

Literacy Instruction in Educator Preparation and Practice: Teacher Effectiveness Analyses

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Authors:

Kevin C. Bastian

Aubrey N. Comperatore

Paola Pilonieta

Colleen E. Whittingham



Study Background: Literacy Instruction in Educator Preparation and Practice

In late 2018, the UNC System Office issued a Request for Proposals (RFP) to examine literacy instruction in educator preparation and practice. In particular, the UNC System sought to better understand teachers' knowledge and use of the essential components of early reading instruction and the effectiveness of UNC System prepared teachers in early grades reading. In response to this RFP, the Education Policy Initiative at Carolina (EPIC) at UNC Chapel Hill and the Cato College of Education at UNC Charlotte submitted a joint proposal that was awarded funding by the UNC System.

In this packet EPIC and the Cato College of Education present results from our analyses of North Carolina administrative data—i.e. student achievement on the mCLASS Reading 3D exam and scores on the Foundations of Reading licensure exam. In future work the Cato College of Education and EPIC will present findings on literacy teachers' instructional practices.

The mCLASS Reading 3D exam is a literacy assessment administered to students in grades K-3 at the beginning, middle, and end of the school year. The exam is intended for use as a universal screener to measure developing reading skills with two main assessments: DIBELS (Dynamic Indicators of Basic Early Literacy Skills) and TRC (Text Reading and Comprehension).

DIBELS includes six standardized sub-tests: (1) Letter Naming Fluency; (2) First Sound Fluency; (3) Phoneme Segmentation Fluency; (4) Nonsense Word Fluency/Correct Letter Sounds; (5) Nonsense Word Fluency/Whole Word Reading; and (6) Oral Reading Fluency, Retell, and Daze. Teachers administer the appropriate sub-tests based on students' grade level and reading ability. Students receive a DIBELS composite score (used as an outcome in these analyses) which corresponds to a criterion-referenced reading level of above benchmark, below benchmark, or well below benchmark.

The TRC assesses students' (1) concepts of print, reading behaviors, and word recognition and (2) ability to correctly and fluently read full text passages aloud and answer oral and written comprehension questions. Teachers assign students to reading levels (RB, PC, A-U), which serve as a grade level benchmark of proficiency (above proficient, proficient, below proficient, or far below proficient).

Finally, the Foundations of Reading exam is a required test in North Carolina for individuals seeking an elementary or special education general curriculum license. The exam assesses candidates' knowledge and understanding of how to effectively teach and promote literacy in students.

Through our analyses of these data we address the questions listed below. The following page provides an **executive summary** of our key results.

- (1) How large are teacher effects in early grades (K-3) reading?
- (2) How effective are UNC System institution graduates in early grades (K-3) reading?
- (3) Do ratings of teacher preparation programs' early literacy instruction predict the effectiveness of program graduates?
- (4) How well do test-takers score on the Foundations of Reading licensure exam?
- (5) Do scores on the Foundations of Reading exam predict teacher effectiveness in early grades (K-3) reading?
- (6) Are early-career teachers more effective in early grades (K-3) reading if they hold a reading license?

Executive Summary: Literacy Instruction in Educator Preparation and Practice

Below, we highlight the key results for each of our six research questions. Please see each research question's summary page for more detailed information about the sample, measures, and analyses.

How large are teacher effects in early grades (K-3) reading?

Results show that teachers strongly influence student achievement in early grades reading. Students taught by a teacher who is one standard deviation more effective score 0.80 letters higher on the TRC and 25 percent of a standard deviation higher on DIBELS. Students taught by highly-effective teachers (at the 90th percentile of effectiveness) score two letters higher on the TRC and 60 percent of a standard deviation higher on DIBELS than students taught by an ineffective teacher (at the 10th percentile of effectiveness).

How effective are UNC System institution graduates in early grades (K-3) reading?

Results from the TRC show that UNC System prepared teachers are more effective than alternative entry teachers. There are no effectiveness differences between UNC System prepared teachers and other preparation categories (in-state private, out-of-state, alternative entry, and TFA) on DIBELS. Results for each UNC System institution show that initially prepared teachers from ECU, NCSU, and UNCCH are more effective than non-UNC System prepared teachers on the TRC; initially-prepared teachers from ECU and FSU are more effective than non-UNC System prepared teachers on DIBELS.

Do ratings of teacher preparation programs' early literacy instruction predict the effectiveness of program graduates?

Results from the TRC show that teacher preparation programs that meet NCTQ's standard for reading comprehension instruction have graduates that are more effective. Results from statewide comparisons indicate that teacher preparation programs that meet NCTQ's standard for reading fluency instruction have graduates that are less effective on the TRC and DIBELS.

How well do test-takers score on the Foundations of Reading licensure exam?

Results show that individuals prepared at UNC System institutions have higher Foundations of Reading exam scores and exam pass rates than those prepared at in-state private institutions, out-of-state institutions, or entering teaching alternatively. Results for each UNC System institution show that individuals prepared at nine System institutions have higher Foundations of Reading exam scores and exam pass rates than those prepared at non-UNC System institutions. Individuals prepared at the UNC System's minority serving institutions have lower Foundations of Reading exam scores and exam pass rates than those prepared at non-UNC System institutions. Other results show that female test-takers score higher than males, white test-takers score higher than test-takers of color, and test-takers who are/have been teachers in NC public schools score higher than test-takers who have not yet been teachers in NC public schools.

Do scores on the Foundations of Reading exam predict teacher effectiveness in early grades (K-3) reading?

Results from the TRC show that Foundations of Reading exam scores (the total score and indicators for passing the exam) predict teacher effectiveness. These results hold for white teachers, teachers of color, and UNC System prepared teachers. Foundations of Reading exam scores (the total score and indicators for passing the exam) do not predict teacher effectiveness on DIBELS.

Are early-career teachers more effective in early grades (K-3) reading if they hold a reading license?

Results from the TRC show that teachers holding a reading license are more effective than their peers without a reading license. Holding a reading license does not predict teacher effectiveness on DIBELS.

How large are teacher effects in early-grades (K-3) reading?

Sample

- All teachers linked to students' mCLASS scores in the 2014-15 through 2017-18 years

Outcome Measures

- TRC Letter Gain—number of letters/levels of growth for the student on the TRC between the beginning and end of the year
- DIBELS end of year composite score (standardized within grade and year)

Analyses

- Multi-level model—students nested within teachers and teachers nested within schools
- Random effect generated by the model is the measure of individual teacher-year effectiveness

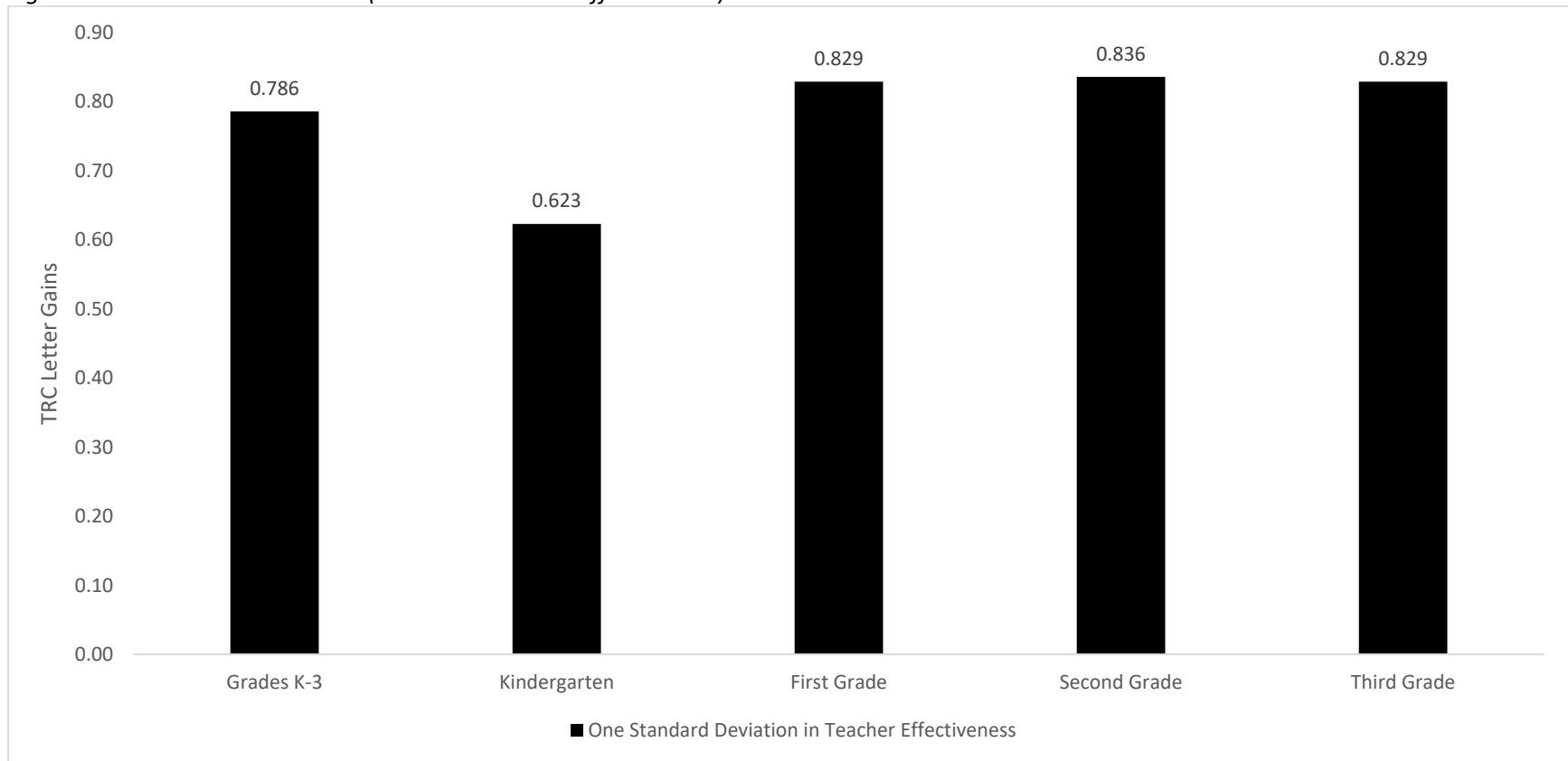
Control Variables

- Student-level: gender, race/ethnicity, subsidized school meals, days absent, current/former English proficiency status, age in months, exceptional status (EC, gifted), year fixed effects, and grade fixed effects
 - In TRC analyses the models include fixed effects for the students' letter/level status at the beginning of the year; allows us to compare the TRC letter gains of students who started the year at the same level
 - In DIBELS analyses the models control for the students' beginning of year composite score (standardized within grade and year); allows us to adjust for student achievement at the beginning of the year
- Classroom/peer-level: subsidized school meals, days absent, race/ethnicity, English proficiency status, exceptional status
- School-level: ADM (average daily membership), per-pupil expenditures, teacher salary supplements, short-term suspension rates, violent acts rates, race/ethnicity, subsidized school meals

Key Results

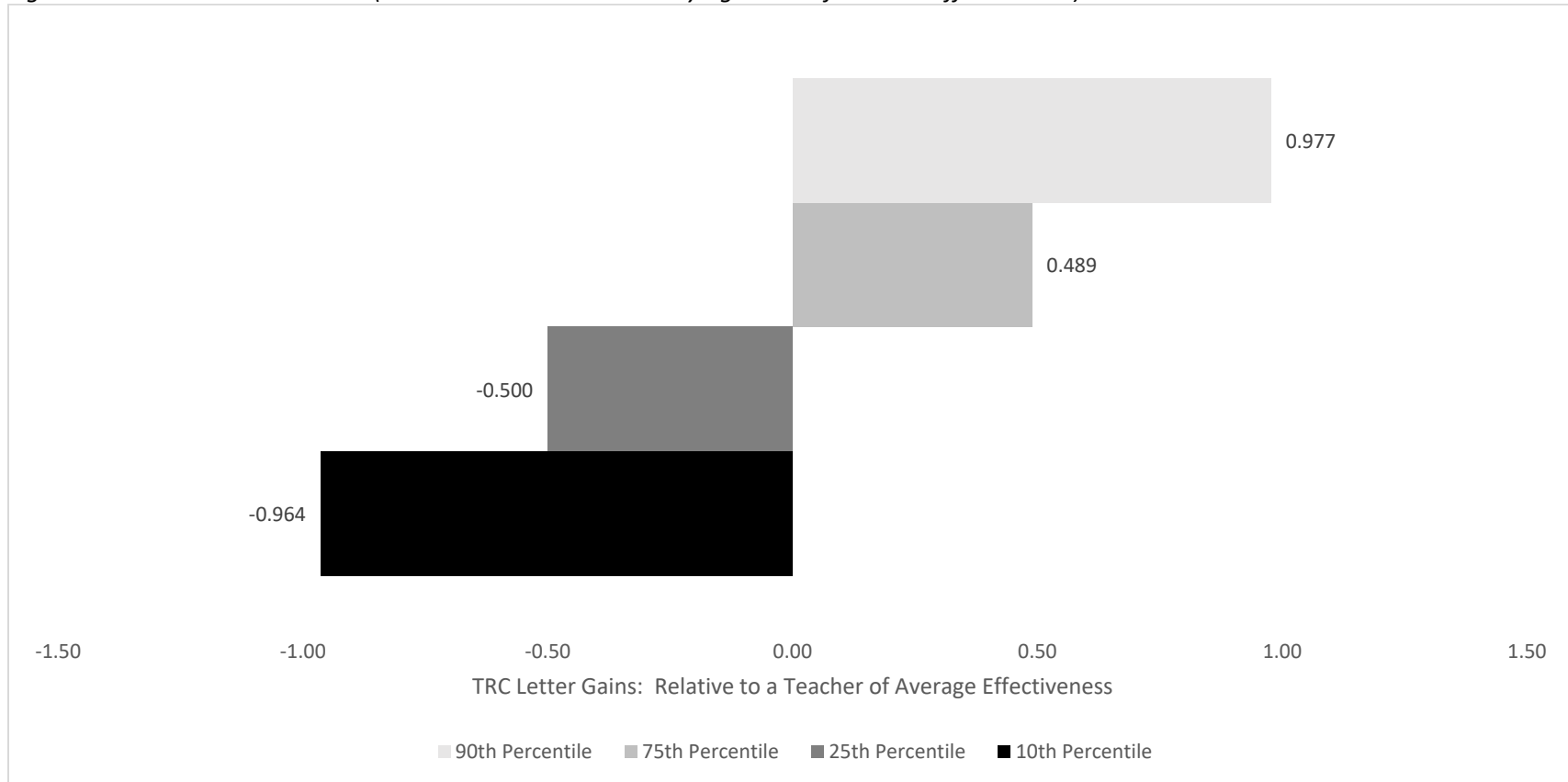
- A one standard deviation increase in teacher effectiveness on the TRC is approximately 0.80 student letter gains (*Figure 1*)
- Students taught by teachers at the 90th percentile of TRC effectiveness gain approximately 1 more level than students taught by teachers at the 50th percentile of effectiveness and nearly 2 more levels than students taught by teachers at the 10th percentile of effectiveness (*Figure 2*)
- A one standard deviation increase in teacher effectiveness on DIBELS is approximately 25 percent of a standard deviation in student achievement (*Figure 3*)
- Students taught by teachers at the 90th percentile of DIBELS effectiveness have adjusted-average achievement approximately 30 percent of a standard deviation higher than students by teachers at the 50th percentile of effectiveness and nearly 60 percent of a standard deviation higher than students taught by teachers at the 10th percentile of effectiveness (*Figure 4*)

Figure 1: TRC Letter Gain Results (Individual Teacher Effectiveness)



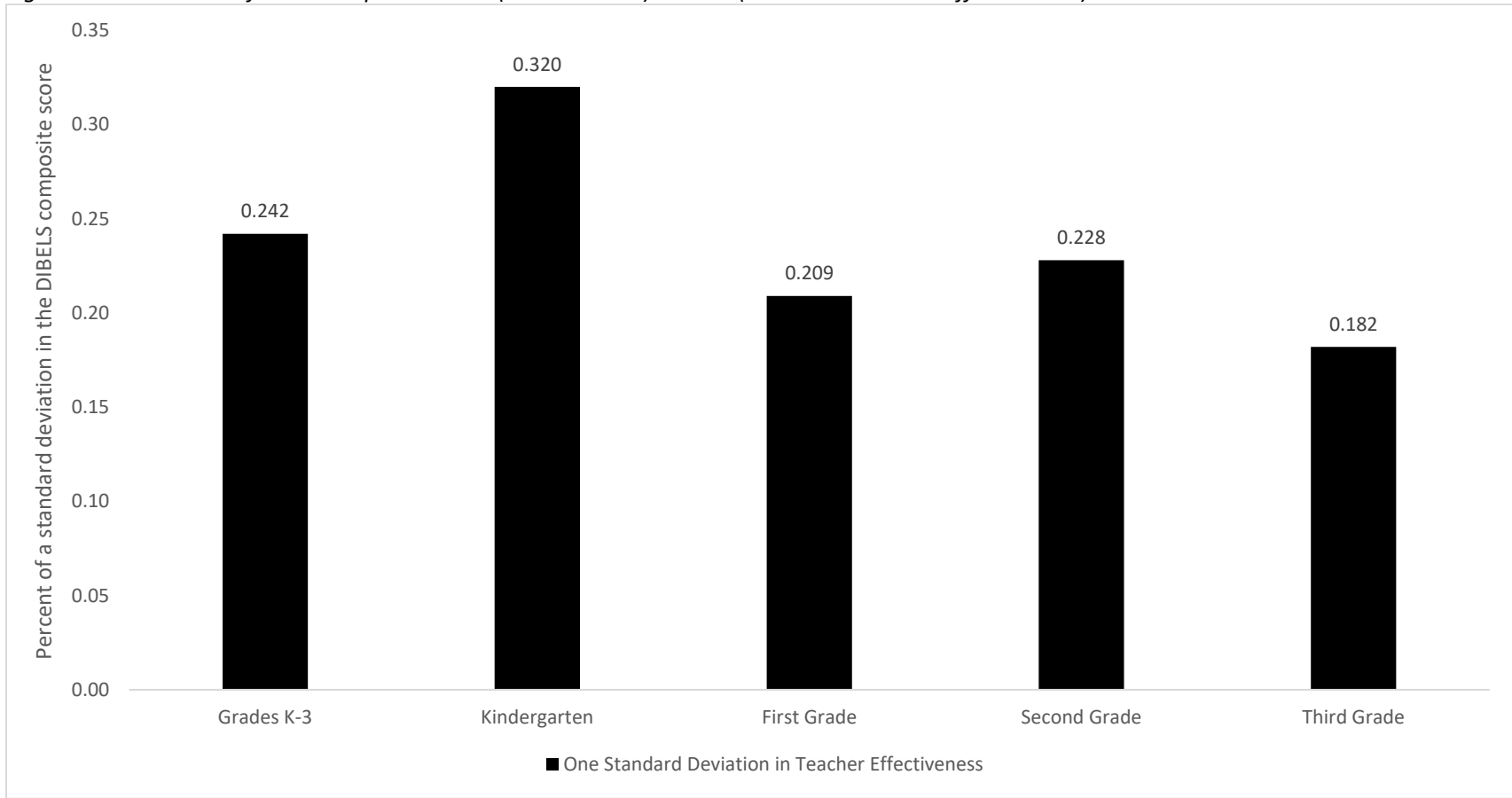
Note: This figure displays the magnitude (standard deviation) of individual teacher effectiveness estimates from models in which K-3 students' letter gain on the TRC is the outcome. The sample includes all teachers in the 2014-15 through 2017-18 school years who are linked to mCLASS TRC data. Models control for student, classroom, and school covariates.

