



PROFILE OF THE SOUTH CAROLINA TEACHER WORKFORCE FOR 2018-2019

WORKING PAPER SERIES II:
WHAT WE KNOW ABOUT THE SOUTH CAROLINA
TEACHER WORKFORCE

Tammiee S. Dickenson, Xumei Fan, Fan Pan, Gina M. Kunz, and Thomas E. Hodges
University of South Carolina | September 2020



sc-teacher.org



info@sc-teacher.org



ABSTRACT

The United States is facing a national crisis in education with K-12 teacher shortages. The same is true for the state of South Carolina. To fully address teacher shortages, it is important to have a firm handle on the current landscape of the teacher workforce. Such datasets exist at the national level; however, until recently, there was no South Carolina-centric database. The South Carolina Teacher Education Advancement Consortium through Higher Education Research (SC-TEACHER) Center was commissioned to ascertain, through comprehensive research, the impact of teacher education recruitment, preparation, and retention activities on teacher effectiveness in South Carolina. The center is developing a South Carolina-centric longitudinal data system to contribute to an understanding of statewide issues of teacher turnover, while reconciling innovative efforts from across the state to better assess the impact those efforts are having in addressing teacher recruitment and retention. In this paper, we share findings from a study that was conducted to define the landscape of the South Carolina K-12 teacher workforce. The study examined key demographics of the teachers as well as the geographic context of the schools in which they teach and the socioeconomic context comparing various teacher demographics by the poverty level in which the schools were situated. Compared to national data, South Carolina had more Black teachers, fewer Hispanic teachers, more female teachers, more teachers with advanced degrees, and lower average teacher salary. However, the percentage of teachers of color in South Carolina is under representative of the student population suggesting the need for a focus on diversity in recruitment efforts for teacher preparation programs. Considering differences between schools in rural and urban locations of the state, rural schools tend to have teachers with more teaching experience, lower teacher performance on the assessment portion of the state teaching evaluation, and employment of more international teachers than urban schools. Comparing higher and lower poverty schools in the state, higher poverty schools tend to have more Black teachers, fewer White teachers, lower teacher salary, more international teachers, and fewer National Board-certified teachers than higher poverty schools.

INTRODUCTION

Our nation is facing an educational crisis with teacher shortages for K-12. The state of South Carolina is no exception to the teacher shortage crisis. Teacher shortages at the national and state levels leave many students taught by underqualified and ill-prepared candidates, placing their education at risk. Many view teacher shortages as primarily a recruitment challenge, as fewer individuals are expressing interest in the teaching profession (CERRA, 2018); however, roughly 67% of teacher vacancies exist due to teachers leaving the profession prior to retirement (Carver-Thomas & Darling-Hammond, 2017). Like other southern states, South Carolina's teacher turnover rates are higher than other areas of the U.S. In fact, the Center for Educator Recruitment, Retention, and Advancement (CERRA) 2017–2018 Supply and Demand Report provides compelling evidence of South Carolina's expanding teacher shortage crisis. The trend is clear. Fewer candidates are graduating from South Carolina's teacher education programs, while concurrently, a growing number of teachers are leaving the classroom during/at the end of the first year, and during/within the first five years of teaching (CERRA, 2018). Given the growing exodus from the profession, it is clear we cannot simply recruit teachers to fill the increasing number of vacancies without simultaneously “plugging the leaking dam” by understanding and addressing root causes of teacher turnover.

Based on the need to simultaneously increase teacher recruitment while dramatically improving retention in South Carolina, the South Carolina Teacher Education Advancement Consortium through Higher Education Research (SC-TEACHER) Center, housed in the College of Education at the University of South Carolina, was established to develop a centralized database for South Carolina-centric teacher data. Thus, the goal of SC-TEACHER is to understand, through comprehensive research, the impact of teacher education recruitment, preparation, and retention activities on teacher effectiveness as determined by the South Carolina Teaching Standards 4.0 rubric assessment and longevity in South Carolina. The center is developing a South Carolina-centric longitudinal data system to contribute to an understanding of statewide issues of teacher turnover, while reconciling innovative efforts from across the state to better understand the impact those efforts are having in addressing teacher recruitment and retention. To this end, the center's ongoing work focuses on investigating unique features of South Carolina's teacher shortage, as well as exploring novel teacher preparation programs and practices (e.g., embedded/immersed methods courses, extended student teaching, residency programs, ongoing professional development, and instructional coaching for early career teachers) that may serve to address systemic issues of teacher retention.

One of the first steps necessary in gaining an understanding of the teacher shortage in South Carolina was to identify the landscape of the teacher workforce in the state. To accomplish this goal, we gathered and analyzed South Carolina-centric data. Thus, the primary focus of this current study was to identify the demographics of K-12 teachers in South Carolina. The SC-TEACHER project team obtained data on South Carolina certified staff from the South Carolina Department of Education. A variety of information on educator backgrounds and experiences were available. This report summarizes information on key variables for the South Carolina teacher workforce from the 2018-2019 school year. Only certified staff employed in teaching positions for which data could be merged between files received were included in the analysis. The variables are organized into four main areas: personal demographics, information on teacher preparation, teaching experience, and teacher evaluation results.

Descriptive Background Demographics

Demographic variables available in the South Carolina teacher data files include gender and race/ethnicity. The majority of teachers in the United States are female, particularly in elementary grades. Some research suggests differences exist in expectations of male and female students by teacher gender. Research suggests that male students who lack male role models may benefit from having male teachers. Regarding the impact of teachers' gender on students' learning outcomes, literature revealed different findings. Some studies (e.g., Winters et al., 2013) found that having a female teacher had a positive impact on the learning outcomes of female students, while other studies (e.g., Ehrenberg et al., 1995) found no relationship between having a female teacher and female students' learning outcomes. Antecol et al. (2015) used data from a randomized experiment and found that having a female teacher was related to lower math scores of female students at primary schools in disadvantaged neighborhoods. However, these researchers did not find any associations between having a female teacher and male students' test scores (Antecol et al., 2015).

Literature suggests that a match between the race and ethnicity of teachers and students leads to better student outcomes, particularly in high-poverty schools with significant at-risk student populations (e.g., Ogbu, 1992). There are at least theoretical rationales that are commonly cited on why racially matched teacher role models have positive educational benefits for students of color. First, students of color benefit from seeing role models of their race in positions of authority (Villegas & Lucas, 2004). Second, teachers of color are more likely to have high expectations of students of color (Ferguson, 2003), who tend to be more sensitive to teacher expectations than middle-class White students (McKown & Weinstein, 2002). Third, as teachers tend to draw on their own cultural contexts when selecting instructional strategies and interpreting student behavior, disparities in disciplinary actions of students of color may be reduced by having teachers from diverse backgrounds.

