Stated Briefly

Academic outcomes for North Carolina Virtual Public School credit recovery students

D. T. Stallings ***Daniel Stanhope***
Sara P. Weiss ***Matthew Starcke***
Robert H. Maser ***Difei Li***

The Friday Institute for Educational Innovation, North Carolina State University

This study examined the North Carolina Virtual Public School's (NCVPS) credit recovery program and other common credit recovery options available to students in the state. The study compared short- and longer-term academic outcome data across credit recovery options, as well as correlations between the academic outcomes and characteristics of enrolled students. Overall, NCVPS students were less likely than other credit recovery students to be economically disadvantaged, and a greater proportion of NCVPS students entered high school proficient in math and reading. However, there was little difference in short-term success rates (such as end-of-course exam scores) between NCVPS credit recovery students and other credit recovery students. NCVPS students were less likely than other credit recovery students to graduate, but those who did graduate were more likely to graduate in four years. Among NCVPS students, outcomes for racial/ethnic minority students and economically disadvantaged students differed from those for other students.

This brief summarizes the findings of Stallings, D. T., Weiss, S. P., Maser, R. H., Stanhope, D., Starcke, M., & Li, D. (2016). *Academic outcomes for North Carolina Virtual Public School credit recovery students* (REL 2017–177), Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southeast. That report is available at http://ies.ed.gov/ncee/edlabs/projects/project.asp?projectID=4462.

ies NATIONAL CENTER FOR EDUCATION EVALUATION AND REGIONAL ASSISTANCE
Institute of Education Sciences
U.S. Department of Education

REL SOUTHEAST
Regional Educational Laboratory
At Florida State University

Why this study?

There is growing interest in North Carolina—and across much of the country—in strengthening the presence of online learning in all public schools. In 2013 the North Carolina General Assembly directed the state to transition to digital learning tools that support anywhere-anytime, personalized, and student-centered learning by 2017 (North Carolina General Assembly, 2013). The current study explores two facets of that transition: the extent to which online learning already plays a role in providing new options for students at risk of dropping out, and the range and scope of unaddressed or underaddressed needs of students in these online credit recovery programs. In addition to expanding understanding of participation in and outcomes related to online credit recovery, this study also demonstrates the range of online credit recovery data available for future analyses and how the data can be used.

Viable credit recovery options are of great interest to the district-level personnel who are directly responsible for deciding which academic options to make available to students. Though North Carolina dropout rates have fallen and graduation rates have risen in recent years (North Carolina Department of Public Instruction, 2015a, 2015b), considerable public pressure remains for school districts to continue to improve these rates. In addition to the state-provided online credit recovery option offered through the North Carolina Virtual Public School (NCVPS), school districts use traditional options such as school-year and summer school course repetition in a face-to-face classroom setting, as well as third-party online credit recovery programs, to improve graduation rates. This report addresses the need for a better understanding of the similarities and differences across these programs.

What the study examined

This study addressed four primary research questions using data for 2008/09–2011/12:

1. What are the features of and enrollments in North Carolina Virtual Public School (NCVPS) credit recovery courses and the other credit recovery programs available to students in North Carolina, and what are the characteristics of students who enroll in NCVPS and other credit recovery options?

2. How do short-term success rates (as measured by scores on end-of-course exam retests) for students who complete NCVPS credit recovery courses compare with success rates for students who repeat a course through other credit recovery options?

3. After completing an NCVPS credit recovery course, how do mid- to longer-term success rates (such as staying on track and graduating) compare with success rates for students who repeat a course through any other credit recovery option?

As an extension to research questions 2 and 3, the study also analyzed outcomes for student subgroups within the NCVPS credit recovery sample:

4. To what extent, if any, do success rates in subsequent exams, courses, dropout rates, and graduation rates for NCVPS credit recovery students vary by student subgroup?

See Stallings et al. (2016) for descriptions of the major distinguishing features of the credit recovery options and the appendix of the current report for the data and methods used to answer these questions.

What the study found

The study first focused on information about online and face-to-face credit recovery options in North Carolina, as well as comparisons of student characteristics by credit recovery option. The study then used simple comparisons to note differences between various short- and longer-term academic outcomes, followed by statistical analyses to identify possible relationships between those outcomes and various characteristics of credit recovery students.

