

KNOCKING AT THE COLLEGE DOOR

Projections of High School Graduates • December 2020

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Since 1953, the Western Interstate Commission for Higher Education (WICHE) has been strengthening higher education, workforce development, and behavioral health throughout the region. As an interstate compact, WICHE partners with states, territories, and postsecondary institutions to share knowledge, create resources, and develop innovative solutions that address some of our society's most pressing needs. From promoting high-quality, affordable postsecondary education to helping states get the most from their technology investments and addressing behavioral health challenges, WICHE improves lives across the West through innovation, cooperation, resource sharing, and sound public policy.



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Executive Summary

Introduction

At the core of WICHE’s mission to ensure access and excellence in higher education for all citizens of the West, WICHE’s 10th edition of *Knocking at the College Door* provides detailed data and projections of the number of high school graduates for the nation, four geographical regions, and the states, including public high school graduates by race/ethnicity. For over 40 years, these projections of high school graduates have been widely used by educators, policymakers, institutional leaders, and others throughout the education system for planning, evaluation, and setting strategic directions.

As these projections are being released in the midst of the COVID-19 pandemic with states and the entire education sector facing significant budget concerns, the need for timely and accurate data is greater than ever. Although these projections do not account for the impact of the pandemic on K-12 enrollments and graduations – because data for the high school graduating Class of 2020 have not yet been reported by states – they still show important trends and are an essential benchmark for monitoring and understanding the impact that the pandemic has on different groups of students.

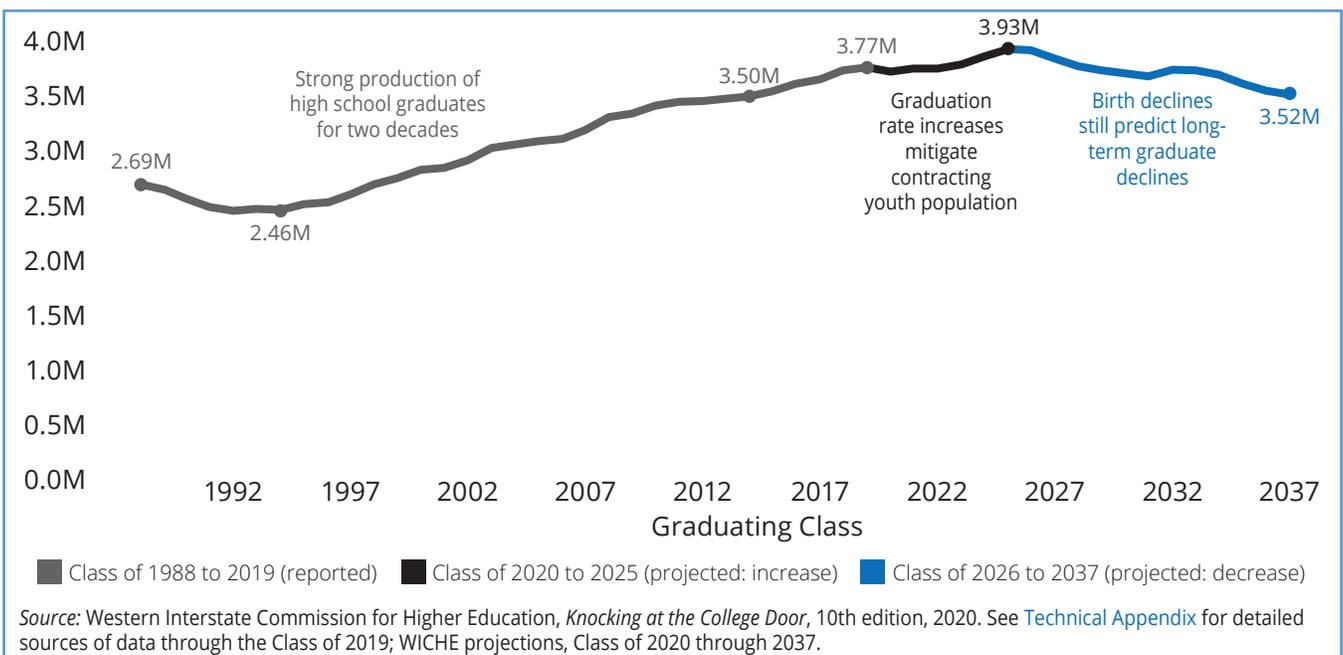
The data also provide an important measure of how the improvement in graduation rates is offsetting some – but not all – of the expected declines in the number of graduates due to declining birth rates. Additionally, the projections show continuing trends of diversification among public high school graduates, with students of color expected to make up an even greater share of the graduating class in the future.

Key Findings

Nationally, the number of high school graduates is expected to peak in the mid-2020s before entering a period of modest decline through the end of the projections in 2037. According to the data WICHE collected from states, the country produced about 3.8 million high school graduates in the Class of 2019. High school graduates are projected to peak in number at nearly 4 million (3.9 million) with the Class of 2025, potentially achieving another 4 percent increase from current numbers.

After 2025, due in large part to the “birth dearth” during and following the Great Recession, the U.S. should expect successively fewer annual number of graduates in virtually every graduating class between 2026 and 2037. The U.S. high school

Figure 1. Slowing Growth in Number of U.S. High School Graduates, then Decline (U.S. Total High School Graduates)



graduating Class of 2037 is projected to be about the same in number as Class of 2014 (3.5 million).

These projections show an increase in the number of graduates of about 10 percent over the previous projections. WICHE attributes much of this increase to improvements in public school graduation rates in recent years, particularly for students of color. The 9th edition of *Knocking at the College Door* projected a graduating class size in 2017 that was about 8 percent below the actual number reported by states since that edition was published. The data show a greater number of students of color completing high school than previously projected. These new projections suggest the national peak in 2025 will be about 10 percent higher than previously projected. Although this peak is higher, demography and the decline in births from 2008 and onward still lead to projections of a decline starting in 2026, but the total numbers during those declining years are expected to be higher than was projected in the 9th edition.

These additional students and projected increases are consistent with recent improvements in high school graduation rates. Hispanic public high school graduates accounted for the greatest increases from what was predicted (among groups that can be compared); 75,000 more Hispanic graduates (10 percent) were reported for Class of 2019 than were predicted in the 9th edition. Additionally,

the data show substantial increases in multiracial graduates, but comparisons to the previous edition are not possible because that edition used different categories for race/ethnicity.

COVID-19 introduces significant uncertainty into the projections. The most recent data available to build these projections are from the Class of 2019 and earlier, meaning that the initial impact of the pandemic is not represented. Data for all states, and consequently the nation, will likely not be available until the fall of 2021. Instead, these projections indicate future numbers of high school graduates as if the country were proceeding from the gains in graduation rates (as well as grade-to-grade progression rates) made before COVID-19 and the ensuing economic disruptions emerged.

COVID-19 and the economic downturn are expected to have significant impacts on the education pipeline, but the size and extent of those impacts are not yet clear. WICHE intends to provide updates to this edition of *Knocking at the College Door* as more information becomes available. It is likely that any impacts will become more apparent in graduate numbers after Class of 2020 as the pandemic affects progression, retention, and completion rates.

Increased diversification of the graduating classes is a projected trend. For several editions now, WICHE has projected increasing diversification of high school graduating classes. The projections

Figure 2. U.S. Public High School Graduates, by Race/Ethnicity, Class of 2019 (reported) and Classes of 2025, 2030, and 2036 (projected)

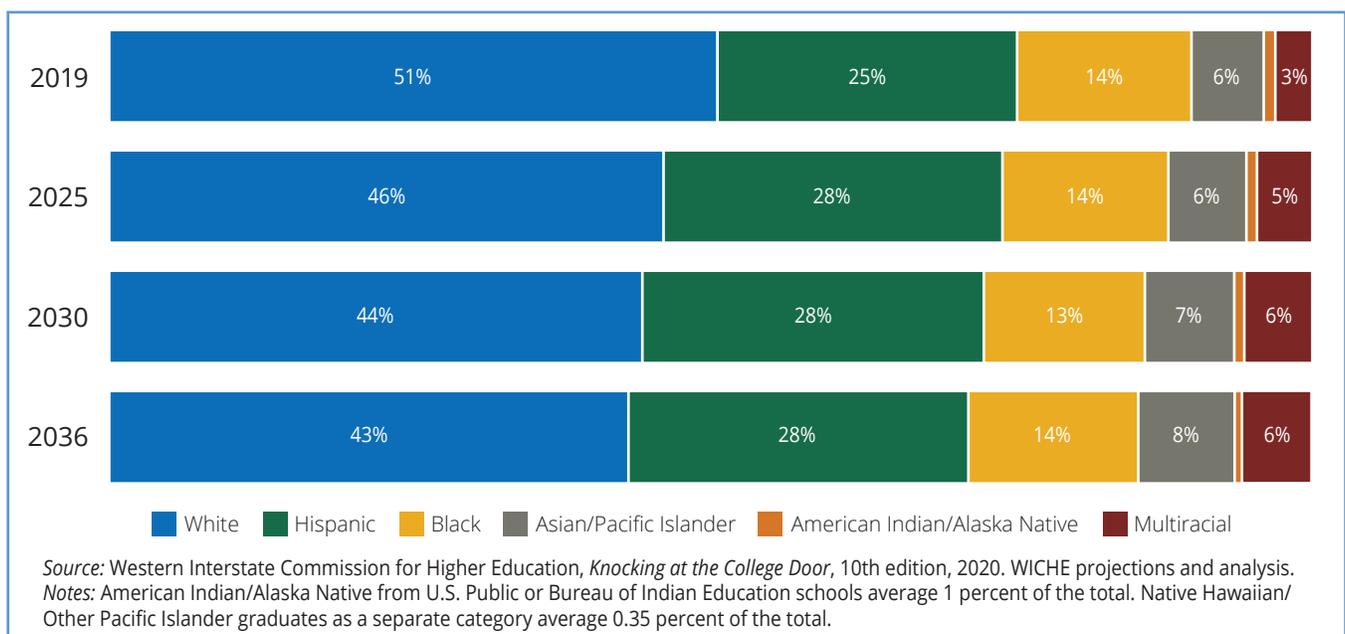
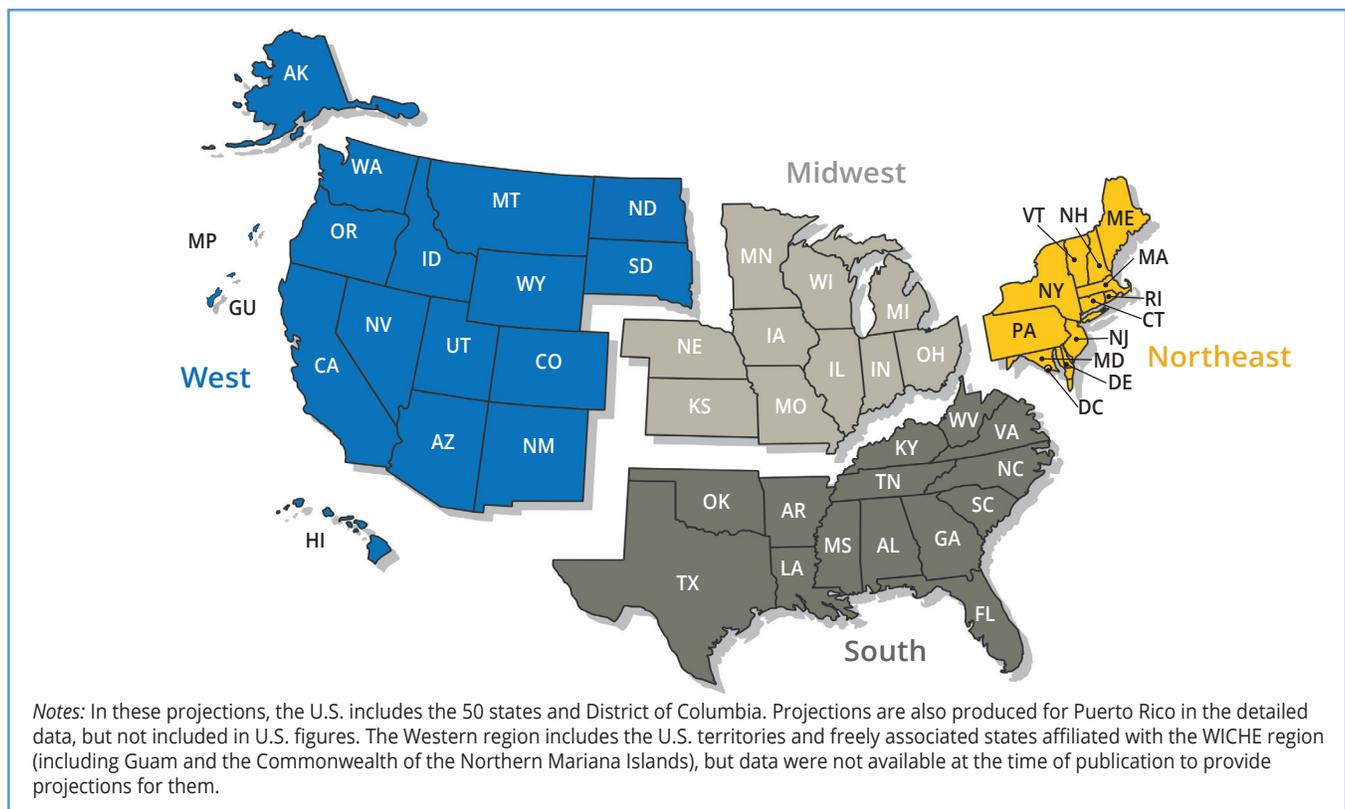


Figure 3. Four Main Regions of the U.S. (WICHE Region Definitions)



presented here continue this trend, with an ever-increasing proportion of students of color. This increase is primarily driven by an increase in the number of Hispanic and multiracial graduates.

This increasing diversification only adds more weight to the imperative for postsecondary education to better support students who have traditionally been underserved and address systemic inequities.

Private school enrollments have been more volatile than previously projected but have shown strong growth in recent years. The most recent [data for K-12 private schools](#) predict a very different future than would have been anticipated from patterns of [enrollment contraction that had been emerging in the data for years prior](#).¹ Nationally, private high school graduates are now projected to increase in number by as much as 13 percent from the Class of 2017 to 2025. Then, even as the number of U.S. *public* school graduates begins contracting after 2025, 9 percent more *private* high school graduates are projected by the Class of 2030 compared to the Class of 2017.

Significant state and regional variation are important features of these projections. Strong growth in the South is projected to lead to a peak

around 2026 of 1.5 million graduates, followed by declines over the course of the projections to 1.4 million in 2037. The Northeast is projected to see modest growth to about 650,000 graduates in 2025 before declining to about 571,000 by 2037. The Midwest is projected to see a similar pattern with modest growth to about 791,000 graduates in 2025, followed by declines to around 693,000 in 2037. The West is projected see growth to about 962,000 students in 2024, followed by declines to 833,000 by 2037.

There is also substantial variation among states, with some, such as Florida and Idaho, expected to see substantial growth over the course of the projections, while others, such as California, Illinois, and Connecticut, are projected to see significant declines.

Implications and Discussion

Key to understanding and correctly interpreting these projections is understanding the methodology at a basic level. Essentially, the projections show what would happen if the trends observed in the data over the past five years continue into the future, given the existing observed populations

of students and births. These projections are not “predictions” of what WICHE analysts think will happen, but simply what the numbers show would happen if everything proceeds on the course what was underway up through Class of 2019. While this approach to modeling is reasonably accurate, especially in the near term, it represents an assumption that retention, progression, and graduation rates will stay exactly the same in the coming years.

Previous editions of *Knocking at the College Door* have garnered significant attention for projecting the national peak in 2026 and the subsequent decline. This trend is still consistent and drawing closer each year. While improvements in high school graduation rates are making a difference in increasing the number of graduates, the decline in birth rates during the Great Recession is still the driving factor in projected declines beginning in the mid-2020s. Although improvements in graduation rates are certainly a good news story, much more remains to be done, particularly to continue improvement in serving students of color.

For postsecondary institutions, even with the increased number of graduates, the “shape” of the trend line has not changed. In previous decades, institutions relied on an ever-increasing number of high school graduates to fuel growth. But that long period of growth is coming to an end. The long period of stagnation and subsequent declines cause substantial concern among enrollment specialists and finance offices across the country. The good news is that there will still be plenty of potential students for institutions to serve, given the current rates at which individuals enroll in postsecondary education. Institutions will have to focus on supporting current students and improving retention and completion rates, while also continuing to focus on adult students. This is not new, but these projections should further underscore the importance of those critical endeavors.

Of course, the biggest uncertainty around these projections is due to the pandemic. COVID-19 has had and will continue to have an impact on education systems as well as the economy that is virtually unprecedented in modern times. It is not yet possible to fully understand how the pandemic will affect projections. While WICHE intends to provide updates as more recent data become

available, it will likely take several years for the impact of COVID-19 to play out in the data.

Although there is uncertainty due to COVID-19, this edition represents a vast improvement in the national data available to understand the numbers of high school graduates at the state and regional level. WICHE's efforts to collect data from each state for the number of graduates have resulted in information that is as current as possible. Although information is available on state graduation rates, no other sources have current numbers of graduates collected in one place.

Currently, there are significant concerns that the pandemic may stall, and even reverse, the modest progress that has been made in improving how our education systems serve students of color and low-income populations. Additionally, it is virtually certain that most states are facing significant fiscal constraints in the coming legislative sessions and those constraints may lead to budget cuts for both K-12 and postsecondary education. As policymakers and education leaders confront these trying circumstances, these projections give them the best available data to respond.

Endnote

¹ National Center for Education Statistics, “Private School Universe Survey,” accessed on November 24, 2020, <https://nces.ed.gov/surveys/pss/>. William J. Hussar and Tabitha M. Bailey, *Projections of Education Statistics to 2024* (Washington, D.C.: National Center for Education Statistics, September 2016), accessed on November 24, 2020, <https://nces.ed.gov/pubs2016/2016013.pdf>.

High School Graduate Trends—A Glimpse of the Future before COVID-19 Intervened

Understanding the pipeline of high school graduates is crucial for a range of policymaking, economic development, and higher education planning needs across the country. WICHE's 10th edition of *Knocking at the College Door* projects the numbers of high school graduates disaggregated by public and private schools and race and ethnicity out to 2037. The new projections show – generally speaking and with caveats about state and regional variation – slightly increased numbers compared to previous projections (now hitting a peak of just under four million graduates in 2025 compared to projections in the previous edition of just under 3.6 million). But the projections still follow the previously projected trend line with a decline beginning in 2026 and ending at around 3.5 million graduates in 2037. This decline traces its origins back to the steep drop in births that began with the Great Recession.

While the projections show a slightly improving picture for the number of high school graduates – due in great part to increases in high school graduation rates – they come with an enormous asterisk. Due to data availability, the numbers presented here represent actual enrollments and graduates from public schools through the Class of 2019, and from private schools through the Class of 2017, with the years from 2020 and forward being fully projected. Therefore, due to the timing and lack of available data, these projections do not capture any of the impacts from the COVID-19 pandemic, which is likely to have substantial long-term impacts on the education pipeline. WICHE will release more information and data as they become available, but at this point, it is too soon to point to data or conclusive research about the size and direction of COVID-19 impacts.

New Projections Fill a Data Gap about What Graduation Improvements Have Meant for the Number of High School Graduates Over the Last Decade

These updated projections depict the changing student landscape, including how graduation rate improvements have increased the number of

projected graduates between 2010 and 2019 and overall growing enrollments of public and private middle and high school students through 2025. The updated projections fill a growing gap in the data that are available for education planning and that are crucial for efforts to improve racial equity throughout the educational system (the annual number of U.S. public high school graduates, by state and race/ethnicity, were previously available through the U.S. Department of Education [publicly available datasets](#) or *Digest of Education Statistics*, but have not been available from these sources for the Class of 2014 to 2019.)¹

The projections continue to depict the increasing diversification of high school graduates that has been a steady feature of these projections for years. The updated data show how historically underserved students – including Black, Hispanic, and other racial/ethnic groups – make up an increasing share of the total graduate population. In particular, Hispanic students and those identified as multiracial are projected to make up a growing proportion of graduates. Higher education does not need more arguments for addressing the glaring inequities among how it serves students of color (other than it being a clear moral imperative), but these data underscore the fact that the traditional-aged student body of the future will continue to have a larger proportion of students from diverse backgrounds.

Trends Predicted by Pre-COVID-19 Conditions Can Be a Benchmark for What Comes Next

These projections indicate future numbers of high school graduates as if the country were proceeding from the gains in graduation rates (as well as grade-to-grade progression rates) made before COVID-19 and the ensuing economic disruptions that have emerged. Of course – that is not the current reality. There is high likelihood that COVID-19 will materially impact the eventual number of graduates.

This information will be crucial for understanding the impact of COVID-19 on enrollments and graduations. Historically, the first few years of our

projections are extremely accurate. If we see – as many expect – deviations from the projected numbers, it would be safe to link these changes to COVID-19. Importantly, the data by race and ethnicity of high school graduates could help discern whether COVID-19 appears to be impacting student progress to graduation disparately.

Longer-Term Less-Than-Rosy Trends Could Be Better or Worse Depending on COVID-19 Recovery

The fundamental value of these projections persists despite anticipated COVID-19 impacts. The projections continue to illustrate diversification of U.S. high school graduates that has developed and accelerated over the years. And, more recently, the projections show the impact of decreasing U.S. birth rates – particularly during the Great Recession – which will result in a decline in high school graduates and young workers starting in 2026.

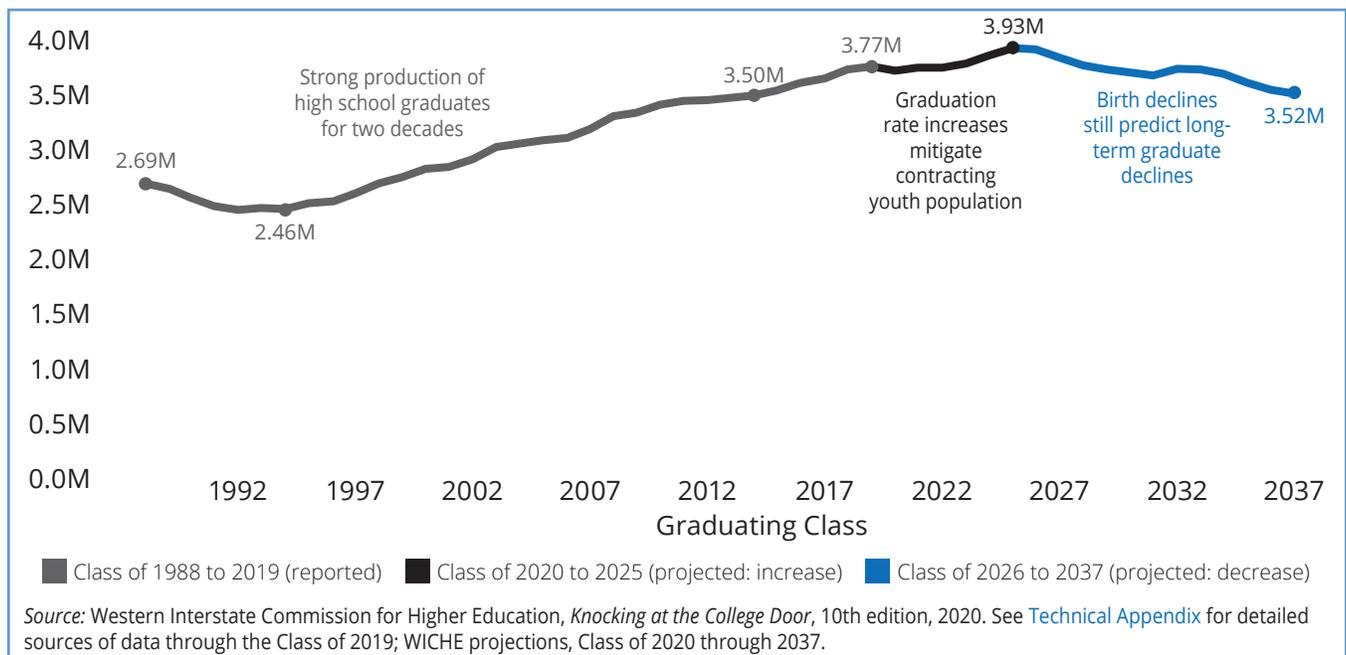
These fundamental demographic changes are here to stay, but they can change around the margins. Comparing the 2016 edition of WICHE’s projections with these data show a 10 percent increase in the size of the peak in 2025. The key question is how much (if at all) COVID-19 will adjust these trends and – if there are big negative impacts on retention,

progression, and completion in the K-12 system – how long it takes for our education system to recover. The already less-than-rosy picture for the longer-term number of high school graduates will be worse (or better), depending on how students and schools fare through these challenging times.²

Going forward, the “birth dearth” starting in 2008 that predicts a downturn in graduates beyond 2025 does not necessarily predict a reduction in sheer numbers across all ethnic and racial subpopulations. Continued graduation improvements could yield more graduates than predicted (a “thrive” scenario). Stable graduation rates would at least fulfill what is predicted (the “persist” scenario). And, if COVID-19 negatively impacts students – particularly underserved populations and low-income students – the already somewhat sobering projections for high school graduates from 2020 to 2037 could be hastened and amplified (a “deteriorate” scenario). Under this scenario, as a society, we could see an increase in the number of adults without a high school diploma.

The projections come as most states are working to reach ambitious attainment goals. The data show (consistent with previous editions) that states cannot simply rely on an ever-growing pipeline of high school graduates to fuel growth in their attainment

Figure 1. Slowing Growth in Number of U.S. High School Graduates, then Decline (U.S. Total High School Graduates)



rates. As has been written at length elsewhere, making improvements in the graduation and retention of students and better serving adults are keys to improved attainment rates as the growth in traditional-aged students declines from its peak.

Number of U.S. High School Graduates Projected to Climb Slightly for Five Years

Figure 1 shows U.S. total annual high school graduates from the early 1990s through the Class of 2019, then continuing with this 10th edition projections through the Class of 2037. (This is the year through which WICHE can produce projections based on available data about recent U.S. births). According to the data WICHE collected from states, the U.S. produced 3.8 million high school graduates by the Class of 2019.³ U.S. high school graduates are projected to peak in number at nearly 4 million (3.9 million) with the Class of 2025, potentially achieving a 4 percent increase from current numbers.

Fewer High School Graduates are Predicted Past 2025 Due to Smaller Elementary School and Birth Cohorts

As seen from the national and state views below, after 2025, the number of potential high school graduates is impacted by the birth dearth that followed the Great Recession. The U.S. should expect successively fewer graduates in virtually

every graduating class between 2026 and 2037, as predicted by smaller elementary school and birth cohorts since 2007. The U.S. high school graduating Class of 2037 is projected to be about the same in number as the Class of 2014 (3.5 million). This longer-term trend is predicted by consistent annual declines in U.S. annual births, about 1 percent annually, since the nation’s high number of 4.3 million births in 2007.⁴ Specifically, there were 3.7 million U.S. births in 2019, 13 percent fewer babies born than in 2007. This was the lowest number of annual births since 1988. Correspondingly, an almost 11 percent decline of graduates is predicted between the Classes of 2025 and 2037.

These smaller birth cohorts are moving through elementary schools now. In fact, the predicted smaller high school graduating classes of 2026 through 2030 are reflective of declining student numbers now progressing through elementary schools. The further declines past 2030 relate to the successively smaller birth cohorts from 2012 to 2019, as birth rates did not recover following the Great Recession.⁵ Sections below describe the predicted trends among public high school graduates by race/ethnicity, but it is instructive to look here at the birth trends by race/ethnicity below the overall total. The birth decreases have occurred for all of the reported races/ethnicities, except Asian/Pacific Islander (Table 1).

Annual birth declines have been occurring with White non-Hispanics since 1991, and these smaller cohorts were evident by the graduating Class of

Table 1. Annual Births by Mother’s Race/Ethnicity (U.S., Thousands)

	Total	Hispanic	White	Asian/Pacific Islander	Black	American Indian/Alaska Native
1990	4,158	604	2,705	138	674	38
1995	3,900	680	2,435	157	593	35
2000	4,059	816	2,400	196	607	39
2005	4,138	986	2,303	221	587	41
2010	3,999	945	2,180	238	596	41
2015	3,978	924	2,152	271	594	37
2018	3,792	886	2,017	270	584	34
2019	3,746	n/a	n/a	n/a	n/a	n/a

Source: WICHE analysis of natality data from U.S. Centers for Disease Control, National Center for Health Statistics. Showing selected years. The latest year available is 2018 for births by race and ethnicity, 2019 for totals.

