# Summary of the U.S. Census Bureau's 2022 County-Level Population and Component Estimates for Massachusetts

*Prepared by:*

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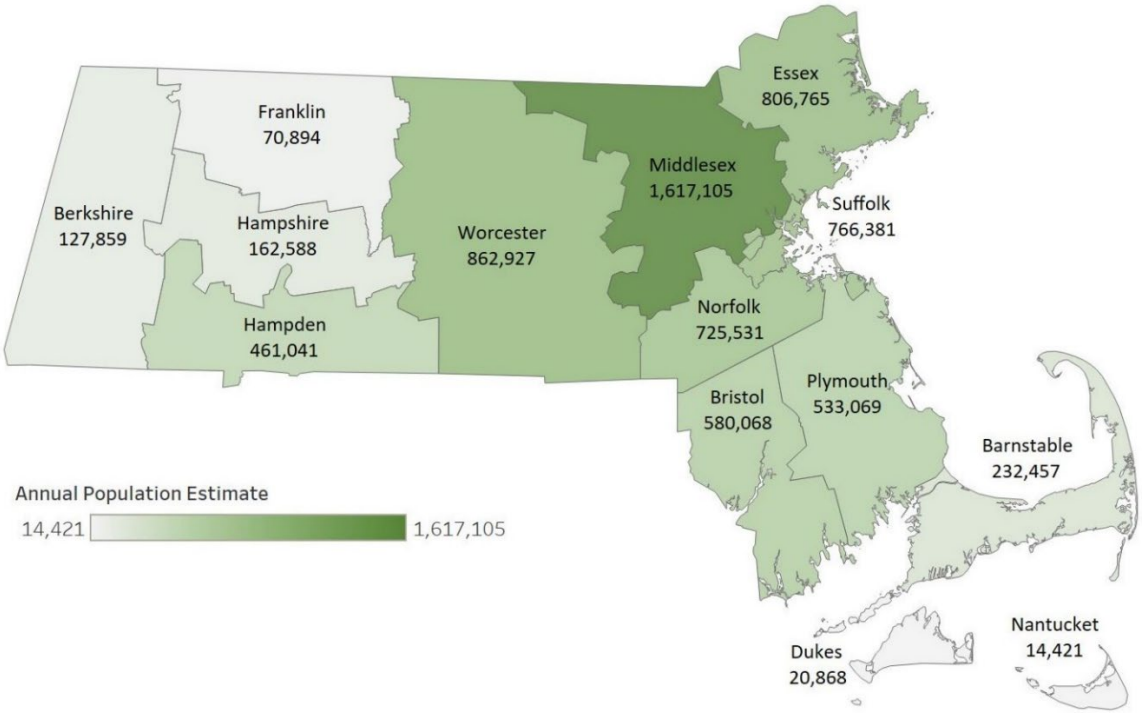
On March 30th, 2023, the U.S. Census Bureau released population estimates for July 1, 2021 through July 1, 2022 for Massachusetts and U.S. counties. The Vintage 2022 estimates are developed from a base that incorporates the 2020 Census, Vintage 2020 estimates, and 2020 Demographic Analysis estimates.[1] The updated methodology was utilized by the U.S. Census Bureau to account for various challenges of the 2020 Census. These challenges include the limitations of the disclosure avoidance system applied to 2020 Census counts, the scheduling delays of census operations caused by the COVID-19 pandemic, and the ongoing evaluation of 2020 Census data as a suitable base population for estimates.

Visit the U.S. Census estimates webpage to learn more about this updated methodology: www.census.gov/programs-surveys/popest.html

Figure 1: Estimated Population by Massachusetts County, July 1, 2022




UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2022 (CO-EST2022-alldata), U.S. Census Bureau, Population Division, March 30, 2023.

[1] "Methodology for the United States Population Estimates: Vintage 2022." Census.gov, US Census Bureau, Dec. 2022. https://www.census.gov/programs-surveys/popest/technical-documentation/methodology.html

**County Population Change: Single-Year Change 2021-2022**

According to the new county-level population estimates released by the U.S. Census Bureau, the greatest numerical increases in Massachusetts counties from July 1, 2021 to July 1, 2022 were seen in Norfolk County at 839 net persons gained; Worcester at 795; and Bristol at 173. Plymouth County was the fourth fastest grower this year with 150 persons added net. In terms of percentage change, the largest net gains were in Norfolk County and Worcester County, both, approximately, with a 0.1% increase from 2021 to 2022.

