Maine Workforce, Research, Development and Student Achievement Institute

^Dr. Andrew Crawley & *Ellie Hunt

^Associate Professor Director EDA University Center
*Research Assistant

9.21.2023

1

The Maine Labor Audit

After initially meeting with the advisory committee in August 2022 workforce and labor assessments were deemed as a high priority.

Project 1: Conduct a labor audit (Benchmarking exercise)

2

Labor Audit

Given start date, pandemic impact on issues within IDEA Cmte's jurisdiction, need for common foundational information, etc. UMS proposes 3:1 situational audit of the labor market in Maine led by UMaine's Dr. Andy Crawley and Megan Bailey and shaped by feedback of advisory Steering Cmte

- Supply analysis to find out where our labor is coming from
- Demand analysis to understand what skills and occupations are needed across Maine
- Market assessment of this dynamic

Labor Force Participation in Maine

3

Proposed Model

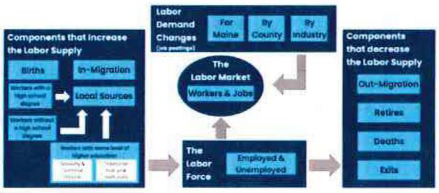
4

Finding and Using Data

Finding and using labor market data is not easy, its located in different places- We used 15 different sources and 25 different surveys and hundreds of variables to build the labor audit!

5

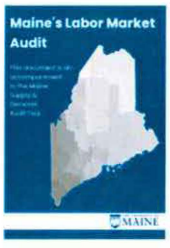
The Labor Audit Dashboard



https://econdatavizme.com

6

Detailed Accompanying Document



7

Public Online Tool

- Public Online tool that anyone can access
- Everything is in one place and follows a logical flow
- Data is presented in a user friendly way
- Many of the "dashboards" are customizable
- This data can be updated and modified

8

3 Selected Key Findings from the Data

Migration

Labor Force Participation

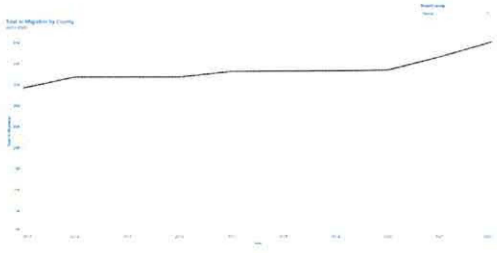
Job Vacancies

9

Maine's recent population growth comes entirely from new arrivals, Census data show

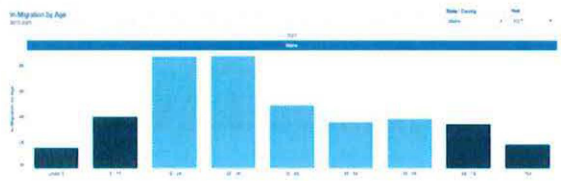
10

In-Migration

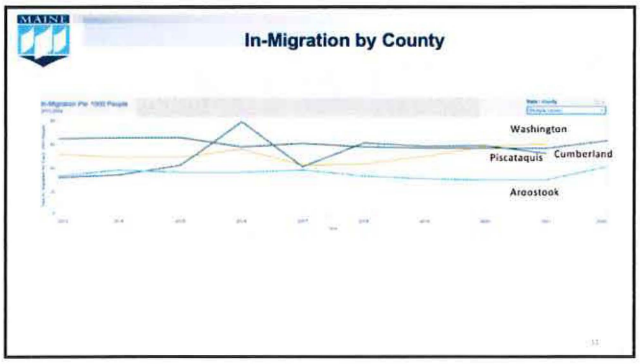


11

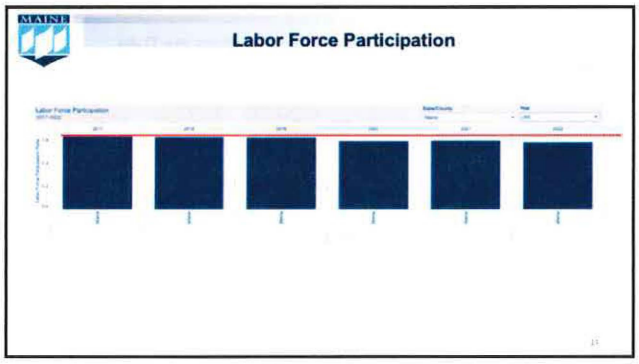
In-Migration By Age



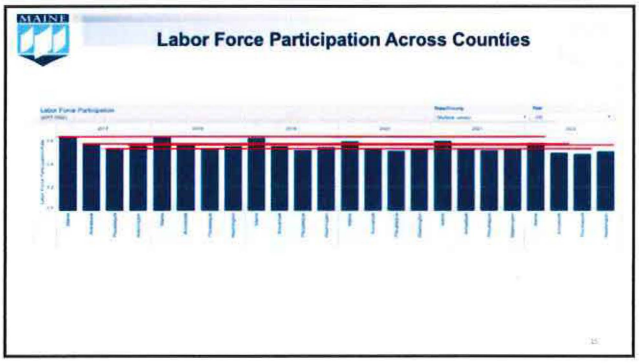
12


In-Migration by County
Washington
Piscataquis
Cumberland
Aroostook

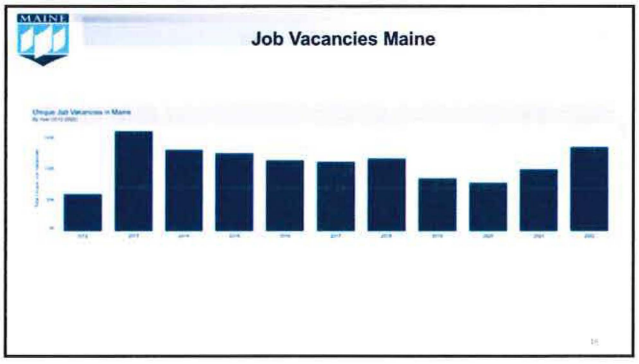
13


Labor Force Participation

14


Labor Force Participation Across Counties

15

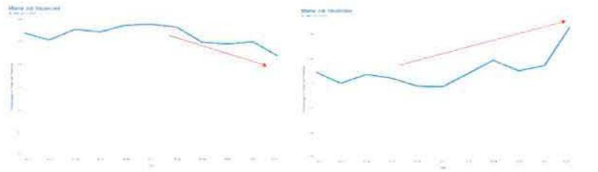

Job Vacancies Maine

16

Skills to Fill Job Vacancies

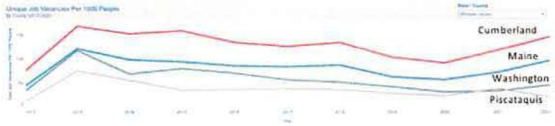
No Qualifications Listed

Require Bachelors Degree



17

Job Vacancies by County



18

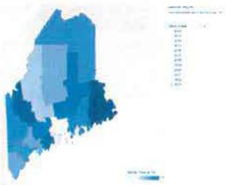
Maine Students Discover Exciting Career Possibilities at Unique Hands-On Career Fair

19

Hard to Fill Job Vacancies
Accommodation and Food Services

2019

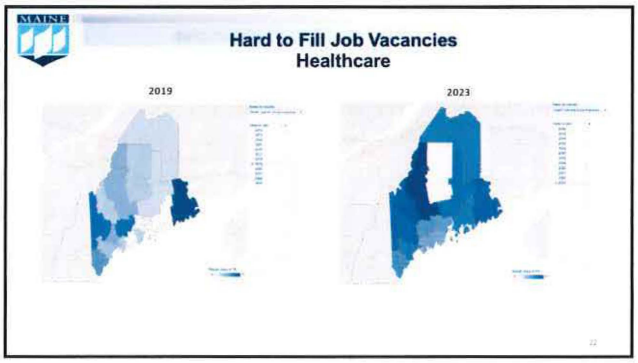
2023



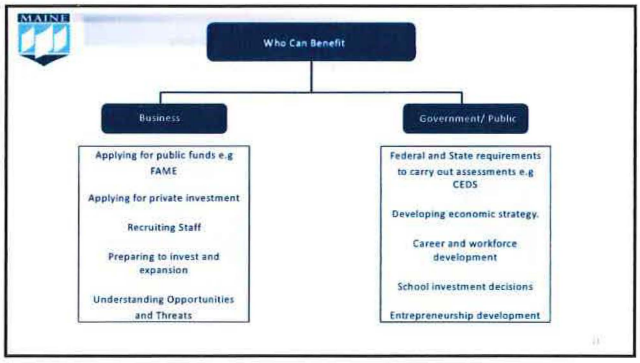
20


Hard to Fill Job Vacancies
Retail Trade
2019
2023

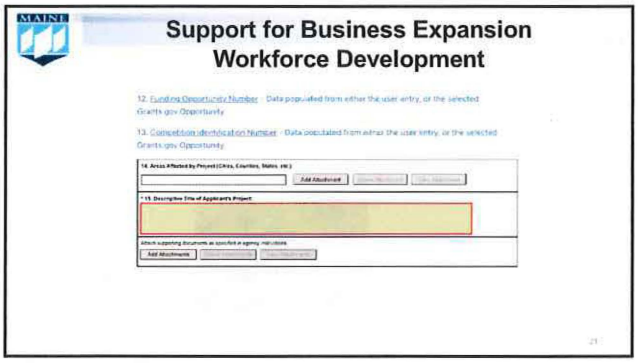
21


Hard to Fill Job Vacancies
Healthcare
2019
2023

22


Who Can Benefit
Business
Applying for public funds e.g FAME
Applying for private investment
Recruiting Staff
Preparing to invest and expansion
Understanding Opportunities and Threats
Government/ Public
Federal and State requirements to carry out assessments e.g CEDS
Developing economic strategy.
Career and workforce development
School investment decisions
Entrepreneurship development

23


Support for Business Expansion
Workforce Development

24

More to Come!

Data is being updated and new findings emerge

Dashboards are being refined and made easier to use

Dashboards will be communicated to different stakeholder groups

25

Questions and Comments

Next Steps

26

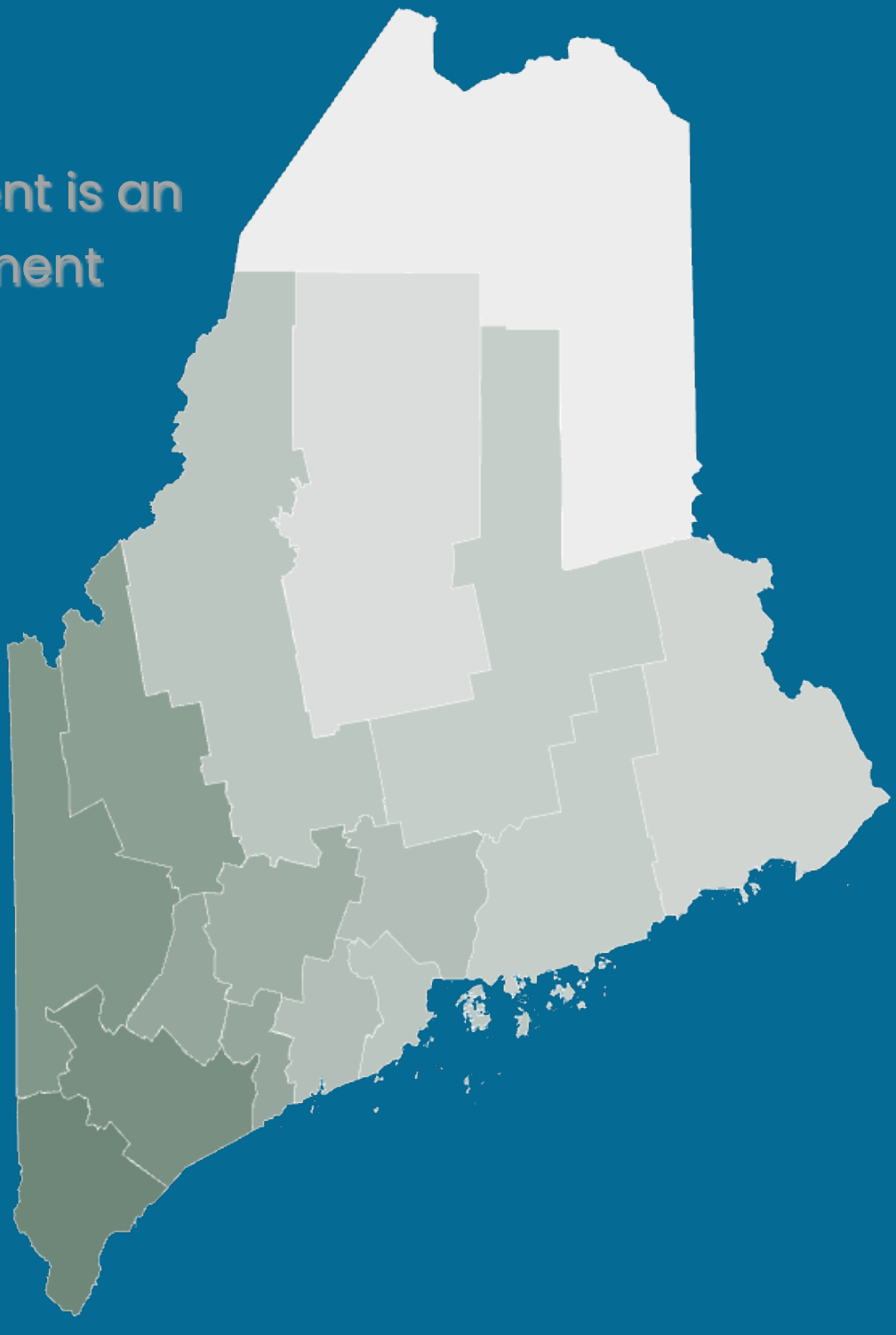
Contact Details

Dr. Andrew Crawley
Associate Professor of Economics
University of Maine
andrew.crawley@maine.edu

27

Maine's Labor Market Audit

This document is an accompaniment to the Maine Supply & Demand Audit Tool



1865 THE UNIVERSITY OF MAINE

INTRODUCTION

The Maine Labor Audit provides a new way for policy makers and the public to explore the State's various labor market components in one online tool. By combining data from multiple sources, this tool allows users to explore individual aspects of the labor market. Specifically, users are able to analyze Maine's labor market from both the supply side and, for the first time, the demand side. The tool is also capable of compiling data by geographical region.

