

# Summary of the U.S. Census Bureau's 2021 County-Level Population and Component Estimates for Massachusetts

*Prepared by:*

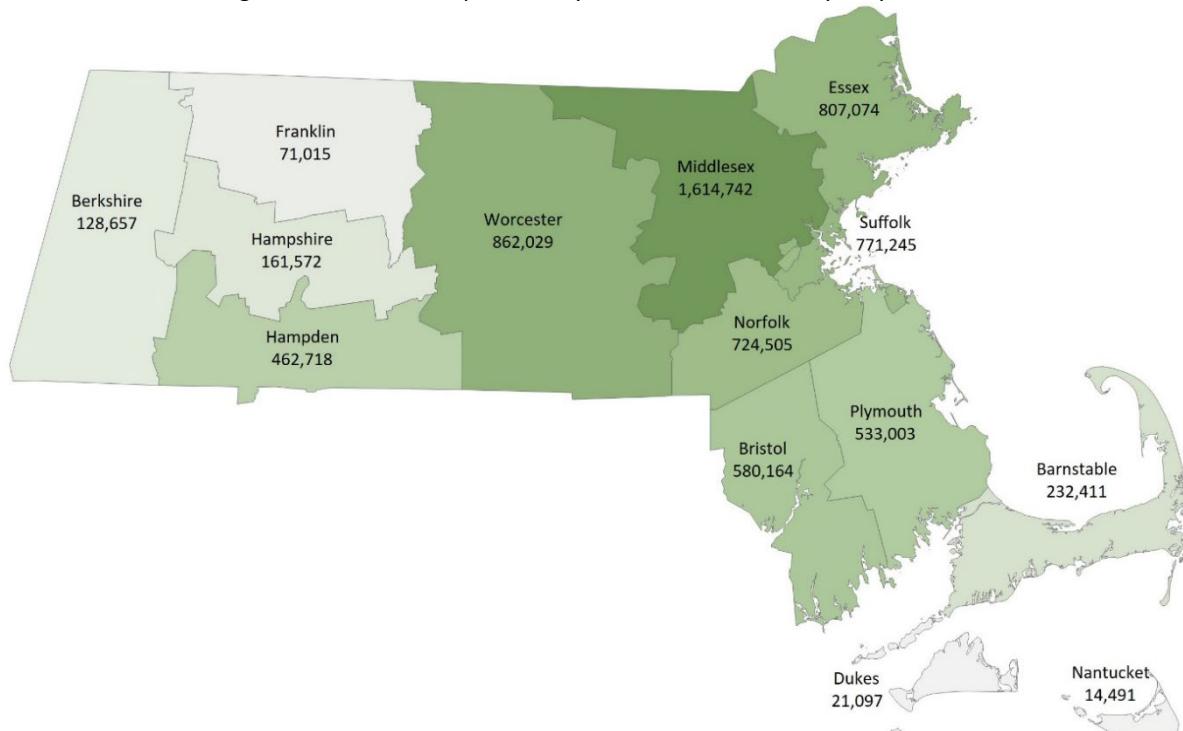
UMass Donahue Institute  
Economic and Public Policy Research  
Population Estimates Program

April 7, 2022

On March 24<sup>th</sup>, 2022, the U.S. Census Bureau released population estimates for July 1, 2020 through July 1, 2021 for Massachusetts and U.S. counties. The Vintage 2021 estimates were built from a “blended base”, which is 2010 Census-based and controlled to elements from the 2020 Census.<sup>1</sup> 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](http://www.census.gov/programs-surveys/popest.html)

Figure 1: Estimated Population by Massachusetts County, July 1, 2021



UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2021 (CO-EST2021-alldata), U.S. Census Bureau, Population Division, March 24, 2021.

<sup>1</sup> “Methodology Updates for the Vintage 2021 Estimates.” Census.gov, US Census Bureau, 23 Nov. 2021.

