



EDUCATION POLICY  
INITIATIVE *at* CAROLINA



## The Effectiveness of UNC System Educator Preparation Program Graduates

In this research brief, the Education Policy Initiative at Carolina (EPIC) presents updated results from our Program Effectiveness analyses, a seminal study in the UNC System Educator Quality Research Initiative. Descriptively, we find that UNC System educator preparation programs (EPPs) differ with respect to the demographics of the teachers they prepare and the types of schools in which their graduates work. When assessing teacher value-added, we find that early-career teachers from several UNC System EPPs frequently outperform their non-UNC System prepared peers. Evaluation ratings present a mixed picture for UNC System EPPs. Graduates of many institutions receive higher evaluation ratings than non-UNC System prepared teachers; graduates of a few institutions receive lower evaluation ratings.

### Introduction

Educator preparation programs (EPPs) at UNC System institutions are the largest supplier of teachers to P-12 public schools in North Carolina. Nearly 40 percent of the state's teacher workforce was traditionally prepared at a UNC System institution and these teachers work across all 115 school districts in North Carolina. To help its constituent institutions prepare more and higher quality teachers, the UNC System commissions a body of research on educator preparation. The Educator Quality Research Initiative (EQRI) connects data from the UNC System and the North Carolina Department of Public Instruction

(NCDPI) to assess the employment, effectiveness, and retention of UNC System prepared teachers. Findings from EQRI studies help UNC System EPPs meet accreditation requirements and inform program accountability and improvement efforts.

In this research brief, the Education Policy Initiative at Carolina (EPIC) presents updated results from a seminal EQRI study: Program Effectiveness analyses. This work examines the effectiveness of each UNC System EPP through three primary research questions: (1) What are the characteristics of UNC System graduates and the schools in which they work? (2) Are graduates from certain

UNC System EPPs more effective at promoting student achievement than non-UNC System prepared teachers? and (3) Do graduates from certain UNC System EPPs earn higher evaluation ratings than non-UNC System prepared teachers? Answers to these questions are one way (among many) to quantify the contributions of UNC System institutions to the state's P-12 public schools and suggest where UNC System EPPs can look for promising program improvement strategies.

## Background

This latest iteration<sup>1</sup> of the Program Effectiveness analyses examines teachers with less than five years of experience in the 2012-13 through 2016-17 school years. We focus on early-career teachers because the performance of recent program graduates is most relevant to program accountability and improvement efforts. Likewise, the early-career period is when educator preparation most influences teacher performance. In analyses, we compare the performance of traditionally prepared teachers from each UNC System EPP to that of all other teachers who were not traditionally prepared at a UNC System institution.<sup>2</sup> Traditional preparation includes those earning an undergraduate education degree, those earning a teaching certification concurrent with a non-education undergraduate degree, those earning a graduate level education degree resulting in an initial license (e.g. Master of Arts in Teaching), and those completing a licensure/certificate program prior to beginning teaching.

We assess the performance of early-career teachers from each UNC System EPP with two outcome measures. Our first measure is standardized student test scores from the state's End-of-Grade (EOG) and End-of-Course (EOC) exams. In these analyses, we control for a rich set of student, classroom, teacher, and school characteristics to assess whether adjusted-average student achievement is higher for students taught by graduates of UNC System EPPs versus students taught by non-UNC System prepared teachers. We performed these value-added analyses in elementary grades mathematics, reading, and science (5th grade); middle grades mathematics, reading, and science (8th grade); and high school algebra I, biology, and English II. Our preferred

analyses use a multi-level model to make statewide teacher value-added comparisons. We also implemented models comparing the effectiveness of teachers prepared by UNC System EPPs with that of non-UNC System prepared teachers working in the same schools.

