



# WAYPOINTS

INFORMING THE FUTURE OF MAINE'S COAST AND ISLANDS



VOLUME 4

## NAVIGATE

RESILIENCE INDICATORS FOR  
MAINE'S COAST AND ISLANDS



## MISSION

The Island Institute works to sustain Maine's island and coastal communities, and exchanges ideas and experiences to further the sustainability of communities here and elsewhere.

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## ABOUT THE COVER

Motoring near bell buoys in Casco Bay. Bell buoys ring when they are rocked by the motion of the waves. They are navigational tools that allow boaters to find safe and efficient routes even when visibility is hindered by fog.

*Cover photos by Jack Sullivan*

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Visit [www.islandinstitute.org/waypoints](http://www.islandinstitute.org/waypoints) to further explore this publication. Download data sets, link to online tools, and access stories about the communities and coastal residents working on these topics.



JACK SULLIVAN



# Introduction

## Communities become more resilient by navigating change

The world has been confronted by many challenges during recent years: some were foreseeable, and others were harder to predict; some of these challenges were large, and others small; some were immediate, and others took a long time to develop. By reflecting on moments of previous change and disruption, considering key trends, and preparing for the future, communities can adapt to better navigate and become more resilient to this change.

*Waypoints: Navigate* is the fourth installment in the *Waypoints* series, which visualizes data on how Maine's coast and islands strive toward resilience.

In this edition you will find data on who is living here and what it costs to call our **Welcoming Coast** home. Data is presented on **Preparedness**—one way of increasing resilience—through assessing risk, identifying who has the capacity to plan, and what types of funding are coming to Maine that could make a positive change. The region's **Resilient Economy** is improved when more training is available for workers and a variety of types of jobs exist, both of which are explored in the following pages.

Some key takeaways are:

**PLANNING AND PREPARATION** are essential to reduce the impacts of constant change. By learning from the past, assessing the current risks, and gearing up for the future, communities and leaders can anticipate what lies ahead and make smart adaptations.

**DIVERSITY ENHANCES LIFE** and increases resilience. In social, economic, and environmental contexts, variety—rather than depending on few options and perspectives—increases our ability to adjust, recover, and renew.

**RESILIENCE IS A CONTINUAL JOURNEY**, not a static point. It is the act of always adjusting and modifying in order to be at least one step ahead of the impact of change.

The *Waypoints* series is meant to share data that provide a fresh look at the coast that many of you know so well. We hope you enjoy *Waypoints: Navigate* and that it inspires you to search for new avenues of preparedness, diversity, and resilience to strengthen the communities of Maine's islands and coast.

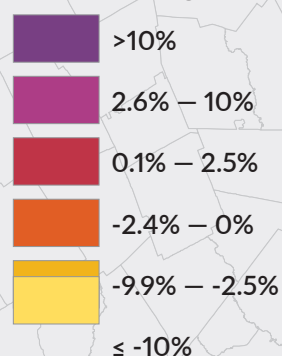
—The Island Institute Community Data Team



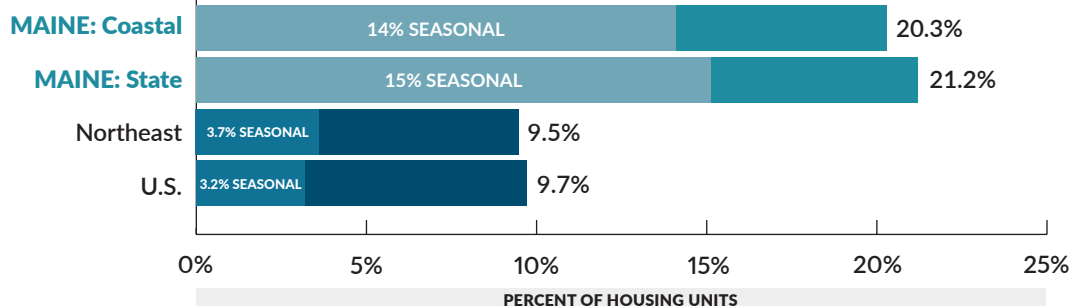
# Coastal Maine at a Glance

Small communities with older populations, high seasonal vacancy rates, and a growing population distinguish the coast from the rest of the state and the nation.

Percent Change in Population, 2010-2020



Housing Vacancy and Seasonality, 2020

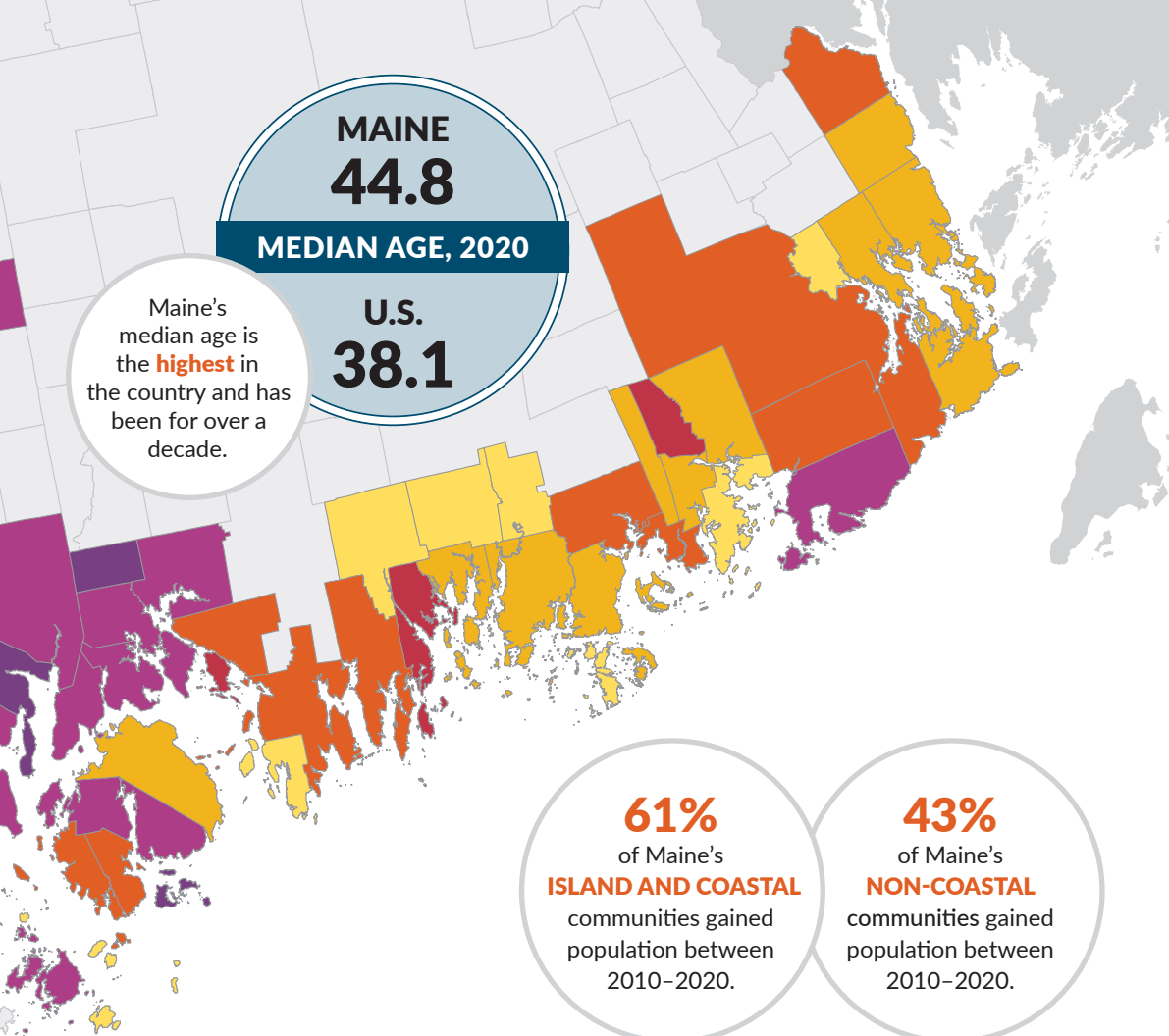


Homes are vacant for many reasons, including being on the market for rent or sale, for migrant workers, or for seasonal use.

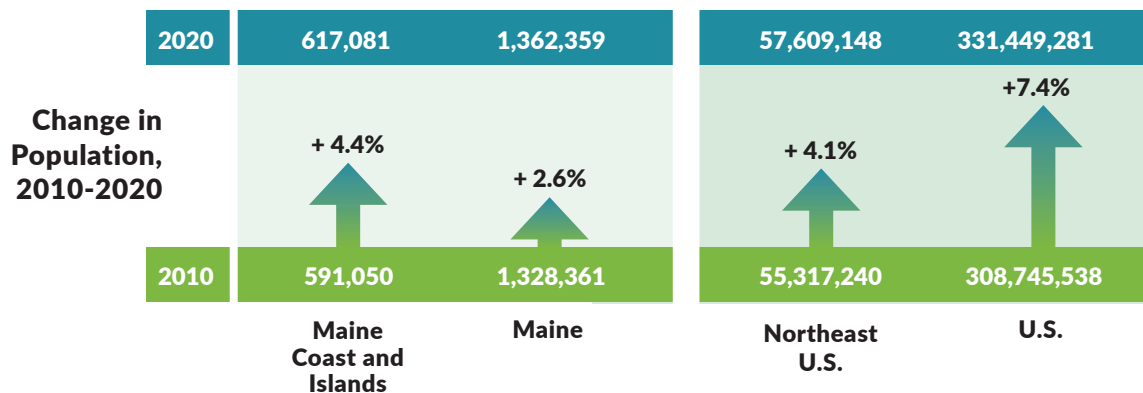
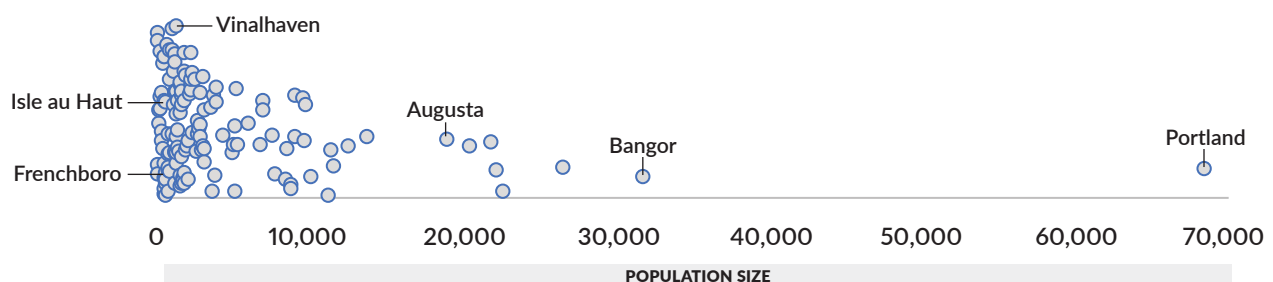


# WHY THIS MATTERS

Over the past ten years Maine's island and coastal communities grew faster than the state but slower than the nation. As the coast of Maine changes, it can be a welcoming place, preparing to embrace new residents who will partake in, and enhance, the economy. But creating a bright future for new arrivals and longtime residents alike will take planning and a willingness to make adjustments along the way.



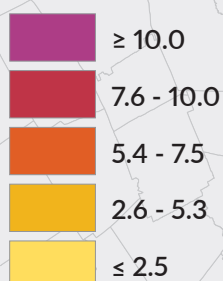
## Population of Island and Coastal Communities, 2020



# Increasing Racial and Ethnic Diversity

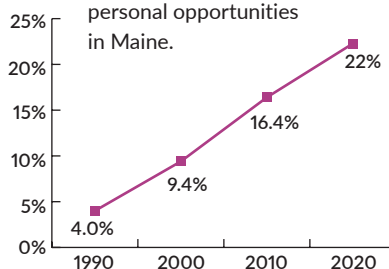
In 2020, Maine's island and coastal communities are more diverse than inland communities. Since 1990, racial and ethnic diversity along the coast has grown.

Change in Black, Indigenous, and People of Color Population (percentage points), 1990-2020



## PORTLAND

The city's diversity has increased for many reasons, including immigration from all over the world. Some have come to seek asylum while others pursue economic and personal opportunities in Maine.





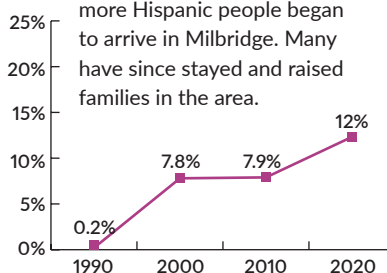
## WHY THIS MATTERS

Since 1990, the islands and coast of Maine have continued to become more racially and ethnically diverse. But while it is projected that the United States will be a plurality by 2044, meaning there will be no single majority group, Maine will remain majority White. In order to be a welcoming coast, communities must continue to strive for equity and inclusion for everyone who lives here.