2011. The birth declines since the Great Recession deepened the trend: there were already 14 percent fewer White non-Hispanic births in 2007 than in 1990 (0.8 percent average annual declines); then a further 14 percent fewer White non-Hispanic births in 2018 than 2007 (1.2 percent average annual declines).

Annual Hispanic births overtook Black non-Hispanic births in 1993, to become the second largest racial/ethnic category for births: 667,000 Hispanic and 649,000 Black births in 1993, compared to 2.5 million White non-Hispanic births. Then, between 1993 and 2007, annual Hispanic births almost doubled (to 1.06 million). And by that point, there was almost one Hispanic birth (1.06 million) to every two White non-Hispanic births (2.33 million), and almost two Hispanic births for every one Black non-Hispanic birth (632,000). However, after 2007, the greatest decreases in births accrued with Hispanic mothers – with 17 percent fewer Hispanic births in 2018 than 2007 (1.5 percent average annual decline). American Indian/Alaska Native non-Hispanic births also show a large rate of decline, with 22 percent fewer American Indian/Alaska Native non-Hispanic births in 2018 than 2007 (2 percent average annual

decline).⁶ Black births declined 0.7 percent average annually over this same timeframe. On the other hand, Asian/Pacific Islander births have increased in almost every year since 2007, to the pace of an 0.9 percent average annual increase.⁷

State Variation Leads to the National Net Balance; Contraction Begins Around the Country Mid-Decade

WICHE produces separate projections for four main regions as defined by the U.S. Census Bureau, and also for slightly modified Western and Midwestern regions to account for North Dakota and South Dakota being member states to both the Western Interstate Commission for Higher Education (WICHE) and the Midwestern Higher Education Compact (MHEC). In the charts here, the regions are defined based on North Dakota and South Dakota in the Western region (see Figure 2a).⁸

There is substantial trend variation in the state-by-state projections of high school graduates from the last reported year of total public and private high school graduates, Class of 2019, to the graduating

Figure 2a. Four Main Regions of the U.S. (WICHE Region Definitions)

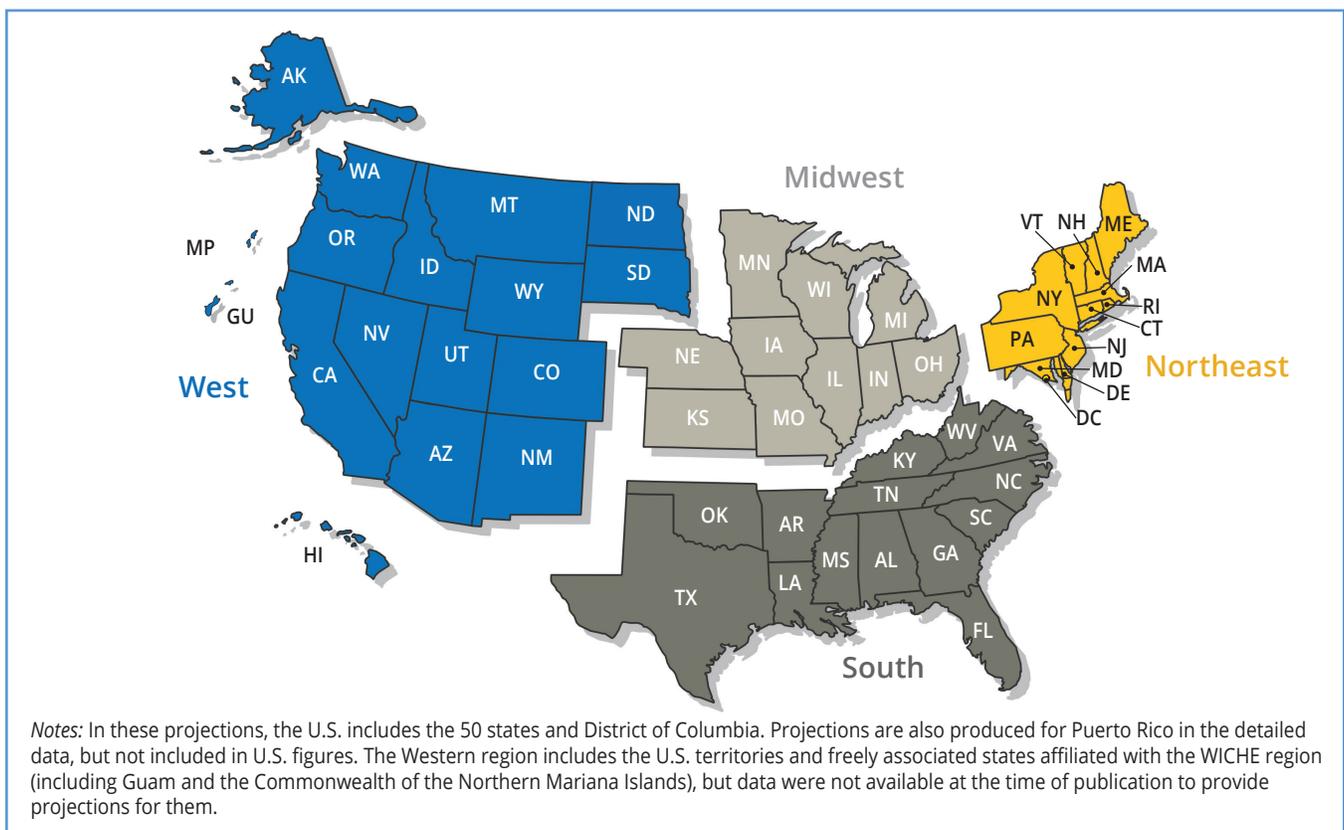
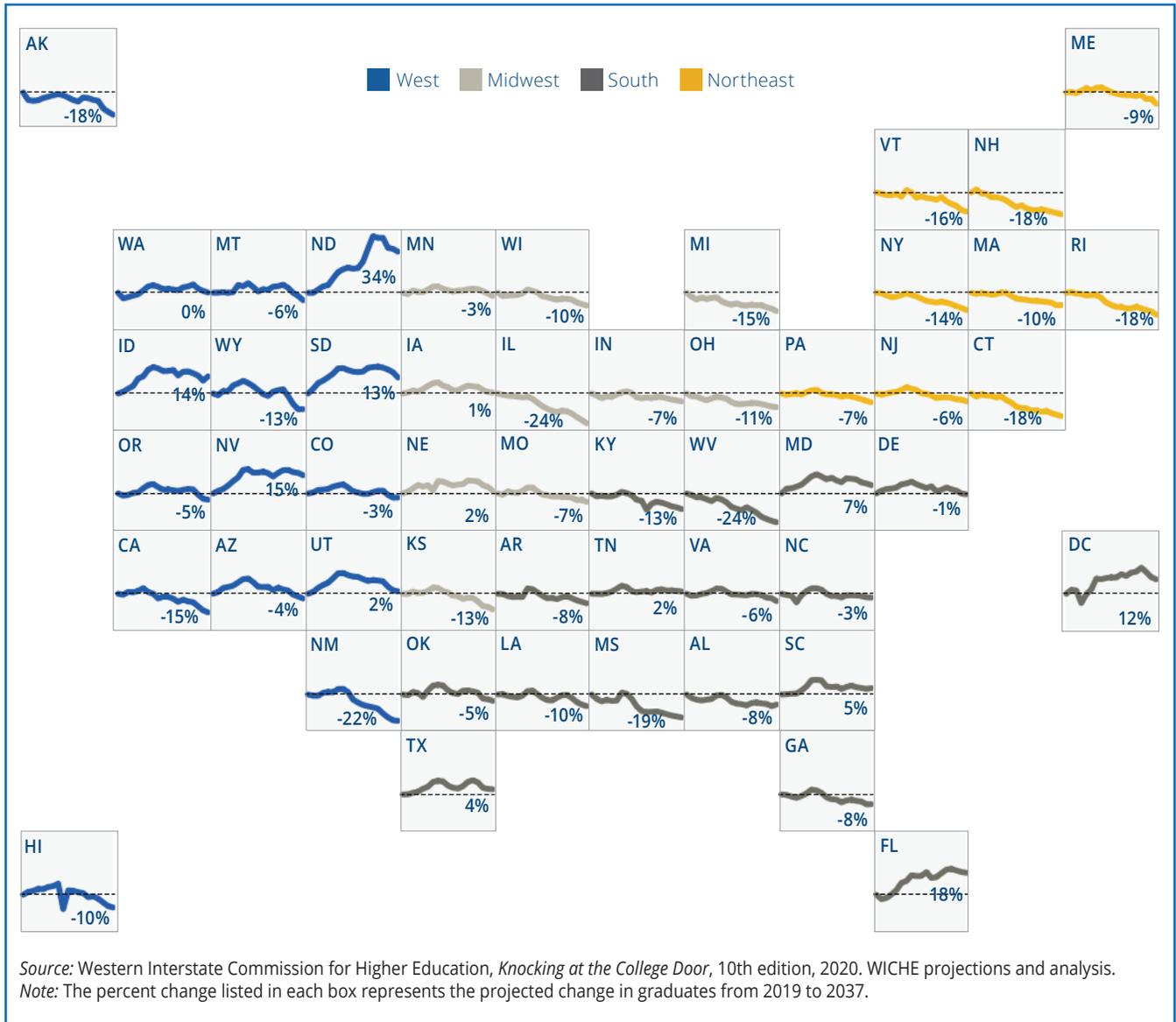


Figure 2b. State-by-State Projected Percent Change from Class of 2019 to 2037, Grand Total of Public & Private Schools



Source: Western Interstate Commission for Higher Education, *Knocking at the College Door*, 10th edition, 2020. WICHE projections and analysis.
 Note: The percent change listed in each box represents the projected change in graduates from 2019 to 2037.

classes projected through the mid-2030s (Figures 2b and 2c). States with increasing numbers of high school graduates balance states with projected lesser increase, or decline, in the number of high school graduates. This variation leads to the national balance of high school graduates, and factors in shifting and heightening competition for recent high school graduates across the country. Among the 10 states that produce more than half of the total U.S. high school graduates, most are projected to be generally stable with slight increases or decreases in class size, over the next five years through about 2025 (Figure 2d).⁹ And then eight of these top 10 graduate producing states are projected

to experience contracting or successively smaller graduating classes after 2025.

The **Southern** region as a whole is projected to have robust graduate production throughout the projections, notwithstanding variation by state. Texas and Florida are predicted to have larger high school graduating classes (compared to the Class of 2019) in virtually every projected year, even beyond 2025. The birth declines only dampen their strong growth rates in the outer years, but do not cause actual declines compared to the number of graduates in the Class of 2019. Maryland, South Carolina, and Tennessee also contribute notably

to the region’s projected strong production of graduates.

Most of the states in the **Midwestern** region are projected to produce fewer graduates by the mid-2030s than they currently do. Illinois and Michigan

experienced declining numbers of graduates, and Ohio graduate numbers were stagnating, even before the Class of 2019 graduated. And these three Midwest states are projected to experience perpetually decreasing class sizes. Iowa, Kansas,

Figure 2c. Regional Contribution to National Increase or Decrease: Class of 2025, 2030, and 2037 Compared to 2019, Grand Total of Public & Private Schools

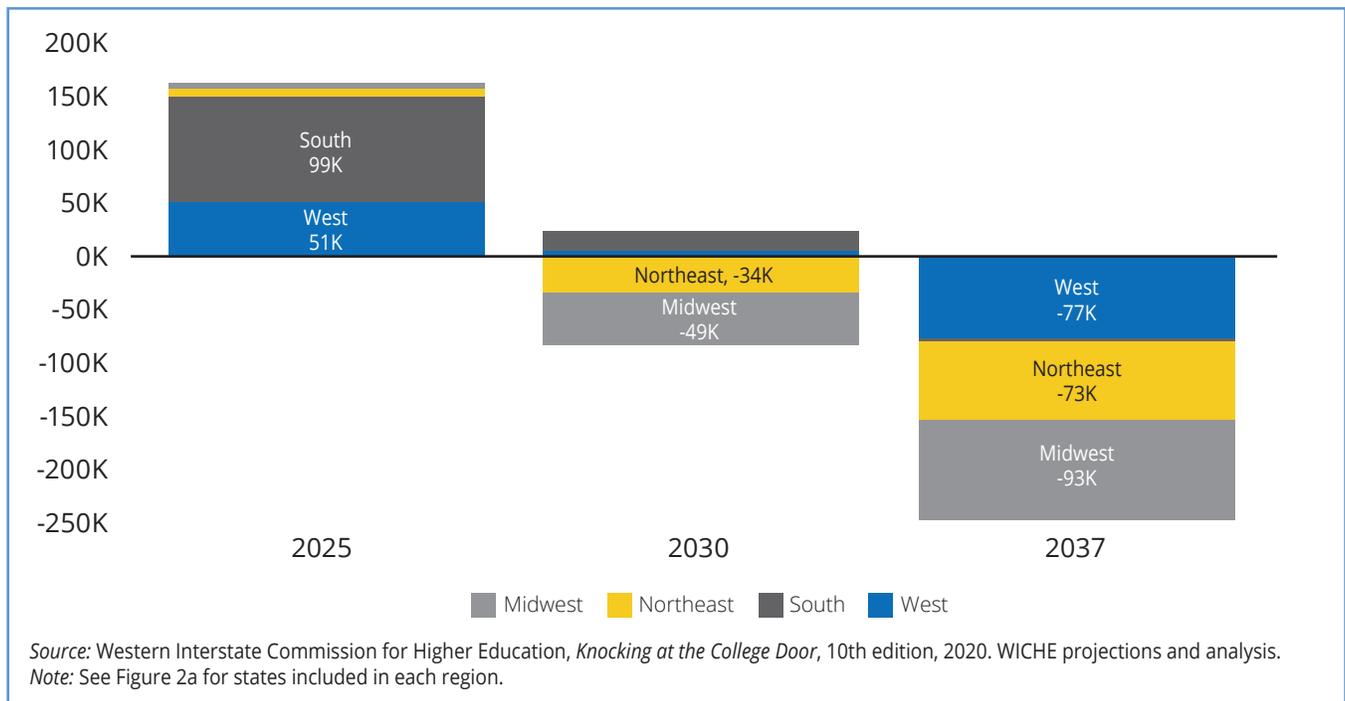


Figure 2d. Ten States Producing 56% of U.S. Total: Historical Change (Class 2003 to 2019) and Projected (Class 2020 to 2037), Grand Total of Public & Private Schools

Thousands (000s)	Graduating Classes			(Projections)		Change		(Projections)	
	2003	2011	2019	2025	2037	2003 to 2011	2011 to 2019	2019 to 2025	2025 to 2037
California	373	445	485	491	411	19%	9%	1%	-16%
Texas	249	303	374	413	390	22%	23%	10%	-6%
Florida	145	176	220	244	259	21%	25%	11%	6%
New York	172	213	215	213	184	24%	1%	-1%	-14%
Illinois	133	149	152	148	115	13%	2%	-3%	-22%
Pennsylvania	139	147	145	149	134	5%	-1%	3%	-9%
Ohio	130	137	138	135	123	6%	1%	-3%	-9%
Georgia	74	100	123	128	113	35%	23%	4%	-12%
North Carolina	75	96	116	121	112	29%	20%	4%	-7%
Michigan	110	113	112	108	95	3%	-1%	-4%	-12%

Source: Western Interstate Commission for Higher Education, *Knocking at the College Door*, 10th edition, 2020. WICHE projections and analysis.

Minnesota, Missouri, and Nebraska are projected to offset the overall decline, until they also experience contraction after peaks around 2025.

About half of the states in the **Northeastern** region are projected to have stagnant or declining graduate numbers in most or all years that are projected. Pennsylvania, New York, and New Jersey are projected to hold steady or have slight increases in the number of graduates, until the birth declines take effect in the mid-2020s, after which the regional downturns sharpen.

As for the **Western** region, California of course contributes strongly to the regional, and national, trend. The number of California graduates continued to increase heading into the projections, but at about half previous rates of increase: total California high school graduates increased 2 percent annually, on average between 2003 and 2011, and 1 percent annually, on average between 2011 and 2019. Predicted stagnation in high school graduate numbers for California, and then predicted contraction, draws down the net increase in high school graduate production that is otherwise predicted for the West region by the relatively smaller-population states of the Mountain West and WICHE member states North Dakota and South Dakota.

While the foundation for most states' projections are overwhelmingly determined by the sheer numbers

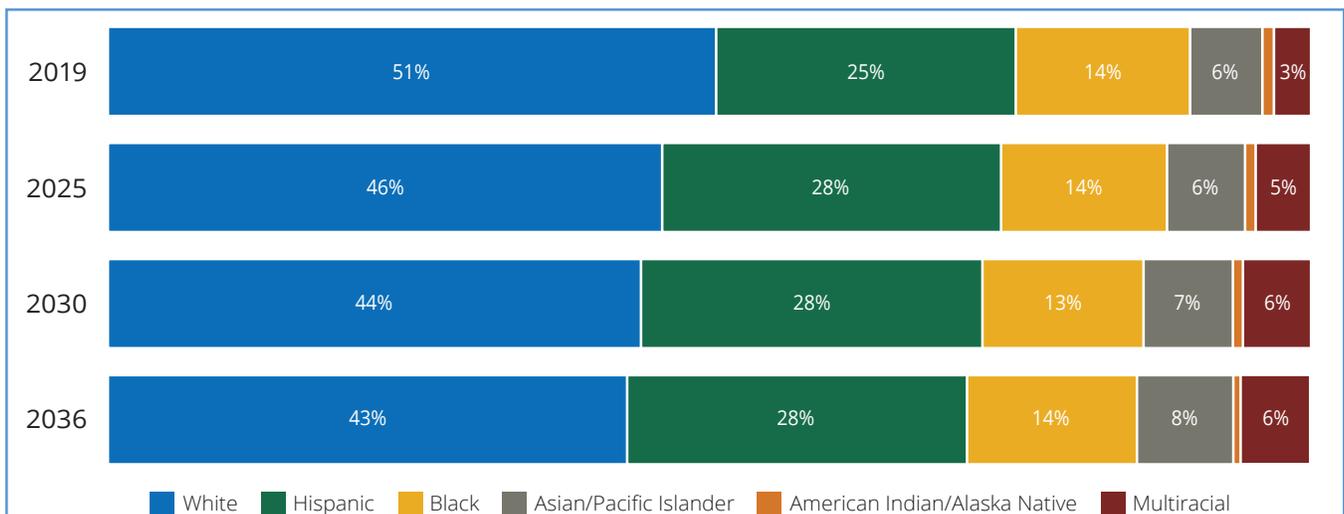
and composition of their existing youth populations, these projections may still be subject to the impacts of COVID-19. And, the educational impacts of COVID-19 are unlikely to be even or uniform across states.

The Shift to Substantially More Diverse High School Graduating Classes Will Continue

Projections for the racial/ethnic distribution of U.S. high school graduates will reflect the strong increases in high school graduation that have occurred in recent years. What used to be the coming diversity of U.S. graduates is now reality. Among the 90 percent of Class of 2019 high school graduates who were from public schools and for whom race/ethnicity data are provided: 51 percent of U.S. public high school graduates were White non-Hispanic, 25 percent were Hispanic of any race, 14 percent were single race Black non-Hispanic, 6 percent were single-race non-Hispanic Asian or Native Hawaiian/Other Pacific Islander (of these, 6 percent were Native Hawaiian/Other Pacific Islander graduates), 3 percent were non-Hispanic multiracial, and 1 percent were single-race non-Hispanic American Indian/Alaska Native (Figure 3).

The first public high school graduating class that is no longer White non-Hispanic majority may be coming in the next year or two, with Class of 2021

Figure 3. U.S. Public High School Graduates, by Race/Ethnicity, Class of 2019 (reported) and Classes of 2025, 2030, and 2036 (projected)



Source: Western Interstate Commission for Higher Education, *Knocking at the College Door*, 10th edition, 2020. WICHE projections and analysis. Notes: American Indian/Alaska Native from U.S. Public or Bureau of Indian Education schools average 1 percent of the total. Native Hawaiian/Other Pacific Islander graduates as a separate category average 0.35 percent of the total.

or 2022, according to the projections. And, it is projected that by the Class of 2036, there will be no majority race/ethnicity among public high school graduates (this is the last year that race/ethnicity of public high school graduates can be projected using available data about U.S. births by race/ethnicity). By the Class of 2036, 57 percent of U.S. public high school graduates are projected to be of a racial/ethnic identity other than White non-Hispanic. At least eight states are predicted to pass the 50 percent non-White share mark over the course of the projections, joining the 15 states who by the Class of 2019 had graduating classes comprised of more than half non-White graduates. Consequently, how well the education system serves students of color factors heavily in overall graduate trends.

In these projections, race/ethnicity is provided for public high school graduates according to the federal reporting categories for aggregated educational data. WICHE acknowledges that these broad race/ethnicity categorizations may be lacking for describing and understanding the wide range of high school graduates. At a minimum, there may be some value from these categorizations for purposes of planning and evaluation. Furthermore, these categories provide some relevant, albeit imperfect, information for attention to racial equity.

Single Race White non-Hispanic Public High School Graduates

Figure 4 shows the changes in U.S. public high school graduates predicted for future years compared to the Class of 2019, by race/ethnicity. Nationally, White non-Hispanic high school graduates were confirmed as declining in number since the Class of 2008, dropping from a high number of 1.9 million at that point to about 1.7 million by 2019, a decrease of 9 percent before heading into the projections. Roughly 300,000 fewer White non-Hispanic public graduates are projected, nationally, by the Class of 2036 (19 percent fewer). Thirty-three states are projected to have fewer White non-Hispanic public high school graduates in all future years (or only experience single year marginal increase). Correspondingly, White non-Hispanic public high school graduates are projected to be less than half of all public high school graduates in virtually half of the states (plus District of Columbia) in the early to mid-2030s.

The race/ethnicity of the approximately 10 percent of U.S. high school graduates from private high schools is not provided in the available data, and therefore their contribution to the numbers of high school graduates is not quantified in the trends described here by race/ethnicity for public high school students. However, summary data about private school student populations indicates that a majority of private high school graduates are likely to be White non-Hispanic (see Private high school graduates section below), and could therefore be expected to offset the decreasing numbers of White non-Hispanic public high school graduates. Further, a portion of the projected private high school graduates will also increase the number of projected non-White public high school graduates.

Hispanic Public High School Graduates (of Any Race)

Meanwhile, the sheer largest numeric projected increases of graduates are Hispanic public high school graduates. The number of Hispanic public high school graduates overtook the number of Black non-Hispanic public high school graduates, nationally, in the Class of 2008. And, by the Class of 2019 there were almost two Hispanic public high school graduates, nationally, for every Black public high school graduate. The number of U.S. Hispanic public high school graduates is predicted to increase 19 percent more by the Class of 2026 (just after the overall peak in the Class of 2025), to just over 1 million. In at least 35 states, the number of Hispanic public high school graduates is projected to increase 25 percent or more by the Class of 2025, compared to the Class of 2019. And while the birth declines will dampen this impressive growth trend and lead to some downturn after 2025, nationally, at least 9 percent more Hispanic public high school graduates are projected for the Class of 2036 than were counted in the Class of 2019. Correspondingly, in 39 states the number of Hispanic public high school graduates will still be at least 10 percent higher in the Class of 2036 than were reported in the Class of 2019. And, the Class of 2036 is projected to have at least 50 percent more Hispanic public high school graduates than the Class of 2019, in 23 states.¹⁰

Single Race Black non-Hispanic Public High School Graduates

The third largest racial/ethnic category of public high school graduates is Black non-Hispanic graduates. In

Figure 4a. Projected Change in Number Among U.S. Public High School Graduates Compared to 2019, by Race/Ethnicity

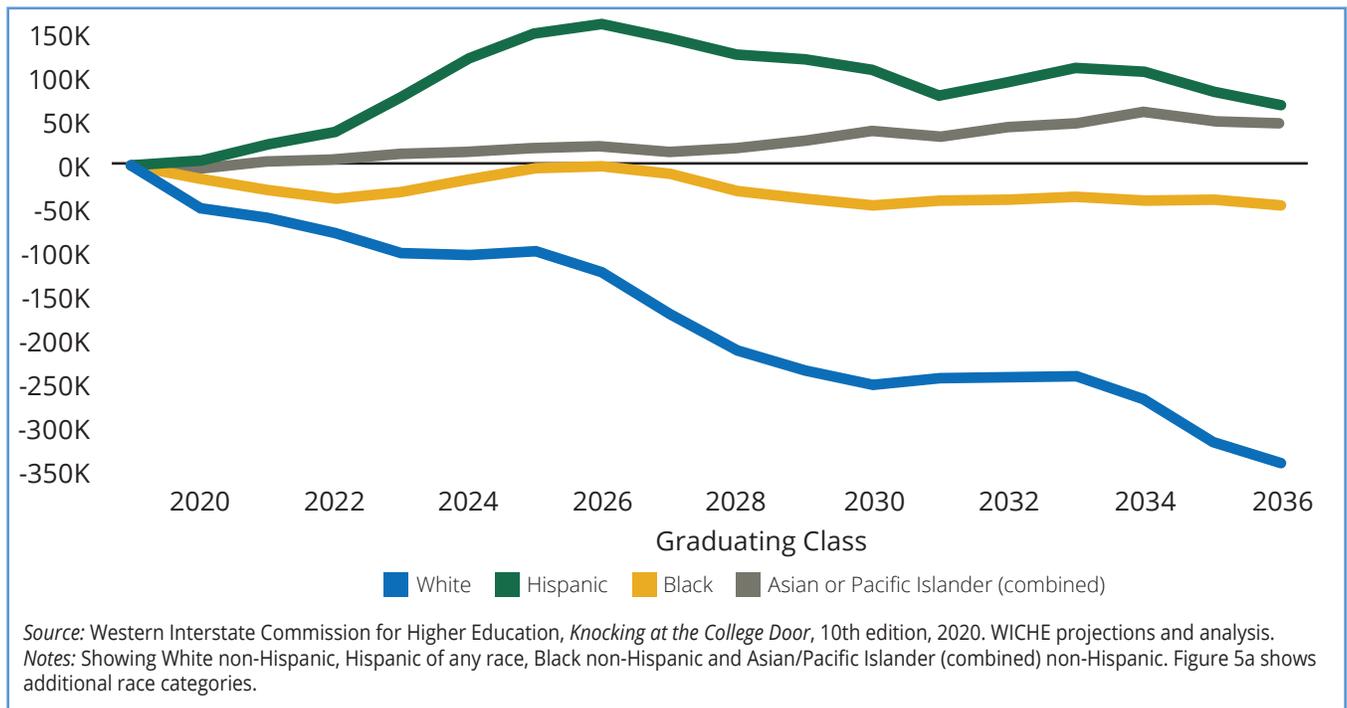


Figure 4b. Projected Change in Number and Percent Among U.S. Public High School Graduates in Classes of 2025, 2030, and 2036 Compared to 2019, by Race/Ethnicity

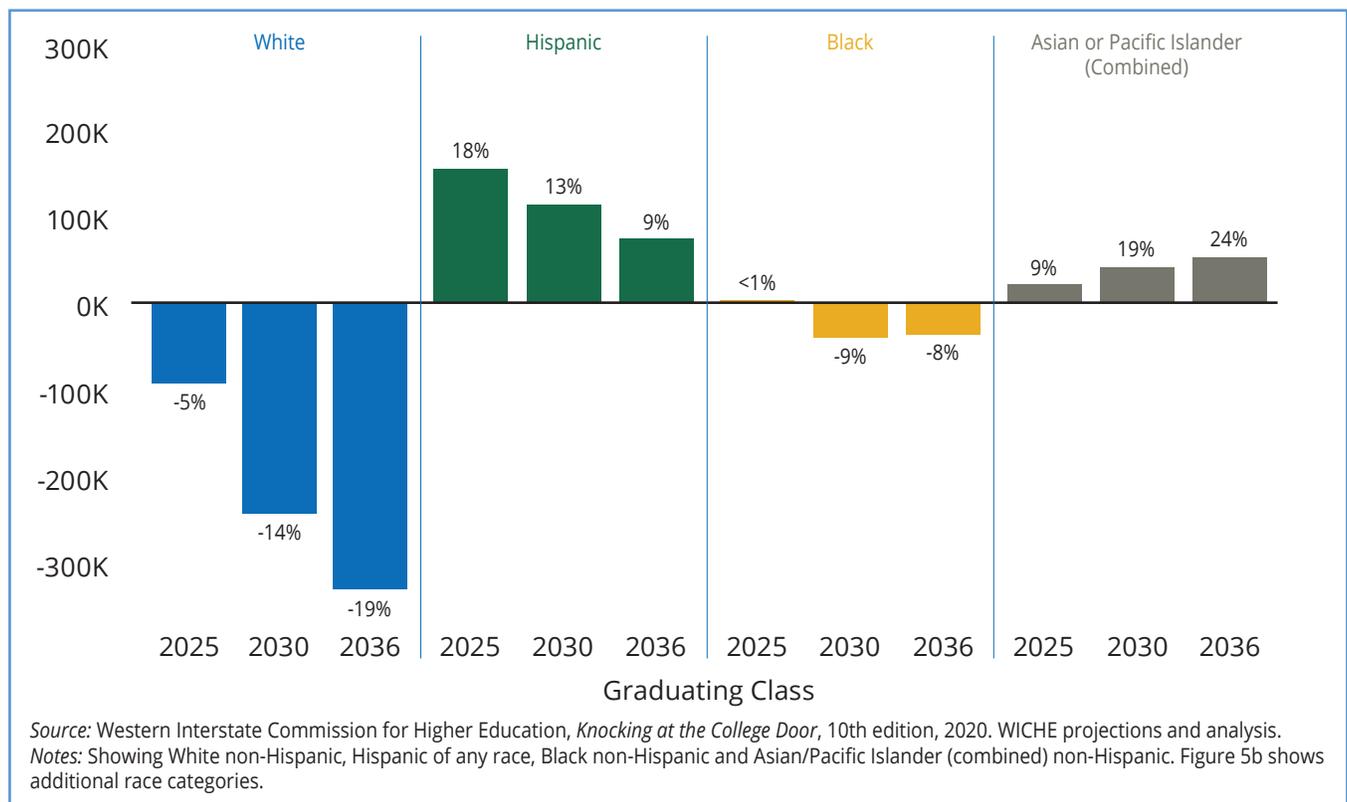


Table 2. Black Public High School Graduates, Reported Number and Percent of Each State’s Class of 2019 Public High School Graduates, and Projections through Class of 2036

	2019	2025	2030	2036	Percent of Public School Graduates, Class of 2019
Texas	43,950	48,690	45,860	52,020	12%
Georgia	41,120	43,630	39,470	39,850	36%
Florida	40,050	38,210	36,680	37,180	21%
New York	30,580	27,840	23,840	21,550	17%
North Carolina	27,410	27,140	24,720	25,390	25%
California	24,190	20,690	18,540	16,300	6%
Illinois	20,700	19,540	16,350	15,490	15%
Maryland	19,650	21,100	19,600	18,980	34%
Virginia	19,050	18,870	16,860	16,760	22%
Louisiana	18,250	17,670	15,400	14,810	43%
South Carolina	16,030	17,270	15,210	14,440	33%
Alabama	16,360	15,520	14,250	14,310	33%
Tennessee	13,740	13,710	12,550	12,580	21%
Mississippi	13,830	13,920	10,860	10,520	47%
Delaware	2,890	3,030	2,790	2,810	31%
District of Columbia	2,310	2,740	2,640	2,420	71%

Source: Western Interstate Commission for Higher Education, *Knocking at the College Door*, 10th edition, 2020. WICHE projections and analysis.

fact, Black public high school graduates are greater in number than private high school graduates (for whom race/ethnicity is not known). The number of Black U.S. public high school graduates is projected to remain relatively stable in number from the Class of 2019 to the Class of 2025 (0.4 percent increase). And then the number of Black U.S. high school graduates is projected to decline in similar magnitude as the overall trend, with about 8 percent fewer Black public high school graduates projected for the Class of 2036 than were reported in the Class of 2019, nationally. This national balance results from variation across states, such as shown in Table 2 (page 10) among key states for Black public high school graduates.