Information on Teacher Preparation

The 2018 Census confirmed that American schools are serving an increasing number of students, and the National Center for Educational Statistics (2013) indicated that student enrollments are projected to rise. In this way, teacher shortages will increase the demand for teachers who have the necessary skills to create healthy student learning environments. Teacher preparation programs enable teachers to learn sophisticated abilities to improve academic outcomes for students. Research shows that the quality of the teacher is the most critical factor. Teachers influence students' academic outcomes (e.g., Goldhaber, 2002), and the effect of having a high-quality teacher can be profound. For example, Hanushek (2004) shows that a student with a very high-quality teacher will achieve a learning gain of 1.5 grade-level equivalents. There are fierce debates about how to provide high-quality trainings to teachers. Some researchers state that easing entry into teaching is necessary to attract strong candidates (U.S. Department of Education, 2002). However, other researchers say that investing in high-quality teacher preparation will better serve our nation's students (National Commission on Teaching and America's Future, 2006). Although researchers agree that teacher quality is an essential factor, there is limited research about the relationship between specific teacher credentials and teacher quality. Most researchers agree that there is no robust research basis for understanding how to best prepare teachers. In this paper, we consider several variables associated with teacher preparation in the database for South Carolina teachers. These include whether the teachers were prepared through an alternative certification route, have an international teaching certificate, have National Board certification, and completed a post-baccalaureate degree.

Post-Baccalaureate Degree

Previous studies show mixed findings of the effect of an advanced degree on student achievement. The advanced degree includes a master's or a doctoral degree. Ferguson and Ladd (2006) indicate the positive impact of an advanced educational level on elementary and middle students' performance. Goldhaber and Brewer (2008) suggest that advanced degrees' general measures are not related to high school students' achievement. However, in different subjects, subject-specific advanced degrees were found to impact student test scores positively in those subjects. Rowan, Chiang, and Miller (2010) further document the importance of subject-specific advanced degrees for high school students. Their study includes whether the teachers had majored in the same subject in undergraduate and graduate school. The results showed that teachers holding both a bachelor and a master's degree in the same subject area taught were the most beneficial for students' achievement. However, some studies (e.g., Eberts & Stone, 2014; Rowan, Correnti, & Miller, 2012) find either no discernable effect or even a negative effect of teachers holding advanced degrees on elementary student achievement.

Alternative Certification

According to the U.S. Department of Education (2003), alternative certification could increase teachers' quantity and quality. Alternative certification is sufficient to produce qualified teachers because candidates participate in intense sessions after a full day teaching, and each candidate can get help from two supervisors (Ovando & Trube, 2000). Teachers with alternative certification often tend to be employed in schools with more significant minority and economically disadvantaged students (Fuller & Alexander, 2003). Supporters point out that alternative certification is appropriate for nontraditional candidates, who are typically older and have non-education degrees and non-teaching experiences (Dill & Stafford-Johnson, 2002). There is limited research about alternative certification. Some studies compare alternative certification with traditional teacher education. The Thomas B. Fordham Foundation (1999) views that alternative certification training is superior to conventional university-based teacher education because the conventional teacher education requires many courses unrelated to classroom teaching. However, some research indicates that alternative certification reduces the amount of preparation, and research continues to document that the less preparation teachers have, the less students achieve (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2005).

International Teacher Certification

In partnership with the South Carolina Department of Education (SCDE), school districts in South Carolina are able to host international teachers who provide students with programs that are linguistically and culturally rich to better prepare them for future success in their personal, academic, and professional lives. The SCDE is a designated sponsor of an Exchange Visitor Program by the U.S. Department of State and sponsors teachers from other countries to teach in South Carolina through the International Visiting Teachers Program. Teachers are certified under the International certificate, which is a short-term certificate for teachers from other countries. These teachers come to the U.S. on a J-1 Visa program and are able to stay for up to three years. This program is used by some districts as a means to address teacher shortages.

National Board Certification

The National Board for Professional Teaching Standards® (NBPTS) was founded on the idea that the attributes that make experienced teachers useful can be identified and evaluated (Goldhaber, 2002). Research suggests that NBPTS holders represent a significantly higher teaching ability than do standard state-level license holders. There is a strong correlation between an applicant's performance on standardized tests and NBPTS certification (Goldhaber et al., 2004). Some studies find a positive connection between NBPTS certification status and student outcomes (Vandervoort et al., 2004). However, each above study suffers from serious data shortcomings. Bond et al. is based on a sample of 31 NBCTs, and the Vandervoort et al. study contains only 35 NBCTs. Besides, no study includes statistical adjustments for differences in student demographics. Because of the absence of rigorous quantitative studies on NBPTS, policymakers could not judge the relative costs and benefits of the NBPTS program, even though the program may improve student learning ability.

Teaching Experience

Experience variables include the number of years of teaching and salary. Years of experience of teachers in the United States were obtained from the 2020 report of the National Center for Education Statistics (NCES). Based on the data for the 2017-2018 school year, about 9% of the teachers had less than 3 years of teaching experience, 28% had between 3 and 9 years of experience, 40% had between 10 and 20 years of experience, and 23% had more than 20 years of experience. In addition, teachers' average base salaries were associated with their educational attainment. In the 2017-2018 school year, the average salary was \$49,900 for the teachers with a bachelor's degree, \$63,100 for those with a master's degree, \$66,500 for those with an education specialist degree or certificate, and \$69,500 for those with a doctoral degree (NCES, 2020).

Teacher Evaluation System in South Carolina

We used the South Carolina Department of Education website for the information about teacher evaluation. Evaluation variables include results of classroom observations and Student Learning Outcomes (SLO) evaluation processes. The South Carolina Teaching Standards (SCTS) 4.0 is the primary evaluation model for classroom-based teachers. The SCTS 4.0 rubric is based on the performance standards designed and validated by the National Institute for Excellence in Teaching (NIET). The SCTS 4.0 includes four domains: instruction, planning, environment, and professionalism. There are 12 indicators of instruction, three indicators of planning, four indicators of environment, and four indicators of professionalism. Each indicator is rated using a 4-point scale (1 - Unsatisfactory; 2 - Needs Improvement; 3 - Proficient; 4 - Exemplary).

