MAINE POPULATION OUTLOOK
2022 to 2032

APRIL 2025

Office of the State Economist

Maine Department of Administrative and Financial Services

Executive Summary

The Office of the State Economist has prepared updated population projections covering the state, counties, and cities and towns. For cities and towns, projections cover total population only; for the state and counties, projections include five-year age and sex cohorts.

Demographics are a key element of understanding the functions of an economy. The economy is made up of people making decisions: decisions about how much to work, what to buy, whether to hire more workers, where to live, and so on. Understanding demographics can tell us about the makeup of the labor force, what the demand for a new product might be, or about where to start a new business. Looking ahead to what the population might be like in the future can help us develop plans and policies now.

These projections are an update to those issued in June 2023. Although they cover different years, they replace the previous set of projections, which are now considered outdated and should no longer be used. Projections are based on a continuation of recent historical trends. As new and revised data are released, these trends can change, making it important to update projections on a regular basis. Near-term projections are likely to be more accurate than projections of the distant future as trends tend to change more significantly the further out we look.

The new projections were complicated by impacts of the COVID-19 pandemic. The "base year" for the projections is 2022, but in order to best reflect recent trends and exclude one-time impacts from the pandemic, some adjustments were made to the methodology. Specifically, while migration rates for most counties were calculated using an average of 2013-2017 and 2018-2022 trends, five counties (Androscoggin, Kennebec, Knox, Somerset, and Waldo) use 2015-2019 trends, and one county (Piscataquis) uses 2019-2023 trends. In addition, survival rates were adjusted to account for excess deaths from COVID-19.

Results

Maine's population is projected to increase from 1,389,338 in 2022 to 1,419,888 in 2027 and further increase to 1,438,344 in 2032. Eleven counties are projected to see population increases from 2022 to 2032.

Statewide

Maine's total population is projected to increase 2.2% from 2022 to 2027 and a further 1.3% from 2027 to 2032. Over the ten-year period, Maine's population is projected to increase 3.5%.

Maine Statewide Population				
	2022 (historical)	**2027**	**2032**	**2022-2032**
Total Population	1,389,338	1,419,888	1,438,344	
Five-Year Percent Change				
Percent Change		2.2%	1.3%	3.5%

Maine's prime working-age population (age 20-64) is projected to decrease by 4.6% from 2022 to 2032, including the aging-out of Baby Boomers, who will be 68-86 years old in 2032. Both the younger working-age (20-39) and older working-age (40-64) cohorts are also expected to decline during this period, by 3.3% and 5.4%, respectively. Conversely, Maine's 65+ population is expected to grow by 35.6% from 2022-2032.

Maine Statewide Population by Age			
	2022 (historical)	**2027**	**2032**
0-19 years	284,733	269,372	259,123
20-39 years	331,993	330,491	320,951
40-64 years	461,727	441,346	436,607
65+ years	310,885	378,679	421,663

Percent Change in Population			
	2022-2027	**2027-2032**	**2022-2032**
0-19 years	-5.4%	-3.8%	-9.0%
20-39 years	-0.5%	-2.9%	-3.3%
40-64 years	-4.4%	-1.1%	-5.4%
65+ years	21.8%	11.4%	35.6%

Counties

Eleven counties are expected to gain population cumulatively from 2022-2032. From 2022-2032, York County is projected to see the greatest rate of population growth, 7.0%, ahead of Sagadahoc (6.3%) and Washington and Waldo (both at 6.2%). Five counties are projected to decline from 2022-2032, with the largest percentage losses expected in Somerset (-2.3%).

Maine County Total Population			
	2022 (historical)	**2027**	**2032**
Androscoggin	113,225	114,957	115,976
Aroostook	67,322	67,300	66,774
Cumberland	308,837	316,999	322,973
Franklin	30,595	30,894	30,993
Hancock	56,549	57,450	57,694
Kennebec	126,535	130,284	133,024
Knox	41,179	41,332	41,049
Lincoln	36,285	36,450	36,242
Oxford	59,458	59,736	59,578
Penobscot	154,728	157,363	158,648
Piscataquis	17,403	17,432	17,335
Sagadahoc	37,372	38,859	39,717
Somerset	51,118	50,676	49,959
Waldo	40,255	41,782	42,766
Washington	31,527	32,732	33,480
York	216,950	225,641	232,136

Percent Change in Population			
	2022-2027	**2027-2032**	**2022-2032**
Androscoggin	1.5%	0.9%	2.4%
Aroostook	0.0%	-0.8%	-0.8%
Cumberland	2.6%	1.9%	4.6%
Franklin	1.0%	0.3%	1.3%
Hancock	1.6%	0.4%	2.0%
Kennebec	3.0%	2.1%	5.1%
Knox	0.4%	-0.7%	-0.3%
Lincoln	0.5%	-0.6%	-0.1%
Oxford	0.5%	-0.3%	0.2%
Penobscot	1.7%	0.8%	2.5%
Piscataquis	0.2%	-0.6%	-0.4%
Sagadahoc	4.0%	2.2%	6.3%
Somerset	-0.9%	-1.4%	-2.3%
Waldo	3.8%	2.4%	6.2%
Washington	3.8%	2.3%	6.2%
York	4.0%	2.9%	7.0%

Background

Population change is a crucial component of economic trends. Economies are made up of people making decisions and understanding population changes can help us understand how economies change over time. For example, understanding the process of older generations aging out of and younger generations aging into the workforce provides critical insight into who will be available to fill jobs, start new businesses, and consume the next generation of products and services.

Population projections provide an important gauge of the current outlook based on recent trends. They are updated periodically as new data are released. Trends change over time, and each new set of population projections replaces the previous set. These projections should be considered as just one piece of information to be used by policymakers, businesspeople, and residents making decisions about their future. These projections incorporate one-time migration effects from the COVID-19 pandemic without carrying the higher rate forward indefinitely by applying modified migration rates to the 2022 base year and accounting for excess deaths from COVID-19. However, caution should be used in interpreting these projections as the long-term demographic impacts from COVID-19 are still unfolding.

What are demographics?

Demographics are the characteristics that describe a population – not just the "how many" but also the "who." This includes more detailed information like how old a population is or what its racial and ethnic distribution is, for example. These descriptive characteristics such as age, sex, race, and ethnicity are all elements of the whole picture.

