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VIRTUAL SCHOOLS REPORT 2016

DIRECTORY AND PERFORMANCE REVIEW

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Foreword

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The *Virtual Schools Report 2016: Directory and Performance Review* report is the fourth in an annual series of NEPC reports on the fast-growing U.S virtual school sector. This year's report provides a comprehensive directory of the nation's full-time virtual and blended learning school providers. It also pulls together and assesses the available evidence on the performance of America's virtual and blended learning schools. It is intended as reference work for policymakers, educators, and the public.

Executive Summary

This report provides a detailed overview and inventory of full-time virtual schools and blended learning schools that are also known as hybrid schools. Full-time virtual schools deliver all curriculum and instruction via the Internet and electronic communication, usually asynchronously with students at home and teachers at a remote location. Blended schools combine traditional face-to-face instruction in classrooms with virtual instruction.

Although increasing numbers of parents and students are choosing virtual or blended schools, little is known about the inner workings of these schools. Evidence related to inputs and outcomes indicate that students in these schools differ from those in traditional public schools. The school performance measures for both virtual and blended schools also indicate that these schools are not as successful as traditional public schools.

Nevertheless, the evidence suggests that their enrollment growth has continued. Large virtual schools operated by for-profit education management organizations (EMOs) dominate this sector and are increasing their market share. While more districts are opening their own virtual schools, the schools are typically small, and with limited enrollment.

This report provides a census of full-time virtual schools and blended schools. It also includes student demographics, state-specific school performance ratings, and a comparison of virtual school outcomes with state norms.

Current Scope of Full-Time Virtual and Blended Learning Schools

- In 2013-14, 447 full-time virtual schools enrolled close to 262,000 students. Eighty-seven blended schools enrolled 26,155 students.

- Thirty-three states had full-time virtual schools and 16 states had blended schools.

There were two states that had blended but not full-time virtual schools (New Jersey and Rhode Island).

- Although only 44.4% of the full-time virtual schools were operated by private education management organizations (EMOs), they accounted for 74.4% of all enrollments.

- Virtual schools operated by for-profit EMOs enrolled an average 1,027 students. In contrast, those operated by non-profit EMOs enrolled an average 286 students, and public virtual schools operating independently enrolled an average 266 students.

- Private EMOs are playing less of a role in the blended sector. Of blended schools, 62.8% are independent (involving no private EMO), while 20.9% are operated by non-profit EMOs and 16.3% are operated by for-profit EMOs. Rocketship Education operates the most blended learning schools (11 schools during 20014-15) included in our inventory.

- Generally, blended schools have fewer students per school than virtual schools. Blended schools enroll an average of 305 students, whereas virtual schools enroll an average of 577 students.

- Among the virtual schools in the inventory, 51.5% are charter schools; together they accounted for 82.6% of enrollment. School districts have been increasingly creating their own virtual schools, but these tend to enroll far fewer students.

- Blended schools are rather evenly split between district schools (47.7%) and charter schools (52.3%). However, the charter schools had substantially larger enrollments: blended charters enrolled an average of 409 students, while blended district schools enrolled an average of 191 students.

- Relative to national public school enrollment, virtual schools have substantially fewer minority students and fewer low-income students. In relation to national averages, blended schools have a similar proportion of low-income students, but a substantially higher average of Hispanic students.

- While the average student-teacher ratio in the nation's public schools was 16 students per teacher,[1] blended schools reported more than twice as many students per teacher (32.4 students per teacher), and virtual schools reported more than twice as many students per teacher (35 students per teacher). Virtual schools operated by for-profit EMOs had the highest ratio (44 students per teacher), while those operated by nonprofit EMOs had the lowest (19.5 students per teacher).

School Performance Data

The school performance data available from state education agencies is used to draw broad pictures of overall school performance across virtual and blended learning schools. The best evidence is coming from states that have replaced Adequate Yearly Progress (AYP) with broader measures; as noted below, the virtual and blended schools do not do well. But even these newer approaches by states to rate the performance of their schools have limitations. The performance data discussed below, therefore, should be understood as red flags rather

than as causal statements about quality.

- Multiple or expanded measures of school performance reveal that virtual school outcomes continued to lag significantly behind that of traditional brick-and-mortar schools. Blended schools tended to score even lower on performance measures than virtual schools, although this may be influenced by the fact that blended schools serve substantially more low-income students.

- Three states with virtual schools continue to use AYP to indicate whether or not schools meet state standards. Most virtual schools in these states did not report AYP results; of those that did, only a few met AYP targets.

- Most states have, however, replaced AYP measures with some sort of school performance ratings or scores. These have typically been based on a variety of measures combined to produce an overall evaluation of school performance. Among the 62 virtual schools with ratings in 2014-15, 19 (30.6%) were rated acceptable. Independent virtual schools (not operated by EMOs) were more likely to receive an acceptable rating than virtual schools operated by these private EMOs: 40.7% compared with 23.5%.

- Another measure of virtual school performance was produced by comparing student performance on assessments in English Language Arts (ELA) and Mathematics in individual virtual schools with state averages. Of the 121 virtual schools for which data were available, 22 (18.2%) had proficiency rates above the state average; 82 percent had proficiency rates below state averages. In independent virtual schools as well as virtual schools operated by for-profit EMOs, were only 16.7% and 14.3%, respectively, had proficiency rates above state averages. Of ten virtual schools operated by nonprofit EMOs, five (50%) had proficiency rates above state averages.

- Five out of 22 independent blended schools (22.7%) had a higher percentage of students rated proficient than the state percentage. District virtual schools were more likely to receive an acceptable rating than charter virtual schools: 37.8% compared with 20.0%. Similarly, 23.1% of district virtual schools had proficiency rates above the state average, while 16.8% of charter virtual schools had above average rates. District run blended schools also had higher proficiency rates (27.3%) than charter blended schools (9.7%).

- As schools transitioned from the adequate yearly progress (AYP) measure to multiple performance measures under ESEA flexibility waivers, performance outcomes continued to differ in charter virtual schools, district virtual schools, and blended schools.

- The evidence on graduation rates aligns with findings from school performance measures, contributing to the overall picture of school performance. Only 131 virtual schools and 26 blended schools had data specific to on-time graduation in 2013-14. The on-time graduation rate (or four-year graduation rate) for full-time virtual schools and blended schools was half the national average: 40.6% for virtual schools, 37.4% for blended schools, and 81.0% for the nation as a whole. The graduation rates for virtual schools have worsened by 3 percentage points over the past few years, even as graduation rates in the country have been improving about 1 percentage point each year.

As detailed below, the findings outlined in this report align with reports from state auditors and new national studies by other organizations, including a recent set of studies funded by the Walton Foundation.

Recommendations

Given the rapid growth of virtual schools and blended schools, the populations they serve, and their relatively poor outcomes on widely used accountability measures, it is recommended that:

- Policymakers slow or stop the growth in the number of virtual schools and blended schools and the size of their enrollments until the reasons for their relatively poor outcomes[2] have been identified and addressed. States should place their first priority on understanding why virtual schools and blended schools perform weakly under a college- and career-ready accountability system and how their performance can be improved before undertaking any measures to expand these relatively new models of schooling.

- Oversight authorities specify and enforce sanctions for virtual schools and blended schools if they fail to demonstrate that they are doing a good job with their students.

- Policymakers require virtual schools and blended schools to devote more resources to instruction, particularly by specifying a maximum ratio of students to teachers.

- State agencies ensure that virtual schools and blended schools fully report data related to the population of students they serve and the teachers they employ.

- State and federal policymakers promote efforts to design new outcome measures appropriate to the unique characteristics of full-time virtual schools and blended schools. Passage of the Every Student Succeeds Act (ESSA) represents an opportunity for those states with a growing virtual and blended school sector to improve upon their accountability systems for reporting data on school performance measures.

- Policymakers and other stakeholders support more research to identify which policy options—especially those impacting funding and accountability mechanisms—are most likely to promote successful virtual schools and blended schools. The virtual school sector, while experiencing considerable growth in recent years, is still in need of rigorous study to determine their impact on the instructional needs of diverse students. More research is also needed to increase understanding of the inner workings of virtual and blended schools, including such factors as the curriculum and the nature of student-teacher interactions. Such research should help identify and remedy features that are negatively affecting student learning.

Virtual Schools Report 2016:
Directory and Performance Review

Full-Time Virtual and Blended Schools:
Enrollment, Student Characteristics, and Performance

New communication technologies have opened exiting new opportunities for schooling over the past two decades. While higher education and the business sectors were early to take advantage of new technologies for delivering instruction and professional development to primary and secondary education, only relatively recently have schools begun taking advantage of new technological opportunities. Such opportunities, however, come with volatility.

For the past three years, NEPC has been active in documenting and researching virtual schooling at the primary and secondary levels,[3] examining who is enrolling in virtual charter and district schools and how well those schools are performing overall. This body of research has also focused on a wide range of policy issues specific to virtual schools. While earlier reports in this series have focused only on full-time virtual schools, this report branches out and considers full-time blended schools as well.

In the last year, large changes in this sector have appeared, with a number of full-time virtual schools closing and an even larger number of new virtual schools opening. Although the evidence base is becoming stronger and more convincingly negative, an increasing number of parents and students are opting for full or part-time online options. While philanthropic groups have offered support to the key operator of blended schools by implying that evidence exists to support their expansion, evidence detailed in this report suggests that blended schools perform just as poorly as full-time virtual schools.

To help document the growth and nature of virtual and blended schools as well as their performance, this report contains detailed descriptions of full-time virtual and blended schools in operation during the 2014-15 school year. The inventory serves as a key research-based effort to track developments nation-wide. It helps identify which students these schools are serving, how well the schools are performing, and how quickly their numbers are expanding or contracting. Research questions this report seeks to answer include:

- How many full-time virtual and blended schools operate in the U.S.? How many students do they enroll?

- What are the key characteristics of these schools and who operates them?

- What are the demographic characteristics of students enrolled in virtual and blended schools? How do demographic data for students enrolled in virtual and blended schools differ from those enrolled in brick-and-mortar schools?

- How do virtual and blended schools perform in terms of such school performance measures as state performance ratings and graduation rates?

Student demographics reported here include grade level, ethnicity, gender, socioeconomic status, special education status, and English language learning status. Data on school performance includes a comparison of aggregate performance ratings and national norms. We also include data on staffing, specifically on teacher to student ratios.

This report builds on earlier reports; we have updated earlier inventories with available data for the 2014-15 academic year. In addition, we have provided details on specific schools in Appendices B and C, which can be downloaded from the NEPC website: http://nepc.colorado.edu/publication/virtual-schools-annual-2016.

Data Sources, Selection Criteria and Aggregation Calculations

The findings presented in this report are based on publicly available data, collected, audited, and warehoused by public authorities. Data from the National Center for Education Statistics was particularly helpful in gathering key data on enrollment, student demographics and staffing. Data from state education agencies and from individual school web sites was also used to provide data not available from NCES.