The SLOs, a measure of teachers' contributions to student learning, is used as an artifact to support teachers' ratings based on the SCTS indicators. The SLOs evaluation rubric has four performance levels ranging from 1 (Unsatisfactory) to 4 (Exemplary). For example, if a teacher sets up rigorous goals for students, uses appropriate assessments to monitor student progress, strategically revises instruction, and between 90% and 100% of his/her students meet their growth targets, the teacher obtains 4 points (Exemplary). If a teacher inconsistently uses assessments, fails to monitor progress or adjust instruction based on progress monitoring data, and 0% - 50% of students meet their growth targets, this teacher obtains 1 point (Unsatisfactory). Teachers' SLOs scores are used as a modifier for the teacher's overall evaluation ratings. If a teacher earns an SLO score of 4 points, there will be an increase of 0.25 points in the teacher's overall evaluation rating. If a teacher earns an SLO score of 1 point, there will be a decrease of 0.25 points in the teacher's overall evaluation rating. If a teacher obtains an SLO score of 2 or 3 points, there will be no change on the teacher's overall evaluation ratings. If a teacher fails to complete the SLOs, the teacher will score 1 point on SLOs.

Teachers' overall rating is based on a 4-point composite score scale. A teacher obtains a performance level of "Unsatisfactory" with a composite score of 1.24 points or below. A teacher obtains a performance level of "Needs Improvement" with a composite score ranging between 1.25 and 2.25 points. A teacher obtains a performance level of "Proficient" with a composite score ranging between 2.26 and 3.75 points. A teacher obtains a performance level of "Exemplary" with a composite score of 3.76 or above. The final evaluation results have two categories: "Not Met" (Ratings of "Unsatisfactory" or "Needs Improvement") and "Met" (Ratings of "Proficient" or "Exemplary").

Key Comparisons among South Carolina Teacher Demographics

A purpose of the SC-TEACHER project is to provide data specific to the South Carolina teaching population. In addition, there is interest in comparing how the teacher workforce in South Carolina compares to that of the United States. The NCES collects and prepares summaries of teacher characteristics and trends. The NCES reports include national results on some teacher demographic and preparation variables that were also available in our South Carolina data so that comparisons may be made.

Geographic Context: Rural and Urban Comparisons

South Carolina includes a mix of rural and urban areas. Thus, we were interested in comparing teacher variables by schools in rural and urban areas of the state. South Carolina is composed of a mix of rural and urban school districts. In fact, 40% of our South Carolina students are educated in schools in the rural context. The NCES (2006) defines "rural" by three subtypes (fringe, distant, and remote) that differentiate rural locations based on the distance and size of the nearest urban area. These criteria assume that families served by a rural school located from a town of 10,000 are likely to have different opportunities and resources than families served by a rural school located 10 miles from an urban core with a population of 100,000. South Carolina has 298 schools designated as rural fringe, which means these schools are 5 miles or fewer from an urban area of at least 50,000 and 2.5 miles or fewer from an urban area of no more than 50,000. South Carolina has 203 schools labeled as rural distant, meaning these schools are no more than 25 miles from an urban area of at least 50,000 and no more than 10 miles from an urban area of no more than 50,000. Lastly, South Carolina has seven schools identified as rural remote, implying these schools are more than 25 miles from an urban area of at least 50,000 and more than 10 miles from an urban area of no more than 50,000. Regardless of rural subtype, schools in these communities tend to be smaller, with a national average enrollment of only 353 students, which translates to fewer teachers per grade level and fewer specialized personnel at the school level (Barton, 2012). Previous literature shows that in addition to limited resources and often poorer communities, teachers serving rural students tend to earn less than their counterparts in cities, suburbs, and towns. The average annual salary for rural teachers is \$44,000, compared to \$49,600 for all public school teachers (Coopersmith, 2009). Consequently, teachers in rural schools are less likely to have advanced degrees. In fact, Coopersmith (2009) showed that the number of teachers in rural public schools who have a master's degree or higher is 10.6 percentage points below the number for suburban schools. With a relatively high percentage of our state's students being educated in rural schools (40%), we deemed it important to compare teacher variables by schools in rural and urban areas of the state.

Socioeconomic Context: Poverty Levels of Comparison

South Carolina has a relatively high poverty rate compared to other states. Within the state, there are variations of high and low poverty areas. Thus, we were interested in comparing teacher variables by high and low poverty schools. It is well established that poverty has devastating impact on students' educational opportunity and outcomes. Low-income students' ability to climb the economic ladder might be jeopardized due to lack of opportunities for development (Snellman, Silva, Frederick, & Putnam, 2015). Poverty has a major effect on school choice and school quality for students, and families of low socioeconomic status (SES) have limited choices of schools (Nishimura & Raut, 2007). Giancola and Kahlenberg (2016) indicated that it was more difficult for high-achieving, low-income students to be admitted to selective institutions than others (Giancola & Kahlenberg, 2016). Specifically, low-income students who had similar test scores were more likely to attend two-year colleges (Hoxby & Avery, 2012) in comparison with wealthy students who tended to attend the more prestigious four-year institutions (Reardon, Baker, & Klasik, 2012). Studies found an association between poverty and students' academic performance, and low-income students tended to perform poorly on various academic measures (Olszewski-Kubilius, Steenbergen-Hu, Thomson, & Rosen, 2018). Fram, Miller-Cribbs, and Van Horn (2007) found that on average, children in high-minority and high-poverty schools had lower test scores. Similarly, Perry and McConney (2010) investigated secondary school students' reading, mathematics, and science achievement; and they found that school SES had significant impact on students' academic performance. In addition to the impact of poverty on school choice and student academic performance, poverty was also found to be associated with other school performance indicators. School poverty level influenced teachers' decisions to stay or leave the school. Teachers were more likely to leave schools that had high poverty populations (Smith & Ingersoll, 2004), and teacher turnover rates in Title I schools were nearly 50% greater than those in non-Title I schools (Carver-Thomas & Darling-Hammond, 2019). In addition, studies also found that high-poverty schools face more challenges in hiring teachers (Garcia & Weiss, 2019), and teachers who stayed in high-poverty schools were less qualified than those in low-poverty schools (Garcia & Weiss, 2019).