Figure 2: TRC Letter Gain Results (Student Achievement at Varying Levels of Teacher Effectiveness)



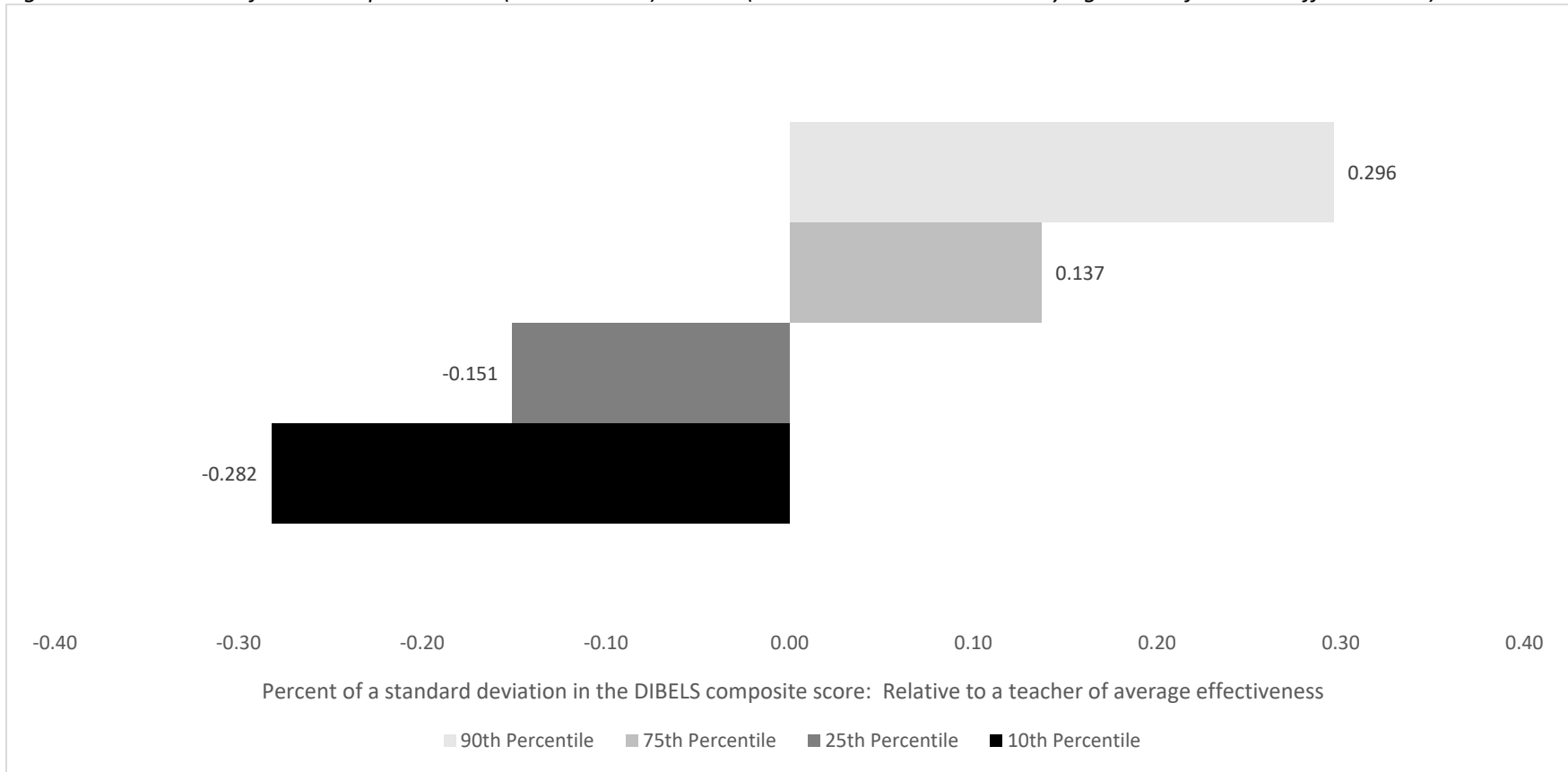
Note: This figure displays the effectiveness of individual teachers at the 10th, 25th, 75th, and 90th percentile of effectiveness relative to the average teacher. Individual teacher effectiveness estimates come from models in which K-3 students' letter gain on the TRC is the outcome. The sample includes all teachers in the 2014-15 through 2017-18 school years who are linked to mCLASS TRC data. Models control for student, classroom, and school covariates.

Figure 3: DIBELS End-of-Year Composite Score (Standardized) Results (Individual Teacher Effectiveness)



Note: This figure displays the magnitude (standard deviation) of individual teacher effectiveness estimates from models in which K-3 students' end-of-year DIBELS composite score (standardized within grade and year) is the outcome. The sample includes all teachers in the 2014-15 through 2017-18 school years who are linked to mCLASS DIBELS data. Models control for student, classroom, and school covariates.

Figure 4: DIBELS End-of-Year Composite Score (Standardized) Results (Student Achievement at Varying Levels of Teacher Effectiveness)



Note: This figure displays the effectiveness of individual teachers at the 10th, 25th, 75th, and 90th percentile of effectiveness relative to the average teacher. Individual teacher effectiveness estimates come from models in which K-3 students' end-of-year DIBELS composite score (standardized within grade and year) is the outcome. The sample includes all teachers in the 2014-15 through 2017-18 school years who are linked to mCLASS TRC data. Models control for student, classroom, and school covariates.

How effective are UNC System institution graduates in early grades (K-3) reading?

Sample

- First, second, and third year teachers linked to students' mCLASS scores in the 2014-15 through 2017-18 years
- Presenting results from models for grades K-3; also estimated models for grades 1-3 and 1st grade only (not included in this packet)
- Ran models for all students taught by early-career teachers; also estimated separate models for subsidized school meal students, limited English proficient students, students of color, and low-performing students (this packet includes a selection of those subgroup results)

Outcome Measures

- TRC: primary outcome is the 'TRC Letter Gain'—number of letters/levels of growth for the student on the TRC between the beginning and end of the year
 - Additional TRC outcome measures (not included in this packet) include whether the student was proficient at the end of the year and the students' proficiency status (far below, below, proficient, above proficient) at the end of the year
- DIBELS: primary outcome is the end of year composite score (standardized within grade and year)
 - An additional DIBELS outcome measure (not included in this packet) is the students' gain score on the DIBELS composite (standardized within grade and year)

Analyses

- Statewide comparisons: Estimate multi-level models with students nested within teachers and schools
- Within-school comparisons: Estimate school fixed effect models to compare teacher effectiveness within the same school

Focal Covariates

- Indicators for NC private, out-of-state, alternative entry, and TFA teachers in reference to UNC system prepared teachers
- Indicators for each UNC System institution in reference to non-UNC System prepared teachers

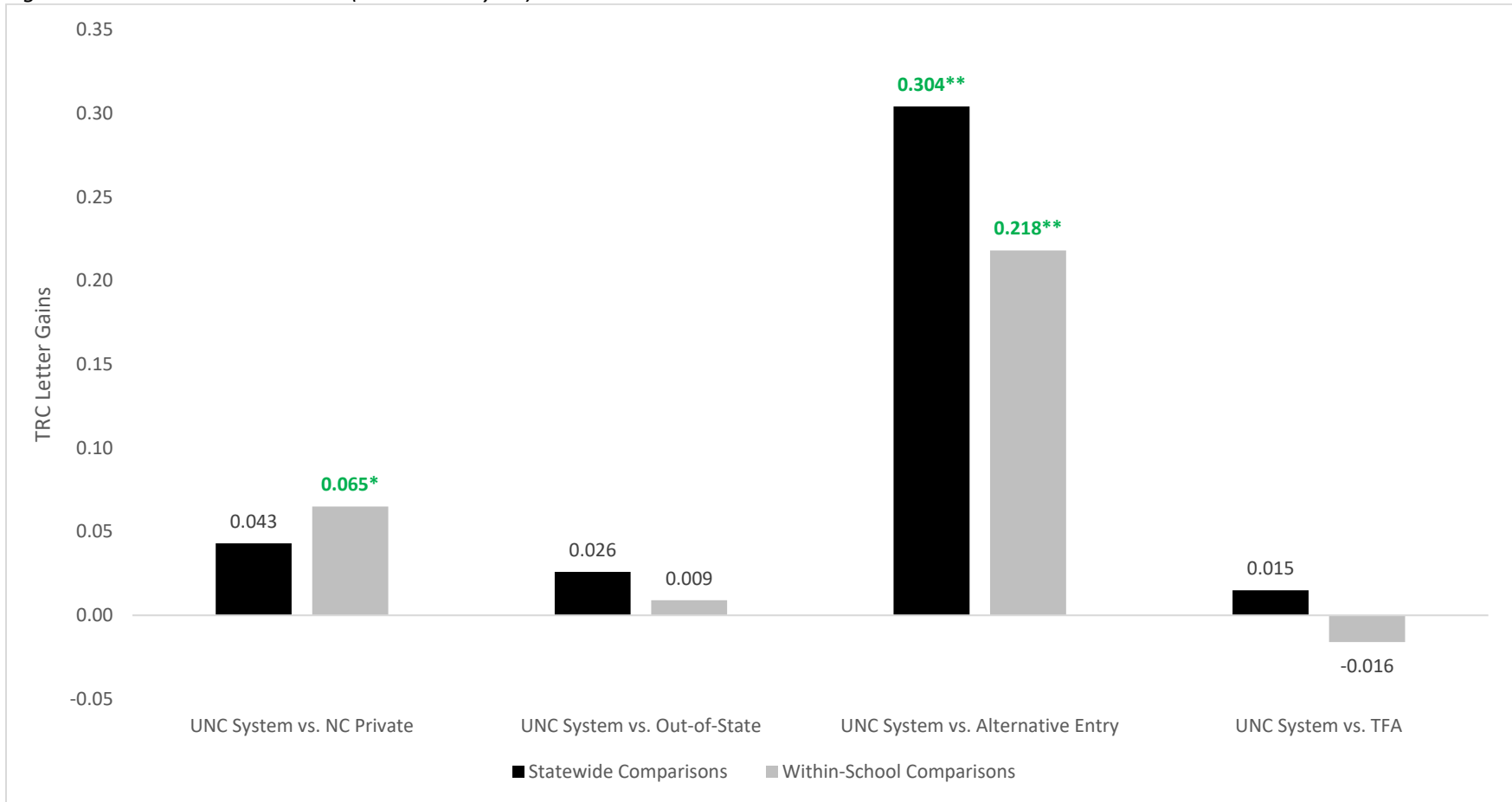
Control Variables

- Student-level: gender, race/ethnicity, subsidized school meals, days absent, current/former English proficiency status, age in months, exceptional status (EC, gifted), year fixed effects, and grade fixed effects
 - In TRC analyses the models include fixed effects for the students' letter/level status at the beginning of the year; allows us to compare the TRC letter gains of students who started the year at the same level
 - In DIBELS analyses the models control for the students' beginning of year composite score (standardized within grade and year) ; allows us to adjust for student achievement at the beginning of the year
- Classroom/peer-level: subsidized school meals, days absent, race/ethnicity, English proficiency status, exceptional status
- Teacher-level: experience
- School-level: ADM (average daily membership), per-pupil expenditures, teacher salary supplements, short-term suspension rates, violent acts rates, race/ethnicity, subsidized school meals

Key Results

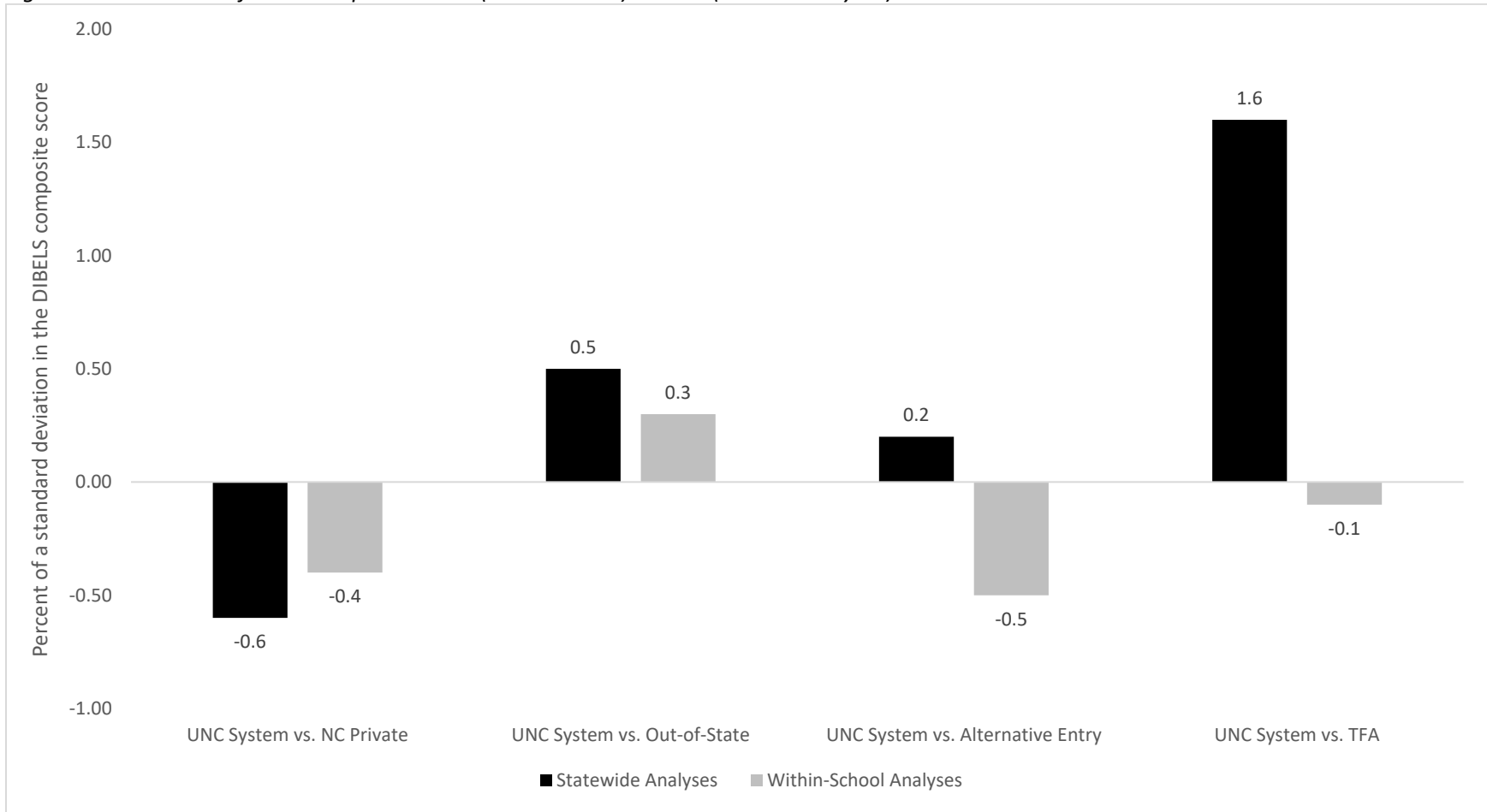
- Portals Analyses
 - UNC System prepared teachers are more effective than alternative entry teachers on the TRC (*Figure 5*)
 - There are no effectiveness differences between teacher portal groups on DIBELS (*Figure 6*)
 - On the last teacher portals analyses in grades 4-5 reading (EOG), UNC System prepared teachers were more effective than teachers prepared out-of-state (*Figure 7*)
- Program Effectiveness Analyses
 - Initially-prepared teachers from ECU, NCSU, and UNCCH are more effective than non-UNC System prepared teachers on the TRC (*Figure 8*)
 - Initially-prepared teachers from ECU and FSU are more effective than non-UNC System prepared teachers on DIBELS (*Figure 10*)
 - On the last program effectiveness analyses in grades 4-5 reading (EOG), initially prepared teachers from ECU and FSU were more effective than non-UNC System prepared teachers (*Figure 12*)

Figure 5: TRC Letter Gain Results (Portals Analyses)



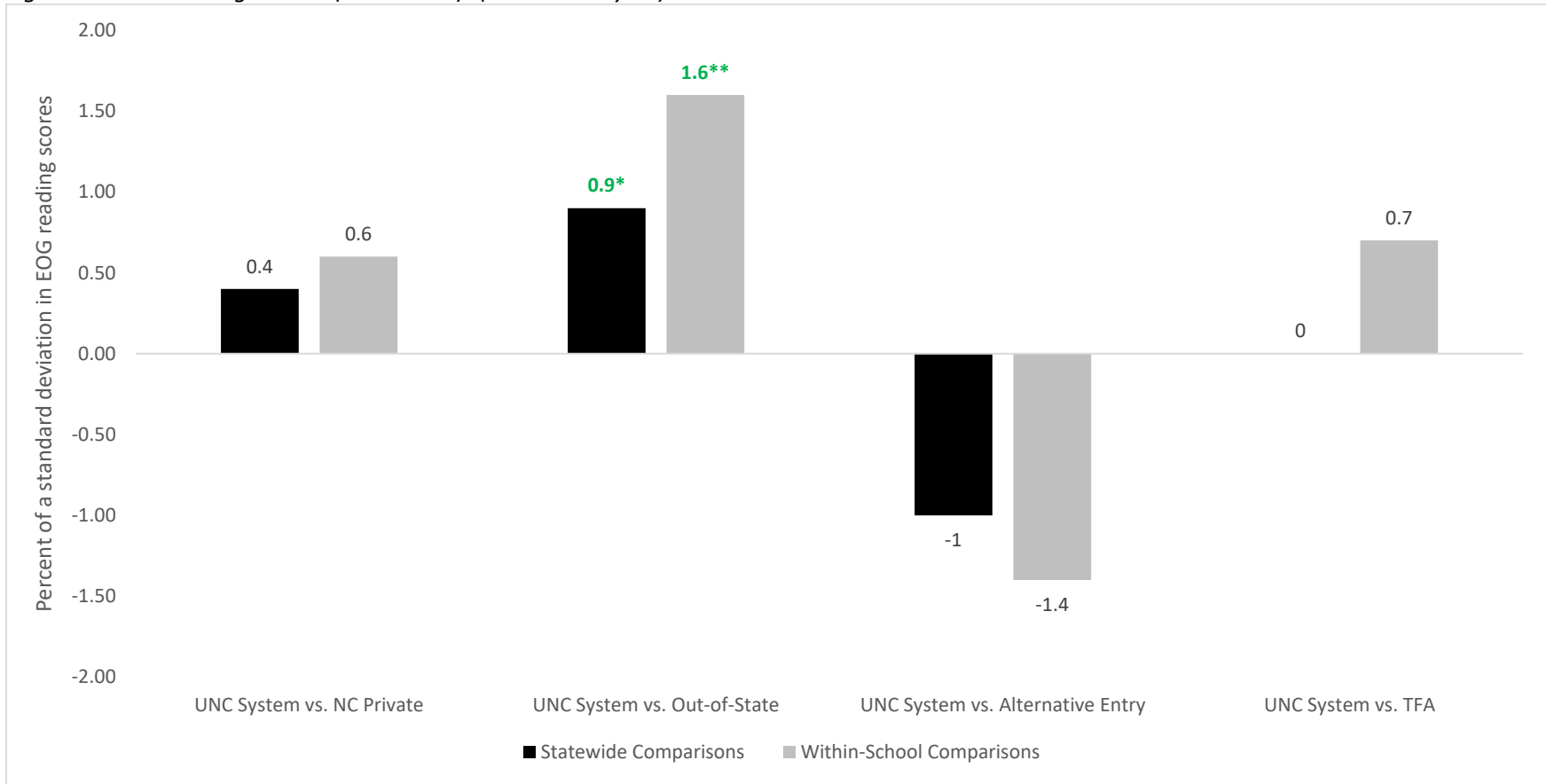
Note: This figure displays results from models in which K-3 students’ letter gain on the TRC is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years. The effectiveness of UNC System prepared teachers is compared with that of NC private, out-of-state, alternative entry, and TFA teachers. Models control for student, classroom, teacher, and school covariates. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 6: DIBELS End-of-Year Composite Score (Standardized) Results (Portals Analyses)



