottled Water Manufacturing was highly concentrated in the state** and had high average earnings per job ($95,028). During the five-year study period, however, the industry lost 54 jobs, and in 2023, Bottled Water Manufacturing supported 864 jobs. A summary table of all six-digit NAICS industries in Maine's Food Production and Processing Sector is included in the Appendix.

**Refrigeration and Cold Storage facilities are essential to processing and distributing perishable food and agricultural products.** Maine has a limited number of these facilities. As of 2022, the state had 667,383 square feet of cold storage spread across 12 buildings. Four buildings, nearly 40% of Maine's total cold storage real estate, were in Cumberland County. Kennebec County also had about 40% of the state's cold storage real estate in one single-tenant building. The adjacent map shows the distribution of the state's cold storage square footage across Maine.

The bottom right chart shows that in 2014, a 16,200-square-foot delivery increased the State's cold storage real estate by 2.2%. In 2019, however, the demolition of a facility in Aroostook County decreased the state's supply by 10.1% or 74,986 square feet. Maine had almost no vacant cold storage real estate between 2017 and 2019. [24] Negative net absorption between 2019 and 2021, however, spiked vacancy rates, which reached 7.1% in 2021. Net absorption increased, and in 2022, vacancy declined to 3.7%. [25]

**Overall, Maine's cold storage real estate is primarily concentrated in five buildings across two counties**, and at least five of the state's 12 facilities are occupied by a single tenant. Additionally, between 2012 and 2022, cold storage facilities consistently had low or no vacancies. **Together, these factors indicate a demand for additional, multi-tenant cold storage spaces.**

**Geographic Distribution of Cold Storage Real Estate by County**



% of State's Total SF

39.70%

20.05%

0.40%

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© GeoNames, TomTom
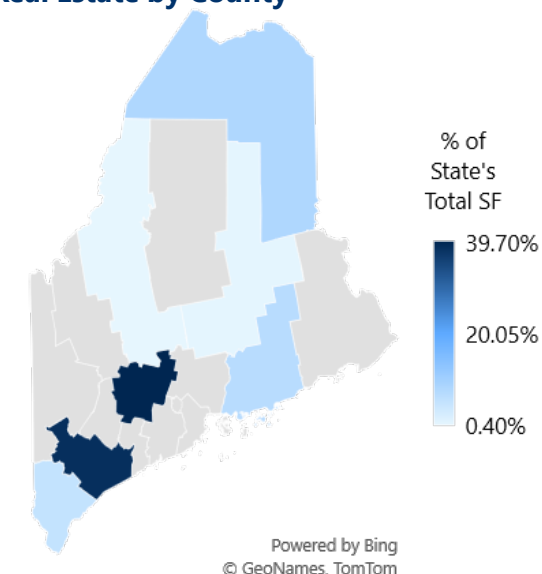
**Location of Cold Storage Facilities in Maine**

| | Address | City | County | Rentable SF | Tenancy |
|---|---|---|---|---|---|
| 1 | 52 Station Rd | Easton | Aroostook | 56,000 | -- |
| 2 | 5 Hutcherson Dr | Gorham | Cumberland | 4,752 | Single |
| 3 | 228 Main St | Gorham | Cumberland | 6,664 | Multi |
| 4 | 165 Read St | Portland | Cumberland | 196,599 | Multi |
| 5 | 640 Saco St | Westbrook | Cumberland | 48,000 | Multi |
| 6 | 84 Heritage Park Rd | Bucksport | Hancock | 16,200 | Single |
| 7 | 126-136 Pound Rd | Hancock | Hancock | 31,064 | -- |
| 8 | 47 Market St | Gardiner | Kennebec | 265,000 | Single |
| 9 | 97 Parker St | Brewer | Penobscot | 4,656 | Single |
| 10 | 518 Norridgewock Rd | Fairfield | Somerset | 2,520 | Single |
| 11 | 86 Industrial Park Rd | Saco | York | 21,528 | Multi |
| 12 | 22 Smada Dr | Sanford | York | 14,400 | Multi |

Source: CoStar

**Cold Storage Real Estate, Maine, 2012-2022**



Vacant SF | Net Absorption SF | Deliveries SF | Vacancy Rate
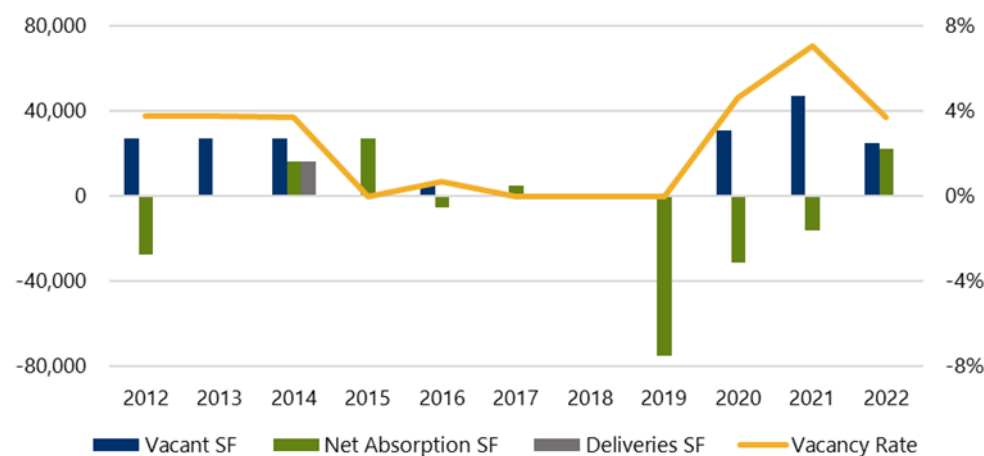
**Source:** CoStar

[24] Vacancy rate is the amount of available (unoccupied) space divided by the amount of total space for a given real estate type.
[25] For existing buildings, net absorption is the total number of new square feet occupied minus the total square feet vacated over a given period of time.
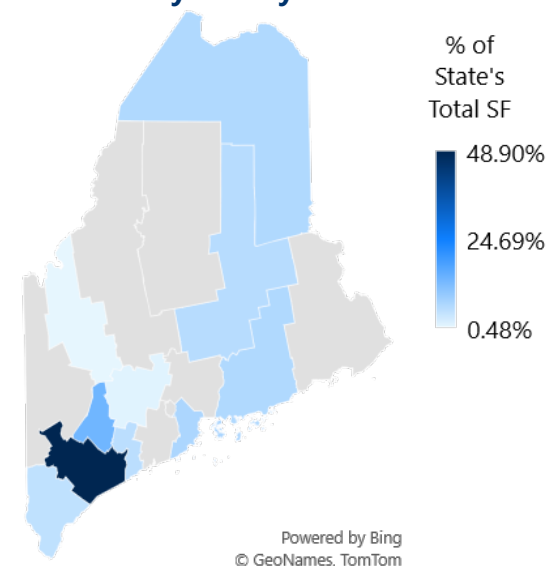
# MAINE'S FOOD ECONOMY: FOOD PROCESSING REAL ESTATE OVERVIEW

The function of food processing facilities can vary from beverage bottling to meat harvesting plants. **As of 2022, the state had 1,616,593 square feet of food processing real estate across 43 buildings.** Seventeen of these buildings, nearly 50% of Maine's food processing real estate, were in Cumberland County. Androscoggin County had the second largest share, with approximately 14% of the state's total or about 210,000 square feet. At least 33 of the buildings were occupied by a single tenant.

Referring to the bottom left chart, between 2012 and 2015, Maine added 36,868 square feet of food processing space, a 2.3% expansion. Since the 2015 addition of 27,000 square feet, food processing real estate has remained stagnant at 1,616,593 square feet. From 2018 to 2020, food processing net absorption was negative, and the vacancy rate reached 2%. **Net absorption spiked in 2021, and the vacancy rate fell to 0.6%. In 2022, the vacancy rate increased to 1.8%.**

**Vacant food processing real estate is limited in Maine**. However, compared to cold storage real estate, food processing facilities are less specialized, and **it may be possible to alter/convert existing industrial real estate properties to meet the needs of new food processing operations.** The chart on the bottom right shows the ten-year trends for Maine's industrial real estate. Maine has more than 2,000 industrial real estate buildings. While not all of these buildings will be usable for food processing, **updating suitable facilities could help meet demand in a tight market and increase Maine's food processing capacity.**

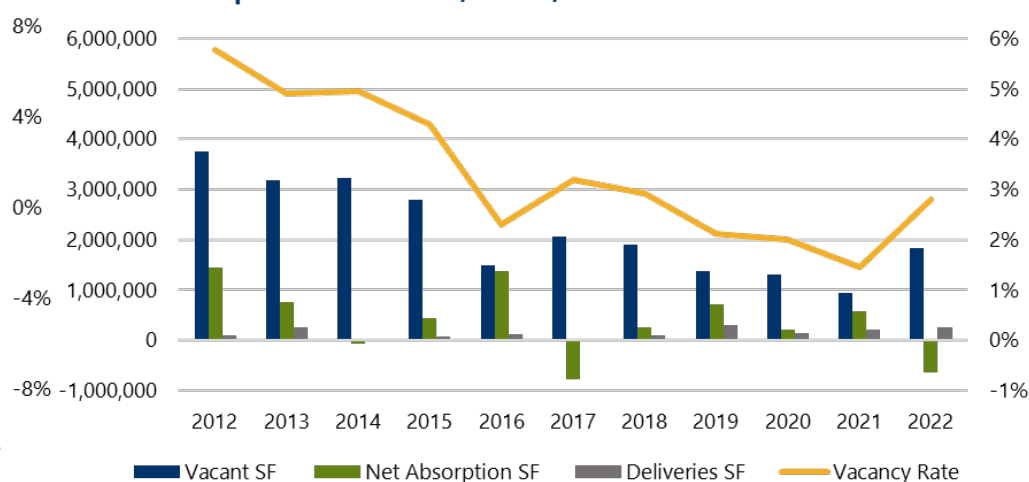**Geographic Distribution of Food Processing Real Estate by County**



% of State's Total SF

48.90%

24.69%

0.48%

Powered by Bing
© GeoNames, TomTom

**Food Processing Real Estate, Maine, 2012-2022**



Legend: Vacant SF, Net Absorption SF, Deliveries SF, Vacancy Rate
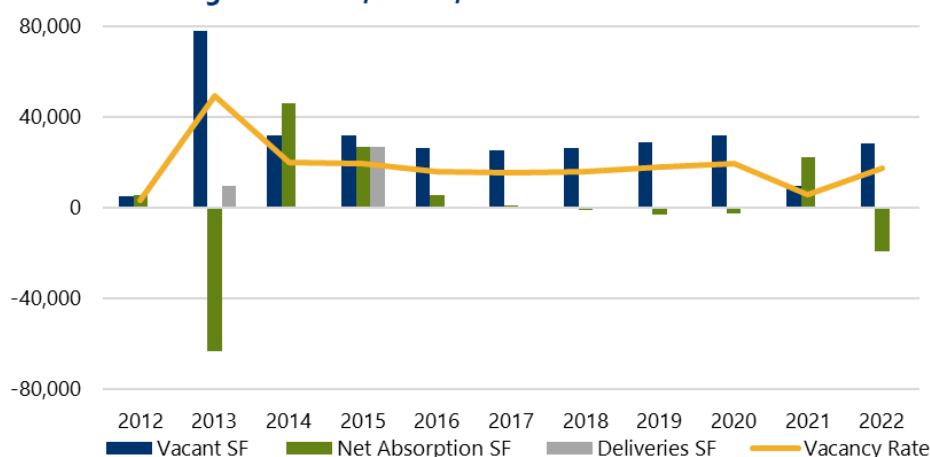
**Source:** CoStar

**Industrial Properties Real Estate, Maine, 2012-2022**



Legend: Vacant SF, Net Absorption SF, Deliveries SF, Vacancy Rate

In September 2023, Maine's Department of Economic and Community Development (DECD) produced an in-depth analysis of the food industry and found the following challenges and opportunities for Maine's Food Processing Sector. [26]

## Challenges



- **Climate change will continue to impact food production** in multiple ways, including more frequent droughts, unreliable growing seasons, warming waters, and more.

- Regulations aimed at reducing lobster lines and minimizing traps to support right whale conservation, as well as Maine's inclusion on the Monterey Bay Aquarium's seafood "red list," have posed major challenges to the lobstering industry in recent years. [27]

- **Volume requirements create barriers for smaller producers**. For example, small farmers, harvesters of less popular marine species, or small specialty food manufacturers often find it challenging to support transportation and logistics infrastructure independently, which impedes access to export markets. Larger producers (lobster, for example) harvest significant volumes and, therefore, are more able to support their distribution networks. One solution may be to support wholesalers who purchase from multiple suppliers to reach enough volume to ship out of state.

- **Processing and supply chain infrastructure is essential for "improving" Maine's raw products and increasing value-add products.** Currently, Maine is leaving value on the table by exporting raw products. For example, Maine sells hundreds of millions of dollars of raw seafood products to be processed in Canada. These products are then shipped back into the US and overseas. This is a major missed opportunity for significant value-added dollars for the state. Expanding the state's limited food processing supply and **cold storage real estate may be a good first step in increasing Maine's ability to capture value-added dollars**.



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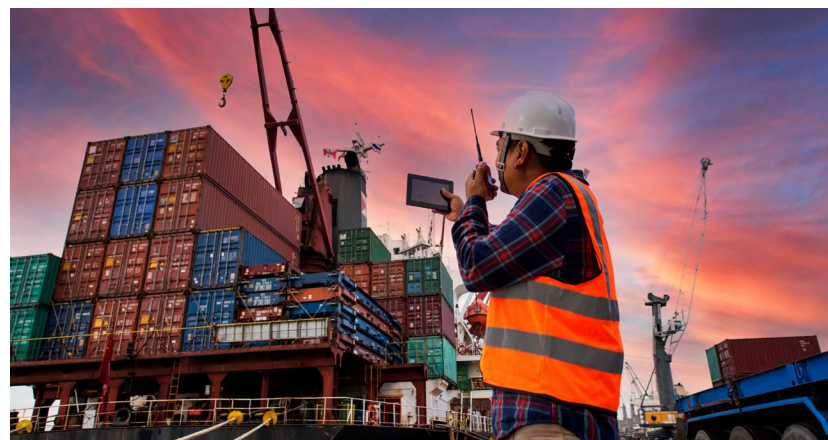
[26] DECD's full report is available here: Final Report - Master Food Sector - DECD.pdf (maine.gov).

[27] The right whale lives along the US's eastern coast and is one of the world's most endangered large whale species (https://www.fisheries.noaa.gov/species/north-atlantic-right-whale).

## Opportunities

- **Direct-to-consumer markets are gaining traction** across the United States as small brands and niche producers **use e-commerce to streamline sales**. Maine companies can ship nationwide by selling products from their website, both raw ingredients and prepared food products. Direct-to-consumer businesses are still required to comply with Food and Drug Administration (FDA) and US Department of Agriculture (USDA) regulations. Additionally, states may impose their own regulations on food imports and exports.

- **Bio-based and eco-friendly packaging is becoming more dominant in the market**. The threat of climate change and resulting regulation increases have led consumers and producers to adopt eco-friendly packaging. Given the Food Production and Processing Sector's heavy reliance on packaging as an input, bio-based and eco-friendly packaging presents opportunities for Maine companies to embrace these accelerating trends.

- **Sea vegetables like Kelp and other seaweed products are growing in popularity** in the United States. Sea vegetables have a variety of uses, including snacks for human consumption, animal feed input, and beauty product ingredients. Seaweed may also offer a promising new frontier for bio-based packaging. **Maine is already working to develop value-added products from sea vegetables, and continued funding and investment could position the state as a leader in this industry.**

- **Sustainable proteins and plant-based foods are growing** in popularity. Consumers are increasingly interested in sustainable food sources that are less energy-intensive and have lower carbon emissions than traditional protein sources. The increased demand for sustainable seafood products and plant-based food, including plant-based meat alternatives, will likely continue.

- **Land-based aquaculture presents an opportunity for Maine to increase seafood production across various species**. Some operators utilize seawater as an input for their land-based operations and are, therefore, typically located in coastal communities.
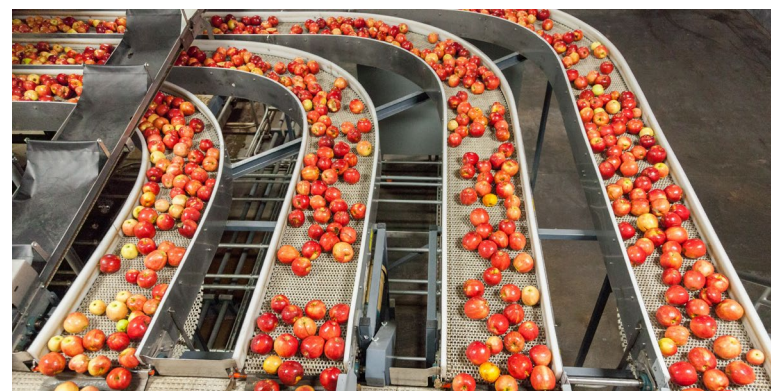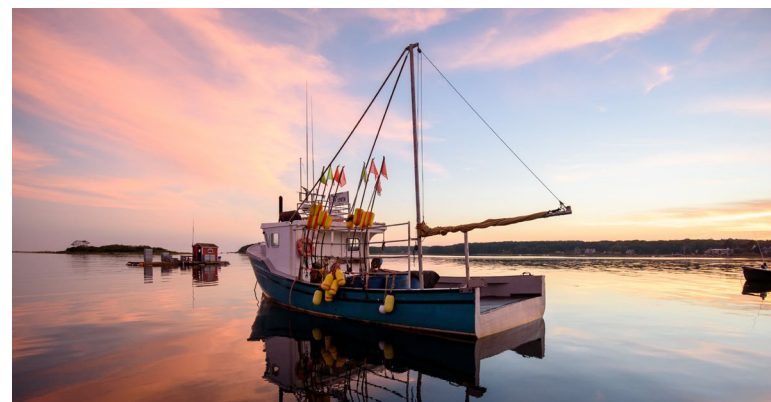
# 2. SUPPLY CHAIN GAP ANALYSIS

## KEY FINDINGS

### Expanding in-state packaging capacity would fill a critical gap for Food Economy industries.

Data suggests that Packaging and Packaging Services represent a key supply chain gap for the Food Economy that could be recaptured within the state. The Agriculture, Food Manufacturing, and Beverage Processing industries each have opportunities to improve in-state packaging and packaging services. Recent innovations by Maine-based companies to supply new Maine-made, sustainable packaging options to the market have the potential to fill this critical gap.

### Freight and logistics represent the supply chain gap with the greatest recapture opportunity for Fishing.

All types of general freight trucking, including short and long-distance as well as full and partial truckload, have significant demand met by out-of-state vendors. In addition, freight services such as customs brokers or freight forwarders have the potential for in-state recapture for Fishing. While the data shows the most prominent opportunity for Fishing, the food economy could greatly benefit from improved logistics networks in-state.

### Animal production and meat processing are common opportunities in several food economy industries.

Animal and meat production is a critical supply chain gap with recapture potential in Maine for both the Agriculture and Food Manufacturing industries. Currently, Maine relies heavily on imports from other states to meet existing demand for animal products, including live animals, meat, dairy, etc.
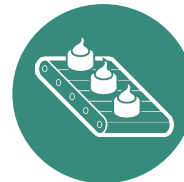
## Key Supply Chain Opportunities

**Agriculture**
- Animal food manufacturing
- Post-harvest crop services (drying, packaging, washing, etc.)
- Animal production
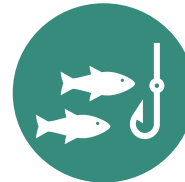
**Fishing [28]**
- General freight trucking
- Freight Services

**Food Manufacturing**
- Animal/Meat production
- Intermediate Crop Processing
- Packaging

**Beverage Processing**
- Grain milling
- Packaging

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[28] Fishing industries are included under NAICS 1141. Aquaculture and related industries are classified separately under NAICS 1120 Animal Production. Both NAICS 1120 and 1141 are examined in this section of the report.

# SUPPLY CHAIN: SUPPLY CHAIN OPPORTUNITIES

The following analysis provides insights into the industries that supply goods and services to Maine's food industries of agriculture, fishing, food manufacturing, and beverage manufacturing. In cases **where a high share of inputs are supplied through out-of-state sources, there may be opportunities for Maine to recapture sales by improving in-state sourcing and business-to-business (B2B) purchases.**

## Agriculture

Approximately 60% of the agriculture industry's B2B purchases are imported from other states, representing leakage where Maine could capture a greater share of the supply chain. **In other words, 60% of the industry's inputs must be shipped to Maine from outside the state.**

The industries with the greatest leakage include Animal Production, Food Manufacturing, Crop Production, Pesticide and Fertilizer, Petroleum, and Contracted Farm Labor. Some of these represent more realistic opportunities for leakage recapture than others. For example, while improving in-state petroleum production is unlikely, **improving B2B connections for animal food manufacturing or post-harvest crop services** may have a stronger potential to bolster Maine's agricultural production sector. Examples of post-harvest crop services include processing crops sold as fresh agricultural products, such as drying, sorting and packaging, or cleaning. Similarly, enhancing the state's animal production capacity can positively affect the industry's supply chain.

**Key Opportunities for Agriculture:**

- Animal food manufacturing

- Post-harvest crop services (drying, packaging, washing, etc.)

- Animal production

## Fishing

**Approximately 64% of the purchases made by businesses in the fishing industry are imported**. Several industries that Fishing relies on can be highlighted as having strong in-state presence: Veterinary Services (94% in-state) and Shipbuilding (84% in-state), among others.

However, others face significant leakages. General Freight Trucking represents significant leakage for the Fishing industry, both for local and long-distance, as well as full truckloads and small volumes.

Similarly, Freight Services such as Customs Brokers or Freight Forwarders working with the Maine Fishing industry are provided by out-of-state providers approximately three-quarters of the time, according to Lightcast. Overall, improvement in Fishing's logistics chain would offer significant improvements to increase in-state sales.

**Key Opportunities for Fishing:**

- General freight trucking

- Freight services

## Food Manufacturing

**Approximately 60% of Maine's Food Manufacturing industry's B2B purchases are imported from out-of-state**, while 40% of inputs are sourced from within Maine. Several supplying industries stand out as being high performers for in-state sourcing, including Fishing (98-100% in-state), Professional Services such as commodity inspection (88% in-state), and Corporate Headquarters operations (71% in-state).

However, others present significant leakage. **Animal production is by far the most sourced by imports; over $159 million of Animals, including cattle, chicken, dairy cows, and others destined for Maine's food manufacturing sector, are sourced from other states.** Similarly, 83% of slaughtered animals are sourced outside Maine, and 97% of meat is from other states.

**Leakage:** This describes when Maine consumers and businesses purchase products and services from out-of-state suppliers rather than from Maine businesses. This means that money is leaking out of the state rather than supporting the in-state economy.

## Food Manufacturing Continued

Together, these three industries indicate a **significant opportunity for Maine** to recapture leakage in the food manufacturing industry through enhanced animal production and meat processing.