Maine's demographics are similar to those of Vermont and New Hampshire, but quite different from the nation. The chart below compares the demographics of Maine to its Northern New England neighbors (Vermont and New Hampshire), its Southern New England neighbors (Massachusetts, Connecticut, and Rhode Island) and the United States. Maine compares closely to the rest of Northern New England in its age structure and levels of diversity. There are more pronounced differences when comparing to Southern New England and the United States, which are home to younger and more diverse populations.

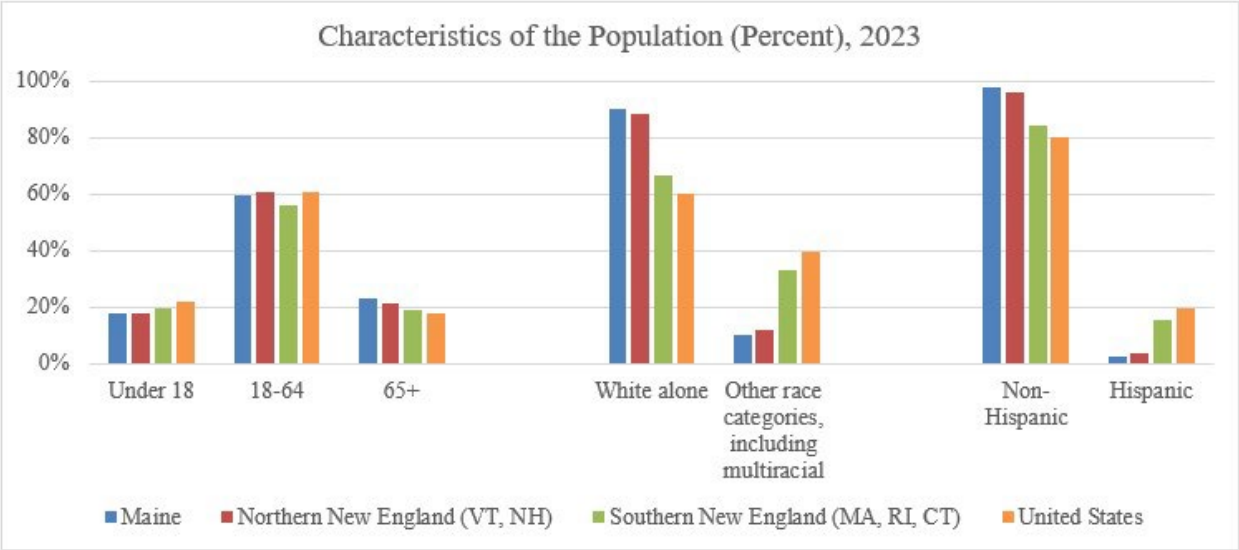

Figure 1. Demographics across regions
Source: U.S. Census Bureau, American Community Survey 1-Year Estimates
Note: Multiracial refers to individuals who identify with or have ancestry from two or more racial groups.

Maine's generational structure

As a percentage of the population, the Baby Boom generation is by far the largest in Maine, at 28 percent. In 2022 this generation ranged from 58 to 76 years old, but by the end of 2032 will be 68 to 86 years old as they fully age out of the traditional definition of the working age population (20-64 years old). Nationally, just 22.3 percent of the population is part of the Baby Boom generation, similar to the share of Millennials and slightly higher than Gen X and Gen Z.

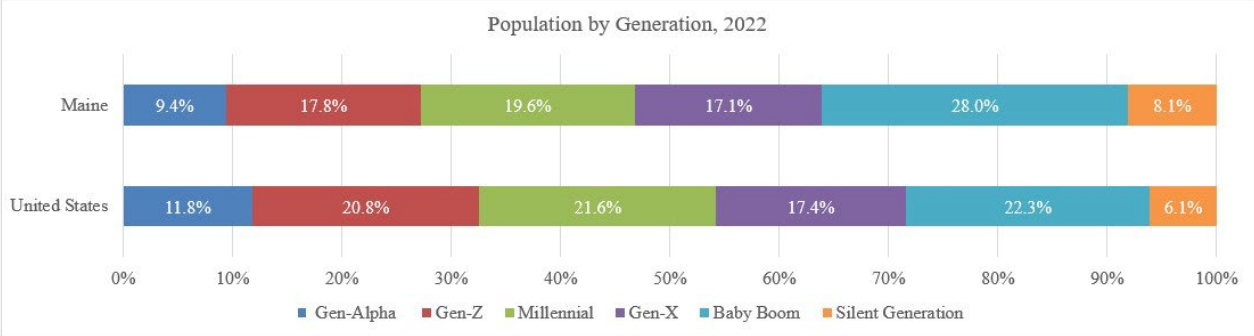

Figure 2. Generational distribution in Maine and the U.S.
Source: U.S. Census Bureau, Population Estimates Program

The size of the Baby Boom generation has significant implications for Maine's economy. One of the most prominent impacts is their participation in the labor force, which saw substantial increases from the late 1960s through 1990. During this time, multiple sources contributed to a surge in the labor force: Baby Boomers entered their prime working age years, and women entered the labor force at higher rates, with labor force participation of women growing from 37.8% in 1960 to

57.5% in 1990[1]. However, in the last decade, Baby Boomers have begun to retire from the labor force. With fewer workers in younger generations to fill their shoes, the labor force leveled out starting in 2005 and has declined in more recent years.