Our second outcome measure is teacher evaluation ratings from the North Carolina Educator Evaluation System (NCEES). Principals rate early-career teachers as either not demonstrated, developing, proficient, accomplished, or distinguished on the state's five professional teaching standards—Leadership, Classroom Environment, Content Knowledge, Facilitating Student Learning, and Reflecting on Practice. Since this is an ordinal outcome measure, we estimate ordered logit models controlling for teacher and school characteristics. These analyses indicate whether graduates of UNC System EPPs have greater odds of earning higher evaluation ratings than their non-UNC System prepared peers. We also implemented a model comparing the evaluation ratings of teachers prepared by UNC System EPPs with that of non-UNC System prepared teachers working in the same schools.

## What are the characteristics of UNC System graduates and the schools in which they work?

Table 1 displays teacher demographics, school characteristics, and the top employers of first-year teachers from each UNC System EPP. Overall, there are three key takeaways from this descriptive table. First, the early-career teachers from many UNC System EPPs resemble the broader teacher workforce in North Carolina—predominately female and white. The exception to these demographic trends are the UNC System's minority-serving institutions (ECSU, FSU, NCA&T, NCCU, UNCP, and WSSU), whose early-career teachers are predominately racial/ethnic minorities. Second, differences in the P-12 school characteristics for UNC System EPPs frequently reflect differences in the demographics of early-career teachers. That is, UNC System EPPs who primarily prepare racial/ethnic minority teachers tend to have

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<sup>1</sup> EPIC previously conducted Program Effectiveness analyses in 2014-15, 2012-13, 2010-11, and 2008-09. For more information on our outcome measures and analysis methods, please see the 2015 Program Effectiveness report.

<sup>2</sup> This includes those prepared at NC private colleges and universities, out-of-state prepared teachers, Teach For America corps members, Participate (Visiting International Faculty) teachers, and alternative entry teachers. It is important to note that alternative entry teachers can fulfill their coursework requirements at a UNC System EPP but are part of the reference group for these analyses.

Table 1: Teacher and School-Level Characteristics

	Teacher Characteristics		School Characteristics			Employment
	Female	Minority	Economically Disadvantaged	Minority	Performance Composite	Top Employers of First-Year Teachers
ASU	77.88	4.28	54.94	40.39	55.21	Charlotte-Mecklenburg, Wake, and Wilkes
ECU	83.04	11.74	60.06	58.47	49.72	Pitt, Wake, and Johnston
ECSU	74.97	54.84	64.64	60.45	44.73	Elizabeth City/Pasquotank, Perquimans, and Bertie
FSU	78.63	64.20	68.31	73.51	45.15	Cumberland, Harnett, and Hoke
NCA&T	79.06	80.14	64.24	71.37	43.72	Guilford, Wake, and Charlotte-Mecklenburg
NCCU	76.38	79.08	64.31	76.07	45.66	Durham, Wake, and Chapel Hill-Carrboro
NCSU	78.00	9.40	44.27	51.85	57.43	Wake, Johnston, and Durham
UNCA	79.03	5.36	55.91	36.51	55.94	Buncombe, Henderson, and Asheville
UNCCH	84.94	13.84	54.92	54.97	54.66	Durham, Chapel Hill-Carrboro, and Wake
UNCC	86.17	14.91	46.05	53.81	58.72	Charlotte-Mecklenburg, Cabarrus, and Union
UNCG	82.48	17.92	60.54	57.20	49.20	Guilford, Forsyth, and Randolph
UNCP	76.76	37.96	68.20	70.04	44.52	Robeson, Cumberland, and Scotland
UNCW	84.96	8.23	56.78	50.16	53.59	New Hanover, Onslow, and Brunswick
WCU	76.71	3.87	57.83	34.99	54.63	Haywood, Jackson, and Buncombe
WSSU	78.32	79.30	71.90	76.56	40.18	Forsyth, Guilford, and Charlotte-Mecklenburg