This report accompanies the audit tool by providing operational guidelines for the tool and an overview of the state's key labor market dynamics. The final section of this report addresses the efficiency of Maine's labor market.

KEY TERMS

Employed: Individuals who have a job

In-Migration: Movement into a county from a location outside of Maine.

Job Postings: The number of want ads collected from print and online sources. This number is used as proxy to measure labor demand.

Labor Demand: Jobs

Labor Force: The employed population plus the unemployed population

Labor Market Efficiency: Measure of how quickly workers match with jobs

Labor Supply: Workers

Migrant: Any person who moved into a county or state from a location outside of the state.

Sample Period: A specific number of years given the indicator being discussed. Due to data availability, certain indicators are not available for all years.

Skilled Labor: Labor supply by educational training

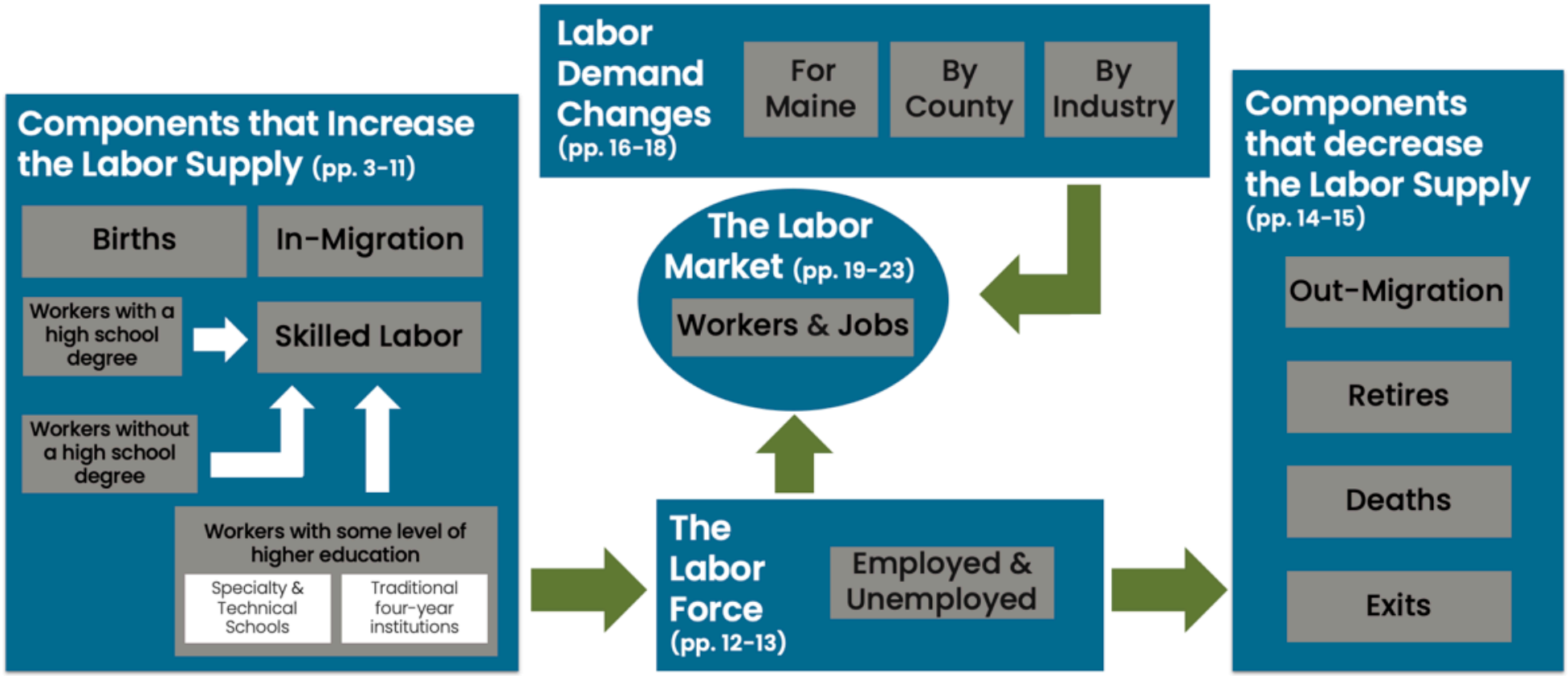
Unemployed: Individuals without a job who are actively searching for work

LABOR MARKET FLOW

The image below was created to serve 3 purposes

1. Identify the components that make up the labor market
2. Illustrate how the various labor market components are connected
3. Serve as a table of contents for this report

This image also appears on the home page for Maine's Labor Market Audit Tool. Users can click on the grey and white buttons to learn more about Maine's labor market.



THE AUDIT TOOL EXPLAINED

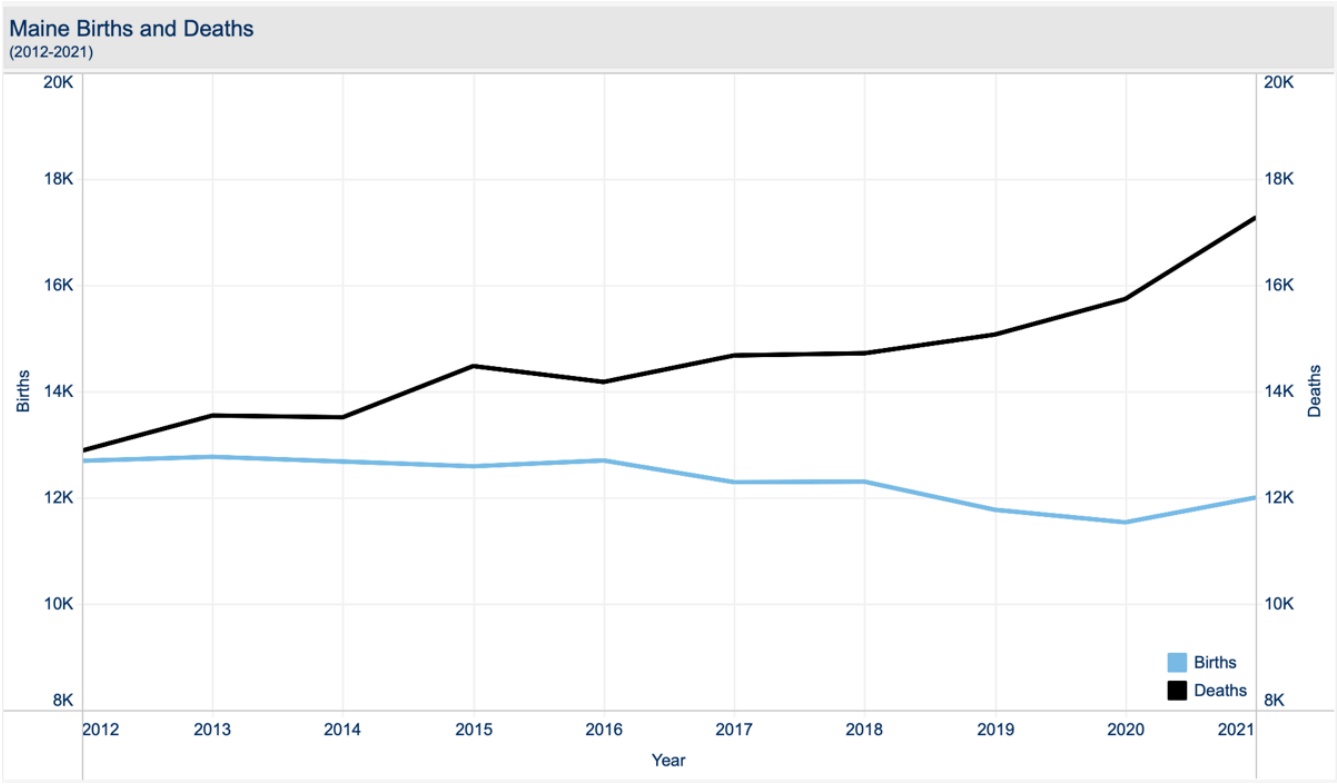
This section provides an overview of the Supply and Demand Audit Tool by summarizing the data behind each of the buttons on the Labor Flow Navigation Home Page.

Components that Increase the Labor Supply

Births

Maine Births and Deaths

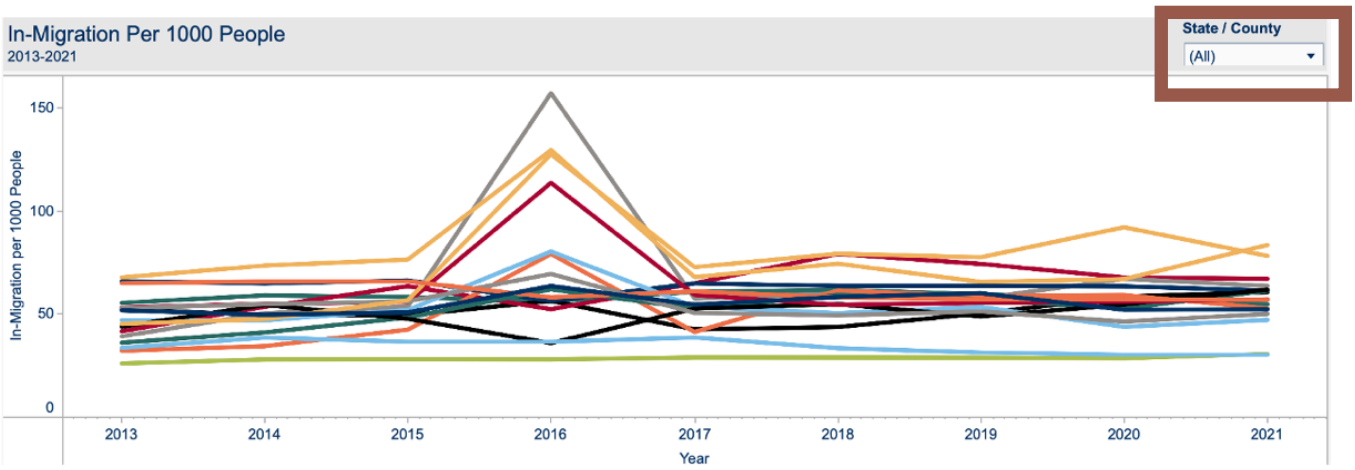
The gap between the number of births and the number of deaths has been increasing during the last 10 years. Without a significant amount of in-migration and/or a substantial increase in the birth rate, Maine's labor force will struggle to support future economic growth.



In-Migration

In-Migration Per 1000 People

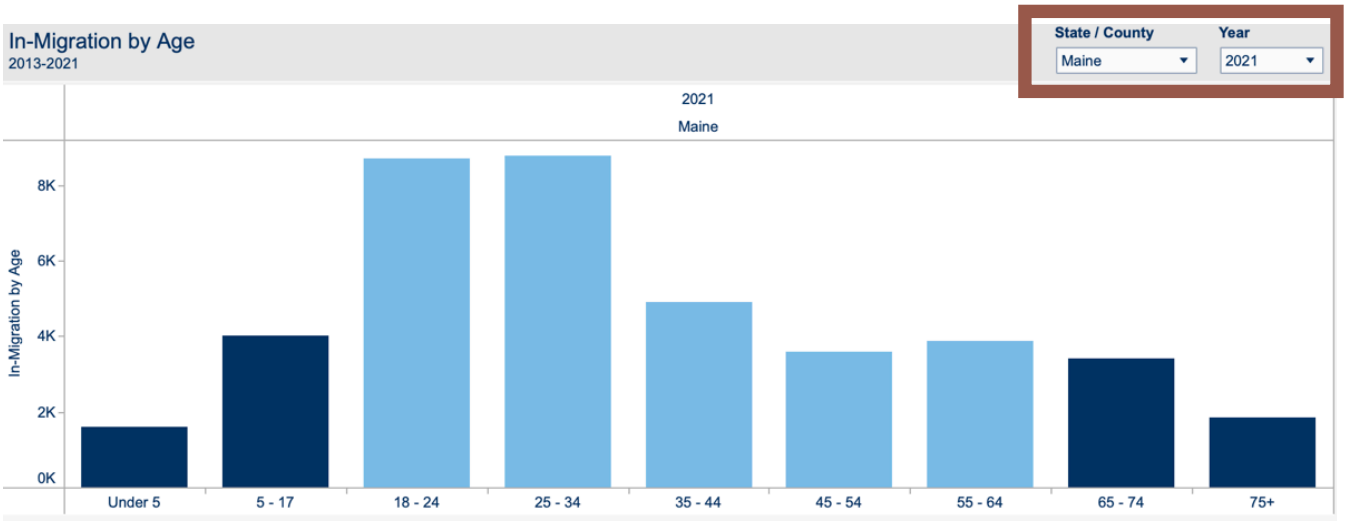
The *In-Migration* button shows how Maine's labor supply has changed as a result of in-Migration. Since 2013, the annual in-migration to Maine's counties has ranged between 30 and 157 migrants per 1000 county residents. Throughout the last five years, Aroostook faced the lowest level of in-migration and in 2021 only 30 people out of every 1000 residents were migrants. During the same period, Franklin and Sagadahoc experienced the highest levels of in migration. In 2021 the ratio of migrants to previous residents was 83 to 1000 for Sagadahoc and 78 to 1000 for Franklin.



Data Filters: *The red box on the image above highlights how users can manipulate the in-migration data. This chart allows users to select specific Maine counties and compare population trends for the last 10 years.*

In-Migration by Age

To better understand how in-migration influences Maine's labor supply, we need to account for the age of the individuals moving into the state. Referring to the chart titled "In-Migration by Age", we assume migrants over the age of 65 and under the age of 18 are not in the labor force. Recently, a younger population has started to relocate to Maine. In 2021 the average age of the state's population decreased, indicating that Maine's population is getting younger. The State Economist's Office largely contributes this age decline to the COVID-19 pandemic which brought younger individuals and families to Maine.



Data Filters: *The red box on the image above highlights how users can manipulate the in-migration data. This chart allows users to select specific Maine counties and years to explore the age distribution of new residents.*

Workers with a High School Degree

School Enrollment

Across most Maine counties, we observe more students in middle and high school grades compared to elementary school grades. This is reflective of the population data which shows a lower population of younger children in the state. If this trend persists, we may anticipate lower college enrollment in the future due to fewer students in the school system. This trend could be interrupted by increases in the birth rate and/or increases in in-migration.