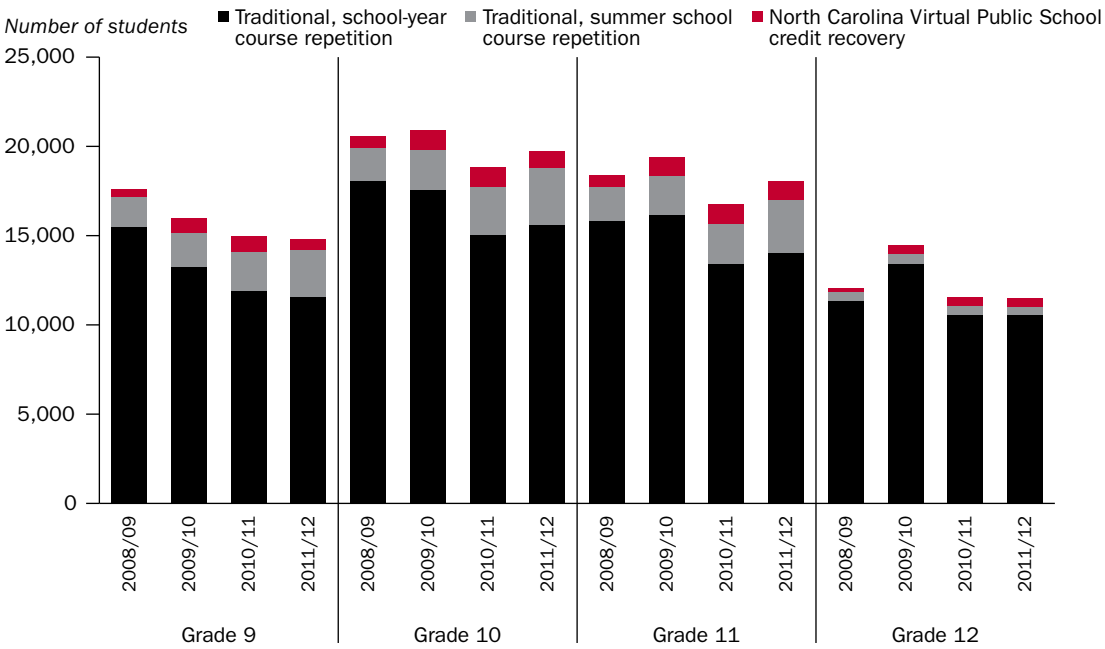
Traditional, school-year course repetition remains the most common credit recovery option in North Carolina, but online and summer school credit recovery enrollments are growing fast

Courses retaken in a traditional, face-to-face classroom setting during the school year are the most common credit recovery options available to North Carolina public school students. How these options are implemented (such as which courses are offered, how long students must participate to earn credit, and per student cost) varies across school districts and school years.

While traditional, school-year course repetition continues to be the most frequently used credit recovery option in North Carolina, both traditional summer school and NCVPS credit recovery options have made enrollment gains in recent years (figure 1).[1]

Overall, traditional, school-year credit recovery courses are by far the most common credit recovery option, but enrollment in these courses declined from 2008/09 to 2011/12 at every grade level; the declines ranged from 7 percent in grade 12 to 25 percent in grade 9. Summer school credit recovery courses are

Figure 1. Overall, traditional, school-year credit recovery courses are by far the most common credit recovery option, 2008/09–2011/12



Note: Because of missing data or errors in the administrative data related to students' grade level, enrollment totals in figures 1, 2, and 3 do not match. Traditional, school-year course repetition and traditional, summer school course repetition refer to repetition of face-to-face courses.

Source: Authors' analysis of transcript data provided by the North Carolina Virtual Public School and the Education Research Data Center.

more common than NCVPS credit recovery courses. In 2011/12 summer school courses accounted for 16–18 percent of total credit recovery courses in grades 9–11 and 4 percent in grade 12, while NCVPS credit recovery courses accounted for 4–6 percent of total credit recovery courses across all grades. From 2008/09 to 2011/12 enrollment increased in both summer school (52 percent) and NCVPS credit recovery courses (67 percent).