The scope of this inventory is limited to full-time, public elementary and secondary virtual and blended schools in the U.S. These include virtual and blended schools operated by for-profit and nonprofit Education Management Organizations (EMOs) as well as virtual schools operated by states or districts. Private virtual or blended schools (funded in whole or in part by charging tuition and fees, rather than relying on a public funding program using tax dollars) are excluded. Also excluded are schools offering a combination of programs including traditional face-to-face programs as well as virtual or blended options, unless it was possible to separate data for the full-time virtual or blended school components.

Schools were typically identified by the unique school ID code assigned by the National Center for Education Statistics (NCES) or, for relatively new schools, by unique building or school ID codes assigned by state agencies. These criteria helped identify and exclude smaller district programs and schools not intended to be full-time, but simply to offer some virtual learning experience for a subset of students.[4] All schools included had evidence of enrollment in one of the past two years, although schools enrolling fewer than 25 students were excluded.[5] Such restrictions allow for more confidence in attributing various outcomes to specific types of schools.

Selection criteria excluded scores of virtual and blended schools or programs. In 2013, close to 100 schools were eventually excluded because no enrollment data were available, or because they were based in traditional schools and data could not be disaggregated; in 2014, an additional 62 schools were excluded, and in 2015, over 20 virtual or blended programs. For this report, 170 potential schools were excluded either because they were not intended to provide a full-time experience or because they had too few students enrolled. However, a total of 67 new full-time virtual schools were added to the inventory, while 13 schools that had been closed were deleted. For the first time, blended learning schools are included in the inventory; a total of 86 meeting selection criteria were identified.

The primary sources for total enrollment and school performance data were the Common Core of Data from NCES, state-level datasets, and school report cards for the 2014-15 school

year. Data for grade level enrollment, race-ethnicity and gender were obtained from NCES and represent the 2013-14 school year, the most recent data available.

Aggregated data reflect weighted averages based on enrollment. That is, averages have been calculated so that the influence of any given school on the aggregated average is proportional to its enrollment. Comparisons were made to norms for all public schools in the United States.

Limitations

There are several general limitations that readers should keep in mind. Note that most of these limitations are also present for other researchers working with this topic, although they are not always highlighted in reports.

Incomplete demographic, class size, and performance data

The tables in the appendices have several gaps that reflect missing data. Some states combine virtual school data with local district data in ways that make disaggregation impossible. For example, while data on student ethnic background and on free-and-reduced-price lunch status is relatively complete, data reported at the district level (including, for example, special education enrollment) is much less available. This was particularly problematic in states where charter schools are not considered Local Education Authorities or districts.

Comparison groups

National aggregate results for all public schools provide the base for several comparisons in this report, which profiles 33 states having virtual and/or blended options and an additional two states offering only the blended format—a total snapshot of 35 states. While comparisons of two inherently different forms of schooling, each representing different geographic datasets, have some obvious weaknesses, national aggregate data is what state and federal agencies typically use in their reports and comparisons. Following the agencies' lead is intended to allow reasonable comparison of this report with others. An additional consideration is that, because the 33 states represented are among the largest and most densely populated, the national comparison is informative, if not perfect. It is perhaps also worth noting that the national data include data for full-time virtual and blended schools, although it constitutes a relatively small subset.

Instability in virtual and blended schools

Full-time virtual and blended schools are rapidly evolving; currently, the number of such schools, their demographic composition, and their performance data could vary from the 2013-14 demographic data and the 2014-15 performance data presented here (the most recent available for each category). When the fluidity of the terrain is layered onto the scope of this attempt to compose a national portrait, some errors of inclusion and exclusion seem likely. Documented corrections to the data in the appendices are welcome and can be sub-

mitted to the authors through the National Education Policy Center.

Growth and Current Scope of Full-Time Virtual and Blended Schools

There is an array of education services delivered online. On one end of the continuum, individual courses are delivered to students who are otherwise enrolled in brick and mortar schools. The middle terrain includes a wide array of blended programs and schools serving students with a combination of face-to-face and online activities. On the other end of the continuum, full-time virtual schools provide all instruction online.

For the purposes of this report, blended schools are defined as schools in which all students experience the same blended instruction, although there are variations in how blended schools combine virtual and face-to-face activities. It is important to note that this report tracks only full-time virtual and blended schools and not the multiple other forms of online instruction. Full-time virtual and blended schools receive full funding for delivering what is supposed to be a full education experience, and so the characteristics and performance of these schools is especially important.

Although virtual and blended schools still account for a relatively small portion of the overall school choice options in the U.S., they constitute some of the fastest-growing options, overlapping with both homeschooling and charter schools. Appendix A contains charts that depict the number of virtual and blended schools and students by state. During the 2014-15 school year, 33 states had full-time virtual schools—many of them charters. Sixteen states had blended schools, while only two states (New Jersey and Rhode Island) had full-time blended but not full-time virtual schools. Beyond the 35 states with either virtual or blended schools, we recognize that other states also offer virtual education options, but in several other formats including, for example, the offering of individual online classes for some students or supplemental coursework facilitated online.

A total of 457 fulltime virtual schools met selection criteria for the 2014-15 school year. Change from the 2013-14 school year reflects the addition of 67 newly identified virtual schools and the deletion of 13 schools that had closed. See Appendix B1 for a list of identified schools.[6] These schools enrolled 261,868 students.

Eighty-seven blended schools met selection criteria in 2014-15. These schools enrolled 26,115 students. See Appendix B2 for a list of identified schools. Although blended schools have not been included in earlier inventories, we know that during the 2014-15 school year, eight blended schools opened and as least one closed.

Figure 1 illustrates the estimated enrollment growth in full-time virtual schools over the last 13 years.[7] The International Association for K-12 Online Learning (iNACOL) typically reports a much higher estimate than NEPC reports each year; however, insufficient detail is available to understand how iNACOL identifies schools—and possibly programs—to include in its enrollment estimates. Figure 1 also illustrates the proportion of students in full-time virtual schools operated by the two largest for-profit EMOs, K12 Inc. and Connections Academy: K12 Inc. schools account for 34.4% of all enrollments while Connections Academy schools account for 23%. Although K12 Inc.'s share of enrollments decreased in 2014-15, Connections Academy's share increased from 17% to 23%. Together, these two companies enrolled 57.4% of all full-time virtual school students in 2014-15, an increase from their combined share of 53% in 2013-14 that continues a pattern of gradual growth in recent years.

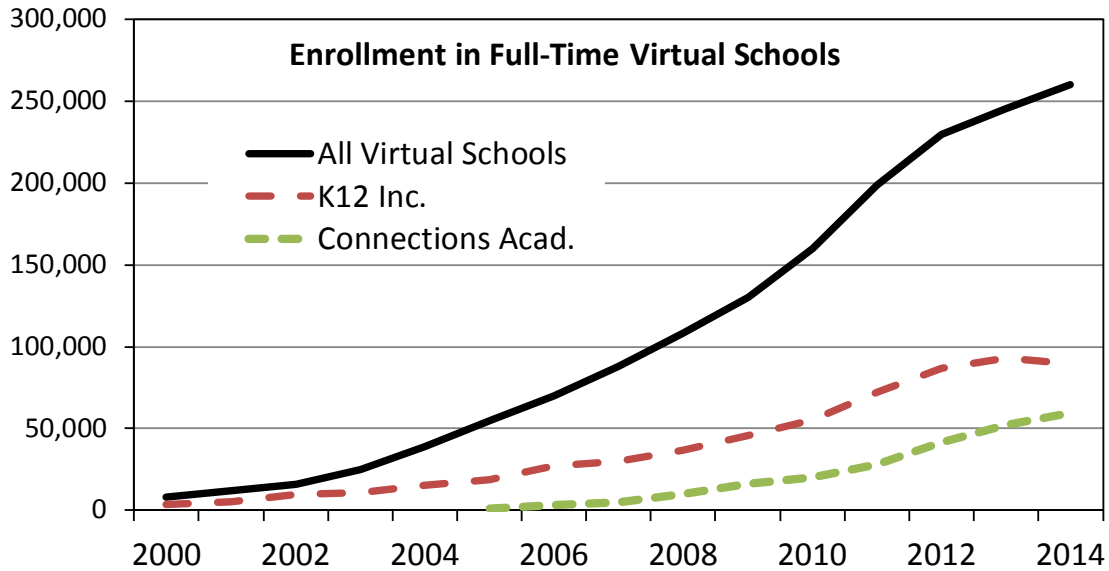**Figure 1. Estimated Enrollment Trends in Full-Time Virtual Schools**
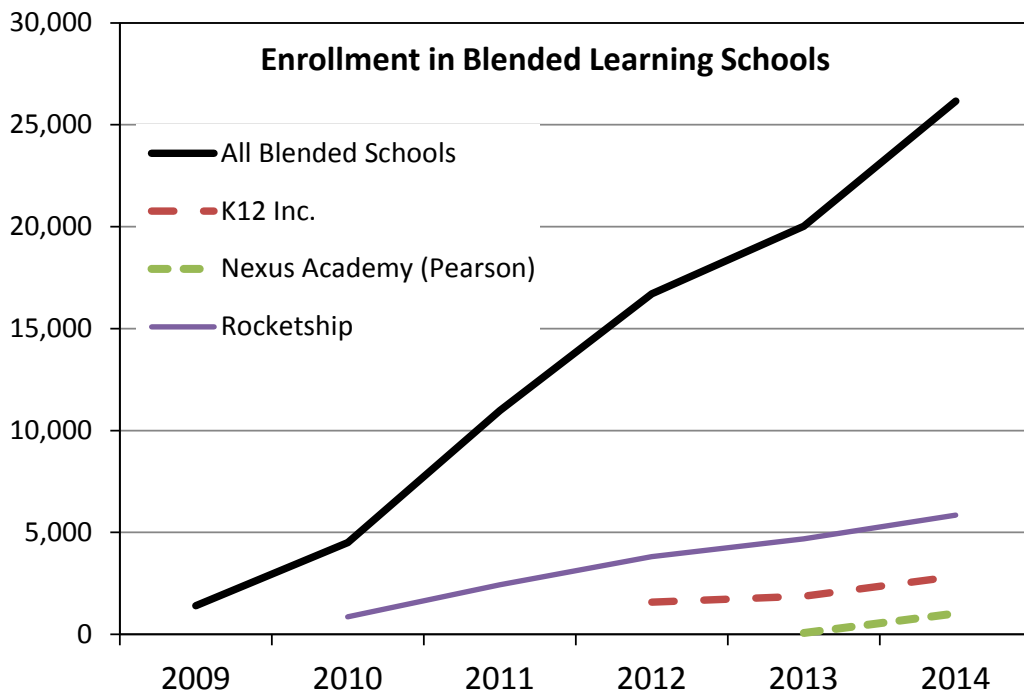

Figure 2. Estimated Enrollment Trends in Full-Time Blended Schools

As Figure 2 shows, enrollments in blended schools have also been growing steadily. Three prominent education management organizations dominate this sector. Rocketship Education accounts for 22.3% of enrollment, K12 Inc. for 10.9%, and Nexus Academy for 3.9%.