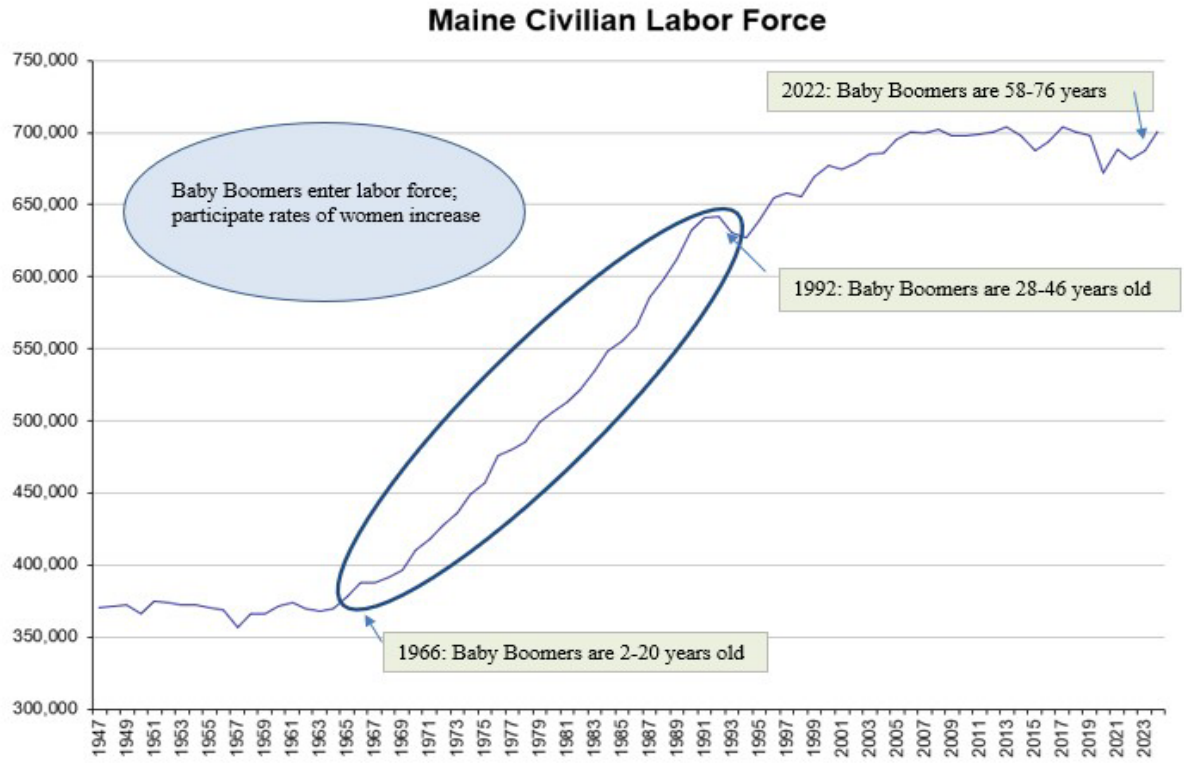

Figure 3. The Baby Boom generation's impact on Maine's labor force
Source: Maine Department of Labor

From 2022-2032, the further aging of this generation will continue to impact Maine's labor force as the remainder of this cohort ages into traditional retirement years. Since their successors make a smaller share of the population, labor constraints are likely to be felt in the coming years.

These dynamics impact future demographic trends within the state in two major ways: first, by increasing Maine's median age, and second, by leading to natural population decline. Due to the sheer size of the Baby Boom generation, the aging of the cohort will naturally raise Maine's median age, barring the migration into the state of younger populations. This trend has been happening nationwide. Along with this aging comes the second major impact, which is natural population decline. As Baby Boomers have aged out of their childbearing years, the number of deaths each year exceeds the number of births each year. This is a reversal of what happened when Baby Boomers were in childbearing years, when births far outnumbered deaths.

In this case, Maine's population can only grow through in-migration. Since 2016, Maine has seen net migration accelerate, peaking during the pandemic years of 2021-2022. This has slowed

[1] Source: U.S. Bureau of Labor Statistics, accessed through fred.stlouisfed.org (Series LNS11300002)

somewhat since then, but Maine still had positive total net migration of over 10 thousand people in 2024 from combined domestic and international sources. Stronger in-migration has contributed to higher population projections and will have a positive impact on Maine's economy in the future.

Components of population change

There are three components of population change: births, deaths, and net migration (domestic and international). Recent population estimates for 2023 and 2024 provide some additional detail, but keep in mind that the projections released with this report do not include any data for those years. In 2022, Maine had the largest percentage of its population aged 65+ of any state in the nation. As this cohort ages, the rate of total deaths per 1,000 population in Maine will naturally increase. Conversely, the birth rate per 1,000 population both nationally and in Maine has seen consistent decline in recent decades, though Maine's birth rate has been lower than the nation's for many years. This might be due to both the state's older population as well as its relatively homogenous population; the white non-Hispanic birth rate tends to be somewhat lower than other racial and ethnic groups.

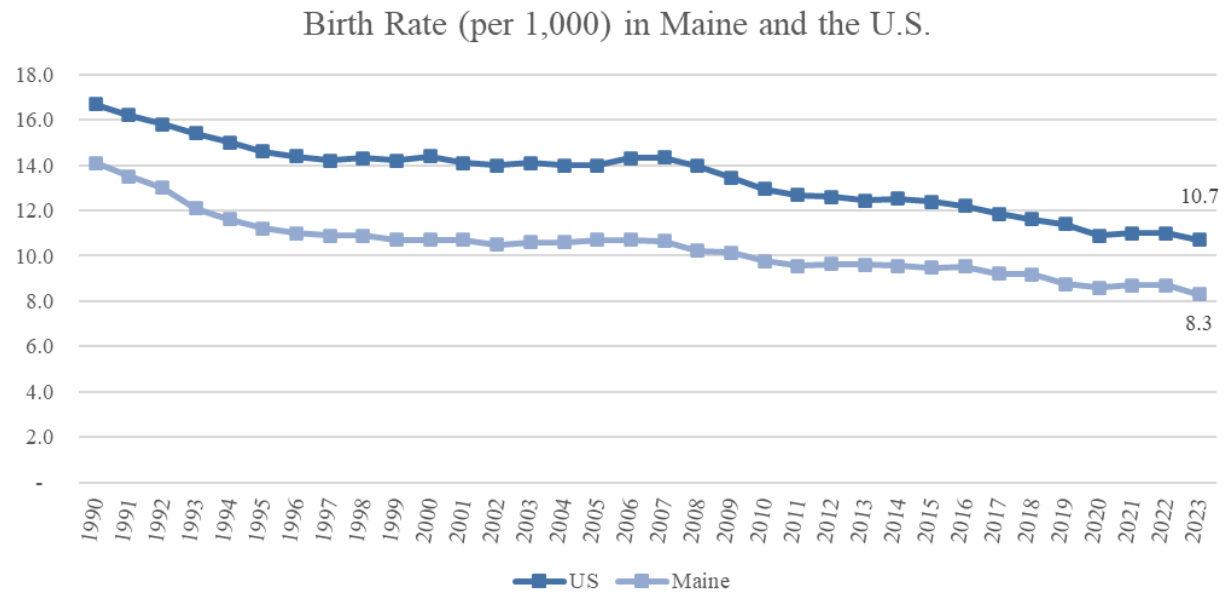

Figure 4. Birth rates in Maine and the U.S.
Source: Maine CDC, Vital Statistics and Population Estimates Program

As previously mentioned, the combination of increasing deaths and decreasing births has led to natural population decline, meaning the state has had more deaths than births in recent years. Maine is one of 17 states that had natural population decline in 2024. In New England, only Connecticut and Massachusetts had positive natural change (more births than deaths).