Crop production is another industry with a high volume of leakage, as over $47 million of the crops used in Maine's food manufacturing sector were sourced from out-of-state in 2022. In many cases, it could be that Maine's raw agricultural products are shipped outside of Maine for initial processing and then shipped back into the state for final food manufacturing. **In these cases, improving intermediate processing is essential** to recapturing leakage in the supply chain.

Finally, **improving connections to in-state packaging manufacturers presents a critical opportunity** for Maine's food manufacturers. In 2022, over 80% of corrugated and solid fiber boxes purchased by food manufacturers were sourced from out of state. Maine's **existing capacity in the pulp and paper manufacturing sector suggests that better in-state packaging sourcing is possible** and may provide opportunities to reduce costs and increase the total value of production remaining inside the state.

**Key Opportunities for Food Manufacturing:**

- Animal and meat production
- Intermediate crop processing
- Packaging

*For more details about data referenced in this section, see Appendix B*

## Beverage Processing & Manufacturing

35% of the inputs used by Maine beverage processors are sourced from within the state, while the remaining **65% of B2B purchases flow to companies from other states**. Generally, many of the industry's most critical inputs – including plastic bottles, metal cans, and processed grains used in the production of beverages are sourced almost entirely out of state. Meanwhile, some industries stand out as having stronger supply chain linkage within the state. These include Machinery and Equipment Wholesalers (56% in-state), Crop Production (65% in-state), and Long-Distance Freight Trucking (72% in-state). These industries represent products and services such as wholesaling of brewery equipment, unprocessed grains, or freight trucking used to distribute finished products.

Several key industries with significant leakages present opportunities for the Beverage Processing sector to improve in-state connections. Among the greatest opportunities are grain processing, namely flour milling and wet corn milling, both used in the **brewing and distilling industries, which currently import $14 million and $11 million of inputs from other states**. In recent years, other types of grain processing, such as Malt Manufacturing, have made strides in Maine and have improved in supplying beverage manufacturers in the state. Further opportunities exist for other types of grain processing to support Maine's budding Brewery and Distillery businesses.

Similar to Food Manufacturing, opportunities to source packaging materials from in-state suppliers are also strong. Beverage Manufacturers in Maine **currently source nearly three-quarters of corrugated and solid fiber boxes from out-of-state**. At the same time, Maine's existing pulp and paper manufacturing sector could recapture a portion of this demand.

**Key Opportunities for Beverage Manufacturing:**

- Grain milling
- Packaging

# WORKFORCE & TALENT TRENDS

## KEY FINDINGS

### Food Economy jobs generally have low barriers to entry, with little preparation needed for entry-level jobs.

Across all three sectors, a common thread is the low barrier to entry, with the majority of key food sector occupations requiring a high school diploma or equivalent and prioritizing on-the-job training. This suggests a robust entry-level job market across these industries.

### Agriculture and Fishing comprise a set of highly specialized occupations specific to their sectors.

The Agriculture and Fishing sectors* exhibit a more concentrated workforce in a handful of critical occupations. In contrast, the Food & Beverage Processing sector contains a broader mix of roles with more varied employment access points.

Wage disparities are evident across sectors, with Fishing* offering median hourly wages higher than those in Agriculture, while some key occupations within Food & Beverage Processing have earnings upwards of $40 per hour for managerial roles. These variations underscore the diversity among positions and earning potential.

*Due to data limitations, some of the key indicators examined in the workforce section of this report, i.e., age, race, etc., are only available for fishing-related occupations and are unavailable for aquaculture-specific occupations. To address this inconsistency, we make a distinction between the **Fishing sector** and the **Fishing and Aquaculture sector**. See page 38 for more information.

### Agriculture and Food & Beverage Processing are driving growth in the sector.

Employment trends in the last five years vary significantly across subsectors: Agriculture and Food & Beverage Processing sectors have shown notable growth, with Agriculture adding 693 jobs in its leading occupations and Food & Beverage Processing growing by 13% since 2018. Fishing*, however, experienced minimal overall growth, emphasizing this sector's stability rather than expansion.

### Recruitment efforts that target younger, more diverse workers to bring to the sector can help future-proof the sector's workforce.

The demographic profile across sectors reveals a majority male workforce. Significant portions of the workforce in Agriculture and Fishing* are nearing retirement age, posing potential challenges to the sustainability of the sector's workforce. At the same time, the Fishing sector stands out for attracting younger workers, indicating a promising future workforce.

Future projections for the Fishing and Aquaculture sectors* are optimistic. With the expected growth of over 1,000 jobs in the next decade, this suggests an increasing demand for labor in these areas.

The diversity in employment opportunities, combined with projected growth in several sectors, presents significant potential for workforce development and economic contribution to Maine's economy.

## Maine's Labor Force Overview

Maine's labor force participation rate has steadily declined since the early 2000s, largely due to the state's aging population. This trend is similar to that of the United States overall.

While the COVID-19 pandemic delivered a sharp blow to the labor force participation rate in both the US and in Maine, the impact in the state was more severe, and labor force participation in Maine continued on a downward trend in the years following the pandemic. Conversely, the nation's labor force participation rate has improved slightly from 2020-2023.

Maine's labor force participation rate was 58.7% in 2023, compared to 62.6% in the United States.

**Data Note**: This figure represents **the total civilian population aged 16 or older,** including those who have retired.

### Labor Force Participation Rate, 1993-2023
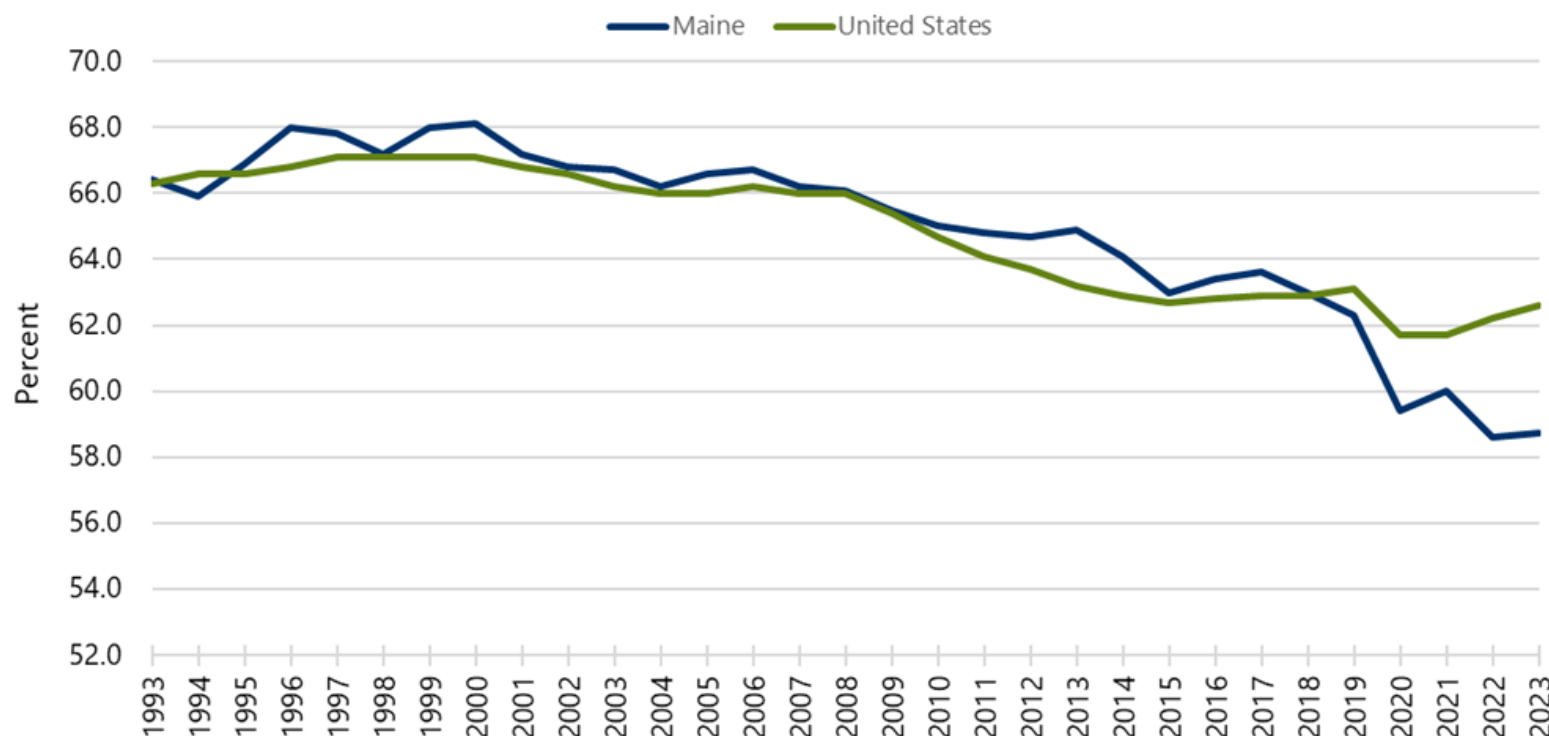


**Source:** Bureau of Labor Statistics

## Maine Occupation Mix

- In 2023, there were over **728,000 jobs across all occupations and sectors** in the state.

- The largest share of Maine's workforce is in Office and Administrative Support occupations, nearing 12% of all jobs. This is followed by Sales and Related Occupations, Food Prep and Serving Related Occupations, and Transportation and Material Moving Occupations.

- Maine's occupation mix closely mirrors those of New England and the United States overall, with a few exceptions.

- For example, Maine has a slightly lower concentration of Business and Financial Operations occupations and Educational Instruction and Library Occupations but higher concentrations of Farming, Fishing, and Forestry Occupations, as well as Construction and Extraction Occupations, compared to New England and the US.

**Data Note:** SOC stands for Standard Occupation Classification (SOC) System, while NAICS stands for North American Industrial Classification System (NAICS), meaning that SOC codes apply to occupations while NAICS codes apply to industries.

### Maine's Occupational Mix, 2023

| SOC | Description | Number | Percent |
|---|---|---|---|
| 43-0000 | Office and Administrative Support Occupations | 84,224 | 11.6% |
| 41-0000 | Sales and Related Occupations | 63,903 | 8.8% |
| 35-0000 | Food Preparation and Serving-Related Occupations | 53,487 | 7.3% |
| 53-0000 | Transportation and Material-Moving Occupations | 53,253 | 7.3% |
| 11-0000 | Management Occupations | 52,460 | 7.2% |
| 29-0000 | Healthcare Practitioners and Technical Occupations | 44,702 | 6.1% |
| 47-0000 | Construction and Extraction Occupations | 43,693 | 6.0% |
| 25-0000 | Educational Instruction and Library Occupations | 42,865 | 5.9% |
| 51-0000 | Production Occupations | 40,988 | 5.6% |
| 13-0000 | Business and Financial Operations Occupations | 38,737 | 5.3% |
| 31-0000 | Healthcare Support Occupations | 36,989 | 5.1% |
| 49-0000 | Installation, Maintenance, and Repair Occupations | 30,841 | 4.2% |
| 37-0000 | Building and Grounds Cleaning and Maintenance Occupations | 29,332 | 4.0% |
| 39-0000 | Personal Care and Service Occupations | 20,251 | 2.8% |
| 15-0000 | Computer and Mathematical Occupations | 15,915 | 2.2% |
| 21-0000 | Community and Social Service Occupations | 14,663 | 2.0% |
| 33-0000 | Protective Service Occupations | 13,298 | 1.8% |
| 27-0000 | Arts, Design, Entertainment, Sports, and Media Occupations | 13,150 | 1.8% |
| 45-0000 | Farming, Fishing, and Forestry Occupations | 11,481 | 1.6% |
| 17-0000 | Architecture and Engineering Occupations | 11,400 | 1.6% |
| 19-0000 | Life, Physical, and Social Science Occupations | 6,305 | 0.9% |
| 23-0000 | Legal Occupations | 4,241 | 0.6% |
| 55-0000 | Military-Only Occupations | 2,306 | 0.3% |
| | **Total** | **728,483** | **100%** |

**Source:** Lightcast

Understanding the opportunities and challenges for the Food Sector workforce in the next decade will be critical in any effort to support industry growth. While all industries face challenging labor force conditions, the Food Sector will face unique workforce challenges in the coming years. Without strategic workforce development support, a lack of available labor force can limit the sector's growth.

A Workforce Gap Index analyzes factors that describe supply-side and demand-side factors within the Food Sector workforce to better evaluate the opportunities and challenges for key food sector occupations.

This index includes the following six data points for the top occupations across the food sector in terms of number of jobs:

1. Projected Job Growth, 2023-2033:
2. Resident labor pool
3. Replacement Rate (replacements due to retirement and people leaving occupations)
4. Annual Average Job Openings Per Job
5. Retirement Risk
6. Automation Index

**O*Net Job Zone:**

Zone 1: Little to No Preparation Needed

Zone 2: Some Preparation Needed

Zone 3: Medium Preparation Needed

Zone 4: Considerable Preparation Needed

Zone 5: Extensive Preparation Needed
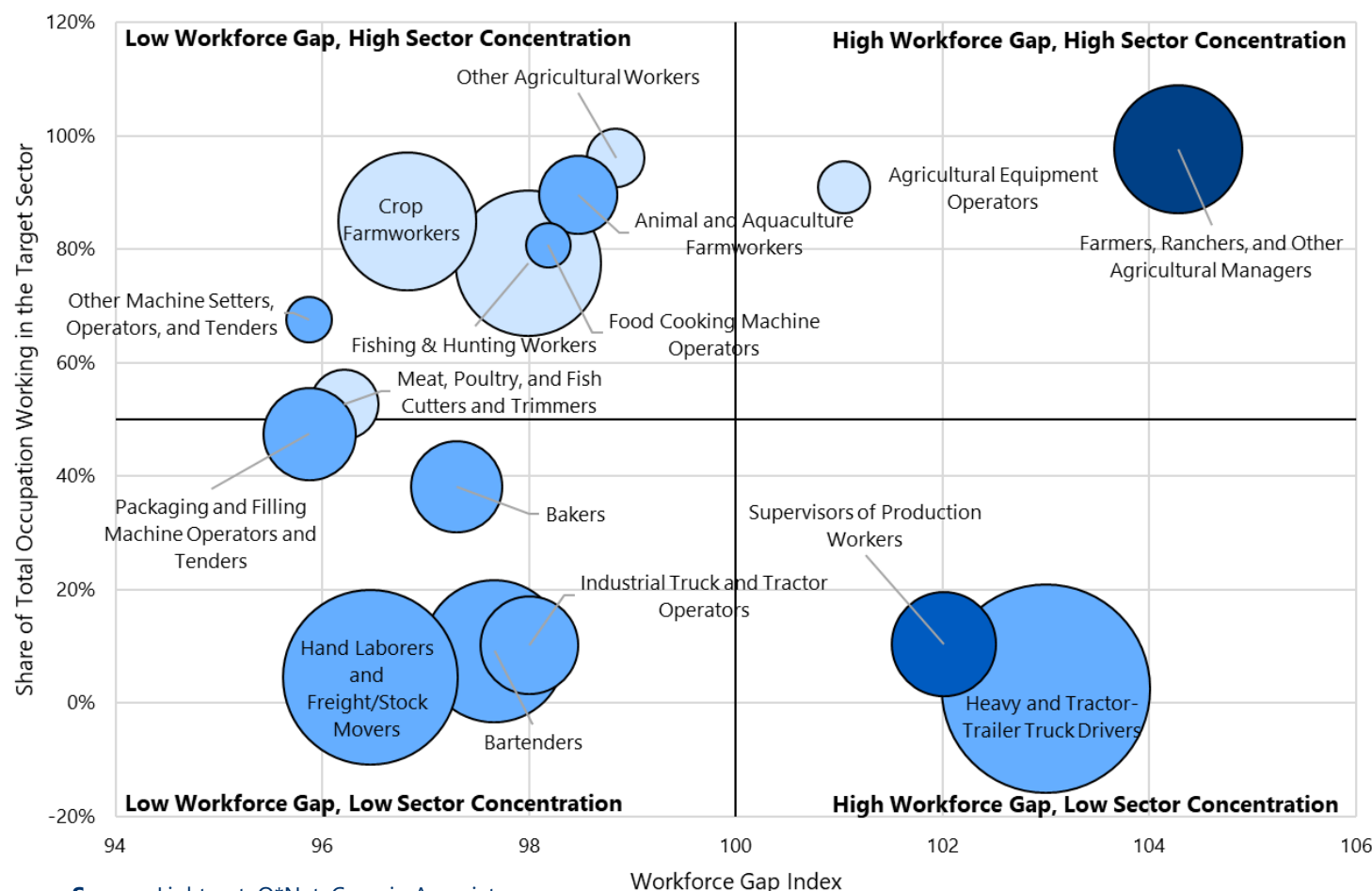


**Source:** Lightcast, O*Net, Camoin Associates
**Bubble Size:** Average annual job openings, 2023-2033

# WORKFORCE: THE TALENT PIPELINE EXPLAINED

The figure on the previous page (page 33) summarizes a wide array of key workforce data, including the supply and demand factors affecting future workforce gaps, how specialized the occupation is in the Food Sector, the skills necessary to complete the job, and the overall number of job openings the occupation is projected to have in the next ten years. Several key insights can be gleaned from this summary visualization:

### Many key food economy occupations specialize in food industries rather than being generalized across many sectors.

Workers within an occupation can often be employed in various sectors. For example, general managers or truck drivers are typically employed in nearly every sector of the economy. Other times, occupations can be highly specialized in one particular sector. Among the top occupations in the Food Economy, over half are employed primarily (>50%) within the Food sector. While this means that **Food Economy employers will face less competition for these workers** with other sectors, it also indicates that **workforce development for these occupations will need to be driven by the Food Economy**, with little help from other sector initiatives.

### Many of the critical Food Economy occupations have low barriers to entry and little preparation needed.

Nearly all the top occupations in the Food Economy are within O*Net's Job Zone 1 or 2. This indicates that **only some or even no preparation is typically needed** for workers to gain employment in these occupations. Preparation includes educational credentials, job experience, and on-the-job training. **Supervisors of Production Workers and Farm Managers** are the Food Economy occupations that require the most preparation within the sector.

### Four key occupations score high on the workforce gap index, indicating that these jobs will be challenging to fill in the next decade.

**Agricultural Equipment Operators, Farm Managers, Supervisors of Production Workers, and Truck Drivers** score over 100, meaning they will face a higher-than-average workforce gap in the next ten years. The two former occupations are highly specialized in the Food Economy, while the latter generally apply across various sectors. Food economy employers will have a broader range of sectors to recruit from, but it also means that there will be greater competition for these workers.

Notably, the occupation with the highest preparation needed – Farm Managers – has a high workforce gap and concentration in the Food Economy. This occupation, therefore, ranks as a high-priority occupation that will need support over the next ten years to fill positions.

### Many key occupations have relatively low workforce gap scores; however, attention should still be paid to these occupations to ensure a future pipeline of workers.

Most of the top occupations in the Food Economy have workforce gap scores lower than 100, indicating that they will have lower-than-average workforce gap challenges. However, several occupations have index scores close to 100, suggesting that slight changes in labor force dynamics could push these occupations to have high workforce gap scores. Additionally, workforce development initiatives can be developed to recruit and train workers in lower-gap occupations to enter into higher-gap occupations. This describes occupations such as Fishing and Hunting Workers, Animal and Aquaculture Farmworkers, Other Agricultural Workers, Food Cooking Machine Operators, and Industrial Truck and Tractor Operators.

**Occupational Mix in Maine's Agriculture Sector, 2023**
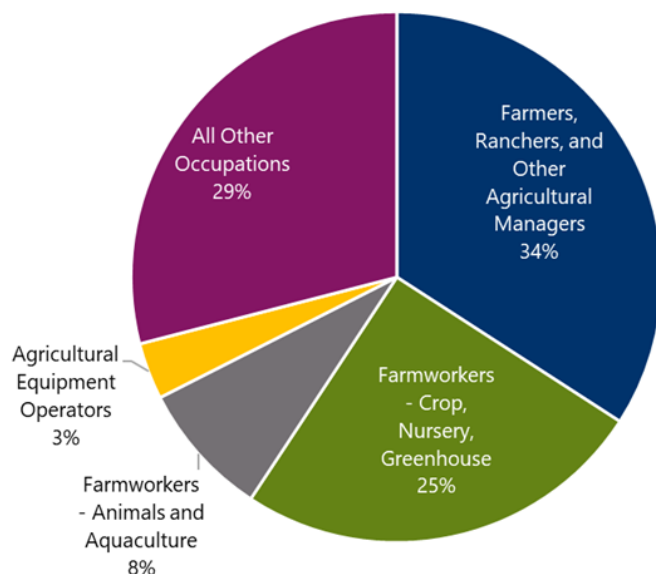


Source: Lightcast

**Data Note:** Data used in this analysis describes Maine's Agriculture Sector, including Crop and Animal Production. For many reasons, agricultural employment is typically undercounted. However, this analysis provides the best available data for the sector's workforce.

**Maine's Agriculture Workforce[29]** Maine's agriculture labor force is highly concentrated across a small subset of occupations. **Farmers and Agricultural Managers make up just over one-third of all employment in the sector**, followed by Crop Farmworkers, who account for a quarter of total sector employment. Animal and Aquaculture Farmworkers are the third-largest occupations in the sector, accounting for 8% of all employment in Agriculture.

Additionally, the top five occupations in the Agriculture sector are highly concentrated within the sector. For example, while only 1% of all Heavy and Tractor-Trailer Truck Drivers work in the Agriculture sector, **more than 80% of workers in the top five occupations work within the Agriculture sector.**

**Occupational Mix of the Agriculture Sector in Maine, 2023**

| SOC | Description | Employed in Agriculture | Share of Agriculture Sector | Agriculture Share of Whole Economy |
|---|---|---|---|---|
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | 3,238 | 34% | 95% |
| 45-2092 | Farmworkers and Laborers, Crop, Nursery, and Greenhouse | 2,382 | 25% | 83% |
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | 781 | 8% | 88% |
| 45-2099 | Agricultural Workers, All Other | 429 | 5% | 95% |
| 45-2091 | Agricultural Equipment Operators | 327 | 3% | 90% |
| 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers | 173 | 2% | 35% |
| 53-3032 | Heavy and Tractor-Trailer Truck Drivers | 141 | 1% | 1% |
| 45-2041 | Graders and Sorters, Agricultural Products | 115 | 1% | 73% |
| 53-7064 | Packers and Packagers, Hand | 98 | 1% | 7% |
| 39-2021 | Animal Caretakers | 89 | 1% | 5% |
| 43-3031 | Bookkeeping, Accounting, and Auditing Clerks | 88 | 1% | 1% |
| 11-9199 | Managers, All Other | 72 | 1% | 1% |
| 41-4012 | Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products | 69 | 1% | 2% |
| 53-7051 | Industrial Truck and Tractor Operators | 68 | 1% | 3% |
| 49-9071 | Maintenance and Repair Workers, General | 67 | 1% | 1% |
| | **Total, All Occupations in Agriculture** | **9,481** | **100%** | **1%** |

**Source:** Lightcast, Camoin Associates

[29] Aquaculture and related industries are classified under NAICS 1120 Animal Production and are therefore included in this section.