Research Questions

This paper addresses the following research questions:

- What are characteristics of the South Carolina teaching population considering personal demographics, teacher preparation and experience, and teacher evaluation results? How do these characteristics compare with teachers nationally for available variables?
- How do teacher characteristics (personal demographics, teacher preparation and experience, and teacher evaluation results) compare between rural and urban schools in South Carolina?
- How do teacher characteristics (personal demographics, teacher preparation and experience, and teacher evaluation results) compare between relatively high and low poverty schools in South Carolina?

DATA SOURCES AND METHODS

Data Sources

Files obtained include two files from the Professional Certified Staff (PCS) system: Staff and Positions. The PCS Staff file includes data on demographics, certification, education, experience, and salary for certified staff members employed in South Carolina. Identifiers provided in the PCS Staff file include certificate number and educator names. The PCS Positions file includes data on employment location and position for certified staff members in South Carolina. Only the certificate number is included as an identifier in the PCS Positions file. A file with summary information on educators' performance evaluations was also provided. Information on ADEPT and Student Learning Objectives (SLOs) for the 2018-2019 school year was included in this file. Identifiers provided in the evaluation file include certificate number and educator names.

The South Carolina school report card for 2018-2019 indicates that there were 52,733 teachers employed in state schools. The PCS Staff file included 84,268 records. After removing duplicate records, there were 42,035 unique educators in the file. Of these, 9,771 did not have a valid certificate number. After merging with the positions file using certificate number, there were 32,264 educators in the file. We selected educators who held teaching positions in 2018-2019, which included 25,568 teachers. Therefore, our analysis includes about half of the number of teachers reported on the school report card for the given year.

The latest national summary of teachers characteristics and trends from NCES is available from the 2017-2018 school year (<https://nces.ed.gov/fastfacts/display.asp?id=28>). We used available data from this source that were comparable with available data from the South Carolina sample of teachers.

Methods

Values of demographic variables for the South Carolina sample were calculated and compared to the comparable data from national figures. For all categorical variables, the percentages of teachers with the trait of interest were computed by the school where they worked in the 2018-2019 school year. For experience and salary, the mean was computed for teachers by their school in 2018-2019. Analysis was conducted by location (rural or urban) and poverty level. The schools were divided in half based on the poverty index from 2019 to form a group of high poverty schools and a group of low poverty schools.

Data Analyses

Separate analyses were conducted for urban/rural and high/low poverty halves. Independent two-sample t-tests for each variable were conducted between the two groups of interest using alpha of .05 to determine whether differences were statistically significant. Cohen's d was computed as an effect size measure to assess practical significance of differences. According to Cohen (1988), values of 0.2 are considered small, 0.5 are considered medium, and values of 0.8 are considered large.

RESULTS

Teaching positions included special education (itinerant, self-contained, and resource), pre-kindergarten, kindergarten, classroom, retired, and purchased-service teacher. The majority (81%) were classroom teachers. A total of 11% were special education teachers, 7% were pre-kindergarten or kindergarten teachers, close to 1% were retired teachers, and 0.1% were purchased-service teachers.

Table 1. Teaching Positions for SC Teachers in the 2018-2019 School Year

Teaching Position	Frequency	Percent
Pre-kindergarten (Child Development)	570	2.2
Kindergarten	1,227	4.8
Special Education (Itinerant)	75	0.3
Special Education (Self-Contained)	1,259	4.9
Special Education (Resource)	1,482	5.8
Classroom Teacher	20,692	80.9
Retired Teacher	231	0.9
Purchased-Services Teacher	32	0.1

Descriptive Background Demographics

Teacher Population

We compared the teacher population in South Carolina and the United States (Table 2). Data on the teacher population in the United States were from the NCES (2020). The majority (79%) of South Carolina teachers in the 2018-2019 school year were White and 15% were Black/African American. Relatively small percentages of teachers were Hispanic, Asian, and American Indian; and slightly more than 2% of teachers' race/ethnicity was unknown. In comparison with national data, South Carolina had a higher percentage of Black/African American teachers (15% vs 7%), a lower percentage of Hispanic teachers (2% vs 9%), and the same percentage of White teachers (79% for both). Considering gender, 81% of South Carolina teachers were female and 19% were male in the 2018-2019 school year. Nationally, 76% of teachers were female with South Carolina having 5% more female teachers. Examining race/ethnicity and gender in combination, 64% of South Carolina teachers were White females, 15% were White males, 12% were Black/African American females, and 3% were Black/African American males in the 2018-2019 school year. Regarding teachers' academic degree, a higher percentage of South Carolina teachers (63%) had a postbaccalaureate degree (i.e., master's, education specialist, or doctorate degree) in comparison with the national data (58%).

Table 2. Comparison of National and State Demographic Variables (%)

Demographic Variable		SC Data (2018-2019)	National Data (2017-2018)
Gender	Female	81	76
	Male	19	24
Race/Ethnicity	White	78.7	79
	Black/African American	15.2	7
	Hispanic/Latino	1.8	9
	Asian	1.5	2
	American Indian/Alaska Native	0.2	1
	Unknown	2.6	NA
	Two or more races	NA	2
	Pacific Islander	NA	<1
Degree	Postbaccalaureate	63	58
	Not Postbaccalaureate	37	42

Student Population

Comparing with the high percentage of White teachers nationwide, student population was more diverse. The NCES (2020) reported that among the 50.7 million students enrolled in public elementary and secondary schools in fall 2017, 24.1 million (47.5%) were White, 7.7 million (15.2%) were Black, 13.6 million (26.8%) were Hispanic, 2.8 million (5.5%) were Asian/Pacific Islander, and about 2.5 million (4.9%) were of two or more races or American Indian/Alaska Native. The state of South Carolina has its unique student population. According to the 45-day headcount of PK-12 in 2019-2020 school year, there were 787,069 actively enrolled students. Among them, about 50% were White, 33% were Black, 11% were Hispanic or Latino, 2% were Asian, and 5% were of two or more races, or American Indian/Alaska Native or Pacific Islanders (South Carolina Department of Education, 2020). Comparing student demographics in the U.S. and South Carolina, it appears that South Carolina has a much larger percentage of Black students.

Teacher Preparation

The majority (81%) of teachers had a professional certificate and about 12% had an initial certificate. About 2.7% were certified to teach through alternative certification programs, and about 2% had international teaching certificates. About 8% of South Carolina teachers in the 2018-2019 school year had National Board certification.

