

Workforce Needs Assessment for the Maine Marine Living Resource (MLR) Economy

March 31, 2023

SUBMITTED TO:

SEAMAINE

SUBMITTED



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INTRODUCTION

In support of the important work of SEAMaine and in concert with Camoin Associates, Thomas P. Miller Associates (TPMA) is pleased to present this Workforce Needs Assessment for the Maine Marine Living Resource (MLR) Economy. The Maine MLR economy is defined by SEAMaine as, “*seafood (capture and culture fisheries), processing and distribution, transportation/logistics, edible and non-edible products and product development, and related innovation, marketing and market development.*” This analysis builds off the work completed by the SEAMaine Workforce & Talent sub-committee and TPMA in a prior project to better account for the occupation families that make up the MLR economy, a sector that both encompasses and expands upon traditional North American Industry Classification System (NAICS) industry classification schema.

In the pages that follow, we apply this newly developed classification scheme in our analysis of the current workforce needs of the industry. Following a brief overview of the population, general labor force trends, and the state of housing in Maine, we estimate the skills gap between the workers the industry will need and the current pipelines of talent, the economic impact the industry has on the state of Maine, and a summary of the themes that emerged through one-on-one conversations with industry employers.

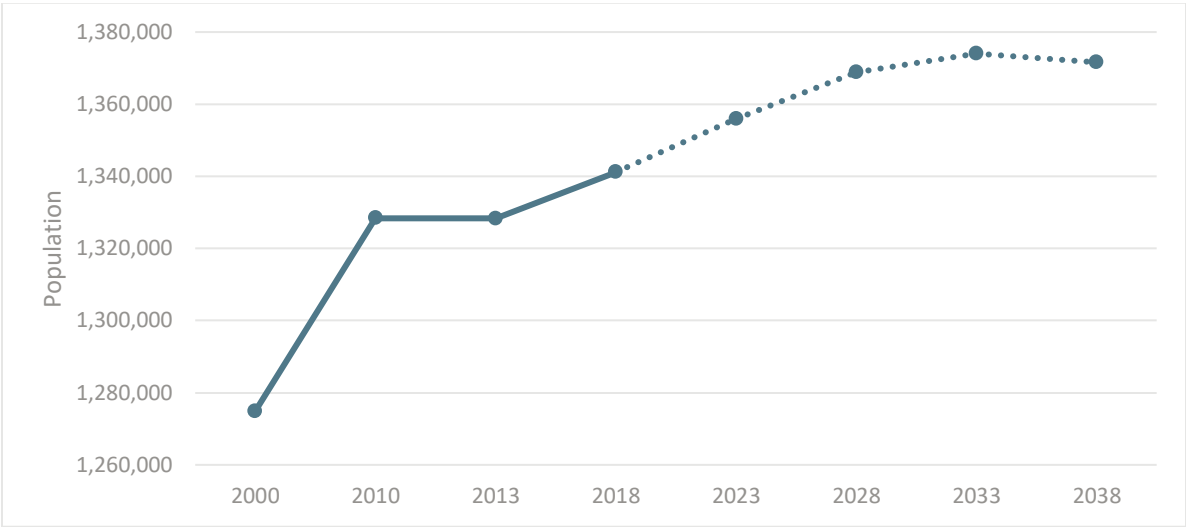
This report concludes with suggested strategies and opportunities to address current, and potentially future, gaps in the employment needs of the industry vis-à-vis the pool of available and interested potential workers.

STATE OF MAINE POPULATION AND LABOR FORCE TRENDS

In this section, we offer an overview of the overall trends in population and the labor force within the state of Maine, highlighting the growth of the population- coupled with a general decline in labor force participation.

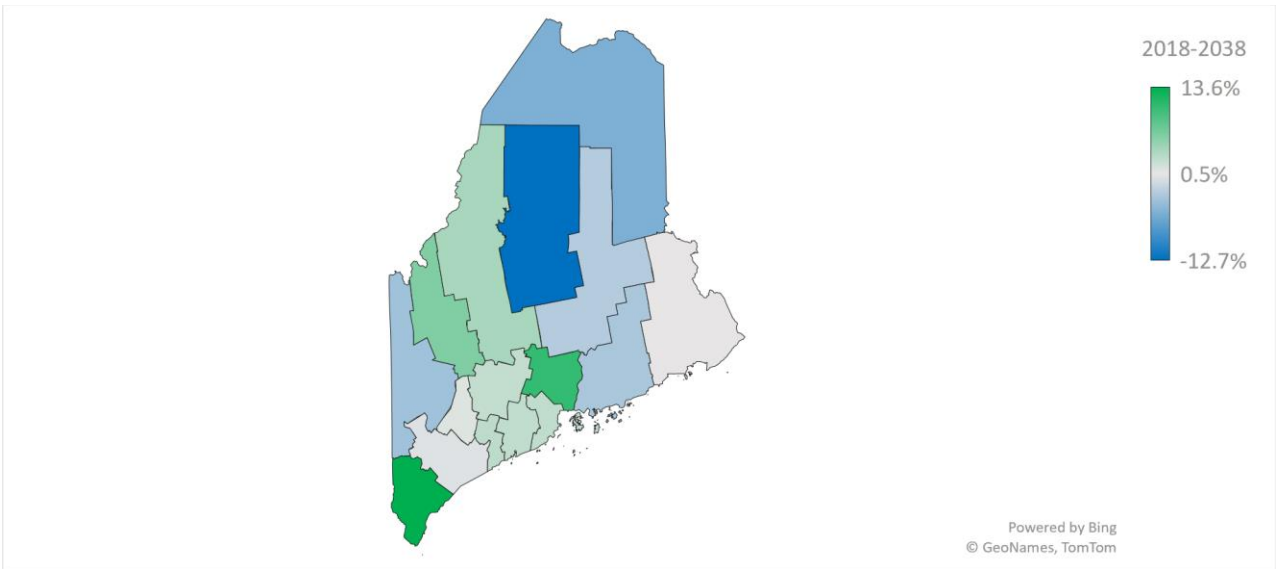
Between 2000 and 2018, Maine’s population has grown by 0.3% per year (or 5% for the entire period). The Maine State Economist’s Office has projected that the population is going to continue growing through 2033, followed by a decline from 2033 to 2038- a reflection of the national trend of lower birth rates over the past several years, ultimately trickling down to the next generation as this overall lower number of recent new births have children of their own. This decline is projected to be slight, however, with the population estimated to decrease from 2033 to 2038 at a rate of -0.04% per year (0.2% for the entire 5-year period). It is also worth noting that these population changes do not occur uniformly throughout the state. Piscataquis County is projected to be hit particularly hard by population decline, with the Maine State Economist estimating that the county will lose 12.7% of its population between 2018 and 2038. Conversely, during the same period, York County is projected to grow relatively rapidly, increasing its population by 13.6%. Figures 1 and 2 on the next page illustrate the projected trends in population growth statewide and the county-by-county impact through 2038, respectively.

Figure 1: Population in Maine, 2000 to 2038.



Source: 2000 and 2010 from the Decennial Census, 2013 from the ACS 5-Year Estimates, 2018 through 2038 from the Maine State Economist.

Figure 2: Population change from 2018 to 2038, by county.



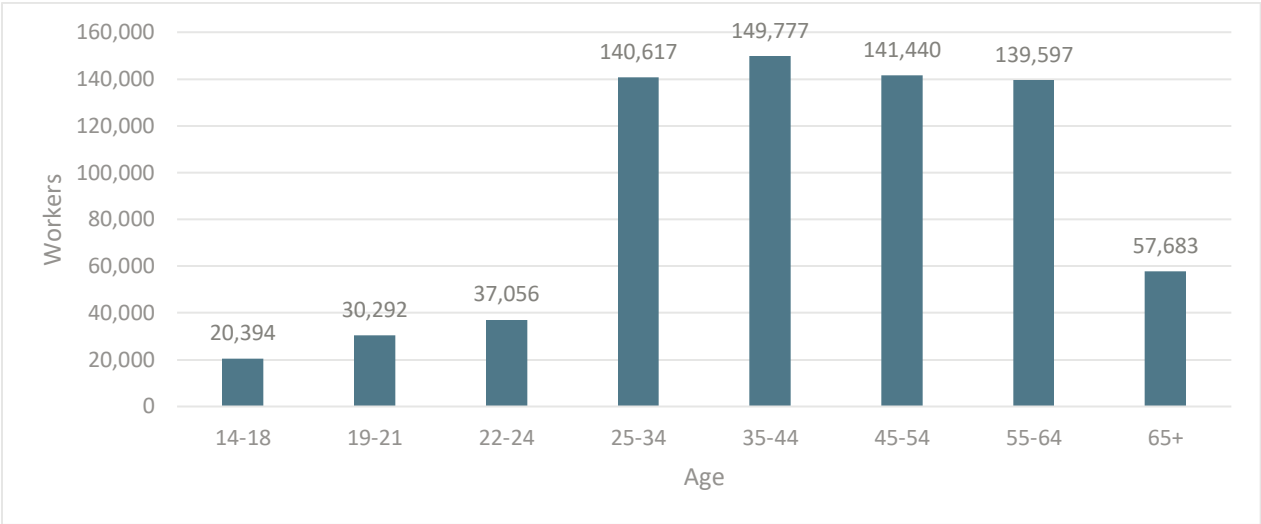
Source: Maine State Economist

Workforce Demographics

In terms of eligible workforce, defined by the Bureau of Labor Statistics as the non-institutionalized, civilian population aged 14 or over, as of 2023 there are 717,000 individuals in the labor pool. Those between the ages of 25 and 64, considered the prime-aged workforce, constitute about 80% of the entire labor force. Maine, similar to the rest of the nation, relies on individuals aged 55 or older to make up a significant portion of the working population: presently 27% of all work eligible individuals. Though hardly a new problem, it is worth noting

that concern over the aging workforce was articulated clearly in several of the one-on-one conversations the team had with employers through the course of this project. Strategies to attract younger workers and a more diverse workforce overall, made up of individuals typically marginalized or participating in the labor force at a much lower rate (for example, individuals with disabilities or justice involved individuals), will be necessary to replace this large percentage of retiring workers in the coming years.

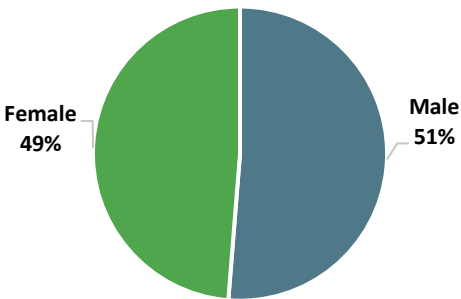
Figure 3: Maine's Work Eligible Population, by Age Cohort



Source: Lightcast 2023.1.

In terms of gender, as reported by Lightcast™, the current distribution of the workforce reflects a more-or-less even split between male and female workers, illustrated in Figure 4 below.¹

Figure 4: Maine workforce by gender.²



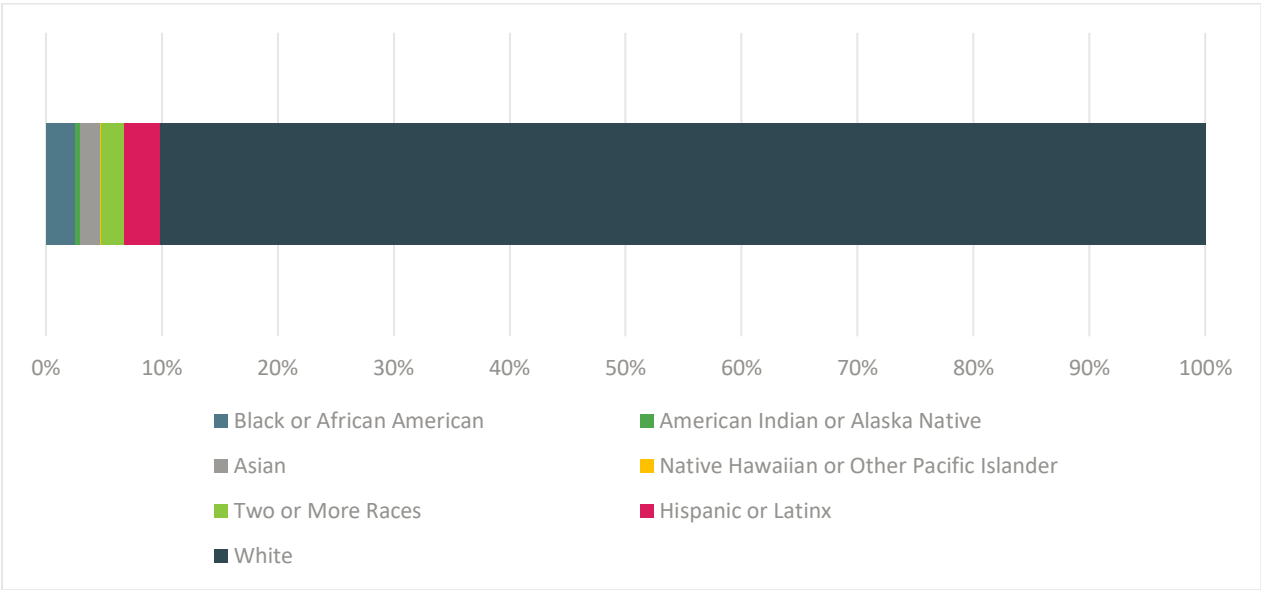
¹ Information on gender is limited to male and female, as reported by Lightcast™. This may undercount or incorrectly assign gender to Two Spirit, nonbinary, transgender, or other gender-diverse individuals.

² Information on gender was limited to male and female, as reported by LightCast™.

Source: Lightcast 2023.1

In terms of race/ethnicity, the current eligible workforce in Maine is predominantly White, sitting at approximately 90%. Black or African American workers represent 2.5% of the workforce, Asian workers account for 1.7% of the workforce, Hispanic or Latinx workers represent 3.0% of the workforce, and workers from two or more races represent 2.1% of the workforce. Native Hawaiians, other Pacific Islanders, American Indian, or Alaskan native represent less than 1% of the workforce. The labor force, while still overwhelmingly White, is more racially diverse than the overall state population, which is 94.2% White.

Figure 5: Maine's workforce by Race/Ethnicity



Source: Lightcast 2023.1

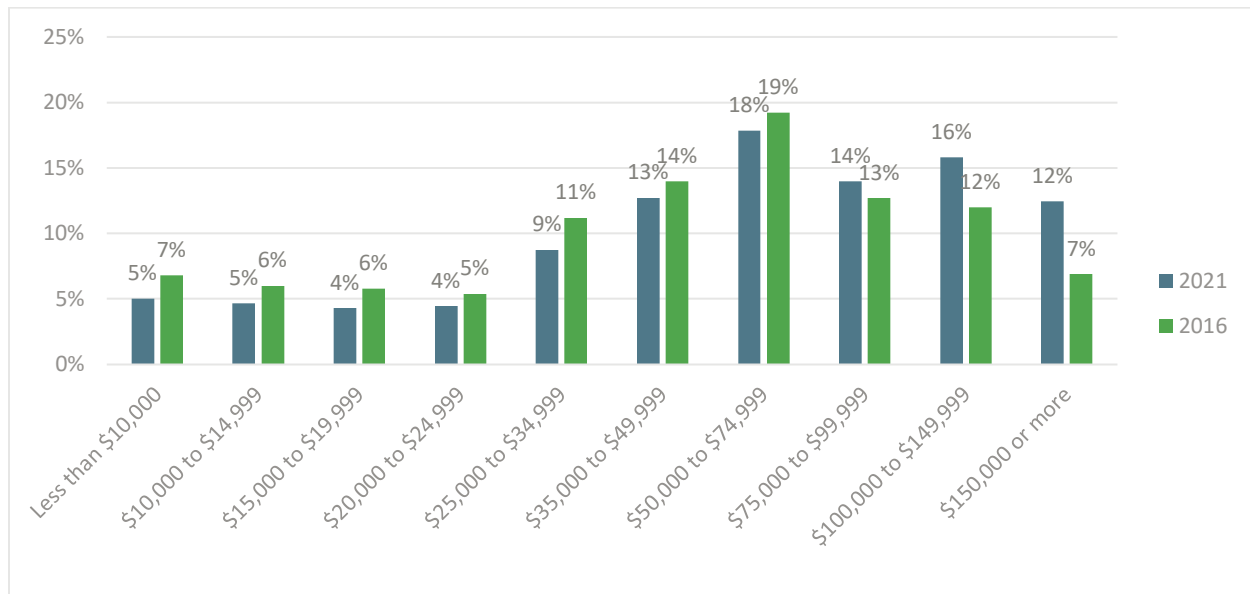
Income and Poverty

Household incomes in the state have risen by nearly 24% during the past 5 years, from a median household income of \$50,826 in 2016 to \$63,182 in 2021. This growth in income closely mirrors changes at the national level, where median household income increased from \$55,322 to \$69,021 (or 25%) over the same period of time. While this wage growth may seem extreme, inflation rose about 18% nationally during this time period. Workers saw an overall increase in real wages over this time period, however, the gains aren't as large as they seem without accounting for inflation.³

As a result of this overall growth in wages, impacted, of course, by both robust growth of open positions and a general decline in the number of people willing to fill them, Maine has seen movement amongst the percent of population by income cohort, as reflected below in Figure 6. Over the 5-year period under review, the percentage of Mainers earning \$100,000 to \$149,999 annually has risen from 12% of the population in 2016 to 16% of the population in 2021. Similarly, the percent of the population earning more than \$150,000 annually nearly

doubled - from 7% in 2016 to 12% in 2021. As might be expected, at the lower end of the earnings spectrum, the percent of the population earning less than \$50,000 fell across the board, with the cohort earning \$19,999 or less seeing a decline of nearly 33% (down from 6% of the population in 2016 to 4% of the population in 2021).

Figure 6: Maine household income, 2021 and 2016.



Source: American Community Survey 5-Year Estimates, 2021.

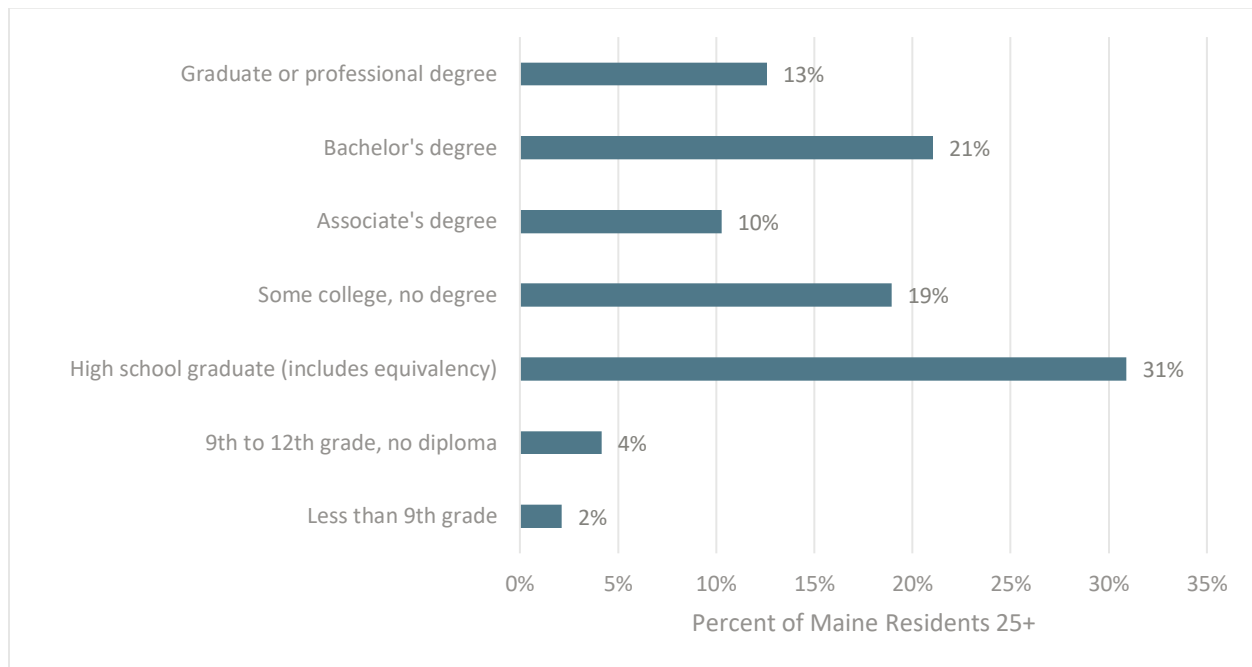
Educational Attainment

The Maine Office of Policy and Management has estimated that of the jobs available in Maine in the year 2025, 60% will require advanced education and training. As a state that has historically had lower higher educational achievement than neighboring states, without a change, there will be a gap in the credentials of the workforce and the needs of employers. To address this gap, the Maine legislature enacted LD 1638 with a goal of having 60% of working-age adults holding a high-value certificate, college degree, vocational education, or other industry-recognized credential by 2025.

Since 2009, Maine's postsecondary educational attainment rate for individuals ages 25 to 64 has increased by 16%, from 39% to 55% in 2021 (see Figure 8).⁴ To better understand the educational attainment of Maine people, this can be further disaggregated by education level. The majority of Maine residents aged 25 years or older have at least a high school diploma (94%), while just over one-third of Mainers have a bachelor's degree or higher.

⁴ When short-term credentials are excluded, Maine's educational attainment rate is 48%.

Figure 7: Educational attainment for Maine residents, ages 25 or older⁵



Source: American Community Survey 5-Year Estimates, 2021.

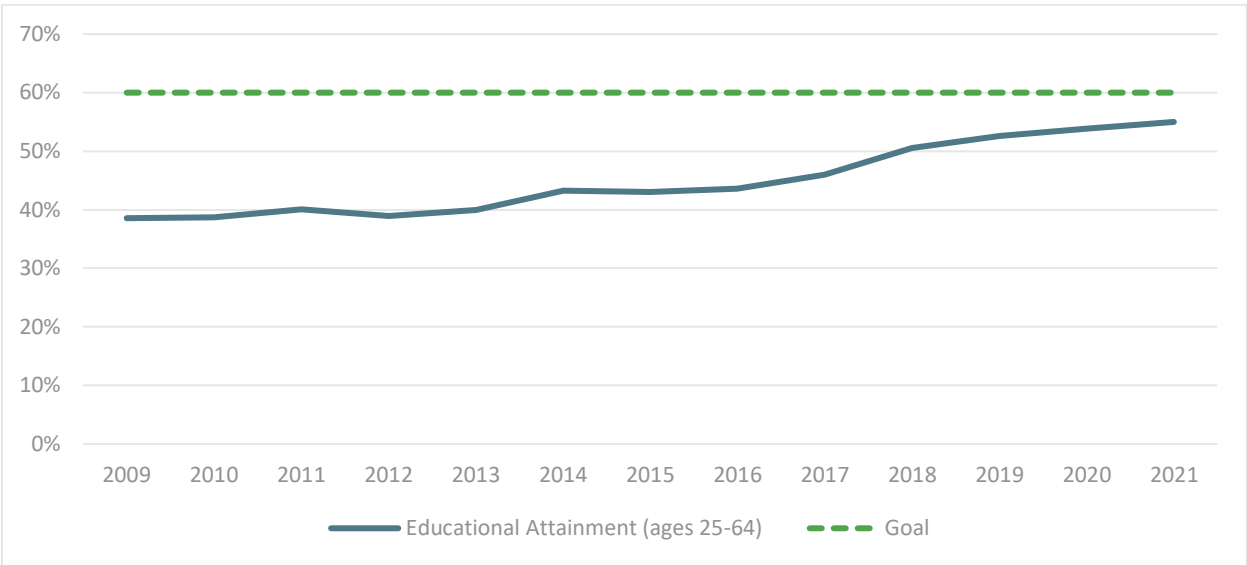
However, large disparities in attainment exist throughout the state. Looking geographically, Cumberland County has the highest postsecondary educational attainment rates for individuals ages 25 to 64, 61% (this does not include short-term credentials). Other counties, such as Somerset and Washington, have educational attainment rates almost half of that, 32%.

Turning our attention to differences by race and ethnicity, Hispanics have the highest postsecondary educational attainment rates for individuals 25 to 64, 58%. This is 25 percentage points higher than the group with the lowest postsecondary educational attainment rates, American Indians or Alaskan Natives.

If these inequities aren't addressed, then some communities will be equipped to meet the needs of the workforce of the future – generally not just for the MLR sector - while other communities will be left behind.

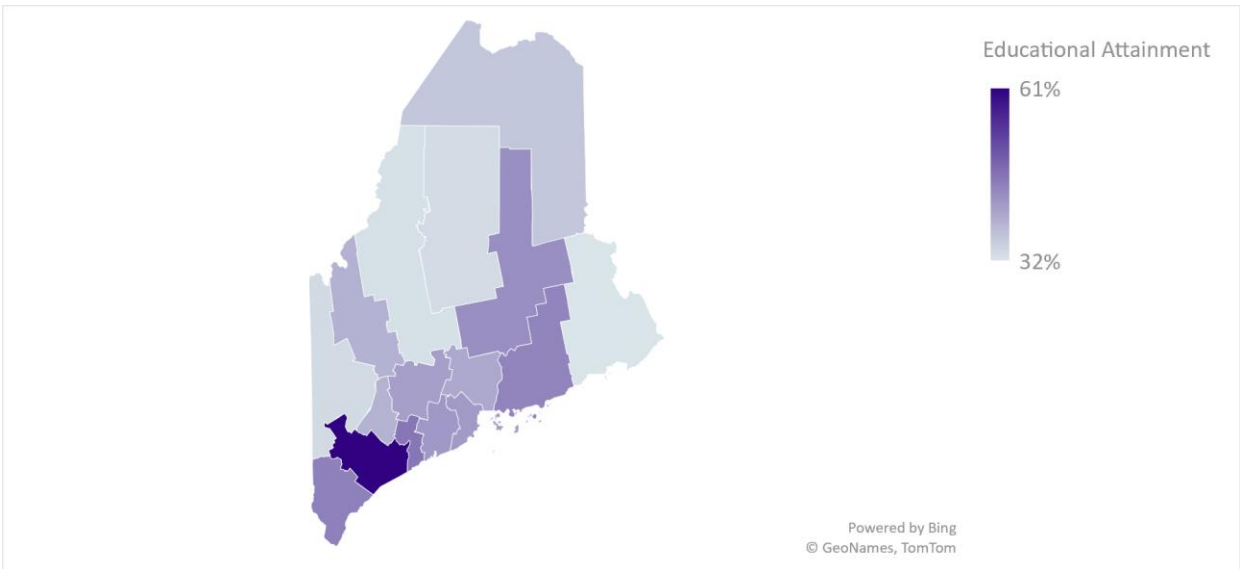
⁵ This excludes short-term credentials.

Figure 8: Postsecondary educational attainment of working age adults in Maine, 2009 to 2021.^{6,7}



Source: Lumina Foundation, Maine report.

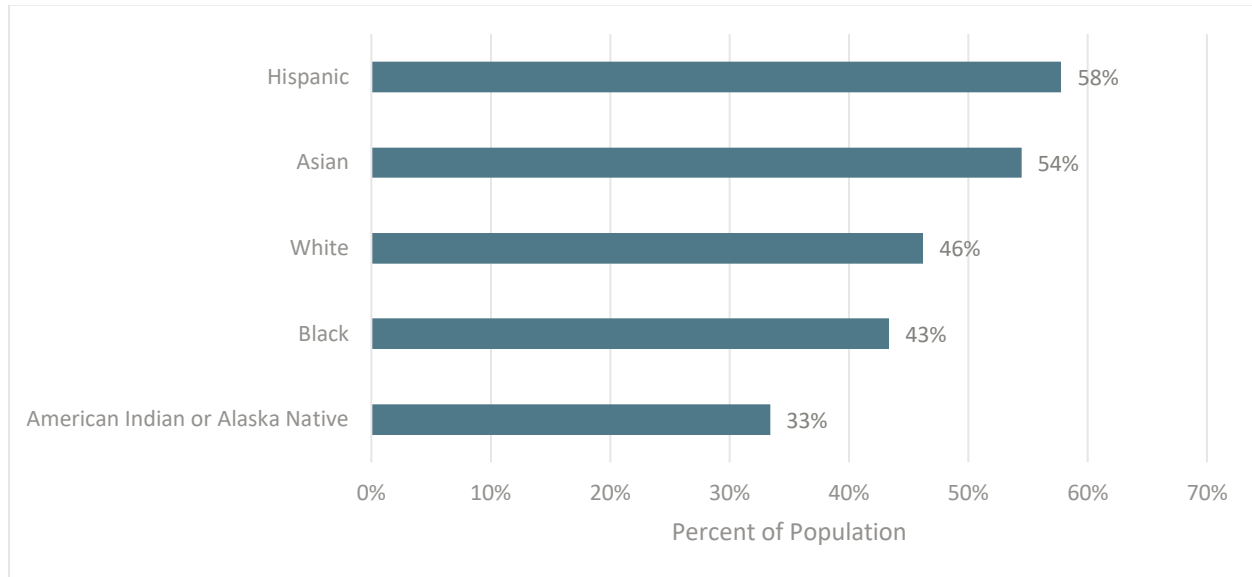
Figure 9: Postsecondary educational attainment by county, 2021.⁸



Source: Lumina Foundation, Maine report.

⁶ This includes graduate or professional degrees, bachelor's degrees, associate degrees, certifications, and industry-recognized credentials.
⁷ 2020 data are omitted. Value shown here for 2020 is the mid-point between 2019 and 2021, used only for graphing purposes.
⁸ Due to data availability, short-term credentials are excluded.

Figure 10: Maine educational attainment by race and ethnicity, 2021.⁹



Source: Lumina Foundation, Maine report.

Labor Force Statistics

Turning now to overall trends in the workforce for Maine, we highlight below the 2 key metrics for gauging the vitality of the labor pool: labor force participation and unemployment rate. Details and full methodology notes on how these rates are calculated, can be found on the official BLS website (https://www.bls.gov/cps/cps_htgm.htm). In simple terms, the labor force participation rate is the ratio of all individuals employed PLUS all individuals not currently working but actively seeking work to the entire work eligible population. The unemployment rate is simply the number of individuals not currently working but actively seeking work, divided by the entire labor force (employed plus unemployed). Though the unemployment rate is the most widely recognized gauge of workforce vitality, the labor force participation rate - which also accounts for the percent of the population NOT working or actively seeking work - is perhaps a better indicator of the underlying strength, or opportunity for improvement, in the state's workforce.

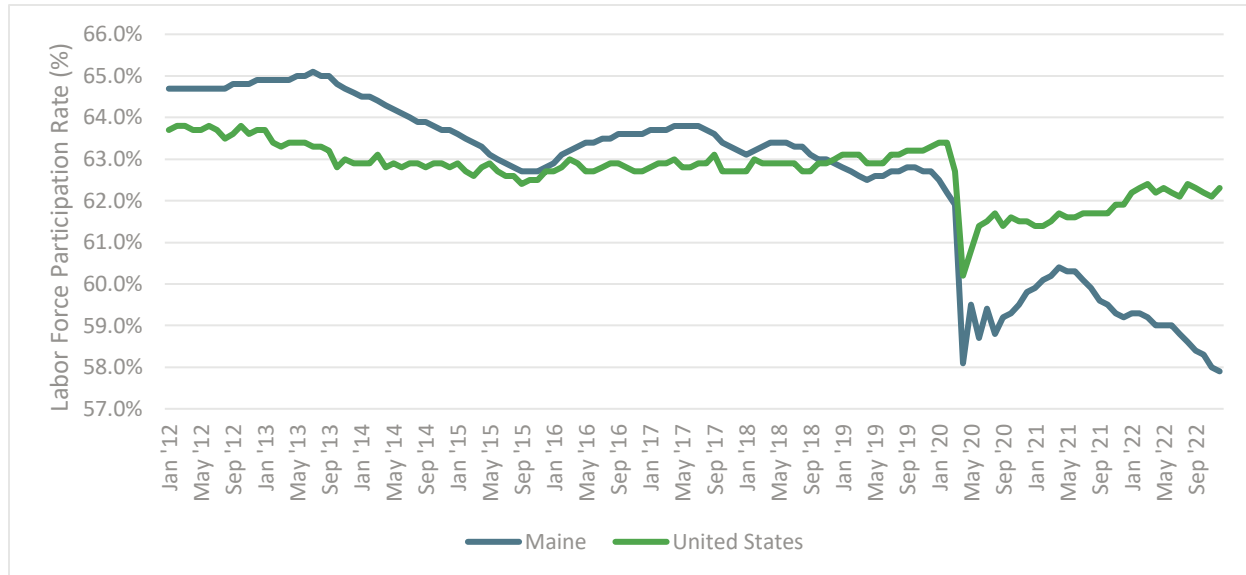
Labor Force Participation Rate

Maine's labor force participation rate (LFPR) has been on a downward trajectory since August 2017. However, until December 2018, the labor force participation rate in the state was higher than in the United States as a whole. This downward trend was accelerated by the COVID-19 pandemic, during which the LFPR dropped to 58.1% in April of 2020. There was a slight recovery between then and Summer 2021. However, this improvement has proven to be somewhat of a blip in the overall general trend, as the LFPR has continued to drop in recent months, down to 57.9% in December 2022, which is lower than at the height of the COVID-19 pandemic.