# WORKFORCE: AGRICULTURE'S TOP OCCUPATIONS BY NUMBER OF JOBS

## Agricultural Occupations in Maine [30]

- **Agriculture generally has low barriers to entry** in terms of workforce training. Nearly all of the top occupations in the sector require either a High School Diploma (or equivalent) or less, and on-the-job training is the primary workforce training method.

- However, **agriculture occupations pay relatively low wages compared to other sectors**. Farmers and Agricultural Managers, who make up over one-third of the sector's workers, have median hourly earnings of just under $15 per hour in 2023.

### Characteristics of the Top 15 Occupations In Agriculture, Maine (2023)

| | Description | Median Hourly Earnings | Typical Entry-Level Education | Work Experience Required | Typical On-The-Job Training |
|---|---|---|---|---|---|
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | $14.61 | High school diploma or equivalent | 5+ years | None |
| 45-2092 | Farmworkers and Laborers, Crop, Nursery, and Greenhouse | $15.98 | No formal educational credential | None | Short-term |
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | $14.65 | No formal educational credential | None | Short-term |
| 45-2099 | Agricultural Workers, All Other | $14.17 | No formal educational credential | None | Short-term |
| 45-2091 | Agricultural Equipment Operators | $15.22 | credential | None | Moderate-term |
| 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers | $24.05 | High school diploma or equivalent | <5 Years | None |
| 53-3032 | Heavy and Tractor-Trailer Truck Drivers | $22.83 | Postsecondary nondegree award | None | Short-term |
| 45-2041 | Graders and Sorters, Agricultural Products | $19.16 | No formal educational credential | None | Short-term |
| 53-7064 | Packers and Packagers, Hand | $13.62 | No formal educational credential | None | Short-term |
| 39-2021 | Animal Caretakers | $14.82 | High school diploma or equivalent | None | Short-term |
| 43-3031 | Clerks | $21.92 | degree | None | Moderate-term |
| 11-9199 | Managers, All Other | $37.66 | Bachelor's degree | <5 Years | None |
| 41-4012 | Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products | $29.44 | High school diploma or equivalent | None | Moderate-term |
| 53-7051 | Industrial Truck and Tractor Operators | $20.35 | No formal educational credential | None | Short-term |
| 49-9071 | General | $20.86 | equivalent | None | Moderate-term |

**Source:** Lightcast, Camoin Associates

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[30] Aquaculture and related industries are classified under NAICS 1120 Animal Production and are therefore included in this section.

# WORKFORCE: AGRICULTURE'S TOP OCCUPATIONS BY JOB GROWTH

## Maine's Growing Agricultural Occupations [31]

**Nearly all occupations in the Agriculture Sector grew in the last five years**. The fastest-growing jobs closely align with the largest occupations overall. Farmers, Ranchers, and Agricultural Managers added the most jobs from 2018-2023, with 693 new jobs (27% growth). Growth in Crop, Nursery, and Greenhouse Workers was a close second, increasing by 572 jobs.

### Top 15 Fastest-Growing Occupations in the Agriculture Sector, 2018-2023

| SOC | Description | Agriculture Change (2018 - 2023) | Agriculture% Change (2018 - 2023) |
|---|---|---|---|
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | 693 | 27% |
| 45-2092 | Farmworkers and Laborers, Crop, Nursery, and Greenhouse | 572 | 32% |
| 45-2099 | Agricultural Workers, All Other | 138 | 47% |
| 45-2091 | Agricultural Equipment Operators | 119 | 57% |
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | 102 | 15% |
| 53-3032 | Heavy and Tractor-Trailer Truck Drivers | 49 | 54% |
| 11-9199 | Managers, All Other | 39 | 118% |
| 45-2041 | Graders and Sorters, Agricultural Products | 36 | 46% |
| 41-4012 | Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products | 33 | 92% |
| 49-9071 | Maintenance and Repair Workers, General | 32 | 92% |
| 43-3031 | Bookkeeping, Accounting, and Auditing Clerks | 29 | 51% |
| 39-2021 | Animal Caretakers | 28 | 47% |
| 53-7051 | Industrial Truck and Tractor Operators | 27 | 67% |
| 53-7062 | Laborers and Freight, Stock, and Material Movers, Hand | 24 | 61% |
| 51-9199 | Production Workers, All Other | 23 | 101% |
| | **Total, All Agriculture** | **2,472** | **35%** |

**Source:** Lightcast, Camoin Associates

[31] Aquaculture and related industries are classified under NAICS 1120 Animal Production and are therefore included in this section.

# WORKFORCE: DEMOGRAPHIC BREAKDOWN OF WORKERS IN THE AGRICULTURE SUBSECTOR

**Demographic Summary** [32] The 2022 Agricultural Census provides demographic data for agricultural producers in Maine. According to this data, the average producer in the state is white, male, and between the age of 35-64. While agriculture is male-dominated, producers have close to a 50-50 split between males and females.
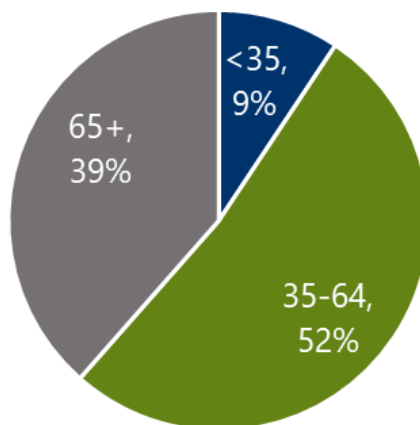
While just over half of agriculture producers are of prime working age, **nearly 40% are over 65 years old**, representing a **significant retirement risk** among farmers.

## KEY DEMOGRAPHIC INDICATORS

**Sex**

Female 43%

Male 57%

**Age**

<35, 9%

65+, 39%

35-64, 52%

**Race**

White, 97%
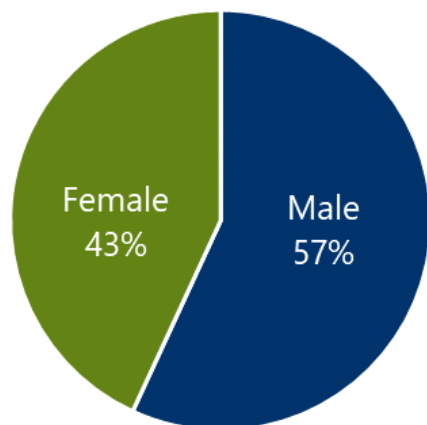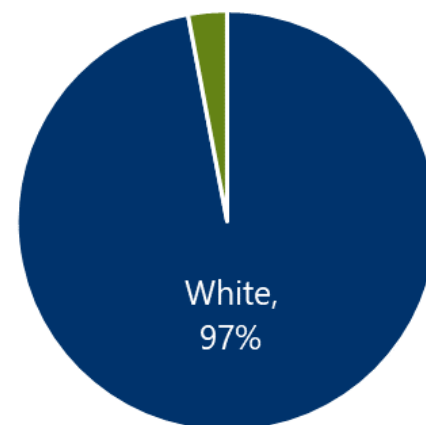
**Source:** 2022 Agricultural Census

[32] Aquaculture is not included in this section.

# WORKFORCE: FISHING OVERVIEW

## Maine's Fishing Workforce (due to data constraints, this section excludes aquaculture)

**85% of Maine's Fishing workforce comprises those directly fishing or working on the water to harvest seafood from the ocean.** Although the industry has a highly concentrated workforce, **other occupations offer critical support to the industry**. These include occupations such as Tour and Travel Guides, which contribute to Maine's Food Tourism sector, and other occupations such as Scientists, Marine Biologists, Fish Cutters, and other jobs, such as those in sales for seafood companies.

**Occupational Mix in Maine's Fishing Sector, 2023**



Source: Lightcast

### Occupational Mix of the Fishing Sector in Maine, 2023

| SOC | Description | Employed in Fishing | Share of Fishing Sector | Fishing Share of Whole Economy |
|---|---|---|---|---|
| 45-3031 | Fishing and Hunting Workers | 4,337 | 85% | 96% |
| 11-9199 | Managers, All Other | 136 | 3% | 2% |
| 39-7018 | Tour and Travel Guides | 110 | 2% | 23% |
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | 105 | 2% | 3% |
| 53-7062 | Laborers and Freight, Stock, and Material Movers | 36 | 1% | 1% |
| 53-5011 | Sailors and Marine Oilers | 28 | 1% | 17% |
| 53-5021 | Captains, Mates, and Pilots of Water Vessels | 28 | 1% | 10% |
| 41-9099 | Sales and Related Workers, All Other | 23 | 0.5% | 3% |
| 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers | 18 | 0.3% | 4% |
| 35-2012 | Cooks, Institution and Cafeteria | 17 | 0.3% | 1% |
| 19-1029 | Biological Scientists, All Other | 16 | 0.3% | 14% |
| 19-1023 | Zoologists and Wildlife Biologists | 15 | 0.3% | 5% |
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | 15 | 0.3% | 2% |
| 43-3031 | Bookkeeping, Accounting, and Auditing Clerks | 14 | 0.3% | 0.2% |
| 51-3021 | Butchers and Meat Cutters | 14 | 0.3% | 2% |
| | **Total, All Occupations in Fishing** | **5,129** | **100%** | **0.7%** |

## Fishing Occupations in Maine
(due to data constraints, this section excludes aquaculture)

- Similar to Agriculture, Fishing generally has **low barriers to entry for its top occupations**. Nearly all of the top occupations in the sector require either a High School Diploma (or equivalent) or less, with on-the-job training being the primary workforce training method. Meanwhile, 14 of the top 15 occupations require either no previous work experience or less than five years of experience.

- Fishing occupations offer a wider range of earning opportunities. Fisherpeople in Maine had a median hourly wage of $20.62, higher than the median of approximately $15 per hour earned by the majority of Agriculture workers. Fishing's top occupations have median earnings ranging from around $15 per hour for managers, aquaculture farmworkers, and sales workers up to about $40 per hour for Biological Scientists.

### Characteristics of the Top Occupations in Fishing, Maine (2023)

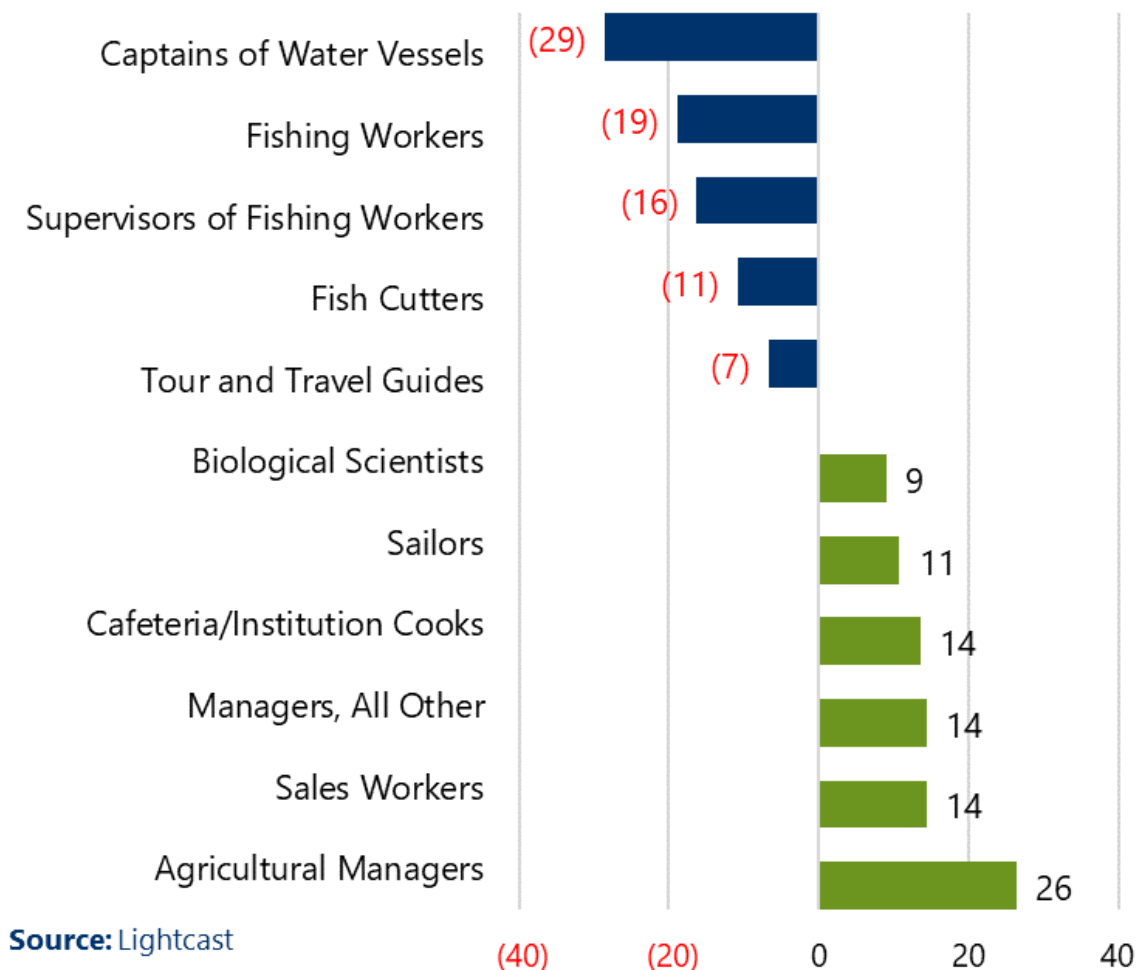| SOC | Description | Median Hourly Earnings | Typical Entry-Level Education | Work Experience Required | Typical On-The-Job Training |
|---|---|---|---|---|---|
| 45-3031 | Fishing and Hunting Workers | $20.62 | No formal educational credential | None | Moderate-term |
| 11-9199 | Managers, All Other | $37.66 | Bachelor's degree | <5 Years | None |
| 39-7018 | Tour and Travel Guides | $17.39 | High school diploma or equivalent | None | Moderate-term |
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | $14.61 | High school diploma or equivalent | 5+ Years | None |
| 53-7062 | Laborers and Freight, Stock, and Material Movers, Hand | $16.83 | No formal educational credential | None | Short-term |
| 53-5011 | Sailors and Marine Oilers | $16.13 | No formal educational credential | None | Moderate-term |
| 53-5021 | Captains, Mates, and Pilots of Water Vessels | $31.67 | Postsecondary nondegree award | <5 Years | None |
| 41-9099 | Sales and Related Workers, All Other | $15.16 | High school diploma or equivalent | None | None |
| 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers | $24.05 | High school diploma or equivalent | <5 Years | None |
| 35-2012 | Cooks, Institution and Cafeteria | $17.15 | No formal educational credential | None | Short-term |
| 19-1029 | Biological Scientists, All Other | $40.02 | Bachelor's degree | None | None |
| 19-1023 | Zoologists and Wildlife Biologists | $31.40 | Bachelor's degree | None | None |
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | $14.65 | No formal educational credential | None | Short-term |
| 43-3031 | Bookkeeping, Accounting, and Auditing Clerks | $21.92 | Some college, no degree | None | Moderate-term |
| 51-3021 | Butchers and Meat Cutters | $18.59 | No formal educational credential | None | Long-term |

**Source:** Lightcast, Camoin Associates

## Changes in Maine's Fishing Occupations

(due to data constraints, this section excludes aquaculture)

- The fishing sector as a whole did not show significant employment growth in the last five years, netting 13 new jobs (+0%). A handful of occupations experienced job growth and decline, while nearly all others saw stable job numbers over that period.

- The occupation that had the largest decline in Fishing was Captains of Water Vessels (-29 jobs), while Agricultural (Fishing) Managers had the greatest job growth (+26 jobs).

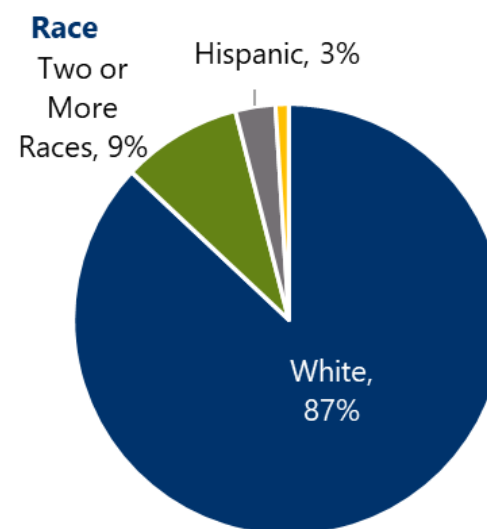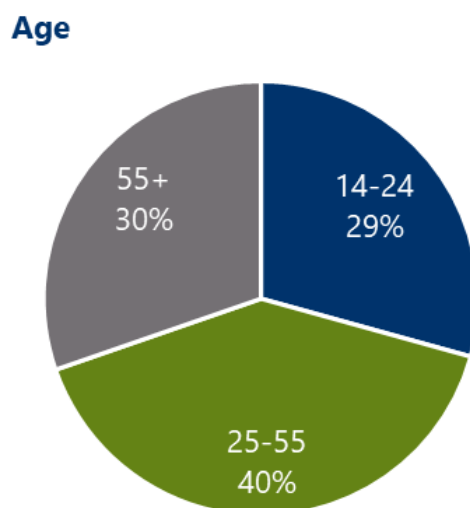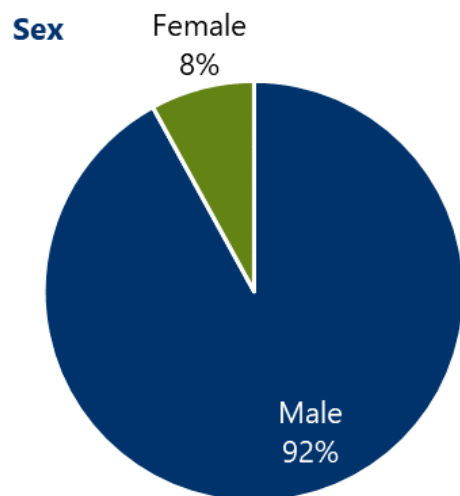**Top Growing and Declining Occupations in Maine's Fishing Sector, 2018-2023**



Captains of Water Vessels (29)
Fishing Workers (19)
Supervisors of Fishing Workers (16)
Fish Cutters (11)
Tour and Travel Guides (7)
Biological Scientists 9
Sailors 11
Cafeteria/Institution Cooks 14
Managers, All Other 14
Sales Workers 14
Agricultural Managers 26

**Source:** Lightcast

# WORKFORCE: DEMOGRAPHIC BREAKDOWN OF WORKERS IN THE FISHING SECTOR

**Demographic Summary** (due to data constraints, this section excludes aquaculture)

Fishing has a significantly male-dominated workforce, with 92% of all Fishing workers being male. However, the sector performs better than others at recruiting young workers. **Almost a third of workers are under the age of 25**, indicating the volume of Maine's next generation of the Fishing workforce. A similar share is aged 55+, and the industry is likely to lose these workers from the workforce as they retire in the coming years.

Finally, Fishing is slightly more diverse than the overall economy. In 2023, 87% of the sector's workforce was White, compared to 90% for the economy as a whole. Almost one in ten Fishing jobs in Maine is filled by individuals who are Two or More Races.

## KEY DEMOGRAPHIC INDICATORS



**Sex**
- Female 8%
- Male 92%

**Age**
- 55+ 30%
- 14-24 29%
- 25-55 40%

**Race**
- Two or More Races, 9%
- Hispanic, 3%
- White, 87%

**Source:** Lightcast

**Relevant Research by SEA Maine** (this section includes both fishing and aquaculture)

In 2023, SEA Maine published a workforce needs assessment for the Marine Living Resource (MLR) sector, including **commercial fishing and aquaculture**, as well as related sectors such as **seafood processing, boat building and repair, seafood wholesalers, fish and seafood markets**, and seafood-related specialized freight. This study produced the following workforce estimates for 2022 and projections through 2033.

This analysis shows that the number of fisherpeople in Maine is **projected to grow by over 1,000 over the next decade,** representing a 22% increase. Other occupations with strong projected growth in the fishing and aquaculture sector include farm and hatchery managers, commercial fishing managers, tour and travel guides, and aquaculture farm hands.

**Top 15 Occupations in Marine Core Industry Cluster in Maine**

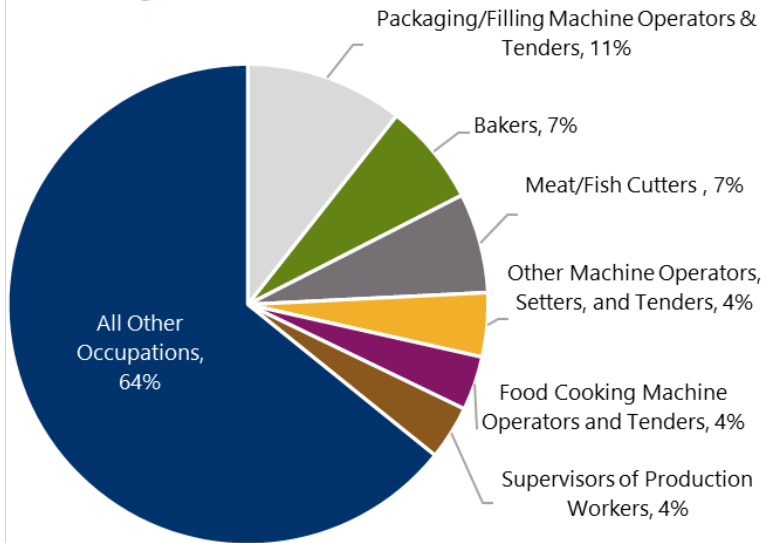| SOC | Cluster Description | 2022 Jobs | 2033 Projected Jobs | Change | % Change | Average Wages (2022) |
|-----|---------------------|-----------|---------------------|--------|----------|----------------------|
| 45-3030 | Sternman/Deckhand AND Captain/Fisherman | 4,768 | 5,826 | 1,058 | 22% | $42.6 |
| 53-7060 | Dock/Float Worker, Forklift Operators, Loaders/Unloaders | 630 | 651 | 21 | 3% | $16.2 |
| 53-3030 | Delivery Drivers, Wholesale and Retail (Route) | 559 | 577 | 18 | 3% | $22.1 |
| 11-9010 | Farm Managers, Hatchery Managers, RAS Production | 498 | 554 | 56 | 11% | $23.6 |
| 45-2090 | Farm Hand, Saltwater Marine Technician, Deckhand, Hatchery Technician, RAS Production Technician | 326 | 355 | 29 | 9% | $15.5 |
| 51-4120 | Shipyard/Boatyard Workers, Factory Workers, Drydock/Repair | 270 | 246 | (24) | (9%) | $23.3 |
| 41-4010 | Sales Representatives, Wholesale Distribution | 242 | 248 | 6 | 2% | $36.7 |
| 51-3020 | Seafood Production Workers, Retail Fish/Seafood Workers | 241 | 225 | (16) | (7%) | $16.6 |
| 51-2090 | Shipyard/Boatyard Workers, Packers/Product Assembly | 178 | 145 | (33) | (19%) | $18.7 |
| 51-1010 | Processing Plant Managers or Boat Building/Repair Supervisors | 156 | 149 | (7) | (4%) | $32.8 |
| 11-9190 | Commercial Fishing Sector Managers | 154 | 184 | 30 | 19% | $42.8 |
| 51-2050 | Shipbuilders | 139 | 133 | (6) | (4%) | $20.2 |
| 11-1020 | GMs, all Sectors | 136 | 136 | 0 | 0% | $47.6 |
| 41-2010 | Cashiers | 126 | 107 | (19) | (15%) | $14.1 |
| 39-7010 | Tour and Travel Guides (Commercial Fishing Sector) | 118 | 153 | 35 | 30% | $22.6 |
| | Top 15 Jobs | 8,539 | 9,689 | 1,150 | 13% | N/A |
| | All Other Jobs (154 Occupations) | 3,239 | 3,180 | (59) | (2%) | N/A |
| | All Jobs, Core Cluster | 11,778 | 12,869 | 1,091 | 9% | N/A |

**Source:** SeaMaine Workforce Needs Assessment, Thomas P. Miller Associates

# WORKFORCE: FOOD AND BEVERAGE PROCESSING OVERVIEW

### Occupations in Maine's Food & Beverage Processing Sector, 2023



- Packaging/Filling Machine Operators & Tenders, 11%
- Bakers, 7%
- Meat/Fish Cutters, 7%
- Other Machine Operators, Setters, and Tenders, 4%
- Food Cooking Machine Operators and Tenders, 4%
- Supervisors of Production Workers, 4%
- All Other Occupations, 64%

**Source:** Lightcast

Additionally, the top five occupations in the sector have relatively high shares of workers in the Food and Beverage Processing sector. For example, around half of Packaging and Filling Machine Operators and Meat/Fish Cutters throughout Maine's economy are working specifically in the Food sector.