Education Level

Most teachers in South Carolina schools in the 2018-2019 school year had a post-baccalaureate degree (63%). Nationally, this figure was 58% in 2017-2018, according to NCES. Considering where South Carolina teachers completed their education, 67% of teachers earned their bachelor's degrees in South Carolina, 55% of teachers with master's degrees earned the degree in South Carolina, and 33% of teachers with doctorate degrees earned the degree in South Carolina.

Table 3. Certificate Class/Education Attainment of SC Teachers in the 2018-2019 School Year

Description	Frequency	Percent
Bachelor's	7,614	29.8
Bachelor's Plus 18	1,930	7.6
Master's	11,584	45.3
Master's Plus 30	3,950	15.5
Doctorate	479	1.9

Total years of teaching experience for South Carolina teachers in the 2018-2019 school year ranged from 0 to 55 with a median of 11, mean of 12.9, and standard deviation of 9.7 years.

Total salary for South Carolina teachers in the 2018-2019 school year ranged from \$0 to \$185,190 with a median of \$48,857, mean of \$49,193, and standard deviation of \$12,466.

Teacher Evaluation Results

The analysis of South Carolina teacher evaluation data was focused on different evaluation models, evaluation of teachers with different types of contracts, evaluation forms, SLOs evaluation ratings, final evaluation ratings, and decision making based on evaluation results. Regarding the evaluation models, almost all (99%) of a total of 24,899 teachers were evaluated using Expanded ADEPT (SCTS). A very small percentage (1%) of teachers were evaluated using 2006 ADEPT, SAFE-T, and other locally developed models.

The teacher evaluation system was implemented based on teachers with different types of contracts. Teachers who have met the formal evaluation criteria set by the State Board of Education, the requirements for annual-contract teachers set by the local board of trustees, and the requirements established by the State Board of Education for the professional teaching certificate are at the continuing-contract level. The majority (77%) of teachers were at the continuing-contract level. Teachers who have satisfied their induction requirements may be employed under an annual contract, and 12% of the teachers were at the annual contract level. Teachers who possess a valid South Carolina pre-professional teaching certificate may be employed under an induction contract for up to three years, and 8% of the teachers were induction teachers. Teachers who are eligible for an induction or an annual contract but who are hired on a date that would cause their period of employment to be less than 152 days during the school year may be employed under a letter of agreement, and 2% of teachers were in this category (South Carolina Department of Education, 2018).

Table 4. Evaluation Based on Contract Type and Forms of Evaluation

Evaluation	Type	N	%
Contract Type	Continuing Contract	19,162	76.96
	Annual Contract	3,057	12.28
	Induction Contract	2,020	8.11
	Letter of Agreement	521	2.09
	No Contract Level	139	0.56
	Total	24,899	100
Evaluation Form	Goals-based Evaluations (GBE)	17,508	70.32
	Formative	5,158	20.72
	Summative	2,204	8.85
	No Evaluation	29	0.12
	Total	24,899	100

In teacher evaluation, different forms of evaluation are adopted. Goals-based evaluation (GBE) is the most widely used evaluation form. GBE is an informal evaluation process designed for teachers at the Annual and Continuing contract levels who have successfully completed the summative evaluation, and 70.32% of the teachers were evaluated using the GBE. Formative evaluations are designed to promote professional growth and reflection, and 20.72% of the teachers were evaluated using formative evaluations. Summative evaluations are high-stakes accountability measures that are used to measure and report learning outcomes, and inform certificate advancement, contract status, and contract renewal; and 8.85% of the teachers were evaluated using summative evaluations.

South Carolina teachers' final ratings are based on the SCTS and the SLOs. The analysis of the SLOs scores of 21,122 teachers revealed that 37.46% of the teachers were rated as "Exemplary," 55.77% as "Proficient," 5.33% as "Needs Improvement," and 1.44% as "Unsatisfactory." Teachers' overall ratings were based on a composite score of SCTS and SLOs. The analysis results indicated that the majority (96.37%) of teachers were in the "Met" category, 1.17% were "Not Met," and 2.46% were in the category of "Incomplete." A teacher who is employed under an induction, annual, or continuing contract and who is absent for more than 20 percent of the days in the district's SBE-approved annual evaluation cycle may, at the recommendation of the district superintendent, have his or her ADEPT results reported to the SCDE as "Incomplete."

Table 5. Teacher Evaluation Ratings

Evaluation	Ratings	N	%
SLO Evaluations	Exemplary	7,912	37.46
	Proficient	11,779	55.77
	Needs Improvement	1,126	5.33
	Unsatisfactory	305	1.44
	Total	21,122	100
Final Evaluations	Met	23,733	96.37
	Not Met	288	1.17
	Incomplete	607	2.46
	Total	24,628	100

Teachers' evaluation ratings are used to inform employment. An analysis of 24,745 teachers' hiring status based on evaluations revealed that 90.24% of the teachers were rehired, 6.94% resigned, 1.42% retired, 0.51% were not rehired, and fewer than 1% were in the other hire status.

Comparison by the Geographic Context

We examined the variables for differences by schools located in rural and urban areas of South Carolina. Rural schools had a greater percentage of Black/African American teachers and a lower percentage of White teachers than urban schools where both differences were statistically significant with small effects. There was no statistically significant difference in the percentage of female teachers between rural and urban schools.

The percentage of teachers with international teaching certificates was statistically significantly greater for rural than urban schools with a small to medium effect. In addition, the percentage of teachers with National Board certification was statistically significantly greater for rural than urban schools with a small effect. There were no statistically significant differences in the percentage of teachers prepared through an alternative certification program or the percentage of teachers with a post-baccalaureate degree between rural and urban schools.

The mean years of experience for teachers was statistically significantly greater for rural than urban schools with a medium effect. The average salary for teachers was statistically significantly lower for rural schools than urban schools with a small effect.

Teachers in rural and urban schools performed similarly on the ADEPT teacher evaluation with no statistically significant differences between the percentage who "Met" standards overall or the percentage receiving ratings of "Exemplary" or "Proficient" for the SLO portion. There was a statistically significant difference in the percentage of teachers receiving "Exemplary" ratings on the SLO portion where rural schools had a lower percentage than urban schools with a small to medium effect.