Note: This figure displays results from models in which K-3 students' end-of-year DIBELS composite score (standardized within grade and year) is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years. The effectiveness of UNC System prepared teachers is compared with that of NC private, out-of-state, alternative entry, and TFA teachers. Models control for student, classroom, teacher, and school covariates. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

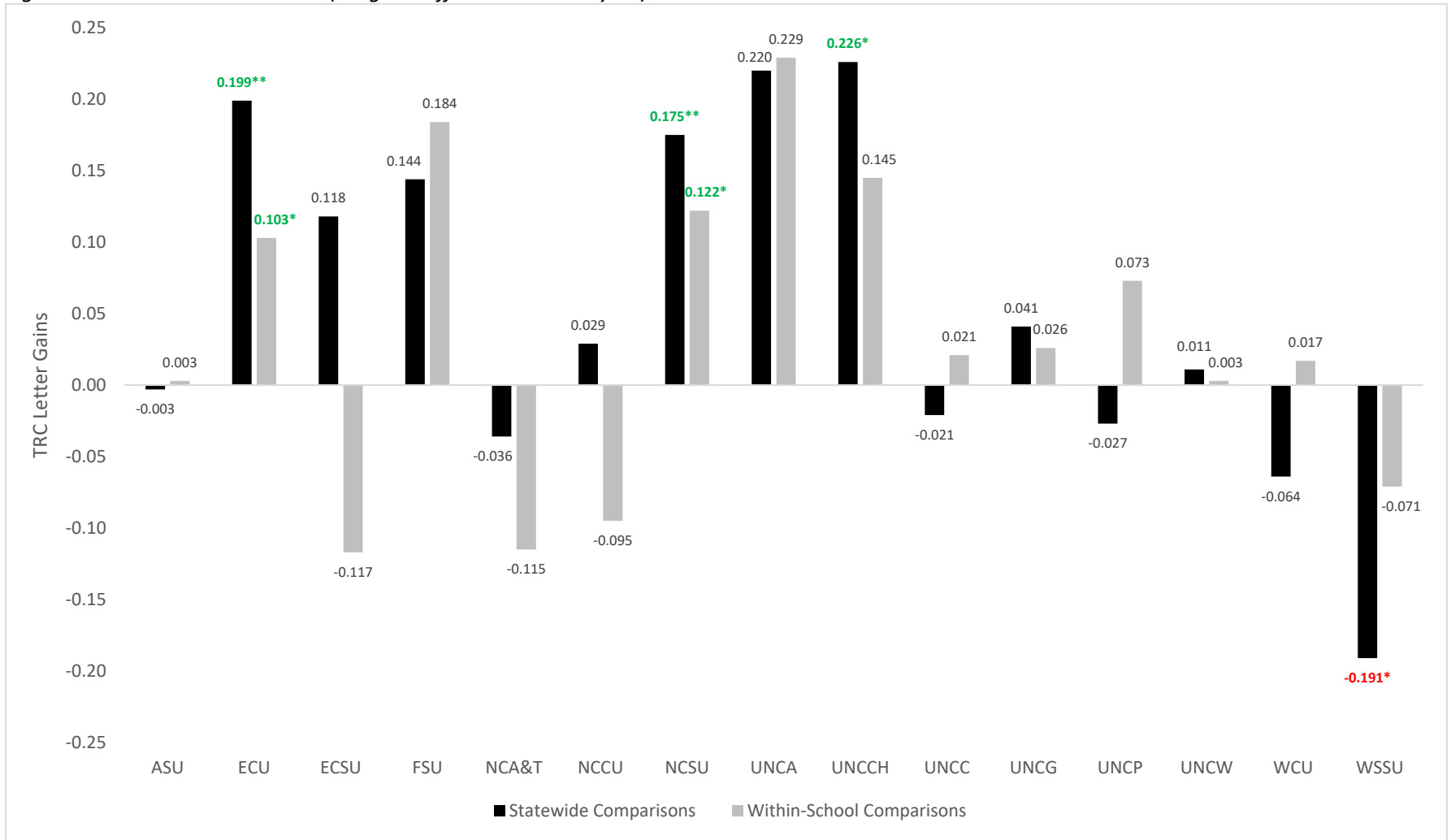
Figure 7: EOG Reading Results (Grades 4-5)¹ (Portals Analyses)



Note: This figure displays results from models in which 4th and 5th grade students’ EOG reading score (standardized within grade and year) is the outcome. The sample includes teachers with less than five years of experience in the 2012-13 through 2016-17 school years. The effectiveness of UNC System prepared teachers is compared with that of NC private, out-of-state, alternative entry, and TFA teachers. Models control for student, classroom, teacher, and school covariates. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

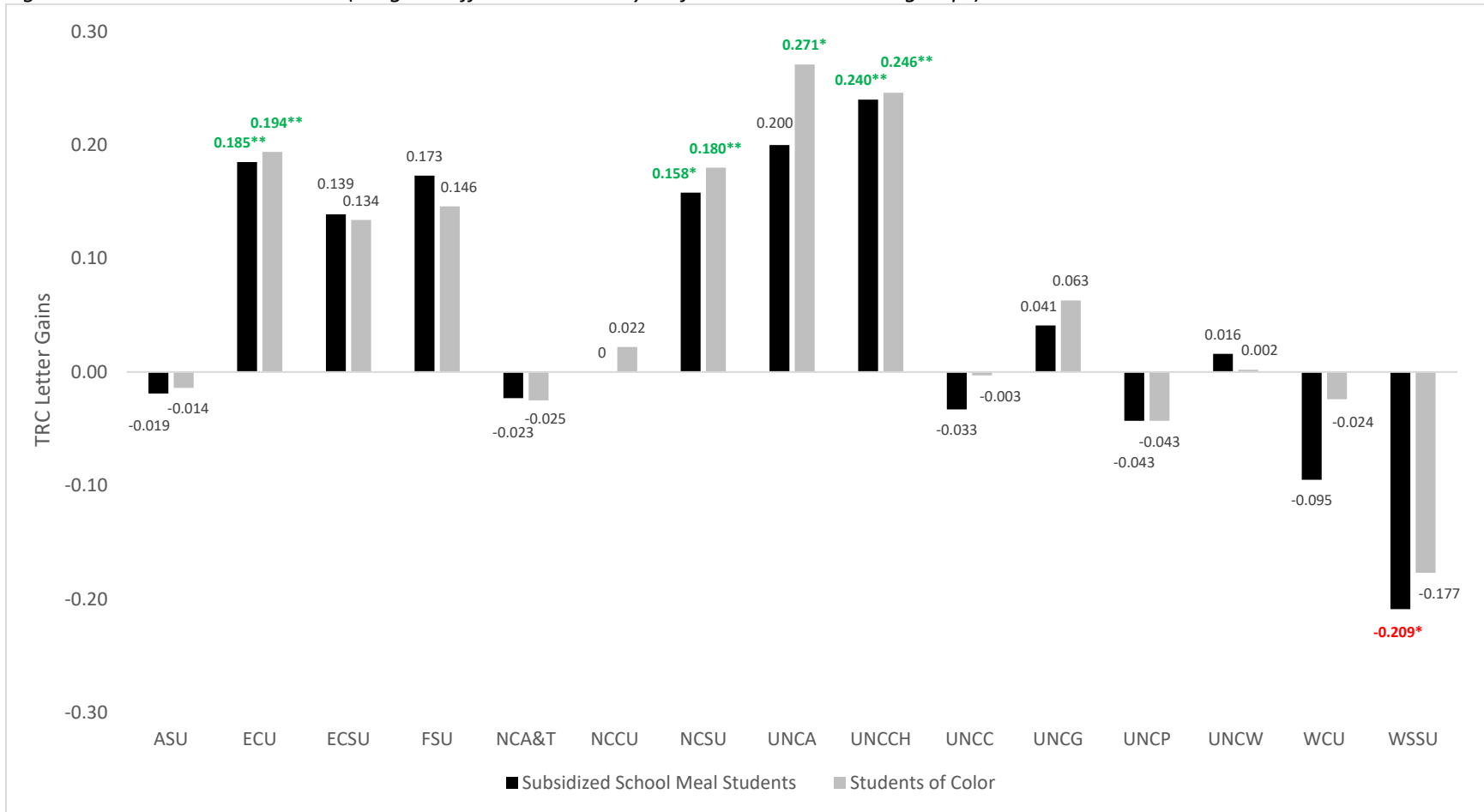
¹ These results are from EPIC’s most recent teacher portals analyses. These analyses used data from the 2012-13 through 2016-17 school years for teachers with less than 5 years of experience.

Figure 8: TRC Letter Gain Results (Program Effectiveness Analyses)



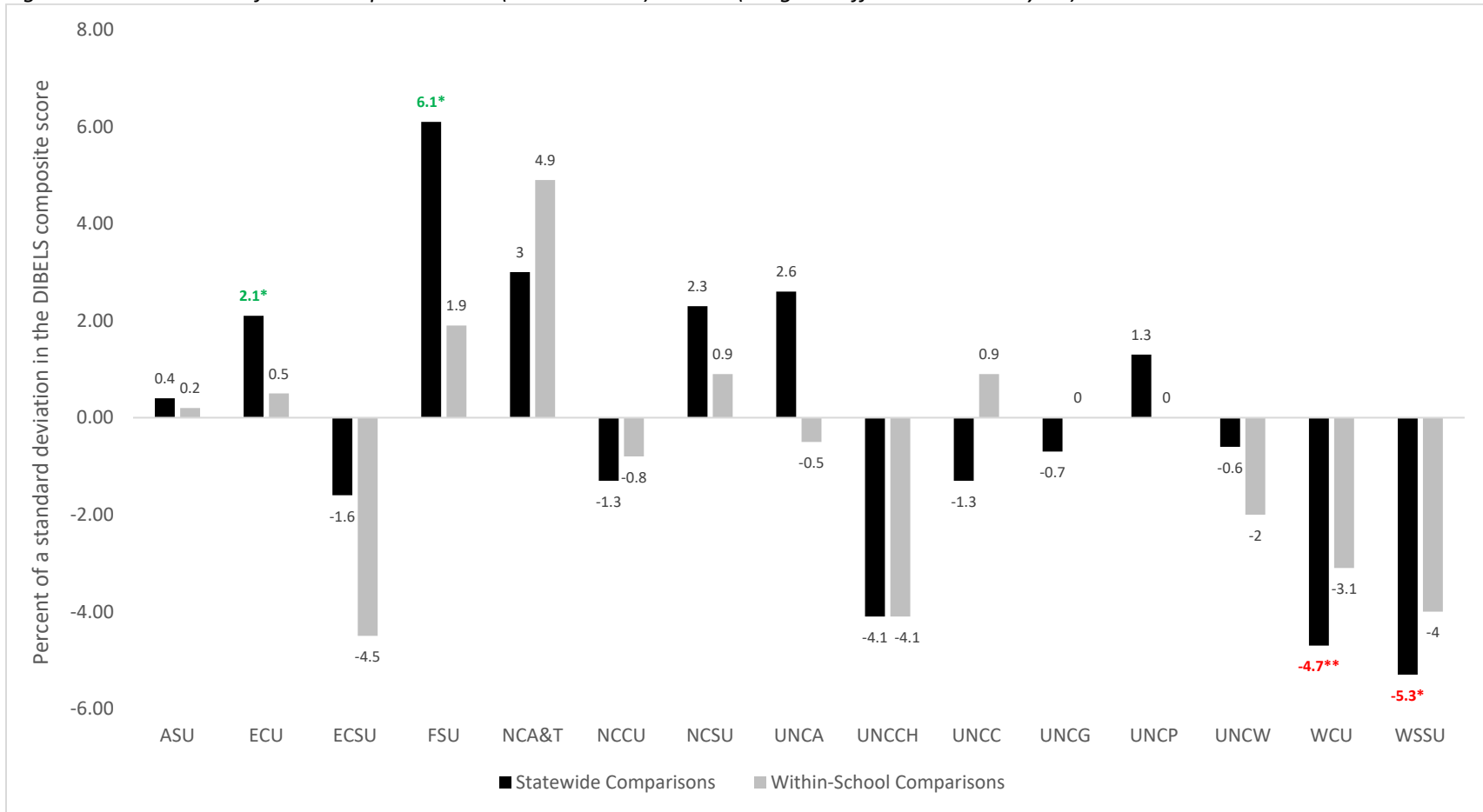
Note: This figure displays results from models in which K-3 students’ letter gain on the TRC is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years. The effectiveness of initially-prepared teachers from each UNC System institution is compared with that of non-UNC System teachers (i.e. NC private, out-of-state, alternative entry, TFA). Models control for student, classroom, teacher, and school covariates. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 9: TRC Letter Gain Results (Program Effectiveness Analyses for Select Student Subgroups)



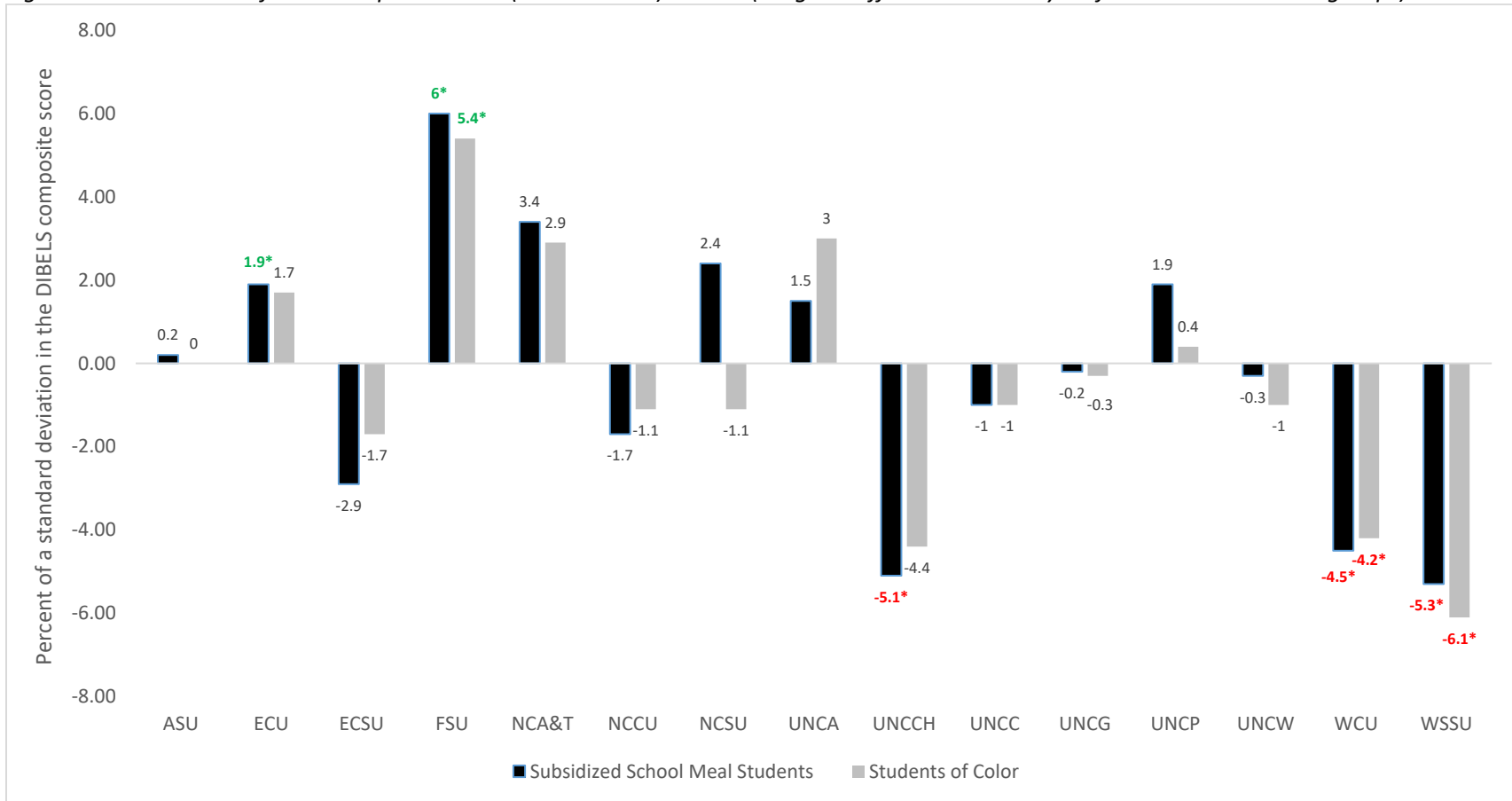
Note: This figure displays results from multi-level models in which K-3 students' letter gain on the TRC is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years; models are limited to students in specific subgroups. The effectiveness of initially-prepared teachers from each UNC System institution is compared with that of non-UNC System teachers (i.e. NC private, out-of-state, alternative entry, TFA). Models control for student, classroom, teacher, and school covariates. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 10: DIBELS End-of-Year Composite Score (Standardized) Results (Program Effectiveness Analyses)