## Maine's Food and Beverage Manufacturing Workforce

The food and beverage processing workforce is much broader in composition, especially compared to its natural resource-based counterparts, agriculture and fishing. **The largest occupation within the sector is Packaging and Filling Machine Operators and Tenders**, which accounts for approximately 11% of all jobs in food and beverage processing.

**Occupational Mix of the Food & Beverage Processing Sector in Maine, 2023**

| SOC | Description | Employed in Food & Bev | Share of Food & Bev | Food & Bev Share of Whole Economy |
|-----|-------------|-----------------------|--------------------|-----------------------------------|
| 51-9111 | Packaging and Filling Machine Operators and Tenders | 912 | 11% | 47% |
| 51-3011 | Bakers | 589 | 7% | 38% |
| 51-3022 | Meat, Poultry, and Fish Cutters and Trimmers | 576 | 7% | 53% |
| 51-9012 | Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders | 369 | 4% | 67% |
| 51-3093 | Food Cooking Machine Operators and Tenders | 313 | 4% | 81% |
| 51-1011 | First-Line Supervisors of Production and Operating Workers | 312 | 4% | 10% |
| 51-3092 | Food Batchmakers | 252 | 3% | 81% |
| 41-2031 | Retail Salespersons | 233 | 3% | 1% |
| 53-7051 | Industrial Truck and Tractor Operators | 204 | 2% | 8% |
| 53-7062 | Laborers and Freight, Stock, and Material Movers, Hand | 178 | 2% | 3% |
| 41-4012 | Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products | 169 | 2% | 4% |
| 49-9041 | Industrial Machinery Mechanics | 164 | 2% | 11% |
| 11-1021 | General and Operations Managers | 157 | 2% | 1% |
| 49-9071 | Maintenance and Repair Workers, General | 157 | 2% | 2% |
| 53-3032 | Heavy and Tractor-Trailer Truck Drivers | 145 | 2% | 1% |
| | **Total, All Occupations in Food & Beverage Processing** | **8,582** | **100%** | **1%** |

**Source:** Lightcast, Camoin Associates

## Food and Beverage Processing Occupations in Maine

Nearly all of the top occupations in the sector require either a High School Diploma (or equivalent) or less, with on-the-job training being the primary workforce training method. Other than Supervisors and General Managers, no occupations typically require previous work experience.

Top occupations within Food & Beverage Processing in Maine have median hourly earnings ranging from approximately $15 per hour in occupations like Retail Salespersons and Food Machine Operators up to over $40 per hour for general managers.

### Characteristics of the Top Occupations In Food & Beverage Processing Sector, Maine (2023)

| SOC | Description | Median Hourly Earnings | Typical Entry-Level Education | Work Experience Required | Typical On-The-Job Training |
|---|---|---|---|---|---|
| 51-9111 | Packaging and Filling Machine Operators and Tenders | $18.15 | High school diploma or equivalent | None | Moderate-term |
| 51-3011 | Bakers | $16.41 | No formal educational credential | None | Long-term |
| 51-3022 | Trimmers | $17.25 | No formal educational credential | None | Short-term |
| 51-9012 | Other Machine Setters, Operators, and Tenders | $22.32 | High school diploma or equivalent | None | Moderate-term |
| 51-3093 | Food Cooking Machine Operators and Tenders | $15.79 | High school diploma or equivalent | None | Moderate-term |
| 51-1011 | First-Line Supervisors of Production and Operating Workers | $33.47 | High school diploma or equivalent | <5 years | None |
| 51-3092 | Food Batchmakers | $17.67 | High school diploma or equivalent | None | Moderate-term |
| 41-2031 | Retail Salespersons | $15.11 | No formal educational credential | None | Short-term |
| 53-7051 | Industrial Truck and Tractor Operators | $20.35 | No formal educational credential | None | Short-term |
| 53-7062 | Material Movers, Hand | $16.83 | No formal educational credential | None | Short-term |
| 41-4012 | Manufacturing, Except Technical and | $29.44 | High school diploma or equivalent | None | Moderate-term |
| 49-9041 | Industrial Machinery Mechanics | $28.97 | High school diploma or equivalent | None | Long-term |
| 11-1021 | General and Operations Managers | $41.27 | Bachelor's degree | 5+ years | None |
| 49-9071 | Maintenance and Repair Workers | $20.86 | High school diploma or equivalent | None | Moderate-term |
| 53-3032 | Heavy and Tractor-Trailer Truck Drivers | $22.83 | Postsecondary nondegree award | None | Short-term |

**Source:** Lightcast, Camoin Associates

# WORKFORCE: OCCUPATIONAL TRENDS IN FOOD AND BEVERAGE PROCESSING

## Changes in Maine's Food and Beverage Occupations

- Bakers added the most jobs in the last five years, each growing by over 200 jobs.

- Other fast-growing occupations in Food & Beverage Processing were Meat/Fish Cutters and Food Cooking Machine Operators.

- Declining jobs in other occupations offset this growth. Slaughterers and Meat Packers had the most significant job decline from 2018-2023, losing 196 jobs, representing a contraction of 84% within the Food and Beverage Processing sector. That being said, a much smaller subset of occupations had job declines during the last five years compared to those that grew.

- **Overall, the sector grew by 13% from 2018-2023**, adding almost 1,000 jobs to Maine's economy.

**Fastest-Growing Occupations in the Food & Beverage Sector, 2018-2023**

| SOC | Description | Food & Bev Change (2018 - 2023) | Food & Bev % Change (2018 - 2023) |
|---|---|---|---|
| 51-3011 | Bakers | 228 | 63% |
| 51-3022 | Meat, Poultry, and Fish Cutters and Trimmers | 152 | 36% |
| 51-3093 | Food Cooking Machine Operators and Tenders | 110 | 54% |
| 41-2031 | Retail Salespersons | 75 | 47% |
| 51-9193 | Cooling and Freezing Equipment Operators and Tenders | 47 | 216% |
| 49-9071 | Maintenance and Repair Workers, General | 42 | 36% |
| 41-1011 | First-Line Supervisors of Retail Sales Workers | 40 | 182% |
| 53-7062 | Laborers and Freight, Stock, and Material Movers, Hand | 39 | 28% |
| | **Total, All Food & Beverage Processing** | **966** | **13%** |

**Source:** Lightcast, Camoin Associates

**Fastest-Declining Occupations in the Food & Beverage Sector, 2018-2023**

| SOC | Description | Food & Bev Change (2018 - 2023) | Food & Bev % Change (2018 - 2023) |
|---|---|---|---|
| 51-3023 | Slaughterers and Meat Packers | (196) | (84%) |
| 51-9199 | Production Workers, All Other | (83) | (47%) |
| 51-9198 | Helpers--Production Workers | (66) | (33%) |
| 51-3099 | Food Processing Workers, All Other | (50) | (43%) |
| 53-7064 | Packers and Packagers, Hand | (46) | (28%) |
| 51-2098 | Miscellaneous Assemblers and Fabricators | (36) | (43%) |
| 53-3033 | Light Truck Drivers | (27) | (26%) |
| 49-9041 | Industrial Machinery Mechanics | (21) | (11%) |
| 51-9023 | Mixing and Blending Machine Setters, Operators, and Tenders | (17) | (28%) |
| | **Total, All Food & Beverage Processing** | **966** | **13%** |

**Source:** Lightcast, Camoin Associates

# WORKFORCE: DEMOGRAPHIC BREAKDOWN OF WORKERS IN FOOD AND BEVERAGE PROCESSING

## Demographic Summary

Food and Beverage Processing's workforce is male-dominated, with only 37% of all workers identifying as female. The sector's workforce is aging. In 2023, nearly a quarter of the sector's workers were over the age of 55, while only about 12% of workers were under the age of 24. The majority of workers in the sector, 66%, fall between 25 and 55 years old. The Food and Beverage Processing sector is slightly more diverse than the overall economy. In 2023, 87% of the sector's workforce was White, compared to 90% for the economy as a whole.
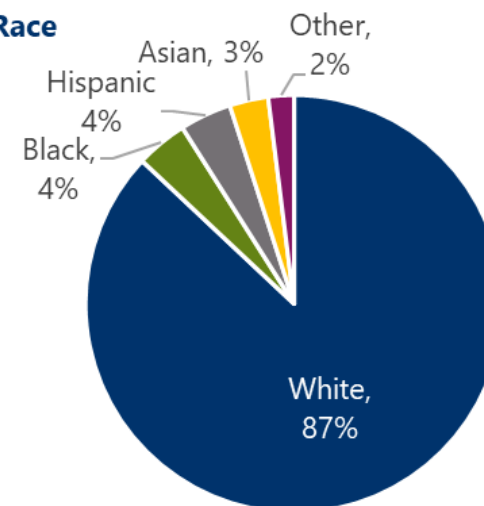
### KEY DEMOGRAPHIC INDICATORS
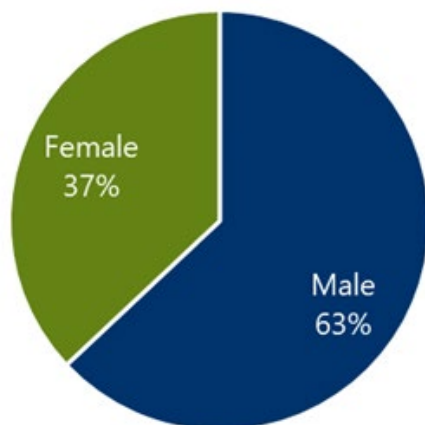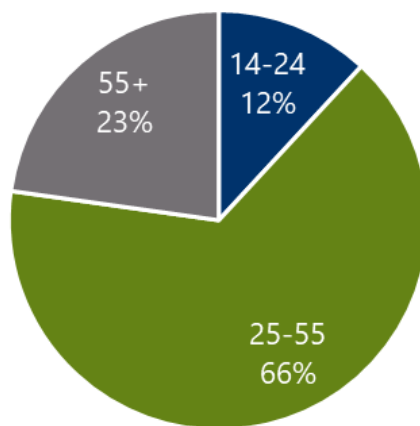


**Source:** Lightcast

## KEY FINDINGS

### Food economy start-ups are significant recipients of venture capital (VC) funding in Maine.

In 2023, Food Economy start-ups accounted for almost one-third of all VC transactions and nearly 20% of total venture capital funding in Maine, totaling $15.3 million across seven deals. Over the last five years, one in every five reported venture capital transactions flowed to Food Economy start-ups.

In the last five years, 19 different Food Economy start-ups have reported venture capital deals, operating broadly across the Food System value chain. VC-funded start-ups have included crop growers, food manufacturers, FoodTech software firms, farm supply innovators, aquaculture companies, and more.

### Maine's food economy is attractive to investment from out-of-state companies.

Three significant food economy investments have been announced in the last five years, including two for land-based aquaculture along Maine's coast and one for vertical farming in southern Maine. Recent cross-border investment indicates that Maine's economic conditions make it favorable for the location of new Food Economy businesses. Attracting investment from both domestic and international businesses will help to bring diverse opportunities to the state's food economy.

### Food-related patents in Maine have slowed in recent years.

The most recent data available for Maine shows that from 2016 to 2020, Maine saw only one patent in the Food Chemistry category despite stronger activity in the last two decades. In New England, patent activity is strongest in the counties surrounding the Boston Metro. Nationally, food and agriculture powerhouse states such as California and Midwestern states have the highest concentrations of food-related patents.

### Many state and federal funding opportunities are available to Maine's food producers.

Funders such as the US Department of Agriculture, Maine's Department of Agriculture, Conservation, and Forestry, the Finance Authority of Maine; Coastal Enterprises, Inc., and more offer a wide range of programs for businesses across the Food Economy spectrum, from farmers to food manufacturers to food marketing and industry groups. This includes recent funding opportunities such as Maine's Agriculture Infrastructure Investment Program, which provided $20 million to farmers and food processors for infrastructure improvements.

# ACCESS TO CAPITAL: VENTURE CAPITAL

- Over the last five years, over $44.8 million in venture capital (VC) funding has flowed to Maine's Food Systems companies. **Funding was highest in 2023, with over $15.3 million awarded through seven transactions.**

- This $44.8 million in Food Systems venture capital funding in the last five years **accounts for approximately 11% of** total **VC funding** in Maine during that time period, indicating the significance of Maine's food sector.

- Venture capital funding fluctuates significantly from year to year, both in the number of funding deals reached as well as the total dollar volume of funding. That said, **VC funding flows have generally increased in the last three years** (2021, 2022, and 2023) compared to 2018 and 2020, **a sign of a healthy entrepreneurial environment in Maine.**

- Since 2019, **18 different companies across the state have reported venture capital deals**, and 16 of the 18 have disclosed the funding raised. Total funding raised ranges from $110,000 for Katahdin Salmon to over $10 million for Standard Biocarbon. Funded companies operate across the Food System value chain, including crop growers, food manufacturers, FoodTech software, farm supply innovators, and many other types of food and Agritech businesses.

**Venture Capital Funding by Year**

| | Food Economy | | All Sectors | | Food Share of Total | |
|---|---|---|---|---|---|---|
| | Deals | Money Raised | Deals | Money Raised | Deals | Money Raised |
| 2019 | 7 | $3,773,753 | 29 | $72,902,921 | 24% | 5% |
| 2020 | 2 | $3,998,309 | 28 | $64,713,982 | 7% | 6% |
| 2021 | 4 | $11,536,183 | 31 | $68,616,125 | 13% | 17% |
| 2022 | 5 | $8,669,464 | 22 | $99,876,464 | 23% | 9% |
| 2023 | 7 | $15,343,410 | 24 | $82,343,980 | 29% | 19% |
| 2024 Q1 | 1 | $1,500,000 | 1 | $1,500,000 | 100% | 100% |
| **Total** | **26** | **$44,821,119** | **135** | **$389,953,472** | **19%** | **11%** |

**Source:** Crunchbase
**Note:** Includes only reported transactions. Not all transactions report a funding amount.

**Maine Venture Capital Funding by Funded Company, 2019-2024 Q1 (Includes only reported transactions)**

| Row Labels | Total Deals | Total VC Raised |
|---|---|---|
| Ocean's Balance | 1 | Unreported |
| Running Tide | 1 | Unreported |
| Standard Biocarbon | 2 | $10,158,317 |
| American Unagi | 3 | $6,208,750 |
| BlueTrace | 3 | $5,240,003 |
| Atlantic Sea Farms (formerly Ocean Approved) | 3 | $5,136,183 |
| Forager | 2 | $4,125,000 |
| Demers Food Group | 1 | $3,828,309 |
| Novel Beverage | 1 | $3,313,427 |
| Kit NA Brewing | 1 | $2,305,093 |
| Fork Food Lab | 1 | $1,500,000 |
| Orange Bike Brewing Company | 1 | $1,270,000 |
| Good To-Go | 1 | $805,000 |
| Maine Craft Distilling | 1 | $251,037 |
| The Maine Extraction | 1 | $250,000 |
| Tootie's Tempeh | 1 | $170,000 |
| Mousam Valley Mushrooms | 1 | $150,000 |
| Katahdin Salmon | 1 | $110,000 |
| **Total** | **26** | **$44,821,119** |

**Source:** Crunchbase

# ACCESS TO CAPITAL: CAPITAL INVESTMENT

Trends in cross-border capital investment can also indicate how active the state's food sector is. The table below shows all cross-border capital investments in Maine in recent years. In other words, **it details the capital expenditures made by companies outside of the state – either from other states or from other countries.**

In recent years, **there have been three major announcements** about cross-border investments in Maine's food sector. These include two announcements for land-based aquaculture facilities and the development of an urban vertical farm in Westbrook. The dollar values associated with these investments have not been reported. Currently, one project is under construction, while two have been stalled due to ongoing legal opposition to development.

**Total Food Systems Capital Investments in Maine from Out-of-State Sources**

| Date | Investing Company | Source Region | Destination | Description | Status |
|------|-------------------|---------------|-------------|-------------|--------|
| April 2022 | Vertical Harvest | Wyoming, US | Westbrook | Wyoming-based Vertical Harvest, a farming company dedicated to sustainable farms and food, with accessibility and hiring practices developed for people with disabilities, is set to open a new farm in Westbrook, Maine. The farm broke ground in spring 2022. | Under Construction |
| November 2021 | The Kingfish Company | Netherlands | Jonesport | The Netherlands-based Kingfish Company announced that it will establish a new land-based aquaculture facility in Jonesport, Maine, US. The facility, which will operate as Kingfish Maine, will provide local sustainable seafood production for the US market. It will have a production capacity of up to 8,500 tonnes of Yellowtail fish per year upon completion. As of July 2024, the town-approved project has faced several appeals and The Kingfish Company has not yet started work on the new facility. | Pending legal challenges |
| January 2018 | Nordic Aquafarms | Norway | Belfast | Norway-based Nordic Aquafarms is to open a new salmon hatchery in Belfast, Maine, US. The company plans to construct a land-based salmon farm with 33,000 tonnes annual production capacity. The project is expected to create 60 new jobs. | Pending legal challenges |

**Source**: fDi Markets, Camoin Associates

**Note**: fDi Markets is a database produced by the Financial Times. It provides real-time monitoring of investment projects, capital investment, and job creation. It is the most comprehensive online database of crossborder greenfield investments available, coveraing all countries and sectors worldwide.

# ACCESS TO CAPITAL: SBIR/STTR FUNDING

The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs support domestic small businesses as they engage in R&D with the potential for commercialization.

Over the last five years, **over $3.9 million of SBIR/STTR funds have been distributed** to small businesses related to the food sector in Maine. Funding was allocated to a range of projects, including those that contributed new research on aquaculture, kelp, food manufacturing, food safety, food product marketing, and more.

## Total Maine SBIR/STTR Funding for Food System Projects, 2019-2023

| Year | SBIR/STTR Funding Awarded |
|---|---|
| 2019 | $100,000 |
| 2020 | $1,105,690 |
| 2021 | $1,362,621 |
| 2022 | $1,206,000 |
| 2023* | $150,000 |
| **Total** | **$3,924,311** |

**Source:** Small Business Administration Award Data

**Notes:** Includes all awards issued by the US Department of Agriculature as well other aquaculture-related awards issued by the Department of Commerce and the National Science Foundation.
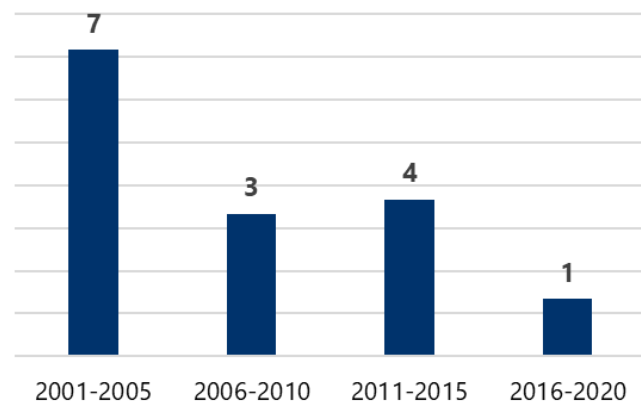
*2023 Data is preliminary

## SBIR Funding Spotlight: Ocean's Balance, Inc

Ocean's Balance, Inc. received $150,000 of SBIR Phase I funding in 2022, followed by $650,000 of Phase II funding in 2023. SBIR funding was used to support its development of commercial-scale seedstring seaweed, which would provide an alternative to wild tissue harvests and scale the growth of skinny growth harvests, potentially also extending the growing season of this seaweed crop.

# INNOVATION: PATENTS

## Maine Patents in Food, 5-Year Totals



| Period | Patents |
|--------|---------|
| 2001-2005 | 7 |
| 2006-2010 | 3 |
| 2011-2015 | 4 |
| 2016-2020 | 1 |

**Source:** National Science Foundation Science and

**Total patents in the food chemistry category have generally trended downward** in recent years, with only one patent in Maine between 2016 and 2020. Patent activity in the last two decades was highest in the five years during 2001-2005.

Geographically, **food-related patents have been most concentrated in the counties surrounding the Boston metro in recent years**, as shown in the map below. In the United States, the states with the most patents in food chemistry from 2016-2020 are concentrated in the Midwest, with Missouri, Iowa, Indiana, and Illinois in the top 5. California is also a top-ranking state for food chemistry patents.

## Top 10 Counties for Food Patents in New England, 2016-2020

| County | State | Patents |
|--------|-------|---------|
| Middlesex | MA | 80 |
| Essex | MA | 19 |
| Fairfield | CT | 15 |
| Suffolk | MA | 15 |
| Rockingham | NH | 5 |
| New Haven | CT | 4 |
| Norfolk | MA | 4 |
| Hartford | CT | 3 |
| Washington | VT | 3 |
| Grafton | NH | 3 |

**Source:** National Science Foundation Science and Engineering Indicators

## Concentration of Food Patents in New England, 2016-2020



Total, 2016-2020: 80 / 15 / 0

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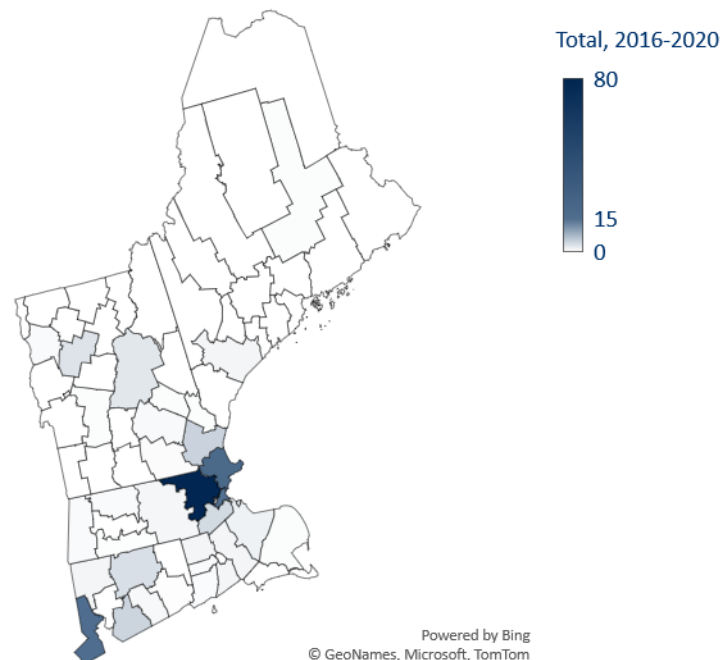
**Data Note:** According to the World Intellectual Property Organization (WIPO), the food chemistry category includes innovations in agricultural goods and food products themselves but does not include innovations in machines used for food production. Patents for machines used for food production are captured in a larger category for machinery and are not able to be disaggregated from other, less relevant machinery innovations.