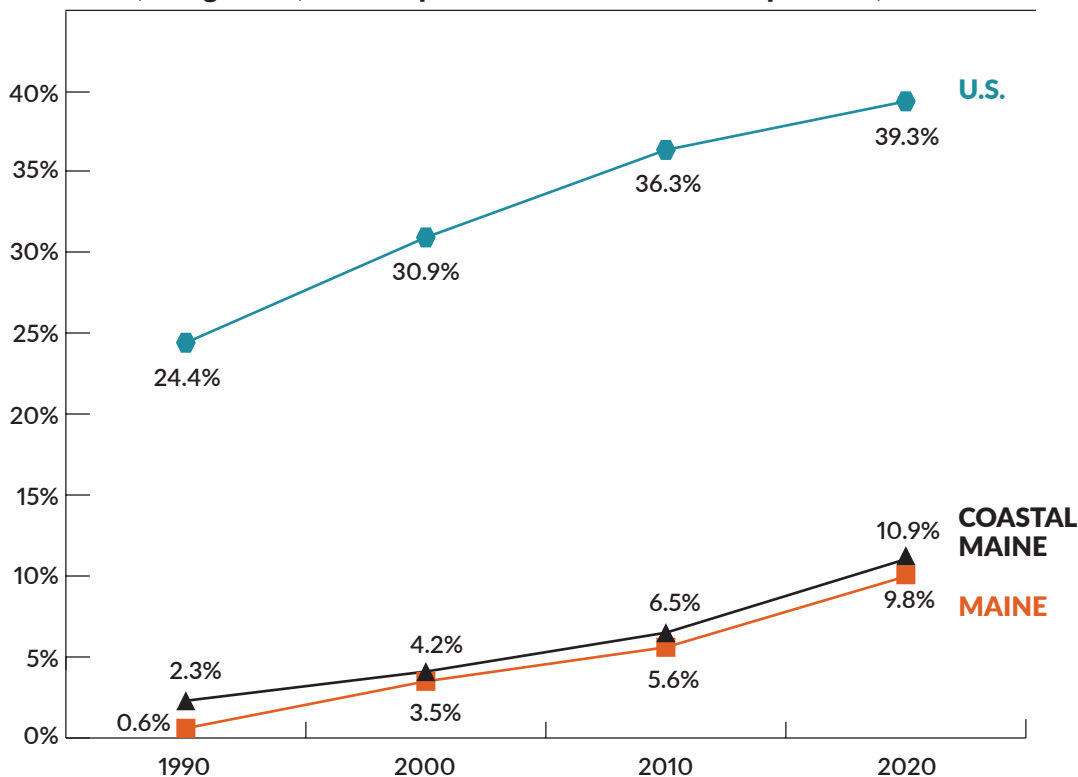
Almost all communities along Maine's coast and islands became more racially and ethnically diverse between 1990-2020.

### MILBRIDGE

Attracted by opportunities with blueberry harvesting and sea cucumber processing, more Hispanic people began to arrive in Milbridge. Many have since stayed and raised families in the area.



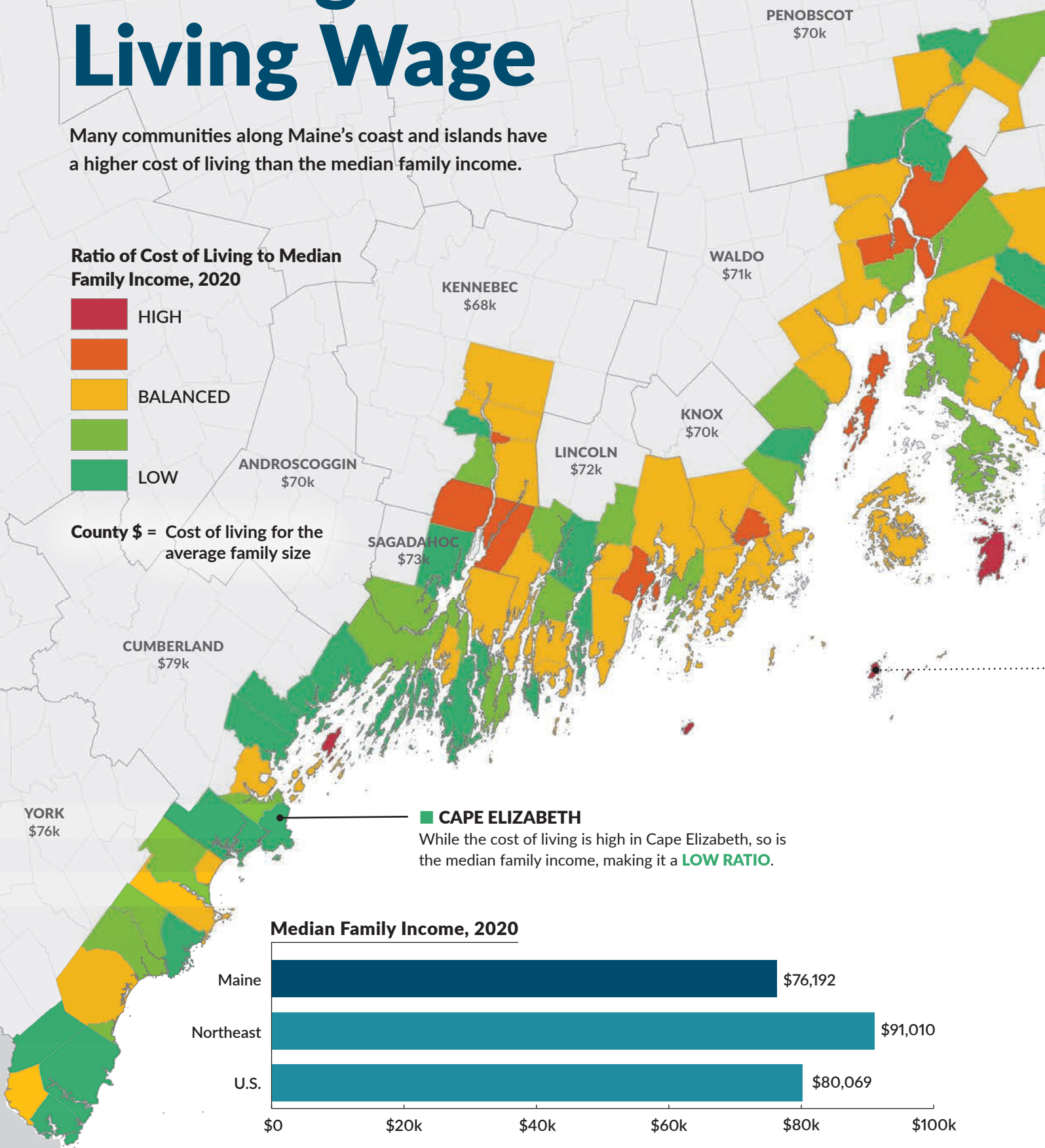
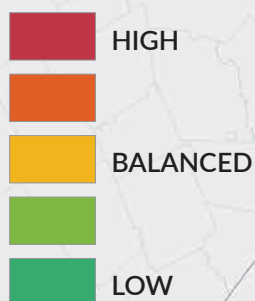
Black, Indigenous, and People of Color: Percent of Population, 1990-2020



# Earning a Living Wage

Many communities along Maine's coast and islands have a higher cost of living than the median family income.

## Ratio of Cost of Living to Median Family Income, 2020



## Median Family Income, 2020





## WHY THIS MATTERS

In every community there is a minimum amount an individual or family must pay for basic necessities that no amount of frugality will reduce. When the cost of living in a community outpaces the amount someone can earn, this upsets the balance of who can live, work, and play in the community. Those who work there may be unable to afford to live there.

### LIVING WAGE

The **income** as a salary or hourly wage required to cover the **cost of living** for a family including food, shelter, transportation, and more.

WASHINGTON  
\$68k

HANCOCK  
\$69k

### JONESBORO

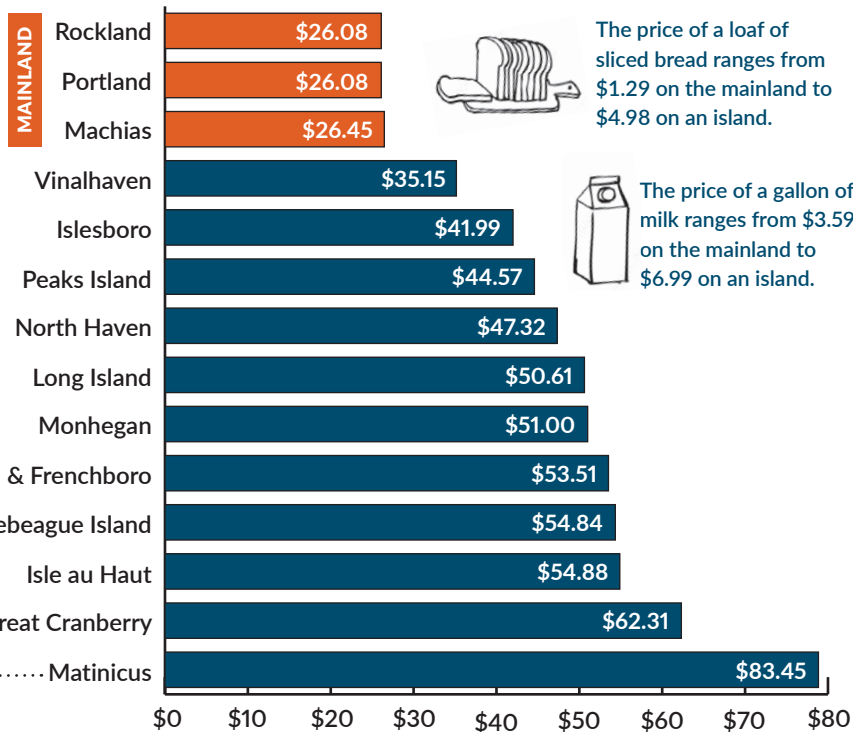
In Jonesboro, the cost of living is significantly higher than the median family income, making it a **HIGH RATIO**.

*Frenchboro residents, lacking an island grocery store, may use the market on Swan's Island.*

*On Matinicus, the cost of a basket of groceries includes airfare because there is no grocery store on the island.*

### Cost of Basket of Groceries, 2021-2022

Basket includes: milk, bread, eggs, apple, ground beef, chicken, coffee, sugar, soup, beans, and chips.



*Many islanders plan trips off-island and incur the additional cost of traveling by ferry to purchase groceries at mainland supermarkets.*

# Mount Desert Island Faces Affordable Housing “Desert”

Local groups are taking tangible actions on several fronts

By Laurie Schreiber

IN BAR HARBOR, the median income in 2019 was \$56,893, according to MaineHousing, the state's housing authority. That's enough to comfortably afford a home costing \$206,291.

Yet the median home price that same year was \$430,000—well out of reach for most would-be buyers.

The situation is exacerbated by the conversion of many homes into lucrative vacation rentals, making them unaffordable for long-term renters and further inflating home values for future buyers.

The situation is challenging throughout Mount Desert Island. According to a 2018 housing needs analysis and assessment by Island Housing Trust, a Bar Harbor nonprofit that promotes permanent

workforce housing on the island, median incomes ranged at that time from \$46,000 in Tremont to \$70,000 in Mount Desert. But the income needed to afford a median priced home ranged from \$70,000 in Tremont to nearly \$100,000 in Mount

The survey found that 70% of people working on Mount Desert Island live off-island.

Desert. The survey found that 70% of people working on Mount Desert Island live off-island.

The disconnect between income and home affordability has resulted in a number of initiatives.



A rendering of a 24-apartment complex under construction near Jackson Laboratory in Bar Harbor.

Responding to a spike in vacation rentals, Bar Harbor in November 2021 voted 1,260 to 840 to cap the number of whole-house, non-owner-occupied vacation rentals at 9% of total housing units.

The nonprofit Mount Desert 365 has acquired Northeast Harbor properties to develop year-round homeownership and rentals. For example, in 2021, it partnered with Island Housing Trust to sell a home to a local working family for \$275,000 with affordability covenants and a 99-year lease on the land, in a shared equity model designed to reduce the cost of home ownership for medium-income families.

Since 2003, Island Housing Trust has completed 48 homeownership projects serving 143 adults and children on Mount Desert Island and holds affordability covenants on 37 homes. Projects include building homes in the towns of Mount Desert and Bar Harbor, homeownership assistance projects, and partnership projects with Maine Coast Heritage Trust, including a development now underway in Town Hill, a village on Bar Harbor's outskirts.

Called the Jones Marsh Affordable Housing Development, with six energy-efficient single-family





COURTESY ISLAND HOUSING TRUST

A rendering of the Island Housing Trust's Jones Marsh Affordable Housing Development in Town Hill.

homes and two duplexes, the goal is to provide year-round housing that's permanently affordable to median-income earners on Mount Desert Island. The goal is to have the first home ready this summer.

Jackson Laboratory, a Bar Harbor nonprofit biomedical research institution and Downeast Maine's largest employer, has affordable housing plans underway, including a sustainable-design 24-apartment complex near the campus and considered key to attracting and retaining workers. The plan is to eventually build a total of 98 units.

“We know that one of the most acute issues for employees working in Bar Harbor is the severe lack of housing.”

— CATHERINE LONGLEY

“We know that one of the most acute issues for employees working in Bar Harbor is the severe lack of housing,” said Catherine Longley, the lab's executive vice president and chief operating officer.

“Over two-thirds commute from off island, and while some prefer it this way, we know that many employees would like to be in walking distance or in close proximity to the laboratory and the communities and schools on the island,” Longley said.

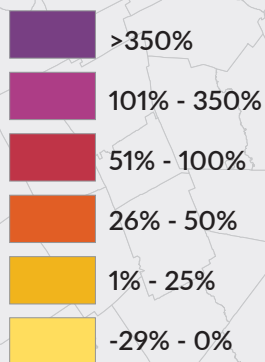
Acadia National Park, another major employer, has also pitched a workforce housing proposal with Island Housing Trust to work with island towns to develop affordable year-round and seasonal housing for park employees and other residents.

College of the Atlantic in Bar Harbor is tackling the tight market with the purchase of two residential complexes totaling 31 bedrooms for student housing. It broke ground in spring 2021 on a multi-use building in Northeast Harbor, with year-round apartments for students and faculty, and announced construction of a Passive House residence hall for nearly 50 students.