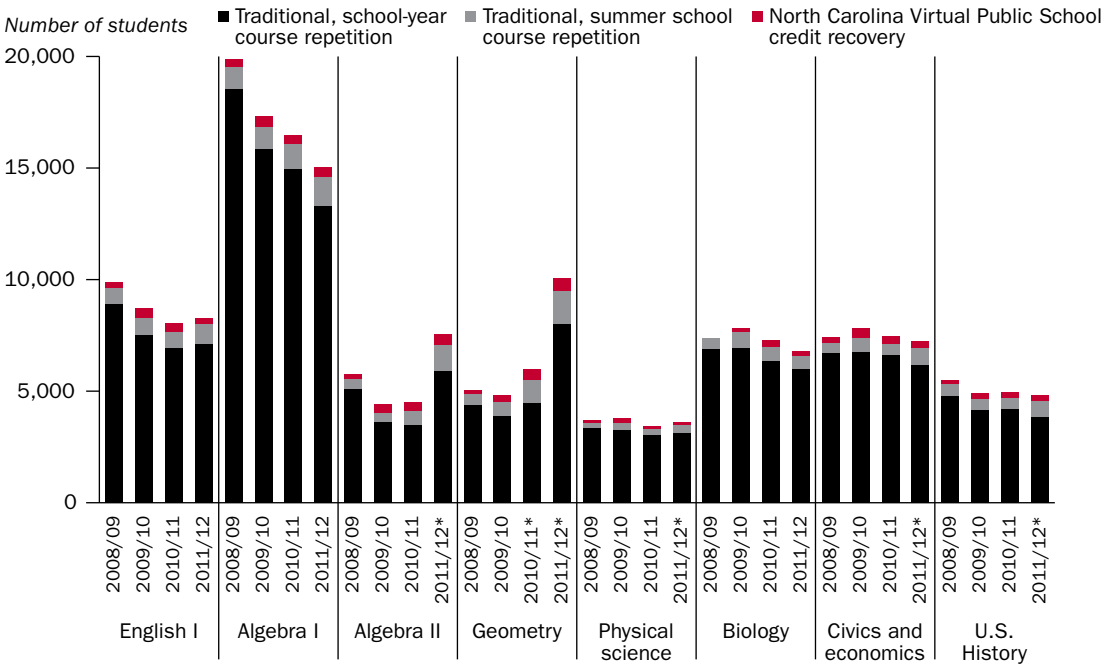
The same general pattern holds by individual course. Traditional school-year courses are the most common, summer school courses are the second most common, and NCVPS courses are the least common (figures 2 and 3). However, enrollment in all NCVPS credit recovery courses grew from 2008/09 to 2010/11. It declined slightly from 2010/11 to 2011/12 but still accounted for between 2.2 percent (World History) and 6.4 percent (Algebra II) of enrollments.

North Carolina Virtual Public School students were less likely than their peers in traditional credit recovery programs to be economically disadvantaged, and a greater proportion entered high school proficient in math and reading

While NCVPS credit recovery students were similar to other credit recovery students in many ways, there were some notable differences across student subgroups.

Race/ethnicity. Enrollment in NCVPS was similar to enrollment in traditional school-year credit recovery courses across all racial/ethnic groups. However, Black students consistently accounted for a larger

Figure 2. For individual credit recovery courses with an end-of-course exam, traditional, school-year courses are the most common, summer school courses are the second most common, and North Carolina Virtual Public School courses are the least common, 2008/09–2011/12