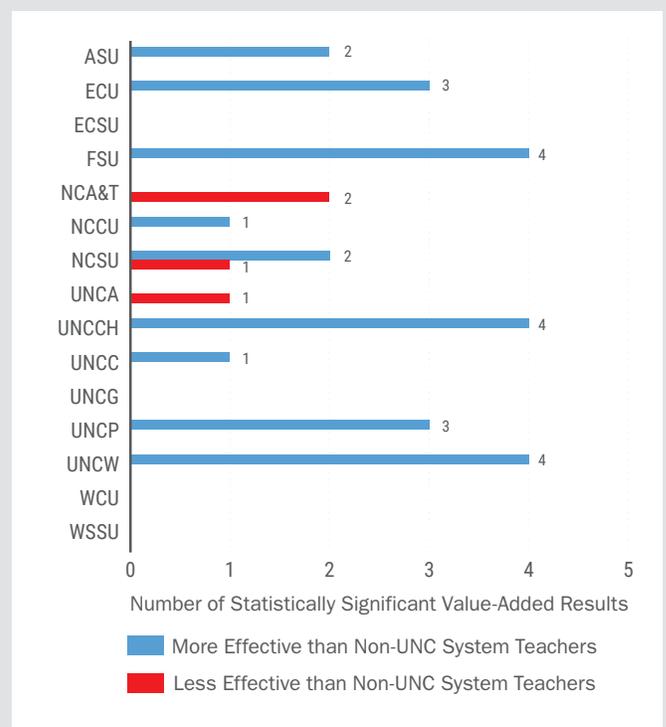
Note: The left and middle panels of this table present teacher and school-level characteristics for those with less than five years of teaching experience in the 2012-13 through 2016-17 school years. The right panel lists the NC school districts that are the top employers of first-year teachers from each UNC System EPP during the study period. These districts are listed such that the top employing district comes first.

early-career graduates who are working in lower performing and higher poverty/minority schools. This may be attributable to a number of factors, including the preferences of early-career teachers, the geographic location of UNC System EPPs, and the unique missions and district partners of UNC System EPPs. Finally, teacher employment data indicate that many first-year teachers are hired in close proximity to their UNC System EPP. The biggest exception to this is ASU, which has the largest number of its beginning teachers hired in Charlotte-Mecklenburg and Wake County.

### Are graduates from certain UNC System EPPs more effective at promoting student achievement?

Figure 1 presents the number of statistically significant (positive and negative) value-added results for each UNC System EPP. These counts come from our multi-level model, which nests students within classrooms and schools and makes statewide teacher effectiveness comparisons. Overall, nine UNC System EPPs have at least one positive value-added result. Five UNC System EPPs—ECU, FSU, UNCCH, UNCP, and UNCW—have at least three positive results. These findings differ

Figure 1: A Summary of Teacher Value-Added Results



Note: This figure displays the number of statistically significant value-added results for each UNC System EPP. If a blue bar is not displayed that means there were no positive results for the respective UNC System EPP; if a red bar is not displayed that means there were no negative results for the respective UNC System EPP.

Table 2: Teacher Value-Added Results by Subject-Area

Comparison	More Effective than Non-UNC System Teachers	Less Effective than Non-UNC System Teachers
Elementary Grades Mathematics	NCSU, UNCCH	—
Elementary Grades Reading	ECU, FSU	—
5 <sup>th</sup> Grade Science	NCCU, UNCW	NCA&T
Middle Grades Mathematics	ASU, UNCCH, UNCW	—
Middle Grades Reading	FSU, UNCC, UNCP	NCA&T
8 <sup>th</sup> Grade Science	FSU, UNCCH, UNCP	—
High School Algebra I	UNCW	UNCA
High School Biology	ASU, ECU, NCSU, UNCCH, UNCP, UNCW	—
High School English II	ECU, FSU	NCSU

Note: This table displays the subject-areas and school-levels in which early-career teachers from UNC System EPPs were more or less effective than non-UNC System prepared teachers.

markedly from the last Program Effectiveness analyses in 2015 (using data from 2008–09 through 2012–13). In that prior work, there were 14 positive results and 9 negative results across all UNC System EPPs. The current analyses return 24 positive results and 4 negative results for UNC System EPPs.<sup>3</sup> While it is tempting to conclude from these changes that UNC System EPPs are producing more effective teachers than before, it is also possible that non-UNC System prepared teachers are less effective than in past analyses. Despite the increased number of positive results for UNC System EPPs, it is also worth noting that a large majority of the variation in teacher effectiveness is within rather than between EPPs.