# Buying into the Housing Market

Single-family homes in coastal and island communities are selling faster than in years past, with more selling above the list price than ever before.

Percent Change in Number of Home Sales, 2005-2021



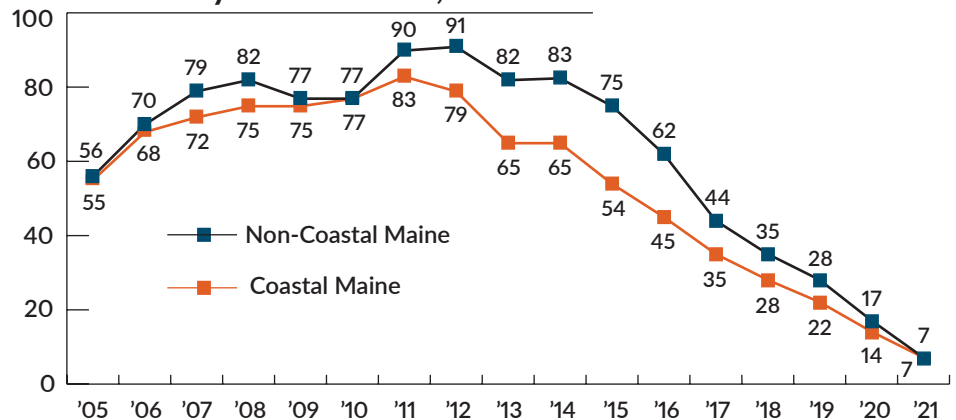
## VINALHAVEN

Vinalhaven had an average of 3.5 single family home sales per year between 2005 and 2010 and an average of 18 sales per year between 2016 and 2021.

## WELLS

Before 2011, Wells averaged fewer than 100 single family home sales per year, but after 2016 this number increased to 230 sales per year.

Median Days on the Market, 2005-2021



## WHY THIS MATTERS

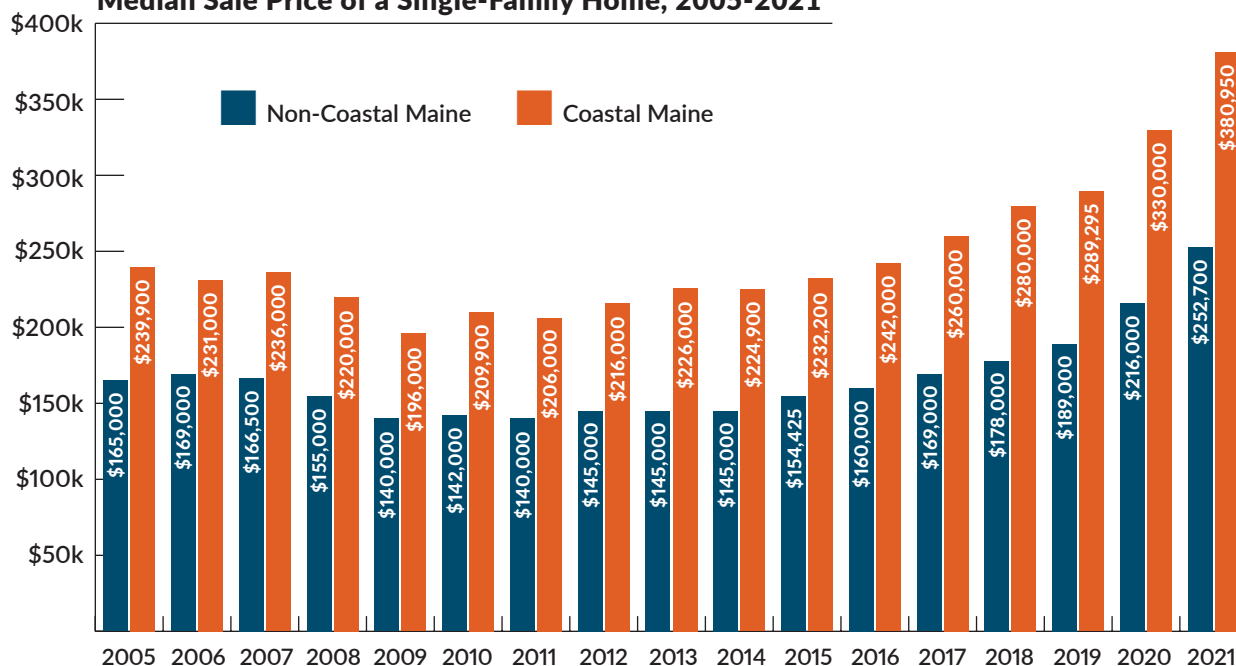
Property in Maine's island and coastal communities is used for a variety of purposes: working waterfront, tourism, primary and secondary homes, and more. The pressure from increasing demand, the reduction in the number of days a property is on the market, and the increasing ratio of sales price to list price leave few opportunities for home buyers. The reduced supply and price increases have exacerbated the shortage of housing for working people.

### GOULDSBORO

Between 2005–2010, Gouldsboro averaged 15 single family home sales per year. Between 2016 and 2021 the town averaged 31 sales per year.

The ratio of a coastal home's selling price to its listing price **increased** from 96% in 2008 (indicating that the median home sold for 4% less than its listed price) to 100% in 2021.

Median Sale Price of a Single-Family Home, 2005-2021

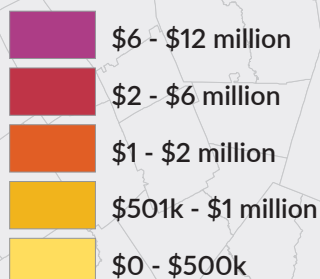




# Assessing Risk of Flooded Infrastructure

Rising seas combined with more frequent and intense storms will bring heavier rainfall and higher storm surges. This will impact critical infrastructure along Maine's islands and coast. Maine is committed to managing for 1.5 feet of sea level rise by 2050.

**Value of Building Loss (including direct economic impacts) at 1.5 Feet of Sea Level Rise\***



● Wastewater Treatment Plant at Risk

\* Map values do not reflect all critical infrastructure (bridges, roads, wharfs, etc.), which would add significant expense if impacted.

## WISCASSET WASTEWATER TREATMENT PLANT

Capacity: 620,000 GPD  
Replacement cost: \$6.5 million

## SACO WASTEWATER TREATMENT PLANT

Capacity: 4,200,000 GPD  
Replacement cost: \$43.8 million

## KENNEBUNK SEWER DISTRICT

Capacity: 1,310,000 GPD  
Replacement cost: \$13.7 million

## OGUNQUIT SEWER DISTRICT

Capacity: 1,280,000 GPD  
Replacement cost: \$13.3 million

## SOUTH BERWICK SEWER DISTRICT

Capacity: 600,000 GPD  
Replacement cost: \$6.3 million

## WASTEWATER TREATMENT PLANTS

The plants shown on the map are at risk of inundation at 1.5 feet of sea level rise.

**Capacity:** Gallons Per Day (GPD)

**Replacement cost:** Upper bound estimate of dollar amount to replace facility based on capacity.

## WHY THIS MATTERS

Without preparing for the impacts of climate change, Maine's island and coastal buildings and critical infrastructure will be at risk of significant and costly damage. A wide array of responses (e.g., protection, elevation, and retreat) will be necessary for existing coastal infrastructure, and new infrastructure will need to be built away from vulnerable areas. Communities will need guidance, technical assistance, and regional collaboration as they adapt to and mitigate the effects of sea level rise.

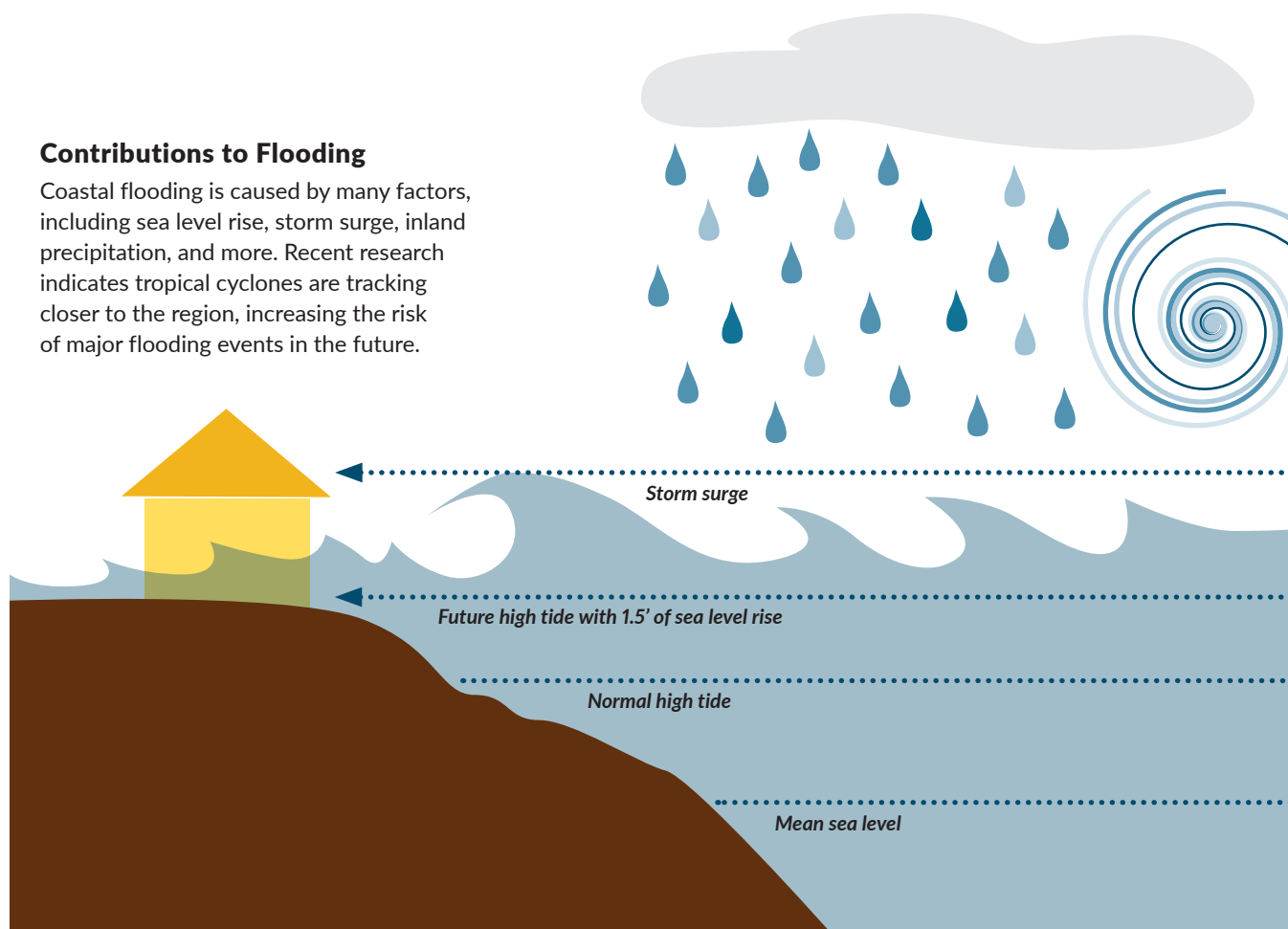
Between 2020 and 2050, flooding of infrastructure will result in an estimated **\$17.5 billion of cumulative damages** to buildings in Maine.

### MACHIAS WASTEWATER TREATMENT PLANT

Capacity: 900,000 GPD  
Replacement cost: \$9.4 million

### Contributions to Flooding

Coastal flooding is caused by many factors, including sea level rise, storm surge, inland precipitation, and more. Recent research indicates tropical cyclones are tracking closer to the region, increasing the risk of major flooding events in the future.



# An Island Helmsman

Islesboro's Gabe Pendleton gets to work—for his neighbors and planet

*Story and Photo by Jack Sullivan*

WHILE ROAMING THE length of the labyrinthine yacht yard that bears his name, Gabe Pendleton checks in with employees as they work. He's soft spoken, but Pendleton's voice carries over the power tools—even when he's wearing a mask.

Whether it's boatyard logistics or a simple hello, it's clear he cares about these people.

"When I was young, I watched my father run this business, and how he treated people—how he cared for his employees. It's something I try to emulate," he says. "No one wants to be treated like a cog in a wheel who is just here to get a particular thing done."

That respect has earned the business a loyal crew. The average employment tenure for the yard's 22 employees is about 15 years.

He addressed the yacht yard's carbon footprint by investing in a 40-kilowatt solar array and battery storage system.

"A lot of people who I knew growing up are still around. Some of the employees who now work for me used to pick me up after school when I was a kid," he recalls.

Pendleton, 37, took over day-to-day operations when he returned to the island in 2013, becoming the fourth consecutive Pendleton to run the business, which began as a livery stable. Under the second generation, Pendleton's grandfather, the shop fixed cars, and when Gabe's father took over, it became the yacht yard that it is today.



JACK SULLIVAN

Gabe Pendleton at the family's Pendleton Yacht Yard on Islesboro.

Pendleton explains that while his father taught him how to be a responsible business owner, taking over the family business wasn't something he planned.

Growing up on the island, he absorbed the key values it instilled, such as the importance of community, but he also learned environmentalism, as taught by his teachers at the Islesboro Central School.

After graduating high school in 2001, he studied at the University of Maine in Orono and in Spain, then studied law at the University of Pittsburgh. After passing the bar, an opening at a law firm in Brunswick brought him back to Maine. Soon after, his father asked if he wanted to come home and manage the yacht yard.

That's when Pendleton and his soon-to-be wife, Chloe Joule, packed up and moved to Islesboro.