The slowest growing counties in the 2021-2022 period by number were Suffolk, with an estimated 5,384-person net loss; Hampden, with an 1,808-person net loss; and Berkshire, with an estimated loss of 762 persons. The largest percent decreases were in Dukes (-1.1%), Suffolk (-0.7%) and Berkshire Counties (-0.6%). Population loss in these areas during the 2021-2022 period can be attributed to a number of factors, including a reversion to pre-pandemic trends, as seen in Berkshire and Dukes County. During the pandemic, many people moved to seasonal homes in the Berkshires or Cape and Islands, but the extent to which these moves are permanent is yet to be discovered. Domestic migration into these areas remained robust in 2021, but we now see a reversal of that trend in Dukes and Berkshire Counties. In contrast, another factor in urban areas may be rising housing costs and the relocation of remote workers away from the city. A previous analysis by the New York Times in 2022 reports that counties with more modest housing costs gained in population in 2021, while counties ranking above the 90$^{th}$ percentile for housing stress – a measure of housing costs relative to income – were net population losers, suggesting housing costs have influenced recent population trends.[2]

Table 1 below shows county population estimates, change, and rankings for the July 1, 2021 and July 1, 2022 estimates years, while the following map (Figure 2) displays the annual percent change.

**Table 1. Annual Estimates of Resident Population Change and Rankings for Massachusetts Counties July 1, 2021 to July 1, 2022**

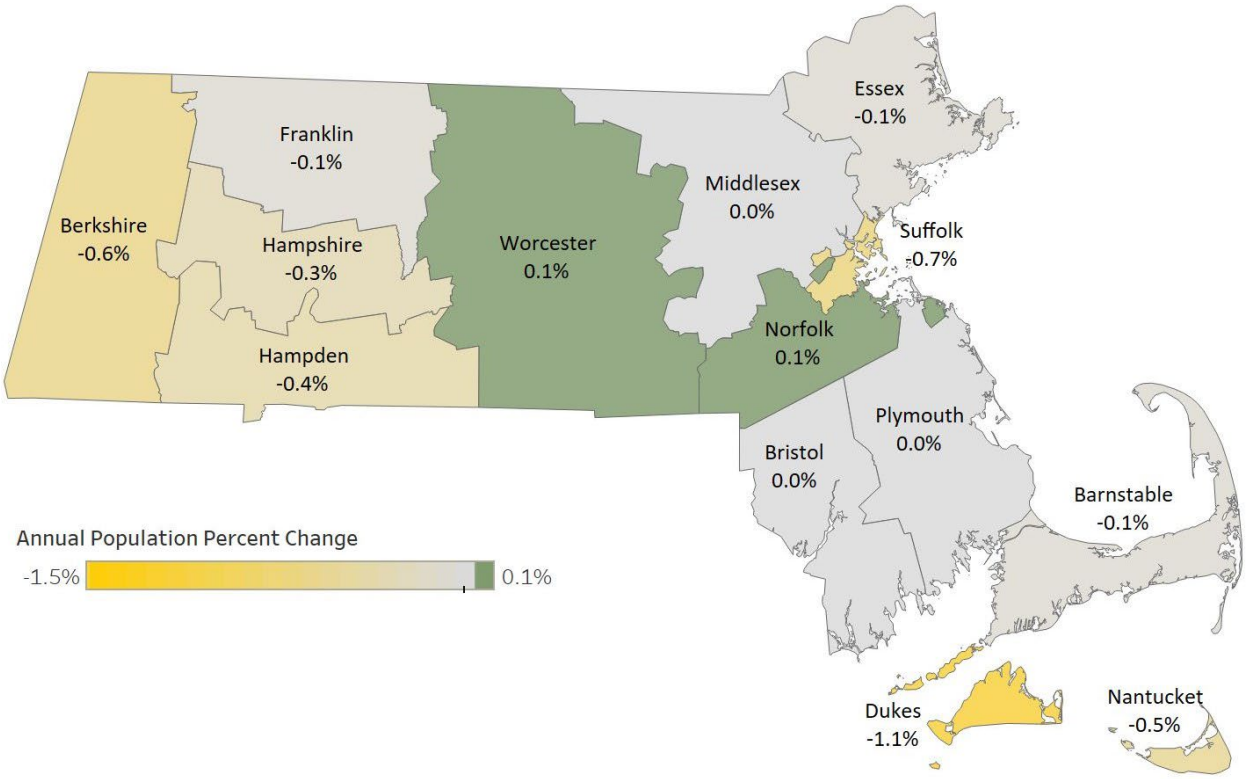
| Geography | July 1 Population Estimate | | Change 2021 to 2022 | | Rank Change 2021 to 2022 | |
|---|---|---|---|---|---|---|
| | 2021 | 2022 | Number | Percent | Number | Percent |
| **Massachusetts** | 6,989,690 | 6,981,974 | -7,716 | -0.1% | (X) | (X) |
| **Barnstable** | 232,594 | 232,457 | -137 | -0.1% | 8 | 6 |
| **Berkshire** | 128,621 | 127,859 | -762 | -0.6% | 12 | 12 |
| **Bristol** | 579,895 | 580,068 | 173 | 0.0% | 3 | 3 |
| **Dukes** | 21,109 | 20,868 | -241 | -1.1% | 9 | 14 |
| **Essex** | 807,485 | 806,765 | -720 | -0.1% | 11 | 8 |
| **Franklin** | 70,943 | 70,894 | -49 | -0.1% | 6 | 7 |
| **Hampden** | 462,849 | 461,041 | -1,808 | -0.4% | 13 | 10 |
| **Hampshire** | 163,088 | 162,588 | -500 | -0.3% | 10 | 9 |
| **Middlesex** | 1,617,099 | 1,617,105 | 6 | 0.0% | 5 | 5 |
| **Nantucket** | 14,499 | 14,421 | -78 | -0.5% | 7 | 11 |
| **Norfolk** | 724,692 | 725,531 | 839 | 0.1% | 1 | 1 |