⁹ Due to data availability, short-term credentials are excluded.

This consistent, downward trend in labor force participation is an acute concern for employers in the state and reflects both the ongoing exodus of older workers and lower-than-expected rates of workforce participation by younger residents.

Figure 11: Monthly labor force participation rate (seasonally adjusted).

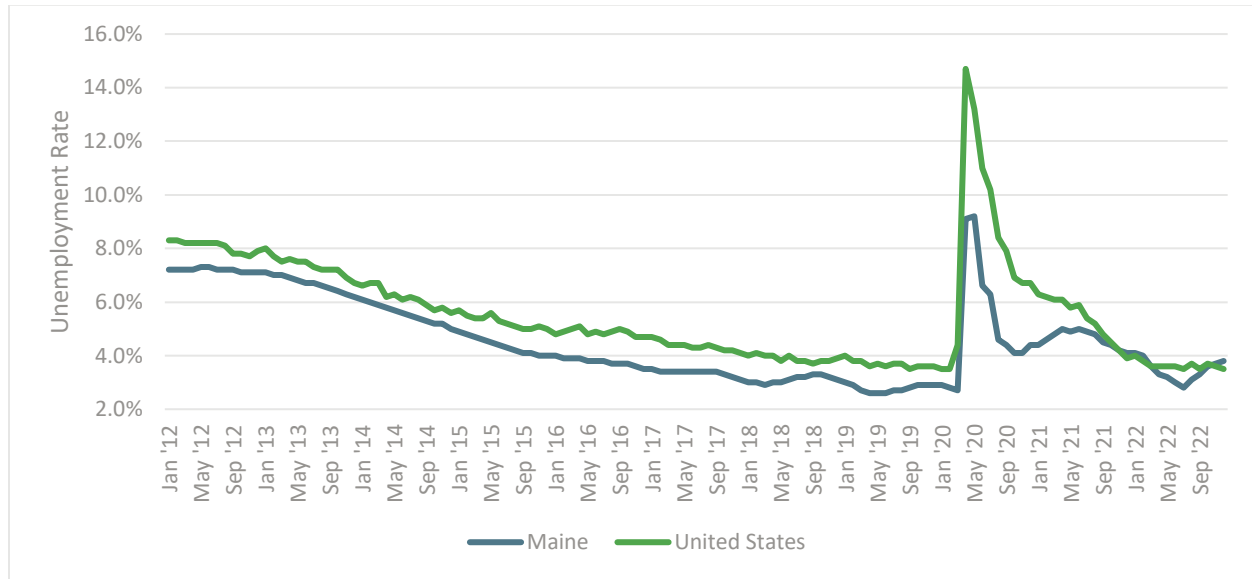


Source: Maine Center for Workforce Research and Information Labor Force Statistics by Geography

Unemployment Rate

Perhaps somewhat less noteworthy, and largely reflective of national trends as well, Over the past ten years, Maine's unemployment rate tended to mirror the trends in the national unemployment rate, though consistently with a rate slightly lower than the national average. However, during the past year or so, there's been more deviation from the national trends. Since March of 2022, the unemployment rate nationwide has remained fairly constant. In Maine, the unemployment rate was decreasing through July 2022, but since then, unemployment has increased gradually by 0.7%, up to 3.5% by September 2022.

Figure 12: Monthly unemployment rate (seasonally adjusted).



Source: Maine Center for Workforce Research and Information Labor Force Statistics by Geography

Top Companies in Maine, by Hiring Volume

By using unique job postings¹⁰ as a proxy for hiring demand, we can understand the top hiring companies in Maine. Six of the top ten hiring companies in Maine are in the medical field or a related field (like Humana, the health insurance company). Two of the top hiring firms has strong ties to Maine's working waterfront, General Dynamics (Bath Iron Works is a subsidiary of General Dynamics) and the University of Maine System.

Figure 13: Companies in Maine with the most unique job postings in the past twelve months.

| Company | Unique Job Postings |
|------------------------------|---------------------|
| Maine Medical Center | 6,066 |
| Hannaford Brothers Company | 2,659 |
| General Dynamics | 2,647 |
| MaineGeneral Health | 1,897 |
| Walmart | 1,713 |
| Central Maine Medical Center | 1,626 |
| Northern Light Health | 1,496 |
| Walgreens Boots Alliance | 1,487 |
| Humana | 1,325 |
| University of Maine System | 1,264 |

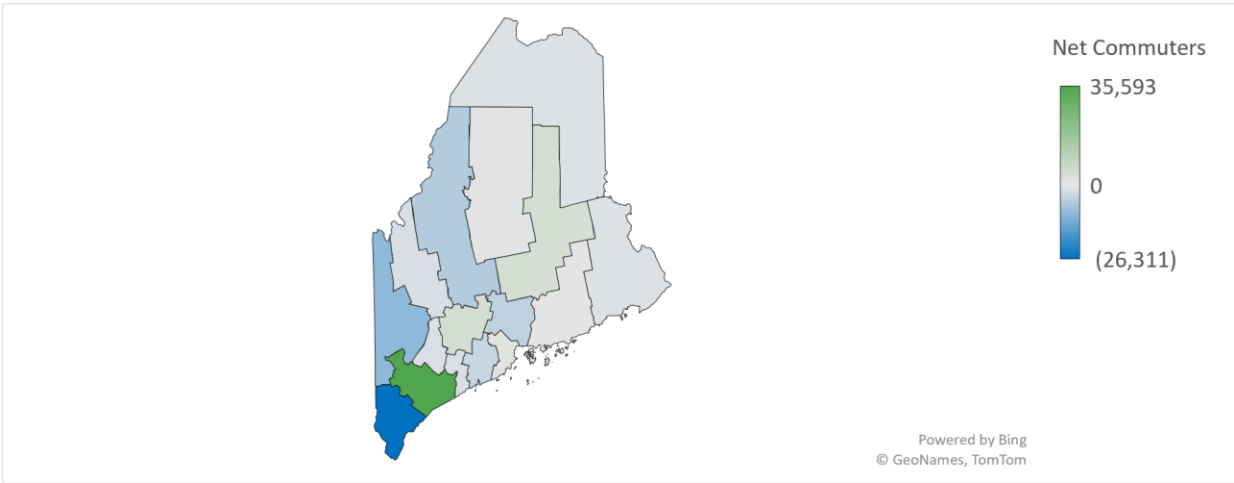
Source: Lightcast 2023.1

¹⁰ Unique job postings are de-duplicated job postings. Postings that list the same job, company, and location are only counted as one unique job posting.

Workforce Commuting Patterns

The number of net commuters is the difference between the number of workers in the region and the employment in a region. If there are more workers than jobs, then net commuting is negative, since workers are commuting in for work. In regions where there are more jobs than workers, the net commuting is positive (workers are coming into the area for work). In the majority of Maine counties, the net commuter is negative, meaning Mainers are leaving their county for work. Of Maine’s 16 counties, four have positive net commuters – Cumberland, Kennebec, Knox, and Penobscot counties.

Figure 14: Net Commuters, 2022.



Source: Lightcast 2023.1

HIRES, OPENINGS, AND WAGE ANALYSIS

Occupations within the MLR economy were defined by the Workforce and Talent Subcommittee, as part of their work on the development of career profiles, pathways, and resources. These occupations were then matched with the closest available Standard Occupational Classification (SOC) code, the method used by the federal government to track occupations. These codes were used to access and analyze the skills gap and employment needs for the MLR economy.

Core and Supporting Occupations

To better understand the employment and skills needs, the occupations were classified as either core or supporting occupations, depending on their relationship to the MLR economy. More than one occupation may share a single SOC code. To avoid double-counting workers, each SOC code was designated as either core or secondary. These designations will be used throughout the analysis in this section. The core occupations and their corresponding SOC codes and titles can be found below, in Table 1. The supporting occupations can be found in the Table 7 in Appendix I.

Table 1: Core occupations

| Occupation | SOC Code | SOC Title |
|---|----------|--|
| Farm Manager | 11-9013 | Farmers, Ranchers, and other Agricultural Managers |
| Hatchery Manager (shellfish/seaweed) | 11-9013 | Farmers, Ranchers, and other Agricultural Managers |
| RAS Production Manager | 11-9013 | Farmers, Ranchers, and other Agricultural Managers |
| RAS Systems Operations & Maintenance Director | 11-9041 | Architectural and Engineering Managers |
| Fish & Seafood Merchant Wholesalers | 13-1020 | Buyers and Purchasing Agents |
| Grocery & Related Product Wholesalers | 13-1020 | Buyers and Purchasing Agents |
| Seafood buyer | 13-1020 | Buyers and Purchasing Agents |
| Seafood dealers | 13-1020 | Buyers and Purchasing Agents |
| RAS Quality Control Technician | 19-4099 | Life, Physical, and Social Science Technicians, All Other |
| Hatchery Team Lead (shellfish/seaweed) | 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers |
| Crew Chief (Shellfish/Seaweed) | 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers |
| Lead hand (fin fish) | 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers |
| RAS Hatchery Manager | 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers |
| Farm Hand (Shellfish/Seaweed) | 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals |
| Saltwater Marine Technician (fin fish) | 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals |
| Deck hand (fin fish) | 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals |
| Hatchery Technician (shellfish) | 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals |
| Hatchery Technician (fin fish) | 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals |
| RAS Production Technician | 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals |
| Sternman/deckhand | 45-3031 | Fishing and Hunting Workers |
| Captain/fisherman | 45-3031 | Fishing and Hunting Workers |
| Processing plant manager | 51-1011 | First-Line Supervisors of Production and Operating Workers |
| Seafood Production Workers | 51-3022 | Meat, Poultry, and Fish Cutters and Trimmers |
| Dock/Float Worker | 53-7199 | Material Moving Workers, All Others |

Employment

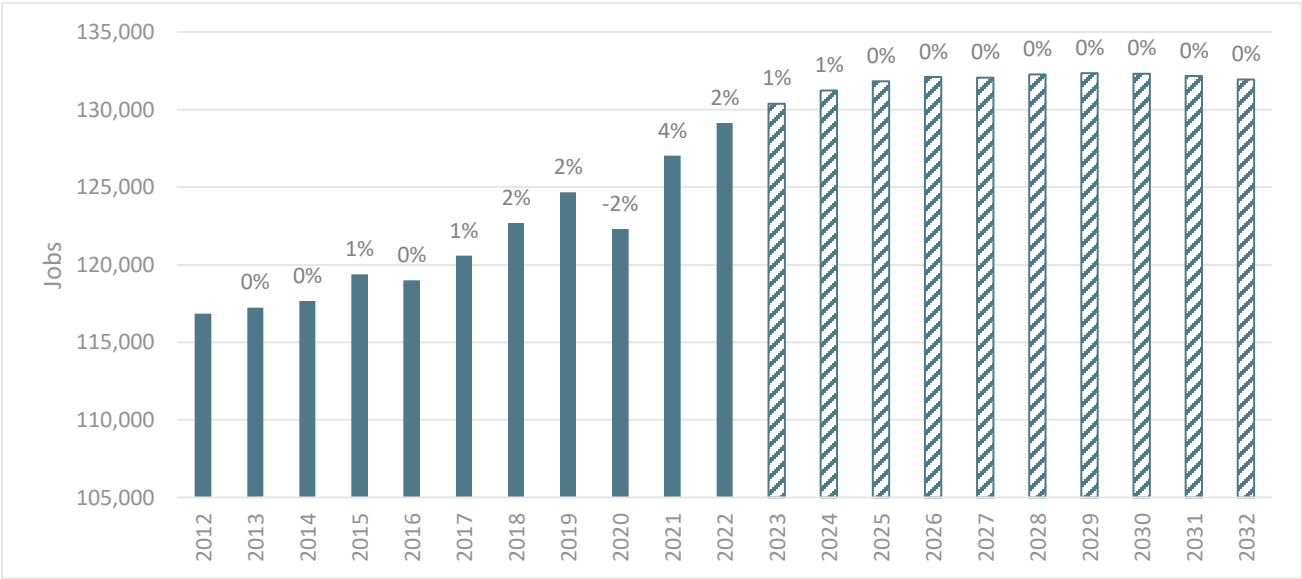
In 2022, over 130,000 workers were employed in the MLR economy. From 2022 to 2032, employment is projected to remain relatively stagnant; year-over-year changes in employment are expected to be between 0% and 1%.

Core occupations represented about 13% of all jobs in the industry in 2022. Core occupations are expected to see higher growth than the MLR industry as a whole, with year-over-year growth in jobs projected to be between 0% and 3%, depending on the year.

Supporting occupations represented the majority of employment in the industry. In 2022, there were 112,875 supporting occupation jobs. Since this represents the majority of employment in the industry, this drives the overall trends in employment. Because of that, the growth in this portion of the industry mirrors that of the industry as a whole. Between 2022 and 2023, year-over-year growth in employment is projected to be between 0% and 1%.

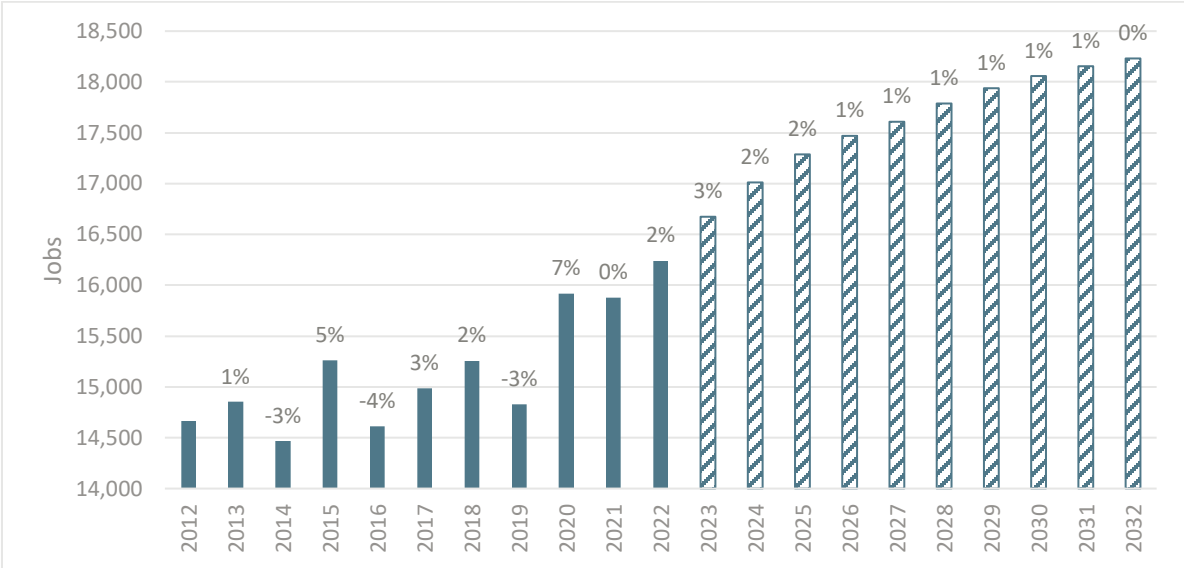
Annual employment information for the full industry can be found in Tables 8 and 9 in Appendix I.

Figure 15: Annual employment in the Marine Living Resource economy. Percentages represent year-over-year change.



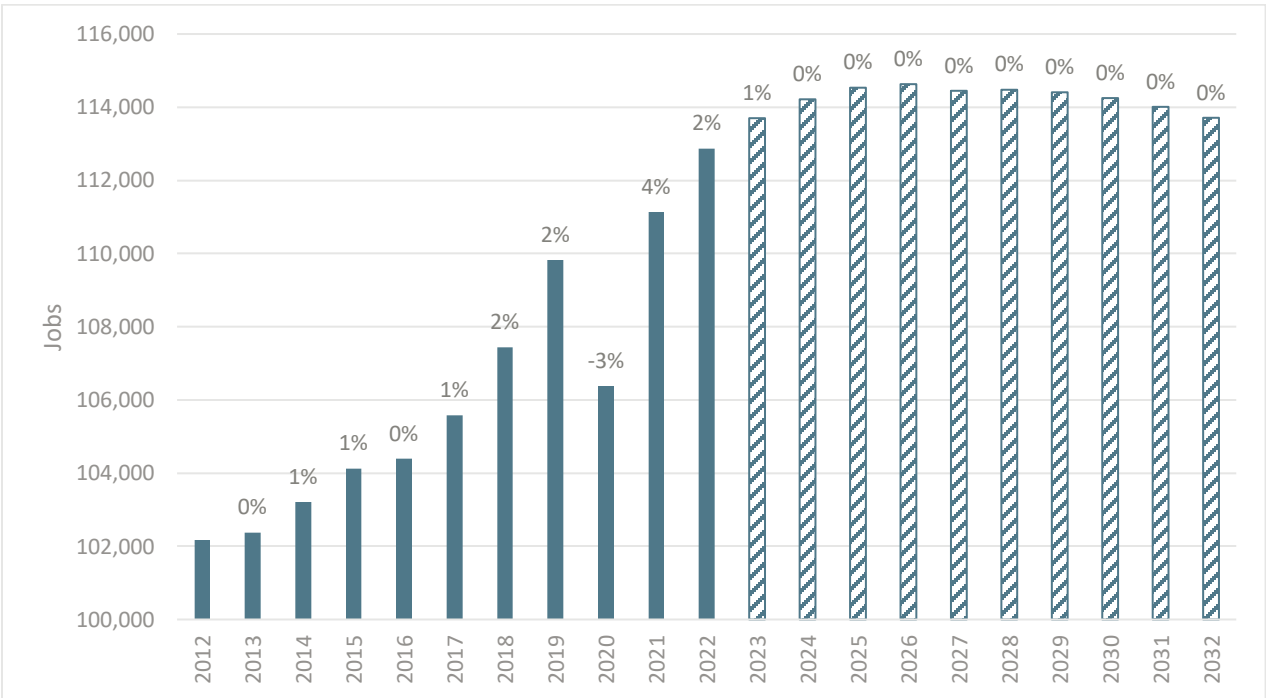
Source: Lightcast 2023.1

Figure 16: Annual employment in the core occupations of the Marine Living Resource economy. Percentages represent year-over-year change.



Source: Lightcast 2023.1

Figure 17: Annual employment in the supporting occupations of the Marine Living Resource economy. Percentages represent year-over-year change.

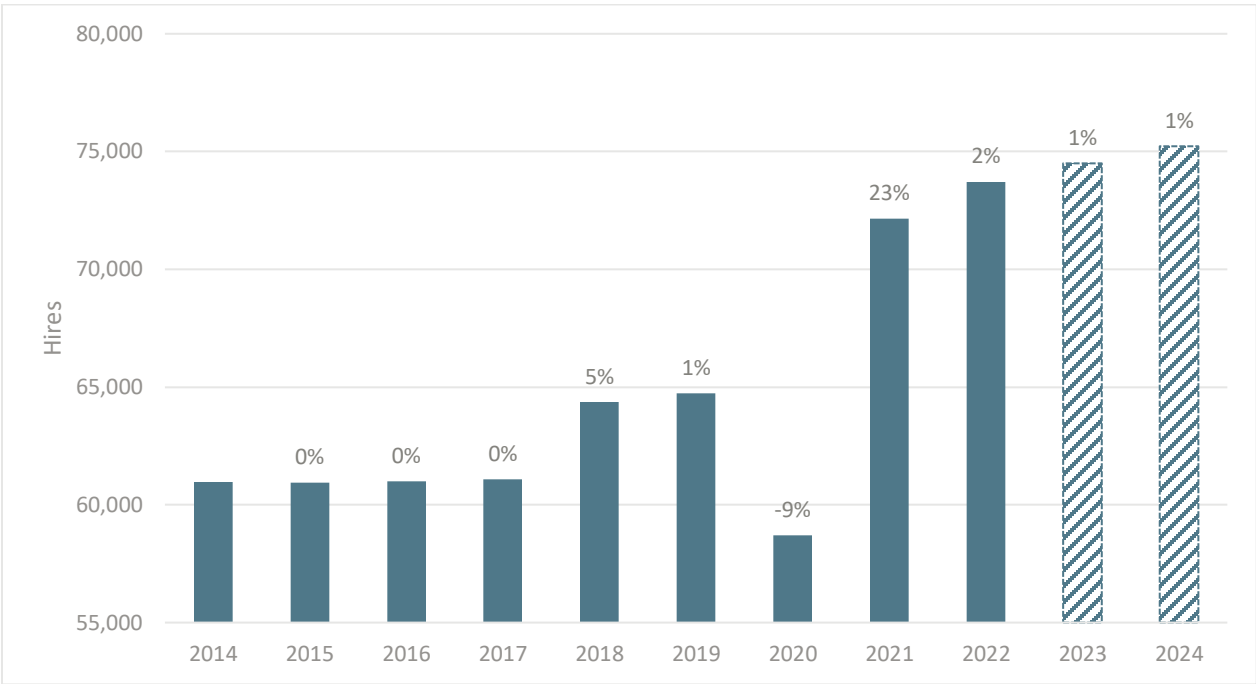


Source: Lightcast 2023.1

Annual Hires

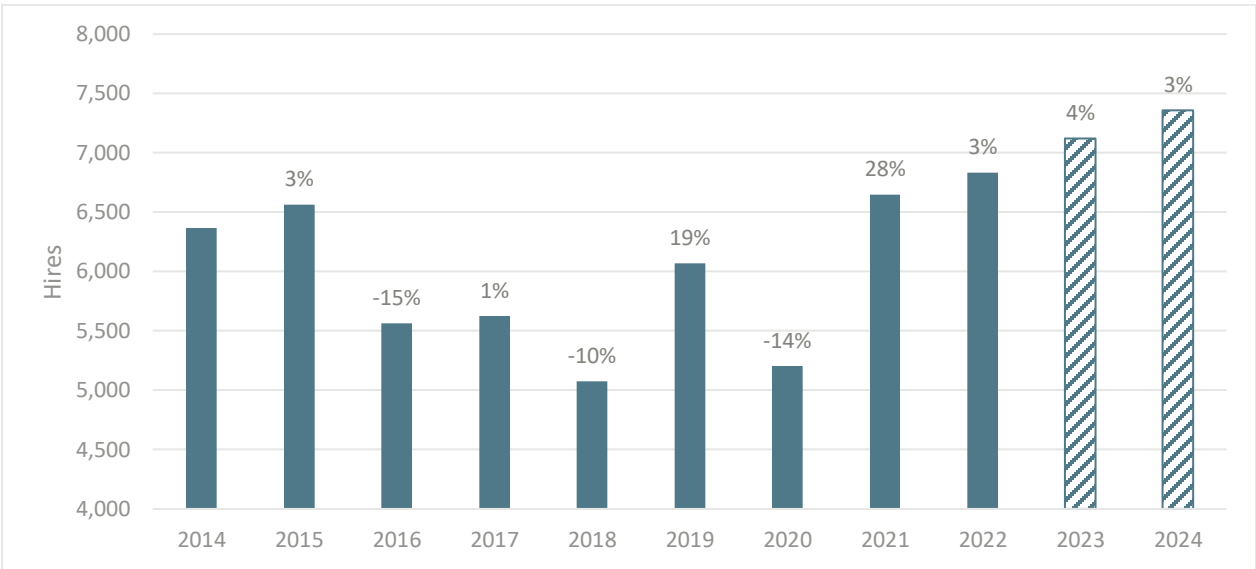
In 2022, the MLR economy hired just under 74,000 workers, a 2% increase from 2021 (see Figure 18). Of all the workers hired in the MLR economy, 6,831 were in core occupations, while 66,873 were in supporting occupations. Over half of the hires within the core occupations were in just three roles: Farmers, Ranchers, and Other Agricultural Managers (18%), Farmworkers, Farm, Ranch, and Aquacultural Animals (19%), and First-Line Supervisors of Production and Operating Workers (22%). The supporting occupations with the largest number of hires in 2022 were retail salespersons (26%), stockers & order fillers (18%), and heavy & tractor-trailer truck drivers (10%). Annual hiring information by occupation can be found in Table 10 in Appendix I.

Figure 18: Annual hires in the Marine Living Resource economy. Percentages represent year-over-year change.



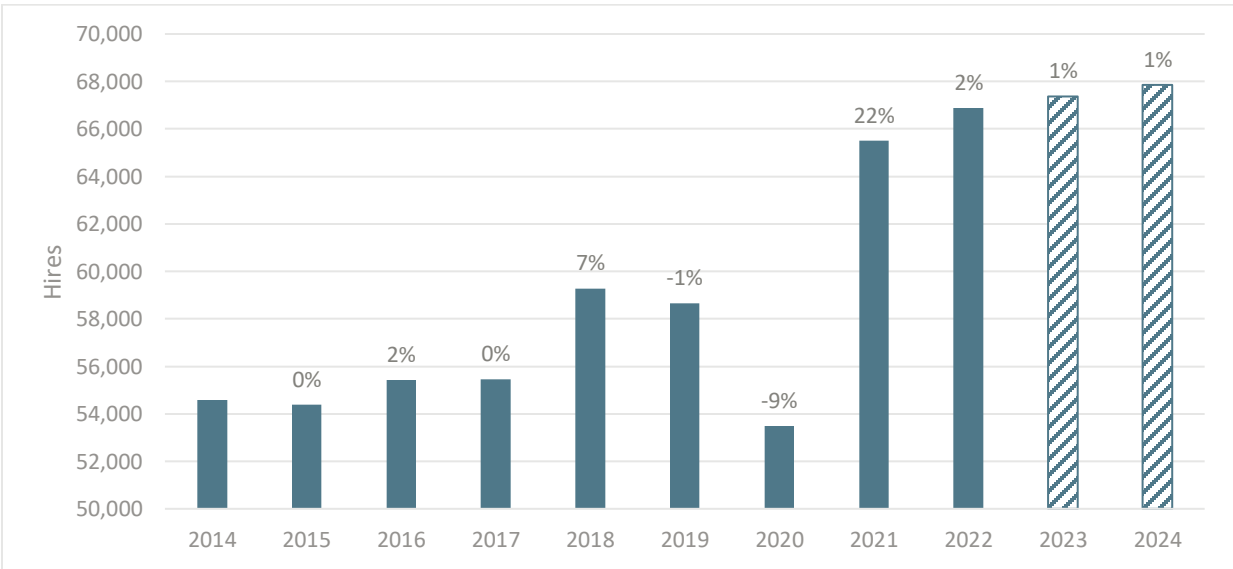
Source: Lightcast 2023.1

Figure 19: Annual hires in core occupations in the Marine Living Resource economy. Percentages represent year-over-year change.



Source: Lightcast 2023.1

Figure 20: Annual hires in the supporting occupations for the Marine Living Resource economy. Percentages represent year-over-year change.



Source: Lightcast 2023.1

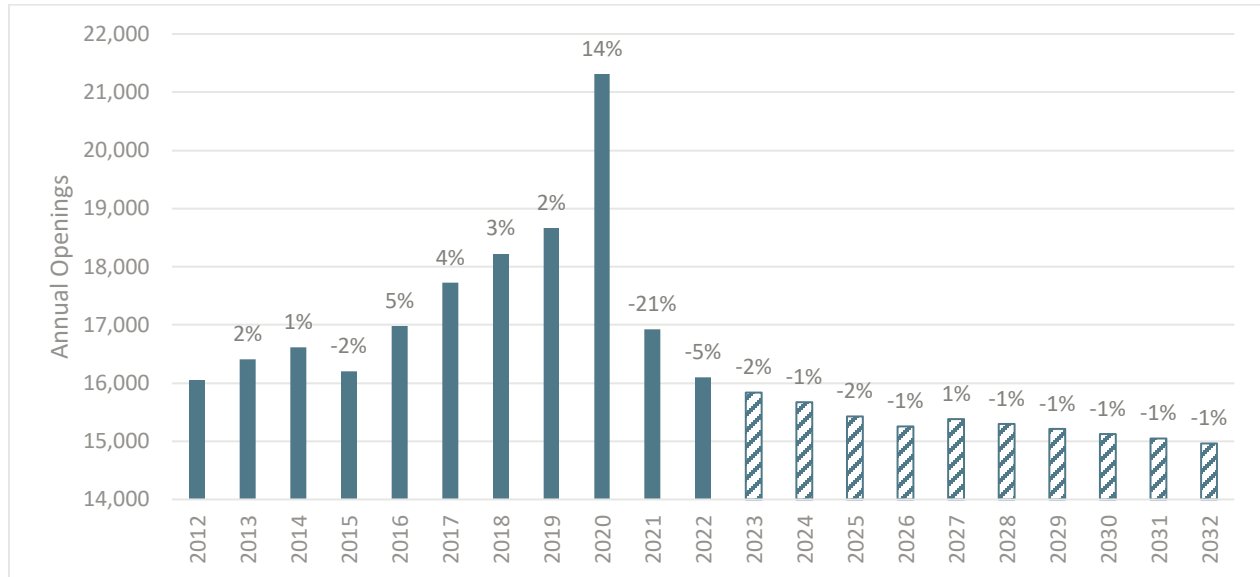
Annual Openings

From 2013 through 2020, overall, the number job openings within the MLR economy were trending upward. However, there were differences in the trends when looking at core occupations compared to supporting occupations. Core occupations saw frequent fluctuations

in the number of openings, while the number of openings in supporting occupations tended to be trending upwards.

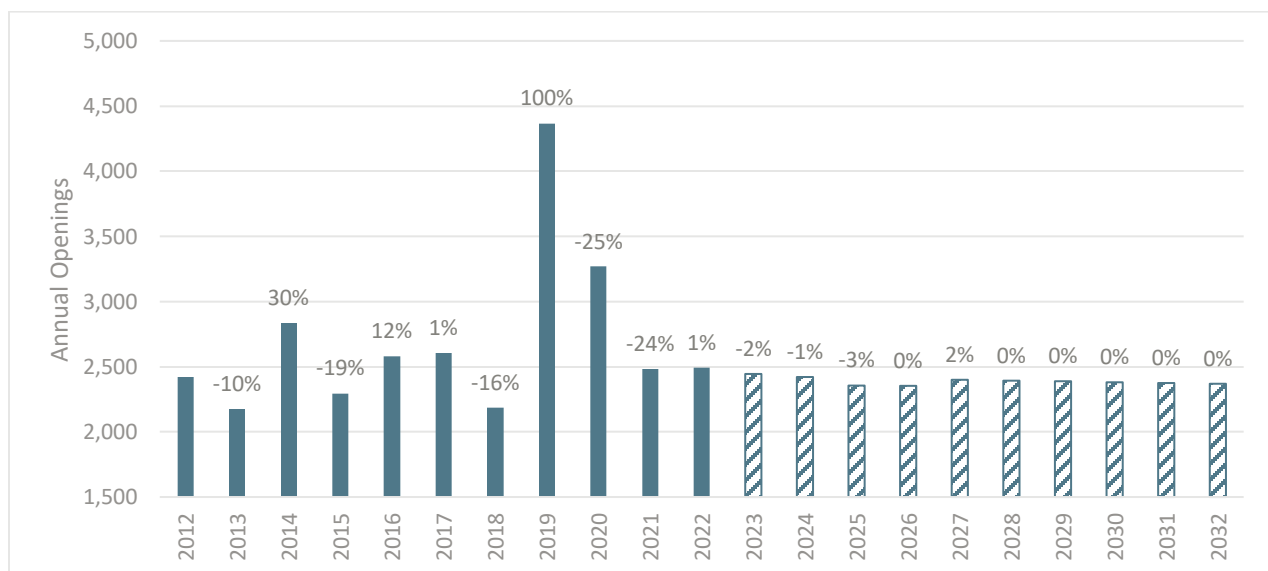
Since the COVID-19 pandemic, annual openings have decreased. This trend is projected to continue through 2032. Annual opening information can be found in Tables 11 and 12 in Appendix I.

Figure 21: Annual openings in the Marine Living Resource economy. Percentages represent year-over-year change.