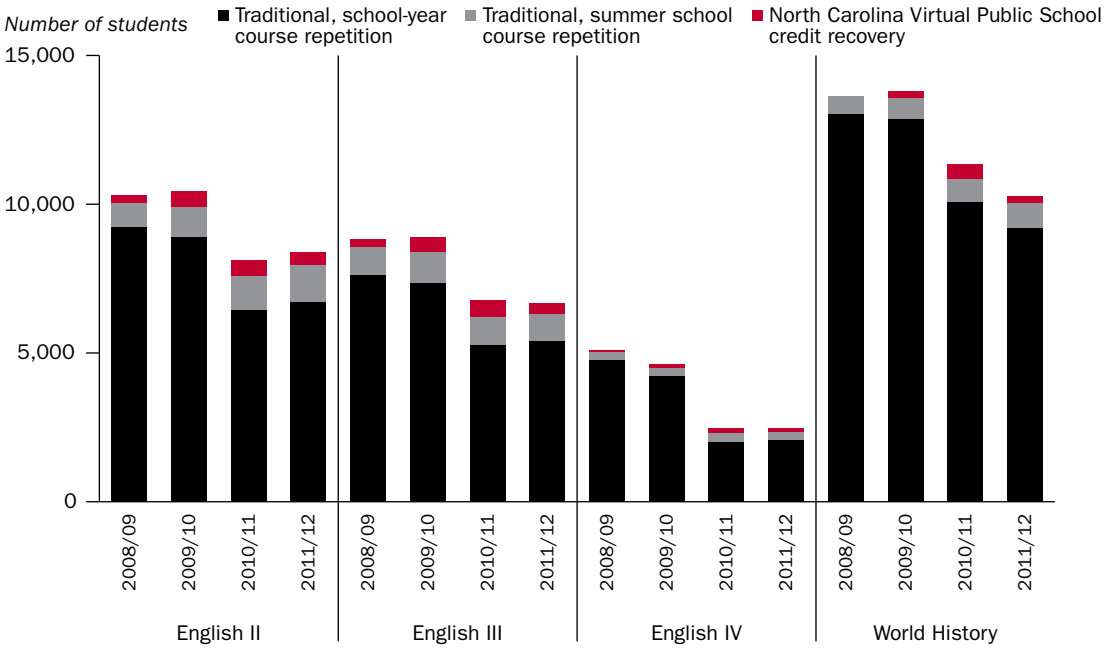


* Indicates that a North Carolina end-of-course exam was not administered; end-of-course exams were discontinued for some courses during the study period.

Note: Because of missing data or errors in the administrative data related to students' grade level, enrollment totals in figures 1, 2, and 3 do not match. Traditional, school-year course repetition and traditional, summer school course repetition refer to repetition of face-to-face courses.

Source: Authors' analysis of transcript data provided by the North Carolina Virtual Public School and the Education Research Data Center.

Figure 3. For individual credit recovery courses without an end-of-course exam, traditional, school-year courses are the most common, summer school courses are the second most common, and North Carolina Virtual Public School courses are the least common, 2008/09–2011/12



Note: Because of missing data or errors in the administrative data related to students' grade level, enrollment totals in figures 1, 2, and 3 do not match. Traditional, school-year course repetition and traditional, summer school course repetition refer to repetition of face-to-face courses.

Source: Authors' analysis of transcript data provided by the North Carolina Virtual Public School and the Education Research Data Center.

proportion of enrollment in summer school courses than in either of the other credit recovery options (41–50 percent), and White students consistently accounted for a smaller proportion of enrollment in summer school courses (34–40 percent) than in the other options (table 1).

Economically disadvantaged status. Students who were economically disadvantaged (as proxied by eligibility for the federal school lunch program) accounted for a larger proportion of enrollment in summer school credit recovery courses than in either of the other credit recovery options (table 2).

Students receiving special education services. The proportion of students receiving special education services was similar across credit recovery options and fairly stable over time. Between 2008/09 and 2011/12 students receiving special education services accounted for 14–18 percent of enrollment in traditional school-year and NCVPS credit recovery courses and 16–17 percent of enrollment in summer school courses.

Academic characteristics of enrolled students. In most years, for both math and reading, the percentage of students reaching proficiency on the grade 8 end-of-grade exams (the last state exam taken before entering high school) was higher among students in NCVPS credit recovery courses than among students in other credit recovery options (table 3).

Table 1. Race/ethnicity of credit recovery students in North Carolina, by credit recovery option, 2008/09–2011/12 (percent)

Credit recovery option and race/ethnicity	2008/09	2009/10	2010/11	2011/12
North Carolina Virtual Public School credit recovery				
Black	45.3	44.1	42.3	41.6
Hispanic	6.0	8.6	11.2	13.7
Other	4.2	4.3	4.5	6.1
White	44.5	43.1	40.1	38.1
Traditional, school-year course repetition				
Black	40.6	43.0	43.6	42.0
Hispanic	9.8	10.9	12.7	13.9
Other	5.5	5.4	6.2	6.4
White	44.0	40.7	37.6	37.7
Traditional, summer school course repetition				
Black	48.3	49.7	50.1	48.3
Hispanic	7.5	7.3	10.3	12.3
Other	4.2	5.1	5.4	5.5
White	39.8	38.0	34.2	33.9

Note: Black includes African American. Hispanic includes Latino. Other includes Asian, American Indian/Alaskan Native, Hawaiian Native/Pacific Islander, and multiracial. Traditional, school-year course repetition and traditional, summer school course repetition refer to repetition of face-to-face courses.

Source: Authors' analysis of administrative data provided by the Education Research Data Center.

Table 2. Percentage of credit recovery students in North Carolina who are economically disadvantaged, by credit recovery option, 2008/09–2011/12 (percent)

Credit recovery option	2008/09	2009/10	2010/11	2011/12
North Carolina Virtual Public School credit recovery	47.6	51.9	52.1	55.9
Traditional, school-year course repetition	47.3	56.7	64.0	67.5
Traditional, summer school course repetition	50.0	57.0	60.3	63.9

Note: Traditional, school-year course repetition and traditional, summer school course repetition refer to repetition of face-to-face courses.