[2] Gebeloff, Robert, et al. "Cities Lost Population in 2021, Leading to the Slowest Year of Growth in U.S. History." The New York Times, The New York Times, 24 Mar. 2022.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Plymouth** | 532,919 | 533,069 | 150 | 0.0% | 4 | 4 |
| **Suffolk** | 771,765 | 766,381 | -5,384 | -0.7% | 14 | 13 |
| **Worcester** | 862,132 | 862,927 | 795 | 0.1% | 2 | 2 |

UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2022 (CO-EST2022-alldata), U.S. Census Bureau, Population Division, March 30, 2023.

Figure 2: Estimated Annual Percent Change in Population by Massachusetts County, July 1, 2021 to July 1, 2022




UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2022 (CO-EST2022-alldata), U.S. Census Bureau, Population Division, March 30, 2023.

**County Population Change: Cumulative Change 2020-2022**

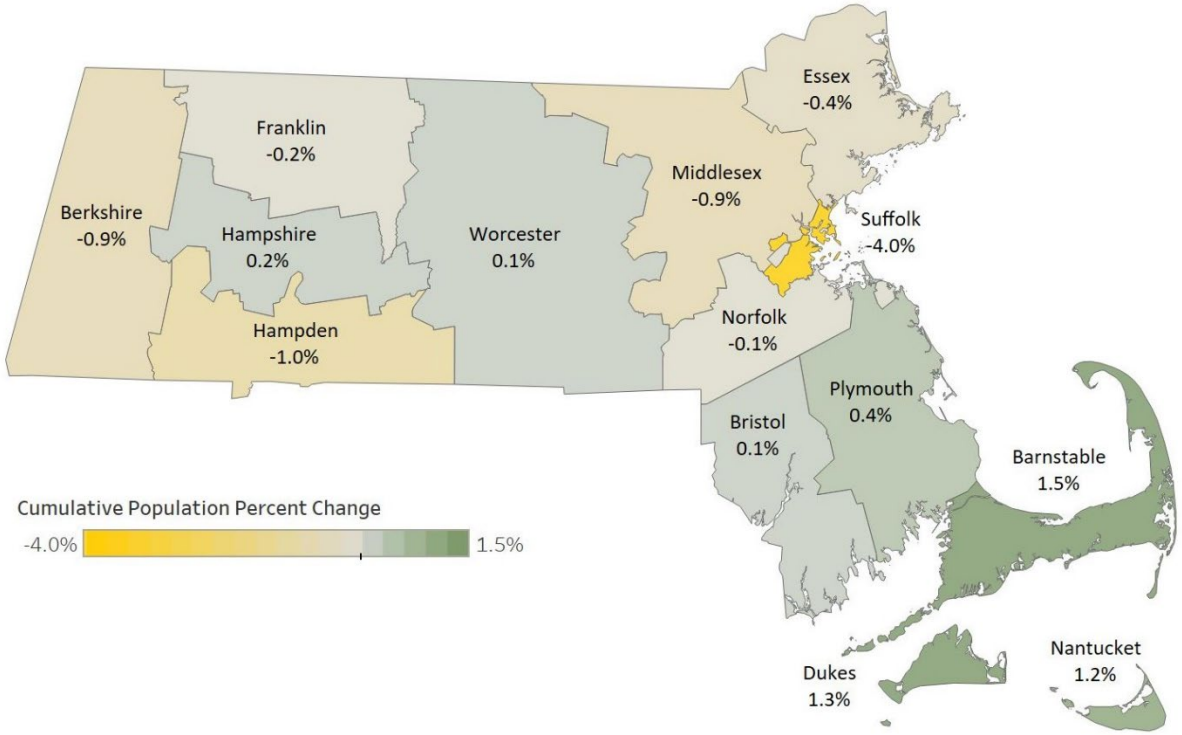
While "single-year change" refers to estimated growth or decline between July 1 of one estimates year to July 1 of the next, "cumulative change" measures the total net change since the Census count date of April 1, 2020.

Table 2, below, shows county population estimates, cumulative change, and rankings from the April 1, 2020 base to the July 1, 2022 estimate, while the map (Figure 3) displays the cumulative percentage change for each county from Census 2020 to the July 1, 2022 estimate. According to these estimates, Barnstable County has been growing the fastest, in terms of percentage growth and numeric growth, since Census 2020 at 1.5%, or 3,453 people, followed by Dukes at 1.3% and Nantucket at 1.2%. By number of people, after Barnstable County, Plymouth County has seen the second highest numeric growth at 2,249 and Bristol is third at 858. Note that in the case of Nantucket and Dukes, their small total population leads to large changes percentage-wise.

