

UNC Teacher Quality Research

Teacher Preparation Program Effectiveness Report

April 2015

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EDUCATION POLICY
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Acknowledgements

We wish to recognize Dan Cohen-Vogel and Eric Zwiieg with the University of North Carolina General Administration (UNC-GA) for their vital contributions in providing data.

We also wish to thank Alisa Chapman, Vice President of Academic and University Programs at the UNC-GA, and the deans and department heads from the colleges, schools, and departments of education at the 15 UNC system institutions engaged in teacher education for their valuable input and continued collaboration. Finally, we wish to acknowledge the editing and formatting work done by Elizabeth D’Amico, who is responsible for the overall look and polish of the report. All authors accept responsibility for any remaining errors.

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Introduction

This report, produced in collaboration with the UNC General Administration (UNC-GA), presents the fourth¹ set of results assessing the performance of North Carolina public school (NCPS) teachers who received their initial preparation at UNC system institutions. The UNC-GA established this research agenda in 2009 to quantify the impact of UNC system teacher preparation programs on student and teacher outcomes and to assist UNC system institutions in the evaluation and improvement of their teacher education programs. Generating quantitative estimates of program effectiveness allows UNC system institutions to see where their program graduates perform well, identifies programs that need improvement, provides a starting point for inquiry about program characteristics that impact teacher performance, and encourages teacher preparation programs to become better consumers of data and to undertake data-driven reforms. This program effectiveness analysis fits into the larger body of research undertaken by the Education Policy Initiative at Carolina (EPIC) and the UNC-GA designed to assess the impact of teacher preparation and to provide evidence for program improvement. Furthermore, this body of research is well-aligned with the current efforts of both the Council for the Accreditation of Educator Preparation and the federal government to strengthen teacher preparation programs.

Consistent with past analyses, the main purpose of this report is to estimate the adjusted average test score gains for North Carolina public school students taught by teachers initially prepared at UNC system institutions. To best inform programs, we estimate these value-added models across grade levels/subject areas, with multiple analysis methods, for subgroups of academically at-risk students, and controlling for a measure of teacher academic ability, to separate the impact of selection into teacher preparation programs from the quality of preparation received therein. For the first time, this report also estimates the adjusted average evaluation ratings for UNC system institution initially prepared teachers. These evaluation ratings are available for a large percentage of teachers and measure important aspects of teaching—demonstrating leadership, establishing a respectful classroom environment, content knowledge, facilitating student learning, and reflecting on practice—that are not fully captured by student test score gains. These two outcomes are policy relevant and together, they provide a more comprehensive view of teacher performance.

We estimated two sets of models for this program effectiveness research: (1) overall models comparing the performance of initially prepared graduates from UNC system institutions to all other, non-UNC system prepared teachers in the state and (2) institution specific models comparing the performance of initially prepared graduates of each UNC system institution to 11 other categories of teacher preparation, including teachers prepared at North Carolina private colleges and universities, teachers prepared out-of-state, Teach For America corps members, and teachers entering the profession alternatively. These two approaches serve different purposes. The first set of models allows comparisons between each UNC system institution and a common

¹ For prior program effectiveness reports, please see:

http://publicpolicy.unc.edu/files/2014/02/ImpactTeacherPrepPro_Jan2010_Final.pdf

http://publicpolicy.unc.edu/files/2014/02/TeacherPrepEffectRpt_Final_2011.pdf

http://publicpolicy.unc.edu/files/2013/11/UNC_TOR_OverallProgramReport_Final.pdf

reference group representing the average of all other types of teacher preparation. This analysis is the focus of this report. The second set of models specifies each UNC system institution as a reference group and makes direct comparisons between initially prepared graduates of the reference institution and teachers entering the profession through one of 11 other categories of preparation. We provide results from this second set of models to each UNC system institution in a separate institution specific report.

In the following sections, we first detail our coding of UNC system initially prepared teachers, our research sample, and the variables used in analyses. Next, we describe our analysis plan for value-added and evaluation rating models. Finally, for each UNC system institution, we present value-added and evaluation rating results and conclude with a summary of the findings.

Data and Sample

Coding of UNC System Initially-Prepared Teachers

To identify graduates/completers of UNC system teacher preparation programs we relied on undergraduate, graduate level, and licensure completion data from the UNC-GA. These files detail individuals' enrollment and graduation status, academic major(s), and whether they completed requirements for licensure. For our analyses we sought to identify those individuals who were *initially prepared* to teach—at the undergraduate, graduate, or licensure only levels—by a UNC system institution prior to entry into the teaching profession. Initially prepared teachers include: (1) those graduating with an undergraduate education degree or those earning a teaching licensure concurrent with a non-education undergraduate degree; (2) those graduating with a graduate level education degree resulting in an initial licensure (e.g. Master of Arts in Teaching) or those earning an initial teaching licensure concurrent with a non-education graduate degree; and (3) those completing their initial requirements to teach through a licensure only program. This coding structure differs from earlier versions of our program effectiveness research, which only classified initially prepared undergraduates as UNC system prepared teachers. We prefer the new coding structure, as it allows for a more comprehensive assessment of the performance of institutions' graduates. However, to maintain consistency with prior program effectiveness research, we report results for UNC system institutions limited to their initially prepared undergraduates in the appendix. Table 1 identifies each of these institutions and their corresponding abbreviations used throughout this report.

Table 1: UNC System Institution Abbreviations

UNC System Institution	Abbreviation
Appalachian State University	ASU
East Carolina University	ECU
Elizabeth City State University	ECSU
Fayetteville State University	FSU
North Carolina Agricultural and Technical State University	NCAT
North Carolina Central University	NCCU
North Carolina State University	NCSU
University of North Carolina – Asheville	UNCA
University of North Carolina – Chapel Hill	UNCCH
University of North Carolina – Charlotte	UNCC
University of North Carolina – Greensboro	UNCG
University of North Carolina – Pembroke	UNCP
University of North Carolina – Wilmington	UNCW
Western Carolina University	WCU
Winston-Salem State University	WSSU

Research Sample

Full Sample: Our full teacher sample consists of all North Carolina public school (NCPS) teachers with less than five years of experience in the 2008-09 through 2012-13 academic years. We limit our sample to these early-career teachers to assess the performance of recent program graduates and because the impact of teacher preparation diminishes over time, as teachers learn from classroom experience, principal and peer feedback, and professional development.

Initially prepared UNC system institution graduates comprise approximately one-third of the full teacher sample. To provide additional information about these UNC system institution graduates, Table 2 displays characteristics of the schools in which these early-career teachers work during our study period. Overall, this table shows that, across institutions, there are pronounced differences in the types of schools in which graduates work. For example, relative to other UNC system institutions: (1) initially prepared graduates from NCSU are highly concentrated in high schools; (2) initially prepared graduates from FSU, NCAT, NCCU, UNCP, and WSSU work in schools with high concentrations of racial/ethnic minority students; and (3) initially prepared graduates from ASU, NCSU, UNCA, and UNCCH work in schools with higher student performance composites.

Table 2: School Characteristics for UNC System Initially Prepared Teachers (2008-09 through 2012-13)

School Characteristic	ASU	ECU	ECSU	FSU	NCAT	NCCU	NCSU	UNCA	UNCCH	UNCC	UNCG	UNCP	UNCW	WCU	WSSU
School Size	709.46	686.49	508.87	702.30	786.09	725.06	1159.44	710.96	841.17	776.51	708.46	663.12	715.43	607.11	626.12
% Free or Reduce-Price Lunch	56.08	62.08	65.74	65.04	65.63	64.42	43.14	55.05	47.34	55.03	61.55	73.12	57.05	59.07	74.98
Minority Percentage	36.22	56.41	55.65	68.60	68.76	73.61	48.05	32.14	52.21	49.57	54.03	68.07	46.85	28.76	71.77
Short-Term Suspension Rate	14.50	22.38	25.55	26.94	24.52	19.51	22.68	14.91	13.10	15.91	14.94	26.88	16.62	14.06	31.00
Violent Acts Rate	7.59	6.93	5.84	9.65	11.96	8.51	11.82	10.74	7.46	7.45	7.41	6.52	5.98	7.82	12.66
Per-Pupil Expenditures	8541.04	9478.21	9731.66	9124.77	9412.22	9322.79	7850.19	8691.51	8643.75	8953.86	8826.66	8933.79	8550.05	8999.09	10790.93
Novice Teacher Percentage	20.65	23.81	20.87	27.50	24.22	25.05	21.65	19.91	23.88	23.24	22.37	24.85	22.64	20.33	23.91
NBC Teacher Percentage	15.02	12.73	13.53	6.43	10.95	10.75	15.39	18.11	15.78	13.94	12.39	8.19	13.14	17.06	9.40
Returning Teacher Percentage	82.79	80.33	80.06	78.33	78.92	77.25	81.34	83.51	81.07	80.51	81.47	79.06	81.39	83.43	77.50
AYP Percentage	52.86	52.02	51.32	48.78	50.11	46.19	58.00	53.17	52.62	54.47	52.37	49.19	50.95	55.69	51.35
Performance Composite	70.34	64.63	61.47	63.13	60.27	60.78	70.96	70.45	71.34	68.59	64.74	61.13	68.79	69.51	55.52
Principal Experience	5.78	5.47	5.25	5.54	6.03	5.43	6.33	5.85	5.86	5.85	5.89	5.52	5.67	5.86	5.89
Urbanicity															
<i>City</i>	21.73	18.11	6.24	48.53	61.73	57.77	43.51	20.94	41.92	34.66	42.46	16.61	33.96	12.37	68.48
<i>Suburb</i>	15.49	4.53	1.22	10.36	6.34	8.90	8.95	30.30	20.34	15.43	7.90	4.70	12.02	21.82	3.92
<i>Town</i>	8.64	14.85	19.22	10.87	5.81	6.11	8.28	9.36	5.77	5.54	10.61	23.56	8.58	9.51	6.81
<i>Rural</i>	54.14	62.51	73.32	30.24	26.11	27.23	39.26	39.41	31.96	44.37	39.03	55.13	45.45	56.30	20.78
School Type															
<i>Elementary/Elem-Middle Combo</i>	53.61	61.86	59.95	57.11	42.59	58.60	19.62	46.01	54.10	66.68	60.55	64.27	61.79	54.66	61.62
<i>Middle School</i>	18.82	15.61	17.48	18.55	18.30	18.67	26.25	15.83	15.87	15.61	17.08	11.57	16.17	17.08	16.67
<i>High School</i>	26.87	21.97	22.09	23.90	38.17	22.73	54.00	37.67	29.72	16.84	21.85	23.99	21.56	26.05	20.20
<i>Other</i>	0.70	0.57	0.49	0.45	0.95	0.00	0.13	0.49	0.31	0.88	0.52	0.17	0.48	2.21	1.52
Teacher-by-School Year Count	8984	9861	824	1569	951	1157	3935	815	2621	5797	6682	2376	4986	3443	594

Note: This table displays school-level characteristics for all UNC system initially prepared teachers with less than five years' experience in the 2008-09 through 2012-13 academic years.

As detailed in the sections below, not all of these initially prepared UNC system institution teachers will be included in our value-added or evaluation rating analyses—due to not teaching a tested grade/subject area or not being evaluated by their school administrator during the study period. Therefore, for the 2012-13 school year, Table 3 provides a snapshot, by UNC system institution, of the total number of initially prepared teachers working in NCPS, the total number of initially prepared teachers with less than five years of experience, the total number of those early-career teachers evaluated by a school administrator, and the total number of those early-career teachers teaching a tested grade/subject area. Overall, 91 percent of the initially prepared teachers with less than five years of experience were evaluated by a school administrator and 37 percent of these initially prepared teachers taught in a tested grade/subject area.

Table 3: Counts of UNC System Initially Prepared Teachers for the 2012-13 School Year

UNC Teacher Preparation Program	All Initially Prepared Teachers in 2012-13			
	All Teachers	Less than 5 Years' Experience	Less Than 5 Years' Experience and a Teacher Evaluation Rating	Less Than 5 Years' Experience and Teaching a Tested-Grade/Subject-Area
ASU	6209	1810	1648	665
ECU	6175	2022	1858	745
ECSU	621	171	155	59
FSU	1013	277	257	113
NCAT	635	197	186	57
NCCU	751	219	186	79
NCSU	2014	934	856	359
UNCA	443	179	166	74
UNCCH	1714	481	446	207
UNCC	3273	1201	1085	472
UNCG	3868	1357	1263	469
UNCP	1603	480	426	156
UNCW	3053	970	904	402
WCU	2338	752	681	261
WSSU	538	144	135	51

Note: By UNC system institution, this table displays unique teacher counts in the 2012-13 school year.

Teacher Value-Added: To estimate the impact of teachers initially prepared by UNC system institutions on adjusted average student test score gains, we analyzed the five most recent years of available data, 2008-09 through 2012-13. Further, we limited our value-added analyses to teachers with less than five years of experience during the study period. We report results from 10 grade level/subject area value-added models: End-of-Grade (EOG) exams in elementary grades mathematics, reading (grades 4 and 5), and science (grade 5 only); EOG exams in middle grades mathematics, reading (grades 6-8), and science (grade 8 only); an End-of-Course (EOC) exam for algebra I taken in middle grades (grades 6-8); and EOC exams for high school algebra

I, biology, and English I/II.² Due to the elimination of several EOC exams in North Carolina, we no longer report value-added results for the following high school subject-areas: algebra II, geometry, chemistry, physical science, physics, U.S. history, and civics.

Teacher Evaluation Ratings: To assess the impact of UNC system teacher preparation programs on the evaluation ratings of their initially prepared teachers, we used North Carolina Educator Evaluation System (NCEES) data from 2010-11 through 2012-13. As with our value-added analyses, we limited these models to all teachers with less than five years of experience during the study period. We report evaluation rating results for the five North Carolina Professional Teaching Standards (NCPTS) that are directly assessed by school administrators: teachers demonstrate leadership (Standard 1), teachers establish a respectful environment for a diverse group of students (Standard 2), teachers know the content they teach (Standard 3), teachers facilitate learning for their students (Standard 4), and teachers reflect on their practice (Standard 5). For these analyses we estimated an evaluation rating model across all school levels, combined, and then performed analyses for elementary, middle, and high schools, separately.

Dependent Variables

Teacher Value-Added: The outcome variable for these analyses is students' current test score performance on EOG exams in elementary grades mathematics, reading (grades 4 and 5), and science (grade 5 only); EOG exams in middle grades mathematics, reading (grades 6-8) and science (grade 8 only); and EOC exams in algebra I, biology, and English I/II. To remove any temporal trends we standardized all EOG exam scores within subject, grade, and year and all EOC exam scores within subject and year.

Teacher Evaluation Ratings: The outcome variable for these analyses is teachers' evaluation ratings on the five NCPTS directly assessed by school administrators. To evaluate teachers, school administrators use formal classroom observations and paper-based evidences to document key teaching behaviors and rate teachers at one of five performance levels: not demonstrated, developing, proficient, advanced, or distinguished.³

Covariates

The focal variables in our value-added and evaluation rating analyses are a set of 15 indicators identifying whether an individual was initially prepared to teach at a specific UNC system institution. To adjust for factors influencing teacher performance outside of the control of these teacher preparation programs, we used a rich set of covariates. For both our value-added and evaluation rating analyses we included year fixed effects to adjust for temporal trends in the data. In our value-added models we controlled for the student, classroom, teacher, and school characteristics shown in Table 4. For our evaluation rating models, we included teacher experience variables and all of the school characteristics listed in Table 4.

² In 2008-09 through 2011-12 North Carolina assessed high school students with an End-of-Course exam in English I (typically taken by students in 9th grade). In 2012-13 North Carolina assessed high school students with an EOC exam in English II (typically taken by students in 10th grade).

³For these analyses, Not demonstrated=1; Developing=2; Proficient=3; Advanced=4; and Distinguished=5.

Table 4: Covariates Used in Models

Student	Classroom & Teacher	School
1. Prior test scores in math and reading	16. Years of teaching experience	22. School size
2. Classmates prior test scores	17. Teaching out-of-field	23. School size squared
3. Days absent	18. Number of students	24. Suspension rate
4. Structural mobility	19. Advanced curriculum (MS and HS only)	25. Violent acts rate
5. Between-year mobility	20. Remedial curriculum (MS and HS only)	26. Total per-pupil expenditures
6. Within-year mobility	21. Dispersion of prior test scores	27. District teacher salary supplements
7. Gender		28. Racial/ethnic composition
8. Race/ethnicity		29. Concentration of poverty
9. Poverty		
10. Gifted		
11. Disabled		
12. Currently limited English proficient		
13. Previously limited English proficient		
14. Overage for grade		
15. Underage for grade		

Note: We include these covariates in our value-added models—both multi-level models and school fixed effects models. We control for teaching experience and all school characteristics in our teacher evaluation rating models.

Analysis Plan

Value-Added Analyses

To estimate the impact of teachers initially prepared by UNC system institutions on the adjusted average test score gains of NCPS students, we specified multi-level (student, classroom, and school-by-year levels) models—which adjust for dependence in the data at both the classroom and school-by-year levels—with a rich set of student, classroom/teacher, and school covariates (Table 4). In these models all non-UNC system initially prepared teachers⁴ are the reference group and we include 15 indicator variables for initially prepared graduates from each UNC system institution. Coefficients for these UNC system indicators show the adjusted average difference in achievement between students taught by initially prepared graduates of a specific UNC system institution and students taught by non-UNC system initially prepared teachers.

We prefer these rich covariate adjustment multi-level models because they allow us to make statewide teacher effectiveness comparisons. However, to adjust for unmeasured school characteristics and regional teacher labor markets that may bias teacher preparation program estimates, we specified additional models with school fixed effects. These models limit teacher effectiveness comparisons to teachers working in the same school during the study period. While this approach may appropriately account for bias in the multi-level model estimates, there are two concerns with school fixed effects: (1) schools without non-UNC system initially

⁴ This includes teachers prepared at North Carolina private and independent colleges and universities, out-of-state prepared teachers, Teach For America corps members, Visiting International Faculty, and alternative entry teachers.

prepared teachers do not contribute to the teacher effectiveness estimates and schools without graduates of a specific UNC system institution do not contribute to the results for that institution and (2) if a school employs teachers of similar effectiveness there will be little within-school variation with which to estimate differences in teacher performance. To allow for direct comparisons of the results, we display our multi-level model estimates in the body of this report and our school fixed effects estimates in the appendix.

In addition to our main value-added results, which detail the impact of UNC system institution initially prepared teachers on all the students in their classes, we estimated a series of models focusing on three student subgroups: (1) free and reduced-price lunch students; (2) racial and ethnic minority students; and (3) low-performing students—defined as students with prior scores more than one standard deviation below the statewide mean in the analyzed subject area.^{5,6} For these analyses we kept observations for students in the specified subgroup and then compare the adjusted average achievement gains for students taught by UNC system institution initially prepared teachers versus students taught by non-UNC system initially prepared teachers. Results from these models address concerns regarding success with academically at-risk students and importantly, may provide teacher preparation programs with finer grained evidence to inform program improvement efforts.

Evaluation Rating Analyses

Since only a minority of teachers teach in a tested grade/subject area and many important aspects of teaching will not be fully captured by teachers' value-added to student achievement, we estimated the impact of UNC system institutions on the evaluation ratings of their initially prepared teachers. For each NCPTS, we specified an ordered logistic regression model with standard errors clustered at the school-by-year level and controls for teacher experience and school characteristics. These models compare the adjusted average evaluation ratings of non-UNC system initially prepared teachers (reference group) with those of initially prepared graduates from each UNC system institution. Coefficients for the UNC system indicators report the odds of being rated higher on the evaluation standard relative to non-UNC system initially prepared teachers. To ease the interpretability of these results, we also display predicted probabilities for rating at Levels II-V (developing to distinguished) of the NCPTS.