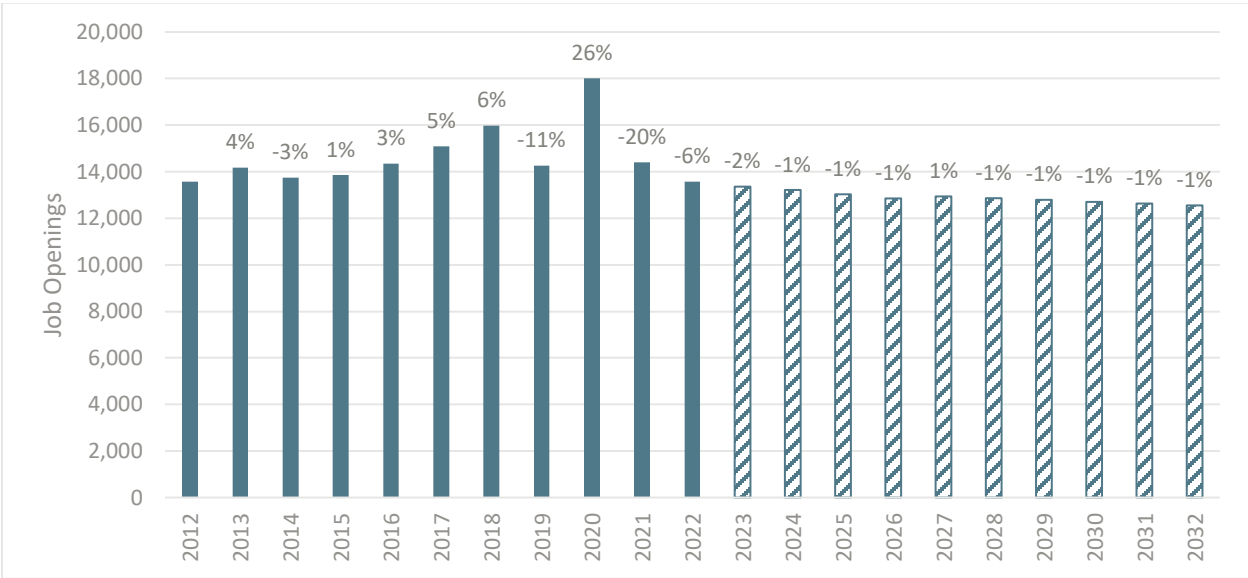
Source: Lightcast 2023.1

Figure 22: Annual openings in the Marine Living Resource economy in core occupations. Percentages represent year-over-year change.



Source: Lightcast 2023.1

Figure 23: Annual openings in the Marine Living Resource economy in supporting occupations. Percentages represent year-over-year change.



Source: Lightcast 2023.1

Annual Average Earnings

On average, workers in the MLR economy have higher hourly wages than other workers in Maine. The average hourly earnings for workers in the MLR economy is \$28.85 in Maine, compared to \$26.21 for all workers in Maine.¹¹ For core occupations, the average hourly wage is \$32.96, compared to \$28.27 for supporting occupations.

Within the core occupations, 68% of the jobs have higher average hourly earnings than the state average. However, the occupations with lower average hourly earnings play crucial roles within the economy. These include Farmers, Ranchers, & Other Agricultural Managers (aquaculture managers); Farmworkers, Farm, Ranch & Aquacultural Animals (aquaculture workers); Meat, Poultry, & Fish Cutters & Trimmers (seafood production workers), and Material Moving Workers, All Others (dock/float workers).

The majority of supporting occupation jobs have lower average hourly earnings than the state average. Retail salespersons; heavy and tractor-trailer truck drivers; and stockers and order fillers account for a large percentage of those jobs, representing over 35% of employment in supporting occupations.

Full wage data for supporting and core occupations in 2022 can be found in the Tables 13 and 14 in Appendix I.

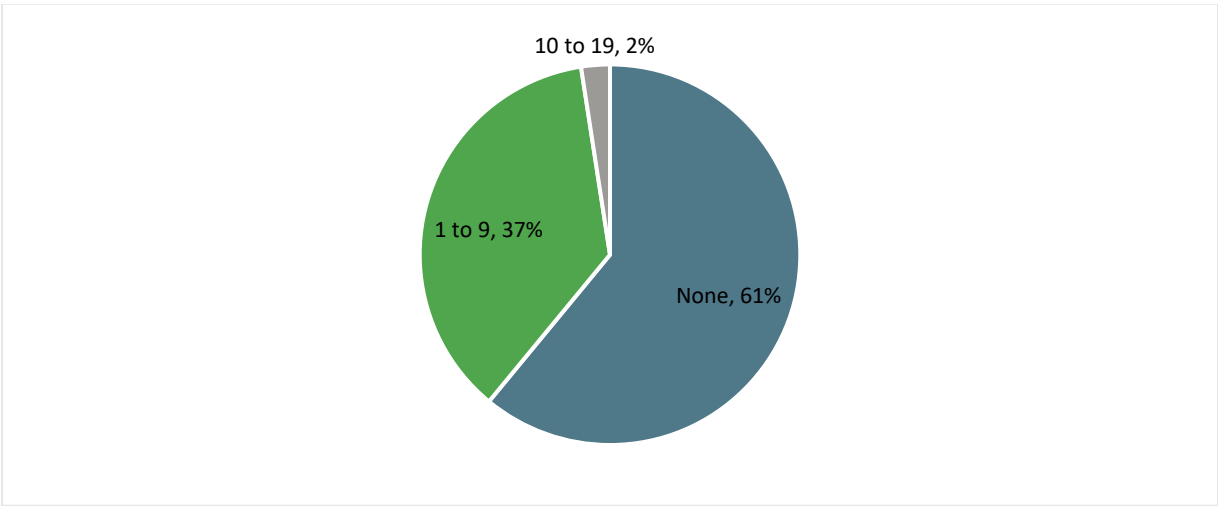
¹¹ While wages within the MLR economy are higher than the state average, during the stakeholder engagement, many employers noted that they are unable to compete with wages from other industries, such as skilled trades or oil and gas.

SKILLS GAP ANALYSIS

Employment Needs in the Marine Living Resource Economy

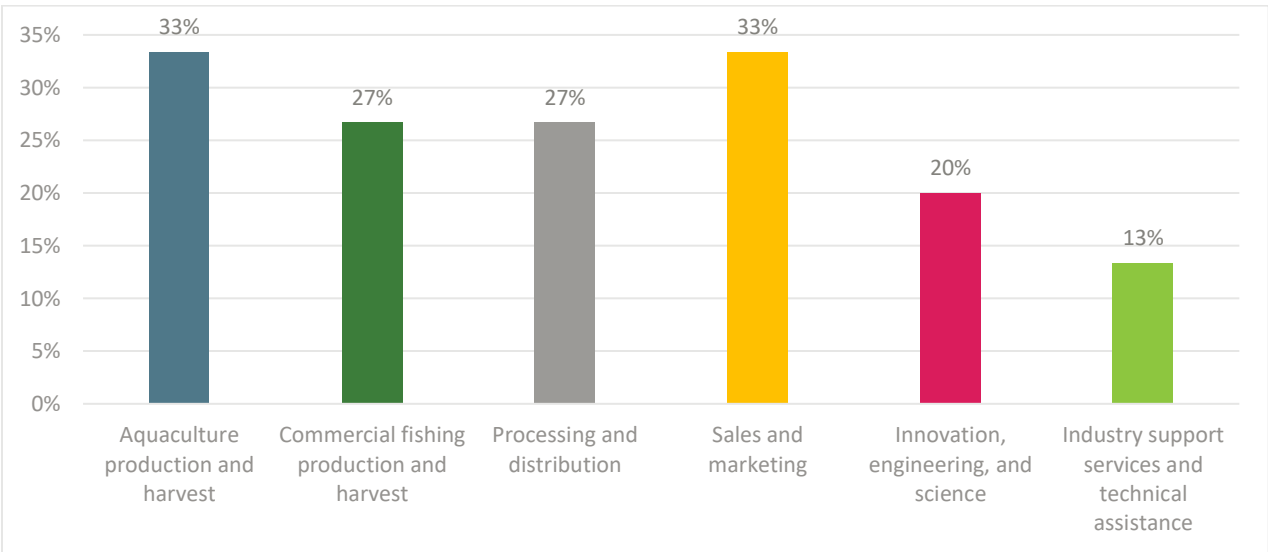
Based on responses to the survey, the majority of employers in the MLR economy are not planning on hiring in the next year (see Figure 24). For those who are planning on hiring, most are looking to fill between one and nine positions. In terms of occupation breakdown, Figure 25 below illustrates the type of jobs that employers who are planning on hiring, are seeking to fill. Respondents could select more than one occupation family; percentages reflect the overall number of respondents indicating a need for each category.

Figure 24: Employer responses to the survey question, "How many unfilled, open positions is your organization seeking to fill in the next year?"



Source: Maine Seafood Industry Employer Survey

Figure 25: Occupation families that best match the positions needing to be filled.



Source: Maine Seafood Industry Employer Survey

In the next five years, employment within the MLR economy is projected to grow by 2.3%. However, this growth isn't distributed evenly amongst the occupations that make up the MLR economy. Core occupations are projected to experience 8.4% growth over the next five years, an increase of 1,369 jobs. The largest increase, in terms of number of workers, will be in fishing and hunting workers and their managers (see Table 2). There will also be a need for farmworkers and processing plant managers, among others. Of note is the projected decreased in jobs for seafood production workers. While the number of jobs lost is expected to be relatively small (44), this represents about 5% of total employment within the occupation.

These fast-growing occupations include both entry-level and more advanced positions. For example, sternmen/deckhands and captains/fishermen both fall into the occupation of "Fishing and Hunting Workers." While sternmen and deckhands are entry-level positions that involve on-the-job training, fulfilling the role of a captain requires experience and licensure. Providing an adequate supply of workers for these roles will require equipping more individuals with the boat handling, navigation, and fishing skills. Finding individuals with these skills was noted as a challenge in the stakeholder interviews, providing further support of this need. Workforce programs for the MLR economy should target these knowledge gaps.

A talent pipeline for aquaculture workers and their managers also needs to be established to ensure the workforce has the required skills needed to meet the growth within the next five years. Most aquaculture worker roles are entry-level. However, workers must be comfortable working on the water and performing physical labor. As with the Fishing and Hunting workers, many of these roles require boat handling and navigation experience. Manager positions require experience and often require technical skills in the sciences. Stakeholders noted the value of good farm managers and the difficulty in replacing them. Given the training and experience required to fill this role, the MLR economy needs to consider building out training programs that will grow the pipeline for the farm manager roles.¹²

Table 2: Changes in core occupations within the state, 2022 to 2027.¹³

| SOC | Description | 2022 Jobs | 2027 Jobs | 2022 - 2027 Change | 2022 - 2027 % Change |
|----------------|--|-----------|-----------|--------------------|----------------------|
| 45-3031 | Fishing and Hunting Workers | 4,799 | 5,433 | 635 | 13% |
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | 3,260 | 3,693 | 433 | 13% |
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | 982 | 1,170 | 188 | 19% |

¹² The Maine Shellfish and Seaweed Aquaculture Apprenticeship program will help fill this gap. However it's unlikely that that one program will train enough workers to fill the need. Further, this apprenticeship program does not train finfish aquaculture workers.

¹³ To see corresponding MLR occupations, see Table 1.

| | | | | | |
|----------------|--|-------|-------|------|------|
| 51-1011 | First-Line Supervisors of Production and Operating Workers | 3,072 | 3,134 | 62 | 2% |
| 11-9041 | Architectural and Engineering Managers | 711 | 758 | 47 | 7% |
| 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers | 466 | 484 | 18 | 4% |
| 13-1028 | Buyers and Purchasing Agents | 1,701 | 1,716 | 15 | 1% |
| 19-4099 | Life, Physical, and Social Science Technicians, All Other | 304 | 316 | 13 | 4% |
| 53-7199 | Material Moving Workers, All Other | 101 | 103 | 2 | 2% |
| 51-3022 | Meat, Poultry, and Fish Cutters and Trimmers | 844 | 800 | (44) | (5%) |

Source: Lightcast 2023.1

Employment within support occupations for the MLR economy is projected to increase by 1.4% over the next five years. Market research analysts and marketing specialists, electricians, and financial managers are expected to see the largest gains, in terms of number of jobs.

Table 3: Top ten largest projected changes in support occupation employment in the Marine Living Resource economy, 2022 to 2027.¹⁴

| SOC | Description | 2022 Jobs | 2027 Jobs | 2022 - 2027 Change | 2022 - 2027 % Change |
|---------|--|-----------|-----------|--------------------|----------------------|
| 13-1161 | Market Research Analysts and Marketing Specialists | 1,864 | 2,149 | 285 | 15% |
| 47-2111 | Electricians | 3,748 | 4,008 | 260 | 7% |
| 11-3031 | Financial Managers | 2,567 | 2,826 | 258 | 10% |
| 25-1099 | Postsecondary Teachers | 7,522 | 7,648 | 126 | 2% |
| 53-7065 | Stockers and Order Fillers | 11,949 | 12,061 | 112 | 1% |
| 23-1011 | Lawyers | 2,696 | 2,804 | 108 | 4% |
| 11-2021 | Marketing Managers | 1,273 | 1,374 | 100 | 8% |
| 53-3031 | Driver/Sales Workers | 2,293 | 2,375 | 82 | 4% |
| 13-2051 | Financial and Investment Analysts | 739 | 808 | 69 | 9% |
| 51-4041 | Machinists | 1,785 | 1,847 | 62 | 3% |

Source: Lightcast 2023.1

Looking at the data by the projected percent change in employment provides a better understanding of the needs for emerging occupations. Core occupations represent three of the fastest growing occupations in the MLR economy. Farmworkers, which includes aquaculture farms, is the fastest growing occupation in the MLR economy (see Table 4). Employment is

¹⁴ To see corresponding MLR occupations, see Table 7 in Appendix I.

projected to grow by 19% in the next five years. For support occupations, scientists and technicians feature prominently.

When looking solely at the volume of jobs, increasing the talent pipeline for the seafood harvesters and producers sector of the MLR economy is imperative. Emerging occupations fall into more sectors, including seafood harvesters and producers, innovation science, & engineering, inputs and services, and sales & marketing. Add to that the fact that the MLR economy relies on occupations not traditionally accounted for when assessing the needs of the industry- like teachers, drivers, salespeople and retail employees, where the products are ultimately sold to consumers, and the need for intervention to reverse the trends in labor force participation becomes even more acute.

Table 4: Top ten fastest projected growing occupations in the Marine Living Resource economy, 2022 to 2027. Green highlight denotes core occupations.¹⁵

| SOC Code | Description | 2022 Jobs | 2027 Jobs | 2022 to 2027 Change | Percent Change |
|----------|--|-----------|-----------|---------------------|----------------|
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | 982 | 1,170 | 188 | 19% |
| 19-4012 | Agricultural Technicians | 62 | 72 | 10 | 17% |
| 19-1029 | Biological Scientists, All Other | 88 | 102 | 14 | 16% |
| 13-1161 | Market Research Analysts and Marketing Specialists | 1,864 | 2,149 | 285 | 15% |
| 19-1042 | Medical Scientists, Except Epidemiologists | 211 | 242 | 31 | 15% |
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | 3,260 | 3,693 | 433 | 13% |
| 45-3031 | Fishing and Hunting Workers | 4,799 | 5,433 | 635 | 13% |
| 19-4031 | Chemical Technicians | 171 | 190 | 20 | 12% |
| 19-1022 | Microbiologists | 89 | 99 | 9 | 11% |
| 11-3031 | Financial Managers | 2,567 | 2,826 | 258 | 10% |

Source: Lightcast 2023.1

In-Demand Employability Skills

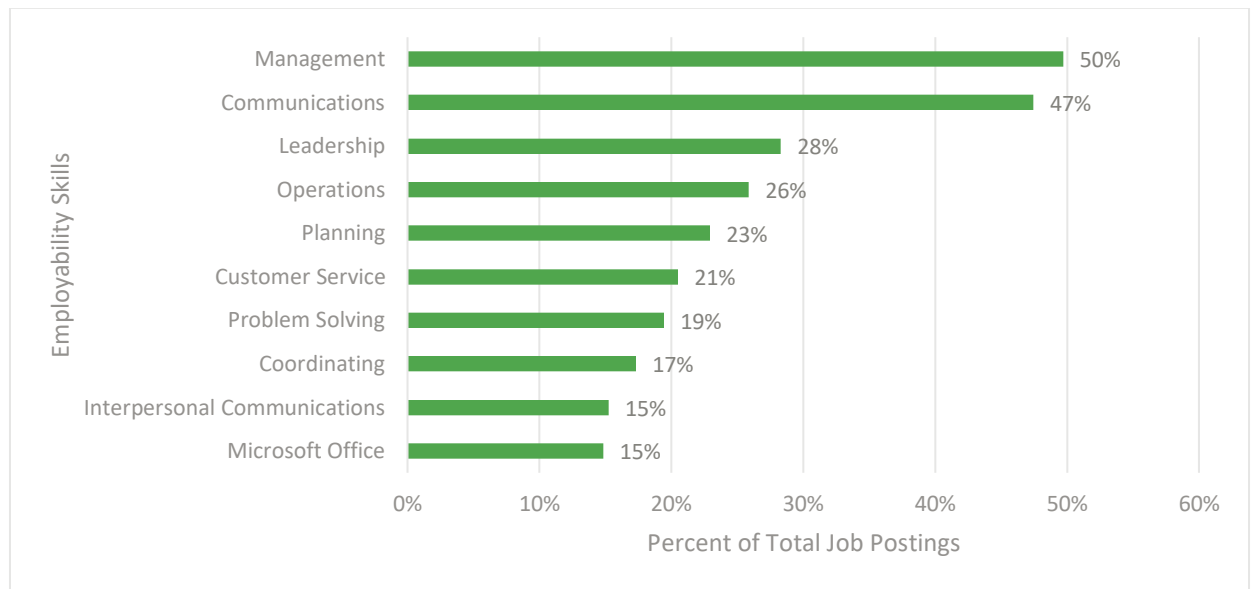
For all occupations in the MLR economy, the most in-demand employability skill was communication, appearing in 42% of total job postings over the past twelve months. Customer service, management, and sales were also highly in-demand, appearing in over 30% of job postings.

¹⁵ To see corresponding MLR occupations, see Table 1 for core occupations and Table 7 in Appendix I for supporting occupations.

The top employability skills for core and support occupations can be seen below in Figure 26 and Figure 27. There’s significant overlap in the employability skills desired by employers for these two sets of occupations.

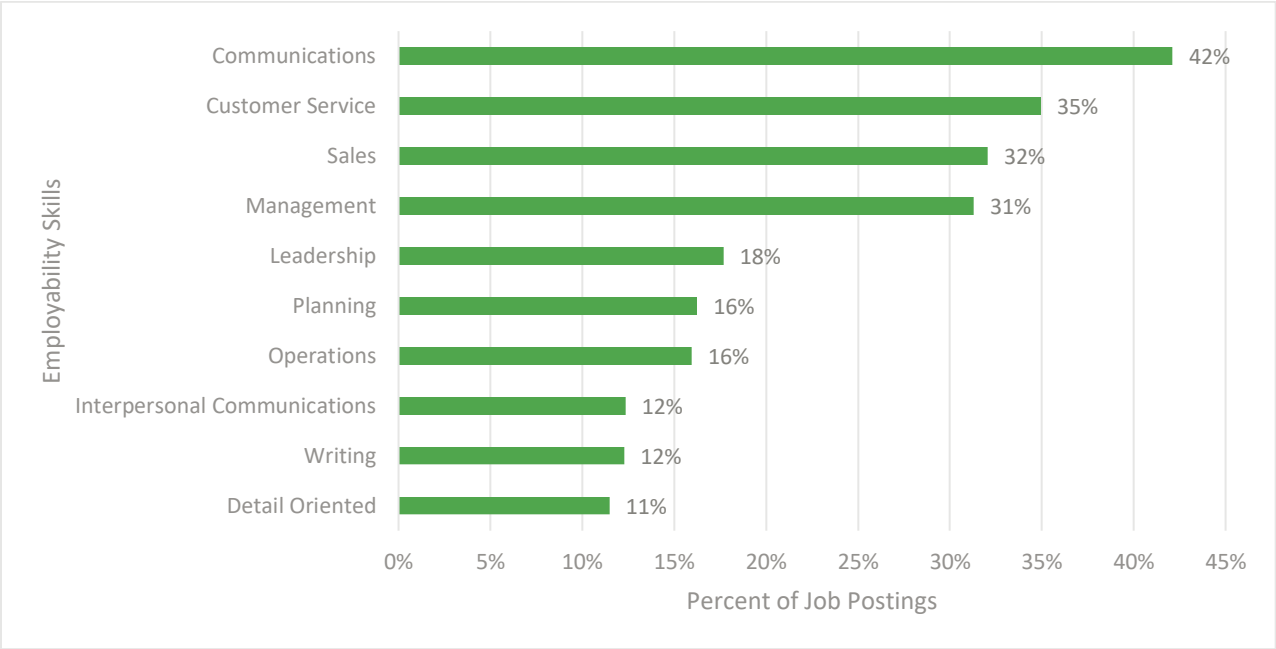
Survey participants were asked what credentials and certifications they look for when screening job candidates. While the intention was to collect data on in-demand technical skills and education, many of the responses were about the basic employability skills they screen for. Top responses include sobriety/ability to pass a drug test, experience, and work ethic. While this provides valuable anecdotal information about the employability skills sought after by employers, readers should use caution when generalizing to the whole industry, due to the low number of respondents.

Figure 26: Top 10 most in-demand employability skills in core occupations over the past twelve months.



Source: Lightcast 2023.1

Figure 27: Top 10 most in-demand employability skills in support occupations over the past twelve months.

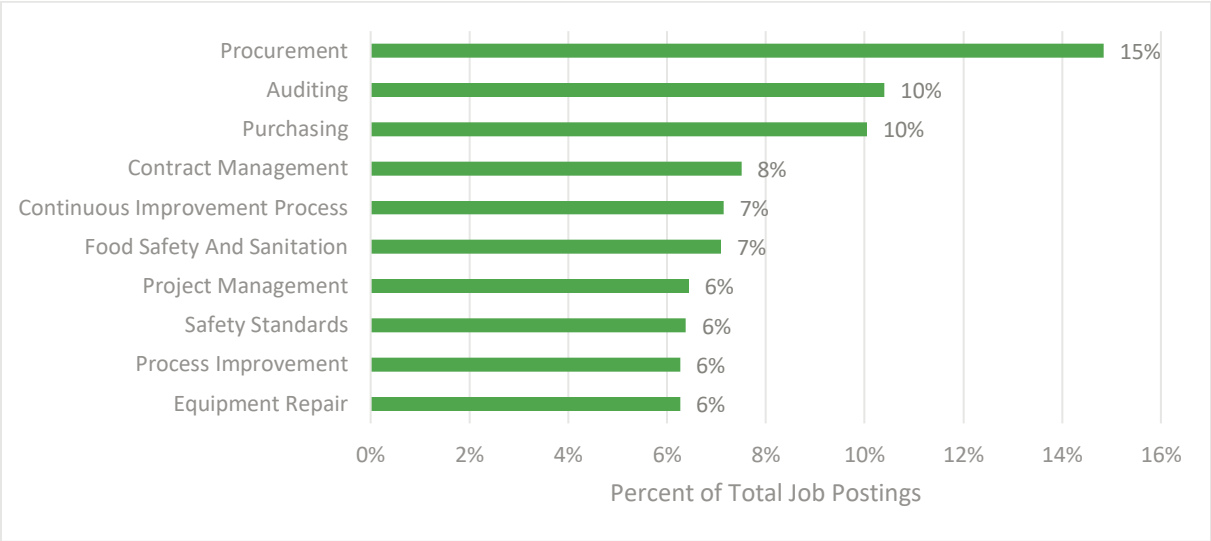


Source: Lightcast 2023.1

In-Demand Technical Skills

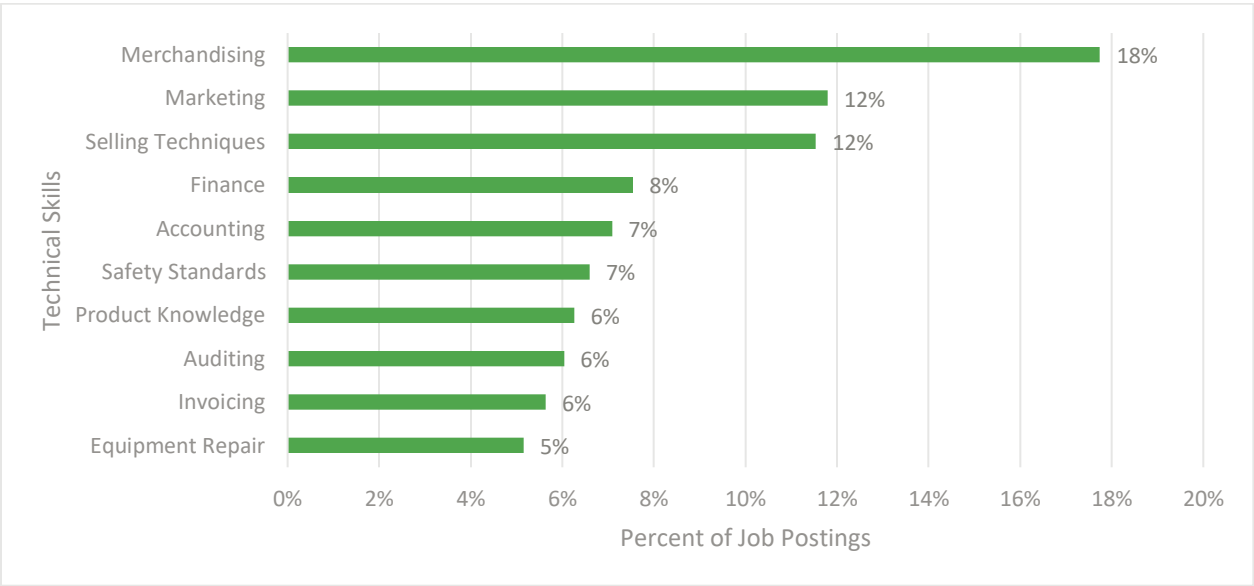
There is less overlap in the technical skills required for core and supporting occupations. For the core occupations, most of the top skills were related to the processing and distribution sector, such as procurement, auditing, purchasing, and food safety and sanitation. Among the support occupations, the most in-demand skills were related to sales and marketing, such as merchandising, marketing, and selling techniques.

Figure 28: Top 10 most in-demand technical skills in core occupations over the past twelve months.



Source: Lightcast 2023.1

Figure 29: Top 10 most in-demand technical skills in support occupations over the past twelve months.

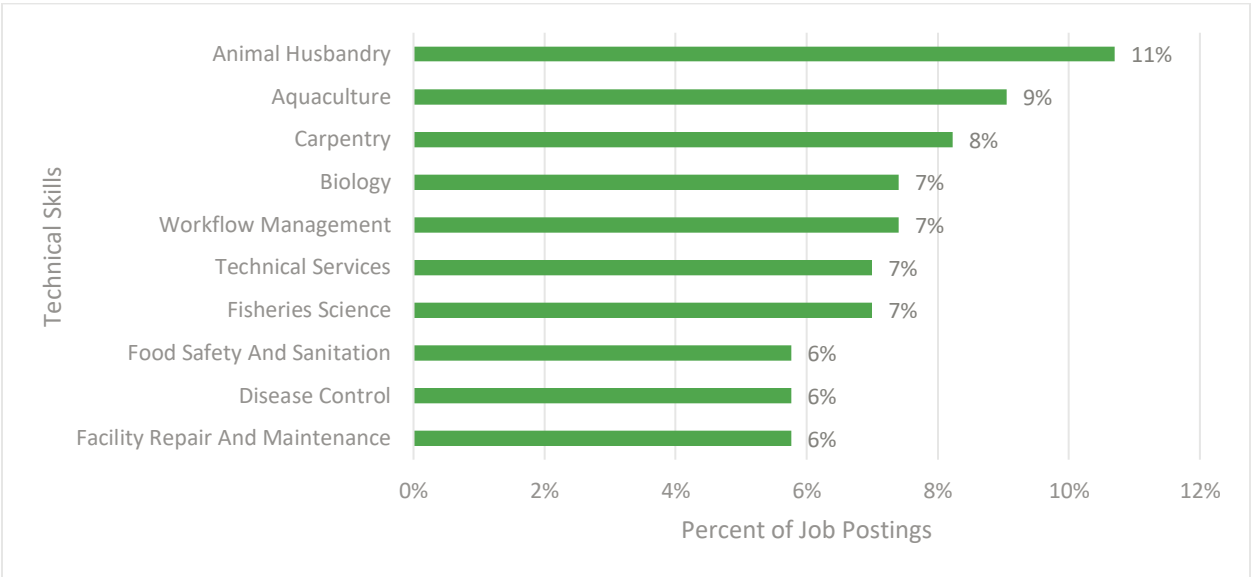


Source: Lightcast 2023.1

To gain a better understanding of the technical skills required for the just commercial fishing and aquaculture jobs, the same analysis as above was repeated. However, the occupations were limited to Farmers, Ranchers, and Other Agricultural Managers (11-9013), First-Line Supervisors of Farming, Fishing, and Forestry Workers (45-1011), Farmworkers, Farm, Ranch, and Aquacultural Animals (45-2093), Fishing and Hunting Workers (45-3031). The top technical skills can be

seen below in Figure 30. Workforce programming should be designed with these skills in mind, in order to meet the future needs of the MLR economy.

Figure 30: Top 10 most in-demand technical skills in aquaculture or commercial fishing occupations over the past twenty-four months.



Source: Lightcast 2023.1

Education and Training Requirements

Jobs within the MLR economy have a variety of different education and training requirements. The required education aligns with the traditional education levels, such as high school diploma or a Bachelor’s degree. Typical on-the-job training is made up of six categories: internship/residency, apprenticeship, short-term, moderate-term, long-term, and none. Short-term training is one month or less. Moderate-term is between one month and 12months. Long-term is defined as training that is more than 12 months.

Required education for entry-level positions in the core occupations ranges from no formal education to a bachelor’s degree. The more entry-level roles tend to have more on-the-job training, since they often require minimal or no prior work experience. However, jobs that don’t require formal education may still require training. The managerial and supervisory roles tend to have no on-the-job training. Instead, prior experience and/or education is required.

For the top growing supporting occupations, there’s more variation in the typical education and training, as these cover a wider range of industries and occupations. The required education varies from a high school diploma to a doctoral or professional degree, while training varies from none to an apprenticeship.

The variation in required education and training is beneficial for workers, as it means there’s an occupation that they could hold in the MLR economy, regardless of educational attainment

or experience. When considering the talent pipeline for the MLR economy, the amount and type of on-the-job training must be considered.

Table 5: Typical education and training required for an entry-level position for core occupations in the Marine Living Resource economy.¹⁶

| SOC | Description | Typical Entry Level Education | Typical On-The-Job Training | Work Experience Required |
|----------------|--|-----------------------------------|-----------------------------------|--------------------------|
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | High school diploma or equivalent | None | 5 years or more |
| 11-9041 | Architectural and Engineering Managers | Bachelor's degree | None | 5 years or more |
| 13-1028 | Buyers and Purchasing Agents | Bachelor's degree | Moderate-term on-the-job training | None |
| 19-4099 | Life, Physical, and Social Science Technicians, All Other | Associate's degree | None | None |
| 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers | High school diploma or equivalent | None | Less than 5 years |
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | No formal educational credential | Short-term on-the-job training | None |
| 45-3031 | Fishing and Hunting Workers | No formal educational credential | Moderate-term on-the-job training | None |
| 51-1011 | First-Line Supervisors of Production and Operating Workers | High school diploma or equivalent | None | Less than 5 years |
| 51-3022 | Meat, Poultry, and Fish Cutters and Trimmers | No formal educational credential | Short-term on-the-job training | None |
| 53-7199 | Material Moving Workers, All Other | No formal educational credential | Short-term on-the-job training | None |

Source: Lightcast 2023.1

¹⁶ To see corresponding MLR occupations, see Table 1.

Table 6: Typical education and training required for an entry-level position for top growing support occupations in the Marine Living Resource economy.¹⁷

| SOC | Description | Typical Entry Level Education | Typical On-The-Job Training | Work Experience Required |
|----------------|--|-----------------------------------|--------------------------------|--------------------------|
| 11-2021 | Marketing Managers | Bachelor's degree | None | 5 years or more |
| 11-3031 | Financial Managers | Bachelor's degree | None | 5 years or more |
| 13-1161 | Market Research Analysts and Marketing Specialists | Bachelor's degree | None | None |
| 13-2051 | Financial and Investment Analysts | Bachelor's degree | None | None |
| 23-1011 | Lawyers | Doctoral or professional degree | None | None |
| 25-1099 | Postsecondary Teachers | Doctoral or professional degree | None | None |
| 47-2111 | Electricians | High school diploma or equivalent | Apprenticeship | None |
| 51-4041 | Machinists | High school diploma or equivalent | Long-term on-the-job training | None |
| 53-3031 | Driver/Sales Workers | High school diploma or equivalent | Short-term on-the-job training | None |
| 53-7065 | Stockers and Order Fillers | High school diploma or equivalent | Short-term on-the-job training | None |

Source: Lightcast 2023.1

INDUSTRY EMPLOYER ENGAGEMENT

Working in close collaboration with SEAMaine, TPMA consultants developed a survey to collect information from employers in the MLR economy. This survey was distributed by SEAMaine to respondents of a previous workforce survey in February 2023. It was designed to collect information on workforce education and training programs. In total, 46 individuals responded. After removing blanks and protest responses, data from 45 responses were analyzed for this report. Findings from the survey have been incorporated into the other sections of the report. A full summary of the survey results can be found in Appendix II.