Table 6. Summary Statistics, Inferential Tests, and Effect Sizes for Variables by Geographic Context

Variable	Rural Location			Urban Location			t-stat	p-value	Effect Size
	N	Mean	Std Dev	N	Mean	Std Dev			
% Black/African American Teachers	650	19.75	22.57	671	15.05	19.99	4.00	<.001	0.221
% White Teachers	650	71.68	27.74	671	76.31	25.26	-3.17	.002	0.175
% Female Teachers	650	79.95	21.87	671	81.55	20.62	-1.37	.172	0.075
% Teachers with Alternative Certification	650	2.63	5.19	671	2.37	4.36	0.98	.325	0.054
% International Teaching Certificate	650	3.31	8.57	671	1.26	4.19	5.50	<.001	0.305
% National Board Certified Teachers	650	6.07	8.15	671	7.55	8.96	-3.14	.002	0.173
% of Teachers with Master's Degree or Higher	650	61.38	19.18	671	59.3	20.94	1.88	.060	0.104
Mean Total Years of Experience	631	13.69	3.82	649	12.27	3.27	7.14	<.001	0.400
Mean Total Salary	631	47,966.49	4,668.11	649	49,072.16	4,815.29	-4.17	<.001	0.233
% who scored Met on ADEPT	650	94.89	18.86	671	94.48	20.68	0.38	.706	0.021
% who scored Exemplary or Proficient on SLO	650	87.31	24.34	671	85.14	29.32	1.47	.143	0.080
% who scored Exemplary on SLO	650	22.82	24.98	671	31.65	28.65	-5.98	<.001	0.328

Comparison by Poverty Level

Differences for all personal demographics of teachers between schools in relatively higher and lower poverty schools were statistically significant. Higher poverty schools had a greater percentage of Black/African American teachers and a lower percentage of White teachers than lower poverty schools with large effects. Higher poverty schools had a greater percentage of female teachers with a medium effect.

Considering teacher preparation variables, there were statistically significant differences between schools in relatively higher and lower poverty schools for all variables considered. Compared to lower poverty schools, higher poverty schools had greater percentages of teachers prepared through an alternative certification program (small effect), teachers with international teaching certificates (medium effect), and teachers with a post-baccalaureate degree (small effect). In addition, higher poverty schools had a lower percentage of teachers with National Board certification than lower poverty schools with a medium effect.

The mean years of experience was comparable between teachers from the higher and lower poverty schools and the difference was not statistically significant. Mean salary for teachers from the higher poverty schools was statistically significantly lower than that of teachers from the lower poverty schools with medium to large effects.

On the ADEPT evaluation, teachers from higher poverty schools had a greater percentage who “Met” expectations than teachers from lower poverty where the difference was statistically significant with a small effect. Considering the SLO portion of the evaluation, there was not a statistically significant difference in the percentage of teachers who were rated “Proficient” or “Exemplary” between the higher and lower poverty schools. However, the percentage of teachers who were rated “Exemplary” on the SLO portion was less for higher than lower poverty schools with statistical significance and a medium effect.

Table 7. Summary Statistics, Inferential Tests, and Effect Sizes for Variables by Poverty Halves

Variable	Upper Half			Lower Half			t-stat	p-value	Effect Size
	N	Mean	Std Dev	N	Mean	Std Dev			
% Black/African American Teachers	646	27.36	25.22	717	8.27	11.28	17.71	<.001	0.995
% White Teachers	646	66.45	27.57	717	80.74	23.84	-10.18	<.001	0.557
% Female Teachers	646	84.93	15.52	717	77.08	24.69	7.10	<.001	0.376
% Teachers with Alternative Certification	646	3.21	6.96	717	2.12	3.74	3.55	<.001	0.198
% International Teaching Certificate	646	4.02	9.16	717	0.8	3.45	8.41	<.001	0.475
% National Board Certified Teachers	646	4.75	7.77	717	8.47	8.95	-8.21	<.001	0.442
% of Teachers with Master's Degree or Higher	645	61.04	19.33	718	57.3	23.46	3.22	.001	0.173
Mean Total Years of Experience	645	12.77	3.99	676	12.97	3.42	-0.98	.329	0.054
Mean Total Salary	645	46,908.68	4,751	676	49,529.72	5,245.39	-9.53	<.001	0.523
% who scored Met on ADEPT	646	96.47	13.16	717	93.07	24.26	3.26	.001	0.172
% who scored Exemplary or Proficient on SLO	646	86.26	24.2	717	86.09	29.46	0.12	.907	0.006
% who scored Exemplary on SLO	646	21.99	23.98	717	31.76	29.34	-6.76	<.001	0.363

FINDINGS AND DISCUSSION

Findings for this study were derived from three data sources: two files from the Professional Certified Staff (PCS) system: Staff and Positions; the South Carolina school report card for 2018-2019; and the latest national summary of teacher characteristics and trends from NCES (2017-2018 school year). We focused the analyses on 12 variables: percentage of Black/African American teachers, percentage of White teachers, percentage of female teachers, percentage of teachers with alternative certification, percentage of teachers with an international teaching certificate, percentage of teachers with National Board certification, percentage of teachers with a master's degree or higher, mean number of years of teaching experience, mean total salary, percentage of teachers who scored "met" on ADEPT teaching evaluation review, percentage of teachers who scored "exemplary" or "proficient" on the SLO portion of their teaching evaluation, and percentage of teachers who scored "exemplary" on the SLO portion of their teaching evaluation. Of these, we were able to make state and national comparisons for teacher race/ethnicity, gender, degree attainment, and average salary.

Findings from this study were similar to national findings in that the percentage of White teachers were the same. However, differences were found for South Carolina from national findings in these areas: South Carolina had more Black teachers, fewer Hispanic teachers, more female teachers, more teachers with advanced degrees, and lower average teacher salary. Considering the 12 variables by geographic context, we found that schools in rural areas tend to have more Black teachers, fewer White teachers, more teachers with international certification, fewer National Board certified teachers, teachers with more years of experience, lower average teacher salary, and fewer scoring "Exemplary" on the SLO portion of the teaching evaluation compared to schools in urban areas. Considering the 12 variables by poverty rate, we found that schools with poverty indices in the upper half tend to have more Black teachers, fewer White teachers, more female teachers, more teachers certified through an alternative certification program, more teachers with international teaching certificates, fewer National Board certified teachers, more teachers with advanced degrees, lower average teacher salary, more teachers who scored "Met" on the ADEPT teaching evaluation, and fewer teachers who scored "Exemplary" on the SLO portion of the teaching evaluation.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study is the first of its kind to provide a profile of the South Carolina teacher workforce. With the commission of the SC-TEACHER Center, a South Carolina-centric database was developed. Thus, this newly developed database allowed for the variables identified in this study to be examined and presented. The database also will allow for subsequent variables and relationships of interest to the field of education to be examined and presented, all with South Carolina-centric data. There are several key demographics that are worth noting from these findings. First, South Carolina has more Black teachers compared to the nation. Further, more Black teachers work in rural than urban and in high poverty than low poverty schools. Student populations in rural and higher poverty schools tend to have more students of color. Thus, the diversity of teachers in these schools may have beneficial impacts on these students. However, the percentage of teachers of color in South Carolina is under representative of the student population suggesting the need for a focus on diversity in recruitment efforts for teacher preparation programs.