The demanding nature of managing the yacht yard meant he couldn't continue practicing law, but





EMMA WENDT

Gabe Pendleton points out the solar array installed on the roof of a building in the Pendleton Yacht Yard.

his preparation for that career was not wasted. The analytical problem-solving skills, and ability to effectively communicate on paper, proved invaluable to the life he took on as a born-again islander.

“The organizational side of running things is a fun challenge for me,” he confesses. “Pendleton Yacht Yard has lots of moving parts—marine construction, working on engines, paint and varnish, hauling and launching boats, and everything has to line up just right.”

On top of that, Pendleton prioritizes running an environmentally sustainable operation. In 2017, he addressed the yacht yard’s carbon footprint by investing in a 40-kilowatt solar array and battery storage system which drastically reduces emissions and energy costs for the business.

And in part due to Pendleton’s advocacy, photovoltaic arrays have appeared on the island’s school, community building, and transfer station.

Though he has strong feelings about such things, he says he has learned the value of building community support for projects, rather than proceeding fueled only by his own passion. As a member of the select board, he works to have the community understand the benefits of the projects the board works on.

“Having 51 percent of the island’s support is never our goal,” he says, and instead hopes for something closer to consensus.

Residents will stop by the yacht yard or flag him down in the store to talk about municipal projects. He passes those concerns along to the others on the select board.

“One of the good things about local government is that you’re close to the issues,” he notes. “If the town’s taxes go up, that includes the select board’s taxes.”

A fellow member of the select board relates how when Pendleton had to bring his child to a board meeting, some asked if he was babysitting. “He corrected them and said, ‘No, it’s called parenting.’”

Though some shy away from straddling the elected official and entrepreneurial worlds, where a decision in one role can hurt the other, Pendleton believes this level of engagement suits him.

“By running a business and being involved in the town, I have an opportunity to do more about the issues I care about,” he says.

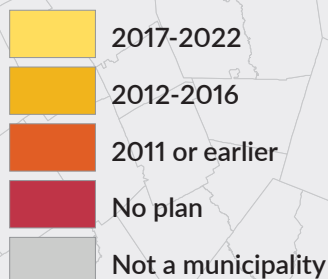
Pendleton believes effective leaders bring everyone along. Sustaining his island community and the planet are driving forces, and it shows through his efforts, which include advocating for affordable island transportation and supporting the local preschool (which his two-and-a-half-year-old attends).

*Jack Sullivan is a multi-media storyteller with the Island Institute. He lives in Waldoboro.*

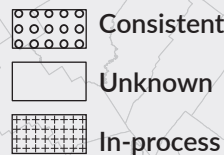
# Planning for Community Resilience

A comprehensive plan documents a community's vision for its future. A municipality qualifies for certain state benefits if its plan is found to be "consistent" with Maine's Growth Management Act, but fewer than half of coastal communities have a consistent comprehensive plan.

## Comprehensive Plan Status, Last Update



## Growth Management Act Status



**LONG ISLAND** is in the process of updating its 2008 plan that will then be submitted to the Department of Agriculture, Conservation, and Forestry to determine if it is "consistent."

**BELFAST** recently completed and submitted its comprehensive plan, which was found "consistent" with Maine's Growth Management Act.

**VINALHAVEN** plan was found consistent in 2013. Soon the town will begin the multi-year process to update its plan.

## WHY THIS MATTERS

The islands and coast of Maine are facing many challenges and risks. Assessing and developing plans to address these risks are critical first steps to increasing community resilience. Comprehensive plans give communities the opportunity to set priorities, which then guide specific actions, ordinances, and operational procedures. Many of Maine's communities, however, lack the capacity, funding, and technical skills to develop or update their comprehensive plans. Without an updated plan, they lose additional state benefits that could be used to prepare for the future.

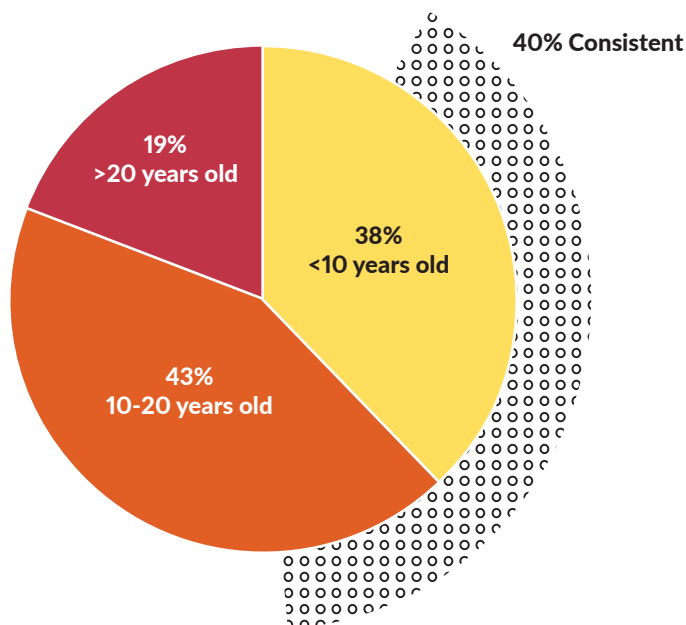
**72%**

of Maine communities have no local planner and limited regional planning support.

### DOWNEAST

Several communities are updating their comprehensive plans, including Lubec, Beals, and Jonesport.

**Maine's Island and Coastal Communities Comprehensive Plan Status, 2022**



### COMPREHENSIVE PLAN:

A document which guides growth in a town based on the vision of community members.

### GROWTH MANAGEMENT ACT:

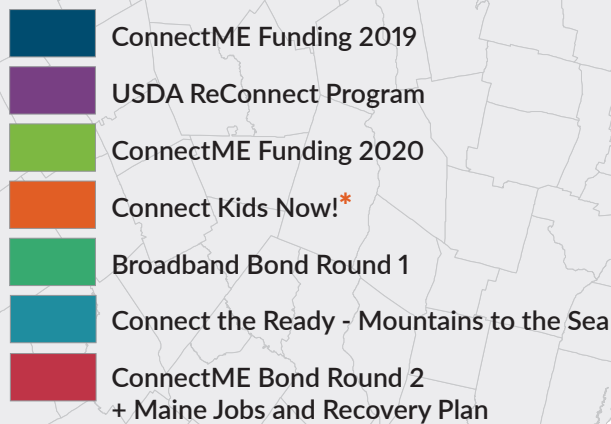
Enacted in 1998, and managed by the Department of Agriculture, Conservation, and Forestry (DACF) to provide guidance on the planning actions of all state and municipal agencies as it relates to natural resource management, land use, and development. A comprehensive plan is reviewed to determine if it is "consistent" with the Act. After 12 years, a "consistent" plan's status becomes "unknown."



# Funding Broadband Expansion

After years of limited funding for broadband, the COVID-19 pandemic spurred significant public investment to quickly build affordable internet connections in communities across the state.

## Broadband Funding Awarded, 2019-2022



\* Funding could only be used to support infrastructure that provided a connection to households with students.

### LONG ISLAND

Received funding in May 2021 through the first round of Broadband Bond awards.

### MONHEGAN

Received the USDA ReConnect grant in December 2019 and is building out their broadband infrastructure.

MAR 2020  
Pandemic  
Shutdown  
Begins

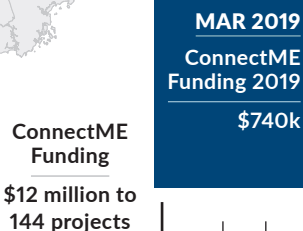
### JUL 2020

High Speed Internet  
Infrastructure Bond

\$15 million

### NOV 2020

Connect  
Kids Now!  
\$5.6 million



JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

2006-2018

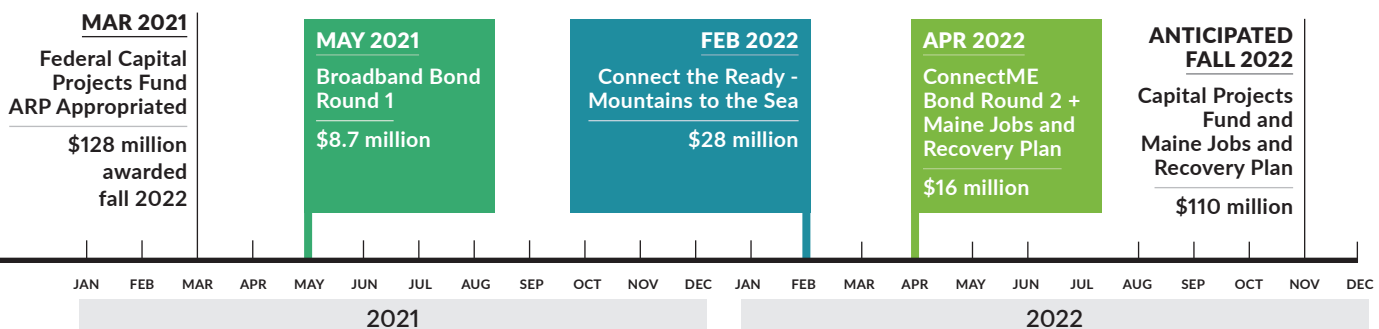
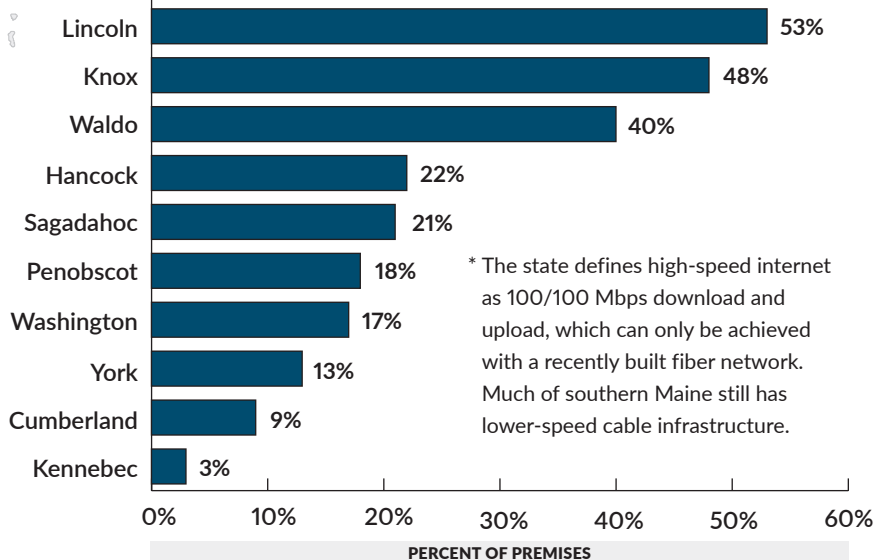
2019

2020

## WHY THIS MATTERS

The pandemic made clear that high-quality internet is critical, but one-third of Maine's island and coastal communities lack the population density necessary to generate a good return on investment by internet service providers. Reaching these rural homes requires some level of public funding. Since the pandemic began, there has been a significant increase in state and federal funding for broadband infrastructure. These funds have already provided thousands of Maine homes with a world-class connection. Funding has been awarded to projects currently underway that will connect more Mainers soon, and a significant amount of additional funding will be distributed in the near future.