| Table 2. Cumulative Estimates of Resident Population Change and Rankings for Massachusetts Counties April 1, 2020 to July 1, 2022 | | | | | | |
|---|---|---|---|---|---|---|
| Geographic Area | Population Estimates | | Change, 2020 to 2022 | | Rank Change | |
| | April 1, 2020 Estimates Base | July 1, 2022 | Number | Percent | By Number | By Percent |
| **Massachusetts** | 7,029,949 | 6,981,974 | -47,975 | -0.7% | (X) | (X) |
| **Barnstable** | 229,004 | 232,457 | 3,453 | 1.5% | 1 | 1 |
| **Berkshire** | 129,036 | 127,859 | -1,177 | -0.9% | 10 | 11 |
| **Bristol** | 579,210 | 580,068 | 858 | 0.1% | 3 | 6 |
| **Dukes** | 20,595 | 20,868 | 273 | 1.3% | 6 | 2 |
| **Essex** | 809,818 | 806,765 | -3,053 | -0.4% | 11 | 10 |
| **Franklin** | 71,035 | 70,894 | -141 | -0.2% | 8 | 9 |
| **Hampden** | 465,834 | 461,041 | -4,793 | -1.0% | 12 | 13 |
| **Hampshire** | 162,305 | 162,588 | 283 | 0.2% | 5 | 5 |
| **Middlesex** | 1,632,002 | 1,617,105 | -14,897 | -0.9% | 13 | 12 |
| **Nantucket** | 14,251 | 14,421 | 170 | 1.2% | 7 | 3 |
| **Norfolk** | 725,999 | 725,531 | -468 | -0.1% | 9 | 8 |
| **Plymouth** | 530,820 | 533,069 | 2,249 | 0.4% | 2 | 4 |
| **Suffolk** | 797,941 | 766,381 | -31,560 | -4.0% | 14 | 14 |
| **Worcester** | 862,099 | 862,927 | 828 | 0.1% | 4 | 7 |

UMass Donahue Institute. Sources: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2022 (CO-EST2022-alldata), U.S. Census Bureau, Population Division, March 30, 2023.

Figure 3: Estimated Cumulative Percent Change in Population by Massachusetts County, April 1, 2020 – July 1, 2022




UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2022 (CO-EST2022-alldata), U.S. Census Bureau, Population Division, March 30, 2023.