Whereas many states are projected to see decreased numbers of Black public high school graduates over the course of the projections, at least 20 states are projected to have greater numbers of Black public high school graduates by

the Class of 2036 than were counted in the Class of 2019.

Single Race Asian and Native Hawaiian/ Other Pacific Islander Public High School Graduates

In this 10th edition, WICHE provides projections for public high school graduates categorized as Asian separate from those categorized as Native Hawaiian or other Pacific Islander, through the Class of 2030, as well as a combined total of Asian and Native Hawaiian/Other Pacific Islander public high school graduates for all years through the Class of 2036.¹¹ Nationally, the combined number of Asian and Native Hawaiian/Other Pacific Islander graduates is projected to increase throughout the course of the projections. Thirty percent more Asian/Native Hawaiian or other Pacific Islander public high school graduates are projected by the Class of 2034 compared to 2019; a small drawback of 4 percent is

Figure 5a. Projected Change in Number Among U.S. Public High School Graduates, Class of 2020 to 2036, by Race/Ethnicity

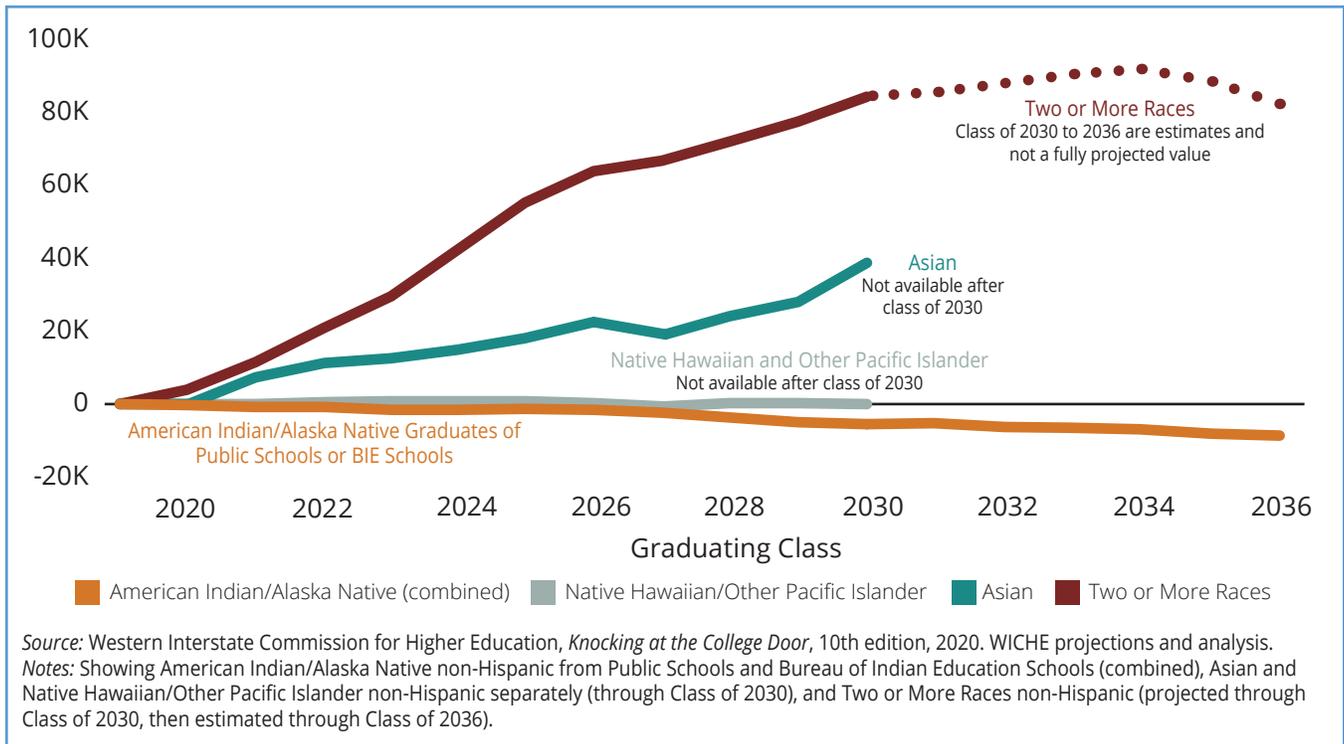
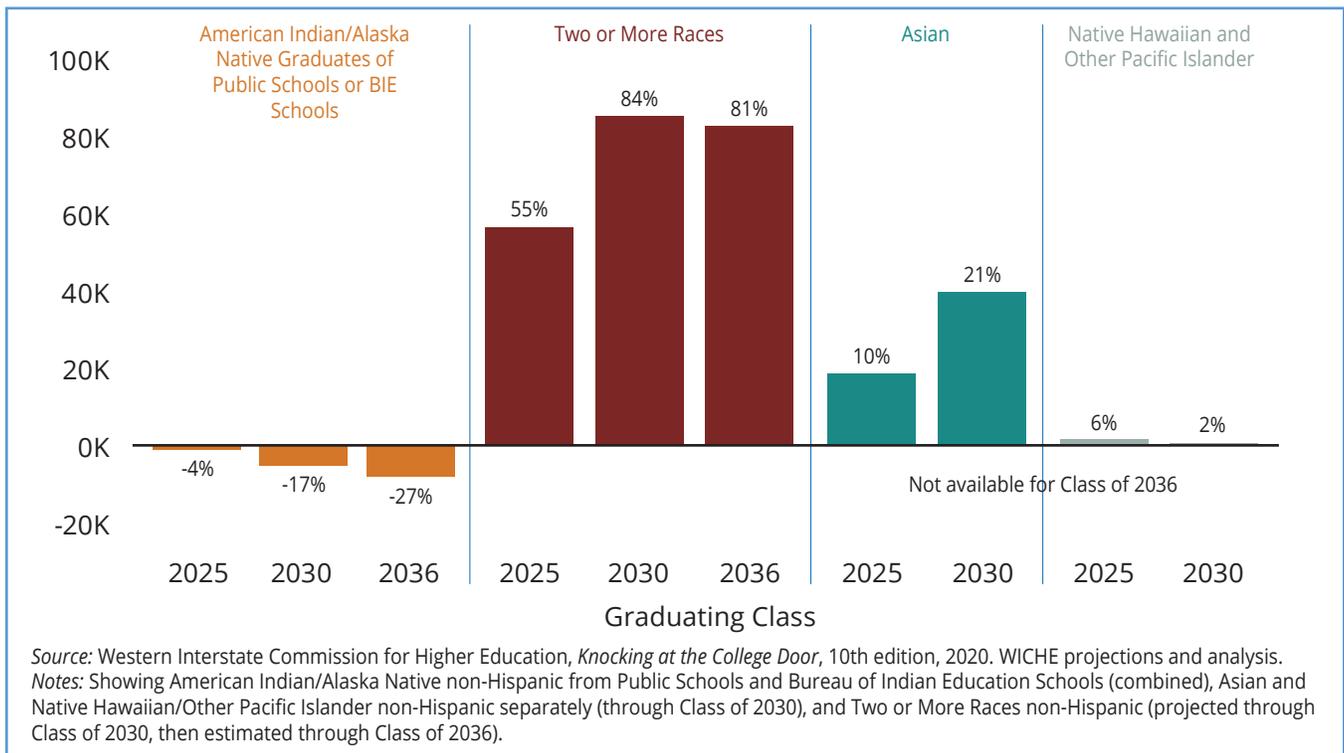


Figure 5b. Projected Change in Number and Percent Among U.S. Public High School Graduates in Classes of 2025, 2030, and 2036 Compared to 2019, by Race/Ethnicity



then projected for the last two graduating classes (2035 and 2036). The number of Native Hawaiian/ Other Pacific Islander public high school graduates is projected to increase about 4 percent through the Class of 2025, at least (Figure 5). However, public high school graduates categorized as Asian dominate and are projected to average about 93 percent of the combined total Asian or Pacific Islander graduates throughout the years projected (through Class of 2030).

Non-Hispanic Public High School Graduates of More Than One Race

In this 10th edition, WICHE provides projections for public high school graduates categorized as non-Hispanic and more than one race (multiracial).¹² Non-Hispanic multiracial graduates were 3 percent of U.S. public high school graduates in Class of 2019 (103,200 graduates). Non-Hispanic multiracial graduates are projected to increase in number by 84 percent by Class of 2030, at which point multiracial graduates are projected to be almost 6 percent of public high school graduates (190,000 graduates).

State-level projections for this category of graduates can be somewhat more speculative, as the projection methodology identifies apparently large changes in what are often relatively small numbers of students and can carry forward possibly implausible rates of increase. The data indicate that more than half the states may experience a doubling, or greater percent increase, in public high school graduates categorized as non-Hispanic multiracial, between Class of 2019 and 2030. WICHE observes from the data that it may take more time for this category of students to settle into a pattern that better reflects multiracial student identifications and less so the evolution of a data category.

Single Race Non-Hispanic American Indian/Alaska Native Public High School Graduates

The projections for American Indian/Alaska Native graduates from U.S. public high schools show a consistent reduction in numbers. The number of reported American Indian/Alaska Native graduates from public schools decreased 9 percent between 2010-11 and 2018-19 (from 33,000 to 30,000). Whereas other public high school graduate populations are peaking around 2025, 6 percent fewer American Indian/Alaska Native graduates are

projected as high school graduates from U.S. public schools by this point. And, 28 percent fewer are projected by 2036, compared to 2019.

The projected severity of declines for graduates with American Indian or Alaska Native identity likely mischaracterize what would appear to be population growth, from other data. What is able to be projected from public school data might be better described as: there is a predicted decline in the number of high school graduates *categorized* as single-race non-Hispanic American Indian/Alaska Native. A strong portion of students with an American Indian/Alaska Native identity may be included among the increasing numbers of multiracial public school graduates.

For example, according to the U.S. Census Bureau, the overall U.S. population of individuals classified as American Indian and Alaska Native (not limited to children) increased at a faster rate than the total population between 2010 and 2019, when one includes those who were single race American Indian/Alaska Native or in combination with another race.¹³ However, only individuals classified as single-race American Indian/Alaska Native will be captured in the federal racial/ethnic definitions for aggregate student data. Since, according to U.S. Census Bureau data, nearly half of the American Indian and Alaska Native population reported multiple races, a strong portion of students with an American Indian or Alaska Native identity are therefore likely to be included among the increasing numbers of multiracial students.¹⁴ Furthermore, a disproportionately higher rate of the American Indian/Alaska Native youth population would be classified as Hispanic (30 percent compared to 25 percent of youth overall) if classified by the education reporting categories. Thus, an additional portion of students who could be identified as American Indian/Alaska Native may instead be represented in the Hispanic category in these projection data.¹⁵

Estimated Additional American Indian High School Graduates from Bureau of Indian Education Schools

Students who attend [Bureau of Indian Education \(BIE\) bureau-run and tribally-controlled schools](#) are not covered by the primary public school data used for these projections, so WICHE estimated their numbers for these national projections.¹⁶ Students at BIE schools may be [graduating at different rates](#)

than American Indian/Alaska Native students in public schools, but those precise graduation rate data are not available.¹⁷ So, WICHE used the available three most recent years of [student enrollment data for BIE schools](#) to estimate what additional number of American Indian graduates there might be, nationally, if an approximate number from BIE schools were added to the number from public schools (WICHE estimated the additional number from BIE schools based on the ratio of 12th graders to graduates for American Indian/Alaska Native students at public schools; see [Technical Appendix](#) for more information).¹⁸ While the estimated higher number of American Indian/Alaska Native graduates from either public schools or BIE schools does not specifically address the race categorization issue, these estimates indicate that may be an average of 7.7 percent more American Indian/Alaska Native graduates, annually, over the course of the projections than would be projected from public schools alone. (Because BIE schools data are not available for all years, this combined estimate is only provided as a supplemental series in the U.S. projections and not added to the U.S. grand totals or any state projections.)

Private High School Graduates: Projected to Trend Upward and Prop Up the U.S. Total High School Graduates – but Future Hard to Predict

The most recent [data for K-12 private schools](#) predict a very different future than would have been anticipated from patterns of [enrollment contraction that had been emerging in the data for years prior](#).¹⁹ The overwhelming pattern for years had been driven by decreasing Catholic school enrollments, and then there were several years of even sharper private school enrollment declines [coincident to the Great Recession](#).²⁰ However, data for school years 2013-14 to 2017-18 (the most recent reported data available for private schools) indicate robust returns to the private school sector since school year 2010-11, which change the projected direction for private high school graduates.

Nationally, private high school graduates are now projected to increase in number by as much as 13 percent from Class of 2017 to 2025 (Figure 6). Then, even as the number of U.S. public school graduates is projected to begin contracting after 2025, 9 percent more *private* high school graduates are projected by Class of 2030 compared to Class of 2017. Private high school graduates are projected as 10-11 percent of U.S. total high school graduates over the course of the projections. So, while public

Figure 6a. U.S. Private High School Graduates, Class of 2001 to 2017 (reported) and 2018 to 2037 (projected)

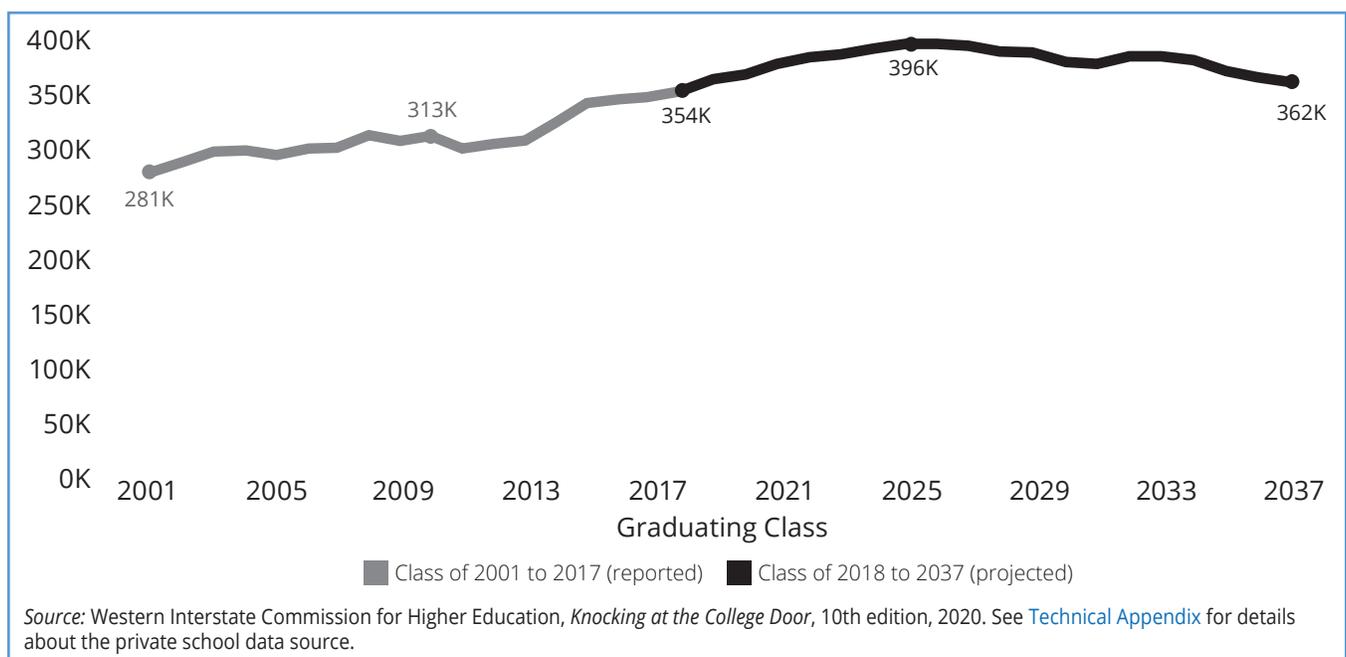


Figure 6b. Projected Percent Change in U.S. High School Graduates Compared to Class of 2017 (last reported year for Private Schools)

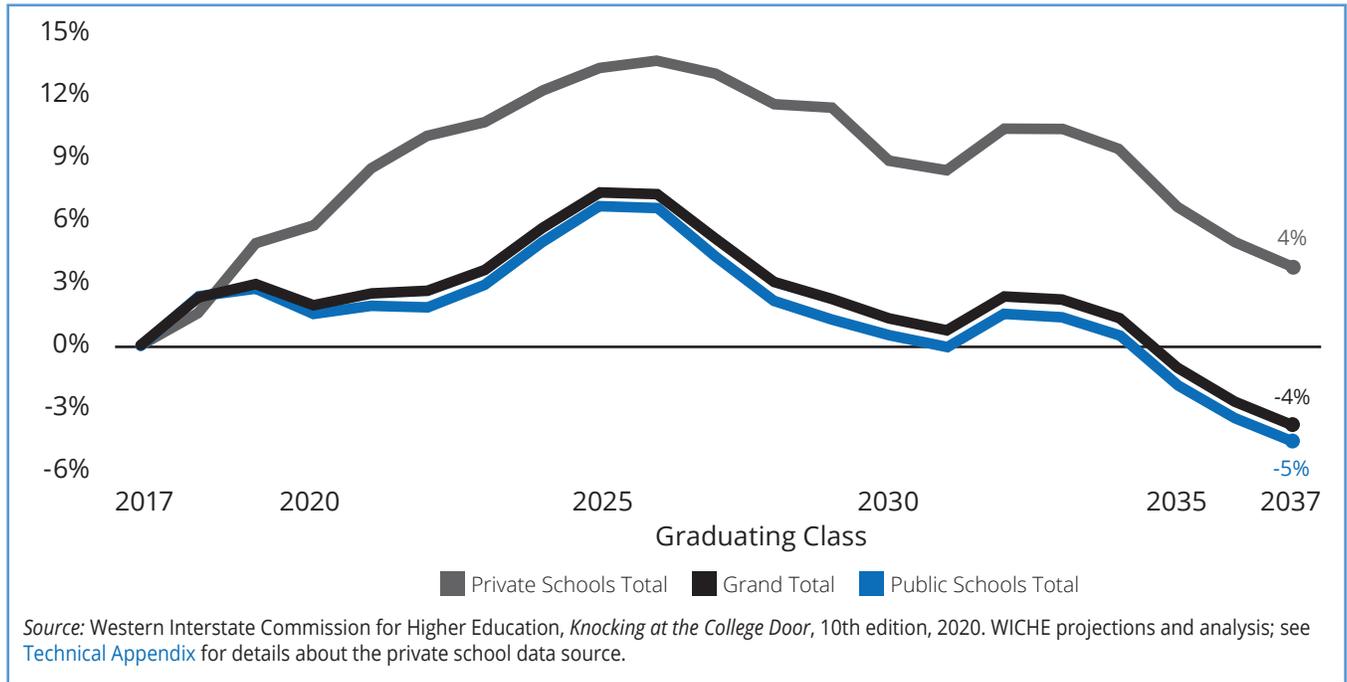
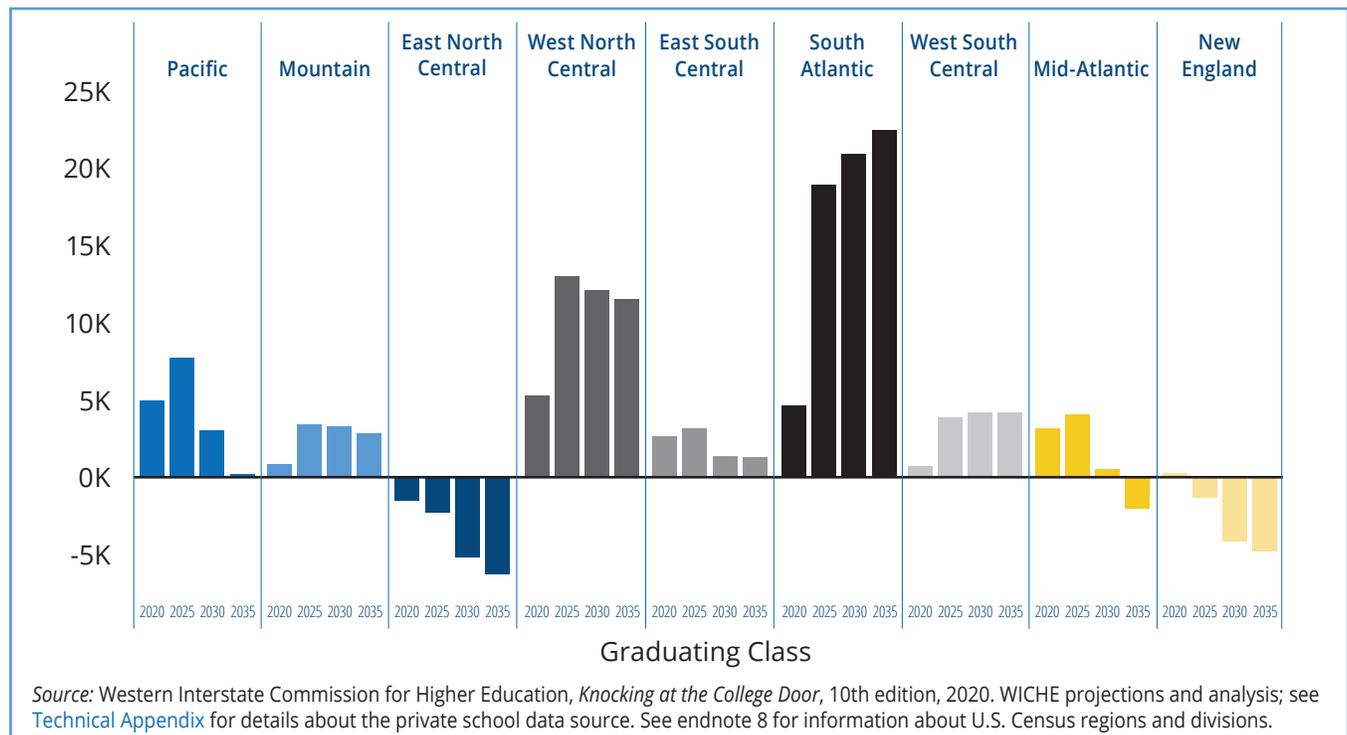


Figure 6c. Projected Private High School Graduates, by U.S. Census Geographic Divisions, Classes 2020 to 2035 Compared to Number Reported for 2017



school populations still drive the overall number and patterns for total U.S. high school graduates, these positive private school trends contribute some “cushion” to the overall downward trend that is predicted by annual decreases in the number of young children beginning with 2007.

The enrollment increases driving these projected trends occurred rapidly. Whereas, nationally, private elementary and middle school enrollments declined by more than 20 percent and high school enrollments by 2 percent from school year 2001-02 to 2011-12, from school year 2011-12 to 2017-18 they increased by 7 percent and 15 percent, respectively. Some issues with the survey data used for the state-level private school projections are discussed in the [Technical Appendix](#). But these issues do not appear to affect the national and regional estimated numbers of private school students.

Ultimately, even if the recent resurgence for U.S. private schools indicated from the available data is reliably correct, these rapid and strong trend changes are not ideal for making projections. The progression methodology will mathematically carry forward recent past trends, even if the magnitude of change would not necessarily be sustained in actuality over the coming 15-17 years. The release of school year (SY) 2019-20 data for private schools is not expected until 2021; WICHE will monitor those data to assess whether the increases between school year 2011-12 and 2017-18 were sustained as projected for the Class of 2018 to 2020 and beyond. But it will be several years before data indicate how private schools fared in relation to COVID-19 and ongoing economic instability.²¹

Differing Private School Graduate Trends by Region

Figure 6c shows which regions are driving the national trend of increasing private school graduates (presented by the nine U.S. Census geographic divisions). Fewer private high school graduates are projected from the East North Central (Great Lakes) and New England regions, although not in the sheer large numbers that were previously projected. Private high school graduates are projected to increase for virtually all other parts of the country through the Class of 2030. A downturn in private high school graduates from the Mid-Atlantic is projected by the early 2030s (from New York, New Jersey and Pennsylvania). Even though the South is now the dominant region for overall growth of high school graduates, the substantial increases from the South appear to be driven not only by the increasing number of children but also private school expansion.