Table 2 provides further details on the subject-areas and school-levels in which early-career teachers from UNC System EPPs were more or less effective than their non-UNC System prepared peers. These summary data indicate that UNC System EPPs are particularly strong—relative to non-UNC System prepared teachers—in high school biology. This is the subject-area with the highest concentration of alternative entry teachers. Another area of strength is middle grades, where there are three positive results in mathematics, reading, and 8<sup>th</sup> grade science, respectively. Given the UNC System’s focus on literacy, it is also worth noting that FSU has positive

results in all the reading/English analyses; ECU has positive results in two of three reading/English analyses (elementary and high school).

In addition to our main value-added analyses, which assess the impact of UNC System EPP graduates on all students, we estimated a series of models focusing on three student subgroups—economically-disadvantaged, racial/ethnic minority, and low-performing students. Generally, these subgroup analyses return similar results to those from our full models. However, there are several instances in which UNC System EPPs have insignificant results in the main model but positive subgroup results. For example: (1) ASU graduates are more effective with low-performing students in elementary grades mathematics; (2) ECU graduates are more effective with low-performing students in middle grades mathematics and with economically-disadvantaged and minority students in middle grades reading; (3) FSU graduates are more effective with minority students in 5<sup>th</sup> grade science; and (4) UNCW graduates are more effective with economically-disadvantaged students in middle grades reading and with low-performing students in 8<sup>th</sup> grade science. Importantly, these subgroup analyses may provide UNC System EPPs with more granular evidence to inform program improvement efforts.

<sup>3</sup> In models comparing teachers working in the same schools (school fixed effect) there are 15 positive results and 3 negative results for UNC System EPPs.

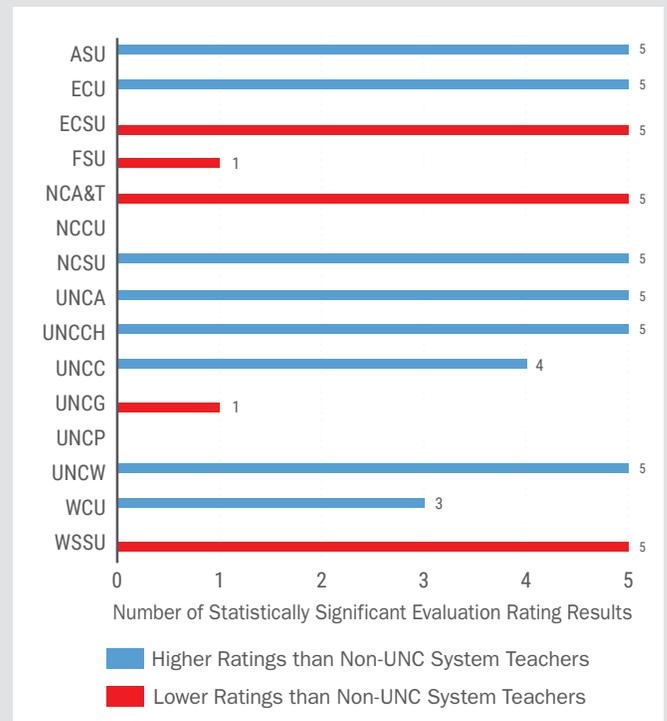
## Do graduates from certain UNC System EPPs earn higher evaluation ratings?

Figure 2 presents the number of statistically significant (positive and negative) evaluation rating results for each UNC System EPP. These counts come from an ordered logit model controlling for teacher and school characteristics. Graduates of six UNC System institutions—ASU, ECU, NCSU, UNCA, UNCCH, and UNCW—have significantly higher ratings on all five North Carolina professional teaching standards. Another two institutions, UNCC and WCU, have significantly higher ratings on four and three teaching standards, respectively. Conversely, graduates of three UNC System institutions—ECSU, NCA&T, and WSSU—have significantly lower ratings on all five professional teaching standards. Each of these universities is a minority serving institution that predominantly prepares racial/ethnic minority teachers. We discuss potential explanations for these negative findings in the paragraphs below. Overall, there are 37 positive results and 17 negative results across all UNC System EPPs. Results are similar when we limit comparisons to early-career teachers working in the same schools.