**High-Speed\* Internet Service by Coastal County in Maine, 2021**

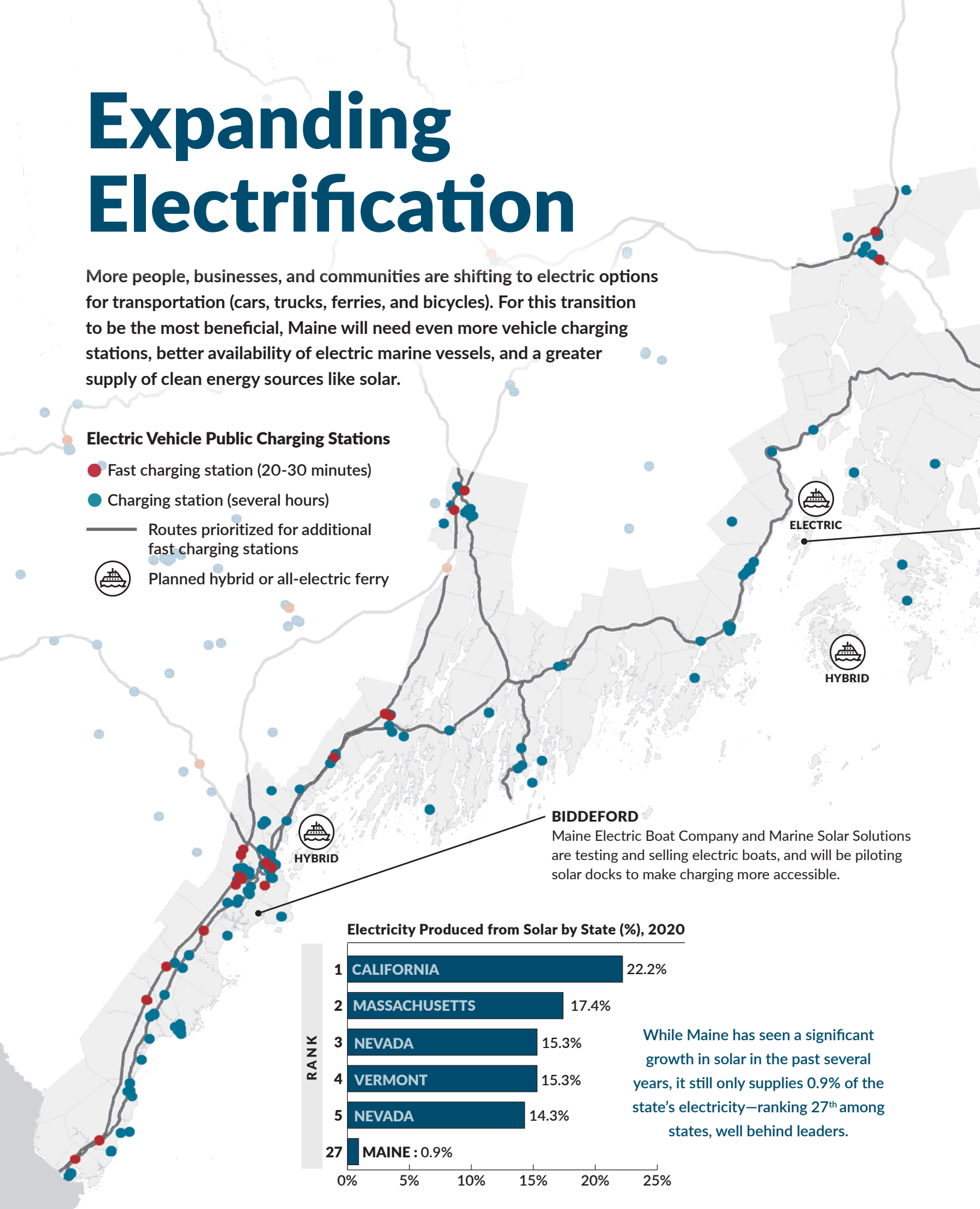


# Expanding Electrification

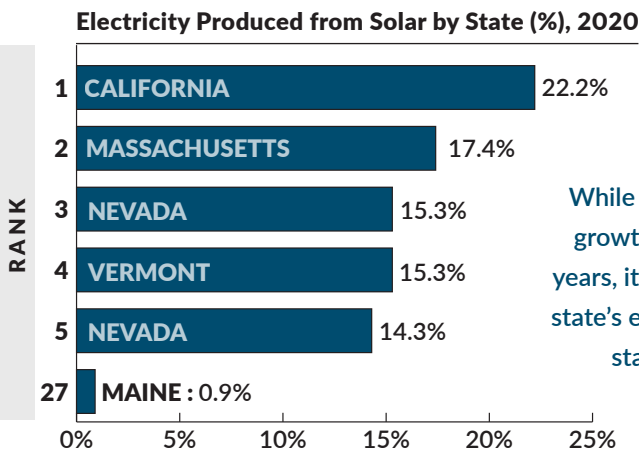
More people, businesses, and communities are shifting to electric options for transportation (cars, trucks, ferries, and bicycles). For this transition to be the most beneficial, Maine will need even more vehicle charging stations, better availability of electric marine vessels, and a greater supply of clean energy sources like solar.

## Electric Vehicle Public Charging Stations

- Fast charging station (20-30 minutes)
- Charging station (several hours)
- Routes prioritized for additional fast charging stations
-  Planned hybrid or all-electric ferry



**BIDDEFORD**  
Maine Electric Boat Company and Marine Solar Solutions are testing and selling electric boats, and will be piloting solar docks to make charging more accessible.



While Maine has seen a significant growth in solar in the past several years, it still only supplies 0.9% of the state's electricity—ranking 27<sup>th</sup> among states, well behind leaders.



## WHY THIS MATTERS

Switching to electric options, particularly for transportation, is a key part of building a climate-resilient coast. Electric versions are more efficient, and have the potential to be powered from clean sources like solar and wind. For electrification to happen everywhere—particularly in rural and remote places like Downeast—Maine will need to direct even more public and private investment and attention to developing the needed infrastructure.

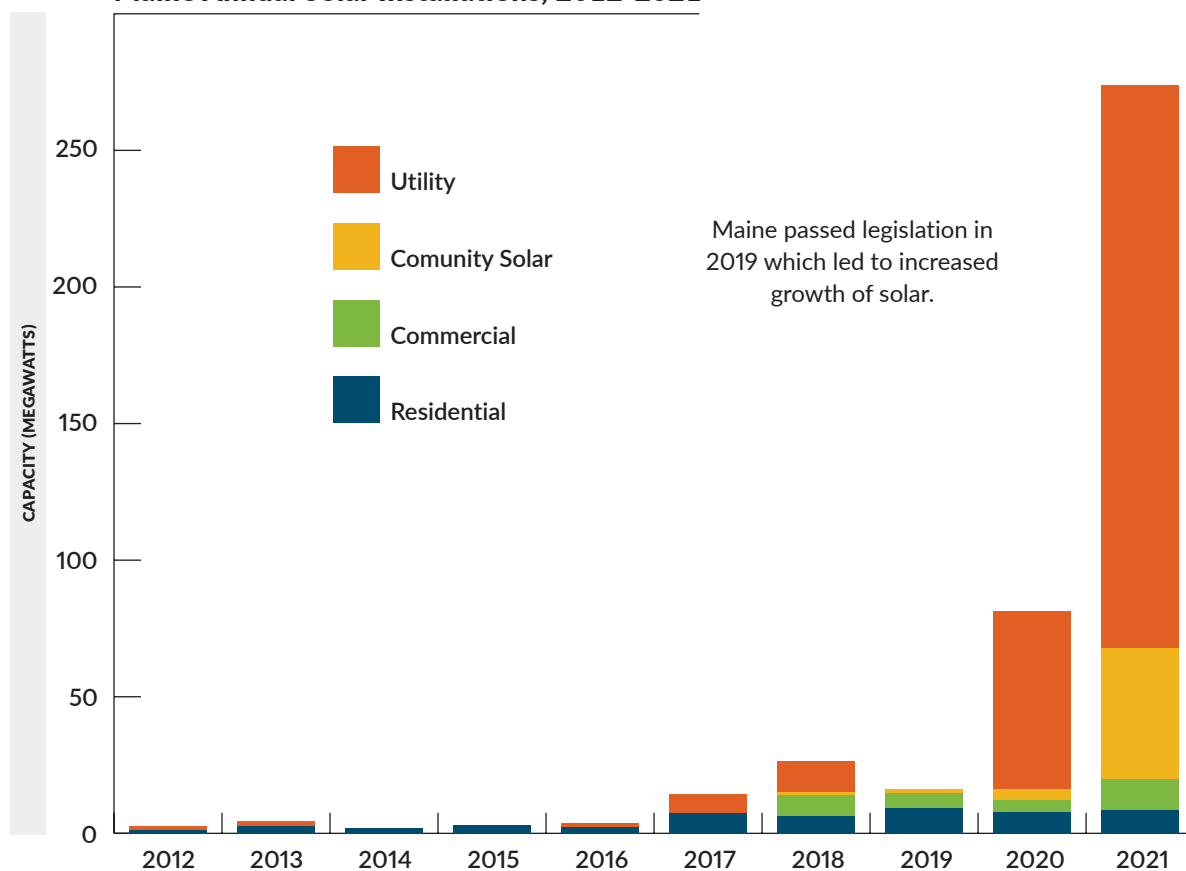
**\$19 million**

in federal funding is coming to Maine for EV charging stations.

### ISLESBORO

Pendleton Yacht Yard has installed solar and battery storage, and has a charging station at their site for their electric vehicles. *See page 14 for story.*

**Maine Annual Solar Installations, 2012-2021**



# Solar Economy May Darken Without Workers

ReVision Energy takes progressive approach to training

By Tom Groening

AS ELECTRICITY, GASOLINE, and heating oil prices soar, ReVision Energy, which installs solar photovoltaic panels and heat pumps, would seem poised to explode with growth.

The company, which employs 180 in Maine and another 160 in New Hampshire and Massachusetts, is indeed busy with work. But like many businesses, ReVision has had trouble finding staff whom they can train to do the technical work. And without enough workers, the company could hit a brick wall.

The problem extends beyond ReVision and its Portland and Montville locations. Vaughan Woodruff, director of

the company's training center, says a recent report noted that nationally, only 6% of the workers needed to do energy work are in the pipeline for training. That means there's a 94% gap in the workforce.

"That's the huge blind spot that we have in this electrical transition," he says. As home heating plants and vehicles are increasingly being powered by electricity,

the need for trained technicians will grow.

ReVision is doing its part in closing the gap. Woodruff explains that the company hires people and trains them, at its cost, to become licensed electricians. It

"The big benefit is to have a good-paying job while taking course work for free."

-VAUGHAN WOODRUFF



COURTESY REVISION ENERGY

Technicians from ReVision Energy install solar panels.

offers an apprenticeship which provides hands-on experience as well as the required hours of supervised work, and offers the courses at no cost, of which 80% may be completed online.

ReVision employees—who can become co-owners of the company through a stock option—work four, ten-hour days, so those electrician apprentices can do much of the course work on Fridays, weekends, or evenings.

The supervised work is usually 1,800-2,000 hours a year.

Currently, about 70 ReVision employees—40 in Maine—are working toward their electrician licenses.

It's an investment that's in the company's best interests.

"We're growing them to own their own business with us," Woodruff says of the apprentices, "since we're an employee-owned B corp." B corporations are legally required to consider benefits to workers, suppliers, community, consumers, and the environment.

While newly minted electricians might be tempted to leave ReVision to start their own business, the pay hike that comes with the license tends to persuade them to stay.

"The big benefit is to have a good-paying job while taking coursework for free," he says.

But as appealing as the employee-ownership and work-to-train benefits are, Woodruff says the company is bumping up against that projected 94 percent worker shortage.

"Our bottleneck is having licensed electricians," he says. Most of the work ReVision does requires electricians. A licensed electrician can supervise just two apprentices. The company currently has about 20 open positions in Maine, and another 20 elsewhere in New England.

Woodruff has a background in both solar energy and education, and he currently serves on the state's workforce board. He was lead instructor for the U.S. Department of Energy's Solar Instructor Training Network in New England and New York and developed and delivered training for instructors from high schools, community colleges, labor unions, and universities to integrate solar into technical training programs.

Not surprisingly, he has strong views on how industries like renewable energy might steer more people into their line of work.

The first step is to revamp how public education discusses trades as a career option and what preliminary courses it offers students who pursue that path, he says. Too often, focusing on vocational education is seen as the last stop before dropping out.



COURTESY REVISION ENERGY

ReVision Energy is offering apprenticeships to workers to help meet its hiring needs.

Offering apprenticeships throughout the trades is a winning strategy, he says, and "a hugely successful model." Rather than ask teens and young adults to exclusively sit in a classroom as part of a curriculum, offering them on-the-job training lets them see the rationale for academic preparation.

"Most of those learners are tactile learners," he says. "They are out in that environment all the time."

In addition to its own training initiatives, ReVision works closely with community colleges in southern and central Maine, where electrical technician courses are offered.

Another strategy is to recruit new Mainers—first generation Americans—into the trades.

ReVision also hires people for non-electrician jobs, such as those who help install heat pumps and do building efficiency assessment work. Finance and sales positions, too, may lead to more technical work such as design, for which ReVision will train.

The trades still suffer from stereotypes, with those working in them being seen as people who only turn a wrench or bang nails, Woodruff says.

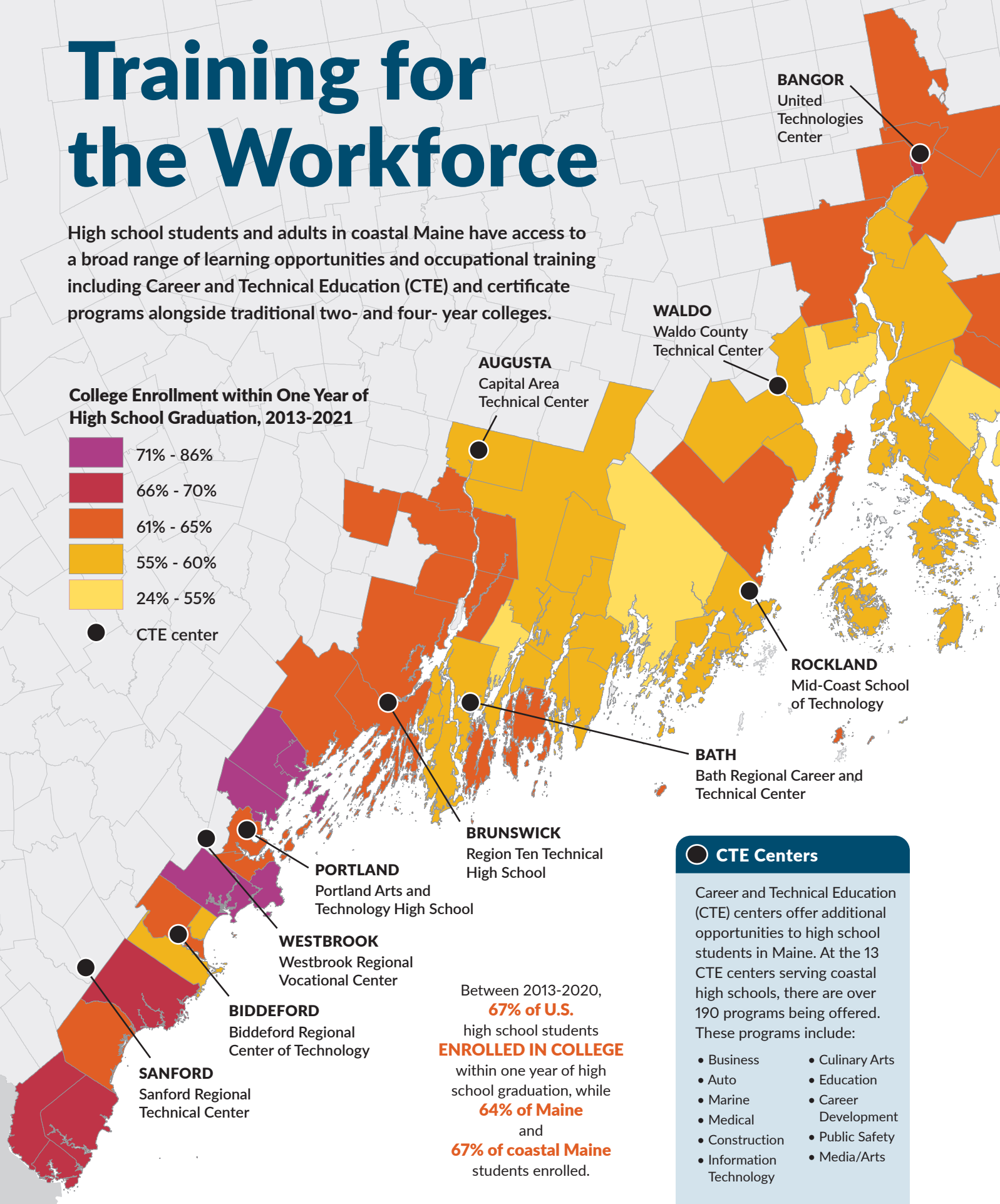
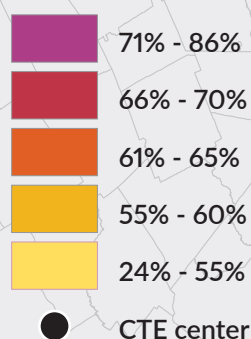
"It's an amazing gateway into other things," with all of the trades becoming much more technically sophisticated.

