



Portals into the Profession: The Composition, Performance, and Retention of North Carolina’s Early-Career Teachers

In this research brief, the Education Policy Initiative at Carolina (EPIC) presents updated results from our Teacher Portals analyses, a longstanding study in the UNC System Educator Quality Research Initiative. Descriptively, we find that North Carolina’s teacher workforce is predominantly composed of traditionally prepared teachers. However, recent trends show declines in the percentage of new entrants from in-state institutions and commensurate increases in the percentage of newly-hired alternative entry teachers. These alternative entry teachers are more diverse, more likely to hold a high-need license, and more likely to work in high-need schools. Performance analyses indicate that early-career teachers from the UNC System are more effective than out-of-state prepared and alternative entry teachers. These results are modest in size but take on practical significance given the number of teachers from these preparation portals. Finally, in-state prepared teachers (from public and private institutions) are more likely to continue teaching in North Carolina than out-of-state prepared and alternative entry teachers.

Introduction

Each year, the UNC System commissions a body of research—the Educator Quality Research Initiative (EQRI)—on educator preparation and effectiveness. This work connects administrative data from the UNC System and the North Carolina Department of Public Instruction (NCDPI) to answer questions about teacher preparation quality, teacher performance, and teacher retention. Findings from the EQRI inform state and local education officials and help UNC System institutions meet program accreditation and improvement standards.

In this research brief, the Education Policy Initiative at Carolina (EPIC) presents updated results from our teacher portals analyses, a longstanding study in the EQRI. Teacher

portals are categories for the preparation an individual held prior to first entering teaching. We classify teachers into one of the following teacher portals: UNC System, NC Private College/University, Out-of-State, Teach For America (TFA), Alternative Entry, and Visiting International Faculty (VIF).¹ With these classifications we assess (1) the distribution of teachers to preparation portals; (2) the characteristics of teachers and the schools in which they work; (3) the performance of teachers, as measured by value-added estimates and evaluation ratings; and (4) the persistence of teachers in North Carolina public schools (NCPS). These analyses help us understand the composition of the state’s teacher workforce and the contributions of UNC System graduates to students and schools. Such findings are particularly salient as North Carolina considers ways to strengthen its teacher pipeline.

¹ There is an additional category for teachers that cannot be classified based on administrative data. We include these teachers in analyses but do not report their results in this brief.

Background

This latest iteration of our Teacher Portals analyses examines outcomes for teachers with less than five years of experience (early-career teachers) in the 2012-13 through 2016-17 school years. We focus on early-career teachers since this is the time period in which teacher preparation most strongly influences teacher performance and retention. In analyses, we compare outcomes for those initially-prepared at a UNC System institution with those entering teaching through another portal—NC Private College/University, Out-of-State, TFA, Alternative Entry, and VIF.²

We assess the performance of early-career teachers with two outcome measures: value-added to student achievement and evaluation ratings. For teacher value-added, we make students' standardized test scores on End-of-Grade (EOG) and End-of-Course (EOC) exams the outcome. In models, 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 a UNC System prepared teacher versus students taught by a teacher from another portal. 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 estimate models comparing the effectiveness of teachers working in the same schools.

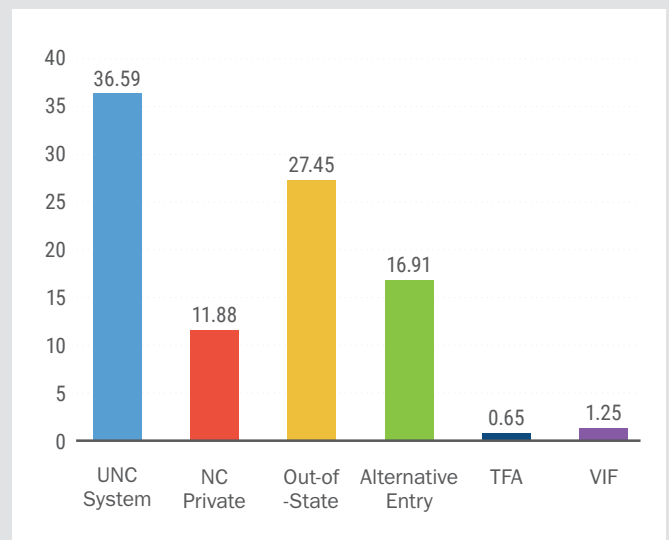
Our second measure of teacher performance is evaluation ratings from the North Carolina Educator Evaluation System (NCEES). Principals rate early-career teachers as either not demonstrated, developing, proficient, accomplished, or distinguished on the state's five professional teaching standards—Leadership, Classroom Environment, Content Knowledge, Facilitating Student Learning, and Reflecting on Practice. We estimate ordered logit models controlling for teacher and school characteristics. These results indicate whether the odds of earning higher evaluation ratings are greater for UNC System graduates versus teachers from another entry portal. We also estimate models comparing the evaluation ratings of teachers working in the same schools.