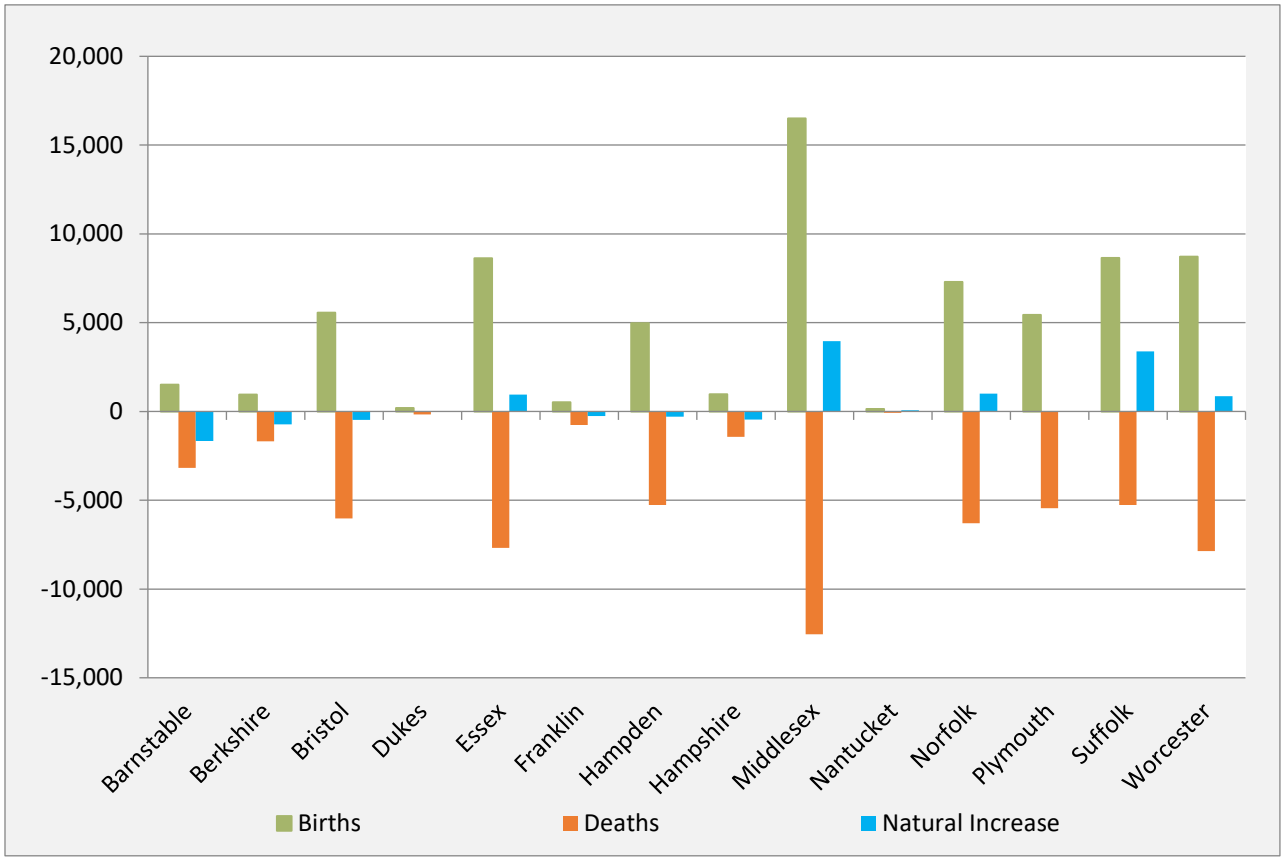
## Components of Change

County-level estimates are produced by the U.S. Census Bureau using the latest data available for the various components of change, which include births and deaths, domestic migration (within the United States) and international migration, and the group quarters population for each county. The following section describes changes in the Massachusetts county-level population estimates due to births, deaths, and migration.

### *Natural Increase*

Natural increase is the net change in population after births and deaths are added together. The following chart (Figure 4) shows the estimated number of births, deaths, and the resulting net natural increase in each county for the period of July 1, 2021 to July 1, 2022. Note that seven counties during this period had a positive net natural increase in which the number of births was greater than the number of deaths. These counties were Middlesex (+3,954), Suffolk (+3,375), Norfolk (+1,007), Essex (+942), Worcester (+860), Nantucket (+62), and Dukes (+18). Counties with the largest negative net natural increase were Barnstable (-1,672), Berkshire (-736), Bristol (-479), and Hampshire (-455).

Figure 4. Estimated Births, Deaths, and Natural Increase by Massachusetts County, 2022



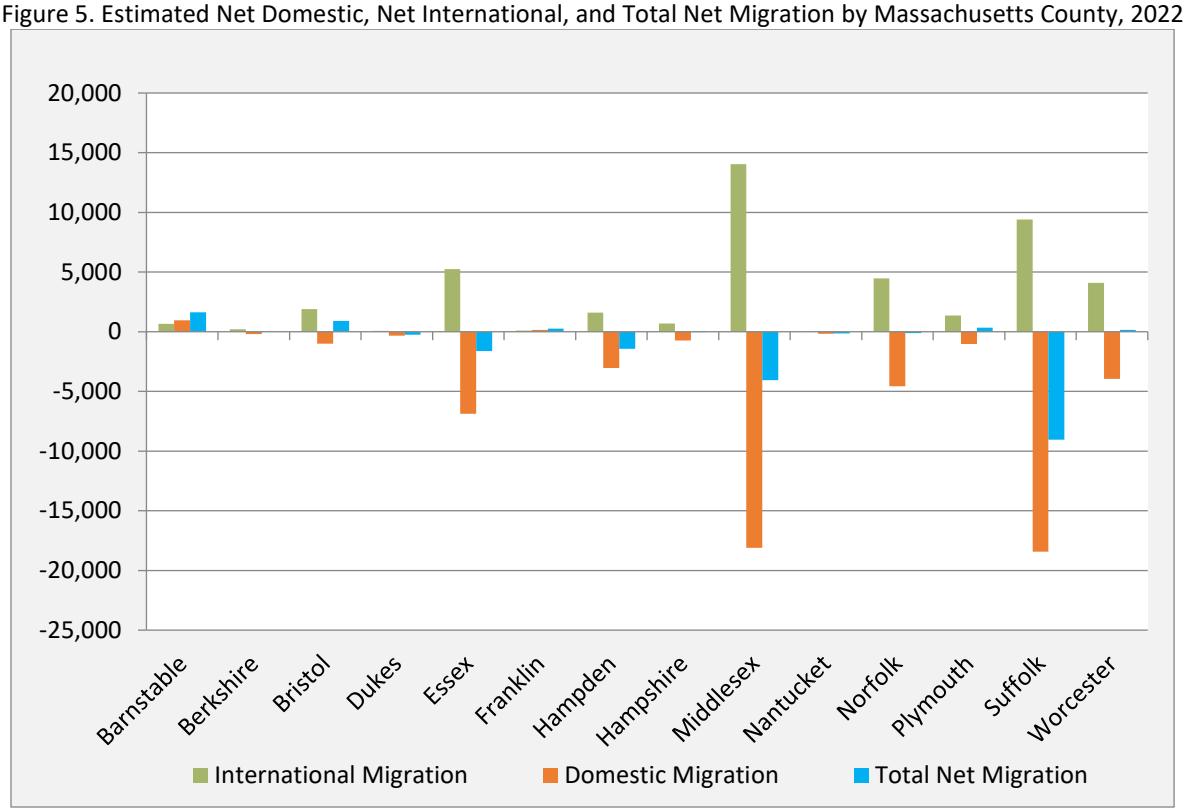

UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2022 (CO-EST2022-alldata), U.S. Census Bureau, Population Division, March 30, 2023.