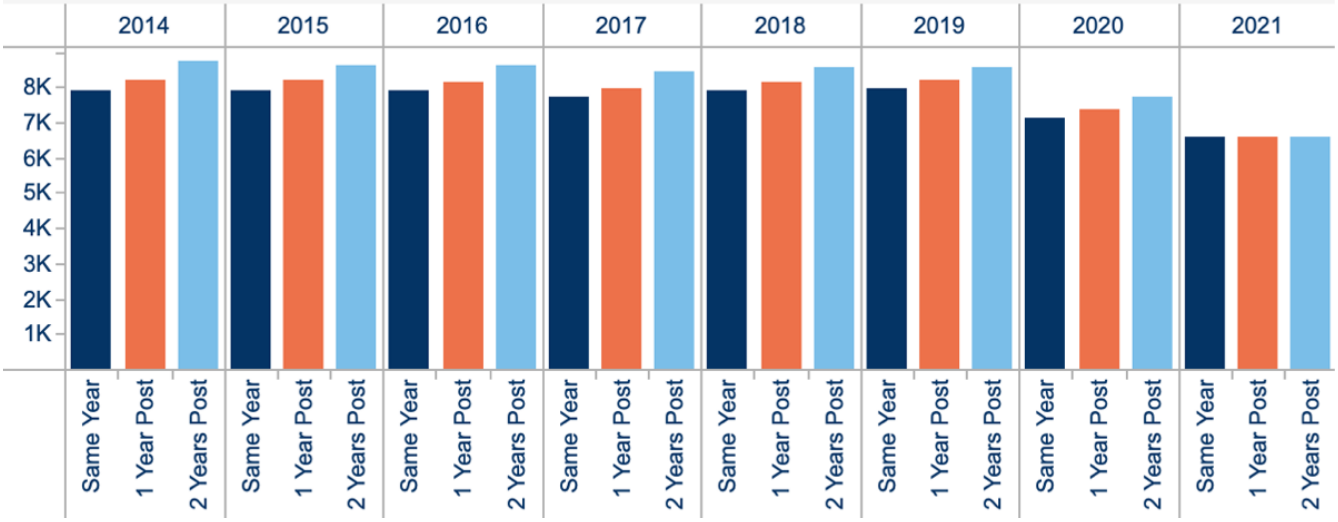
You may have noticed a lower proportion of students enrolled in pre-kindergarten (pre-K) compared to all other grades. This discrepancy has several explanations. Pre-K is not required by the State therefore parents may opt out of enrolling their children in school until kindergarten. Additionally, because it is optional, the state is not required to provide pre-K access to all children in Maine.

Data Filters: *The red box on the image above highlights how users can manipulate the enrollment data. Enrollment data for pre-K through 12th grade can be sorted by county, year, and/or grade.*

College Enrollment of Maine High School Students Post High School Graduation

On average, college enrollment increased progressively in the 2 years following high school graduation. This may be explained by enrollment following gap years and individuals returning to school after being in the workforce. For the last 10 years, roughly 7,000-8,000 high school graduates have enrolled in college immediately following their graduation. In 2020, Cumberland County had the highest ratio of high school graduates to college enrollment with 70% of graduates enrolling in higher education. The county with the lowest enrollment in 2020 is Piscataquis, with 46% of high school graduates immediately attending some form of college education.

College Enrollment of Maine High School Students Post High School Graduation
Maine (2014-2021)

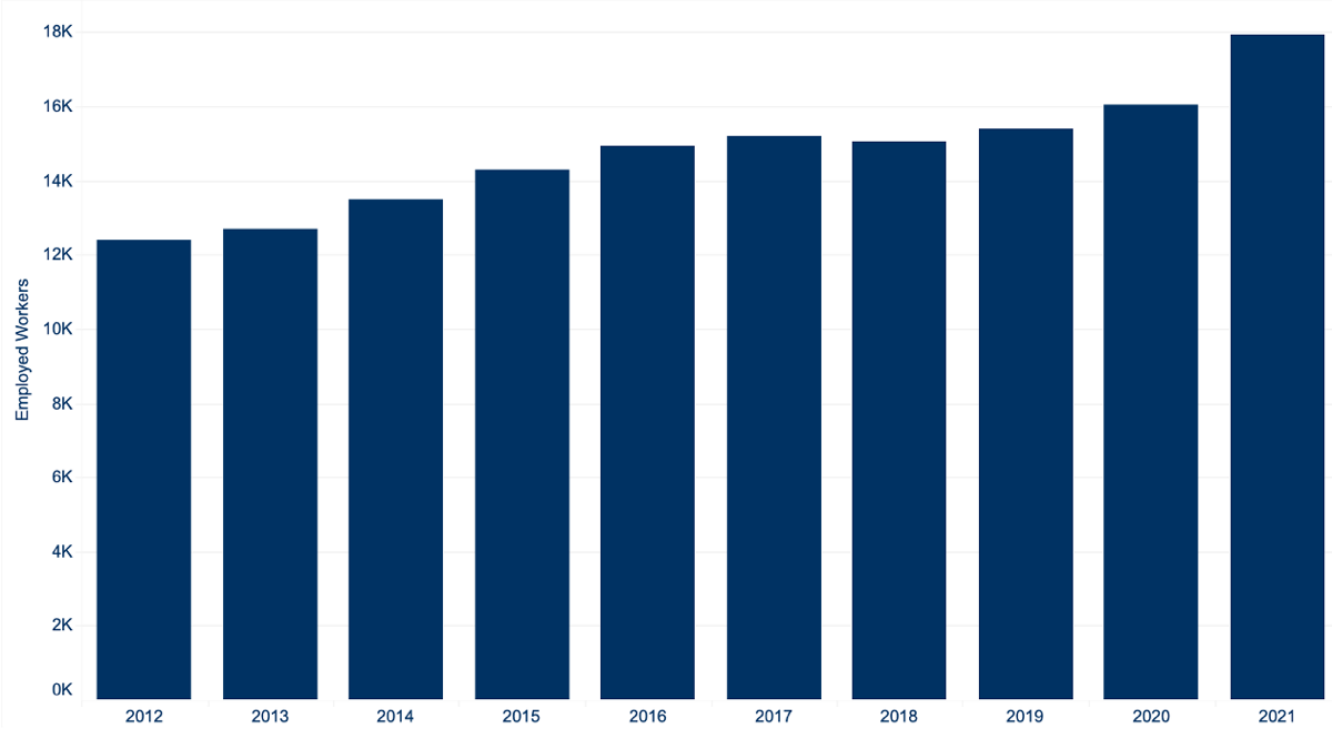


Workers Without a High School Degree

Employed Workers without a High School Degree in Maine

In Maine, the number of workers between the ages of 14-and 18-years-old has been steadily increasing since 2012. This pattern is consistent across all years except for 2018 when teen employment decreased by approximately 200 workers compared to the prior year. Between 2020 and 2021 nearly 2,000 teen workers gained employment making it the largest annual employment increase during the sample period. Current data does not separate 14- and 15-year-old workers from those 16 and older. Given federal employment law, however, we believe the majority of teen workers in Maine are 16 and older.

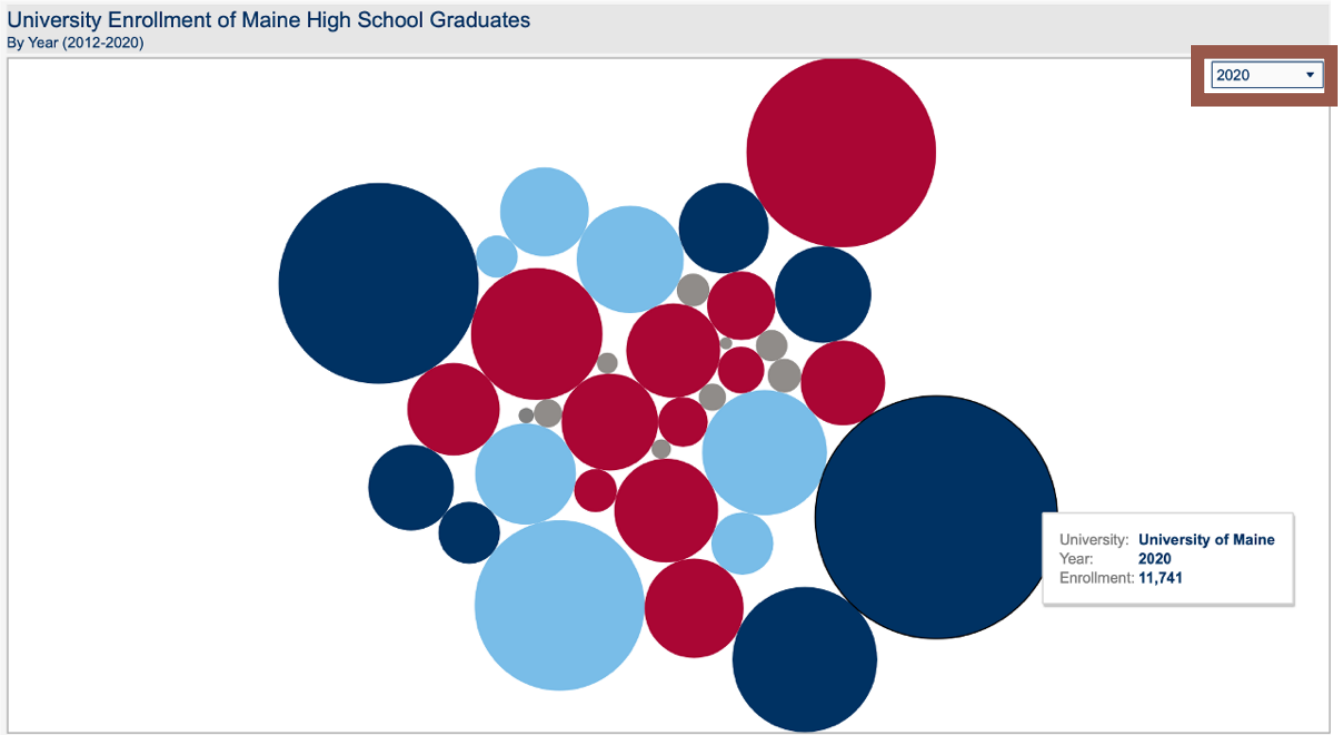
Employed Workers Without a High School Degree in Maine
Age 14-18



Workers with Some Level of Higher Education

University Enrollment of Maine High School Graduates

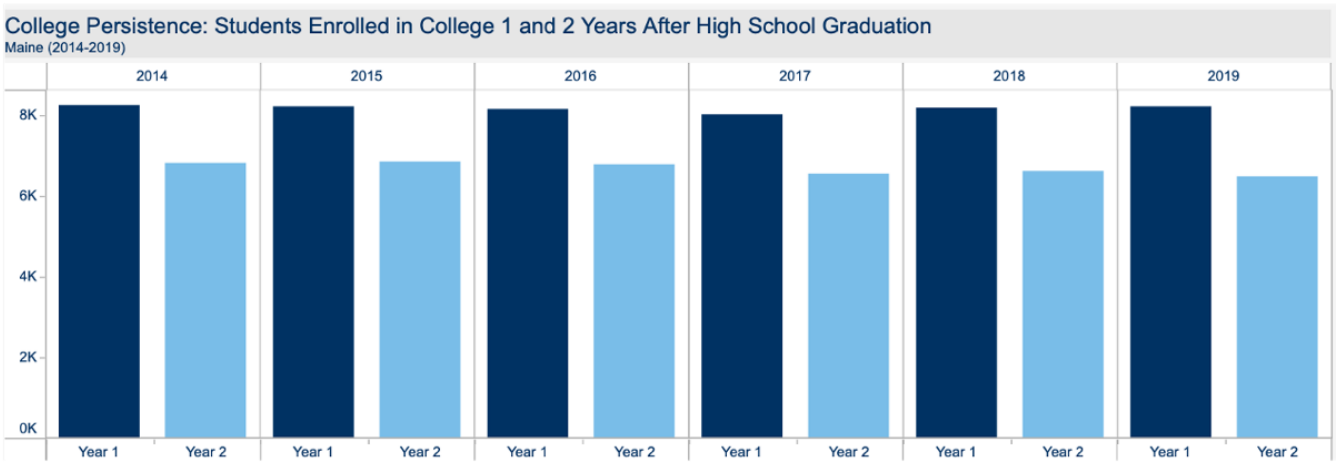
Between 2012 and 2020, Maine's high school graduates enrolled at the University of Maine (Orono) more than any other instate institution. Annual enrollment ranged between 10,000 and 12,000 students. The University of New England and the University of Southern Maine also enrolled a large proportion of Maine High School Graduates. Both institutions enrolled approximately 8,000 students per year.



Data Filters: *The red box on the image above highlights where users can change the year. The size of the bubble relates to student enrollment and the color of the bubble indicates the type of institution. Dark blue bubbles are four-year public schools, red bubbles are four-year private institutions, light blue bubbles are community colleges and grey bubbles are specialty schools.*

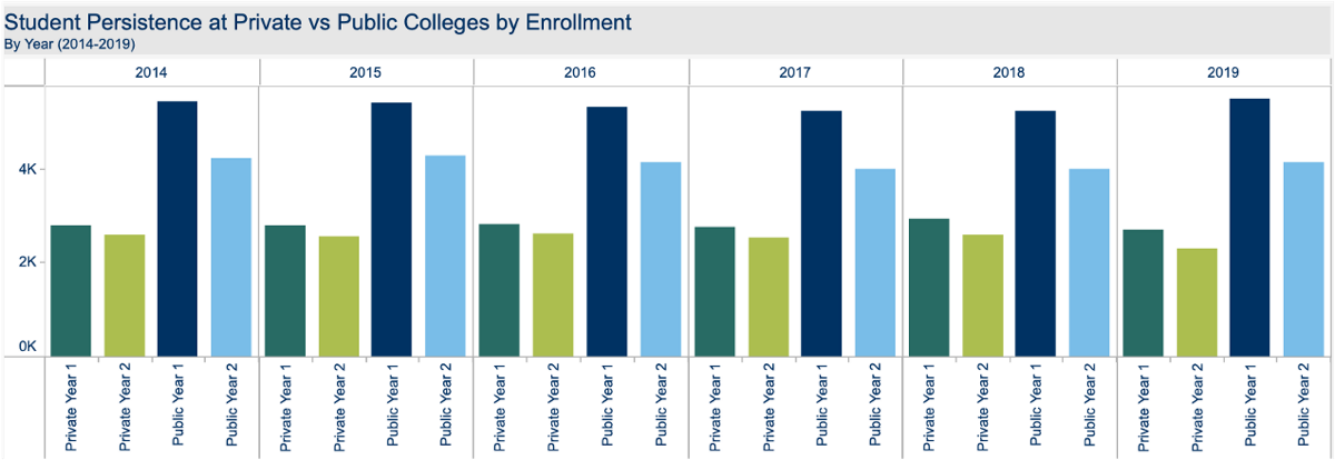
College Persistence: Students Enrolled in College 1 and 2 Years After High School Graduation

College enrollment is not equal to college graduation. Persistence measures how many students reenroll for a second year at their selected institution. Between 2014 and 2019, college persistence remained relatively steady. During this period, approximately 1,500 students opted not to reenroll for a second year.