Finally, to examine teacher retention, we identify three cohorts of first-year teachers in the 2012-13, 2013-14, and 2014-15 school years. Using certified salary files from NCDPI, we follow these teachers over time to determine the percentage that return for a second, third, fourth, and fifth year of teaching in NCPS. This allows us to compare the retention rates for early-career teachers from the UNC System versus their peers from other preparation portals.

How are teachers distributed to preparation portals?

Figure 1 displays the distribution of teachers to portals in the 2016-17 school year. Of NCPS' 96,000 teachers in 2017, almost 37 percent were traditionally prepared at a UNC System institution. Another 12 percent of North Carolina's teachers were prepared at an in-state private college/university. Together, in-state institutions traditionally prepare nearly 50 percent of the state's teacher workforce. North Carolina imports more than 25 percent of its teacher workforce from out-of-state institutions and nearly 17 percent of the state's teachers entered the profession alternatively.³ Here, it is important to note that many of

Figure 1: The Distribution of Teachers to Portals (2016-17 School Year)

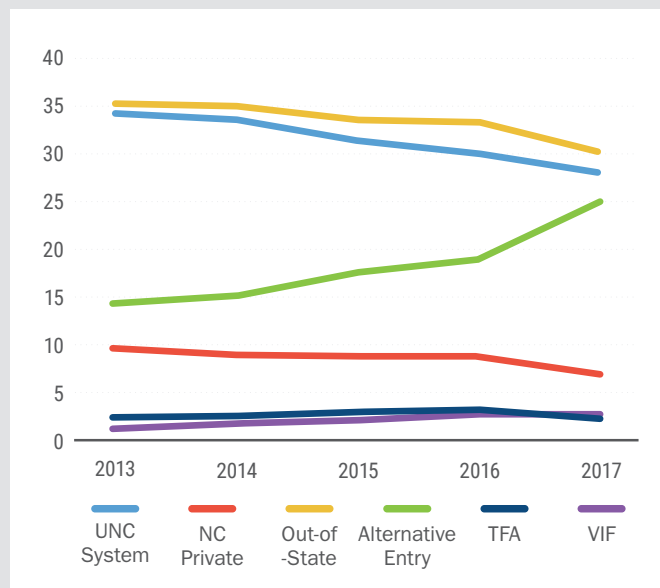


Note: This figure displays the percentage of teachers in NCPS, by preparation portal, in the 2016-17 school year.

² Visiting International Faculty is now known as Participate. For consistency with prior work, we continue to use their original name in this research brief. Because VIF teachers must have at least three years of in-country teaching experience before coming to the United States, there are very few early-career VIF teachers in our analysis sample. As such, we include them in our broader descriptive reporting but do not present their performance or retention outcomes.

³ This means that they entered teaching without having completed all the requirements for an initial licensure.

Figure 2: The Percentage of New Entrants by Portal (2012-13 to 2016-17)



Note: For each preparation portal, this figure displays the percentage of new teacher entrants to NCPS in the 2013 through 2017 school years.

these alternative entry teachers may fulfill their coursework requirements at an in-state institution(s). Finally, TFA corps members and VIF teachers comprise very small percentages (<1.5 percent) of the teacher workforce.

For the 2012-13 through 2016-17 school years, Figure 2 displays the percentage of new entrants⁴ to the NCPS workforce from each preparation portal. Since substantive changes in the composition of the full teacher workforce take time to develop, this figure allows us to see how recent events in North Carolina (e.g. declines in teacher education enrollment) influence the makeup of newly-hired teachers. Two trends in these new entrant data stand out. First, the percentage of new entrants from in-state public and private institutions has dropped in recent years—from 43.46 percent of new entrants in 2013 to 34.65 percent of new entrants in 2016-17.⁵ Second, the percentage of new entrants from alternative routes has increased in a commensurate fashion—from 14.25 percent of new entrants in 2013 to 24.98 percent of new entrants in 2016-17. North Carolina is now more reliant on alternative entry teachers.