## County Population Change: Single-Year Change 2020-2021

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, 2020 to July 1, 2021 were seen in Barnstable County at 3,442 net persons gained; Plymouth at 2,024; and Bristol at 992. Worcester County was the fourth fastest grower this year with 568 persons added net. In terms of percentage change, the largest net gains were in Dukes County at 2.5%, followed by Nantucket at 1.7%, Barnstable at 1.5%, and Plymouth rounding to a 0.4% increase from 2020 to 2021. Note that in the cases of Dukes and Nantucket, the small overall population size leads to large changes percentage-wise.

The slowest growing counties in the 2020-2021 period were Suffolk, with population change of -3.0%, or an estimated 24,186-person net loss; Middlesex, with a 14,680-person net loss (-0.9% change); and Hampden, with an estimated loss of 2,190 persons, or -0.5%. Population loss in these areas during the 2020-2021 period can be attributed to a number of factors, such as rising urban housing costs and the relocation of remote workers away from the city. An analysis by the New York Times reports that counties with more modest housing costs gained in population, while counties ranking above the 90<sup>th</sup> percentile for housing stress – a measure of housing costs relative to income – were net population losers, suggesting housing costs have influenced recent population trends.<sup>2</sup>

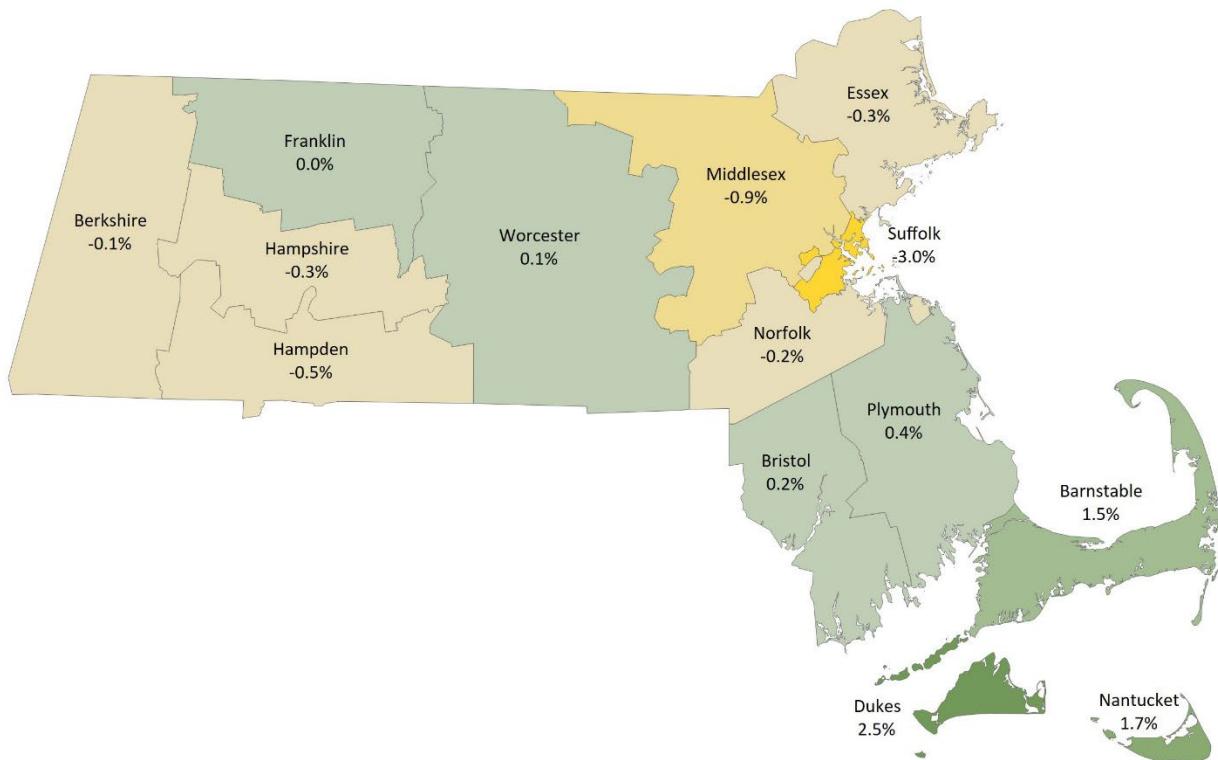
Table 1 below shows county population estimates, change, and rankings for the July 1, 2020 and July 1, 2021 estimates years, while the following map (Figure 2) displays the annual percent change.