While new district-operated schools added significantly to the pool of full-time virtual schools, they tend to be very small (see Table 1). Virtual charters are much larger, accounting for 48.5% of all virtual schools and for 82.6% of enrollments. Within the virtual school sector, for-profit EMOs play a prominent role: they operate 40.8 percent of all virtual schools, which together enroll 72.6% of the student population (see Table 2). In 2013-14, for-profit EMOs managed 160 charter and district schools; in 2014-15, that number grew to 186. As noted earlier, K12 Inc. is by far the largest EMO in this sector; in 2014-15, it operated 117 full-time virtual schools that enrolled just under 90,000 students. However, K12 Inc. enrollments decreased by approximately 3,500 students between 2013-14 and 2014-15, and because of more recent closures, K12's enrollments are likely to remain below their peak for the next few years.

Connections Academy LLC, the second largest for-profit operator, operated 32 such schools with just under 60,000 students, an increase of more than 7,000 students between 2013-14 and 2014-15. It is important to note that this report's data on these private operators under-represents the role of for-profit EMOs. While this report profiles only virtual schools that EMOs are entirely responsible for, many district-operated virtual schools subcontract to K12, Inc. and Connections Academy, LLC to provide online curriculum, learning platforms, and other support services. In contrast to for-profit EMOs, their non-profit counterparts operated only 16 schools, enrolling 4,582 students. Generally, charter virtual schools are much more likely to be operated by an EMO.

Table 1. Distribution of Virtual Schools and Students Across District and Charter Sectors, 2014-15

	Schools	Percent of all Schools	Students	Percent of all Enrollment	Average Enrollment Per School
District	234	51.5%	45,509	17.4%	194
Charter	220	48.5%	215,940	82.6%	982
Total for All Virtual Schools	454	100.0%	261,449	100.0%	577

There were 220 virtual charter schools and 234 virtual district schools operating full-time in 2014-15. Although the number of district-operated virtual schools increased more than virtual charters, the charters continued to have much larger enrollments. The average size of both district and charter virtual schools decreased slightly between 2013-14 and 2014-15, however (which many would deem a good sign).

All EMOs combined operated 45% of full-time virtual schools and accounted for 73% of enrollment, an increase of close to two percentage points. Most are for-profit, and they continued to increase the size of their already very large schools—an average of 1,027 students per school (Table 2). In contrast, the average enrollment in the schools operated by non-profit EMOs was considerably smaller, with an average of 286 students per school. Independent virtual schools (those public virtual schools with no private EMO involvement) had the smallest average school size, 266 students per school.

Table 2. Distribution of Virtual Schools and Students by Operator Status 2014-15

	Schools	Percent of all Schools	Stu-dents	Percent of all Enrollment	Average Enroll-ment Per School
Independent	252	55.6%	66,954	25.6%	266
Nonprofit EMO	16	3.5%	4,582	1.8%	286
For-profit EMO	186	40.8%	189,913	72.6%	1,027
K12 Inc.	*117*	*25.8%*	*89,546*	*34.2%*	*1,063*
Connections Academy	*32*	*7.1%*	*59,722*	*22.8%*	*1,850*
Total for All Virtual Schools	454	100%	261,449	100%	577

A number of other for-profit EMOs have emerged to operate full-time virtual schools, including Mosaica Education Inc. (8 schools), Insight Schools (6 schools) Edison Schools (4 schools), Calvert Education Services (3 schools), Cyber Education Center (3 schools), and White Hat Management (3 schools). The largest nonprofit EMOs are Learning Matters Educational Group (6 schools), Advanced Academics (4 schools), and Roads Education Organization (3 schools). More expansion is coming from some for-profit EMOs that formerly operated only brick and mortar schools. These include Edison Schools Inc., Mosaica Inc., and White Hat Management. Given the relatively lucrative circumstances[8] under which full-time virtual schools can operate, it is likely that still more for-profit EMOs will be expanding their business models to include full-time virtual schools.

Reflecting similar trends, most blended learning schools are independent district-operated schools—but they have small enrollments than those in blended schools managed by private EMOs (see Tables 3 and 4). For example, while K12 Inc. only had 3 full-time blended schools in 2014-15, those schools enrolled 2,843 students. K12 Inc. blended schools are clearly much larger in enrollments than those run by other operators, such as Nexus Academies (a Pearson company similar to Connections Academy). However, the largest operator of full-time blended schools is Rocketship Education, a private nonprofit EMO based in California that recently expanded to Tennessee and Wisconsin. In 2014-15 Rocketship operated 11 schools enrolling 5,841 students.

Table 3. Distribution of Blended Schools and Students Across District and Charter Sectors, 2013-14

	Schools	Percent of all Schools	Stu-dents	Percent of all Enrollment	Average Enroll-ment Per School
District	41	47.7%	7,812	29.9%	191
Charter	45	52.3%	18,343	70.1%	408
Total for All Blended Schools	86	100.0%	26,155	100.0%	304

Table 4. Distribution of Blended Schools and Students by Operator Status 2014-15

	Schools	Percent of all Schools	Stu-dents	Percent of all Enrollment	Average Enroll-ment Per School
Independent	54	62.8%	14,223	54.4%	263
Nonprofit EMO	18	20.9%	7,393	28.3%	411
For-profit EMO	14	16.3%	4,539	17.4%	324
Total for All Blended Schools	86	100.0%	26,155	100%	304

Student Characteristics

The following analysis of student demographics will provide context for school performance data comparisons discussed later in this report.

Race-Ethnicity

Aggregate data from full-time virtual schools looked rather different than national averages in terms of student ethnicity. Close to 70% of the students in virtual schools were White-Non-Hispanic, compared with the national mean of 49.8% (see Figure 3). Not surprisingly, then, the proportion of Black and Hispanic students in virtual schools was noticeably lower than the national average. Only 12.8% of students in virtual schools were Black while the national average was 25.5%; only 10.5% of students in virtual schools were Hispanic while the national average was 15.5%.[9] The fact that minority and low-income families may have less access to technology may help to explain underrepresentation of these groups, even though most virtual schools loan students computers and they frequently pay
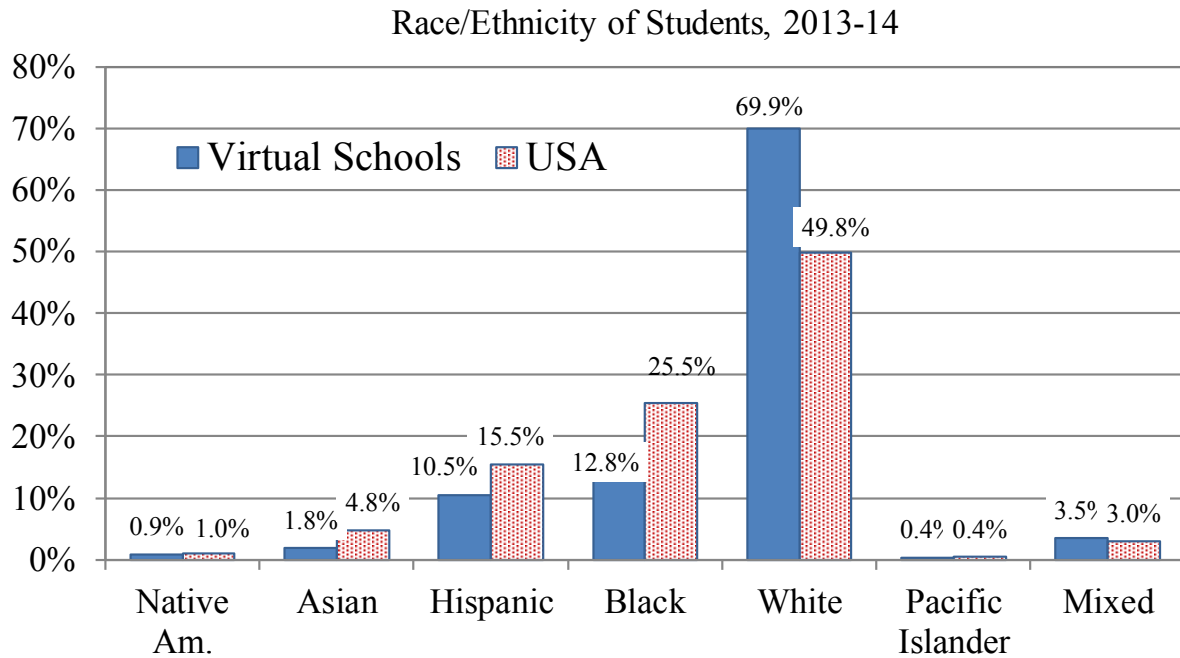
for monthly Internet access as well.

Race/Ethnicity of Students, 2013-14

	Virtual Schools	USA
Native Am.	0.9%	1.0%
Asian	1.8%	4.8%
Hispanic	10.5%	15.5%
Black	12.8%	25.5%
White	69.9%	49.8%
Pacific Islander	0.4%	0.4%
Mixed	3.5%	3.0%

Figure 3. Race/Ethnicity of Students in Virtual Schools Compared with National Averages, 2013-14

Figure 4 displays the demographic composition of students enrolled in blended schools. The population of students in blended schools more closely matches enrollments in public schools as a whole. One noteworthy difference is that the enrollments of Hispanic students in blended schools is substantially higher than in public schools as a whole. This finding may be explained by the fact that blended learning schools are concentrated in Arizona, California and Colorado—states with large concentrations of Hispanic students. As blended schools expand in other states, it is likely that their enrollments will become more like those of full-time virtual schools.
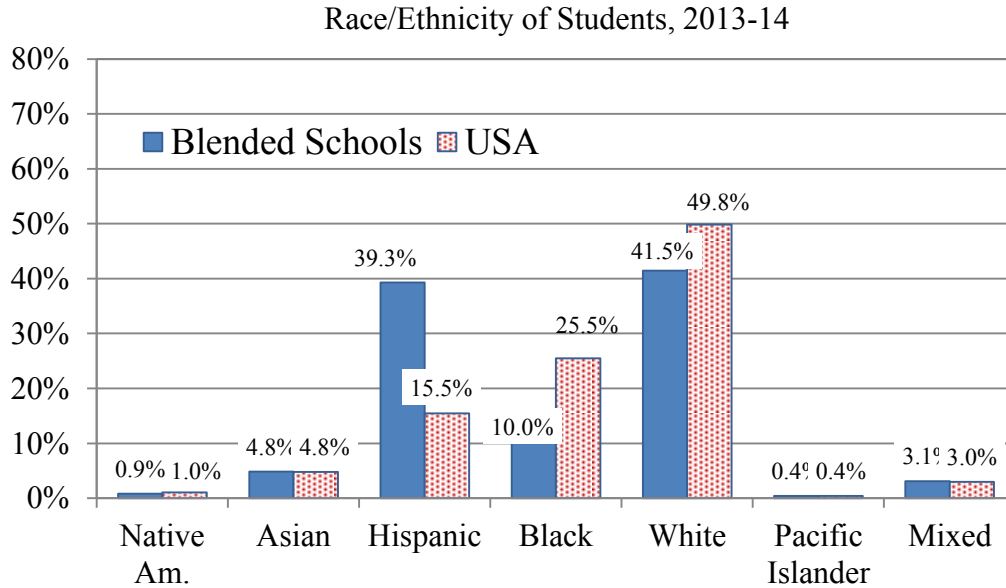
Race/Ethnicity of Students, 2013-14

Figure 4. Race/Ethnicity of Students in Blended Schools Compared with National Averages, 2013-14

Data available from state sources for 2014-15 was less complete than the 2013-14 data collected from the National Center for Education Statistics (NCES) [10;] still, the pattern of distribution of students by race/ethnicity was largely unchanged except for a very small increase in minority students.