Student Persistence at Private vs. Public Colleges by Enrollment

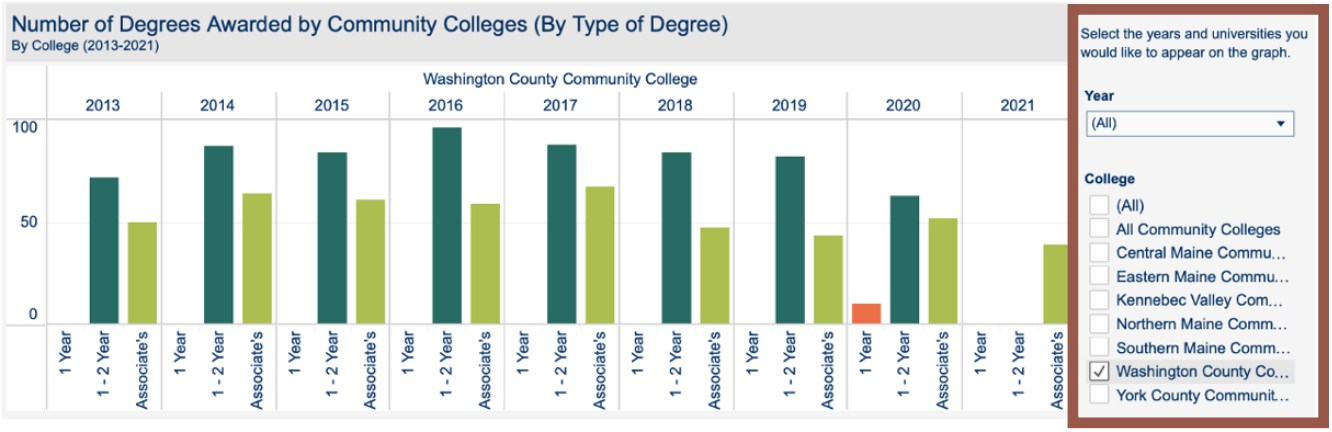
During our sample period, private institutions enrolled fewer students compared to public institutions. Once enrolled, however, students at private institutions were more likely to remain enrolled the following year when compared to their public counterparts. The cost and exclusive nature of Maine's private institutions may explain the difference in persistence rates. High school graduates who are unsure about attending college may choose to enroll in a public institution where the tuition is less expensive and the acceptance rates are much higher.



Maine Specialty and Technical Schools

Number of Degrees Awarded by Community Colleges (By Type of Degree)

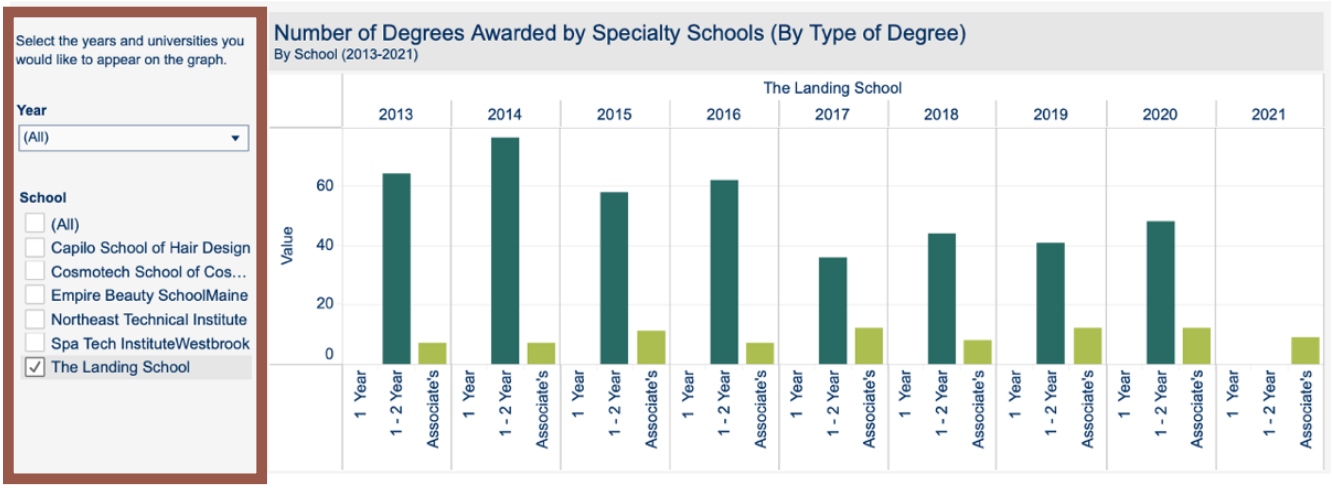
Maine's community colleges primarily awarded Associate's degrees between 2013 and 2022. Washington County Community College (WCCC), however awarded more 1–2-year degrees than Associate's degrees. During this time, popular certificate programs at WCCC's included Welding Technology, Heavy Equipment Operation and Heavy Equipment Maintenance.



Data Filters: *The red box on the image above highlights where users can select a year and a school. To clearly see trends and patterns we suggest selecting one institution and multiple years OR multiple years and only one institution.*

Number of Degrees Awarded by Specialty Schools (By Type of Degree)

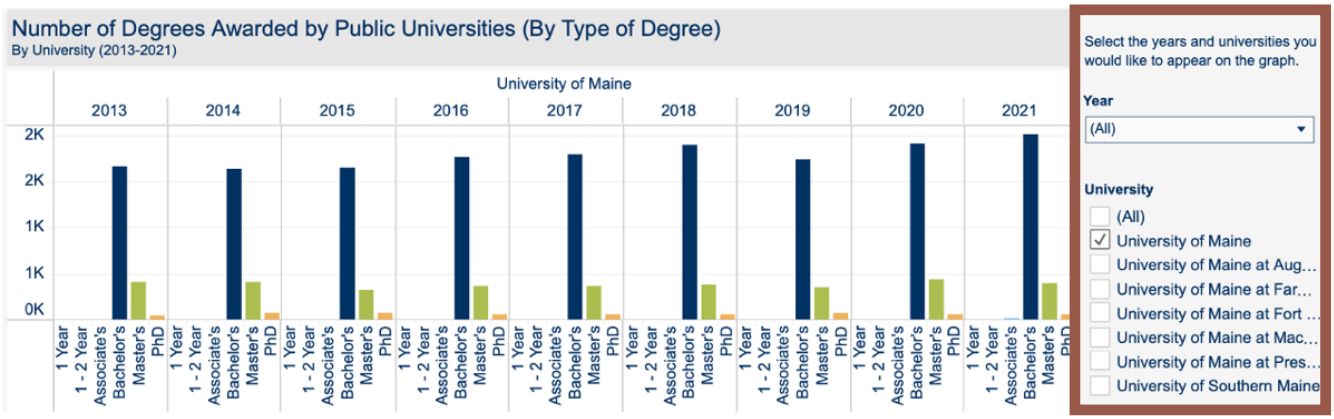
Maine's specialty schools include the Northeast Technical Institute and several cosmetology and beauty schools. Additionally, Maine is home to The Landing School, a historic boat building institution. The first school of its type to receive accreditation from The Accrediting Commission of Career Schools and Colleges (ACCSC), The Landing School offers both certificate and Associate's degree programs.



Data Filters: *The red box on the image above highlights where users can select a year and a school. To clearly see trends and patterns, we suggest selecting one institution and multiple years OR multiple years and only one institution.*

Number of Degrees Awarded by Public Universities (By Type of Degree)

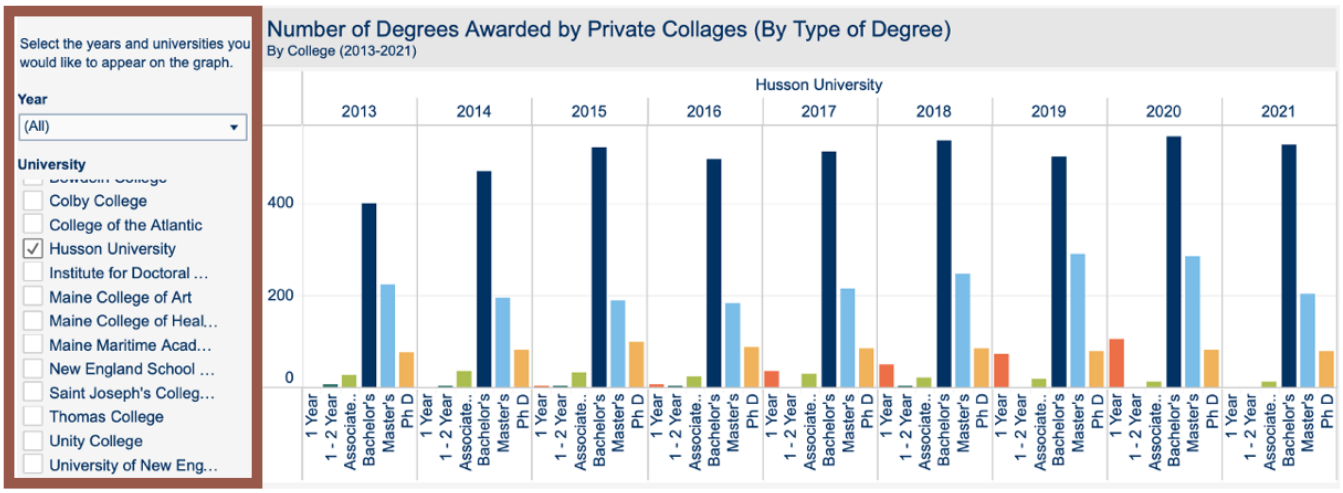
The University of Maine System's flagship school is located in Orono and is the state's land grant university. The UMaine system has six additional institutions located across the state. During the sample period, the University of Maine (Orono) and the University of Southern Maine produced the most graduates and both schools primarily awarded Batchelor's degrees.



Data Filters: *The red box on the image above highlights where users can select a year and a school. To clearly see trends and patterns, we suggest selecting one institution and multiple years OR multiple years and only one institution.*

Number of Degrees Awarded by Private Universities (By Type of Degree)

Maine is home to multiple, top-tier liberal arts colleges. Colby, Bates, and Bowdoin Colleges each award roughly 600-700 Bachelor's degrees annually. Several private institutions including Husson University and the University of New England award Master's degrees and PhDs. Please note that while Maine Maritime Academy is a public institution, we listed it with private schools due to its specialized curriculum and advanced degree offerings.

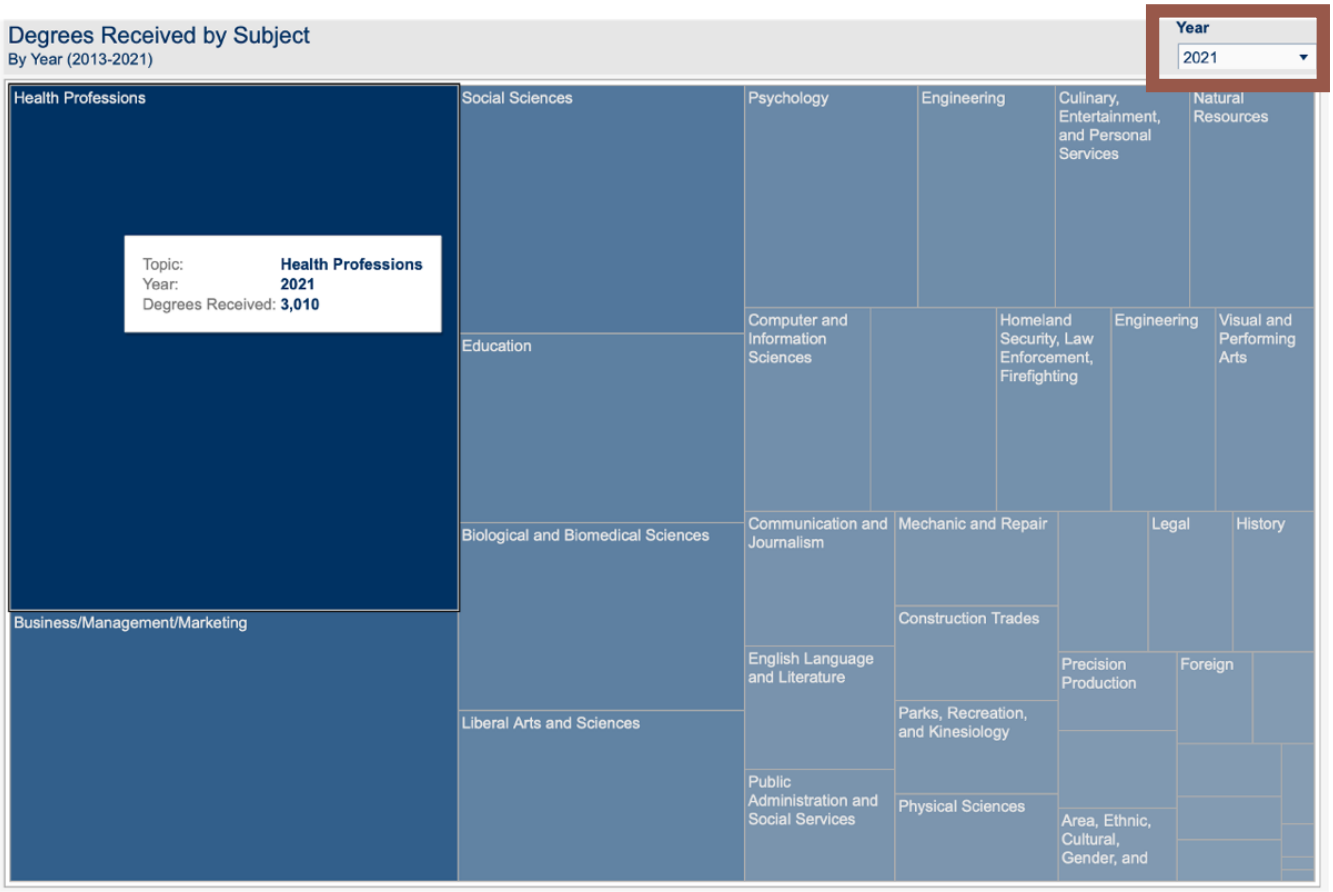


Data Filters: *The red box on the image above highlights where users can select a year and a school. To clearly see trends and patters, we suggest selecting one institution and multiple years OR multiple years and only one institution.*

Skilled Labor

Degrees Received by Subject

The Degrees Received by Subject chart provides information about the skills and qualifications of the state's incoming labor force. This information can be used to identify potential mismatches between labor force training (advanced education) and employer demand. For example, Maine employers have a high demand for skills related to the construction trades and engineering. In 2021, however, Maine's higher educational institutions only awarded roughly 200 degrees related to construction and 650 degrees related to engineering. The annual number of graduates in these fields has remained fairly constant throughout the sample period. Addressing the mismatch between employer demand and labor force training could potentially strengthen the labor market and increase its efficiency.