Source: Authors' analysis of administrative data provided by the Education Research Data Center.

Table 3. Percentage of credit recovery students reaching proficiency on the grade 8 end-of-grade exam in North Carolina, by content area and credit recovery option, 2008/09–2011/12

Content area and credit recovery option	2008/09	2009/10	2010/11	2011/12
Math				
North Carolina Virtual Public School credit recovery	48.0	53.3	58.0	64.1
Traditional, school-year course repetition	53.2	47.8	49.0	57.7
Traditional, summer school course repetition	45.2	48.5	57.9	63.7
Reading				
North Carolina Virtual Public School credit recovery	77.6	66.6	52.7	49.2
Traditional, school-year course repetition	80.2	70.5	47.6	41.0
Traditional, summer school course repetition	69.9	55.5	43.3	45.1

Note: Traditional, school-year course repetition and traditional, summer school course repetition refer to repetition of face-to-face courses.

Source: Authors' analysis of administrative data provided by the Education Research Data Center.

North Carolina Virtual Public School students scored lower on state end-of-course exam retests after credit recovery than did traditional credit recovery students, but the differences were small once differences between student subgroups were taken into account

The study compared two short-term academic outcomes for NCVPS credit recovery students—scaled scores and achievement levels on standardized North Carolina end-of-course exams retaken after completing credit recovery—to outcomes for all other credit recovery students (traditional face-to-face students, summer school students, and other identifiable credit recovery students, such as those who participated in third-party credit recovery options not provided by the state). At the individual course level and across all courses, the NCVPS credit recovery students in the sample years reached proficiency on end-of-course exam retests at lower rates (0.3–19.6 percentage points) and scored lower on end-of-course exam retests after credit recovery (0.1–2.6 points) than did other credit recovery students (table 4).

Regression analysis was applied to adjust for other possible influences that might be related to the differences in retest scores (such as credit recovery option, student demographics, and prior scores on the same exam). NCVPS credit recovery students still appeared to be less likely to score as high as or to reach proficiency as often as other credit recovery students after credit recovery. The differences were statistically significant, but because the effect sizes related to the differences were very small (all below 0.005), the differences were not particularly meaningful.

In other words, while there was no indication that participation in NCVPS credit recovery was more beneficial in terms of shorter-term outcomes for those students than was participation in other credit recovery

Table 4. Credit recovery students' performance on North Carolina end-of-course exam retest after completing credit recovery, by course and credit recovery option, 2008/09–2011/12

Outcome and course	NCVPS credit recovery students	All other credit recovery students[a]	Difference
Students reaching proficiency on end-of-course exam retest (percent)			
English I	34.6	34.9	–0.3
Algebra I	29.5	36.1	–5.6
Algebra II	45.5	55.6	–10.1
Geometry	29.9	49.5	–19.6
Physical Science	30.8	45.0	–14.2
Biology	26.9	41.2	–14.3
Civics & Economics	27.1	36.0	–8.9
U.S. History	31.7	43.1	–11.4
Average scaled score on end-of-course exam retest			
English I	142.8	142.9	–0.1
Algebra I	143.3	144.7	–1.4
Algebra II	145.1	146.9	–1.8
Geometry	144.2	146.8	–2.6
Physical Science	144.3	146.8	–2.5
Biology	142.3	144.6	–2.3
Civics & Economics	144.0	145.3	–1.3
U.S. History	145.7	147.0	–1.3

NCVPS is North Carolina Virtual Public School.

a. Includes traditional face-to-face students, summer school students, and other identifiable credit recovery students, such as those who participated in third-party credit recovery options.

Source: Authors' analysis of administrative data provided by the Education Research Data Center.

options, there also was no definitive indication that it might have been notably detrimental (see the appendix for a brief explanation of statistical significance and effect sizes; see Stallings et al., 2016, for these and other regression results).

Longer-term outcomes for North Carolina Virtual Public School credit recovery students relative to outcomes for other credit recovery students were mixed

The study compared four longer-term education outcomes for NCVPS and other credit recovery options:

- Student re-enrolled in school the following year.
- Student reached proficiency in the subsequent course in the course series—an indicator derived by stringing together the sequence of students' courses in their longitudinal records.
- Student graduated from high school.
- Student graduated from high school in four years (that is, on-time graduation).

