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Enrollment in Massachusetts Public Schools, COVID and Beyond

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WHITE PAPER
No. 257 | April 2023

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PUBLIC POLICY RESEARCH

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Table of Contents

Executive Summary 4
Introduction 4
Changes in Enrollment Before COVID, 2010–2019 4
Impact of COVID, 2019 to 2022 7
Which Students Left? 8
Where Are the Missing Students? 10
Where Did Enrollment Change When COVID Hit? 12
Moving Forward – Enrollment Forecasts 13
Conclusion 15
Appendix A – Measuring Enrollment 16

Executive Summary

From 2010 to 2019, K–12 enrollment in public schools in Massachusetts was extremely stable, with annual changes averaging less than 2,000 students. Even the extremes were not far apart—enrollment peaked at 942,000 and reached a minimum of 935,000, a difference of less than 1 percent. However, the stability hid substantial local changes, as enrollment shifted across cities and towns: 68 cities and towns lost more than 20 percent of their students and 33 cities and towns saw enrollment rise more than 10 percent. The declines were more common in central and western Massachusetts, while larger city districts were more likely to gain students.

When COVID hit in the winter of 2020, it disrupted enrollment trends. Enrollment fell by 2.8 percent nationwide and by 3.3 percent in Massachusetts. The largest declines occurred in elementary schools, with especially steep drops in pre-kindergarten and kindergarten. The students did not return in the following years, as enrollment barely rebounded in other states and continued to fall slightly in Massachusetts.

For the most part, it is not clear why some districts saw larger declines during COVID. While enrollment fell more among White students, a city or town's size or income did not explain how many students left. There is also no clear geographic pattern to the declines. It is also not clear exactly where the missing students went, although there is incomplete evidence that most of the students switched to homeschooling rather than private schools.

As the impact of COVID recedes, enrollment is likely to fall further. The National Center for Education Statistics projects that by 2030, enrollment in Massachusetts will fall by 40,000 students, or 4.5 percent, with most of the decline coming after 2025. Data on birthrates suggest that the decline is likely to be especially severe in some municipalities in western Massachusetts. Births across the state also fell substantially in 2020 during the worst of the COVID pandemic and have not rebounded since, suggesting that districts should expect fewer students starting in 2025.

Introduction

In 2008 and 2012, Pioneer Institute published reports documenting declines in enrollment in Massachusetts' public schools.[1,2] At the time, enrollment had fallen by about 35,000 students over a decade, or roughly 0.5 percent per year, with especially large drops in western Massachusetts and parts of Cape Cod. This paper examines enrollment trends since that time in three main sections.

The first section continues the analysis from the prior papers and describes changes in enrollment during the 2010s. The second section evaluates the impact of COVID, using data from 2020 through this school year that the Department of Elementary and Secondary Education (DESE) published in December 2022. The final section offers cautious predictions for the next decade.

Changes in Enrollment Before COVID, 2010–2019

In most years, demographics are the primary determinant of local enrollment, as areas with falling or aging populations see declines in school enrollment. While demographics determine the number of children in an area, choices that families make about where to educate children—traditional public schools, vocational schools, charter public schools, private schools, etc.—also affect enrollment patterns.

From 2010 to 2019, statewide enrollment in Massachusetts was very stable, with annual changes averaging less than 2,000 students.[3] Even the extremes were not far apart—enrollment for the decade peaked at 942,000 and reached a minimum of 935,000, a difference of less than 1 percent.

However, the overall stability hid substantial changes, as enrollment shifted across cities and towns: 165 cities and towns lost more than 10 percent of their students and 68 lost more than 20 percent. At the other extreme, 33 cities and towns saw enrollment rise more than 10 percent.

Statewide enrollment in Massachusetts was very stable, with annual changes averaging less than 2,000 students.

In very small towns, an increase or decrease of just a few students can show up as a large percentage change — e.g. Alford and Aquinnah began with fewer than 50 students before Alford lost roughly half of them, while Aquinnah's enrollment grew by 40 percent. However, the large percentage changes were not confined to small towns; among towns that started with at least 500 students, many saw substantial enrollment changes as shown in Table 2 and Table 3.

Table 1: Enrollment Changes 2010–19

Enrollment Changes	# Cities/Towns
>10%	33
0% to 10%	57
–10% to 0%	96
–20% to –10%	97
< –20%	68

Table 2: Towns with > 500 Students with Largest Declines in Enrollment, 2010–2019

City or Town	Initial Enrollment	Decline in Enrollment	% Change
Hubbardston	851	(298)	–35.1%
Newbury	1,025	(341)	–33.2%
Monson	1,505	(492)	–32.7%
Hampden	884	(281)	–31.7%
Ashby	551	(159)	–28.8%
Granby	1,020	(293)	–28.7%
Merrimac	1,225	(332)	–27.1%
Hull	1,228	(332)	–27.0%
Southwick	1,627	(423)	–26.0%
Sandwich	3,721	(962)	–25.9%
Rowley	1,000	(237)	–23.7%
Rockport	903	(214)	–23.7%
Millville	648	(153)	–23.6%
Pepperell	2,149	(507)	–23.6%
Lenox	660	(153)	–23.2%

Table 3: Towns with > 500 Students with Largest Increases in Enrollment, 2010–2019,