***Migration***

In the estimates process, *net international migration* measures in- and out-migration between a county and places outside the U.S. These numbers represent estimates produced by the U.S. Census Bureau's analysis of American Community Survey data on the foreign-born population and other data sources. *Domestic migration*, sometimes called *internal migration*, measures movement from one county to another within the U.S. To estimate this component, the U.S. Census Bureau uses a combination of IRS data on tax filers and Medicare enrollment data. The sum of these two types of migration, international and domestic, equals the *total net migration*.

The following chart (Figure 5) shows the international, domestic, and total net migration estimates for each Massachusetts county for the period of July 1, 2021 to July 1, 2022. Note that almost all Massachusetts counties—12 out of 14—show negative domestic migration, meaning populations have moved from these counties to other counties within the U.S. In some counties, however, the negative domestic migration is somewhat offset by international immigration. For instance, Worcester, Plymouth, Bristol, and Berkshire counties' negative domestic migration is offset completely for a positive net migration. Barnstable and Franklin counties have both a positive domestic and international migration, but have a negative natural increase, leading to slight population declines. International migration has made a strong comeback in the V2022 estimates series for Massachusetts, with more than triple the number of international migrants coming to the state in 2022 compared to 2021. However, the domestic outmigration figure still outweighs the influx of international migration between July 1, 2021 and July 1, 2022, especially in Middlesex and Suffolk counties with domestic outmigration totals of -18,102 and -18,434, respectively.

Figure 5. Estimated Net Domestic, Net International, and Total Net Migration by Massachusetts County, 2022




UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2022 (CO-EST2022-alldata), U.S. Census Bureau, Population Division, March 30, 2023.

**Detailed Components-of-Change Estimates and Rates**

As described above, component data on births, deaths, domestic migration, and international migration combine together (along with group quarters updates and a "residual" component, not shown) to factor into population change for each county. The following table outlines the numerical change in each of these components for each county. Table 3 shows single-year change from July 1, 2021 to July 1, 2022.

**Table 3. Annual Estimates of the Components of Population Change: July 1, 2021 to July 1, 2022**

| Massachusetts County | Total Population Change [1] | Vital Events | | | Net Migration | | |
|---|---|---|---|---|---|---|---|
| | | Natural Increase | Births | Deaths | Total | International [2] | Domestic |
| Barnstable | (137) | (1,672) | 1,510 | 3,182 | 1,621 | 667 | 954 |
| Berkshire | (762) | (736) | 950 | 1,686 | 30 | 216 | (186) |
| Bristol | 173 | (479) | 5,554 | 6,033 | 892 | 1,905 | (1,013) |
| Dukes | (241) | 18 | 188 | 170 | (263) | 62 | (325) |
| Essex | (720) | 942 | 8,630 | 7,688 | (1,619) | 5,242 | (6,861) |
| Franklin | (49) | (254) | 512 | 766 | 248 | 90 | 158 |
| Hampden | (1,808) | (293) | 4,971 | 5,264 | (1,438) | 1,598 | (3,036) |
| Hampshire | (500) | (455) | 966 | 1,421 | (25) | 699 | (724) |
| Middlesex | 6 | 3,954 | 16,496 | 12,542 | (4,051) | 14,051 | (18,102) |
| Nantucket | (78) | 62 | 143 | 81 | (138) | 42 | (180) |
| Norfolk | 839 | 1,007 | 7,297 | 6,290 | (118) | 4,456 | (4,574) |
| Plymouth | 150 | (26) | 5,429 | 5,455 | 336 | 1,366 | (1,030) |
| Suffolk | (5,384) | 3,375 | 8,650 | 5,275 | (9,044) | 9,390 | (18,434) |
| Worcester | 795 | 860 | 8,723 | 7,863 | 157 | 4,096 | (3,939) |

[1] Total population change includes a residual. This residual represents the change in population that cannot be attributed to any specific demographic component. See Population Estimates Terms and Definitions at http://www.census.gov/popest/about/terms.html. [2] Net international migration (except for Puerto Rico) includes the international migration of both native and foreign-born populations. For population estimates methodology statements, see http://www.census.gov/popest/methodology/index.html.

UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2022 (CO-EST2022-alldata), U.S. Census Bureau, Population Division, March 30, 2023.

The table below displays these same components of change as average rates per 1,000 persons over one year from July 1, 2021 through July 1, 2022. These rates are useful when comparing one county to another.