Selection vs Preparation Analyses

Our value-added and evaluation rating estimates reflect both the knowledge and skills that teachers develop while they are teaching candidates at a particular university and the capacity/academic ability that teaching candidates bring with them into the preparation program. While this combined effect is most relevant to policy and hiring decisions, separating the effect of selection into a program from the quality of preparation received therein is an important source of information for programs seeking to make evidence-based reforms. Therefore, we

⁵ We use prior EOG mathematics scores to define low-performing students in 5th and 8th grade science and for high school biology.

⁶ We do not present a graph for low-performing students in middle grades algebra I, since very students taking algebra I in middle grades scored more than one standard deviation below the statewide mean on their prior mathematics test.

took the following steps to uniquely identify the effect of *preparation quality* on the value-added and evaluation ratings of initially prepared UNC system institution teachers.

First, we identified a set of five academic ability measures—SAT scores, ACT scores, high school GPA, high school class rank, and Praxis I scores—that occur prior to candidates’ entry into teacher preparation programs. Our goal is to use these measures to control for teaching candidates’ academic ability prior to entry into preparation programs. Through data provided by the UNC-GA, these measures are readily accessible for teachers prepared at UNC system institutions but are not widely available for those entering teaching through other routes of preparation. As a result we limited the sample for these selection vs preparation analyses to UNC system institution initially prepared teachers working in NCPS during the 2008-09 through 2012-13 school years with less than five years of teaching experience. Second, we performed multiple imputation to address missingness in these academic ability measures. Specifically, we imputed 20 datasets using these academic ability measures, teacher demographics and credentials, and sets of classroom and school characteristics from a teacher’s first appearance in NCPS.⁷ Third, post-imputation, we used factor analysis, on each of the 20 imputed datasets, to examine the underlying structure of the five academic ability variables. These analyses revealed a single factor of academic ability prior to entry into a teacher preparation program which we standardized in each imputed dataset. Finally, to separate the effect of selection into UNC system institution teacher preparation programs from the preparation received therein, we included this academic ability measure in our value-added and evaluation rating analyses. In these analyses we compare the performance of initially prepared graduates from a single UNC system institution with that of initially prepared graduates from all other UNC system institutions, combined, and perform separate regressions for each UNC system institution and for each of the 20 imputed datasets.⁸ Coefficients from these models report adjusted average differences in student achievement or evaluation ratings net of the academic ability teachers bring with them into their preparation program.

Table 5 presents the mean standardized factor values, by institution, for all of the UNC system institution initially prepared teachers in our study sample and for all of the teachers in the value-added and evaluation rating analyses.

⁷ To impute we used the SAS proc mi command. The variables in the imputation included academic ability measures (SAT scores, ACT scores, Praxis I scores, high school GPA, high school class rank, collegiate GPA, and Praxis II scores), teacher demographics and credentials (gender, ethnicity, age, advanced degree status, and indicators for UNC system institutions), classroom characteristics (average class size, grade taught, the percentage of students who were white, disabled, gifted, qualifying for subsidized school meals, and limited English proficient), and school characteristics (Title I status, calendar type, urbanicity, school type, school size, per-pupil expenditures, percentage of AYP goals met, percentage of students passing standardized exams, percentage of minority students and students qualifying for subsidized meals, and the percentages of teachers who are fully licensed, Nationally Board Certified, and holding an advanced degree).

⁸ We use the SAS proc mianalyse (value-added models) and Stata mi estimate (evaluation rating models) commands to combine regression coefficients and standard errors into a single estimate.

Table 5: Mean Academic Ability Measure Values

University	Overall	ES Math	ES Read	ES Science	MS Math	MS Read	MS Science	HS Algebra	HS Biology	HS English	Evaluation
ASU	0.105	0.114	0.123	0.133	0.262	0.119	0.162	0.702	0.420	0.347	0.121
ECU	-0.282	-0.402	-0.426	-0.421	-0.244	-0.343	-0.288	0.403	0.206	0.301	-0.285
ECSU	-0.646	-0.474	-0.423	-0.248	-0.753	-0.873					-0.602
FSU	-0.827	-0.721	-0.725	-0.773	-0.599	-0.872		-0.206	-0.563	-0.782	-0.883
NCA&T	-0.687	-0.834	-0.848	-0.934	0.083	-0.568		0.227		-0.336	-0.631
NCCU	-0.717	-0.660	-0.651	-0.550	-0.697	-0.834		-0.207		-0.232	-0.705
NCSU	0.615	0.535	0.540	0.597	0.532	0.387	0.720	0.985	0.836	0.842	0.621
UNCA	0.764	0.742	0.734	0.758	1.043	0.809		0.947	0.747	1.200	0.777
UNCCH	1.193	1.183	1.172	1.169	1.274	1.214	1.437	1.379	1.364	1.414	1.272
UNCC	-0.047	-0.142	-0.112	-0.136	0.124	-0.066	0.137	0.562	0.924	0.378	-0.028
UNCG	0.047	0.053	0.054	0.097	0.225	0.003	0.106	0.796	0.412	0.233	0.032
UNCP	-0.388	-0.391	-0.376	-0.325	-0.383	-0.525	-0.089	0.255		-0.272	-0.396
UNCW	0.071	0.054	0.058	0.111	0.201	0.111	0.211	0.509	0.759	0.575	0.098
WCU	-0.019	-0.157	-0.169	-0.114	0.070	0.015	0.230	0.709	0.065	0.339	0.001
WSSU	-0.918	-0.919	-0.923	-0.984	-0.648	-0.583					-0.895

Note: This table displays mean values for our academic ability measure (standardized within the full sample of UNC system initially prepared teachers) for all UNC system initially prepared teachers and the UNC system initially prepared teachers in our value-added and evaluation rating models. Highlighted cells have fewer than ten teachers and therefore do not have any results reported.

Results

Value-Added Results

We present value-added results in a graphical format that displays the reference group, initially prepared teachers from non-UNC system institutions, at zero (the mid-point of the graph) and UNC system institutions above or below the reference group, corresponding to their effectiveness estimates. These graphs provide an accessible visual presentation of the results but introduce the need for some explanatory notes. First, we only report effectiveness results for preparation programs that have at least 10 teachers in the value-added model. Table 6 presents the unique teacher counts, by preparation program, for all of our value-added models. Second, we bold and mark with an asterisk—one asterisk for significance at the 0.05 level and two asterisks for significance at the 0.01 level—results that are statistically significantly different from the reference category. All statistically insignificant results appear in grey. Finally, in our results graphs, we report estimates as a percentage of a standard deviation unit. Below, Table 7 provides a summary of the overall value-added model results. Figures 1-10 display results from our overall and student subgroup value-added models and Appendix Tables A-D show the graphed results in tabular format. Appendix Table E shows school fixed effects results for all initially prepared graduates and Appendix Tables F-G display multi-level model and school fixed effects results for UNC system institution initially prepared undergraduates only.

Table 6: Unique Teacher Counts in Value-Added Models

	ES Math	ES Read	ES Science	MS Math	MS Read	MS Science	MS Algebra	HS Algebra	HS Biology	HS English
ASU	516	536	252	202	214	41	47	106	35	127
ECU	568	597	300	185	181	64	43	94	47	121
ECSU	47	52	26	20	14	2	2	6	4	6
FSU	81	81	33	39	40	9	5	30	10	20
NCA&T	51	51	28	14	14	3	4	12	6	10
NCCU	74	75	35	22	22	4	5	12	3	15
NCSU	78	83	36	101	149	44	34	144	56	84
UNCA	52	53	24	13	30	5	6	19	15	18
UNCCH	136	141	74	58	65	15	17	31	36	64
UNCC	381	387	193	138	111	39	32	61	16	42
UNCG	402	406	191	95	123	22	18	37	17	102
UNCP	127	122	59	42	41	11	7	35	9	19
UNCW	312	323	158	124	112	31	28	51	29	76
WCU	167	184	76	90	88	24	17	46	26	42
WSSU	29	31	17	11	13	1	0	7	0	3

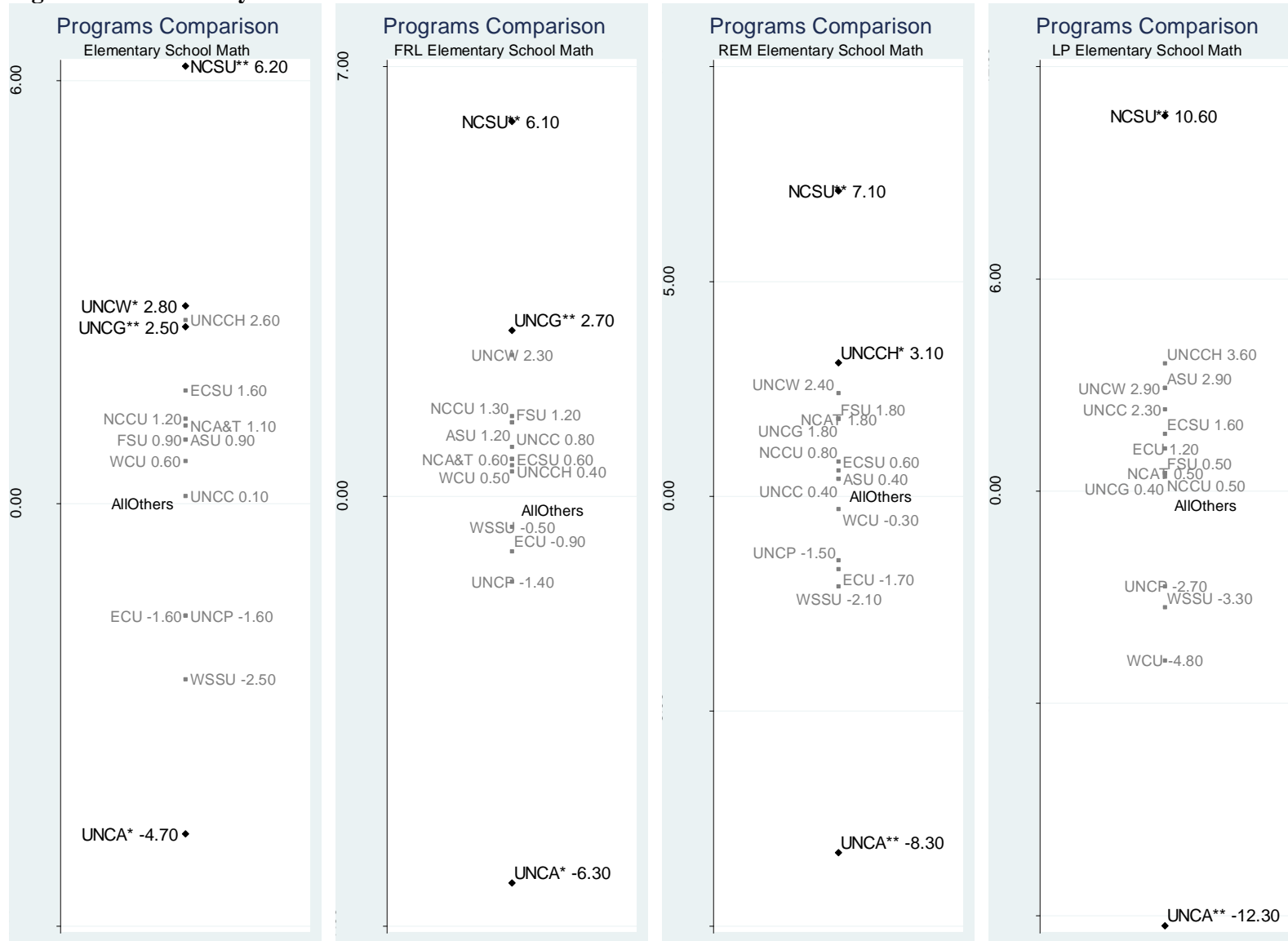
Note: This table displays the number of unique teachers, by UNC system institution, in our value-added models. Highlighted cells have fewer than ten teachers and therefore do not have any value-added results reported.

Table 7: Summary of Overall Value-Added Model Results

Institution	Number of Significantly Higher Value-Added Comparisons	Number of Significantly Lower Value-Added Comparisons
ASU	0	0
ECU	2 (MS Read & MS Algebra I)	0
ECSU	0	0
FSU	0	0
NCA&T	0	2 (5 th Grade Science & MS Math)
NCCU	1 (5 th Grade Science)	0
NCSU	2 (ES Math & HS Algebra I)	0
UNCA	0	1 (ES Math)
UNCCH	1 (MS Math)	1 (MS Algebra I)
UNCC	3 (MS Read, HS Biology, & HS English I/II)	0
UNCG	1 (ES Math)	3 (MS Read, HS Biology, & HS English I/II)
UNCP	0	2 (8 th Grade Science & HS English I/II)
UNCW	3 (ES Math, 5 th Grade Science, & MS Math)	0
WCU	1 (5 th Grade Science)	0
WSSU	0	0

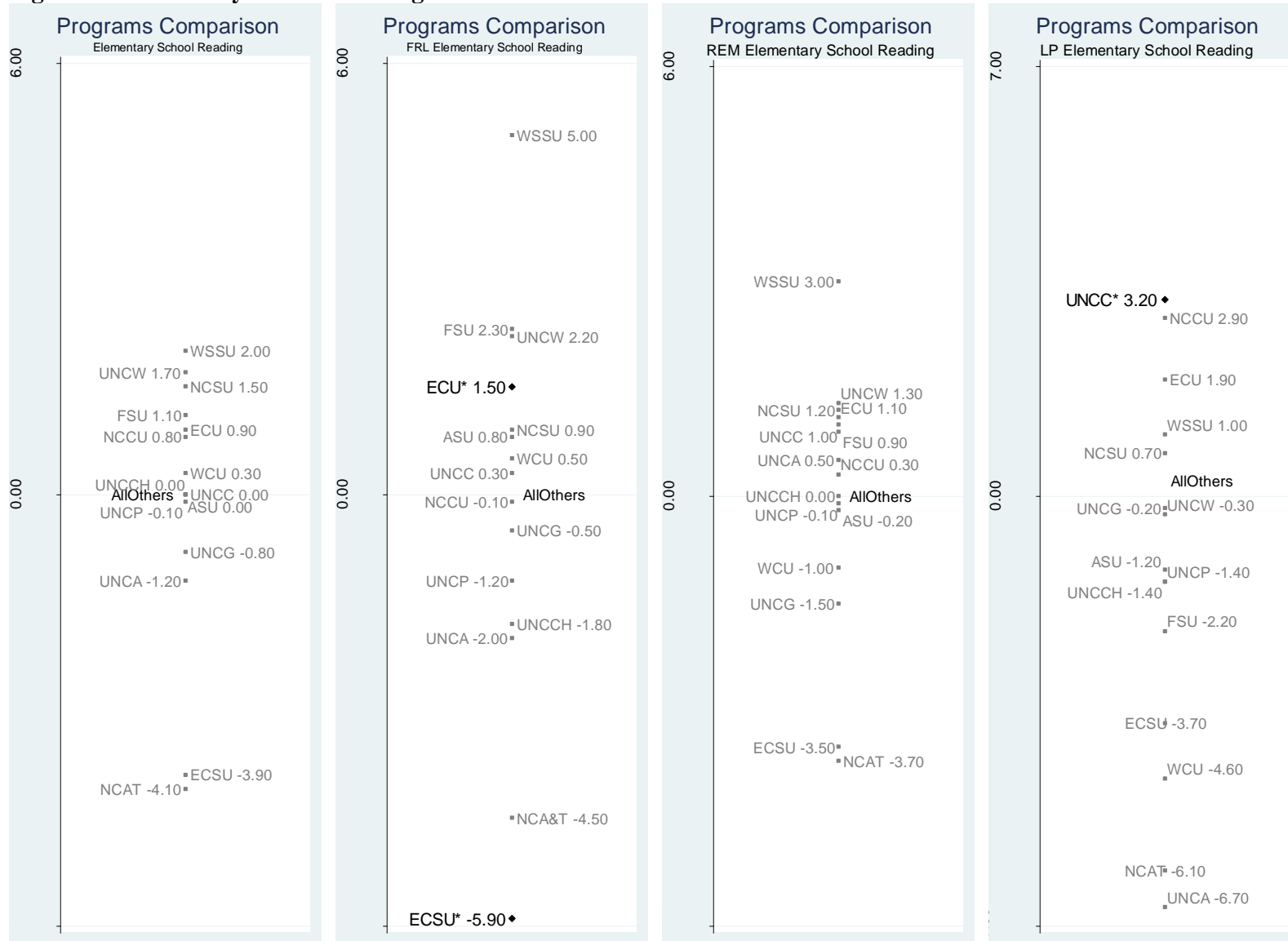
Note: For the overall value-added models, this table displays counts of statistically significant results by UNC system institution (positive and negative) and for which grade level/subject area the results were significant.

Figure 1: Elementary Grades Mathematics Value-Added Results



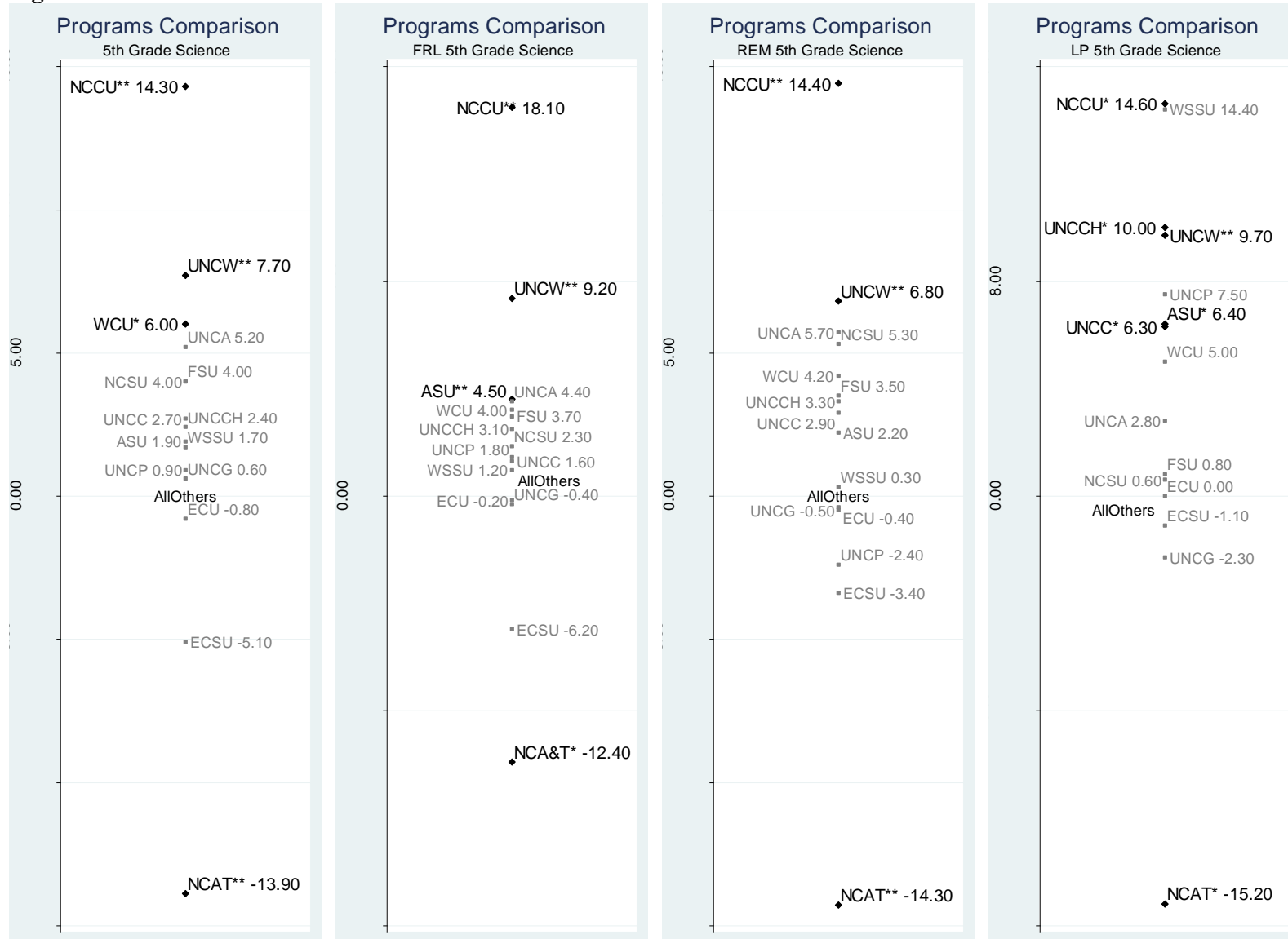
Note: Graphs are in the following order—overall, free and reduced-price lunch, racial/ethnic minority, and low-performing students.