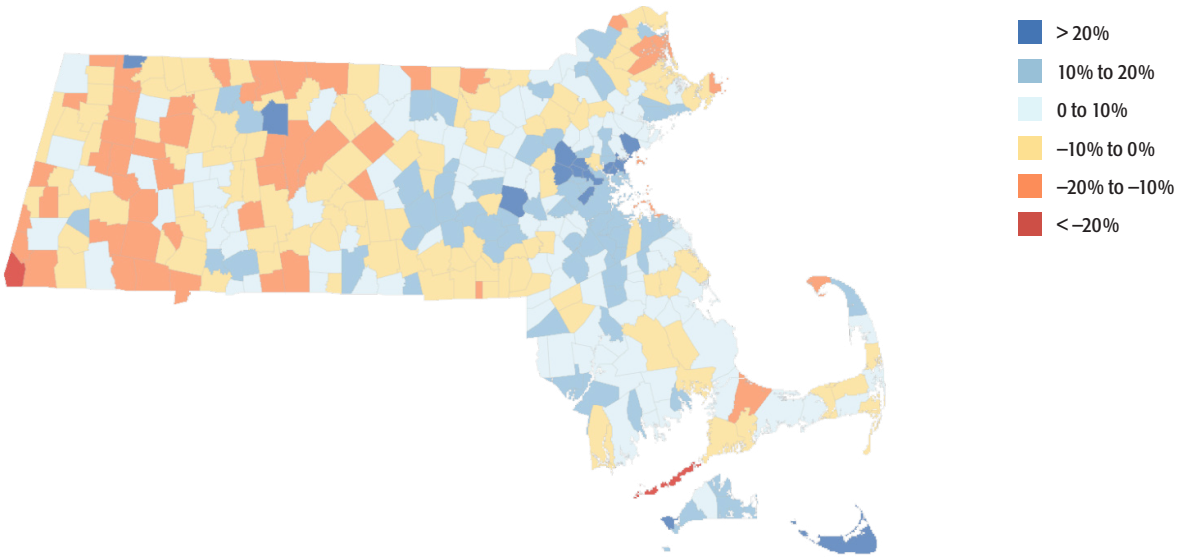
City or Town	Initial Enrollment	Increase in Enrollment	% Change
Nantucket	1,230	434	35.3%
Arlington	4,734	1,503	31.7%
Lynn	13,961	4,126	29.6%
Chelsea	5,902	1,643	27.8%
Revere	6,558	1,686	25.7%
Everett	6,126	1,526	24.9%
Cambridge	6,075	1,444	23.8%
Brookline	6,333	1,316	20.8%
Lexington	6,126	1,221	19.9%
Framingham	8,503	1,662	19.5%
Belmont	3,887	751	19.3%
Waltham	4,831	915	18.9%
Lawrence	14,313	2,318	16.2%
Winchester	4,043	648	16.0%
Milton	3,844	571	14.9%

Changes this large have a profound effect on school districts. In the shrinking areas, schools may have to reduce staffing levels and program offerings and decide how to manage building space. Rapid growth can lead to overcrowding as districts adjust to the influx of students. The growth of course puts pressure on school and municipal budgets as schools hire new staff. While state aid is partially responsive to enrollment growth, the additional aid covers only a portion of higher costs that varies by community. Moreover, the aid doesn't come until a year after new students show up.

The geographic pattern of enrollment changes in the 2010s is shown in Figure 1. The areas with faster growth, in blue, are generally in eastern Massachusetts, particularly in the greater Boston area, and on the islands. The areas with falling enrollment, in orange and red, include central and western Massachusetts, the northeast corner of the state, and pockets scattered elsewhere.

While state aid is partially responsive to enrollment growth, the additional aid covers only a portion of higher costs that varies by community.

Figure 1: Enrollment Growth 2010–2019



Determinants of Changes in Enrollment Before COVID

Small school districts were more likely to lose students in the 2010s. Table 4 divides districts into three groups based on their enrollment in 2010; larger districts grew while smaller ones shrank. The correlation between the district's initial enrollment and growth in enrollment is 0.33, indicating a positive but not terribly strong relationship.

Table 4: Change in Enrollment, 2010–2020, by District Size

2010 Enrollment Category	Number of Towns	Average Enrollment	% Change 2010–2019
< 1000	120	365	–12.0%
1,000 to 2,500	104	1,651	–8.1%
> 2500	127	5,692	3.1%

Beyond the initial size of the district, it is difficult to find factors that explain enrollment patterns in the 2010s. One potential simple explanation is that towns with growing populations have faster enrollment growth. This is partially true; areas with the fastest growing population tended to have higher enrollment growth, but the correlation is only 0.25. Additionally, this explanation begs the question of why an area had faster or slower growth in population.

It might seem reasonable that people would move to areas with higher income and/or lower housing prices. However, there is virtually no correlation between income in 2010 and enrollment growth. Housing prices themselves can be misleading, because having low housing prices in an area with low income may not make the area attractive to families. Instead, it could be that areas with housing prices that were low *relative to local income* would grow faster. However, the ratio of income to housing prices in 2010 has virtually no relationship to enrollment growth over the next decade.

The ratio of income to housing prices in 2010 has virtually no relationship to enrollment growth over the next decade.

One factor from 2010 does successfully predict which areas went on to have faster enrollment growth over the subsequent decade – the birth rate. This might seem obvious, but births do not necessarily lead to enrollment growth because families could leave a town before children are old enough to attend school. The number of births per 100 people in 2010, which averaged 1.1 and ranged from 0 to 2.4, has a reasonably strong positive correlation of 0.49 with enrollment growth over the next decade.[4]

Impact of COVID, 2019 to 2022

COVID disrupted existing enrollment trends across the country. Many families withdrew their children from regular public schools for a variety of reasons. The impact was startling – the nationwide decline was roughly 1.4 million students, or 2.8 percent.[5]

The enrollment decline could have many causes. Some parents might not have felt comfortable sending children to schools where they might be exposed to COVID. Other families may have been unhappy with online learning, or they might have removed children from public schools as a backlash against vaccines and masking.

Regardless of the reason, there appears to be inertia in these decisions—i.e. once students switch to homeschooling or a private school, they may be more likely to stay away from public schools. Perhaps for this reason, the decline was not short-lived. One of the striking facts about the decline is that the students did not return; enrollment grew only 80,000 the year after COVID as the initial effects of the pandemic faded.[6] As *The New York Times* reported, "the pandemic has supercharged the decline in the nation's public school system in ways that experts say will not easily be reversed."[7]

Massachusetts mirrors the rest of the country. After a decade of stability, between October 2019 and October 2020, enrollment fell by 31,000 students, or 3.3 percent.[8] The following year, rather than rebounding slightly as in the rest of the country, enrollment fell an additional 0.4 percent. In the fall of 2022, the missing students again did not return, as enrollment rose by only 2,200 students, or 0.2 percent. As this paper will discuss later, it is not clear what happened to these "missing" students.