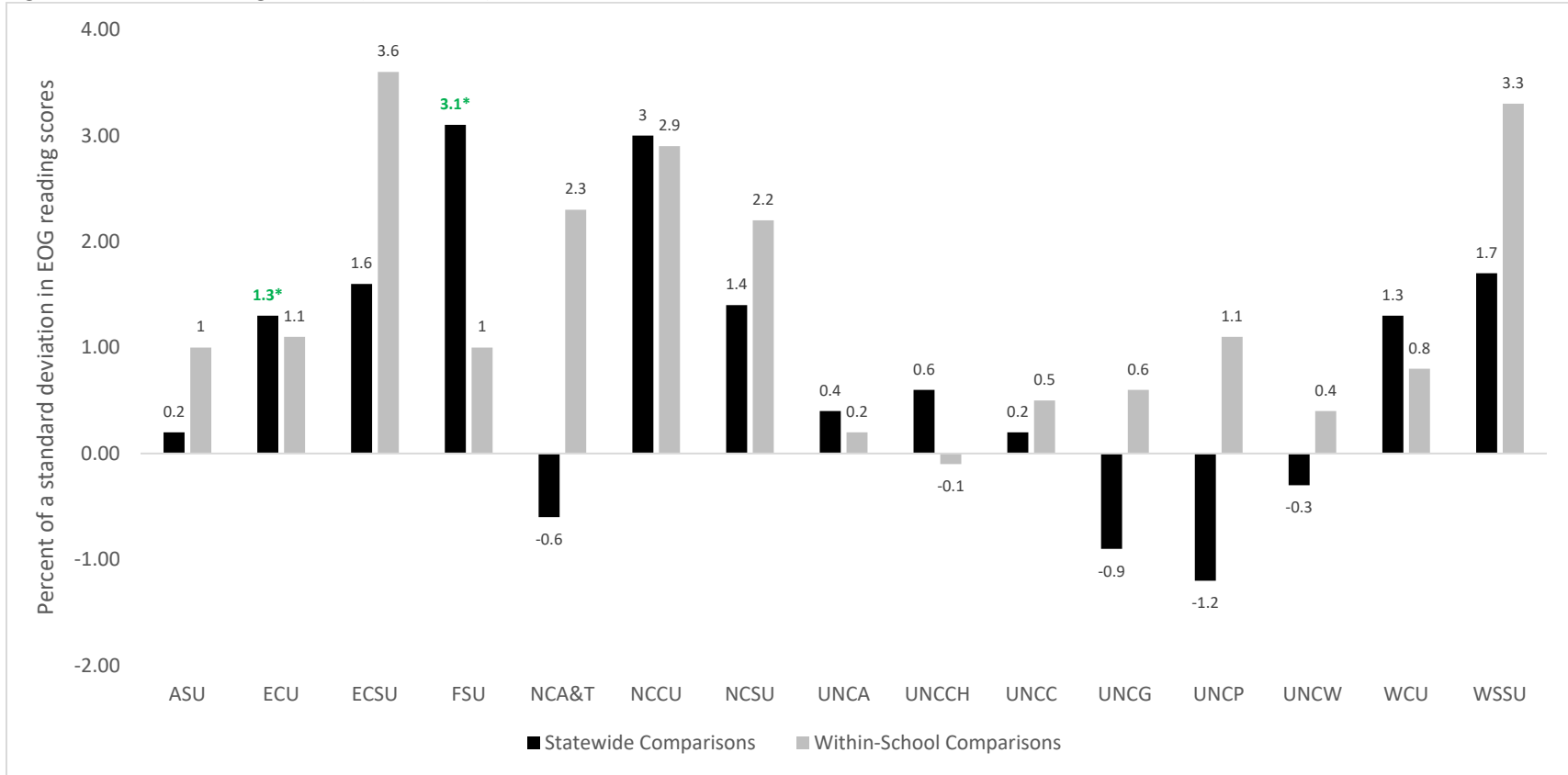
Note: This figure displays results from models in which K-3 students' end-of-year DIBELS composite score (standardized within grade and year) is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years. The effectiveness of initially-prepared teachers from each UNC System institution is compared with that of non-UNC System teachers (i.e. NC private, out-of-state, alternative entry, TFA). Models control for student, classroom, teacher, and school covariates. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 11: DIBELS End-of-Year Composite Score (Standardized) Results (Program Effectiveness Analyses for Select Student Subgroups)



Note: This figure displays results from multi-level models in which K-3 students' end-of-year DIBELS composite score (standardized within grade and year) is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years; models are limited to students in specific subgroups. The effectiveness of initially-prepared teachers from each UNC System institution is compared with that of non-UNC System teachers (i.e. NC private, out-of-state, alternative entry, TFA). Models control for student, classroom, teacher, and school covariates. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 12: EOG Reading Results (Grades 4-5)²



Note: This figure displays results from models in which 4th and 5th grade students’ EOG reading score (standardized within grade and year) is the outcome. The sample includes teachers with less than five years of experience in the 2012-13 through 2016-17 school years. The effectiveness of initially-prepared teachers from each UNC System institution is compared with that of non-UNC System teachers (i.e. NC private, out-of-state, alternative entry, TFA). Models control for student, classroom, teacher, and school covariates. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

² These results are from EPIC’s most recent program effectiveness work. These analyses used data from the 2012-13 through 2016-17 school years for teachers with less than 5 years of experience.

Do ratings of teacher preparation programs' early literacy instruction predict the effectiveness of program graduates?

Sample

- First, second, and third year teachers who (1) are linked to students' mCLASS scores in the 2014-15 through 2017-18 years and (2) can be linked to an elementary preparation program rated by NCTQ
- Separate models for (1) North Carolina and out-of-state programs; (2) North Carolina programs only; and (3) UNC System programs only

Outcome Measures

- TRC Letter Gain—number of letters/levels of growth for the student on the TRC between the beginning and end of the year
- DIBELS end of year composite score (standardized within grade and year)

Analyses

- Statewide comparisons: Estimate multi-level models with students nested within teachers and schools
- Within-school comparisons: Estimate school fixed effect models to compare teacher effectiveness within the same school

Focal Covariates

- NCTQ ratings of teacher preparation programs in early literacy
 - Early literacy score (0-4)
 - Indicators for whether programs met requirements in the following areas: phonemic awareness, phonics, fluency, vocabulary, and comprehension

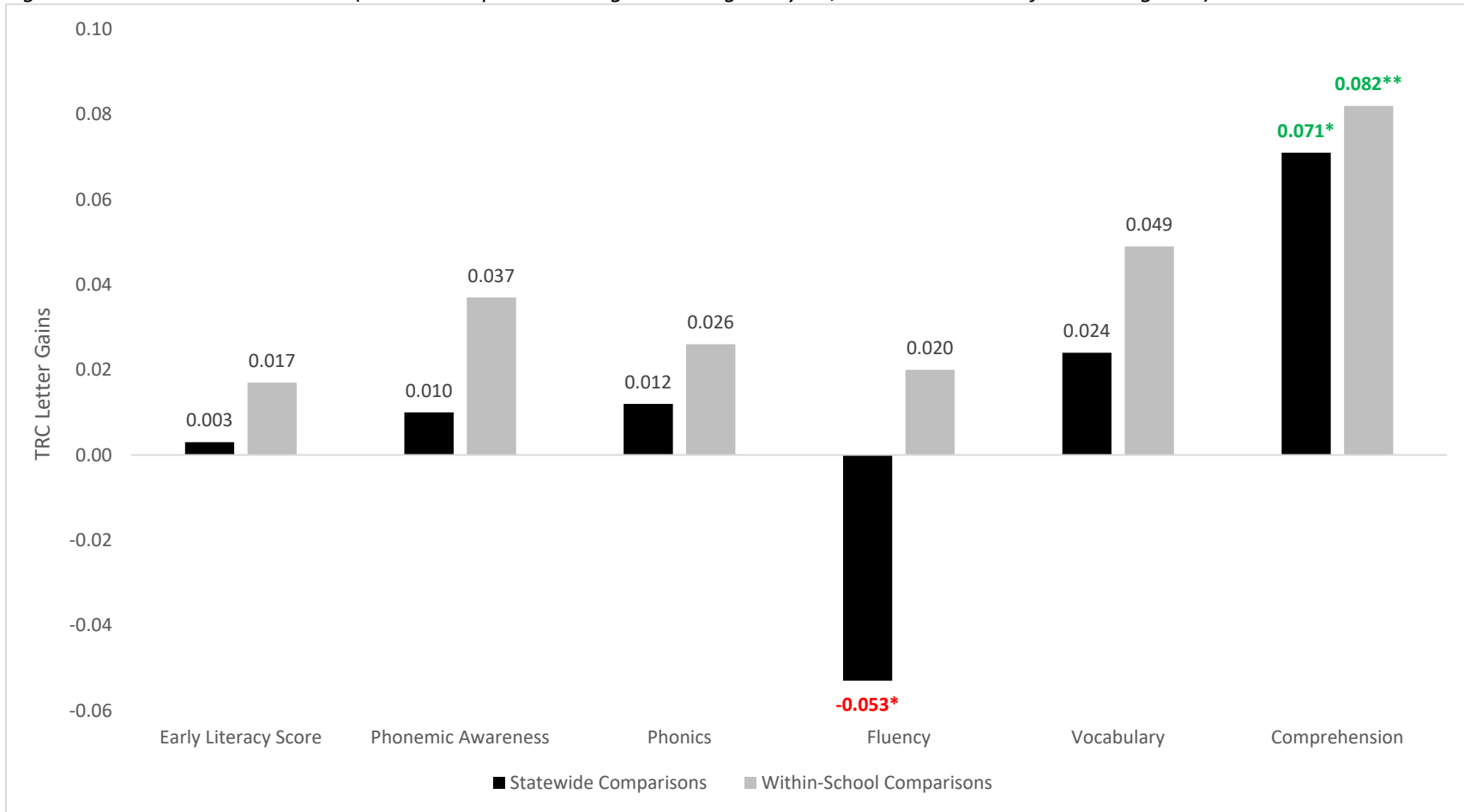
Control Variables

- Student-level: gender, race/ethnicity, subsidized school meals, days absent, current/former English proficiency status, age in months, exceptional status (EC, gifted), year fixed effects, and grade fixed effects
 - In TRC analyses the models include fixed effects for the students' letter/level status at the beginning of the year; allows us to compare the TRC letter gains of students who started the year at the same level
 - In DIBELS analyses the models control for the students' beginning of year composite score (standardized within grade and year) ; allows us to adjust for student achievement at the beginning of the year
- Classroom/peer-level: subsidized school meals, days absent, race/ethnicity, English proficiency status, exceptional status
- Teacher-level: experience
- School-level: ADM (average daily membership), per-pupil expenditures, teacher salary supplements, short-term suspension rates, violent acts rates, race/ethnicity, subsidized school meals

Key Results

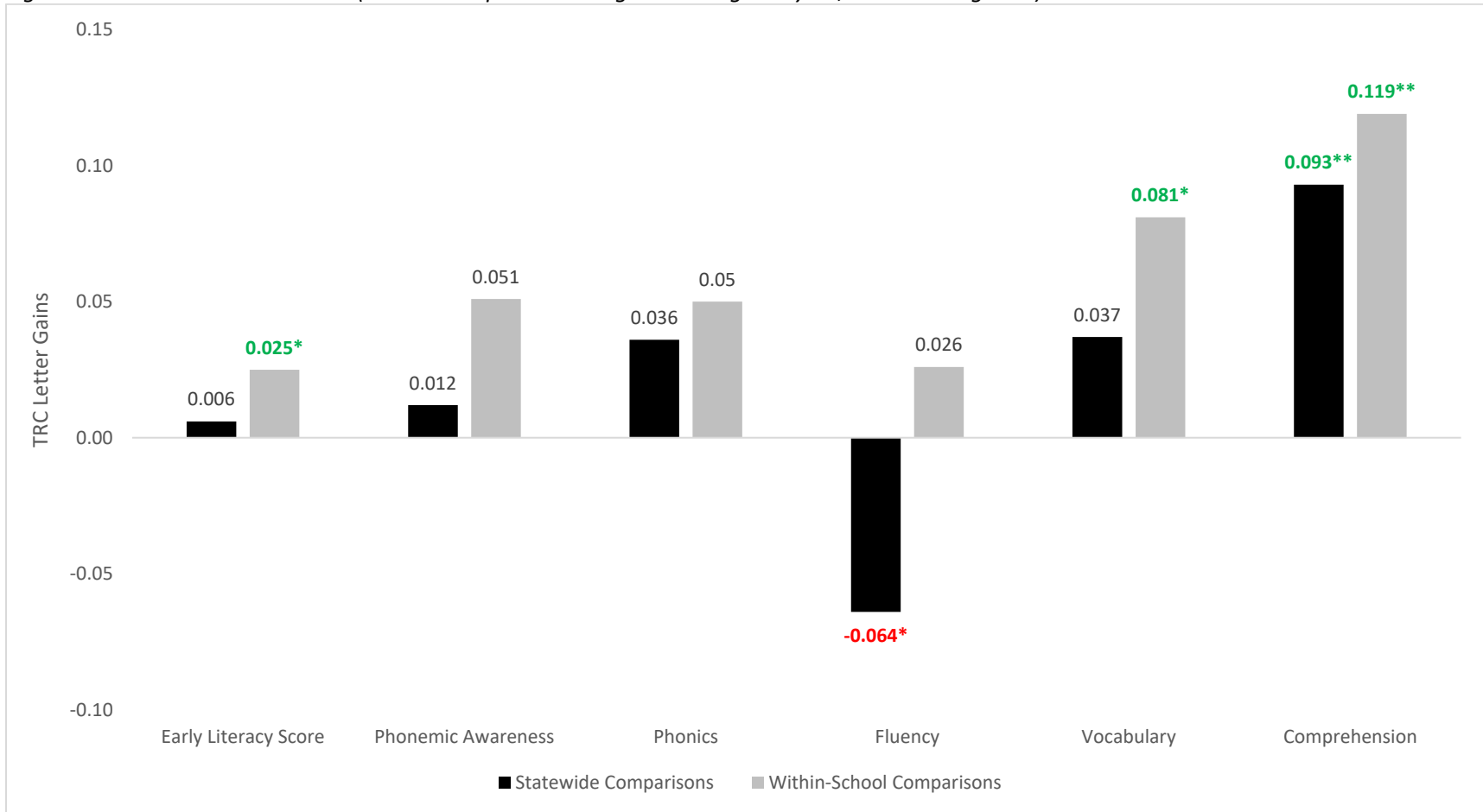
- Teacher preparation programs (TPPs) that meet NCTQ's standard for reading comprehension instruction have graduates that are more effective on the TRC (*Figures 13-15*)
- Results from statewide comparisons indicate that TPPs that meet NCTQ's standard for reading fluency instruction have graduates that are less effective on the TRC and DIBELS (*Figures 13-17*)

Figure 13: TRC Letter Gain Results (Teacher Preparation Program Rating Analyses; In-state and Out-of-State Programs)



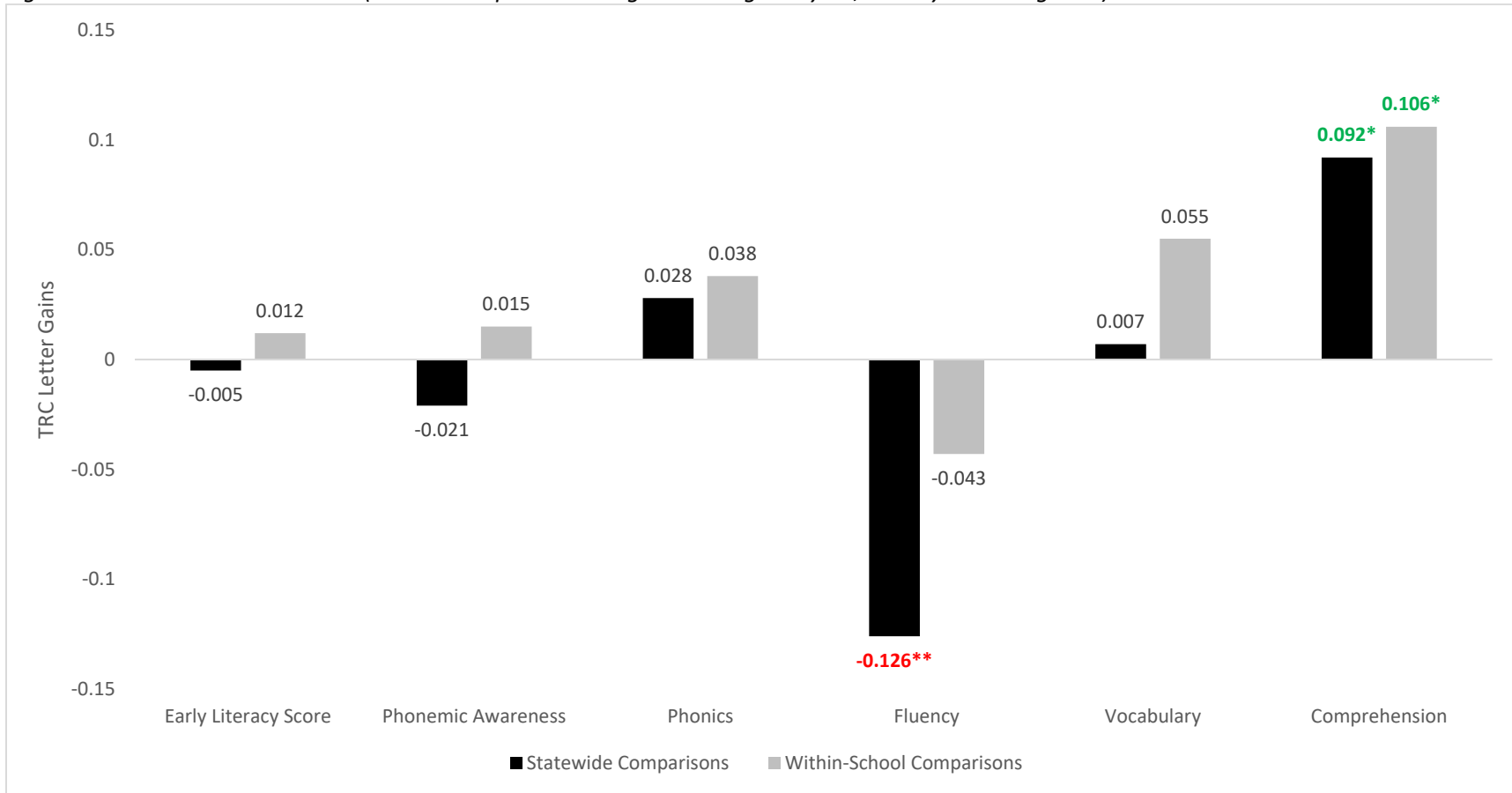
Note: This figure displays results from models in which K-3 students' letter gain on the TRC is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years who are linked to an elementary preparation program rated by NCTQ. The focal variables are NCTQ's ratings of elementary teacher preparation programs in early grades literacy. These data include an early literacy score (0-4) and indicators for the five scientifically-based instructional strategies for reading: phonemic awareness, phonics, fluency, vocabulary, and comprehension. Models control for student, classroom, teacher, and school covariates. In TRC analyses, low-performing students are those who were not proficient on the TRC at the beginning of the year. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 14: TRC Letter Gain Results (Teacher Preparation Program Rating Analyses; In-state Programs)