# STATE AND FEDERAL INCENTIVES

The following section provides an inventory of state and federal funding opportunities for Maine's agriculture, fishing, and food processing businesses.

## State and Federal Programs: Grants and Loans

| Program Name | Provider | Description |
|---|---|---|
| Agricultural Development Grant Program (ADG) | Maine DACF Bureau of Agriculture, Food and Rural Resources | The Agricultural Development Grant Program (ADG) provides cost-share grants to conduct market promotion, market research and development, value-added processing, and new technology demonstration projects. |
| Agricultural Infrastructure Investment Program | Maine DACF, Coastal Enterprises, Inc | This program was a one-time funding opportunity available to farmers, and food processors for infrastructure and equipment purchases, funded by the Maine Jobs and Recovery Plan. In total, approximately $20 million was awarded to 64 agricultural businesses that included a mix of different scales and types of production across all sixteen counties. |
| Agricultural Marketing Loan Fund (AMLF) | Maine DACF Bureau of Agriculture, Food and Rural Resources | The Agricultural Marketing Loan Fund provides low-cost financing to help farmers, food processors and aquaculture operators adopt new and innovative equipment and facilities in order to improve and enhance the manufacturing, marketability, and production of Maine products. |
| Coastal Community Planning Grant Program | Maine DACF Bureau of Agriculture, Food and Rural Resources | The Coastal Community Grant program is a competitive grant program that provides federal funds for projects in Maine's coastal zone with a focus on priority coastal issues, as identified by the Maine Coastal Program and the Maine Climate Council's Maine Won't Wait: A Four-Year Plan for Climate Action. This can include agricultural issues, such as soil and water conservation, land use, and more. |
| Farmer's Market Promotion Program | USDA | Funds projects that aid local and regional consumer access to agricultural projects. |
| Linked Investment Program for Agriculture | Finance Authority of Maine | This program helps reduce the interest rate of the borrower. Loans are approved and funded by the financial institution according to their own policies. |

# STATE AND FEDERAL INCENTIVES

**State and Federal Programs: Grants and Loans (continued)**

| Program Name | Provider | Description |
|---|---|---|
| Local Food Promotion Program | USDA | This program seeks to foster local agricultural systems infrastructure, funding projects that foster the capabilities of business enterprises that actively coordinate and connect consumers to their regional and local producers. |
| Maine Farms for the Future Program | Maine DACF | The Maine Farms for the Future Program is a competitive grant program that provides selected farms with business planning assistance and investment support. |
| Major Food Processing Manufacturing Expansion Program | Maine Department of Economic and Community Development | This program is intended to encourage the location and expansion of food processing and manufacturing facilities in the State of Maine, create employment opportunities, and generate significant economic growth. |
| Nutrient Management Loan Program | Finance Authority of Maine | This program provides financing to certain agricultural businesses for projects that protect the environment. This includes projects such as diversion, irrigation, anaerobic digesters, composting, or treatment facilities. |
| Potato Marketing Improvement Fund | Finance Authority of Maine | This fund assists Maine potato growers, processors, or marketers with funding to make their product competitive in a larger marketplace. |
| Regional Food System Partnerships | USDA | This program builds the bridge between private and public resources with an aim to bolster local food economies and eliminate needless technical and administrative barriers. |
| Resilient Food Systems Infrastructure Program (RFSI) | USDA, Maine DACF | The purpose of this program is to build resilience across Maine's middle-of-the-supply food chain. The funds can be used to support expanded capacity for the aggregation, processing, manufacturing, storing, transporting, wholesaling, and distribution of Maine-produced food products, including specialty crops, dairy, grains for human consumption, aquaculture, and other food products, excluding meat and poultry. |

# STATE AND FEDERAL INCENTIVES

### State and Federal Programs: Grants and Loans (continued)

| Program Name | Provider | Description |
|---|---|---|
| Rural Rehabilitation Trust Fund | Maine DACF Agricultural Resource Development Division | This fund supports low-interest loans to farmers for purchasing land or feeder cattle as well as capital improvement loans to agricultural fairs. |
| Specialty Crop Block Grant Program | USDA | The USDA Specialty Crop Block Grant Program (SCBG) program is a competitive grant program, solicited once per year, which funds market research, market promotion, and new technology projects specifically to benefit specialty crop producers. |
| Value Added Producer Grant | USDA | Helps value-added agricultural producers enter value-added activities related to the processing and marketing of new products, via generating new products, developing and expanding marketing opportunities, and increasing producer income. |

# LEVERAGING THE MAINE BRAND

## Key Findings from Case Studies, the Literature Review, and Interviews

### Opportunities

1. Opportunity to leverage the Maine brand to differentiate products
   a. This can be particularly useful for products that are tied to natural resources and conservation (Tom's of Maine) or designed to evoke nostalgic feelings (Maine Needham Company).
2. Opportunity to leverage the Maine brand as it relates to new, sustainable packaging operations in the state.
3. Opportunity to provide Maine's producers with the knowledge and tools needed to identify their target market and advertise their products accordingly.

### Challenges

1. Challenges related to limitations of the Maine brand
   a. Depending on the product type, focusing too heavily on the Maine brand may limit the reach of the product depending on where the product is marketed and how general the product is (is it easily accessible and can most states produce it).
2. Challenges related to the expense of redesigning and changing packaging.
3. Challenges related to accurately determining the correct client base and best marketing campaign for a product.

## Maine Brand Case Studies

### Maine Needham Company

Maine Needham Company uses the company's values as a tool for marketing and promoting its candy and other products. These values include preserving Maine traditions, hard work values, and family connections. Through its marketing, the company focuses on evoking nostalgic feelings of visiting Maine as a child or of returning to a simpler time to sell their candy in Maine and across the nation. Additionally, Maine Needham Company highlights the use of quality ingredients in its market efforts.

### Tom's of Maine

In recent years, Tom's of Maine has successfully used its values and its connection to Maine and/or nature to drive marketing efforts. These values include a focus on the all-natural ingredients. The company has also successfully created a community around its brand. Tom's of Maine continually hosts events, including the annual cleanup/maintenance of Mount Agamenticus in Southern Maine. Tom's of Maine also produces *The Natural Maineiacs*, a newsletter that offers tips on "living a naturally healthy lifestyle, going green, and giving back."

### Sea Bags Maine

Sea Bags Maine, an upcycled tote bag company, uses Maine's "peppy-yet rugged aesthetic" to market the company in waterfront communities across the United States. In addition to leveraging its Maine connection, the company also highlights its sustainability practices. Its website states that Sea Bags Maine has "saved over 1.5 million lbs. of materials from entering landfills."

# WHAT WE HEARD

In addition to quantitative research, an in-person kick-off event, and a futurist presentation, we conducted five forums focused on key themes in the food economy: **data, technology and innovation, capital, sustainability, and marketing**. Each forum hosted 3-4 panelists presenting on each theme, and the audience was engaged with questions throughout each forum. The goal of the forums was to better understand business needs, barriers, and opportunities within each key area.

## Forum 1: Data in the Food Economy

- Stakeholders identified value-added food, locally sourced products, and marketing quality products as emerging trends for Maine's food economy in the next five years.

- Barriers to overcome to advance opportunities include processing capacity, skilled workforce, and necessary infrastructure (e.g., cold storage and transportation).

## Forum 2: Harvesting Innovation: A Maine Food Future Panel on Integrating Tech

- To accelerate businesses adopting technology, it would be useful to fund technology exchange trips, invest in support services for companies to understand available technology and how to implement it, and grant funding for new equipment.

- Key advice for innovation in the food economy includes relying on your network for advice and guidance, determining your values, and considering the full arc of what you are implementing rather than just the end result – determine the ramifications, timing, sources of financing, and metrics.

## Forum 3: Cultivating Capital

- There are many sources to provide capital and assist in accessing capital in Maine; however, barriers include the timing of when grants are released (during harvesting season), business readiness for applications, and upfront funds for planning and applications.

- Stakeholders discussed the need for more flexible and patient capital options, loans to support operations and asset purchases, and technical assistance to prepare applications.

## Forum 4: Maine Sustains

- Guest speakers identified the following benefits associated with sustainable practices in the food business: bottom-line impact, ensuring a sustainable supply chain, superior quality, and consumer preferences.

- The speakers explained that sustainable practices in the food business could also come with challenges, such as greenwashing (misleading consumers about your sustainability practices), greenhushing (staying quiet about your sustainable practices for fear of being accused of greenwashing), limited supply, and limited options.
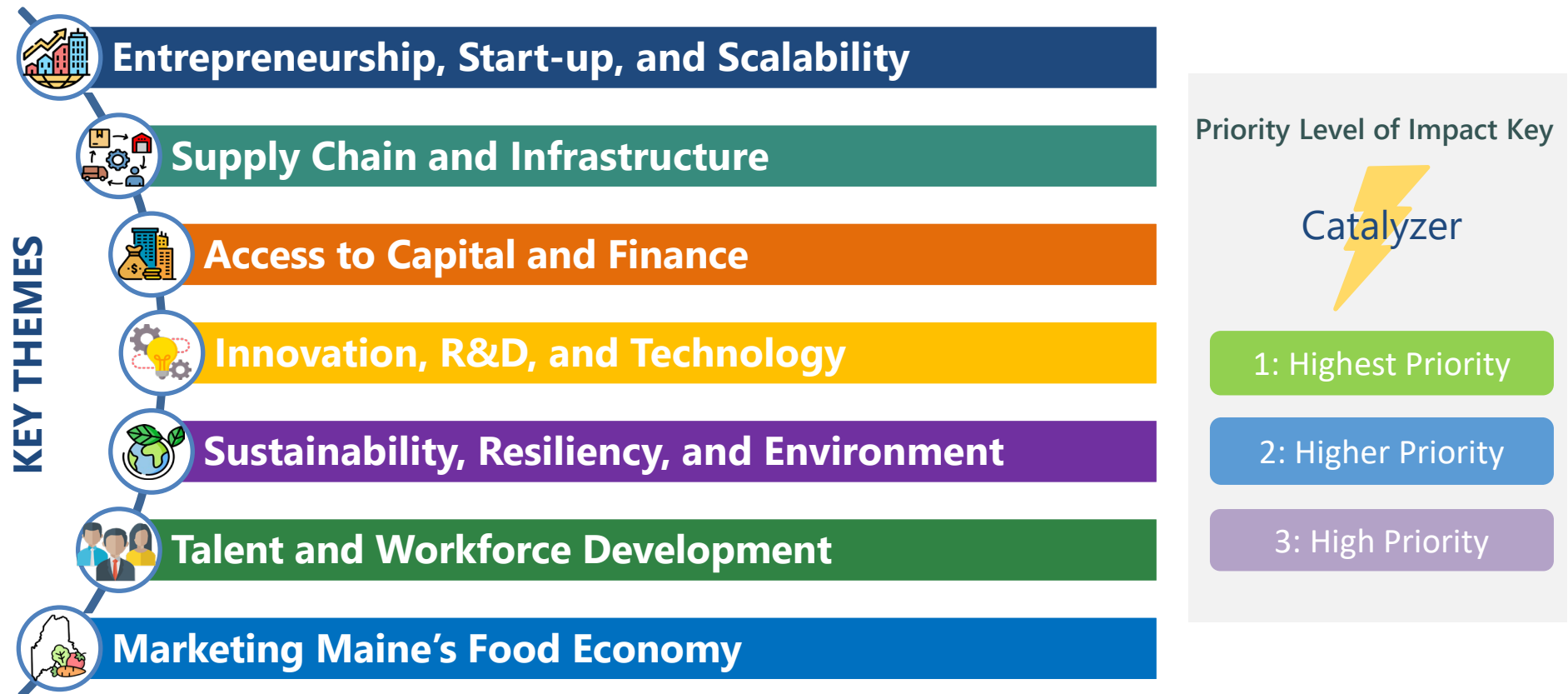
## Forum 5: Marketing Maine's Food Economy

- The Maine brand encourages agritourism experiences that directly support businesses.

- Promoting products as local and collaborating among Maine businesses is a proven strategy.

- The Maine brand is communicated best through storytelling.

# 4. ACTION FRAMEWORK

# STRATEGIC DIRECTION

Using input from business owners, partners, past research, and best practices, we created an action plan to catalyze growth in Maine's food economy. This plan outlines actions organized by seven (7) key themes that aim to highlight actions that will have the greatest impact on improving the economy for Maine residents and businesses. Collaboration amongst various organizations and partnerships to implement this plan will support future food economy successes and local economic development initiatives.

The seven key themes are connected to challenges we are trying to overcome or opportunities we are trying to advance. Each action within a theme is organized by a priority level labeled "high (3), higher (2), or highest (1)." While all strategies and actions are priorities, some priorities are designated as higher or highest due to emphasis from stakeholder interviews, sequencing in the action framework, and the level of impact that the action will have on the food economy. The level of impact is determined by existing ecosystem capacity, resource availability, implementation time, and the effects of the action on the food economy. Lastly, ten (10) actions have been identified as "Catalyzers." "Catalyzers" are actions that are key to unlocking others within the matrix. They are of ultimate priority as other actions cannot be achieved without completion, or other actions may not be as successful without the foundational work of the "Catalyzer."

**KEY THEMES**

- Entrepreneurship, Start-up, and Scalability
- Supply Chain and Infrastructure
- Access to Capital and Finance
- Innovation, R&D, and Technology
- Sustainability, Resiliency, and Environment
- Talent and Workforce Development
- Marketing Maine's Food Economy

**Priority Level of Impact Key**

Catalyzer

1: Highest Priority

2: Higher Priority

3: High Priority

# **I** Entrepreneurship, Start-up, and Scalability

## VISION

Maine's food entrepreneurial ecosystem flourishes, fostering equity and nurturing scalable businesses statewide. Business capacity is boosted through expanded programming and strategic investments in existing organizations. An inclusive environment for entrepreneurship is fostered, empowering new ventures to develop and scale up successfully.

## STRATEGY

To support and expand existing start-up programming and technical services for the food economy for greater access and opportunity across the state. To support the ability of entrepreneurs and start-ups to scale up and sustain business growth. To strengthen Maine's start-up ecosystem in the food economy for long-term viability and effectiveness.

## DESIRED OUTCOMES

- Expanded programming efforts across the state that foster greater access, equity, and opportunity.

- Increased potential to scale up start-ups and business capacity to support business growth.

- Resilient entrepreneurship ecosystem that fosters new business development.

# ▷ Entrepreneurship, Start-up, and Scalability

> 1. Create a Maine Food Entrepreneurs Resource Council to coordinate programming, events, networking, and communications for organizations supporting businesses and entrepreneurs.

| Action | | Priority Level |
|---|---|---|
| 1.1 | Create and fund a Maine Food Entrepreneurs Resource Council. Bring together the food entrepreneurship groups in Maine to collaborate, share resources, build a mentorship network, and coordinate communication. This group should work with the marketing group (see 1.1 on page 98) to help promote these opportunities to aspiring and current entrepreneurs in and outside of Maine. | ⚡ Catalyzer |
| 1.2 | Create an asset map of existing entities and resources that can easily be accessed by support organizations and kept up to date. Make it publicly available and promoted at events. | 2 |
| 1.3 | Organize and coordinate network sharing, communications, and networking events for greater participation and involvement throughout the state. | 3 |
| 1.4 | Create a process for tracking and sharing referrals for services across multiple organizations. | 3 |

# I ▸ Entrepreneurship, Start-up, and Scalability

## 2. Invest and expand existing organizations' technical and organizational capacity to support more start-ups and entrepreneurs within existing programming.

| Action | | Priority Level |
|---|---|---|
| 2.1 | Create a best practices manual and tool kit for start-up and scale-up support organizations and make it available to organizations to assess their current status and develop improvement plans. | 3 |
| 2.2 | Expand and support technical assistance programs that help entrepreneurs identify target markets, customers, funding resources, marketing strategies, business planning, and certifications. | ⚡ Catalyzer |

## 3. Expand existing technical services and related programs with rotating satellite programming.

| Action | | Priority Level |
|---|---|---|
| 3.1 | Fund and expand existing programs by creating rotating satellite programs focused on underserved areas of the state. | 1 |
| 3.2 | Identify a community/region to pilot the satellite program, evaluate it, and expand additional programs with satellite locations. | 2 |

# I ▶ Entrepreneurship, Start-up, and Scalability

## 4. Create scholarships and dedicated services for underrepresented business owners to access existing technical services and support programs with fees.

| Action | | Priority Level |
|---|---|---|
| 4.1 | Identify organizations that currently work with underrepresented business owners to market scholarships, business resources, and mentorship opportunities. | 1 |
| 4.2 | Identify and coordinate with potential scholarship funders to fund programming.<br><br>Example: Leveraging private funding to match public funds. | 2 |
| 4.3 | Support the capacity of existing technical assistance organizations to fund training for business operations, management, and financial literacy. | 2 |

## 5. Support the expansion of entrepreneurship services across Maine's universities and colleges by supporting existing locations and expanding into new locations.

| Action | | Priority Level |
|---|---|---|
| 5.1 | Ensure that each college and university has some level of entrepreneurship programming and services. | 2 |
| 5.2 | Support and expand "entrepreneur-in-residence" programs at colleges and universities, including Maine's community colleges, to provide services for students, faculty, and community members to develop entrepreneurial ideas, services, and products. | 3 |

# II SUPPLY CHAIN AND INFRASTRUCTURE

## VISION

Food sector business-to-business (B2B) purchase leakage in Maine's food economy is reduced, decreasing reliance on imports. Strategic infrastructure investments optimize existing facilities, expand business capacity, and enhance transportation, enabling more Maine food companies across the state to access broader markets and add value through improved packaging and processing capacity. These efforts will attract new businesses, foster B2B collaborations, and create a more resilient food ecosystem in Maine.

## STRATEGY

Over 60% of Maine's agricultural, fishing, and food and beverage manufacturing B2B purchases are imported from other states, representing high levels of leakage. This presents an opportunity to improve B2B connections within Maine that will grow existing businesses and attract new ones. Prioritizing supply chain and infrastructure investments leverages existing assets to create long-term resiliency in the food ecosystem and Maine's overall economy.

# II SUPPLY CHAIN AND INFRASTRUCTURE

## DESIRED OUTCOMES

- Optimized and redeveloped vacant real estate to align with business needs, generating increased local tax revenues. Potential uses include cold storage, food processing, and distribution facilities

- Expanded business capacity, particularly in sectors like meat processing

- Enabled businesses to scale and grow more efficiently

- Attract new businesses, driving economic development

- Enhanced overall economic growth through infrastructure improvements such as roads, railways, and ports, benefiting multiple industries

- Fostered increased collaboration among businesses, including the formation of co-ops and B2B partnerships for packaging and distribution

- Improved transportation methods, reducing shipping costs, increasing product volume, and decreasing delivery times for out-of-state shipments

# II ▶ SUPPLY CHAIN AND INFRASTRUCTURE

1. Assess interest and feasibility of the potential of cooperative producer models to meet supply chain needs through shared facilities, equipment, and shared services.

| Action | | Priority Level |
|---|---|---|
| 1.1 | Collaborate with partners to identify small-medium-sized producers willing to work together in a cooperative or similar system. Examine models and best practices in other states. Create a model agreement to support and promote businesses to share equipment, supplies, transportation modes, etc. | Catalyzer |
| 1.2 | Pilot a program for an existing organization or the creation of a new organization to lead this initiative and support businesses in implementing the model agreement. | 2 |
| 1.3 | Develop education materials and workshops about cooperatives, opportunities, and benefits to increase support and producer participation. | 2 |

# II ▶ SUPPLY CHAIN AND INFRASTRUCTURE

**2. Support efforts to reduce food supply chain leakage through efforts to connect and support greater business-to-business (B2B) buyer/seller relationships.**

| Action | | Priority Level |
|--------|--|----------------|
| 2.1 | Leverage and increase awareness of existing online platforms to connect businesses to each other and to institutions to increase communication between sellers and buyers within potential supply/value chains. | 2 |
| 2.2 | Partner with existing organizations and invest in online marketing platforms to support producers selling to buyers. | 3 |
| 2.3 | Reduce supply chain leakage by encouraging Maine institutions to purchase more food products from Maine producers. | 3 |

# II ▶ SUPPLY CHAIN AND INFRASTRUCTURE

### 3. Increase the supply and availability of food and beverage production, processing, cold storage, co-packing, and warehousing facilities throughout the state where gaps exist.

| Action | | Priority Level |
|---|---|---|
| 3.1 | Conduct a statewide market and feasibility study of existing facilities, supply and demand, existing gaps, and financial feasibility. Research and develop findings and insights for best practices and experiences in the development of and access to facilities and their business models. | Catalyzer ⚡ |
| 3.2 | Partner with organizations to identify a short list of available sites for processing, warehousing, and cold storage facilities in targeted regions (if gaps and needs exist and are potentially financially feasible). | 2 |
| 3.3 | Develop a marketing plan with partners to attract developers and end-user(s) for the facilities. | 2 |
| 3.4 | Develop a program to provide financial support to participating food producers to improve intermediary cold storage facilities on-site. | 2 |
| 3.5 | Expand shared-use commercial kitchen capacity in strategically placed locations throughout the state with the goal of creating a commercial kitchen incubator within a 90-minute radius of Maine's 1,700 home kitchens. | 3 |

# II ► SUPPLY CHAIN AND INFRASTRUCTURE

**4. Advocate for a statewide bond for infrastructure specifically related to food, supply chain, and logistics.**

| Action | | Priority Level |
|---|---|---|
| 4.1 | Using existing needs and gaps identified in this strategy effort to work with stakeholders to develop and prioritize a list of items for potential bond funding. | 2 |
| 4.2 | Communicate to create awareness among the legislature and executive office (i.e., the Governor) of needs and priorities. Work with a coalition to refine and advocate for the bond. | 2 |
| 4.3 | Campaign for public support and approval. | 3 |

# III ▶ ACCESS TO CAPITAL AND FINANCE

## VISION

Maine's food businesses have improved access to capital, enhanced financial literacy, and supportive technical assistance as they move through the capital and finance landscape. Entrepreneurs, including those from underrepresented backgrounds, are aware of and adeptly navigate various funding options and effectively communicate their business value propositions in funding requests.