Additionally, the team from Camoin Associates conducted twelve one-on-one interviews with MLR employers and their representatives. A summary of the findings and trends they detected appears below.

¹⁷ To see corresponding MLR occupations, see Table 7 in Appendix I.

Challenges

- COVID impacted industries in a variety of ways including workforce – getting people, getting them to show up, loss of restaurant markets.
- Recruiting/retaining workforce overall was a challenge. In general, companies found it more challenging to find seasonal workers than full-time. In general, the larger the company, the more workforce was cited as a major challenge, particularly for production and processing jobs. Smaller companies did have challenges as well, but it was typically for skilled positions.
- The seasonality of fishing and aquaculture seasonality make it difficult to provide year-round employment – this means job seekers may rule out openings because they are looking for full-time work.
- Housing is a major issue negatively impacting employers' ability to get and keep workers, and it was mentioned by nearly every interviewee as a significant challenge to the workforce. Almost all of the companies operate close to the shoreline if not on it. Some are in small, rural communities along the coast which have limited affordable housing options (both ownership and rental). Those in more populated areas in southern Maine have more options, but housing prices are higher than what most average wages in the industries can support.
- Wages: It can be difficult to pay wages that compete with alternatives including skilled trades like carpentry.
- Transportation: Lack of transportation options further constrains workforce opportunities. Combined with housing, it can be challenging to live near job sites and commute to work.
- Awareness of job and career opportunities: There remains a lack of understanding of what the key occupations and skills are and the opportunities they present to jobseekers at all age levels.
- Getting into high schools to provide awareness of industry and jobs can be challenging and was made even more so during COVID as many schools did not allow in-person visitors. It has improved but is still a challenge.
- Finding business services with people that know the industry can be difficult in rural areas, such as consultants, lawyers, and accountants.
- Regulatory environment: The regulatory environment, specifically licensing by the state, is backlogged and slow and constraining industry growth. There is a need for more staff capacity at the state to support quicker review and permitting. This would also create demand for additional workers in the industry.
- Lobstering is under threat because of warming waters, regulations, market conditions

Growing & Harvesting

- Working on the water is not for everyone; employers have to find the right people. Workers must be willing to work outside on the water and perform physical labor, as well as being comfortable in and around boats/barges and navigating coastline for many positions. In fact, these are the hardest skills to find for many of the harvesters.
- Aquaculture firms that have hatcheries need technical skills in sciences, including marine science, biology, and chemistry.

- Farm managers are highly valued and can be very tough to replace.
- Firms that have pens (such as lobster and on-land aquaculture) need skills in mechanical systems, facilities operations, electricians, trades.
- Smaller firms cite challenges with finding business management, accounting, and sales positions particularly those companies in rural/small town areas.

Handling, Processing, & Shipping

- Transportation/logistics: Some companies have vertically integrated and are doing well, but others have challenges or would have a hard time growing without transportation/logistics support.
- Larger firms in both processing and aquaculture also need production and facilities design and management, as well as engineering skills related to pump/water systems.

Opportunities

- The demand for aquaculture products rising, particularly kelp, which is only just getting started in North America
- New Americans represent a significant labor pool. Some companies are succeeding at utilizing foreign-born workers and workers in hard-to-reach populations. Large companies spend a lot of time and resources on this. Industrywide initiatives can help both large and small companies.
- The price of kelp and oysters are strong, supporting growth in industry.
- There are opportunities for high schools, universities, and community colleges to collaborate and share opportunities in sea-based industries.
- There is a cross-section of opportunities and skills among the subsectors – lobstering and aquaculture in particular. Kelp/algae fit with both skills and seasons (different seasons making both possible). Companies are having some success recruiting lobster workers to also work in algae and other aquaculture.
- Mentorships, internships, and apprenticeships when used are very helpful for attracting workers and then retaining them.
- Expand horticulture and agriculture-type training programs to include aquaculture.
- All can benefit from increased connections and access to workforce and education entities.
- Increasing opportunities for healthcare and benefits for part-time and seasonal workers could help with attraction and retention.
- There is collaboration among companies within industry including within workforce.

Growing & Harvesting

- Flexibility/design of work so that it fits people's lifestyles can help retain employees and find the right fit for those who may not want to work year-round.
- Synergy/coexistence between aquaculture (especially kelp) and lobstering/fishing due to seasonality of each.

Handling, Processing, & Shipping

- Automation is growing, which can help reduce the need for manual labor and provide efficiencies/higher wage employment (but much of the work is still quite physical in nature).
- Skills are similar to other food industries and workers come from some of those other food-related industries, such as meat processing.
- It is common to advance/be promoted from within. This provides opportunities for workers to have long-term careers.
- The immigrant population has proven to be well-suited for the industry. Any help supporting this population as well as increasing visas can have a big positive impact.

Other Findings

- Needs vary between communities (Portland has a deeper labor pool than Damariscotta, for example).
- Automation/technology is regularly being adopted and integrated to gain efficiency and reduce the need for more labor.
- Many interviews cite the importance of R&D to industry growth and sustainability, as well as business skills to optimize markets and financial feasibility. These are skills that are needed in the industry – additionally, a commitment to building business models and focusing on value-added will help keep industry competitive including with wages.
- Most employers looking for workers utilize online platforms like Indeed plus word of mouth, and local advertising.

Resources

Each of the following resources were indicated within the interviews as serving as a resource related to the industry and education/workforce development.

- SEAMaine
- Island Institute
- Maine Maritime Academy – particularly for vessel skills and experience
- Washington County Community College – in particular captain's course
- Maine Aquaculture Innovation Center
- Coastal Enterprises Inc –aquaculture in shared waters course (free)
- Southern Maine Community College
- Maine Department of Labor
- Unity College
- Colby College
- University of Maine
- University of New England
- Cape Elizabeth High School – aquaculture program – one example of such program
- Maine Aquaculture Association
- Gulf of Maine Research Institute
- Maine Center of Entrepreneurs

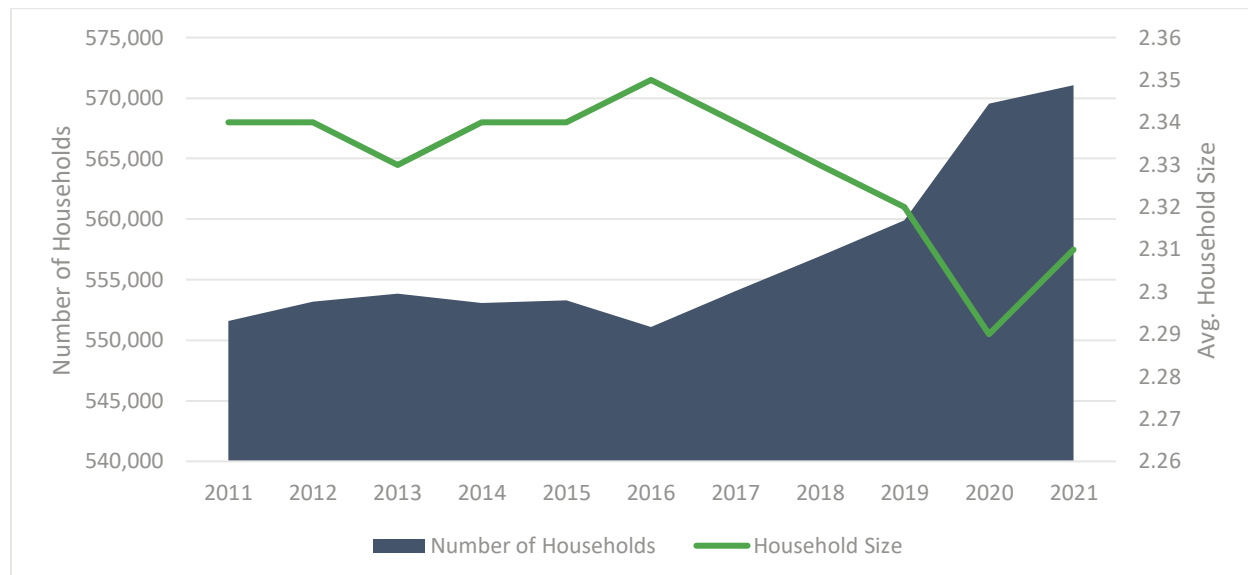
HOUSING ANALYSIS

During the one-on-one employer interviews, workforce housing emerged as a substantial challenge impacting the ability of the MLR to grow and thrive. Workers in Maine, a state with a large tourism economy and saw significant in-migration during the COVID-19 pandemic, are experiencing extreme challenges in accessing housing that is affordable and near their employment. This quantitative analysis will document the economic, demographic, and inventory characteristics of the Maine housing market, using the most recently available data to better understand the challenges facing these workers.

Households

Since 2016, the number of households in Maine has been steadily growing. Conversely, the average household size has been declining. In 2021, there was a slight uptick in average household size. However, it remains to be seen if this uptick becomes a longer-term trend.

Figure 31: Maine Households and Household Size, 2011 - 2021.

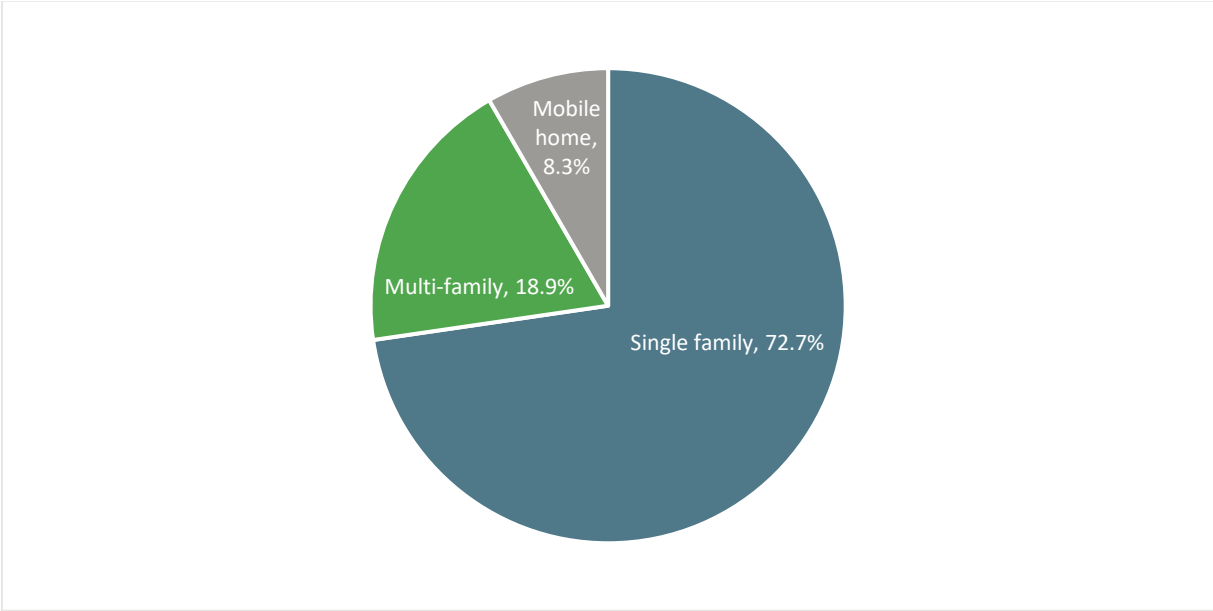


Source: 2011 – 2021 American Community Survey 5-Year Estimates.

Housing Type

Housing in Maine is a combination of single-family units, multi-family units, and mobile homes. The vast majority of homes are single-family (see Figure 32). Somewhat unique to Maine, mobile homes make up 8% of the total housing stock. The preference for single-family homes has grown over time; since 2011, the percentage of single-family homes has increased by about 1%, while the percentage of multi-family and mobile homes have decreased. Compared to the United States as a whole, Maine has more single unit detached structures, small multi-family homes (two to four units), and mobile homes, and fewer large buildings and developments.

Figure 32: Maine Housing Stock by Type

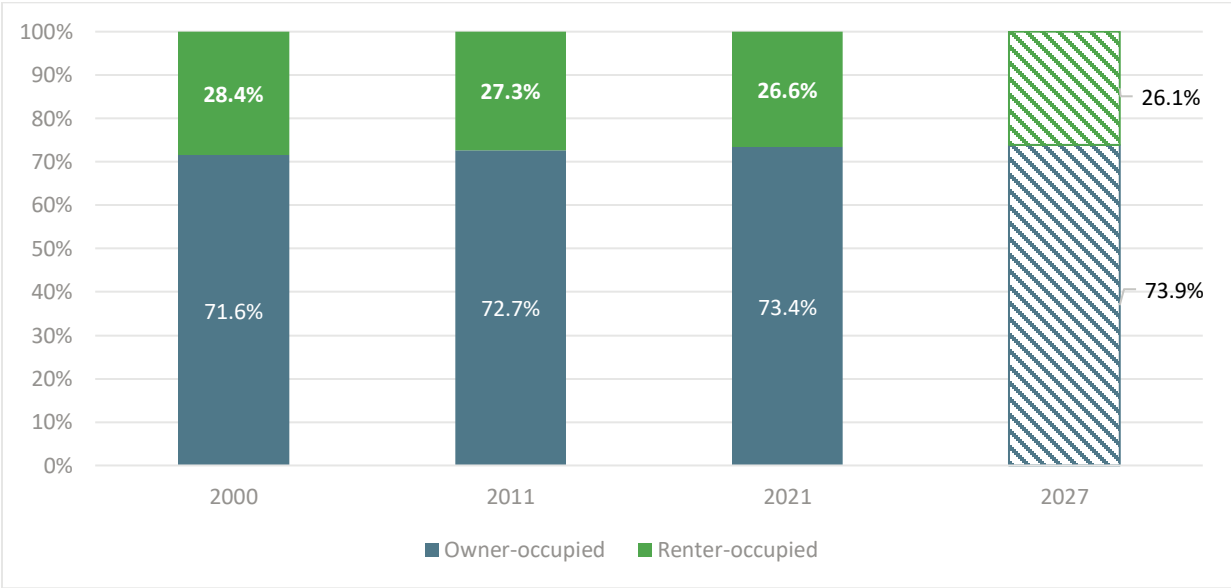


Source: 2021 American Community Survey 5-Year Estimates.

Housing Tenure

The percentage of owner-occupied housing has increased since 2000, while the percentage of renter-occupied units has decreased. Over the next five years, this trend is projected to continue, and the share of owner-occupied homes will grow slightly.

Figure 33: Maine Housing Tenure, 2000 to 2027.



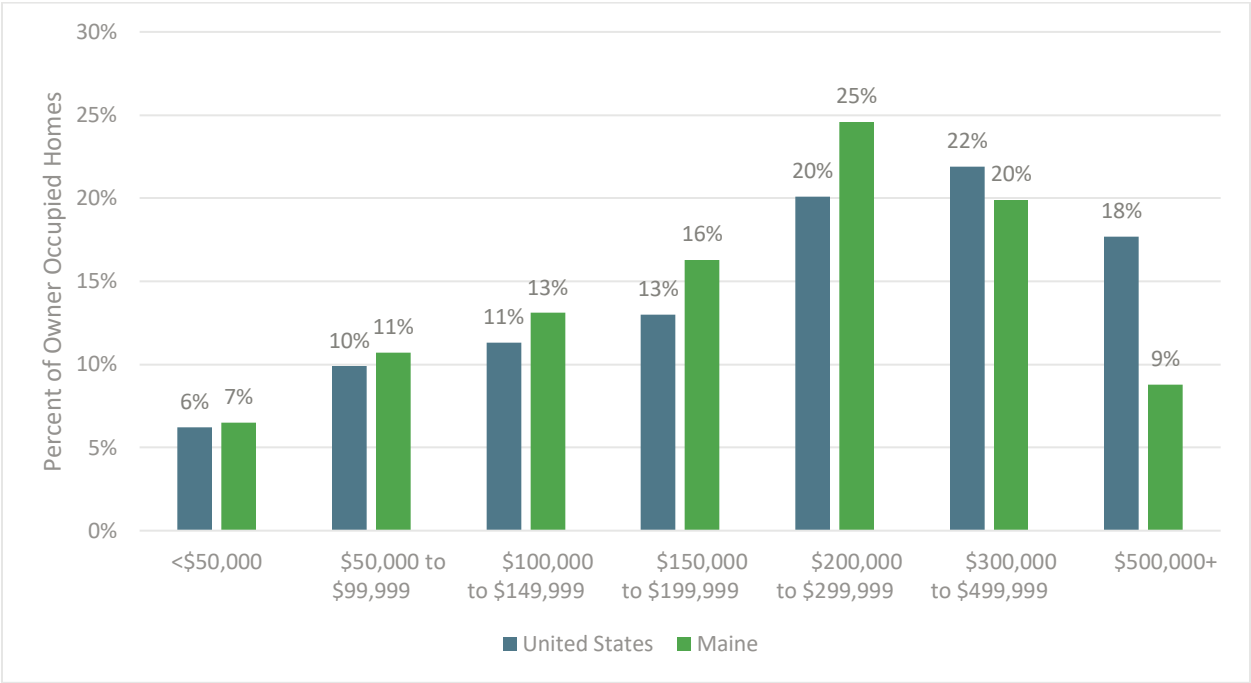
Source: 2011 and 2021 American Community Survey 5-Year Estimates, 2000 Decennial Census. 2027 projections from ESRI Business Analyst.

Owner-Occupied Home Value

The median home value in Maine is \$212,100, slightly lower than the national value of \$244,900. The majority of home values range from \$150,000 to \$499,999. From 2016 to 2021, home values in Maine steadily increased by 2.2% to 4.0% per year. From 2020 to 2021, the median home value increased by 7.1%, almost double the increases that were previously seen.

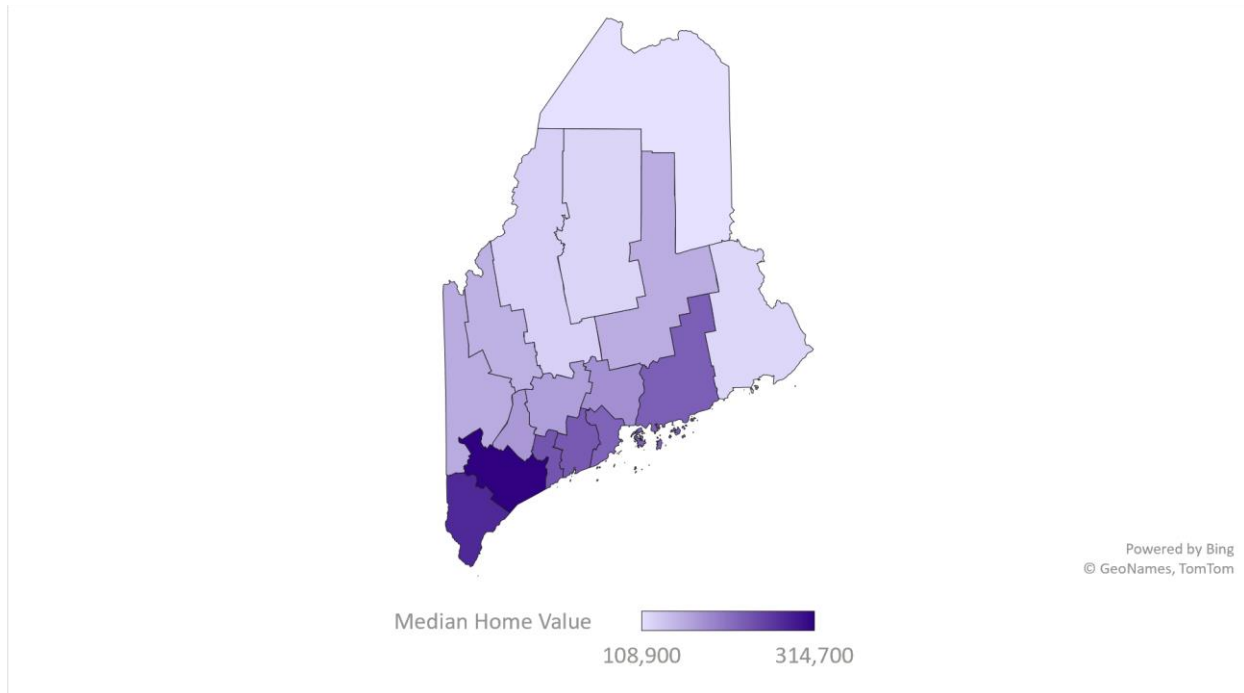
Home values vary across the state; southern coastal counties tend to have the highest median home value, while northern and inland counties tend to have the lowest (see Figure 35).

Figure 34: Occupied Home Values.



Source: 2021 American Community Survey 5-Year Estimates.

Figure 35: Median Home Value by County, 2021.



Source: 2021 American Community Survey 5-Year Estimates

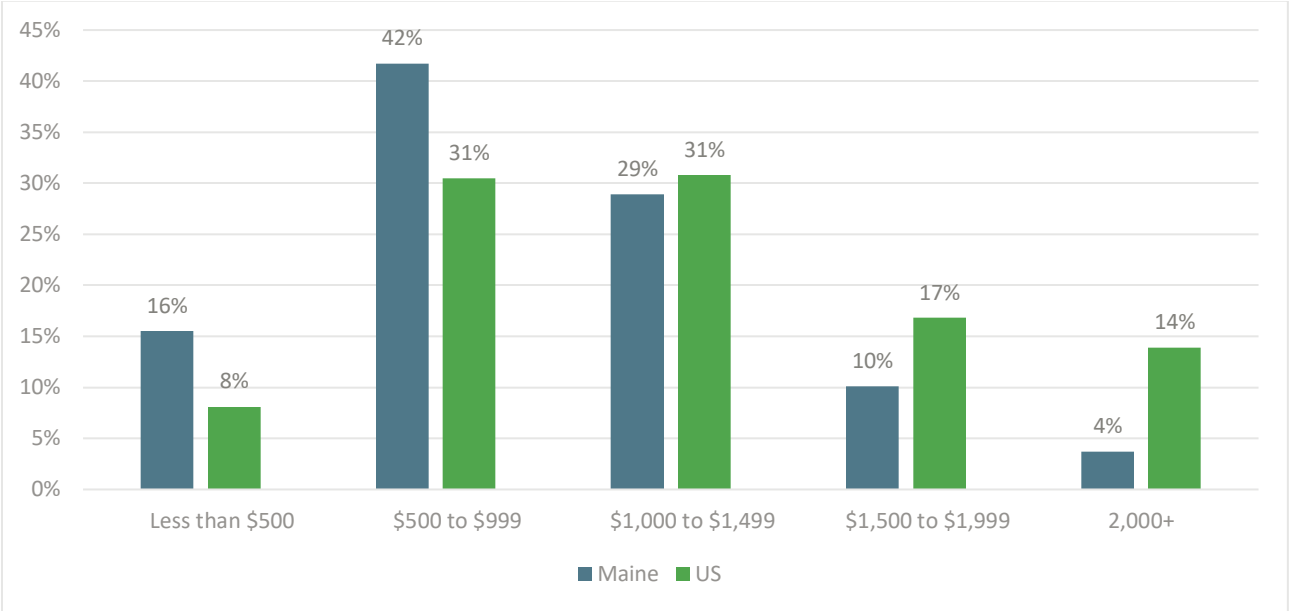
Gross Rent

The median gross rent¹⁸ in Maine is \$927, about 20% less than the national value of \$1,163. The majority of monthly rental rates are less than \$1,500, with only 14% of all rents in Maine being higher than that. Between 2016 and 2020, the median rental price increased by 2.3 to 2.8% per year. From 2020 to 2021, the median gross rent in Maine increased by 6.2%, almost three times the increase of the previous year.

As with home values, the median gross rent varies by county. Rents are lowest in Washington and Aroostook counties and highest in Cumberland county (see Figure 37).

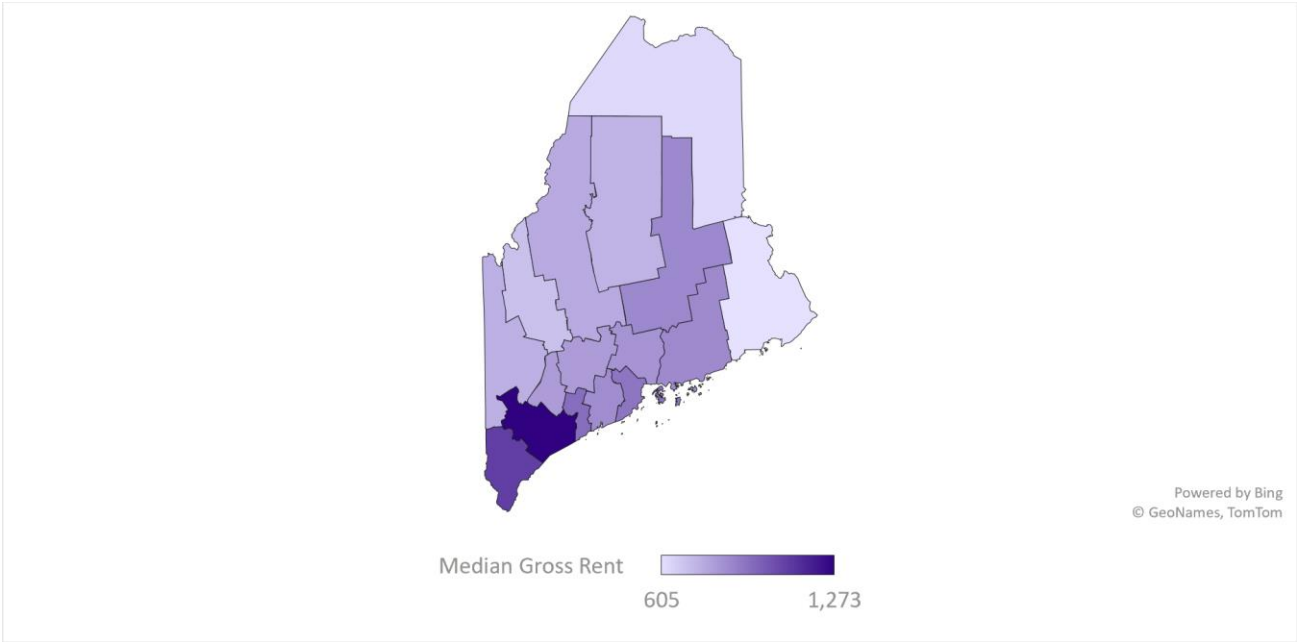
¹⁸ Gross rent is the contract rent (the agreed upon monthly rent) plus the estimate average cost of utilities and fuels.

Figure 36: Gross Rent



Source: 2021 American Community Survey 5-Year Estimates

Figure 37: Median Gross Rent by County



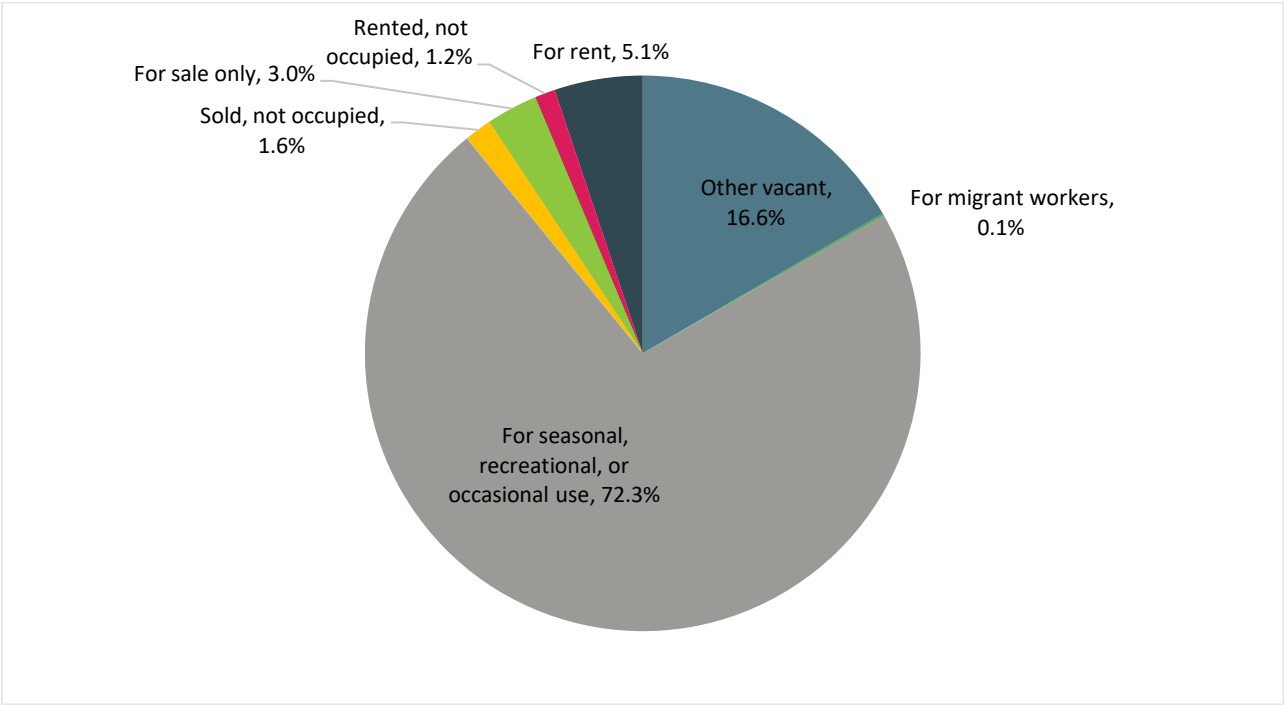
Source: 2021 American Community Survey 5-Year Estimates

Vacancy Rates

In 2021, Maine had 166,718 vacant housing units that were vacant year-round, or 23% of the total housing units. The vast majority of these vacant units are being used seasonally, recreationally, or occasionally. As a state with a strong camp culture and large tourism

industry, strategies for increasing occupancy of these seasonal homes could reduce the housing squeeze.

Figure 38: Reason for vacancy.

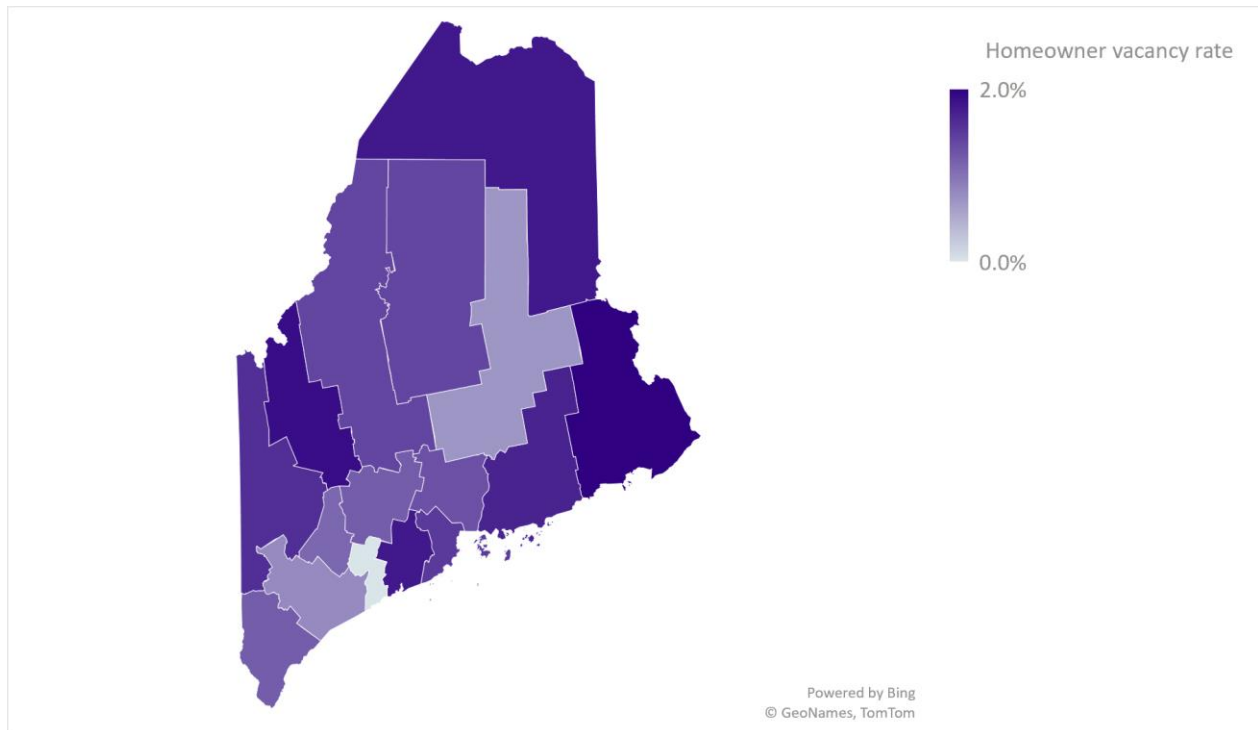


Source: 2021 American Community Survey 5-Year Estimates

Homeowner Vacancy Rate

In Maine, the homeowner vacancy rate¹⁹ is 1.2%, which matches the homeowner vacancy rate in the United States. The homeowner vacancy rate has decreased by 0.8 percentage points since 2016. This varies by county; Washington and Aroostook counties have the highest homeowner vacancy rates (see Figure 39).