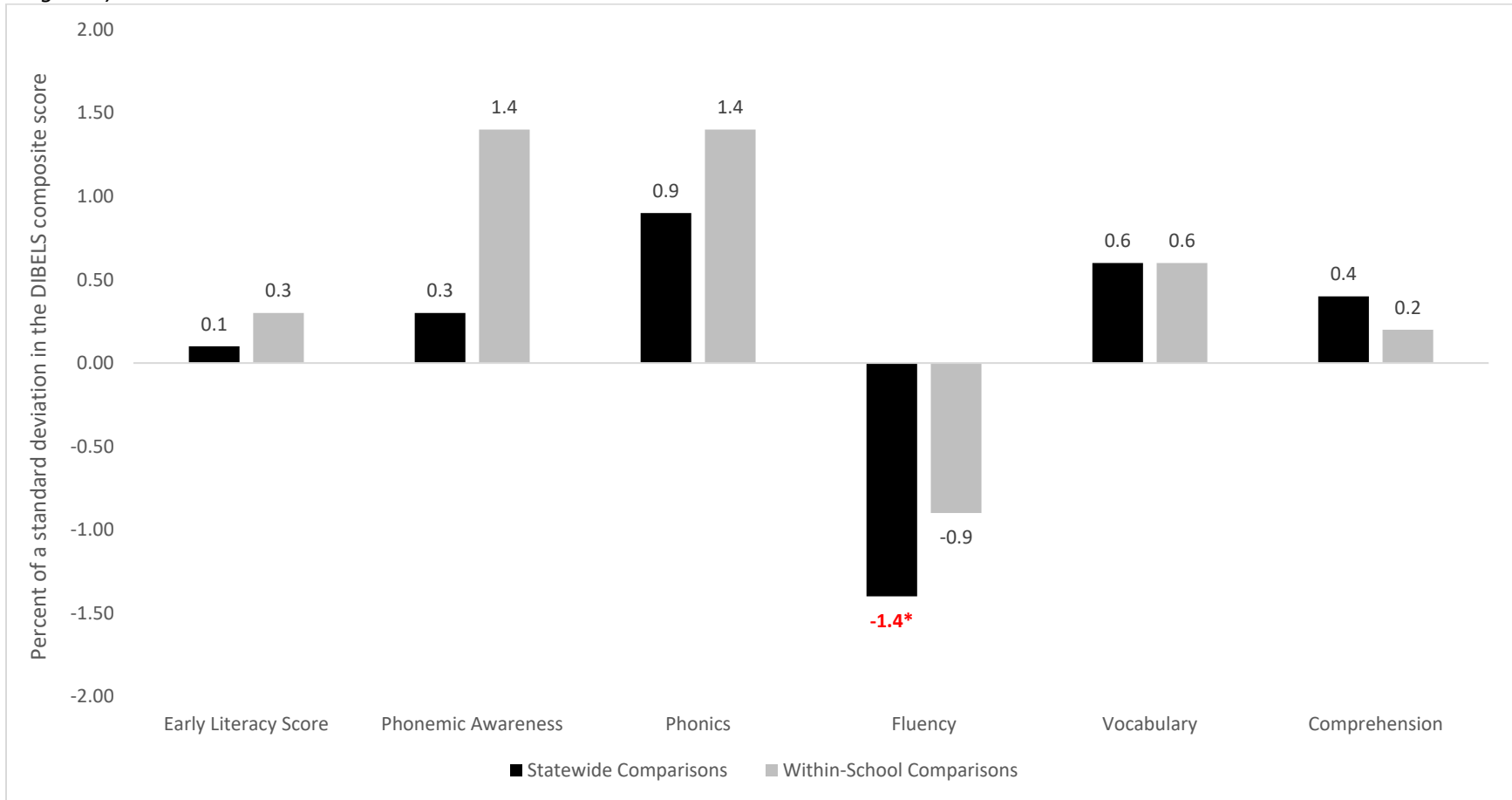
Note: This figure displays results from models in which K-3 students’ letter gain on the TRC is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years who are linked to an in-state elementary preparation program rated by NCTQ. The focal variables are NCTQ’s ratings of elementary teacher preparation programs in early grades literacy. These data include an early literacy score (0-4) and indicators for the five scientifically-based instructional strategies for reading: phonemic awareness, phonics, fluency, vocabulary, and comprehension. Models control for student, classroom, teacher, and school covariates. In TRC analyses, low-performing students are those who were not proficient on the TRC at the beginning of the year. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 15: TRC Letter Gain Results (Teacher Preparation Program Rating Analyses; UNC System Programs)



Note: This figure displays results from models in which K-3 students’ letter gain on the TRC is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years who are linked to a UNC System institution elementary preparation program rated by NCTQ. The focal variables are NCTQ’s ratings of elementary teacher preparation programs in early grades literacy. These data include an early literacy score (0-4) and indicators for the five scientifically-based instructional strategies for reading: phonemic awareness, phonics, fluency, vocabulary, and comprehension. Models control for student, classroom, teacher, and school covariates. In TRC analyses, low-performing students are those who were not proficient on the TRC at the beginning of the year. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

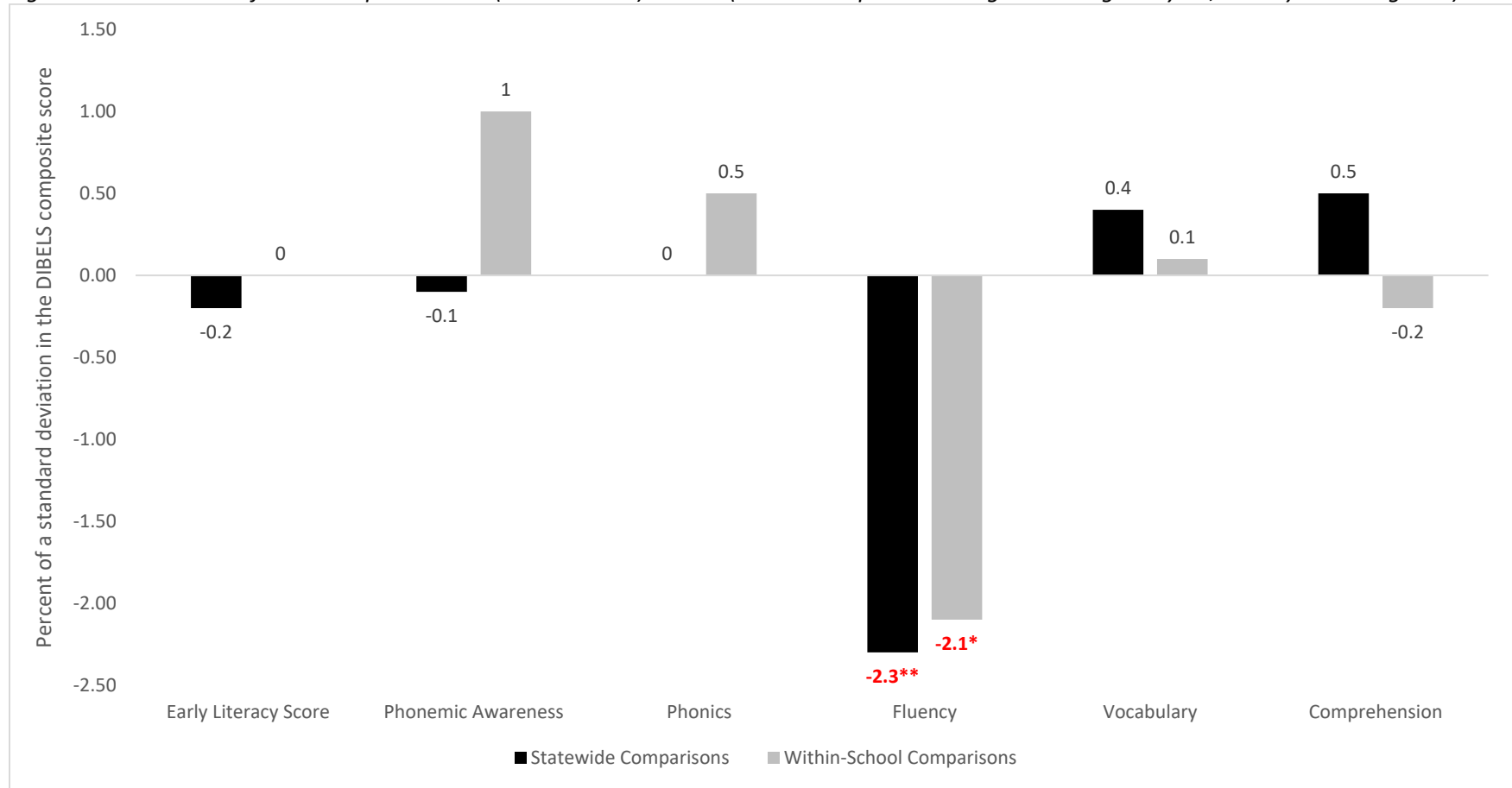
Figure 16: DIBELS End-of-Year Composite Score (Standardized) Results (Teacher Preparation Program Rating Analyses; In-state and Out-of-State Programs)³



Note: This figure displays results from models in which K-3 students' end-of-year DIBELS composite score (standardized within grade and year) is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years who are linked to an elementary preparation program rated by NCTQ. The focal variables are NCTQ's ratings of elementary teacher preparation programs in early grades literacy. These data include an early literacy score (0-4) and indicators for the five scientifically-based instructional strategies for reading: phonemic awareness, phonics, fluency, vocabulary, and comprehension. Models control for student, classroom, teacher, and school covariates. In TRC analyses, low-performing students are those who were not proficient on the TRC at the beginning of the year. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

³ Results are quite similar when limited to graduates of in-state elementary preparation programs only.

Figure 17: DIBELS End-of-Year Composite Score (Standardized) Results (Teacher Preparation Program Rating Analyses; UNC System Programs)



Note: This figure displays results from models in which K-3 students' end-of-year DIBELS composite score (standardized within grade and year) is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years who are linked to a UNC System institution elementary preparation program rated by NCTQ. The focal variables are NCTQ's ratings of elementary teacher preparation programs in early grades literacy. These data include an early literacy score (0-4) and indicators for the five scientifically-based instructional strategies for reading: phonemic awareness, phonics, fluency, vocabulary, and comprehension. Models control for student, classroom, teacher, and school covariates. In TRC analyses, low-performing students are those who were not proficient on the TRC at the beginning of the year. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

How well do test-takers score on the Foundations of Reading licensure exam?

Sample

- Individuals taking the Foundations of Reading licensure exam in the 2014-2019 calendar years
- Exclude the following from the sample:
 - Those who did not take the exam for the first time by August 2018
 - Those who entered teaching in NC through Visiting International Faculty
 - Those who never have less than three years of experience in the 2014-2019 years (accumulated years of experience elsewhere)
- Code teacher preparation measures based on data from UNC System and NCDPI

Outcome Measures

- Foundations of Reading total scores—for the first-time an individual takes the assessment and for their highest score
- Foundations of Reading pass rates—for the first-time an individual takes the assessment and for their highest score
- Also have (but do not report in this packet) scores on each of the four exam subcomponents

Comparisons

- Compare the scores and pass rates of UNC System prepared test-takers (portal) versus NC private, out-of-state, alternative entry, and TFA test-takers
- Compare the scores and pass rates for test-takers from each UNC System institution versus non-UNC System prepared test-takers
- Compare the scores and pass rates for the following groups of test-takers: (a) female versus male; (b) white versus individuals of color; and (c) those who have been/are teachers in NC public schools versus those who have not yet/may never become teachers in NC public schools

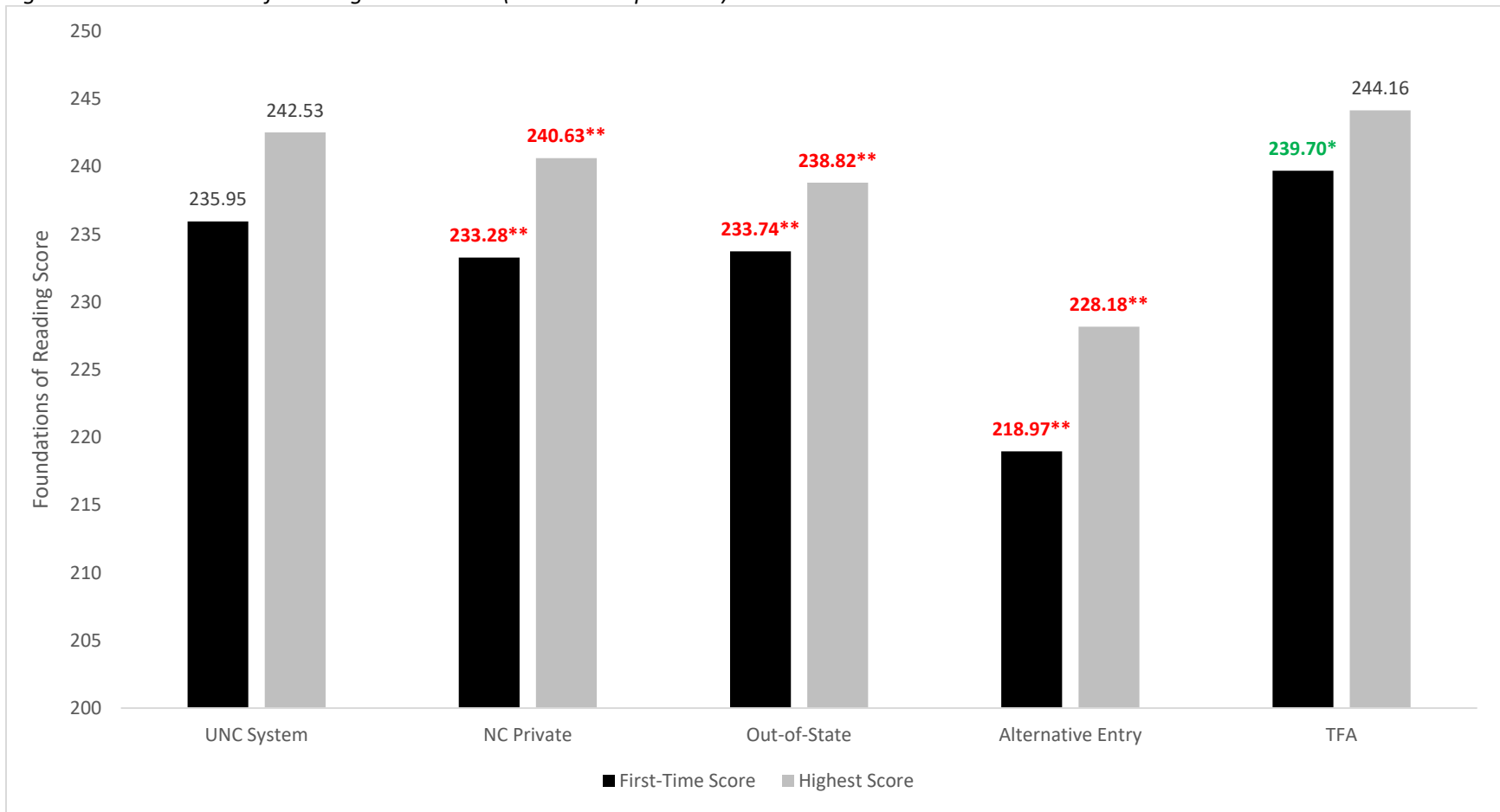
Analyses

- Independent sample t-tests (testing for mean differences in scores and pass rates)

Key Results

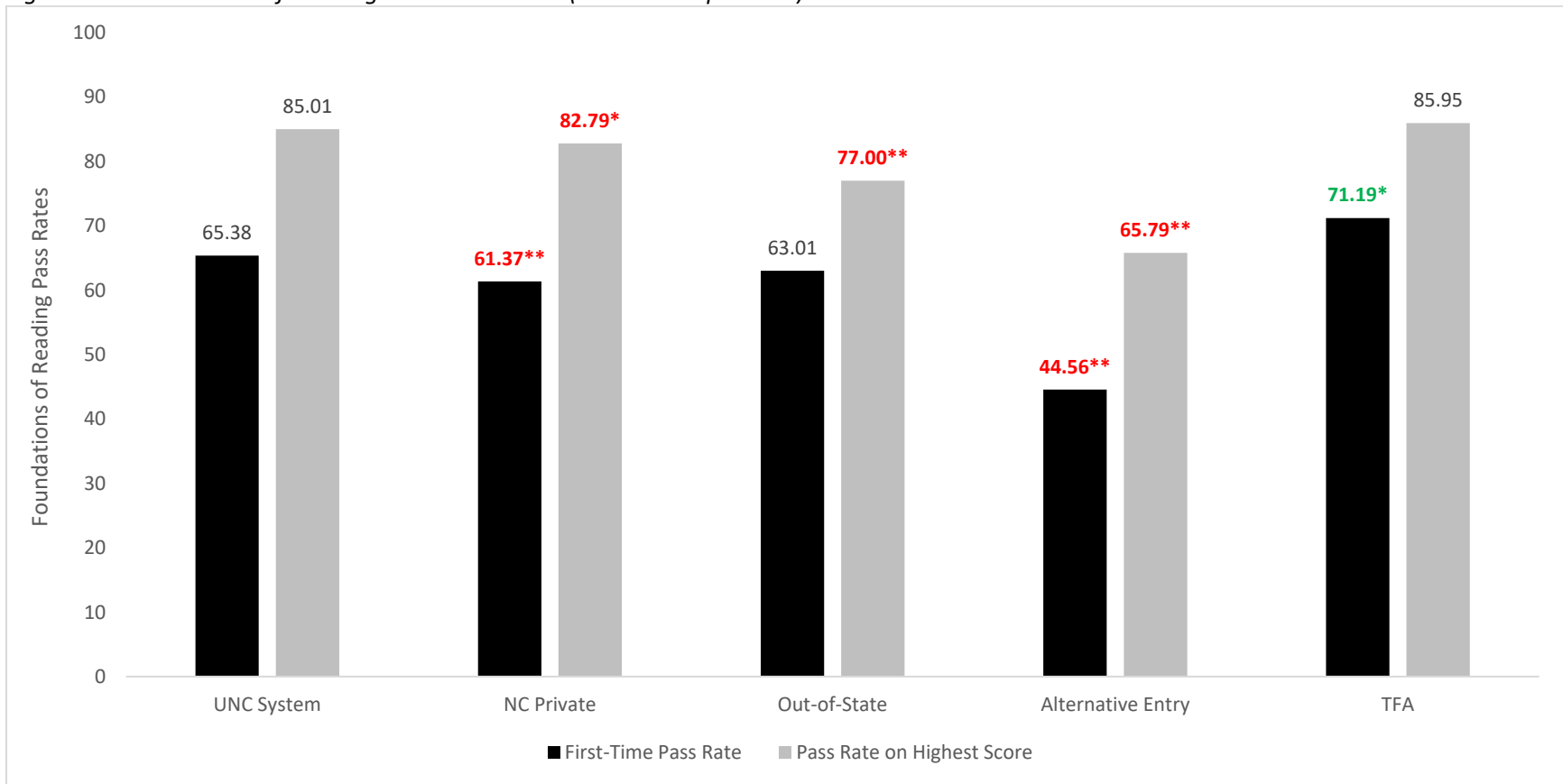
- Portals Comparisons
 - Individuals prepared at UNC System institutions have higher Foundations of Reading exam scores and pass rates than those prepared at in-state private institutions, out-of-state, or entering teaching alternatively (*Figures 18 and 19*)
- Program Comparisons
 - Individuals prepared at nine UNC System institutions have higher Foundations of Reading exam scores and pass rates than those prepared at non-UNC System institutions. Individuals prepared at minority serving institutions in the UNC System have lower Foundations of Reading exam scores and pass rates than those prepared at non-UNC System institutions (*Figures 20 and 21*)
- Other Comparisons
 - On the Foundations of Reading exam (a) female test-takers have higher scores and pass rates than male test-takers; (b) white test-takers have higher scores and pass rates than test-takers of color; and (c) test-takers who are/have been teachers in NC public schools have higher scores and pass rates than test-takers who have not yet been teachers in NC public schools (*Figures 22-25*)

Figure 18: Foundations of Reading Exam Scores (Portals Comparisons)