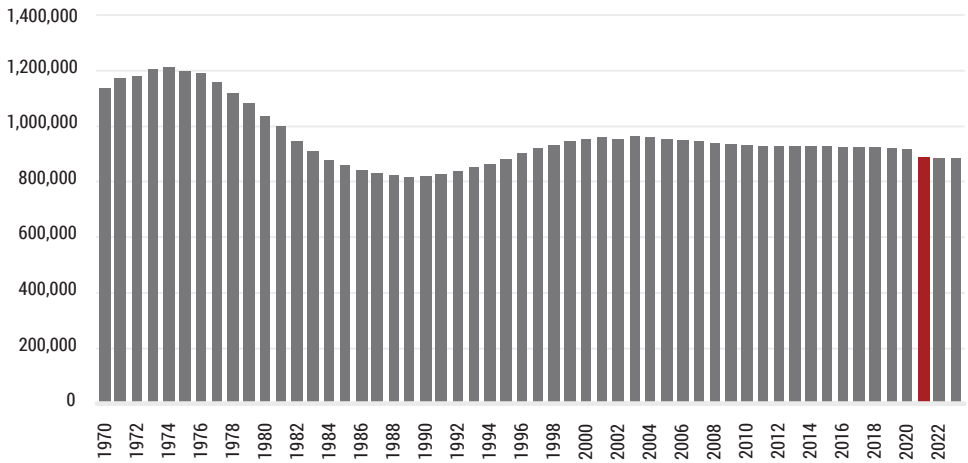
After a decade of stability, between October 2019 and October 2020, enrollment fell by 31,000 students, or 3.3 percent.

Compared to recent enrollment patterns, the impact of COVID looks substantial. As discussed earlier, the average annual change in enrollment in the decade before the pandemic hit was only a few thousand students, which gives perspective to the loss of 31,000 students from fall 2019 to fall 2020.

However, with a longer view the decline due to COVID is not unprecedented. Prior to 2000, enrollment varied significantly from year to year. During the end of the baby boom in the early 1970s, enrollment fell by tens of thousands of students every year. Viewed in this light, the decline during COVID (highlighted) appears as only a small dip that is noticeable primarily because of the recent stability.

Figure 3: K–12 Enrollment in Massachusetts Since 1970

K–12 Public Enrollment, Massachusetts State Totals



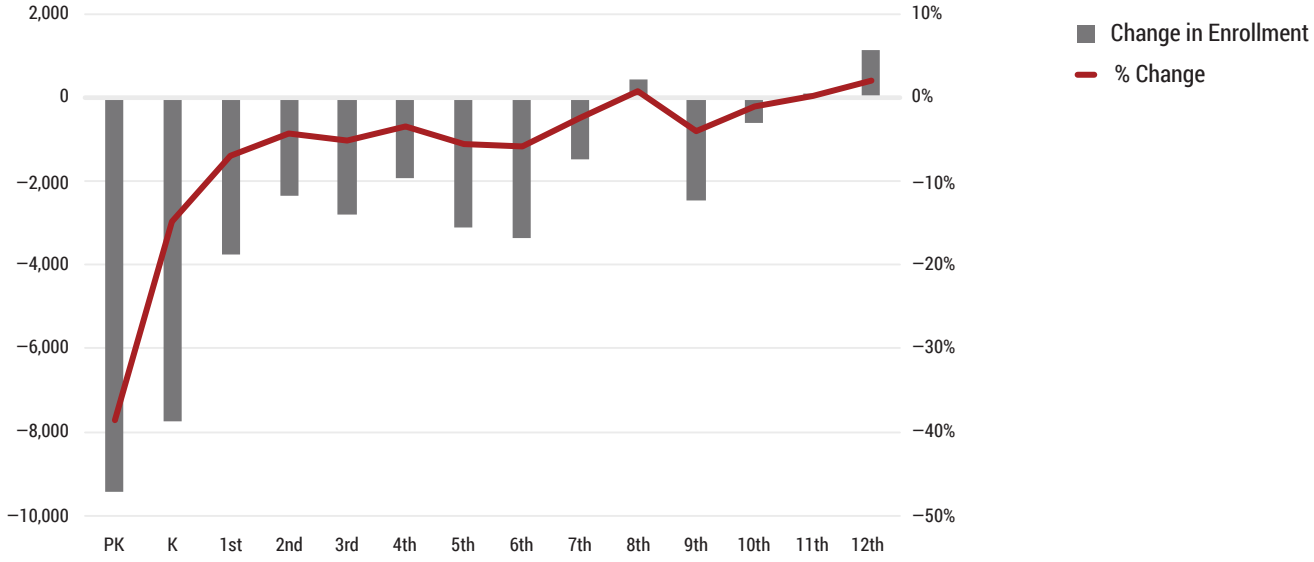
Which Students Left?

While COVID reduced public school enrollment by about 3 percent, the decline was uneven. Research early in the pandemic showed that the decline was driven in large part by a drop in the number of young students.[9] As NPR reported, "the enrollment drops are especially noticeable in kindergarten and pre-K."[10] This pattern seems reasonable if it was easier for parents to hold a young child out of kindergarten or pre-K than to remove a student who was already attached to their school.

More complete data from the National Center for Education Statistics (NCES) supports the early indications. The Digest of Education Statistics estimates that the portion of three- to five-year-old children in school fell from 66 percent, where it had been for a decade, to 55 percent.

Data from Massachusetts again mirror the nationwide pattern. As Figure 4 shows, enrollment in elementary and middle school fell more than in higher grades. The drop was especially large among the youngest students, with pre-K enrollment dropping by one-third and kindergarten enrollment falling 12 percent.

Figure 4: Initial Impact of COVID on K–12 Enrollment by Grade, 2019–20 to 2020–21



As described earlier, the following year statewide enrollment fell an additional 0.4 percent before rebounding by 0.2 percent this year. The biggest changes in the early grades have been fully offset—enrollment in P–K and K rebounded slightly after one year and fully after two so that enrollment in 2022–23 is roughly in line with pre-COVID levels. However, enrollment in grades 2–8 continued to fall, with steeper declines in middle school. At the upper grades the pattern in the two years after COVID is mixed, with slight increases in grades 9 and 10 and declines in grades 11 and 12.