Table 1. Annual Estimates of Resident Population Change and Rankings for Massachusetts Counties July 1, 2020 to July 1, 2021						
Geography	July 1 Population Estimate		Change 2020 to 2021		Rank Change 2020 to 2021	
	2020	2021	Number	Percent	Number	Percent
Massachusetts	<b>7,022,220</b>	<b>6,984,723</b>	<b>-37,497</b>	<b>-0.5%</b>	(X)	(X)
Barnstable	228,969	232,411	3,442	1.5%	1	3
Berkshire	128,758	128,657	-101	-0.1%	8	8
Bristol	579,172	580,164	992	0.2%	3	5
Dukes	20,581	21,097	516	2.5%	5	1
Essex	809,218	807,074	-2,144	-0.3%	11	10
Franklin	70,988	71,015	27	0.0%	7	7
Hampden	464,908	462,718	-2,190	-0.5%	12	12
Hampshire	162,064	161,572	-492	-0.3%	9	11
Middlesex	1,629,422	1,614,742	-14,680	-0.9%	13	13
Nantucket	14,244	14,491	247	1.7%	6	2
Norfolk	726,025	724,505	-1,520	-0.2%	10	9
Plymouth	530,979	533,003	2,024	0.4%	2	4
Suffolk	795,431	771,245	-24,186	-3.0%	14	14
Worcester	861,461	862,029	568	0.1%	4	6

UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2021 (CO-EST2021-alldata), U.S. Census Bureau, Population Division, March 24, 2022.

<sup>2</sup> 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.

Figure 2: Estimated Annual Percent Change in Population by Massachusetts County, July 1, 2020 to July 1, 2021



UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2021 (CO-EST2021-alldata), U.S. Census Bureau, Population Division, March 24, 2021.

### County Population Change: Cumulative Change 2010-2021

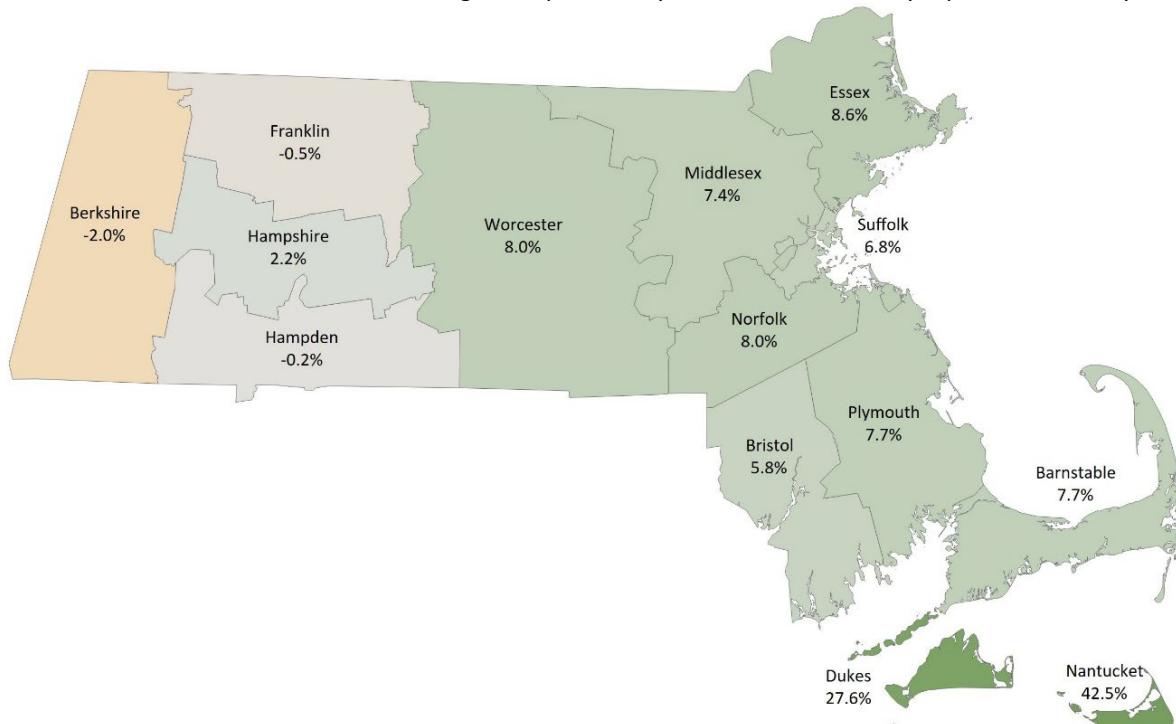
While “single-year change” refers to estimated growth or decline between July 1 of one estimates year to July 1 of the next, “cumulative change” measures the total net change since the Census count date of April 1, 2010.