## STRATEGY

Maine's food economy has various local, state, and federal funding resources to support start-ups, innovation, scaling-up, and business expansions. However, there are challenges in accessing these funds, such as financial literacy, knowledge of available resources, and the completion of financing applications. Although many partners work in this area, more cooperation is needed to promote existing resources and support entrepreneurs. This strategy aims to help business owners by creating a network to simplify grant and loan procedures, enhance marketing collaboration among partners, and focus on succession planning.
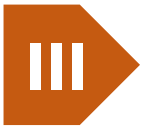
## DESIRED OUTCOMES

- Technical Assistance

  - Increased financial literacy and awareness of how to leverage debt, but also what leveraging grants involves.

  - Improvement in how businesses present their business case to apply for loans/grants to improve their chances of receiving funding.

- Increased innovative technologies and practices created by accessing low-interest loans and/or grants; this can support long-term capacity building, business expansions, and business growth.

- Programming that meets entrepreneurs where they are and creates multiple entry points to funding by simplifying applications, marketing different types of capital, and building a finance network willing to provide riskier loans to businesses in the food ecosystem.

- Planning for business transitions that support and connect younger producers to capital to take over existing businesses.

# III ▶ ACCESS TO CAPITAL AND FINANCE

**1. Enhance technical assistance and improve communication about existing capital resources through partnerships and food system networks.**

| Action | | Priority Level |
|---|---|---|
| 1.1 | Meet with local businesses to listen to their needs, identify gaps, and determine the best way to get capital-related information and assistance to them. | Catalyzer |
| 1.2 | Create marketing materials that include a list of partners, capital resources, and what type of projects they are for. Update the list and marketing materials annually by circulating the list to partners to see what needs to be changed (via email, conferences, and meetings). | 2 |
| 1.3 | Establish and market webinars and dedicated 1:1 support on navigating the federal grant system. | 3 |
| 1.4 | Fund-coordinated marketing efforts that market different types of capital and funding resources that involve three or more partners to encourage regional collaboration. | 2 |
| 1.5 | Provide business advising and outreach services to help guide businesses through the capital identification process, particularly medium-sized businesses for which programs and assistance are lacking. | 1 |
| 1.6 | Establish grant writing support for businesses trying to access capital and funding resources. | 1 |
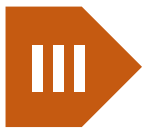
# III ▶ ACCESS TO CAPITAL AND FINANCE

2. Host an annual or semi-annual rotating summit with businesses and partners, including educational workshops, resource collaboration exercises, and 1:1 technical assistance appointments.

| Action | | Priority Level |
|--------|--|:-:|
| 2.1 | Develop an advisory board to champion and plan the summit. | 1 |
| 2.2 | Work with the advisory board to understand and identify funding resources to host a summit. | 2 |
| 2.3 | Create a five-year calendar with mapped locations where the summit will rotate yearly. | 3 |
| 2.4 | Provide pre-summit resources and activities to help prepare potential entrepreneurs and businesses to pitch, advocate for their businesses, and ask for help. | 2 |
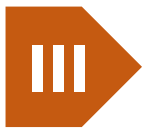
# III ▶ ACCESS TO CAPITAL AND FINANCE

## 3. Support investor networks focused on farm-transfer financing (succession planning).

| Action | | Priority Level |
|--------|--|----------------|
| 3.1 | Identify gaps in capital by engaging with organizations currently undertaking this work to understand and complement their efforts. | 1 |
| 3.2 | Work with new or socially disadvantaged farmers to help them identify suitable land that meets their needs and budget. | 2 |
| 3.3 | Support the development of a revolving loan fund to support farm transfers, including on-ramping services (e.g., business planning), land acquisition, and machinery and equipment. | 2 |
| 3.4 | Provide technical assistance that meets the needs of aging farmers. | 1 |
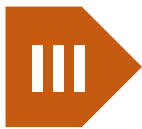
# III ► ACCESS TO CAPITAL AND FINANCE

> 4. Expand existing networks by allocating funding resources to support underserved businesses in accessing capital.

| Action | | Priority Level |
|---|---|---|
| 4.1 | Form a small business advisory committee of underrepresented entrepreneurs to advise on accessing capital, policy, programming, and broadening capital networks.<br><br>Ex. Sharia-compliant and Indigenous food sovereignty experts. | Catalyzer |
| 4.2 | Conduct surveys, focus groups, and workshops with underserved business owners to allow them to design policies and products that will be useful and meaningful to them and their communities. | 1 |
| 4.3 | Dedicate a percentage of existing and future grant funding and loans for underserved businesses. | 2 |
| 4.4 | Create a fund to provide Sharia-compliant financing and create awareness of this resource in communities that will access it. | 1 |

# IV ▸ INNOVATION, R&D, TECHNOLOGY

## VISION
Maine's food sector readily applies existing technology and develops, adopts, and commercializes innovative products and processes, continuously enhancing efficiency, competitiveness, and sustainability.

## STRATEGY
Maine has a long history of food production through agriculture, seafood, and aquaculture. These sectors are dramatically changing due to advances and the availability of technology and innovation. Maine's small and medium-sized food businesses indicate that barriers to adoption include cost to develop and/or integrate as well as risk. The purpose of this strategy is to support businesses, institutions, and organizations with the adoption and commercialization of innovation, R&D, and technology within food-related sectors.

## DESIRED OUTCOMES

- Increased development and adoption of innovative technologies/practices at Maine companies.

- Encouragement for new and existing businesses within the food sector to integrate innovation, R&D, and technology.

- Increased competitive and collaborative innovation, R&D, and technology activities, including proposals for funding and awarded projects.

# IV ▸ INNOVATION, R&D, TECHNOLOGY

**1. Catalyze a comprehensive transformation in innovation, R&D, and technology across Maine's food-related economy to accelerate the state's advancement into the future of food.**

| Action | | Priority Level |
|---|---|---|
| 1.1 | Work with industry and research partners to define and scope a comprehensive program initiative to transform the industry through the development and adoption of technology and innovation for accelerated industry growth and competitiveness. A comprehensive, transformative program is defined as having statewide potential, involving multiple partners representing industry, research organizations, business, and workforce support entities, and creating new capacity for opportunities related to innovation and technology.<br><br>The initiative should focus on industry cross-sectors and innovation and technology areas that fit with Maine's existing strengths and assets, including:<br>• Agtech and Farmtech<br>• Healthtech - food as medicine and wellness<br>• Aquaculture – sustainability, harvesting, ocean, coastal, and land-based<br>• Environmental, climate, energy, and sustainability industries (e.g., innovation, R&D, and technology to support soil health, energy development, efficiency, etc.), advanced materials for packaging, upcycling, regenerative and restorative agriculture, resilience to climate change<br>• Plant-based proteins<br>• Vertical agriculture<br>• Regulation and compliance tech<br>• Logistics tech (logistics, storage, transportation)<br><br>Seek comprehensive funding to support the initiative, including major national funds, competitive grants, and in-state matches. | ⚡ Catalyzer |

# IV ▶ INNOVATION, R&D, TECHNOLOGY

1. Catalyze a comprehensive transformation in innovation, R&D, and technology across Maine's food-related economy to accelerate the state's advancement into the future of food.

| Action | | Priority Level |
|--------|--|----------------|
| 1.2 | Provide dedicated funds and technical assistance to small and medium-sized businesses so that they can participate in the Action 1.1 technology and innovation initiative and its implementation. | 2 |
| 1.3 | Increase awareness among food start-ups and companies of innovation and technology funding programs and assist in developing applications. | 3 |

2. Support focused business attraction efforts to recruit companies in the FoodTech and innovation ecosystems.

| Action | | Priority Level |
|--------|--|----------------|
| 2.1 | Target areas in the US with strong FoodTech and innovation activity, including California, Illinois, other ag and food intensives, Midwestern states, and Boston (as it relates to bio). | 2 |
| 2.2 | Work with companies overseas located in areas with geography similar to Maine and discover what the state can do differently based on what has worked for international businesses. | 3 |

# IV ▶ INNOVATION, R&D, TECHNOLOGY

3. Increase the adoption and integration of technology and innovation into existing Maine businesses.

| Action | | Priority Level |
|---|---|---|
| 3.1 | Support businesses with technology adoption and integration through funding and technical services. Focus on small and medium-sized businesses, which are particularly challenged by innovation and technology integration due to cost and technical capacity. Help transition from start-up to scale-up phases and beyond, including product and process innovation. | 1 |
| 3.2 | Increase capacity for technical assistance and tech transfer capabilities within Maine's universities, colleges, and research institutions so they can assist more entrepreneurs and companies. | 2 |
| 3.3 | Develop relationships with engineering firms and equipment contractors to work with businesses on technology integration and ongoing maintenance to meet productivity needs. | 3 |
| 3.4 | Annually or biannually assess the state of technology in the food economy in Maine, including reporting performance metrics and benchmarking against best practices. | 3 |

# IV ▸ INNOVATION, R&D, TECHNOLOGY

## 4. Increase access to and participation in innovation, R&D, and technology programs to underserved areas of the state and underserved populations.

| Action | | Priority Level |
|--------|--|----------------|
| 4.1 | Expand targeted services to reach and serve rural, tribal, and low-income POC-owned businesses to encourage DEI-aligned innovation and commercial growth. | 1 |
| 4.2 | Provide support to entities that support underserved areas and populations to build their capacity to expand programs and services. | 1 |

## 5. Increase awareness and interest of the student-aged population in technology-based careers in the food sector.

| Action | | Priority Level |
|--------|--|----------------|
| 5.1 | Introduce technology-based learning and experiences to the young population. Target students with potential interest in food-related occupations/industries, as well as those in tech-related occupations/industries. | 2 |

# V ▶ SUSTAINABILITY, RESILIENCY, AND ENVIRONMENT

## VISION

Maine's food economy leads in resilience, enabling businesses to swiftly adapt to extreme weather events and climate change challenges. Businesses effectively communicate sustainability practices to customers, investors, and other producers. Maine's industries adeptly counter misconceptions regarding negative environmental impacts.

## STRATEGY

As the State of Maine adapts to climate change and prepares for future challenges, economic ecosystems must focus on building resilience, especially those vulnerable to shifting growing conditions. This initiative aims to develop a climate-resilient food economy poised for long-term success and market those practices to both producers and consumers, setting a high standard for Maine products.

# V SUSTAINABILITY, RESILIENCY, AND ENVIRONMENT

**DESIRED OUTCOMES**

- Businesses that communicate their sustainability efforts effectively to consumers and other producers.

- Businesses resilient to climate change.

- Sustainable supply chain to mitigate potential interruptions.

- Preservation of resources and the environment (lessening people's carbon footprint, food-related waste (e.g., plastic packaging), and using less water to produce and process food and beverage products).

- Decreased imports of food and food-related products, including sustainable bottling, packaging, and shipping materials.

- Growth of the overall economy resulting from Maine businesses that produce sustainable food-related packing products.

- Increased exports of value-added food and beverage products.

# V ▸ SUSTAINABILITY, RESILIENCY, AND ENVIRONMENT

1. Create connections between producers and sustainable technology providers and provide technical assistance to make implementation possible.

| Action | | Priority Level |
|---|---|---|
| 1.1 | Create a grant program for businesses to access educational opportunities focused on resilience and/or sustainability. | 2 |
| 1.2 | Provide technical assistance to businesses to help them take the next steps in adopting and implementing these new technologies. | 1 |

2. Amplify the stories of producers who have seen success implementing sustainable practices.

| Action | | Priority Level |
|---|---|---|
| 2.1 | Provide 1:1 technical assistance for businesses who need support marketing their sustainability practices. | 1 |
| 2.2 | Amplify success stories of producers who have made changes or implemented sustainable practices to Maine food buyers through various communication channels (e.g., social media, newsletter, etc..) | 2 |

# V SUSTAINABILITY, RESILIENCY, AND ENVIRONMENT

| Action | | Priority Level |
|---|---|---|
| 2.3 | Amplify the voices and stories of Indigenous farmers and authorities who have deep knowledge of sustainable practices and may be interested in sharing what they know. | 1 |
| 2.4 | Support industry efforts to communicate and clarify the impact of industry and practices on sustainability and the environment, including dispelling negative myths and misunderstandings. | 2 |

## 3. Make grants for sustainability and resiliency efforts available, accessible, and low barrier.

| Action | | Priority Level |
|---|---|---|
| 3.1 | Work with partners to fund sustainability and resiliency grant programs and certifications to offset transition costs, market research, and life cycle assessments. | Catalyzer |
| 3.2 | Compile a list of and market existing sustainability and resiliency funding through multiple media outlets and platforms to support partner collaboration and increase visibility for diverse populations. | 3 |
| 3.3 | Leverage existing programs that add a nationally recognized stamp to sustainable products and businesses by providing information sessions for certification processes. <br> For example: https://ratioinstitute.org/certification/ | 3 |

## V  SUSTAINABILITY, RESILIENCY, AND ENVIRONMENT

**4. Provide marketing/communications surrounding climate adaptation efforts in the local food economy.**

| Action | | Priority Level |
|---|---|---|
| 4.1 | Partner with organizations to provide webinars on the business case for sustainability and how to market. | 2 |
| 4.2 | Create short marketing videos of business owners discussing their experience with sustainable changes that provide tips and tricks on how to get started implementing, communicating, and measuring sustainability. | 3 |
| 4.3 | Investigate potential opportunities for businesses to mentor other businesses or learn in cohorts about sustainability and resilience initiatives. | 3 |

# VI ▸ TALENT AND WORKFORCE DEVELOPMENT

**VISION**

Maine's food sector has a flexible, robust, and well-supported workforce, ready to meet evolving demands and prevent workforce shortages.

**STRATEGY**

Like all sectors in Maine and throughout the country, employers in the Maine Food Economy are facing significant challenges in attracting and retaining workers. This is driven by many factors, including an aging population, low employment rates, technological advancement, lack of sufficient housing, transportation, childcare, and more. The goals of these strategies and actions is to prepare existing and future workers for careers and attract talent from outside of Maine to support industry growth and resiliency.

**DESIRED OUTCOMES**

- Strong Maine food workforce supported by skills development, education, and training directly relevant to the food industry.

- Ability to fill gaps left by those leaving the industry, including those retiring.

- Succession plans for businesses to be better prepared for future workforce needs.

- Connection between farm seekers and aging farmers that helps sustain and grow agriculture in Maine.

# VI TALENT AND WORKFORCE DEVELOPMENT

## 1. Develop a strong understanding of workforce needs, available programming and its impact, and training and attraction gaps in the food system.

| Action | | Priority Level |
|---|---|---|
| 1.1 | Analyze workforce needs and gaps to strategically plan future programming and support. | Catalyzer |
| 1.2 | Map programming to examine what is currently being done for new businesses in support programs to integrate workforce development. | 2 |
| 1.3 | Identify and address training and attraction gaps and... <br> • Use a model of the Educate Maine Education Leaders Experience (ELE) for the food economy sector, including elements like a cohort of people every year. <br> • Tour various businesses and organizations around the state; learn, connect, build community and mutual understanding, and bring this learning back to the participants' community. | 2 |

## 2. Create programs for high school-aged students to get involved in the food system.

| Action | | Priority Level |
|---|---|---|
| 2.1 | Develop high school or gap year Extended Learning Opportunities (ELO) in the food system. Work with businesses, organizations, and high schools to organize youth experiences, awareness, and credits/pre-hours in the industry. | 3 |

# VI ▷ TALENT AND WORKFORCE DEVELOPMENT

| Action | | Priority Level |
|---|---|---|
| 2.2 | Initiate a collaborative effort with existing programs that serve businesses to reach out to their business/employer partners about:<br><br>• Creating and/or expanding internship programs.<br><br>• Joining the Maine Career Catalyst (MCC) program. | 2 |
| 2.3 | Identify or create an intermediary organization or collective that engages and facilitates community events and programs to get 7th-12th grade students interested in the food industry.<br><br>• Develop school outreach programs to increase awareness of and interest in the sector. Connect with guidance counselors, instructors, and other school-level stakeholders to start this process through work-based learning, experiences, and after-school clubs.<br><br>• Engage with middle and high schools to foster student interest in the industry and raise awareness about internship and experiential learning opportunities. | 3 |

## 3. Develop awareness among college students for careers in food-related industries.

| Action | | Priority Level |
|---|---|---|
| 3.1 | Identify target programs that align most closely with the needs of the food economy workforce, acknowledging that the future food workforce could come from various fields. | 2 |

# VI ▶ TALENT AND WORKFORCE DEVELOPMENT

| Action | | Priority Level |
|---|---|---|
| 3.2 | Develop, map, and share pathways for critical food-related jobs/occupations, clarifying entry-advancement opportunities, education and skills, and available programs/resources. | 1 |
| 3.3 | Develop materials and conduct outreach that communicates experiences and opportunities in the food-related sectors and corresponding jobs, including pathways for entry and advancement. | 2 |
| 3.4 | Fund and support technical assistance to increase the supply and demand for internships and apprenticeships. | 2 |

## 4. Increase opportunities for living wages, benefits, and beyond in food-related occupations and careers.

| Action | | Priority Level |
|---|---|---|
| 4.1 | Determine and benchmark living wages and where the gap exists in existing food occupations. | 1 |
| 4.2 | Identify gaps in benefits in food occupations and careers. | 2 |
| 4.3 | Work with the food ecosystem, including companies, to develop paths towards living wages, benefits, and beyond. | 2 |

# VI ▶ TALENT AND WORKFORCE DEVELOPMENT

**5. Increase awareness and representation of job and career opportunities in food-related industries of underrepresented and disadvantaged populations.**

| Action | | Priority Level |
|--------|--|----------------|
| 5.1 | Establish connections with groups representing traditionally marginalized populations (e.g., justice-involved, Indigenous populations) to increase access to food economy resources and networks. | 1 |
| 5.2 | Connect existing Mainers on the sidelines of the labor market (new Mainers, parents without childcare, new high school graduates, persons in recovery, previously incarcerated persons) to apprenticeships, internships, and early-stage career opportunities. | 2 |
| 5.3 | Engage underrepresented populations in attraction efforts to bring additional people from out of state into the Maine food economy. | 3 |

**6. Continue to modernize the trades to meet the needs of the future – trades are increasingly technical and require problem-solving, digital skills, communication skills, and working with machines and robots. This requires a new set of education, skills development, and workforce preparedness at all levels, particularly in high school CTE programs and community colleges.**

| Action | | Priority Level |
|--------|--|----------------|
| 6.1 | Convene high school CTE and community college professionals along with industry businesses to identify gaps in curriculum and keep programs up to date with the latest industry technology. | 1 |

# VI ▶ TALENT AND WORKFORCE DEVELOPMENT

## 7. Increase access to wraparound services to encourage workforce participation, including housing, transportation, health insurance, and childcare/elder care/family care.

| Action | | Priority Level |
|---|---|---|
| 7.1 | Develop financial support programs for businesses and communities to develop and fund essential services for employees, such as housing, transportation, health insurance, and childcare, to ensure they can get to work. | 2 |
| 7.2 | Leverage and align with state efforts and investments in housing, transportation and childcare to ensure continued alignment and adapting strategies and actions as warranted. | 2 |

## 8. Conduct an ongoing talent attraction campaign to bring workers and potential workers willing to move to opportunities in Maine.

| Action | | Priority Level |
|---|---|---|
| 8.1 | Leverage attraction efforts and organizations such as Live and Work in Maine to design and initiate a campaign highlighting the benefits of both Maine and working in the food economy. | 2 |
| 8.2 | Develop recruiting tools and resources for businesses. | 3 |

# VI TALENT AND WORKFORCE DEVELOPMENT

9. Conduct ongoing analysis to understand emerging trends and skills needed for the food industry to be communicated to those involved in workforce training for incorporation.

| Action | | Priority Level |
|---|---|---|
| 9.1 | Analyze trends and impacts of past strategies to determine the effectiveness of work to date. | 3 |
| 9.2 | Convene stakeholders biannually to conduct a state of the industry workforce workshop and assess strategies. | 3 |

# VII ▶ MARKETING MAINE'S FOOD ECONOMY

## VISION

The Maine brand boosts business growth through domestic and international exports. Food businesses are empowered with the tools, opportunities, and market awareness to leverage the Maine brand. Maine's reputation for quality and sustainability attracts businesses and consumers.

## STRATEGY

To enhance the success of the Maine brand, an organizing body is needed to streamline marketing, brand identity, and communication among the many related bodies and create and amplify the message around Maine food. This effort aims to leverage the Maine brand and other aspects of Maine food to increase the success of marketing efforts in the Maine food ecosystem.

## DESIRED OUTCOMES

- Business growth is driven by increasing access to broader markets and leveraging the Maine brand to increase exports (domestically and internationally).

- Support for new entrepreneurs entering the local food ecosystem.

- Recognition of Maine as a strong food brand in key national markets.

# VII ▶ MARKETING MAINE'S FOOD ECONOMY

## 1. Create a Maine Food Promotional Council to promote Maine food products and brands and connect these efforts to local tourism.

| Action | | Priority Level |
|---|---|---|
| 1.1 | Explore modeling the Maine Food Promotional Council informed by best practices and lessons learned from other states.<br><br>Promotional Council Goals:<br><br>1. Increased awareness of Maine food and beverage products<br><br>2. Strategically aligned marketing plan to promote Maine food and beverage products<br><br>3. Strengthened communication and collaboration among partners and businesses to increase industry development and sales | ⚡ Catalyzer |
| 1.2 | Collaborate with the Promotional Council to identify PILOT projects and partners to create an annual food and beverage marketing plan. | 2 |
| 1.3 | Develop a communications plan that encompasses all of the food and beverage industry and incorporates tourism offices. | 2 |
| 1.4 | Fund and facilitate the presence of local food and beverage products at trade shows. | 2 |

# VII ▶ MARKETING MAINE'S FOOD ECONOMY

2. Create a collection of anecdotal success stories that can be shared across the industry to market Maine food and beverages; success stories can be used for B2B, B2C, and business attraction efforts.

| Action | | Priority Level |
|--------|--|----------------|
| 2.1 | Work with tourism stakeholders to create a cohesive marketing plan that ties in the Promotional Council for a streamlined message. | 1 |
| 2.2 | Start a three-month outreach campaign to ask for success stories from Maine food and beverage businesses. | 2 |
| 2.3 | Design marketing materials that can be used to promote success stories across multiple communication channels. | 2 |
| 2.4 | Share success story marketing materials with development partners and across social media outlets to improve communication about programs and outcomes. Begin with high-growth subsectors to demonstrate success. | 2 |
| 2.5 | Uplift immigrant entrepreneurship by sharing success stories. | 1 |

# VII ▸ MARKETING MAINE'S FOOD ECONOMY

**3. Create a marketing resource program for immigrant entrepreneurs that can assist them in uplifting and promoting their brand.**

| Action | | Priority Level |
|---|---|---|
| 3.1 | Pair new businesses with established businesses that speak the same native language and can mentor them on marketing best practices. | 1 |
| 3.2 | Support business owners by providing links to online marketing tools. | 3 |

# 5. APPENDIX

# APPENDIX A: ANALYSIS OF MAINE'S FOOD ECONOMY WORKFORCE

## OCCUPATIONS IN MAINE'S FOOD ECONOMY

### Top Occupations

- From 2018-2023, the Food Economy occupation in Maine with the **most jobs was Fishing and Hunting Workers with 4,339 jobs** in the Food Economy.