The total impact from the initial decline and the smaller changes in the following years, as illustrated in Figure 6 and Table 5, is that enrollment fell across almost every grade. The steepest declines took place in the elementary and middle school grades.

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Figure 5: Change in K–12 Enrollment after Initial Impact of COVID, 2020–21 to 2022–23

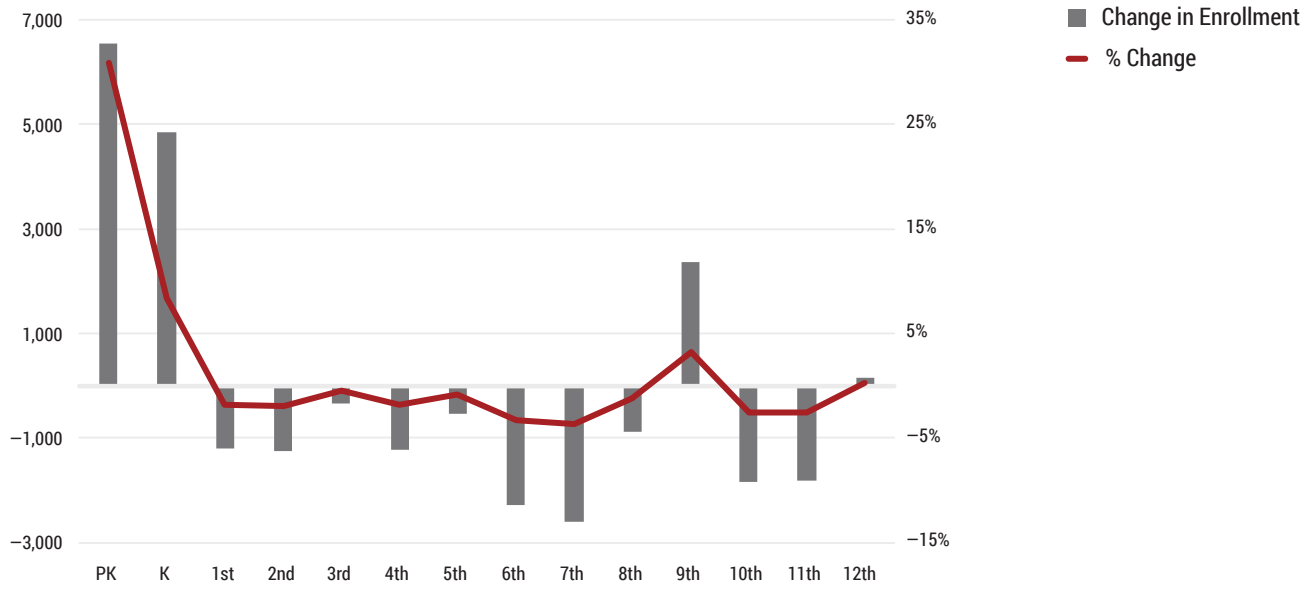

Figure 6: Overall Change in Enrollment by Grade, pre-COVID to Current, 2019–20 to 2022–23

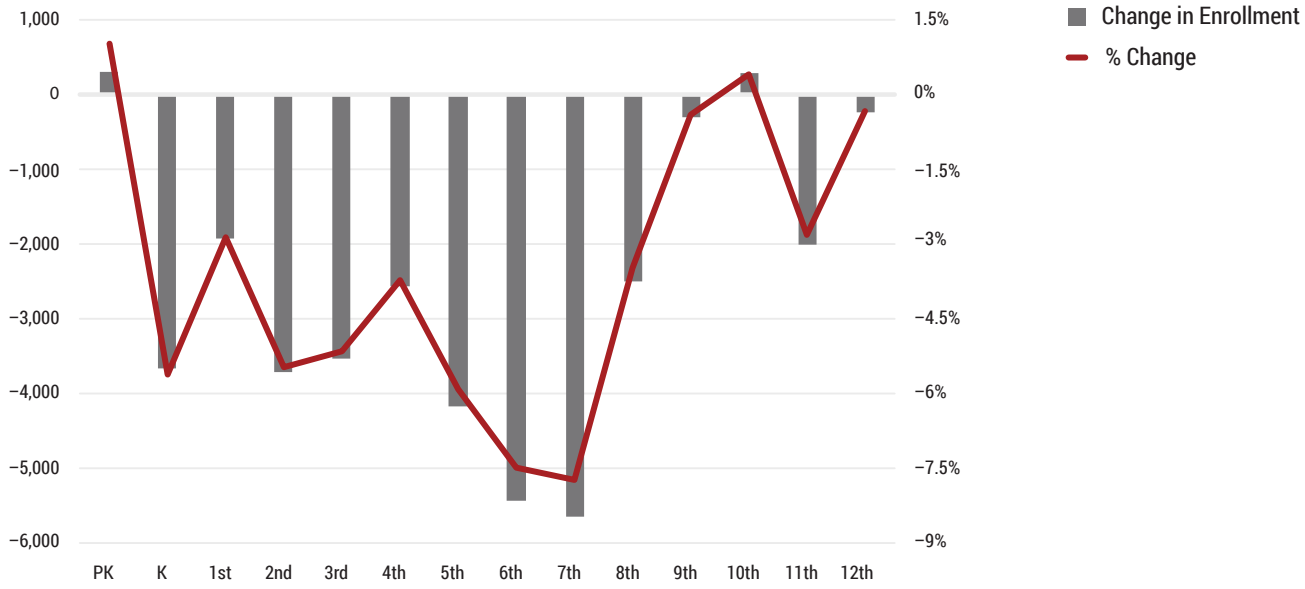

Table 5: Change in Enrollment by Grade, 2019–2022

Grades	Change, 2019–2022	% Change
PK to 8	−32,917	−5.0%
9 to 12	−2,273	−0.8%
Total	−35,190	−3.7%

Declines by Student Characteristics

DESE publishes enrollment data by student characteristics, which provides information about which students were most likely to leave public schools. When COVID first hit, enrollment fell especially quickly among White students, while enrollment for Hispanic students grew, as shown in Table 6. Data by race/ethnicity by grade level, while not entirely consistent with the district totals, shows that the larger declines from P–K to grade 7 showed up for most groups.