| Table 4. Estimated Annual Rates* of the Components of Population Change for Single Year July 1, 2021 to July 1, 2022 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Massachusetts County | Total Population Change | Vital Events | | | Net Migration | | |
| | | Natural Increase | Births | Deaths | Total | International | Domestic |
| Barnstable | (0.6) | (7.2) | 6.5 | 13.7 | 7.0 | 2.9 | 4.1 |
| Berkshire | (5.9) | (5.7) | 7.4 | 13.1 | 0.2 | 1.7 | (1.5) |
| Bristol | 0.3 | (0.8) | 9.6 | 10.4 | 1.5 | 3.3 | (1.7) |
| Dukes | (11.5) | 0.9 | 9.0 | 8.1 | (12.5) | 3.0 | (15.5) |
| Essex | (0.9) | 1.2 | 10.7 | 9.5 | (2.0) | 6.5 | (8.5) |
| Franklin | (0.7) | (3.6) | 7.2 | 10.8 | 3.5 | 1.3 | 2.2 |
| Hampden | (3.9) | (0.6) | 10.8 | 11.4 | (3.1) | 3.5 | (6.6) |
| Hampshire | (3.1) | (2.8) | 5.9 | 8.7 | (0.2) | 4.3 | (4.4) |
| Middlesex | 0.0 | 2.4 | 10.2 | 7.8 | (2.5) | 8.7 | (11.2) |
| Nantucket | (5.4) | 4.3 | 9.9 | 5.6 | (9.5) | 2.9 | (12.4) |
| Norfolk | 1.2 | 1.4 | 10.1 | 8.7 | (0.2) | 6.1 | (6.3) |
| Plymouth | 0.3 | (0.0) | 10.2 | 10.2 | 0.6 | 2.6 | (1.9) |
| Suffolk | (7.0) | 4.4 | 11.2 | 6.9 | (11.8) | 12.2 | (24.0) |
| Worcester | 0.9 | 1.0 | 10.1 | 9.1 | 0.2 | 4.7 | (4.6) |
| *Rates per 1,000 average population. | | | | | | | |
| UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2022 (CO-EST2022-alldata), U.S. Census Bureau, Population Division, March 30, 2023. | | | | | | | |

**Shifting Trends**

During the height of the pandemic years, many of the counties that started the previous decade as the strongest growers in the state started to see this growth slow. In this year's estimates release, we are beginning to see the trends of the pandemic starting to return to pre-pandemic patterns. However, as discussed above, overall growth has been small or negative in most counties in Massachusetts. Table 5 below shows the shift in rank annual percent population change by county over the 2010-2022 period.

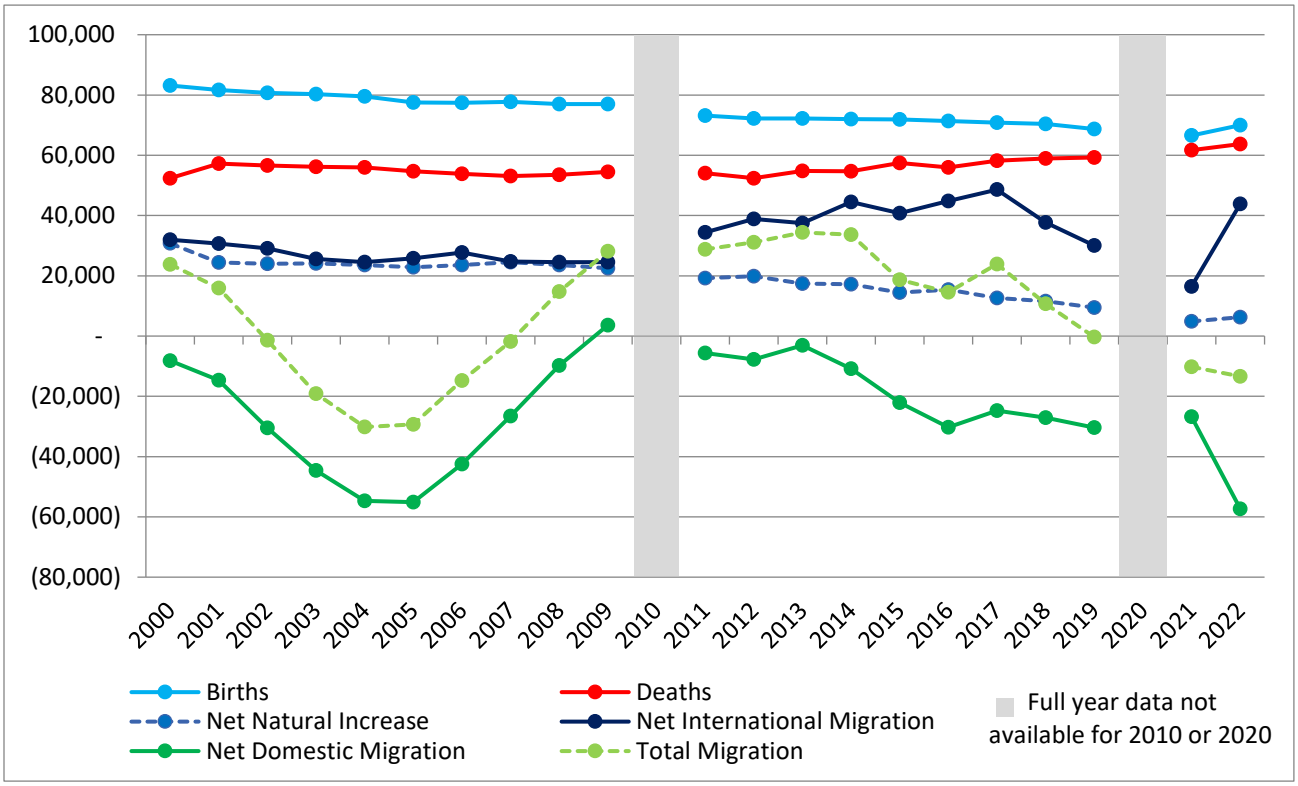
| Table 5. Rank Annual Percent Change by Year and County for Massachusetts Counties, July 1st years 2010-2022 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| County | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 |
| Suffolk | 1 | 1 | 3 | 2 | 1 | 2 | 1 | 6 | 5 | 13 | 14 | 13 |
| Middlesex | 2 | 3 | 4 | 3 | 4 | 4 | 6 | 7 | 6 | 10 | 13 | 5 |
| Essex | 3 | 5 | 5 | 4 | 3 | 7 | 5 | 3 | 7 | 7 | 11 | 8 |
| Dukes | 4 | 4 | 2 | 5 | 11 | 8 | 9 | 8 | 10 | 2 | 2 | 14 |
| Norfolk | 5 | 6 | 6 | 8 | 7 | 6 | 8 | 4 | 3 | 6 | 8 | 1 |
| Hampshire | 6 | 10 | 9 | 11 | 10 | 5 | 13 | 11 | 4 | 14 | 1 | 9 |
| Franklin | 7 | 12 | 13 | 12 | 13 | 12 | 11 | 10 | 13 | 11 | 9 | 7 |
| Worcester | 8 | 7 | 8 | 7 | 8 | 9 | 4 | 5 | 8 | 4 | 7 | 2 |
| Plymouth | 9 | 9 | 7 | 6 | 5 | 3 | 3 | 2 | 2 | 9 | 6 | 4 |
| Hampden | 10 | 11 | 11 | 10 | 9 | 13 | 12 | 9 | 12 | 12 | 12 | 10 |
| Bristol | 11 | 8 | 10 | 9 | 6 | 10 | 7 | 1 | 9 | 8 | 5 | 3 |
| Barnstable | 12 | 14 | 12 | 13 | 12 | 11 | 10 | 12 | 11 | 3 | 4 | 6 |
| Nantucket | 13 | 2 | 1 | 1 | 2 | 1 | 2 | 14 | 1 | 1 | 3 | 11 |
| Berkshire | 14 | 13 | 14 | 14 | 14 | 14 | 14 | 13 | 14 | 5 | 10 | 12 |

