

Study of Virtual School Performance and Impact

Conducted by Public Impact and the National Association of Charter School Authorizers

Commissioned by the State Charter Schools Commission of Georgia

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The National Association of Charter School Authorizers (NACSA) is a 501(c)(3) not-for-profit membership organization dedicated to the establishment and operation of quality charter schools through responsible oversight in the public interest. Visit NACSA's website to learn more about high-quality charter school authorizing: www.qualitycharters.org.

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ABOUT THIS REPORT

Virtual schools in the U.S. have grown significantly over the past decade, both in number of schools and number of students enrolled.¹ But growth has brought challenges, especially for student performance.

Across the nation, only a few virtual charter schools have delivered strong student achievement results. Virtual school advocates attribute low student performance to the characteristics of many students enrolled in these schools, such as high mobility rates and lack of success in other educational environments.² Those factors do present accountability challenges,³ but beyond that, few studies have grappled with student performance in virtual schools nationally. Authorizers and policymakers need an in-depth understanding of performance trends to improve accountability, as such trends may point to certain providers or practices that boost—or diminish—students’ chances of success.

In the fall of 2014, the State Charter Schools Commission of Georgia (SCSC) engaged researchers at the National Association of Charter School Authorizers (NACSA) and Public Impact to answer the following questions:

1. **What do virtual schools look like?** How do their models differ? Where are they operating? What types of students do they serve?
2. **How are virtual schools performing?** How do they compare to brick-and-mortar schools? Have certain virtual schools consistently produced exemplary student outcomes?

To seek answers to these questions, we:

- **Conducted a literature scan** for existing studies on virtual school models and virtual school performance, with a focus on national and state-level findings. Most studies focused on fully online schools, or schools in which students receive all instruction and complete all coursework in an online environment. However, we also found a few studies of other online programs. The Summary Grid beginning on page 19 details the design, relevance, and highlights of studies that informed this report.
- **Contacted charter school authorizers** who indicated on the 2014 National Association of Charter School Authorizers (NACSA) survey that they authorized at least one “100 percent virtual/online school.”⁴ We asked them to summarize the performance of the virtual charter schools they authorize, and to share details on and/or recommendations for virtual school operators that appear to produce stronger student achievement results.
- **Consulted organizations knowledgeable about virtual learning** for information on virtual education nationally. The organizations we consulted included advocates for the expansion of

¹ Watson, J., et al. (2014). Evergreen Education Group. *Keeping Pace with K-12 Digital Learning: An Annual Review of Policy and Practice*. Available: http://www.kpk12.com/wp-content/uploads/EEG_KP2014-fnl-lr.pdf

²Ibid.

³ Locke, G., Ableidinger, J., Hassel, B. C., & Barrett, S. K. (2014). *Virtual schools: Assessing progress and accountability: Final report of study findings*. Washington, DC: National Charter School Resource Center. Available: <http://www.charterschoolcenter.org/sites/default/files/Virtual%20Schools%20Accountability%20Report.pdf>

⁴ In 2014, NACSA surveyed all charter school authorizers nationally with five or more schools, all non-district authorizers, and a sample of district authorizers with fewer than five schools in their charter school portfolios. Of the 182 authorizers in the sample, 43 (or 24 percent) reported authorizing at least one “100 percent virtual/online school.”

virtual learning opportunities for students nationwide, as well as an education research firm that has published several studies related to virtual learning.

This study both answers the initial research questions and highlights topics that need further research.

WHAT DO VIRTUAL SCHOOLS LOOK LIKE?

This section analyzes national trends in virtual school performance based on the findings of two studies: *Keeping Pace with K–12 Digital Learning: An Annual Review of Policy and Practice*, released by the Evergreen Education Group in November 2014, and *Virtual Schools in the U.S. 2014: Politics, Performance, Policy and Research Evidence*, published by the National Education Policy Center in March 2014.

We draw heavily from these two studies because, unlike most studies identified in our scan that focus on individual states, these offer detailed information on virtual school activity *nationwide*. They also offer the most recent information available, especially the publication *Keeping Pace*.

However, despite providing valuable compilations of national virtual school data, the publishers of these two studies are not neutral observers. Evergreen Education Group provides consulting services to those involved in digital learning, and National Education Policy Center is a think tank that has published many critiques of charter schools and other education reforms. To ensure this report's findings are unbiased, we used objective and factual data from *Keeping Pace* and *Virtual Schools* and do not rely on nor report conclusions from those studies.

We also used state-level findings when relevant, especially on student characteristics and enrollment information. State-specific information came primarily from reports by the Colorado Department of Education, Georgia Department of Education, Minnesota Office of the Legislative Auditor, Ohio Association for Public Charter Schools, Pennsylvania Clearinghouse for Educational Research, and Wisconsin Legislative Audit Bureau.

What do virtual school models look like?

At least three types of schools use virtual instruction:⁵

1. **Fully online schools** serve students who take their entire course load online and are not required to attend any classes in physical school buildings. Fully online schools often serve students from across the state and may be **state-run**, **district-run**, **charter schools**, or **non-charter schools**.
2. **Supplemental online programs** offer individual online courses to supplement existing curriculum offerings and often operate in partnership with brick and mortar schools and/or traditional school districts. Supplemental programs may be **state-run** or **district-run**.

⁵ Locke, G., Ableidinger, J., Hassel, B. C., & Barrett, S. K. (2014). Virtual schools: Assessing progress and accountability: Final report of study findings. Washington, DC: National Charter School Resource Center. Available: <http://www.charterschoolcenter.org/sites/default/files/Virtual%20Schools%20Accountability%20Report.pdf>

- 3. Blended learning schools** are schools that offer both online curriculum and in-person direct instruction throughout the school day. Students at blended learning schools may spend very little to most of their time online. Blended learning schools are typically **district-run** or **charter schools**.

Where are virtual schools operating throughout the country?

In 2014, 30 states had fully online schools that served students statewide, and 26 states ran supplemental online programs. It is unclear how many states supported the operation of blended learning schools.

Fully Online Schools

According to *Keeping Pace*, as of 2013–14, 30 states had fully online schools of some sort that served students statewide—state-run schools, district-run schools, and charter schools—which enrolled an estimated 316,000 students.⁶ Arizona, California, Ohio, and Pennsylvania accounted for more than half of all fully online student enrollment across the country, with more than 35,000 students enrolled in each state. Georgia enrolled 18,000 students, the fifth largest statewide enrollment count in the country. Fully online *charter* schools comprised the majority of fully online enrollments.⁷ These schools currently operate in 26 states and serve approximately 200,000 students.⁸

Keeping Pace does not detail how many fully online *state-run* or *district-run* schools are in each state. State profiles in the report do indicate that students may enroll full-time in at least five *state-run* virtual schools—although most state-run virtual schools offer only supplemental programs, as detailed below. The state profiles also suggest that districts in at least 17 states offer fully online options.⁹ Additionally, a 2014 report from the National Education Policy Center (NEPC) listed 121 district-run fully online schools in its 2012–13 inventory of fully online schools nationwide.¹⁰

Supplemental Online Programs

In 2013–14, 26 states ran supplemental online programs.¹¹ No studies reviewed as part of our literature scan included specific counts of district-run supplemental online programs, although state profiles in *Keeping Pace* suggest that districts in 29 states provide supplemental online course options to their students.