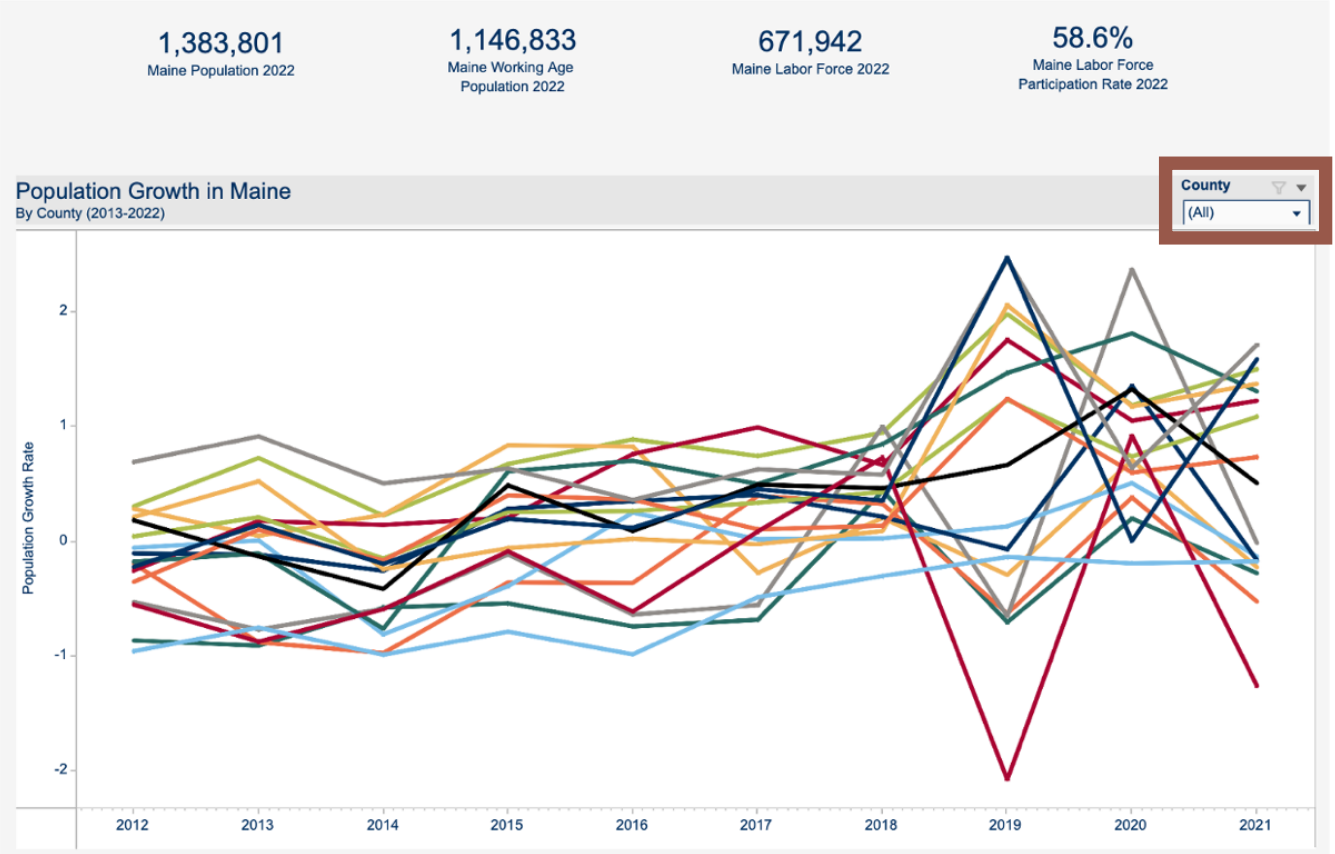
Data Filters: *The red box on the image above highlights where users can filter based on year. Select one or two years and then scroll over the boxes to learn more about Maine's labor force training.*

The Labor Force

Employed & Unemployed

Population Growth in Maine

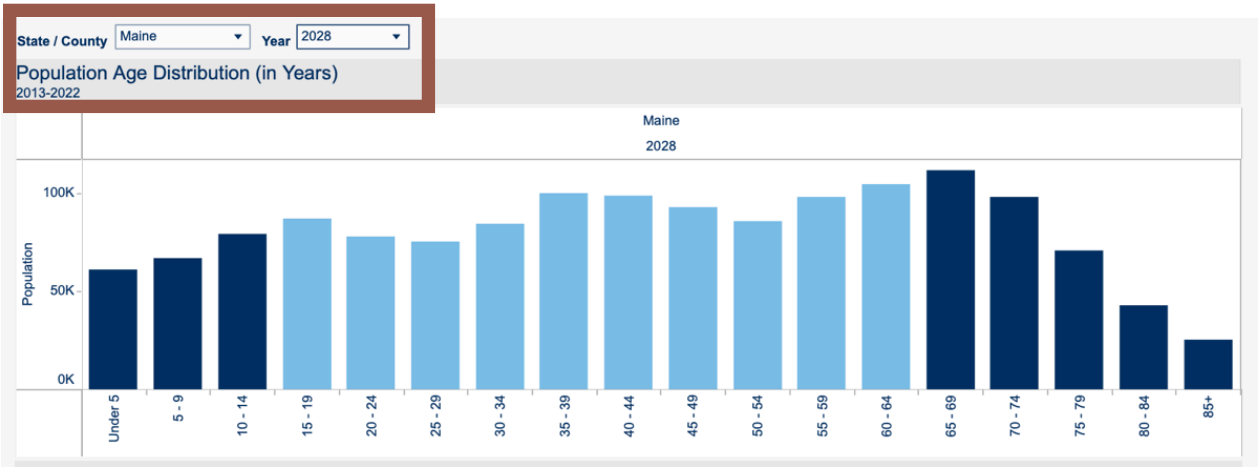
As of 2022 the population of Maine was 1,383,801. This population is not dispersed evenly between or within the 16 counties. The two most populous counties in the state, Cumberland and York, are also the southernmost counties. In 2021, approximately 38% of Maine's total population lived in these counties.



Data Filters: *The red box on the image above highlights where users can filter based on county. The State of Maine is included so users are able to compare the growth rate of their county to Maine's total growth.*

Population Age Distribution

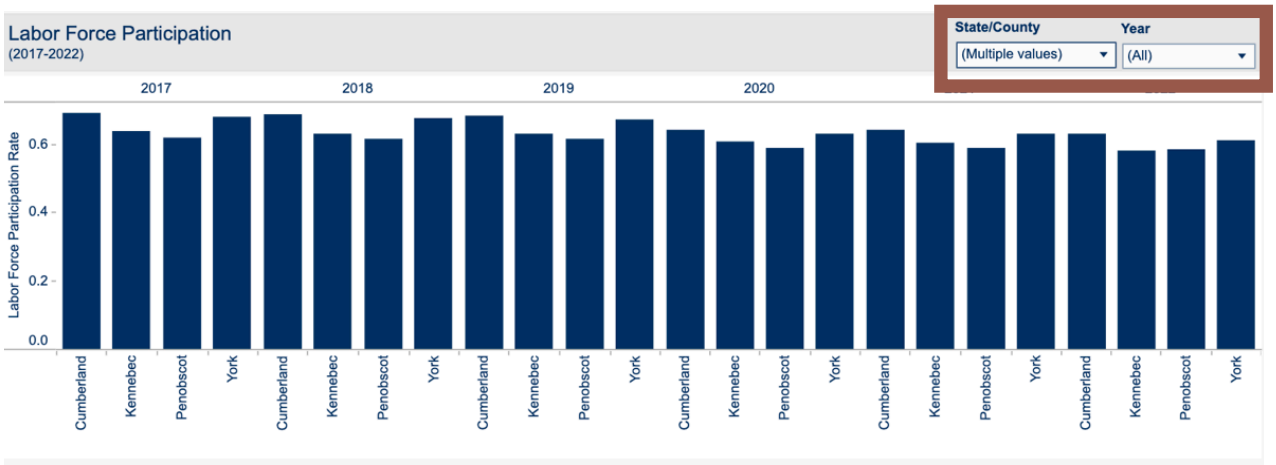
A common concern across all of Maine's counties is the aging population. Maine is the oldest state in the country and in 2022 roughly 22% of Maine's total population was over the age of 65. For comparison, only about 18% of the population was younger than 18. This indicates that Maine may have fewer workers entering the labor force compared to the number of workers leaving the labor market.



Data Filters: *The red box on the image above highlights where users can filter based on county and year. The State of Maine is included so users are able to compare the age distribution of their county to Maine's age distribution. This chart will also display projected changes in the age distribution through 2028.*

Labor Force Participation

The labor force participation rate across Maine has been falling for over a decade. The pandemic exacerbated this decline and the state appears to have fared worse than the nation with the rate dropping below 58% in 2020. When looking at labor force participation by age, the number of prime wage workers in the labor force (24-54) has remained fairly constant but the number of workers over the age of 60 has risen sharply. In contrast, the participation of workers below the age of 24 has been falling.



Data Filters: *The red box on the image above highlights where users can filter by county and year. The State of Maine is included so users are able to compare the participation rate of their county with the state's labor force participation rate.*

Components that Decrease Labor Supply

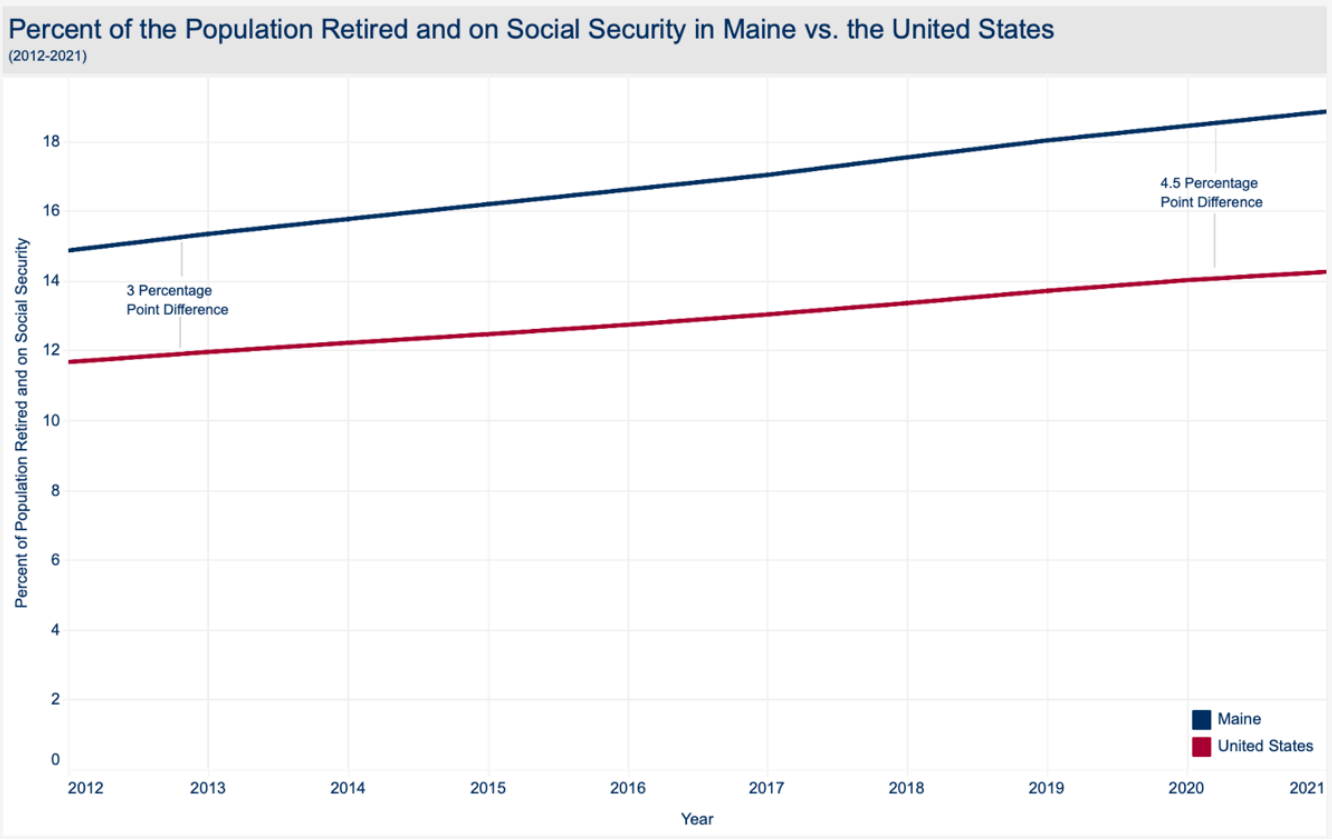
Out-Migration

See *In-Migration* discussed on page 3

Retires

Percent of the Population Retired and on Social Security in Maine versus the United States

During the last 10 years, the percent of Maine's population that is retired and collecting social security has been steadily increasing. This increase is also observed at the national level; however, Maine's retirement rate is out pacing the U.S.'s rate. In 2012, the percent of Maine's population that was retired and collecting social security was roughly 3 percentage points higher than the national average. By 2021, however, the percent of Maine's population that was retired and collecting social security was approximately 4.5 percentage points above the national average.