To better convey the magnitude of evaluation rating differences across UNC System EPPs, Figure 3 displays predicted probabilities of rating at developing, proficient, accomplished, and distinguished on the Facilitating Student Learning standard.<sup>4</sup> Generally, few early-career teachers are rated at developing or distinguished. As such, the main source of variation across UNC System EPPs is in the probability of rating at proficient versus accomplished. Programs with significantly higher ratings have a larger percentage of graduates with accomplished ratings (e.g. NCSU, UNCA, and UNCCH); those with significantly lower ratings have a larger percentage of graduates with proficient ratings (e.g. ECSU, NCA&T, and WSSU).

There may be valid reasons why an EPP's evaluation results substantially differ from its value-added results (e.g. differences in the teacher sample,<sup>5</sup> evaluations providing a fuller perspective on teaching practices). Nonetheless, given the interest in using value-added estimates and evaluation

Figure 2: A Summary of Teacher Evaluation Rating Results



Note: This figure displays the number of statistically significant evaluation rating results for each UNC System EPP. If a blue bar is not displayed that means there were no positive results for the respective UNC System EPP; if a red bar is not displayed that means there were no negative results for the respective UNC System EPP.

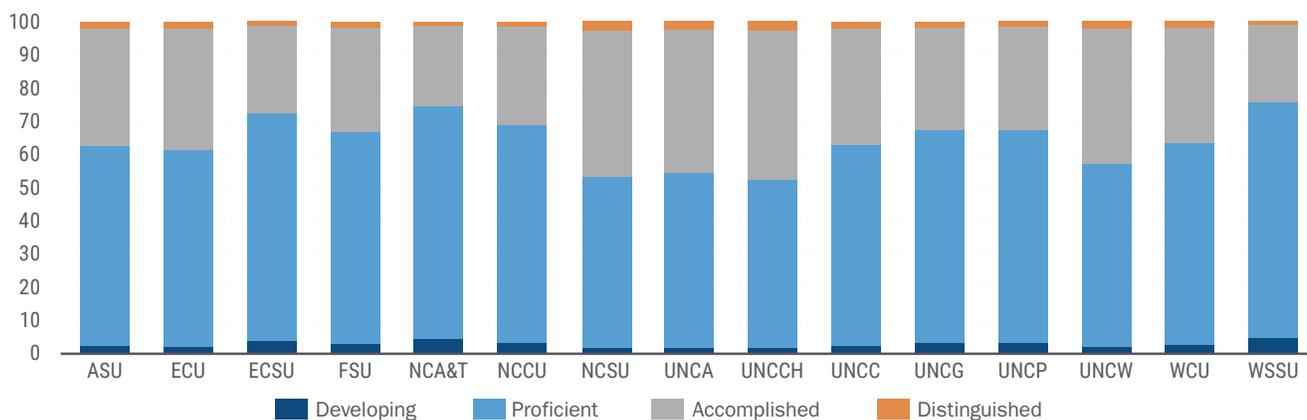
ratings for program accountability and improvement, it is valuable to assess the extent to which the measures convey similar information about program performance. Several UNC System EPPs—ASU, ECU, NCSU, UNCCH, and UNCW—have multiple positive results in value-added and evaluation rating analyses.<sup>6</sup> There are also institutions with positive results for one outcome measure but not the other. For instance, FSU and UNCP only have positive value-added results; UNCA only has positive evaluation rating results. Lastly, two institutions, ECSU and WSSU, have statistically insignificant value-added estimates but negative evaluation results. One theme that emerges from these evaluation results, whether they align with the value-added results or not, is that graduates from minority-serving

<sup>4</sup> These are not raw percentages of teachers earning ratings at each of these levels. Rather, these are predicted probabilities from models that adjust for teacher and school characteristics.

<sup>5</sup> In North Carolina, over 90 percent of teachers are evaluated each year. Approximately 35 percent of teachers teach a class in which students take an EOG or EOC exam.