Blended Learning Schools

Our scan produced little information about the pervasiveness of blended learning schools nationwide. This is likely due to the wide range of blended learning models and lack of clear state definitions. Additionally, state data systems typically do not designate these schools as “blended,” making it difficult

⁶ Note that we use *Keeping Pace* estimates because they are more recent than NEPC (November 2014 vs. March 2014) Watson, J., et al. *Keeping Pace*.

⁷ Ibid.

⁸ Ibid.

⁹ Ibid.

¹⁰ Molnar, A. (2014). University of Colorado Boulder. *Virtual schools in the U.S. 2014: Politics, Performance, Policy and Research Evidence*. Available: <http://nepc.colorado.edu/files/virtual-2014-all-final.pdf>

¹¹ Watson, J. et al. *Keeping Pace*.

to distinguish between them and traditional brick-and-mortar schools. However, *Keeping Pace* mentions blended learning schools in 26 state profiles.

What types of students are enrolled in virtual schools?

Although student demographic data are available for students enrolled in fully online schools, it is difficult, if not impossible, to collect the same information for students enrolled in supplemental programs or in blended learning schools. Since state data systems tie student enrollment data to the brick-and-mortar schools in which they receive the majority of instruction, there are not publicly available school-level enrollment records for most supplemental programs.¹² For these reasons, it is similarly difficult to assess blended learning schools' student demographics. As a result, this study focuses only on students enrolled in fully online schools—state-run schools, district-run schools, and charter schools.

Overall, fully online schools serve more white students, fewer economically disadvantaged students, fewer special education students, and more consistently mobile students than are served, on average, by the respective states in which they operate.

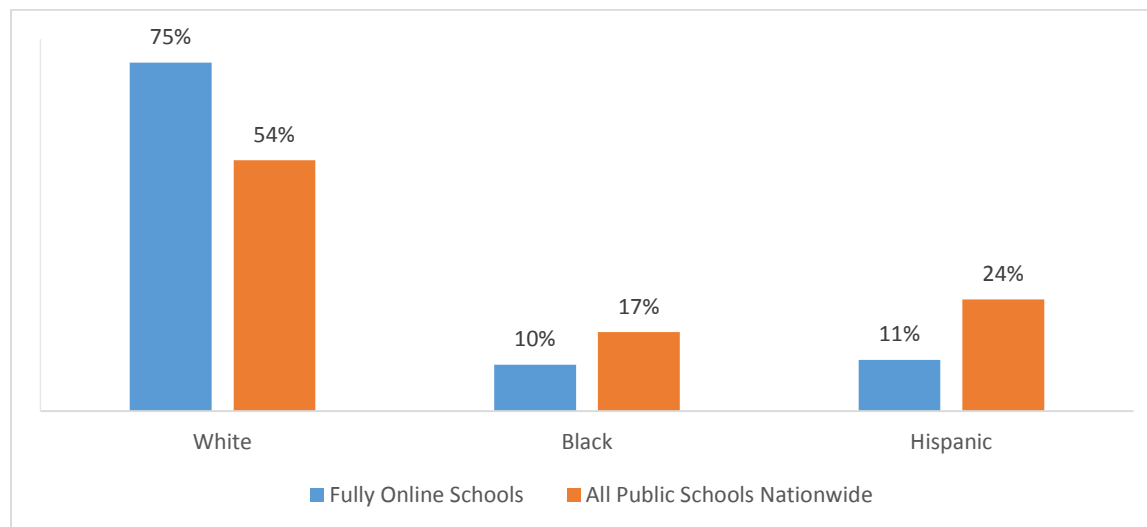
Race and Ethnicity

Although students' race and ethnicity vary from school to school and state to state, we found that students attending fully online schools are more likely to be white compared to students attending brick and mortar schools. In 2010–11, the most recent school year for which national fully online school enrollment data are available, 75 percent of students enrolled in fully online schools were white, 10 percent were black, and 11 percent were Hispanic. In the same year, 54 percent of all public school students nationwide were white, 17 percent were black, and 24 percent were Hispanic.¹³

¹² Public Impact and NACSA identified one study that commented on supplemental program demographics. In Washington State, the percent of white students enrolled in supplemental courses decreased from 77 percent in 2009–10 to 67 percent in 2012–13. For comparison, 59 percent of students statewide were white in 2012–13. See: Nelson, K. (2013). Office of the Superintendent of Public Instruction. *Online Learning Annual Report 2012–13*. Available: <http://www.k12.wa.us/LegisGov/2014documents/OnlineLearningJan2014.pdf>; Office of Superintendent of Public Instruction. "K-12 Data and Reports: State of Washington". Available: <http://data.k12.wa.us/PublicDWP/Web/WashingtonWeb/Home.aspx>

¹³ Molnar, A. *Virtual schools in the U.S. 2014*.

Figure 1. Race and Ethnicity of Students Served, Fully Online Schools vs. All Public Schools Nationwide



Source: National Education Policy Center. Available: <http://nepc.colorado.edu/files/virtual-2014-all-final.pdf>

However, this finding does not hold in all states. Two studies indicate that students attending fully online schools increasingly reflect statewide demographic trends. For example, the percent of non-white students attending fully online schools in Colorado grew from 18 percent in 2003 to 39 percent in 2011, which approached the statewide percentage of non-white students in 2011.¹⁴ This growth exceeded the increase of non-white student enrollment statewide in Colorado, which grew from 35 percent in 2003 to 44 percent in 2011.¹⁵ In Pennsylvania in 2013–14, students enrolled in fully online charter schools closely mirrored the race and ethnicity of students enrolled in traditional public schools statewide.¹⁶ In comparison to brick and mortar charter schools, however, Pennsylvania’s fully online charter schools were found to serve a much higher percentage of white students and much lower percentage of black and Hispanic students.