Table 5 breaks out race/ethnicity data by school type and operator status. Non-profit EMO virtual schools had some distinct differences, although their very small share of enrollment makes drawing inferences difficult. Similarly, the differences between district and charter schools and those between for-profit or independent virtual schools are also very small.

Table 5. Student's Race Ethnicity, 2013-14

	Native	Asian		Black	White	Pacific Islander	Multi-racial
Independent	0.9%	1.5%	12.3%	9.9%	71.2%	0.3%	3.7%
Nonprofit	1.1%	3.0%	20.5%	3.8%	66.6%	0.1%	4.8%
For-Profit	0.9%	1.9%	9.5%	14.2%	69.6%	0.4%	3.3%
K12 Inc.	1.0%	2.5%	8.2%	16.6%	69.4%	0.5%	1.6%
Connections Academy	0.7%	1.7%	12.6%	10.2%	69.2%	0.2%	5.5%
District	1.2%	1.9%	12.1%	8.8%	71.8%	0.2%	3.6%
Charter	0.9%	1.8%	10.2%	13.7%	69.6%	0.4%	3.4%
All Virtual Schools	0.9%	1.8%	10.5%	12.8%	69.9%	0.4%	3.5%
National Average[1]	1.0%	4.8%	15.5%	25.5%	49.8%	0.4%	3.0%

1 Source: United States Department of Education, National Center for Education Statistics, Common Core of Data

Free and Reduced-Price Lunch and Other Student Background Characteristics

As illustrated in Figure 5, the proportion of students in full-time virtual schools who qualified for free or reduced-price lunch (FRL) was 17 percentage points lower than the average in all public schools in 2013-14: 33.1% compared to 49.9%. Of those virtual schools reporting data, 20% enrolled a higher percentage of FRL students than the national average, while 80% of reporting schools indicated a lower percentage. District virtual schools had more low-income students (33.8%) relative to charter virtual schools (29.4%) and for-profit virtual schools had more low-income students (35.9%) than virtual schools operated by nonprofit EMOs (28.2%).

Blended schools enrolled a much higher proportion of FRL students than full-time virtual schools. In 2013-14, 46.9% of the students enrolled in blended schools qualified for free or reduced-priced lunch.
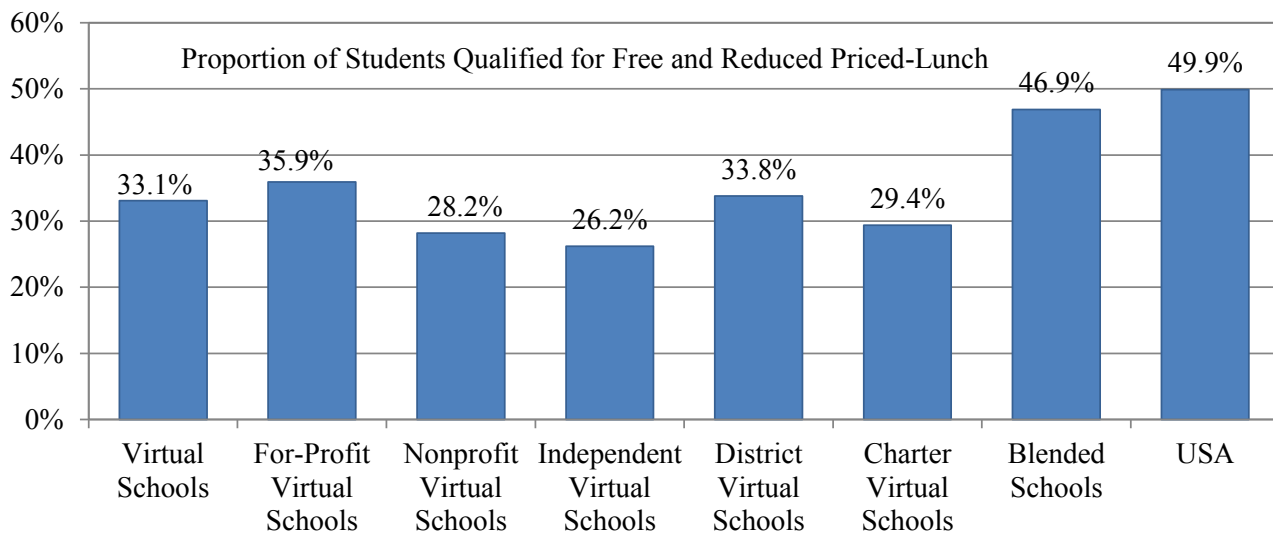
Proportion of Students Qualified for Free and Reduced Priced-Lunch

Category	Value
Virtual Schools	33.1%
For-Profit Virtual Schools	35.9%
Nonprofit Virtual Schools	28.2%
Independent Virtual Schools	26.2%
District Virtual Schools	33.8%
Charter Virtual Schools	29.4%
Blended Schools	46.9%
USA	49.9%

Figure 5. Students Qualifying for Free and Reduced-Priced Lunch, 2013-14

The current report does not contain updated data on the proportion of students with disabilities or students classified as English-language learners. Earlier data from NCES in 2011-12 indicated that the proportion of students with disabilities in virtual schools is around half of the national average, or 7.2% compared with 13.1%.

English language learners represent a growing proportion of students in the nation's schools, especially in the states served by virtual schools. However, only 0.1% of full-time virtual school students were classified as English language learners (ELLs). This is a strikingly large difference from the 9.2% national average in 2012-13.[11]

While the population in the nation's public schools is nearly evenly split between girls and boys, the population of students enrolled in virtual charter schools during the 2011-12 school year was skewed slightly in favor of girls (52.5% girls and 47.5% boys).[12] Charter schools and for-profit EMO-operated schools tended to have slightly more girls than boys enrolled, while district-run virtual schools tended to have a more even distribution.

Enrollment by Grade Level

The National Center for Education Statistics (NCES) uses four school level classifications: elementary, middle school, high school, or other. "Other" refers to grade configurations that cut across the first three levels of education. More than 60% of virtual schools (63.4%) fall into the Other category because they are designed or intended to enroll students across two or more levels; in fact, many serve students from kindergarten to grade 12. A total of 10.4% are designated as primary schools, 2.4% as middle schools, and 23.8% as high schools. While these classifications are generally useful for describing traditional public schools, they are less useful for describing student distribution in charter schools spanning multiple levels. This is a significant complication because charters comprise a large segment of virtual and

blended schools, and it is exacerbated by the fact that many charter schools have permission to serve all grades but actually enroll students in a more limited grade range.

To illustrate the distribution of students in virtual schools as accurately as possible, Figure 6 details NCES data on actual student enrollment by grade; comparisons are based on national averages. A disproportionate number of students in virtual schools were in high school or upper secondary level, in contrast to the national picture where a relatively stable cohort of students was generally distributed evenly across grades, with a gradual drop from grades 9 to 12.
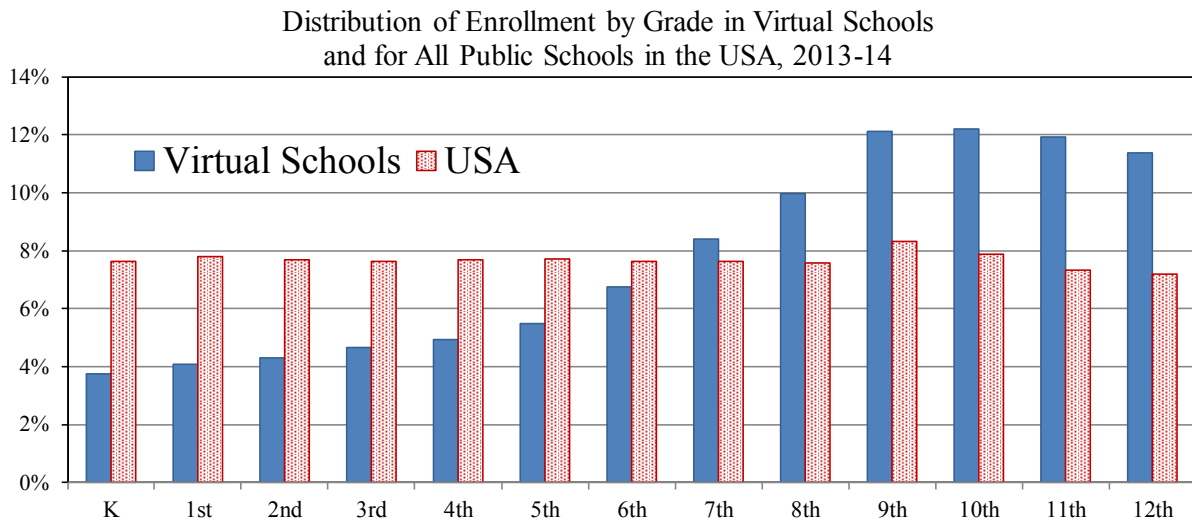
Distribution of Enrollment by Grade in Virtual Schools
and for All Public Schools in the USA, 2013-14

Figure 6. Enrollment by Grade Level for Virtual Schools and U.S., 2013-14

District schools served slightly more students at the upper-secondary level than charter schools did. More pronounced differences were evident when for-profit schools were compared with nonprofit EMO-operated schools and independent schools, which both served many upper secondary level students. Virtual schools operated by for-profit EMOs, predominately by K12 Inc. and Connections Academy, served substantially fewer students at the upper secondary level and showed stark enrollment drop offs after grade 9.