Figure 39: Homeowner vacancy rate by county



Source: 2021 American Community Survey 5-Year Estimates

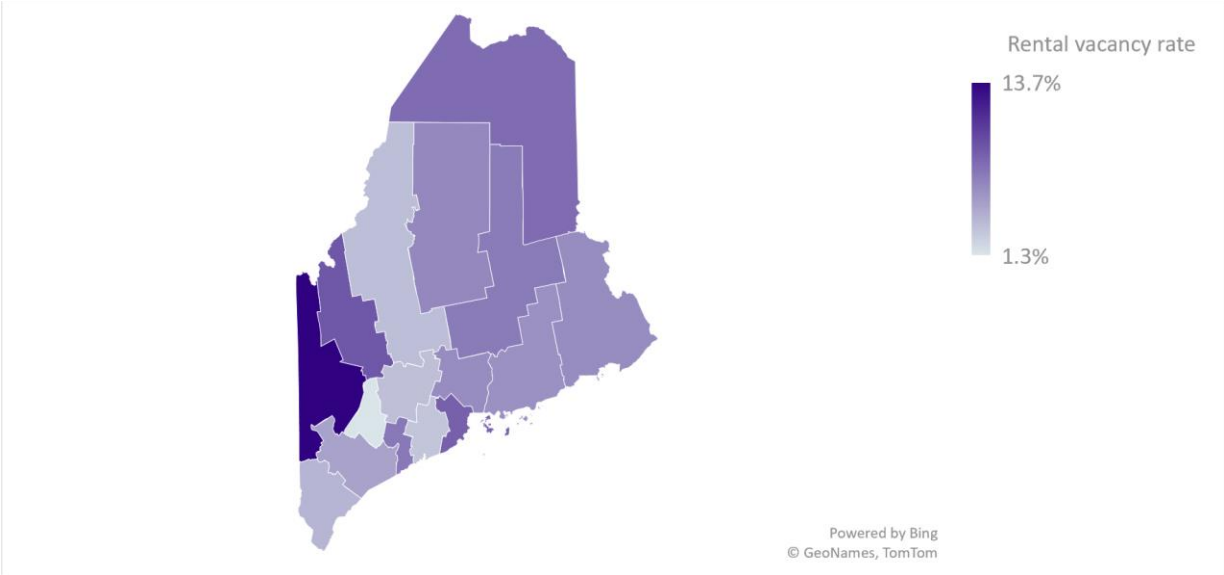
Rental Vacancy Rate

The rental vacancy rate²⁰ in Maine has decreased by 1.1 percentage points since 2016, and currently sits at 5.3%. This is slightly lower than the nationwide rental vacancy rate of 5.7%. As with the homeowner vacancy rate, the rental vacancy rate varies by county, with Oxford County having the highest rental vacancy rate.

¹⁹ The homeowner vacancy rate is calculated as the number of vacant year-round homeowner inventory for sale divided by the sum of the owner-occupied units plus the vacant year-round units sold but awaiting occupancy plus the vacant year-round units for sale. This does not include units that are held off the market and units that are vacant seasonally.

²⁰ The rental vacancy rate is calculated as the number of vacant year-round units for rent divided by the sum of renter occupied units, vacant year-round units rented but awaiting occupancy, and vacant year-round units for rent. This excludes units that are held off the market and rental units that are vacant seasonally.

Figure 40: Rental vacancy rate by county.

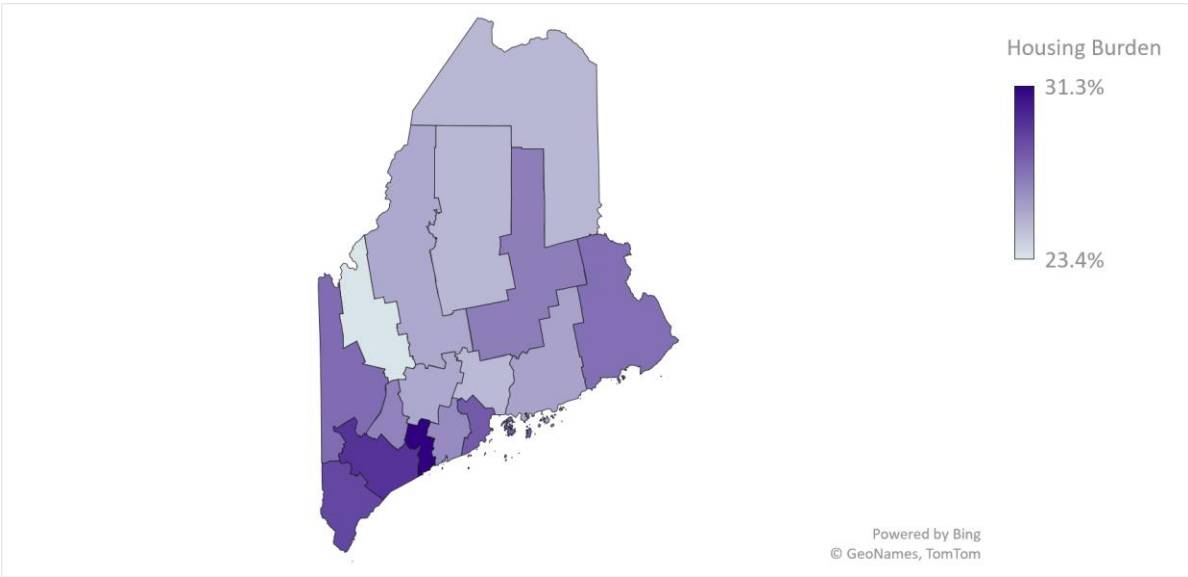


Source: 2021 American Community Survey 5-Year Estimates

Cost Burden

Households are said to be cost-burdened if they spend more than 30% of their monthly income on rent and utilities. Overall, 28% of Maine households are cost burdened. As seen in Figure 41, this varies by county. However, in all counties in Maine, at least 25% of households are cost burdened.

Figure 41: Cost burden by county.

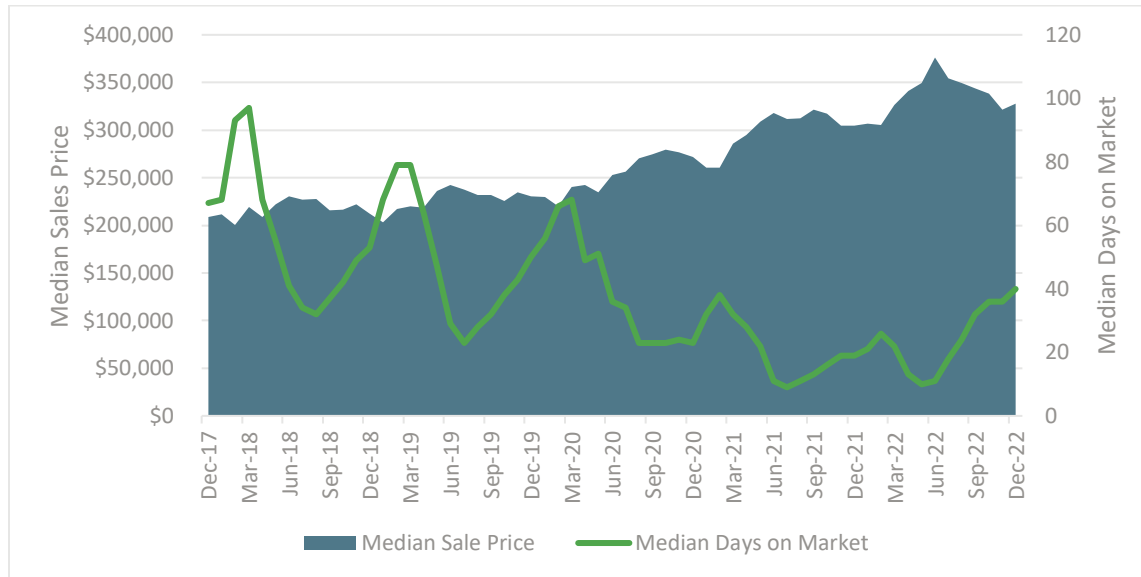


Source: 2021 American Community Survey 5-Year Estimates

Sales Prices and Time on Market

Since 2017, the median home sales price in Maine has been steadily rising. Prices peaked in May 2022 and have since decreased. However, prices still remain above pre-pandemic levels. Simultaneously, the number of days on the market has been decreasing. This also reached its lowest level in May 2022. Since then, the number of days on the market have increased, a trend that is likely to continue as long as interest rates continue to rise.

Figure 42: Median sales price and median days on market for homes sold in Maine, December 2017 to December 2022.



Source: Redfin Market Insights.

PROMISING PRACTICE RESEARCH & RECOMMENDATIONS

Talent Pipeline Development

In an increasingly tight, and competitive, labor market, employers and employer organizations are becoming increasingly creative, and forward thinking, when it comes to developing their talent pipelines. In this section, we highlight a selection of promising practices from around the country that are being leveraged to meet employment needs of not only today, but tomorrow as well. For industries that, perhaps, are not so well known, or, perhaps, are battling misperceptions about the nature of the work or the pay and benefits available, a major part of these initiatives is correcting these public misperceptions. Manufacturers have long battled these perceptions, as they transitioned to a more technical, skilled workforce over the latter part of the 20th Century, so it should come as no surprise that our first Promising Practice comes from a private/non-profit partnership between employers and the Manufacturing Institute (<https://www.themanufacturinginstitute.org/>).

Future Creators Programming

As part of a broader “Careers on Track” program developed in concert with the Manufacturing Institute, Union Pacific Railroads recently launched a 3-year, \$3 million dollar initiative to bring career paths in transportation, distribution, and logistics (TDL) to middle school students across the country. The “Future Creators” initiative has made available, at no cost, digitally delivered STEM curriculum and content to over 24,000 middle schools. The curriculum is supplemented with real world examples and highlighting how these skills apply to a career in TDL. To date, the Manufacturing Institute reported that over 80% of all participants have an increased awareness of/interest in careers like those available at Union Pacific²¹.

The classroom component was designed, specifically, to reduce gender gaps and dispel myths about both the type and nature of jobs in the industry. A 3-D, mobile simulator was also included as part of the program, traveling the country to promote the industry’s careers in a fun, interactive way to targeted communities. Again, the tour stops are designed to target women, young people, and traditionally underrepresented communities to create awareness and improve perceptions²².

Be Pro, Be Proud South Carolina

In September of 2020, in partnership with the Governor’s Office (and the South Carolina Department of Employment and Workforce), the Associated Industries of South Carolina (<https://www.sctrucking.org/scta-foundation/>) launched the Be Pro, Be Proud initiative. Utilizing initial and support funds from employers and the state itself, the initiative focuses on a custom-built, double-expandable, 53 ft. trailer that serves as a mobile workshop, with simulators for truck driving, forklift operation, welding, and carpentry skills. The trailer is transported around the state with a tractor provided by Carolina International Trucks, and has, to date, visited 308 locations across the state, focusing on high schools and technical schools. To support the on-site events, the initiative has its own website as well, with links to career pathways, training programs, job openings, and employers (<https://www.beprobeproudsc.org/>).

Other states (Arkansas, Georgia, New Mexico, North Carolina, and Tennessee) have launched similar initiatives, all designed to highlight earnings potential and attract the next generation of pros to their industries.

Talent Bound, Marion County, Indiana

To better respond to the mismatch between skills needed in industry and the emerging workforce, the state of Indiana requires work-based learning as a graduation requirement for high school students. Talent Bound serves as the connection between this requirement and the students of Marion County, providing a three-phased approach to career exploration for students. First, classroom curriculum and mentoring connections are established to develop a baseline understanding of industry sectors. Next, through “Talent Tours” and “Talent Shadow” opportunities, students are exposed to a wide variety of industries and hands-on activities.

²¹ <https://www.themanufacturinginstitute.org/press-releases/union-pacific-railroad-and-the-manufacturing-institute-launch-digital-stem-awareness-program-for-middle-school-students/>

²² <https://www.nam.org/how-manufacturers-are-investing-in-their-future-workforce-17633/?stream=workforce>

Finally, students are able to further explore and develop their skills through paid work experiences, through “Talent Hire”, “Talent Intern”, and “Talent Apprenticeship” programming, designed to meet the post-graduation goals of each student.

Employers can join the program through a relatively straight-forward process, streamlined to meet their busy schedules and tailored to their broader recruitment needs/goals. The program continues to expand, with more employers coming online quickly, some alleviating immediate staffing pain points with the paid student workers. All employers get the chance to promote their industry and recruit the emerging generation of workers.

Educator in the Workplace

A program gaining popularity across the country, the Educator in the Workplace curriculum starts by reaching the people, perhaps, most responsible for exposing the next generation to promising career opportunities: teachers and guidance counselors. Through a straightforward registration process and at no charge to teachers or school districts, the curriculum sponsored by the Scranton, PA Chamber of Commerce (<https://www.scrantonchamber.com/educators-in-the-workplace/>) first offers classroom overviews of industry sectors and requirements of employees, both education, training, and soft skills. Next, educators are afforded an opportunity to meet one-on-one with industry leaders, tour local facilities and, ultimately, spend some time actually completing tasks associated with in-demand occupations. Educators routinely report being exposed to opportunities they were not previously aware of, and, in turn, return to their classrooms and offices able to counsel and instruct prospective next generation employees about the steps necessary to enter these careers.

Expanded Recruitment & Retention Strategies

Erie County Re-Entry and Support Alliance (ECRSA)

Funded by the Greater Erie Community Action Committee (GECAC), the United Way, and Pennsylvania Department of Education, the Alliance provides case management and wrap around services for justice involved individuals seeking to re-enter the workforce. Because many are faced with myriad challenges upon release- including housing, transportation and, in some cases, childcare challenges, the program was established to help address these problems so participants can focus on getting back to work. Employers have reported significant success working with the Alliance and with supports in place to help their transition back to the community, the risk affiliated for employers is alleviated. The program has been widely recognized as a best practice and continues to attract additional funding and interest from community partners and employers themselves.

MaineWorks is helping to provide jobs for those facing barriers to workforce reentry, including those with felony convictions. They partner jobseekers with jobs in many fields, including construction, carpentry, masonry, roadwork, and landscaping, as well as providing a comprehensive social needs evaluation through the Maine Recovery Fund to connect workers with necessary supportive services. For the MLR, partnering with organizations such as this, either by helping to fund the program or hiring enrollees, would serve as an important first step in expanding the MLR reach into the underutilized population of ex-offenders in the state.

LGBTQ+ Community

Research by the Society for Human Resource Management (SHRM) illustrates that members of the LGBTQ+ community, despite recent advances, continue to face daunting barriers to workforce entry. The transgender community, specifically, is cited as a segment of the population with an exceedingly low rate of labor force participation, lower than individuals with disabilities by some estimates. These talented individuals are often left on the sidelines, despite their willingness and ability to help assuage the challenges in hiring faced by industries across the board. Some large corporate employers, however, have created and implemented plans to increase the diversity of the workforce, with a specific emphasis on the LGBTQ+ community. Bank of America, for example, was one of the first employers in the country to develop a toolkit for both the hiring and the retention of members of the community. In fact, the organization was one of the first in the country to develop a framework specifically dedicated to the hiring and retention of transgender employees in 2014. Since that time, Bank of America has conducted hundreds of presentations for and been engaged by multiple Fortune 500 companies to both teach diversity in the workplace and develop inclusive policies, practices, and procedures²³.

SHRM highlights the need for intentional engagement and planning, and the importance of including LGBTQ+ individuals as part of the process of updating internal hiring and retention guidelines. The Society also identifies *Out & Equal* as THE premier organization in the United States advocating for and assisting in the development of true workplace equality. The organization has a wide variety of toolkits, self-assessments, and best practices/articles available directly to employers on its website, <https://outandequal.org/toolkits-guides/>

MLR economy employers who want to learn how to be better allies and better support LGBTQ+ job seekers and employees can hire local LGBTQ+ organizations. Maine TransNet provides transgender cultural competency training for community organizations, health care professionals, social service providers, educators, clergy, and professional environments. EqualityMaine offers cultural competency trainings and professional development on a variety of issues concerning LGBTQ+ people, including Supporting Transgender People in the Workplace and Make your Agency more LGBTQ+ Inclusive.

Native American Population

The Office of Federal Contract Compliance (OFCC), a division of the US Department of Labor (DOL), in concert with the Indian and Native American Employment Rights Program (INAERP), published a “best practices” guide for hiring, and retaining, Native Americans. While the guide and some program specifics (e.g. Indian Preference in hiring for work conducted at or near a reservation) are applicable only to businesses contracting with the federal government, the general advice and resource links are universally valid. Highlights include:

²³ <https://www.shrm.org/hr-today/news/all-things-work/Pages/a-sense-of-belonging.aspx>

1. Working directly with Tribal Employment Rights Organizations (TEROs)²⁴ and vocational and training programs designed explicitly to assist Native Americans. Engaging tribal stakeholders directly for recruitment will help expedite the process and establish the beginning of a longer-term relationship. In Maine, information on Tribal Leadership can be found here: <https://www.bia.gov/bia/ois/tribal-leaders-directory/>; and the Wabanaki Vocational Rehabilitation program here: <https://maliseets.net/vocational-rehabilitation/>
2. Reconsidering standardized employment tests when screening applicants. Native Americans are often sensitive to these types of tests for historically denying their elders access to education and employment. When possible, it is recommended that other methods be used to screen candidates for necessary job qualifications or evaluate employees for advancement opportunities.
3. Consider access limitations for Native American communities when recruiting, especially the absence of high-speed internet on many reservations. On-site recruiting events can be more effective, but will require establishing trust and partnerships with tribal leaders and agencies already working within the community.
4. Focusing on building long-term relationships within the community, trust mentioned explicitly as a significant barrier to recruitment and retention of a Native American workforce. This means building an inclusive and welcoming environment at the workplace and reinvesting in the community, beyond the paychecks of employees.

The full list of best practices can be accessed at:

<https://www.dol.gov/agencies/ofccp/compliance-assistance/outreach/indians-native-americans/best-practices>

Collaboration and Coordination

OH-PENN Interstate Manufacturing Alliance

As the first interstate industry partnership in the nation, the OH-PENN initiative is comprised of employers from the Ohio counties of Columbiana, Mahoning, and Trumbull and the Pennsylvania counties of Lawrence and Mercer. Founded with the overriding premise that labor pools do not respect county or state lines when pursuing new opportunities, the alliance has been a vehicle to greater collaboration across traditional workforce development areas. Over the course of its relatively brief existence, the Alliance has developed a wide array of Department of Labor recognized apprenticeship programs in manufacturing and affiliated industries. As both an industry organization and training consortium, the Alliance has opened doors for both employers and employees looking to leverage funds from across the region for training support and seeking camaraderie and best practices from around the region. The work of the initiative is supported with a public-facing website that provides detailed occupation, training, and apprenticeship information for prospective job seekers (<https://industryneedsyou.com/>).

²⁴ A full list of Tribal Employment Rights Organizations (TEROs), as well as news, contact information, and conference highlights can be found at: <https://cter-tero.org/>

RECOMMENDATIONS

Diverse Talent Attraction and Retention

Based purely on the data presented at the beginning of this report, two demographic challenges face Maine: its low labor force participation rate and the decline in the number of younger citizens in the state. While SEAMaine can, of course, engage in a broad marketing campaign in concert with state or local leaders designed to highlight the appeal of the state to non-residents, changing these trends is a large problem well beyond the control of this organization. However, the industry CAN dig deeper into the pool of potential talent in the state by focusing on traditionally marginalized populations, most notably individuals who are justice-involved and individuals with disabilities.

Justice-Involved Individuals

The Society of Human Resources Management (SHRM) has conducted extensive research on individuals with criminal records in the workplace. Based on responses from over 40,000 employers, over 80% of respondents indicated that employees with criminal records perform as well or better than other employees²⁵. Additionally, employers like Envoy and Saint Gobain have publicly endorsed studies that show that second chance employees are retained longer, all else equal, than other, non-criminal record staff²⁶. This squares with analysis from the US Chamber of Commerce that highlights second chance employees as vital to reducing turnover. Additionally, they estimate that excluding individuals with criminal records from the workforce leads to a loss of between \$78 and \$87 Billion in unrealized GDP annually for US industries²⁷.

To support employers looking to bolster their current hiring practices when it comes to justice involved individuals, SHRM also produced a toolkit that helps guide the way. Available at <https://www.gettingtalentbacktowork.org/>, the kit includes testimonials, best practices, and advice on building career pathways for ex-offenders. While all industries can help reduce their labor shortages by looking at the ex-offender population, for the MLR economy, where loyalty and retention were highlighted as challenges by several of the employers the team spoke to, second chance employees have the potential to fill these high-turnover positions and remain with the company much longer than other employees. More than that, with Work Opportunity Tax Credits and FREE bonding from the federal government available via local workforce one stop centers for new hires with criminal records, there are serious financial incentives to support this initiative.

Community Action organizations and non-profits across Maine are working with employers across the state to secure opportunities for second chance individuals. The local workforce development boards, discussed in fuller detail below, are often the starting point for identifying and connecting with these programs. Hiring individuals with criminal records, who

²⁵ <https://www.gettingtalentbacktowork.org/>

²⁶ <https://www.themanufacturinginstitute.org/how-manufacturers-should-pursue-second-chance-hiring-16944/>

²⁷ <https://www.uschamber.com/employment-law/how-employers-can-build-career-pathways-ex-offenders>

are, disproportionately, minorities or persons of color, can also jump-start a broader diversity drive within the workplace.

Individuals with Disabilities

As indicated through both the surveys and conversations with employers, diversity, not only in gender, ethnicity, and race, but also in the presence of individuals with disabilities in a challenge in the industry. In Maine, just 34% of the working-age population with a disability are employed; this is less than half of the rate for those without a disability.²⁸ Fortunately, a robust program of support for employers and job seekers with disabilities already exists, as offered by the Maine Division of Vocational Rehabilitation

(<https://www.maine.gov/rehab/dvr/index.shtml>). Active engagement with representatives from the Division, and a willingness to work together with the Division and new employees to provide the specific accommodations necessary to not only attract but retain these potential employees is all that is required to tap into this underutilized labor pool.

LGBTQ+

Throughout the best practices research on building a welcoming and inclusive workplace, the emphasis remained on engagement with community members when constructing policies, procedures, and practices aimed at increasing LGBTQ+ recruitment and retention. Remaining abreast of all current laws, rules, and regulations and ensuring full adherence is an important, basic step. But beyond meeting these basic requirements, an important first step for employers is a full open and assessment of the culture and benefits available for this community. The Human Rights Campaign has tracked Corporate Equality with regard to LGBTQ+ workplace for 20 years and produces annual lists of top-employers. In brief, the best employers:

1. Ensure nondiscrimination policies are in place and enforced across business entities
2. Provide equitable benefits for LGBTQ+ workers and their families
3. Foster a supporting an inclusive culture
4. Practice corporate social responsibility and
5. Actively drive equality in LGBTQ+ family formation

As part of their annual report (available at https://reports.hrc.org/corporate-equality-index-2022?_ga=2.31858494.1618424107.1678889900-1309780240.1678889900#spotlight-equality-public-square), HRC provides a questionnaire and scoring mechanism used in its evaluations. We have included this tool in Appendix IV for employers interested in completing a self-assessment. Hiring a Diversity Equity and Inclusion consultant, or contracting with a firm specializing in corporate assessment and training, to administer the survey and assist with planning and culture change could be a viable strategy for employers.

²⁸ “Maine Workers with Disabilities.” *Center for Workforce Research and Information*. <https://www.maine.gov/labor/cwri/disabilities/index.html>

Coordination of Workforce Strategies Among Partners

In terms of expanded collaboration with partners, it is recommended that SEAMaine actively engage with the local workforce development community. In addition to state workforce development board, comprised of gubernatorial appointees representing employers, labor unions and employee groups, education providers, and partner program representatives (such as vocational rehabilitation department officials), Maine also has 3 separate local workforce development boards. The Northeastern Area covers the counties of Aroostook, Hancock, Penobscot, Piscataquis, and Washington; Central Western Area covers Androscoggin, Franklin, Kennebec, Oxford and Somerset counties and; the Coastal Counties Board serves the counties of Cumberland, Knox, Lincoln, Sagadahoc, Waldo and York.

Both the state and local workforce boards work closely with employers and training providers to designate occupations as high-priority/in-demand. While the specific criteria can vary slightly from region to region, in general terms, for an occupation to be classified as in-demand it must be growing faster than the state average for all occupations AND provide a family-sustaining income for potential employees. Once an occupation is designated as in-demand in a local area, or statewide, individuals seeking to transition into one of these jobs are eligible for training dollars and supportive service (for example, childcare or transportation) assistance while completing the designated training program. Eligibility criteria for individual enrollees are also determined by local boards, in concert with state and federal guidance, with training dollars typically restricted to displaced workers (losing their prior jobs through no fault of their own) or individuals with barriers to employment (such as basic skills deficiency, reliance on public assistance, unmet transportation or childcare needs, for example).

Broader, less restrictive (in terms of individual eligibility) training programs also exists for employees who were displaced from their current jobs due to adverse trade conditions. This training- authorized by the Trade Adjustment Act- is available on a longer-term basis for displaced workers when their job loss is certified by the Department of Labor as a result of the aforementioned adverse trade conditions.

Additionally, local workforce boards also oversee, and in some cases, manage Industry Partnerships in their region. In addition to gathering employers together to discuss and address a wide range of workforce related challenges, often these Industry Partnerships and their members can access Incumbent Worker Training dollars, made available on (typically) a reimbursement basis to upskill and retain current employees. While SEAMaine has a vibrant, active organization that, in many ways, encompasses and supersedes the work of traditional industry partnerships, tapping into pre-existing networks and actively participating in local workforce board meetings could expand the organization's footprint and position the group for access to incumbent worker training dollars. Additionally, attending these public board and committee meetings would afford the group the opportunity to highlight the in-demand occupations for the industry, and start the process of adding them to the local area's list of occupations eligible for training dollar support.

Developing the Talent Pipeline

Clearly, SEAMaine has already taken some of the most important steps in developing the talent pipeline: identifying in-demand occupations and building career pathways. The next step in this

process is promotion and distribution of the pathways and raising awareness of the industry. Through the course of employer interviews, lack of awareness of opportunities by school officials, teachers and guidance counselors, was pointed out as a challenge for the industry. In the best practices section above we highlight proven examples of how best to promote and share these career pathways, especially with the next generation of workers.

Working much more closely with local school districts and community colleges to both refine and promote the opportunities that exist in the MLR economy will be vital. Fortunately, plugging in to the local workforce development system will expedite these type of partnerships, as educators are required representatives on local workforce development boards. Once connections have been made, the possibilities are limitless for employers when it comes to promoting careers in the MLR economy. Interactive exhibits, experiential learning opportunities, educator in the workplace programming, and active participation in job fairs/career awareness events are all potential opportunities to increase awareness of and interest in MLR occupations. Targeted recruitment campaigns for part-time employees, when the job conditions allow, drawn from the ranks of high school seniors or recent graduates are a possible solution to alleviating some immediate labor force crunches, with the potential of attracting full-time recruits upon graduation.

Automation and its Potential

Raised by employers as part of engagement, the future potential of automation to alleviate some pain points in attracting and retaining the workforce the industry needs is real. Though not an “immediate” solution, as technology progresses, the potential for the industry to capitalize on non-human labor is part of a future solution to workforce challenges. While industry experts are better positioned to speak about the specific modalities and developments, as they pertain to specific MLR opportunities, there has been a considerable push toward adaptable, programmable, easy-to-use “cobots” in the workplace. In a partnership with Vincennes University (Indiana)²⁹, Telamon Corporation is providing training and development support for employers looking to automate routine processes in the workplace with teachable cobots, that assist workers in their day-to-day tasks. Telamon is actively expanding the use of these cobots beyond traditional manufacturing and is eagerly seeking partners in new sectors to develop cobot solutions that meet their needs (<https://telamon.com/robotics/>).

Supporting the Talent Pipeline

Workforce housing and transportation were raised by employers as substantial challenges during the one-on-one interviews. Many of the jobs require living near Maine’s coast, which tends to be more expensive. Maine’s small coastal towns, while picturesque, often lack affordable housing units, both for homeownership and for rental. In southern Maine, housing tends to be more plentiful, but cost remains a challenge. These issues are compounded by transportation challenges.

In many of Maine’s rural communities, there is no public transportation, or limited public transportation. Further, 6.7% of Maine households have no vehicles and are reliant on active

²⁹ <https://www.insideindianabusiness.com/articles/vincennes-creating-cobot-hub-with-dollar8m-grant>

transportation, taxis/rideshares, and rides from others. With the expense of housing along the coastline, many workers are forced to live far from their employer and commute long distances. For those without a license or a reliable vehicle, this is a barrier to employment within the MLR economy.

Housing

The workforce housing crisis is multi-faceted and has no easy solution. MaineHousing's Rural Affordable Rental Housing Program will provide funding to build affordable rental housing units. While this is not a short-term solution (housing needs to be built), this should help ease some of the strain on the housing market. Maine has also passed the Maine Affordable Housing Tax Credit program, which provides a refundable tax credit to those who invest in affordable housing. This program should incentivize the development of affordable housing, providing more options for those in the MLR economy.

Community-led initiatives could be employed to ease the housing strain. In Kennebunkport, the Kennebunkport Heritage Housing Trust was established in 2018 with a mission of providing permanent, affordable housing for year-round residents. Land for the Heritage Woods neighborhood was donated by the town in 2019. Construction began in April 2021 and was completed by September 2022. At the time of completion, the six homes (single-family and attached duplexes) that were made up the development were sold. To keep the purchase prices low, the Trust used grants from the Maine State Housing Authority and the Federal Home Loan Bank. Buyers were able to access low-down payment loans from the Maine State Housing Authority. Though a small development, this type of community-led initiative is one piece towards solving Maine's workforce housing puzzle.

Transportation

Addressing transportation challenges will require new and innovative thinking. The Maine Department of Transportation is currently operating a Workforce Transportation Pilot Program grant. This program is focused on connecting workers in rural areas with employment opportunities, although those in urban environments can apply. An employer (or group of employers) could take advantage of this program to address their specific transportation needs. While this process may be labor-intensive, it would result in a transportation solution tailor-made to the needs of the employers. Further, there may be an opportunity to lead a collaboration between employers, non-profits, workforce boards, and others, to maximize the impact. More information on this program is available at <https://www.maine.gov/mdot/grants/mjrp/workforce/>.

CONCLUSION

Maine's MLR economy has experienced growth over the past ten years. The industry is primed for further growth but is being constrained by Maine's limited labor pool. Without intervention, Maine's labor force is likely to continue to shrink, due to its aging population. However, by focusing on talent pipeline development and support, expanded recruitment and retention efforts, and collaboration & coordination, the MLR can increase employee

recruitment, attraction, and retention. Through these efforts, the MLR economy, an important heritage industry, can flourish and support many more generations of Mainers.