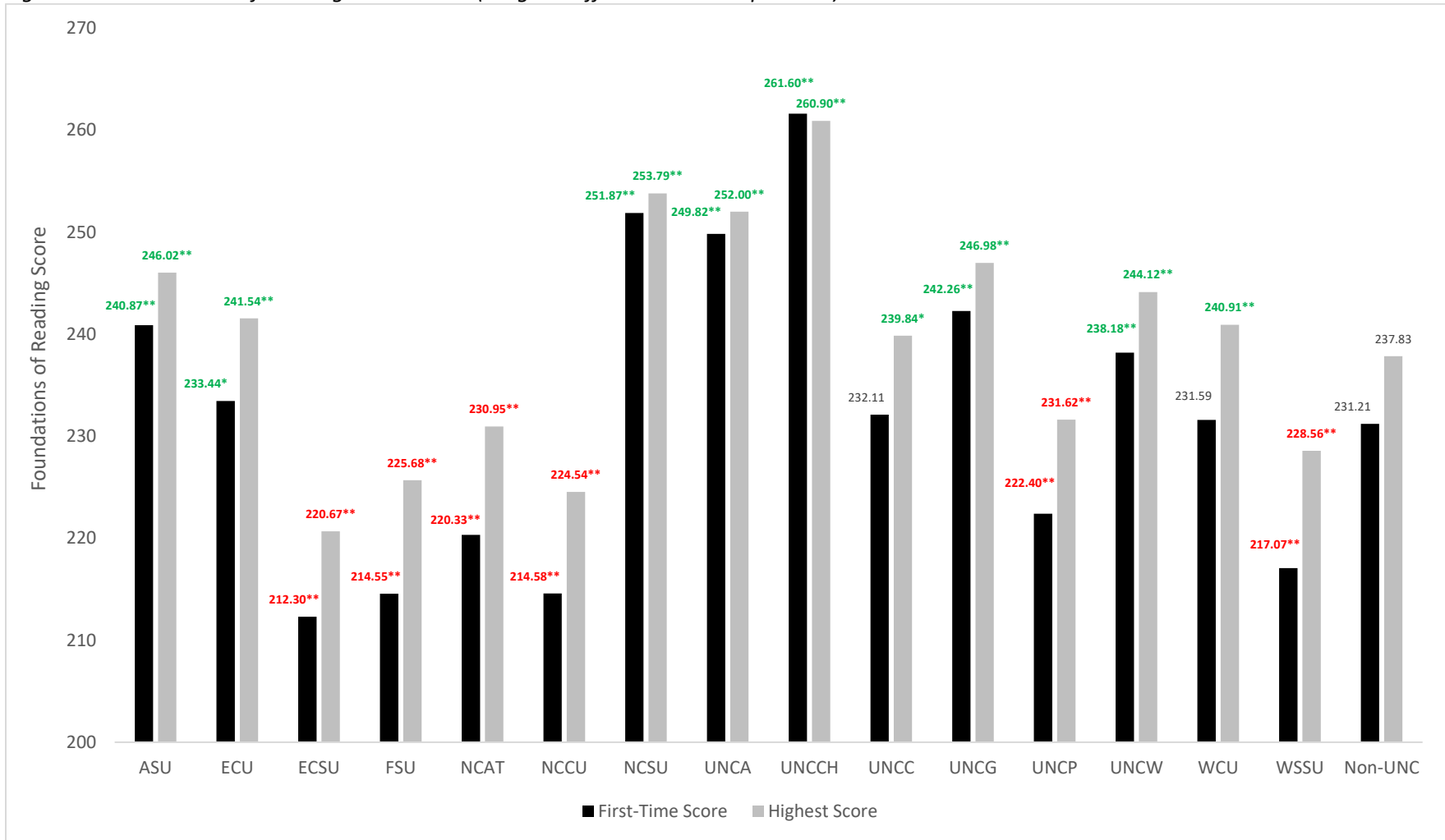
Note: This figure displays average Foundations of Reading scores from test-takers first-time taking the exam and for their highest score when taking the exam. Foundations of Reading scores are shown for UNC System prepared, NC private, out-of-state, alternative entry, and TFA teachers. Scores of NC private, out-of-state, alternative entry, and TFA teachers are compared with those of UNC System prepared teachers. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 19: Foundations of Reading Exam Pass Rates (Portals Comparisons)



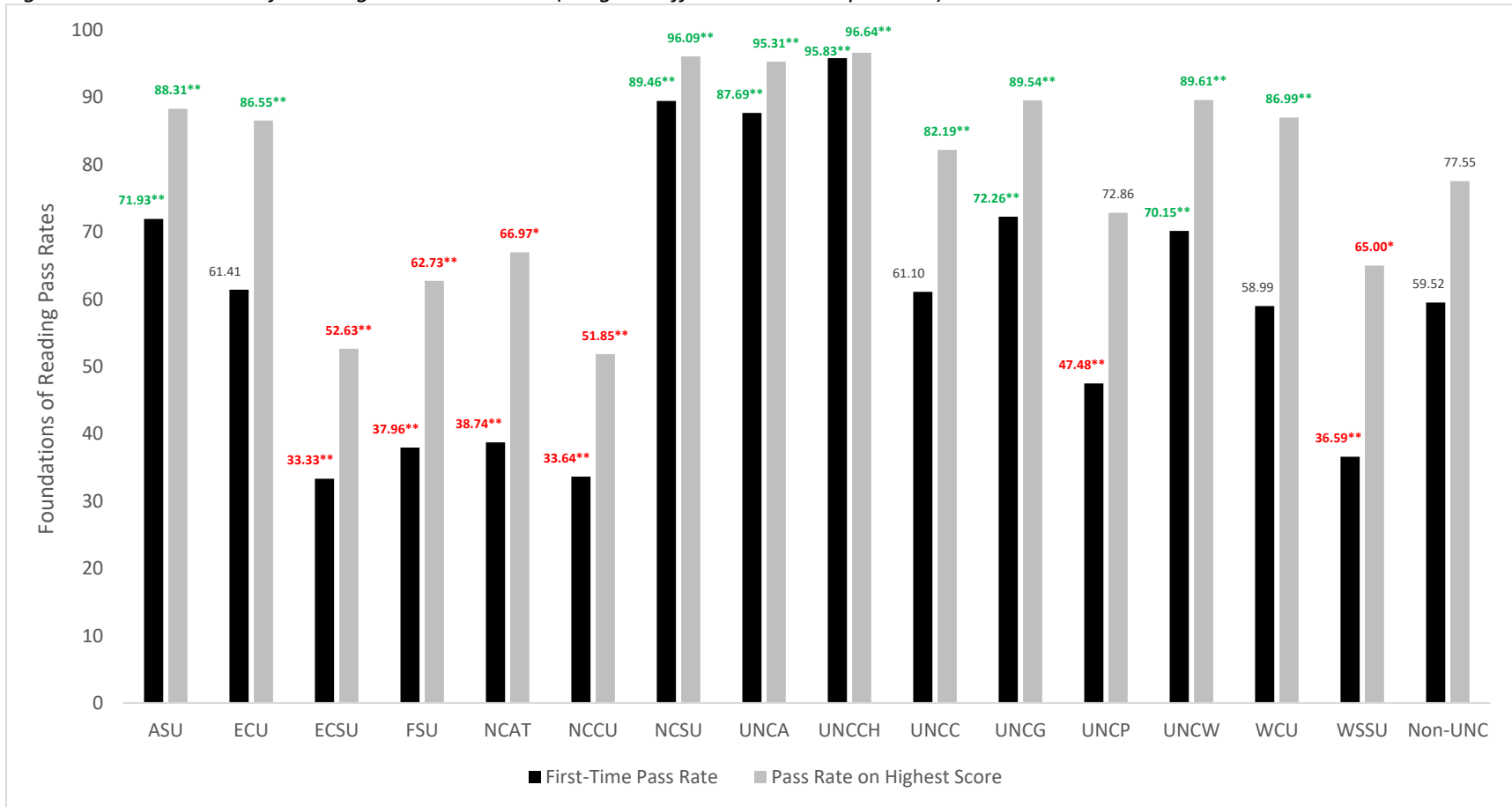
Note: This figure displays Foundations of Reading pass rates from test-takers first-time taking the exam and for their highest score when taking the exam. Foundations of Reading pass rates are shown for UNC System prepared, NC private, out-of-state, alternative entry, and TFA teachers. Pass rates of NC private, out-of-state, alternative entry, and TFA teachers are compared with those of UNC System prepared teachers. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 20: Foundations of Reading Exam Scores (Program Effectiveness Comparisons)



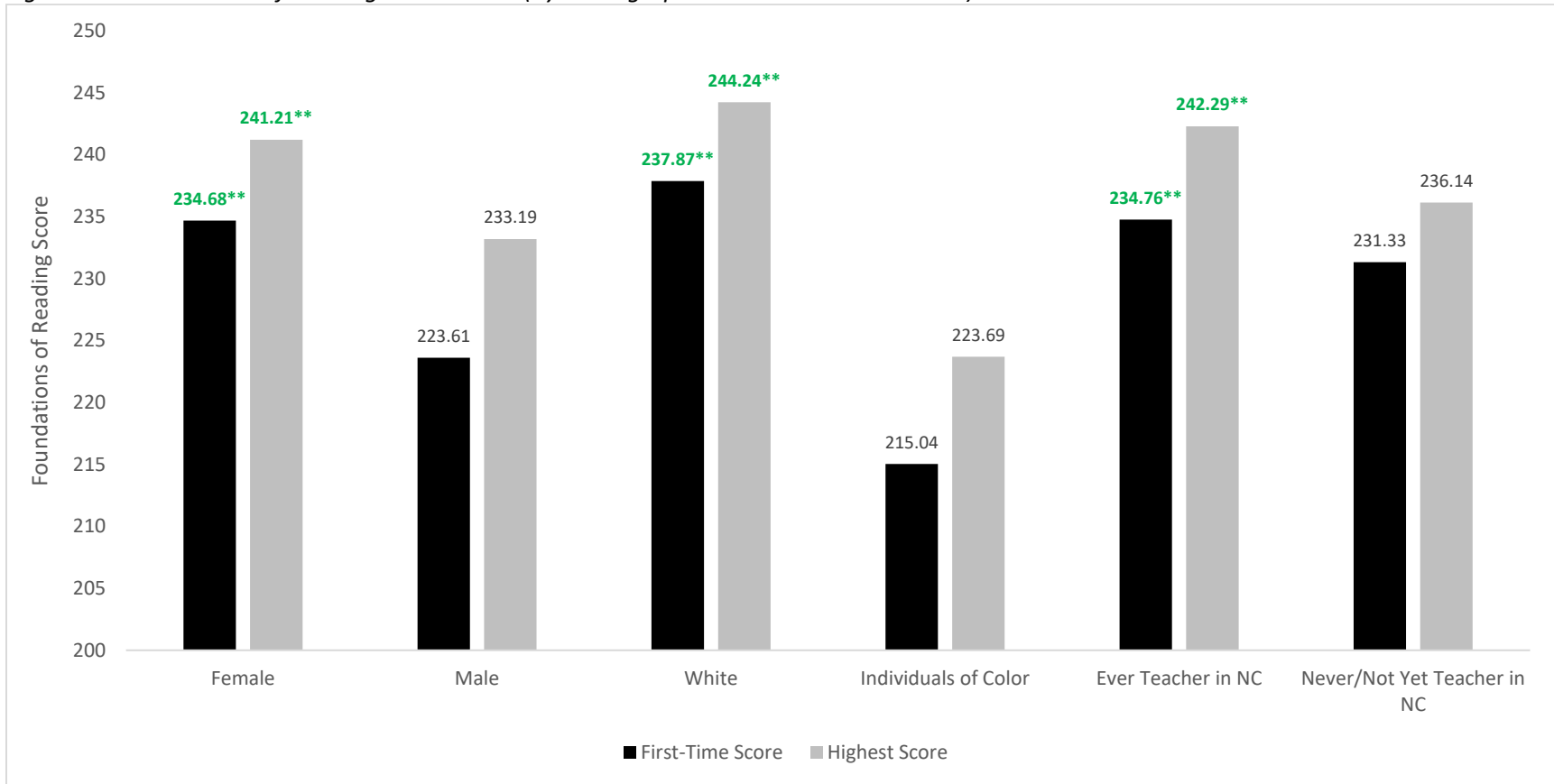
Note: This figure displays average Foundations of Reading scores from test-takers first-time taking the exam and for their highest score when taking the exam. Foundations of Reading scores are shown for each UNC System institution and for non-UNC System prepared teachers. Scores of each UNC System institution are compared with those of non-UNC System prepared teachers. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 21: Foundations of Reading Exam Pass Rates (Program Effectiveness Comparisons)



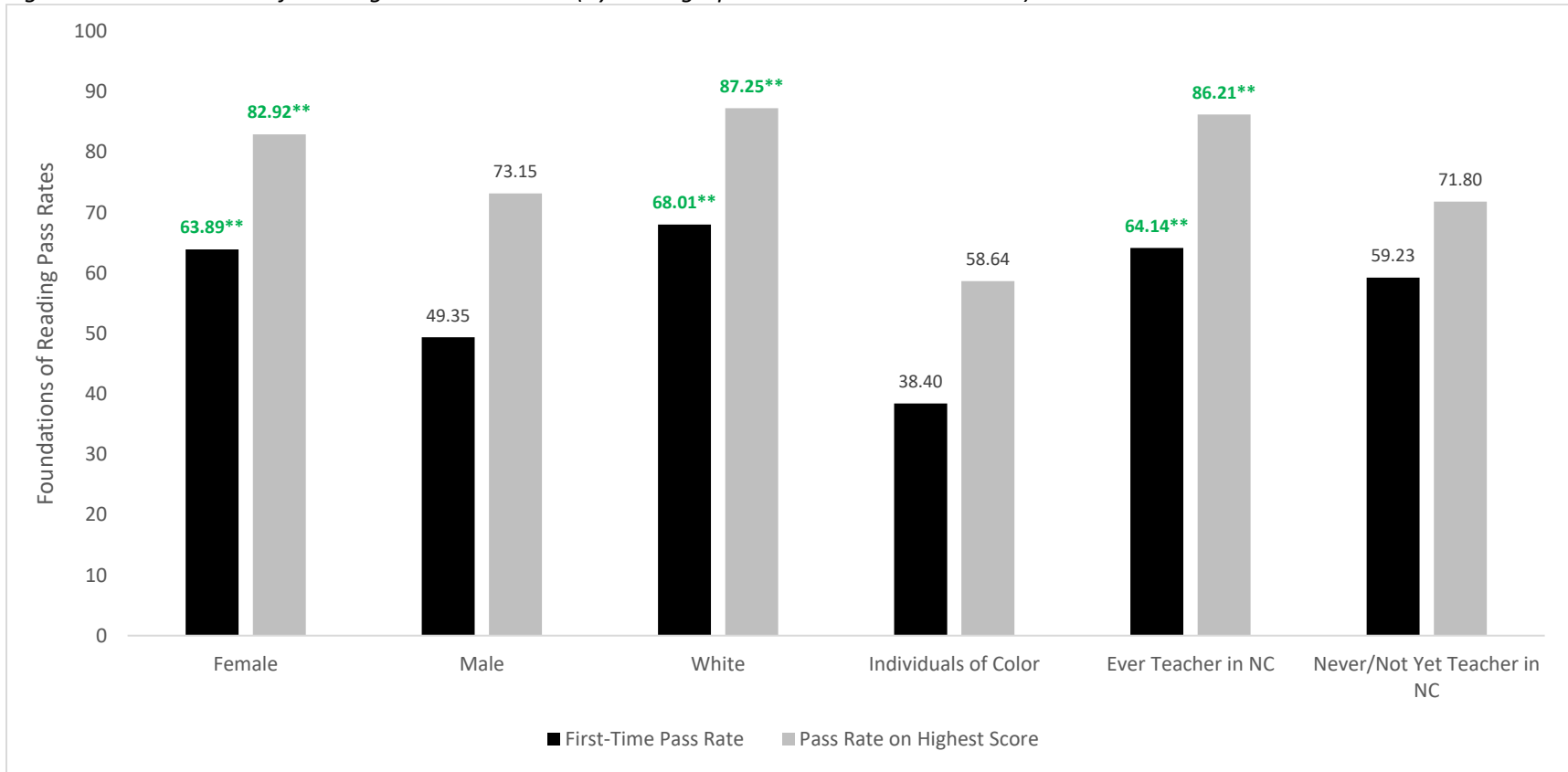
Note: This figure displays Foundations of Reading pass rates from test-takers first-time taking the exam and for their highest score when taking the exam. Foundations of Reading scores are shown for each UNC System institution and for non-UNC System prepared teachers. Pass rates of each UNC System institution are compared with those of non-UNC System prepared teachers. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 22: Foundations of Reading Exam Scores (By Demographics and NC Teacher Status)



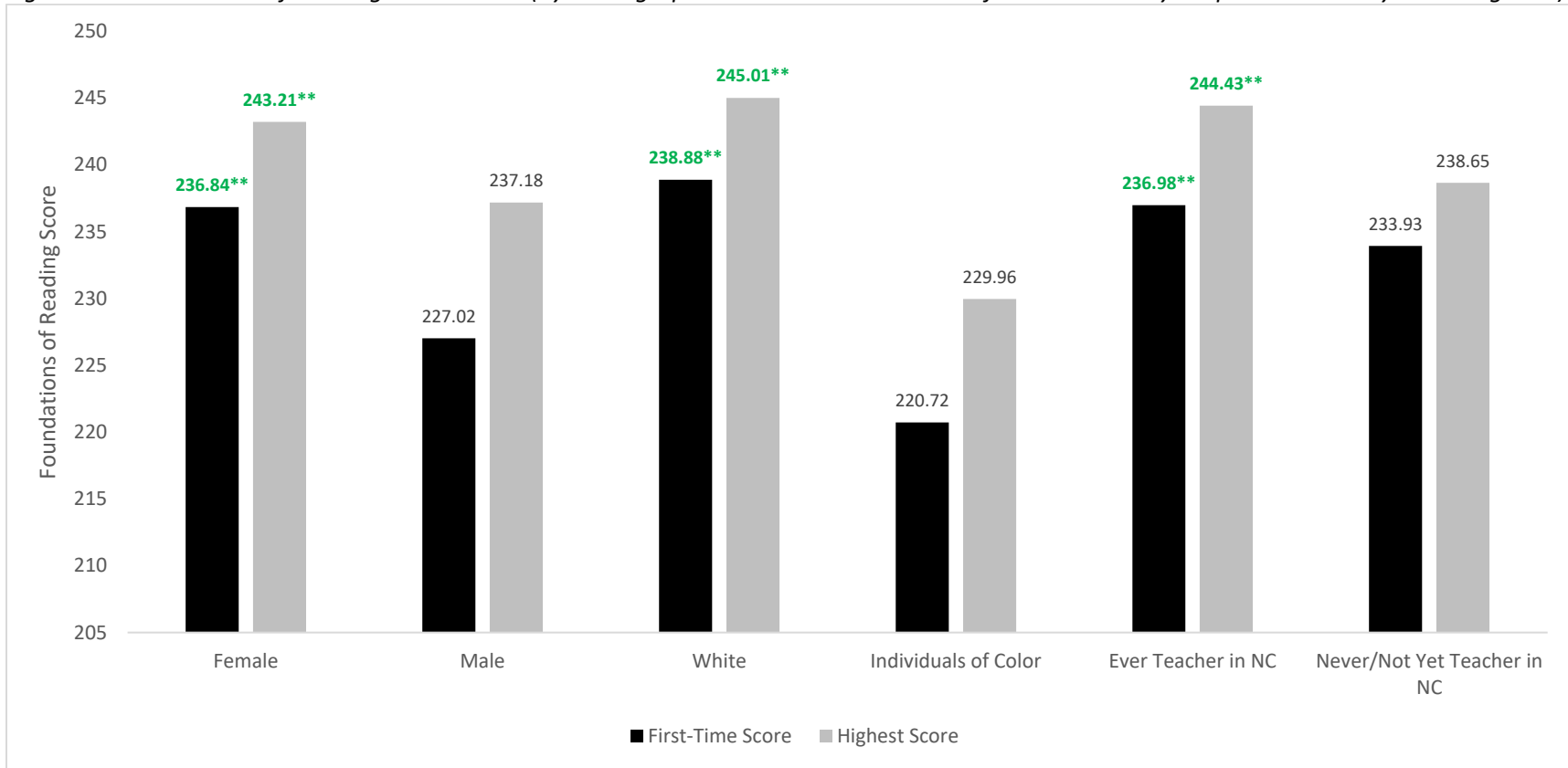
Note: This figure displays average Foundations of Reading scores from test-takers first-time taking the exam and for their highest score when taking the exam. In this figure the scores of (a) female test-takers are compared with those of male test-takers; (b) white test-takers are compared with those of non-white test-takers; and (c) test-takers who become/are a teacher in NC public schools are compared with those of test-takers who have not yet/may never be teachers in NC public schools. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 23: Foundations of Reading Exam Pass Rates (By Demographics and NC Teacher Status)