Changing Mix of Private School Students by School Type

It is not possible to specifically produce projections of high school graduates by type of private school from the available data, but WICHE can estimate enrollment trends by type of private school at the national level. Table 3 shows quite different enrollment patterns that occurred between school year 2001-02 and 2011-12, compared to those between 2011-12 to 2017-18 (the most recent available year of private school data), for private schools categorized as Catholic, other religious or nonsectarian (many nonsectarian private schools are also considered ‘independent schools’, but they

Table 3. Private School Student Enrollments SY 2001-02 to 2017-18, by Type of Private School

	School Year 2001-02 to 2011-12				School Year 2011-12 to 2017-18			
	Grades 1 to 8		Grades 9 to 12		Grades 1 to 8		Grades 9 to 12	
	Percent Change	Share, 2011-12	Percent Change	Share, 2011-12	Percent Change	Share, 2017-18	Percent Change	Share, 2017-18
Catholic	-29%	43%	-5%	48%	-1%	40%	9%	45%
Other Religious	-17%	40%	2%	32%	11%	41%	13%	31%
Nonsectarian	-6%	17%	8%	22%	22%	19%	26%	24%

Source: WICHE estimates and analysis from Private School Universe Survey data (<https://nces.ed.gov/surveys/pss/>). See [Technical Appendix](#) for details about the private school data source.

are not synonymous). Whereas previous trends were dominated by the decreasing Catholic school portion, the projections for private school graduates from 2020 to 2037 are strongly influenced by recent rapid enrollment increases for non-Catholic religious private schools and nonsectarian schools.

Race/Ethnicity of Private School Students

Finally, the underlying data source for the private school series only provides the total number of K-12 students by race/ethnicity, and not detail by grade-level or for graduates. So, WICHE is not able to include private school students in the race/ethnicity series of these projections. But, [NCES estimates](#) that 67 percent of private elementary and secondary school students in fall 2017 were White, 11 percent were Hispanic, 9 percent were Black, 6 percent were Asian, and 5 percent were students of two or more races.²² Therefore, just as these projected numbers of private school graduates add to and help buoy up the total number of high school graduates, so might they supplement to an extent the trends indicated by race/ethnicity. By extension, the largest portion of these private high school graduates might offset some of the declines of White public high school graduates – and increase the numbers of graduates already projected from public schools for the other public school race/ethnicity categories.

Improvements in High School Graduation Rates Fueled the Robust Numbers of Graduates

From the early 1990s to 2010, the number of U.S. total high school graduates increased 2 percent per year, on average. An imminent decrease of these strong annual increases in high school graduates has been the subject of previous editions of these projections and predicted by [others](#).²³ The updated data indicate that, in fact, between the Class of 2010 and 2019, the average annual rate of increase in U.S. total high school graduates declined to 1.1 percent. However, according to the data WICHE analyzed, it appears that graduation rate improvements that occurred over the past decade yielded more high school graduates even while the overall rate of increase in youth is tightening.²⁴ Some shifting of students to the private school sector also appears to contribute to some of the observed increases.

WICHE analyzed the reported numbers of high school graduates between the Class of 2013 and

Class of 2019 to better understand the sources of unpredicted change since the 9th edition of these projections and to identify the factors that are driving these newly issued projections. The 9th edition projections predicted 2 percent fewer U.S. total high school graduates for the Class of 2013 than were ultimately reported, increasing to a difference of 8 percent by the Class of 2017 (these are the four years of data which provided a comparison point of reported, confirmed graduates; by the Class of 2018 and 2019, private school values are projected).

Private School Portion of the Recent Increases

Private school graduates accounted for 30 percent to 58 percent of the unpredicted increase in the four years examined, amounting to between 35,000 and 81,000 more private high school graduates than were previously predicted. As discussed above, projecting high school graduates for the private school sector has become increasingly difficult.

Public School Portion of the Recent Increase, by Race/Ethnicity

Public high school graduate numbers have subsequently been reported as 1 to 6 percent more than predicted for the graduating classes of 2013 to 2019. Hispanic public high school graduates accounted for the greatest increases from what was predicted; 75,000 more Hispanic graduates (10 percent) were reported for the Class of 2019 than were predicted in the 9th edition.

The 9th edition provided public high school graduate projections by four major race categories, whereas six race categories are available in this 10th edition, so it is not possible to fully compare. Notably, about 1 percent fewer White non-Hispanic graduates were reported between classes of 2013 and 2019 than were projected in the 9th edition; 10,000 to 30,000 per year. The 9th edition did not provide separate projections for multiracial public high school graduates, rather their numbers were counted in the four main race categories. In this edition, the newly projected multiracial category accounts for the greatest quantity of graduates by race that were not previously projected, starting at 63,000 with the Class of 2013 and growing to 150,000 by the Class of 2019. By the Class of 2019, a greater number of Black, Asian/Pacific Islander and American Indian/Alaska Native public high school

graduates were also reported compared to what was predicted (30,600 or 6.6 percent; 14,000 or 7.2 percent; and 2,400 or 8.4 percent, respectively).

Recent Increases in Number of Graduates Follow Increases in Graduation Rates

WICHE's projections for the total number of high school graduates are not derived from the federally defined high school graduation rates, which states have been reporting since 2012. But, WICHE's analysis indicates that the two graduation trends (graduation rates and the total annual number of graduates) track closely in relative magnitude.

According to the U.S. Department of Education, the [U.S. average on-time](#) graduation rate for public high school students increased from 79 percent in school year 2010–11 to 85 percent in 2017–18 (the latest information available).²⁵ Of course, graduation rates differ by state and subpopulations of students, but by school year 2017-18, 30 states reported an *overall* public school adjusted cohort graduation rate at or above this national average.²⁶ Comparatively, the data WICHE collected from states shows that the number of *total annual* U.S. public high school graduates increased 8 percent over the same period. In at least half the states, the increase in the number of total annual public high school graduates tracked within 1.5 percent of the increase in the estimated number of on-time graduates that can be derived from the adjusted cohort graduation rate data ([WICHE analysis and estimates from publicly available data](#)).²⁷

The U.S. on-time graduation rates for Hispanic public high school students increased from 76.3 to 81.0 percent by 2017-18 (the latest year available). The on-time graduation rates for Black public high school students increased from 72.5 to 79.0 percent; for American Indian/Alaska Native public school students (not including students of Bureau of Indian Education schools), rates increased from 69.6 to 73.5 percent; and for Asian/Pacific Islander students, rates increased from 89.4 to 92.2 percent (rates for multiracial students not available). Over the same period, on-time graduation rates for White non-Hispanic public school students increased from 87.2 to 89.1. This improvement in *rates* did appear to yield positively in the number of U.S. White non-Hispanic public high school graduates by potentially reducing the predicted rates of decline predicted in their student numbers.

The COVID-19 Impact

WICHE's high school graduate projections have always been based on retrospective data. Most years, this leads to [relatively accurate projections](#), especially in the first few years after publication. But – in what might be the understatement of all understatements – 2020 is not “most years.” Typically, as can be seen in this edition, the biggest source of deviation from the projections are changes in how well K-12 education systems across the country serve students. As retention and graduation rates improve, WICHE's projected numbers can fall behind the actual numbers. In the 40-year history of this work, however, our society has not experienced this type of global event with the potential to dramatically impact our nation's K-12 educational pipeline, and in ways that are so dramatically inequitable across racial/ethnic, economic, and geographic lines.

By reflecting the recent past, these projections perpetuate the latest school attendance patterns and graduation rates. For the U.S. overall, that means a roughly 85 percent on-time graduation rate is presumed (the precise rate will vary by state and student race/ethnicity).²⁸ Were nothing to have intervened, the projections indicate that relatively high graduation rates would buoy up the number of high school graduates and somewhat offset the impacts of developing contraction and eventual decline in the young adult population.

However, it is not yet clear what the impact of COVID-19 and the resulting economic disruption will be. Certainly, students of all grades, ages and school type were impacted as schools rapidly transitioned to remote instruction in March 2020, including learning loss or reduction, disruption or canceling of milestone academic and extracurricular events, socioemotional or family socioeconomic changes that might have immediate or long-term achievement impacts, or even complete disengagement from school.

[Some initial research](#) has found increased graduation rates in 2020, possibly due to the economic downturn leading some students who would have stopped out to seek employment to stay and earn a diploma.²⁹ The authors also speculate that the loss of extracurricular activities and distractions could lead to improved completion. Yet, even with these somewhat counterintuitive

findings, they are very clear that there are definitely negative impacts on some students, including a possible decline in educational quality. These short-term impacts bear watching, but it is also clear that COVID-19 is likely to have long-term and negative effects on the education system.

The trends projected using WICHE's [methodology](#) mathematically "assume" that school attendance and graduation through school year 2021-22 (and further into the future as the nation recovers from the pandemic and economic impacts) will be roughly similar to recent years. This is looking less and less plausible, but exact impacts are not yet known. One thing is clear, however: how well the education system serves diverse student populations and low-income students has a large bearing on whether the overall number of high school graduates will vary from what is projected and by how much. This is particularly concerning given the documented impacts of COVID-19 on these communities.

Moreover, the overall graduation pattern is influenced by "the parts of the whole," which from the available data refer largely to race/ethnicity. White non-Hispanic high school graduates are still the majority by number and have among the highest graduation rates – increasing *rates* of public high school graduation can only mitigate or dampen the accumulating effect of White youth population declines in the high school graduate numbers. On the other hand, almost half of U.S. school-age youth are children of color and as they age from elementary to high-school age, the number of high school students of color will increase. So, whether educational outcomes for children of color or otherwise underserved students are more negatively impacted during this time has a large bearing on whether the overall number of high school graduates will change from what is projected.

There also may be volatility in the proportion of students at public or private schools as families face economic pressure, but also [concerns](#) about in-person versus remote learning or childcare needs.³⁰

Sudden, widespread shifts in education are uncommon, so it has typically been unnecessary (and beyond WICHE's resources) to update the projections more than every 4 to 5 years, let alone annually. But increased responsiveness and frequency of information is justified and needed in this unprecedented period. WICHE is

preparing and intends to issue new information about the state-level trends, and possibly adjusted projections, as newer actual data about enrollments and graduates from school year 2019-20 to 2021-22 become available. WICHE relies on a relatively straightforward projection methodology and can capitalize on this to respond as newer data become available. At the same time, some of the expected impacts from COVID-19 and the ensuing economic downturn may be much more nuanced or unclear than can be identified with the existing projection methodology or enrollment and graduate count changes, requiring a new modeling approach. And, these impacts will be intersecting with and overlapping across multiple sectors, perhaps requiring new approaches.

The First Projected Year, Class of 2020, is Less Likely to Show Impacts from COVID-19

The number of high school graduates projected for Class of 2020 would probably only be substantially different from the number ultimately reported, if high school seniors who were on-track to graduate by March 2020 were so impacted by the disruptions in the last several months of the spring semester that it impeded their ability to complete requirements for receiving their diploma. And this scenario would suggest fewer than projected graduates. Given that many school districts provided [substantial flexibility to students](#), it may be that 2020 actual numbers are consistent with, or slightly above, projected numbers.³¹

The specific impacts to high school seniors during Spring 2020 varied by race/ethnicity and socioeconomic status and this disaggregation will be an important story once the data are available. It could be, for example (and speaking entirely hypothetically) that the projected number of graduates are higher than projected, overall, but that there are fewer than projected graduates of specific populations, such as students of color – given the disparate impacts of COVID-19 and the economic disruptions. And, even those who achieved their diploma experienced a range of possible impacts on their post-high school plans for postsecondary education, work, and other parts of life. That may inevitably mean that even if these projections prove to be relatively accurate for the high school Class of 2020, they might not

be as descriptive about incoming freshmen college populations.

In terms of when we might be able to compare the projected numbers to what actually occurred with the high school Class of 2020, based on WICHE's experience with compiling the data underlying the projections, public school grade-level enrollments for school year 2019-20 are imminent, but high school graduate counts for the Class of 2020 will be available on a rolling basis state-by-state but not fully available for every state and therefore for the nation, until Fall 2021.

Class of 2021 and Future Graduate Trends Could Be Different for Many Reasons

Concurrent research and development will be needed to track and model how the pandemic is impacting education and high school graduation in the many and varied ways that cannot be easily identified by straightforward enrollment and graduate count changes – or that will take several years to emerge.

High school seniors SY 2020-21; would-be Class of 2021. In practical terms for these projections of high school graduates for the forthcoming Class of 2021, the greatest potential for the projections to be very different from the eventual actual number who graduate by spring/summer 2021 relates to how COVID-19 impacted students who were 11th graders in spring 2020 and rising seniors of school year 2020-21.

The most immediate possibility for change from projected numbers is if there was a disengagement/dropping out of students between 11th and 12th grade at different rates than historically experienced (or at least a perceived dropping out, given how it is harder to track student attendance with online learning). Even if there is no net unexpected difference in the *total* actual number of 11th graders progressing to 12th grade between SY 2019-20 and 2020-21, it is possible that there might be some apparent dropping out related to students transitioning to homeschooling, or transferring between public and private schools; and these types of transitions could impact the projections by sector, at least.

Current high school seniors and would-be graduates projected for the Class of 2021, might also be

impacted by some more subtle and developing COVID-19 impacts. For example, their progress or plans in their senior year with intended courses may be altered (including advanced coursework such as concurrent/dual enrollment access, AP, IB etc.), and so might be [extracurricular pursuits](#) that were part of their high school completion plan (sports, music, expository activities, performances, etc.).³² [International secondary school students](#) are likely experiencing their own unique impacts.³³ And, of course, some number of high school seniors are being impacted by lack of access to online learning technology, internet and supports, needed support for learning and other disabilities, and possibly economic and family circumstances that are further challenging their learning. Any of these or other circumstances of COVID-19 might derail some seniors from graduating in 2021. And these impacts will be occurring disparately by race/ethnicity and socioeconomic status.

On the other hand, there is also some evidence that the [online learning environment may be beneficial for some students'](#) achievement.³⁴ And again, even if the number of graduates eventually remains somewhat similar to the number projected, only the future will tell how their post-graduation plans may have been impacted, so that the number of graduating high schoolers might not foretell incoming freshmen classes.

High school graduating classes past 2021. Beyond these considerations for the first two projected years – it could take years for COVID-19's full impact on high school graduation to be evidenced. For example, it might be three or four years before it is evident if ninth graders transitioning in SY 2020-21 were substantially impacted by their unusual transition to high school. Similarly, initial estimates point to the possibility of greater [impacts for middle schoolers](#), which would be evidenced around the approach to 2025.³⁵ And, [learning loss](#), particularly [among underserved](#) public school students of color or [low-income](#) younger students might potentially undo some of the recent graduation improvements for these populations, over the medium and longer term.³⁶ [Initial estimates](#) have varied about the learning impacts of the [shift to remote/online instruction](#), possible changes in education "quality" and high school graduation standards, and the impact of this turbulent time on learning due to pressures on children's mental health and

socioemotional states.³⁷

There may be shifting of students between public, private or [home schooling](#), which could alter the projected distribution of students and graduates by sector.³⁸ There will also be variations across states or in specific ways related to the recession that will involve in-depth research and utilization of other non-education data sources, such as Census and Bureau of Labor Statistics data, or research that others produce. And, over the very long term, there are some early predictions that the already ongoing [birth declines may continue or be amplified](#).³⁹

How might eventual private school trends differ from projections? By the time of publication, the most recent data about private school students was two years lagged from public school data (private school enrollments through school year 2017-18, graduates through Class of 2017).⁴⁰ And, as discussed, the data that estimate private school populations indicates swift increases between 2013-14 and 2017-18. Thus, even barring what COVID-19 might do for the sector, the future of private school graduates is already less determinate than for public school students. (And, any changes to private school trends also implicitly affect the grand total and the public school sector, which students might be transferring between). From a projection standpoint, COVID-19 impacts may increase the existing volatility of private school trends. For example, there are some indications that [families](#) may be opting for private school amidst concern with public school re-openings or the need for the childcare.⁴¹ And unstable private school enrollments [during the Great Recession](#) may be some indication of potential impacts to school choice of the current unique economic environment.⁴²

Conclusion and Next Steps

If you discount COVID-19, the conclusions and key takeaways from these projections are relatively straightforward. Namely, improvements in high school graduation rates are leading to more high school graduates than previously projected and offsetting some – but definitely not all – of the expected national declines beginning in 2026. High school graduating classes will continue to become more diverse, led by growing proportions of Hispanic and multiracial students in particular. Our nation's education systems must continue and redouble efforts to address systemic inequities

that have resulted in disparate outcomes by race/ethnicity. It is clearly the right thing to do – and necessary for the economic success of our society – and these projections only add to the imperative by showing that a greater number of students of color will continue to flow through the education pipeline in the coming years.

But clearly, discounting COVID-19 is impossible and the pandemic adds a layer of complexity and uncertainty to these projections. WICHE provides these data for planning investments and programming in U.S. education, but acknowledges that – as always – planners and policymakers inevitably need more information for using the data given the expected limitations to their precision. This is never more true than now.

In preparing this report, WICHE has heard clearly from advisors, experts, and key stakeholders about the uncertainty introduced by the pandemic. WICHE intends to issue new information as more evidence becomes available about what might be different in the immediate or longer-term future for high school graduates due to COVID-19 and the recession.

This 10th edition is being released almost entirely online, focusing on getting the data into the hands of those who can use them and enabling transparent and efficient additions of new information as it becomes available, with an abundance of interactive charting and visualization tools.

About

WICHE provides this information free of charge in a variety of formats: reports, downloadable data, charts and profiles for state, regional and national trends, and archived presentations and forums.

To produce the projections, WICHE gathers and maintains data about the numbers of students for every grade of public and private schools for each state. WICHE's projection method is a simple and frequently used cohort progression method, which observes the mathematical ratio of students in a current year compared to the number in the previous year. These ratios implicitly capture changes in the student numbers that are – for example – from migration in and out of the state, grade promotion and retention, and the impact of external environments or events on youth trends, among other things. Projections based on student counts can typically be made for 12 years out.

WICHE's projections also invoke counts of births to extend our projections out to 18 years.

In all, the 10th edition considers reported enrollments and graduates through school year 2018-19, and U.S. births, to project graduates from the Class of 2020 through 2037 for the nation, regions, and states. From the available data, WICHE can produce the projections by race/ethnicity for public schools, which generate about 90 percent of U.S. graduates. Projections for private schools are state totals only, because the underlying data source does not provide the necessary detail to describe private school graduates' race/ethnicity.

Graduates are projected through school year 2036-37 for the totals for public and private schools, and through school year 2035-36 for public school graduates by race/ethnicity. The methodology also produces grade-level enrollment projections; for this edition, enrollment projections are available for all grades through school year 2025-26, and for additional years past that for specific grades (available with the graduate projections in the downloadable datasets).

For full detail about the source data, methodology, implicit influences on the projections, and the accuracy of the projections over time, see the [Technical Appendix](#).

Endnotes

¹ National Center for Education Statistics, Common Core of Data, "Dropouts, Completers and Graduation Rate Reports," accessed on December 3, 2020 at https://nces.ed.gov/ccd/pub_dropouts.asp. National Center for Education Statistics, "Digest of Education Statistics," accessed on December 3, 2020 at https://nces.ed.gov/programs/digest/current_tables.asp.

² For example, graduation rate improvements occurred while the Great Recession and recovery occurred. This could be evidence about what might occur during this period. However, information emerging from the Fall 2020 semester suggests that past evidence might not be directly relevant, or complete, for beginning to understand the impacts of COVID-19 and this economic downturn.

³ The U.S. total includes the 50 states and District of Columbia and covers the overwhelming majority of graduates from public high schools and the almost 10 percent of youth who attend private schools (nationally). Home-schooled or other pockets of youth are not explicitly covered by the available data. WICHE provides an estimate of the number of graduates from Bureau of Indian Education schools at the national level in this edition, but it is not included here, because it is not available for all years. Projections for Puerto Rico are also available in the detailed data, but not included here.

⁴ Centers for Disease Control and Prevention, *Nativity Information: Live Births* (Washington, D.C.: U.S. Department of Health and Human Services, accessed on November 23, 2020 at <https://wonder.cdc.gov/nativity.html>).

⁵ The predicted rates of decline for U.S. high school graduates (11 percent) are not exactly equal to the birth cohort declines (13 percent) for a number of reasons that WICHE cannot precisely quantify, but which are implicitly sensed and modeled by the projection methodology. For example, not all students begin kindergarten and first grade at the same age. And, students are promoted or repeat grades, which can diffuse changes with very young children by later years. Also, some children may be home-schooled and not be reflected in these projections. Also, immigration historically has led to somewhat more high school graduates than might be predicted by U.S. births alone; some small amount of youth in-migration might be sensed in the student enrollments that were not reflected in U.S. births (see [Technical Appendix](#) for more on this).

⁶ As discussed elsewhere in this report, the trends described by a focus on single-race non-Hispanic American Indian/Alaska Native identity provide a contrary picture to the population increases that are occurring with a broader definition of individuals with any American Indian/Alaska Native identity.

⁷ Births in the categories Asian or Native Hawaiian/Other Pacific Islander, separately, or multi-racial, are not available until 2016. Therefore, WICHE does not produce the extended projections for these series, because the data are available for too few years.

⁸ Projections are also provided in the detailed data for the nine Census regional subdivisions. (See also Census Regions and Divisions of the U.S. map at https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf).

⁹ Scott Jaschik, "Are Prospective Students About to Disappear?" *Inside Higher Ed*, January 8, 2018, accessed on December 3, 2020, at <https://www.insidehighered.com/admissions/article/2018/01/08/new-book-argues-most-colleges-are-about-face-significant-decline>. Megan Adams and Samantha Smith, "The demographic cliff is already here – and it's about to get worse," *Education Advisory Board*, May 28, 2020, accessed on December 3, 2020 at <https://eab.com/insights/expert-insight/enrollment/the-demographic-cliff-is-already-here-and-its-about-to-get-worse/>.

¹⁰ Graduates from Puerto Rico contributed roughly 22,000 Hispanic public high school graduates in the Class of 2019 (about 0.65 percent of the combined total of Hispanic public high school from the 50 states, District of Columbia and Puerto Rico). Based on Puerto Rico public school enrollments for school year 2018-19, by the Class of 2030 there could be fewer than 10,000 public high school graduates from Puerto Rico.

¹¹ Due to limitations with the births data used to project the outer years, WICHE is only able to separately project Asian and Native Hawaiian/Other Pacific Islander graduates through the Class of 2030. Also, each series is independently projected so the separate projections may not equal when summed.

¹² Similar to the separate Asian and Native Hawaiian/Other Pacific Islander series, it is not possible to project this category beyond the Class of 2030. However, were the number of these graduates not at least estimated for 2031 to 2036, the sum of the public high school graduates by race/ethnicity would be noticeably incomplete compared to the public school graduate total. Therefore, for the Class of 2031 to 2036, multiracial public high school graduates are estimated based on continuing the share they represent of non-Hispanic graduates by the Class of 2030.

¹³ United States Census Bureau, "2019 Population Estimates by Age, Sex, Race and Hispanic Origin," accessed on December 3, 2020 at <https://www.census.gov/newsroom/press-kits/2020/population-estimates-detailed.html>.

¹⁴ United States Census Bureau, "Annual Estimates of the Resident Population by Sex, Race, and Hispanic Origin for the United States, April 1, 2010 to July 1, 2019," accessed on December 3, 2020 at <https://www.census.gov/newsroom/press-kits/2020/population-estimates-detailed.html>. WICHE computations and analysis.

¹⁵ United States Census Bureau, *2018 American Community 1-Year Estimates, Survey Public Use Microdata*, (Suitland, MD: United States Census Bureau). Data available at <https://www.census.gov/programs-surveys/acs/microdata.html>. WICHE computations and analysis.

¹⁶ United States Department of the Interior, "Bureau of Indian Education: Schools," accessed on November 24, 2020 at <https://www.bie.edu/schools/directory>.

¹⁷ Aiden Woods, "The Federal Government Gives Native Students an Inadequate Education, and Gets Away With It," *ProPublica*, August 6, 2020, accessed on December 3, 2020 at <https://www.propublica.org/article/the-federal-government-gives-native-students-an-inadequate-education-and-gets-away-with-it>.

¹⁸ National Center for Education Statistics, "CCD Data Files," accessed on December 3, 2020 at <https://nces.ed.gov/ccd/files.asp>.

¹⁹ National Center for Education Statistics, "Private School Universe Survey (PSS)," accessed on November 23, 2020 at <https://nces.ed.gov/ccd/files.asp#Page:1>. William J. Hussar and Tabitha M. Bailey, *Projections of Education Statistics to 2024*, (Washington, D.C.: National Center for Education Statistics, September 2016), accessed on November 23, 2020 at <https://nces.ed.gov/pubs2016/2016013.pdf>.

²⁰ Stephanie Ewert, *The Decline in Private School Enrollment*, (Suitland, MD: United State Census Bureau: Social, Economic, and Housing Statistics Division, January 2013), accessed on December 3, 2020 at https://www.census.gov/content/dam/Census/library/working-papers/2013/acs/2013_Ewert_01.pdf.

²¹ But, for example, one source of enrollment growth for private schools was international students (including those seeking U.S. high school diplomas), and that appears to have **recently declined**, according to Institute of International Education. See Leah Mason and Natalya Andrejko, *Studying for the Future: International Secondary Students in the United States*, (New York, NY: Institute of International Education, 2020), accessed on December 3, 2020 at <https://iie.widen.net/s/r2trwgnvbq>.

²² Bill Hussar, Jijun Zhang, Sarah Hein, Ke Wang, Ashley Roberts, Jiashan Cui, Mary Smith, Farrah Bullock Mann, Amy Barmer, and Rita Dilig, *The Condition of Education 2020*, (Washington, D.C.: United States Department of Education, National Center for Education Statistics, 2020), accessed December 8, 2020 at <https://nces.ed.gov/pubs2020/2020144.pdf>. (Specifically, Private School Enrollment section and tables.)

²³ Hussar and Bailey, 2016.

²⁴ Hussar et al, 2020. See, for example, "Public High School Graduation Rates" section.

²⁵ The term "on-time graduation rate" refers to the methodology states are required to use to report graduation rates to the U.S. Department of Education, which is an adjusted cohort graduation rate (ACGR) method. For more information see National Center for Education Statistics, "High school graduation rates," accessed on December 3, 2020 at <https://nces.ed.gov/fastfacts/display.asp?id=805>.

²⁶ National Center for Education Statistics, "Digest of Education Statistics: Table 219.46, Public high school 4-year adjusted cohort graduation rate (ACGR), by selected student characteristics and state: 2010-11 through 2017-18," accessed on December 3, 2020 at https://nces.ed.gov/programs/digest/d19_219.46.asp.

²⁷ Because the WICHE projections encompass total annual public high school graduates, not just those considered graduating 'on-time' within four years of ninth grade, the data underlying these projections will be slightly higher even than suggested by on-time graduate estimates. By WICHE's estimate, nationally, there are about 6 percent more annual total public high school graduates than the number who graduate on-time.

²⁸ Representation of U.S. overall public school ACGR rates between 2013-14 and 2017-18 (the latest year available), using the five-year weighted average approach employed by the projections.

²⁹ Kunwon Ahn, Jun Yeong Lee, John V. Winters, "Employment Opportunities and High School Completion during the COVID-19 Recession," *Economics Working Papers*: Department of Economics, Iowa State University, October 19, 2020, accessed on December 3, 2020 at https://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=1114&context=econ_workingpapers.