Re-enrollment and subsequent-course proficiency. Between 2008/09 and 2011/12 NCVPS credit recovery students re-enrolled in school the following year at a rate of 91.7 percent, 2.7 percentage points higher than other credit recovery students. NCVPS credit recovery students' academic success rates in the next course in each sequence, relative to students who completed other credit recovery options, varied between 3.9 percentage points lower and 2.4 percentage points higher (table 5).

As with the short-term outcomes analysis, regression analysis was applied to determine whether the differences would remain after other possible explanatory factors (such as differences in special education status and school attendance rates) were accounted for. NCVPS credit recovery students still appeared to be more likely than their peers to re-enroll in school the year following their credit recovery coursework, but the regression analysis eliminated the positive results for academic success in the next course in the English II–III and the English III–IV course sequence.

Graduation. NCVPS credit recovery students graduated at a lower rate (76.0 percent) than did other credit recovery students (77.7 percent; table 6). Even after regression analyses were applied to control for several other explanatory variables, NCVPS credit recovery students were still statistically significantly less likely to graduate than other credit recovery students were. However, among credit recovery students who graduated, NCVPS credit recovery students were more likely than other credit recovery students to graduate on time.

Table 5. Longer-term in-school outcomes among credit recovery students in North Carolina after completing credit recovery, by credit recovery option, 2008/09–2011/12 (percent)

Outcome	NCVPS credit recovery students	All other credit recovery students[a]	Difference
Student re-enrolls following year	91.7	89.0	+2.7
Student passes next course in sequence			
English II after English I credit recovery	67.1	68.0	–0.9
English III after English II credit recovery	73.6	71.2	+2.4
English IV after English III credit recovery	88.4	86.9	+1.5
Algebra II or Geometry, after Algebra I credit recovery	60.8	64.7	–3.9

NCVPS is North Carolina Virtual Public School.

a. Includes traditional face-to-face students, summer school students, and other identifiable credit recovery students, such as those who participated in third-party credit recovery options.

Source: Authors' analysis of administrative data provided by the Education Research Data Center.

Table 6. Longer-term graduation outcomes among credit recovery students in North Carolina after completing credit recovery, by credit recovery option, 2008/09–2011/12 (percent)

Outcome	NCVPS credit recovery students	All other credit recovery students[a]	Difference
Student graduates	76.0	77.7	–1.7
If student graduates, graduates on time (4 years or less)	31.5	24.3	+7.2

NCVPS is the North Carolina Virtual Public School.

a. Includes traditional face-to-face students, summer school students, and other identifiable credit recovery students, such as those who participated in third-party credit recovery options.

Source: Authors' analysis of administrative data provided by the Education Research Data Center.

Among North Carolina Virtual Public School credit recovery students, outcomes for racial/ethnic minorities and economically disadvantaged students differed from those for other students

The study also examined academic outcomes within the population of NCVPS credit recovery students only. The goals were to note differences between outcomes for different student subgroups and identify possible correlations between these outcomes and key student characteristics. Findings from these analyses included:

- Racial/ethnic minority NCVPS credit recovery students frequently had higher success rates than White NCVPS credit recovery students, not only in terms of re-enrolling the year following credit recovery but also in terms of graduating and graduating on time.
- Economically disadvantaged NCVPS students had lower graduation rates after credit recovery than did NCVPS students who were not economically disadvantaged.

These outcomes persisted even after regression analyses controlled for other possible explanatory variables (such as differences in special education status and school attendance rates). See Stallings et al. (2016) for more details on these regression results.

Implications of the study findings

While there were almost no clear and strong positive associations between participation in NCVPS credit recovery courses and the short- and longer-term academic outcomes examined relative to participation in other credit recovery options, there also appeared to have been few meaningfully negative associations.

As programs like NCVPS continue to grow (NCVPS is now the second-largest online school in the nation, after Florida's; Hughes, Zhou, & Petscher, 2015) and states continue to transition to digital learning, it will become increasingly important to expand understanding of how to best support that transition.

Limitations of the study

The large number of cases examined reduces the chance of the analyses being affected by unusual results from a single year, but the size of the dataset does not offset several important limitations.

First, because the data were not derived in a controlled experimental environment, the analyses cannot be used to make any direct conclusions about the quality of online credit recovery courses or of their overall efficacy in improving student academic outcomes. However, the analyses do provide the kind of information needed to understand how much and what kind of data are available on the topic, as well as to identify some of the causal research questions the available data may allow future studies to consider.