Figure 7 illustrates the actual number of students served by virtual schools at each grade level. Enrollment increased steadily through grade 9 and then decreased slightly from grades 10-12. This figure indicates that while many virtual schools had classes in grades 9 to 12, the size of the grade cohorts dropped a bit after the ninth grade. This could be a result of some schools not fully implementing their enrollment plans across all high school grades. Nevertheless, based on the low graduation rates in virtual schools—discussed later—a more likely explanation seems that many students do not persist into upper grades and that virtual schools replace lost full-time students less often in these grades than in the lower grades.
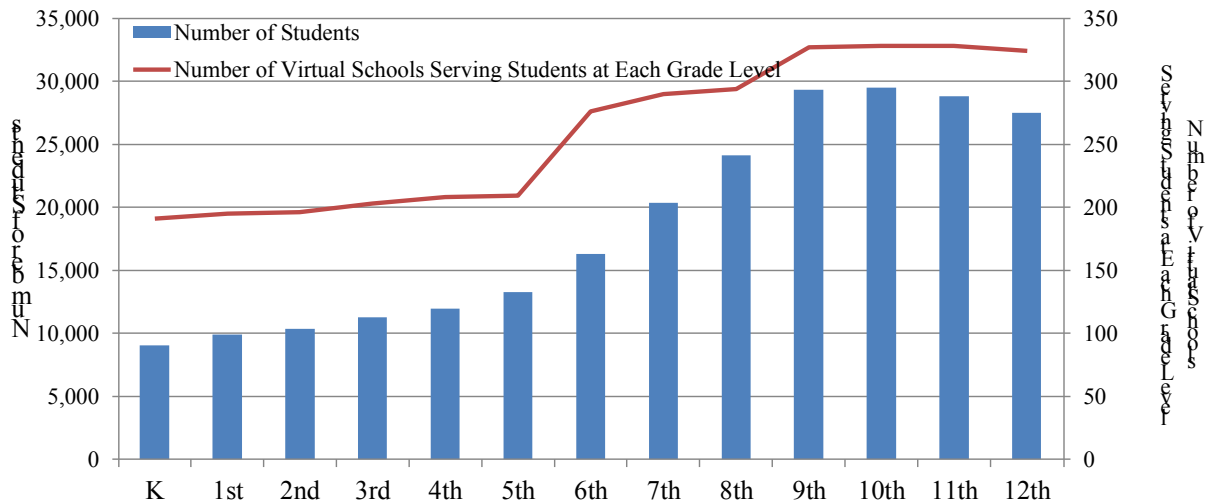
Figure 7. Number of Virtual School Students per Grade Level and Number of Schools that Offer Instruction at Each of the Grade Levels, 2013-14

Figures 8 and 9 illustrate grade level student distribution in blended schools. Interestingly, blended schools had high concentrations of students at the elementary and high school levels and fewer students at the middle school level. Higher numbers in the lower grades may have been due to blended schools opening at lower elementary levels and then adding a new grade level each year. The large concentration at grade 12 may have been due to students using blended schools for credit recovery or as an alternative for late graduation.
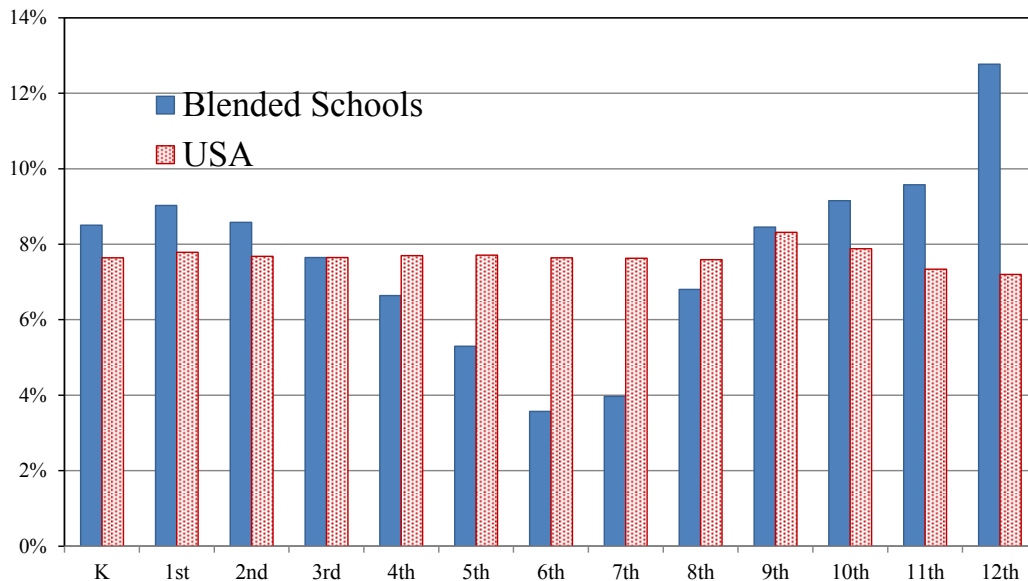

Figure 8. Enrollment by Grade Level for Blended Schools and U.S., 2013-14

Figure 9 indicates that most blended schools were catering to high school students. Given that students at the upper secondary level are more technology savvy and usually are better able to self-regulate and work independently, it makes sense to see concentrations of students and blended schools in those grades.
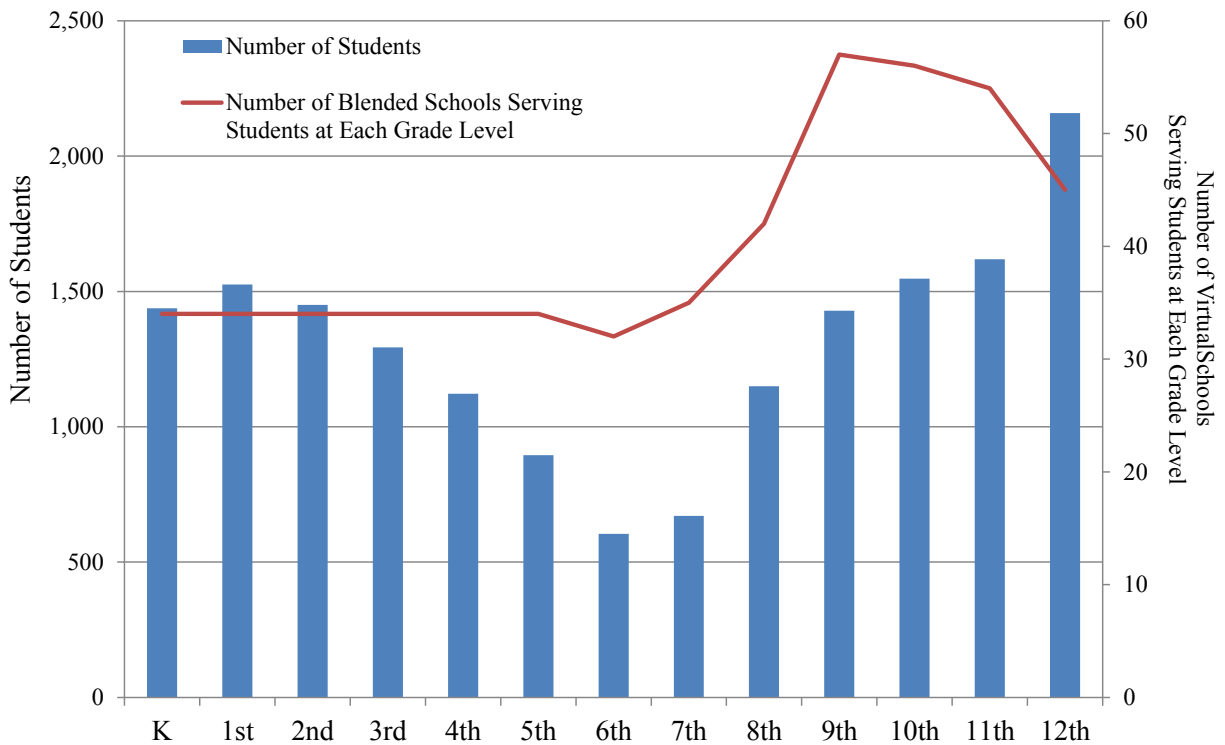

Figure 9. Number of Blended School Students per Grade Level and Number of Schools that Offer Instruction at Each of the Grade Levels, 2013-14

Student-Teacher Ratios

The data available on student to teacher ratios is incomplete and—given the extreme variations reported from year to year—erratic. Due to a relative dearth of information on student-teacher ratio from state education agencies and from school report cards, the most recent and complete data available was NCES Common Core data for school year 2013-14.

While the average ratio was approximately 16 students per teacher in the nation's public schools, virtual schools reported more than twice as many students per teacher (35:1). Virtual schools operated by for-profit EMOs had the highest ratio (44:1), while those operated by nonprofit EMOs had the lowest (19.5:1). The raw data showed considerable outliers, with some virtual schools reporting fewer than 2 students per teacher[13] and others reporting more than 300. Table 6 includes data from full-time virtual schools broken out by EMO status and also by district or charter status. Table 6 also includes data from blended schools, which indicate that they typically had slightly lower student-to-teacher ratios compared with the full-time virtual schools (32.4:1).

Table 6. Teacher-Student Ratios, 2013-14

	Number of schools with data	Median	Mean	SD	Max	Min
All Virtual Schools	213	26.5	35.03	36.43	356	1.3
Independent Virtual	119	23.0	29.36	24.81	150	1.4
Nonprofit Virtual	7	17.0	19.50	12.91	42	4.8
For-Profit Virtual	87	36.6	44.04	47.64	356	1.3
K12 Inc.	51	39.6	41.77	38.78	265	1.3
Connections Academy	16	37.2	35.60	6.69	45.6	24
District Virtual	73	28.2	39.89	51.18	356	1.4
Charter Virtual	140	25.8	32.50	25.46	150	1.3
All Blended Schools	16	23.26	32.44	24.59	113	11
National Average[2]			16.0[3]			

2 Note: United States Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Public Elementary/Secondary Education Survey", 2011-12 v.1a
3 The pupil/teacher ratios in 2010 and 2011 were both at 16.0. Keaton, P. (2013). Selected Statistics From the Common Core of Data: School Year 2011–12 (NCES 2013-441). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved December 1, 2014, from http://nces.ed.gov/pubsearch

School Performance Data

This section reviews key school performance indicators, including Adequate Yearly Progress (AYP) status, student achievement and growth reports, state school performance ratings, and on-time graduation rates. General findings and trends are presented and discussed here; findings by school appear in Appendix C.

Performance-based school accountability systems identified in this report required full-time virtual schools, blended schools, and brick-and-mortar schools to fulfill similar academic progress and proficiency expectations. In 2014-15, most states adopted sweeping educational policy changes. These generally included updated "college- and career-ready" academic standards and new accountability systems, typically employing Common Core-aligned assessments from the Partnership for Assessment of Readiness for College and Careers (PARCC) or the Smarter Balanced Assessment Consortium (SBAC). In 2013-14, several states granted ESEA flexibility waivers transitioned to new statewide assessments, and since 2014-15 nearly every state has been grappling with issues related to the results of new assessments and the redesign of report card ratings intended to summarize student and school performance. Currently, only 19 of 31 states included in this study have released 2014-15 report cards, while the others are planning a 2015-16 report. Some states that published school profile performance results (Oregon and South Carolina, for example) included no

overall or comparison ratings (district vs. school, for example). Because of the widespread transition to new assessments and the fact lack of data for 2014-15, the school performance results captured here should be interpreted cautiously.

Despite this caveat, virtual schools continued to underperform academically: they did not perform as well as their brick-and-mortar school counterparts. Overall, 18.8 percent of full-time virtual schools met grade-level proficiency based on new state tests. That's down considerably from this year's state-by-state average.[14]

Adequate Yearly Progress and State Ratings Assigned to Virtual Schools

School performance ratings were obtained from state sources or directly from school report cards. Although these are weak measures of school performance, they do provide descriptive indicators that can be aggregated across states. Accountability policy in 2002's NCLB legislation mandated annual adequate yearly progress (AYP) reports, including results of annual assessments in math and reading. Schools meet AYP if they meet or exceed their respective state's expectations in terms of the percentage of students who score at or above state-defined academic standards in reading and math.