- ³⁰ Megan Brennan, "K-12 Parents' Satisfaction With Child's Education Slips," Gallup, August 25, 2020, accessed on December 3, 2020 at <https://news.gallup.com/poll/317852/parents-satisfaction-child-education-slips.aspx>.
- ³¹ Education Week, "Data: How is Coronavirus Changing States' Graduation Requirements?" accessed on December 3, 2020 at <https://www.edweek.org/ew/section/multimedia/data-how-is-coronavirus-changing-states-graduation-requirements.html>.
- ³² Greg Toppo, "Sign on, Zoom in, Drop Out: Pandemic Sparks Fears that Without Sports and Other Activities, Students Will Disengage from School," *The 74 Million*, November 12, 2020, accessed on December 3, 2020 at <https://www.the74million.org/article/sign-on-zoom-in-drop-out-pandemic-sparks-fears-that-without-sports-and-other-activities-students-will-disengage-from-school/>.
- ³³ Mason and Andrejko, 2020.
- ³⁴ Nora Fleming, "Why Are Some Kids Thriving During Remote Learning?" *Edutopia*, April 24, 2020, accessed on December 3, 2020 at <https://www.edutopia.org/article/why-are-some-kids-thriving-during-remote-learning>. Erika Christakis, "School Wasn't So Great Before COVID, Either," *The Atlantic*, December 2020, accessed on December 3, 2020 at <https://www.theatlantic.com/magazine/archive/2020/12/school-wasnt-so-great-before-covid-either/616923/>.
- ³⁵ Lucrecia Santibanez and Cassandra Guarino, "The Effects of Absenteeism on Cognitive and Social-Emotional Outcomes: Lessons for COVID-19," *EdWorkingPapers*, 20:261 (2020), accessed on December 3, 2020 at <https://www.edworkingpapers.com/ai20-261>.
- ³⁶ Megan Kuhfield, James Soland, Beth Tarasawa, Angela Johnson, Erik Ruzek and Jing Lui, "Projecting the potential impacts of COVID-19 school closures on academic achievements," *EdWorkingPapers*, 20:226 (2020), accessed on December 3, 2020 at <https://www.edworkingpapers.com/ai20-226>. Marta W. Aldrich, "COVID slide: Struggling Tennessee students have fallen even further behind, say superintendents," *Chalkbeat*, September 22, 2020, accessed on December 3, 2020 at <https://tn.chalkbeat.org/2020/9/22/21451931/covid-slide-struggling-tennessee-students-have-fallen-even-further-behind-say-superintendents>. C. Kirabo Jackson, Cora Wigger and Heyu Xiong, "The Costs of Cutting School Spending," *Education Next*, Vol. 20, No. 4 (2020), accessed on December 3, 2020 at <https://www.educationnext.org/costs-cutting-school-spending-lessons-from-great-recession/>.
- ³⁷ Megan Kuhfield, James Soland, Beth Tarasawa, Angela Johnson, Erik Ruzek and Karyn Lewis. *Learning during COVID-19: Initial findings on students' reading and math achievement and growth*, (Portland, OR: NWEA, Collaborative for Student Growth, November 2020), accessed on December 3, 2020 at <https://www.nwea.org/content/uploads/2020/11/Collaborative-brief-Learning-during-COVID-19.NOV2020.pdf>. Ember Smith and Richard V. Reeves, "Students of color most likely to be learning online: Districts must work even harder on race equity," *Brookings*, September 23, 2020, accessed on December 3, 2020, <https://www.brookings.edu/blog/how-we-rise/2020/09/23/students-of-color-most-likely-to-be-learning-online-districts-must-work-even-harder-on-race-equity/>. Center for Promise, "What Drives Learning: Young People's Perspectives on the Importance of Relationships, Belonging, & Agency," *America's Promise Alliance*, September 23, 2020, accessed on December 3, 2020 at <https://www.americaspromise.org/resource/what-drives-learning-young-peoples-perspectives-importance-relationships-belonging-agency>.
- ³⁸ Brennan, 2020.
- ³⁹ Melissa S. Kearney and Philip B. Levine, "Half a million fewer children? The coming COVID baby bust," *Brookings*, June 15, 2020, accessed on December 3, 2020 at <https://www.brookings.edu/research/half-a-million-fewer-children-the-coming-covid-baby-bust/>.
- ⁴⁰ Data from the Private School Universe Survey for the 2019-20 school year and 2018-19 high school graduates are estimated to be released in Spring to Summer 2021 (per conversation with the NCES program coordinator).
- ⁴¹ Brennan, 2020.
- ⁴² Ewert, 2013
- ⁴³ Data were not available at the time of publication to provide projections for the U.S. territories and freely associated states that are affiliated with the WICHE region (including Guam and the Commonwealth of the Northern Mariana Islands).

Technical Appendix

Underlying assumptions and data constraints are inherent in any projections and must be understood to determine the appropriate uses and interpretations of the projections. The historical reported counts and the projections of high school graduates in this edition of *Knocking at the College Door* rely on several types of data accumulated over many years and spanning more than three decades, from school year (SY) 2000-01 to 2036-37. The sections below provide an overview of the projection methodology, pertinent information relating to the data underlying the projections, and influential factors that are implicitly modeled in the projections. Of particular relevance for this edition are the possible implications for these projections of the COVID-19 period, which are referenced in this *Technical Appendix* and the main *Knocking at the College Door report* issued with the projections in December 2020.

Methodology Overview

WICHE's *Knocking at the College Door* projections of high school graduates are produced using a methodology known as the cohort survival ratio (CSR) method, which is essentially an observation from the count data sources, of the progression of the number of students/individuals from birth to first grade, through each grade, and eventually from the 12th grade to high school graduates. WICHE uses these calculated ratios to project the number of enrollments and graduates in the years to come. WICHE uses a five-year smoothed average ratio for making the projections, in order to place relatively greater weight on the most recent year's data without masking or eliminating any trends that would be evident by taking a longer view. Each cohort survival ratio is calculated as:

$$Y_{pt} = wY_{p(t-1)} + (1-w) \frac{\sum_{i=2}^5 Y_{p(t-i)}}{4},$$

where Y_{pt} is the CSR at a given progression point p in year t , and w is the smoothing weight (equal to 0.4 in the first year and .15 for each of the four prior years in WICHE's methodology). In simple terms:

- The CSR methodology operates by calculating the difference between the **enrollments** in a given grade in one school year and the enrollments in the subsequent grade level the next year. For example, if there are 100 first graders in school year 2018-19 and 98 second graders in 2019-20, the ratio of first graders to second graders is 0.98. (Although the focus of this publication is on high school graduates, the CSR methodology also produces grade-level enrollment projections.)
- The ratio of 12th graders to graduates indicates the ratio between the reported count of 12th graders in a school year to the number of high school **graduates** (the graduate counts encompass all graduates throughout the school year, but largely reflect those who graduate in the spring term).
- WICHE also uses data on **births** from the National Center for Health Statistics (NCHS) to derive the ratio of the number of children born in a given year compared to the number of first graders reported approximately six years later, in order to extend the graduate projections beyond what can be projected from reported enrollments. Thereby, the last year for which graduates can be projected is 17-18 years past the last available year of births data, which is approximately when the most recently born children would be graduating from high school.

WICHE uses the CSR methodology for reasons similar to why educational planners in schools, school districts, states, and the federal government use it – because its relative simplicity and transparency meet the wide-ranging needs of its users. But perhaps an even greater strength of this methodology is that only a limited amount of data are required. Despite the relative simplicity of the CSR methodology, studies have shown that it is reasonably accurate for short-term projections and even for small populations.¹ While [alternative methodologies](#) exist that provide short-term projections that are as accurate as CSR, this equivalence is offset by the fact that the alternative methodologies have more extensive data requirements and employ techniques that are less easily understood by non-statisticians.²

Data Sources and Notes

This section provides specific information regarding the sources of data used in this publication, detailed notes and observations about the raw data, and any adjustments made to these data. For most state total graduates (public plus private schools), the public school portions are projected beginning SY 2019-20, while the private school portion is typically projected beginning SY 2017-18. Public school graduates comprise 85 percent or more of the total for the nation and 40 states. Therefore, for simplicity when writing about the projected public school graduates, or grand total of public and private schools, the first projected year of high school graduates is typically stated as SY 2019-20 (class of 2020).

For simplicity when writing about the projected trends, WICHE typically states SY 2019-20 (class of 2020) as the first projected year for high school graduates. But, some aggregated values include a projected portion.

When writing specifically about private school trends, the projections are described as beginning with SY 2017-18 (class of 2018). The nation and three of the region aggregated numbers also include a projected portion, because at least one states' public school projections begin in an earlier year (Delaware, Nevada, and Vermont). Any exceptions to these typical projection starting years are documented in detail in the downloadable datasets, [Appendix Table 1. Data Notes](#), and in charts and graphs, where feasible.

Public School Data

Enrollment data. All state-level public school enrollment count data used in the projections that are new to this edition were obtained from the Common Core of Data (CCD) public datafiles for State Nonfiscal Public Elementary/Secondary Education Survey Data, maintained by the National Center for Education Statistics (NCES), part of the U.S. Department of Education at <https://nces.ed.gov/ccd/files.asp>. At the time of publication, the most recent available CCD data were for grade-level fall headcounts through SY 2018-19. The CCD public school enrollments data for SY 2008-09 to 2013-14 were used and published in previous editions of *Knocking at the College Door*, but may not exactly match previously published values, because in previous editions WICHE "bridged" the data by race/ethnicity from the seven current reporting

categories to five previous categories.

High school graduates data. Data for public school high school graduates for most years from SY 2002-03 to 2012-13 (class of 2003 to 2013) are also from the CCD public data files or as published in *Digest of Education Statistics* (at <https://nces.ed.gov/programs/digest/>), when not available through the public datasets. In early 2020, as it became clear that the CCD total annual graduate counts data would not become available in a timely nature for updating the projections, WICHE decided to collect the data for public high school graduates from SY 2013-14 to 2018-19, or the most recent year available, from state departments of education. The data were obtained from state websites, through requests for public information or from other advertised processes for data requests (sources are documented in [Appendix Table 1. Data Notes](#)).

WICHE took extensive care to obtain data that related to the definition of high school graduates that has been the foundation of these projections for most editions: the total number of graduates or completers in the school year who received a formal document certifying the successful completion of a prescribed secondary school program of study, including regular high school diplomas that are differentiated by type, such as an academic diploma, a general diploma, or a vocational diploma (for further related education data definitions see also <https://www2.ed.gov/about/inits/ed/edfacts/sy-19-20-nonxml.html>). Unless otherwise noted in [Appendix Table 1. Data Notes](#), other state-recognized equivalents were not included in these counts, including recognized alternative standards for individuals with disabilities (also often referred to as "other completers"), or GED recipients.³ In the cases where it was inconclusive which graduate types were included, the differences that we observed in the data were generally within 1-2% of public school graduates for the given state. While the requirements for high school graduation do vary by state, these data and the trends they depict are therefore, at least, descriptive of regular diploma recipients.

While the requirements for high school graduation do vary by state, these projections and the trends they depict are by and large representative of total annual standard high school diploma recipients.

Estimated total annual public graduate counts.

For eight states, WICHE was not able to obtain specific counts of total annual public high school graduates from the state department of education, and WICHE had to compute estimates of total annual graduates instead; estimates were also used for a portion of public graduates for two other states (Table A-1). These estimates are made from data published by the respective states, about graduates within 4 to 7 years of their defined ninth grade cohort, for adjusted cohort graduation rate reporting. (Note: the state-published data typically provides more information about Adjusted Cohort Graduation Rate (ACGR) graduates than is available through *EdFacts* at <https://www2.ed.gov/about/inits/ed/edfacts/sy-19-20-nonxml.html>, which is limited to on-time graduates within four years of ninth grade and does not provide a direct count of graduates.) The data used for these estimates generally provided at least the number of on-time graduates, plus the information needed to compute graduates within 5, 6, or in selected cases, 7 years of ninth grade. WICHE did not have the data to precisely determine how different these estimates are, in number, from total annual graduates. Estimates that stop short of graduates within 7 years of ninth grade may be systematically different (lower) than a total annual number of graduates, by a small, but consistent amount. WICHE estimates that no more than 5 percent of the U.S. total derives from these states' estimates, and it likely leads to less than 0.25% undercounting at the national level. Nonetheless, there may be issues with estimates produced from the publicly available cohort graduation data, because those data are not configured for such computations. WICHE carefully

reviewed the computed estimates for consistency against available data for major obvious issues (e.g., graduate counts through SY 2012-13 and 12th grade counts through SY 2018-19 from NCES Common Core of Data). Detailed notes about each states' estimates are in [Appendix Table 1. Data Notes](#).

Suppression of small numbers of graduates.

In relatively few cases graduate counts for a given public school race/ethnicity series were not available – and projections are therefore not made – because the number was suppressed in the source data to protect the privacy of very few students. In some cases, the unreported graduate counts for a particular race/ethnicity might be counted in another category of student. In these cases, it appears that the graduate counts that are not available for the given category are counted in the public school total. Also, by consequence, where Native Hawaiian/Other Pacific Islander graduates are suppressed, the combined Asian/Pacific Islander and the separate Asian categories are likely to have equivalent numbers of graduates. Because the region and nation graduate counts are derived from the sum of state counts, this suppression results in the aggregated projections being incomplete by an estimated very small amount (Table A-2). [Appendix Table 1. Data Notes](#) provides specific detail for the states with suppressed values.

Limited adjustments were made to reported data.

WICHE carefully reviewed the data for anomalies and noted data nuances, but limited data adjustments to a very few cases in which there were obvious discrepancies (see [Appendix Table 1. Data Notes](#) for specific detail). The data were reviewed with the expectation that there might be some perceptible effects of transitioning across race/

Table A-1. SY 2013-14 to SY 2018-19 Public High School Graduates Estimated from Adjusted Cohort Graduation Rate Data

Arizona	District of Columbia	Delaware
Nebraska	New Mexico	Nevada
Vermont *	Washington	

* Vermont estimates were obtained from the New England Secondary School Consortium (NESSC), not computed by WICHE. NESSC estimates are also used for a portion of New Hampshire and Rhode Island's graduates.

Table A-2. Estimate of U.S. Public High School Graduates Missing Due to Suppression, by Race

	American Indian/Alaska Native	Asian	Native Hawaiian/Other Pacific Islander	Two or More
States not reporting counts	4	1	9	1
Estimated missing from U.S. graduate count	0.1%	0.0%	0.1%	0.0%

ethnicity category schemas, as well as “real” but apparently erratic adjustments in number, especially for smaller counts. While potentially problematic for making projections, this type of anomaly was typically not considered a data error unless it was suggested by something such as an observed difference in the total public count compared to a sum of races/ethnicities.

Private School Data

The Private School Universe Survey (PSS) is the primary source of data for the private school projections. PSS is a biannual survey conducted in odd years by NCES and provides data for public use (at <http://nces.ed.gov/surveys/pss>) for religious and nonsectarian private/nonpublic elementary and secondary schools in the 50 states and the District of Columbia. Private school grade level enrollments or graduates are only intermittently available from states.⁴ Private school enrollments for this edition came from the publicly available survey data files for SY 2013-14, 2015-16 and 2017-18. Enrollments for SY 2017-18 and high school graduates for SY 2016-17 (class of 2017) were the most recent data available at the time of publication.⁵ Therefore, projections of private high school graduates for most states in this edition begin with SY 2017-18 (class of 2018), with exceptions as outlined below or noted in [Appendix Table 1. Data Notes](#).

Because the PSS data are collected every other year, enrollment counts for grades 1 to 11 for years between PSS administrations are typically linearly imputed by WICHE after data review is completed. The exception is grade 12 enrollment counts, which are effectively provided in the PSS data for all years, because survey question 9b asks for the number of students enrolled in the 12th grade around October

1 of the prior academic year, which corresponds with the number of graduates reported for that same (prior) academic year.

Details concerning the PSS survey and data methodology are available on NCES’s Private School Universe Survey website (<http://nces.ed.gov/surveys/pss>). Of particular relevance—the survey frame list is composed of schools from several sources. The main source is information initially for the SY 1989-90 survey, which is updated every PSS cycle by matching it with lists provided by nationwide private school associations, state departments of education, and other national private school guides and sources. Additionally, an area frame search is conducted by the Census Bureau each survey cycle, to identify schools not included in the list frame and to compensate for the under-coverage of the list frame. Response rates for the PSS have generally been high: 92 percent for 2011-12; and then dropping to between 75.7 and 82.9 percent between 2013-14 and 2017-18 administrations. PSS applied weighting adjustments to eliminate some bias, because the 2015-16 and 2017-18 unweighted unit response rates were 75.7 and 81.4 percent, respectively (weighted response rates of 69.2 and 76.6 percent), and this is below NCES Statistical Standard 4-4 of 85 percent.

WICHE computed state-level weighted enrollment estimates from the PSS survey response data, as has historically been done for these projections. As described in the PSS documentation: “In surveys with complex sample designs, direct estimates of sampling errors that assume a simple random sample will typically underestimate the variability in the estimates. The PSS sample design and estimation included procedures that deviate from the assumption of simple random sampling,

primarily resulting from the stratified cluster sampling occurring in the area frame. The preferred method of calculating sampling errors to reflect these aspects of the complex sample design of PSS is using replication.” So, WICHE used the 88 replicate weights provided with the response data to compute sampling errors; the estimates and sampling errors were computed in SPSS statistical software. WICHE computed the estimates and sampling error for the enrollments. But the state-level graduate estimates are only available as published by PSS, with the standard errors. The sampling error is expressed in terms of coefficients of variation (CV)—that is, the ratio of the sample standard deviation to the sample mean (enrollment estimate)—at a confidence interval of 90%. WICHE typically considers a coefficient of variation of 25% or less as acceptable for using survey-based estimates.

WICHE observed a higher frequency of unacceptably high sample error with the private school estimates than has been the case for previous editions. WICHE used statistical measures for evaluating the state-level private school estimates arising from the PSS data, but in practical terms, the estimates with higher standard error also generally evidenced anomalous patterns. WICHE applied the PSS program standards for estimates and suppressed estimates with CV greater than or equal to 50%, and carefully reviewed estimates with CV 30-50% to avoid projecting forward what might be considered data anomalies, to future years. Table A-3 summarizes states with grade-level or graduate estimates that WICHE had

to suppress from use or adjust the methodology to avoid. In limited cases, WICHE made selected imputations for the problematic estimates. In most cases, modifications occurred with, and impacts, the starting projection year for *enrollments*. For only two states were *graduate* estimates suppressed and projections begun earlier than class of 2017 (Kentucky and Nebraska). For a limited number of states, the most recent year of available enrollment estimates, SY 2017-18, were not statistically acceptable and therefore projections were lagged to use the next most recent statistically acceptable estimates; therefore, some states’ private school *enrollment* projections will begin with SY 2015-16. For some states, progression ratios and/or enrollment estimates from earlier years were used, outside the years that would typically have been invoked for these projections (SY 2013-14 to 2017-18).

Practically speaking, the private school estimates indicate a notable amount of change for the private school sector since 2010, even after WICHE accounted for survey sampling error in the estimates. WICHE limited modifications to states with higher standard errors, allowing possible real changes in the sector to carry forward – whether or not such sustained change will be borne out by subsequently reported counts. Furthermore, the national and regional private school estimates are produced independently of the states and were not hampered by limitations in the state-level data. The exact state-by-state details of problematic estimates and adjustments are provided in the projection datasets and [Appendix Table 1. Data Notes](#).

Table A-3. Adjustments for High Standard Error Estimates of Private School Students or Graduates

Delaware	District of Columbia	Idaho
Iowa	Kentucky	Louisiana
Michigan	Minnesota	Missouri
Nebraska	New Hampshire	New Mexico
Wisconsin		

Note: [Appendix Table 2](#) summarizes all states’ grade-level estimates produced from the PSS data with coefficients of variation greater than 25 percent.

Grand Totals

Several details should be kept in mind for the grand totals of public and private schools.

The portion of the grand total that is private school graduates, is estimated. With the recent increase of survey sampling error in the private school data (see *Private School Data*), it is important to emphasize that the portion of the grand total that is from private schools are estimates, and conceivably less certain than the overwhelming portion that is driven by public school populations. In addition, the rapid and substantial trend shifts with private schools in recent years are not ideal for making projections. The progression methodology will mathematically carry forward recent past trends, even if the magnitude of change is not sustained in actuality over the coming 15-17 years. Also, the private school portion of the grand total is two years lagged from the public school portion (projections beginning SY 2017-18 and SY 2019-20, respectively), and data about COVID-19's impacts on the private school sector will not be available as soon as with public sector data.

Publicly funded students attending private schools cannot be isolated in the data. WICHE is aware of some possible duplication in the public and private schools data relating to publicly funded students who attend private schools, because their towns do not have public schools. Data is generally not available to de-duplicate these students. This possible duplication applies to [Vermont](#) and [Maine](#), at least.⁶ For example, by WICHE estimates, Vermont's total public and private graduate counts (and projections) might be overstated by up to 10 percent due to likely duplication of these students in the public and private school data (WICHE estimate from compiled data and correspondence with Vermont Student Assistance Commission).

The estimated additional number of American Indian graduates from Bureau of Indian Education schools is estimated for the nation only. As detailed in the section *Considerations for the Race/Ethnicity Categories*, WICHE provides a national-level estimate of the potential additional American Indian graduates who may arise from students from schools under the authority of Bureau of Indian Education (BIE) in this edition. However, WICHE has only estimated the contribution of BIE high school graduates nationally and these numbers are not included in any state estimates (see more in the

section *National Estimate of Total American Indian/Alaska Native Graduates from Public Schools and BIE Schools*).

Births Data

WICHE obtained data for live births from the National Center for Health Statistics and Prevention, which is part of the Centers for Disease Control (CDC). The data were acquired through the CDC WONDER table builder at <https://wonder.cdc.gov/nativity.html>, and from [Vital Statistics Rapid Release Report No. 8 Births: Provisional Data for 2019](#).⁷ Births data are grouped according to the mother's state of residence, mother's Hispanic origin, and mother's race. For this edition, WICHE acquired births data for 2015 to 2019, and added them to births data used for previous editions. The latest available data were for total statewide births in 2019, and statewide births by race/ethnicity in 2018. Therefore, projections for the totals of public and private schools extend through SY 2036-37, whereas public school projections for most race/ethnicity categories extend to SY 2035-36. The births data are considered final, so generally, adjustments were not made to the values obtained. Important differences between the categorization of racial/ethnic identity in the natality and education data are discussed under *Considerations for the Race/Ethnicity Categories*, but no adjustments were made to the births data for the projections.

U.S. Outlying Areas and Territories

Puerto Rico. Puerto Rico public school enrollments are from the Common Core of Data (see *Public School Data*). The public school graduate counts for SY 2010-11 to SY 2018-19 were obtained by correspondence with El Instituto de Estadísticas de Puerto Rico (estadisticas.pr). There can be issues [estimating Puerto Rico's population trends](#) since Hurricane Maria in 2017, let alone projecting it into the future.⁸ WICHE limited the high school graduate projections to the years that could be produced by enrollment data. Even these limited projections indicate a 61% reduction of Puerto Rico public school graduates by 2030, which may be an implausibly large decrease depending on return migration between now and 2030. Only the public total high school graduates are projected, more than 99.5% of whom are categorized as Hispanic (any race), according to the data. No data were available for graduates of Puerto Rico private/nonpublic

schools. But, data provided for the 9th edition of these projections indicated that possibly one-third of Puerto Rico high school graduates may be with private/nonpublic high schools (13,000 graduates of private/nonpublic schools, on average, between SY 2010-11 and 2013-14).

Puerto Rico is not added to the national (U.S.) data and projections (the U.S. is a sum of the 50 states and District of Columbia). Puerto Rico's public high school graduates were 0.6% of the U.S. total public graduates in class of 2019, decreasing to a projected 0.3% by 2030; and 2.3% to 0.9% of U.S. Hispanic public school graduates, respectively. Florida is estimated to have received the largest amount of the out-migration after Hurricane Maria, followed by Texas, Pennsylvania and New York.⁹ But WICHE did not have the data to estimate what portion of these state's high school graduates may have recently migrated from Puerto Rico.¹⁰ (Therefore, some amount of "boost," possibly temporary, may be reflected in recipient states' (Hispanic) high school graduate projections.)

WICHE members Guam and Commonwealth of the Northern Mariana Islands. Data were not available by the time of publication, to produce projections for WICHE members Guam and Commonwealth of the Northern Mariana Islands or to include them in the WICHE West region data.

An Estimated 3-4% of High School-Age Students are Home-schooled, but are Not Covered in WICHE's Projections

WICHE knows users are interested in how home-schooled children add to the projected high school graduates – and at this particular time, home schooling has become even more relevant. So, WICHE researched recent past home-schooling trends to try to understand the extent of these students not being explicitly included in the data underlying the projections. In order to include home-schooled students in the annual graduate counts or produce a projection, WICHE would need detailed data disaggregated and not duplicated in other sources, about home-schooled students by grade level and the rate of students who complete a high school diploma.

WICHE's research indicates home-schooled students are generally not covered by the source data that WICHE uses for the public and private school projections. Specifically, the primary data source for

the projections, the NCES Common Core of Data describes all schools and students supported by public funding. The NCES Private School Universe Survey describes private schools not supported primarily by public funds, which provide classroom instruction with at least one teacher in a school; organizations or institutions that provide support for home schooling without offering classroom instruction for students are not included. However, the survey underlying these data does inquire about activities related to home schooling. On average between 2009-10 and 2017-18, 3.4 percent of private schools answered that "a major role of this school or program is to support home schooling," and 0.6% of private schools responded that the "school or program located is in a private home that is used primarily as a family residence." In neither case is there an estimate of the number of students associated with these specific activities.¹¹

Importantly, even where one finds information/ data, it only describes students. WICHE does not find information about the rate at which home-school students graduate or how many high school graduates were home-schooled. There is no single data source for home-schooled students across states, and there is wide variation in data collection by states. WICHE located [two sources](#) for state counts/estimates.¹² Both sources provided data for total enrollments (for some or all states), but not the detail for grade level or high school graduation needed for projections.

[National estimates are available](#) from the Parent and Family Involvement in Education (PFI) questionnaire of the National Household Education Survey (NHES).¹³ School year 2015-2016 is the most recent for these data, which have only been provided approximately every four years. It is very possible that the [home-schooling rate may increase](#) in the immediate term during the COVID-19 period, but the data are not available in time for publication to shed light on these potential shifts (and, temporarily home-schooled children are not counted in the home-school estimates from the national statistics from NHES).¹⁴ But, in 2016, almost four percent of 5- to 17-year-olds were home-schooled (3.8 percent, 1.7 million). This represented a doubling of home-schooled children from 1999 (0.9 million), and a stabilization through the highpoint in 2012 (3.4 percent). Those most likely to be home-schooled in 2016 were: Grades 9 to 12 (3.8 percent); White

(3.8 percent) or Hispanic (3.5 percent); rural (4.4 percent); in the South (3.9 percent) or West (3.7 percent); in families with 3 or more children (4.7 percent); in two-parent households (3.7 percent), particularly those with (only) one parent in the labor force (7.2 percent); and near-poor households (4.7 percent).¹⁵

Considerations for the Race/Ethnicity Categories

For the first time, WICHE is producing projections disaggregated by the expanded set of seven racial/ethnic categories established by the Office of Management and Budget (OMB) in 1997, for public school students and graduates. The WICHE projection method relies on the availability of a minimum of five years' worth of uniform data, and this accumulation of data is now largely available. Projections are now provided for public school students and graduates in these series:

- Hispanic or Latino (any race)

Among those not categorized as Hispanic or Latino:

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White
- Two or more races (multiracial)

Ultimately, users should take note that there are subtle differences between the exact definitions of the race/ethnicity categorizations in any given year for the 30 years of retrospective and future data that this edition encompasses. Generally speaking, data for public school student and graduate race/ethnicity for *SY 2010-11 and all subsequent years* reflect the categorizations according to the new protocol. But, data published with these projections for historical perspective, for years *prior to SY 2010-11*, overwhelmingly reflect the previous long-standing five racial/ethnic categories.¹⁶ While it was possible to produce projections in this new schema, some remaining limitations with or considerations about these varying data sources remain relevant.

Nuances of the Births Data Used for the Extended Projections

Projections for 2030-31 to 2036-37 are not possible for all race/ethnicity categories. There is not yet the necessary overlap between the births and school data, to extend all the projections for all race categorizations past what can be projected from school enrollment numbers. State revisions to birth certificates to reflect the 1997 OMB standards for race/ethnicity were on different timeframes than education agencies. All states were required to report *education* data in the new race/ethnicity categorizations by school year 2010-11. Birth certificates were not fully converted across all states until 2014, and the first year of publicly available births data in the new race/ethnicity categorizations is 2016 (see <https://wonder.cdc.gov/nativity.html>). But, the projection methodology would need births from 2012 and first grade enrollments from SY 2018-19 – and similarly matched quasi-cohorts for four prior years – to include births for the extended projections for all of the separate new race/ethnicity categories. These limitations should diminish by the next edition of these projections, but for now:

- Infants of Hispanic origin are categorized separately from non-Hispanic infants, and this category overlaps between the education and births data for making projections of public school Hispanic graduates through SY 2035-36. (Nonetheless, the quasi-cohort matching between the data sources is still imperfect, because births are categorized based only on the mother's Hispanic identity).
- WICHE produces separate **projections for public school non-Hispanic Asian graduates and Native Hawaiian/Other Pacific Islander graduates, only through SY 2029-30**. The combined category of Asian/Pacific Islander is projected through SY 2025-36, since data by this category is similarly available from both births and school data.
- The births data do not support extended projections for **multiracial non-Hispanic public school graduates; projections are only made through SY 2029-30**. However, not having values for this series in the extended years would appear to make the total of public high school graduates when viewed by race/ethnicity, to

be incomplete. Therefore, **WICHE also issues approximations of the number of multiracial public high school graduates for SY 2030-31 to 2035-36** (this estimate is a simple continuation of their share of non-Hispanic graduates by SY 2029-30). However, users should understand that these approximate values should not be added with the other races/ethnicities in these outer years, because they would introduce some amount of inherent duplication.