Second, the state funding formula for NCVPS credit recovery changed in the 2011/12 school year. The study's analytical design was not affected by this funding change, as all credit recovery students in the sample were enrolled before the funding change. However, participation, and thus the correlations, might change under the new funding regime.

Third, end-of-course exams in North Carolina do not cover all subjects; the tested subjects have changed over time, and the exams themselves have recently changed. Anticipating future results on the basis of past testing scenarios is not always practicable.

Finally, the samples used to conduct the analyses are not necessarily representative of all online credit recovery programs or participants.

Appendix. Data and methodology

This appendix includes an overview of the data used for this report, as well as of the methods used to complete the analyses.

Data

This section outlines the sources of the data used for this report and provides details about the student data sample.

Sources. The data for this study are from three primary sources: North Carolina Virtual Public School (NCVPS), which provided a description of its credit recovery program and student enrollment data that could be matched to state administrative data; longitudinal, administrative student records provided by the North Carolina Department of Public Instruction and hosted and maintained by the Education Research Data Center at Duke University; and the seven third-party credit recovery program vendors in operation in the state, who provided descriptions of their programs. Administrative records were at the student level and included many individual demographic variables—for example, age, race/ethnicity, and economically disadvantaged status (as proxied by eligibility for the federal school lunch program)—and academic variables —for example, performance on standardized state end-of-course exams and course enrollment.

Sample. The sample included all identifiable students who took credit recovery courses offered by NCVPS between 2008/09—the first full academic year of NCVPS's program—and 2011/12, as well as all identifiable students whose credit recovery involved re-enrolling in a course during the regular school year (traditional face-to-face credit recovery), during summer school, or, when possible, as part of some other credit recovery program, such as participation in a program provided by a third-party vendor. For some research questions, student records from the preceding year (2007/08) were included to provide baseline (pre-participation) measures for some students.

Because students can fail more than one course and can therefore choose more than one type of credit recovery, for most analyses data were organized by instances of course enrollment instead of by student. Thus a single student could have separate records in the data for credit recovery courses taken online or face to face, as well as separate records for courses taken in different years. The sample of all credit recovery students included about 14,900 instances of NCVPS credit recovery enrollment between fall 2008 and spring 2012, about 329,900 instances of traditional school-year credit recovery enrollment, and about 33,900 instances of summer school credit recovery enrollment (see figures 1–3 in the main text). Courses included in the analyses were limited to the 12 offered by NCVPS as part of its credit recovery program —English I, English II, English III, English IV, Algebra I, Algebra II, Geometry, Physical Science, Biology, Civics and Economics, U.S. History, and World History.

The sample used for analyses of differences among NCVPS credit recovery students included only the 12,900 students for whom complete administrative data could be matched to evidence of participation in NCVPS credit recovery.

In some cases a subset of students was excluded for some research questions, because the students had not been enrolled long enough to experience some of the mid- or longer-term outcomes of interest. In other cases students were excluded when their records could not be matched to demographic information required for analysis. However, rates of matching students to the demographic and transcript data needed for many of the analyses were very high (for example, 93 percent of NCVPS credit recovery students were identifiable in the official state administrative dataset).

Quantitative analysis methodology

This section outlines the strategies used to determine categorization of each record of enrollment in a credit recovery course and provides details about the regression analyses conducted after completion of this categorization.

Identifying NCVPS online credit recovery courses. Because the North Carolina Department of Public Instruction administrative database does not contain an online course identifier and because individual districts are responsible for encoding student enrollment, the process of identifying the various instances of credit recovery required several steps. The first step was to match NCVPS's records to the state records, resulting in a very high match rate (93 percent).

Identifying traditional school-year and summer school credit recovery courses. Next, records of all other courses for the years of interest were selected, then reduced to include only those that matched the 12 NCVPS credit recovery courses. Despite differences in the course titles and in course coding schemes across districts, all districts include a universal initial four-number course code that identifies the discipline (first two numbers) and the course (second two numbers). By identifying instances of targeted courses that were repeated (and for which initial enrollment included an indication of no credit earned), the study team could deduce (from information about the semester in which the repeated courses were taken) whether the courses were traditional (that is, taken in the fall or spring semester) repetitions or summer school repetitions. Because credit recovery requires repeating courses and because the transcript data begin in 2007/08, the credit recovery course analyses are limited to 2008/09–2011/12.