"Until we make a huge investment in how we portray this kind of work," he says, "we're in a perilous position."

# Training for the Workforce

High school students and adults in coastal Maine have access to a broad range of learning opportunities and occupational training including Career and Technical Education (CTE) and certificate programs alongside traditional two- and four- year colleges.

## College Enrollment within One Year of High School Graduation, 2013-2021



Between 2013-2020,  
**67% of U.S.**  
high school students  
**ENROLLED IN COLLEGE**  
within one year of high  
school graduation, while  
**64% of Maine**  
and  
**67% of coastal Maine**  
students enrolled.

## CTE Centers

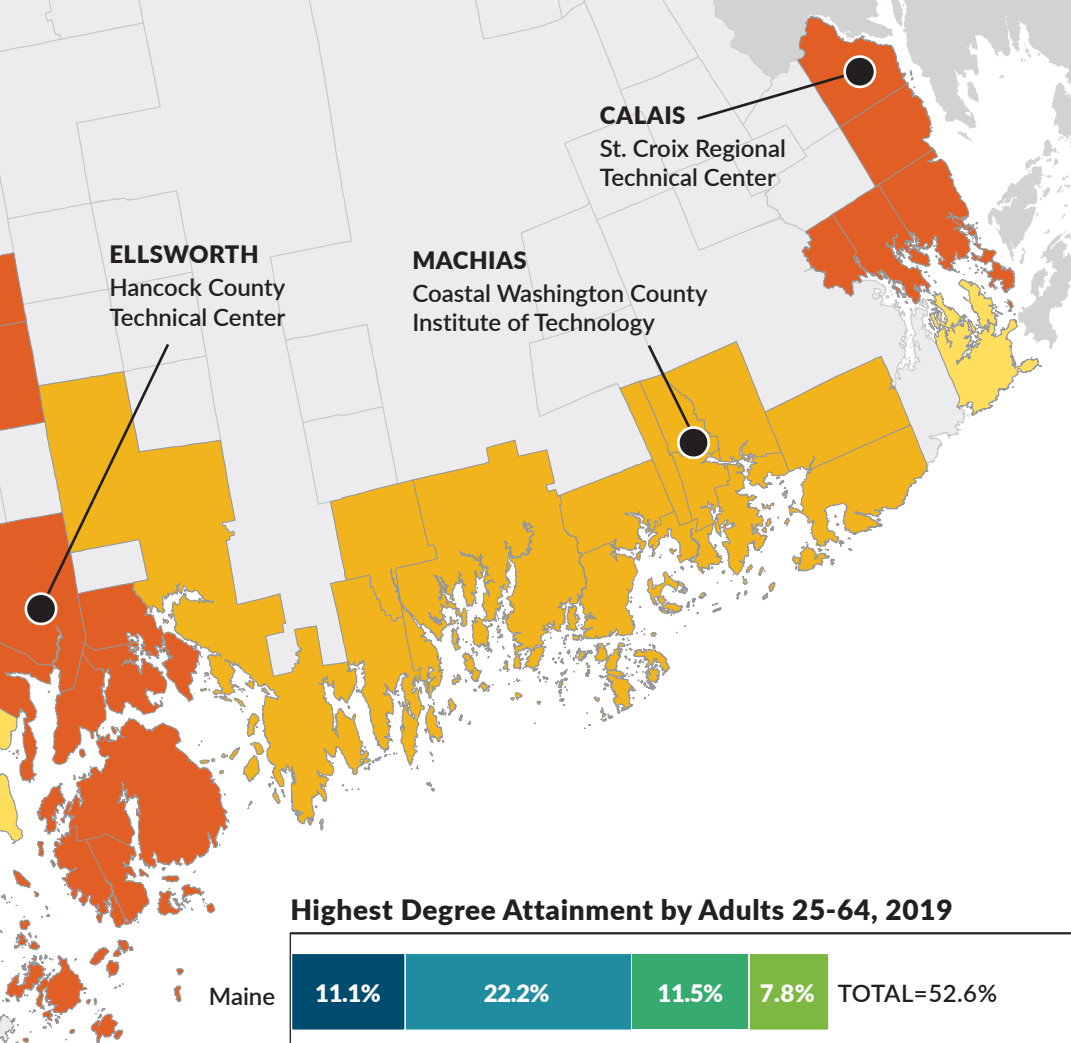
Career and Technical Education (CTE) centers offer additional opportunities to high school students in Maine. At the 13 CTE centers serving coastal high schools, there are over 190 programs being offered. These programs include:

- Business
- Auto
- Marine
- Medical
- Construction
- Information Technology
- Culinary Arts
- Education
- Career Development
- Public Safety
- Media/Arts

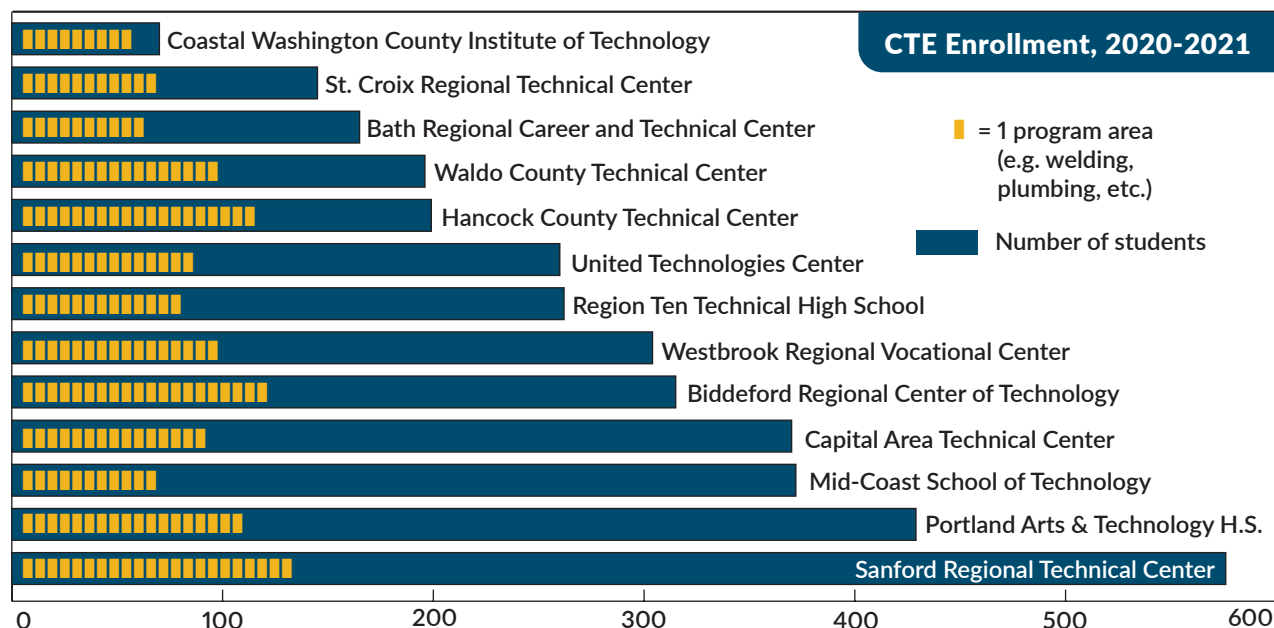
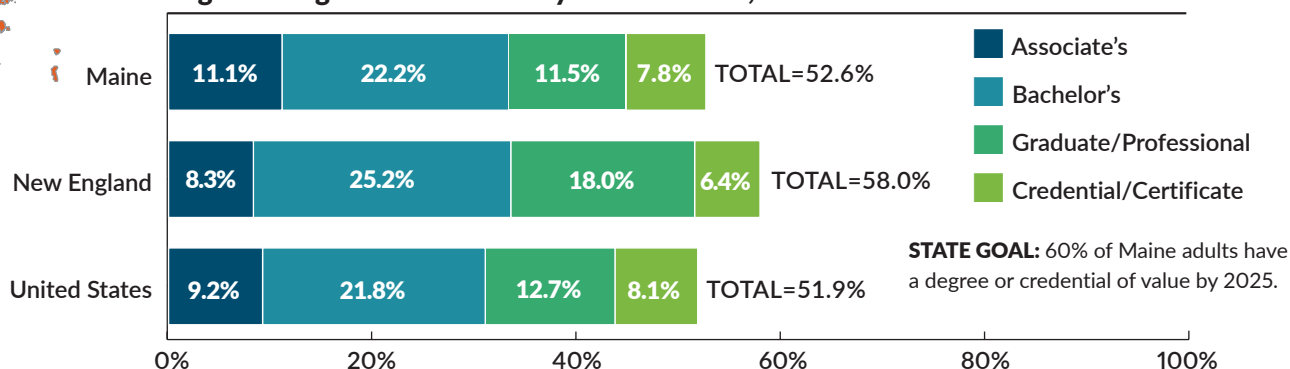


## WHY THIS MATTERS

To maintain a vibrant economy, Maine needs to add 75,000 people to its workforce by 2030. Expanding the variety of educational and training opportunities will help the state meet this goal and give students and adults more choices as they prepare for careers.



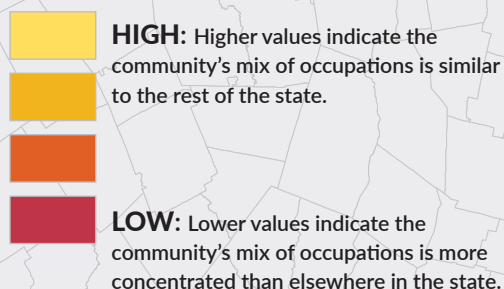
### Highest Degree Attainment by Adults 25-64, 2019



# Occupational Diversity

Communities along the islands and coast of Maine vary by their occupational mix. Southern Maine has more communities where people work in many different types of jobs. Downeast has communities where people work in fewer different types of jobs.

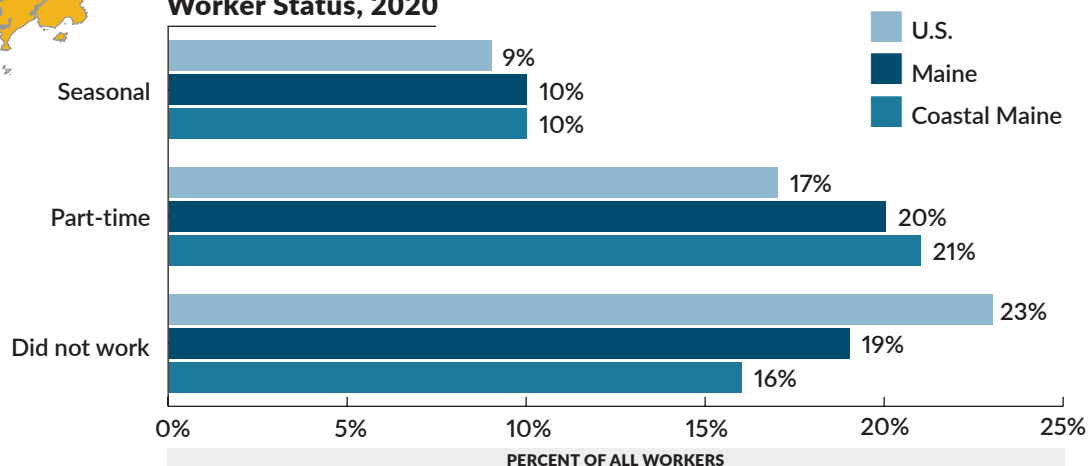
## Occupational Diversity, 2020



Communities with a **HIGHER DIVERSITY** of occupations relative to the state are generally larger communities in southern Maine.

On the coast of Maine, workers often cobble together multiple part-time occupations to make a living.