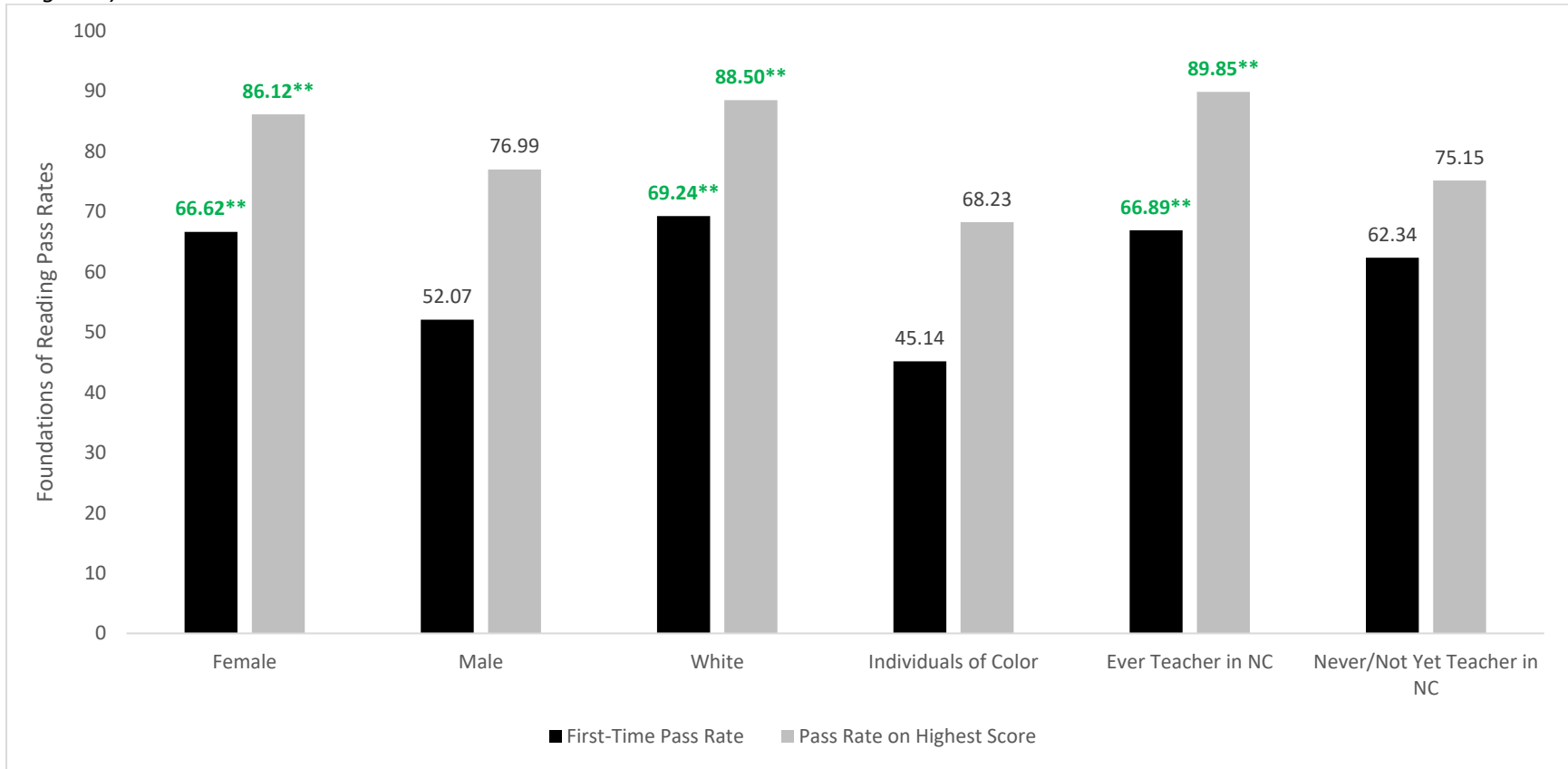
Note: This figure displays average Foundations of Reading pass rates from test-takers first-time taking the exam and for their highest score when taking the exam. In this figure the pass rates of (a) female test-takers are compared with those of male test-takers; (b) white test-takers are compared with those of non-white test-takers; and (c) test-takers who become/are a teacher in NC public schools are compared with those of test-takers who have not yet/may never be teachers in NC public schools. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 24: Foundations of Reading Exam Scores (By Demographics and NC Teacher Status for Those Initially-Prepared at UNC System Programs)



Note: This figure displays average Foundations of Reading scores from test-takers first-time taking the exam and for their highest score when taking the exam. All data are from individuals prepared to teach by UNC System institutions. In this figure the scores of (a) female test-takers are compared with those of male test-takers; (b) white test-takers are compared with those of non-white test-takers; and (c) test-takers who become/are a teacher in NC public schools are compared with those of test-takers who have not yet/may never be teachers in NC public schools. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 25: Foundations of Reading Exam Pass Rates (By Demographics and NC Teacher Status for Those Initially-Prepared at UNC System Programs)



Note: This figure displays average Foundations of Reading pass rates from test-takers first-time taking the exam and for their highest score when taking the exam. All data are from individuals prepared to teach by UNC System institutions. In this figure the pass rates of (a) female test-takers are compared with those of male test-takers; (b) white test-takers are compared with those of non-white test-takers; and (c) test-takers who become/are a teacher in NC public schools are compared with those of test-takers who have not yet/may never be teachers in NC public schools. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Do scores on the Foundations of Reading exam predict teacher effectiveness in early-grades (K-3) reading?

Sample

- First, second, and third year teachers who (1) are linked to students' mCLASS scores in the 2014-15 through 2017-18 years and (2) have Foundations of Reading scores
- Separate analyses for white teachers and teachers of color
- Separate analyses for UNC System prepared teachers

Outcome Measures

- TRC Letter Gain—number of letters/levels of growth for the student on the TRC between the beginning and end of the year
- DIBELS end of year composite score (standardized within grade and year)

Analyses

- Statewide comparisons: Estimate multi-level models with students nested within teachers and schools
- Within-school comparisons: Estimate school fixed effect models to compare teacher effectiveness within the same school

Focal Covariates

- Standardized score on the Foundations of Reading exam (first-time score and highest-score)
- Indicator for passing the Foundations of Reading exam (pass first time and ever pass)

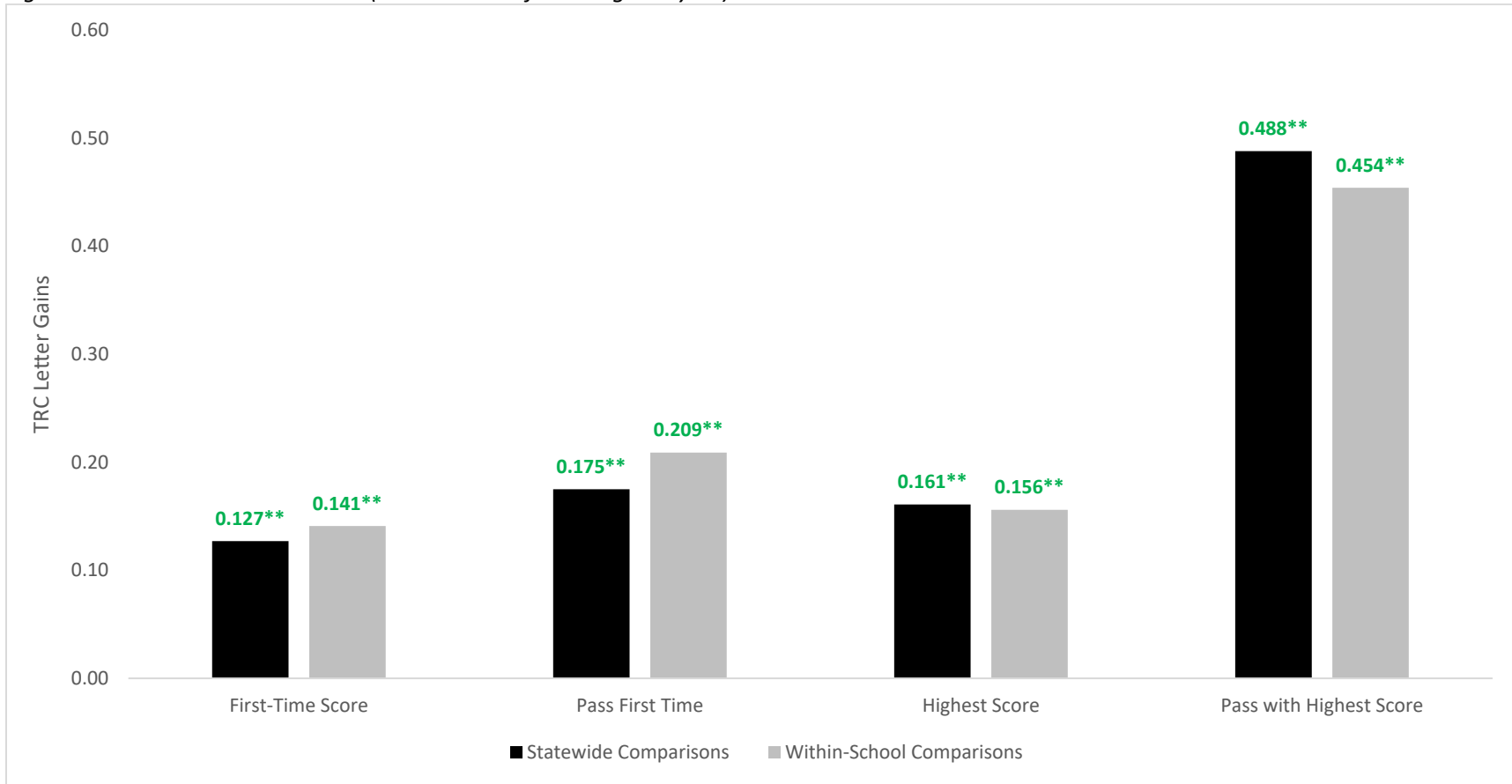
Control Variables

- Student-level: gender, race/ethnicity, subsidized school meals, days absent, current/former English proficiency status, age in months, exceptional status (EC, gifted), year fixed effects, and grade fixed effects
 - In TRC analyses the models include fixed effects for the students' letter/level status at the beginning of the year; allows us to compare the TRC letter gains of students who started the year at the same level
 - In DIBELS analyses the models control for the students' beginning of year composite score (standardized within grade and year) ; allows us to adjust for student achievement at the beginning of the year
- Classroom/peer-level: subsidized school meals, days absent, race/ethnicity, English proficiency status, exceptional status
- Teacher-level: experience
- School-level: ADM (average daily membership), per-pupil expenditures, teacher salary supplements, short-term suspension rates, violent acts rates, race/ethnicity, subsidized school meals

Key Results

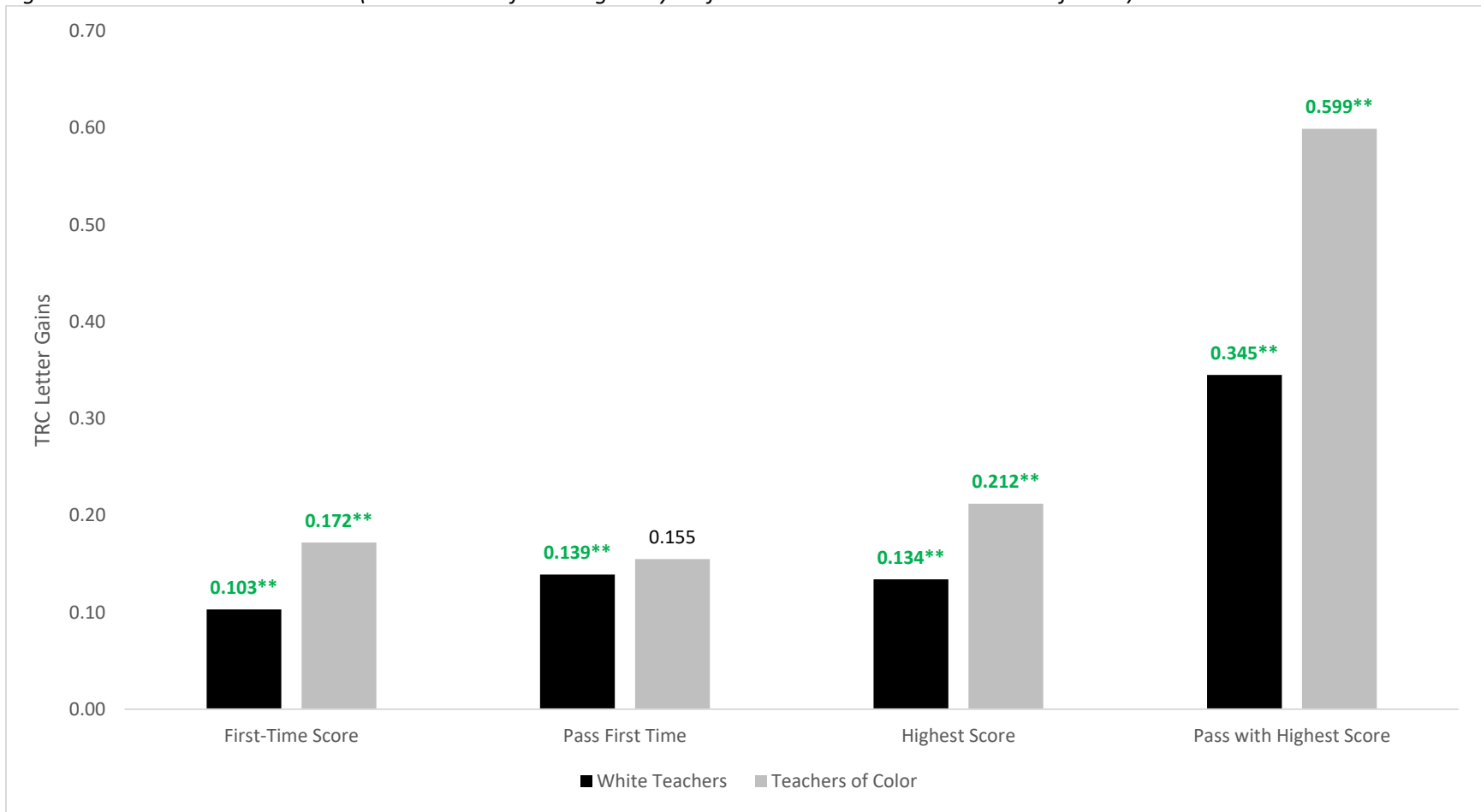
- Foundations of Reading exam scores (total score and indicators for passing the exam) predict the effectiveness of teachers on the TRC; these results hold for white teachers, teachers of color, and UNC System prepared teachers (*Figures 26-28*)
- Foundations of Reading exam scores (total scores and indicators for passing the exam) do not predict the effectiveness of teachers on DIBELS (*Figures 29-30*)

Figure 26: TRC Letter Gain Results (Foundations of Reading Analyses)



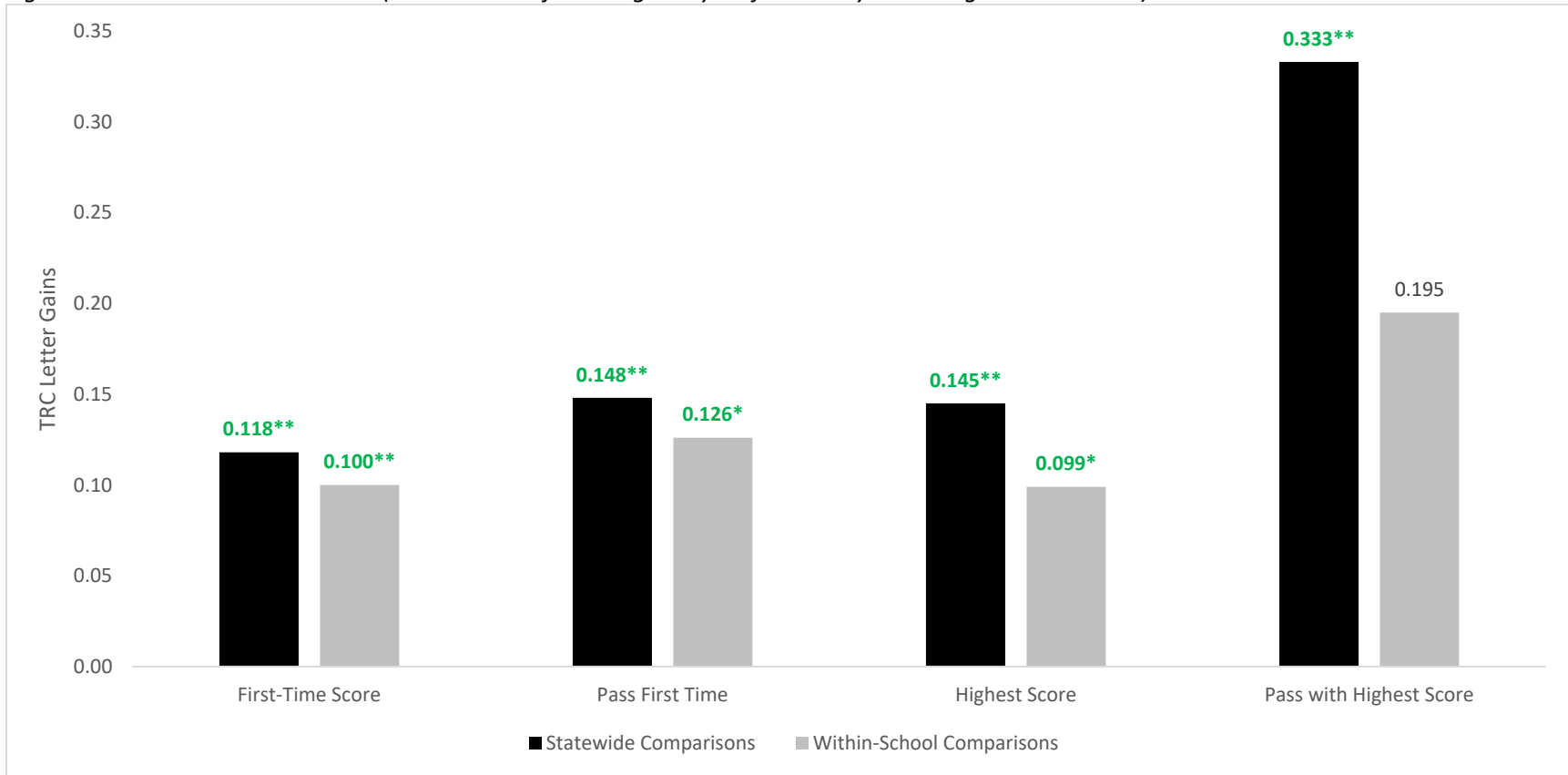
Note: This figure displays results from models in which K-3 students’ letter gain on the TRC is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years who have Foundations of Reading licensure exam scores. The focal variables include the Foundations of Reading score (standardized) and an indicator for passing the exam. These focal measures are based on teachers’ first time scores and their highest score. Models control for student, classroom, teacher, and school covariates. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 27: TRC Letter Gain Results (Foundations of Reading Analyses for White Teachers and Teachers of Color)