APPENDIX I: SUPPLEMENTAL TABLES

Table 7: Supporting Occupations

| Occupation | SOC Code | SOC Title |
|--|----------|--|
| Trade Association Executive | 11-1011 | Chief Executives |
| Advertising & Promotions Managers | 11-2011 | Advertising and Promotions Managers |
| Marketing Managers | 11-2021 | Marketing Managers |
| Public Relations Managers | 11-2032 | Public Relations Managers |
| Facilities engineers | 11-3013 | Facilities Manager |
| Finance managers | 11-3031 | Financial Managers |
| Quality control/quality assurance manager | 11-3051 | Industrial Production Managers |
| RAS Quality Control Manager | 11-3051 | Industrial Production Managers |
| Logistics/operations Manager | 11-3071 | Transportation, Storage, and Distribution Managers |
| Supply Chain Managers | 11-3071 | Transportation, Storage, and Distribution Managers |
| Transportation, Storage & Distribution Managers | 11-3071 | Transportation, Storage, and Distribution Managers |
| Wharf manager | 11-3071 | Transportation, Storage, and Distribution Managers |
| First receivers (wharves/co-ops) | 13-1041 | Compliance Officers |
| Market Research Analysts & Marketing Specialists | 13-1161 | Market Research Analysts and Marketing Specialists |
| Small business advisors | 13-2051 | Financial and Investment Analysts |
| Marine Engineers | 17-2121 | Marine Engineers and Naval Architects |
| Mechanical Engineering Technicians | 17-3027 | Marine Engineering Technologists and Technicians |
| RAS Systems Operation & Maintenance Technician | 17-3027 | Mechanical Engineering Technologists and Technicians |
| Aquatic animal health nutritionist | 19-1011 | Animal Scientists |
| Applied Food Scientist | 19-1012 | Food Scientists and Technologists |
| Research Chef | 19-1012 | Food Scientists and Technologists |
| Microbiologists | 19-1022 | Microbiologists |
| Phycologist | 19-1022 | Microbiologists |
| Marine Biologists (Regulatory) | 19-1023 | Zoologists and Wildlife Biologists |
| Marine Biologists (Research) | 19-1029 | Biological Scientists, All Other |
| Molecular biologists | 19-1029 | Biological Scientists, All Other |
| Biotechnology Research Scientist | 19-1029 | Biological Scientists, All Other |
| Marine Resource Managers | 19-1031 | Conservation Scientists |
| Public Health Researcher | 19-1041 | Epidemiologists |
| Biomedical Scientist | 19-1042 | Medical Scientists, Except Epidemiologists |
| Marine Policy Analyst | 19-2041 | Environmental Scientists and Specialists, Including Health |

| | | |
|---|---------|--|
| Environmental Policy Analyst | 19-2041 | Environmental Scientists and Specialists, Including Health |
| Marine Geologists | 19-2042 | Geoscientists, Except Hydrologists and Geographers |
| Extension Associate | 19-4012 | Agricultural Technicians |
| Aquatic Animal Health Technician | 19-4021 | Biological Technicians |
| Water Quality Analyst | 19-4031 | Chemical Technicians |
| Physical Oceanographic Technicians | 19-4043 | Geological Technicians, Except Hydrologic Technicians |
| Lawyer | 23-1011 | Lawyers |
| Hearings Officer | 23-1021 | Administrative Law Judges, Adjudicators, and Hearing Officers |
| Post-secondary Teachers | 25-1011 | Business Teacher, Postsecondary |
| Post-secondary Teachers | 25-1021 | Computer Science Teachers, Postsecondary |
| Post-secondary Teachers | 25-1022 | Mathematical Science Teachers, Postsecondary |
| Post-secondary Teachers | 25-1031 | Architecture Teachers, Postsecondary |
| Post-secondary Teachers | 25-1032 | Engineering Teachers, Postsecondary |
| Post-secondary Teachers | 25-1041 | Agricultural Sciences Teachers, Postsecondary |
| Post-secondary Teachers | 25-1042 | Biological Science Teachers, Postsecondary |
| Post-secondary Teachers | 25-1043 | Forestry and Conservation Science Teachers, Postsecondary |
| Post-secondary Teachers | 25-1051 | Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary |
| Marine Academic Researcher | 25-1051 | Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary |
| Post-secondary Teachers | 25-1052 | Chemistry Teachers, Postsecondary |
| Post-secondary Teachers | 25-1053 | Environmental Science Teachers, Postsecondary |
| Aquaculture Academic Researcher | 25-1053 | Environmental Science Teachers, Postsecondary |
| Post-secondary Teachers | 25-1054 | Physics Teachers, Postsecondary |
| Post-secondary Teachers | 25-1061 | Anthropology and Archeology Teachers, Postsecondary |
| Post-secondary Teachers | 25-1062 | Area, Ethnic, and Cultural Studies Teachers, Postsecondary |
| Post-secondary Teachers | 25-1063 | Economics Teachers, Postsecondary |
| Post-secondary Teachers | 25-1064 | Geography Teachers, Postsecondary |
| Post-secondary Teachers | 25-1065 | Political Science Teachers, Postsecondary |
| Post-secondary Teachers | 25-1066 | Psychology Teachers, Postsecondary |
| Post-secondary Teachers | 25-1067 | Sociology Teachers, Postsecondary |

| | | |
|-------------------------|---------|--|
| Post-secondary Teachers | 25-1069 | Social Sciences Teachers, Postsecondary, All Other |
| Post-secondary Teachers | 25-1071 | Health Specialties Teachers, Postsecondary |
| Post-secondary Teachers | 25-1072 | Nursing Instructors and Teachers, Postsecondary |
| Post-secondary Teachers | 25-1081 | Education Teachers, Postsecondary |
| Post-secondary Teachers | 25-1082 | Library Science Teachers, Postsecondary |
| Post-secondary Teachers | 25-1111 | Criminal Justice and Law Enforcement Teachers, Postsecondary |
| Post-secondary Teachers | 25-1112 | Law Teachers, Postsecondary |
| Post-secondary Teachers | 25-1113 | Social Work Teachers, Postsecondary |
| Post-secondary Teachers | 25-1121 | Art, Drama, and Music Teachers, Postsecondary |
| Post-secondary Teachers | 25-1122 | Communications Teachers, Postsecondary |
| Post-secondary Teachers | 25-1123 | English Language and Literature Teachers, Postsecondary |
| Post-secondary Teachers | 25-1124 | Foreign Language and Literature Teachers, Postsecondary |
| Post-secondary Teachers | 25-1125 | History Teachers, Postsecondary |
| Post-secondary Teachers | 25-1126 | Philosophy and Religion Teachers, Postsecondary |
| Post-secondary Teachers | 25-1192 | Family and Consumer Sciences Teachers, Postsecondary |
| Post-secondary Teachers | 25-1193 | Recreation and Fitness Studies Teachers, Postsecondary |
| Post-secondary Teachers | 25-1194 | Career/Technical Education Teachers, Postsecondary |
| Post-secondary Teachers | 25-1199 | Postsecondary Teachers, All Others |
| K-12 Educators | 25-2012 | Kindergarten Teachers, Except Special Education |
| K-12 Educators | 25-2021 | Elementary School Teachers, Except Special Education |
| K-12 Educators | 25-2022 | Middle School Teachers, Except Special and Career/Technical Education |
| K-12 Educators | 25-2023 | Career/Technical Education Teachers, Middle School |
| K-12 Educators | 25-2031 | Secondary School Teachers, Except Special and Career/Technical Education |
| K-12 Educators | 25-2032 | Career/Technical Education Teachers, Secondary School |
| K-12 Educators | 25-2052 | Special Education Teachers, Kindergarten and Elementary School |
| K-12 Educators | 25-2057 | Special Education Teachers, Middle School |

| | | |
|--|---------|--|
| K-12 Educators | 25-2058 | Special Education Teachers, Secondary School |
| Post-secondary Teachers | 25-3011 | Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors |
| Seafood writers/journalists | 27-3023 | News Analysts, Reporters, and Journalists |
| Fisheries Lobbyist | 27-3031 | Public Relations Specialists |
| Public Relations Specialists | 27-3031 | Public Relations Specialists |
| Seafood writers/journalists | 27-3043 | Writers and Authors |
| Human Dieticians and Nutritionists | 29-1031 | Dietitians and Nutritionists |
| Endocrinologists | 29-1229 | Physicians, All Other |
| Marine Patrol Officer | 33-3031 | Fish and Game Wardens |
| Retail Salespersons | 41-2031 | Retail Salespersons |
| Accounts Payable & Accounts Receivable Specialist | 43-3031 | Bookkeeping, Accounting, and Auditing Clerks |
| Bookkeeper | 43-3031 | Bookkeeping, Accounting, and Auditing Clerks |
| Electrician | 47-2111 | Electricians |
| Boat Mechanic | 49-3051 | Motorboat Mechanics and Service Technicians |
| HVAC & Cooling Equipment Engineers | 49-9021 | Heating, Air Conditioning, and Refrigeration Mechanics and Installers |
| Processing plant technician | 49-9043 | Maintenance Workers, Machinery |
| Machinist | 51-4041 | Machinists |
| Gear Production Employee | 51-4041 | Machinists |
| HVAC & Cooling Equipment Engineers | 51-9193 | Cooling and Freezing Equipment Operators and Tenders |
| Seafood Warehouse Managers | 53-1047 | First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors |
| Waste Manager | 53-1047 | First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors |
| Feed & Bait Distribution Worker | 53-3031 | Driver/Sales Workers |
| Class A, B & C Truck Drivers | 53-3032 | Heavy and Tractor-Trailer Truck Drivers |
| Stockers & Order Fillers | 53-7065 | Stockers and Order Fillers |
| Sanitation workers | 53-7081 | Refuse and Recyclable Material Collectors |

Table 8: Core Occupations Employment

| Description | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Farmers, Ranchers, and Other Agricultural Managers | 2,355 | 2,383 | 2,440 | 2,379 | 2,339 | 2,686 | 2,690 | 2,745 | 3,219 | 3,156 | 3,260 | 3,382 | 3,483 | 3,570 | 3,639 | 3,693 | 3,756 | 3,812 | 3,862 | 3,906 | 3,945 |
| Architectural and Engineering Managers | 797 | 761 | 739 | 738 | 727 | 736 | 754 | 755 | 752 | 700 | 711 | 730 | 742 | 752 | 757 | 758 | 763 | 766 | 768 | 769 | 770 |
| Buyers and Purchasing Agents | 1,762 | 1,779 | 1,770 | 1,801 | 1,775 | 1,704 | 1,617 | 1,624 | 1,610 | 1,686 | 1,701 | 1,718 | 1,726 | 1,731 | 1,729 | 1,716 | 1,711 | 1,705 | 1,694 | 1,683 | 1,673 |
| Life, Physical, and Social Science Technicians, All Other | 244 | 250 | 271 | 296 | 294 | 302 | 300 | 300 | 295 | 297 | 304 | 309 | 312 | 314 | 316 | 316 | 319 | 321 | 321 | 321 | 322 |
| First-Line Supervisors of Farming, Fishing, and Forestry Workers | 490 | 545 | 493 | 558 | 520 | 502 | 558 | 449 | 449 | 464 | 466 | 472 | 477 | 480 | 484 | 484 | 487 | 488 | 490 | 490 | 491 |
| Farmworkers, Farm, Ranch, and Aquacultural Animals | 526 | 651 | 640 | 750 | 757 | 766 | 792 | 755 | 834 | 938 | 982 | 1,039 | 1,084 | 1,122 | 1,151 | 1,170 | 1,197 | 1,220 | 1,241 | 1,259 | 1,276 |
| Fishing and Hunting Workers | 4,678 | 4,637 | 4,263 | 4,819 | 4,258 | 4,319 | 4,522 | 4,171 | 4,918 | 4,633 | 4,799 | 4,978 | 5,126 | 5,255 | 5,335 | 5,433 | 5,528 | 5,611 | 5,685 | 5,749 | 5,805 |
| First-Line Supervisors of Production and Operating Workers | 2,943 | 2,928 | 2,955 | 2,982 | 3,019 | 3,059 | 3,082 | 3,070 | 2,881 | 3,045 | 3,072 | 3,109 | 3,131 | 3,143 | 3,148 | 3,134 | 3,133 | 3,128 | 3,119 | 3,106 | 3,091 |
| Meat, Poultry, and Fish Cutters and Trimmers | 766 | 817 | 790 | 840 | 826 | 814 | 825 | 839 | 847 | 859 | 844 | 836 | 827 | 819 | 809 | 800 | 791 | 783 | 772 | 763 | 753 |
| Material Moving Workers, All Other | 105 | 103 | 103 | 97 | 97 | 96 | 115 | 122 | 115 | 100 | 101 | 102 | 103 | 103 | 103 | 103 | 104 | 105 | 105 | 107 | 107 |

Table 9: Supporting Occupations Employment

| Description | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Chief Executives | 1,409 | 1,413 | 1,417 | 1,425 | 1,406 | 1,434 | 1,430 | 1,665 | 1,842 | 2,061 | 2,074 | 2,091 | 2,099 | 2,103 | 2,098 | 2,094 | 2,094 | 2,094 | 2,091 | 2,088 | 2,082 |
| Advertising and Promotions Managers | 146 | 146 | 150 | 141 | 140 | 142 | 135 | 140 | 143 | 190 | 190 | 190 | 189 | 188 | 187 | 186 | 186 | 185 | 184 | 183 | 182 |
| Marketing Managers | 911 | 938 | 966 | 1,029 | 1,080 | 1,154 | 1,211 | 1,272 | 1,261 | 1,247 | 1,273 | 1,307 | 1,331 | 1,352 | 1,366 | 1,374 | 1,387 | 1,397 | 1,405 | 1,412 | 1,416 |
| Public Relations Managers | 290 | 278 | 280 | 285 | 287 | 289 | 296 | 295 | 280 | 283 | 288 | 295 | 298 | 301 | 303 | 304 | 306 | 307 | 308 | 308 | 308 |
| Facilities Managers | 647 | 668 | 665 | 657 | 632 | 613 | 630 | 662 | 648 | 714 | 722 | 730 | 735 | 739 | 741 | 740 | 742 | 742 | 742 | 742 | 741 |
| Financial Managers | 2,784 | 2,767 | 2,759 | 2,785 | 2,673 | 2,604 | 2,533 | 2,563 | 2,437 | 2,498 | 2,567 | 2,642 | 2,705 | 2,756 | 2,798 | 2,826 | 2,860 | 2,894 | 2,920 | 2,942 | 2,961 |
| Industrial Production Managers | 744 | 746 | 737 | 737 | 734 | 753 | 774 | 749 | 695 | 728 | 739 | 756 | 767 | 776 | 782 | 780 | 784 | 787 | 788 | 787 | 787 |
| Transportation, Storage, and Distribution Managers | 612 | 592 | 595 | 591 | 595 | 591 | 573 | 580 | 538 | 557 | 566 | 575 | 581 | 587 | 589 | 588 | 589 | 590 | 589 | 589 | 588 |
| Compliance Officers | 1,042 | 1,030 | 1,030 | 1,038 | 1,075 | 1,085 | 1,110 | 1,206 | 1,242 | 1,317 | 1,328 | 1,342 | 1,352 | 1,360 | 1,365 | 1,365 | 1,368 | 1,369 | 1,370 | 1,368 | 1,367 |
| Market Research Analysts and Marketing Specialists | 967 | 1,023 | 1,039 | 1,077 | 1,119 | 1,169 | 1,280 | 1,376 | 1,556 | 1,770 | 1,864 | 1,947 | 2,016 | 2,072 | 2,118 | 2,149 | 2,189 | 2,223 | 2,253 | 2,277 | 2,299 |
| Financial and Investment Analysts | 483 | 483 | 490 | 506 | 526 | 566 | 624 | 694 | 704 | 721 | 739 | 761 | 778 | 792 | 802 | 808 | 816 | 824 | 828 | 833 | 838 |
| Marine Engineers and Naval Architects | 180 | 176 | 205 | 212 | 236 | 326 | 358 | 377 | 303 | 211 | 214 | 217 | 220 | 221 | 222 | 221 | 221 | 220 | 219 | 217 | 215 |
| Mechanical Engineering Technologists and Technicians | 234 | 230 | 241 | 249 | 234 | 225 | 210 | 234 | 200 | 145 | 148 | 151 | 154 | 157 | 158 | 158 | 159 | 159 | 160 | 160 | 158 |
| Animal Scientists | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Food Scientists and Technologists | 31 | 36 | 33 | 39 | 40 | 43 | 32 | 38 | 38 | 61 | 63 | 64 | 66 | 67 | 67 | 67 | 68 | 68 | 68 | 68 | 68 |
| Microbiologists | 67 | 72 | 70 | 66 | 66 | 69 | 73 | 78 | 87 | 89 | 89 | 93 | 95 | 97 | 98 | 99 | 100 | 101 | 103 | 103 | 103 |
| Zoologists and Wildlife Biologists | 264 | 249 | 231 | 206 | 208 | 254 | 282 | 298 | 281 | 256 | 258 | 258 | 258 | 257 | 257 | 256 | 255 | 254 | 253 | 252 | 251 |

WORKFORCE NEEDS ASSESSMENT
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| | | | | | | | | | | | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Biological Scientists, All Other | 106 | 111 | 94 | 88 | 96 | 95 | 84 | 76 | 75 | 85 | 88 | 92 | 96 | 98 | 101 | 102 | 104 | 105 | 107 | 108 | 109 |
| Conservation Scientists | 110 | 104 | 98 | 103 | 104 | 115 | 122 | 118 | 131 | 146 | 149 | 150 | 151 | 152 | 151 | 151 | 152 | 152 | 152 | 152 | 152 |
| Epidemiologists | 28 | 25 | 19 | <10 | <10 | <10 | <10 | <10 | 17 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Medical Scientists, Except Epidemiologists | 193 | 219 | 207 | 225 | 224 | 226 | 221 | 224 | 218 | 201 | 211 | 220 | 228 | 234 | 239 | 242 | 245 | 249 | 252 | 254 | 256 |
| Environmental Scientists and Specialists, Including Health | 465 | 491 | 499 | 488 | 492 | 492 | 487 | 517 | 523 | 499 | 506 | 510 | 511 | 512 | 512 | 511 | 510 | 510 | 508 | 507 | 505 |
| Geoscientists, Except Hydrologists and Geographers | 108 | 105 | 103 | 99 | 91 | 80 | 69 | 68 | 70 | 76 | 77 | 79 | 81 | 83 | 84 | 84 | 85 | 86 | 86 | 86 | 87 |
| Agricultural Technicians | 19 | 22 | 24 | 26 | 23 | 24 | 36 | 34 | 54 | 59 | 62 | 65 | 67 | 69 | 71 | 72 | 74 | 75 | 76 | 77 | 78 |
| Biological Technicians | 541 | 510 | 502 | 481 | 465 | 457 | 463 | 478 | 490 | 481 | 482 | 492 | 499 | 504 | 508 | 509 | 511 | 513 | 514 | 514 | 514 |
| Chemical Technicians | 142 | 145 | 144 | 148 | 151 | 155 | 159 | 158 | 158 | 168 | 171 | 177 | 183 | 187 | 190 | 190 | 193 | 194 | 195 | 196 | 196 |
| Geological Technicians, Except Hydrologic Technicians | 12 | 14 | 14 | 14 | 17 | 20 | 22 | 25 | 10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Lawyers | 2,480 | 2,455 | 2,360 | 2,390 | 2,425 | 2,411 | 2,433 | 2,526 | 2,580 | 2,648 | 2,696 | 2,727 | 2,751 | 2,773 | 2,791 | 2,804 | 2,819 | 2,832 | 2,843 | 2,853 | 2,861 |
| Administrative Law Judges, Adjudicators, and Hearing Officers | 117 | 115 | 115 | 119 | 117 | 112 | 108 | 109 | 116 | 110 | 110 | 110 | 109 | 108 | 107 | 107 | 106 | 105 | 104 | 104 | 103 |
| Postsecondary Teachers | 7,596 | 7,969 | 8,005 | 8,117 | 7,752 | 7,644 | 7,502 | 7,774 | 7,444 | 7,465 | 7,522 | 7,557 | 7,586 | 7,612 | 7,628 | 7,648 | 7,666 | 7,681 | 7,691 | 7,701 | 7,709 |
| Kindergarten Teachers, Except Special Education | 998 | 1,016 | 1,040 | 1,073 | 1,088 | 1,080 | 1,050 | 970 | 805 | 780 | 796 | 799 | 801 | 802 | 802 | 802 | 802 | 802 | 801 | 801 | 800 |
| Elementary School Teachers, Except Special Education | 6,023 | 5,861 | 5,786 | 5,634 | 5,568 | 5,682 | 5,765 | 5,768 | 5,366 | 5,070 | 5,203 | 5,223 | 5,236 | 5,244 | 5,245 | 5,239 | 5,238 | 5,235 | 5,229 | 5,222 | 5,212 |
| Middle School Teachers, Except Special and Career/Technical Education | 2,920 | 2,961 | 3,040 | 3,213 | 3,242 | 3,322 | 3,309 | 3,334 | 3,225 | 3,370 | 3,444 | 3,456 | 3,463 | 3,468 | 3,469 | 3,467 | 3,467 | 3,465 | 3,462 | 3,458 | 3,453 |
| Career/Technical Education Teachers, Middle School | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |

WORKFORCE NEEDS ASSESSMENT

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|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Secondary School Teachers, Except Special and Career/Technical Education | 5,055 | 4,999 | 5,086 | 5,108 | 5,326 | 5,486 | 5,592 | 5,449 | 5,172 | 5,595 | 5,723 | 5,747 | 5,763 | 5,773 | 5,777 | 5,775 | 5,777 | 5,776 | 5,773 | 5,767 | 5,760 |
| Career/Technical Education Teachers, Secondary School | 88 | 85 | 66 | 56 | 60 | 65 | 60 | 56 | 62 | 62 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 66 | 66 | 66 | 65 |
| Special Education Teachers, Kindergarten and Elementary School | 1,321 | 1,275 | 1,240 | 1,163 | 1,066 | 1,010 | 963 | 951 | 929 | 859 | 877 | 880 | 881 | 882 | 882 | 881 | 880 | 879 | 878 | 876 | 875 |
| Special Education Teachers, Middle School | 529 | 529 | 526 | 532 | 533 | 527 | 489 | 447 | 429 | 448 | 457 | 458 | 459 | 459 | 459 | 459 | 458 | 458 | 458 | 457 | 456 |
| Special Education Teachers, Secondary School | 680 | 684 | 695 | 685 | 693 | 691 | 683 | 649 | 639 | 745 | 761 | 763 | 764 | 765 | 765 | 765 | 765 | 764 | 763 | 762 | 761 |
| Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors | 275 | 299 | 302 | 293 | 278 | 290 | 284 | 268 | 245 | 176 | 175 | 173 | 171 | 169 | 167 | 165 | 162 | 161 | 159 | 158 | 156 |
| News Analysts, Reporters, and Journalists | 411 | 398 | 385 | 369 | 375 | 354 | 324 | 325 | 311 | 277 | 271 | 260 | 251 | 244 | 237 | 235 | 231 | 227 | 224 | 222 | 220 |
| Public Relations Specialists | 1,157 | 1,181 | 1,218 | 1,265 | 1,325 | 1,434 | 1,539 | 1,619 | 1,714 | 1,825 | 1,848 | 1,866 | 1,880 | 1,888 | 1,896 | 1,896 | 1,901 | 1,903 | 1,904 | 1,904 | 1,904 |
| Writers and Authors | 625 | 665 | 783 | 801 | 730 | 781 | 707 | 564 | 603 | 634 | 645 | 653 | 660 | 666 | 669 | 676 | 681 | 687 | 691 | 694 | 696 |
| Dietitians and Nutritionists | 293 | 291 | 293 | 292 | 294 | 285 | 294 | 307 | 310 | 306 | 310 | 313 | 316 | 318 | 319 | 320 | 321 | 323 | 324 | 325 | 325 |
| Physicians, All Other | 1,420 | 1,366 | 1,345 | 1,369 | 1,338 | 1,375 | 1,483 | 1,436 | 1,319 | 1,275 | 1,269 | 1,273 | 1,276 | 1,278 | 1,277 | 1,274 | 1,272 | 1,270 | 1,268 | 1,264 | 1,261 |
| Fish and Game Wardens | 140 | 146 | 133 | 128 | 149 | 144 | 149 | 168 | 163 | 150 | 151 | 149 | 147 | 145 | 144 | 142 | 141 | 139 | 138 | 137 | 135 |
| Retail Salespersons | 20,374 | 20,810 | 21,139 | 21,490 | 21,200 | 21,056 | 21,270 | 20,906 | 18,872 | 19,165 | 19,555 | 19,584 | 19,567 | 19,527 | 19,456 | 19,345 | 19,265 | 19,170 | 19,064 | 18,949 | 18,826 |
| Bookkeeping, Accounting, and Auditing Clerks | 8,134 | 7,986 | 7,913 | 8,023 | 8,098 | 8,059 | 8,152 | 8,240 | 7,989 | 8,647 | 8,678 | 8,692 | 8,678 | 8,647 | 8,603 | 8,534 | 8,491 | 8,442 | 8,389 | 8,332 | 8,272 |
| Electricians | 2,664 | 2,624 | 2,636 | 2,699 | 2,676 | 2,912 | 3,334 | 3,684 | 3,573 | 3,635 | 3,748 | 3,839 | 3,906 | 3,957 | 3,996 | 4,008 | 4,037 | 4,059 | 4,075 | 4,086 | 4,092 |
| Motorboat Mechanics and | 279 | 256 | 261 | 252 | 243 | 238 | 256 | 267 | 269 | 378 | 388 | 394 | 398 | 402 | 403 | 403 | 405 | 405 | 405 | 404 | 403 |

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|--|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Service Technicians | | | | | | | | | | | | | | | | | | | | | |
| Heating, Air Conditioning, and Refrigeration Mechanics and Installers | 1,931 | 1,918 | 1,984 | 2,023 | 2,116 | 2,204 | 2,381 | 2,484 | 2,514 | 2,562 | 2,600 | 2,627 | 2,643 | 2,653 | 2,658 | 2,652 | 2,653 | 2,651 | 2,646 | 2,639 | 2,631 |
| Maintenance Workers, Machinery | 284 | 269 | 267 | 263 | 260 | 249 | 237 | 227 | 214 | 194 | 200 | 201 | 204 | 204 | 205 | 203 | 203 | 203 | 203 | 202 | 201 |
| Machinists | 1,506 | 1,496 | 1,523 | 1,573 | 1,562 | 1,607 | 1,623 | 1,657 | 1,599 | 1,754 | 1,785 | 1,810 | 1,827 | 1,839 | 1,846 | 1,847 | 1,855 | 1,858 | 1,860 | 1,859 | 1,857 |
| Cooling and Freezing Equipment Operators and Tenders | 15 | 23 | <10 | <10 | <10 | <10 | 24 | 25 | 26 | 41 | 41 | 41 | 41 | 40 | 40 | 40 | 40 | 39 | 39 | 39 | 38 |
| First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors | 1,463 | 1,458 | 1,463 | 1,453 | 1,429 | 1,473 | 1,587 | 1,913 | 2,093 | 2,433 | 2,454 | 2,468 | 2,472 | 2,474 | 2,469 | 2,455 | 2,447 | 2,438 | 2,426 | 2,412 | 2,397 |
| Driver/Sales Workers | 1,732 | 1,743 | 1,768 | 1,798 | 1,786 | 1,709 | 1,605 | 1,765 | 1,708 | 2,232 | 2,293 | 2,322 | 2,344 | 2,361 | 2,372 | 2,375 | 2,383 | 2,388 | 2,391 | 2,391 | 2,390 |
| Heavy and Tractor-Trailer Truck Drivers | 9,585 | 9,590 | 9,755 | 9,714 | 9,956 | 10,283 | 10,333 | 10,856 | 10,517 | 11,197 | 11,297 | 11,325 | 11,326 | 11,309 | 11,268 | 11,216 | 11,181 | 11,136 | 11,084 | 11,023 | 10,956 |
| Stockers and Order Fillers | 8,532 | 8,327 | 8,480 | 8,519 | 9,064 | 9,321 | 9,911 | 10,443 | 10,914 | 11,859 | 11,949 | 12,017 | 12,061 | 12,083 | 12,089 | 12,061 | 12,053 | 12,034 | 12,005 | 11,967 | 11,922 |
| Refuse and Recyclable Material Collectors | 1,013 | 983 | 983 | 977 | 915 | 778 | 757 | 696 | 657 | 662 | 675 | 683 | 687 | 690 | 692 | 691 | 691 | 691 | 689 | 687 | 685 |

Table 10: Annual Hires

| SOC | Description | Occupation Category | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---------|--|---------------------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | Core | 878 | 1,152 | 803 | 746 | 893 | 1,565 | 956 | 1,163 | 1,228 | 1,331 | 1,413 |
| 11-9041 | Architectural and Engineering Managers | Core | 221 | 183 | 213 | 205 | 175 | 192 | 124 | 196 | 213 | 212 | 210 |
| 13-1028 | Buyers and Purchasing Agents | Core | 773 | 737 | 621 | 566 | 712 | 719 | 606 | 775 | 763 | 769 | 796 |
| 19-4099 | Life, Physical, and Social Science Technicians, All Other | Core | 274 | 245 | 236 | 191 | 224 | 220 | 176 | 212 | 227 | 231 | 235 |
| 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers | Core | 463 | 483 | 395 | 600 | 350 | 295 | 325 | 376 | 388 | 416 | 428 |
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | Core | 1,524 | 1,430 | 1,039 | 874 | 777 | 847 | 924 | 1,222 | 1,286 | 1,379 | 1,456 |
| 45-3031 | Fishing and Hunting Workers | Core | 392 | 420 | 409 | 669 | 394 | 519 | 557 | 544 | 534 | 566 | 590 |
| 51-1011 | First-Line Supervisors of Production and Operating Workers | Core | 1,106 | 1,159 | 1,100 | 1,096 | 1,017 | 988 | 955 | 1,444 | 1,477 | 1,503 | 1,519 |
| 51-3022 | Meat, Poultry, and Fish Cutters and Trimmers | Core | 613 | 625 | 675 | 558 | 461 | 628 | 496 | 664 | 664 | 664 | 659 |
| 53-7199 | Material Moving Workers, All Other | Core | 125 | 129 | 73 | 119 | 75 | 95 | 84 | 50 | 50 | 50 | 51 |
| 11-1011 | Chief Executives | Supporting | 502 | 417 | 501 | 444 | 996 | 912 | 926 | 579 | 583 | 587 | 594 |
| 11-2011 | Advertising and Promotions Managers | Supporting | 133 | 111 | 107 | 65 | 111 | 135 | 145 | 103 | 126 | 105 | 105 |
| 11-2021 | Marketing Managers | Supporting | 483 | 455 | 487 | 501 | 509 | 510 | 411 | 490 | 513 | 523 | 539 |
| 11-2032 | Public Relations Managers | Supporting | 168 | 133 | 132 | 120 | 159 | 120 | 130 | 129 | 148 | 134 | 136 |
| 11-3013 | Facilities Managers | Supporting | 353 | 287 | 273 | 310 | 445 | 424 | 541 | 373 | 386 | 387 | 393 |

WORKFORCE NEEDS ASSESSMENT
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| | | | | | | | | | | | | | |
|---------|--|------------|-----|-----|-----|-----|-----|-------|-----|-------|-------|-------|-------|
| 11-3031 | Financial Managers | Supporting | 835 | 743 | 746 | 688 | 756 | 612 | 613 | 923 | 932 | 951 | 959 |
| 11-3051 | Industrial Production Managers | Supporting | 170 | 197 | 189 | 207 | 188 | 151 | 193 | 224 | 233 | 232 | 236 |
| 11-3071 | Transportation, Storage, and Distribution Managers | Supporting | 255 | 228 | 222 | 231 | 277 | 214 | 237 | 223 | 235 | 237 | 252 |
| 13-1041 | Compliance Officers | Supporting | 402 | 403 | 373 | 408 | 543 | 441 | 476 | 476 | 465 | 479 | 478 |
| 13-1161 | Market Research Analysts and Marketing Specialists | Supporting | 598 | 594 | 590 | 644 | 799 | 1,250 | 917 | 1,090 | 1,126 | 1,158 | 1,178 |
| 13-2051 | Financial and Investment Analysts | Supporting | 156 | 201 | 211 | 306 | 260 | 212 | 180 | 313 | 272 | 276 | 282 |
| 17-2121 | Marine Engineers and Naval Architects | Supporting | 46 | 114 | 177 | 114 | 72 | 169 | 28 | 49 | 50 | 52 | 53 |
| 17-3027 | Mechanical Engineering Technologists and Technicians | Supporting | 108 | 81 | 119 | 119 | 132 | 93 | 50 | 70 | 73 | 79 | 88 |
| 19-1011 | Animal Scientists | Supporting | <10 | <10 | <10 | 14 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 19-1012 | Food Scientists and Technologists | Supporting | 40 | 30 | 32 | 21 | 47 | 36 | 61 | 42 | 34 | 34 | 35 |
| 19-1022 | Microbiologists | Supporting | 31 | 24 | 34 | 29 | 46 | 43 | 24 | 36 | 37 | 39 | 40 |
| 19-1023 | Zoologists and Wildlife Biologists | Supporting | 76 | 87 | 216 | 164 | 145 | 86 | 69 | 92 | 92 | 93 | 93 |
| 19-1029 | Biological Scientists, All Other | Supporting | 41 | 53 | 51 | 52 | 55 | 42 | 47 | 48 | 38 | 61 | 42 |
| 19-1031 | Conservation Scientists | Supporting | 48 | 42 | 67 | 60 | 58 | 57 | 69 | 60 | 59 | 61 | 62 |
| 19-1041 | Epidemiologists | Supporting | <10 | <10 | <10 | <10 | <10 | 35 | <10 | <10 | <10 | <10 | <10 |
| 19-1042 | Medical Scientists, Except Epidemiologists | Supporting | 102 | 74 | 87 | 82 | 77 | 94 | 53 | 66 | 67 | 70 | 70 |
| 19-2041 | Environmental Scientists and Specialists, Including Health | Supporting | 196 | 171 | 205 | 236 | 217 | 184 | 148 | 206 | 211 | 211 | 213 |
| 19-2042 | Geoscientists, Except Hydrologists and Geographers | Supporting | 40 | 31 | 30 | 22 | 23 | 30 | 25 | 27 | 28 | 28 | 50 |