Shifting ranks this year can be attributed to both reverting to pre-pandemic trends, as well as some persistent trends within the state. International immigration is rebounding, which is beginning to counterbalance the domestic outmigration that Massachusetts has historically experienced. Additionally, many of the seasonal areas that experienced abrupt and rapid growth from domestic migration, such as in the Berkshires, Cape, and Islands, are starting to see that migration pattern turning around. For example, Dukes and Nantucket Counties experienced a net outflow of residents in 2022 after a period of positive domestic migration during the pandemic, Berkshire County experienced negative domestic migration just balanced by international migration, and Barnstable County saw net domestic migration decreasing significantly compared to the last few years. The population of Hampshire County, which contains a proportionally large college student population, was heavily influenced by the migration of college students away from their schools and back again during the pandemic, and shows large jumps in ranking over the past few years. As universities returned to their regular state of operations, we see the effects of the pandemic on migration diminishing in Hampshire County.

In addition to shifting pandemic trends, both overall migration trends and the aging population profile in Massachusetts also contribute to the change in rankings. While in 2022 international migration was at its highest in Massachusetts since 2017, net domestic migration in Massachusetts persisted in trending downward. Domestic migration into Massachusetts peaked in around 2010 – the same year that the large “Millennial” generation hit a median age of 18 in Massachusetts – but has been generally decreasing since that time and is now a negative component in most Massachusetts counties. Because of these shifting trends, counties that typically attract younger, college-age students will tend to show more domestic loss, as the Millennials age up. Finally, as Massachusetts and the U.S, as a whole, ages, the “natural increase” that occurs when births replace deaths is declining in many places, with half of the counties experiencing a negative net “natural increase” from 2021 to 2022.

Figure 6, below, displays the statewide trends in components of population change over the long term, from 2000 through 2022. [3] An appendix to this report shows these component trends from 2000-2022 by Massachusetts county.

Figure 6. Massachusetts Estimated Components of Population Change 2000-2022




UMass Donahue Institute. Sources: U.S. Census Bureau Population Division, CO-EST2009-04-25, CO-EST2020-ALLDATA, and CO-EST2022-ALLDATA, Release dates March 2010, May 2021, and March 2023.

For more information on the U.S. Census Bureau's Vintage 2022 Population Estimates Release and to see national county data, see: https://www.census.gov/programs-surveys/popest/data/tables.html

To see additional summary reports by the UMDI Population Estimates Program on U.S. Census Bureau estimates releases for Massachusetts, follow this link: https://donahue.umass.edu/business-groups/economic-public-policy-research/massachusetts-population-estimates-program/population-estimates-by-massachusetts-geography

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[3] The 2010 and 2020 values have been excluded from this time series due to the Census Bureau providing only a 3-month period (April-June) for the entire census year, which complicates assessing trends over time.