- The births data for the remaining non-Hispanic race categories are provided in what is considered “bridged” race categories, which includes methodologically assigning infants of multi-race origins to a single category of White, Black/African American, American Indian/Alaska Native or Asian/Pacific Islander.¹⁷ It is not ideal to continue using these “bridged” (multiple-race) births data with the now discrete single-race first grade enrollments data, but WICHE uses these data to produce the extended projections through SY 2035-36 in these categories.¹⁸

Other effects of births and school data differences. The projection method invokes recent births to project the number of first graders for 5-6 years after the last reported year of 1st grade enrollments. This is done using the five-year weighted average ratio of the number of first graders compared to infants born approximately six years prior, for the five most recent years. Theoretically, something very close to 100 percent of children born will enter first grade within six years, but WICHE observes ratios both above and below 100 percent. There could be many reasons why there might be more or less than 100 percent of infants appearing in first grade counts. The ratio of births to first graders has always been subject to some level of effect from interstate relocations, immigration, changes in race/ethnicity categories, early and late enrollment of first graders, home schooling and enrollment in private schools (which do not provide race/ethnicity detail), and the small but non-negligible rates of childhood mortality.

But in recent years, WICHE has observed increasingly disparate ratios of state births to first grade enrollments that we suspect relate to the known differences in race/ethnicity categorizations described above. For this reason and the limitations of the births data for making the extended projections, WICHE recently assessed the possibility

of using another data source to model the longer-term projections. The primary alternative was population estimates by age and race/ethnicity from the U.S. Census Bureau American Community Survey (ACS) public use microsample data (PUMS). However, these data are not an equal substitute for the births data, for making the extended projections in the detail that WICHE produces the projections. The primary purpose for considering an alternative to births data was to gain precision with the state-level progression ratios by student race/ethnicity. But it was only possible to produce fewer than half of the necessary single-year age estimates by race/ethnicity by state, due to depletion from standard error (it was a similar case for multiple year age estimates, e.g., combined 5- 6-year-olds). Also, due to the nature of the ongoing ACS data collection, it is not possible to construct an equivalent definition of single-year age estimates in a given annual period that corresponds with school year, similar to what is anticipated with the progression methodology (e.g., micro age estimates are produced from ACS “5-year” datasets). (These data are used for [other similar projections](#), which demonstrate the limitations and benefits of the data for various geographic groupings).¹⁹

Lacking a substitute for the births data for the extended projections, WICHE carefully reviewed the projections for SY 2030-31 to 2036-37 for overt over- or under-estimation of underlying population changes, but generally did not alter or restrict the projections. Possible inflation/deflation is most likely or apparent with smaller states and race/ethnicities.

National Estimate of Total American Indian/Alaska Native Graduates from Public Schools and BIE Schools

WICHE did not find the precise data needed to fully account for the additional number of American Indian graduates there would be, if students from [Bureau of Indian Education \(BIE\) schools](#) were accounted for, but estimated it in a supplemental series in the U.S. (national) data by this method²⁰:

- WICHE used the U.S. total of grades 1 to 12 students covered by BIE schools, available from the U.S. Department of Education Common Core of Data for SY 2008-09 to 2010-11 and SY 2016-17 to 2018-19.
- From this, WICHE estimated the number of students for the intervening years.

- Because the number of high school graduates from BIE schools was not available, WICHE computed the number as a percentage of 12th grade students with BIE schools, using the rate of progression from 12th grade to graduation observed with (single-race non-Hispanic) American Indian/Alaska Native students in U.S. public schools.
- WICHE then computed the supplemental projections for combined total American Indian/Alaska Native graduates of public schools, plus the estimated number from students of BIE schools, nationally.

WICHE presents these supplemental estimates in the national data, to partially address some of the issues in the American Indian/Alaska Native projections series. Because specific graduation patterns vary across the states, this U.S. estimate may not describe the possible range of additional American Indian graduates that might be available from BIE schools located within specific states' geographic boundaries. There are 187 BIE schools within the geographic boundaries of 23 states. And, when considered by the physical location of BIE schools within state boundaries, eight states encompass 88 percent of all students reported at BIE schools between SY 2016-17 and 2018-19. These

same states encompass an average of 82 percent of grades 9 to 12 high school students at BIE schools (Table A-4).

For the time being, WICHE has only estimated the contribution of BIE high school graduates nationally, and has not yet issued estimates of how graduates from BIE schools within specific states' geographic boundaries may add to individual states' total number of American Indian/Alaska Native graduates. Moreover, total possible American Indian/Alaska Native graduates remain not well represented by the available data, such as discussed in the full report of these projections.

Other Impacts of Race/Ethnicity Categorizations

Black non-Hispanic. The impact and nuances in the race/ethnicity categories are more visible in data that retain and report detailed individual-level data, such as the United States Census. For example, the [2015 Census population estimates](#) indicate that there were 14 percent fewer individuals considered Black by the narrowest racial/ethnic categorization (non-Hispanic single-race Black, which is how Federal education data are reported) than the number considered Black using the less narrow categorizations of "Black only" or "Black in combination with another race".²¹

Table A-4. Distribution of Students at Bureau of Indian Education Schools, SY 2016-17 to 2018-19, by State Boundaries

	Grades 1-8	Grades 9-12	Total Grades 1-12
Arizona	30%	14%	26%
New Mexico	21%	16%	20%
South Dakota	15%	24%	18%
North Dakota	10%	8%	10%
Mississippi	5%	5%	5%
Washington	4%	6%	5%
North Carolina	2%	3%	3%
Oklahoma	1%	7%	3%
Other states	10%	18%	12%

Note: By number of students, the other states with BIE students are: Minnesota, Michigan, California, Oregon, Montana, Maine, Florida, Wyoming, Idaho, Utah, Nevada, Iowa, Louisiana, and Kansas.

White non-Hispanic. On the other hand, the single-race White category is also subject to definitional nuances. For example, Middle Eastern and North African individuals are captured under the White category, and notwithstanding the mandate to capture students in the mandated categories, families/students may indicate themselves as Hispanic or White differently over time.²²

Private school graduates. Finally, the data source for private schools only provides the total number of K-12 students by race/ethnicity, and not detail by grade-level or for graduates. But, for example, NCES estimates that [67 percent of private elementary and secondary school students in fall 2017 were White](#).²³ But, WICHE is not able to estimate or project the additional graduates from private schools that would add to the race/ethnicity series.

Projection Accuracy

WICHE endeavors to ensure that the *Knocking at the College Door* methodology remains a credible and reliable method for producing these projections. This includes consulting with experts for each edition, assessing the accuracy of the projections against the subsequently reported actual data and other education projections, and carefully inspecting the underlying data and other pertinent information. Furthermore, WICHE releases updated projections every four to five years on average. This is a relatively short period of time considering that student populations and trends are relatively stable and the projections are therefore reliably contemporaneous.

Ongoing Review of the Methodology

WICHE has twice comprehensively reviewed the reliability of the methodology, in 1993 and 2012. The report from the 2012 methodological review remains relevant and is summarized in a [report](#) covering the commissioned technical white paper, a simulations analysis to compare the relative accuracy of several CSR alternatives, and two expert review panels — both a technical review panel of experts and an end-user panel of various experts who use *Knocking at the College Door*.²⁴ In the 2012 review, the CSR methodology was found to produce projections as well as or better than the two most feasible existing alternatives (single and double exponential smoothing), to accommodate the constraints of the available data, and to provide the

transparency and understandability that give the projections their substantial credibility. WICHE will continue to assess methodological approaches as the data justify another review.

For this edition of *Knocking at the College Door*, WICHE consulted selected experts and stakeholders regarding some nuances of the data and base projections that were new or different than in prior editions of these projections:

Patrese Atine, director, congressional and federal relations, **American Indian Higher Education Consortium**, and **Regina Sievert**, executive director, innovation and research

Stephen Broughman, statistician, **National Center for Educational Statistics**

Jinghong Cai, senior research analyst, **National School Boards Association**

Sunny Deye, program director, postsecondary education, **National Conference of State Legislatures**

Eric Godin, associate vice president, **State Higher Education Executive Officers Association**

Amy Goldstein, associate vice president, organizational advancement, **Thurgood Marshall College Fund**

Christina Gordon, senior director, **American College Testing**, and colleagues

Nathan Grawe, professor, economics, **Carleton College**

Annie Holmes, chief equity officer, **Council of Chief State School Officers**

Jessica Howell, vice president, research, **College Board**, and colleagues

Darlana Jones, director, assessment and research, **Association for Institutional Research**

Julie Laurel, senior researcher, **Excelencia in Education**

Nancy Lewin, program director, **ACT's Center for Equity Learning**

Michael Reilly, executive director, **American Association of Collegiate Registrars and Admissions Officers**

Doug Shapiro, vice president, research, executive director, research center, **National Student Clearinghouse**

Mean Absolute Percentage Error

WICHE analyzed the relative accuracy of the *Knocking at the College Door* projections at different periods of time for as many editions as possible through the last (9th) edition, compared to the compiled reported actual graduate counts. The mean absolute percentage error is one way to express the forecast accuracy of past projections, summarizing the differences between past projections and actual data.²⁵ The mean absolute percentage errors for WICHE's projections of *public* high school graduates in the United States for lead times of 1, 2, 5, and 10 years were 1.5, 2.0, 3.2, and 5.4 percent, respectively, over these nine editions of the projections (Table A-5).

Figure A-1 illustrates how the projections have compared to subsequently reported public high school graduates.

There is greater variance for some regions and states, but it does not appear to be systematic or, systematically related to the methodology. Private school projections have been less accurate, with MAPEs of 1.7, 9.2, 8.9 and 14.7 percent for lead times of 1, 2, 5, and 10 years, respectively. The private school projections derive from survey estimates for the sector, not confirmed counts as for the public school series. And, more recent survey estimates are then used to evaluate the accuracy of the projections. It is relevant, therefore, that sampling error associated with these survey data has increased in recent years (see *Data Sources and Notes*). However, the majority of private school estimates had acceptable sampling error levels (CV <25%), and therefore WICHE used them for the MAPES analysis.

WICHE has been producing state-level projections of public school graduates by race/ethnicity since 1996, leading to roughly 20 years of projections by student race/ethnicity. For a number of reasons, it is difficult to quantify the projections' accuracy over time by race/ethnicity. There have been substantial definitional nuances and changes with the underlying data over these two decades, both within data sources that are used in more than one edition, and as WICHE has had to use other data sources as data availability changed. And, WICHE had to continue producing the race/ethnicity projections with five major race/ethnicity categories for two editions during the period when the actual student

data were reported in seven categories (due to data limitations). Finally, the births data, which predict the outer six years of each edition, are reported in roughly equivalent but not identical race/ethnicity categories as education data. All of this leads to expected imprecision between the projected numbers of high school graduates by race/ethnicity, and the ultimately reported number.

Comparison to Other Education Data

The MAPE analysis will be to some extent somewhat self-referential, because it does not include comparable data about the number of high school graduates independent of the data that underlie the projections. It can therefore be difficult to precisely attribute differences to the projection methodology, rather than differences arising from, for example, data definitions or reliability of survey estimates.

But, one point of comparison are the U.S. Department of Education's published projections. While NCES uses a different cohort progression methodology (single exponential), the most recent [NCES projections published in May 2020](#) are within 1.5 percentage points of the reported graduates for SY 2013-14 to 2018-19 provided with these data, and the projections past 2018-19.²⁶ This is perhaps noteworthy since the WICHE data sources depart from the NCES Common Core of Data source, but still confirms similar trends.²⁷ Of note, the NCES projections rely on the same private school survey estimates and demonstrated relatively high mean absolute percentage errors in the editions invoking data from SY 2010-11 to 2015-16; and similarly under-projected private high school graduates in a previous [43rd edition of projections](#) that corresponded with WICHE's 9th edition of *Knocking at the College Door*.²⁸

Another point of comparison come from [projections of college demand](#) published by Dr. Nathan Grawe in 2017.²⁹ Dr. Grawe's higher education demand index projections rely on different data sources and methodology. But, Dr. Grawe's projections of 18-year-olds predicted to enroll in college depict similar patterns and relative numbers as WICHE's high school graduate projections.

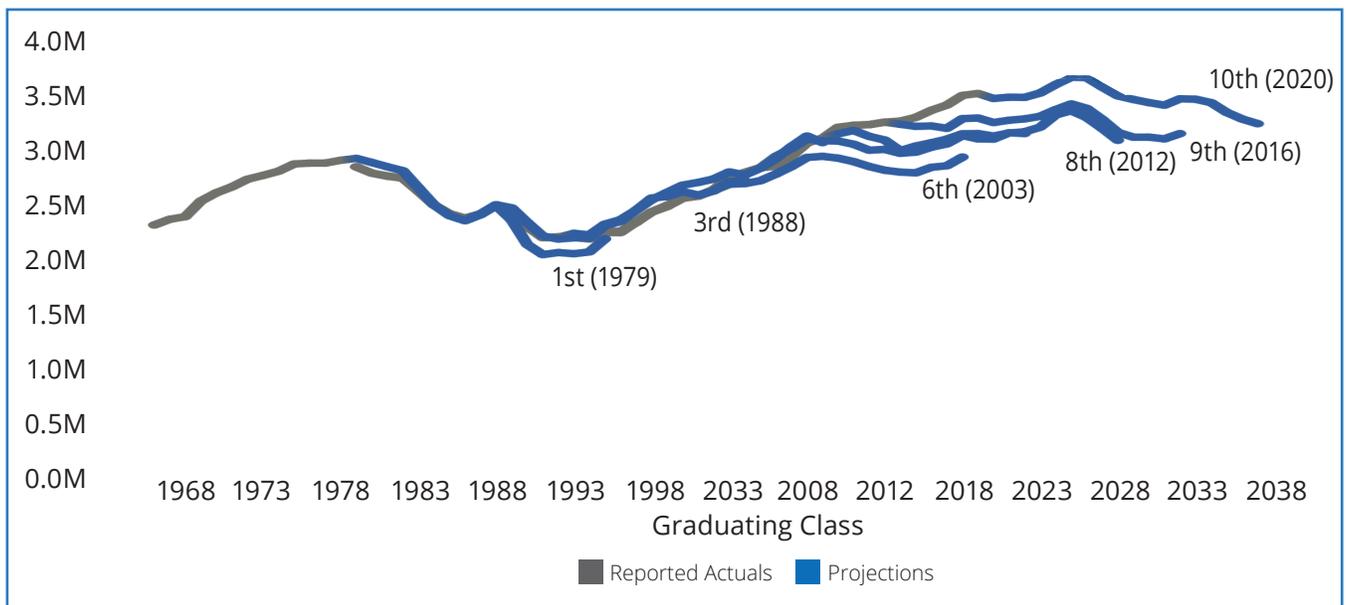
Expected Differences between National, Regional, and Subgroup Projections

WICHE makes lower-level projections independent of the aggregate projections. The primary reason for

Table A-5. Mean Absolute Percentage Errors, Selected Lead Time in Years

	1st Year Projected	2nd Year	5th Year	10th Year
National Projections				
Total public & private	1.4%	1.7%	3.9%	6.2%
Public schools	1.5%	2.0%	3.2%	5.4%
Private schools	1.7%	9.2%	8.9%	14.7%
State-Level Projections				
Total public & private	2.2%	2.7%	5.4%	9.5%
Public schools	2.6%	3.2%	5.5%	9.6%
Private schools	8.5%	13.2%	19.0%	30.0%

Figure A-1. Over Time: The Projections Track Reported Graduates (Public high school graduate projections from nine editions of *Knocking at the College Door*, 1979 to 2016)



this is to let possibly legitimate growth trends that are seen at the lower levels be evident; they might be overstated or understated if they were adjusted. The small numerical differences that result from making these projections independently may cause confusion for some users of these projections. Generally speaking, the differences between the independently projected series tend to increase in later future years, consistent with the nature of

extended projections. And these differences are expected to be more evident in series with smaller numbers.

National and regional projections are made independently of state projections. The state projections do not equal exactly to the regional projections, nor do the state and regional projections sum exactly to the national projections.

- The sum of WICHE’s state-level projections is about 19,000 total graduates (0.54 percent) greater than that of the independent projection for the United States by 2036-37, the last year projected for total high school graduates (and generally lower percentage difference in prior years).
- There is less than one percent (1 percent) difference between the sum of states and the regional projections for all four major geographic regions, except for the *private school projections* in the South region, which shows up to a 6.7 percent difference between the sum of states and region projections by class of 2036.

Each public school race/ethnicity category is projected independently, by state. Those projections do not necessarily sum to the regional or national total public projections. And the sum of the independently projected race/ethnicity series do not necessarily sum to the public school total.

- The maximum differences observed in the sum of state’s race/ethnicity projections compared to the national projection for that race/ethnicity, is 3.5 percent, which occurs with the American Indian/Alaska Native and Asian/Pacific Islander series by 2036.
- On average, the state-level sum of races/ethnicities is 2.9 percent less than the state public school total projection, or a lower percentage difference, in any year.
- A difference can be expected between the sum of races/ethnicities and the public total in states with suppression in any of the race/ethnicity categories. In these states, the sum of races/ethnicities is .25% lower than the public school projections in 2019, and an average of 3 to 4 percent lower after 2030.

Implicit and Environmental Influences on the Projections

Demographic studies generally identify two main sources of population change: natural increase and net migration.³⁰ The number of school-age youth – and, eventually, high school graduates – is influenced first and foremost by the number of children born, and secondarily by factors such as grade retention and acceleration, net migration between states and school sectors, dropouts, early

graduations, mortality, and major events, policies and practices.

The cohort survival ratios that are used to generate the projections capture these factors, implicitly through the recent past counts of infants, students and graduates, and carry them forward into the future projected years. However, this assumption has the greatest potential to degrade the accuracy of the projections should either a new pattern emerge in the preceding year or two, or new circumstances emerge in reality that are not evident in the years of available data.

The Number of Infants Born is a Key Predictor of Future Numbers of Graduates

The projections methodology models change in birth trends explicitly, while assuming that the implicit influences on enrollments and graduates will carry forward indefinitely. Under the current methodology, *Knocking at the College Door* estimates the number of first graders based on the number of births that occurred six years prior. WICHE obtains data for live births by state and race/ethnicity from the National Center for Health Statistics, which is part of the Centers for Disease Control and Prevention (see *Data Sources and Notes*). Births for 2019, in total, and for 2018 by race/ethnicity, were the latest available data at the time of publication. This establishes the last year for total public and private high school graduate projections as 2036-37 – that is, approximately when babies born in 2019 would reach 17 or 18 years of age (approximately, because births are reported for calendar years January to December, while enrollments are reported for school years and therefore do not overlap precisely). While not the principal focus of this publication, birth trends are instructive in their own right because of the significance they play in the projection methodology.

The United States experienced a new high number of 4.32 million births in 2007. There have been consistent annual declines in U.S. annual births (about 1 percent annually) since that high point in 2007. There were 3.7 million U.S. births in 2019 – 13 percent fewer babies born than in 2007. Therefore, these successively smaller birth cohorts started transitioning into elementary schools by school year 2013-14 and are now moving through the elementary grades, and the infants born in 2014

will recently have started school. Following from this, the predicted smaller classes of 2026 to 2030 are reflective of declining student numbers now progressing through elementary schools, and graduating classes past that point are predicted to be smaller in number corresponding to recent births.

Mortality, Grade Retention, and Grade Acceleration

Mortality, grade retention (holding students back), and grade acceleration (promoting students early) impact enrollments and grade progression to varying extents. More importantly, national estimates indicate that these factors can *vary systematically by race/ethnicity*.³¹ However, these data cannot be specifically derived in the detail needed to explicitly model the detailed projections by state, race/ethnicity and grade level. Instead, they are implicitly included in the calculated cohort survival ratios that reflect the various aspects of grade progression. Interested readers can find more detail about child mortality, grade retention, and grade acceleration in WICHE's 2012 *Methodology Review Report*.³²

Movement and Migration

The impact of movement and migration may have an impact on year-to-year enrollment data and ratios. One type of movement is when students transition between public and private schools, which most typically occurs at the junctures between school levels (e.g., when parents shift their children from public to private school at the beginning of ninth grade). The movement between public and private schools is implicitly reflected in the data for public and private school enrollments, but they are not easily discernible from other factors that are in play at the same time (e.g., relatively high rates of retention in the ninth grade), because they typically occur in relatively small numbers compared to the totals.

Migration between states also accounts for some difference between the number of eventually reported graduates, and the number projected. (Of course, intrastate movements might occur even more frequently than cross-state movements, but state-level and more aggregated projections should be affected only by cross-state or international movements.) WICHE is not able to explicitly model migration's specific impact in these detailed

projections. Rather, one typically observes patterns with school populations that coincide with migration retrospectively.

WICHE has documented in previous editions, the relative patterns of immigration that may bear on high school graduate trends. Immigration and non-native populations have been important factors in the overall size and profile of the U.S. population and school-age youth. They may be increasingly important as the number of White students continues to decline, and as the domestic U.S. youth population contracts with the ensuing birth declines. In-migration to the U.S. contributes positively to the number of the U.S. high school graduates. Relatively lesser migration of *school-age children* is usually not discernible in immediate trends. The greater potential contribution may be from *infants born to non-native families/parents*, the impact of which will not be evident until approximately 18 years after a given immigration period.³³ But, in the years that matter for the span of projections in this edition, *immigration to the U.S. has been down, historically speaking*.³⁴ Nonetheless, some states may have been recipients to larger portions of the overall immigration, and their projections may be more impacted (see *Economic and External Factors*).

These Graduate Data are Not Computed from Graduation Rates, but Do Numerically Track the Rates

As described under *Methodology Overview*, the data WICHE uses and the resulting projections are of total annual high school graduates. The projections are not computed from any specific graduation rate (averaged freshmen graduation rate or adjusted cohort graduation rate). But, for this edition, WICHE did access information about the adjusted cohort graduation rates, for certain analyses.

In selected cases where WICHE could not obtain the total annual public high school graduate counts from a state, WICHE computed an estimate of graduates within four to seven years of an assigned ninth grade cohort, from data published by the state about their adjusted cohort graduation rates (see *Data Sources and Notes*).

WICHE also accessed data about national adjusted cohort graduation rates, and for states, from the U.S. Department of Education (available at <https://www2.ed.gov/about/inits/ed/edfacts/data-files/index.html>). Graduate counts are not provided

in these data files, so to estimate the state-level number of on-time graduates (public schools total), WICHE applied the state-level graduation rate to a computed estimate of the state ninth-grade cohort, which must be compiled from district-level data. This state-level estimate will represent only those who graduated within four years of their assigned ninth grade cohort. Appendix Table 3 provides a comparison of the changes in the number of total annual public high school graduates, estimated on-time graduates, and on-time graduation rates, from SY 2012-13 to 2017-18 (the most recent available on-time graduate data). This analysis indicates that the number of total annual high school graduates strongly reflects so-called “on-time” graduate trends.

Natural Disasters

There have been several extraordinary hurricane events in the past several years. In 2017, three major hurricanes (Harvey, Irma and Maria) struck Texas, Florida and Puerto Rico, respectively. A year later, Michael became the first Category 5 hurricane to hit the contiguous United States since 1992, impacting Florida’s Gulf Coast in particular. These events inevitably disrupted students’ education and led to migration within and across state lines. For example, [Florida](#) signed supplemental orders waiving school-entry documentation requirements, allowing students displaced by these storms to attend any Florida public schools.³⁵ After Hurricane Maria displaced students from Puerto Rico, Florida Department of Education signed a waiver allowing high school juniors and seniors the option of earning a Puerto Rico high school diploma from the Florida high school they are attending while displaced.³⁶ However, WICHE did not find specific data to isolate these students by state, or their potential impact in the projections.

Wildfire season in the American West is growing longer and more intense each year, but WICHE found no evidence that major wildfire seasons in the West through 2019 impacted migration and schooling.

High School Graduation Exams and Standards

Changes in high school exit examinations or standards might be evidenced in changing numbers of high school graduates (although there are typically not data to directly isolate this). As of 2019, 47 states and the District of Columbia have adopted

statewide high school graduation requirements while three states leave the decision-making to local levels. A notable example is that the California High School Exit Examination (CAHSEE) was eliminated due to a misalignment of the test and the Common Core standards. Beginning January 1, 2016, no student in the state of California is required to take an exit examination, including those in adult education courses. Furthermore, any student whose only outstanding graduation requirement was the passing of CAHSEE became immediately eligible to receive their high school diploma. By one estimate, this had the potential to affect about 249,000 students who had failed the test since it became a graduation requirement in 2006 (about 6 percent of the test takers in that time).³⁷ Since 2015, California has allowed any student who failed the exam to earn their diploma retroactively as long as they met all other graduation requirements.³⁸

Educational Policies and Practices

Other changes may be evidenced in number and trend changes with high school graduates less directly or over the longer term. Here are several possible examples that relate to the time period that influences this edition of projections.

Dual and Concurrent Enrollment Opportunities, ongoing. Dual and concurrent enrollment opportunities continue to grow; as of 2019, all 50 states and the District of Columbia have a [statewide dual/concurrent enrollment policy in place](#).³⁹ These policies may be providing an [incentive to remain in school](#) and may have some role in [how long it takes students to complete high school](#).⁴⁰ At least one state (Colorado) includes potential high school graduates who choose to stay enrolled in high school for a fifth year in their graduation rate data so that they can participate in concurrent enrollment opportunities.⁴¹

Common Core Standards, 2010-present. In the early 2010s, states began adopting a common set of state standards as a way to improve math and literacy in K-12 education. The Center on Standards, Alignment, Instruction, and Learning found that [many states that had adopted the Common Core](#) lagged behind their peers that had not: “by 2017 — seven years after most states had adopted them — the standards appear to have led to modest declines in fourth-grade reading and eighth-grade math scores.”⁴² Many states have begun

moving away from the Common Core as evidenced by the [decline in state participation in related assessments](#).⁴² States participating in exams such as PARCC and Smarter Balanced have dropped from 23 in 2014 to just 16 in 2019. In 2011, 45 states had initially indicated they planned to use these tests.

The Deferred Action for Childhood Arrivals (DACA) program. As it relates to these projections of high school graduates, DACA was a possible factor during the period covered by the data, specifically, an incentive to remain in school. But no specific data exist to precisely analyze or quantify this. [According to Migration Policy Institute](#) estimates, in 2019, 680,000 individuals were in the DACA program, 98,000 undocumented students graduate from high school each year, 17 percent of which graduate from high schools in Texas and 27 percent from high schools in California.⁴⁴ DACA availability was constrained since 2017 as the Trump administration has sought to terminate the DACA program, and [future availability](#) may be affected by the 2021 U.S. presidential transition.⁴⁵ Even less certain is how the youth communities who are the focus of DACA will be impacted by the COVID-19 period, and how that might impact their contributions to the number of high school graduates.

Every Student Succeeds Act (ESSA), 2017-present.