WORKFORCE NEEDS ASSESSMENT
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| | | | | | | | | | | | | | |
|---------|--|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 19-4012 | Agricultural Technicians | Supporting | 40 | 45 | 48 | 69 | 60 | 110 | 96 | 57 | 60 | 64 | 68 |
| 19-4021 | Biological Technicians | Supporting | 240 | 241 | 246 | 224 | 249 | 285 | 202 | 265 | 266 | 272 | 277 |
| 19-4031 | Chemical Technicians | Supporting | 62 | 72 | 68 | 71 | 59 | 70 | 60 | 97 | 95 | 104 | 104 |
| 19-4043 | Geological Technicians, Except Hydrologic Technicians | Supporting | 11 | 13 | 11 | 17 | 15 | <10 | 12 | <10 | <10 | <10 | <10 |
| 23-1011 | Lawyers | Supporting | 311 | 337 | 340 | 328 | 523 | 387 | 380 | 454 | 452 | 437 | 455 |
| 23-1021 | Administrative Law Judges, Adjudicators, and Hearing Officers | Supporting | 33 | 22 | 20 | 17 | 18 | 29 | 19 | 21 | 21 | 21 | 21 |
| 25-1099 | Postsecondary Teachers | Supporting | 3,839 | 2,975 | 3,063 | 2,734 | 2,761 | 4,118 | 2,560 | 3,240 | 3,263 | 3,283 | 3,304 |
| 25-2012 | Kindergarten Teachers, Except Special Education | Supporting | 643 | 573 | 510 | 499 | 466 | 419 | 272 | 382 | 400 | 402 | 403 |
| 25-2021 | Elementary School Teachers, Except Special Education | Supporting | 1,980 | 1,799 | 1,897 | 1,905 | 1,751 | 1,675 | 1,206 | 1,754 | 1,753 | 1,756 | 1,757 |
| 25-2022 | Middle School Teachers, Except Special and Career/Technical Education | Supporting | 1,764 | 1,160 | 1,171 | 1,038 | 1,108 | 1,177 | 911 | 1,099 | 1,155 | 1,159 | 1,162 |
| 25-2023 | Career/Technical Education Teachers, Middle School | Supporting | <10 | <10 | 0 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 25-2031 | Secondary School Teachers, Except Special and Career/Technical Education | Supporting | 1,714 | 2,480 | 1,840 | 1,939 | 1,575 | 1,491 | 1,987 | 1,751 | 1,827 | 1,835 | 1,839 |
| 25-2032 | Career/Technical Education Teachers, Secondary School | Supporting | 20 | 38 | 37 | 22 | 16 | 42 | 13 | 33 | 21 | 20 | 20 |
| 25-2052 | Special Education Teachers, Kindergarten and Elementary School | Supporting | 417 | 382 | 354 | 321 | 298 | 386 | 225 | 283 | 289 | 290 | 290 |
| 25-2057 | Special Education Teachers, Middle School | Supporting | 206 | 191 | 177 | 167 | 144 | 144 | 118 | 143 | 150 | 150 | 151 |
| 25-2058 | Special Education Teachers, Secondary School | Supporting | 240 | 255 | 235 | 218 | 203 | 279 | 423 | 244 | 252 | 253 | 254 |

WORKFORCE NEEDS ASSESSMENT
SUBMITTED BY THOMAS P. MILLER & ASSOCIATES, LLC

| | | | | | | | | | | | | | |
|---------|--|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 25-3011 | Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors | Supporting | 174 | 145 | 276 | 158 | 141 | 162 | 95 | 86 | 85 | 85 | 85 |
| 27-3023 | News Analysts, Reporters, and Journalists | Supporting | 105 | 103 | 97 | 74 | 83 | 76 | 37 | 72 | 66 | 63 | 61 |
| 27-3031 | Public Relations Specialists | Supporting | 982 | 779 | 1,004 | 820 | 947 | 1,357 | 954 | 948 | 989 | 1,010 | 1,012 |
| 27-3043 | Writers and Authors | Supporting | 123 | 90 | 69 | 66 | 89 | 109 | 155 | 127 | 115 | 118 | 120 |
| 29-1031 | Dietitians and Nutritionists | Supporting | 56 | 71 | 75 | 93 | 96 | 91 | 111 | 83 | 83 | 85 | 86 |
| 29-1229 | Physicians, All Other | Supporting | 203 | 171 | 265 | 362 | 166 | 119 | 135 | 126 | 125 | 132 | 133 |
| 33-3031 | Fish and Game Wardens | Supporting | 51 | 111 | 59 | 95 | 100 | 61 | 47 | 62 | 62 | 61 | 60 |
| 41-2031 | Retail Salespersons | Supporting | 15,469 | 14,999 | 15,305 | 14,257 | 14,148 | 13,792 | 10,246 | 16,663 | 17,113 | 17,102 | 17,153 |
| 43-3031 | Bookkeeping, Accounting, and Auditing Clerks | Supporting | 4,618 | 4,629 | 4,516 | 4,515 | 4,625 | 4,623 | 5,183 | 5,664 | 5,778 | 5,837 | 5,863 |
| 47-2111 | Electricians | Supporting | 1,219 | 1,136 | 1,495 | 2,154 | 2,320 | 1,315 | 1,163 | 1,904 | 2,002 | 2,061 | 2,114 |
| 49-3051 | Motorboat Mechanics and Service Technicians | Supporting | 151 | 114 | 159 | 171 | 114 | 166 | 208 | 209 | 218 | 224 | 227 |
| 49-9021 | Heating, Air Conditioning, and Refrigeration Mechanics and Installers | Supporting | 919 | 1,050 | 856 | 1,190 | 1,003 | 958 | 848 | 1,160 | 1,174 | 1,192 | 1,202 |
| 49-9043 | Maintenance Workers, Machinery | Supporting | 140 | 168 | 129 | 121 | 107 | 126 | 80 | 112 | 102 | 107 | 112 |
| 51-4041 | Machinists | Supporting | 537 | 544 | 472 | 542 | 630 | 747 | 549 | 712 | 750 | 770 | 780 |
| 51-9193 | Cooling and Freezing Equipment Operators and Tenders | Supporting | <10 | 40 | 32 | 69 | 12 | 15 | 53 | 24 | 25 | 25 | 25 |
| 53-1047 | First-Line Supervisors of Transportation and Material Moving Workers, Except | Supporting | 841 | 804 | 851 | 1,184 | 1,907 | 1,818 | 2,060 | 1,567 | 1,595 | 1,606 | 1,644 |

WORKFORCE NEEDS ASSESSMENT
SUBMITTED BY THOMAS P. MILLER & ASSOCIATES, LLC

| | | | | | | | | | | | | | |
|---------|---|------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|
| | Aircraft Cargo Handling Supervisors | | | | | | | | | | | | |
| 53-3031 | Driver/Sales Workers | Supporting | 1,241 | 1,160 | 1,222 | 993 | 1,702 | 1,602 | 2,606 | 1,787 | 1,857 | 1,888 | 1,906 |
| 53-3032 | Heavy and Tractor-Trailer Truck Drivers | Supporting | 4,676 | 4,955 | 5,706 | 5,606 | 6,300 | 5,156 | 5,692 | 6,463 | 6,527 | 6,590 | 6,606 |
| 53-7065 | Stockers and Order Fillers | Supporting | 6,332 | 7,773 | 7,634 | 8,256 | 9,280 | 9,585 | 9,138 | 11,897 | 12,090 | 12,159 | 12,250 |
| 53-7081 | Refuse and Recyclable Material Collectors | Supporting | 440 | 478 | 350 | 324 | 350 | 319 | 311 | 398 | 407 | 409 | 416 |

Table 11: Annual Openings in Core Occupations

| Description | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|--|------|------|-------|------|------|------|------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| Farmers, Ranchers, and Other Agricultural Managers | 431 | 379 | 309 | 385 | 671 | 498 | 433 | 810 | 546 | 479 | 499 | 486 | 478 | 459 | 457 | 470 | 468 | 466 | 463 | 462 | 461 |
| Architectural and Engineering Managers | 60 | 61 | 63 | 58 | 85 | 79 | 66 | 61 | 65 | 67 | 69 | 64 | 62 | 59 | 56 | 59 | 58 | 57 | 56 | 56 | 55 |
| Buyers and Purchasing Agents | 217 | 205 | 227 | 206 | 184 | 177 | 194 | 173 | 250 | 192 | 189 | 183 | 181 | 179 | 175 | 176 | 175 | 173 | 171 | 170 | 168 |
| Life, Physical, and Social Science Technicians, All Other | 47 | 56 | 59 | 45 | 48 | 46 | 53 | 44 | 48 | 45 | 44 | 42 | 42 | 41 | 40 | 42 | 42 | 41 | 41 | 41 | 41 |
| First-Line Supervisors of Farming, Fishing, and Forestry Workers | 153 | 81 | 140 | 97 | 110 | 156 | 83 | 98 | 118 | 81 | 83 | 82 | 80 | 78 | 76 | 77 | 77 | 76 | 76 | 75 | 75 |
| Farmworkers, Farm, Ranch, and Aquacultural Animals | 217 | 131 | 235 | 201 | 186 | 202 | 143 | 212 | 263 | 204 | 218 | 215 | 214 | 212 | 206 | 216 | 217 | 218 | 218 | 219 | 220 |
| Fishing and Hunting Workers | 740 | 705 | 1,197 | 748 | 742 | 894 | 684 | 2,450 | 1,332 | 890 | 899 | 895 | 898 | 868 | 899 | 911 | 912 | 917 | 917 | 919 | 920 |
| First-Line Supervisors of Production and Operating Workers | 343 | 385 | 381 | 393 | 398 | 384 | 356 | 320 | 480 | 370 | 361 | 350 | 343 | 337 | 327 | 331 | 328 | 325 | 324 | 322 | 319 |
| Meat, Poultry, and Fish Cutters and Trimmers | 191 | 154 | 207 | 140 | 139 | 132 | 149 | 180 | 143 | 138 | 117 | 113 | 110 | 107 | 103 | 104 | 102 | 101 | 99 | 97 | 95 |
| Material Moving Workers, All Other | 22 | 20 | 16 | 22 | 17 | 36 | 25 | 18 | 21 | 15 | 15 | 15 | 15 | 14 | 14 | 15 | 15 | 15 | 16 | 15 | 15 |

Table 12: Annual Openings in Supporting Occupations

| Description | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Chief Executives | 149 | 125 | 125 | 119 | 139 | 128 | 339 | 299 | 356 | 183 | 177 | 173 | 170 | 163 | 166 | 166 | 165 | 164 | 163 | 161 | 161 |
| Advertising and Promotions Managers | 23 | 20 | 19 | 18 | 22 | 17 | 23 | 22 | 64 | 21 | 20 | 20 | 19 | 19 | 19 | 20 | 19 | 18 | 18 | 18 | 18 |
| Marketing Managers | 108 | 124 | 150 | 150 | 170 | 168 | 168 | 124 | 142 | 138 | 145 | 139 | 137 | 133 | 127 | 133 | 131 | 130 | 130 | 129 | 128 |
| Public Relations Managers | 34 | 30 | 30 | 29 | 31 | 33 | 32 | 27 | 32 | 28 | 30 | 28 | 27 | 27 | 26 | 26 | 26 | 26 | 26 | 26 | 26 |
| Facilities Managers | 74 | 61 | 59 | 54 | 53 | 72 | 85 | 55 | 119 | 69 | 68 | 65 | 64 | 63 | 61 | 62 | 62 | 62 | 61 | 61 | 61 |
| Financial Managers | 239 | 230 | 264 | 217 | 224 | 211 | 235 | 204 | 261 | 256 | 266 | 259 | 252 | 247 | 236 | 244 | 246 | 241 | 239 | 238 | 233 |
| Industrial Production Managers | 67 | 73 | 73 | 75 | 84 | 88 | 65 | 54 | 88 | 68 | 71 | 66 | 64 | 62 | 57 | 61 | 60 | 59 | 58 | 58 | 57 |
| Transportation, Storage, and Distribution Managers | 53 | 63 | 55 | 59 | 59 | 57 | 65 | 50 | 75 | 57 | 57 | 54 | 54 | 52 | 50 | 51 | 51 | 51 | 50 | 50 | 49 |
| Compliance Officers | 90 | 93 | 97 | 122 | 102 | 120 | 184 | 136 | 179 | 120 | 121 | 118 | 117 | 115 | 110 | 113 | 111 | 111 | 110 | 110 | 109 |
| Market Research Analysts and Marketing Specialists | 154 | 120 | 146 | 156 | 164 | 228 | 222 | 317 | 384 | 268 | 266 | 260 | 254 | 249 | 239 | 250 | 249 | 248 | 245 | 245 | 244 |
| Financial and Investment Analysts | 47 | 62 | 66 | 72 | 83 | 108 | 116 | 74 | 80 | 72 | 76 | 73 | 71 | 68 | 65 | 67 | 67 | 66 | 65 | 66 | 65 |
| Marine Engineers and Naval Architects | 15 | 38 | 22 | 37 | 149 | 49 | 84 | 41 | 16 | 23 | 15 | 14 | 13 | 13 | 12 | 12 | 12 | 12 | 12 | 11 | 11 |
| Mechanical Engineering Technologists and Technicians | 31 | 36 | 42 | 29 | 40 | 31 | 48 | 24 | 23 | 20 | 18 | 18 | 18 | 17 | 16 | 17 | 17 | 16 | 16 | 16 | 16 |
| Animal Scientists | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Food Scientists and Technologists | <10 | <10 | 11 | <10 | <10 | <10 | <10 | <10 | 26 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Microbiologists | 12 | <10 | <10 | <10 | <10 | 11 | 14 | 18 | 15 | <10 | 11 | 10 | 10 | <10 | <10 | <10 | <10 | 10 | <10 | <10 | <10 |
| Zoologists and Wildlife Biologists | 23 | 22 | 21 | 21 | 64 | 50 | 41 | 34 | 25 | 25 | 24 | 23 | 23 | 23 | 22 | 22 | 22 | 22 | 22 | 22 | 22 |
| Biological Scientists, All Other | 15 | <10 | 10 | 16 | 12 | 10 | 12 | 14 | 19 | 10 | 11 | 12 | 11 | 11 | <10 | 11 | 10 | 10 | 10 | 10 | 10 |
| Conservation Scientists | 12 | 11 | 15 | 14 | 22 | 18 | 14 | 23 | 29 | 16 | 15 | 15 | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| Epidemiologists | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 12 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Medical Scientists, Except Epidemiologists | 40 | 14 | 33 | 19 | 24 | 20 | 28 | 20 | 18 | 24 | 22 | 22 | 21 | 19 | 17 | 18 | 19 | 18 | 18 | 17 | 17 |
| Environmental Scientists and Specialists, Including Health | 71 | 56 | 49 | 52 | 55 | 51 | 75 | 58 | 49 | 54 | 52 | 50 | 49 | 48 | 47 | 48 | 48 | 47 | 47 | 47 | 46 |

WORKFORCE NEEDS ASSESSMENT

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| | | | | | | | | | | | | | | | | | | | | | | |
|--|-------|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Geoscientists, Except Hydrologists and Geographers | 11 | 11 | 10 | <10 | <10 | <10 | <10 | <10 | 14 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Agricultural Technicians | <10 | <10 | <10 | <10 | <10 | 16 | <10 | 27 | 16 | 11 | 12 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Biological Technicians | 80 | 75 | 71 | 68 | 67 | 74 | 92 | 87 | 88 | 70 | 74 | 72 | 71 | 70 | 68 | 70 | 69 | 69 | 68 | 68 | 68 | 68 |
| Chemical Technicians | 24 | 21 | 27 | 28 | 28 | 28 | 28 | 25 | 36 | 28 | 28 | 28 | 26 | 26 | 24 | 26 | 25 | 25 | 25 | 25 | 25 | 24 |
| Geological Technicians, Except Hydrologic Technicians | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Lawyers | 131 | 242 | 262 | 162 | 198 | 215 | 264 | 266 | 205 | 177 | 160 | 155 | 154 | 150 | 146 | 149 | 148 | 146 | 145 | 144 | 143 | 143 |
| Administrative Law Judges, Adjudicators, and Hearing Officers | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 13 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Postsecondary Teachers | 1,132 | 821 | 962 | 837 | 827 | 802 | 1,073 | 799 | 827 | 756 | 723 | 716 | 711 | 698 | 703 | 704 | 701 | 697 | 696 | 694 | 690 | 690 |
| Kindergarten Teachers, Except Special Education | 127 | 135 | 146 | 137 | 126 | 120 | 116 | 107 | 87 | 101 | 89 | 88 | 88 | 87 | 87 | 87 | 87 | 86 | 86 | 86 | 86 | 86 |
| Elementary School Teachers, Except Special Education | 475 | 498 | 445 | 462 | 553 | 527 | 480 | 444 | 392 | 508 | 403 | 397 | 393 | 387 | 385 | 386 | 384 | 382 | 381 | 379 | 378 | 378 |
| Middle School Teachers, Except Special and Career/Technical Education | 269 | 310 | 396 | 299 | 331 | 278 | 292 | 256 | 383 | 324 | 264 | 261 | 259 | 255 | 254 | 255 | 254 | 253 | 252 | 251 | 250 | 250 |
| Career/Technical Education Teachers, Middle School | <10 | <10 | <10 | <10 | <10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Secondary School Teachers, Except Special and Career/Technical Education | 376 | 453 | 387 | 607 | 534 | 494 | 407 | 398 | 781 | 515 | 414 | 407 | 403 | 397 | 395 | 396 | 395 | 393 | 391 | 390 | 389 | 389 |
| Career/Technical Education Teachers, Secondary School | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Special Education Teachers, Kindergarten and Elementary School | 100 | 95 | 92 | 87 | 84 | 76 | 74 | 73 | 69 | 83 | 68 | 67 | 66 | 66 | 65 | 65 | 65 | 65 | 65 | 64 | 64 | 64 |
| Special Education Teachers, Middle School | 43 | 41 | 45 | 44 | 42 | 39 | 37 | 34 | 51 | 42 | 35 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 33 |
| Special Education Teachers, Secondary School | 57 | 64 | 53 | 62 | 57 | 55 | 53 | 50 | 154 | 72 | 59 | 58 | 58 | 57 | 57 | 57 | 57 | 56 | 56 | 56 | 56 | 56 |
| Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors | 57 | 50 | 39 | 39 | 52 | 39 | 33 | 31 | 32 | 22 | 20 | 20 | 20 | 19 | 19 | 19 | 19 | 18 | 18 | 18 | 18 | 18 |
| News Analysts, Reporters, and Journalists | 69 | 63 | 49 | 55 | 56 | 43 | 50 | 41 | 42 | 38 | 33 | 31 | 30 | 29 | 28 | 28 | 28 | 27 | 27 | 26 | 26 | 26 |

WORKFORCE NEEDS ASSESSMENT

SUBMITTED BY THOMAS P. MILLER & ASSOCIATES, LLC

| | | | | | | | | | | | | | | | | | | | | | |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Public Relations Specialists | 149 | 143 | 170 | 179 | 233 | 235 | 225 | 243 | 266 | 183 | 180 | 177 | 174 | 174 | 169 | 172 | 171 | 170 | 169 | 169 | 168 |
| Writers and Authors | 186 | 193 | 137 | 106 | 140 | 83 | 80 | 97 | 103 | 76 | 73 | 73 | 72 | 70 | 74 | 73 | 74 | 73 | 73 | 73 | 73 |
| Dietitians and Nutritionists | 24 | 25 | 30 | 27 | 24 | 31 | 36 | 27 | 30 | 27 | 24 | 24 | 23 | 23 | 22 | 23 | 23 | 23 | 22 | 22 | 22 |
| Physicians, All Other | 47 | 53 | 73 | 45 | 98 | 151 | 62 | 46 | 48 | 42 | 44 | 43 | 41 | 40 | 37 | 38 | 38 | 37 | 37 | 37 | 36 |
| Fish and Game Wardens | 22 | 17 | 15 | 35 | 17 | 23 | 36 | 22 | 18 | 18 | 17 | 17 | 16 | 16 | 16 | 16 | 16 | 15 | 15 | 15 | 15 |
| Retail Salespersons | 3,671 | 3,461 | 3,536 | 3,267 | 3,214 | 3,403 | 3,198 | 3,079 | 3,199 | 3,177 | 2,945 | 2,915 | 2,894 | 2,869 | 2,843 | 2,834 | 2,816 | 2,797 | 2,779 | 2,759 | 2,739 |
| Bookkeeping, Accounting, and Auditing Clerks | 1,055 | 1,030 | 1,106 | 1,125 | 1,041 | 1,122 | 1,151 | 1,078 | 1,660 | 1,142 | 1,120 | 1,103 | 1,092 | 1,081 | 1,072 | 1,067 | 1,059 | 1,051 | 1,043 | 1,034 | 1,025 |
| Electricians | 327 | 340 | 403 | 320 | 541 | 731 | 748 | 465 | 506 | 516 | 476 | 461 | 452 | 445 | 429 | 443 | 441 | 438 | 435 | 433 | 430 |
| Motorboat Mechanics and Service Technicians | 40 | 52 | 38 | 41 | 51 | 60 | 43 | 39 | 137 | 56 | 48 | 46 | 46 | 45 | 43 | 45 | 44 | 44 | 43 | 43 | 43 |
| Heating, Air Conditioning, and Refrigeration Mechanics and Installers | 220 | 255 | 244 | 305 | 300 | 398 | 331 | 309 | 312 | 282 | 277 | 269 | 265 | 260 | 255 | 259 | 256 | 255 | 253 | 253 | 251 |
| Maintenance Workers, Machinery | 33 | 38 | 34 | 33 | 31 | 29 | 32 | 28 | 24 | 29 | 24 | 25 | 23 | 23 | 22 | 23 | 22 | 22 | 22 | 22 | 22 |
| Machinists | 194 | 224 | 261 | 195 | 293 | 221 | 235 | 206 | 363 | 259 | 221 | 215 | 212 | 209 | 206 | 210 | 207 | 206 | 205 | 204 | 203 |
| Cooling and Freezing Equipment Operators and Tenders | <10 | <10 | <10 | <10 | <10 | 17 | <10 | <10 | 19 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors | 184 | 199 | 181 | 176 | 218 | 292 | 515 | 407 | 588 | 313 | 307 | 301 | 300 | 296 | 294 | 293 | 292 | 290 | 288 | 286 | 284 |
| Driver/Sales Workers | 233 | 252 | 249 | 228 | 212 | 201 | 349 | 218 | 724 | 328 | 300 | 295 | 292 | 289 | 283 | 288 | 286 | 285 | 284 | 283 | 282 |
| Heavy and Tractor-Trailer Truck Drivers | 1,315 | 2,035 | 1,301 | 1,487 | 1,542 | 1,459 | 1,749 | 1,353 | 1,926 | 1,477 | 1,430 | 1,405 | 1,388 | 1,363 | 1,358 | 1,354 | 1,344 | 1,335 | 1,325 | 1,315 | 1,304 |
| Stockers and Order Fillers | 1,482 | 1,586 | 1,525 | 1,999 | 1,805 | 2,180 | 2,237 | 2,267 | 2,812 | 2,159 | 2,130 | 2,118 | 2,106 | 2,095 | 2,070 | 2,078 | 2,069 | 2,061 | 2,052 | 2,043 | 2,034 |
| Refuse and Recyclable Material Collectors | 193 | 221 | 167 | 139 | 128 | 166 | 111 | 118 | 112 | 114 | 107 | 104 | 103 | 101 | 99 | 100 | 99 | 98 | 98 | 97 | 96 |

Table 13: Earnings for Core Occupations

Red highlights show occupations with hourly average earnings less than the state average (\$26.21).

| SOC | Description | 2022 Jobs | Avg. Hourly Earnings | Median Hourly Earnings | Median Annual Earnings |
|---------|--|-----------|----------------------|------------------------|------------------------|
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | 3,260 | \$23.61 | \$13.99 | \$29,103 |
| 11-9041 | Architectural and Engineering Managers | 711 | \$65.96 | \$61.74 | \$128,417 |
| 13-1028 | Buyers and Purchasing Agents | 1,701 | \$33.09 | \$30.49 | \$63,417 |
| 19-4099 | Life, Physical, and Social Science Technicians, All Other | 304 | \$27.64 | \$25.74 | \$53,538 |
| 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers | 466 | \$26.22 | \$22.58 | \$46,962 |
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | 982 | \$15.23 | \$13.65 | \$28,391 |
| 45-3031 | Fishing and Hunting Workers | 4,799 | \$42.60 | \$21.07 | \$43,831 |
| 51-1011 | First-Line Supervisors of Production and Operating Workers | 3,072 | \$32.79 | \$30.77 | \$64,001 |
| 51-3022 | Meat, Poultry, and Fish Cutters and Trimmers | 844 | \$15.24 | \$14.18 | \$29,495 |
| 53-7199 | Material Moving Workers, All Other | 101 | \$19.45 | \$15.99 | \$33,262 |

Table 14: Earnings for Supporting Occupations

Red highlights show occupations with hourly average earnings less than the state average (\$26.21).

| SOC | Description | 2022 Jobs | Avg. Hourly Earnings | Median Hourly Earnings | Median Annual Earnings |
|---------|--|-----------|----------------------|------------------------|------------------------|
| 11-1011 | Chief Executives | 2,074 | \$70.70 | \$56.91 | \$118,373 |
| 11-2011 | Advertising and Promotions Managers | 190 | \$48.99 | \$47.33 | \$98,456 |
| 11-2021 | Marketing Managers | 1,273 | \$55.87 | \$50.85 | \$105,778 |
| 11-2032 | Public Relations Managers | 288 | \$55.24 | \$47.80 | \$99,430 |
| 11-3013 | Facilities Managers | 722 | \$39.58 | \$37.07 | \$77,097 |
| 11-3031 | Financial Managers | 2,567 | \$64.16 | \$59.85 | \$124,486 |
| 11-3051 | Industrial Production Managers | 739 | \$48.59 | \$46.69 | \$97,112 |
| 11-3071 | Transportation, Storage, and Distribution Managers | 566 | \$43.25 | \$38.13 | \$79,306 |
| 13-1041 | Compliance Officers | 1,328 | \$35.31 | \$36.81 | \$76,565 |
| 13-1161 | Market Research Analysts and Marketing Specialists | 1,864 | \$34.67 | \$34.97 | \$72,739 |
| 13-2051 | Financial and Investment Analysts | 739 | \$39.19 | \$37.17 | \$77,305 |
| 17-2121 | Marine Engineers and Naval Architects | 214 | \$49.37 | \$48.14 | \$100,134 |
| 17-3027 | Mechanical Engineering Technologists and Technicians | 148 | \$38.52 | \$36.68 | \$76,298 |
| 19-1011 | Animal Scientists | <10 | Insf. Data | Insf. Data | Insf. Data |
| 19-1012 | Food Scientists and Technologists | 63 | \$31.34 | \$31.46 | \$65,441 |
| 19-1022 | Microbiologists | 89 | \$28.05 | \$27.98 | \$58,198 |

WORKFORCE NEEDS ASSESSMENT

SUBMITTED BY THOMAS P. MILLER & ASSOCIATES, LLC

| | | | | | |
|---------|--|-------|------------|------------|------------|
| 19-1023 | Zoologists and Wildlife Biologists | 258 | \$29.63 | \$29.03 | \$60,385 |
| 19-1029 | Biological Scientists, All Other | 88 | \$43.54 | \$38.77 | \$80,636 |
| 19-1031 | Conservation Scientists | 149 | \$29.47 | \$28.56 | \$59,411 |
| 19-1041 | Epidemiologists | <10 | Insf. Data | Insf. Data | Insf. Data |
| 19-1042 | Medical Scientists, Except Epidemiologists | 211 | \$65.82 | \$59.62 | \$124,007 |
| 19-2041 | Environmental Scientists and Specialists, Including Health | 506 | \$32.04 | \$27.81 | \$57,851 |
| 19-2042 | Geoscientists, Except Hydrologists and Geographers | 77 | \$38.54 | \$31.05 | \$64,578 |
| 19-4012 | Agricultural Technicians | 62 | \$21.87 | \$19.63 | \$40,838 |
| 19-4021 | Biological Technicians | 482 | \$25.06 | \$29.52 | \$61,402 |
| 19-4031 | Chemical Technicians | 171 | \$26.39 | \$26.27 | \$54,642 |
| 19-4043 | Geological Technicians, Except Hydrologic Technicians | <10 | Insf. Data | Insf. Data | Insf. Data |
| 23-1011 | Lawyers | 2,696 | \$51.26 | \$38.57 | \$80,226 |
| 23-1021 | Administrative Law Judges, Adjudicators, and Hearing Officers | 110 | \$31.23 | \$25.50 | \$53,050 |
| 25-1099 | Postsecondary Teachers | 7,522 | \$37.58 | \$35.17 | \$73,156 |
| 25-2012 | Kindergarten Teachers, Except Special Education | 796 | \$25.44 | \$23.44 | \$48,758 |
| 25-2021 | Elementary School Teachers, Except Special Education | 5,203 | \$27.82 | \$28.88 | \$60,080 |
| 25-2022 | Middle School Teachers, Except Special and Career/Technical Education | 3,444 | \$28.69 | \$29.01 | \$60,347 |
| 25-2023 | Career/Technical Education Teachers, Middle School | <10 | Insf. Data | Insf. Data | Insf. Data |
| 25-2031 | Secondary School Teachers, Except Special and Career/Technical Education | 5,723 | \$27.64 | \$28.80 | \$59,904 |
| 25-2032 | Career/Technical Education Teachers, Secondary School | 67 | \$28.92 | \$29.15 | \$60,628 |

WORKFORCE NEEDS ASSESSMENT

SUBMITTED BY THOMAS P. MILLER & ASSOCIATES, LLC

| | | | | | |
|---------|--|--------|----------|----------|-----------|
| 25-2052 | Special Education Teachers, Kindergarten and Elementary School | 877 | \$26.74 | \$24.09 | \$50,111 |
| 25-2057 | Special Education Teachers, Middle School | 457 | \$27.47 | \$28.54 | \$59,355 |
| 25-2058 | Special Education Teachers, Secondary School | 761 | \$27.07 | \$24.26 | \$50,451 |
| 25-3011 | Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors | 175 | \$31.23 | \$28.15 | \$58,553 |
| 27-3023 | News Analysts, Reporters, and Journalists | 271 | \$21.42 | \$17.92 | \$37,278 |
| 27-3031 | Public Relations Specialists | 1,848 | \$25.53 | \$23.59 | \$49,062 |
| 27-3043 | Writers and Authors | 645 | \$30.47 | \$19.92 | \$41,435 |
| 29-1031 | Dietitians and Nutritionists | 310 | \$33.20 | \$29.16 | \$60,657 |
| 29-1229 | Physicians, All Other | 1,269 | \$113.40 | \$102.92 | \$214,075 |
| 33-3031 | Fish and Game Wardens | 151 | \$29.56 | \$29.15 | \$60,628 |
| 41-2031 | Retail Salespersons | 19,555 | \$16.65 | \$14.23 | \$29,589 |
| 43-3031 | Bookkeeping, Accounting, and Auditing Clerks | 8,678 | \$21.12 | \$19.05 | \$39,623 |
| 47-2111 | Electricians | 3,748 | \$28.51 | \$27.95 | \$58,138 |
| 49-3051 | Motorboat Mechanics and Service Technicians | 388 | \$23.19 | \$22.23 | \$46,238 |
| 49-9021 | Heating, Air Conditioning, and Refrigeration Mechanics and Installers | 2,600 | \$25.74 | \$23.21 | \$48,286 |
| 49-9043 | Maintenance Workers, Machinery | 200 | \$24.87 | \$23.09 | \$48,027 |
| 51-4041 | Machinists | 1,785 | \$23.88 | \$22.88 | \$47,589 |
| 51-9193 | Cooling and Freezing Equipment Operators and Tenders | 41 | \$19.73 | \$18.21 | \$37,869 |
| 53-1047 | First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors | 2,454 | \$26.50 | \$23.64 | \$49,162 |
| 53-3031 | Driver/Sales Workers | 2,293 | \$16.46 | \$14.37 | \$29,886 |

| | | | | | |
|---------|---|--------|---------|---------|----------|
| 53-3032 | Heavy and Tractor-Trailer Truck Drivers | 11,297 | \$24.60 | \$22.66 | \$47,139 |
| 53-7065 | Stockers and Order Fillers | 11,949 | \$15.96 | \$14.38 | \$29,920 |
| 53-7081 | Refuse and Recyclable Material Collectors | 675 | \$17.07 | \$17.27 | \$35,928 |