- This was followed closely by Farmers, Ranchers, and Other Agricultural Managers, as well as Farmworkers and Laborers for Crops, Nurseries, and Greenhouses, both of whom have over 2,000 jobs in the Food Economy.

- The **top three occupations account for 44% of the total** industry employment.

**Occupation Characteristics for Top 15 Food Occupations in Maine by Job Count (2018-2023)**

| SOC | Description | Jobs 2018 | Jobs 2023 | Change | % Change | % of All Food Economy Jobs 2023 | Median Hourly Earnings |
|---|---|---|---|---|---|---|---|
| 45-3031 | Fishing and Hunting Workers | 4,357 | 4,339 | -18 | 0% | 19% | $20.62 |
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | 2,627 | 3,343 | 716 | 27% | 14% | $14.61 |
| 45-2092 | Farmworkers and Laborers, Crop, Nursery, and Greenhouse | 1,849 | 2,431 | 582 | 31% | 10% | $15.98 |
| 51-9111 | Packaging and Filling Machine Operators and Tenders | 936 | 929 | -7 | -1% | 4% | $18.15 |
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | 698 | 798 | 100 | 14% | 3% | $14.65 |
| 51-3011 | Bakers | 362 | 591 | 229 | 63% | 3% | $16.41 |
| 51-3022 | Meat, Poultry, and Fish Cutters and Trimmers | 433 | 579 | 146 | 34% | 2% | $17.25 |
| 45-2099 | Agricultural Workers, All Other | 294 | 434 | 140 | 48% | 2% | $14.17 |
| 51-9012 | Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders | 345 | 371 | 25 | 7% | 2% | $22.32 |
| 45-2091 | Agricultural Equipment Operators | 211 | 329 | 118 | 56% | 1% | $15.22 |
| 51-1011 | First-Line Supervisors of Production and Operating Workers | 312 | 322 | 10 | 3% | 1% | $33.47 |
| 51-3093 | Food Cooking Machine Operators and Tenders | 202 | 313 | 110 | 54% | 1% | $15.79 |
| 53-3032 | Heavy and Tractor-Trailer Truck Drivers | 217 | 292 | 75 | 34% | 1% | $22.83 |
| 53-7062 | Laborers and Freight, Stock, and Material Movers, Hand | 219 | 277 | 58 | 27% | 1% | $16.83 |
| 53-7051 | Industrial Truck and Tractor Operators | 224 | 272 | 48 | 21% | 1.2% | $20.35 |

**Source**: Lightcast

# APPENDIX A: ANALYSIS OF MAINE'S FOOD ECONOMY WORKFORCE

## OCCUPATIONS IN MAINE'S FOOD ECONOMY CONT.

### Job Growth

From 2018-2023, the Food Economy occupation in Maine with the most job growth was Farmers, Ranchers, and Other Agricultural Managers, which added 716 jobs (+27%) in the Food Economy from 2018-2023. This was followed by Farmworkers and Laborers, Crop, Nursery, and Greenhouse and Bakers, adding 582 and 229 jobs, respectively, in the Food Economy. The occupations with the largest declines from 2018-2023 were Slaughterers and Meat Packers (-196 jobs, -84%), Production Helpers (-71 jobs, -34%), and Production Workers (-55 jobs, -27%).

**Occupation Characteristics for Top 15 Food Occupations in Maine by Job Growth (2018-2023)**

| SOC | Description | Jobs 2018 | Jobs 2023 | Change | % Change | % of All Food Economy Jobs 2023 | Median Hourly Earnings |
|---|---|---|---|---|---|---|---|
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | 2,627 | 3,343 | 716 | 27% | 14% | $14.61 |
| 45-2092 | Farmworkers and Laborers, Crop, Nursery, and Greenhouse | 1,849 | 2,431 | 582 | 31% | 10% | $15.98 |
| 51-3011 | Bakers | 362 | 591 | 229 | 63% | 3% | $16.41 |
| 51-3022 | Meat, Poultry, and Fish Cutters and Trimmers | 433 | 579 | 146 | 34% | 2% | $17.25 |
| 45-2099 | Agricultural Workers, All Other | 294 | 434 | 140 | 48% | 2% | $14.17 |
| 45-2091 | Agricultural Equipment Operators | 211 | 329 | 118 | 56% | 1% | $15.22 |
| 51-3093 | Food Cooking Machine Operators and Tenders | 202 | 313 | 110 | 54% | 1% | $15.79 |
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | 698 | 798 | 100 | 14% | 3% | $14.65 |
| 49-9071 | Maintenance and Repair Workers, General | 157 | 233 | 76 | 48% | 1% | $20.86 |
| 53-3032 | Heavy and Tractor-Trailer Truck Drivers | 217 | 292 | 75 | 34% | 1% | $22.83 |
| 41-2031 | Retail Salespersons | 166 | 238 | 73 | 44% | 1% | $15.11 |
| 53-7062 | Laborers and Freight, Stock, and Material Movers, Hand | 219 | 277 | 58 | 27% | 1% | $16.83 |
| 11-9199 | Managers, All Other | 178 | 232 | 53 | 30% | 1% | $37.66 |
| 11-1021 | General and Operations Managers | 161 | 215 | 53 | 33% | 1% | $41.27 |
| 41-4012 | Wholesale and Manufacturing Sales Representatives (Non-technical/scientific products) | 190 | 239 | 48 | 25% | 1% | $29.44 |

**Source**: Lightcast

# APPENDIX A: ANALYSIS OF MAINE'S FOOD ECONOMY WORKFORCE

## OCCUPATIONS IN MAINE'S FOOD ECONOMY CONT.

**Occupation Characteristics for Bottom 15 Food Occupations in Maine by Job Growth (2018-2023)**

| SOC | Description | Jobs 2018 | Jobs 2023 | Change | % Change | % of All Food Economy Jobs 2023 | Median Hourly Earnings |
|-----|-------------|-----------|-----------|--------|----------|-------------------------------|------------------------|
| 51-3023 | Slaughterers and Meat Packers | 234 | 37 | -196 | -84% | 0% | $13.97 |
| 51-9198 | Helpers--Production Workers | 208 | 138 | -71 | -34% | 1% | $18.12 |
| 51-9199 | Production Workers, All Other | 207 | 152 | -55 | -27% | 1% | $17.64 |
| 51-3099 | Food Processing Workers, All Other | 122 | 73 | -49 | -40% | 0% | $14.82 |
| 51-2098 | Miscellaneous Assemblers and Fabricators | 84 | 49 | -34 | -41% | 0% | $18.57 |
| 53-5021 | Captains, Mates, and Pilots of Water Vessels | 58 | 28 | -30 | -52% | 0% | $31.67 |
| 53-7064 | Packers and Packagers, Hand | 247 | 222 | -25 | -10% | 1% | $13.62 |
| 45-3031 | Fishing and Hunting Workers | 4,357 | 4,339 | -18 | 0% | 19% | $20.62 |
| 49-9041 | Industrial Machinery Mechanics | 199 | 181 | -18 | -9% | 1% | $28.97 |
| 51-9023 | Mixing and Blending Machine Setters, Operators, and Tenders | 61 | 45 | -16 | -26% | 0% | $25.05 |
| 53-7011 | Conveyor Operators and Tenders | 36 | 22 | -14 | -38% | 0% | $17.24 |
| 53-7063 | Machine Feeders and Offbearers | 24 | 10 | -14 | -58% | 0% | $16.99 |
| 51-9021 | Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders | 27 | 18 | -9 | -35% | 0% | $22.30 |
| 51-8021 | Stationary Engineers and Boiler Operators | 12 | 2 | -8 | -65% | 0% | $27.53 |
| 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers | 208 | 201 | -7 | -3% | 1% | $24.05 |

**Source**: Lightcast

# APPENDIX A: ANALYSIS OF MAINE'S FOOD ECONOMY WORKFORCE

## SKILL REQUIREMENTS IN MAINE'S FOOD ECONOMY

### Workforce Skills

- This table shows entry-level education, work experience, and on-the-job training for the top 15 occupations in the Food Economy.

- These occupations typically do not require any formal education, with only five of the top 15 requiring a high school diploma or equivalent and one job requiring post-secondary non-degreed education.

- Only two occupations require any work experience; however, there is an expectation of at least short-term on-the-job training for all but two occupations.

**Workforce Skills for Top 15 Food Occupations in Maine by Job Count (2018-2023)**

| SOC | Description | Typical Entry-Level Education | Work Experience Required | Typical On-The-Job Training |
|-----|-------------|-------------------------------|--------------------------|------------------------------|
| 45-3031 | Fishing and Hunting Workers | No formal educational credential | None | Moderate-term on-the-job training |
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | High school diploma or equivalent | 5 years or more | None |
| 45-2092 | Farmworkers and Laborers, Crop, Nursery, and Greenhouse | No formal educational credential | None | Short-term on-the-job training |
| 51-9111 | Packaging and Filling Machine Operators and Tenders | High school diploma or equivalent | None | Moderate-term on-the-job training |
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | No formal educational credential | None | Short-term on-the-job training |
| 51-3011 | Bakers | No formal educational credential | None | Long-term on-the-job training |
| 51-3022 | Meat, Poultry, and Fish Cutters and Trimmers | No formal educational credential | None | Short-term on-the-job training |
| 45-2099 | Agricultural Workers, All Other | No formal educational credential | None | Short-term on-the-job training |
| 51-9012 | Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders | High school diploma or equivalent | None | Moderate-term on-the-job training |
| 45-2091 | Agricultural Equipment Operators | No formal educational credential | None | Moderate-term on-the-job training |
| 51-1011 | First-Line Supervisors of Production and Operating Workers | High school diploma or equivalent | Less than 5 years | None |
| 51-3093 | Food Cooking Machine Operators and Tenders | High school diploma or equivalent | None | Moderate-term on-the-job training |
| 53-3032 | Heavy and Tractor-Trailer Truck Drivers | Postsecondary nondegree award | None | Short-term on-the-job training |
| 53-7062 | Laborers and Freight, Stock, and Material Movers, Hand | No formal educational credential | None | Short-term on-the-job training |
| 53-7051 | Industrial Truck and Tractor Operators | No formal educational credential | None | Short-term on-the-job training |

**Source**: Lightcast

# APPENDIX A: ANALYSIS OF MAINE'S FOOD ECONOMY WORKFORCE

## PROJECTED GROWTH IN MAINE'S FOOD ECONOMY

### Projected Growth

Over the next ten years, Farmworkers and Laborers, Crop, Nursery, and Greenhouse workers are expected to experience the greatest job growth in the Food Economy, adding 564 jobs (+23%). Farmers, Ranchers, and Other Agricultural Managers and Farmworkers, Farm, Ranch, and Aquaculture Managers round out the top three, adding 548 (+26%) and 211 (+26%) jobs, respectively.

**Top 15 Food Occupations in Maine by Job Growth (2023-2033)**

| SOC | Description | Jobs 2023 | Jobs 2033 | Change | % Change |
|---|---|---|---|---|---|
| 45-2092 | Farmworkers and Laborers, Crop, Nursery, and Greenhouse | 2,431 | 2,995 | 564 | 23% |
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | 3,343 | 3,891 | 548 | 16% |
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | 798 | 1,009 | 211 | 26% |
| 45-2099 | Agricultural Workers, All Other | 434 | 595 | 161 | 37% |
| 45-2091 | Agricultural Equipment Operators | 329 | 457 | 128 | 39% |
| 51-9111 | Packaging and Filling Machine Operators and Tenders | 929 | 996 | 67 | 7% |
| 53-3032 | Heavy and Tractor-Trailer Truck Drivers | 292 | 356 | 64 | 22% |
| 35-3011 | Bartenders | 288 | 347 | 58 | 20% |
| 41-4012 | Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products | 239 | 296 | 57 | 24% |
| 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers | 201 | 256 | 56 | 28% |
| 53-7062 | Laborers and Freight, Stock, and Material Movers, Hand | 277 | 322 | 45 | 16% |
| 53-7051 | Industrial Truck and Tractor Operators | 272 | 317 | 45 | 16% |
| 49-9041 | Industrial Machinery Mechanics | 181 | 223 | 42 | 23% |
| 49-9071 | Maintenance and Repair Workers, General | 233 | 274 | 41 | 17% |
| 53-7064 | Packers and Packagers, Hand | 222 | 261 | 39 | 18% |

**Source**: Lightcast

## DEMOGRAPHIC BREAKDOWN OF MAINE'S FOOD ECONOMY

**Workforce Demographics by Sex**

- The Food Sector in Maine is relatively male-dominated, with about two-thirds of workers being male and one-third being female.

- The most male-dominated occupations in the sector are Fishing and Hunting Workers and Other Machine Setters, Operators and Tenders; eight of the sector's ten largest occupations are more male-dominated than the overall economy in Maine.

- Conversely, two of the top ten occupations are female-dominated – packaging and Filling Machine Operators/Tenders and Bakers.

**Sex Composition for Top 10 Food Occupations by Employment in Maine, 2023**

Legend: ■ Male ■ Female

| Occupation | Male | Female |
|---|---|---|
| Fishing and Hunting Workers | 95% | 5% |
| Other Machine Setters, Operators, and Tenders | 88% | 12% |
| Farmers, Ranchers, and Other Agricultural Managers | 72% | 28% |
| Meat, Poultry, and Fish Cutters and Trimmers | 71% | 29% |
| Total, Food Sector | 68% | 32% |
| Farmworkers and Laborers, Crop, Nursery, and Greenhouse | 65% | 35% |
| Agricultural Equipment Operators | 65% | 35% |
| Agricultural Workers, All Other | 62% | 38% |
| Farmworkers, Farm, Ranch, and Aquacultural Animals | 59% | 41% |
| Total in Maine, All Sectors | 51% | 49% |
| Packaging and Filling Machine Operators and Tenders | 46% | 54% |
| Bakers | 39% | 61% |

**Source:** Lightcast

## DEMOGRAPHIC BREAKDOWN OF MAINE'S FOOD ECONOMY CONT.

### Workforce Demographics by Race

- As demonstrated in the adjacent figure, the racial composition of Maine's Food Sector is largely concentrated among White workers, with a small number of Hispanic or Latino workers and fewer of all other races. However, the Food Sector has slightly higher concentrations of Hispanic/Latino and other BIPOC workers than the overall economy.

- The most diverse occupations in the sector include Meat/Poultry/Fish Cutters, Packaging & Filling Machine Operators, and Crop/Nursery Farmworkers.

**Racial Composition for Top 10 Food Occupations by Employment in Maine, 2023**

Legend: ■ Hispanic or Latino ■ White ■ All Other Races

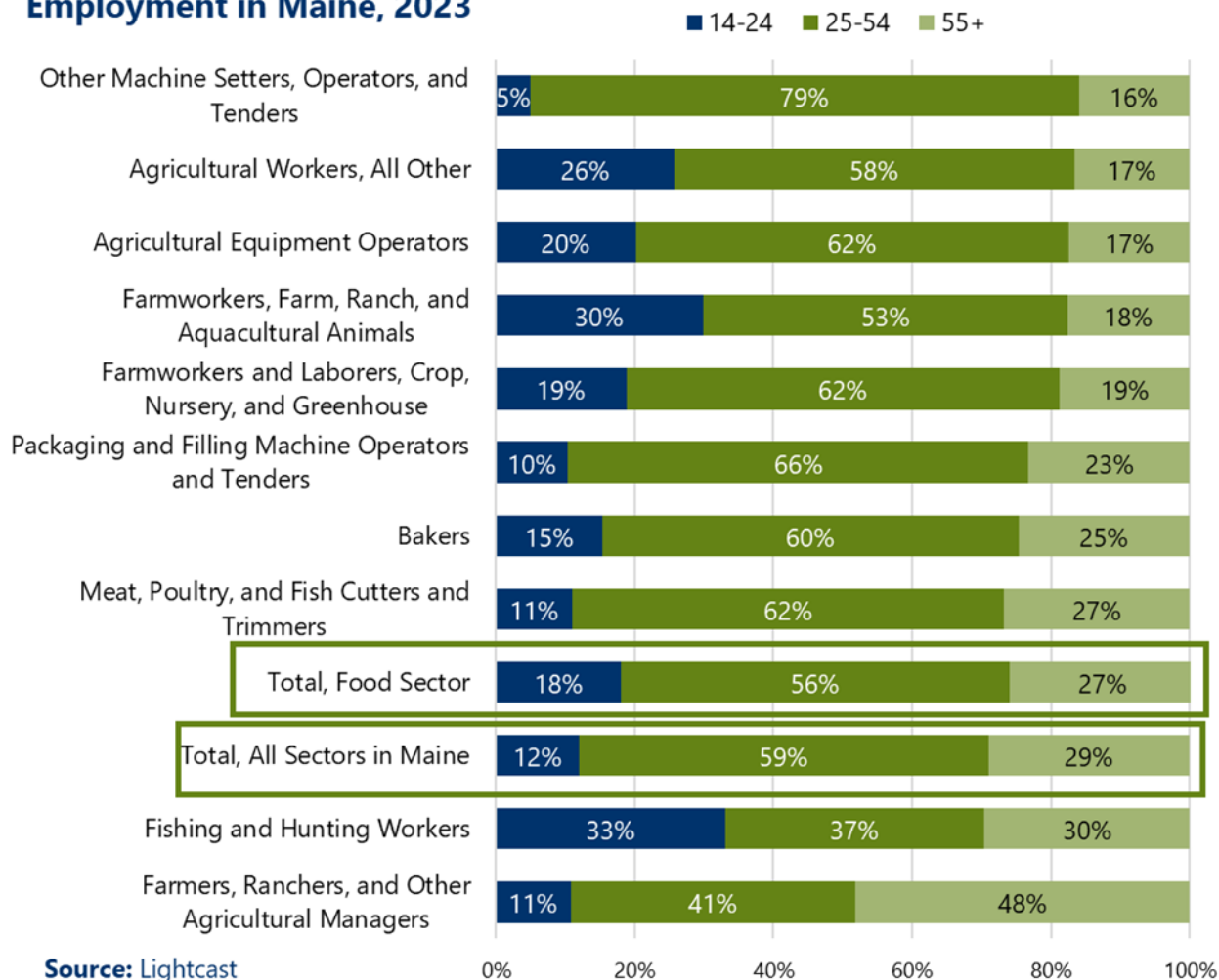| Occupation | Hispanic or Latino | White | All Other Races |
|---|---|---|---|
| Meat, Poultry, and Fish Cutters and Trimmers | 9% | 73% | 18% |
| Packaging and Filling Machine Operators and Tenders | 7% | 77% | 16% |
| Farmworkers and Laborers, Crop, Nursery, and Greenhouse | 10% | 86% | 5% |
| Bakers | 5% | 86% | 9% |
| Fishing and Hunting Workers | 3% | 86% | 11% |
| Agricultural Equipment Operators | 8% | 87% | 5% |
| Farmworkers, Farm, Ranch, and Aquacultural Animals | 7% | 87% | 6% |
| Agricultural Workers, All Other | 6% | 88% | 6% |
| Total, Food Sector | 4% | 88% | 8% |
| Total in Maine, All Sectors | 3% | 90% | 7% |
| Farmers, Ranchers, and Other Agricultural Managers | 1% | 94% | 5% |
| Other Machine Setters, Operators, and Tenders | 1% | 94% | 5% |

**Source:** Lightcast

## DEMOGRAPHIC BREAKDOWN OF MAINE'S FOOD ECONOMY CONT.

### Workforce Demographics by Age

Overall, approximately 27% of Food Sector workers are aged 55+ and therefore at risk of retirement in the near term. This is slightly lower than the overall economy. Additionally, the Food Sector has a greater concentration of young workers under the age of 25, at 18% of all workers compared to 12% in all sectors in Maine.

The category of Farm and Agricultural Managers is an occupation that stands out as having high retirement risk, as nearly half of all workers are aged 55+. Fishing and Hunting workers are also disproportionately concentrated among workers nearing retirement age.