Figure 2: Elementary Grades Reading Value-Added Results



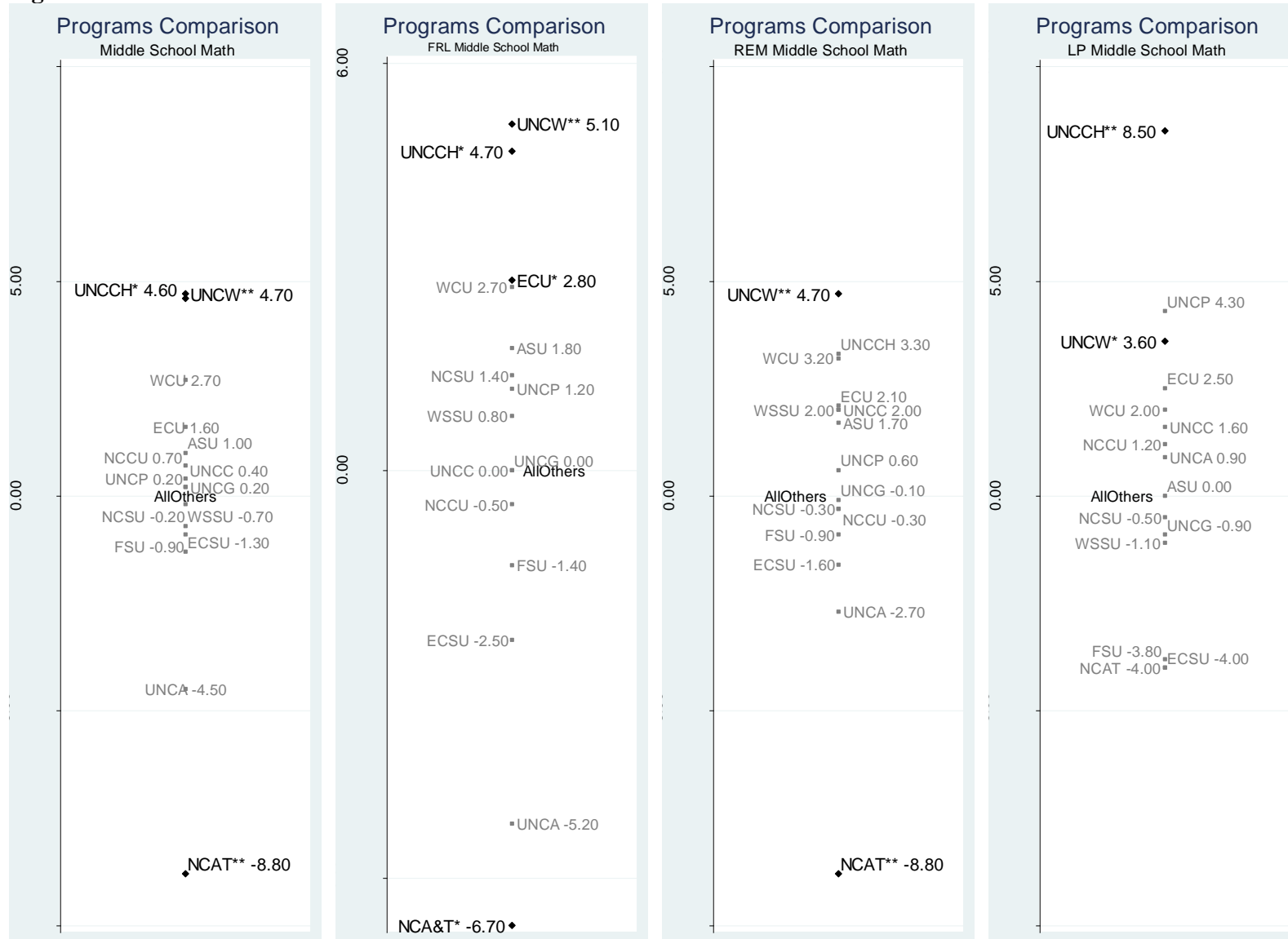
Note: Graphs are in the following order—overall, free and reduced-price lunch, racial/ethnic minority, and low-performing students.

Figure 3: 5th Grade Science Value-Added Results



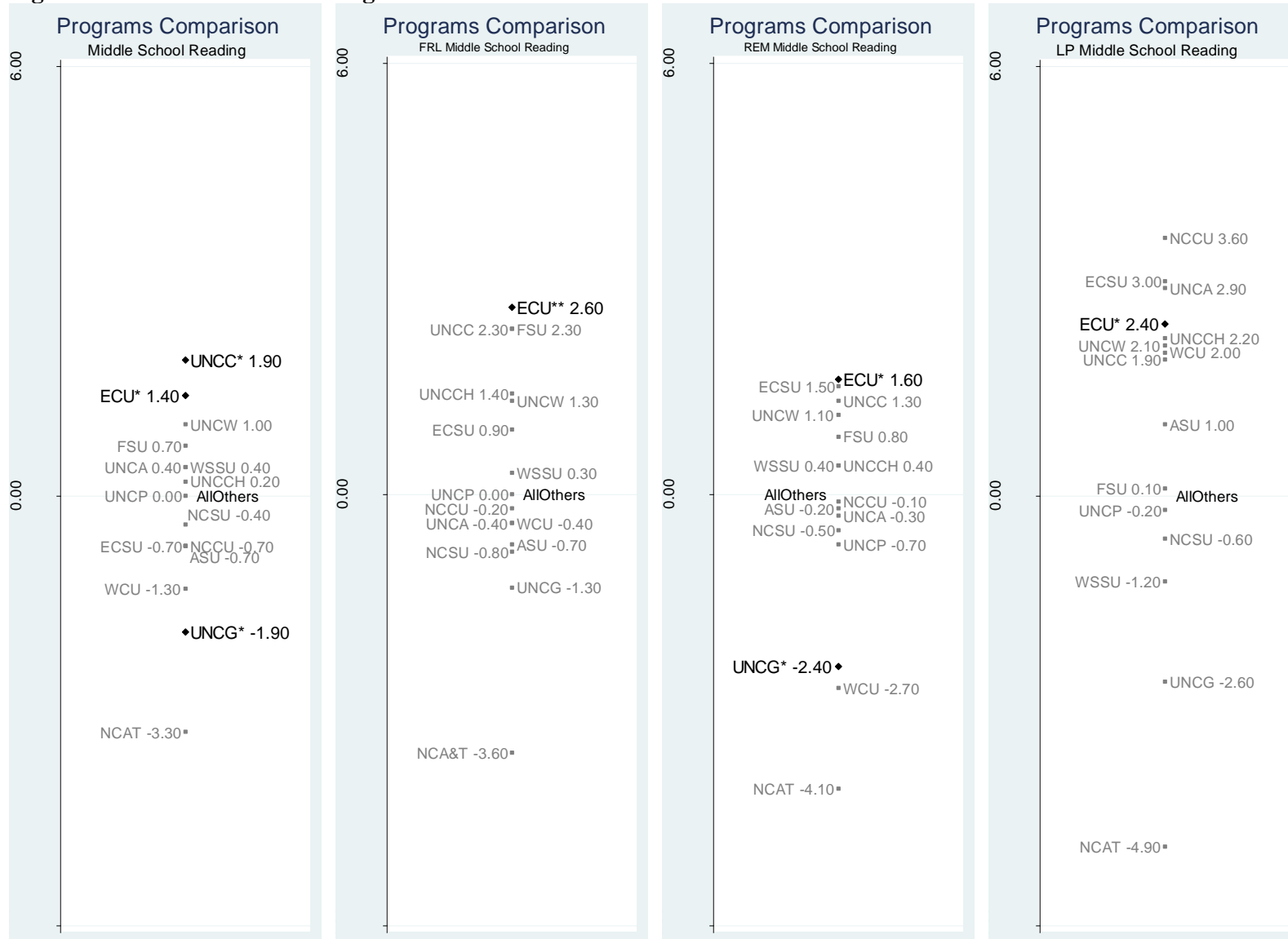
Note: Graphs are in the following order—overall, free and reduced-price lunch, racial/ethnic minority, and low-performing students.

Figure 4: Middle Grades Mathematics Value-Added Results



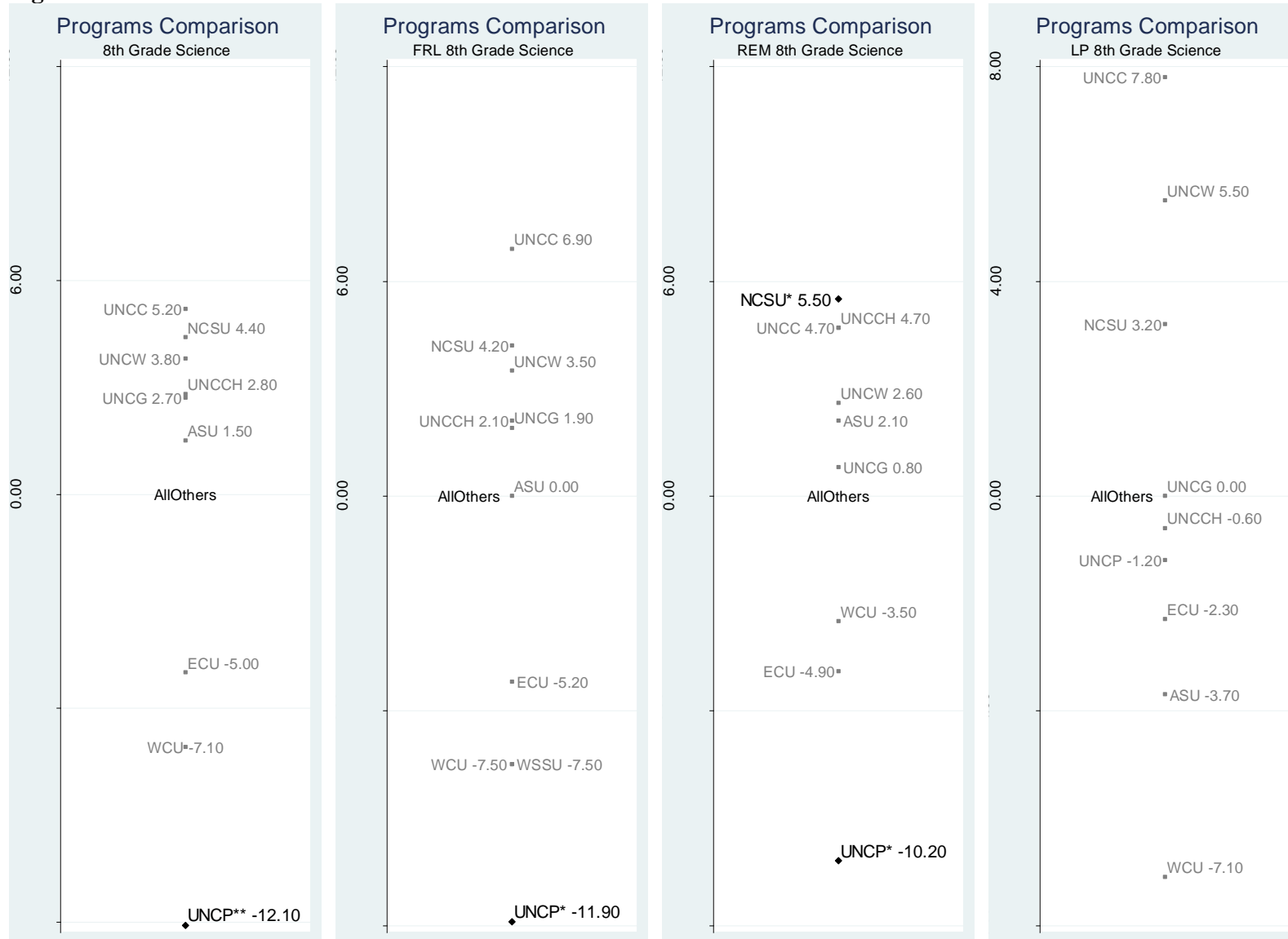
Note: Graphs are in the following order—overall, free and reduced-price lunch, racial/ethnic minority, and low-performing students.

Figure 5: Middle Grades Reading Value-Added Results



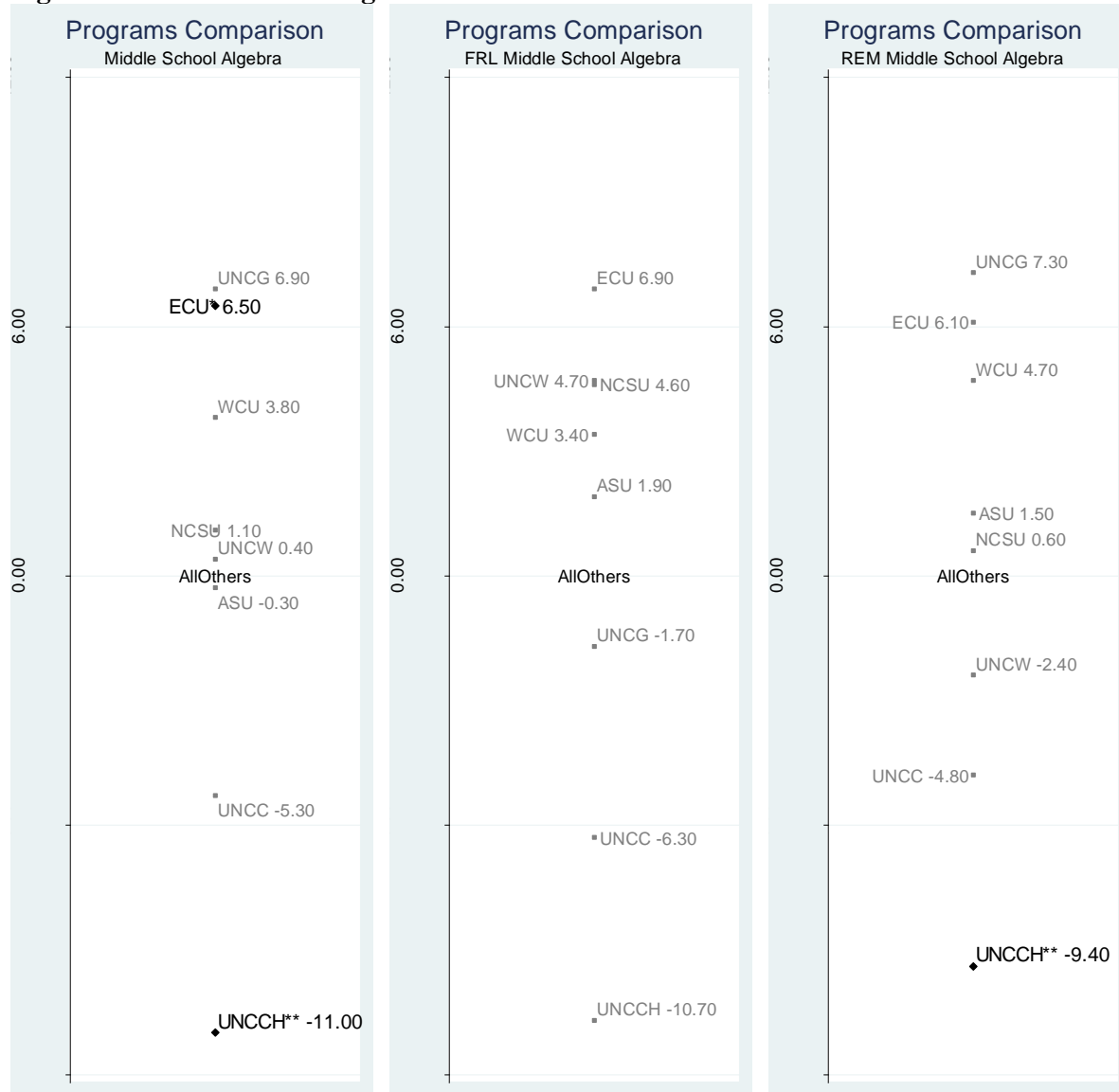
Note: Graphs are in the following order—overall, free and reduced-price lunch, racial/ethnic minority, and low-performing students.

Figure 6: 8th Grade Science Value-Added Results



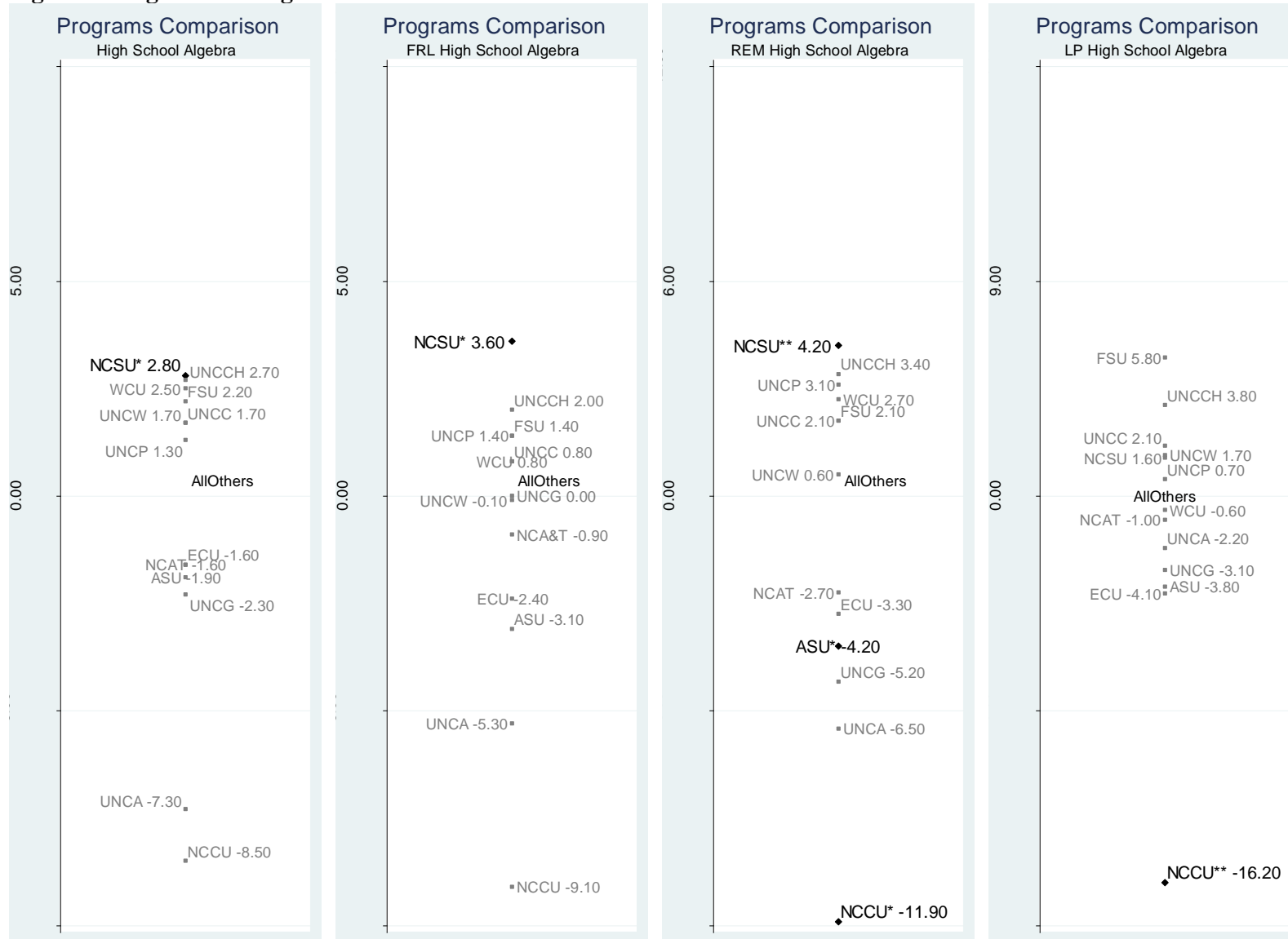
Note: Graphs are in the following order—overall, free and reduced-price lunch, racial/ethnic minority, and low-performing students.