Table 2, below, shows county population estimates, cumulative change, and rankings from the April 1, 2010 base to the July 1, 2021 estimate, while the map (Figure 3) displays the cumulative percentage change for each county from Census 2010 to the July 1, 2021 estimate. According to these estimates, Nantucket County has been growing the fastest, in terms of percentage growth, since Census 2010 at 42.5%, followed by Dukes at 27.6% and Essex at 8.6%. By number of people, Middlesex County leads the state, growing by 111,635 since 2010, followed by Essex at 63,992 and Worcester at 63,644. Note again that in the case of Nantucket and Dukes, their small total population leads to large changes percentage-wise.

Geography	Population Estimates		Change, 2010 to 2021		Rank Change	
	April 1, 2010	July 1, 2021	Number	Percent	By Number	By Percent
<b>Massachusetts</b>	<b>6,547,788</b>	<b>6,984,723</b>	<b>436,935</b>	<b>6.7%</b>	(X)	(X)
Barnstable	215,883	232,411	16,528	7.7%	8	7
Berkshire	131,274	128,657	-2,617	-2.0%	14	14
Bristol	548,239	580,164	31,925	5.8%	7	10
Dukes	16,535	21,097	4,562	27.6%	9	2
Essex	743,082	807,074	63,992	8.6%	2	3
Franklin	71,381	71,015	-366	-0.5%	12	13
Hampden	463,620	462,718	-902	-0.2%	13	12
Hampshire	158,058	161,572	3,514	2.2%	11	11
Middlesex	1,503,107	1,614,742	111,635	7.4%	1	8
Nantucket	10,168	14,491	4,323	42.5%	10	1
Norfolk	670,951	724,505	53,554	8.0%	4	4
Plymouth	494,933	533,003	38,070	7.7%	6	6
Suffolk	722,172	771,245	49,073	6.8%	5	9
Worcester	798,385	862,029	63,644	8.0%	3	5

UMass Donahue Institute. Sources: Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2020 (CO-EST2020-alldata), U.S. Census Bureau, Population Division, May 04, 2021; Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2021 (CO-EST2021-alldata), U.S. Census Bureau, Population Division, March 24, 2022.

Figure 3: Estimated Cumulative Percent Change in Population by Massachusetts County, April 1, 2010 – July 1, 2021



UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2020 (CO-EST2020-alldata), U.S. Census Bureau, Population Division, May 04, 2021; Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2021 (CO-EST2021-alldata), U.S. Census Bureau, Population Division, March 24, 2021.