Beginning in 2017, every state and the District of Columbia are required to submit a [school accountability](#), funding, and reporting plan to the Department of Education in compliance with the Every Student Succeeds Act (ESSA).⁴⁶ School districts receive funding from ESSA to support low-income students; federal dollars from ESSA are intended to supplement local budgets rather than replace them. Theoretically, ESSA could influence funding allocations in a way that begins shifting more funding to schools with higher relative proportions of students below the poverty line (among other ESSA innovations that might impact student achievement). Evidence will continue to emerge as ESSA is implemented, but there is evidence of [funding inequities](#).⁴⁷

529 Plans Available for Private School Tuition, 2017-2020. The Trump administration has been focused on school choice since 2017. The Tax Cuts and Jobs Act, passed in 2017, authorized [529 savings accounts to pay for K-12 private school tuition](#).⁴⁸

Whether this use of 529s influences the number of private school student is still emerging, but is so far

estimated to be marginal and more likely utilized by families already choosing private school. Others point out that the potential [impact is limited to families who know about or have a 529 account](#).⁴⁹

Monitoring and Metrics. Finally, it is possible that more accurate student tracking through the increasing use of state longitudinal data systems may explain some numerically perceptible effects in the data underlying these projections – specifically, better tracking that leads to numeric changes in the data may be detectable by the methodology, but not be able to be isolated from other real change. Even more direct to these projections, the uniform official graduation rate may have had some effect on the number and type of [diplomas awarded and counted in the data](#) used for these projections.⁵⁰

Endnotes

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- ² William J. Hussar and Tabitha M. Bailey, *Projections of Education Statistics to 2028*, Washington, D.C.: National Center for Education Statistics, May 2020, accessed on November 23, 2020, <https://nces.ed.gov/pubs2020/2020024.pdf>. Specifically, "Appendix A: Introduction to Projection Methodology".
- ³ Recipients of national high school equivalency assessments are not included in the data for high school graduates (except for a specific state or two, where it was noted as indeterminate in the data obtained from states). Detailed data are not available at the national or state level to fully account for these individuals, particularly what portion of them are typical high school age. But it appears that somewhere between 20 to 25 percent of the roughly 55,000 or more individuals who passed the TASC or HiSET versions of high school equivalency exams in years between 2015 and 2019, were between 16 and 18 years old. Recent estimates were not available for General Educational Development (GED) exams.
- ⁴ The Every Student Succeeds Act (ESSA) requires local educational agencies (LEAs) to provide equitable participation to eligible private school children, teachers, and other educational personnel in programs under Title I Part A, Title II Part A, Title III Part A, and Title IV Part A (20 U.S.C. §§ 6320(b) and 7881(d)). WICHE notes that this presumes states are able to know the number of students enrolled in private schools. WICHE will continue to monitor for alternative sources of private school data.
- ⁵ Specifically, enrollments come from the public datasets and graduates come from U.S. Department of Education, National Center for Education Statistics, Private School Survey Data (PSS) Table 15, which details the number of private schools, students, full-time equivalent teachers, and high school graduates, by state and academic year, both available on the PSS website at <https://nces.ed.gov/surveys/pss/>.
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- ¹⁴ "Back to School Survey Shows 47% of Parents Considering Dropping School, Going to Homeschooling," *Business Wire*, July 9, 2020, accessed on November 23, 2020, <https://www.businesswire.com/news/home/20200709005777/en/Back-to-School-Survey-Shows-47-of-Parents-Considering-Dropping-School-Going-to-Homeschooling>. John P. Bailey, "Parents and the pandemic: A comprehensive analysis of survey data," Washington, D.C.: American Enterprise Institute, June 2020, accessed December 7, 2020, <https://www.aei.org/research-products/report/parents-and-the-pandemic-a-comprehensive-analysis-of-survey-data/>.
- ¹⁵ Detailed data are from U.S. Department of Education, *Digest of Education Statistics 2017*, Table 206.10, at <https://nces.ed.gov/pubs2018/2018070.pdf>.
- ¹⁶ All references to students by race/ethnicity refer to public school students only. A small number of states began reporting in the new seven categories in school year 2008-09 or 2009-10. These distinctions are detailed in the published projections data and are most evident when looking at the data at a state level; they are not as apparent or feasible to isolate in regional and national views of the data.
- ¹⁷ United States Department of Health and Human Services, *United States Census 2000 Population With Bridged Race Categories*, Hyattsville, Md: Vital and Health Statistics Series 2, Number 135, September 2003, accessed on November 24, 2020, https://www.cdc.gov/nchs/data/series/sr_02/sr02_135.pdf.

¹⁸ For example, bridged-Race Population Estimates from 1990 to 2015 suggest that there has not been a net decline in individuals with Black origins, even though in some cases the projections indicate some decline, net of the recent birth declines. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics, "Bridged-Race Population Estimates," available on CDC WONDER Online Database, accessed August 25, 2016, <http://wonder.cdc.gov/bridged-race-v2015.html>. On a related note, in recent years race/ethnicity was "not stated" for between 0.6 percent and 0.9 percent of births. So in the extended projections, the totals reflect all births, but these uncategorized births are not counted in any race/ethnicity category.

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²⁰ United States Department of the Interior, "Bureau of Indian Education: Schools," accessed on November 24, 2020 <https://www.bie.edu/schools/directory>.

²¹ Centers for Disease Control and Prevention, *Bridged-Race Population Estimates*, accessed November 5, 2020, <https://wonder.cdc.gov/bridged-race-population.html>.

²² See for example: D'Vera Cohn, "Millions of Americans changed their racial or ethnic identity from one census to the next," Pew Research Center, May 5, 2014, accessed October 1, 2016, <http://www.pewresearch.org/fact-tank/2014/05/05/millions-of-americans-changed-their-racial-or-ethnic-identity-from-one-census-to-the-next/>. Brian Duncan and Stephen J. Trejo, "The Complexity of Immigrant Generations: Implications for Assessing the Socioeconomic Integration of Hispanics and Asians," *ILR Review* 70, 5 (October, 2017), 1146-1175. Gary D. Sandefur, Mary E. Campbell, and Jennifer Eggerling-Boeck, "Racial and Ethnic Identification, Official Classifications, and Health Disparities," In *Critical Perspectives on Racial and Ethnic Differences in Health in Late Life*, Washington, D.C.: National Academies Press, 2004, accessed 17 October 2016, <https://www.ncbi.nlm.nih.gov/books/NBK25522/>.

²³ National Center for Education Statistics, "Private School Enrollment," May 2020, accessed on November 24, 2020, https://nces.ed.gov/programs/coe/indicator_cgc.asp.

²⁴ Peace Bransberger, "Knocking at the College Door Methodology Review," December 2012, Boulder, Colo.: Western Interstate Commission for Higher Education, accessed 27 July 2020, <https://www.wiche.edu/wp-content/uploads/2018/10/methodology.pdf>.

²⁵ William J. Hussar and Tabitha M. Bailey, *Projections of Education Statistics to 2028*, Washington, D.C.: National Center for Education Statistics, 2020, accessed December 7, 2020, <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2020024>. These NCES projections are in some groupings similar to WICHE's projections, and also report mean absolute percentage errors. For example, from the most recent NCES projection report: the mean absolute percentage errors for U.S. public school graduates for lead times of 1, 2, 5, and 10 years were 1.0, 1.1, 2.5, and 5.1 percent, respectively, over nine editions of the projections. And, mean absolute percentage errors of U.S. private school graduates for lead times of 1, 2, 5, and 10 years were 3.0, 2.5, 4.9, and 7.7 percent, respectively, over 17 editions of the projections.

²⁶ Hussar and Bailey, 2020.

²⁷ Hussar and Bailey, 2020. NCES projects a high of 3.86 million U.S. graduates with Class of 2026. The NCES projections covered high school enrollments through SY 2016-17, but high school graduates were still projected beginning with Class of 2014. So, the most recent NCES projections did not factor the confirmed graduate counts between class of 2014 and 2019, but are conceivably reflecting much of the effect of graduation increases through the numbers of (retained) high school students.

²⁸ William J. Hussar and Tabitha M. Bailey, *Projections of Education Statistics to 2024*, Washington, D.C.: National Center for Education Statistics, September 2016, accessed on November 24, 2020, <https://nces.ed.gov/pubs2016/2016013.pdf>.

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- ⁵⁰ Mark Dynarski, *Is the High School Graduation Rate Really Going Up?* Washington, D.C.: The Brookings Institute, May 3, 2018, accessed November 24, 2020, <https://www.brookings.edu/research/is-the-high-school-graduation-rate-really-going-up/>.

Appendix Table A-1. Data Sources and Notes

Detailed information about the source and relevant observations about the data used for the projections for the nation, regions, and each state. (This information is also provided with the projections in the downloadable datasets and charts.)

Nation and Regions

United States	<p>The U.S. Public Schools graduates values for SY 2016-17 to 2018-19 include a projected portion (for Delaware, Nevada and Vermont); U.S. values are fully projected beginning SY 2019-20. Projections for U.S. Private Schools begin SY 2017-18. The U.S. Grand Total includes projected values in SY 2016-17 to 2018-19, and is fully projected beginning SY 2019-20. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (https://nces.ed.gov/ccd/). This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (https://nces.ed.gov/surveys/pss/). The U.S. (national) data and projections include the 50 states and District of Columbia, but projections may not exactly equal the sum of the states and D.C., because the national projections are made independently of the states. The U.S. (national) projections include a supplemental series of the combined estimated American Indian/Alaska Native graduates from public and BIE schools.</p>
Midwest	<p>The WICHE-defined Midwest region does not include North Dakota and South Dakota; they are included with other WICHE member states in the WICHE West region. The Midwest region Public Schools graduate projections begin SY 2019-20, projections for Private Schools begin SY 2017-18, and the Grand Total includes projected values in SY 2017-18 to 2018-19, and is fully projected beginning SY 2019-20. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (https://nces.ed.gov/ccd/). Public school graduates SY 2013-14 to 2018-19 are data gathered from states. This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (https://nces.ed.gov/surveys/pss/).</p>
Northeast	<p>Northeast region Public Schools graduates values for SY 2016-17 to 2018-19 include a projected portion (for Vermont, and for New Hampshire race/ethnicity series); values are fully projected beginning SY 2019-20. Projections for Private Schools begin SY 2017-18. The Grand Total includes projected values in SY 2016-17 to 2018-19, and is fully projected beginning SY 2019-20. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (https://nces.ed.gov/ccd/). Public school graduates SY 2013-14 to 2018-19 are data gathered from states. This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (https://nces.ed.gov/surveys/pss/).</p>
South	<p>South region Public Schools graduates values for 2018-19 include a projected portion (for Delaware); values are fully projected beginning SY 2019-20. Projections for Private Schools begin SY 2017-18. The Grand Total includes projected values in SY 2017-18 to 2018-19, and is fully projected beginning SY 2019-20. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (https://nces.ed.gov/ccd/). Public school graduates SY 2013-14 to 2018-19 are data gathered from states. This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (https://nces.ed.gov/surveys/pss/).</p>

West

The WICHE-defined West region is a total of WICHE member states, including North and South Dakota. Public Schools graduates values for 2018-19 include a projected portion (for Nevada); values are fully projected beginning SY 2019-20. Projections for Private Schools begin SY 2017-18. The Grand Total includes projected values in SY 2017-18 to 2018-19, and is fully projected beginning SY 2019-20. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (<https://nces.ed.gov/ccd/>). Public school graduates SY 2013-14 to 2018-19 are data gathered from states. This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (<https://nces.ed.gov/surveys/pss/>).

Census Divisions

Pacific (AK, CA, HI, OR, WA (and MP, GU))

Public Schools graduates projections begin SY 2019-20, projections for Private Schools begin SY 2017-18, and the Grand Total includes projected values in SY 2017-18 to 2018-19, and is fully projected beginning SY 2019-20. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (<https://nces.ed.gov/ccd/>). Public school graduates SY 2013-14 to 2018-19 are data gathered from states. This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (<https://nces.ed.gov/surveys/pss/>).

Mountain (AZ, CO, ID, MT, NV, NM, UT, WY)

Public Schools graduates values for 2018-19 include a projected portion (for Nevada); values are fully projected beginning SY 2019-20. Projections for Private Schools begin SY 2017-18. The Grand Total includes projected values in SY 2017-18 to 2018-19, and is fully projected beginning SY 2019-20. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (<https://nces.ed.gov/ccd/>). Public school graduates SY 2013-14 to 2018-19 are data gathered from states. This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (<https://nces.ed.gov/surveys/pss/>).

West North Central (IA, KS, MN, MO, NE, ND, SD)

Public Schools graduates projections begin SY 2019-20, projections for Private Schools begin SY 2017-18, and the Grand Total includes projected values in SY 2017-18 to 2018-19, and is fully projected beginning SY 2019-20. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (<https://nces.ed.gov/ccd/>). Public school graduates SY 2013-14 to 2018-19 are data gathered from states. This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (<https://nces.ed.gov/surveys/pss/>). Several grade level estimates for SY 2013-14 private school enrollments had coefficients of variation between 27% and 28%, and should be used with caution. No adjustments were made for using these values in the projections.

West South Central (AR, LA, OK, TX)

Public Schools graduates projections begin SY 2019-20, projections for Private Schools begin SY 2017-18, and the Grand Total includes projected values in SY 2017-18 to 2018-19, and is fully projected beginning SY 2019-20. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center

for Education Statistics (NCES) Common Core of Data (<https://nces.ed.gov/ccd/>). Public school graduates SY 2013-14 to 2018-19 are data gathered from states. This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (<https://nces.ed.gov/surveys/pss/>).

East North Central (IL, IN, MI, OH, WI)

Public Schools graduates projections begin SY 2019-20, projections for Private Schools begin SY 2017-18, and the Grand Total includes projected values in SY 2017-18 to 2018-19, and is fully projected beginning SY 2019-20. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (<https://nces.ed.gov/ccd/>). Public school graduates SY 2013-14 to 2018-19 are data gathered from states. This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (<https://nces.ed.gov/surveys/pss/>).

East South Central (AL, KY, MS, TN)

Public Schools graduates projections begin SY 2019-20, projections for Private Schools begin SY 2017-18, and the Grand Total includes projected values in SY 2017-18 to 2018-19, and is fully projected beginning SY 2019-20. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (<https://nces.ed.gov/ccd/>). Public school graduates SY 2013-14 to 2018-19 are data gathered from states. This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (<https://nces.ed.gov/surveys/pss/>). Several grade level estimates for SY 2017-18 private school enrollments had coefficients of variation between 29% and 32%, and should be used with caution. No adjustments were made for using these values in the projections.

New England (CT, MA, ME, NH, RI, VT)

Public Schools graduates values for SY 2016-17 to 2018-19 include a projected portion (for Vermont, and for New Hampshire race/ethnicity series); values are fully projected beginning SY 2019-20. Projections for Private Schools begin SY 2017-18. The Grand Total includes projected values in SY 2016-17 to 2018-19, and is fully projected beginning SY 2019-20. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (<https://nces.ed.gov/ccd/>). Public school graduates SY 2013-14 to 2018-19 are data gathered from states. This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (<https://nces.ed.gov/surveys/pss/>).

Mid-Atlantic (NJ, NY, PA)

Public Schools graduates projections begin SY 2019-20, projections for Private Schools begin SY 2017-18, and the Grand Total includes projected values in SY 2017-18 to 2018-19, and is fully projected beginning SY 2019-20. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (<https://nces.ed.gov/ccd/>). Public school graduates SY 2013-14 to 2018-19 are data gathered from states. This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (<https://nces.ed.gov/surveys/pss/>).

South Atlantic (DE, DC, FL, GA, MD, NC, SC, VA, WV)

Public Schools graduates values for 2018-19 include a projected portion (for Delaware); values are fully projected beginning SY 2019-20. Projections for Private Schools begin SY 2017-18. The Grand Total includes projected values in SY 2017-18 to 2018-19, and is fully projected beginning SY 2019-20. Public

school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (<https://nces.ed.gov/ccd/>). Public school graduates SY 2013-14 to 2018-19 are data gathered from states. This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (<https://nces.ed.gov/surveys/pss/>).

State Data Notes

Unless otherwise noted for a specific state: graduate projections begin SY 2019-20 for Public Schools, SY 2017-18 for Private Schools, and the Grand Total is fully projected beginning SY 2019-20 but includes the Private school projected portion SY 2017-18 and 2018-19. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 and enrollments through SY 2018-19 are from the National Center for Education Statistics (NCES) Common Core of Data, <https://nces.ed.gov/ccd/>. This Technical Appendix provides full data details, including about private school data, which are estimates computed from survey-based data from NCES Private School Universe Survey, <https://nces.ed.gov/surveys/pss/>.

Alabama	Public school graduates for SY 2013-14 to 2018-19 received by request in October 2020 from alsde.org. WICHE observed anomalies observed in the categorization of received public high school graduates by race/ethnicity for 2013-14, but no adjustments were made, because 2013-14 is primarily displayed for historical considerations and not critical in the projection methodology.
Alaska	Public school graduates for SY 2013-14 to 2018-19 received in April 2020 by request to https://education.alaska.gov . Separately reported American Indian and Alaska Native counts in the data received were aggregated for a total of American Indian/Alaska Native graduates. Private school graduates for virtually all years since 2000 are estimated by WICHE, derived as a percentage of 12th graders reflecting an average of 98 percent grade-12-to-graduation progression. Private school graduate counts are not available from the Alaska state department of education or the primary NCES source of data for this series.
Arizona	Public school graduates for SY 2013-14 to 2018-19 are ESTIMATES COMPUTED BY WICHE (not confirmed total annual graduates) using data about graduates from ninth-grade cohorts that WICHE was pointed to at https://www.azed.gov/accountability-research/data/ in Summer 2020, because Arizona department of education was not able to provide the requested total annual graduates. Estimates based on graduates within 4 to 7 years of their defined ninth grade cohort may be a reasonable approximation of total annual graduates. The Arizona estimates only capture graduates within 4 or 5 years of their defined ninth grade cohort, and as such may systematically underreport the total number of graduates by a small, but consistent, amount. And, users should keep in mind these are a computed estimate from data that may not be specifically for this purpose.
Arkansas	Public school graduates for SY 2013-14 and forward compiled April to July 2020 from data available at https://adedata.arkansas.gov/statewide/ReportList/State/Graduates.aspx . WICHE observed anomalies with 2014-15 graduate data. According to Arkansas Department of Education: the 2014-2015 Graduates are correct based on the data submitted by the Districts, but for the 2014-2015 SY there was a change in the Race Field in eSchool which resulted in the incorrect race being selected. WICHE was not able to adjust the data due to insufficient information for deriving the correct values. Several grade level estimates for SY 2015-16 private school enrollments had coefficients of variation between 26% and 39%, and should be used with caution. These estimates indicated 30% increase of private school students in certain grades between SY 2013-14 and 2015-16. But, no adjustments were made for using these values in the projections because they did not appear to lead to any material differences in the projections.
California	Public school graduates for SY 2013-14 to 2018-19 compiled in August 2020 from data available at https://www.cde.ca.gov/ds/sd/sd .

Colorado	Public school graduates for SY 2013-14 to 2018-19 compiled in March 2020 from data received by request from Colorado Department of Education. Several grade level estimates for SY 2015-16 private school enrollments had coefficients of variation between 28% and 49%, and should be used with caution. No adjustments were made for using these values in the projections; they did not appear to materially impact the projections.
Connecticut	Public school graduates for SY 2013-14 to 2018-19 received in April 2020 by request per instructions at edsight.ct.gov . Several grade level estimates for SY 2013-14 and 2017-18 private school enrollments had coefficients of variation between 29% and 41%, and should be used with caution. No adjustments were made for using these values in the projections.
Delaware	For Delaware: Graduate projections begin SY 2018-19 for Public Schools, SY 2017-18 for Private Schools, and the Grand Total is fully projected beginning SY 2018-19 but includes the Private school projected portion SY 2017-18. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (https://nces.ed.gov/ccd/). This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (https://nces.ed.gov/surveys/pss/). Specific to Delaware: Public school graduates for SY 2014-15 to 2017-18 are ESTIMATES COMPUTED BY WICHE (not confirmed total annual graduates) using data about graduates from ninth-grade cohorts that WICHE obtained in August 2020 from data available at https://data.delaware.gov/Education/Student-Graduation/t7e6-zcnn because WICHE was unable to obtain the requested total annual graduate data from Delaware department of education. Estimates based on graduates within 4 to 7 years of their defined ninth grade cohort may be a reasonable approximation of total annual graduates. The Delaware estimates only capture graduates within 4 or 5 years of their defined ninth grade cohort, and as such may systematically underreport the total number of graduates by a small, but consistent, amount. And, users should keep in mind these are a computed estimate from data that may not be specifically for this purpose. The source data did not provide counts for American Indian/Alaska Native graduates, or Native Hawaiian/Other Pacific Islander graduates separate from Asian graduates (they are presumably redacted due to small numbers), so they are also not projected; and the Asian/Pacific Islander category may be the same or very similar in number to Asian alone category, since the specific additional number of NH/OPI graduates is not known. Values for 2013-14 were imputed by WICHE (but 2013-14 is primarily displayed for historical considerations and not critical in the projection methodology). WICHE also observes but made no alterations for an unusual increase in the number of Delaware births for 2017 and 2018 that are classified as Hispanic, which drives a sudden increase of high school graduates in the last several projected years. Delaware private school grade level estimates for SY 2017-18 had coefficients of variation $\geq 50\%$ and were suppressed from use in the projections. Private school graduate projections still begin with 2017-18, but enrollment projections begin with SY 2016-17. In practical terms, the estimates with unacceptable levels indicated 50% increases in private school students between 2015-16 and 2017-18; the adjusted projections reflect the pattern of Delaware private school enrollment declines in all observed years through 2015-16.
District of Columbia	Public school graduates for SY 2013-14 to 2018-19 are ESTIMATES COMPUTED BY WICHE (not confirmed total annual graduates) using data about graduates from ninth-grade cohorts that WICHE was referred to at https://osse.dc.gov/page/data-and-reports-0 , because D.C. OSSE was not able to provide the requested total annual graduate data. Estimates based on graduates within 4 to 7 years of their defined ninth grade cohort may be a reasonable approximation of total annual graduates. The D.C. estimates only capture graduates within 4 or 5 years of their defined ninth grade cohort, and as such may systematically underreport the total number of graduates by a small, but consistent, amount. And, users should keep in mind these are a computed estimate from data that may not be specifically for this purpose. The source data did not provide counts for American Indian/Alaska Native graduates, or Native Hawaiian/Other Pacific Islander graduates separate from Asian graduates, so these categories of graduates are not projected

(there were typically 5 or fewer such 12th graders); and the count of Asian/Pacific Islanders may be the same or very similar in number to Asian alone category, since the specific additional number of NH/OPI graduates is not known. Estimates for SY 2015-16 D.C. private school grade 6 students had a coefficient of variation $\geq 50\%$ and was suppressed. Estimates for grade 7 and 8 students had CVs of 42% and 48%, respectively, and should be used with caution. A replacement estimate was imputed for grade 6 students from surrounding year data, but not for grade 7 or 8; there were no material changes to the projections before or after the adjustments. In practical terms, the estimates indicate a very strong increase of private high school students between 2009-10 and 2013-14 that was not sustained through 2017-18, and stagnant or decreasing private elementary school numbers.

Florida	Public school graduates for SY 2013-14 to 2018-19 compiled in August 2020 from data available at http://www.fldoe.org/accountability/data-sys/edu-info-accountability-services/pk-12-public-school-data-pubs-reports . While there was no obvious reason to adjust these data or the projection methodology, WICHE notes that the Florida private school estimates indicate increases of 30-45% in all grade levels between 2010-11 and 2017-18, which lead to a multiplier effect in the projections for private schools. This rate of perpetual increase may be implausible.
Georgia	Public school graduates for SY 2013-14 to 2018-19 compiled in June to August 2020 from data available at https://gosa.georgia.gov/report-card-dashboards-data/downloadable-data . WICHE did not project Native Hawaiian/Other Pacific Islander graduates separate from Asian, because data about them were not reported separately in the data available from Georgia.gov. WICHE was not able to confirm in which category these students are counted, but with about 130 NH/OPI 12th graders annually in recent years, an estimated 2.8 percent of the graduates categorized as Asian could be NH/OPI, if they are counted there, or 4.5 percent of Two or more races graduates, if reported there. And, the Asian/Pacific Islander category may be the same or very similar in number to Asian alone category, since the specific number of NH/OPI graduates is not known. Georgia private school grade-level estimates for SY 2015-16 have coefficients of variation between 27% and 41% and should be used with caution, but no adjustments were made to the values before use in the projections. In practical terms, avoiding the SY 2015-16 year of data in making the projections, with its higher enrollment estimates, would produce projections of private school graduates that were on average 16 percent lower over the projected years.
Hawai'i	Public school graduates for SY 2013-14 to 2018-19 provided by the Hawai'i Data eXchange Partnership (DXP ID651) (2020). In SY 2014-15, the date students must be age 5 to attend Kindergarten changed. Therefore, SY 2015-16 had essentially "5 less months of students". This change, in addition to a decrease in birth rates in 2009, resulted in a drop in SY 2015-16 early elementary grade enrollments, and this smaller cohort will likely remain small until these students graduate. WICHE also observes that the number of Hawai'i public school graduates categorized as multi-racial is substantially lower in these data as ratio of 12th graders, than from Common Core of Data graduate counts for SY 2010-11 to 2012-13. And, the sum of public graduates by race/ethnicity is slightly less than the public school total. Combined, these data nuances result in some apparently unusual projections for outer years. Grade level estimates for SY 2015-16 Hawai'i private school enrollments have coefficients of variation between 30% and 39%; grade 6 CV is 44%. These estimates should be used with caution. Practically speaking, the estimates indicate an average of 35% increase of Hawai'i private school enrollments in each grade and graduates between SY 2013-14 and 2015-16, and project a doubling of the number of private school graduates (by 2030 and after). But, there was no basis for altering the projections.
Idaho	Public school graduates for SY 2013-14 to 2018-19 received by request in March 2020 from http://www.sde.idaho.gov/communications/public-records-requests.html . Idaho private school grades 1 and 2 student estimates for SY 2017-18 had coefficients of variation of 41% and 50%, and were suppressed from use in the projections. Private school graduate projections still begin with 2017-18, but Idaho private school grade 1 and grade 2 projections begin with 2016-17 (all other grade projections begin with 2018-19). In

practical terms, the estimates for the last year of private school enrollment data (SY 2017-18) indicated strong enrollment increases, which results in projecting continuing strong increase for the sector, increasing from 4% of total graduates to 6% over the timeframe projected.

Illinois	Public school graduates for SY 2013-14 to 2018-19 received by public information data request June to October 2020 from https://www.isbe.net/foia .
Indiana	Public school graduates for SY 2013-14 to 2018-19 received by request in March 2020 from Indiana Department of Education. Grades 1 to grade 8 estimates for SY 2015-16 and 2017-18 Indiana private school enrollments had coefficients of variation between 27% and 32%, and should be used with caution. No adjustments were made for using these values in the projections.
Iowa	Public school graduates for SY 2013-14 to 2018-19 received by request in June 2020 from the Iowa Department of Education. Many of the grade-level estimates for 2013-14 and 2015-16 Iowa private school grades 1 to 8 had unacceptably high coefficients of variation 37% to 70%. Therefore, estimates for grades 1 to 8 for SY 2013-14 and grades 1 to 5 for SY 2015-16 were suppressed if CV >=50%, or otherwise excluded from use in the projections methodology. In practical terms, these estimates with unacceptably high CVs indicated as much as 50-90% increases in Iowa private elementary students between 2011-12 and 2015-16, but this increase was not sustained by SY 2017-18. In effect, the resulting methodology adjustment leads to projections that capture 5-15% increase of private elementary school students between 2011-12 and 2017-18, and 14-28% increases in high school grades. These estimates and projections should be used with caution.
Kansas	Public school graduates for SY 2013-14 to 2018-19 compiled in July 2020 from data received by request from https://www.ksde.org/Data-Central/Data-Requests .
Kentucky	For Kentucky: Graduate projections begin SY 2019-20 for Public Schools, SY 2015-16 for Private Schools, and the Grand Total is fully projected beginning SY 2019-20 but includes the Private school projected portion SY 2015-16 to 2018-19. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (https://nces.ed.gov/ccd/). This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (https://nces.ed.gov/surveys/pss/). Specific to Kentucky: Public school graduates for SY 2013-14 to 2018-19 received by request in May 2020 from education.ky.gov . WICHE observes a 9% decline in public school 1st grade enrollments between 2017-18 and 2018-19 (after some other accumulating decreases in other early grades) and similar declines in other early grade enrollments. An increase in births in recent years reverses the trend but leads to an inconsistent trend. No adjustment made to the data. Kentucky private school enrollment estimates for grades 9 to 12 for SY 2017-18 were suppressed due to coefficients of variation >=50%. So, Kentucky private school enrollment projections for grades 9 to 12 begin with SY 2016-17, whereas grades 1 to 8 begin with SY 2018-19. The private school graduate estimate for SY 2016-17 for Kentucky was flagged in the source data from NCES as having a CV of 30-50%, and the estimated number of graduates could not be confirmed by recent 12th grade count, so this value for SY 2016-17 was not used and Kentucky private high school graduate projections begin with 2015-16.
Louisiana	Public school graduates for SY 2013-14 to 2018-19 received by request in August 2020 from LDEPublicRecords@la.gov . Estimates for Louisiana private high school students (grades 8 to 12, and graduates) for SY 2015-16/2014-15 graduates had coefficients of variation reaching and exceeding 50%; they were suppressed from use in the projection methodology. Remaining grades 1-12 estimates for SY 2015-16 and 2017-18 also had CVs from 27-42%, and should be used with caution; but they were not excluded from the projections methodology. In practical terms, the grades 8-12 estimates with unacceptably high error indicated two-year increases in student numbers of up to 50%, that were not

sustained to SY 2017-18. The adjustments to exclude these problematic estimates from the projection methodology capture 5-15% increases indicated for Louisiana private high school students between 2013-14 and 2017-18, and 5-25% increases for private elementary students over the same period.