<sup>6</sup> Likewise NCA&T has negative results in both value-added and evaluation rating analyses.

Figure 3: Predicted Probabilities on the Facilitating Student Learning Standard



Note: For each UNC System EPP, this figure displays predicted probabilities (after adjusting for teacher and school characteristics) of rating at developing, proficient, accomplished, and distinguished on the Facilitating Student Learning standard.

institutions have lower evaluation ratings. This may reflect true differences in teaching practices, differences in school and classroom context for graduates of minority-serving institutions,<sup>7</sup> and/or biases in ratings. These differences call for caution (and further study) in the high stakes use of evaluation ratings for EPPs.

## Discussion

In this research brief we used student test scores and teacher evaluation ratings to assess the effectiveness of early-career teachers from each UNC System EPP. These analyses can inform program accreditation, accountability, and improvement and are one way to assess the contributions of UNC System EPPs to North Carolina’s P-12 schools. Overall, there are three important takeaways from this research.

First, UNC System EPPs differ with respect to the demographics of the teachers they prepare and the types of schools in which their graduates work. UNC System EPPs prepare teachers who are predominately female and white. However, minority-serving institutions within the UNC System prepare many teachers from racial/ethnic minority populations. Graduates of these minority-serving institutions tend to work in schools with higher concentrations of economically-disadvantaged, minority, and low-performing students.

Second, when considering student achievement, early-career teachers from several UNC System EPPs frequently outperform their non-UNC System prepared peers. In particular, graduates of FSU, UNCCH, and UNCW were more effective in four value-added comparisons; graduates of ECU and UNCP were more effective in three value-added comparisons. Positive value-added results for UNC System EPPs were concentrated in high school biology and middle grades, with FSU and ECU standing out as especially effective in reading/English.

Finally, evaluation rating results present a mixed picture for graduates of UNC System EPPs versus their non-UNC System prepared peers. Six EPPs—ASU, ECU, NCSU, UNCA, UNCCH, and UNCW—have significantly higher ratings on all five professional teaching standards; three other EPPs—ECSU, NCA&T, and WSSU—have significantly lower ratings on all five standards. For many institutions their value-added and evaluation rating results are congruent: either statistically insignificant or both positive/negative. However, there are a few UNC System EPPs—particularly minority-serving institutions—whose value-added and evaluation rating results are quite different. These differences warrant further study and caution in the high stakes use of evaluation ratings for EPPs.

<sup>7</sup> It is important to note that all of our analyses control for school demographic characteristics (e.g. percentage of economically-disadvantaged and minority students). Furthermore, results are similar for minority-serving institutions when we make evaluation rating comparisons within schools.

## For more research on this topic

Bastian, K.C., Patterson, K.M., & Yi, P. (2015). UNC Teacher Quality Research: Teacher preparation program effectiveness report.

Available from: <https://publicpolicy.unc.edu/files/2015/07/2015-Teacher-Preparation-Program-Effectiveness-Report.pdf>

Bastian, K.C., Patterson, K.M., & Yi, P. (2018). Evaluating teacher preparation programs with teacher evaluation ratings: Implications for program accountability and improvement. *Journal of Teacher Education*, 69(5), 429–447.

Gansle, K.A., Noell, G.H., & Burns, J.M. (2012). Do student achievement outcomes differ across teacher preparation programs? An analysis of teacher education in Louisiana. *Journal of Teacher Education*, 63(5), 304–317.

Goldhaber, D., Liddle, S., & Theobald, R. (2013). The gateway to the profession: Assessing teacher preparation programs based on student achievement. *Economics of Education Review*, 34, 29–44.

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*EPIC is an interdisciplinary team that conducts rigorous research and evaluation to inform education policy and practice. We produce evidence to guide data-driven decision-making using qualitative and quantitative methodologies tailored to the target audience. By serving multiple stakeholders, including policy-makers, administrators in districts and institutions of higher education, and program implementers we strengthen the growing body of research on what works and in which context. Our work is ultimately driven by a vision of high quality and equitable education experiences for all students, and particularly students in North Carolina.*

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