Table 6: Change in Enrollment by Race, 2019–2021

	Total	African American	Asian	Hispanic	White	Native American	Native Hawaiian, Pacific Islander	Multi-Race, Non-Hispanic
Change	–34,554	–2,297	–1,571	5,768	–39,414	–69	–35	2,181
% Change	–3.8%	–2.7%	–2.4%	2.9%	–7.4%	–3.8%	–3.8%	6.1%

DESE also publishes enrollment data by other student characteristics, as shown in Table 7. Enrollment fell slightly less for students with disabilities and for English language learners than it did for the overall student population. This could be due to parents being more reluctant to remove children in these groups from school, perhaps because it is more difficult or expensive to homeschool these students or send them to private school.

Table 7: Change in Enrollment for Selected Student Populations, 2019–2021[11]

	Students with Disabilities	English Learners
Change in Enrollment	–2,250	–2,650
% Change	–1.3%	–2.6%

One interesting question is whether COVID had a different impact on poorer students. The number of economically disadvantaged students spiked during the pandemic, rising by 23,000 students or more than 7 percent. However, this increase may reflect the impact of COVID on family incomes rather than the movement of students. Unfortunately, data does not allow an analysis of whether children in families with low income *before COVID hit* were more or less likely to leave school due to the pandemic.

The number of economically disadvantaged students spiked during the pandemic, rising by 23,000 students or more than 7 percent.

Research using survey data from Michigan can shine a light on this question. The authors found that "Kindergarten enrollment declines were concentrated among low income and Black students, while the smaller declines in other grades and for incumbent students were disproportionately among higher income and White students."[12] In other words, younger students leaving school were more likely to be lower income, while older students were higher income. This could be due to the relative ease of homeschooling younger students while older students were more likely to switch to costly private schools.

Where Are the Missing Students?

The disappearance of 30,000 students from Massachusetts schools and 1.2 million from schools around the country begs the question: Where did they go? There are several possibilities: they are not attending school, they are in private school or a school outside Massachusetts, or they are homeschooled.

Unfortunately, data on private and homeschooling does not provide a clear answer. Nationwide estimates typically rely on National Center for Education Statistics data that is several years out of date; the most recent data available from the Private School Universe Survey or the Digest of Education Statistics is from 2019.

Other surveys, such as the Household Pulse Survey that focuses on COVID, provide limited enrollment information and generally show that the national share of students homeschooled increased by about three percentage points when COVID hit, which roughly matches the declines in enrollment at public and private schools. If the three percentage point increase in homeschooling applies to Massachusetts, we would have seen a shift of about 30,000 students (3 percent of about 1 million students) — enough to roughly explain the entire drop in public school enrollment.

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This explanation, that a jump in homeschooling accounted for most of the decline in public enrollment, is supported by research from Michigan.[13] The authors found that most of the decline "came from homeschooling rates jumping substantially among families with children in elementary school" while older students were more likely to switch to private school. The divergence between young students being homeschooled and older students switching to private school had an impact on which types of families pulled their children out of school. As stated earlier, the declines in kindergarten were larger among Black families, while declines among older students were larger among higher income and White families.

In Massachusetts, DESE publishes data meant to track where all local students attend school each year in the "School Attending Children Report" (SACR). The SACR is meant to monitor enrollment at local public schools, regional schools, vocational schools, collaboratives, charter schools, other public schools, as well those who are homeschooled or in private schools. Unfortunately, the SACR may not be reliable, as the publication has both gaps and errors.

For example, in recent years 5–10 districts do not report public school enrollment each year. Moreover, the data that is reported does not match with other enrollment figures — total enrollment in public schools shows up roughly 40,000 students below the October enrollment figures. If local officials do not accurately report public school enrollment, which should be the easiest information to collect, the reported enrollment in private schools and homeschools may be even less reliable. Unfortunately, data for children just starting pre-K or kindergarten may be the least accurate — it may be easier to notice and account for an older student who leaves school than a five-year-old who does not register for kindergarten. Because COVID had a larger impact on young children, the inaccuracies in the SACR may be especially problematic.

Despite its limitations, we can examine the SACR to see what it can tell us about the impact of COVID. The SACR files show public school enrollment falling by about 30,000 students, roughly in line with figures from more reliable data sets. Unfortunately, the data do not provide a clear picture of where these students went.

The reported enrollment for private school shows almost no change — a decrease of 800 students over two years. Homeschool enrollment pre-COVID starts at only 7,000 children, or less than 1 percent of total enrollment. This is significantly less than we would expect given national data on the percentage of students who are homeschooled. This discrepancy could be because homeschooling is less prevalent in Massachusetts or because SACR does not capture these students accurately.

When COVID hit, the number of children reported as homeschooled rose by 9,000 — i.e. it more than doubled — before falling back by 4,000 the following year. The increase of 9,000 is substantial but it can only explain one-third of the decline in public school enrollment.

When COVID hit, the number of children reported as homeschooled rose by 9,000—i.e. it more than doubled—before falling back by 4,000 the following year.

To sum up, it is difficult to determine what happened to the students who did not attend public schools. Data from other states suggest that most of them switched to homeschooling, particularly in early grades. While incomplete, the SACR data partially confirm this explanation.

Where Did Enrollment Change When COVID Hit?

The declines in enrollment from 2019–20 to 2020–21 were not spread evenly across the state. Three hundred nineteen cities and towns saw enrollment decline, while only 32 mostly small towns saw an increase. Table 8 and Table 9 show the cities/towns with the largest declines in enrollment. Small towns were more likely to see large percentage changes, with enrollment falling more than 20 percent in a handful of communities.