Deaths

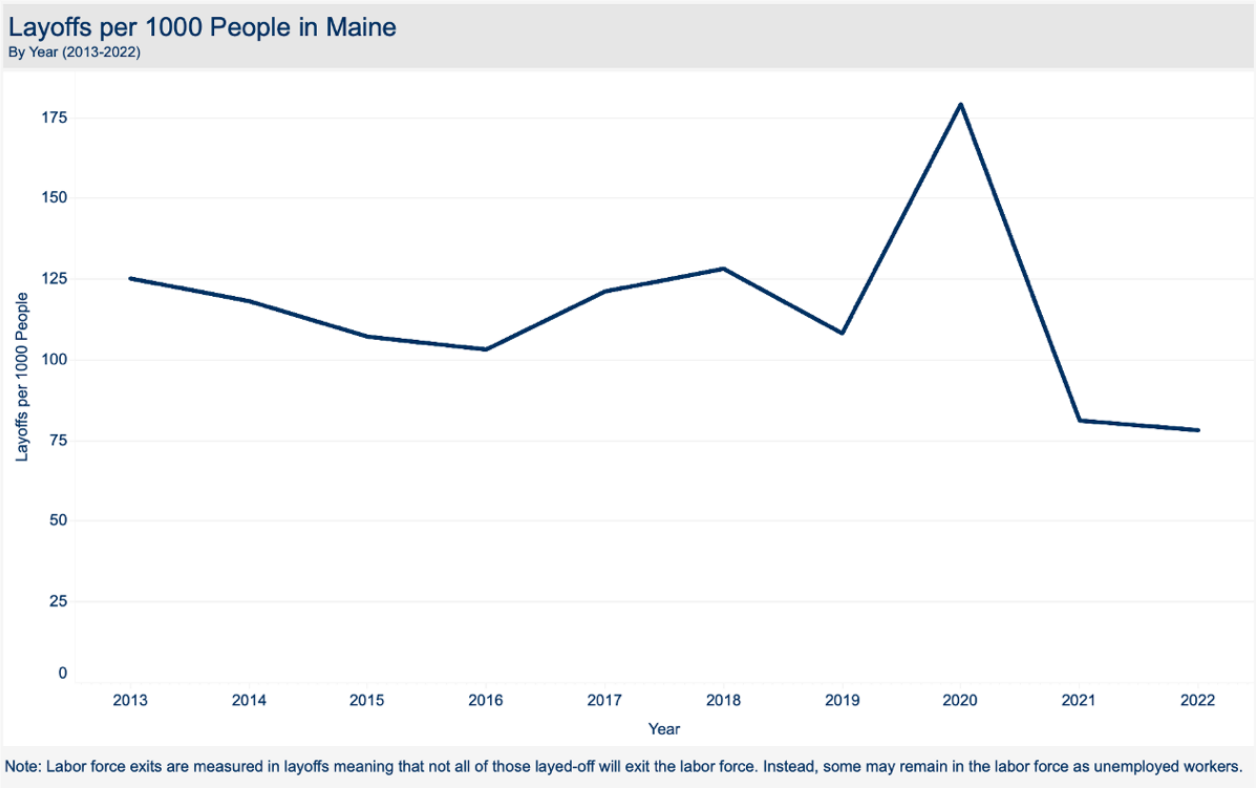
See *Births* discussed on page 3

Exits

Layoffs per 1000 people in Maine

This graph shows the annual number of layoffs per 1,000 Maine residents. While these layoffs are commonly referred to as 'exits' it is important to note that laid-off individuals may choose to remain in the labor market as unemployed workers. As long as an individual is actively searching for work, they are still considered to be part of the labor force. If a laid-off individual chooses not to search for and/or gain new employment, they are then considered to be an inactive worker. The movement from the labor force into the inactive worker population decreases the total labor force.

The COVID-19 pandemic is easily identifiable by the spike in layoffs during 2020. Following the pandemic, layoff levels have been lower compared to pre-pandemic levels. One explanation for this trend may be that during the pandemic, employers opted to layoff all nonessential workers and only maintain a 'skeleton' staff. Even after two years, these employers may still be operating with a reduced staff making laying off employees unfeasible.



Note: Labor force exits are measured in layoffs meaning that not all of those layed-off will exit the labor force. Instead, some may remain in the labor force as unemployed workers.

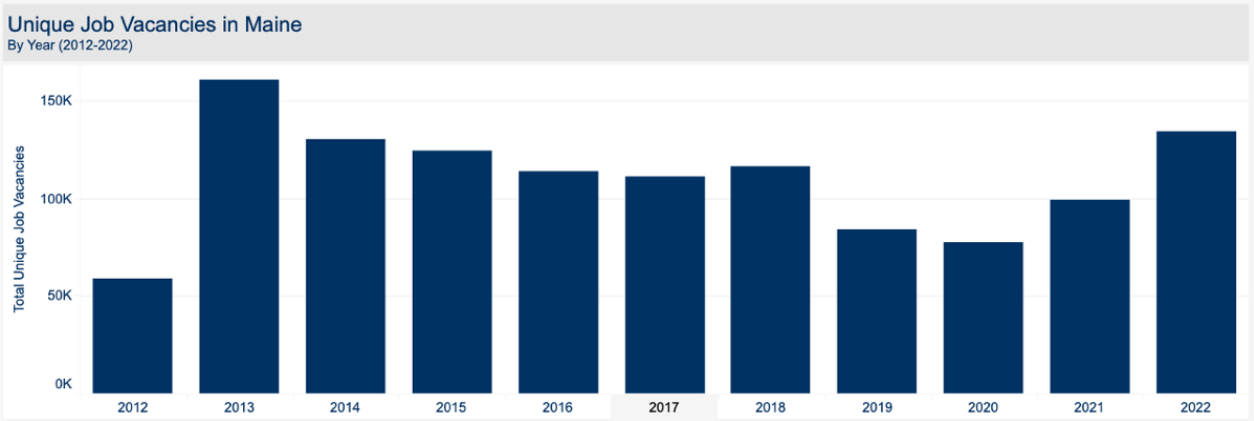
Labor Demand Changes (job postings)

For Maine

Unique Job Vacancies in Maine

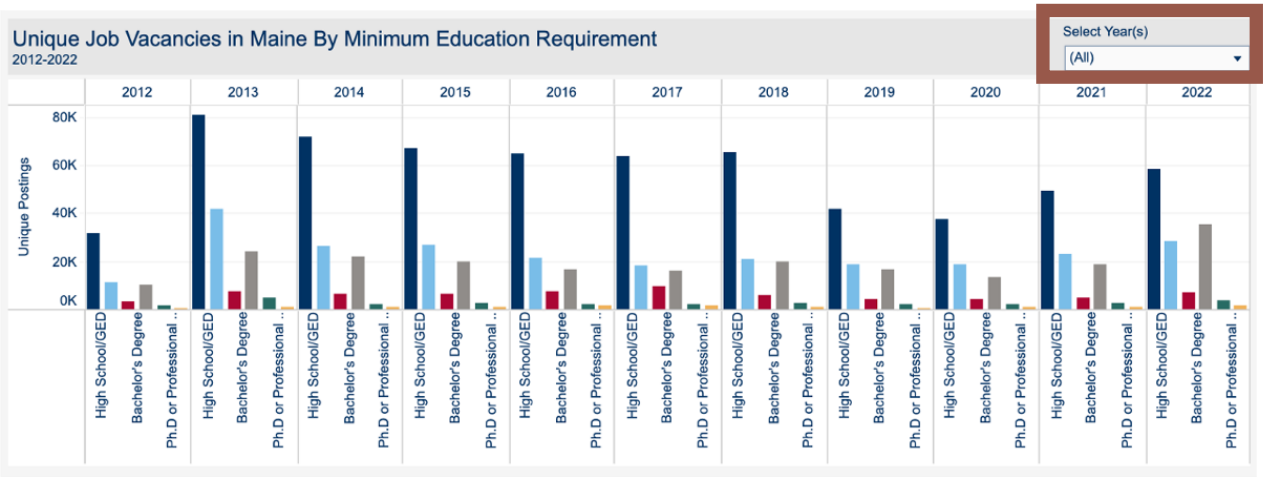
We use the number of unique job postings as a proxy for labor demand. This job postings data was collected using Lightcast, previously EMSI and Burning Glass Technologies. Lightcast's job vacancy data are compiled from more than 45,000 websites. The postings are then cleaned to remove duplicates.

In 2020, Maine's labor demand experienced a substantial decline. This lack of demand reflects the COVID-19 pandemic which resulted in global market disruptions and forced many businesses to layoff or furlough employees. In 2021 and 2022, labor demand recovered to levels greater than pre-pandemic demand.



Unique Job Vacancies in Maine by Minimum Education Requirement

Relative to pre-pandemic levels (2018 numbers) there has been an 80% increase in jobs requiring at least a Bachelor's degree. Demand for high school degrees has increased by 34%. Conversely, job postings with no educational requirements have declined by 11%.



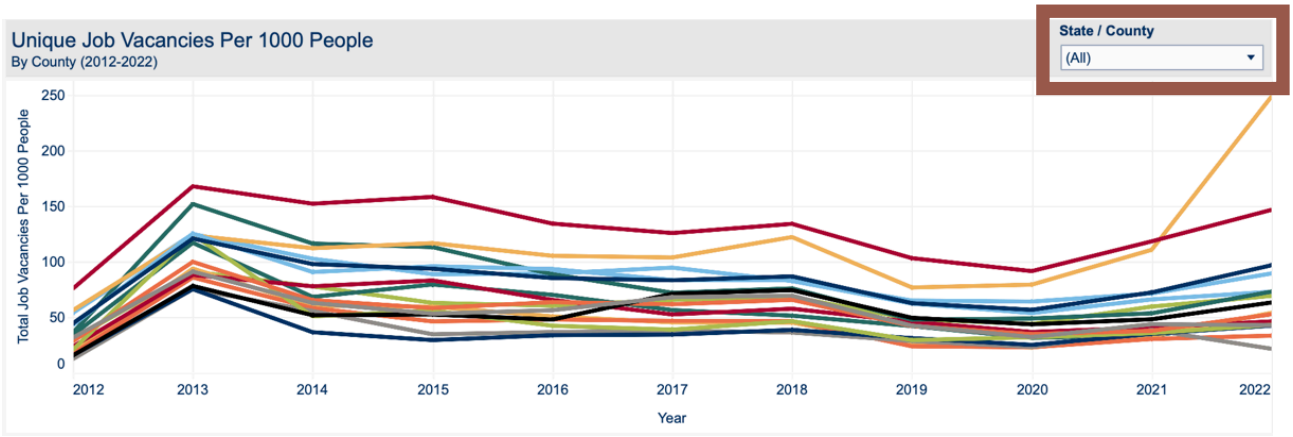
Data Filters: *The red box on the image above highlights where users can filter by year. Select a year to see how employer's educational requirements have changed.*

By County

Unique Job Vacancies Per 1000 People

Labor demand is measured using data related to unique job postings per 1,000 residents. We divided the raw number of jobs in a county by 1,000 in order to account for the large variation in county populations. Adjusting this metric by population allows user to easily see and compare labor demand rates across all Maine counties.

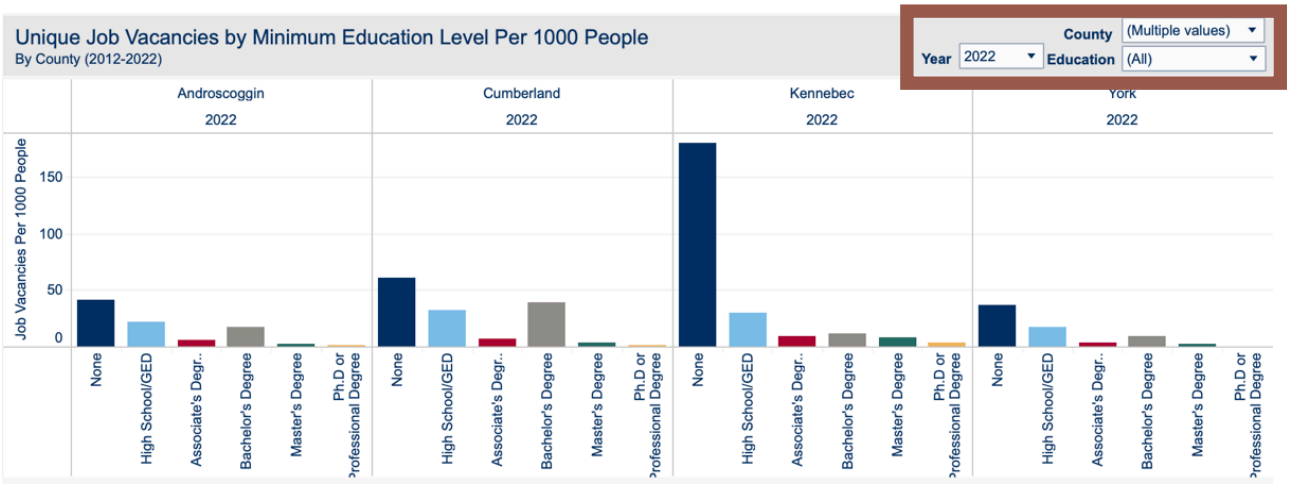
During the last five years, Cumberland and Knox Counties have consistently had the most unique job postings per 1,000 people. Even when adjusted for population, Piscataquis, Aroostook, and Somerset had the lowest demand for labor during the same period.