Georgia’s Statewide Fully Online Charter Schools: Race/Ethnicity

Student demographics at Georgia’s three statewide fully online schools did not completely mirror the national trend. In 2013–14, two of the three schools enrolled more white students than non-white students. The third statewide fully online school exceeded the statewide average for non-white student enrollment by nearly 20 percentage points and trailed the statewide average for white student enrollment by the same amount.¹⁷

¹⁴Heiney, A. et al. (2012). Colorado Department of Education. *Characteristics of Colorado’s Online Students*. Available:

http://www.cde.state.co.us/sites/default/files/documents/onlinelearning/download/ol_research_final.pdf

¹⁵ Colorado Department of Education. Pupil Membership for 2013: Pupil Count by Race/Ethnicity. Available: <http://www.cde.state.co.us/cdereval/rv2013pmlinks>

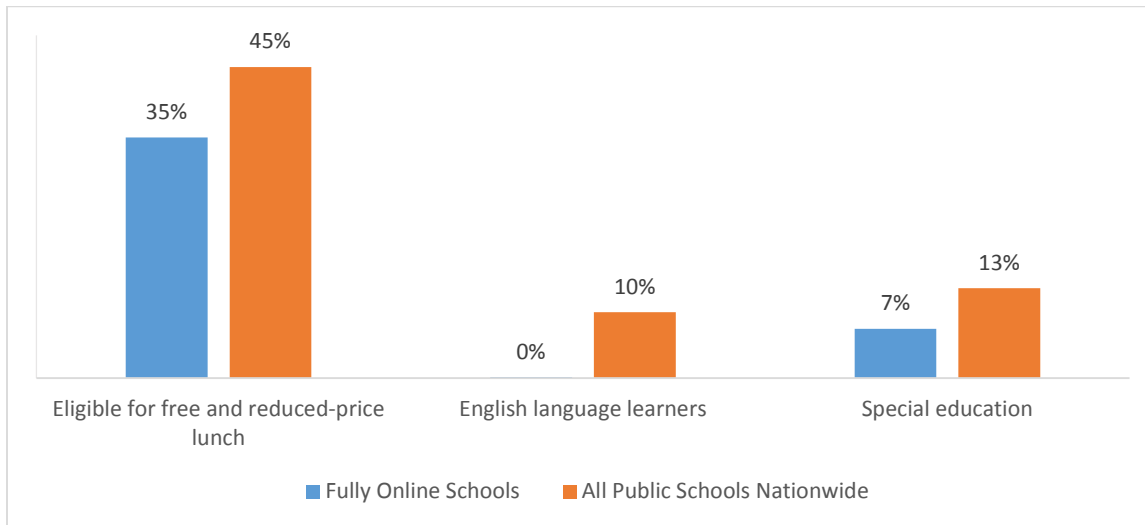
¹⁶ Sludden, J. and Westmaas, L. (2014). *Policy Brief: Revisiting Cyber Charter School Performance*. Available: <http://www.researchforaction.org/wp-content/uploads/2014/11/RFA-Revisiting-Cyber-Charter-Performance-November-2014.pdf>

¹⁷ 2013-14 demographic data from Georgia Department of Education, provided by SCSC.

Free or Reduced-Price Lunch, Special Education, and English Language Learner Status

As of 2010–11, fully online schools nationwide served fewer students who qualified for free and reduced-price lunch, special education, or English language learner status than public schools nationwide. Fully online schools trailed the percentages of free and reduced-price lunch students and English language learners nationwide by about 10 percentage points, and trailed the percentage of special education students by six percentage points.¹⁸

Figure 2. Student Subgroups Served, Fully Online Schools vs. All Public Schools Nationwide



Source: National Education Policy Center. Available: <http://nepc.colorado.edu/files/virtual-2014-all-final.pdf>

Again, this finding did not hold in all states. In Minnesota, for example, a report from the Office of the Legislative Auditor found that the percentages of students eligible for free or reduced-price lunch or special education services at fully online schools were within one percentage point of students enrolled in public schools statewide.¹⁹

Meanwhile, the percentage of students with these characteristics has been increasing in other states. In Colorado, the percentage of students enrolled in fully online schools that qualified for free or reduced-price lunch increased from seven percent in 2003 to 38 percent in 2011.²⁰ For comparison, that figure grew by 10 percentage points (from 31 to 41 percent) for all public school students during the same time frame.²¹ Similarly in Pennsylvania, the percentage of special education students enrolled in fully

¹⁸ Molnar, A. *Virtual schools in the U.S. 2014.*

¹⁹ Minnesota Office of the Legislative Auditor. (2011). *Evaluation Report: K-12 Online Learning.* Available: <http://www.auditor.leg.state.mn.us/ped/pedrep/k12oll.pdf>

²⁰ Heiney, A. et al. *Characteristics.*

²¹ Colorado Department of Education. Fall 2003 Pupil Membership. Available: <http://www.cde.state.co.us/cdereval/rv2003pmlinks>; Colorado Department of Education. Fall 2011 Pupil Membership. Available : <http://www.cde.state.co.us/cdereval/rv2011pmlinks>

online schools grew by 24 percent from 2012–13 to 2013–14, while overall enrollment in fully online schools grew by just six percent.²²



Georgia's Statewide Fully Online Charter Schools:

Free or Reduced Priced Lunch Students and Special Education Students

*Of the three statewide fully online schools in Georgia, two served a higher percentage of students eligible for free or reduced-price lunch than the state, and all had about the same percentage of special education students as the state.*²³

While several fully online schools report serving “at-risk” students (those at risk of not completing their education) and “credit-recovery” students (those working to recover credits for courses they previously failed),²⁴ no formal studies or national data exist to confirm this assertion or verify the extent to which fully online schools serve these students. States do not share a consistent definition for “at-risk,” but publications about how to serve these students indicate they have fallen behind peers for such reasons as having failed classes or grades, drug or alcohol abuse, incarceration, pregnancy, or parenthood.²⁵

Student Turnover

The most consistent finding relating to the students attending fully online schools is that they do not tend to remain enrolled in a given school for extended periods of time. For example, in Colorado, less than 25 percent of kindergarten students who were enrolled in a fully online school in 2008 remained in an online school through 3rd grade, compared to 45 percent of kindergarten students enrolled in brick and mortar schools. The trend continued into the upper grades.²⁶ In fact, another study found that half of all students who enrolled in Colorado's 10 largest fully online schools left within one year.²⁷

Similarly, of the nearly 2,000 students enrolled in fully online schools in Wisconsin in 2005–06, only 184 students, or about 11 percent, were continuously enrolled through 2007–08.²⁸ In Ohio, 49 percent of fully online students stayed for less than a year, compared to 20 percent in the eight largest school

²² Sludden, J. and Westmaas, L. (2014). *Policy Brief: Revisiting Cyber Charter School Performance*. Available: <http://www.researchforaction.org/wp-content/uploads/2014/11/RFA-Revisiting-Cyber-Charter-Performance-November-2014.pdf>

²³ 2013-14 demographic data from Georgia Department of Education provided by SCSC. Note that the number of students with a given disability was suppressed if less than 10, so these data may understate the percentage of students with disabilities served.

²⁴ Watson, J., et al. *Keeping Pace*; Archambault, L., et al. (2010). *Research Committee Issues Brief: An Exploration of At-Risk Learners and Online Education*. International Association for K-12 Online Learning. Available: <http://files.eric.ed.gov/fulltext/ED509620.pdf>; Watson, J. and Gemin, B. (2008). *Promising Practices in Online Learning: Using Online Learning for At-Risk Students and Credit Recovery*. Available: http://www.inacol.org/wp-content/uploads/2012/09/NACOL_CreditRecovery_PromisingPractices.pdf

²⁵ Watson, J. and Gemin, B. *Using Online Learning for At-Risk Students*.

²⁶ Heiney, A. et al. *Characteristics*.