Table 8: Largest Enrollment Decline, 2019–20 to 2020–21

City or Town	FY21	Change	% Change
Hawley	36	–9	–24.5%
Middlefield	37	–8	–22.5%
Savoy	64	–14	–21.9%
New Ashford	28	–6	–21.4%
Worthington	123	–21	–17.1%
New Marlborough	145	–22	–15.4%
Leyden	60	–9	–14.2%
Rowe	50	–7	–14.0%
Chesterfield	113	–16	–13.8%
Pelham	151	–20	–13.2%
Warwick	66	–9	–12.9%
West Stockbridge	138	–17	–12.6%
Colrain	191	–23	–12.2%
Wenham	651	–79	–12.1%
Russell	241	–27	–11.2%

Table 9: Municipalities with more than 1,000 students with Largest Enrollment Declines, 2019–20 to 2020–21

City or Town	FY21	Change	% Change
Wilmington	3,466	–373	–10.8%
Bourne	2,197	–228	–10.4%
Brookline	7,649	–790	–10.3%
Montague	1,056	–89	–8.5%
Wellesley	4,878	–411	–8.4%
Marblehead	3,069	–258	–8.4%
Hingham	4,289	–342	-8.0%
Douglas	1,333	–105	–7.9%
Sterling	1,101	–85	–7.7%
Southwick	1,204	–90	–7.5%
Rehoboth	1,712	–125	–7.3%
Dennis	1,119	–82	–7.3%
East Longmeadow	2,643	–186	–7.0%
Dudley	1,825	–127	–6.9%
Scituate	3,022	–202	–6.7%

Families that take their children out of school must have an alternative, whether it be homeschooling, private school, or day care. These options are probably more feasible for higher income families, which suggests that higher income towns might have more students leave school. However, that does not seem to be the case in Massachusetts; the correlation between a town's per capita income and the percentage change in enrollment is a negligible –0.04, and it does not change when we concentrate on larger towns by excluding any with fewer than 500 or 1,000 students.

Unlike in the pre-COVID decade, the size of a city does not seem to be related to the decline in enrollment—both urban and rural areas lost students, as did both large and small districts. Table 10 shows the enrollment change at the 15 largest districts, and the declines in these areas roughly match the overall loss for the state. There is essentially no correlation between the size of a district and the percentage of students it lost.

One characteristic that can help explain the change in enrollment is whether the area was already losing students prior to COVID. Not surprisingly, cities and towns that were growing quickly before the pandemic were slightly less likely to lose students. However, recent growth did not protect all districts, as exemplified by Arlington. In the five years before COVID, Arlington was the fastest growing large district in the state as enrollment grew 14 percent, or 2.6 percent per year. Yet when COVID hit Arlington's enrollment fell by 3.6 percent, which was more than the state average.

In the five years before COVID, Arlington was the fastest growing large district in the state as enrollment grew 14 percent, or 2.6 percent per year. Yet when COVID hit Arlington's enrollment fell by 3.6 percent, which was more than the state average.

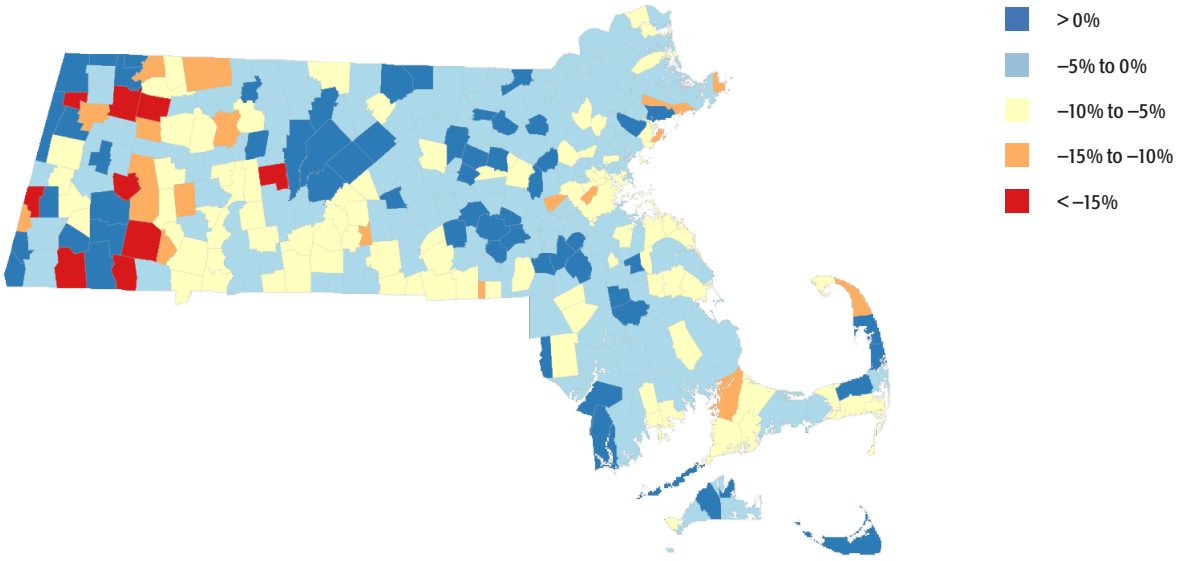
Table 10: Enrollment Change, 15 Largest Districts

City or Town	FY21	Change	% Change
Boston	62,890	–2,186	–3.5%
Springfield	29,551	–407	–1.4%
Worcester	27,442	–902	–3.3%
Brockton	18,436	–331	–1.8%
Lowell	18,120	–246	–1.4%
Lynn	18,087	–931	–5.1%
Lawrence	16,631	–623	–3.7%
New Bedford	15,946	–258	–1.6%
Fall River	13,225	–179	–1.4%
Newton	12,831	–718	–5.6%
Framingham	10,165	–259	–2.5%
Quincy	9,675	–110	–1.1%
Haverhill	9,420	–274	–2.9%
Taunton	8,720	–169	–1.9%
Revere	8,244	–230	–2.8%

Towns with enrollment that continued to grow despite COVID were scattered in western and central Massachusetts, near Route 495, and on the Cape and islands.

The overall impact of COVID on enrollment across the state is shown in Figure 7. There is no obvious pattern. The majority of towns saw public school enrollment decline, with the largest declines mostly in western Massachusetts. Towns with enrollment that continued to grow despite COVID were scattered in western and central Massachusetts, near Route 495, and on the Cape and islands. Both the largest percentage declines and the largest growth are concentrated in smaller towns, which is not surprising because in small populations there are more likely to be outliers.