While AYP has been a common metric, in recent years 42 states (including the District of Columbia) have received waivers on AYP targets. Such waivers allowed 29 states with virtual schools to discontinue the use of state-determined AYP standards in 2012-13. Washington, Idaho, and Iowa are the only three states with full-time virtual schools that continue AYP report. (Washington's ESEA flexibility waiver was not extended for the 2014–15 school year, and Iowa's ESEA flexibility request is still under review.[15] Idaho's ESEA flexibility allows it to remove some of the sanctions associated with AYP results while transitioning to the Idaho Core Standards and new assessment tests).

In 2014, only 1 of 32 full-time virtual schools in Washington met AYP targets (though nearly half of virtual schools were not rated). Of brick-and-mortar public schools, the percentage of schools meeting AYP was: 51.1% for elementary schools; 51.1% for middle schools; and 0% for high schools.[16] A state-sponsored report for the 2013-14 school year also found that students in online programs/schools met the state math standard at a lower rate than the state average, although they met the reading standard at a roughly comparable rate. For example, in math, online students met the standard at a lower rate (35.3%) than the rates of their statewide 4th grade (61.8%) and 7th grade (58.6%) counterparts. In reading, online students met standards at a rate comparable to their 4th grade and 7th grade statewide counterparts, (68.3%, 71.0% and 68.6% respectively), but below their 10th grade counterparts (85.5%).[17]

In contrast, Iowa's first full-time virtual school—Iowa Connections Academy, which operates three schools across grade levels—attained AYP for three consecutive years. And, although K12's Iowa Virtual Academy failed to meet its AYP in 2014-15, it did meet AYP overall in prior years. Of course, there are variations among individual schools and companies in the virtual school cohorts discussed here. In other states (Washington and Minnesota in particular), some virtual school operators have had particularly dismal results. For example, only 11% of K12's virtual schools (1 out of 9) with school level AYP reports attained adequate yearly progress in 2014-15; Connections Academy did a bit better, with 60% (3 out of 5) of its full-time virtual schools meeting AYP.

Annual AYP data collected over several years from state education agencies shows a trend of

lower AYP ratings for virtual schools managed by EMOs than for brick-and-mortar schools managed by EMOs: 29.6% compared with 51.1%. These results mirror results in other states such as Pennsylvania, which has had a fast-growing number of virtual schools. In the 2010 and 2011 school years, when Pennsylvania was still reporting AYP status, the differences among schools' AYP for full-time virtual schools, traditional brick-and-mortar charters and district schools was substantial: 16.67% (2 of 12) virtual schools met AYP as compared to 75% of traditional brick-and-mortar schools and 61% of district charters, respectively. In the same year, the Center for Research on Education Outcomes (CREDO) at Stanford University reported that in reading and math, all eight cyber schools operating in Pennsylvania performed significantly worse than their brick-and-mortar charter and district school counterparts.[18]

New Accountability Systems

In late 2015, President Obama signed the Every Student Succeeds (ESSA) Act, a bipartisan replacement to the No Child Left Behind (NCLB). ESSA allows states to move forward with the innovations (new accountability systems) they have been creating under ESEA waivers.[19] Under ESEA flexibility waivers, multiple accountability indicators were permitted, but under ESSA, multiple indicators in a state accountability system are required. The passage of ESSA does not impact any requirements or reports for the 2015-2016 school year, nor does it change any current state statutes or requirements. ESEA flexibility waivers remain in effect until August 1, 2016. The transition to ESSA will begin in the 2016-2017 school year, with full implementation occurring in the 2017-2018 school year.

Although accountability systems in many states focus predominantly on academic proficiency and growth, a wide range of variables

Under ESEA waivers, states renewed their initial flexibility request in order continue the provisions of their accountability models.[20] The approved waivers for 43 states including the District of Columbia expired at the end of the 2013-2014 academic year, and a total of 34 states received an extension of their ESEA flexibility request through 2014-2015.[21] Having waivers for AYP requirements, 29 of 31 states with full-time virtual schools developed new school accountability systems. Typically, the new systems focus on student achievement scores and academic growth; many also include an expanded set of indicators, such as measures of college and career readiness. Elementary and middle school achievement scores are based on state test results. For high schools, achievement scores are based on state test results, graduation rates, and student performance on the ACT/SAT. Under the waiver, however, states administering new college- and career-ready aligned assessments in the 2014-15 school year are not required to assign schools new ratings/rankings based on those assessments. While state new accountability systems must still be based on the state academic standards and assessments, in many of these states, the assignment of school ratings on school report cards will not be available until 2015-16. As a result, the current state accountability systems vary substantially across states. A total of 15 states administered the Smarter Balance and PARCC assessments in 2014 to collect baseline data and establish cut scores,[22] while the remaining states have begun transitioning to their own versions of Common Core standards and related assessments.

Although accountability systems in many states focus predominantly on academic proficiency and growth, a wide range of variables shape reporting outcomes, including standards,

cut-off scores on standardized tests, and calculation methods. Five states (Ohio, Colorado, Illinois, Massachusetts, and New Mexico) rely on PARCC's five performance levels[23] in each content area and grade level to demonstrate that students are college/career ready. Oklahoma and Nevada have adopted letter grades. Oklahoma's A-F school grading system scores student performance and growth, with the possibility of a 10 point bonus in the overall score to provide an incentive for schools to strive for high levels of performance. For 2014-15 report cards, Nevada used 2013-14 achievement data as it transitioned to new assessments.[24] Oregon uses yet another system, Student Growth Percentiles (SGPs), to assess Student Learning and Growth (SLG) in grades 4-8 in English language arts and math.

Texas and Utah use a school grading accountability rating based on multiple metrics, including such areas as student achievement, student progress, closing performance gaps, participation rate, and postsecondary readiness. Pennsylvania uses four performance categories (advanced, proficient, basic and below basic) to indicate school performance on its 2015 PSSA state tests, as well as the percent of students designated as "historically underperforming" across the tested grade levels in a school. The test results may be used to compare whether schools' scores are lower than the district's historical performance or above the state's averages in all assessed areas. Other states (South Carolina for example) use three standardized tests including ACT Aspire in grades 3-8 in core subject areas to calculate absolute ratings, growth ratings, growth towards college/career readiness, and federal accountability status (percent of students who met or exceeded grade level standards). Still other states, including Minnesota and Georgia, use a variety of multiple indicators that are then combined to arrive at an overall evaluation of school performance.[25]

Several of the state-specific school performance ratings consider the growth of all students toward college and career readiness, the performance of all students in the school, subgroup growth, academic achievement rating, and graduation rate. For example, in the 2014-15 school year, Georgia implemented a College and Career Ready Performance Index (CCRPI) that uses multiple indicators to rate schools, including percentages of students reaching proficiency.

States like Tennessee publish school report cards that show how each school (virtual schools, blended schools and brick-and-mortar schools), district, and the state performs on a wide range of academic measures—achievement, graduation rate, ACT scores, and value-added composite scores.[26]

Another example of a state using multiple indicators is Minnesota, which uses both AYP indicators and its own Multiple Measurement Rating (MMR). The MMR targets a combination of multiple domains, emphasizing growth, achievement gap, proficiency and graduation rates in an effort to increase the validity of its assessments. Only two of ten virtual schools in Minnesota consistently received an acceptable rating from 2011 to 2015; virtual schools that performed poorly on MMR also fell below AYP requirements. More disturbing is that in the 2014-15 school year, every virtual school operated by private EMOs in Minnesota (Minnesota Virtual Academy by K12 Inc. and Minnesota Connections Academy) performed poorly on both AYP the MMR measures. This suggests that more time and flexibility—and even alternative assessments—under current federal policy may not be enough to realize and reflect improvements. It remains to be seen whether Minnesota's experience—where EMO schools performed poorly not only in AYP but also in the new assessment system—will prove the case in other states.

State School Performance Ratings

In the 2014-15 school year, state education authorities provided annual accountability ratings for only 62 (13.6%) of the 457 full-time virtual schools. Iowa, Washington, Idaho and Minnesota schools were rated based on AYP results, while Oklahoma, Louisiana, Nevada and Utah were rated with letter-grades or on star-rating report cards. Massachusetts, Texas and Tennessee ratings were based on composite performance indices based on multiple measures, including student growth.[27] Among the 62 virtual schools with ratings, 19 (30.64%) received acceptable ratings in 2014-15. Independent virtual schools without EMOs were more likely to receive an acceptable rating than virtual schools with private EMOs: 40.74% compared with 23.53% (see Table 7). A trend appears to be emerging: for the past three academic years, independent virtual schools have outperformed those employing private EMOs. Only one school operated by a nonprofit EMO was rated; its rating was unacceptable. No blended schools were assigned state performance ratings.

Table 7. Percentage of Virtual Schools with Acceptable School Performance Ratings by Management Status, 2014-15

	2014-15 Percentage of Total Rated Acceptable N=62
All Virtual Schools	30.64% (19 out of 62)
For-Profit Virtual	23.53% (8 out of 34)
Nonprofit Virtual	0% (0 out of 1)
Independent Virtual	40.74% (11 out of 27)
District-Operated Virtual	37.84% (14 out of 37)
Charter Virtual	20% (5 out of 25)

As noted above, many states have adopted new accountability systems using multiple measures intended to capture such variables as academic proficiency, longitudinal academic growth, growth gaps, college readiness, attendance and graduation. Such new generation accountability systems are expected to add significantly to the size and scope of school performance measures, thus adding more detailed information about the aggregate performance trends of full-time virtual schools. For example, subject area results in PARCC and Smarter Balanced tests are reported in two ways—mean scale scores and mean achievement levels—so that student performance can be more easily understood. State reporting metrics based on the percentage of students meeting and exceeding expectations greatly facilitate performance comparisons between a state, its districts, and its schools with similar grade configurations. Table 8 details comparisons of average state assessment results in English Language Arts (ELA) and Mathematics with average results in virtual and blended schools. That is, the table indicates to what extent average student proficiency in virtual and blended schools met, fell short of, or exceeded states averages. However, comparison of the school's student achievement on the statewide achievement assessments should be considered in a spirit of inquiry. In particular, analyses conducted using aggregate, school-level achievement measures do not capture variability among individual students or among student sub-

groups.

Generally, recent state-by-state first year results for assessments aligned with more rigorous learning standards showed a decline in the statewide percentage of students scoring at proficient or advanced levels. However, results for students in full-time virtual schools showed a greater decline in grades 3-8.[28] For example, while statewide 33 percent of California's students met or exceeded standards in math, the percent of full-time virtual students at comparable levels fell to an average of 26.95 percent.

Of the 121 virtual schools with available student proficiency rates, we found that 22 (18.18%) had rates above the state average (see Table 8). Of virtual schools operated by nonprofit EMOs, half (5 out of 10 schools) had proficiency rates above state averages. Rates for independent virtual schools and virtual schools operated by for-profit EMOs were similar: 14.29% and 16.67%.