²⁷ Hubbard, B. & Mitchell, N. (2011). Rocky Mountain PBS I-News. “Online K-12 Schools Failing Students but Keeping Tax Dollars.” Available: <http://inewsnetwork.org/2011/10/02/online-k-12-schools-failing-students-but-keeping-tax-dollars/>

²⁸ Wisconsin Legislative Audit Bureau. (2010). *An Evaluation: Virtual Charter Schools, Department of Public Instruction*. Available: <http://legis.wisconsin.gov/lab/reports/10-3full.pdf>

districts and 10 percent in all other traditional district schools.²⁹ The trend is also evident in Minnesota, where 34 percent of fully online students changed schools at least once in 2009–10. Meanwhile, 95 percent of Minnesota students enrolled in brick and mortar, traditional district, and charter schools remained enrolled in one school that year.³⁰

No studies explicitly examined reasons for high turnover rates, though one report shared anecdotal information that technology problems and social isolation caused students to leave fully online schools.³¹ Another report indicated that fully online schools attribute turnover to the same reasons that led students to initially enroll: family mobility, the need to work, and chronic health problems.³²

HOW ARE VIRTUAL SCHOOLS PERFORMING?

This section focuses on national and state trends of virtual school performance. It does not aim to draw conclusions about the efficacy of certain types or characteristics of virtual schools. Rather, it shares key findings from 13 studies relevant to nine states, as well as information gathered from contact with authorizers and experts.

State-specific findings come from:

- State agencies (Colorado Department of Education, State Charter Schools Commission of Georgia, Minnesota Office of the Legislative Auditor, Wisconsin Department of Education, Washington Legislative Audit Bureau);
- Advocacy organizations (Innovation Ohio, Ohio Association for Public Charter Schools, Pennsylvania Clearinghouse for Educational Research, Raise Your Hand Texas);
- University-based researchers (Georgia State University, Center for Research on Educational Outcomes at Stanford University, Harvard Kennedy School, University of Arkansas); and
- News outlets (Milwaukee-Wisconsin Journal Sentinel, Tampa Bay Times).

How do virtual schools compare to brick and mortar schools?

Research on school accountability suggests using multiple measures—at a minimum, student proficiency, student growth, and college and career readiness—to evaluate student outcomes at all schools, including virtual schools.³³ Accordingly, this section summarizes how virtual schools have performed on five measures:

1. **Student proficiency:** the percentage of students demonstrating proficiency in reading and math as measured by state assessments;
2. **School performance according to state accountability measures:** the rating a school receives as calculated by the state accountability system;

²⁹ Ohio Alliance for Public Charter Schools. (2009). *E-Schools Show Superior Results*. Available: http://www.oapcs.org/files/EschoolStudy_final6-24-09.pdf

³⁰ Minnesota Office of the Legislative Auditor. *Evaluation Report*.

³¹ Hubbard, B. & Mitchell, N. (2011). "Online K-12 Schools Failing Students."

³² Ohio Alliance for Public Charter Schools. *E-Schools Show Superior Results*.

³³ Locke, G., Ableidinger, J., Hassel, B. C., & Barrett, S. K. *Virtual Schools*.

3. **Student growth:** the amount of academic progress students make between two points in time, typically between two state assessment administrations;
4. **Graduation rate:** the percentage of high school students who receive a diploma within four years; and
5. **Dropout rate:** the percentage of high school students who permanently withdraw from school before receiving a diploma.

According to most of these measures, virtual schools are not performing well on average.

Student proficiency at virtual schools can be difficult to measure. Because of high rates of student attrition, course completion rates (the percent of students who finish the online courses they start) tend to be low at virtual schools. If a struggling student withdraws from a course, end-of-year assessments will not capture his proficiency level. For example, the course completion rate among fully online students in Minnesota was 63 percent in 2009–10, down from 84 percent in 2006–07. The Minnesota Department of Education required only fully online schools to report course completion data, so we cannot compare these rates to other schools in the state.³⁴

Course completion can also be a challenge at supplemental online programs. A study of students enrolled in Florida Virtual School (FLVS) supplemental courses found that 66 percent of students withdrew within a month, but of the students who stayed, 81 percent successfully completed the course.³⁵ While supplemental online programs are different from fully online schools because they often serve students who receive most instruction at brick and mortar schools, findings suggest that proficiency rates and student growth at fully online schools would likely be lower if all of the students who began as part of the cohort were actually tested.

Student Proficiency

Our literature scan found two rigorous studies of fully online student proficiency that controlled for prior test scores or other student characteristics.

The first study used a matched pairs design to examine performance at one fully online charter school in Arkansas. It found that students in grades 5–8 who had been enrolled for two years increased their percentile rank—their rank in state assessment performance among all students statewide—by 10 percentile points in math and by four percentile points in literacy. Matched students who were not enrolled at the school gained 1.6 percentile points in math and lost 1.2 percentile points in literacy during the same period. The study excluded first year students, to avoid "transition shock."³⁶

The second study used a value-added model to estimate school impact on student proficiency at 16 Georgia charter schools in 2012–13, including three fully online state charter schools. The study found that, among the three fully online charter schools, value-added estimates of student proficiency in English language arts and reading were above state averages and value-added estimates for

³⁴ Minnesota Office of the Legislative Auditor. *Evaluation Report*.

³⁵ Catalanello, R. & Sokol, M. (2014). Tampa Bay Times. "Success of Florida Virtual School is Difficult to Measure." Available: <http://www.tampabay.com/news/education/k12/success-of-florida-virtual-school-is-difficult-to-measure/1209497>

³⁶ Lueken, M. & Rittner, G. (2012). University of Arkansas. *Internal Evaluation of the Arkansas Virtual Academy School*. Available: <http://www.edweek.org/media/uofarkansasstudy.pdf>

mathematics were well below state averages (see highlight box, “Georgia’s Statewide Fully Online Charter Schools: Value Added Analysis”, for a more detailed description of method and findings).



Georgia’s Statewide Fully Online Charter Schools: Value Added Analysis

Value-added analysis uses data on prior performance and student characteristics to predict a student’s test scores. The difference between predicted and actual test scores represents the “estimated effect” of the school a student attends on her or his performance. SCSC’s value-added analysis averages the estimated effect for all students in a school to generate school-level estimates. In the two fully online schools that serve elementary and middle grades, proficiency value-added estimates in English language arts and reading were consistently above the state average in most grade levels. Similarly, students in 9th grade at all three fully online schools were above the state average in 9th grade literature. In mathematics, however, value-added estimates were consistently below state averages at all three schools, and in most grade levels were below the tenth percentile.³⁷

Additionally, six studies offered descriptive statistics on student proficiency on state assessments:

- Two found that student proficiency at fully online schools trailed the state in both reading and math. For example, in Colorado, elementary students enrolled at fully online schools consistently performed below state peers in reading and math from 2008 to 2011.³⁸ In Ohio in 2009–10, the average fully online charter school’s Performance Index Score, which is calculated based on student proficiency on tested subjects, was lower than 97 percent of traditional school district scores.³⁹
- A third study found that Washington State students enrolled in supplemental online courses performed worse than the statewide average in all tested subjects.⁴⁰
- The other three studies were less conclusive. Compared with all public school students statewide, full-time online students in Minnesota had significantly lower proficiency rates in math, but about the same proficiency rates in reading.⁴¹ Likewise, fully online charter students in Wisconsin outperformed state peers in reading but lagged state peers in math.⁴²
- And though it examined supplemental coursework rather than a fully online program, a study of Florida Virtual School found that students who completed supplemental Algebra I and English I

³⁷ Note that one fully online charter school, Georgia Cyber Academy, was under the same charter as a brick and mortar school, Odyssey School, in 2012-13, and therefore student results are reported as one entity. However, 97% of students were enrolled in the fully online program. Sass, T.R. (2014). *The Performance of State Charter Schools in Georgia, 2012-13*. Commissioned by the State Charter Schools Commission of Georgia and the Governor’s Office of Student Achievement. Available:

http://scsc.georgia.gov/sites/scsc.georgia.gov/files/related_files/site_page/GOSA_SCSC_Report_02-25-2014.pdf

³⁸ Heiney, A. et al. *Characteristics*.