Figure 7: Public School Enrollment Growth, 2019 – 2021



Moving Forward – Enrollment Forecasts

It is difficult to forecast enrollment in the best of times, and COVID has made it even tougher. The National Center for Education Statistics (NCES) uses sophisticated statistical models to forecast enrollment on the state level, but they do not provide local forecasts.

To get a sense of the accuracy of these forecasts, we can look back at the NCES forecast in 2013.[14] At that time, projections for 2019 (before the impact of COVID) called for nationwide growth of 5.6 percent while the actual figure turned out to be 2.6 percent—i.e. a substantial overestimate. For Massachusetts, the forecast was for a decline of 1.6 percent. This turned out to underestimate enrollment, which was essentially flat during this time.

Moving forward, projections will be even more difficult because of the uncertainty around whether children will return as the impact of COVID fades. In the most recent Digest of Education Statistics, NCES projects that enrollment across the country will fall by 2.1 million students by 2030, or 4.3 percent.[15] The annual projections show relatively flat enrollment over the next few years, perhaps as a post-COVID rebound offsets demographic declines. NCES projects that the bulk of the decline will take place from 2025 to 2030, when schools will lose 1.9 million students or 85 percent of the total loss.

In the most recent Digest of Education Statistics, NCES projects that enrollment across the country will fall by 2.1 million students by 2030, or 4.3 percent

The projections for Massachusetts are very similar—a loss of an additional 40,000 students, or 4.5 percent by 2030, with more than 80 percent of the decline after 2025. NCES also projects that the decline in Massachusetts will be slightly more concentrated in pre-K to grade 8, which suggests that enrollment may continue to fall after 2030 as the smaller cohort works its way into high school.

While the NCES projections can serve as a baseline for the state, as we saw earlier, birth data can provide additional information about the potential changes in enrollment in specific cities and towns. One notable fact about the number of births in 2019 is that despite almost 7 percent growth in population during the 2010s, the number of births fell by 3,700 or 5 percent. Per person, residents in Massachusetts had 11 percent fewer children in 2019 than in 2010. This suggests that enrollment in Massachusetts is likely to decline substantially absent a wave of immigration from other states or countries. The large decline in births also provides context for the NCES estimate of a 4.5 percent decline in enrollment.

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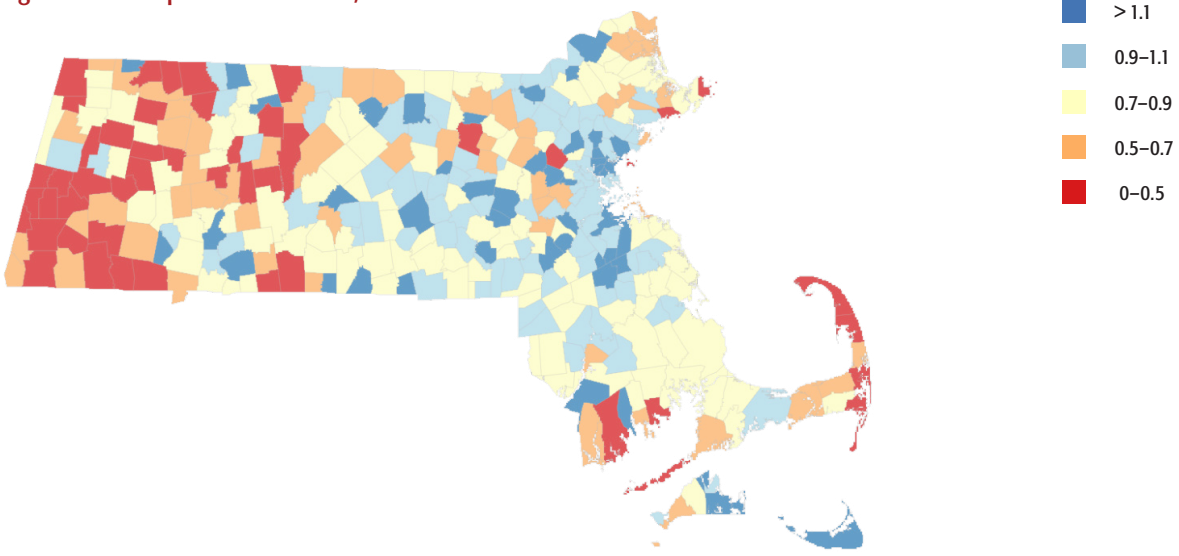
In the short term, the decline's impact on enrollment will be exacerbated by the pandemic. Across the country, birth rates fell an additional 5 percent in 2020 before rebounding by only 1 percent in 2021.[16] Schools should expect even smaller incoming kindergarten cohorts starting in 2025–26.

While low birth rates in Massachusetts predict an upcoming decline in statewide enrollment, geographic birth data can provide information about where the declines are likely to be the largest. As seen in Figure 8, births in western Massachusetts were especially low, while central Massachusetts and the greater Boston area had higher birth rates. Of course, low birth rates do not guarantee a decline in enrollment, as some towns may see enrollment boosted by migration.

Figure 8: Births per 100 Residents, 2019



If enrollment over the remainder of the decade follows the patterns of births from 2019, districts in the western half of the state are likely to see particularly large enrollment declines. This map is similar to Figure 1, which showed enrollment growth during the 2010s. This tells us that areas with declining enrollment in the 2010s also had very low birthrates in 2019, suggesting that enrollment will continue to decline. Given that the NCES projects a decline of 4.5 percent for the state, the drops in some districts are likely to be quite large.

This tells us that areas with declining enrollment in the 2010s also had very low birthrates in 2019, suggesting that enrollment will continue to decline.

Conclusion

During the 2010s, statewide enrollment was very stable in Massachusetts. Despite that stability, roughly half of cities and towns saw enrollment change by more than 10 percent. The gains and losses were distributed so that about 30 mostly larger cities saw enrollment rise, and five times as many small cities and towns lost 10 percent or more of their students. The losses were concentrated in smaller municipalities in western Massachusetts, while the gains clustered around greater Boston.

When the pandemic hit, public schools in Massachusetts lost about 30,000 students, with declines among White students roughly three times as large as for non-White students. Most of the declines occurred in earlier grades, particularly in pre-K and kindergarten, as thousands of students did not show up at school in fall 2020. In the two years since then, enrollment did not recover in Massachusetts or in the rest of the country—the students seem to be gone permanently. While there is evidence that most of the missing students are being homeschooled, the Massachusetts data is not reliable enough to be certain.