Despite a natural population decrease of 5,157, Maine's population managed to increase by over 5,300 people in 2024. Maine's population growth has improved in recent years as the final

component of population change has improved: net migration. Net migration is defined as the total number of people who moved to the state, either from other states (domestic in-migration) or other nations (international in-migration) minus the number of people who moved out of the state. Net migration has been ticking up since 2016, peaking in 2021 and 2022 before declining somewhat in the post-pandemic years. This is a change from the first half of the last decade, which showed net negative or neutral migration.

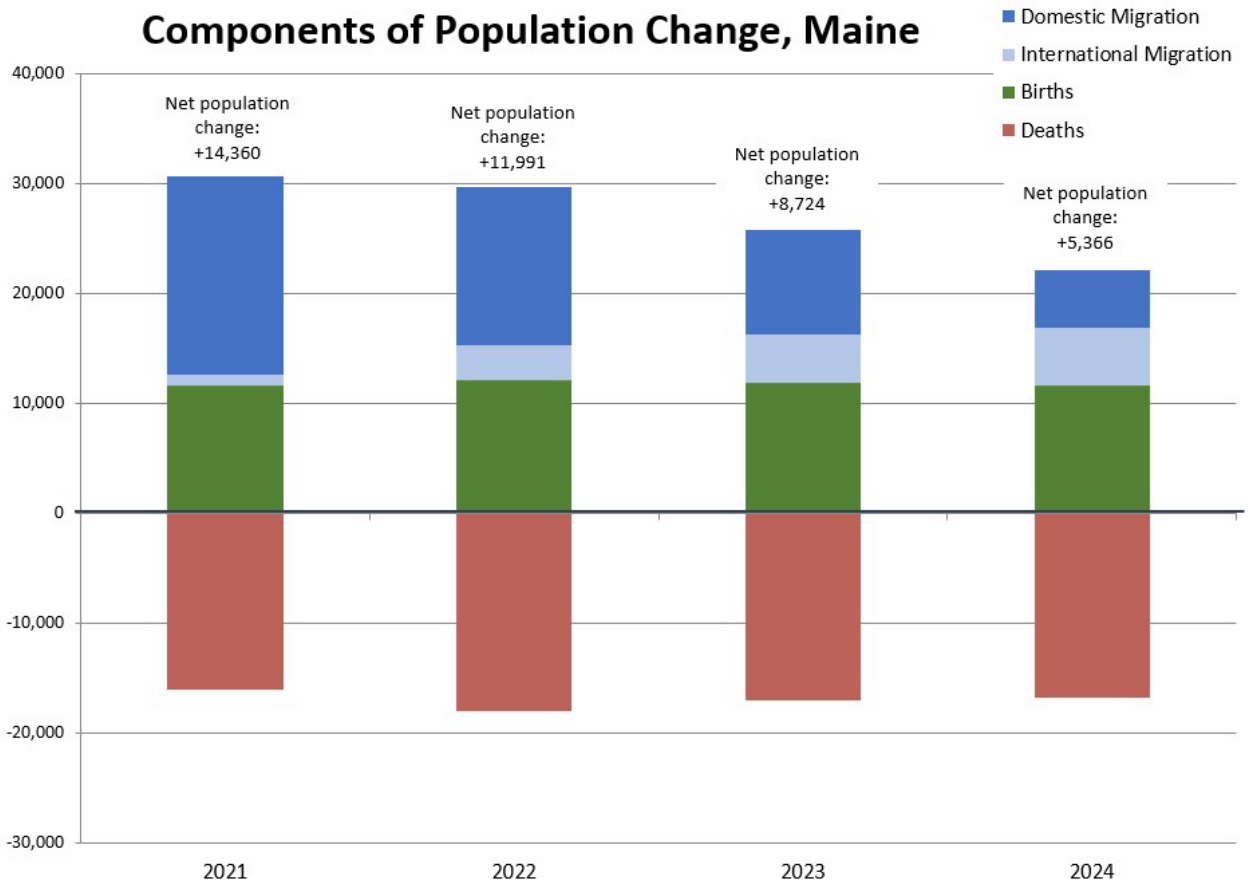

Figure 5. Components of population change in Maine, 2021 – 2024
Source: U.S. Census Bureau, Population Estimates Program

Implications

Population growth and the demographic composition of a region have myriad impacts on its economy. An influx of working-age population tends to lead to better job growth as businesses have a larger pool of qualified workers to draw from. However, disproportionate population growth can have negative effects on a region. For example, some parts of the state may grow too fast – that is to say, faster than their infrastructure capabilities allow. This may lead to lack of affordable housing, traffic congestion, and reduced quality of public services. At the same time, some areas may see their populations decline. These dynamics make a careful understanding of a region's population change critical to providing for its residents.

Maine's age structure poses some challenges for the state. As many members of the Baby Boom generation retire from the workforce, there are fewer workers to fill their jobs. This can be problematic for business and job development. Additionally, these dynamics put stress on what is called the "old-age dependency ratio" for Maine: this means that for each person aged 65+, there are increasingly fewer people of working age for them to depend on. We have begun to see the implications of this and will continue to in the future: shortages of nurses and critical healthcare workers, challenges for working-age adults who are caregivers, and stress on pension and Social Security systems. The onset of COVID-19 in early 2020 brought these challenges to the forefront as Maine grappled not only with the public health implications of a large population of older adults, but also with the impact to the labor force as many who were nearing retirement age decided to leave the labor force earlier than expected to protect their health. There are opportunities, too, as older adults can bring a wealth of experiences to the workplace if businesses are able to keep them engaged beyond traditional retirement age.

For Maine to move forward with economic growth, it must continue to attract and embrace in-migration, both international and domestic, and welcome diverse populations. Currently, Maine is the least diverse state in the United States, with 91.8% of the population identifying as white alone, not Hispanic. However, from 2022-2023, 73% of the state's population gain came from populations other than white, non-Hispanic. To be successful, Maine must not only welcome racially and ethnically diverse communities to the state but also work consistently to make its economy more equitable and inclusive for these populations.