Maine	Public school graduates for SY 2013-14 to 2018-19 received in April 2020 by request per instructions at www.maine.gov/dae/ . WICHE was not able to isolate the publicly funded students of Maine's town tuitioning program who attend and graduate from a public-serving private school, so there may be some duplication in the Maine public and private school totals, and the grand total.
Maryland	Public school graduates for SY 2013-14 to 2018-19 compiled March to August 2020 from data available at http://www.marylandpublicschools.org/about/Pages/DCAA/SSP/index.aspx . The source data include Special Education Certificates (see Table 12 of report), which are not typically included for the primary definition of graduate for these projections. WICHE was able to deduct the Special Ed certificates from the data used for the Public Schools Total, but not from each public school race/ethnicity series, which therefore might be inflated by 1.1% to 1.4%, based on Special Ed certificates portion of the Total.
Massachusetts	Public school graduates for SY 2013-14 to 2018-19 compiled in March 2020 from data available at www.doe.mass.edu .
Michigan	Public school graduates for SY 2013-14 to 2018-19 compiled March to August 2020 from data available originally at https://www.mischooldata.org/college-progression-by-graduating-class/ and more recently at https://www.mischooldata.org/college-enrollment-by-hs-1/ (the source data URL changed). WICHE observes what appears to be some recategorization/category changes with the numbers of graduates categorized as Hispanic, White and Two or more races between 2013-14 and 2014-15, but no adjustments were made with the data obtained and these values are for historical reference and not critical to the projections. Michigan private school estimates for grades 8 and 9 for SY 2015-16 had coefficients of variation $\geq 50\%$ and were suppressed; all other grade-level estimates for this year had CVs between 39% and 48%. In practical terms, the estimates indicated a 25% to 30% increase in the number of students in each grade between 2013-14 and 2015-16, which was not sustained (was reversed in almost equal measure) to 2017-18. The estimates for SY 2015-16 were not used in the projection methodology. These estimates and projections should be used with caution.
Minnesota	Public school graduates for SY 2013-14 to 2018-19 compiled March to November 2020 from data available at https://education.mn.gov/MDE/Data/ , with supplemental data by request. Minnesota private school estimates for grades 1 to 8 for SY 2017-18 were suppressed due to coefficients of variation $\geq 50\%$, and therefore enrollments for Grades 1 to 8 are projected from SY 2016-17 onward (private school graduate projections still begin with 2017-18). Estimates for grades 9 to 12 for SY 2017-18 have coefficients of variation 29% to 38% and should be used with caution; but no adjustments were made to these estimates. In practical terms, the available estimates for recent years indicate decreasing numbers of grades 1 to 8 Minnesota private school students, but strong increases in the number of Minnesota private high school students and graduates.
Mississippi	Public school graduates for 2013-14 to 2019-19 received by request to https://mdek12.org/OPR/Reporting in May 2020. Native Hawaiian/Other Pacific Islander graduates were not available separately in the source data and therefore no projection is made for them; and, the Asian/Pacific Islander category may be the same or very similar in number to Asian alone category, since the specific number of NH/OPI graduates is not known.
Missouri	Public school graduates for SY 2013-14 to 2018-19 received in April 2020 by request to https://apps.dese.mo.gov/DataRequestForm/DataRequest.aspx . Estimates for private school grade 1 to 8 students had coefficients of variation $\geq 50\%$, and were suppressed. Also, several grade-level estimates for SY 2017-18 were between 29% and 34%, and should be used with caution; but they were not adjusted. In practical terms, the private school data indicate strong increases in the number of Missouri private high school

students over the years between 2009-10 and 2017-18, so increasing numbers of high school graduates are projected despite relatively stable or slightly decreasing elementary and middle school student numbers.

Montana	Public school graduates for SY 2013-14 to 2018-19 compiled in April 2020 from data available at https://gems.opi.mt.gov/CollegeReadiness/Pages/Overview.aspx .
Nebraska	For Nebraska: Graduate projections begin SY 2019-20 for Public Schools, SY 2015-16 for Private Schools, and the Grand Total is fully projected beginning SY 2019-20 but includes the Private school projected portion SY 2015-16 to 2018-19. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (https://nces.ed.gov/ccd/). This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (https://nces.ed.gov/surveys/pss/). Specific to Nebraska: Public school graduates for SY 2013-14 to 2018-19 are ESTIMATES COMPUTED BY WICHE (not confirmed total annual graduates) using data about graduates from ninth-grade cohorts that WICHE received in April-July 2020 by request from https://nep.education.ne.gov/ , because Nebraska department of education was not able to provide the requested total annual graduate counts. Estimates based on graduates within 4 to 7 years of their defined ninth grade cohort may be a reasonable approximation of total annual graduates, and the estimates for Nebraska are based on ninth graders graduating within 4 to 7 years. Nebraska private school enrollment estimates for grades 7 to 12 for SY 2017-18 were suppressed due to coefficients of variation $\geq 50\%$. 2015-16 grade 1 enrollment estimate also exceeded CV of 50%, and was not used; WICHE linearly interpolated this value. So, Nebraska private school enrollment projections for grades 7 to 12 begin with SY 2016-17, whereas grades 1 to 6 begin with SY 2018-19. The private school graduate estimates for Nebraska for SY 2016-17 was flagged in the source data from NCES as having a CV of 30-50%, and the estimated number of graduates could not be confirmed by recent 12th grade count, so this value for SY 2016-17 was not used and Nebraska private high school graduate projections begin with 2015-16.
Nevada	For Nevada: Graduate projections begin SY 2018-19 for Public Schools, SY 2017-18 for Private Schools, and the Grand Total is fully projected beginning SY 2018-19 but includes the projected portion SY 2017-18. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (https://nces.ed.gov/ccd/). This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (https://nces.ed.gov/surveys/pss/). Specific to Nevada: Public school graduates for 2013-14 to 2017-18 are ESTIMATES COMPUTED BY WICHE in July 2020 from data at http://nevadareportcard.nv.gov , because Nevada department of education was not able to provide the requested total annual graduates. Estimates based on graduates within 4 to 7 years of their defined ninth grade cohort may be a reasonable approximation of total annual graduates. The Nevada estimates for SY 2013-14 and 2014-15 only capture graduates within 4 years of their defined ninth grade cohort; the estimates for SY 2015-16 to 2017-18 only capture graduates within 5 years of their defined ninth grade cohort. (WICHE was not able to compute a plausible estimate for total graduates in SY 2018-19, from the 4- and 5-year graduation rate data published on the website.) In relation to these being estimates, the public school graduate counts may systematically underreport the number of graduates by a small, but consistent, amount. And, users should keep in mind these are a computed estimate from data that may not be specifically for this purpose.
New Hampshire	For New Hampshire: Graduate projections begin SY 2019-20 for Public Schools total and 2018-19 for race/ethnicities, SY 2017-18 for Private Schools, and the Grand Total is fully projected beginning SY 2019-20 but includes the projected portions SY 2017-18 and 2018-19. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments

through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (<https://nces.ed.gov/ccd/>). This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (<https://nces.ed.gov/surveys/pss/>). Specific to New Hampshire: Public school graduates, total, for SY 2013-14 to 2018-19 compiled in April-June 2020 from data for total completers earning standard diplomas at www.education.nh.gov. Estimates of graduates by race/ethnicity obtained from the New England Secondary School Consortium (www.newenglandssc.org), which New Hampshire is a participant to. Race/ethnicity data from NESSC are an estimated total of the 4- to 6-year ninth-grade cohort graduates. Fewer than 11 Native Hawaiian/Other Pacific Islander graduates annually, prior to 2017 (at which point there were 12) so no separate projections are made for them; and, the Asian/Pacific Islander category may be the same or very similar in number to Asian alone category, since the specific number of NH/OPI graduates is not known. Some anomalies observed in public schools total and White graduate counts in 2013-14. Town Tuitioned students/graduates may be counted in both the Public and Private school data. New Hampshire private school enrollment estimates for grades 1 to 8 for SY 2017-18 were suppressed due to coefficients of variation $\geq 50\%$. So, New Hampshire private school enrollment projections for grades 1 to 8 begin with SY 2016-17; grades 9 to 12 still begin with SY 2018-19; and graduate projections still begin with 2017-18.

New Jersey	Public school graduates for SY 2013-14 to 2018-19 compiled in March 2020 from data received by request to opra.custodian@doe.nj.gov .
New Mexico	The data for New Mexico public school graduates for SY 2013-14 to 2018-19 were compiled in July 2020 from two data sources obtained from New Mexico Public Education Department and include ESTIMATES COMPUTED BY WICHE (so that not all years are confirmed total annual graduates). WICHE computed estimates of annual graduates for SY 2013-14 to 2015-16 from cohort graduate data published at https://webnew.ped.state.nm.us/bureaus/accountability/graduation , and used total annual graduate counts provided by NMPED for SY 2016-17 to 2018-19. The estimates for SY 2013-14 to 2015-16, computed from cohort-based graduates-- capture graduates within 4 to 6 years of their defined ninth grade cohort, and as such may be systematically different than a total annual number of graduates by a small, but consistent, amount. And, users should keep in mind these are a computed estimate from data that may not be specifically for this purpose. Further, New Mexico's cohort-based graduation data did not provide counts for Native Hawaiian/Other Pacific Islander and multi-racial students, so WICHE approximated their numbers for SY 2013-14 to 2015-16 based on the proportional rate of these students for SY 2016-17 to 2018-19. See Technical Appendix for full detail about private school data, which utilize survey-based estimates. New Mexico private school estimates for grades 1 to 8 for SY 2017-18 were suppressed due to coefficients of variation $\geq 50\%$, and therefore enrollments for Grades 1 to 8 are projected from SY 2016-17 onward (private school graduate projections still begin with 2017-18).
New York	Public school graduates for SY 2013-14 for 2018-19 received by request in June 2020 from the New York State Education Department. New York reported all grade-level counts of Hawaiian Native / Pacific Islander students ('NHOP') as missing in 2013-14 to 2015-16 Common Core of Data. In the 2013-14 and 2014-15 CCD documentation, NCES reported that it was possible these students were counted in other categories of race/ethnicity. WICHE was unable to determine if they were already counted under Asian (alone) counts, or in Two or more races. Enrollments on NYSED.gov are only available by combined "Asian or Native Hawaiian/Other Pacific Islander" and therefore did not provide the needed substitutions. From the data available in other years, it appears these students were approximately 0.1% of total public students, by grade. Graduate counts by these categories were available from in the data received from NYSED, so WICHE estimated these grade-level enrollments using linear interpolation.
North Carolina	Public school graduates for SY 2013-14 to 2018-19 compiled March to August 2020 from data available in the Statistical Profile at http://apps.schools.nc.gov/ords/f?p=145:1 . WICHE observes about 10% fewer first graders in 2010-11 than in 2009-10 or 2011-12; this reduced starting "cohort" appears to progress with

roughly 10% fewer students through the grade levels. It is reflected in the White and Black enrollments. There is no clarification about this in the NCES CCD documentation, and similar patterns are evident in data available from Statistical Profile at <http://apps.schools.nc.gov/ords/f?p=145:1>. No adjustments were made to these data. Native Hawaiian/Other Pacific Islander (NHOP) graduates were missing/suppressed for 2016-17 and 2018-19; WICHE imputed them using a 5-year average ratio of 12th grade-to-graduates.

North Dakota	Public school graduates for SY 2013-14 to 2018-19 compiled June to August 2020 from data available at https://insights.nd.gov/Education/State/GraduationRate# . Hispanic grade-level enrollments from CCD for 2010-11 were linearly imputed because counts appeared erroneous (decreased from 200s to 20s); these values are only for information and not used for the projections. In graduate data published by the state, two or more races graduate counts were suppressed (<10), so projections are not possible. Hispanic graduates were also suppressed 2013-14 to 2015-16, and WICHE computed estimates of these graduates with linear interpolation. Projections for North Dakota Black public high school graduates were adjusted to minimize a compounding effect that was occurring due to recent observed increases in infants and young school-age children categorized as Black non-Hispanic, which in the projections methodology resulted in implausible multiplication in the number of future Black public high school graduates by 2030. Private school graduates for virtually all years since 2000 are estimated by WICHE, derived as a percentage of 12th graders reflecting an average of 100 percent grade-12-to-graduation progression. Private school graduate counts are not available from the state department of education or the primary NCES source of data for this series.
Ohio	Public school graduates for SY 2013-14 to 2018-19 compiled March to October 2020 from data available at https://reportcard.education.ohio.gov/advanced and https://reports.education.ohio.gov/report/report-card-data-graduate-count-by-school-year-state . WICHE observes historically more reported graduates than the number of 12th graders, consistently, and has received information over the years that Ohio's business rules for enrollments reporting differ from those for Common Core of Data. The membership file of EdFacts is pulled on October 1st, while the Ohio Dept of Education October Headcount is based on data pulled on the Friday of the first full week in October each year. Ohio private school estimates for grades 1 to 8 in SY 2015-16 have coefficients of variation between 34% to 43%, and should be used with caution. But, no adjustments were made for the projections.
Oklahoma	Public school graduates for SY 2013-14 to 2018-19 received in October 2020 through public information request to Oklahoma State Department of Education.
Oregon	Public school graduates for SY 2013-14 and forward received in March 2020 from Oregon Department of Education.
Pennsylvania	Public school graduates for SY 2013-14 to 2018-19 compiled in March to October from data at https://www.education.pa.gov/DataAndReporting/Graduates/Pages/default.aspx . Several grade level estimates for SY 2014-15 and 2015-16 private school enrollments had coefficients of variation between 25% and 32%, and should be used with caution. No adjustments were made for using these values in the projections.
Rhode Island	Public school graduates for SY 2013-14 to 2018-19 compiled in April 2020 from data available at www.eride.ri.gov/reports/reports.asp . Native Hawaiian/Other Pacific Islander graduates were not separately reported in these (website) data. WICHE obtained the separate counts from the New England Secondary School Consortium (www.newenglandssc.org), which Rhode Island is a participant to. Rhode Island private school estimates for SY 2015-16 have coefficients of variation from 28% to 44%, and should be used with caution. But, they have not been adjusted for use in the projections.
South Carolina	Public school graduates for school years 2013-14 to 2018-19 compiled from data received in March 2020 by request to South Carolina department of education, https://scdoe.mycusthelp.com/WEBAPP/_rs/(S(j2xnyqxa3bgckldzhnd4z3tc))/supporthome.aspx . WICHE imputed graduates by race/ethnicity for

2014-15, because race/ethnicity detail was not present for 2014-15 graduates in the data received upon request, which South Carolina department of education confirmed was due to an internal state data source that changed in 2014 and prevented reporting of this detail.

South Dakota	<p>Public high school graduates for 2014-15 to 2018-19 compiled in March 2020 from data available at https://doestatereporting.sd.gov. It appears these data WICHE were referred to, include GED recipients (by age 21). WICHE is unable to determine what amount more this might be than if the data included only standard/regular diploma recipients from high schools. Native Hawaiian/Other Pacific Islander graduate counts were redacted/suppressed in the source data for all but 2017-18, and therefore no projections are made for them; and, the Asian/Pacific Islander category may be the same or very similar in number to Asian alone category, since the specific number of NH/OPI graduates is not known. WICHE linearly interpolated public school statewide graduate counts for 2013-14 since these were not available from the South Dakota department of education; these values are for information and not critical in the projections methodology. WICHE observes an increase of 10 to 50% in the number of South Dakota public school students per grade, who are categorized as multiracial, between SY 2017-18 and 2018-19. There was no basis for altering these data, so they were not adjusted; but this becomes a multiplier effect in the methodology, which might be projecting an implausible increase in the number of multiracial South Dakota graduates. Graduate count for 2014-15 was not available from NCES data source, so the values for both the normally imputed years (2011, 2013 and 2015) and this missing year (2014) are estimated/computed using the average historical ratio of grade 12 to graduates (95 percent).</p>
Tennessee	<p>Public school graduates for school years 2013-14 to 2018-19 received in May 2020 from request to https://www.tn.gov/content/tn/education/data/data-downloads/request-data.html. WICHE observes that the Two or more races values for 2013-14 and 2015-16 are implausible, but was not able to adjust them due to insufficient prior data (this might slightly affect the first projected year). Also, the data received by request looks virtually the number that would be estimated for on-time graduates from Tennessee published annual statistical reports, but from WICHE's analysis it seems more likely the on-time estimated number is high, than that the total annual graduates are off; so no adjustment is made.</p>
Texas	<p>Public school graduates for SY 2013-14 to 2018-19 compiled April to November 2020 from data available at https://tea.texas.gov/texas-schools/accountability/academic-accountability/performance-reporting/texas-academic-performance-reports.</p>
Utah	<p>Public school graduates for SY 2013-14 and forward received in May 2020 from request to https://www.schools.utah.gov/data.</p>
Vermont	<p>For Vermont: Graduate projections begin SY 2016-17 for Public Schools, SY 2017-18 for Private Schools, and the Grand Total is fully projected beginning SY 2017-18 but includes the projected portion SY 2016-17. Each series is independently projected, so they may not exactly sum to the totals. Public school graduates through SY 2012-13 (and enrollments through SY 2018-19) are from the National Center for Education Statistics (NCES) Common Core of Data (https://nces.ed.gov/ccd/). This Technical Appendix provides full data details, including for private school data, which utilize survey-based estimates from NCES Private School Universe Survey (https://nces.ed.gov/surveys/pss/). Specific to Vermont: Public school graduates for SY 2013-14 to 2015-16 are data provided in July 2020 by the New England Secondary School Consortium (www.newenglandssc.org), which Vermont is a participant to. Data from NESSC may not be a total annual number of graduates, because they represent a sum of cohort-based ninth graders who graduated within 4 to 6 years; but NESSC analysis indicates these are virtually all those who would graduate annually from public schools. Vermont counts students who select multiple race/ethnicities in every category they select, rather than having a Multiracial/Two or More Races category, but the NESSC provides an estimate/count for multiracial students, so the sum of races/ethnicities may exceed the public school total. Projections were not possible due to unusually small numbers and data suppression of American Indian/Alaska Native (average of 23 12th graders in recent years) and Native Hawaiian/Other</p>

Pacific Islander graduates (average of 6 12th graders in recent years), and occasionally birth counts. WICHE was not able to isolate the publicly funded students of Vermont’s town tuitioning program who attend and graduate from a public-serving private school. But by WICHE estimates, Vermont’s grand total of public and private graduate counts (and projections) might be overstated by up to 10 percent due to likely duplication of these students in the public and private school data (WICHE estimate from compiled data and correspondence with Vermont Student Assistance Commission).

Virginia	Public school graduates for SY 2013-14 and forward compiled in March 2020 from data available at http://www.doe.virginia.gov/statistics_reports/research_data/index.shtml#grad .
Washington	Public school graduates for SY 2013-14 to 2018-19 are ESTIMATES COMPUTED BY WICHE (not confirmed total annual graduates) using data about graduates from ninth-grade cohorts, which WICHE was pointed to at https://www.k12.wa.us/data-reporting/data-portal?combine=report%20card%20graduation in May 2020; because Washington state department of education was not able to provide the requested total annual graduate counts. Estimates based on graduates within 4 to 7 years of their defined ninth grade cohort may be a reasonable approximation of total annual graduates. The estimates for SY 2016-17 to 2019-20 include graduates within 4 to 7 years of ninth grade; estimates for 2013-14 to 2015-16 include reported graduates within 5 to 6 years of ninth grades, and WICHE estimates of graduates within 6 to 7 years based on the rates 2016-17 to 2019-20. Several grade level estimates for SY 2013-14 private school enrollments had coefficients of variation between 26% and 50%, and should be used with caution. No adjustments were made for using these values in the projections.
West Virginia	Public school graduates for SY 2013-14 to 2018-19 received by request from West Virginia department of education (https://wvde.us/) in June 2020. Graduate counts for American Indian/Alaska Native and Native Hawaiian/Other Pacific Islander graduates were redacted in the received data for counts fewer than 30 (AI/AN) and 10 (NH/OPI), so no projections are made for these categories; and the Asian/Pacific Islander category may be the same or very similar in number to the Asian alone category, since the specific additional number of NH/OPI graduates is not known.
Wisconsin	Public school graduates for SY 2013-14 to 2018-19 compiled in March 2020 from data obtained from http://wisedash.dpi.wi.gov/Dashboard/portalHome.jsp . Wisconsin private school grades 9 to 12 enrollment estimates and graduate estimates for SY 2013-14 were suppressed from the projections due to coefficients of variation $\geq 50\%$. Coefficients of variation for SY 2013-14 grades 1 to 8 private school estimates were also between 30% and 43%, but were not adjusted.
Wyoming	Public school graduates for SY 2013-14 to 2018-19 compiled March to August 2020 from data available at https://edu.wyoming.gov/data/statisticalreportseries-2/ . WICHE observed that the data for total annual graduates are almost exact in number to AGCR estimated on-time graduates. Wyoming.edu contact confirmed that the data used for total annual graduates do meet the definition we sought. Private school graduates are estimated by WICHE due to data not being available from the state, and these data being suppressed in NCES Table 15 due to data inadequacy, graduates have been derived as a percent of 12th graders for virtually all years since 2000, reflecting an average of 107 percent grade-12-to-graduation progression.

Appendix Table A-3. Comparison of Change in Reported Total Annual High School Graduates, and On-Time Graduation, SY2012-13 to 2017-18

	Total Annual Public School Reported Graduate Counts (Collected by WICHE from States), Class of 2013 to 2019								Change in Estimated Number of On-Time Graduates, and Rates, Class of 2013 to 2018	
	2013	2014	2015	2016	2017	2018	2019	Change, 2013-2018	On-Time Graduates (#)	On-Time Graduation Rates
United States (Sum of 50 states & D.C.)	3.17 M	3.18 M	3.21 M	3.27 M	3.31 M	3.39 M	3.40 M	7%	5.5%	81 - 85%
South										
Texas	301,400	303,100	313,400	324,300	334,400	347,900	355,600	15%	16%	88 - 90%
Florida	158,000	158,100	164,200	167,600	176,200	186,200	190,300	20%	20%	76 - 86%
North Carolina	94,300	96,100	98,800	101,000	102,900	106,800	108,400	15%	14%	83 - 86%
Georgia	92,400	93,100	103,600	106,700	109,300	111,300	113,000	22%	22%	72 - 82%
Virginia	83,300	82,500	81,900	85,100	85,300	88,200	88,300	6%	6%	85 - 88%
Tennessee	61,300	60,600	61,500	64,100	64,800	64,700	64,900	6%	7%	86 - 90%
Maryland	58,900	58,300	57,600	57,500	57,300	58,000	57,400	-3%	1%	85 - 87%
Louisiana	37,500	38,000	37,900	39,900	40,300	43,400	42,900	14%	16%	74 - 81%
Alabama	44,200	46,000	46,000	47,300	50,000	50,500	49,600	12%	14%	80 - 90%
Kentucky	42,900	43,600	43,600	44,500	44,800	46,000	46,100	7%	6%	86 - 90%
South Carolina	42,200	39,500	44,300	47,800	48,600	50,600	49,300	17%	16%	78 - 81%
Oklahoma	37,000	37,500	38,800	40,800	42,200	41,800	43,500	18%	13%	85 - 82%
Arkansas	28,900	30,800	30,300	30,900	31,300	31,800	32,400	12%	9%	85 - 89%
Mississippi	26,500	26,300	27,000	28,500	28,500	29,600	29,100	10%	14%	76 - 84%
West Virginia	17,900	17,600	17,800	18,300	18,000	18,200	17,900	0%	5%	81 - 90%
Delaware (incl. Estimates)	8,100	8,300	8,500	8,800	9,200	9,400	n/a	16%	8%	80 - 87%
District of Columbia (incl. Estimates)	4,000	3,400	3,300	3,400	3,400	3,500	3,300	-18%	8%	62 - 69%
West										
California	422,100	421,600	427,000	429,300	429,600	438,700	438,700	4%	-11%	80 - 83%
Washington (incl. Estimates)	66,100	66,100	65,900	69,400	69,300	70,500	73,100	11%	13%	76 - 87%
Arizona (incl. Estimates)	62,200	63,600	64,200	69,600	68,600	71,300	71,800	15%	18%	75 - 79%
Colorado	51,000	51,500	52,000	54,500	55,400	57,900	58,000	14%	14%	77 - 81%
Oregon	33,900	35,100	35,400	38,500	37,700	38,400	38,700	14%	16%	69 - 79%
Utah	33,200	36,300	37,600	38,900	40,500	41,800	42,600	28%	8%	83 - 87%
Nevada (incl. Estimates)	23,000	23,200	23,800	25,200	29,300	30,100	n/a	11%	30%	71 - 83%
New Mexico (incl. Estimates)	19,200	19,500	17,800	18,100	20,200	20,700	19,800	3%	12%	70 - 74%
Idaho	17,200	17,600	16,900	17,400	18,000	19,200	19,600	14%	n/a	81%
Hawaii	10,800	11,200	10,900	11,000	10,900	11,400	10,900	1%	4%	82 - 85%
Montana	9,400	9,500	9,300	9,300	9,300	9,200	9,300	-1%	-1%	84 - 86%
South Dakota	8,200	8,300	8,300	8,200	8,400	8,500	8,200	0%	2%	83 - 84%
Alaska	7,900	7,700	8,300	8,100	8,400	8,500	8,500	8%	9%	72 - 79%
North Dakota	6,900	6,800	6,700	6,900	6,700	6,600	6,900	0%	-2%	88 - 88%
Wyoming	5,500	5,400	5,400	5,600	5,500	5,600	5,700	4%	7%	77 - 82%
Midwest										
Illinois	139,200	139,100	139,000	137,300	137,700	138,700	136,700	-1%	-1%	83 - 87%
Ohio	122,500	118,400	118,600	120,500	120,600	122,200	123,400	0%	-3%	82 - 82%
Michigan	104,200	103,000	103,000	101,800	102,300	103,900	103,700	0%	1%	77 - 81%
Indiana	66,600	68,300	67,800	67,900	68,800	69,400	72,000	8%	4%	87 - 88%
Wisconsin	61,400	61,000	60,000	59,000	60,400	61,800	61,500	0%	2%	88 - 90%
Minnesota	58,300	57,300	57,800	57,900	58,300	59,800	61,200	3%	3%	80 - 83%
Missouri	61,400	61,300	61,000	60,400	61,300	61,000	61,500	0%	3%	86 - 89%
Iowa	32,500	32,900	32,800	33,100	33,300	34,000	33,800	4%	7%	90 - 91%
Kansas	31,900	31,600	32,100	32,100	32,600	33,300	33,300	4%	4%	86 - 87%
Nebraska (incl. Estimates)	20,400	20,400	20,300	20,600	20,800	21,500	21,400	5%	6%	89 - 89%
Northeast										
New York	180,400	185,600	180,900	181,900	180,200	183,100	182,800	1%	0%	77 - 82%
Pennsylvania	129,800	128,000	123,800	125,100	125,500	125,700	125,500	-3%	-3%	86 - 86%
New Jersey	96,500	96,400	97,300	95,300	96,800	99,100	98,100	2%	2%	88 - 91%
Massachusetts	66,400	66,400	65,500	65,700	67,100	67,100	67,900	2%	4%	85 - 88%
Connecticut	38,700	38,800	38,000	38,300	38,800	38,800	38,300	-1%	-1%	86 - 88%
Maine	13,200	13,200	12,700	12,700	11,600	12,500	11,700	-11%	-2%	86 - 87%
New Hampshire (incl. Estimates)	14,300	14,300	13,400	13,400	13,000	13,000	12,800	-9%	-8%	87 - 89%
Rhode Island	9,600	9,500	9,400	9,600	8,700	9,200	9,800	2%	-4%	80 - 84%
Vermont (incl. Estimates)	6,500	6,400	6,300	6,200				n/a	-13%	87 - 85%

***"On-time" overall public school graduation (ACGR) information was only available through SY 2017-18 (class of 2018). WICHE computed the estimated number of on-time graduates using published state graduation rates and a computed estimate of state-level ninth-grade cohorts from district level data. See Technical Appendix for full detail.

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