When the pandemic hit, public schools in Massachusetts lost about 30,000 students, with declines among White students roughly three times as large as for non-White students.

Moving forward, the U.S. Department of Education forecasts a significant decline in public school enrollment in Massachusetts by 2030. Because of the decline in birth rates when COVID hit, the drop-off may be especially sharp starting in 2025. The data also suggest that enrollment declines may be steeper in western Massachusetts, in areas that may have already seen significant declines over the past decade. Of course, these patterns may change, as construction of new housing or changes in migration may prevent some of the declines. However, vulnerable districts in Massachusetts should be prepared for substantial continued declines over the next few years.

Appendix A – Measuring Enrollment

Measuring enrollment might seem straightforward — simply count the number of students. However, there are several reasons that analyzing enrollment data can be complex. One issue is that it is not clear what geographic unit to use to count students. Most students attend a local public school, and their district coincides with their hometown. However, hundreds of thousands of students in Massachusetts attend regional schools with students from other towns, while other students attend vocational schools or charter schools. One can count these students at the district/school, or at the town level. A slightly more complex situation occurs for school choice programs such as METCO or special education placements, where students from one district are sent to a school in another district.

DESE produces two primary measures of enrollment, the October 1 headcount and the Foundation enrollment. The October headcount is a measure of how many kids are at a school, regardless of who is paying for them or how they got there. The foundation enrollment is a measure of fiscal responsibility.

Table 11: Enrollment Measures in Massachusetts

Measure	Description
October 1 Enrollment	All students at the district, regardless of how they got there. Only available at district level – does not provide place of residence. Allows for analysis of enrollment by grade level or by student characteristics, such as race, income, or special education status.
Foundation Enrollment	Students from each city/town, including those that are sent to other K–12 districts or special education schools. METCO students from Boston or Springfield are not included in the cities' enrollment, but because METCO enrollment is relatively stable this has little impact on trends over time.

This paper primarily uses both sets of data. The October 1 enrollment is useful for state-level figures, as well as for breakdowns by grade or student characteristic. The paper uses the Foundation Enrollment to examine changes at the municipal level and analyze the geographic distribution of enrollment changes.

The municipal enrollment can hide the impact on a local district of changes in enrollment at charter schools — e.g. if municipal enrollment is flat but more students switch to a charter school, enrollment at the local district would fall. These changes will not be discussed in this paper.

In addition to these commonly used measures, DESE also collects separate enrollment information about student enrollment on January 1 across different school types: public, private, and homeschools. DESE publishes this information in the "School Attending Children Report" at https://profiles.doe.mass.edu/statereport/schoolattendingchildren.aspx. While potentially useful, the data are not completely reliable. The clearest example of this is that the count of public school students misses tens of thousands of students who show up in the figures from October.

In addition to these commonly used measures, DESE also collects separate enrollment information about student enrollment on January 1 across different school types: public, private, and homeschools.

Endnotes

1 Ardon, Kenneth, September 1, 2008. "Enrollment Trends in Massachusetts." Pioneer Institute.

2 Ardon, Kenneth, October 12, 2012. "Enrollment Trends in Massachusetts: An Update." Pioneer Institute.

3 There are several measures of enrollment at the district or town level. These measures are explained in Appendix A. Because the focus of this paper is on the geographic changes in enrollment, it will primarily use city/town enrollment from pre-K to grade 12e 7. The differences across enrollment measures generally are small and do not affect trends, but they mean that enrollment totals may not be consistent across tables/graphs. All Massachusetts enrollment data is from the Department of Elementary and Secondary Education website in various reports, primarily from https://profiles.doe.mass.edu/state_report/#Student%20Enrollment%20and%20Indicators.

4 The correlation is slightly higher, 0.53, in a sample restricted to larger towns with more than 500 students in 2010.

5 National Center for Education Statistics, Digest of Education Statistics, https://nces.ed.gov/programs/digest/d22/tables/dt22_203.10.asp?current=yes

6 National Center for Education Statistics, Digest of Education Statistics, https://nces.ed.gov/programs/digest/d22/tables/dt22_203.10.asp?current=yes

7 Nubler, Shawn, May 17, 2022. "With Plunging Enrollment, a 'Seismic Hit' to Public Schools." NY Times, https://www.nytimes.com/2022/05/17/us/public-schools-falling-enrollment.html

8 Individual schools take attendance each day, but statewide enrollment reports primarily reflect data gathered in October of each school year. The discussion of the impact of COVID relies on a comparison of October, 2019 (early in the school year before the school shutdowns in March of 2020) and October, 2020.

9 https://www.chalkbeat.org/2020/12/22/22193775/states-public-school-enrollment-decline-covid

10 https://www.npr.org/2020/10/09/920316481/enrollment-is-dropping-in-public-schools-around-the-country

11 Enrollment by special population files, various years, https://www.doe.mass.edu/infoservices/reports/enroll/default.html

12 Mussadiq, Strange, Bacher-Hicks, and Goodman, August 2022. "The Pandemic's effect on demand for public schools, homeschooling, and private schools." Journal of Public Economics, vol 212.

13 Mussadiq, Strange, Bacher-Hicks, and Goodman, August 2022. "The pandemic's effect on demand for public schools, homeschooling, and private schools." Journal of Public Economics, vol 212.

14 https://nces.ed.gov/programs/projections/projections2021/app_a1.asp

15 https://nces.ed.gov/programs/digest/current_tables.asp

16 https://www.cdc.gov/nchs/products/databriefs/db442.htm

About the Authors

Ken Ardon received a Ph.D. in economics from the University of California at Santa Barbara in 1999, where he co-authored a book on school spending and student achievement. He taught economics at Pomona College before moving to Massachusetts, and from 2000 to 2004, Dr. Ardon worked for the Commonwealth of Massachusetts in the Executive Office of Administration and Finance. He is a professor of economics at Salem State University, where he has taught since 2004. Dr. Ardon is a member of Pioneer Institute's Center for School Reform Advisory Board.

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