COVID-19: impacts and challenges for forecasting

The COVID-19 pandemic continued to complicate this set of projections. The pandemic resulted in significant short-term changes to migration as well as birth and mortality rates. For example, the way labor markets interact with geographic boundaries changed as the rapid and widespread implementation of remote work made it possible for many workers, particularly those in middle- and high-wage jobs, to work from anywhere. Maine's lower population density may have been attractive to urban dwellers throughout the height of the pandemic, as it posed less risk than crowded city centers, resulting in a substantial increase in migration to Maine in 2021 and, to a lesser extent, in 2022. While migration patterns generally change gradually over time, the COVID-19 pandemic appears to have led to a sudden, drastic change in migration patterns. However, that change appears to have been more of a one-time impact than a long-term shift. While Maine continues to see positive net migration, the rate has slowed from the pandemic-era peak.

The "base year" for the projections is 2022, but in order to best reflect recent trends and exclude one-time impacts from the pandemic, some adjustments were made to the methodology. Specifically, while migration rates for most counties were calculated using an average of 2013-2017 and 2018-2022 trends, five counties (Androscoggin, Kennebec, Knox, Somerset, and Waldo) use 2015-2019 trends and one county (Piscataquis) uses 2019-2023 trends. In addition, survival rates were adjusted to account for excess deaths from COVID-19.

Projections

Total Population

The Office of the State Economist has prepared population projections for the state, counties, and cities/towns. Populations are projected for 2027 and 2032, with additional projections out to 2042 available, and replace the previous set of projections issued in June 2023. County- and state-level projections are given for five-year age cohorts by sex. City- and town-level projections are only available for the total population.

It is important to note that the projections presented here are not exact. Any estimation errors in the data inputs, including recent population estimates, will be incorporated into this and future projections. The county-level model assumes that past birth, death, and migration rates within each cohort will persist into the foreseeable future. The model cannot account for unprecedented future events that may dramatically alter a county's demographic composition, such as a pandemic or changes in technologies, personal choices, or environmental conditions in the coming years that may alter migration behavior or birth and death rates. As such, population projections are more accurate for the near future than distant years and should be updated regularly.

Most importantly, note that some adjustments were made to the methodology to account for migration impacts from the COVID-19 pandemic. Specifically, while migration rates for most counties were calculated using an average of 2013-2017 and 2018-2022 trends, five counties (Androscoggin, Kennebec, Knox, Somerset, and Waldo) use 2015-2019 trends and one county (Piscataquis) uses 2019-2023 trends. In addition, survival rates were adjusted to account for excess deaths from COVID-19.

The county projections are the basis for the state and town projections and thus are the first piece completed. The methodology used for the county projections is the cohort-component method. This widely used methodology utilizes births, deaths, and migrations to advance each age-sex cohort through the projection period. It allows for specific survival and migration rates to be calculated for each age-sex cohort. Using this methodology provides a detailed projection of the county population. A more detailed description of the methodology is provided in the appendix to this report.

Statewide

Maine's total population is projected to increase 3.5% for the decade between 2022 and 2032, with 2.2% growth in the first half and 1.3% in the second. This projection forecasts Maine's population to be 1,438,344 in 2032.

Table 1 Maine's total population and projected change

Maine Statewide Population				
	2022 (historical)	**2027**	**2032**	**2022-2032**
Total Population	1,389,338	1,419,888	1,438,344	
Five-Year Percent Change				
Percent Change		2.2%	1.3%	3.5%

Counties

Fourteen of Maine's 16 counties are projected to see population increases from 2022-2027 and ten are projected to see an increase from 2027-2032. Overall, eleven counties are projected to see population increases from 2022-2032 cumulatively. From 2022-2032, York County is projected to see the greatest rate of population growth, 7.0%, ahead of Sagadahoc (6.3%) and Washington and Waldo (both at 6.2%). Five counties are projected to decline from 2022-2032, with the largest percentage losses projected in Somerset (-2.3%).

Again, these projections are based on recent historical trends: any major changes to migration rates or birth/mortality rates will be reflected in future revisions to the population projections.

Table 2. Maine population projections by county

Maine County Total Population			
	2022 (historical)	**2027**	**2032**
Androscoggin	113,225	114,957	115,976
Aroostook	67,322	67,300	66,774
Cumberland	308,837	316,999	322,973
Franklin	30,595	30,894	30,993
Hancock	56,549	57,450	57,694
Kennebec	126,535	130,284	133,024
Knox	41,179	41,332	41,049
Lincoln	36,285	36,450	36,242
Oxford	59,458	59,736	59,578
Penobscot	154,728	157,363	158,648
Piscataquis	17,403	17,432	17,335
Sagadahoc	37,372	38,859	39,717
Somerset	51,118	50,676	49,959
Waldo	40,255	41,782	42,766
Washington	31,527	32,732	33,480
York	216,950	225,641	232,136

Percent Change in Population			
	2022-2027	**2027-2032**	**2022-2032**
Androscoggin	1.5%	0.9%	2.4%
Aroostook	0.0%	-0.8%	-0.8%
Cumberland	2.6%	1.9%	4.6%
Franklin	1.0%	0.3%	1.3%
Hancock	1.6%	0.4%	2.0%
Kennebec	3.0%	2.1%	5.1%
Knox	0.4%	-0.7%	-0.3%
Lincoln	0.5%	-0.6%	-0.1%
Oxford	0.5%	-0.3%	0.2%
Penobscot	1.7%	0.8%	2.5%
Piscataquis	0.2%	-0.6%	-0.4%
Sagadahoc	4.0%	2.2%	6.3%
Somerset	-0.9%	-1.4%	-2.3%
Waldo	3.8%	2.4%	6.2%
Washington	3.8%	2.3%	6.2%
York	4.0%	2.9%	7.0%

Population by Age

In the next ten years, the generational makeup of Maine's workforce will undergo significant change. In 2032, all of the Baby Boom generation will have aged out of the traditionally defined working-age population (20-64 years old). At this point, Millennials and Gen Z will make up the majority of Maine's working-age population, as workers in Gen X begin to approach retirement age.

As Baby Boomers continue to age, the population pyramid will continue to appear top-heavy as the share of the population 65+ grows while the share of the population under age 18 contracts. Additionally, Maine's female-to-male ratio will gradually increase over time as women statistically live longer than men.