³⁹ Innovation Ohio. (2011). *Ohio’s E-Schools: Funding Failure; Coddling Contributors*. Available:

<http://69.195.124.74/~innovby5/wp-content/uploads/2011/05/IO.051211.eschools.pdf>

⁴⁰ Nelson, K. *Online Learning Annual Report 2012-13*.

⁴¹ Minnesota Office of the Legislative Auditor. *Evaluation Report*.

⁴² Wisconsin Legislative Audit Bureau. *An Evaluation: Virtual Charter Schools*.

courses performed at the same level or somewhat better on state tests than their peers statewide, when controlling for prior test scores.⁴³

School Performance According to State Accountability Measures

Although each state accountability system is unique, and therefore criteria for acceptable academic performance may differ widely among states, school accountability ratings represent another tool for assessing fully online school performance.⁴⁴

When we reached out to NACSA survey respondents who reported authorizing at least one fully online school, eight authorizers provided accountability ratings for 16 schools. No schools exceeded state or authorizer standards. Seven schools met the state or authorizer standard,⁴⁵ and nine did not meet the standard or had required improvement plans.

According to the NEPC study, only 34 percent of fully online schools nationwide received state accountability ratings that state education agencies deemed “acceptable” in 2012–13.⁴⁶

Four state-specific studies also pointed to lackluster performance:

- In 2009–10, only three of the 23 fully online charter schools in Ohio, which comprised eight percent of all fully online enrollments in the state, received a state rating of “effective” or better. Among traditional public school students, 75 percent were enrolled at a school rated “effective” or better.⁴⁷
- Similarly, a 2012 study found that only one fully online school in Texas had ever maintained an “academically acceptable” rating for two consecutive years, and it later fell to “academically unacceptable” and closed. At the time of the study, none of the three fully online schools in the state had received either of the state’s two highest ratings.⁴⁸
- According to a Wisconsin news report, four of the eight fully online schools that received state report card grades for 2012–13 did not “meet expectations.”⁴⁹

⁴³ Chingos, M. & Schwerdt, G. (2014). Harvard Kennedy School. *Virtual Schooling and Student Learning: Evidence from the FL Virtual School*. Available:

http://www.hks.harvard.edu/pepg/PDF/Papers/PEPG14_02FVS_Chingos_Schwerdt.pdf

⁴⁴ For more information about the state accountability systems mentioned in this report, see descriptions in each state’s ESEA flexibility request. Available: <http://www2.ed.gov/policy/elsec/guid/esea-flexibility/index.html>

⁴⁵ Three of the schools that met state standards were in Texas, where fewer than 10 percent of rated schools did not meet standards.

⁴⁶ Molnar, A. *Virtual schools in the U.S. 2014*.

⁴⁷ Innovation Ohio. *Ohio’s E-Schools*.

⁴⁸ Raise Your Hand Texas, (2012). *Virtual Schools in Texas: Good for Kids or Merely Good for Profit?* Available: <http://www.raiseyourhandtexas.org/wp-content/uploads/2012/10/virtual-schools-white-paper.pdf>

⁴⁹ The other 20 schools in the state did not receive ratings because they had been operating for less than three years, had fewer than 20 students, or enrolled students not tested by the state assessments.

Oliver, E. (2013). Milwaukee-Wisconsin Journal Sentinel. “Half of virtual charter schools judged in new report cards miss mark.” Available: <http://www.jsonline.com/news/education/half-of-virtual-charter-schools-judged-in-new-report-cards-miss-mark-b99125899z1-229471831.html>

- In 2013–14, no fully online charter schools in Pennsylvania received satisfactory scores on the state rating system, and all received scores below the median score for both traditional and charter brick and mortar schools.⁵⁰



Georgia’s Statewide Fully Online Charter Schools: Accountability Measures

In 2012–13, none of Georgia’s three statewide fully online schools: 1) met all of the standardized assessment goals included in their respective charter contracts; 2) outperformed the state average score on the state accountability metric, the College and Career Readiness Performance Index; or 3) outperformed the state on the SCSC’s value-added performance analysis, which evaluates a school’s impact while controlling for student characteristics.

Student Growth

We identified four studies that examined student academic growth in fully online schools, and one attempted to control for prior achievement by using a matched pairs study design. Of the four studies, one found that students enrolled in fully online schools made more growth than their peers in traditional public schools, one concluded the opposite, and two found that fully online students showed less growth in math than state peers but not necessarily less growth in reading. In Ohio, five of seven fully online charter schools serving students statewide met or exceeded state expectations for student progress in 2008, compared to only two of the eight largest districts.⁵¹ Meanwhile, the matched pairs study that looked at Pennsylvania student learning gains between 2007 and 2010 found that growth in academic achievement was significantly lower among the eight fully online charter schools in the state than traditional public schools.⁵²

Student growth trends in Minnesota were different for math and reading in 2008–09 and 2009–10. In math, fully online students made about half as much growth as their peers statewide in both years. In reading, however, fully online students grew about two-thirds as much as state peers in 2008–09 but made about the same growth in 2009–10.⁵³ Student growth at the three fully online state charter schools in Georgia was also different for math and reading. In 2012–13, student growth at these schools trailed the state median in math but exceeded the state median in English language arts and reading (see highlight box, “Georgia’s Statewide Fully Online Charter Schools: Student Academic Growth”, for a more detailed description of findings).



Georgia’s Statewide Fully Online Charter Schools: Student Academic Growth

Of the three fully online charter schools serving statewide attendance zones in Georgia in 2012–13, student growth in English language arts and reading were dramatically different compared to student growth in mathematics. In the two fully online schools that serve elementary and middle grades, student growth in English language arts and reading was consistently above the median state performance in most grade levels, and growth among 9th grade students at all schools was significantly above the state average in 9th

⁵⁰ Sludden, J. and Westmaas, L. *Policy Brief*.

⁵¹ Ohio Alliance for Public Charter Schools. *E-Schools*.