Considering differences between schools in rural and urban locations of the state, effect sizes were close to the medium range for mean years of teaching experience (rural greater than urban, $d=0.40$), percentage of teachers who scored “Exemplary” on the SLO portion of the teaching evaluation (rural less than urban, $d=0.33$), and percentage of international teachers (rural greater than urban, $d=0.31$). Comparing higher and lower poverty schools, effect sizes were medium to high for percentage of Black teachers (higher greater than lower, $d=1.00$), percentage of White teachers (higher less than lower, $d=0.56$), mean salary (higher less than lower, $d=0.52$), percentage of international teachers (higher greater than lower, $d=0.48$), and percentage of National Board certified teachers (higher less than lower, $d=0.44$).

Limitations and Recommendations

While this study provided a landmark milestone for South Carolina in identifying a profile of its teacher workforce, there were limitations. First, the data received from the SCDE represents about half the number of teachers reported by South Carolina. Data were provided in multiple files, and some files had missing teacher identification numbers and/or names. Future data collection should attempt to resolve issues of missing identification variables to ensure representation of the full population of South Carolina teachers. As such, South Carolina should capitalize on an opportunity to address unpacking both how a data system can support reliable numbers for the state and who is tasked with development, dissemination, and reporting such data upon which policy and practice decisions can be made. The sounder the data that are available, the sounder the decisions that can be made. SC-TEACHER is poised to lean into its mission to be that conduit for figuring out how to get more reliable data upon which to conduct further studies and assist policymakers and educators in making better informed decisions. Second, national data was from a different school year than the South Carolina data. National data was from the 2017-2018 school year, and South Carolina data was from the 2018-2019 school year. While we would not expect large differences from one school year to the next, using data from the same school year would improve validity of comparisons.

Given the growing presence of alternative certification programs in South Carolina, a more extensive examination of these programs is needed to determine their impact on student achievement, diversity of the teacher workforce, as well as addressing recruitment and retention challenges. Very few studies exist on the quality of an alternatively prepared teacher versus one that is traditionally prepared. While there are a number of characteristics of high-quality traditional teacher preparation programs (Thompson, Harbour, & White, 2019), relatively little is known about the characteristics of highly effective alternative certification programs in South Carolina. Beyond program effectiveness, the extent to which both traditional and alternative certification programs are successful in their efforts to recruit and prepare diverse teaching candidates is needed. A deeper examination of the extent to which South Carolina recruitment efforts specifically address the need for a diverse workforce is of value. Similar to certification pathways, a rigorous study of National Board certification and teacher effectiveness is needed. Given the significant number of National Board certified teachers in the state and continued discussion at a policy level of incentives for National Board certification, a deep investigation of its value in South Carolina may allow policymakers to make better informed decisions regarding incentives.

References

- Antecol, H., Eren, O., & Ozbeklik, S. (2015). The effect of teacher gender on student achievement in primary school. *Journal of Labor Economics*, 33(1), 63-89.
- Barton, R. (2012). Recruiting and retaining rural educators: Challenges and strategies. *Principal's Research Review*, 7(6), 1-6.
- Boyd, D., Grossman, P., Lankford, H., Loeb, S., & Wyckoff, J. (2005). How changes in entry requirements alter the teacher workforce and affect student achievement. *Education Finance and Policy*, 1(2), 176-216.
- Carver-Thomas, D. & Darling-Hammond, L. (2017). *Teacher turnover: Why it matters and what we can do about it*. Palo Alto, CA: Learning Policy Institute.
- Carver-Thomas, D., & Darling-Hammond, L. (2019). The trouble with teacher turnover: How teacher attrition affects students and schools. *Education Policy Analysis Archives*, 27(36). DOI: <http://dx.doi.org/10.14507/epaa.27.3699>
- Center for Educator Recruitment, Retention, and Advancement. (2018). *South Carolina annual educator supply and demand report*. Rock Hill, SC: Author.
- Cohen J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. New York, NY: Routledge Academic.
- Coopersmith, J. (2009). Characteristics of public, private, and Bureau of Indian Education elementary and secondary school teachers in the United States: Results from the 2007–08 schools and staffing survey (NCES 2009-324). Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Retrieved from <https://nces.ed.gov/pubs2009/2009324.pdf>
- Dill, V. S., & Stafford-Johnson, D. (2002, November). A different road. *American School Board Journal*. Retrieved from altcert.org/research.
- Eberts, R. W., & Stone, J. A. (1984). *Unions and public schools*. Lexington, MA: D.C. Heath and Company.
- Ehrenberg, R. G., Goldhaber, D. D., & Brewer, D. J. (1995). Do teachers' race, gender and ethnicity matter? Evidence from the National Educational Longitudinal Study of 1988. *Industrial and Labor Relations Review*, 48(3), 547–561.
- Ferguson, R.F. (2003). Teachers' perceptions and expectations and the Black-White test score gap. *Urban Education*, 38 (4), 460-507.
- Ferguson, R. F., & Ladd, H. F. (2006). How and why money matters: An analysis of Alabama schools. In H. F. Ladd (Ed.), *Holding schools accountable: Performance-based reform in education* (pp. 265–298). Washington, DC: Brookings.
- Fram, S. M., Miller-Cribbs, J. E., & Van Horn, L. (2007). Poverty, race, and the contexts of achievement: examining educational experiences of children in the U.S. South. *Social Work*, 52(4), 309-319.
- Fuller, E., & Alexander, C. (2003, April). Teachers in Texas from different routes to certification: Who are they, where do they teach, and how long do they teach? Paper presented at the American Educational Research Association Annual Meeting, Chicago, IL.
- Garcia, E., & Weiss, E. (2019). The teacher shortage is real, large and growing, and worse than we thought. Economic Policy Institute. Retrieved from: <https://www.epi.org/publication/the-teacher-shortage-is-real-large-and-growing-and-worse-than-we-thought-the-first-report-in-the-perfect-storm-in-the-teacher-labor-market-series/>