Overview of quantitative analyses. For all components of research questions 2 and 3, the study team used multivariate ordinary least squares regression models for continuous outcomes (for example, scaled test scores) and multivariate logistic regression models for binary outcomes (for example, whether a student graduated). All regression analyses compared two populations: students who took an NCVPS credit recovery course and credit recovery students who did not.

Analyses of short-term outcomes. The population for these analyses included all students who retook a state standardized end-of-course exam after completion of credit recovery. The study team used a multivariate ordinary least squares regression to predict students' course-specific normalized end-of-course exam scores following NCVPS credit recovery participation and multivariate logistic regression to predict whether a student reached proficiency following credit recovery.

Analyses of mid- and longer-term outcomes. The population for these analyses included all students for whom dropout data or re-enrollment data were available after taking a credit recovery course. Analyses related to success in subsequent courses were limited to the Algebra I→Algebra II/Geometry sequence and the English I→English II→English III→English IV sequence. All analyses for the components of research question 3 employed multivariate logistic regressions.

Statistical significance and effect sizes. When the results of a regression analysis with many potential outcomes are statistically significant (that is, not likely to have happened by chance), there is a temptation to assume that the results are also meaningful. What is often more important is the size of the predicted result. The effect size helps put into context how meaningful a statistically significant result is. This study considers effect sizes between 0.2 and 0.5 to be small, effect sizes between 0.5 and 0.8 to be medium, and effect sizes of 0.8 and above to be large (Cohen, 1988).

Note

1. There is a fourth, smaller group of credit recovery students in North Carolina: those enrolled in third-party (that is, not state-provided) credit recovery programs. However, because limitations in the data prevent accurate identification of all those students, the third-party credit recovery students who were identifiable for the study period may not be demographically representative of all third-party online credit recovery students in those years. Therefore, the analyses of enrollment presented in this section and the section that follows do not include data for those students. Identifiable third-party credit recovery students are included with traditional school-year and summer school credit recovery students as part of the non-NCVPS credit recovery comparison group used in the analyses of academic outcomes described in the second half of this brief.

References

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Hughes, J., Zhou, C., & Petscher, Y. (2015). *Comparing success rates for general and credit recovery courses online and face to face: Results for Florida high school courses* (REL 2015–095). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southeast. http://eric.ed.gov/?id=ED559978

North Carolina Department of Public Instruction. (2015a). *2014 NC high school graduation rate highest in state history.* Raleigh, NC: Author. Retrieved June 27, 2015, from http://www.ncpublicschools.org/newsroom/news/2014–15/20140904–01.

North Carolina Department of Public Instruction. (2015b). *Consolidated data report, 2013–14.* Raleigh, NC: Author. Retrieved June 27, 2015, from http://www.ncpublicschools.org/docs/research/discipline/reports/consolidated/2013–14/consolidated-report.pdf.

North Carolina General Assembly. (2013). House Bill 44, Session Law 2013–12. Retrieved August 12, 2016, from http://www.ncleg.net/EnactedLegislation/SessionLaws/PDF/2013–2014/SL2013–12.PDF.

Stallings, D. T., Weiss, S. P., Maser, R. H., Stanhope, D., Starcke, M., & Li, D. (2016). *Academic outcomes for North Carolina Virtual Public School credit recovery students* (REL 2016–177), Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southeast. Retrieved from http://ies.ed.gov/ncee/edlabs.

REL 2017–217

The National Center for Education Evaluation and Regional Assistance (NCEE) conducts unbiased large-scale evaluations of education programs and practices supported by federal funds; provides research-based technical assistance to educators and policymakers; and supports the synthesis and the widespread dissemination of the results of research and evaluation throughout the United States.

January 2017

This report was prepared for the Institute of Education Sciences (IES) under Contract ED-IES-12-C-0011 by Regional Educational Laboratory Southeast administered by the Florida Center for Reading Research, Florida State University. The content of the publication does not necessarily reflect the views or policies of IES or the U.S. Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

Stallings, D. T., Weiss, S. P., Maser, R. H., Stanhope, D., Starcke, M., and Li, D. (2017). *Stated Briefly: Academic outcomes for North Carolina Virtual Public School credit recovery students* (REL 2017–217), Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southeast. Retrieved from http://ies.ed.gov/ncee/edlabs.

This report is available on the Regional Educational Laboratory website at http://ies.ed.gov/ncee/edlabs.

The Regional Educational Laboratory Program produces 7 types of reports