Figure 7: Middle Grades Algebra I Value-Added Results



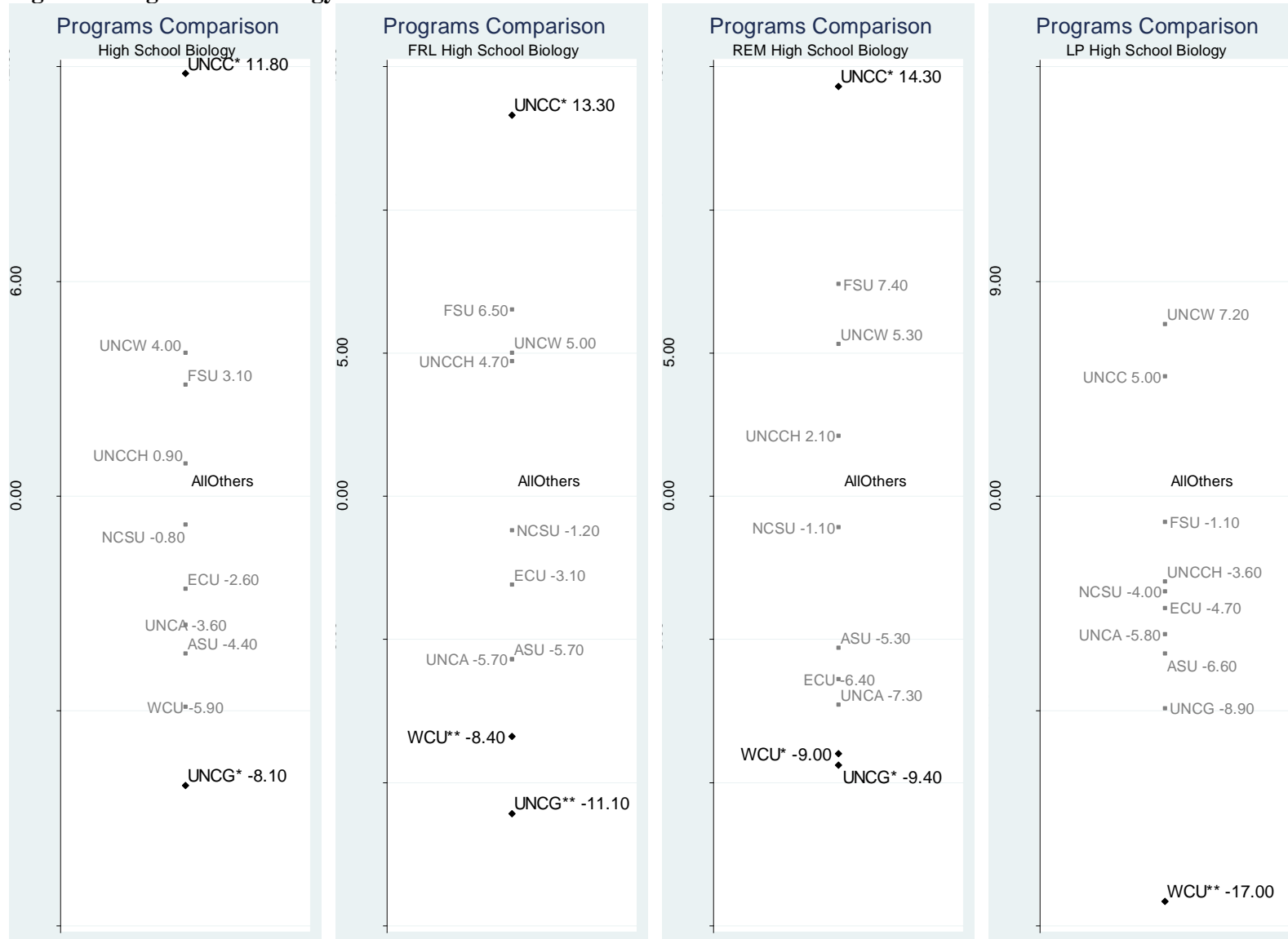
Note: Graphs are in the following order—overall, free and reduced-price lunch, and racial/ethnic minority students.

Figure 8: High School Algebra I Value-Added Results



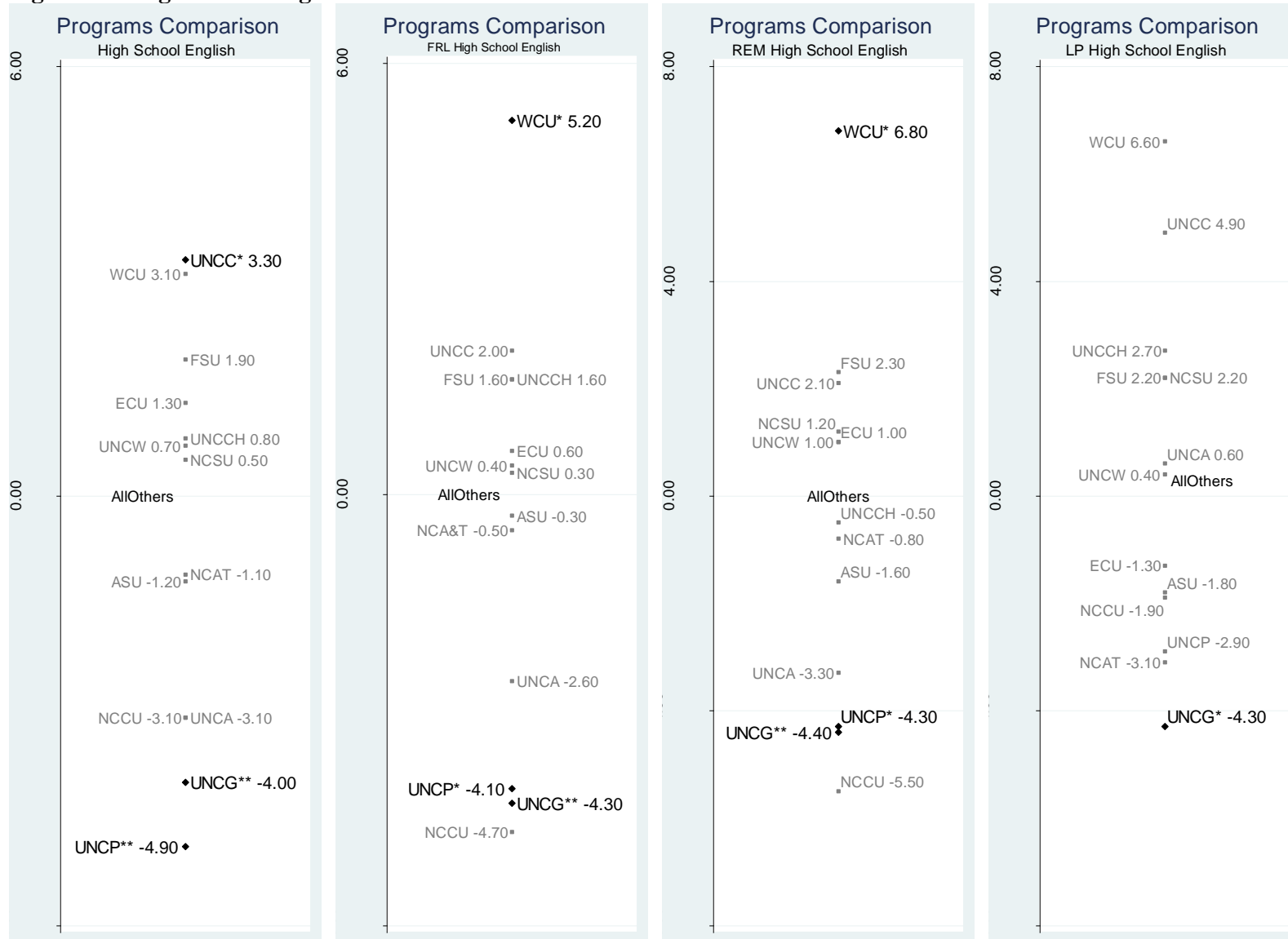
Note: Graphs are in the following order—overall, free and reduced-price lunch, racial/ethnic minority, and low-performing students.

Figure 9: High School Biology Value-Added Results



Note: Graphs are in the following order—overall, free and reduced-price lunch, racial/ethnic minority, and low-performing students.

Figure 10: High School English I/II Value-Added Results



Note: Graphs are in the following order—overall, free and reduced-price lunch, racial/ethnic minority, and low-performing students.

Appalachian State University (ASU): Overall, initially prepared graduates of ASU performed similarly to all non-UNC system initially prepared teachers in all ten value-added models—elementary grades mathematics, reading, and 5th grade science; middle grades mathematics, reading, 8th grade science, and algebra I; and high school algebra I, biology, and English I/II. Examining the results for student subgroups, ASU initially prepared graduates were more effective than all non-UNC system initially prepared teachers with low-performing students in 5th grade science and less effective with racial and ethnic minority students in high school algebra I.

East Carolina University (ECU): Overall, initially prepared graduates of ECU were more effective than all non-UNC system initially prepared teachers in two comparisons—middle grades reading and middle grades algebra I—and no different in the remaining eight comparisons—elementary grades mathematics, reading, and 5th grade science; middle grades mathematics and 8th grade science; and high school algebra I, biology, and English I/II. Examining the results for student subgroups, ECU initially prepared graduates were more effective than all non-UNC system initially prepared teachers with free and reduced-price lunch students in elementary grades reading and middle grades mathematics and more effective with free and reduced-price lunch, racial and ethnic minority, and low-performing students in middle grades reading.

Elizabeth City State University (ECSU): Overall, initially prepared graduates of ECSU performed similarly to all non-UNC system initially prepared teachers in five value-added models—elementary grades mathematics, reading, and 5th grade science and middle grades mathematics and reading. There were insufficient ECSU initially prepared graduates (less than 10 teachers) to make comparisons in 8th grade science, middle grades algebra I, high school algebra I, high school biology, and high school English I/II. Examining the results for student subgroups, ECSU initially prepared graduates were less effective than all non-UNC system initially prepared teachers with free and reduced-price lunch students in elementary grades reading.

Fayetteville State University (FSU): Overall, initially prepared graduates of FSU performed similarly to all non-UNC system initially prepared teachers in eight value-added models—elementary grades mathematics, reading, and 5th grade science; middle grades mathematics and reading; and high school algebra I, biology, and English I/II. There were insufficient FSU initially prepared graduates (less than 10 teachers) to make comparisons in 8th grade science and middle grades algebra I. Examining the results for student subgroups, FSU initially prepared graduates performed similarly to all non-UNC system initially prepared teachers.

North Carolina A&T State University (NCAT): Overall, initially prepared graduates of NCAT were less effective than all non-UNC system initially prepared teachers in two comparisons—5th grade science and middle grades mathematics—and no different in five comparisons—elementary grades mathematics and reading; middle grades reading; and high school algebra I and English I/II. There were insufficient NCAT initially prepared graduates (less than 10 teachers) to make comparisons in 8th grade science, middle grades algebra I, and high school biology. Examining the results for student subgroups, NCAT initially prepared

graduates were less effective than all non-UNC system initially prepared teachers with free and reduced-price lunch, racial and ethnic minority, and low-performing students in 5th grade science and less effective with free and reduced-price lunch and racial and ethnic minority students in middle grades mathematics.

North Carolina Central University (NCCU): Overall, initially prepared graduates of NCCU were more effective than all non-UNC system initially prepared teachers in one comparison—5th grade science—and no different in six comparisons—elementary grades mathematics and reading; middle grades mathematics and reading; and high school algebra I and English I/II. There were insufficient NCCU initially prepared graduates (less than 10 teachers) to make comparisons in 8th grade science, middle grades algebra I, and high school biology. Examining the results for student subgroups, NCCU initially prepared graduates were more effective than all non-UNC system initially prepared teachers with free and reduced-price lunch, racial and ethnic minority, and low-performing students in 5th grade science and less effective with racial and ethnic minority and low-performing students in high school algebra I.

North Carolina State University (NCSU): Overall, initially prepared graduates of NCSU were more effective than all non-UNC system initially prepared teachers in two comparisons—elementary grades mathematics and high school algebra I—and no different in the remaining eight comparisons—elementary grades reading and 5th grade science; middle grades mathematics, reading, 8th grade science, and algebra I; and high school biology and English I/II. Examining the results for student subgroups, NCSU initially prepared graduates were more effective than all non-UNC system initially prepared teachers with free and reduced-price lunch, racial and ethnic minority, and low-performing students in elementary grades mathematics, more effective with free and reduced-price lunch and racial and ethnic minority students in high school algebra I, and more effective with racial and ethnic minority students in 8th grade science.

University of North Carolina – Asheville (UNCA): Overall, initially prepared graduates of UNCA were less effective than all non-UNC system initially prepared teachers in one comparison—elementary grades mathematics—and no different in seven comparisons—elementary grades reading and 5th grade science; middle grades mathematics and reading; and high school algebra I, biology, and English I/II. There were insufficient UNCA initially prepared graduates (less than 10 teachers) to make comparisons in 8th grade science and middle grades algebra I. Examining the results for student subgroups, UNCA initially prepared graduates were less effective than all non-UNC system initially prepared teachers with free and reduced-price lunch, racial and ethnic minority, and low-performing students in elementary grades mathematics.

University of North Carolina – Chapel Hill (UNCCH): Overall, initially prepared graduates of UNCCH were more effective than all non-UNC system initially prepared teachers in one comparison—middle grades mathematics—and less effective than all non-UNC system initially prepared teachers in one comparison—middle grades algebra I. Initially prepared UNCCH teachers performed similarly to all non-UNC system initially prepared teachers in the remaining eight comparisons—elementary grades mathematics, reading, and 5th grade science; middle grades reading and 8th grade science; and high school algebra I, biology, and English I/II. Examining the results for student subgroups, UNCCH initially prepared graduates were more

effective than all non-UNC system initially prepared teachers with free and reduced-price lunch and low-performing students in middle grades mathematics, more effective with low-performing students in 5th grade science, and more effective with racial and ethnic minority students in elementary grades mathematics. UNCCH initially prepared graduates were less effective than all non-UNC system initially prepared teachers with racial and ethnic minority students in middle grades algebra I.

University of North Carolina – Charlotte (UNCC): Overall, initially prepared graduates of UNCC were more effective than all non-UNC system initially prepared teachers in three comparisons—middle grades reading, high school biology, and high school English I/II—and no different in the remaining seven comparisons—elementary grades mathematics, reading, and 5th grade science; middle grades mathematics, 8th grade science, and algebra I; and high school algebra I. Examining the results for student subgroups, UNCC initially prepared graduates were more effective than all non-UNC system initially prepared teachers with free and reduced-price lunch and racial and ethnic minority students in high school biology and more effective with low-performing students in elementary grades reading and 5th grade science.

University of North Carolina – Greensboro (UNCG): Overall, initially prepared graduates of UNCG were more effective than all non-UNC system initially prepared teachers in one comparison—elementary grades mathematics—and less effective in three comparisons—middle grades reading, high school biology, and high school English I/II. Initially prepared UNCG teachers performed similarly to all non-UNC system initially prepared teachers in the remaining six comparisons—elementary grades reading and 5th grade science; middle grades mathematics, 8th grades science, and algebra I; and high school algebra I. Examining the results for student subgroups, UNCG initially prepared graduates were more effective than all non-UNC system initially prepared teachers with free and reduced-price lunch students in elementary grades mathematics. UNCG initially prepared graduates were less effective than all non-UNC system initially prepared teachers with free and reduced-price lunch, racial and ethnic minority and low-performing students in high school English I/II, less effective with free and reduced-price lunch and racial and ethnic minority students in high school biology, and less effective with racial and ethnic minority students in middle grades reading.

University of North Carolina – Pembroke (UNCP): Overall, initially prepared graduates of UNCP were less effective than all non-UNC system initially prepared teachers in two comparisons—8th grade science and high school English I/II—and no different in six comparisons—elementary grades mathematics, reading, and 5th grade science; middle grades mathematics and reading; and high school algebra I. There were insufficient UNCP initially prepared graduates (less than 10 teachers) to make comparisons in middle grades algebra I and high school biology. Examining the results for student subgroups, UNCP initially prepared graduates were less effective than all non-UNC system initially prepared teachers with free and reduced-price lunch and racial and ethnic minority students in 8th grade science and high school English I/II.

University of North Carolina – Wilmington (UNCW): Overall, initially prepared graduates of UNCW were more effective than all non-UNC system initially prepared teachers in three comparisons—elementary grades mathematics, 5th grade science, and middle grades

mathematics—and no different in the remaining seven comparisons—elementary grades reading; middle grades reading, 8th grade science, and algebra I; and high school algebra I, biology, and English I/II. Examining the results for student subgroups, UNCW initially prepared graduates were more effective than all non-UNC system initially prepared teachers with free and reduced-price lunch, racial and ethnic minority, and low-performing students in 5th grade science and middle grades mathematics. UNCW initially prepared graduates were less effective than all non-UNC system initially prepared teachers with low-performing students in middle grades algebra I.

Western Carolina University (WCU): Overall, initially prepared graduates of WCU were more effective than all non-UNC system initially prepared teachers in one comparison—5th grade science—and no different in the remaining nine comparisons—elementary grades mathematics and reading; middle grades mathematics, reading, 8th grade science, and algebra I; and high school algebra I, biology, and English I/II. Examining the results for student subgroups, WCU initially prepared graduates were more effective than all non-UNC system initially prepared teachers with free and reduced-price lunch and racial and ethnic minority students in high school English I/II. WCU initially prepared graduates were less effective than all non-UNC system initially prepared teachers with free and reduced price-lunch, racial and ethnic minority, and low-performing students in high school biology.

Winston-Salem State University (WSSU): Overall, initially prepared graduates of WSSU were no different than all non-UNC system initially prepared teachers in five comparisons—elementary grades mathematics, reading, and 5th grade science and middle grades mathematics and reading. There were insufficient WSSU initially prepared graduates (less than 10 teachers) to make comparisons in 8th grade science, middle grades algebra I, and high school algebra I, biology, and English I/II. Examining the results for student subgroups, WSSU initially prepared graduates performed similarly to all non-UNC system initially prepared teachers.