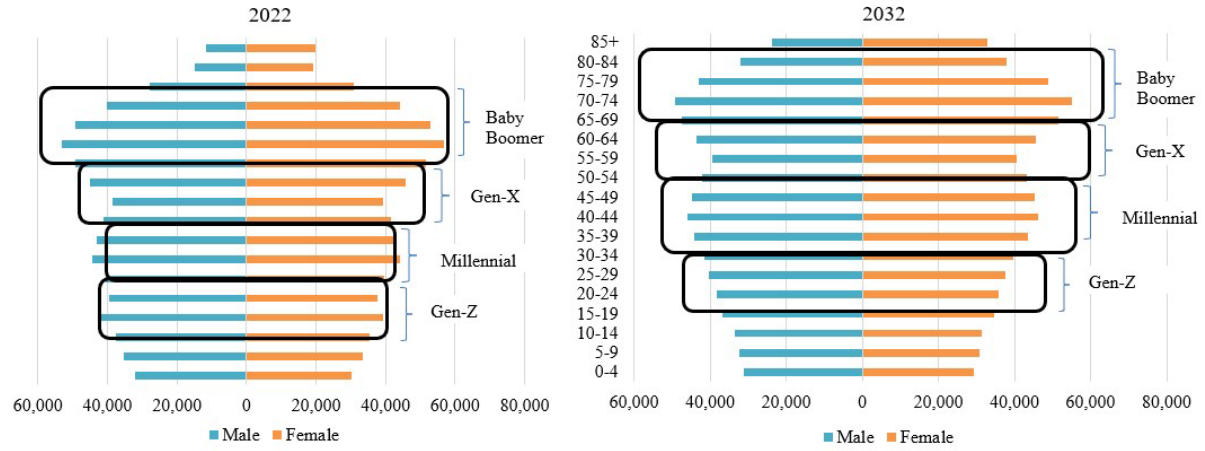

Figure 6. Population pyramids for 2022 and 2032

Note: The years used to define Millennial, Gen Z, and Gen Alpha are not universally agreed upon and are subject to substantial change. The years used in this analysis are based on the best information available at the time of writing, primarily from the Census Bureau and Pew Research Center.

Maine's working-age population will continue to decline by 4.6% from 2022-2032, including the aging-out of Baby Boomers, who will be 68-86 years old in 2032. Both the younger working-age (20-39) and older working-age (40-64) cohorts are also expected to decline during this period, by 3.3% and 5.4%, respectively. Conversely, Maine's 65+ population is expected to grow by 35.6% from 2022-2032.

Table 3. Maine population projections by age cohort

Maine Statewide Population by Age			
	2022 (historical)	2027	2032
0-19 years	284,733	269,372	259,123
20-39 years	331,993	330,491	320,951
40-64 years	461,727	441,346	436,607
65+ years	310,885	378,679	421,663

Percent Change in Population			
	2022-2027	2027-2032	2022-2032
0-19 years	-5.4%	-3.8%	-9.0%
20-39 years	-0.5%	-2.9%	-3.3%
40-64 years	-4.4%	-1.1%	-5.4%
65+ years	21.8%	11.4%	35.6%

Over time, the aging of older generations and the birth of new ones will begin to equalize the generational distribution in Maine. While the Baby Boom generation made up about 28% of Maine's population in 2022, it will drop to just below 25% by 2032. Gen Alpha (in this analysis, defined as being born in the 17-year period from 2013-2030), the generation directly following Gen Z, is projected to grow to around 18% of the population, while Gen Z will fall to about 17% by 2032.

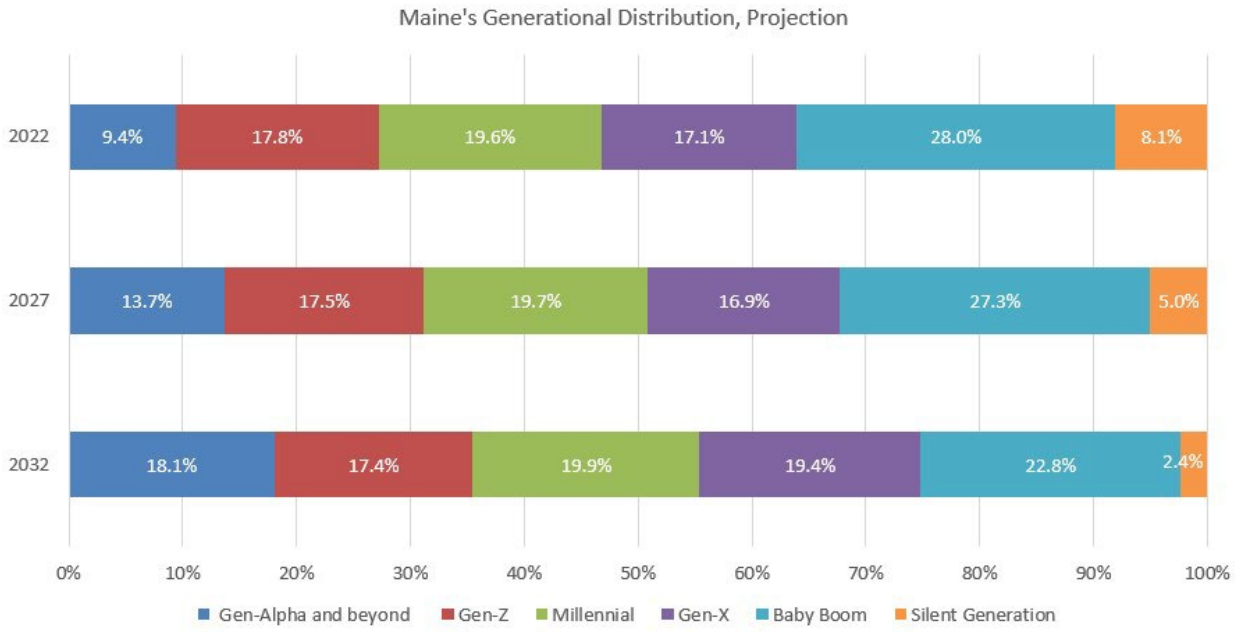

Figure 7. Maine's projected generational distribution, 2022-2032
Note: The years used to define Millennial, Gen Z, and Gen Alpha are not universally agreed upon and are subject to substantial change. The years used in this analysis are based on the best information available at the time of writing, primarily from the Census Bureau and Pew Research Center.

City and Town Population

City/town projections by necessity use a different, less robust methodology due to a lack of detailed source data. Most of the city/town projections were calculated by estimating a constant rate of growth for each town's share of their county population between 2018 and 2022 and then extrapolating this growth into the future. There were a few communities for which projections required off-model adjustments. The off-model adjustments included either: (1) using a linear regression to estimate a constant rate of growth for the town as a share of its county population between 2013 and 2022, (2) or applying the town's share of the county population in 2022 to each year of the forecast.