Data Filters: *The red box on the image above highlights where users can filter by county. The State of Maine is included so users are able to compare the demand of their county to Maine's total labor demand.*

Unique Job Vacancies by Minimum Education Level Per 1000 People

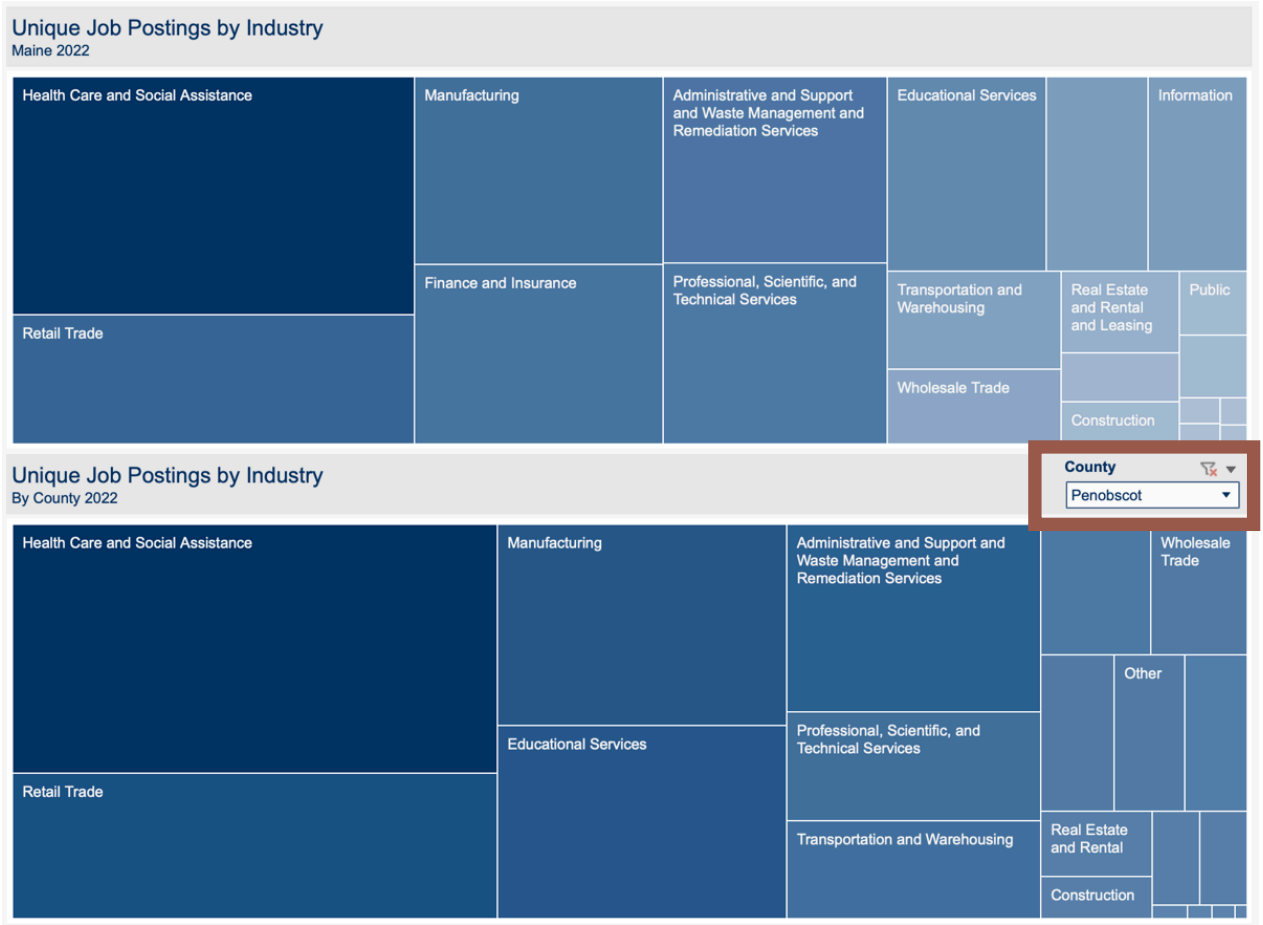
In 2022, Cumberland County had the highest demand for workers with a Bachelor's degree. Kennebec County however, had the most job postings that did not list any type of educational requirement.



Data Filters: *The red box on the image above highlights where users can filter based on year, academic requirements and county. To clearly see trends and patterns we suggest selecting one or two options from drop-down menus.*

Unique Job Vacancies by Industry

The job postings data allows us to see which industries sought to hire workers during 2022. The health care and social assistance sector had over 22,000 positions, by far the largest of any one industry in the State. Retail trade posted more than 12,000 positions and manufacturing advertised around 12,000 job vacancies. The next top industries for job postings were in the service sectors, finance and insurance (10,511), administrative support (9,868) and technical services (9,511). Taking a look across different counties we find some commonality, particularly a high demand for employees to work in healthcare and retail trade. Demand for manufacturing and technical services is limited to a few counties.



Data Filters: *The red box on the image above highlights where users can filter by county. See how industry labor demand in your county compares to the state's demand structure.*

MAINE'S LABOR MARKET

The Maine labor audit has assessed each component of the labor force, explored underlying trends, identified constraints for growth and examined the spatial distribution of labor. To better interpret the health of Maine's labor force we next turn to measuring the relative efficiency of the overall labor market. Labor market efficiency refers to the ability of labor supply to meet the specific needs of labor demand. When paired with unemployment, job vacancies can provide insight into how the labor market is functioning. Job vacancies and unemployment exist simultaneously, implying that the labor demanded differs from the labor supplied. This mismatch can be caused by various factors including skill and geographical discrepancies (Dow & Dicks-Mireaux, 1958). The relationship between unemployment and vacancies can be observed graphically which is known as the Beveridge curve. By plotting vacancies against unemployment, often in the form of rates, two critical observations can be made. First, cyclical trends in the demand for labor can be captured. Secondly, early signs of structural disequilibrium in the labor market can be made visible. When both unemployment and job vacancies are low, the plotted point will be closer to the origin, signaling more efficient labor market conditions. Conversely, plotted points that are further away from the origin reveal structural problems within the labor market and indicate that unemployed workers and vacant jobs are not aligning to create matches (Dow & Dicks-Mireaux, 1958).

Labor market studies in the second half of the 20th century determined that the employment level is not solely reliant on firm level decisions, but it is instead influenced by vacancies and unemployment (Blanchard & Diamond, 1989; Stiglbauer et al., 2003) This indicated a new structural inefficiency likely due to a mismatch between skills, ages and geographic locations of the labor demanded compared to the labor supplied (Welch, 2018). Following the Great Recession, economists in the U.S. observed a structural inefficiency where the labor supplied did not match the labor being demanded (Crawley & Welch, 2020). Additionally, the Beveridge curve from the post-recession period illustrated the labor market's disequilibrium. Through regional Beveridge curve observations, we are able to see specific labor market inefficiencies (Welch, 2018). By providing easy access to data, through the Labor Audit Tool, we aim to help bridge the information gap between Maine's labor supply and demand.

The period between 2008 and 2010 brought on high labor supply levels with low labor demand, a trend that is commonly observed during recessions (Crawley & Welch, 2020). Following the recession, Maine's labor market experienced a structural reversal but remained relatively inefficient. In other words, between 2011 and 2014, Maine experienced low unemployment, but high job vacancies. This trend continued until 2015 when the market slowly started to recover and the job vacancy rate began to decline (Welch, 2018).

Nationally, the labor market's reaction to the COVID-19 recession differed from historical trends. Rather than aligning with the Beveridge curve, during this period, labor supply was high, but labor demand decreased less than anticipated given the Great Recession (Gallant et. al., 2020). Additionally, job finding rates following pandemic shut downs were much higher allowing for faster labor market recovery (Gallant et. al., 2020). Unlike the Great Recession, which saw high levels of labor market inefficiency due to structural changes, the COVID-19 recession was not plagued by these structural shifts (Pizzinelli & Shibata, 2022). Instead, current market inefficiencies are attributed to the employment gap that developed because fewer people are in the labor force compared to pre pandemic levels (Pizzinelli & Shibata, 2022).

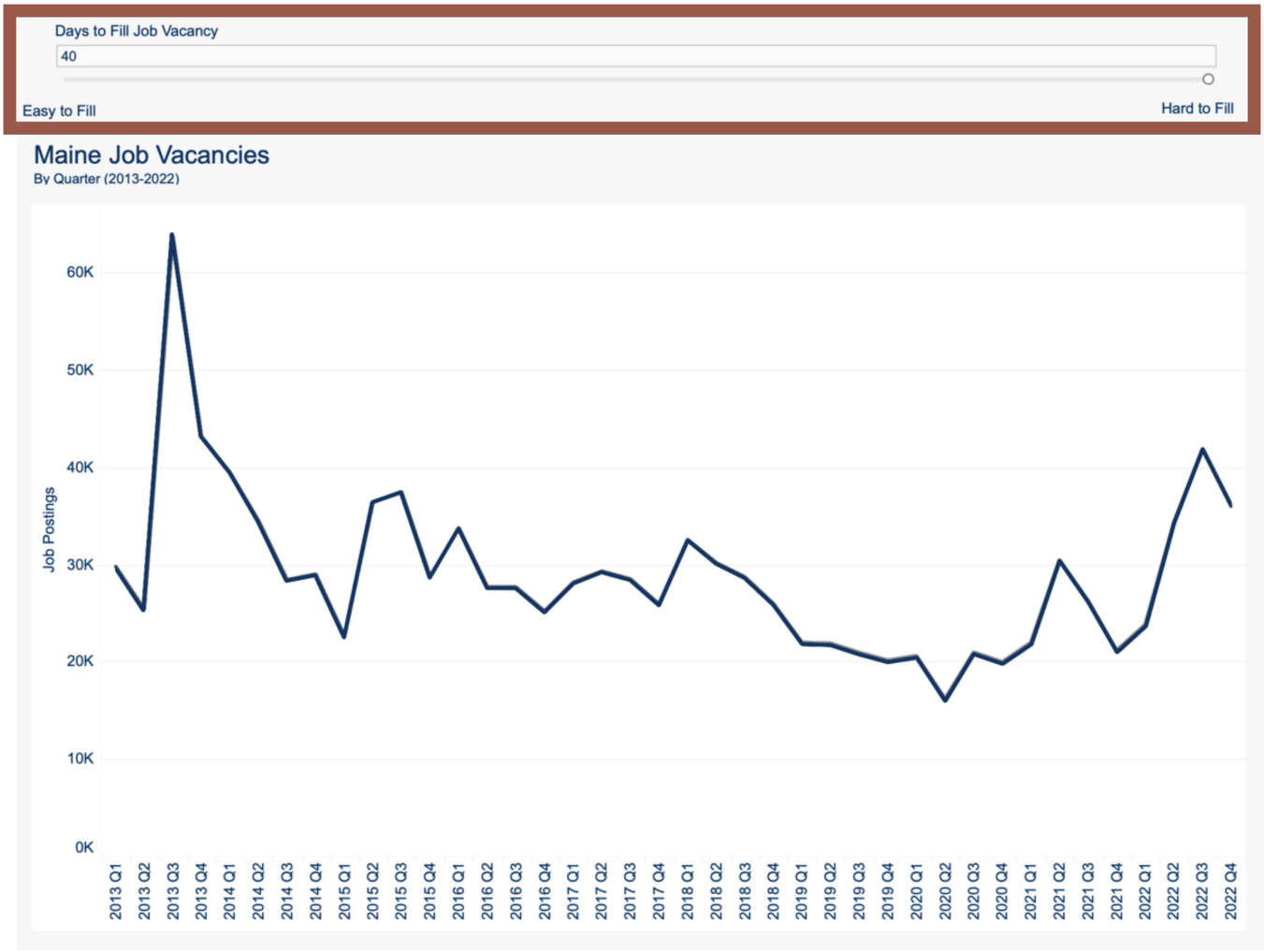
As previously mentioned, Maine experienced a high level of in-migration during the pandemic which changed the labor supply within the state. Understanding how this increase in population impacted the state's employment gap will be important for economic recovery. Additionally, understanding where inefficiencies exist within the state and its counties will allow for the creation of thorough, tailored economic development plans.