Selection vs Preparation: The value-added results summarized above represent a combination of selection into teacher preparation programs and the quality of preparation received therein. To separate these two effects, we included a measure of pre-teacher preparation program academic ability in our value-added models.⁹ Table 8 displays these results, which compare the adjusted average test scores of students taught by teachers with similar values for the academic ability measure.

⁹ Unlike our overall value-added models, the sample for these models only includes initially prepared UNC system institution teachers. For each UNC system institution we specify all other initially prepared UNC system institution teachers as the reference category and run value-added models for 10 different grade levels/subject areas.

Table 8: Results from Value-Added Models Controlling for a Measure of Academic Ability

	ES Math	ES Read	5 th Science	MS Math	MS Read	8 th Science	HS Algebra	HS Biology	HS English
ASU	0.009 (0.010)	0.006 (0.008)	0.012 (0.018)	-0.017 (0.014)	-0.008 (0.007)	-0.017 (0.031)	-0.028 (0.020)	-0.018 (0.035)	-0.008 (0.010)
ECU	-0.024 ** (0.009)	0.008 (0.007)	-0.023 (0.020)	0.026 (0.015)	0.013 (0.008)	-0.066 * (0.031)	-0.033 (0.018)	0.001 (0.035)	0.007 (0.011)
ECSU	0.022 (0.027)	-0.037 (0.022)	-0.089 (0.048)	-0.009 (0.030)	-0.022 (0.028)				
FSU	0.018 (0.027)	0.015 (0.017)	0.087 (0.054)	-0.024 (0.029)	0.022 (0.013)		0.026 (0.037)	-0.025 (0.084)	0.038 (0.020)
NCA&T	-0.014 (0.027)	-0.044 (0.023)	-0.229 ** (0.048)	-0.123 ** (0.039)	-0.029 (0.031)		0.050 (0.039)		-0.002 (0.032)
NCCU	0.010 (0.021)	0.002 (0.019)	0.166 ** (0.048)	-0.024 (0.034)	-0.005 (0.023)		0.022 (0.066)		-0.053 (0.031)
NCSU	0.059 ** (0.022)	0.012 (0.016)	-0.004 (0.046)	-0.012 (0.019)	-0.013 (0.007)	0.059 (0.035)	0.033 * (0.016)	-0.070 * (0.033)	0.021 (0.011)
UNCA	-0.074 ** (0.025)	-0.017 (0.018)	0.037 (0.049)	-0.119 ** (0.040)	0.013 (0.012)		-0.075 (0.049)	-0.046 (0.037)	-0.034 (0.020)
UNCCH	-0.004 (0.017)	0.004 (0.014)	-0.011 (0.029)	0.058 ** (0.022)	0.010 (0.010)	-0.013 (0.056)	0.006 (0.027)	0.033 (0.042)	0.000 (0.015)
UNCC	-0.011 (0.010)	-0.003 (0.009)	0.019 (0.023)	0.007 (0.018)	0.029 ** (0.010)	0.025 (0.033)	0.012 (0.026)	0.203 ** (0.074)	0.036 * (0.016)
UNCG	0.013 (0.010)	-0.025 ** (0.008)	-0.032 (0.021)	-0.028 (0.018)	-0.025 ** (0.009)	0.045 (0.046)	-0.028 (0.027)	-0.079 * (0.040)	-0.047 ** (0.013)
UNCP	-0.040 (0.023)	-0.006 (0.018)	-0.037 (0.043)	0.008 (0.033)	-0.006 (0.017)	-0.081 (0.043)	-0.039 (0.029)		-0.044 (0.026)
UNCW	0.020 (0.013)	0.021 * (0.010)	0.039 (0.026)	0.023 (0.019)	0.011 (0.009)	0.053 (0.052)	-0.012 (0.020)	0.076 (0.046)	0.018 (0.014)
WCU	0.006 (0.017)	0.000 (0.013)	0.000 (0.034)	0.029 (0.019)	-0.006 (0.012)	-0.117 * (0.050)	0.053 * (0.027)	-0.075 * (0.035)	0.032 (0.021)
WSSU	-0.024 (0.038)	0.020 (0.031)	-0.080 (0.055)	0.040 (0.038)	0.008 (0.032)				

Note: Each cell in this table displays results from a separate value-added model which specifies all other initially prepared UNC system teachers as the reference group and includes the academic ability measure. Due to the small sample of teachers, we do not report selection model results for middle grades algebra I.

Note: * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Due to differences in the analytical sample between the overall value-added and the selection vs preparation value-added models, it is difficult to directly compare results. However, across grade levels/subject areas, many of the significant results in Table 8 were also significant in the overall value-added models (summarized in Table 7). For example, UNCC initially prepared teachers were more effective than all non-UNC system institution initially prepared teachers in middle grades reading, high school biology, and high school English I/II; after controlling for the academic ability measure, UNCC initially prepared teachers were also more effective than all other UNC system institution initially prepared teachers in the same three comparisons. Results for some UNC system institutions differed when controlling for the academic ability measure. For example, after controlling for the academic ability measure, ECU initially prepared teachers were less effective than all other UNC system institution initially prepared teachers in elementary grades mathematics and 8th grade science and NCSU initially

prepared teachers were less effective than all other UNC system institution initially prepared teachers in high school biology.

Overall, the academic ability measure was rarely significant in these value-added models and UNC system institutions with high values for the academic ability measure (shown in Table 5) did not consistently return significantly positive value-added results; likewise, those with low values for the academic ability measure did not consistently return significantly negative value-added results.¹⁰ While it is unknown how well this academic ability measure accounts for selection into teacher preparation programs, these results show that in certain grade levels/subject areas initially prepared teachers from UNC system institutions differ significantly in their effectiveness from other UNC system institution peers with comparable levels of pre-teacher preparation program academic ability. This suggests that certain UNC system institutions are ‘adding value’ to the performance of their initially prepared teachers through the quality of their preparation components.

Evaluation Rating Results

We present our overall evaluation rating results in two graphical formats. Like our value-added results, the first graph displays the reference group, non-UNC system institution initially prepared teachers, at one (the mid-point of the graph indicating equivalent odds of rating higher on the evaluation standard) and UNC system institutions above or below the reference group, corresponding to their odds of having higher evaluation ratings. Because the odds ratios from our evaluation rating models are not straightforward to interpret, we also include a bar graph which displays, by UNC system institution, predicted probabilities for rating at Level II (developing), Level III (proficient), Level IV (advanced), and Level V (distinguished). Table 9 presents unique teacher counts, by UNC system institution, for our evaluation rating models, Table 10 summarizes the main evaluation rating results, Figures 11-15 display the evaluation rating results in both graphical formats, and Tables 11-13 present evaluation rating results by school level (elementary, middle, and high). Finally, Appendix Table H shows the graphed evaluation results in tabular format and Appendix Table I displays results for UNC system institution initially prepared undergraduates only.

¹⁰ The coefficient for the academic ability measure was positive and statistically significant in elementary grades mathematics models and was positive and significant at the $p < 0.10$ level in some 5th grade science and high school biology models. While the academic ability measure did not consistently predict higher value-added, these results are only for UNC system institution initially prepared teachers and do not support wider inferences that academic ability is unimportant to teacher effectiveness.

Table 9: Unique Teacher Counts in Evaluation Rating Models

University	Standard 1: Leadership	Standard 2: Classroom Environment	Standard 3: Content Knowledge	Standard 4: Facilitating Student Learning	Standard 5: Reflecting on Practice
ASU	2241	2226	2227	2241	2227
ECU	2572	2552	2552	2572	2552
ECSU	203	203	203	203	203
FSU	369	367	367	369	367
NCA&T	253	252	252	253	252
NCCU	267	265	265	267	265
NCSU	1127	1124	1124	1127	1124
UNCA	217	214	214	217	214
UNCCH	662	659	658	662	658
UNCC	1464	1455	1455	1464	1455
UNCG	1708	1696	1695	1708	1695
UNCP	589	581	581	589	581
UNCW	1292	1283	1283	1292	1283
WCU	915	904	902	915	903
WSSU	170	170	170	170	170

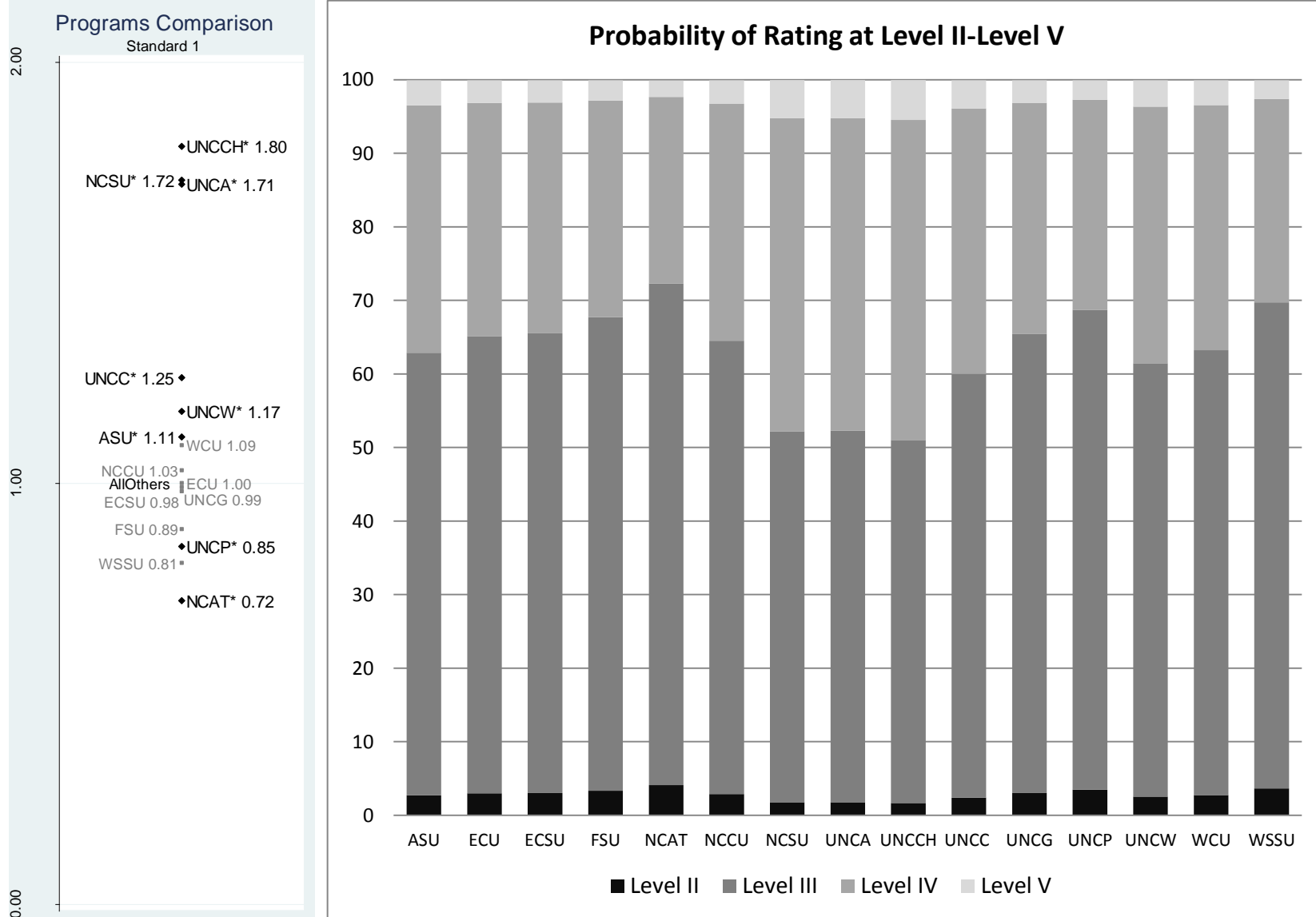
Note: This table displays the number of unique teachers, by UNC system institution, in our evaluation rating models.

Table 10: Summary of Overall Evaluation Rating Results

University	Number of Significantly Higher Evaluation Ratings	Number of Significantly Lower Evaluation Ratings
ASU	5 (Standards 1-5)	0
ECU	0	0
ECSU	0	1 (Standard 3)
FSU	0	0
NCA&T	0	3 (Standards 1, 4, and 5)
NCCU	0	0
NCSU	5 (Standards 1-5)	0
UNCA	5 (Standards 1-5)	0
UNCCH	5 (Standards 1-5)	0
UNCC	4 (Standards 1, 2, 4, and 5)	0
UNCG	0	0
UNCP	0	2 (Standards 1 and 5)
UNCW	5 (Standards 1-5)	0
WCU	0	0
WSSU	0	4 (Standards 2-5)

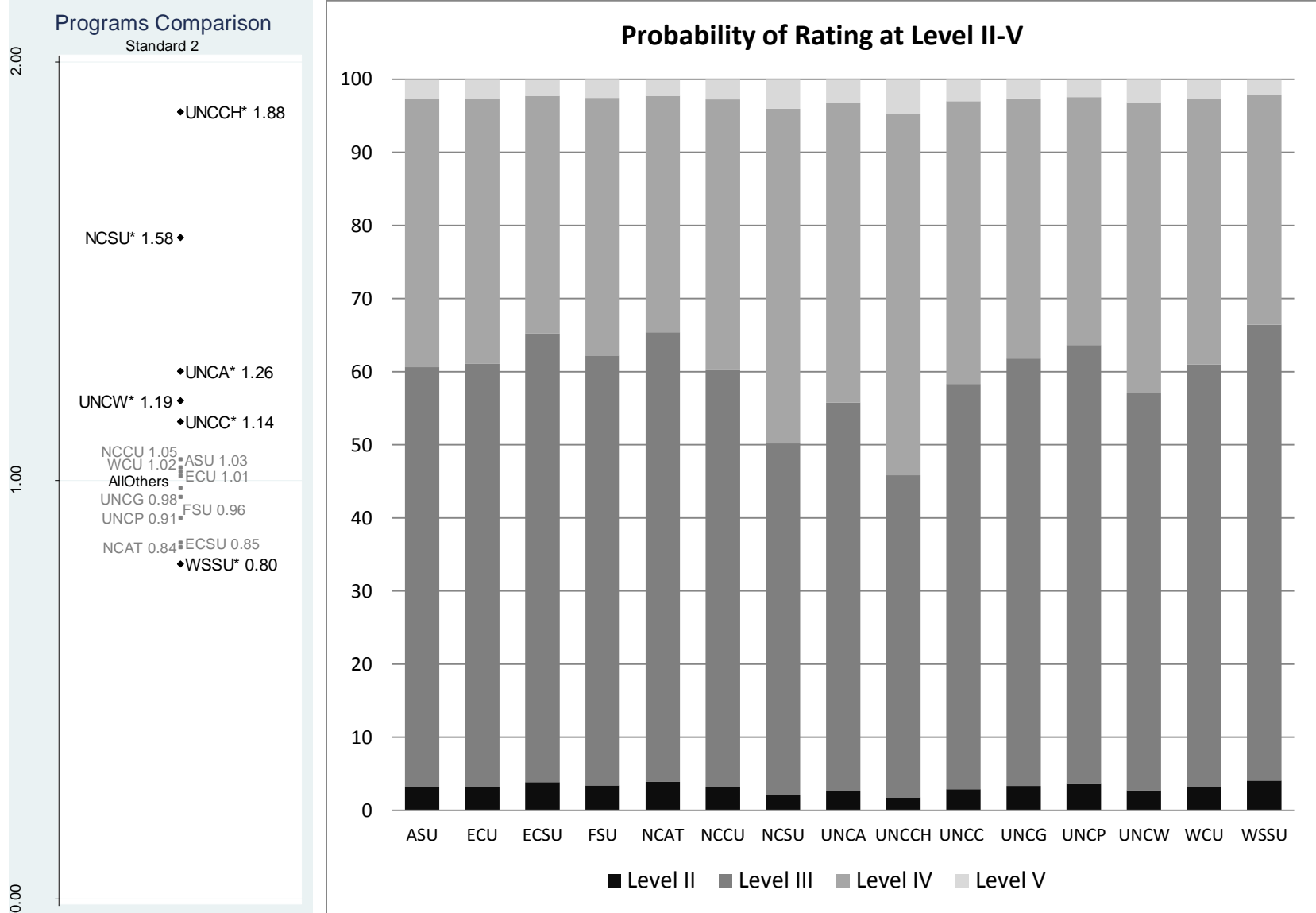
Note: For the overall evaluation rating models, this table displays counts of statistically significant results by UNC system institution (positive and negative) and for which standards the results were significant.

Figure 11: Evaluation Rating Results for Standard 1—Leadership



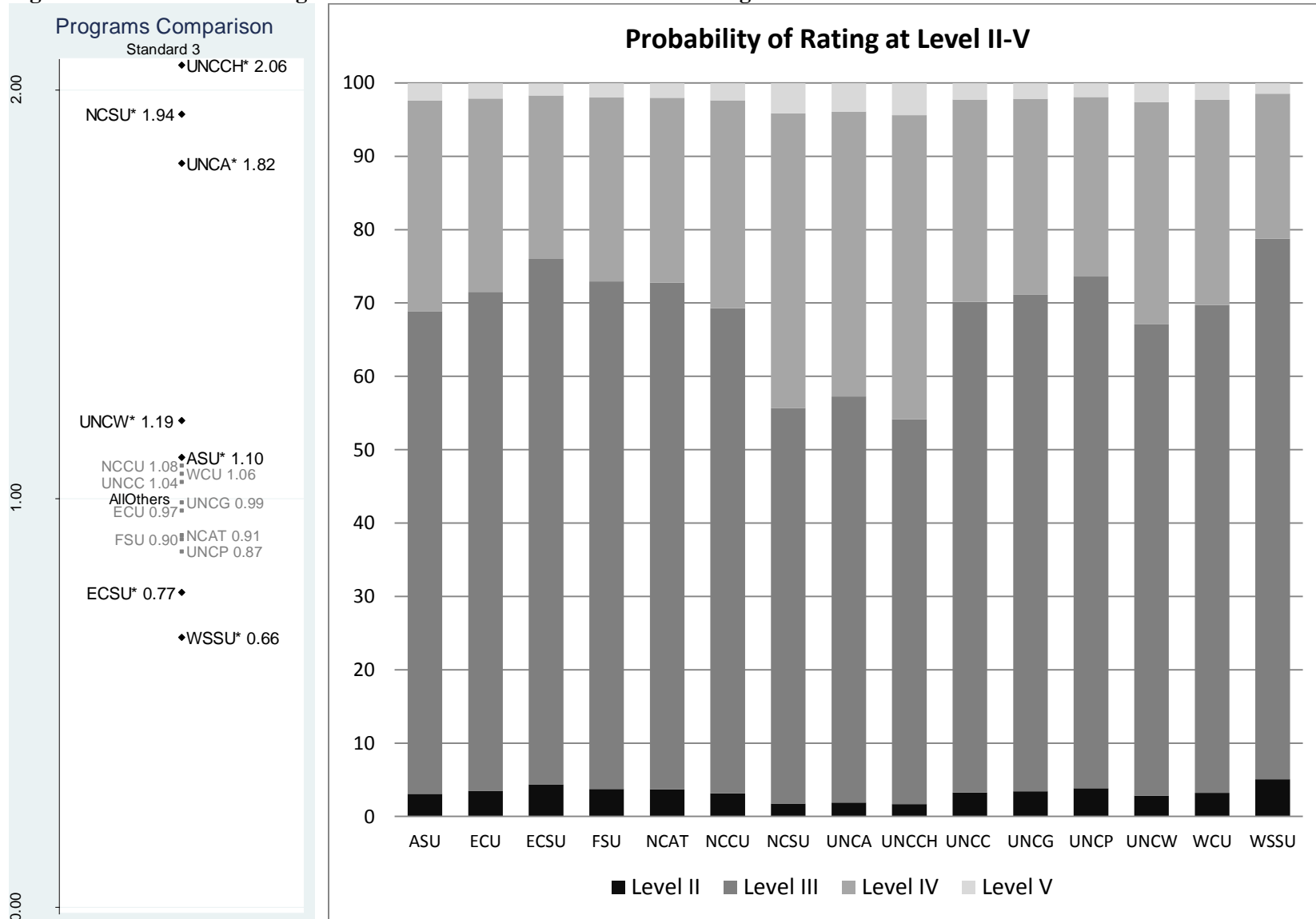
Note: The left graph displays the odds of rating higher than non-UNC system initially prepared teachers for Standard 1. The right graph displays predicted probabilities, by UNC system institution, for rating at Developing, Proficient, Advanced, and Distinguished.