Table 8. Percentage of Virtual and Blended Schools that Outperform State Averages in Terms of Proportion of Students Meeting or Exceeding State Proficiency Benchmarks, 2014-15

	2014-15 Virtual Schools that Outperform the State Average
Total for all Virtual Schools N=121	18.18% (22 out of 121)
For-profit Virtual	16.67% (8 out of 48)
Nonprofit Virtual	50% (5 out of 10)
Independent Virtual	14.29% (9 out of 63)
District Virtual	23.08% (6 out of 26)
Charter Virtual	16.84% (16 out of 95)
Total for all Blended Schools N=42	14.28% (6 out of 42)
For-profit Blended	0% (0 out of 13)
Nonprofit Blended	14.28% (1 out of 7)
Independent Blended	22.73% (5 out of 22)
District Blended	27.27% (3 out of 11)
Charter Blended	9.68% (3 out of 31)

Comparisons of average state ELA and math assessment results in blended school are weaker because the enrollment area of blended schools is typically limited and urban; in contrast, virtual schools generally can enroll students statewide and so have a student population more similar to the state's aggregate enrollment. Still, the proficiency gaps between blended schools and their host states are substantial and noteworthy. Of the blended schools operated by private EMOs, none outperformed state averages for students meeting or exceeding proficiency. Among nonprofit EMO blended schools, only one exceeded state averages, while of independent blended schools, 5 out of 22 posted averages higher than their states'.

Graduation Rates

In recent years, schools and states have been standardizing how they record and report graduation rates. The measure widely used today is "On-Time Graduation Rate," which refers to the percentage of all students who graduate from high school within four years after they started 9th grade. Information on graduation rates was available for 131 virtual schools (about 28% of the total 457) and for 26 (32% of the total 87) blended schools. A large number of virtual and blended schools did not report a graduation rate partly because some do not offer high school grades; others are relatively new and have not had a student cohort that has completed grades 9-12. Even so, however, the numbers seem low in light of the large enrollment reported for grades 9-12 (see Figures 7 and 9).

As Figure 10 illustrates, the on-time graduation rates for full-time virtual and blended schools (40.6% and 37.4% respectively) were slightly more than half the national average of 81.0%. The graduation rates for virtual schools have worsened by 3 percentage points over the past few years, while the graduation rates for the country have been improving about 1 percentage point each year. These findings align with other measures of school performance and contribute to the overall picture of virtual and blended school performance.
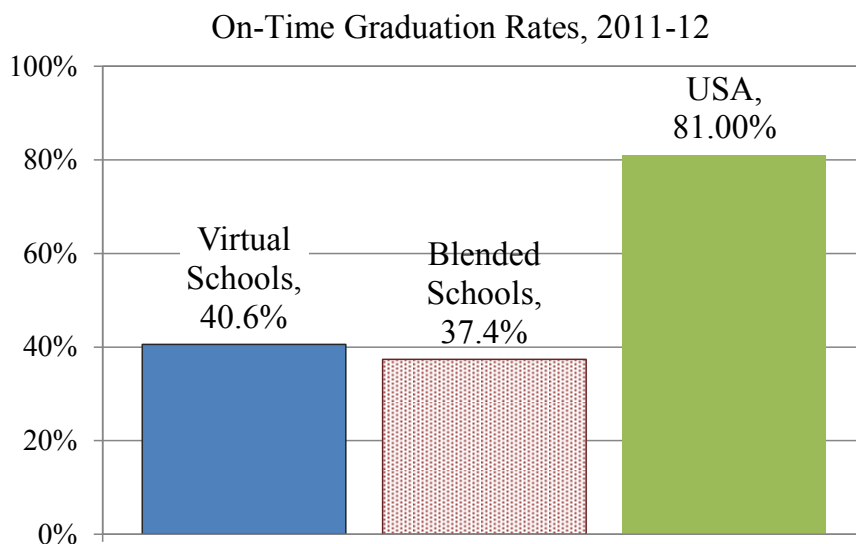

On-Time Graduation Rates, 2011-12

Figure 10. Mean Graduation Rates for Virtual Schools Relative to All Public Schools, 2013-2014

As Table 7 depicts, the graduation rates for 2013-14 are poor across all subgroups of virtual and blended schools. During the 2013-14 school year, virtual schools operated by nonprofit EMOs had the highest on-time graduation rate, 50.1%. Rates in independent and for-profit operated virtual schools were 40.9% and 38.3%, respectively. Within the subgroup representing EMO-managed virtual schools, high-school students at K12, Inc. had an on-time graduation rate of 32.8%; as in 2012-13, Connections Academy did better at 47.8%.

Table 9. Graduation Rates, 2013-14

	Number of schools with data	4 year on-time graduation rate		
		Mean	Weighted Mean	Median
Independent	79	40.92%	51.51%	35.0%
Nonprofit	8	50.10%	40.64%	50.5%
For-Profit	44	38.31%	39.26%	33.5%
K12 Inc.	18	32.83%	35.46%	29.5%
Connections Acad.	13	47.88%	50.51%	49.0%
District	57	41.13%	40.23%	35.0%
Charter	74	40.20%	42.90%	35.0%
All Virtual Schools	131	40.60%	42.69%	35.0%
All Blended Schools	26	37.43	38.87	37.0%
National Average (2012-13)		81.0%[4]		

4 The national figure is for 2012-13. https://nces.ed.gov/ccd/tables/ACGR_2010-11_to_2012-13.asp

Charter virtual schools again had a graduation rate similar to that of district-operated virtual schools at about 40.2% and 41.1%, respectively. Blended schools with graduation data had a lower graduation rate than all of the subgroups of virtual schools, except for the especially low rate for K12 Inc. Overall, average on-time graduation rates remained substantially lower for virtual and blended schools than for traditional public schools in the US: only 40.6% of students at virtual high schools and 37.4% at blended schools graduated on time, whereas the national average for all public high schools was more than double at 81.0%.

Discussion

Findings outlined in this report deserve the attention of policymakers as they seek to revise regulations and oversight of the fast growing virtual and blended learning sectors. The findings also deserve the attention of researchers and analysts since more in-depth and focused studies are required to explain the differences that exist between groups of schools compared in this study; in addition, more insights are needed to explain why the virtual and hybrid schools are falling far short of claims and expectations.

Deepening Evidence of Struggling Virtual Schools

The key finding regarding the overall dismal—if not disastrous—performance of full-time virtual schools confirms what has been earlier reported by NEPC.[29] This finding is also being confirmed by other researchers, evaluators, state auditors and investigative journalists.[30] In late 2015, a study undertaken by CREDO[31] with funding from the Walton Foundation found that learning (measured by changes in scores on standardized tests) in charter virtual schools fell far short of learning in brick-and-mortar schools. Given the statistical matching

of students, and tracking of individual student scores, this is the most rigorous study to date. Unfortunately, this study only looked at virtual charter schools and not district-operated virtual schools.

Virtual Schools vs. Blended Learning Schools

The examination of performance data for both virtual and blended-learning schools is the first of its kind. Initially, the authors of this report believed that the performance of blended learning schools was likely to be better than full-time virtual schools. Their belief was bolstered by claims of the largest EMO in this sector, Rocketship Education. Rocketship's web site[32] boastfully highlights evidence of the success of their schools based on select outcome measures from state sources. This selected evidence is interesting because it presents a different picture than does the data in this report, both in terms of student demographics and student performance on standardized tests.

The Rocketship Education website cites one study by Innovate Public Schools[33] that claimed that a number of Rocketship schools were performing well, given the high poverty students they serve. Although regularly touted by the nonprofit EMO, this study does not appear to be an independent evaluation. The Innovate Public Schools' report contains some inspiring quotes from historical figures and some lists and descriptions of what they refer to as successful schools, but it is not clear what the actual purpose of the report is. Based on the contents and the manner in which information is presented, the report's purpose seems more in-line with promoting its own mission and the aspirations of Rocketship than with an objective study of performance.

The impression that blended learning schools have been doing better than virtual schools has also been fostered by the extensive favorable attention and financial support that Rocketship has received from the philanthropic sector, including New Schools Venture Fund.

In addition, because virtual schools have such design flaws as large school and class size and lack of face-to face instruction that can explain their poor performance, it seems reasonable to expect that schools combining traditional face-to-face instruction and virtual schooling would perform better. However: the overall performance of blended learning schools was similar to or slightly worse than the performance of virtual schools. This was the case for (i) school performance ratings, (ii) comparisons between the students acceptable ratings on state assessments compared with state averages, and (iii) graduation rates. The tentative findings on this topic contained in this report reveal that self-reported student-to-teacher ratios are very high and similar in both virtual and blended schools. It is worth noting that a closer look at Rocketship schools by Education Week[34] revealed changes in its model intended to generate or free up resources that could be invested elsewhere by the EMO. These changes from the original model resulted in fewer staff to work with students.

It is fair to note that blended learning schools have a higher proportion of students in poverty than virtual schools. Furthermore, given the differences in student demographics, incomplete data, and the overall quality of data reported by virtual and blended schools, the findings comparing blended schools and virtual schools should be considered tentative and in need of further research.

District vs. Charter and EMO vs. Independent

It is interesting to note that district-operated full-time virtual schools outperformed their charter virtual school counterparts both in acceptable school performance ratings (17 percentage points higher) and in progress at the proficient and advanced achievement levels (7 percentage points higher). Similarly, district-operated blended schools outperformed their charter blended counterparts in progress at the proficient and advanced achievement levels (18 percentage points higher). In addition, independent and district-operated virtual blended schools appeared to provide a more effective learning environment than EMO-operated virtual and blended schools.

It is worth noting the general patterns highlighted in the previous paragraph, although it is important to recognize that these findings are tentative and need further scrutiny by practitioners, academics, and policy makers.

Missing Data and Validity of Data Remain Concerns

The limitations highlighted earlier as well as concerns about the amount of missing data and the quality of some data self-reported by schools (such as student-teacher ratios, for example) argue for caution in interpreting findings. Further, in terms of assessment data, it is worth noting that there are many new state assessments being used, often with a single year of data. Another concern relates to the fact that average enrollments in virtual and blended schools are generally lower than state averages, which means that average student proficiency percentages in virtual and blended schools are generally based on fewer students. As a result, year-to-year variations among virtual and blended schools may naturally be greater than variations in state averages.

Another concern relates to the accuracy of class size data, because class size may help explain the weak performance of virtual and blended schools. Given the anecdotal evidence practitioners have shared with us after reviewing our earlier research, and given the excessively high teacher-student ratios reported by investigative journalists[35], we do have concerns about the accuracy of largely self-reported teacher-student ratios found in state and federal datasets. We believe that the data we report underestimates the number of teachers to students in virtual and blended learning schools. This is an area of particular interest because virtual schools have considerable cost savings in facilities and transportation, and so one would expect them to have more resources available to spend on teaching staff.

Given the limitations and concerns we identify, one should be cautious in interpreting the preciseness of the data. At the same time, given that our findings are increasingly being shored up by other scholars, it is foolish for policymakers to wait any longer in attempting to revise regulations and oversight mechanisms for virtual and blended schools.

One obvious concern that should be addressed quickly is the need for greater accountability and transparency, particularly from the for-profit and nonprofit education management organizations that control the lion's share of both full-time virtual and blended learning schools. These private companies and organizations need to be more forthcoming with their data and more proactive in compiling data that will help assess equity issues within the trends.