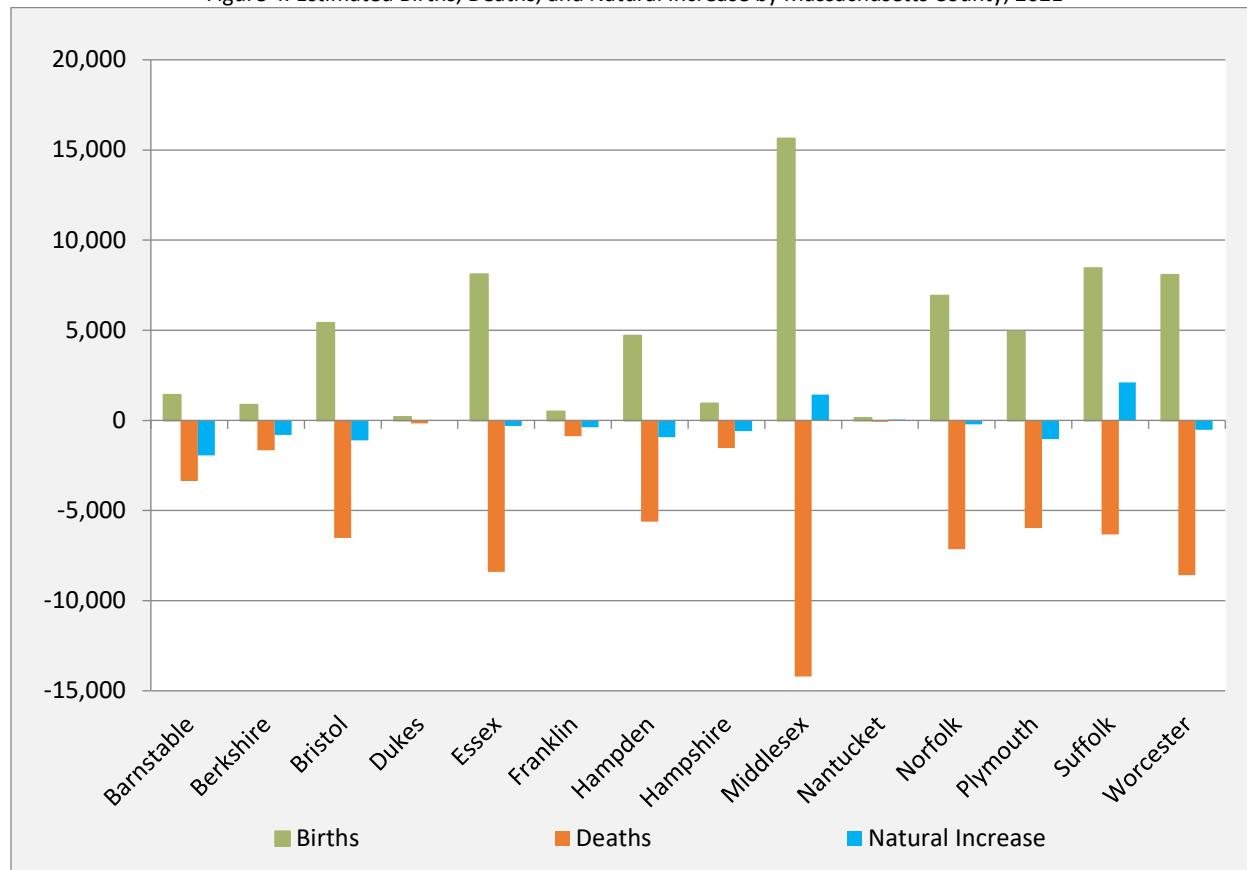
## Components of Change

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, 2020 to July 1, 2021. Note that only four 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 Suffolk (+2,110), Middlesex (+1,424), Nantucket (+48), and Dukes (+15). Counties with the largest negative net natural increase were Barnstable (-1,941), Bristol (-1,104), Plymouth (-1,045), and Hampden (-924).

Figure 4. Estimated Births, Deaths, and Natural Increase by Massachusetts County, 2021