Figure 12: Evaluation Rating Results for Standard 2—Classroom Environment



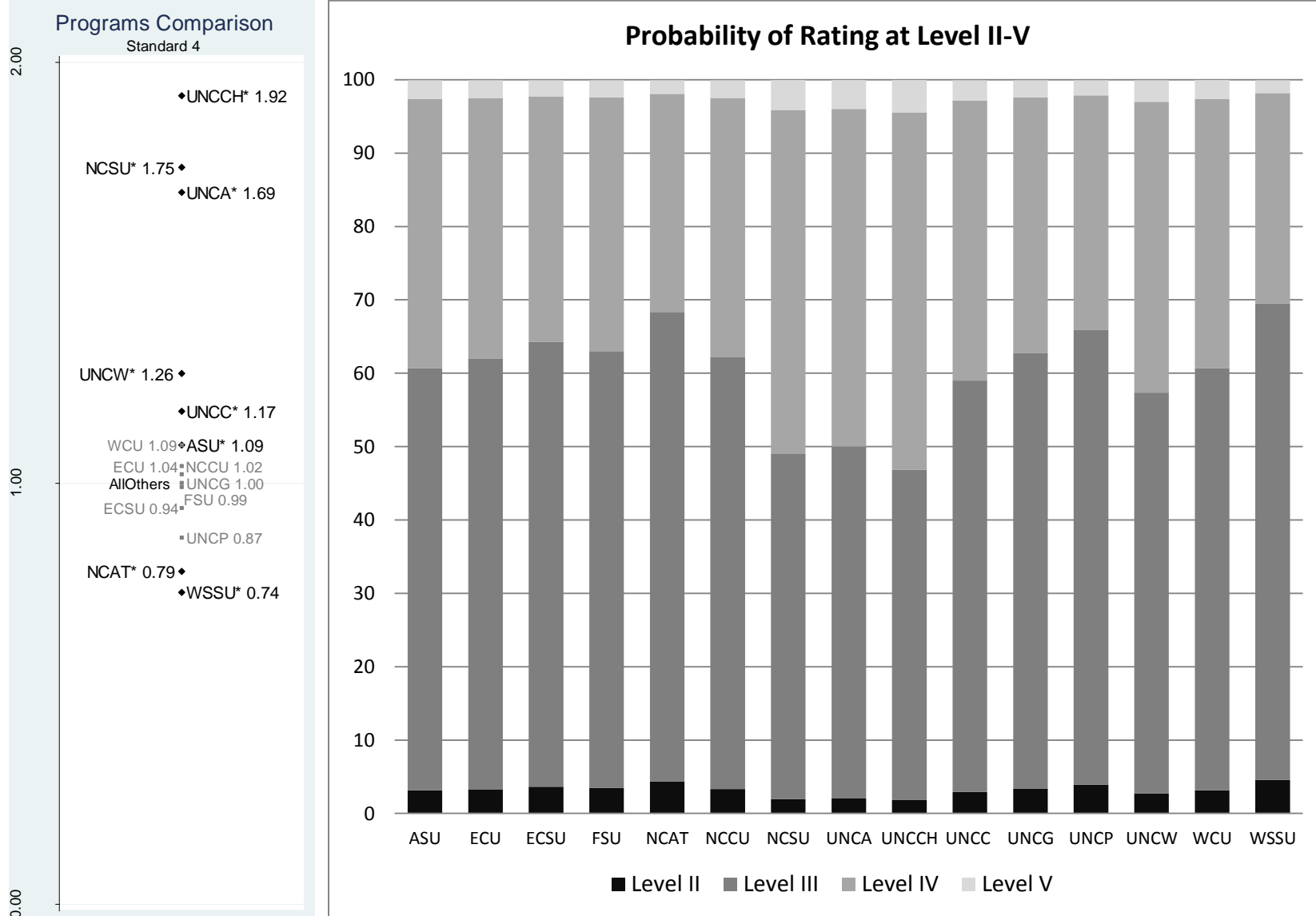
Note: The left graph displays the odds of rating higher than non-UNC system initially prepared teachers for Standard 2. The right graph displays predicted probabilities, by UNC system institution, for rating at Developing, Proficient, Advanced, and Distinguished.

Figure 13: Evaluation Rating Results for Standard 3—Content Knowledge



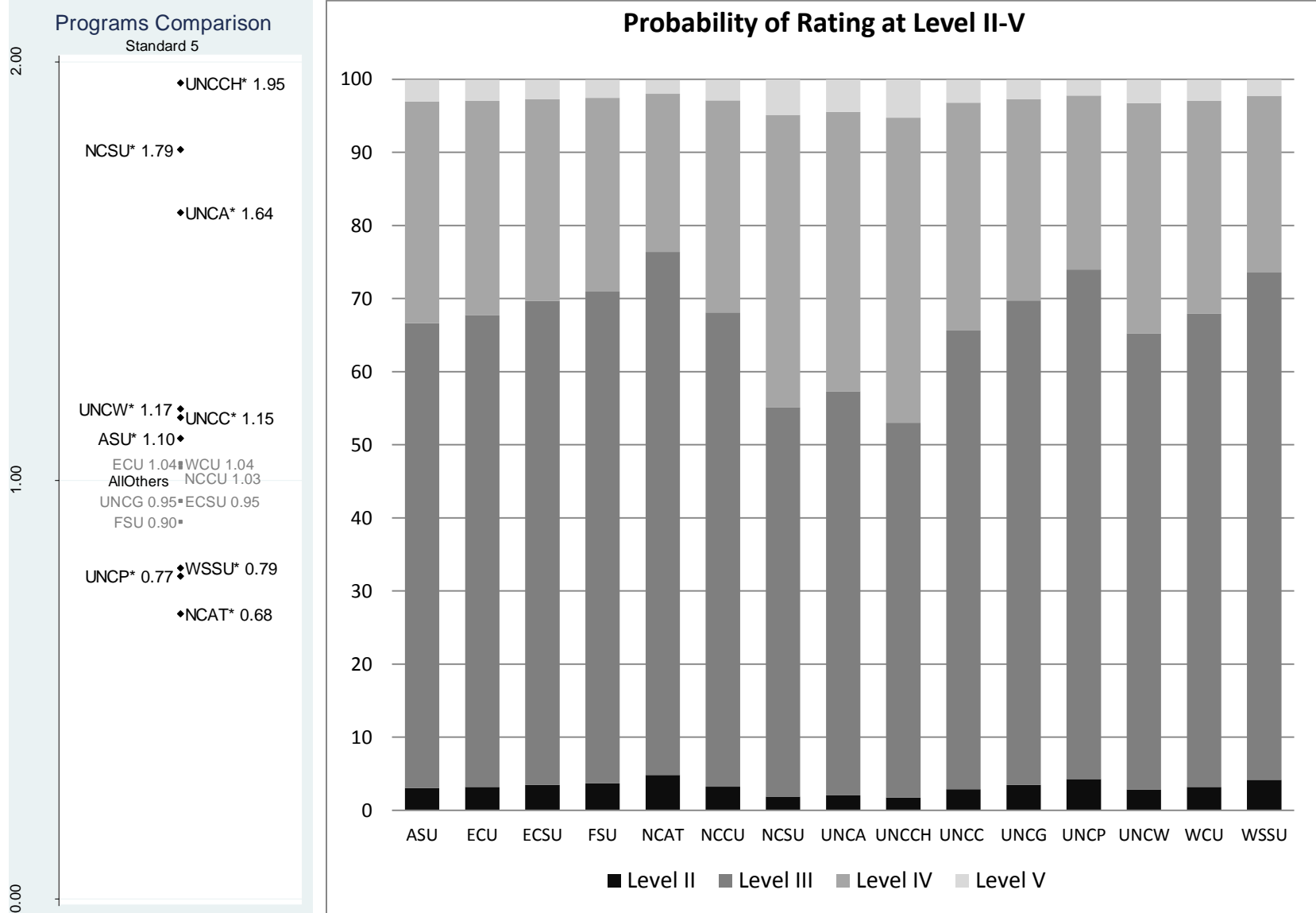
Note: The left graph displays the odds of rating higher than non-UNC system initially prepared teachers for Standard 3. The right graph displays predicted probabilities, by UNC system institution, for rating at Developing, Proficient, Advanced, and Distinguished.

Figure 14: Evaluation Rating Results for Standard 4—Facilitating Student Learning



Note: The left graph displays the odds of rating higher than non-UNC system initially prepared teachers for Standard 4. The right graph displays predicted probabilities, by UNC system institution, for rating at Developing, Proficient, Advanced, and Distinguished.

Figure 15: Evaluation Rating Results for Standard 5—Reflecting on Practice



Note: The left graph displays the odds of rating higher than non-UNC system initially prepared teachers for Standard 5. The right graph displays predicted probabilities, by UNC system institution, for rating at Developing, Proficient, Advanced, and Distinguished.

Table 11: Elementary School Evaluation Rating Results

University	Standard 1: Leadership	Standard 2: Classroom Environment	Standard 3: Content Knowledge	Standard 4: Facilitating Student Learning	Standard 5: Reflecting on Practice
ASU	1.176**	1.081	1.192**	1.193**	1.168**
ECU	0.942	0.969	0.986	1.006	1.018
ECSU	1.282	1.055	1.121	1.263	1.298
FSU	0.812	0.935	0.879	0.921	0.863
NCAT	0.742	0.865	0.788	0.806	0.562**
NCCU	1.222	1.099	1.365*	1.036	1.209
NCSU	1.982**	2.059**	2.270**	2.332**	2.134**
UNCA	1.688**	1.368	1.718**	2.043**	1.528*
UNCCH	2.002**	2.107**	2.089**	2.273**	2.102**
UNCC	1.206**	1.123	1.094	1.135	1.122
UNCG	0.916	0.887	0.949	0.912	0.877*
UNCP	0.842	0.908	0.883	0.829	0.727**
UNCW	1.111	1.154	1.136	1.193*	1.097
WCU	1.069	0.911	1.027	1.111	0.948
WSSU	0.850	0.795	0.744*	0.796	0.841

Note: This table displays odds ratios for receiving higher evaluation ratings relative to the comparison group of non-UNC system initially prepared teachers. Statistically significant odds ratios above 1 indicate greater odds of receiving higher evaluation ratings; statistically significant odds ratios below 1 indicate lesser odds of receiving higher evaluation ratings.

Note: * and** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Table 12: Middle School Evaluation Rating Results

University	Standard 1: Leadership	Standard 2: Classroom Environment	Standard 3: Content Knowledge	Standard 4: Facilitating Student Learning	Standard 5: Reflecting on Practice
ASU	1.006	0.924	0.905	0.955	0.909
ECU	1.299**	1.282**	1.106	1.222*	1.204*
ECSU	0.954	0.727	0.665	0.727	0.840
FSU	0.898	0.909	0.936	1.027	0.915
NCAT	0.594*	0.745	0.759	0.715	0.713
NCCU	0.771	0.951	0.806	0.885	0.828
NCSU	1.945**	1.774**	2.313**	1.984**	1.957**
UNCA	1.412	1.062	1.421	1.693*	1.311
UNCCH	1.302	1.236	1.553*	1.122	1.208
UNCC	1.468**	1.228	1.172	1.383**	1.208
UNCG	0.901	0.933	0.901	1.021	0.959
UNCP	0.893	1.009	0.818	0.961	0.844
UNCW	1.208	1.371*	1.197	1.355*	1.242
WCU	1.248	1.176	1.101	1.205	1.224
WSSU	1.027	0.894	0.650	0.649*	0.983

Note: This table displays odds ratios for receiving higher evaluation ratings relative to the comparison group of non-UNC system initially prepared teachers. Statistically significant odds ratios above 1 indicate greater odds of receiving higher evaluation ratings; statistically significant odds ratios below 1 indicate lesser odds of receiving higher evaluation ratings.

Note: * and** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Table 13: High School Evaluation Rating Results

University	Standard 1: Leadership	Standard 2: Classroom Environment	Standard 3: Content Knowledge	Standard 4: Facilitating Student Learning	Standard 5: Reflecting on Practice
ASU	0.979	0.963	1.050	0.954	1.047
ECU	1.070	1.049	1.098	1.092	1.134
ECSU	0.569**	0.596*	0.392**	0.556*	0.519*
FSU	1.003	1.065	0.971	1.121	0.921
NCAT	0.717*	0.798	1.016	0.737	0.724
NCCU	0.845	1.006	0.749	1.095	0.747
NCSU	1.497**	1.316**	1.542**	1.436**	1.594**
UNCA	1.718**	1.117	1.768**	1.277	1.755**
UNCCH	1.587**	1.746**	2.210**	1.678**	1.951**
UNCC	1.351**	1.196	1.195	1.278*	1.341**
UNCG	1.211*	1.237*	1.114	1.209*	1.081
UNCP	0.847	0.881	0.952	0.943	0.828
UNCW	1.403**	1.195	1.603**	1.427*	1.408*
WCU	0.976	1.110	1.003	0.992	1.065
WSSU	0.514*	0.640	0.387**	0.598**	0.417**

Note: This table displays odds ratios for receiving higher evaluation ratings relative to the comparison group of non-UNC system initially prepared teachers. Statistically significant odds ratios above 1 indicate greater odds of receiving higher evaluation ratings; statistically significant odds ratios below 1 indicate lesser odds of receiving higher evaluation ratings.

Note: * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Appalachian State University (ASU): Overall, initially prepared teachers from ASU had significantly higher evaluation ratings than non-UNC system initially prepared teachers for four NCPTS—Leadership, Content Knowledge, Facilitating Student Learning, and Reflecting on Practice. Initially prepared teachers from ASU and non-UNC system institutions were rated similarly on the Classroom Environment standard. Examining the results by school level, Tables 11-13 show that initially prepared teachers from ASU had significantly higher evaluation ratings in elementary schools but were rated no differently than the comparison group in middle and high schools.

East Carolina University (ECU): Overall, initially prepared teachers from ECU and non-UNC system institutions were rated similarly on all five NCPTS. Examining the results by school level, Tables 11-13 show that initially prepared teachers from ECU had significantly higher evaluation ratings for four NCPTS in middle schools—Leadership, Classroom Environment, Facilitating Student Learning, and Reflecting on Practice—but were rated no differently than the comparison group in elementary and high schools.

Elizabeth City State University (ECSU): Overall, initially prepared teachers from ECSU had significantly lower evaluation ratings than non-UNC system initially prepared teachers for one NCPTS—Content Knowledge—and were rated similarly on the remaining four standards. Examining the results by school level, Tables 11-13 show that initially prepared teachers from ECSU had significantly lower evaluation ratings than non-UNC system initially prepared teachers for all five NCPTS in high schools. Initially prepared teachers from ECSU and non-UNC system institutions were rated similarly in elementary and middle schools.

Fayetteville State University (FSU): Overall, initially prepared teachers from FSU and non-UNC system institutions were rated similarly on all five NCPTS. Examining the results by school level, Tables 11-13 show that initially prepared teachers from FSU and non-UNC system institutions were rated similarly in elementary, middle, and high schools.

North Carolina A&T State University (NCAT): Overall, initially prepared teachers from NCAT had significantly lower evaluation ratings than non-UNC system initially prepared teachers for three NCPTS—Leadership, Facilitating Student Learning, and Reflecting on Practice—and were rated similarly on the Classroom Environment and Content Knowledge standards. Examining the results by school level, Tables 11-13 show that initially prepared teachers from NCAT had significantly lower evaluation ratings for one NCPTS in elementary schools—Reflecting on Practice—and one NCPTS in middle and high schools—Leadership.

North Carolina Central University (NCCU): Overall, initially prepared teachers from NCCU and non-UNC system institutions were rated similarly on all five NCPTS. Examining the results by school level, Tables 11-13 show that initially prepared teachers from NCCU had significantly higher evaluation ratings for one NCPTS in elementary schools—Content Knowledge—and were rated similarly to non-UNC system initially prepared teachers for the remaining standards in elementary, middle, and high schools.

North Carolina State University (NCSU): Overall, initially prepared teachers from NCSU had significantly higher evaluation ratings than non-UNC system initially prepared teachers for all five NCPTS—Leadership, Classroom Environment, Content Knowledge, Facilitating Student Learning, and Reflecting on Practice. Examining the results by school level, Tables 11-13 show that initially prepared teachers from NCSU had significantly higher evaluation ratings for all five NCPTS in elementary, middle, and high schools.

University of North Carolina – Asheville (UNCA): Overall, initially prepared teachers from UNCA had significantly higher evaluation ratings than non-UNC system initially prepared teachers for all five NCPTS—Leadership, Classroom Environment, Content Knowledge, Facilitating Student Learning, and Reflecting on Practice. Examining the results by school level, Tables 11-13 show that initially prepared teachers from UNCA had significantly higher evaluation ratings for four NCPTS in elementary schools—Leadership, Content Knowledge, Facilitating Student Learning, and Reflecting on Practice—significantly higher evaluation ratings for one NCPTS in middle schools—Facilitating Student Learning—and significantly higher evaluation ratings for three NCPTS in high schools—Leadership, Content Knowledge, and Reflecting on Practice.

University of North Carolina – Chapel Hill (UNCCH): Overall, initially prepared teachers from UNCCH had significantly higher evaluation ratings than non-UNC system initially prepared teachers for all five NCPTS—Leadership, Classroom Environment, Content Knowledge, Facilitating Student Learning, and Reflecting on Practice. Examining the results by school level, Tables 11-13 show that initially prepared teachers from UNCCH had significantly higher evaluation ratings for all five NCPTS in elementary and high schools and significantly higher evaluation ratings for one NCPTS in middle schools—Content Knowledge.

University of North Carolina – Charlotte (UNCC): Overall, initially prepared teachers from UNCC had significantly higher evaluation ratings than non-UNC system initially prepared teachers for four NCPTS—Leadership, Classroom Environment, Facilitating Student Learning, and Reflecting on Practice—and were rated similarly on the Content Knowledge standard. Examining the results by school level, Tables 11-13 show that initially prepared teachers from UNCC had significantly higher evaluation ratings for one NCPTS in elementary schools—Leadership—significantly higher evaluation ratings for two NCPTS in middle schools—Leadership and Facilitating Student Learning—and significantly higher evaluation ratings for three NCPTS in high schools—Leadership, Facilitating Student Learning, and Reflecting on Practice.

University of North Carolina – Greensboro (UNCG): Overall, initially prepared teachers from UNCG and non-UNC system institutions were rated similarly on all five NCPTS. Examining the results by school level, Tables 11-13 show that initially prepared teachers from UNCG had significantly lower evaluation ratings for one NCPTS in elementary schools—Reflecting on Practice—and significantly higher evaluation ratings for three NCPTS in high schools—Leadership, Classroom Environment, and Facilitating Student Learning.