⁵² Center for Research on Education Outcomes. (2011). *Charter School Performance in Pennsylvania*. Stanford University. Available: http://credo.stanford.edu/reports/PA%20State%20Report_20110404_FINAL.pdf

⁵³ Minnesota Office of the Legislative Auditor. *Evaluation Report*.

*grade literature. In mathematics, however, student growth was consistently below state median performance, and in most grade levels dramatically lower.*⁵⁴

Graduation Rates

Fully online students are far less likely to graduate from high school in four years compared to public school students overall. In 2012–13, 44 percent of fully online students graduated in four years, compared to 79 percent of all public school students nationwide.⁵⁵

Two state-specific studies also showed a large difference between graduation rates at fully online schools and statewide rates:

- In 2010–11, 23 percent of high school students enrolled in fully online schools in Colorado graduated in four years, 50 percentage points lower than the statewide graduation rate.⁵⁶
- In the same year in Ohio, five of seven fully online charter schools that served students statewide had graduation rates lower than Cleveland Municipal Schools, which graduated 54 percent of its students—the lowest graduation rate of all traditional school districts in Ohio.⁵⁷

None of the studies reviewed looked at five-year or six-year graduation rates.



Georgia's Statewide Fully Online Charter Schools: Graduation Rates

In 2012–13, only two of three fully online schools operating in Georgia had a graduating cohort. Neither school's graduation rate exceeded 27 percent that year. In comparison, the statewide graduation rate was 72 percent in 2012–13.

Dropout Rates

Students enrolled in fully online schools were also more likely to drop out:

- A study of fully online students in Minnesota found that 10 percent of 11th grade students and 25 percent of 12th grade students dropped out, compared to only one percent and three percent, respectively, statewide.⁵⁸
- In 2010–11, the dropout rate among full-time online students in Colorado was 13 percent, while statewide only three percent of students dropped out of school.⁵⁹
- A study of 10 fully online charter schools in California also found that students dropped out at higher rates than peers at 10 traditional public schools that served similar students.⁶⁰

⁵⁴ Sass, T.R. *The Performance of State Charter Schools in Georgia*.

⁵⁵ Molnar, A. *Virtual schools in the U.S. 2014*.

⁵⁶ Heiney, A. et al. *Characteristics*.

⁵⁷ Innovation Ohio. *Ohio's E-Schools*.

⁵⁸ Minnesota Office of the Legislative Auditor. *Evaluation Report*.

⁵⁹ Heiney, A. et al. *Characteristics*.

⁶⁰ Darrow, R. (2010). *A Comparative Study between Online Charter High Schools and Traditional High Schools in California*. Unpublished Dissertation. California State University, Fresno. Available: <https://robsdoc.wikispaces.com/file/view/DarrowDissertation.OLinCa.May2010.pdf>

Have certain virtual schools produced exemplary student outcomes?

The data presented thus far show that on the whole, student performance at fully online schools is lackluster. For this section, we aimed to determine whether any virtual schools consistently produce strong results. Disappointingly, we found none.

However, as noted throughout this study, we did find evidence of individual fully online schools that are achieving better results than others. For example:

- Fully online schools' proficiency rates in reading were the same or better than statewide rates in Georgia, Michigan, and Wisconsin;
- Three fully online charter schools in Ohio received state ratings of "effective" or better for 2009–10;
- Students at one fully online school in Arkansas showed more improvement in math and reading than statewide peers;
- Five fully online charter schools in Ohio met or exceeded expectations for student growth in 2008;
- At least seven fully online charter schools in Louisiana, Texas, Utah, and Wisconsin met state standards in 2013–14, according to authorizers that responded to the 2014 NACSA survey.

Closely investigating characteristics of individual schools with promising results was not within the scope of this report, so we do not know if there were any common traits among the fully online schools that seem to perform better than others. A logical next research step is to closely examine aspects of successful schools for replicable characteristics or practices. This research could answer additional questions about virtual school performance.

RECOMMENDATIONS FOR FUTURE RESEARCH

We identified studies that held answers to the SCSC's initial questions, and also found several additional areas that could lead to a better understanding of student performance at fully online schools, useful for strengthening accountability practices for these schools. These areas fall into three categories:

1. **What else can we learn about students who attend fully online schools?**
 - Several fully online school operators indicate that they serve at-risk and credit-recovery students, which could impact overall school performance. But what portion of the typical fully online school's enrollment do these students comprise? What common characteristics do these students possess?
 - We can conclude that many fully online schools do have higher than normal student turnover rates, but what factors drive these high rates? Do high turnover rates contribute to dropout rates at fully online schools?
 - Why do student demographics at some fully online schools reflect those of the states in which they are located, while student demographics at other fully online schools do not? What is different about the schools with more diverse student populations?

2. What characteristics are common to virtual schools that are performing better than others?
 - Do other virtual school models (i.e., supplemental or blended) have characteristics that produce strong student results?
 - Do state or charter authorizer accountability standards impact fully online school performance?
 - Do the instructional approaches at fully online schools positively impact student performance in certain subject areas more than others? What explains our limited findings that suggest some virtual schools seem to achieve better results in reading and literacy than in math?
 - Are students in some grade levels more successful at fully online schools than others?
 - Does the level of student and family support available impact performance at fully online schools?
 - Do online schools that can select their student populations show better results than those that must accept all students?

3. How do existing policies impact and respond to virtual school performance?
 - What are the consequences for the many fully online schools that are not meeting state or authorizer standards? Are these consequences being implemented? Are these schools closing, remediating, or changing providers? What accountability strategies hold promise for improving low virtual school performance?
 - Have states or authorizers developed accountability policies specific to fully online schools that serve high numbers of at-risk or credit recovery students? How are they defining “at-risk” or “credit recovery”?
 - Is there a relationship between the amount of funding virtual schools receive and student performance?

Student performance at fully online schools has considerable room for improvement. Seeking answers to these questions could move the field closer to identifying practices and policies that would support improved student outcomes in these schools.

SUMMARY GRID OF STUDIES REVIEWED

The following summary grid lists the studies reviewed for this publication. We do not cite each study in this report, but all studies included here had at least one finding that was relevant to the SCSC’s research questions. Each entry in the grid includes a brief citation (with link to source, where possible) and summary information about the study’s geographic focus, design, and student population observed. We also indicate the study’s relevance to the four research strands covered in the memo: where virtual schools operate (“geography”), what types of students they serve (“demographics”), how they are performing (“performance”), and whether there are providers with better results than others (“provider quality”). The last column summarizes key findings.