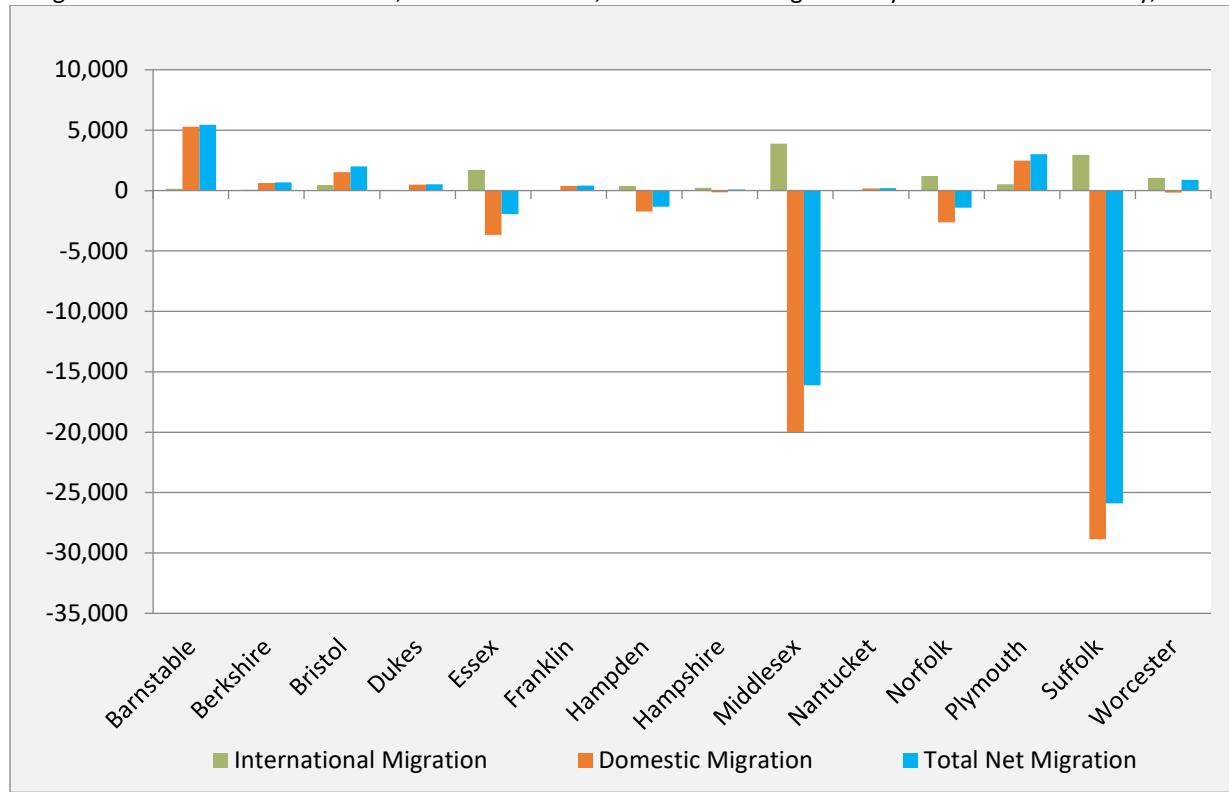
UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2021 (CO-EST2021-alldata), U.S. Census Bureau, Population Division, March 24, 2021.

## 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, 2020 to July 1, 2021. Note that half of Massachusetts counties—7 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 and Hampshire counties' negative domestic migration is offset completely for a positive net migration, while Norfolk and Essex counties have significant international immigration, but not enough to entirely offset the negative domestic immigration. Barnstable, Berkshire, Bristol, Franklin, and Plymouth counties have both a positive domestic and international migration, but all have a negative natural increase. Barnstable County gained the most population from 2020-2021, which can be attributed to its substantial domestic in-migration and positive international migration outpacing its negative natural increase. The domestic out-migration figures between July 1, 2020 and July 1, 2021 demonstrate a large number of residents relocated away from Middlesex (-16,120) and Suffolk (-25,884) counties.

Figure 5. Estimated Net Domestic, Net International, and Total Net Migration by Massachusetts County, 2021



UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2021 (CO-EST2021-  
alldata), U.S. Census Bureau, Population Division, March 24, 2022.

### 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, 2020 to July 1, 2021.

Table 3. Annual Estimates of the Components of Population Change: July 1, 2020 to July 1, 2021							
Massachusetts County	Total Population Change [1]	Vital Events			Net Migration		
		Natural Increase	Births	Deaths	Total	International [2]	Domestic
Barnstable	3,442	(1,941)	1,419	3,360	5,448	152	5,296
Berkshire	(101)	(798)	865	1,663	684	68	616
Bristol	992	(1,104)	5,410	6,514	1,999	462	1,537
Dukes	516	15	182	167	505	16	489
Essex	(2,144)	(301)	8,105	8,406	(1,959)	1,700	(3,659)
Franklin	27	(386)	483	869	408	25	383
Hampden	(2,190)	(924)	4,695	5,619	(1,344)	391	(1,735)
Hampshire	(492)	(600)	937	1,537	86	223	(137)
Middlesex	(14,680)	1,424	15,629	14,205	(16,120)	3,878	(19,998)
Nantucket	247	48	130	82	198	22	176
Norfolk	(1,520)	(216)	6,919	7,135	(1,428)	1,208	(2,636)
Plymouth	2,024	(1,045)	4,924	5,969	3,003	514	2,489
Suffolk	(24,186)	2,110	8,436	6,326	(25,884)	2,966	(28,850)
Worcester	568	(516)	8,063	8,579	892	1,050	(158)

[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 <https://www.census.gov/programs-surveys/popest/technical-documentation/methodology.html>.

UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2021 (CO-EST2021-alldata), U.S. Census Bureau, Population Division, March 24, 2022.

The table below displays these same components of change as average rates per 1,000 persons over one year from July 1, 2020 through July 1, 2021. These rates are useful when comparing one county to another.

Table 4. Estimated Annual Rates* of the Components of Population Change: Year July 1, 2020 to July 1, 2021							
Massachusetts County	Total Population Change [1]	Vital Events			Net Migration		
		Natural Increase	Births	Deaths	Total	International [2]	Domestic
Barnstable	14.8	(8.4)	6.1	14.5	23.4	0.7	22.8
Berkshire	(0.8)	(6.2)	6.7	12.9	5.3	0.5	4.8
Bristol	1.7	(1.9)	9.3	11.2	3.4	0.8	2.6
Dukes	24.5	0.7	8.6	7.9	23.9	0.8	23.2
Essex	(2.7)	(0.4)	10.0	10.4	(2.4)	2.1	(4.5)
Franklin	0.4	(5.4)	6.8	12.2	5.7	0.4	5.4
Hampden	(4.7)	(2.0)	10.1	12.1	(2.9)	0.8	(3.7)
Hampshire	(3.0)	(3.7)	5.8	9.5	0.5	1.4	(0.8)

Middlesex	(9.1)	0.9	9.7	8.8	(10.0)	2.4	(12.4)
Nantucket	17.0	3.3	9.0	5.7	13.7	1.5	12.1
Norfolk	(2.1)	(0.3)	9.5	9.8	(2.0)	1.7	(3.6)
Plymouth	3.8	(2.0)	9.2	11.2	5.6	1.0	4.7
Suffolk	(31.4)	2.7	10.9	8.2	(33.6)	3.8	(37.4)
Worcester	0.7	(0.6)	9.4	10.0	1.0	1.2	(0.2)

\*Rates per 1,000 average population.

UMass Donahue Institute. Source: Annual Estimates of the Resident Population: April 1, 2020 to July 1, 2021 (CO-EST2021-alldata), U.S. Census Bureau, Population Division, March 24, 2022.