University of North Carolina – Pembroke (UNCP): Overall, initially prepared teachers from UNCP had significantly lower evaluation ratings than non-UNC system initially prepared teachers for two NCPTS—Leadership and Reflecting on Practice—and were rated similarly on the Classroom Environment, Content Knowledge, and Facilitating Student Learning standards. Examining the results by school level, Tables 11-13 show that initially prepared teachers from UNCP had significantly lower evaluation ratings for one NCPTS in elementary schools—Reflecting on Practice—and were rated similarly to non-UNC system initially prepared teachers for all other standards in elementary, middle, and high schools.

University of North Carolina – Wilmington (UNCW): Overall, initially prepared teachers from UNCW had significantly higher evaluation ratings than non-UNC system initially prepared teachers for all five NCPTS—Leadership, Classroom Environment, Content Knowledge, Facilitating Student Learning, and Reflecting on Practice. Examining the results by school level, Tables 11-13 show that initially prepared teachers from UNCW had significantly higher evaluation ratings for one NCPTS in elementary schools—Facilitating Student Learning—significantly higher evaluation ratings for two NCPTS in middle schools—Classroom Environment and Facilitating Student Learning—and significantly higher evaluation ratings for four NCPTS in high schools—Leadership, Content Knowledge, Facilitating Student Learning, and Reflecting on Practice.

Western Carolina University (WCU): Overall, initially prepared teachers from WCU and non-UNC system institutions were rated similarly on all five NCPTS. Examining the results by school level, Tables 11-13 show that initially prepared teachers from WCU and non-UNC system institutions were rated similarly in elementary, middle, and high schools.

Winston-Salem State University (WSSU): Overall, initially prepared teachers from WSSU had significantly lower evaluation ratings than non-UNC system initially prepared teachers for four NCPTS—Classroom Environment, Content Knowledge, Facilitating Student

Learning, and Reflecting on Practice—and were rated similarly on the Leadership standard. Examining the results by school level, Tables 11-13 show that initially prepared teachers from WSSU had significantly lower evaluation ratings for one NCPTS in elementary schools—Content Knowledge—significantly lower evaluation ratings for one NCPTS in middle schools—Facilitating Student Learning—and significantly lower evaluation ratings for four NCPTS in high schools—Leadership, Content Knowledge, Facilitating Student Learning, and Reflecting on Practice.

Selection vs Preparation: The evaluation rating results summarized above represent a combination of selection into teacher preparation programs and the quality of preparation received therein. To separate these two effects, we included a measure of pre-teacher preparation program academic ability in the evaluation rating models.¹¹ Table 14 displays these results, which compare evaluation ratings from teachers with similar values for the academic ability measure.

Table 14: Results from Evaluation Rating Models Controlling for a Measure of Academic Ability

University	Standard 1: Leadership	Standard 2: Classroom Environment	Standard 3: Content Knowledge	Standard 4: Facilitating Student Learning	Standard 5: Reflecting on Practice
ASU	0.958	0.926	0.969	0.935	0.956
ECU	0.962	0.982	0.938	0.973	1.036
ECSU	1.039	0.872	0.827	0.953	1.030
FSU	0.941	0.982	0.973	1.011	0.947
NCAT	0.690**	0.817	0.915	0.742**	0.668**
NCCU	1.034	1.042	1.130	0.996	1.055
NCSU	1.343**	1.313**	1.535**	1.386**	1.432**
UNCA	1.300*	1.022	1.380**	1.294*	1.243
UNCCH	1.225**	1.423**	1.390**	1.329**	1.352**
UNCC	1.151**	1.067	0.943	1.053	1.064
UNCG	0.832**	0.855**	0.838**	0.836**	0.803**
UNCP	0.777**	0.821*	0.800*	0.771**	0.684**
UNCW	1.024	1.076	1.047	1.087	1.024
WCU	0.991	0.959	0.979	0.993	0.942
WSSU	0.844	0.822	0.692**	0.739**	0.831

Note: Each cell in this table displays odds ratios from a separate evaluation rating model which specifies all other initially prepared UNC system teachers as the reference group and includes the academic ability measure. Statistically significant odds ratios above 1 indicate greater odds of receiving higher evaluation ratings; statistically significant odds ratios below 1 indicate lesser odds of receiving higher evaluation ratings.

*Note: * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.*

¹¹ Unlike our overall evaluation rating models, the sample for these models only includes initially-prepared UNC system institution teachers. For each UNC system institution we specify all other initially-prepared UNC system institution teachers as the reference category and run models for each of the five NCPTS.

Overall, the measure of pre-teacher preparation program academic ability significantly predicted higher evaluation ratings across all five NCPTS. Initially prepared teachers from NCSU and UNCCH had significantly higher evaluation ratings than initially prepared graduates from all other UNC system institutions across all five NCPTS and initially prepared teachers from UNCA had significantly higher evaluation ratings for three NCPTS. Despite controlling for a measure of pre-teacher preparation program academic ability, these positive results are for the UNC system institutions with the highest average academic ability values (shown in Table 5). Conversely, initially prepared teachers from UNCG and UNCP had significantly lower evaluation ratings than initially prepared graduates from all other UNC system institutions across all five NCPTS and initially prepared teachers from NCAT and WSSU had significantly lower evaluation ratings for three and two NCPTS, respectively. These negative evaluation rating results are generally for UNC system institutions with negative values for the academic ability measure—UNCG being the exception. However, other institutions with negative academic ability values, such as ECSU, FSU, and NCCU, had evaluation rating results comparable to all other UNC system institutions. Taken together, these results show that initially prepared graduates from some UNC system institutions receive evaluation ratings that are significantly higher or lower than the evaluation ratings of peers from other UNC system institutions with comparable levels of pre-teacher preparation program academic ability. This suggests that certain UNC system institutions are ‘adding value’ to the performance of their initially prepared teachers through the quality of their preparation components.

Conclusion

There is no single outcome measure that completely captures the quality of a teacher preparation program. Just as individual teacher performance is better identified through multiple outcomes—e.g. student achievement, classroom observations, student surveys—the evaluation and improvement of teacher preparation programs is better served by considering teacher preparation program effectiveness across multiple measures. Therefore, in this report, we assessed the performance of UNC system institution teacher preparation programs by examining the adjusted average student test scores and evaluation ratings of their initially prepared teachers. These outcomes are policy relevant, more comprehensive—both in terms of sample and capturing multiple facets of teaching quality—than either approach alone, and provide UNC system institutions with more evidence about the quality of teachers they produce.

An important question for teacher preparation programs considering this evidence for programmatic reforms is the degree to which value-added estimates and evaluation ratings (or additional outcome measures) correspond with each other. While teacher preparation programs can act on either piece of evidence alone—or other evidences, such as surveys of recent program graduates—when results are consistent across outcome measures teacher preparation programs can more confidently identify program quality and pursue programmatic changes. This report shows consistency for many UNC system institutions. For example: (1) ECU initially prepared teachers are more effective in middle grades reading and algebra I and receive higher evaluation ratings for four NCPTS in middle schools; (2) UNCC initially prepared teachers are more effective in middle grades reading and high school biology and English I/II and receive higher evaluation ratings for two NCPTS in middle schools and three NCPTS in high schools; (3) NCSU initially prepared teachers are more effective in elementary grades mathematics and high

school algebra I and receive higher evaluation ratings for all five NCPTS in elementary and high schools; and (4) UNCW initially prepared teachers are more effective in elementary grades mathematics, 5th grade science, and middle grades mathematics and receive higher evaluation ratings for one NCPTS in elementary schools and two NCPTS in middle schools. By contrast, there are also several UNC system institutions with differing value-added and evaluation rating results. For example: (1) UNCA initially prepared teachers are less effective in elementary grades mathematics but receive higher evaluation ratings for four NCPTS in elementary schools and (2) UNCG initially prepared teachers are less effective in high school biology and English I/II but receive higher evaluation ratings for three NCPTS in high schools. While multiple factors may contribute to these differences—changes in sample between value-added and evaluation rating models or a lack of alignment between teaching skills beneficial to student test scores and classroom observations—such discrepancies complicate the process of teacher preparation program accountability and reform.

Overall, many UNC system institutions are performing as well as or better than non-UNC system sources of initially prepared teachers. Eight UNC system institutions have at least one positive and statistically significant impact on student achievement gains; four other programs perform no differently than non-UNC system institution initially prepared teachers. Nine UNC system institutions have at least one instance of significantly higher evaluation ratings—in the school-level specific evaluation rating models—and initially prepared teachers from two other programs are evaluated comparably to non-UNC system initially prepared teachers. Beyond these results, whose primary purpose is program accountability, this report extended previous analyses by estimating separate value-added models for subgroups of students—free and reduced-price lunch, racial and ethnic minority, and low-performing students—and estimating value-added and evaluation models that included a measure of pre-teacher preparation program academic ability. With the student subgroup models, we provide data on success with academically at-risk students and finer grained evidence to inform program improvement. Now, UNC system institutions can better connect programmatic elements—e.g. course content and sequencing or fieldwork and student teaching placements—to success with specific groups of students. While it is unknown how well the measure of academic ability accounts for selection into teacher preparation programs, our selection vs preparation models allow UNC system institutions to begin to isolate their unique ‘value-added’ to teacher performance. This evidence may be particularly important as teacher preparation programs work to identify programmatic elements predicting teaching effectiveness.

Appendix

Table A: Multi-Level Models for UNC System Initially Prepared Teachers

University	ES Math	ES Read	5 th Science	MS Math	MS Read	8 th Science	MS Algebra	HS Algebra	HS Biology	HS English
ASU	0.009 (0.008)	0.000 (0.006)	0.019 (0.014)	0.010 (0.012)	-0.007 (0.006)	0.015 (0.030)	-0.003 (0.043)	-0.019 (0.017)	-0.044 (0.033)	-0.012 (0.010)
ECU	-0.016 (0.008)	0.009 (0.006)	-0.008 (0.015)	0.016 (0.012)	0.014* (0.007)	-0.050 (0.030)	0.065* (0.033)	-0.016 (0.017)	-0.026 (0.032)	0.013 (0.010)
ECSU	0.016 (0.022)	-0.039 (0.020)	-0.051 (0.035)	-0.013 (0.024)	-0.007 (0.029)					
FSU	0.009 (0.022)	0.011 (0.015)	0.040 (0.048)	-0.009 (0.022)	0.007 (0.013)			0.022 (0.027)	0.031 (0.053)	0.019 (0.018)
NCA&T	0.011 (0.025)	-0.041 (0.023)	-0.139** (0.053)	-0.088** (0.032)	-0.033 (0.027)			-0.016 (0.038)		-0.011 (0.025)
NCCU	0.012 (0.019)	0.008 (0.018)	0.143** (0.036)	0.007 (0.027)	-0.007 (0.024)			-0.085 (0.056)		-0.031 (0.024)
NCSU	0.062** (0.020)	0.015 (0.014)	0.040 (0.037)	-0.002 (0.015)	-0.004 (0.006)	0.044 (0.030)	0.011 (0.036)	0.028* (0.013)	-0.008 (0.026)	0.005 (0.009)
UNCA	-0.047* (0.023)	-0.012 (0.017)	0.052 (0.040)	-0.045 (0.031)	0.004 (0.012)			-0.073 (0.043)	-0.036 (0.051)	-0.031 (0.019)
UNCCH	0.026 (0.014)	0.000 (0.012)	0.024 (0.025)	0.046* (0.018)	0.002 (0.009)	0.028 (0.028)	-0.110** (0.042)	0.027 (0.030)	0.009 (0.030)	0.008 (0.013)
UNCC	0.001 (0.008)	0.000 (0.007)	0.027 (0.017)	0.004 (0.014)	0.019* (0.009)	0.052 (0.033)	-0.053 (0.029)	0.017 (0.018)	0.118* (0.057)	0.033* (0.014)
UNCG	0.025** (0.009)	-0.008 (0.007)	0.006 (0.016)	0.002 (0.015)	-0.019* (0.009)	0.027 (0.032)	0.069 (0.052)	-0.023 (0.028)	-0.081* (0.039)	-0.040** (0.011)
UNCP	-0.016 (0.020)	-0.001 (0.015)	0.009 (0.033)	0.002 (0.029)	0.000 (0.016)	-0.121** (0.042)		0.013 (0.044)		-0.049* (0.019)
UNCW	0.028* (0.012)	0.017 (0.009)	0.077** (0.021)	0.047** (0.016)	0.010 (0.008)	0.038 (0.032)	0.004 (0.044)	0.017 (0.022)	0.040 (0.039)	0.007 (0.014)
WCU	0.006 (0.016)	0.003 (0.012)	0.060* (0.027)	0.027 (0.015)	-0.013 (0.011)	-0.071 (0.044)	0.038 (0.045)	0.025 (0.025)	-0.059 (0.037)	0.031 (0.022)
WSSU	-0.025 (0.034)	0.020 (0.029)	0.017 (0.052)	-0.007 (0.039)	0.004 (0.027)					

Note: The reference group for these models is non-UNC system initially prepared teachers.

Note: * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively. Highlighted cells have fewer than ten teachers and therefore do not have any results reported. These results are graphed in Figures 1-10.

Table B: Multi-Level Models for UNC System Initially Prepared Teachers Teaching Free and Reduced Price Lunch Students

University	ES Math	ES Read	5 th Science	MS Math	MS Read	8 th Science	MS Algebra	HS Algebra	HS Biology	HS English
ASU	0.012 (0.010)	0.008 (0.008)	0.045** (0.016)	0.018 (0.014)	-0.007 (0.008)	0.000 (0.027)	0.019 (0.053)	-0.031 (0.019)	-0.057 (0.037)	-0.003 (0.012)
ECU	-0.009 (0.009)	0.015* (0.007)	-0.002 (0.017)	0.028* (0.012)	0.026** (0.008)	-0.052 (0.030)	0.069 (0.038)	-0.024 (0.019)	-0.031 (0.034)	0.006 (0.011)
ECSU	0.006 (0.025)	-0.059* (0.023)	-0.062 (0.035)	-0.025 (0.027)	0.009 (0.036)					
FSU	0.012 (0.024)	0.023 (0.017)	0.037 (0.051)	-0.014 (0.022)	0.023 (0.014)			0.014 (0.029)	0.065 (0.052)	0.016 (0.019)
NCA&T	0.006 (0.029)	-0.045 (0.028)	-0.124* (0.053)	-0.067* (0.028)	-0.036 (0.026)			-0.009 (0.035)		-0.005 (0.026)
NCCU	0.013 (0.023)	-0.001 (0.021)	0.181** (0.042)	-0.005 (0.027)	-0.002 (0.026)			-0.091 (0.061)		-0.047 (0.040)
NCSU	0.061** (0.023)	0.009 (0.021)	0.023 (0.051)	0.014 (0.016)	-0.008 (0.008)	0.042 (0.029)	0.046 (0.035)	0.036* (0.016)	-0.012 (0.028)	0.003 (0.013)
UNCA	-0.063* (0.027)	-0.020 (0.021)	0.044 (0.042)	-0.052 (0.034)	-0.004 (0.013)			-0.053 (0.047)	-0.057 (0.053)	-0.026 (0.021)
UNCCH	0.004 (0.017)	-0.018 (0.017)	0.031 (0.035)	0.047* (0.020)	0.014 (0.012)	0.021 (0.031)	-0.107 (0.057)	0.020 (0.033)	0.047 (0.034)	0.016 (0.017)
UNCC	0.008 (0.010)	0.003 (0.010)	0.016 (0.020)	0.000 (0.015)	0.023 (0.012)	0.069 (0.036)	-0.063 (0.050)	0.008 (0.021)	0.133* (0.061)	0.020 (0.015)
UNCG	0.027** (0.01)	-0.005 (0.009)	-0.004 (0.018)	0.000 (0.016)	-0.013 (0.010)	0.019 (0.038)	-0.017 (0.060)	-0.000 (0.033)	-0.111** (0.041)	-0.043** (0.014)
UNCP	-0.014 (0.021)	-0.012 (0.017)	0.018 (0.033)	0.012 (0.031)	0.000 (0.018)	-0.119* (0.046)		0.014 (0.043)		-0.041* (0.017)
UNCW	0.023 (0.013)	0.022 (0.012)	0.092** (0.023)	0.051** (0.018)	0.013 (0.009)	0.035 (0.037)	0.047 (0.052)	-0.001 (0.025)	0.050 (0.039)	0.004 (0.016)
WCU	0.005 (0.018)	0.005 (0.015)	0.040 (0.031)	0.027 (0.017)	-0.004 (0.012)	-0.075 (0.046)	0.034 (0.080)	0.008 (0.029)	-0.084** (0.032)	0.052* (0.023)
WSSU	-0.005 (0.035)	0.050 (0.028)	0.012 (0.059)	0.008 (0.035)	0.003 (0.035)					

Note: The reference group for these models is non-UNC system initially prepared teachers.

Note: * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively. Highlighted cells have fewer than ten teachers and therefore do not have any results reported. These results are graphed in Figures 1-10.

Table C: Multi-Level Models for UNC System Initially Prepared Teachers Teaching Racial/Ethnic Minority Students

University	ES Math	ES Read	5 th Science	MS Math	MS Read	8 th Science	MS Algebra	HS Algebra	HS Biology	HS English
ASU	0.004 (0.01)	-0.002 (0.009)	0.022 (0.018)	0.017 (0.014)	-0.002 (0.008)	0.021 (0.034)	0.015 (0.054)	-0.042* (0.020)	-0.053 (0.040)	-0.016 (0.012)
ECU	-0.017 (0.009)	0.011 (0.007)	-0.004 (0.016)	0.021 (0.012)	0.016* (0.008)	-0.049 (0.031)	0.061 (0.035)	-0.033 (0.017)	-0.064 (0.034)	0.010 (0.011)
ECSU	0.006 (0.024)	-0.035 (0.02)	-0.034 (0.034)	-0.016 (0.024)	0.015 (0.032)					
FSU	0.018 (0.023)	0.009 (0.019)	0.035 (0.049)	-0.009 (0.022)	0.008 (0.013)			0.021 (0.026)	0.074 (0.055)	0.023 (0.020)
NCA&T	0.018 (0.027)	-0.037 (0.025)	-0.143** (0.055)	-0.088** (0.031)	-0.041 (0.033)			-0.027 (0.038)		-0.008 (0.025)
NCCU	0.008 (0.021)	0.003 (0.019)	0.144** (0.036)	-0.003 (0.027)	-0.001 (0.024)			-0.119* (0.052)		-0.055 (0.028)
NCSU	0.071** (0.022)	0.012 (0.017)	0.053 (0.040)	-0.003 (0.015)	-0.005 (0.007)	0.055* (0.028)	0.006 (0.033)	0.042** (0.015)	-0.011 (0.028)	0.012 (0.012)
UNCA	-0.083** (0.029)	0.005 (0.021)	0.057 (0.057)	-0.027 (0.035)	-0.003 (0.013)			-0.065 (0.051)	-0.073 (0.046)	-0.033 (0.026)
UNCCH	0.031* (0.016)	0.000 (0.014)	0.033 (0.028)	0.033 (0.019)	0.004 (0.011)	0.047 (0.027)	-0.094** (0.045)	0.034 (0.032)	0.021 (0.034)	-0.005 (0.017)
UNCC	0.004 (0.009)	0.010 (0.009)	0.029 (0.018)	0.020 (0.015)	0.013 (0.011)	0.047 (0.041)	-0.048 (0.039)	0.021 (0.023)	0.143* (0.065)	0.021 (0.019)
UNCG	0.018 (0.010)	-0.015 (0.008)	-0.005 (0.018)	-0.001 (0.015)	-0.024* (0.010)	0.008 (0.032)	0.073 (0.044)	-0.052 (0.032)	-0.094* (0.040)	-0.044** (0.013)
UNCP	-0.015 (0.021)	-0.001 (0.016)	-0.024 (0.033)	0.006 (0.032)	-0.007 (0.016)	-0.102* (0.046)		0.031 (0.053)		-0.043* (0.018)
UNCW	0.024 (0.013)	0.013 (0.011)	0.068** (0.024)	0.047** (0.017)	0.011 (0.009)	0.026 (0.037)	-0.024 (0.052)	0.006 (0.026)	0.053 (0.039)	0.010 (0.017)
WCU	-0.003 (0.020)	-0.010 (0.016)	0.042 (0.038)	0.032 (0.017)	-0.027 (0.015)	-0.035 (0.043)	0.047 (0.059)	0.027 (0.030)	-0.090* (0.035)	0.068* (0.027)
WSSU	-0.021 (0.038)	0.030 (0.031)	0.003 (0.056)	0.020 (0.033)	0.004 (0.031)					

Note: The reference group for these models is non-UNC system initially prepared teachers.