Table 15: Employment, On-The-Job Training, Education Level, and Experience Requirements for Core Occupations

| SOC Code | Description | 2022 Jobs | 2027 Jobs | 2022 - 2027 Change | 2022 - 2027 % Change | Typical Entry Level Education | Work Experience Required | Typical On-The-Job Training |
|----------|--|-----------|-----------|--------------------|----------------------|-----------------------------------|--------------------------|-----------------------------------|
| 11-9013 | Farmers, Ranchers, and Other Agricultural Managers | 3,260 | 3,693 | 433 | 13% | High school diploma or equivalent | 5 years or more | None |
| 11-9041 | Architectural and Engineering Managers | 711 | 758 | 47 | 7% | Bachelor's degree | 5 years or more | None |
| 13-1028 | Buyers and Purchasing Agents | 1,701 | 1,716 | 15 | 1% | Bachelor's degree | None | Moderate-term on-the-job training |
| 19-4099 | Life, Physical, and Social Science Technicians, All Other | 304 | 316 | 13 | 4% | Associate's degree | None | None |
| 45-1011 | First-Line Supervisors of Farming, Fishing, and Forestry Workers | 466 | 484 | 18 | 4% | High school diploma or equivalent | Less than 5 years | None |
| 45-2093 | Farmworkers, Farm, Ranch, and Aquacultural Animals | 982 | 1,170 | 188 | 19% | No formal educational credential | None | Short-term on-the-job training |
| 45-3031 | Fishing and Hunting Workers | 4,799 | 5,433 | 635 | 13% | No formal educational credential | None | Moderate-term on-the-job training |
| 51-1011 | First-Line Supervisors of Production and Operating Workers | 3,072 | 3,134 | 62 | 2% | High school diploma or equivalent | Less than 5 years | None |
| 51-3022 | Meat, Poultry, and Fish Cutters and Trimmers | 844 | 800 | (44) | (5%) | No formal educational credential | None | Short-term on-the-job training |
| 53-7199 | Material Moving Workers, All Other | 101 | 103 | 2 | 2% | No formal educational credential | None | Short-term on-the-job training |

Table 16: Employment, On-The-Job Training, Education Level, and Experience Requirements for Supporting Occupations

| SOC | Description | 2022 Jobs | 2027 Jobs | 2022 - 2027 Change | 2022 - 2027 % Change | Typical Entry Level Education | Work Experience Required | Typical On-The- Job Training |
|---------|--|--------------|--------------|--------------------------|----------------------------|-----------------------------------|--------------------------------|-----------------------------------|
| 11-1011 | Chief Executives | 2,074 | 2,094 | 20 | 1% | Bachelor's degree | 5 years or more | None |
| 11-2011 | Advertising and Promotions Managers | 190 | 186 | (4) | (2%) | Bachelor's degree | Less than 5 years | None |
| 11-2021 | Marketing Managers | 1,273 | 1,374 | 100 | 8% | Bachelor's degree | 5 years or more | None |
| 11-2032 | Public Relations Managers | 288 | 304 | 16 | 5% | Bachelor's degree | 5 years or more | None |
| 11-3013 | Facilities Managers | 722 | 740 | 18 | 2% | Bachelor's degree | Less than 5 years | None |
| 11-3031 | Financial Managers | 2,567 | 2,826 | 258 | 10% | Bachelor's degree | 5 years or more | None |
| 11-3051 | Industrial Production Managers | 739 | 780 | 42 | 6% | Bachelor's degree | 5 years or more | None |
| 11-3071 | Transportation, Storage, and Distribution Managers | 566 | 588 | 22 | 4% | High school diploma or equivalent | 5 years or more | None |
| 13-1041 | Compliance Officers | 1,328 | 1,365 | 37 | 3% | Bachelor's degree | None | Moderate-term on-the-job training |
| 13-1161 | Market Research Analysts and Marketing Specialists | 1,864 | 2,149 | 285 | 15% | Bachelor's degree | None | None |
| 13-2051 | Financial and Investment Analysts | 739 | 808 | 69 | 9% | Bachelor's degree | None | None |
| 17-2121 | Marine Engineers and Naval Architects | 214 | 221 | 7 | 3% | Bachelor's degree | None | None |
| 17-3027 | Mechanical Engineering Technologists and Technicians | 148 | 158 | 11 | 7% | Associate's degree | None | None |
| 19-1011 | Animal Scientists | <10 | <10 | Insf. Data | Insf. Data | Bachelor's degree | None | None |
| 19-1012 | Food Scientists and Technologists | 63 | 67 | 5 | 7% | Bachelor's degree | None | None |
| 19-1022 | Microbiologists | 89 | 99 | 9 | 11% | Bachelor's degree | None | None |

| | | | | | | | | |
|---------|---|-------|-------|------------|------------|---------------------------------|-------------------|-----------------------------------|
| 19-1023 | Zoologists and Wildlife Biologists | 258 | 256 | (2) | (1%) | Bachelor's degree | None | None |
| 19-1029 | Biological Scientists, All Other | 88 | 102 | 14 | 16% | Bachelor's degree | None | None |
| 19-1031 | Conservation Scientists | 149 | 151 | 2 | 2% | Bachelor's degree | None | None |
| 19-1041 | Epidemiologists | <10 | <10 | Insf. Data | Insf. Data | Master's degree | None | None |
| 19-1042 | Medical Scientists, Except Epidemiologists | 211 | 242 | 31 | 15% | Doctoral or professional degree | None | None |
| 19-2041 | Environmental Scientists and Specialists, Including Health | 506 | 511 | 5 | 1% | Bachelor's degree | None | None |
| 19-2042 | Geoscientists, Except Hydrologists and Geographers | 77 | 84 | 7 | 9% | Bachelor's degree | None | None |
| 19-4012 | Agricultural Technicians | 62 | 72 | 10 | 17% | Associate's degree | None | Moderate-term on-the-job training |
| 19-4021 | Biological Technicians | 482 | 509 | 26 | 5% | Bachelor's degree | None | None |
| 19-4031 | Chemical Technicians | 171 | 190 | 20 | 12% | Associate's degree | None | Moderate-term on-the-job training |
| 19-4043 | Geological Technicians, Except Hydrologic Technicians | <10 | <10 | Insf. Data | Insf. Data | Associate's degree | None | Moderate-term on-the-job training |
| 23-1011 | Lawyers | 2,696 | 2,804 | 108 | 4% | Doctoral or professional degree | None | None |
| 23-1021 | Administrative Law Judges, Adjudicators, and Hearing Officers | 110 | 107 | (4) | (3%) | Doctoral or professional degree | 5 years or more | Short-term on-the-job training |
| 25-1099 | Postsecondary Teachers | 7,522 | 7,648 | 126 | 2% | Doctoral or professional degree | None | None |
| 25-2012 | Kindergarten Teachers, Except Special Education | 796 | 802 | 6 | 1% | Bachelor's degree | None | None |
| 25-2021 | Elementary School Teachers, Except Special Education | 5,203 | 5,239 | 36 | 1% | Bachelor's degree | None | None |
| 25-2022 | Middle School Teachers, Except Special and Career/Technical Education | 3,444 | 3,467 | 23 | 1% | Bachelor's degree | None | None |
| 25-2023 | Career/Technical Education Teachers, Middle School | <10 | <10 | Insf. Data | Insf. Data | Bachelor's degree | Less than 5 years | None |

| | | | | | | | | |
|---------|--|--------|--------|-------|-------|-----------------------------------|-------------------|-----------------------------------|
| 25-2031 | Secondary School Teachers, Except Special and Career/Technical Education | 5,723 | 5,775 | 52 | 1% | Bachelor's degree | None | None |
| 25-2032 | Career/Technical Education Teachers, Secondary School | 67 | 67 | 0 | 0% | Bachelor's degree | Less than 5 years | None |
| 25-2052 | Special Education Teachers, Kindergarten and Elementary School | 877 | 881 | 3 | 0% | Bachelor's degree | None | None |
| 25-2057 | Special Education Teachers, Middle School | 457 | 459 | 1 | 0% | Bachelor's degree | None | None |
| 25-2058 | Special Education Teachers, Secondary School | 761 | 765 | 4 | 1% | Bachelor's degree | None | None |
| 25-3011 | Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors | 175 | 165 | (10) | (6%) | Bachelor's degree | None | None |
| 27-3023 | News Analysts, Reporters, and Journalists | 271 | 235 | (36) | (13%) | Bachelor's degree | None | None |
| 27-3031 | Public Relations Specialists | 1,848 | 1,896 | 48 | 3% | Bachelor's degree | None | None |
| 27-3043 | Writers and Authors | 645 | 676 | 31 | 5% | Bachelor's degree | None | Long-term on-the-job training |
| 29-1031 | Dietitians and Nutritionists | 310 | 320 | 10 | 3% | Bachelor's degree | None | Internship/residency |
| 29-1229 | Physicians, All Other | 1,269 | 1,274 | 5 | 0% | Doctoral or professional degree | None | Internship/residency |
| 33-3031 | Fish and Game Wardens | 151 | 142 | (8) | (6%) | Bachelor's degree | None | Moderate-term on-the-job training |
| 41-2031 | Retail Salespersons | 19,555 | 19,345 | (209) | (1%) | No formal educational credential | None | Short-term on-the-job training |
| 43-3031 | Bookkeeping, Accounting, and Auditing Clerks | 8,678 | 8,534 | (144) | (2%) | Some college, no degree | None | Moderate-term on-the-job training |
| 47-2111 | Electricians | 3,748 | 4,008 | 260 | 7% | High school diploma or equivalent | None | Apprenticeship |
| 49-3051 | Motorboat Mechanics and Service Technicians | 388 | 403 | 15 | 4% | High school diploma or equivalent | None | Long-term on-the-job training |
| 49-9021 | Heating, Air Conditioning, and Refrigeration Mechanics and Installers | 2,600 | 2,652 | 52 | 2% | Postsecondary nondegree award | None | Long-term on-the-job training |
| 49-9043 | Maintenance Workers, Machinery | 200 | 203 | 4 | 2% | High school diploma or equivalent | None | Long-term on-the-job training |

| | | | | | | | | |
|----------------|--|--------|--------|------|------|-----------------------------------|-------------------|-----------------------------------|
| 51-4041 | Machinists | 1,785 | 1,847 | 62 | 3% | High school diploma or equivalent | None | Long-term on-the-job training |
| 51-9193 | Cooling and Freezing Equipment Operators and Tenders | 41 | 40 | (1) | (3%) | High school diploma or equivalent | None | Moderate-term on-the-job training |
| 53-1047 | First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors | 2,454 | 2,455 | 1 | 0% | High school diploma or equivalent | Less than 5 years | None |
| 53-3031 | Driver/Sales Workers | 2,293 | 2,375 | 82 | 4% | High school diploma or equivalent | None | Short-term on-the-job training |
| 53-3032 | Heavy and Tractor-Trailer Truck Drivers | 11,297 | 11,216 | (81) | (1%) | Postsecondary nondegree award | None | Short-term on-the-job training |
| 53-7065 | Stockers and Order Fillers | 11,949 | 12,061 | 112 | 1% | High school diploma or equivalent | None | Short-term on-the-job training |
| 53-7081 | Refuse and Recyclable Material Collectors | 675 | 691 | 16 | 2% | No formal educational credential | None | Short-term on-the-job training |

APPENDIX II: SURVEY SUMMARY

Which of the following best describes the organization you represent?

| Organization Type | Count | Percent |
|-------------------------|-----------|-------------|
| Private sector employer | 27 | 60% |
| Public sector employer | 2 | 4% |
| Other: | 16 | 36% |
| Grand Total | 45 | 100% |

Which of the following best describes your role with the organization (select all that apply)?

| Organization Role | Count | Percent |
|--------------------------------|-----------|---------|
| Executive leadership | 29 | 64% |
| Human resources representative | 5 | 11% |
| Training supervisor | 7 | 16% |
| Hiring manager | 7 | 16% |
| Operations supervisor | 8 | 18% |
| Other | 16 | 36% |
| Grand Total | 45 | |

How many full-time employees work for your organization?

| Number of employees | Count | Percent |
|---------------------|-----------|---------|
| 1 to 9 | 22 | 52% |
| 10 to 19 | 4 | 10% |
| 20 to 29 | 2 | 5% |
| 30 to 39 | 1 | 2% |
| 40 to 49 | 1 | 2% |
| None | 12 | 29% |
| Grand Total | 42 | |

How many of the full-time employees indicated above are considered seasonal?

| Number of employees | Count | Percent |
|---------------------|-----------|-------------|
| 1 to 9 | 17 | 57% |
| 10 to 19 | 2 | 7% |
| 20 to 29 | 1 | 3% |
| None | 10 | 33% |
| Grand Total | 30 | 100% |

How many part-time employees work for your organization?

| Number of employees | Count | Percent |
|---------------------|-----------|----------|
| 1 to 9 | 20 | 48% |
| 10 to 19 | 1 | 2% |
| 20 to 29 | 1 | 2% |
| None | 20 | 48% |
| Grand Total | 42 | 1 |

How many of the part-time employees indicated above are considered seasonal?

| Number of employees | Count | Percent |
|---------------------|-----------|-------------|
| 1 to 9 | 15 | 71% |
| 10 to 19 | 1 | 5% |
| 20 to 29 | 1 | 5% |
| None | 4 | 19% |
| Grand Total | 21 | 100% |

Do your organization contract with any 1099/non-payroll employees?

| Response | Count | Percentage |
|--------------------|-----------|-------------|
| Yes | 18 | 44% |
| No | 21 | 51% |
| Not sure | 2 | 5% |
| Grand Total | 41 | 100% |

Which of the following job descriptions describe the roles your organization is seeking to fill in the next year (select all that apply)?

| Marine Living Resource Economy Sector | Count | Percent |
|--|-----------|---------|
| Aquaculture production and harvest | 5 | 33% |
| Commercial fishing production and harvest | 4 | 27% |
| Processing and distribution | 4 | 27% |
| Sales and marketing | 5 | 33% |
| Innovation, engineering, and science | 3 | 20% |
| Industry support services and technical assistance | 2 | 13% |
| Grand Total | 15 | |

What challenges, if any, has your organization dealt with in the past year when it comes to hiring new employees (select all that apply)?

| Hiring Challenge | Count | Percent |
|---|-----------|---------|
| Shortage of initial applicants, qualified or not | 13 | 37% |
| Shortage of qualified initial applicants | 9 | 26% |
| Enough initial candidates with relevant skills, but not enough candidates passing the screening interview | 2 | 6% |
| Not enough finalist candidates can successfully complete the interview process | 1 | 3% |
| Not enough candidates offered employment accept the position | 3 | 9% |
| Not enough candidates who have accepted employment successfully complete the onboarding process. | 0 | 0% |
| Our organization faces no challenges in hiring new employees | 14 | 40% |
| Grand Total | 35 | |

Which of the following best describes your organization's recruitment plan/strategy for identifying and hiring Black, Indigenous, and People of Color (BIPOC) workers?

| Recruitment Plan/Strategy Description | Count | Percent |
|---|-----------|----------|
| Our organization does not currently have a recruitment strategy for these workers in place and has no immediate plans to develop one | 17 | 59% |
| Our organization does not currently have a recruitment strategy for these workers in place, but would like to and are not sure where to begin | 1 | 3% |
| Our organization has a recruitment strategy for these workers already in place and in use | 8 | 28% |
| Our organization has a recruitment strategy for these workers developed, but not yet fully deployed/executed | 1 | 3% |
| Our organization is currently, actively working on updating/developing a recruitment strategy for these workers | 2 | 7% |
| Grand Total | 29 | 1 |

Which of the following best describes your organization's recruitment plan/strategy for identifying and hiring older adult (55+) workers?

| Recruitment Plan/Strategy Description | Count | Percent |
|---|-----------|-------------|
| Our organization does not currently have a recruitment strategy for these workers in place and has no immediate plans to develop one | 17 | 57% |
| Our organization does not currently have a recruitment strategy for these workers in place, but would like to and are not sure where to begin | 4 | 13% |
| Our organization has a recruitment strategy for these workers already in place and in use | 8 | 27% |
| Our organization has just begun updating/developing a recruitment strategy for these workers | 1 | 3% |
| Grand Total | 30 | 100% |

Which of the following best describes your organization's recruitment plan/strategy for identifying and hiring immigrant workers?

| Recruitment Plan/Strategy Description | Count | Percent |
|---|-----------|-------------|
| Our organization does not currently have a recruitment strategy for these workers in place and has no immediate plans to develop one | 18 | 62% |
| Our organization does not currently have a recruitment strategy for these workers in place, but would like to and are not sure where to begin | 3 | 10% |
| Our organization has a recruitment strategy for these workers already in place and in use | 5 | 17% |
| Our organization has just begun updating/developing a recruitment strategy for these workers | 2 | 7% |
| Our organization is currently, actively working on updating/developing a recruitment strategy for these workers | 1 | 3% |
| Grand Total | 29 | 100% |

Which of the following best describes your organization's recruitment plan/strategy for identifying and hiring workers with disabilities?

| Recruitment Plan/Strategy Description | Count | Percent |
|---|-----------|-------------|
| Our organization does not currently have a recruitment strategy for these workers in place and has no immediate plans to develop one | 22 | 73% |
| Our organization does not currently have a recruitment strategy for these workers in place, but would like to and are not sure where to begin | 1 | 3% |
| Our organization has a recruitment strategy for these workers already in place and in use | 5 | 17% |
| Our organization has just begun updating/developing a recruitment strategy for these workers | 2 | 7% |
| Grand Total | 30 | 100% |

When selecting new employees, what credentials and certifications do you look for when screening candidates?

Respondents provided open-ended text responses to the question. These responses were grouped thematically. The results of those groupings are below.

| Response | Count | Percent |
|--|-------|---------|
| Sobriety/drug test | 5 | 20% |
| Experience | 5 | 20% |
| Work ethic | 4 | 16% |
| Punctuality | 2 | 8% |
| Driver's license | 2 | 8% |
| Character | 2 | 8% |
| Work outside in a range of conditions | 1 | 4% |
| Teamwork | 1 | 4% |
| Aquaculture knowledge | 1 | 4% |
| Communication skills | 1 | 4% |
| Can't generalize | 1 | 4% |
| Transportation | 1 | 4% |
| Scientific college degree | 1 | 4% |
| Certifications/coursework in aquaculture | 1 | 4% |
| Servsafe | 1 | 4% |
| Work skills | 1 | 4% |
| dependable | 1 | 4% |

From what regional training programs has our organization hired graduates from in the past year?

| Program | Count | Percent |
|--|-------|---------|
| None or N/A | 17 | 81% |
| Husson University | 1 | 5% |
| We have hired employees from U Maine. In 2022 we hosted interns from the Aquaculture Pioneers program and will host another in 2023. | 1 | 5% |
| We hire seasonal interns and farm hands on a 1099 basis only. We have identified interns and farm hands from two programs (1) Aquaculture Pioneers at Educate Maine, and (2) University of Maine School of Food & Agriculture (specifically via Prof Tim Bowden and the Introduction to Aquaculture course he runs). We have also hired through referrals from colleagues in our professional networks and via word of mouth | 1 | 5% |

Following initial onboarding, which of the following in-house training activities does your organization provide for new employees (select all that apply)?

| In-house training activity | Count | Percent |
|--|-----------|---------|
| Safety and emergency response-related training | 16 | 67% |
| Hands-on training for specific job functions | 23 | 96% |
| Structured, multi-lesson training program with supervisory staff | 3 | 13% |
| Job shadowing, formal/informal apprenticeship under the stewardship of a more tenured employee | 12 | 50% |
| Classroom training and instruction | 2 | 8% |
| Self-guided training classes, completed on a computer/handheld device | 5 | 21% |
| Grand Total | 24 | |

When training new employees for basic job functions and responsibilities, does your organization contract with any outside training providers?

| Response | Count | Percent |
|--------------------|-----------|-------------|
| Yes | 1 | 4% |
| No | 1 | 4% |
| Not Sure | 26 | 93% |
| Grand Total | 28 | 100% |

From which outside training providers does your organization contract with?

Only respondents who answered yes to the previous question saw this question.

| Response | Count | Percent |
|-----------------|-------|---------|
| Safety training | 1 | 100% |

With regard to ongoing employee training, what credentials/certifications does your organization require/assist employees with attaining?

8 respondents answered that they do not require/assist employees with attaining any credentials/certifications.

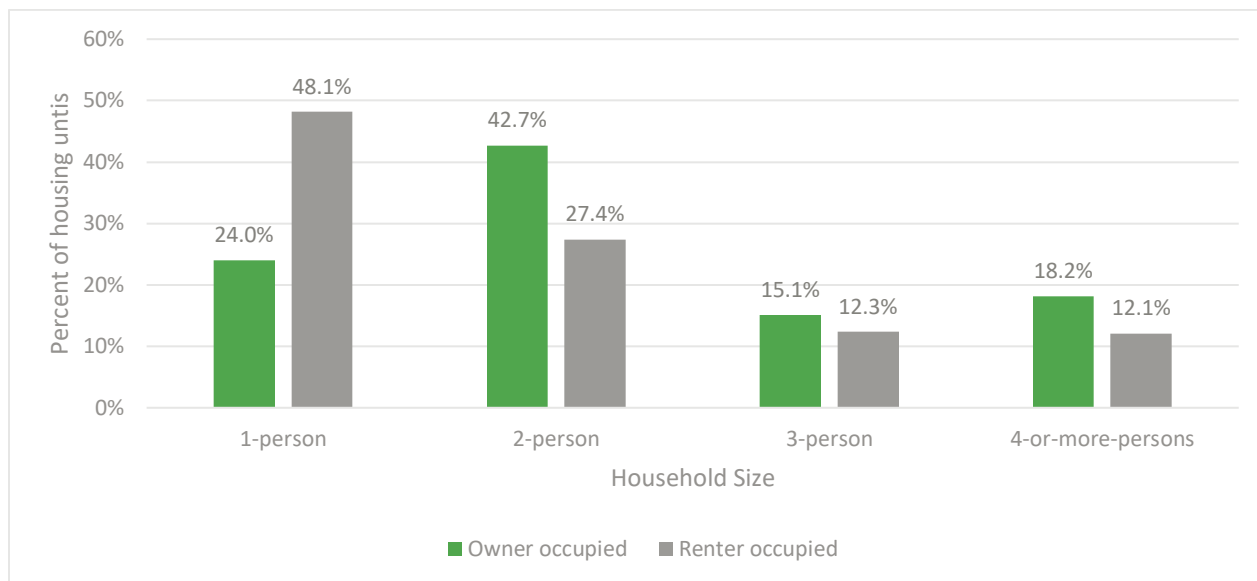
| Response | Count |
|--|-------|
| UMaine training (DEI, safety, COI, etc.) | 1 |
| HACCP | 1 |
| Boaters Safety | 1 |
| Online management and communications courses | 1 |
| NMFS Licensing | 1 |
| ServSafe Food Handling Certification | 1 |
| Water Safety Training | 1 |
| Free, online boat education course | 1 |

When it comes to employee development and training, what training providers does your organization contract with?

| Response | Count | Percent |
|---|-----------|---------|
| N/A or none | 11 | 69% |
| Brightspace? | 1 | 6% |
| Hard Knocks of Georges Bank | 1 | 6% |
| MEP | 1 | 6% |
| Not sure | 1 | 6% |
| UMAINE, Cornell, US coast guard, Coursera | 1 | 6% |
| Grand Total | 16 | |

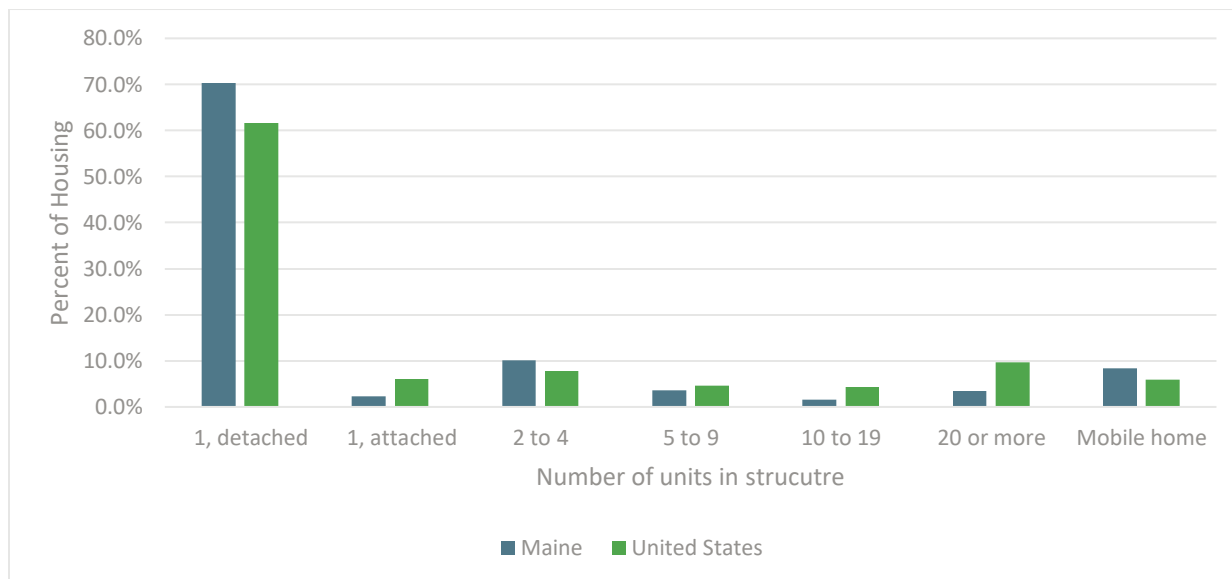
APPENDIX III: SUPPLEMENTAL HOUSING ANALYSIS FIGURES

Figure 43: Maine Households by Tenure Size.



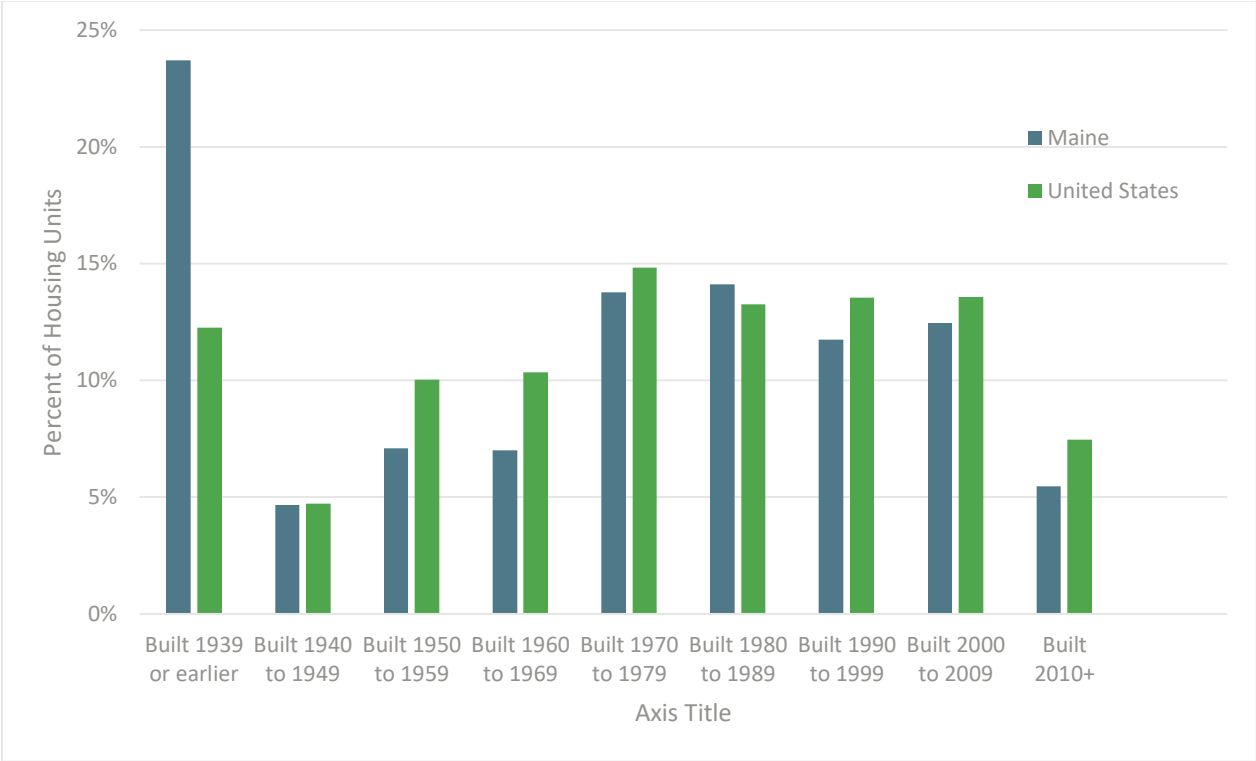
Source: 2021 American Community Survey 5-Year Estimates.

Figure 44: Housing stock by number of units in structure.



Source: 2021 American Community Survey 5-Year Estimates.

Figure 45: Total Housing Stock by Year Built.



Source: 2021 American Community Survey 5-Year Estimates.

APPENDIX IV: CORPORATE EQUALITY INDEX, SCORING & SELF-ASSESSMENT TOOL³⁰

Criteria 1: Workforce Protections (30 points possible)

- a. Policy includes sexual orientation for all operations (15 points)
- b. Policy includes gender identity or expression for all operations (15 points)

Criteria 2: Inclusive Benefits (30 points possible)

To secure full credit for benefits criteria, each benefit must be available to all benefits-eligible U.S. employees. In areas where more than one health insurance plan is available, at least one inclusive plan must be available.

- a. Equivalency in same- and different-sex spousal medical and soft benefits (10 points)
- b. Equivalency in same- and different-sex domestic partner medical and soft benefits (10 points)
- c. Equal health coverage for transgender individuals without exclusion for medically necessary care (10 points):

- Insurance contract explicitly affirms coverage and contains no blanket exclusions for coverage
- Insurance contract and/or policy documentation is based on the World Professional Association for Transgender Health (WPATH) Standards of Care
- Plan documentation must be readily available to employees and must clearly communicate inclusive insurance options to employees and their eligible dependents.
- Other benefits available for other medical conditions are also available to transgender individuals. Specifically, where available for employees, the following benefits should all extend to transgender individuals, including for transition-related services:

- Short term medical leave
- Mental health benefits
- Pharmaceutical coverage (e.g., for hormone replacement therapies)
- Coverage for medical visits or laboratory services
- Coverage for reconstructive surgical procedures related to sex reassignment

Criteria 3: Supporting an Inclusive Culture & Corporate Social Responsibility (40 points possible)

- a. Three LGBTQ+ Internal Training and Education Best Practices Businesses must demonstrate a firm-wide, sustained and accountable commitment to diversity and cultural competency, including at least three of the following elements (10 points):

³⁰ The Corporate Equality Index, 2022 report, including methodology and the herein referenced scoring criteria can be found at: https://reports.hrc.org/corporate-equality-index-2022?_ga=2.31858494.1618424107.1678889900-1309780240.1678889900#spotlight-equality-public-square

1. New hire training clearly states that the nondiscrimination policy includes gender identity and sexual orientation and provides definitions or scenarios illustrating the policy for each
2. Supervisors undergo training that includes gender identity and sexual orientation as discrete topics (maybe part of a broader training) and provides definitions or scenarios illustrating the policy for each
3. Integration of gender identity and sexual orientation in professional development, skills-based or other leadership training that includes elements of diversity and/or cultural competency
4. Gender transition guidelines with supportive restroom, dress code and documentation guidance
5. Anonymous employee engagement or climate surveys conducted on an annual or biennial basis allow employees the option to identify as LGBTQ+.
6. Data collection forms that include employee race, ethnicity, gender, military and disability status — typically recorded as part of employee records — include optional questions on sexual orientation and gender identity.
7. Senior management/executive performance measures include LGBTQ+ diversity metrics

b. Employee group –or– Diversity council (10 points)

c. Three Distinct Efforts of Outreach or Engagement to Broader LGBTQ+ Community | Businesses must demonstrate ongoing LGBTQ+ specific engagement that extends across the firm, including at least three of the following (15 points):

1. LGBTQ+ employee recruitment efforts with demonstrated reach of LGBTQ+ applicants (required documentation may include a short summary of the event or an estimation of the number of candidates reached)
2. Supplier diversity program with demonstrated effort to include certified LGBTQ+ suppliers
3. Marketing or advertising to LGBTQ+ consumers (e.g.: advertising with LGBTQ+ content, advertising in LGBTQ+ media or sponsoring LGBTQ+ organizations and events)
4. Philanthropic support of at least one LGBTQ+ organization or event (e.g.: financial, in kind or pro bono support)
5. Demonstrated public support for LGBTQ+ equality under the law through local, state or federal legislation or initiatives

d. LGBTQ+ Corporate Social Responsibility, Contractor/supplier non-discrimination standards AND Philanthropic Giving Guidelines (5 points)

Criteria 4: Responsible citizenship (-25)

Employers will have 25 points deducted from their score for a large-scale official or public anti-LGBTQ+ blemish on their recent records. Scores on this criterion are based on information that has come to HRC's attention related to topics including but not limited to: undue influence by a significant shareholder calculated to undermine a business's employment policies or

practices related to its LGBTQ+ employees; directing corporate charitable contributions to organizations whose primary mission includes advocacy against LGBTQ+ equality; opposing shareholder resolutions reasonably aimed at encouraging the adoption of inclusive workplace policies; revoking inclusive LGBTQ+ policies or practices; or engaging in proven practices that are contrary to the business's written LGBTQ+ employment policies.

Perfect Score: 100 points