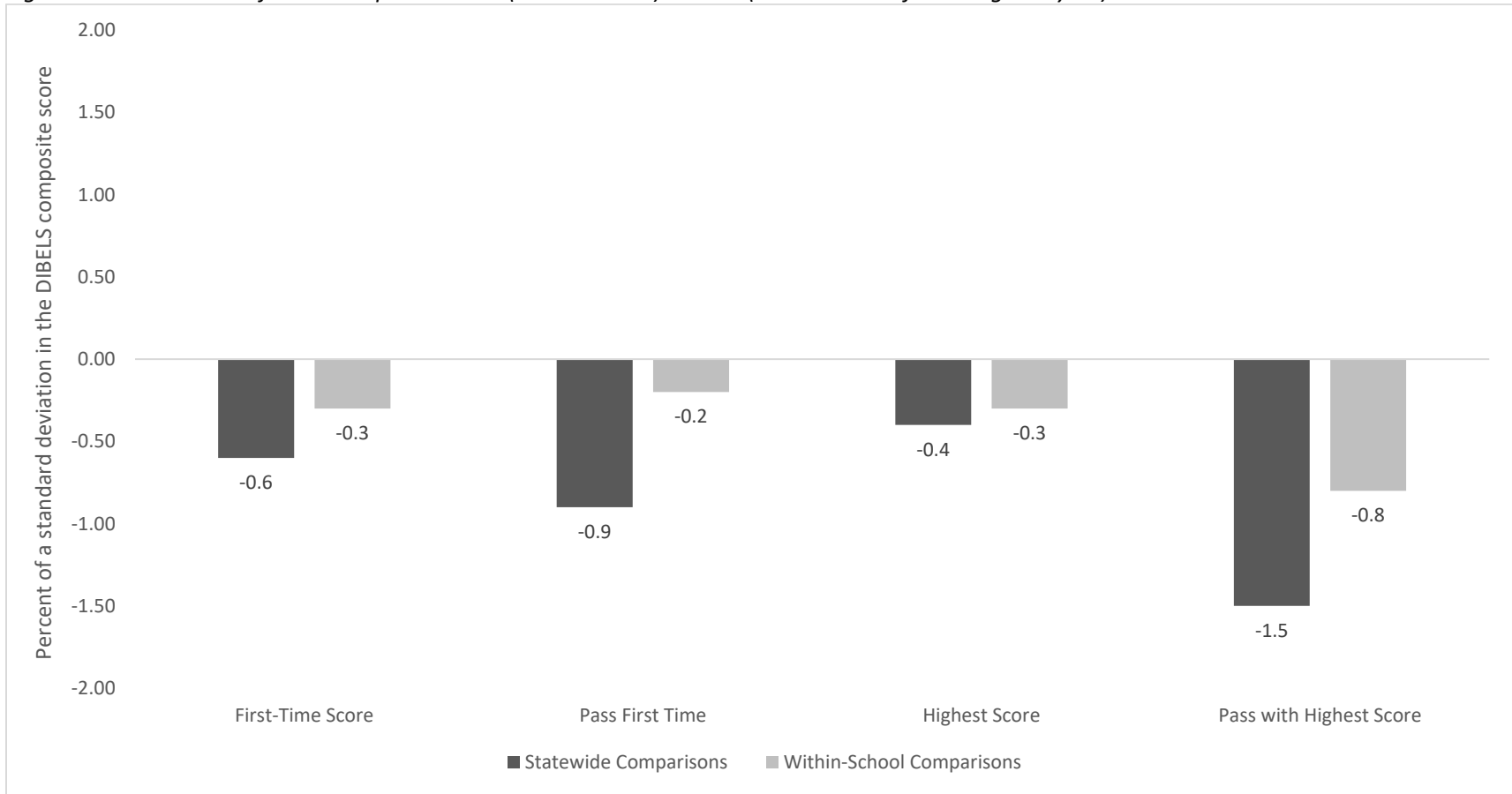
Note: This figure displays results from multi-level models in which K-3 students' letter gain on the TRC is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years who have Foundations of Reading licensure exam scores. The focal variables include the Foundations of Reading score (standardized) and an indicator for passing the exam. These focal measures are based on teachers' first time scores and their highest score. Models control for student, classroom, teacher, and school covariates. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 28: TRC Letter Gain Results (Foundations of Reading Analyses for UNC System Program Graduates)



Note: This figure displays results from models in which K-3 students’ letter gain on the TRC is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years who have Foundations of Reading licensure exam scores and were prepared by a UNC System institution. The focal variables include the Foundations of Reading score (standardized) and an indicator for passing the exam. These focal measures are based on teachers’ first time scores and their highest score. Models control for student, classroom, teacher, and school covariates. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

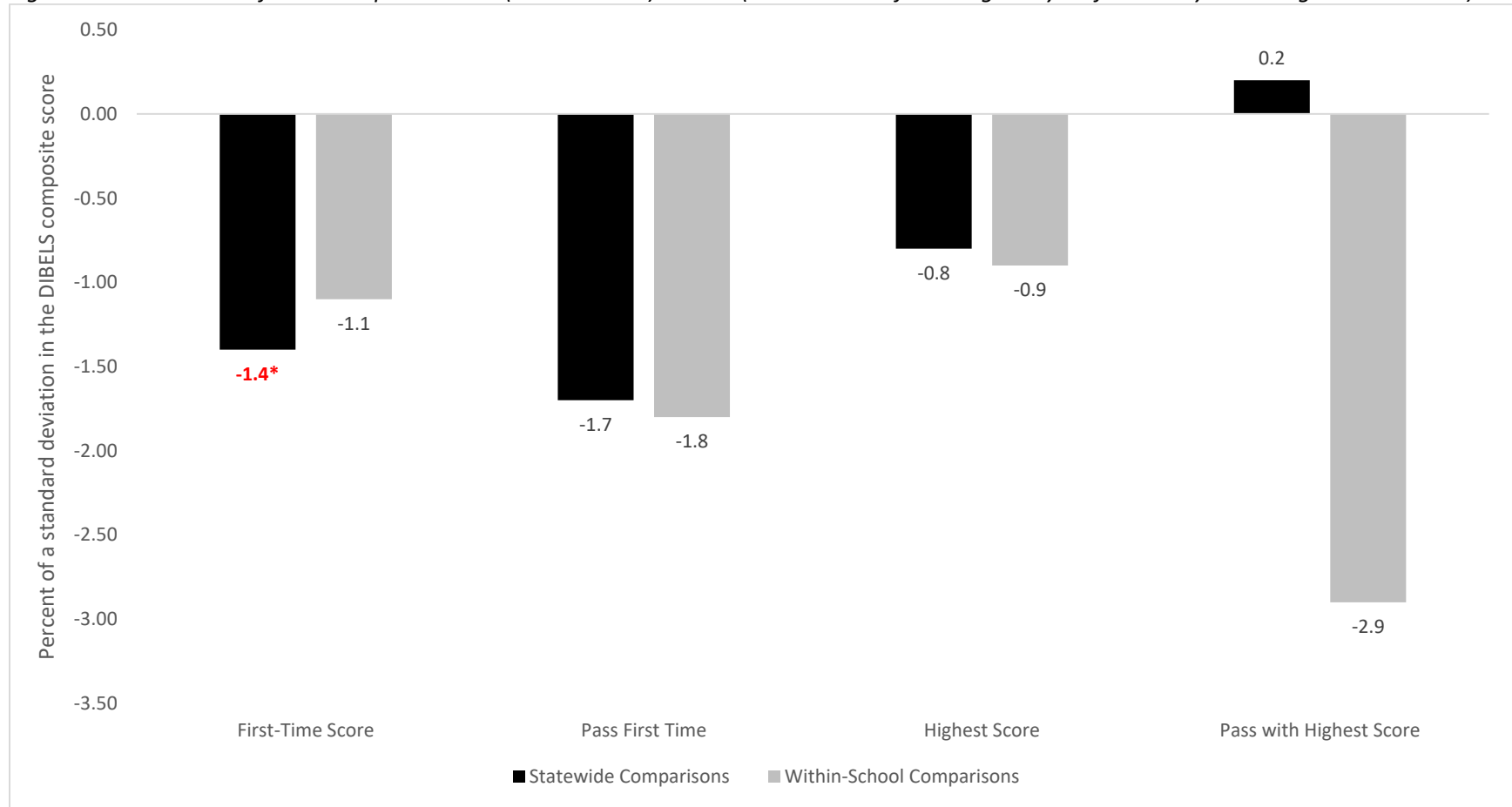
Figure 29: DIBELS End-of-Year Composite Score (Standardized) Results (Foundations of Reading Analyses)⁴



Note: This figure displays results from models in which K-3 students’ end-of-year DIBELS composite score (standardized within grade and year) is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years who have Foundations of Reading licensure exam scores. The focal variables include the Foundations of Reading score (standardized) and an indicator for passing the exam. These focal measures are based on teachers’ first time scores and their highest score. Models control for student, classroom, teacher, and school covariates. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

⁴ Foundations of Reading results are of a similar magnitude and statistically insignificant in DIBELS models for white teachers and teachers of color.

Figure 30: DIBELS End-of-Year Composite Score (Standardized) Results (Foundations of Reading Analyses for UNC System Program Graduates)



Note: This figure displays results from models in which K-3 students’ end-of-year DIBELS composite score (standardized within grade and year) is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years who have Foundations of Reading licensure exam scores and were prepared by a UNC System institution. The focal variables include the Foundations of Reading score (standardized) and an indicator for passing the exam. These focal measures are based on teachers’ first time scores and their highest score. Models control for student, classroom, teacher, and school covariates. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively

Are early-career teachers more effective in early-grades (K-3) reading if they hold a reading license?

Sample

- First, second, and third year teachers who are linked to students' mCLASS scores in the 2014-15 through 2017-18 years
- Additional models for student subgroups

Outcome Measures

- TRC Letter Gain—number of letters/levels of growth for the student on the TRC between the beginning and end of the year
- DIBELS end of year composite score (standardized within grade and year)

Analyses

- Statewide comparisons: Estimate multi-level models with students nested within teachers and schools
- Within-school comparisons: Estimate school fixed effect models to compare teacher effectiveness within the same school

Focal Covariates

- Whether the early-career teacher possesses a reading license

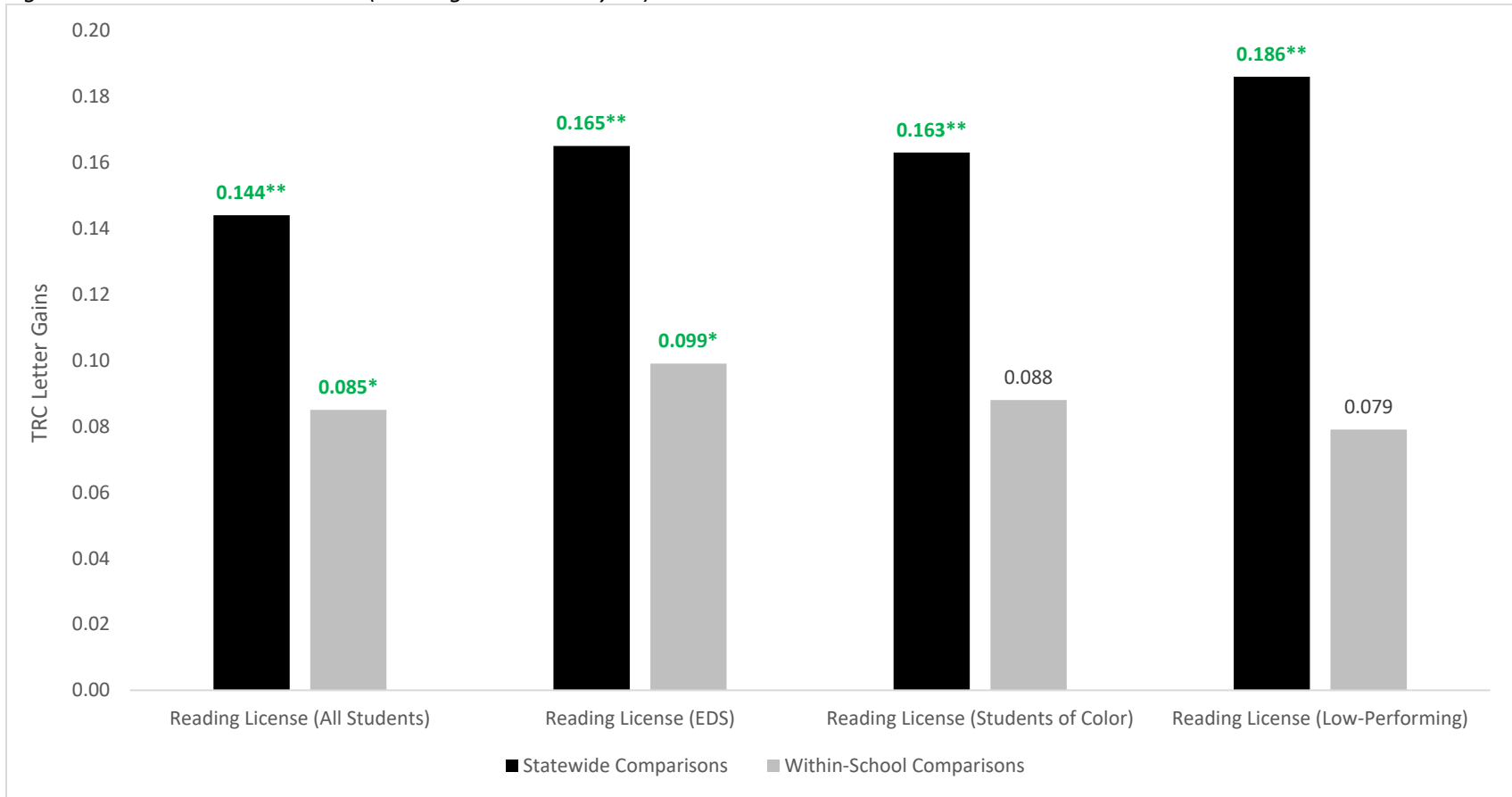
Control Variables

- Student-level: gender, race/ethnicity, subsidized school meals, days absent, current/former English proficiency status, age in months, exceptional status (EC, gifted), year fixed effects, and grade fixed effects
 - In TRC analyses the models include fixed effects for the students' letter/level status at the beginning of the year; allows us to compare the TRC letter gains of students who started the year at the same level
 - In DIBELS analyses the models control for the students' beginning of year composite score (standardized within grade and year) ; allows us to adjust for student achievement at the beginning of the year
- Classroom/peer-level: subsidized school meals, days absent, race/ethnicity, English proficiency status, exceptional status
- Teacher-level: experience
- School-level: ADM (average daily membership), per-pupil expenditures, teacher salary supplements, short-term suspension rates, violent acts rates, race/ethnicity, subsidized school meals

Key Results

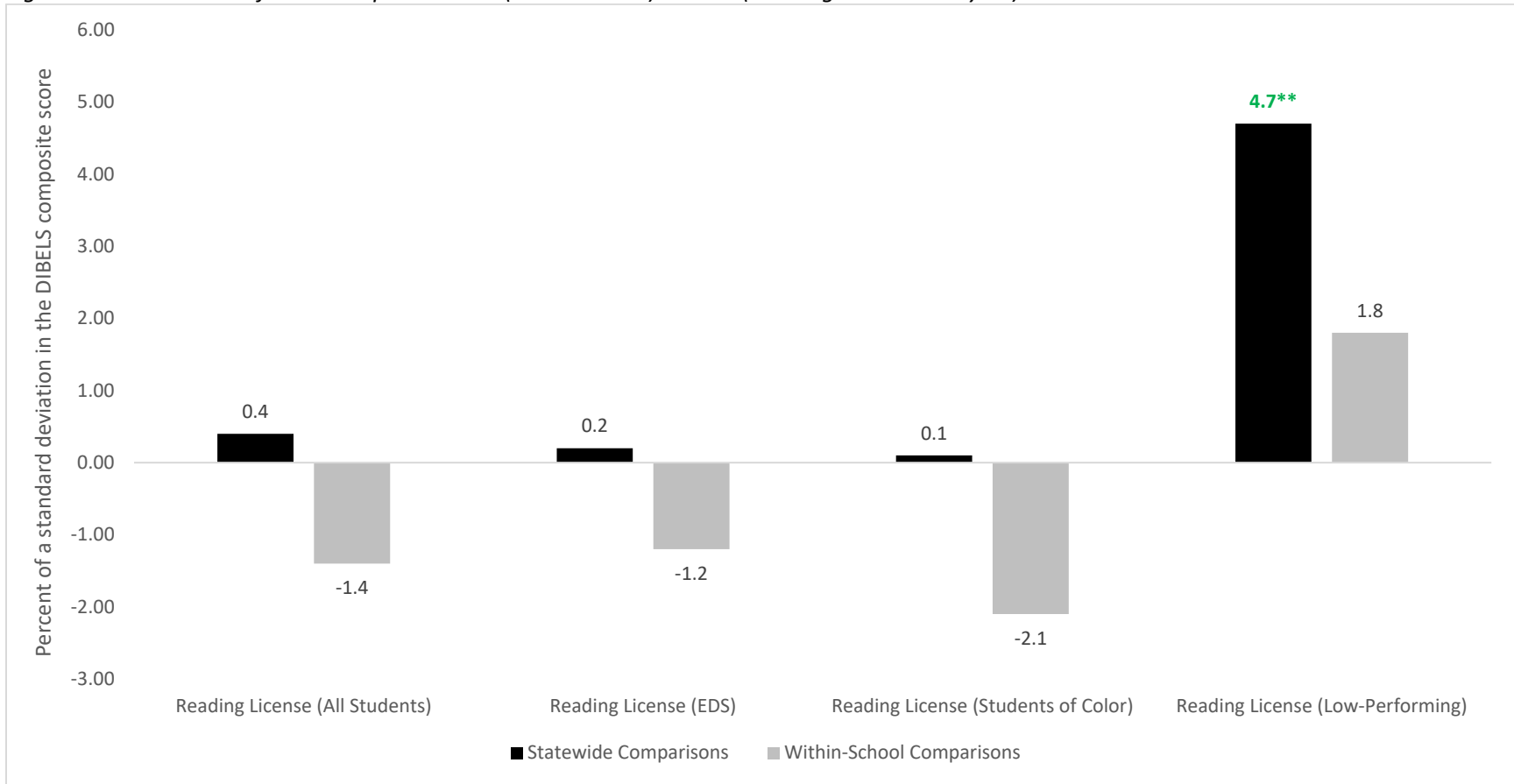
- Teachers holding a reading license are more effective on the TRC than peers without a reading license (*Figure 31*)
- Holding a reading license does not predict teacher effectiveness on DIBELS (*Figure 32*)

Figure 31: TRC Letter Gain Results (Reading License Analyses)



Note: This figure displays results from models in which K-3 students’ letter gain on the TRC is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years; models include all students or are limited to specific student subgroups. Models compare the effectiveness of early-career teachers holding a reading license versus peers who do not hold a reading license. Models control for student, classroom, teacher, and school covariates. In TRC analyses, low-performing students are those who were not proficient on the TRC at the beginning of the year. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.

Figure 32: DIBELS End-of-Year Composite Score (Standardized) Results (Reading License Analyses)



Note: This figure displays results from models in which K-3 students' end-of-year DIBELS composite score (standardized within grade and year) is the outcome. The sample includes early-career teachers (<3 years of experience) in the 2014-15 through 2017-18 school years; models include all students or are limited to specific student subgroups. Models compare the effectiveness of early-career teachers holding a reading license versus peers who do not hold a reading license. Models control for student, classroom, teacher, and school covariates. In DIBELS analyses, low-performing students are those whose DIBELS composite score from the beginning of the year was more the 1 standard deviation below the mean. * and ** indicate statistical significance at the 0.05 and 0.01 levels, respectively.