What are the characteristics of teachers and the schools in which they work?

Table 1 displays individual and school-level characteristics for teachers with less than five years of experience in the 2016-17 school year. Overall, these data show that alternative entry and TFA teachers fill several gaps in the teaching workforce. Demographically, traditionally

Table 1: Individual and School Level Characteristics for Teachers with Less than Five Years of Experience (2016-17)

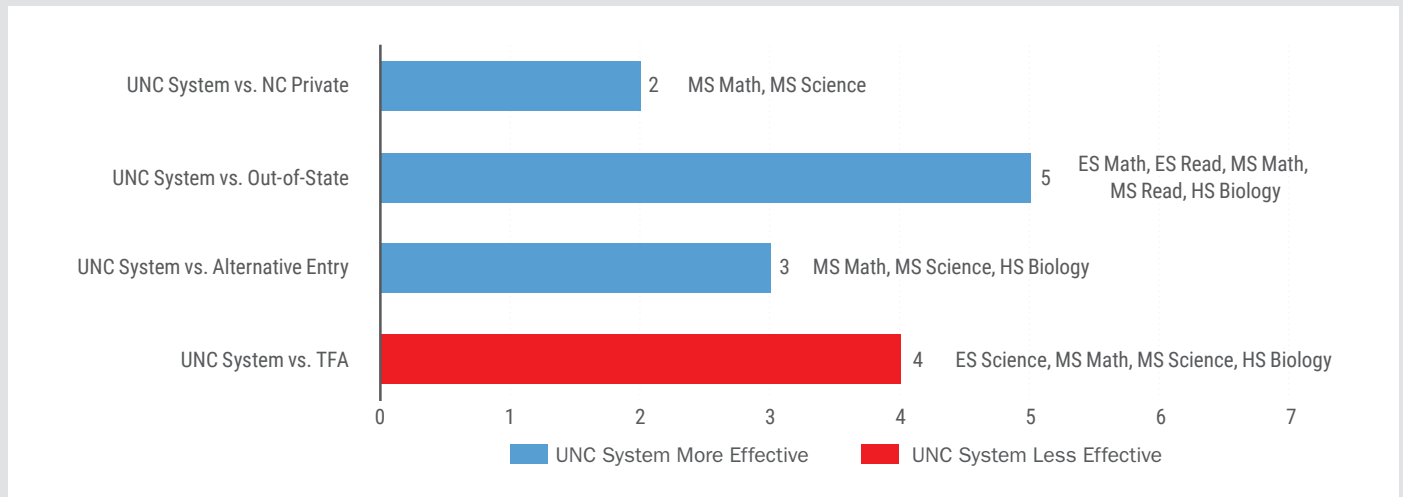
	UNC System	NC Private	Out-of-State	Alternative Entry	TFA
Teacher Demographics					
Female	80.53	85.43	80.15	70.23	78.75
Minority	17.53	13.05	14.22	44.81	38.77
Select Licensure Groups					
Elementary	47.51	59.64	54.62	9.71	24.50
Reading/English	15.55	10.16	15.38	10.75	22.82
Social Studies	12.76	10.87	12.89	10.59	16.46
Mathematics	10.26	9.27	10.50	10.15	19.84
Science	7.99	5.36	7.87	17.04	18.25
Exceptional Children	11.37	13.51	17.97	16.86	7.73
School Characteristics					
Minority	54.26	52.90	59.80	64.31	85.69
Economically-Disadvantaged	49.94	50.56	49.08	54.01	62.53
Performance Composite	56.32	57.04	56.72	49.12	41.42

Note: For each preparation portal, this table displays individual and school-level characteristics for teachers with less than five years of experience in 2016-17.

⁴ New entrants are defined as individuals who have never taught in NCPS. New entrants can have 0 years of experience or have previously taught elsewhere before coming to North Carolina.

⁵ The percentage of new entrants from out-of-state has also dipped slightly during our study period.