Note: * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively. Highlighted cells have fewer than ten teachers and therefore do not have any results reported. These results are graphed in Figures 1-10.

Table D: Multi-Level Models for UNC System Initially Prepared Teachers Teaching Low-Performing Students

University	ES Math	ES Read	5 th Science	MS Math	MS Read	8 th Science	HS Algebra	HS Biology	HS English
ASU	0.012 (0.010)	0.008 (0.008)	0.064* (0.026)	0.018 (0.014)	-0.007 (0.008)	0.000 (0.027)	-0.031 (0.019)	-0.057 (0.037)	-0.003 (0.012)
ECU	-0.009 (0.009)	0.015* (0.007)	0.000 (0.022)	0.028* (0.012)	0.026** (0.008)	-0.052 (0.030)	-0.024 (0.019)	-0.031 (0.034)	0.006 (0.011)
ECSU	0.006 (0.025)	-0.059* (0.023)	-0.011 (0.060)	-0.025 (0.027)	0.009 (0.036)				
FSU	0.012 (0.024)	0.023 (0.017)	0.008 (0.067)	-0.014 (0.022)	0.023 (0.014)		0.014 (0.029)	0.065 (0.052)	0.016 (0.019)
NCA&T	0.006 (0.029)	-0.045 (0.028)	-0.152* (0.068)	-0.067* (0.028)	-0.036 (0.026)		-0.009 (0.035)		-0.005 (0.026)
NCCU	0.013 (0.023)	-0.001 (0.021)	0.146* (0.057)	-0.005 (0.027)	-0.002 (0.026)		-0.091 (0.061)		-0.047 (0.040)
NCSU	0.061** (0.023)	0.009 (0.021)	0.006 (0.051)	0.014 (0.016)	-0.008 (0.008)	0.042 (0.029)	0.036* (0.016)	-0.012 (0.028)	0.003 (0.013)
UNCA	-0.063* (0.027)	-0.020 (0.021)	0.028 (0.082)	-0.052 (0.034)	-0.004 (0.013)		-0.053 (0.047)	-0.057 (0.053)	-0.026 (0.021)
UNCCH	0.004 (0.017)	-0.018 (0.017)	0.100* (0.049)	0.047* (0.020)	0.014 (0.012)	0.021 (0.031)	0.020 (0.033)	0.047 (0.034)	0.016 (0.017)
UNCC	0.008 (0.010)	0.003 (0.010)	0.063* (0.029)	0.000 (0.015)	0.023 (0.012)	0.069 (0.036)	0.008 (0.021)	0.133* (0.061)	0.020 (0.015)
UNCG	0.027** (0.01)	-0.005 (0.009)	-0.023 (0.027)	0.000 (0.016)	-0.013 (0.010)	0.019 (0.038)	-0.000 (0.033)	-0.111** (0.041)	-0.043** (0.014)
UNCP	-0.014 (0.021)	-0.012 (0.017)	0.075 (0.045)	0.012 (0.031)	0.000 (0.018)	-0.119* (0.046)	0.014 (0.043)		-0.041* (0.017)
UNCW	0.023 (0.013)	0.022 (0.012)	0.097** (0.032)	0.051** (0.018)	0.013 (0.009)	0.035 (0.037)	-0.001 (0.025)	0.050 (0.039)	0.004 (0.016)
WCU	0.005 (0.018)	0.005 (0.015)	0.050 (0.048)	0.027 (0.017)	-0.004 (0.012)	-0.075 (0.046)	0.008 (0.029)	-0.084** (0.032)	0.052* (0.023)
WSSU	-0.005 (0.035)	0.050 (0.028)	0.144 (0.082)	0.008 (0.035)	0.003 (0.035)				

Note: The reference group for these models is non-UNC system initially prepared teachers.

Note: * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively. Highlighted cells have fewer than ten teachers and therefore do not have any results reported. These results are graphed in Figures 1-10.

Table E: School Fixed Effects Models for UNC System Initially Prepared Teachers

University	ES Math	ES Read	5 th Science	MS Math	MS Read	8 th Science	MS Algebra	HS Algebra	HS Biology	HS English
ASU	0.009 (0.009)	0.005 (0.007)	0.004 (0.016)	0.008 (0.013)	0.000 (0.007)	0.018 (0.041)	0.027 (0.053)	0.001 (0.018)	-0.040 (0.034)	-0.000 (0.012)
ECU	-0.017 (0.009)	0.011 (0.007)	0.020 (0.018)	0.010 (0.013)	0.019 ** (0.008)	-0.018 (0.026)	0.127 * (0.051)	-0.024 (0.018)	-0.006 (0.033)	0.032 * (0.013)
ECSU	0.014 (0.029)	-0.052 (0.027)	-0.086 (0.056)	-0.011 (0.033)	-0.012 (0.036)					
FSU	-0.007 (0.022)	-0.012 (0.015)	0.009 (0.049)	-0.002 (0.023)	0.007 (0.014)			0.040 (0.029)	-0.050 (0.041)	0.000 (0.022)
NCA&T	0.005 (0.026)	0.002 (0.022)	-0.133 * (0.064)	-0.074 * (0.031)	-0.014 (0.029)			0.015 (0.041)		0.049 (0.032)
NCCU	0.015 (0.021)	0.010 (0.020)	0.096 * (0.041)	0.036 (0.029)	0.004 (0.024)			-0.024 (0.053)		-0.068 * (0.026)
NCSU	0.059 ** (0.023)	0.018 (0.015)	0.072 * (0.035)	-0.008 (0.016)	-0.003 (0.007)	0.037 (0.029)	-0.026 (0.038)	0.042 ** (0.014)	-0.005 (0.025)	0.004 (0.011)
UNCA	-0.044 (0.024)	-0.021 (0.018)	0.070 (0.040)	-0.046 (0.033)	0.005 (0.013)			0.022 (0.057)	-0.013 (0.057)	-0.014 (0.036)
UNCCH	0.032 * (0.014)	0.008 (0.011)	0.020 (0.025)	0.063 ** (0.019)	0.011 (0.010)	-0.037 (0.037)	-0.079 (0.048)	0.076 * (0.031)	0.074 ** (0.027)	0.017 (0.014)
UNCC	-0.002 (0.009)	0.002 (0.007)	0.056 ** (0.017)	-0.003 (0.015)	0.009 (0.010)	0.014 (0.036)	-0.004 (0.039)	0.039 (0.021)	0.143 ** (0.049)	0.028 (0.015)
UNCG	0.025 ** (0.009)	0.014 (0.007)	0.021 (0.018)	0.012 (0.016)	-0.021 * (0.009)	0.098 * (0.040)	0.123 * (0.057)	-0.021 (0.028)	-0.071 (0.059)	-0.026 * (0.012)
UNCP	-0.035 (0.023)	0.003 (0.016)	-0.004 (0.033)	-0.004 (0.030)	0.007 (0.018)	0.063 (0.082)		0.030 (0.042)		-0.043 * (0.022)
UNCW	0.040 ** (0.012)	0.019 (0.010)	0.060 ** (0.023)	0.045 ** (0.016)	0.001 (0.009)	0.088 * (0.038)	-0.040 (0.058)	0.022 (0.023)	0.074 * (0.036)	0.001 (0.016)
WCU	0.008 (0.018)	-0.002 (0.014)	0.066 * (0.030)	0.048 ** (0.017)	-0.017 (0.012)	-0.012 (0.075)	0.039 (0.054)	0.046 (0.028)	-0.062 (0.044)	0.052 (0.027)
WSSU	-0.050 (0.036)	0.000 (0.026)	-0.001 (0.059)	0.002 (0.040)	0.002 (0.027)					

Note: The reference group for these models is non-UNC system initially prepared teachers.

Note: * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively. Highlighted cells have fewer than ten teachers and therefore do not have any results reported.

Table F: Multi-Level Models for UNC System Initially Prepared Undergraduate Teachers

University	ES Math	ES Read	5 th Science	MS Math	MS Read	8 th Science	MS Algebra	HS Algebra	HS Biology	HS English
ASU	0.009 (0.008)	0.002 (0.007)	0.018 (0.015)	0.010 (0.012)	-0.009 (0.006)	0.017 (0.031)	-0.006 (0.043)	-0.019 (0.017)	-0.049 (0.035)	-0.014 (0.010)
ECU	-0.022 ^{**} (0.009)	0.015 [*] (0.006)	-0.016 (0.015)	0.016 (0.013)	0.013 (0.007)	-0.030 (0.033)	0.058 (0.034)	-0.015 (0.017)	-0.048 (0.036)	0.005 (0.011)
ECSU	0.020 (0.022)	-0.031 (0.019)	-0.052 (0.035)	-0.004 (0.026)	0.004 (0.028)					
FSU	0.013 (0.023)	0.011 (0.015)	0.051 (0.047)	-0.009 (0.022)	0.013 (0.013)			0.043 [*] (0.019)		0.017 (0.018)
NCA&T	0.009 (0.026)	-0.035 (0.022)	-0.139 ^{**} (0.054)	-0.091 ^{**} (0.032)				-0.017 (0.038)		
NCCU	0.018 (0.022)	0.018 (0.019)	0.128 ^{**} (0.041)	0.015 (0.032)	-0.005 (0.031)			-0.083 (0.060)		-0.047 [*] (0.022)
NCSU	0.047 [*] (0.022)	0.024 (0.016)	0.055 (0.042)	0.006 (0.016)	-0.002 (0.007)	0.039 (0.032)	0.011 (0.036)	0.027 [*] (0.014)	0.000 (0.027)	0.006 (0.009)
UNCA	-0.040 (0.024)	-0.006 (0.017)	0.078 [*] (0.039)	-0.046 (0.031)	-0.004 (0.013)			-0.073 (0.043)	-0.084 (0.045)	-0.033 (0.018)
UNCCH	0.026 (0.015)	0.002 (0.012)	0.027 (0.025)	0.045 [*] (0.019)	0.003 (0.010)	0.030 (0.031)	-0.137 ^{**} (0.043)	-0.022 (0.051)	0.051 (0.043)	
UNCC	0.001 (0.008)	0.003 (0.007)	0.028 (0.017)	0.005 (0.014)	0.021 [*] (0.010)	0.053 (0.033)	-0.047 (0.029)	0.020 (0.018)	0.101 (0.058)	0.029 (0.016)
UNCG	0.028 ^{**} (0.010)	-0.005 (0.008)	0.023 (0.017)	-0.004 (0.016)	-0.015 (0.009)	0.029 (0.033)	0.092 (0.059)	-0.032 (0.028)	-0.099 ^{**} (0.038)	-0.042 ^{**} (0.012)
UNCP	-0.019 (0.020)	-0.002 (0.015)	0.006 (0.033)	0.003 (0.030)	-0.001 (0.016)	-0.151 ^{**} (0.031)		0.021 (0.047)		-0.057 ^{**} (0.021)
UNCW	0.029 [*] (0.012)	0.020 [*] (0.009)	0.078 ^{**} (0.021)	0.049 ^{**} (0.016)	0.009 (0.008)	0.034 (0.034)	0.006 (0.043)	0.017 (0.022)	0.061 (0.061)	0.013 (0.016)
WCU	0.001 (0.016)	0.004 (0.012)	0.065 [*] (0.027)	0.027 (0.015)	-0.019 (0.013)	-0.050 (0.050)	0.018 (0.045)	0.023 (0.029)	-0.044 (0.053)	0.029 (0.024)
WSSU	-0.026 (0.034)	0.021 (0.029)	0.019 (0.052)		0.014 (0.027)					

Note: The reference group for these models is non-UNC system initially prepared teachers.

Note: * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively. Highlighted cells have fewer than ten teachers and therefore do not have any results reported.

Table G: School Fixed Effects Models for UNC System Initially Prepared Undergraduate Teachers

University	ES Math	ES Read	5 th Science	MS Math	MS Read	8 th Science	MS Algebra	HS Algebra	HS Biology	HS English
ASU	0.011 (0.009)	0.006 (0.007)	0.003 (0.016)	0.008 (0.013)	-0.001 (0.008)	0.015 (0.042)	0.027 (0.053)	-0.003 (0.018)	-0.037 (0.038)	-0.006 (0.012)
ECU	-0.024* (0.010)	0.013 (0.007)	0.006 (0.019)	0.008 (0.014)	0.016* (0.008)	-0.010 (0.029)	0.152** (0.053)	-0.024 (0.018)	-0.025 (0.037)	0.023 (0.013)
ECSU	0.027 (0.029)	-0.036 (0.027)	-0.092 (0.057)	-0.015 (0.032)	-0.000 (0.034)					
FSU	-0.005 (0.022)	-0.013 (0.015)	0.007 (0.050)	-0.003 (0.023)	0.011 (0.015)			0.058* (0.024)		-0.004 (0.023)
NCA&T	0.003 (0.028)	0.004 (0.021)	-0.131* (0.064)	-0.077* (0.031)				0.013 (0.041)		
NCCU	0.024 (0.023)	0.024 (0.021)	0.086 (0.045)	0.043 (0.029)	-0.002 (0.031)			-0.038 (0.057)		-0.093** (0.024)
NCSU	0.023 (0.025)	0.024 (0.017)	0.078 (0.041)	-0.001 (0.017)	-0.003 (0.007)	0.038 (0.031)	-0.030 (0.037)	0.038** (0.014)	-0.007 (0.028)	0.006 (0.011)
UNCA	-0.043 (0.026)	-0.019 (0.019)	0.091* (0.040)	-0.048 (0.033)	-0.002 (0.014)			0.019 (0.058)	-0.066 (0.050)	-0.026 (0.030)
UNCCH	0.033* (0.014)	0.008 (0.012)	0.021 (0.026)	0.056** (0.019)	-0.009 (0.010)	-0.047 (0.042)	-0.094 (0.052)	0.004 (0.054)	0.129** (0.036)	
UNCC	-0.001 (0.009)	0.004 (0.008)	0.054** (0.018)	-0.002 (0.015)	0.011 (0.010)	0.013 (0.036)	-0.005 (0.038)	0.040 (0.021)	0.139* (0.053)	0.029 (0.016)
UNCG	0.028** (0.010)	0.014 (0.008)	0.038* (0.019)	0.004 (0.016)	-0.17 (0.009)	0.090* (0.039)	0.116 (0.062)	-0.035 (0.029)	-0.115 (0.063)	-0.027* (0.012)
UNCP	-0.038 (0.023)	0.001 (0.016)	-0.003 (0.033)	-0.007 (0.031)	0.005 (0.018)	-0.039 (0.050)		0.036 (0.042)		-0.053* (0.023)
UNCW	0.041** (0.012)	0.022* (0.010)	0.053* (0.023)	0.046** (0.016)	0.000 (0.009)	0.081* (0.042)	-0.036 (0.057)	0.018 (0.023)	0.121 (0.066)	0.008 (0.017)
WCU	0.006 (0.018)	0.000 (0.014)	0.067* (0.030)	0.041* (0.017)	-0.025 (0.013)	0.002 (0.107)	0.008 (0.055)	0.037 (0.031)	-0.080 (0.056)	0.026 (0.029)
WSSU	-0.051 (0.036)	0.000 (0.026)	0.002 (0.059)		0.008 (0.028)					

Note: The reference group for these models is non-UNC system initially prepared teachers.

Note: * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively. Highlighted cells have fewer than ten teachers and therefore do not have any results reported.

Table H: Evaluation Rating Results for UNC System Initially Prepared Teachers

University	Standard 1: Leadership	Standard 2: Classroom Environment	Standard 3: Content Knowledge	Standard 4: Facilitating Student Learning	Standard 5: Reflecting on Practice
ASU	1.105*	1.032	1.102*	1.093*	1.098*
ECU	1.001	1.013	0.969	1.037	1.044
ECSU	0.985	0.845	0.768*	0.938	0.953
FSU	0.892	0.965	0.903	0.991	0.898
NCA&T	0.716**	0.841	0.911	0.785*	0.677**
NCCU	1.030	1.051	1.080	1.024	1.027
NCSU	1.716**	1.579**	1.937**	1.755**	1.791**
UNCA	1.709**	1.259*	1.821**	1.689**	1.636**
UNCCH	1.797**	1.881**	2.063**	1.915**	1.947**
UNCC	1.249**	1.136**	1.036	1.174**	1.150**
UNCG	0.989	0.982	0.987	1.004	0.952
UNCP	0.851*	0.907	0.873	0.872	0.770**
UNCW	1.175**	1.194**	1.194**	1.256**	1.168**
WCU	1.088	1.015	1.056	1.094	1.036
WSSU	0.812	0.802*	0.657**	0.740**	0.788*

Note: This table displays odds ratios for receiving higher evaluation ratings relative to the comparison group of non-UNC system initially prepared teachers. Statistically significant odds ratios above 1 indicate greater odds of receiving higher evaluation ratings; statistically significant odds ratios below 1 indicate lesser odds of receiving higher evaluation ratings.

Note: * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively. These results are graphed in Figures 11-15.

Table I: Evaluation Rating Results for UNC System Initially Prepared Undergraduate Teachers

University	Standard 1: Leadership	Standard 2: Classroom Environment	Standard 3: Content Knowledge	Standard 4: Facilitating Student Learning	Standard 5: Reflecting on Practice
ASU	1.081	1.008	1.062	1.078	1.078
ECU	0.974	0.976	0.910*	1.014	1.001
ECSU	0.984	0.812	0.756*	0.906	0.948
FSU	0.878	0.942	0.887	0.971	0.871
NCA&T	0.788*	0.866	0.968	0.825	0.710**
NCCU	0.982	0.967	1.076	0.931	1.024
NCSU	1.641**	1.456**	1.859**	1.651**	1.695**
UNCA	1.817**	1.281*	1.749**	1.740**	1.732**
UNCCH	1.748**	1.739**	1.761**	1.915**	1.914**
UNCC	1.211**	1.097	0.999	1.156**	1.124*
UNCG	0.946	0.933	0.932	0.974	0.917
UNCP	0.846*	0.880	0.844*	0.842*	0.740**
UNCW	1.134*	1.142*	1.098	1.202**	1.149*
WCU	0.985	0.903	0.956	1.011	0.945
WSSU	0.818	0.781*	0.640**	0.728**	0.769*

Note: This table displays odds ratios for receiving higher evaluation ratings relative to the comparison group of non-UNC system initially prepared undergraduate teachers. Statistically significant odds ratios above 1 indicate greater odds of receiving higher evaluation ratings; statistically significant odds ratios below 1 indicate lesser odds of receiving higher evaluation ratings.

Note: * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.