Brief Citation	Relevant State(s)	Type of School	Study Design and Population	Relevance	Highlights
Catalanello, R. & Sokol, M. (2014). Success of Florida Virtual School is Difficult to Measure . Tampa Bay Times.	FL	Supplemental (state-run)	News article on Florida Virtual School (FLVS)-provided data and challenges with comparing online course performance to courses provided in traditional schools.	<input type="checkbox"/> Geography <input type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> 66% of students who enrolled in an FLVS course withdrew within a month; of the students who stayed, 81% successfully completed the course.
Center for Research on Education Outcomes. (2011). Charter School Performance in Pennsylvania . Stanford University.	PA	Fully online (charter)	Matched pairs study that followed Grades 3-8 student performance in math and reading from 2007–2010.	<input type="checkbox"/> Geography <input type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> In every subgroup with significant effects, student growth in math and reading was significantly lower in the eight fully online schools studied than in brick and mortar charters and traditional public schools.
Chingos, M. & Schwerdt, G. (2014). Virtual Schooling and Student Learning: Evidence from the Florida Virtual School . Harvard Kennedy School.	FL	Supplemental (state-run)	Matched pairs study of 10 th grade student performance on Algebra and English state exams in 2008–09.	<input type="checkbox"/> Geography <input type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> When controlling for pre-high school characteristics, part-time FLVS students performed the same as or slightly better than non-FLVS on Algebra and English state exams. Study did not find evidence of negative impacts on student subgroups [gender, race, Free and Reduced-price Lunch (FRL), Special Education (SPED), and English Language Learners (ELL)].

Brief Citation	Relevant State(s)	Type of School	Study Design and Population	Relevance	Highlights
Darrow, R. (2010). A Comparative Study between Online Charter High Schools and Traditional High Schools in California . Unpublished Dissertation. California State University, Fresno.	CA	Fully online (charter)	Comparative study of fully online charter high school student proficiency rates and dropout rates in 2007–08 and 2008–09. Comparison group consisted of 10 traditional high schools with similar demographics.	<input type="checkbox"/> Geography <input type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> Proficiency rates in English Language Arts (ELA) were higher at the traditional comparison high schools than at fully online charter high schools. The fully online charter and traditional high schools in the study scored above statewide average. Fully online charter high school students dropped out at higher rates than traditional high school peers.
Heiney, A. et al. (2012). Characteristics of Colorado's Online Students . Colorado Department of Education.	CO	Fully online (district-run and charter)	Longitudinal analysis (2003–2011) of demographic and performance data for K-12 students enrolled in fully online schools.	<input checked="" type="checkbox"/> Geography <input checked="" type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> The percent of economically disadvantaged students enrolled in online schools grew from 7% to 38% over the study period. Students consistently performed below state peers in reading and math. Graduation rates were significantly lower than state average (23% vs. 74% in 2011). Student mobility rates were high (e.g. 21% of the fully online kindergarten students enrolled in 2008 were still in the same school in 2011, vs. 45% of peers not enrolled online schools). Students enrolled for four+ years showed better performance than more mobile peers.
Hubbard, B. & Mitchell, N. (2011). Online K-12 Schools Failing Students but Keeping Tax Dollars . Rocky Mountain PBS I-News.	CO	Fully online (unspecified)	News article reviewed 2008–2010 state data on student retention and mobility at online schools.	<input type="checkbox"/> Geography <input type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> Half of all students who enrolled in the largest fully online programs in fall 2008 left within a year. Only a quarter of these students remained after two years. Fully online schools produced three times as many dropouts as they did graduates. One of every eight fully online students dropped out of school, which is four times the state average.

Brief Citation	Relevant State(s)	Type of School	Study Design and Population	Relevance	Highlights
Innovation Ohio. (2011). Ohio's E-Schools: Funding Failure; Coddling Contributors.	OH	Fully online (charter)	Reviewed 2009–10 state ratings and graduation rates for fully online charter schools	<input type="checkbox"/> Geography <input type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> Only three of 23 fully online charter schools received a state rating of "effective" or better for 2009–10. Five of seven fully online schools that served students statewide had graduation rates lower than Cleveland Municipal Schools, which had the lowest graduation rate of all traditional public school districts in the state. Ohio Connections Academy had a graduation rate of 89% and received a rating of "excellent."
Means, B., et al. (2010). Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies. U.S. Department of Education.	WV, LA, MD, Taiwan	Supplemental (unspecified)	Analysts screened 1,000 studies of online learning to find those that (a) contrasted an online to a face-to-face condition, (b) measured student learning outcomes, (c) used a rigorous research design, and (d) provided adequate information to calculate an effect size.	<input type="checkbox"/> Geography <input type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> Among the five studies reviewed that looked at K-12 learning and met criteria for validity, the mean effect of virtual learning was not significantly positive.
Minnesota Office of the Legislative Auditor. (2011). Evaluation Report: K-12 Online Learning.	MN	Fully online (district-run, charter); Supplemental (district-run)	Review of 2006–07 through 2009–10 enrollment and performance data for students enrolled both part-time and full-time in online schools. Study also included discussions of students' online learning experiences and online school accountability.	<input type="checkbox"/> Geography <input checked="" type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> Fully online students were less likely than all students statewide to complete courses they start. Fully online students were more likely to drop out of school than all students statewide. Students at fully online schools were more mobile than peers in traditional districts and charter schools. In 2009–10, 34% of fully online students changed schools at least once, vs. 95% statewide. FRL and SPED students enrolled in fully online schools at similar rates to all schools statewide. Fully online students made less progress in math than all students statewide for two consecutive years. They kept pace with students statewide in reading in one of the two years analyzed.

Brief Citation	Relevant State(s)	Type of School	Study Design and Population	Relevance	Highlights
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. National Education Policy Center.	Numerous	Fully online (unspecified)	Review of federal and state data on student characteristics, school finance, and school performance data for 48 K12 Inc.-operated schools.	<input type="checkbox"/> Geography <input checked="" type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input checked="" type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> • K12 Inc. schools enroll similar percentages of black students, “substantially” more white students, and fewer Hispanic students relative to public schools in the states where the company operates. • The percentages of K12 Inc. students qualifying for FRL, ELL, or SPED status trailed the same-state comparison group. • 28% of K12 Inc. schools met Average Yearly Progress (AYP) in 2010–11, vs. 52% nationwide. However, this percentage was similar to performance at all schools operated by full-time education management organizations (27% met AYP that year). • 36 of the 48 fully online K12-operated schools received state ratings in 2010–11, and only seven of those received ratings that indicated “satisfactory” performance. • The on-time graduation rate at K12 Inc. schools is 49%, vs. 79% for the same-state comparison group.
Molnar, A., et al. (2014). Virtual Schools in the U.S. 2014: Politics, Performance, Policy, and Research Evidence. National Education Policy Center.	All	Fully online (state-run, district-run, charter)	National review of fully online policy/political landscape, research, student characteristics, and performance. Study used data from 2010–11 through 2012–13.	<input type="checkbox"/> Geography <input checked="" type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> • Fully online schools serve more white students and fewer FRL, SPED, and ELL students than all public schools nationwide. • Fully online schools tend to perform worse against state accountability measures, and tend to graduate fewer students, when compared to all public schools nationwide.
Nelson, K. Online Learning Annual Report 2012-13. (2013). Office of the Superintendent of Public Instruction.	WA	Supplemental (district-run)	Review of all online learning activity in the state, including demographics and achievement among K-12 students taking online courses.	<input type="checkbox"/> Geography <input type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> • Students taking online courses trailed state peers on all tested subjects in 2012–13. • White students were over-represented and Hispanic and Asian students were under-represented compared to non-online students statewide.