Figure 3: A Summary of Teacher Value-Added Results



Note: This figure displays the number of statistically significant value-added results for UNC System graduates versus teachers from other preparation portals. If a blue bar is not displayed that means there were no positive results for UNC System graduates; if a red bar is not displayed that means there were no negative results for UNC System graduates.

prepared teachers (UNC System, NC Private, out-of-state) are overwhelmingly female and white. Conversely, alternative entry and TFA teachers are much more likely to be a racial/ethnic minority. This matters, since minority teachers are linked to positive outcomes for same-race students. Licensure data show that alternative entry and TFA teachers are more likely to hold a high-need license—e.g. math, science, and/or special education—and less likely to hold an elementary license. Finally, school-level data indicate that alternative entry and TFA teachers work in schools with more minority and economically-disadvantaged students and in schools with lower performance composites.

How effective are teachers from different preparation portals?

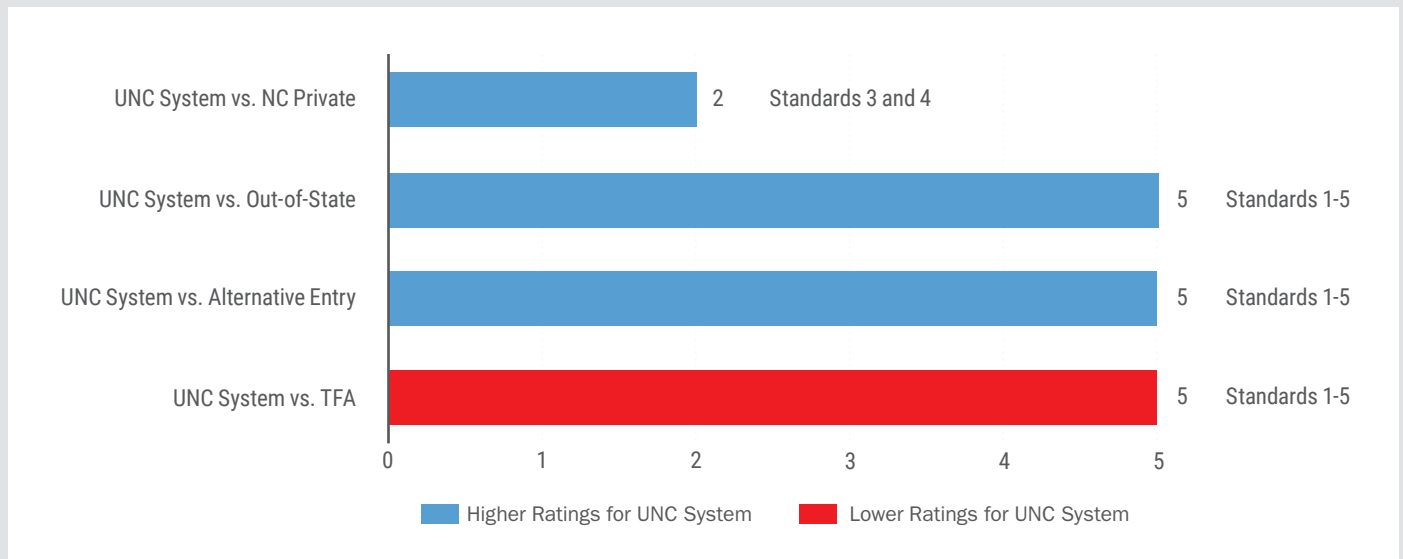
Figure 3 presents the number of statistically significant value-added results for UNC System graduates versus teachers from other preparation portals. These counts come from our multi-level model that nests students within classrooms and schools and makes statewide teacher effectiveness comparisons.⁶ Early-career teachers from the UNC System are more effective than teachers from in-state private colleges/universities in two comparisons, out-of-state prepared teachers in five comparisons, and alternative

entry teachers in three comparisons. Most of the positive results for UNC System graduates are in mathematics and science. Only TFA corps members outperform UNC System teachers—in the STEM subjects of 5th grade science, middle grades math, 8th grade science, and high school biology.

In addition to our main value-added analyses, which consider the test scores of all students, we estimated a series of models focused 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 graduates have insignificant results in the main model but significant subgroup results. For example, UNC System graduates are more effective than (1) NC private college/university teachers with low-performing students in elementary grades math; (2) out-of-state prepared teachers with minority students in 5th grade science and low-performing students in 8th grade science; and (3) alternative entry teachers with economically-disadvantaged students in middle grades reading. UNC System graduates are less effective than NC private college/university teachers with economically-disadvantaged and minority students in high school algebra.