In all methodologies, the emphasis is on a town's growth as a share of its county's total growth. This is necessary to ensure the town totals within a county equal the total county projection, but this can create some counterintuitive results. Towns with historical population growth in counties that are projected to grow may have projected population declines if that town's share of the county population has been declining (that is, if the other towns in the county have been growing faster than the town in question). City/town projections should be used with caution, particularly in situations where the results seem unlikely. A minimum size threshold was established for publication and any towns with total population below 10 in any year are excluded.

Fifty-eight percent of the cities and towns in Maine are projected to see population growth between 2022 and 2032. The growth rates in these 297 towns range from 0.1% to 39.1%. Five towns are projected to see no change from 2022 to 2032. The remaining 213 cities and towns are projected to see declines ranging from -0.1% to -33.3%.

Unlike other years, where towns with projected population growth were heavily concentrated in the counties that were projected to see growth overall, the 2022 to 2032 projected growth across Maine communities is highly dispersed. For example, while Aroostook and Somerset counties are projected to see declines in population between 2022 and 2032, 43% and 27% of their towns, respectively, are expected to grow. York and Sagadahoc counties, which are projected to see growth overall, are projected to see growth in at least 97% of their towns.

Maine is expected to see some movement in the rankings of largest cities in the coming decade. Scarborough is expected to see almost 16% growth by 2032, replacing Auburn as the fifth-largest city in Maine. Portland (ranked first) and Bangor (ranked third) remain in the top five, though they will see population decline by 2032. Even though these cities have seen recent growth, these cities' shares of their counties have been shrinking, leading to the projected decline. Lewiston (ranked second) and South Portland (ranked fourth) round out the top five. However, as described earlier, city/town projections should be viewed with caution and used in conjunction with local knowledge, as the methodology used here is not as refined as for the counties and states.

Table 4. Population projections for Maine's largest cities

Population in Maine's Five Largest Cities				
	2022 (historical)	2027	2032	2020-2030
Portland	68,361	68,073	67,043	
Lewiston	38,512	40,029	41,328	
Bangor	31,611	31,018	30,103	
South Portland	27,019	28,021	28,724	
Scarborough	23,219	25,044	26,918	
Five-Year Percent Change				
Portland		-0.4%	-1.5%	-1.9%
Lewiston		3.9%	3.2%	7.3%
Bangor		-1.9%	-2.9%	-4.8%
South Portland		3.7%	2.5%	6.3%
Auburn		7.9%	7.5%	15.9%

Conclusion

Maine's median age remains the highest in the nation; however, recent acceleration in net migration, especially among working-age individuals and children, results in overall population growth for Maine in this set of projections despite a condition of natural population decline. These projections assume a continuation of in-migration, although at lower rates than during the peak of the pandemic; for this to be achieved, the state must continue to attract new people and businesses to the state. Over time, Maine will need to attract younger residents to fill the shoes of its Baby Boomer retirees. Just as workers seek out employment opportunities, employers seek out markets that contain a diverse set of available workers. Both sides of this equation are necessary for our economy to thrive. However, simply attracting new people and businesses to the state is not enough to ensure the state's success in the future; Maine must also prioritize equitable access to economic opportunity for all. Maine's future growth will be driven by diversity as migration into the state increases, making demographic projections an even more important part of policy development.

Appendix: Methodology and Caveats

While this report focuses on the 10-year population projections (out to 2032), spreadsheets with projections out to 2042 are available for those needing longer projection periods. Use these out-year projections with caution as the further out the projections look, the less accurate they become.

Populations are projected for 2027 through 2042 in five-year intervals and are given for five-year age cohorts by sex for counties and the state while city and town projections are for total population only.

It is important to note that the projections presented here are not exact. Any estimation errors in the data inputs, including recent population estimates, will be incorporated into this and future projections. The county-level model assumes that past birth, death, and migration rates within each cohort will persist into the foreseeable future. The model cannot account for unprecedented future events, such as a pandemic or changes in technologies, personal choices, or environmental conditions, that may change migration behavior or birth and death rates. As such, population projections are more accurate for the near future than distant years and should be updated regularly. While they provide a forward-looking estimate of the population, they are not a prediction of future population.

Most importantly, note that some adjustments were made to the methodology to account for migration impacts from the COVID-19 pandemic. Specifically, while migration rates for most counties were calculated using an average of 2013-2017 and 2018-2022 trends, five counties (Androscoggin, Kennebec, Knox, Somerset, and Waldo) use 2015-2019 trends and one county (Piscataquis) uses 2019-2023 trends. In addition, survival rates were adjusted to account for excess deaths from COVID-19.

Methodology

The county projections are the basis for the state projections. The methodology used for the county projections is the cohort-component method. This widely-used methodology utilizes births, deaths, and migration to advance each age-sex cohort through the projection period. It allows for specific survival and migration rates to be calculated for each age-sex cohort. Using this methodology provides a detailed projection of the county population.

As with any projections, these are only an estimate of one possible scenario. While the best data and methodology available at the time are used, there are many factors that could change the projections. These projections are based on past trends of birth, survival, and migration rates. The projections do not account for any future changes in these rates. In addition, life expectancy is held constant during the projection time period.

The population is divided into 18 age cohorts: 17 five-year cohorts, beginning with 0-4 and continuing through 80-84, and one open-ended cohort, 85+. When divided among males and females, this gives a total of 36 age-sex cohorts. Because the cohorts are in five-year intervals, it is necessary to advance the projections five years at a time. The population of 20-24 year-olds in

2022 will be 25-29 in 2027. These projections go out to 2042, for four projection data points (2027, 2032, 2037, and 2042).

There were several key inputs to the county projections: the number of births by the age of the mother for each year from 2018 to 2022; the number of deaths by age and sex for each year from 2018 to 2022; the population estimate by age and sex as of July 1 of each year from 2018 to 2022; select college enrollment data for Franklin and Penobscot counties; U.S. population estimates for 2022 and population projections for 2027, 2032, 2037, and 2042. The births and deaths data came from the Office of Data, Research, and Vital Statistics in the Maine Department of Health and Human Services while the population estimates and national projections came from the U.S. Census Bureau. Because detailed intercensal population estimates were not available from the Census, this analysis utilized county-level intercensal estimates calculated by the Office of the State Economist. Headline Census intercensal estimates were used for towns and cities. College enrollment data came from the National Center for Education Statistics and the Maine Community College System.