The Labor Market

Workers and Jobs

Maine Job Vacancies

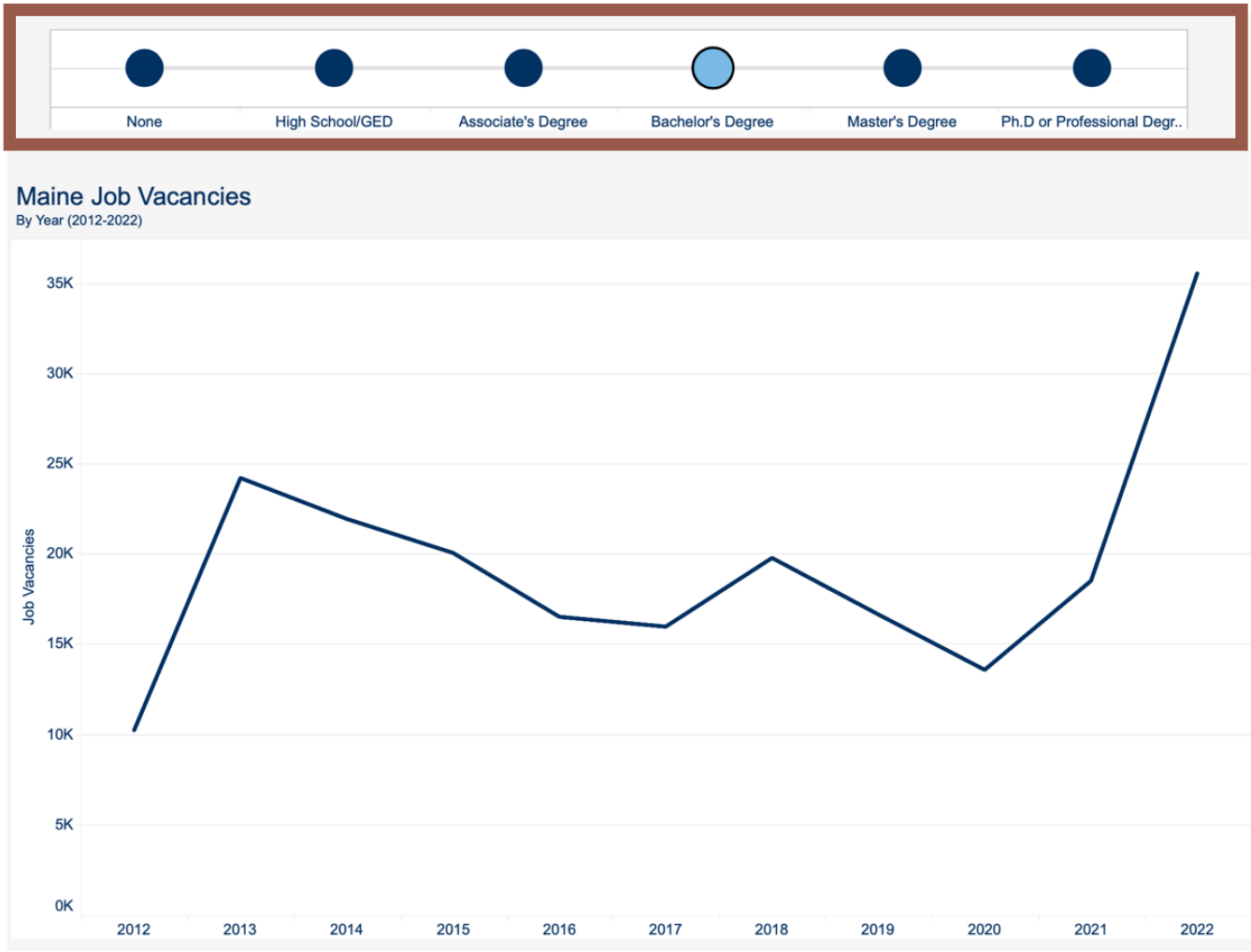
Looking at job vacancy data in Maine across time we are able to see that the total number of postings peaked in 2013. But compared to the labor force, the number of vacancies remains high. Filtering this data by the time it takes to fill an open position allows us to understand how many of these postings are hard to fill. Typically, positions for nurses and doctors are considered "hard to fill", meaning there are a relatively high number of these positions open at any given time. Maine appears to have a significant number of job postings that are hard to fill, implying a high level of inefficiency in the labor market. This presents a challenge for the state in assessing labor market health.



Data Filters: *The red box on the image above highlights where users can filter by the number of days a job vacancy has been posted. Use the slider at the top of the chart to see how many job postings remain unfilled.*

Maine Job Vacancies (by educational requirements)

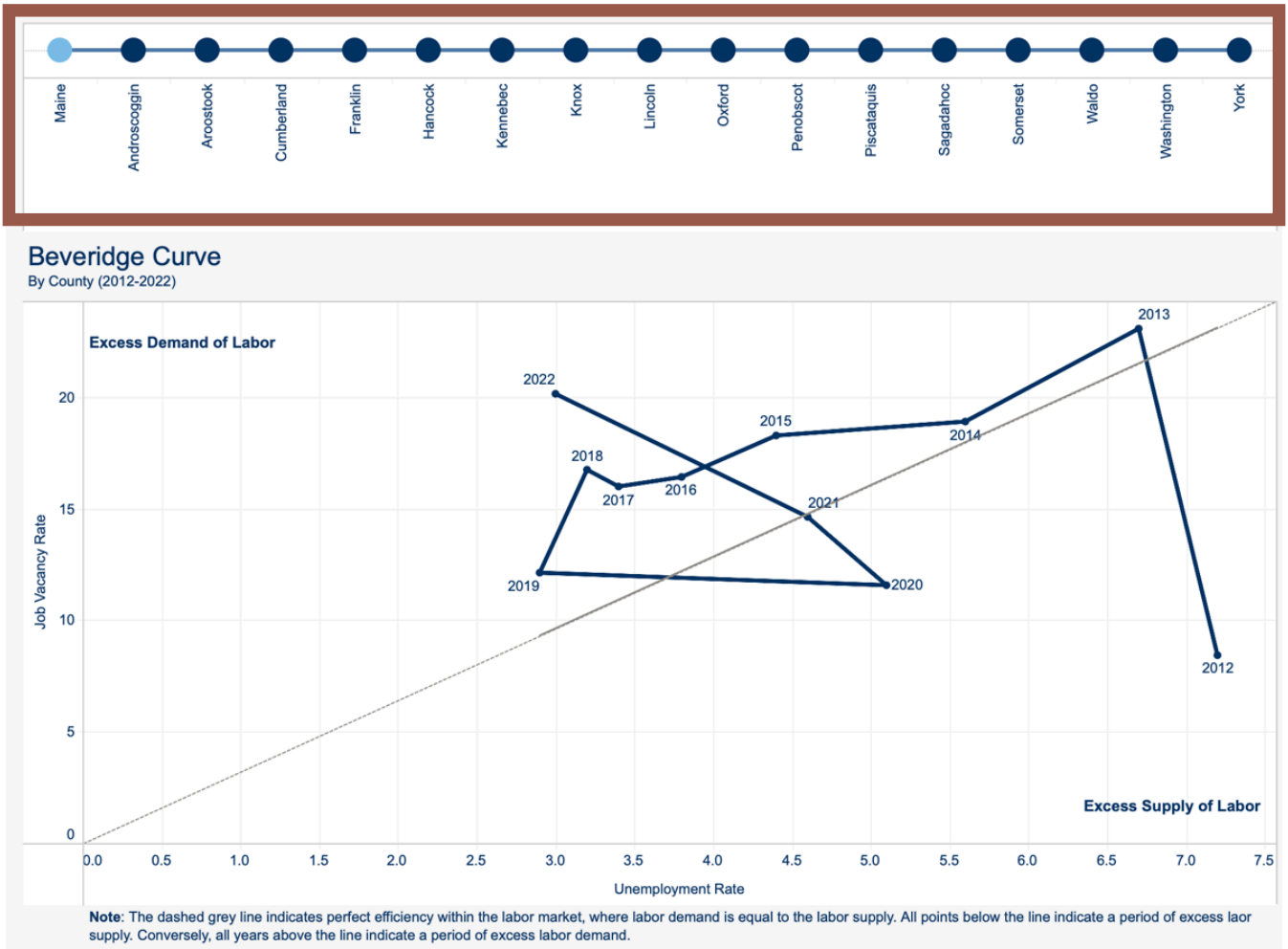
Another approach to assessing the health of the labor market is to look at the total number of positions by the educational requirements listed on the posting. A Bachelor's degree has become the most common educational requirement. Across time, demand for Bachelor's degrees has grown faster than demand for High School/GED degrees. If we look at more advanced degrees, Masters and PHDs, although small, demand for these has continued to grow over the last 5 years.



Data Filters: *The red box on the image above highlights where users can filter job vacancies by educational requirements. Select a bubble to view how educational requirements have changed.*

Beveridge Curve

For a description of the Beveridge curve please see pages 19-20. After assessing all aspects of the labor market for this audit, a final assessment of its dynamics maybe observed by constructing a Beveridge curve. Taking a look at the curve for Maine, it is possible to see the significant fluctuations across time. The COVID-19 pandemic is clearly visible. Over the course of two years, you can see the shift from an excess supply of labor to an excess demand for labor. When looking at each county, it is interesting to note the significant variation in terms of excess labor demand versus excess labor supply. This speaks to the large heterogeneity, in terms of population and industries, that exists in each county.



Data Filters: *The red box on the image above highlights where users can select their county and learn about the efficiency of its labor market.*

AUDIT TOOL DATA INDEX

VARIABLE NAME	DATA LEVEL	YEARS AVAILABLE	PROJECTIONS AVAILABLE	CHART TITLE	SOURCE
Population	State	2012-2028	Yes; 2023-2028	Population Growth in Maine	Lightcast™, 2022
	County	2012-2028	Yes; 2023-2028	Population Growth in Maine	Lightcast™, 2022
	County by Age	2012-2028	Yes; 2023-2028	Population Age Distribution (in Years)	Lightcast™, 2022
Labor Force Participation	State	2022	No	Labor Force Participation	Lightcast™, 2022
	County	2022	No	Labor Force Participation	Lightcast™, 2022
School Enrollment	County	2013-2022	No	School Enrollment	Maine Department of Education
College Enrollment	State	2014-2021	No	College Enrollment of Maine High School Students Post High School Graduation	Lightcast™, 2022
	State by University Type	2012-2020	No	University Enrollment of Maine High School Graduates	Lightcast™, 2022
	County	2013-2020	No	College Enrollment by County	Lightcast™, 2022
College Persistence	State	2014-2019	No	College Persistence: Students Enrolled in College 1 and 2 Years After High School Graduation	Lightcast™, 2022
	State by University Type	2014-2019	No	Student Persistence at Private vs. Public Colleges by Enrollment	Lightcast™, 2022
College Degrees Received	State by University	2013-2021	No	Number of Degrees Awarded by Public Universities (by Type of Degree)	US Department of Education
				Number of Degrees Awarded by Private Colleges (by Type of Degree)	Lightcast™, 2022
				Number of Degrees Awarded by Community Colleges (by Type of Degree)	Lightcast™, 2022
				Number of Degrees Awarded by Specialty Schools (by Type of Degree)	Lightcast™, 2022
	State by Subject	2013-2021	No	Degrees Received by Subject	Lightcast™, 2022
Migration	County	2013-2021	No	In-Migration Per 1000 People	ACS 5 Year Survey
	County by Age	2013-2021	No	In-Migration by Age	ACS 5 Year Survey
Job Vacancies	State	2012-2022	No	1. Unique Job Vacancies in Maine 2. The Bevridge Curve	Lightcast™, 2022
	State by Education Req.	2012-2022	No	Unique Job Vacancies in Maine By Minimum Education Requirement	Lightcast™, 2022
	State by Industry	2012-2022	No	Unique Job Postings by Industry	Lightcast™, 2022
	County	2012-2022	No	Unique Job Postings Per 1000 People	Lightcast™, 2022
	County by Education Req.	2012-2022	No	Unique Job Postings by Minimum Education Level Per 1000 People	Lightcast™, 2022
	County by Industry	2012-2022	No	Unique Job Postings by Industry	Lightcast™, 2022
Births	State	2012-2022	No	Maine Births and Deaths	Maine Center for Disease Control
Deaths	State	2012-2022	No	Maine Births and Deaths	Maine Center for Disease Control
Layoffs	State	2013-2022	No	Layoffs per 1000 People in Maine	Job Openings and Labor Turnover Survey
Retirement	Country	2012-2021	No	Percent of the Population Retired and on Social Security in Maine vs. the United States	Social Security Administration Congressional Statistics
	State	2012-2021	No	Percent of the Population Retired and on Social Security in Maine vs. the United States	Social Security Administration Congressional Statistics
Employment No High School Degree	State	2012-2021	No	Employment of Workers Without a Highschool Degree Age 14-18	Bureau of Labor Statistics
Unemployment	State	2012-2022	No	Bevridge Curve	Lightcast™, 2022

RESOURCES & REFERENCES

Blanchard, O. J., Diamond, P., Hall, R. E., & Yellen, J. (1989). The Beveridge Curve. Brookings Papers on Economic Activity, 1989(1), 1–76. https://doi.org/10.2307/2534495

Bureau of Labor Statistics, U.S. Department of Labor, https://beta.bls.gov/dataQuery/search

Bureau, U. C. (n.d.). Data Releases. Census.Gov., from https://www.census.gov/programs-surveys/acs/news/data-releases.html

Census Bureau, U.S. Department of Commerce. https://www.census.gov/data.html.

Crawley, A., & Welch, S. (2020). Do high levels of US employment reduce labour matching efficiency? Applied Economics Letters, 27(2), 77–81. https://doi.org/10.1080/13504851.2019.1608351

Data Index, Division of Public Health Systems, MeCDC, Maine DHHS. (n.d.). Retrieved April 16, 2023, from https://www.maine.gov/dhhs/mecdc/public-health-systems/data-research/data/index.html#births

Dow, J. C. R., & Dicks-Mireaux, L. A. (1958). The Excess Demand for Labour. A Study of Conditions in Great Britain, 1946-56. Oxford Economic Papers, 10(1), 1–33.

Featured JLT Searchable Databases: U.S. Bureau of Labor Statistics. (n.d.)., from https://www.bls.gov/jlt/data.htm

Gallant, J., Kroft, K., Lange, F., & Notowidigdo, M. J. (n.d.). Temporary Unemployment and Labor Market Dynamics During the COVID-19 Recession.

Lightcast™.(2023). https://analyst.lightcast.io/login/login.php

Shibata, C., & Pizzinelli, I. (2022, January 19). Has COVID-19 Induced Labor Market Mismatch? Evidence from the US and the UK. IMF. https://www.imf.org/en/Publications/WP/Issues/2022/01/18/Has-COVID-19-Induced-Labor-Market-Mismatch-Evidence-from-the-US-and-the-UK-511917

SSA Open Data Public Datasets. (n.d.)., from https://www.ssa.gov/open/data/

Student Enrollment Data, Department of Education. (n.d.)., from https://www.maine.gov/doe/data-reporting/reporting/warehouse/enrollment

Stiglbauer, A., Stahl, F., Winter-Ebmer, R., & Zweimuller, J. (2003). Job creation and job destruction in a regulated labor market: The case of Austria. Empirica, 30(2), 127. https://doi.org/10.1023/A:1024169315209

The Integrated Postsecondary Education Data System. (n.d.)., from https://nces.ed.gov/ipeds/use-the-data

Welch, Sarah M., "The Analysis of Labor Market Efficiency: A Comparative Analysis of Maine and the United States" (2018). Honors College. 361.
https://digitalcommons.library.umaine.edu/honors/361

ACKNOWLEDGEMENTS

The report was produced by the Economic Development Administration University Center at the University of Maine with funding provided through the Maine Workforce, Research, Development and Student Achievement Institute.

EDA University Center at the University of Maine Project team

- Dr. Andrew Crawley Director of the EDA University Center and Associate Professor, School of Economics, University of Maine.
- Dawn Otterby Research Assistant School of Economics, University of Maine.
- Ellie Hunt Research Associate Margret Chase Smith Policy Center, University of Maine.