- Garcia, E., & Weiss, E. (2019). U.S. schools struggle to hire and retain teachers. Economic Policy Institute. Retrieved from: <https://www.epi.org/publication/u-s-schools-struggle-to-hire-and-retain-teachers-the-second-report-in-the-perfect-storm-in-the-teacher-labor-market-series/>
- Giancola, J., & Kahlenberg, R. D. (2016). True merit: Ensuring our brightest students have access to our best colleges and universities. Landsdown, VA: Jack Kent Cooke Foundation. Retrieved from <https://eric.ed.gov/?id=ED569948>
- Goldhaber, D., "The Mystery of Good Teaching: Surveying the Evidence on Student Achievement and Teachers' Characteristics," *Education Next* 2:1 (2002), 50–55.
- Goldhaber, D. D., & Brewer, D. J. (2008). Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy Analysis*, 22(2), 129–146.
- Goldhaber, D., D. Perry, and E. Anthony, "NBPTS Certification: Who Applies and What Factors Are Associated with Success?" *Educational Evaluation and Policy Analysis* 26:4 (2004), 259–280.
- Hanushek, Eric A., and Steven G. Rivkin. 2004. "How to improve the supply of high quality teachers." In *Brookings Papers on Education Policy 2004*, edited by Diane Ravitch. Washington, DC: Brookings Institution Press:7-25.
- Hoxby, C. M., & Avery, C. (2012). The missing "one-offs": The hidden supply of high achieving, low-income students. *National Bureau of Economic Research Working Paper 18586*, Cambridge, MA.
- McKown, C. & Weinstein, R.S. (2002). Modeling the role of child ethnicity and gender in children's differential response to teacher expectations. *Journal of Applied Social Psychology*, 32 (1), 159-184.
- National Center for Education Statistics. (2006). Rural education in America. Retrieved from <https://nces.ed.gov/surveys/ruraled/definitions.asp>
- National Center for Education Statistics (2020). Characteristics of public school teachers. Retrieved from: https://nces.ed.gov/programs/coe/indicator_clr.asp
- National Center for Education Statistics (2020). Racial/Ethnic enrollment in public schools. Retrieved from: https://nces.ed.gov/programs/coe/indicator_cge.asp
- National Commission on Teaching and America's Future. (1996). What matters most: Teaching for America's future. Washington, DC: Government Printing Office.
- Nishimura, K., & Raut, L. K. (2007). School choice and the intergenerational poverty trap. *Review of development Economics*, 11 (2), 412-420.
- Ogbu, J.U. (1992). Understanding cultural diversity and learning. *Educational Researcher*, 21 (8), 5-14.
- Olszewski-Kubilius, P., Steenbergen-Hu, S., Thomson, D., & Rosen, R. (2018). Minority achievement gaps in STEM: Findings of a longitudinal study of Project Excite. *Gifted Child Quarterly*, 61, 20-39. doi:10.1177/0016986216673449
- Ovando, M. N., & Trube, M. B. (2000). Capacity building of beginning teachers from alternative certification programs: Implications for instructional leadership. *Journal of School Leadership*, 10, 346-366.
- Perry, L., McConney, A. (2010). Does the SES of the school matter? An examination of socioeconomic status and student achievement using PISA 2003. *Teacher College Record*, 112(4), 1137-1162.
- Reardon, S. F., Baker, R., & Klasik, D. (2012). Race, income, and enrollment patterns in highly selective colleges, 1982–2004. Stanford, CA: Center for Education Policy Analysis, Stanford University.

- Rowan, B., Chiang, F., & Miller, R. J. (2010). Using research on employees' performance to study the effects of teachers on students' achievement. *Sociology of Education*, 70(October), 256–284.
- Rowan, B., Correnti, R., & Miller, R.J. (2002). What large-scale, survey research tells us about teacher effects on student achievement: Insights from the prospectus study of elementary schools. *Teachers College Record*.
- Smith, T., & Ingersoll, R. (2004). Reducing teacher turnover: What are the components of effective induction? *American Education Research Journal*, 41, 687-714.
- Snellman, K., Silva, J., Frederick, C. B., & Putnam, R. D. (2015). The engagement gap: Social mobility and extracurricular participation among American youth. *Annals of the American Academy of Political and Social Science*, 657, 194-207. doi:10.1177/0002716214548398
- South Carolina Department of Education (2018). ADEPT contract levels and evaluations. Retrieved from: <https://ed.sc.gov/educators/educator-effectiveness/expanded-adept-resources/https-ed-sc-gov-educators-educator-effectiveness-expanded-adept-resources-educator-evaluation-guidance-2018-19/adept-contract-levels-and-evaluations2/>
- South Carolina Department of Education (2020). Active student headcounts. Retrieved from: <https://ed.sc.gov/data/other/student-counts/active-student-headcounts/>
- Thomas B. Fordham Foundation. (1999). Foreword. In M. Kanstoroom & C. E. Finn, Jr. (Eds.), *Better teachers, better schools* (pp. v—vii).
- Thompson, S.L., Harbour, K.E., White, E. (2019). Clinical practices for elementary teacher preparation across South Carolina. Columbia, SC: South Carolina Teacher Education Advancement Consortium through Higher Education Research. Retrieved from https://sc-teacher.org/wp-content/uploads/2019/10/FieldExp_WP_10.14.pdf
- U.S. Department of Education, National Center for Education Statistics (2002). *NCES Statistical Standards* (NCES 2003-601). Washington, DC.
- U.S. Department of Education, National Center for Education Statistics (2003). *NCES Statistical Standards* (NCES 2003-601). Washington, DC.
- Vandevoort, L. G., A. Amrein-Beardsley, D. C. Berliner, “National Board Certified Teachers and Their Students’ Achievement,” *Education Policy Analysis Archives*, 12:46 (2004). Retrieved November 23, 2005 from <http://epaa.asu.edu/epaa/vl2n46/>
- Villegas, A. & Lucas, T.F. (2004). Diversifying the teacher workforce: A retrospective and prospective analysis. *Yearbook of the National Society for the Study of Education*, 103 (1), 70-104.
- Winters, M. A., Haight, R. C., Swaim, T. T., & Pickering, K. (2013). The effect of same-gender teacher assignment on student achievement in the elementary and secondary grades: Evidence from panel data. *Economics of Education Review* 34, 69–75.