The first step in the process involved calculating the college population for Franklin and Penobscot counties. For these two counties, the in-migration resulting from college-going populations distorts the overall migration rates and would cause unrealistic results if not adjusted for in the projections. Thus, estimates were made of the number of 18- and 19-year-olds entering colleges and universities in these counties from outside of the counties. These figures were later used to adjust the in-migration rates for the pertinent age cohorts in Franklin and Penobscot county.

The operational birth rate for females in each age cohort is calculated as the five-year average birth rate from 2018-2022, averaged between the current and the next age cohort. This averaging is done because the average female can expect to spend half of the next five years in her current age cohort and half of the next five years in the next age cohort. For example, the operational birth rate for 25-29 year-olds is the average of the 25-29 five-year rate and the 30-34 five-year rate.

Operational survival rates are calculated for each age-sex cohort. The average survival rate for each cohort is calculated as the average number of deaths from 2018 to 2022 divided by the 2020 cohort population and then subtracted from one. To address excess deaths from COVID-19, the number of COVID-19 related deaths for 2021 and 2022 were subtracted from the total deaths for those years before being averaged. While this over-estimates the number of excess deaths from COVID-19, resulting in higher survival rates, it is not significant enough to be detrimental to the overall projections. To get the five-year rate, the average survival rate is raised to the fifth power: mortality being a permanent condition, the probability of surviving more than one year compounds exponentially. As with the birth rates, survival rates are averaged across two subsequent age cohorts.

The oldest and youngest age cohorts are treated somewhat differently. For the youngest age cohort, 0-4 year-olds, the operational survival rate is simply the one-year survival rate raised to the 2.5 power. For the oldest age cohort, 85 and older, the operational survival rate is the five-year survival rate raised to the 1.5 power.

Migration is the most complicated element of the projections. Out-migration and in-migration are calculated separately and applied to different populations to obtain the migration rates.

The out-migration and in-migration rates use an average of 2017 and 2022 5-year estimates of movers to and from counties produced by the U.S. Census Bureau as part of the American Community Survey. For a handful of counties, these estimates resulted in unrealistic migration patterns and an alternative provided a more reasonable solution. The 2019 5-year estimates were used for Androscoggin, Kennebec, Knox, Somerset, and Waldo counties and the 2023 5-year estimates for Piscataquis County. For each cohort, the total preliminary number of out-migrants is multiplied by five to get the number for five years, multiplied by the percentage of total outmigrants that were male/female, and divided by the estimated total number living in the county one year ago. This is the preliminary out-migration rate. The total population of each age cohort for the year prior to the end of the five-year period is multiplied by the preliminary out-migration rate to get the estimated number of out-migrants for each cohort.

Adjustments are made to the 15-19, 75-79, 80-84, and 85+ age cohorts to account for the fact that the ages in the geographic mobility tables are not an exact match for the age cohorts used throughout the projections.

In-migration is calculated in a similar manner. For each age cohort, the number currently living in the county who were living abroad, moved from a different state, or moved from a different county from one year ago were summed to obtain the total preliminary number of in-migrants. This was then multiplied by the percent of female/male in-migrants and multiplied by five before being divided by the estimated total number currently living in the county. Adjustments are made for the incoming college-bound 18-19 year-olds in Franklin and Penobscot county.

Adjustments are again made to the 15-19, 75-79, 80-84, and 85+ age cohorts to account for differences in age groupings between data sets.

The migration rates operate on the concept of "at risk" populations. In each case, the population at risk of migrating is identified and used as the basis for migration rates. To calculate the population at-risk of migration, the number of in-migrants is subtracted from the 2022 cohort population and the number of outmigrants is added.

The survived population for 2027 is calculated by multiplying the 2022 population for each cohort by the corresponding operational survival rate. The number of stayers in the county is calculated by multiplying the survived population by one minus the outmigration rate. The number of outmigrants is calculated by subtracting the stayers in the county for 2022-2027 from the survived population for 2027.

Next the 2027 survived county population is subtracted from the 2027 cohort population from the U.S. Census Bureau's national population projections and then multiplied by the in-migration rate to get the number of in-migrants. This number is added to the stayers in county 2022-2027 to get the 2027 population. Keep in mind that this is the population of the next age cohort for 2027. People who were 20-24 in 2022 are 25-29 in 2027.

For the oldest cohort, the calculated population for the oldest and next-oldest age cohorts are added together. The 85+ cohort contains those who were 85+ in the previous period as well as those who were 80-84 and have aged into the 85+ cohort.

The youngest cohort, those born during the 5-year period, is more complicated to project. The population at risk of giving birth is calculated by adding the stayers in county 2022-2027 to the in-migrants and half of the deaths during the period. This figure is then multiplied by the operational birth rate to get the number of births to each age cohort of mothers. The births across all cohorts are summed and multiplied by the ten-year average percentage of the 0-4 population that is female/male to get the number of female/male births. Each of these are multiplied by the respective operational survival rates to get the 2027 0-4 cohort population. Note that migration is addressed through the mothers' movements.

State-level projections were obtained by adding together the county projections.

City and town population projections are calculated using two pieces of information: (1) the recent historical growth of each town's share of its county's population, and (2) the county population projections.

Historical population growth rates for cities and towns were derived from the population estimates from the U.S. Census Bureau, including intercensal estimates for 2010-2019.

A linear regression analysis was used for most of the projections, estimating a constant rate of growth for each town's share of their county population between 2018 and 2022. This growth rate was then extrapolated into the future, using county population projections to project the population for each town in 2027, 2032, 2037, and 2042. There were some communities whose projections required an off-model adjustment. The two off-model adjustments included either: (1) using a linear regression to estimate a constant rate of growth for the town as a share of its county population between 2013 and 2022 or (2) applying the town's share of the county population in 2022 to each year of the forecast.

This method produces some results that may seem counterintuitive. For example, some towns may be projected to shrink between 2022 and 2027, even though they showed historical population growth and the county is expected to grow from 2022 to 2027. Keep in mind that the population projections for the town are based on changes in its share of the county's population. The town's share of the county population may be declining even though the town and the county have both been growing in population. The town population projections thus rest on the assumption (among many others, including those upon which the county population projections are based) that relative growth rates of towns in a given county will continue into the future.