⁶ Models comparing teacher value-added within the same schools return similar results—nine positive and three negative estimates for UNC System prepared teachers.

Figure 4: A Summary of Teacher Evaluation Rating Results

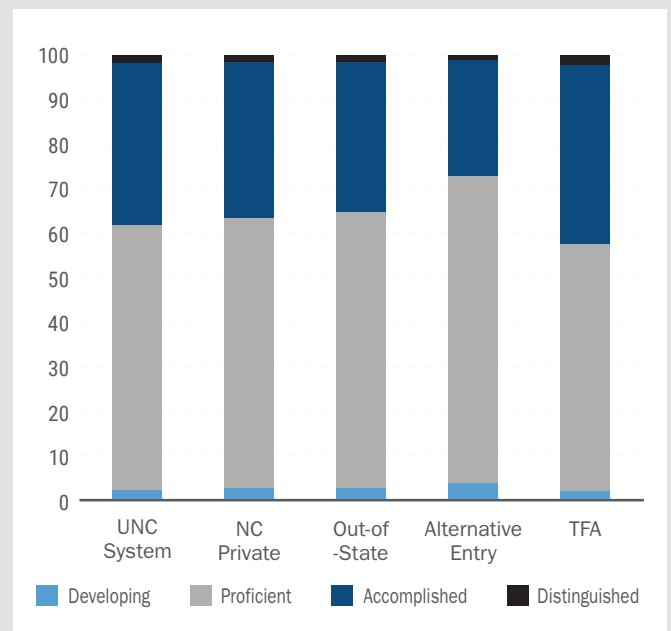


Note: This figure displays the number of statistically significant evaluation rating results for UNC System graduates versus teachers from other preparation portals. If a blue bar is not displayed that means there were no positive results for UNC System graduates; if a red bar is not displayed that means there were no negative results for UNC System graduates.

Figure 4 displays the number of statistically significant evaluation rating results for UNC System graduates versus teachers from other preparation portals. These counts come from our ordered logit model controlling for teacher and school characteristics.⁷ Early-career teachers from the UNC System earn higher ratings than NC private college/university teachers on two standards, out-of-state prepared teachers on all five standards, and alternative entry teachers on all five standards. Only TFA corps members earn higher evaluation ratings than UNC System graduates.

To better convey the magnitude of evaluation rating differences, Figure 5 presents predicted probabilities of rating at developing, proficient, accomplished, and distinguished on the Facilitating Student Learning standard. These data show that many of the statistically significant differences between preparation portals are rather modest in size. For example, the predicted probabilities for teachers from UNC System, NC Private, and out-of-state institutions are similar. Conversely, the evaluation rating differences between UNC System graduates and alternative entry teachers are more practically significant.

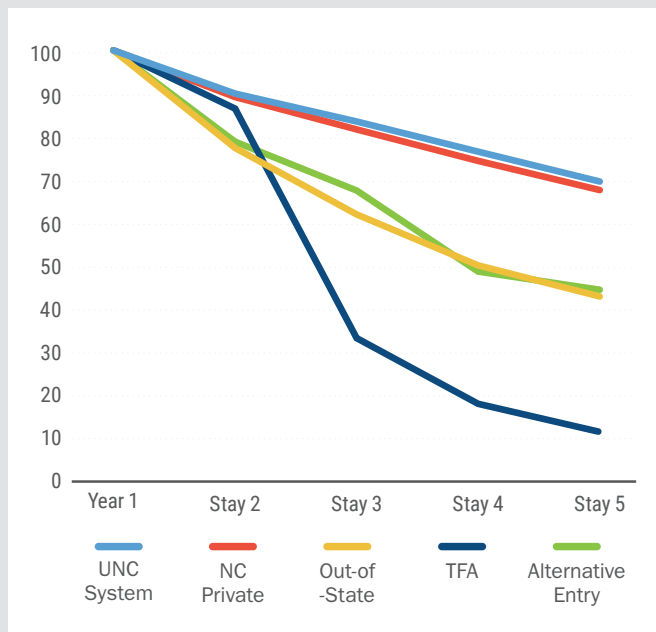
Figure 5: Predicted Probabilities for Evaluation Ratings on the Facilitating Learning Standard



Note: For each preparation portal, this figure displays predicted probabilities (adjusting for model covariates) for rating at developing, proficient, accomplished, and distinguished on the Facilitating Student Learning standard.