## Worker Status, 2020



## OCCUPATION

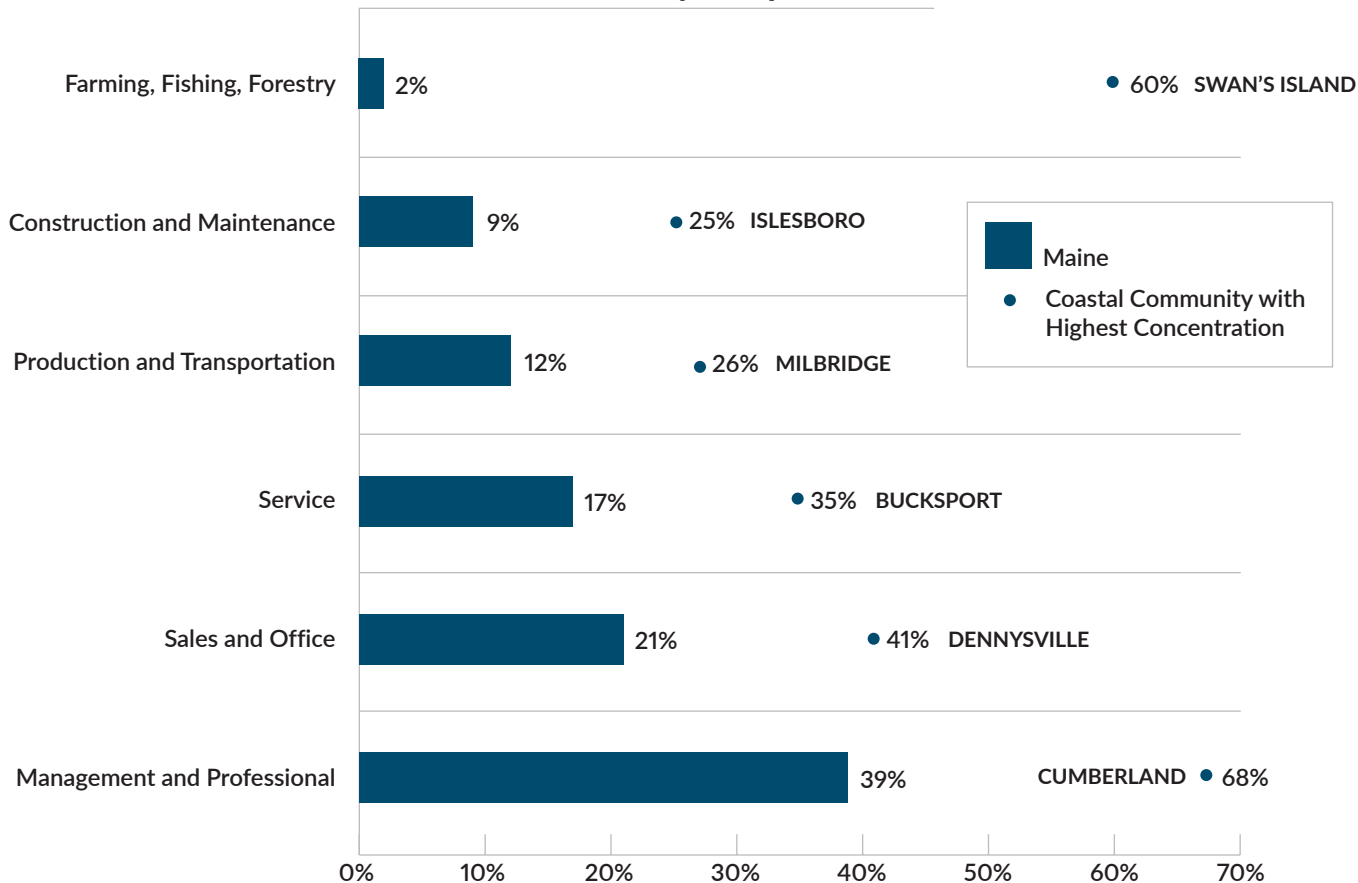
is defined by the duties performed by the worker, not the industry of employment. For example, a bookkeeper for a logging company would be counted under sales and office; a worker at a lobster processing facility would be counted under production and transportation.

## WHY THIS MATTERS

One economic risk for communities is overreliance or concentration on a single industry or occupation. A community with a high concentration of residents in one occupation will be more vulnerable to economic downturns that affect those occupations. By contrast, a community with a variety of jobs will often be able to withstand economic shocks.

Communities with a **LOWER DIVERSITY** of occupations are generally fishing communities on the islands, and Midcoast and Downeast peninsulas.

### Worker Concentration by Occupation, 2020



# A Changing Lobster Industry

Since 1990, the value of lobster landings has increased significantly. This bounty, however, has not been spread equally across Maine's islands and coast, highlighting the variable nature of the fishery.

## Change in Lobster Landings (\$) per Harvester, 2009-2019

- Below trend
- Follows state trend (+143%)
- Above trend
- Well above trend

### ROUND POND

Losing 13 harvesters but having an increase in value landed did increase the value per harvester in Round Pond, but it was still below the state average.

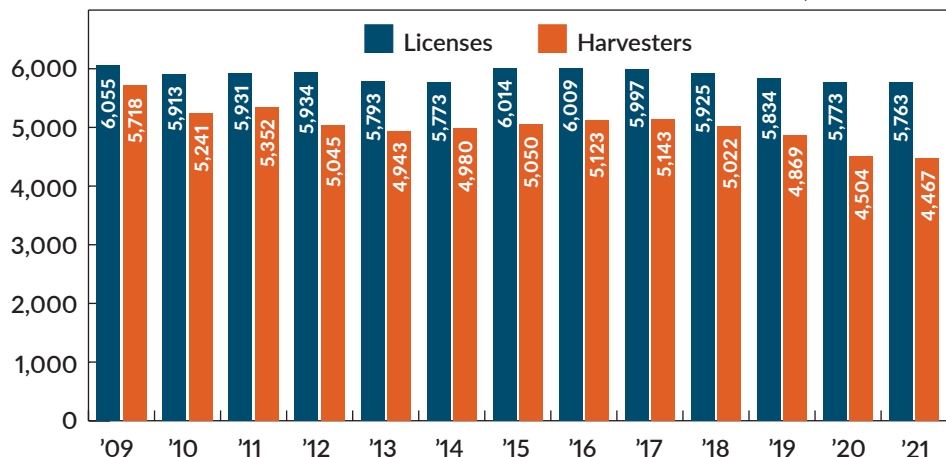
### ROCKPORT

An over 400% increase in value landed and the same number of harvesters (23) put Rockport well above the state trend for increase in value per harvester.

### KITTERY

Kittery stayed on trend with the state, with a decrease in the number of harvesters (87 to 61) and an increase in overall value landed.

## Lobster Licenses and Total Active Harvesters in Maine, 2009-2021



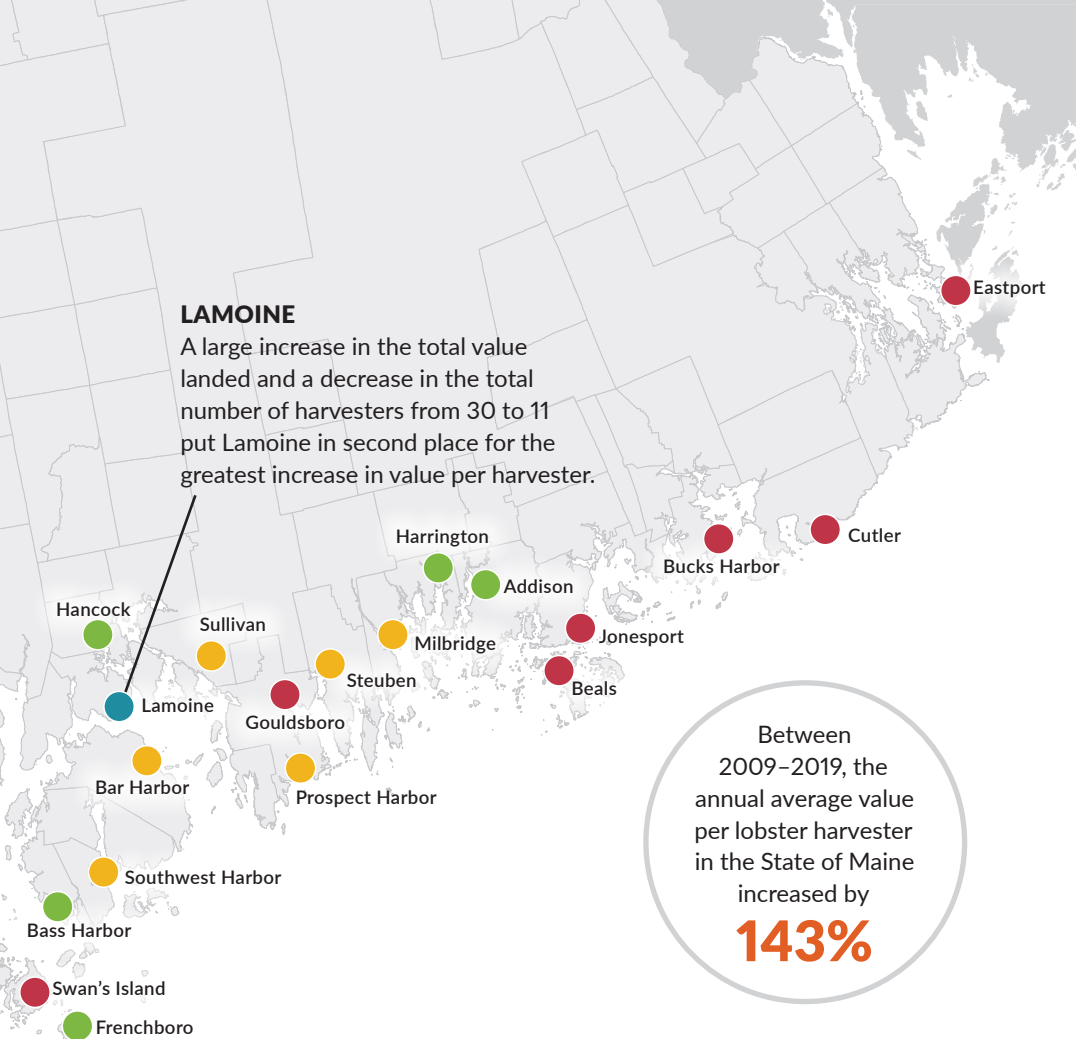


## WHY THIS MATTERS

Fishing along Maine's islands and coast has occurred for millennia in various forms, and the need to proactively adjust has been ever-present. Lobster fishing is influenced by numerous outside factors, including regulatory and environmental changes, making nuances in this complex industry difficult to capture with data. This has forced fishermen and -women to be flexible and to use their ingenuity to adapt, which has the potential to keep this industry resilient as it navigates the challenges of the 21<sup>st</sup> century.

### LAMOINE

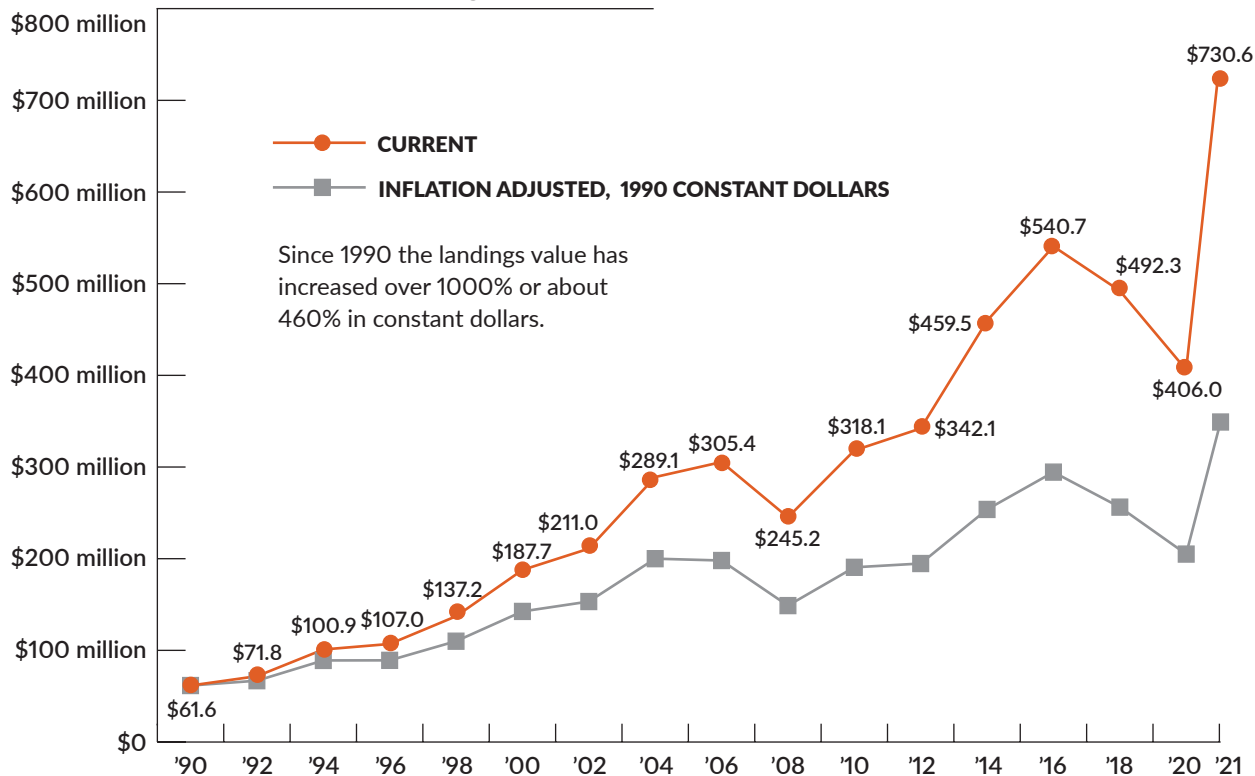
A large increase in the total value landed and a decrease in the total number of harvesters from 30 to 11 put Lamoine in second place for the greatest increase in value per harvester.