## Shifting Trends

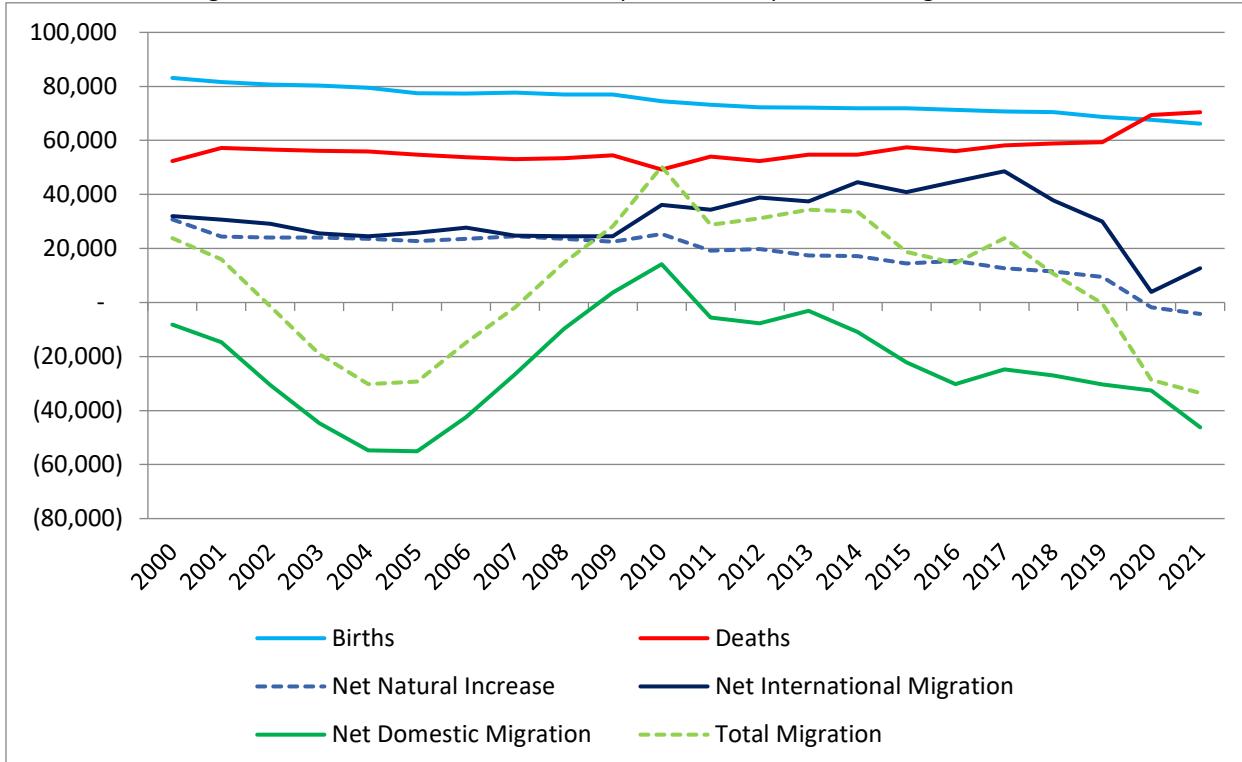
Of note in this year's estimates release is that many of the counties that started the previous decade as the strongest growers in the state are now starting to see this growth slow. Table 7 below shows the shift in rank annual percent population change by county over the 2010-2021 period.

County	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Suffolk	1	1	3	2	1	2	1	6	5	14	14
Middlesex	2	3	4	3	4	4	6	7	6	10	13
Essex	3	5	5	4	3	7	5	3	7	8	10
Dukes	4	4	2	5	11	8	9	8	10	2	1
Norfolk	5	6	6	8	7	6	8	4	3	6	9
Hampshire	6	10	9	11	10	5	13	11	4	12	11
Franklin	7	12	13	12	13	12	11	10	13	11	7
Worcester	8	7	8	7	8	9	4	5	8	4	6
Plymouth	9	9	7	6	5	3	3	2	2	9	4
Hampden	10	11	11	10	9	13	12	9	12	13	12
Bristol	11	8	10	9	6	10	7	1	9	7	5
Barnstable	12	14	12	13	12	11	10	12	11	3	3
Nantucket	13	2	1	1	2	1	2	14	1	1	2
Berkshire	14	13	14	14	14	14	14	13	14	5	8

These shifting ranks may be explained by a combination of both changes in immigration and the aging population profile in Massachusetts. At the state and even the national level, net international immigration has started to slow over the past three years. Many of the counties that traditionally saw large gains or offsets to domestic out-migration are starting to see those gains diminishing. Meanwhile, net domestic migration in Massachusetts is also 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. Meanwhile, counties that tend to attract persons in their late twenties to early thirties may start to see more domestic gains. Finally, as Massachusetts and the U.S. as a whole ages, in many areas the “natural increase” that occurs when births replace deaths also starts to decline in most places.

Figure 6, below, displays the statewide trends in components of population change over the long term, from 2000 through 2021. An appendix to this report shows these component trends from 2000-2021 by Massachusetts county.

Figure 6. Massachusetts Estimated Components of Population Change 2000-2021



UMass Donahue Institute. Sources: U.S. Census Bureau Population Division, CO-EST2009-04-25, CO-EST2020-ALLDATA, and CO-EST2021-ALLDATA, Release dates March 2010, May 2021, and March 2022.

For more information on the U.S. Census Bureau's Vintage 2021 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: <http://www.donahue.umassp.edu/business-groups/economic-public-policy-research/massachusetts-population-estimates-program/population-estimates-by-massachusetts-geography>

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