Brief Citation	Relevant State(s)	Type of School	Study Design and Population	Relevance	Highlights
Ohio Alliance for Public Charter Schools. (2009). E-schools Show Superior Results.	OH	Fully online (charter)	Reviewed 2008 state value-added results for fully online charter schools.	<input type="checkbox"/> Geography <input type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> Five of seven fully online charter schools that serve students statewide met or exceeded state expectations for value-added.
Oliver, E. (2013). Half of virtual charter schools judged in new report cards miss mark. Milwaukee-Wisconsin Journal Sentinel.	WI	Fully online (charter)	News article on publicly-released school report card grades.	<input type="checkbox"/> Geography <input type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input checked="" type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> Four of the eight fully online charter schools that received state report card grades for 2012–13 did not “meet expectations.” One fully online charter school “exceeded expectations”—Hayward Center for Individualized Learning. The school serves 115 students and has a weekly in-person enrichment class. Another 20 fully online charters did not receive grades because they either had not been operating for three+ years or served students who do not take state tests.
Rauh, W.J. (2011). The Utility of Online Choice Options: Do Purely Online Schools Increase the Value to Students? Education Policy Analysis Archives Vol. 19, No. 34.	SC	Fully online (charter)	Expected utility model examines “value conferred” to high school students at South Carolina Virtual Charter School (SCVCS) vs. traditional brick and mortar schools in the state. “Value” is defined as likelihood of better results on the High School Assessment Program than the state average.	<input type="checkbox"/> Geography <input checked="" type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> 84% of students at SCVCS were white non-Hispanic, vs. 54% of students statewide. 51% of SCVCS students had been enrolled at a private school or were home schooled prior to enrolling. Students in high-poverty brick and mortar schools gain more expected value from switching to a fully online charter school than staying in their school, i.e. they are more likely to score above the state average, according to the expected utility model. Students in low- to median-poverty schools gain more expected value from staying at their school than switching to fully online.

Brief Citation	Relevant State(s)	Type of School	Study Design and Population	Relevance	Highlights
Raise Your Hand Texas (2012). Virtual Schools in Texas: Good for Kids or Merely Good for Profit?	TX	Fully online (district-run, charter)	Review of demographic, financial, and performance data on fully online schools in Texas. Demographic and performance data pertain to all students enrolled.	<input type="checkbox"/> Geography <input checked="" type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> In 2010–11, fully online schools enrolled a higher percentage of white students, about the same percentage of black students, lower percentages of Hispanic, FRL, SPED, and ELL students than state averages. One fully online school in Texas had maintained an “academically acceptable” rating for two consecutive years, which later fell to “academically unacceptable;” the school closed. None of the three fully online schools in the state had received an “exemplary” or “recognized” rating.
Rittner, G. (2012). Internal Evaluation of the Arkansas Virtual Academy School. University of Arkansas.	AR	Fully online (charter)	Matched pairs study of student growth in math and literacy of Arkansas Virtual Academy cohort from 2008–09 through 2010–11. Students were in Grades 3-6 at study initiation and Grades 5-8 at study conclusion.	<input type="checkbox"/> Geography <input type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> The students in the cohort increased their rank in state assessment performance among all students statewide in both math (by 10 percentile points) and literacy (by four percentile points).
Sass, T.R. (2014). The Performance of State Charter Schools in Georgia, 2012-13. State Charter Schools Commission of Georgia and the Governor’s Office of Student Achievement.	GA	Fully online (charter)	Value-added study that estimated school impact on student proficiency at 16 Georgia charter schools in 2012–13, including three fully online charter schools. The value-added analysis controlled for prior test scores and several student characteristics.	<input type="checkbox"/> Geography <input type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> School impact on average student proficiency across all tested subjects was below the state average at two of the fully online schools and was not statistically different from the state average at the third school. Student growth across all tested subjects was below the state average at all three fully online schools. At all three fully online schools, school impact on student proficiency and student growth in reading, English language arts, and 9th grade literature exceeded the state average.

Brief Citation	Relevant State(s)	Type of School	Study Design and Population	Relevance	Highlights
Sludden, J. and Westmaas, L. (2014). Policy Brief: Revisiting Cyber Charter School Performance. Pennsylvania Clearinghouse for Educational Research.	PA	Fully online (charter)	Review of 2012–13 and 2013–14 characteristics and performance data among all students enrolled in fully online charters.	<input type="checkbox"/> Geography <input checked="" type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> Fully online charter schools served more white students and fewer black students than brick and mortar charter schools. Race/ethnicity at fully online charter schools closely mirrored that of traditional public schools. The number of SPED students at fully online charter schools increased 25% between 2012–13 and 2013–14, vs. a 6% increase at traditional public schools. The average Student Performance Profile score at fully online schools trailed traditional public schools by 28 points in 2013–14.
Wang, Y. & Decker, J. (2014). Can Virtual Schools Thrive in the Real World? TechTrends Vol. 58, No. 6: 57-62.	OH	Fully online (charter)	Review of Performance Index scores and state rankings among fully online charter schools vs. traditional public, 2007–2011.	<input type="checkbox"/> Geography <input type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input checked="" type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> Performance Index scores were higher at traditional schools and showed greater improvement over five years than fully online charter schools. No fully online charter schools received the highest state rank, “Excellence with Distinction,” between 2007 and 2011. One-third of fully online charter schools were designated “Academic Watch” or “Academic Emergency” between 2007 and 2011. Ohio Connections Academy received the second-highest ranking, “Excellent” in 2009, but dropped to “Effective” in 2010 and 2011.
Watson, J., et al. (2014). Keeping Pace with K-12 Digital Learning: An Annual Review of Policy and Practice. Evergreen Education Group.	All	Fully online (state-run, district-run, charter); Supplemental (state-run, district-run, charter); Blended	National review of digital learning activity, including growth of different types of school models, policy developments, and the level of digital learning activity in each state.	<input checked="" type="checkbox"/> Geography <input type="checkbox"/> Demographics <input type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> 30 states have fully online schools that serve students statewide (including state-run, district-run, and charter). 26 states have fully online charter schools. 26 states run supplemental programs. State profiles in the report offer state-specific information about types of virtual schools operating and recent policy developments.

Brief Citation	Relevant State(s)	Type of School	Study Design and Population	Relevance	Highlights
Wisconsin Legislative Audit Bureau. (2010). An Evaluation: Virtual Charter Schools, Department of Public Instruction.	WI	Fully online (charter)	Review of 2005–2008 student enrollment data, revenue and expenditures, virtual school instruction, and academic achievement.	<input type="checkbox"/> Geography <input checked="" type="checkbox"/> Demographics <input checked="" type="checkbox"/> Performance <input type="checkbox"/> Provider Quality	<ul style="list-style-type: none"> • Between 2005–06 and 2007–08, only 11% of fully online charter students stayed continuously enrolled. • The percentage of fully online charter students who received SPED services was lower than the percentage statewide by at least 10 percentage points from 2002–03 through 2007–08. • From 2005–06 through 2007–08, fully online charter schools scored better in reading but worse in math on state tests when compared to public school students statewide.