⁷ Models comparing teacher evaluation ratings within the same schools return similar results—eleven positive and five negative estimates for UNC System prepared teachers.

Figure 6: Teacher Retention in NCPS



Note: This figure displays the percentage of first-year teachers in the 2012-13, 2013-14, and 2014-15 school years that return for a 2nd, 3rd, 4th, and 5th year of teaching in NCPS.

How long do teachers from these preparation portals persist in NCPS?

For each preparation portal, Figure 6 displays the percentage of beginning teachers in the 2012-13, 2013-14, and 2014-15 school years who returned for a 2nd, 3rd, 4th, and 5th year of teaching in NCPS. In-state prepared teachers (from public and private institutions) are the most likely to return. Ninety percent return for a 2nd year of teaching, 83 percent return for a 3rd year of teaching, and 70 percent return for a 5th year of teaching in NCPS. The retention patterns of out-of-state and alternative entry teachers are similar to each other—approximately 80 percent return for a 2nd year of teaching, 66 percent return for a 3rd year of teaching, and 45 percent return for a 5th year of teaching in NCPS. As expected, given their two-year teaching commitments, TFA corps members have the lowest retention rates beyond a second year of teaching.

Discussion

Improvements to the state’s teacher workforce require data and evidence that informs decision making. With this motivation, we assessed whether preparation portals are related to the performance and persistence of early-career teachers in NCPS. These analyses generated four main takeaways.

First, North Carolina’s teacher workforce is predominantly composed of traditionally prepared teachers from UNC System, in-state private, and out-of-state institutions. However, recent trends show declines in the percentage of new entrants from in-state institutions. These declines track with enrollment drops at in-state colleges of education. Likewise, there are commensurate increases in the percentage of newly-hired alternative entry teachers. These shifts in the teacher workforce matter given the performance and retention differences between UNC System and alternative entry teachers. Second, alternative entry teachers help fill gaps in the teacher workforce. Relative to their traditionally trained peers, alternative entry teachers are more diverse, more likely to hold a high-need license, and work in schools with more economically-disadvantaged and minority students. These data accord with national trends for alternative entry teachers.

Third, although the performance differences are relatively modest, on average, early-career teachers from the UNC System are more effective than out-of-state prepared and alternative entry teachers. These results take on greater practical significance given the number of teachers from each of these preparation portals. However, it is important to note that there is much more variation in effectiveness within preparation portals than between them. This suggests that research should focus on better understanding the sources of this variation in order to inform policy and practice. Finally, differences in teacher retention are meaningful in size and indicate that in-state prepared teachers (from public and private institutions) are more committed to teaching in NCPS than those from other states or those who entered teaching alternatively. Collectively, this evidence can guide state and local education officials as they enact preparation and licensure policies and target teacher recruitment and hiring efforts.

For more research on this topic

- Bastian, K.C. & Henry, G.T. (2015). Teachers without borders: Consequences of teacher labor force mobility. *Educational Evaluation and Policy Analysis*, 37(2), 163-183.
- Henry, G.T., Purtell, K.M., Bastian, K.C., Fortner, C.K., Thompson, C.L., Campbell, S.L., & Patterson, K.M. (2014). The effects of teacher entry portals on student achievement. *Journal of Teacher Education*, 65(1), 7-23.
- Lincove, J.A., Osborne, C., Mills, N., & Bellows, L. (2015). Teacher preparation for profit or prestige: Analysis of a diverse market for teacher preparation. *Journal of Teacher Education*, 65(5), 415-434.
- Public Schools of North Carolina. (2019). Report to the North Carolina General Assembly: 2017-18 State of the Teaching Profession in North Carolina. Available from: <http://www.ncpublicschools.org/docs/district-humanresources/surveys/leaving/2017-18-state-teaching-profession.pdf>

Study Author: Kevin C. Bastian (April 2019)

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.

<http://publicpolicy.unc.edu/epic-home/>



UNC
COLLEGE OF
ARTS & SCIENCES
PUBLIC POLICY