**Age Composition for Top 10 Food Occupations by Employment in Maine, 2023**

Legend: 14-24, 25-54, 55+

| Occupation | 14-24 | 25-54 | 55+ |
|---|---|---|---|
| Other Machine Setters, Operators, and Tenders | 5% | 79% | 16% |
| Agricultural Workers, All Other | 26% | 58% | 17% |
| Agricultural Equipment Operators | 20% | 62% | 17% |
| Farmworkers, Farm, Ranch, and Aquacultural Animals | 30% | 53% | 18% |
| Farmworkers and Laborers, Crop, Nursery, and Greenhouse | 19% | 62% | 19% |
| Packaging and Filling Machine Operators and Tenders | 10% | 66% | 23% |
| Bakers | 15% | 60% | 25% |
| Meat, Poultry, and Fish Cutters and Trimmers | 11% | 62% | 27% |
| Total, Food Sector | 18% | 56% | 27% |
| Total, All Sectors in Maine | 12% | 59% | 29% |
| Fishing and Hunting Workers | 33% | 37% | 30% |
| Farmers, Ranchers, and Other Agricultural Managers | 11% | 41% | 48% |

**Source:** Lightcast

**Top 25 Industries that Maine's Agriculture Sector Purchases From, 2022**

| NAICS | Purchases from | In-region Purchases | % In-region Purchases | Imported Purchases | % Imported Purchases | Total Purchases |
|---|---|---|---|---|---|---|
| 111000 | Crop Production | $65,192,082 | 62% | $39,136,017 | 38% | $104,328,099 |
| 112000 | Animal Production | $17,229,842 | 20% | $70,616,803 | 80% | $87,846,645 |
| 311119 | Other Animal Food Manufacturing | $4,405,176 | 8% | $47,672,473 | 92% | $52,077,649 |
| 531110 | Lessors of Residential Buildings and Dwellings | $26,065,118 | 81% | $6,080,294 | 19% | $32,145,412 |
| 325320 | Pesticide and Other Agricultural Chemical Manufacturing | $721,854 | 2% | $31,342,357 | 98% | $32,064,211 |
| 115115 | Farm Labor Contractors and Crew Leaders | $6,997,400 | 23% | $24,048,151 | 77% | $31,045,550 |
| 531210 | Offices of Real Estate Agents and Brokers | $21,818,134 | 77% | $6,338,573 | 23% | $28,156,707 |
| 324110 | Petroleum Refineries | $0 | 0% | $26,785,580 | 100% | $26,785,580 |
| 531120 | Lessors of Nonresidential Buildings (except Miniwarehouses) | $20,784,097 | 84% | $3,920,834 | 16% | $24,704,931 |
| 325311 | Nitrogenous Fertilizer Manufacturing | $6,861,204 | 31% | $15,580,371 | 69% | $22,441,575 |
| 531390 | Other Activities Related to Real Estate | $13,922,985 | 69% | $6,401,809 | 31% | $20,324,794 |
| 424690 | Other Chemical and Allied Products Merchant Wholesalers | $6,827,055 | 39% | $10,486,803 | 61% | $17,313,857 |
| 115114 | Postharvest Crop Activities (except Cotton Ginning) | $640,764 | 4% | $14,004,069 | 96% | $14,644,833 |
| 424990 | Other Miscellaneous Nondurable Goods Merchant Wholesalers | $7,840,793 | 56% | $6,106,891 | 44% | $13,947,684 |
| 424820 | Wine and Distilled Alcoholic Beverage Merchant Wholesalers | $7,071,785 | 51% | $6,810,249 | 49% | $13,882,033 |
| 424910 | Farm Supplies Merchant Wholesalers | $2,442,797 | 18% | $10,943,052 | 82% | $13,385,849 |
| 484121 | General Freight Trucking, Long-Distance, Truckload | $8,275,873 | 64% | $4,646,042 | 36% | $12,921,915 |
| 424350 | Clothing and Clothing Accessories Merchant Wholesalers | $324,932 | 3% | $12,522,552 | 97% | $12,847,484 |
| 325312 | Phosphatic Fertilizer Manufacturing | $53,821 | 0% | $12,255,039 | 100% | $12,308,860 |
| 325314 | Fertilizer (Mixing Only) Manufacturing | $2,847,649 | 24% | $9,230,306 | 76% | $12,077,955 |
| 531311 | Residential Property Managers | $8,967,813 | 76% | $2,826,312 | 24% | $11,794,125 |
| 335910 | Battery Manufacturing | $0 | 0% | $11,181,594 | 100% | $11,181,594 |
| 115210 | Support Activities for Animal Production | $3,207,436 | 30% | $7,465,417 | 70% | $10,672,853 |
| 424810 | Beer and Ale Merchant Wholesalers | $9,275,040 | 88% | $1,236,073 | 12% | $10,511,113 |
| 482110 | Rail transportation | $5,565,879 | 62% | $3,481,070 | 38% | $9,046,949 |

Source: Lightcast

Note: In-region purchases are purchases made by entities in Maine

## Top 25 Industries that Maine's Fishing Sector Purchases From, 2022

| NAICS | Purchases from | In-region Purchases | % In-region Purchases | Imported Purchases | % Imported Purchases | Total Purchases |
|---|---|---|---|---|---|---|
| 324110 | Petroleum Refineries | $0 | 0% | $15,340,589 | 100% | $15,340,589 |
| 524126 | Direct Property and Casualty Insurance Carriers | $2,070,488 | 24% | $6,683,772 | 76% | $8,754,260 |
| 524114 | Direct Health and Medical Insurance Carriers | $2,415,377 | 33% | $4,959,276 | 67% | $7,374,653 |
| 424720 | Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals) | $4,499,828 | 52% | $4,128,041 | 48% | $8,627,868 |
| 488510 | Freight Transportation Arrangement | $1,145,647 | 27% | $3,133,664 | 73% | $4,279,310 |
| 333112 | Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing | $25,820 | 1% | $2,941,275 | 99% | $2,967,095 |
| 335132 | Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing | $0 | 0% | $2,762,614 | 100% | $2,762,614 |
| 484121 | General Freight Trucking, Long-Distance, Truckload | $2,076,732 | 46% | $2,486,983 | 54% | $4,563,715 |
| 311119 | Other Animal Food Manufacturing | $153,935 | 6% | $2,250,773 | 94% | $2,404,708 |
| 423830 | Industrial Machinery and Equipment Merchant Wholesalers | $744,407 | 25% | $2,238,064 | 75% | $2,982,471 |
| 333111 | Farm Machinery and Equipment Manufacturing | $30,826 | 1% | $2,188,274 | 99% | $2,219,100 |
| 423690 | Other Electronic Parts and Equipment Merchant Wholesalers | $161,804 | 7% | $2,160,917 | 93% | $2,322,721 |
| 423610 | Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant Wholesalers | $277,446 | 12% | $2,116,786 | 88% | $2,394,232 |
| 326199 | All Other Plastics Product Manufacturing | $316,615 | 13% | $2,083,300 | 87% | $2,399,914 |
| 335910 | Battery Manufacturing | $0 | 0% | $2,010,769 | 100% | $2,010,769 |
| 336350 | Motor Vehicle Transmission and Power Train Parts Manufacturing | $158,407 | 7% | $1,961,955 | 93% | $2,120,362 |
| 321911 | Wood Window and Door Manufacturing | $384,769 | 19% | $1,669,496 | 81% | $2,054,265 |
| 336390 | Other Motor Vehicle Parts Manufacturing | $350,715 | 18% | $1,596,491 | 82% | $1,947,206 |
| 484122 | General Freight Trucking, Long-Distance, Less Than Truckload | $397,286 | 21% | $1,472,359 | 79% | $1,869,646 |
| 488190 | Other Support Activities for Air Transportation | $642,122 | 34% | $1,254,556 | 66% | $1,896,678 |
| 484110 | General Freight Trucking, Local | $1,114,774 | 48% | $1,223,870 | 52% | $2,338,645 |
| 336611 | Ship Building and Repairing | $5,049,964 | 83% | $1,034,985 | 17% | $6,084,949 |
| 541940 | Veterinary Services | $11,766,990 | 94% | $737,895 | 6% | $12,504,886 |
| 524210 | Insurance Agencies and Brokerages | $6,612,257 | 95% | $334,116 | 5% | $6,946,373 |
| 424710 | Petroleum Bulk Stations and Terminals | $3,743,206 | 92% | $327,656 | 8% | $4,070,862 |

**Source:** Lightcast

**Note:** In-region purchases are purchases made by entities in Maine

# APPENDIX B: FOOD SECTOR PURCHASING AND IMPORTS

**Top 25 Industries that Maine's Food Manufacturing Sector Purchases From, 2022**

| NAICS | Purchases from | In-region Purchases | % In-region Purchases | Imported Purchases | % Imported Purchases | Total Purchases |
|---|---|---|---|---|---|---|
| 112000 | Animal Production | $33,894,644 | 18% | $159,514,087 | 82% | $193,408,731 |
| 111000 | Crop Production | $83,052,247 | 64% | $47,307,165 | 36% | $130,359,412 |
| 551114 | Corporate, Subsidiary, and Regional Managing Offices | $49,017,608 | 71% | $20,389,860 | 29% | $69,407,468 |
| 424410 | General Line Grocery Merchant Wholesalers | $14,964,896 | 46% | $17,844,662 | 54% | $32,809,558 |
| 424490 | Other Grocery and Related Products Merchant Wholesalers | $17,942,609 | 55% | $14,469,931 | 45% | $32,412,540 |
| 311224 | Soybean and Other Oilseed Processing | $7,198,661 | 23% | $24,305,381 | 77% | $31,504,042 |
| 484121 | General Freight Trucking, Long-Distance, Truckload | $19,827,458 | 67% | $9,822,356 | 33% | $29,649,814 |
| 311513 | Cheese Manufacturing | $1,544,943 | 6% | $23,825,936 | 94% | $25,370,879 |
| 322211 | Corrugated and Solid Fiber Box Manufacturing | $4,601,252 | 19% | $20,133,865 | 81% | $24,735,117 |
| 311615 | Poultry Processing | $13,964,262 | 57% | $10,690,728 | 43% | $24,654,990 |
| 311211 | Flour Milling | $662,652 | 4% | $17,125,531 | 96% | $17,788,183 |
| 311611 | Animal (except Poultry) Slaughtering | $2,545,178 | 17% | $12,693,190 | 83% | $15,238,368 |
| 484110 | General Freight Trucking, Local | $8,693,360 | 57% | $6,493,285 | 43% | $15,186,646 |
| 311612 | Meat Processed from Carcasses | $456,972 | 3% | $14,604,429 | 97% | $15,061,401 |
| 311511 | Fluid Milk Manufacturing | $5,584,322 | 43% | $7,314,616 | 57% | $12,898,938 |
| 114111 | Finfish Fishing | $12,095,205 | 98% | $197,427 | 2% | $12,292,632 |
| 484122 | General Freight Trucking, Long-Distance, Less Than Truckload | $5,702,191 | 47% | $6,443,732 | 53% | $12,145,923 |
| 114112 | Shellfish Fishing | $11,937,909 | 100% | ($0) | (0%) | $11,937,909 |
| 311412 | Frozen Specialty Food Manufacturing | $623,852 | 5% | $11,015,909 | 95% | $11,639,761 |
| 482110 | Rail Transportation | $6,971,467 | 62% | $4,224,120 | 38% | $11,195,587 |
| 332431 | Metal Can Manufacturing | $0 | 0% | $11,088,193 | 100% | $11,088,193 |
| 424480 | Fresh Fruit and Vegetable Merchant Wholesalers | $6,444,779 | 58% | $4,615,389 | 42% | $11,060,168 |
| 311225 | Fats and Oils Refining and Blending | $0 | 0% | $9,903,501 | 100% | $9,903,501 |
| 493110 | General Warehousing and Storage | $4,299,382 | 44% | $5,568,402 | 56% | $9,867,784 |
| 541990 | All Other Professional, Scientific, and Technical Services | $7,578,162 | 88% | $1,012,005 | 12% | $8,590,167 |

**Source:** Lightcast

**Note:** In-region purchases are purchases made by entities in Maine. Shellfish fishing numbers are likely due to Maine's high production

# APPENDIX B: FOOD SECTOR PURCHASING AND IMPORTS

**Top 25 Industries that Maine's Beverage Manufacturing Sector Purchases From, 2022**

| NAICS | Purchases from | In-region Purchases | % In-region Purchases | Imported Purchases | % Imported Purchases | Total Purchases |
|---|---|---|---|---|---|---|
| 326160 | Plastic Bottle Manufacturing | $7,520,957 | 16% | $39,728,174 | 84% | $47,249,131 |
| 332431 | Metal Can Manufacturing | $0 | 0% | $37,231,306 | 100% | $37,231,306 |
| 331318 | Other Aluminum Rolling, Drawing, and Extruding | $0 | 0% | $22,209,256 | 100% | $22,209,256 |
| 322211 | Corrugated and Solid Fiber Box Manufacturing | $7,204,568 | 26% | $20,674,627 | 74% | $27,879,195 |
| 331315 | Aluminum Sheet, Plate, and Foil Manufacturing | $0 | 0% | $19,187,004 | 100% | $19,187,004 |
| 332439 | Other Metal Container Manufacturing | $253,456 | 1% | $18,248,248 | 99% | $18,501,704 |
| 311211 | Flour Milling | $223,429 | 2% | $14,427,093 | 98% | $14,650,522 |
| 311221 | Wet Corn Milling | $1,704,108 | 13% | $11,449,406 | 87% | $13,153,514 |
| 111000 | Crop Production | $21,561,666 | 65% | $11,438,096 | 35% | $32,999,762 |
| 533110 | Lessors of Nonfinancial Intangible Assets (except Copyrighted Works) | $984,273 | 9% | $10,234,973 | 91% | $11,219,246 |
| 325199 | All Other Basic Organic Chemical Manufacturing | $233,928 | 2% | $9,233,443 | 98% | $9,467,371 |
| 311930 | Flavoring Syrup and Concentrate Manufacturing | $1,903,732 | 18% | $8,842,477 | 82% | $10,746,209 |
| 322212 | Folding Paperboard Box Manufacturing | $0 | 0% | $7,301,751 | 100% | $7,301,751 |
| 327213 | Glass Container Manufacturing | $0 | 0% | $6,324,586 | 100% | $6,324,586 |
| 322219 | Other Paperboard Container Manufacturing | $151,368 | 2% | $6,285,024 | 98% | $6,436,392 |
| 312130 | Wineries | $541,100 | 8% | $6,130,201 | 92% | $6,671,301 |
| 327212 | Other Pressed and Blown Glass and Glassware Manufacturing | $587,659 | 10% | $5,253,118 | 90% | $5,840,777 |
| 423830 | Industrial Machinery and Equipment Merchant Wholesalers | $5,197,672 | 56% | $4,146,298 | 44% | $9,343,970 |
| 334413 | Semiconductor and Related Device Manufacturing | $3,195,055 | 44% | $4,051,268 | 56% | $7,246,323 |
| 327215 | Glass Product Manufacturing Made of Purchased Glass | $13,937,031 | 78% | $3,903,081 | 22% | $17,840,112 |
| 484121 | General Freight Trucking, Long-Distance, Truckload | $8,284,404 | 72% | $3,213,996 | 28% | $11,498,400 |
| 551114 | Corporate, Subsidiary, and Regional Managing Offices | $9,342,581 | 76% | $2,986,922 | 24% | $12,329,503 |
| 484110 | General Freight Trucking, Local | $3,249,530 | 55% | $2,640,449 | 45% | $5,889,980 |
| 524210 | Insurance Agencies and Brokerages | $5,571,154 | 94% | $350,628 | 6% | $5,921,782 |
| 312140 | Distilleries | $22,443,929 | 100% | $105,269 | 0% | $22,549,198 |

**Source:** Lightcast

**Note:** In-region purchases are purchases made by entities in Maine

# APPENDIX C: SUMMARY TABLE FOR SIX-DIGIT NAICS INDUSTRIES

**Industry Summary for Maine's Food Production and Processing Sector, 2018-2023**

| NAICS | Description | 2018 Jobs | 2023 Jobs | Avg. Earnings Per Job | 2023 Employment Concentration | Competitive Effect | 2022 GRP |
|-------|-------------|-----------|-----------|-----------------------|-------------------------------|--------------------|----------|
| 111000 | Crop Production | 4,033 | 6,260 | $43,724 | 1.68 | 2,157 | $639,807,209 |
| 112000 | Animal Production | 1,816 | 1,991 | $43,218 | 1.01 | 234 | $150,664,626 |
| 114111 | Finfish Fishing | 1,089 | 1,061 | $73,552 | 19.28 | 30 | $153,562,222 |
| 114112 | Shellfish Fishing (including lobster) | 3,965 | 4,005 | $59,650 | 70.89 | 276 | $485,593,940 |
| 114119 | Other Marine Fishing | 63 | 62 | $60,117 | 8.19 | 0 | $6,519,808 |
| 115111 | Cotton Ginning | 0 | 0 | $0 | 0.00 | 0 | $0 |
| 115112 | Soil Preparation, Planting, and Cultivating | 57 | 50 | $40,594 | 0.34 | (4) | $8,281,666 |
| 115113 | Crop Harvesting, Primarily by Machine | 24 | 23 | $38,145 | 0.45 | 3 | $7,607,679 |
| 115114 | Postharvest Crop Activities (except Cotton Ginning) | 55 | 51 | $36,512 | 0.14 | (0) | $1,916,976 |
| 115115 | Farm Labor Contractors and Crew Leaders | 895 | 948 | $32,326 | 0.67 | 28 | $31,469,109 |
| 115116 | Farm Management Services | 19 | 24 | $51,166 | 0.26 | 6 | $6,427,232 |
| 115210 | Support Activities for Animal Production | 109 | 134 | $36,412 | 0.72 | 27 | $11,952,016 |
| 311111 | Dog and Cat Food Manufacturing | 34 | <10 | Insf. Data | 0.04 | (37) | $4,262,232 |
| 311119 | Other Animal Food Manufacturing | 51 | 66 | $75,248 | 0.42 | 13 | $11,687,217 |
| 311211 | Flour Milling | <10 | 16 | $49,785 | 0.25 | 16 | $1,144,508 |
| 311212 | Rice Milling | 0 | 0 | $0 | 0.00 | 0 | $0 |
| 311213 | Malt Manufacturing | <10 | <10 | Insf. Data | 0.11 | 0 | $78,104 |
| 311221 | Wet Corn Milling | 56 | 27 | $104,298 | 0.49 | (28) | $6,746,828 |
| 311224 | Soybean and Other Oilseed Processing | 0 | 37 | $70,572 | 0.88 | 37 | $11,685,564 |
| 311225 | Fats and Oils Refining and Blending | 0 | 0 | $0 | 0.00 | 0 | $0 |
| 311230 | Breakfast Cereal Manufacturing | 0 | 0 | $0 | 0.00 | 0 | $0 |
| 311313 | Beet Sugar Manufacturing | 0 | 0 | $0 | 0.00 | 0 | $0 |
| 311314 | Cane Sugar Manufacturing | 0 | 0 | $0 | 0.00 | 0 | $0 |
| 311340 | Nonchocolate Confectionery Manufacturing | 66 | 111 | $46,091 | 1.03 | 33 | $10,419,809 |
| 311351 | Chocolate and Confectionery Manufacturing from Cacao Beans | 0 | <10 | Insf. Data | 0.20 | 9 | $821,235 |
| 311352 | Confectionery Manufacturing from Purchased Chocolate | 165 | 249 | $33,528 | 1.80 | 87 | $16,506,897 |
| 311411 | Frozen Fruit, Juice, and Vegetable Manufacturing | 532 | 682 | $68,887 | 5.23 | 146 | $83,856,452 |
| 311412 | Frozen Specialty Food Manufacturing | 302 | 70 | $59,326 | 0.25 | (259) | $7,972,531 |

| NAICS | Industry | | | | | |
|-------|----------|------:|------:|--------:|------:|------:|--------------:|
| 311421 | Fruit and Vegetable Canning | 366 | 432 | $69,836 | 1.75 | 71 | $63,266,855 |
| 311422 | Specialty Canning | 93 | 22 | $88,837 | 0.41 | (84) | $5,128,674 |
| 311423 | Dried and Dehydrated Food Manufacturing | <10 | <10 | Insf. Data | 0.07 | 2 | $493,117 |
| 311511 | Fluid Milk Manufacturing | 363 | 310 | $94,391 | 1.32 | (55) | $60,418,453 |
| 311512 | Creamery Butter Manufacturing | 45 | 22 | $88,990 | 1.38 | (38) | $4,183,605 |
| 311513 | Cheese Manufacturing | <10 | 50 | $69,324 | 0.19 | 43 | $6,343,985 |
| 311514 | Dry, Condensed, and Evaporated Dairy Product Manufacturing | 0 | 0 | $0 | 0.00 | 0 | $0 |
| 311520 | Ice Cream and Frozen Dessert Manufacturing | 106 | 95 | $54,291 | 0.88 | (28) | $7,947,589 |
| 311611 | Animal (except Poultry) Slaughtering | 113 | 144 | $43,439 | 0.23 | 26 | $11,279,090 |
| 311612 | Meat Processed from Carcasses | 85 | 32 | $69,291 | 0.05 | (66) | $5,089,928 |
| 311613 | Rendering and Meat Byproduct Processing | 0 | 0 | $0 | 0.00 | 0 | $0 |
| 311615 | Poultry Processing | 288 | 397 | $68,699 | 0.39 | 110 | $47,538,298 |
| 311710 | Seafood Product Preparation and Packaging | 744 | 689 | $61,161 | 4.82 | (23) | $56,848,627 |
| 311811 | Retail Bakeries | 629 | 729 | $34,446 | 1.44 | (1) | $29,344,107 |
| 311812 | Commercial Bakeries | 603 | 805 | $58,648 | 1.29 | 186 | $54,451,537 |
| 311813 | Frozen Cakes, Pies, and Other Pastries Manufacturing | 284 | 202 | $44,860 | 3.41 | (106) | $11,365,952 |
| 311821 | Cookie and Cracker Manufacturing | 25 | 43 | $48,868 | 0.26 | 15 | $3,888,501 |
| 311824 | Dry Pasta, Dough, and Flour Mixes Manufacturing from Purchased Flour | 79 | 106 | $51,685 | 1.14 | 28 | $10,046,335 |
| 311830 | Tortilla Manufacturing | <10 | <10 | Insf. Data | 0.01 | (6) | $61,263 |
| 311911 | Roasted Nuts and Peanut Butter Manufacturing | 0 | 0 | $0 | 0.00 | 0 | $228,076 |
| 311919 | Other Snack Food Manufacturing | 13 | 19 | $46,129 | 0.09 | 4 | $4,195,979 |
| 311920 | Coffee and Tea Manufacturing | 89 | 125 | $49,141 | 1.05 | 26 | $18,660,204 |
| 311930 | Flavoring Syrup and Concentrate Manufacturing | <10 | <10 | Insf. Data | 0.10 | 4 | $2,832,470 |
| 311941 | Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing | 28 | 39 | $52,094 | 0.42 | 5 | $4,605,271 |
| 311942 | Spice and Extract Manufacturing | <10 | 21 | $35,544 | 0.17 | 17 | $1,573,647 |
| 311991 | Perishable Prepared Food Manufacturing | 345 | 231 | $52,843 | 0.85 | (170) | $19,912,306 |
| 311999 | All Other Miscellaneous Food Manufacturing | 155 | 154 | $91,384 | 0.85 | (40) | $23,810,400 |
| 312111 | Soft Drink Manufacturing | 15 | <10 | Insf. Data | 0.03 | (6) | $1,211,325 |
| 312112 | Bottled Water Manufacturing | 918 | 864 | $95,028 | 10.03 | (265) | $131,187,170 |
| 312113 | Ice Manufacturing | 34 | 38 | $70,896 | 1.09 | (0) | $4,549,846 |
| 312120 | Breweries | 709 | 1,279 | $56,224 | 2.70 | 292 | $328,026,055 |
| 312130 | Wineries | 60 | 76 | $42,596 | 0.22 | 8 | $6,322,975 |
| 312140 | Distilleries | 202 | 364 | $76,978 | 3.16 | 31 | $226,653,093 |
| **Total** | | **19,741** | **23,191** | **$54,475** | | **2,749** | **$2,810,448,592** |

**Source:** Lightcast

**Note:** Employment concentration compares the level of employment in a region to the level of employment in the United States. Competitive effect illustrates how much change in an industry is not explained by national economic or industry trends and represents the number of jobs that a region gained or lost due to unique regional factors.

# 6. ABOUT CAMOIN ASSOCIATES

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The **Census of Agriculture** provides a detailed picture of US farms and ranches and the people who operate them. It provides uniform, comprehensive agricultural data for every state and county in the US on topics including agricultural land, animal and crop production, employment, worker demographics, farm business operations, environment, and employment. It is conducted by the US Department of Agriculture (USDA) every five years, in years ending in 2 and 7. Click to learn more.

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**fDi Markets** is the most comprehensive online database of cross-border greenfield investments available, covering all countries and sectors worldwide. The fDi Markets database tracks capital expenditures and jobs at the sector and project level for country-to-country foreign direct investment projects as well as domestic state-to-state investment projects. Click to learn more.

**The Council for Community and Economic Research** is a national organization that collects and provides data related to community, economic, and workforce research. Their services include a regularly updated Cost of Living Index, a State Economic Development Expenditures Database, a State Business Incentives Database, and an Economic Diversity Index. Click to learn more.

The **Local Area Unemployment Statistics** (LAUS) program estimates total employment and unemployment for approximately 7,500 geographic areas on a monthly basis, from the national level down to the city and town level. LAUS data is offered through the US Bureau of Labor Statistics (BLS) by combining data from the Current Population Survey (CPS), Current Employment Statistics (CES) survey, and state unemployment (UI) systems. Click to learn more.

# CAMOIN ASSOCIATES

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## The Project Team

Jim Damicis
Principal

Tori McNiff, MPA
Senior Project Manager

Katherine Follansbee
Project Manager

Angela Hallowell
Senior Analyst

Dawn Otterby
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