Between 2009–2019, the annual average value per lobster harvester in the State of Maine increased by

**143%**

### Value of Lobster Landings, 1990–2021



# Data Notes

## GENERAL INFORMATION

In the United States, the U.S. Census Bureau recognizes geographic units within all counties and statistically equivalent entities known as county subdivisions. In the State of Maine, these county subdivisions are minor civil divisions, a geography with legal boundaries and governmental or administrative functions. These data presented in this publication for “communities” come from the American Community Survey (ACS) and decennial censuses which rely on these county subdivisions for the spatial analysis. The ACS uses multi-year surveys to compile enough data to improve the statistical reliability of the findings. Caution should still be exercised when taking this data as absolute due to large margins of error in communities of such small size.

Some difficulties are associated with using census data for Maine's island communities. First, Great Diamond, Cliff, and Peaks islands are all included in the totals for Portland. Cranberry Isles is a county subdivision that includes both Islesford and Great Cranberry Island, two distinct communities. This is also the case for Edmunds and Trescott townships, which are combined into the East Central Washington county subdivision with other territories.

All U.S. Census Bureau data are available at [data.census.gov](https://data.census.gov).

## COASTAL MAINE AT A GLANCE

**Median Age:** U.S. Census Bureau; 2020 American Community Survey 5-year Estimates, Table S0101 of Maine County Subdivisions and States of U.S.

**Housing Vacancy:** U.S. Census Bureau; 2020 Census Redistricting Data (Public Law 94-171), Table H1: Occupancy Status by Housing Unit for Maine County Subdivisions, Northeast, and States of U.S.

**Housing Seasonality:** U.S. Census Bureau; 2020 American Community Survey 5-year Estimates, Table B25004 Vacant Housing Units of Maine County Subdivisions, Northeast, and States of U.S.

**Population 2020:** U.S. Census Bureau; 2020 Census Redistricting Data (Public Law 94-171), Table P1: Total Population of Maine County Subdivisions.

**Population 2010:** U.S. Census Bureau; Decennial Census 2010, Summary File 1, Table P1: Total Population of Maine County Subdivisions.

### ANALYSIS NOTES

Map values calculated from percent change between Population 2020 and Population 2010.

Seasonality calculated as a percent of vacant units and applied to decennial census housing units.

## INCREASING RACIAL AND ETHNIC DIVERSITY

**Population 2020:** U.S. Census Bureau; 2020 Census Redistricting Data (Public Law 94-171), Table P2: Hispanic or Latino, and not Hispanic or Latino by Race for Maine County Subdivisions, State of Maine, and U.S.

**Population 2010:** U.S. Census Bureau; Decennial Census 2010, Summary File 1, Table P5: Hispanic or Latino Origin by Race of Maine County Subdivisions, State of Maine, and U.S.

**Population 2000:** U.S. Census Bureau; 2000 Decennial Census 110th Congressional District Demographic Profile, Table DP1: Profile of General Demographic Characteristics of Maine County Subdivisions, State of Maine, and U.S.

**Population 1990:** U.S. Department of Commerce Economics and Statistics Administration Bureau of the Census; 1990 Census of Population, Table 76: General Characteristics of Persons, Households, and Families; <https://www2.census.gov/library/publications/decennial/1990/cp-1/cp-1-21.pdf>.

### ANALYSIS NOTES

2000, 2010, and 2020 Black, Indigenous, and People of Color Population includes: Hispanic or Latino; Black or African American alone non-Hispanic; American Indian and Alaska Native alone non-Hispanic; Asian alone non-Hispanic; Native Hawaiian and Other Pacific Islander alone non-Hispanic; Some Other Race alone non-Hispanic; Multiracial non-Hispanic.

1990 Black, Indigenous, and People of Color Population includes: Black, American Indian, Eskimo, or Aleut, Asian or Pacific Islander, Hispanic origin.

## MAKING A LIVING WAGE

**Median Family Income:** U.S. Census Bureau; 2020 American Community Survey 5-year Estimates, Table S1901: Income in the Past 12 Months (in 2020 Inflation-Adjusted Dollars) of Maine County Subdivisions, Northeast, and States of U.S.

**Cost of Living:** Glasmeier, Amy K. Living Wage Calculator. 2020. Massachusetts Institute of Technology. [livingwage.mit.edu](https://livingwage.mit.edu).

**Island Institute Grocery Basket Survey:** Primary research conducted by Island Institute staff, fellows, and grocery employees during the fall of 2021 and winter of 2022. Prices collected in store by data assistants for selected goods in the lowest and highest price options.

### ANALYSIS NOTES

Cost of Living by County: Converted the Living Wage into annual required salary assuming 40-hour work weeks and year-round employment for the average family size (2.9 people or 2 adults, both working, and 1 child).

Due to large fluctuations in data and suppressed data, Median Household Income data were used in place of Family Household Income on the year-round, unbridged islands.

Ratio of Cost of Living (by county) to Median Family Income (by community) where values below 0.8 are a low ratio and values above 1.35 are a high ratio.

Cost of grocery basket includes the high price option (if more than one) for milk, bread, eggs, apple, ground beef, chicken, coffee, sugar, soup, beans, and chips. Matinicus also includes the cost to fly the groceries to the island, based on weight, and the service fee for in-store shopping service.

## BUYING INTO THE HOUSING MARKET

**Single Family Home Sales:** Maine Real Estate Information System; 2005-2021 Single Family Home Sales. Retrieved February 2022.

### ANALYSIS NOTES

Number of home sales (transactions), median days on the market, median single family home sales, and ratio of home's sales price to its listing price were all calculated from the Maine Real Estate Information System dataset. Seasonal homes, homes on leased land, homes that sold for less than \$10,000, and homes that sold for less than 20% or more than 200% of their list price (which reflects either incorrect data or a very unusual situation) were excluded. Each sale was mapped to a community and flagged as either coastal (any property within one of the coastal communities) or non-coastal (properties outside of these communities).

## ASSESSING RISK OF FLOODED INFRASTRUCTURE

**Value of Building Loss:** Analysis conducted by Eastern Research Group (ERG); 2020 Cumulative Building Loss Due to Sea Level Rise of 1.6 feet (but referred to as 1.5 feet for general use) by Census Block for Coastal Counties.

**Wastewater Treatment Replacement Cost, and Cumulative Damage Estimate:** State of Maine; 2020 Assessing the Impacts Climate Change May Have on the State's Economy, Revenues, and Investment Decisions: Volume 2: Cost of Doing Nothing Analysis, Eastern Research Group; [https://www.maine.gov/future/sites/maine.gov/future/files/inline-files/ERG\\_MCC\\_Vol2\\_CostOfDoingNothing\\_9-1-2020.pdf](https://www.maine.gov/future/sites/maine.gov/future/files/inline-files/ERG_MCC_Vol2_CostOfDoingNothing_9-1-2020.pdf).

### ANALYSIS NOTES

Value of Building Loss includes building (structure), contents (supplies like furniture or electronics), and inventory (goods produced and/or sold by a company).

Map of Building Loss of Value: ERG Analysis of census blocks were aggregated to Maine county subdivisions and summed.

## PLANNING FOR COMMUNITY RESILIENCE

**Planning Support Statistic:** Maine Climate Council; 2020 Maine Won't Wait: A Four-Year Plan for Climate Action, [https://www.maine.gov/future/sites/maine.gov/future/files/inline-files/MaineWontWait\\_December2020.pdf](https://www.maine.gov/future/sites/maine.gov/future/files/inline-files/MaineWontWait_December2020.pdf).

**Comprehensive Plan Status:** Data collection by Island Institute; collected from Department of Agriculture, Conservation, and Forestry Municipal Planning Assistance Program website (see below), town websites, and phone calls to municipal offices on last update to comprehensive plan.

**Growth Management Act Status:** Department of Agriculture, Conservation, and Forestry; Municipal Planning Assistance Program: Comprehensive Plans; accessed June 1, 2022; [https://www.maine.gov/dacf/municipalplanning/comp\\_plans/index.shtml](https://www.maine.gov/dacf/municipalplanning/comp_plans/index.shtml).

## FUNDING BROADBAND EXPANSION

**High-Speed Service by Coastal County:** Maine Development Foundation; 2021 Measures of Growth Report: Performance Measures and Benchmarks to Achieve a Vibrant and Sustainable Economy for Maine, pg. 25. [https://www.mdf.org/wp-content/uploads/2022/05/MOG\\_2021\\_FullReport\\_FINALv2.pdf](https://www.mdf.org/wp-content/uploads/2022/05/MOG_2021_FullReport_FINALv2.pdf).

**Broadband Funding Award Dates, Titles, Amounts:** ConnectMaine Authority, June 2022.

## EXPANDING ELECTRIFICATION

**Electric Vehicle Charging Stations:** U.S. Department of Energy; Alternative Fuels Data Center – Electric Vehicle Charge Station Locations; accessed May 1, 2022; [https://afdc.energy.gov/fuels/electricity\\_locations.html#/find/nearest?fuel=ELEC](https://afdc.energy.gov/fuels/electricity_locations.html#/find/nearest?fuel=ELEC).

**Electric Vehicle Charging Corridors:** U.S. Department of Transportation Federal Highway Administration; HEPGIS Geographic Data Alternative Fuel Corridors, <https://hepgis.fhwa.dot.gov/fhwagis/>.

**Electricity Produced from Solar by State:** Shahan, Zachary. October 2020. Top U.S. States for Percentage of Electricity from Solar. Clean Technica. <https://cleantechnica.com/2020/10/05/top-us-states-for-percentage-of-electricity-from-solar-cleantechnica-report/>.

**Maine Annual Solar Installations:** Solar Energy Industries Association; 2021 Maine Annual Solar Installations; accessed June 1, 2022; <https://www.seia.org/state-solar-policy/maine-solar>.

## TRAINING FOR THE WORKFORCE

**College Enrollment within One Year of High School Graduation for Maine:** Maine Department of Education; 2020 National Student Clearinghouse Reports, accessed February 2022, <https://www.maine.gov/doe/data-reporting/reporting/warehouse/NSC-2020>.

**High School Students Enrolled in College for U.S.:** National Center for Education Statistics 2022; Postsecondary Education Immediate College Enrollment Rate; accessed June 1, 2022; <https://nces.ed.gov/programs/coe/indicator/cpa/immediate-college-enrollment-rate>.

**Highest Degree Attainment by Adults:** Maine Development Foundation; 2021 Measures of Growth Report: Performance Measures and Benchmarks to Achieve a Vibrant and Sustainable Economy for Maine, pg. 19. [https://www.mdf.org/wp-content/uploads/2022/05/MOG\\_2021\\_FullReport\\_FINALv2.pdf](https://www.mdf.org/wp-content/uploads/2022/05/MOG_2021_FullReport_FINALv2.pdf).

**Career and Technical Center Enrollment and Programs:** Data provided by MELMAC Education Foundation 2021 collected from Career and Technical Education Centers in and near coastal communities.

**School Unit Boundaries:** Maine Department of Education and Maine Office of Geographic Information Systems; Maine School Administrative Units – Feature Service, accessed March 2022.

#### ANALYSIS NOTES

College Enrollment includes 2- and 4-year institutions of students entering college within one year of high school graduation.

Enrollment data collected by high school and joined with school administrative unit where the high school was located. In school administrative units lacking a high school the average of statistics for receiving high schools was used (e.g. Nobleboro Public Schools reported Lincoln Academy enrollment numbers).

## OCCUPATIONAL DIVERSITY

**Occupational Diversity and Worker Concentration by Occupation:** U.S. Census Bureau; 2020 American Community Survey 5-year Estimates, Table S2401: Occupation for the Civilian Employed Population 16 Years and Older of Maine County Subdivisions.

**Worker Status:** U.S. Census Bureau; 2020 American Community Survey 5-year Estimates, Table S2303: Work Status in the Past 12 Months of Maine County Subdivisions, State of Maine, and U.S.

#### ANALYSIS NOTES

Occupational Diversity Index: The percentage of each of the occupation groups for each coastal community was divided by the state's overall percentage to calculate the community's percent of residents working in the occupation above or below the state average (sometimes called a Location Quotient). Taking the inverse sum of squares of the location quotient for all six





categories gives the Diversity Index Score. A higher value means that the town's concentration parallels the state and lower values indicate that the occupational mix is less diverse.

Occupations are categorized using Standard Occupation Codes (SOCs) which have been aggregated to six categories to ensure appropriate sample sizes for small communities. More information on which occupations make up each of the six categories can be found here: <https://www2.census.gov/programs-surveys/cps/methodology/Occupation%20Codes.pdf>.

## A CHANGING LOBSTER INDUSTRY

**Lobster Landings Value (\$) and Total Harvesters per Port 2009-2019:** Maine Department of Marine Resources; 2021 MaineDMR Landings Portal, accessed April 2022, [https://mainedmr.shinyapps.io/Landings\\_Portal/](https://mainedmr.shinyapps.io/Landings_Portal/).

**Lobster Licenses and Value of Lobster Landings (\$):** Maine Department of Marine Resources; 2022 Historical Landings Data, accessed April 2022, <https://www.maine.gov/dmr/commercial-fishing/landings/documents/lobster.table.pdf>.

**Inflation Adjustment:** Bureau of Labor Statistics, 2022 Consumer Price Index Databases – All Urban Consumers (Current Series) Annual Average, accessed March 2022, <https://www.bls.gov/cpi/data.htm>.

## ANALYSIS NOTES

Lobster Landings Value deflated to Inflation Adjusted Dollars in 1990 constant dollars using the Bureau of Labor Statistics Consumer Price Index above with base year 1990.







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