Conclusion

In this emerging era of increased federal flexibility, each state with a waiver from federal accountability requirements has been working toward new accountability systems, including improved and more consistent reporting of graduation rates. States with waivers have been given opportunity to use multiple measures and expand assessment criteria to include such variables as proficiency, student growth, high-school graduation rates, and college and career readiness. We can hope that new measures will be more suitable for capturing the performance of full-time virtual schools and blended schools.

Unlike other technological options, full-time virtual schools and blended schools do much more than simply supplement and expand the courses available in traditional brick-and-mortar schools. Instead, they are being used to expand school choice, concurrently advancing privatization, entrepreneurism and private financial investment. With key providers vigorously lobbying legislatures and national organizations promoting school choice, virtual schooling now has a firm foothold: 30 states and the District of Columbia allow full-time virtual schools and blended schools to operate, and even more states allow, or in some cases require, one or more courses to be delivered online to district public school students.

Our analyses indicate that full-time virtual schooling continues to grow rapidly. While it is growing more rapidly in some sectors than other, every sector is growing. Still, our findings indicate for-profit EMOs continue to dominate and increased their market share from 2012-13 and again from 2013-14. Interestingly, in the 2014-15 school year, a few of the largest virtual schools operated by K12 Inc. have indicated that they want to part ways with the for-profit giant. Should that happen, we could see some dramatic changes in the distribution of schools and students.

The rapid expansion of virtual schools and blended schools is remarkable given the consistently negative findings regarding student and school performance. The advocates of full-time virtual schools and blended schools remain several years ahead of policymakers and researchers, and new opportunities are being defined and developed largely by for-profit entities accountable to stockholders rather than to any public constituency.

Our findings indicate that district operated virtual schools and blended schools, as well as virtual schools and blended schools operated by nonprofit EMOs, or no EMO at all, are more likely to perform better. They are much smaller, and they have substantially lower teacher to student ratios. More research is needed to understand the characteristics of the successful outliers or exceptions. Contrary to the overwhelmingly negative evidence on the performance of current virtual schools and blended schools, we remain optimistic that full-time virtual schooling can work and hope that more research and more reasoned policymaking can revise and strengthen regulations that steer the operation and growth of full-time virtual schools and blended schools. Further expansion in this sector should be contingent on school performance.

Advocates of virtual schools and blended schools may argue that the limitations in our data mean that findings such as those we share in this report are not definitive. We agree that there is a need for stronger measures of school performance. Nevertheless, even though the outcome measures available are not as rigorous as desired, and even though the data reported by virtual schools and blended schools are not as complete as they should be, the findings still reveal that across all school performance measures, most virtual schools and blended schools are lacking. There is not a single positive sign from the empirical evidence presented

here. Given this picture, continued expansion seems unwise. More research is needed; and to enable such research, state oversight agencies need to require more, and better refined, data.

Recommendations

Given the rapid growth of virtual schools and blended schools, the populations they serve, and their relatively poor performance on widely used accountability measures, it is recommended that:

- Policymakers slow or stop the growth in the number of virtual schools and blended schools and the size of their enrollments until the reasons for their relatively poor performance have been identified and addressed. States should place their first priority on understanding why virtual schools and blended schools perform weakly under a college- and career-ready accountability system and how their performance can be improved before undertaking any measures to expand these relatively new models of schooling.

- Oversight authorities specify and enforce sanctions for virtual schools and blended schools if they fail to improve performance.

- Policymakers require virtual schools and blended schools to devote more resources to instruction, particularly by specifying a maximum ratio of students to teachers.

- State agencies ensure that virtual schools and blended schools fully report data related to the population of students they serve and the teachers they employ.

- State and federal policymakers promote efforts to design new outcome measures appropriate to the unique characteristics of full-time virtual schools and blended schools. Passage of the Every Student Succeeds Act (ESSA) represents an opportunity for those states with a growing virtual and blended school sector to improve upon their accountability systems for reporting data on school performance measures.

- Policymakers and other stakeholders support more research to identify which policy options—especially those impacting funding and accountability mechanisms—are most likely to promote successful virtual schools and blended schools. More research is also needed to increase understanding of the inner workings of virtual and blended schools, including such factors as the curriculum and the nature of student-teacher interactions. Such research should help identify and remedy features that are negatively affecting student learning.

Appendices

Appendix A1. Numbers of Virtual Schools and Students by State

Appendix A2. Numbers of Blended Learning Schools and Students by State

Appendix B1. Numbers of Full-Time Virtual Schools and the Students They Serve

Appendix B2. Numbers of Blended Learning Schools and the Students They Serve

Appendix C1. Measures of School Performance: State Performance Ratings, Adequate Yearly Progress Status, and Graduation Rates —Full-Time Virtual Schools

Appendix C2. Measures of School Performance: State Performance Ratings, Adequate Yearly Progress Status, and Graduation Rates —Blended Learning Schools

Appendix D. States' Assessment System, School Performance Ratings Summarized by States for their Full-Time Virtual and Blended Learning Schools

The Appendices as well as links to data sources are available for download as PDF files at
http://nepc.colorado.edu/publication/virtual-schools-annual-2016

Notes and References

1   This finding is based on NCES data from the Conditions of Education 2015. Retrieved December 2, 2015 from http://nces.ed.gov/pubs2015/2015144_highlights.pdf and http://nces.ed.gov/programs/coe/indicator_clr.asp

2   Although there are many uses for the information generated by outcome measurement, here we confine ourselves only to "measured outcomes" as opposed to the "effect of the virtual schools/blended schools on measured outcomes." The latter focuses on causal inferences which would require considerable time and resources in order to gather and analyze the data. Our analytic approach is more pragmatic—that is, to raise performance flags for virtual schools and blended schools that are failing to meet performance targets for the state. The challenge now facing the virtual school sector is to maximize its desirable effects and minimize the undesirable ones. The challenge is made tougher by the fact that the data are still coming in. While measured outcomes reported here cannot directly speak to causality, our analysis represents an improvement over single-state studies. Our results have important implications for the ongoing debate over whether virtual schools and blended schools that repeatedly fail to meet state standards should face sanctions or shut down. Although the state ratings and the performance measures we use are limited, it is important to recognize that ALL measures of performance are negative for the group of virtual and blended learning schools. There are noteworthy state-by-state differences (see Appendix D). Further exploration of the academic impact of virtual schools and blended schools should be high on the list of priorities for those interested in these types of schools. Future research on the virtual school sector should also seek to examine a broader and deeper range of student outcomes (non-cognitive impacts).

3   Molnar, A. (Ed.); Huerta, L., Shafer, S. R., Barbour, M.K., Miron, G., Gulosino, C. (2015). *Virtual Schools in the U.S. 2015: Politics, Performance, Policy, and Research Evidence.* Boulder, CO: National Education Policy Center. Retrieved December 18, 2015 from http://nepc.colorado.edu/publication/virtual-schools-annual-2015

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4   For example, school districts or schools offer online courses to cut costs or attract students from other schools/districts/states. These are not actually schools in the sense that they offer the complete state-mandated curriculum; they are just basically individual courses that students can take if they want to. Such a program would never receive an NCES ID no matter how many students enroll in these online courses because it's not a school.

5   See notes in the appendices for more details regarding inclusion criteria.

6   To be included in this inventory and considered in our analyses, a virtual school or blended learning school has to meet our selection criteria. First of all, it must be classified as a school and not a program. For example, it must be classified as a functioning school and not just a collection of individual optional courses. Online courses offered by school districts or schools to cut costs or attract students from other schools/districts/states, as referred to in Note 3, are therefore not included.

    Additionally, when separating programs from schools, we look for the existence of unique NCES or State Education Agency ID codes that are designated for school units. We exclude blended schools, and we avoid schools that have both face-to-face instruction and virtual instruction. Further, in order to be included in our inventory, these virtual schools should have evidence of at least 25 students enrolled during one of the last few years. An important part of our analyses examines school performance; by including only full-time virtual schools, we are better able to attribute school performance outcomes to full-time virtual schools.

7   Estimates for 2000 to 2010 are based on two sources, the annual Profiles of For-Profit and Nonprofit Education Management Organizations from NEPC, and the annual Keeping Pace reports from Evergreen Education, a consulting group that prepares reviews of policy and practice for online learning.

8   Marsh, R.M., Carr-Chellman, A.A., & Stockman, B.R. (2009). Why parents choose cybercharter schools. *TechTrends 53*(4).

Miron, G., & Urschel, J.L. (2012). *Understanding and improving full-time virtual schools: A study of student characteristics, school finance, and school performance in schools operated by K12 Inc.* Retrieved December 11, 2014, from http://nepc.colorado.edu/files/nepc-rb-k12-miron.pdf

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9   Comparisons with demographic composition of charter schools in the nation is also relevant since the virtual schools that enroll most students are charter virtual schools. Thirty-six percent of all charter school students are white, 29.2% are black, 27.2% are Hispanic, 3.5 are Asian, and 3.2% are classified as "other."

10   Data on ethnicity are from 2013-14, the most recent year from which we could obtain NCES data. The NCES provides the most comprehensive data, all from a single audited source. We obtained more-- though incomplete-- data on race/ethnicity, sex, free- and reduced-price lunch status, English Language Learner status, and special education status for 2014-15 from state sources and from school report cards. The figures we present are based on the most complete data source, the NCES 2013-14 data.

11   This statistic is based on NCES data from U.S. Department of Education, National Center for Education Statistics. (2015). The Condition of Education 2015 (NCES 2015-144), English Language Learners. Retrieved December 2, 2015 from https://nces.ed.gov/fastfacts/display.asp?id=96 and

12   This finding is based on NCES data from 2011-12.

13   Such a low number of full-time equivalent teachers reported may be explained by the use of larger numbers of teachers who work part-time for the school.

14   Authors' calculations. For detailed results, see Appendices C and D.

15   For more details, see http://www2.ed.gov/policy/elsec/guid/esea-flexibility/index.html

16   For more details, see http://reportcard.ospi.k12.wa.us/ayp.aspx?domain=AYP&groupLevel=District&schoolId=1&reportLevel=State&year=2014-15

17   For more details, see: http://www.k12.wa.us/LegisGov/2015documents/OnlineLearningJan2015.pdf

18   Center for Research on Education Outcomes. (2011). *Charter school performance in Pennsylvania.* Stanford, CA: Author.

19   For more details, see http://www2.ed.gov/policy/elsec/leg/essa/faq/essa-faqs.pdf

20   For more details, see http://www2.ed.gov/policy/elsec/guid/esea-flexibility/index.html

21   For more details, see http://www.ed.gov/news/press-releases/obama-administration-approves-nclb-flexibility-extension-requests-six-states

22   For more details, see http://www.achieve.org/files/Grades_3-8_ELA_Math_Assessments_Table.pdf

23   PARCC's Performance levels include: Did not yet meet expectations; partially met expectations; approached expectations; Met expectations; and Exceeded expectations.

24   For more details, see http://nspf.doe.nv.gov/

25   For more details, see http://www.education.state.mn.us/MDE/JustParent/ESEA/PriorityFocusRewardSch/index.html

26   For more details, see https://www.tn.gov/education/topic/report-card

27   For more details, see http://profiles.doe.mass.edu/help/data.aspx?section=assess

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