

Predicting Performance on the Missouri Assessment Program (MAP) Grade-Level Assessments Based on NWEA MAP Growth Scores

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NWEA Psychometrics and Analytics

Linking Study Updates

Date	Description
2020-02-01	Initial linking study conducted for Missouri
2021-01-29	Linking study updated to incorporate the new 2020 NWEA MAP Growth norms (Thum & Kuhfeld, 2020)
2021-05-17	Linking study updated to include science
2021-06-10	Fixed error in titling the “ <i>Below Basic</i> ” and “ <i>Basic</i> ” proficiency level columns on Page 17–19 tables
2025-08	Updated the linking study based on the 2025 norms

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Executive Summary

To predict student achievement on the Missouri Assessment Program (MAP) Grade-Level assessments in grades 3–8 English language arts (ELA) and mathematics and grades 5 and 8 science, NWEA® conducted a linking study using Spring 2018 data for ELA and mathematics and Spring 2019 data for science to derive Rasch Unit (RIT) cut scores on the MAP® Growth™ assessments that correspond to the Missouri performance levels. With this information, educators can identify students at risk of failing to meet state proficiency standards early in the year and provide tailored educational interventions. The linking study has been updated since the previous version to incorporate the most recent 2025 NWEA MAP Growth norms (NWEA, 2025).

Table E.1 presents the *Proficient* performance level cut scores and the corresponding MAP Growth RIT cut scores that allow teachers to identify students who are on track for proficiency (*Proficient* or higher) on the state summative test and those who are not. For example, the *Proficient* cut score on the Missouri grade 3 ELA test is 364. A grade 3 student with a MAP Growth reading RIT score of 193 in the fall is likely to meet proficiency on the state summative test in the spring, whereas a grade 3 student with a MAP Growth reading RIT score lower than 193 in the fall is in jeopardy of not meeting proficiency. MAP Growth cut scores for grade 2 are also provided so that educators can track early learners' progress toward proficiency on the state summative test by grade 3. These cut scores were derived based on the grade 3 cuts and the 2025 NWEA growth norms for the adjacent grade (i.e., grades 2 to 3).

Table E.1. MAP Growth Cut Scores for MO MAP Proficiency

Assessment		Proficient Cut Scores by Grade						
		2	3	4	5	6	7	8
ELA/Reading								
Missouri MAP Spring		–	364	388	403	413	435	443
MAP Growth	Fall	180	193	202	211	216	221	222
	Winter	186	198	205	214	217	222	223
	Spring	190	201	207	215	218	223	224
Mathematics								
Missouri MAP Spring		–	362	387	410	417	435	468
MAP Growth	Fall	179	190	204	216	219	226	235
	Winter	187	199	212	222	225	230	240
	Spring	193	205	217	226	229	233	242
Science								
Missouri MAP Spring		–	–	–	310	–	–	510
MAP Growth	Fall	–	–	–	206	–	–	216
	Winter	–	–	–	209	–	–	218
	Spring	–	–	–	211	–	–	219

Please note that the results in this report may differ from those found in the NWEA reporting system for individual districts. The typical growth scores from fall to spring or winter to spring used in this report are based on the default instructional weeks most encountered for each term (i.e., Weeks 4, 20, and 32 for fall, winter, and spring, respectively). However, instructional weeks

often vary by district, so the cut scores in this report may differ slightly from the MAP Growth score reports that reflect the specific instructional weeks set by partners.

E.1. Assessment Overview

The MAP Grade-Level assessments are Missouri's state summative tests aligned to the Missouri Learning Standards. All students in grades 3–8 in Missouri public and charter schools take the Grade-Level assessment. ELA and mathematics are administered in grades 3–8, whereas science is administered in grades 5 and 8. Based on their test scores, students are placed into one of four performance levels: *Below Basic*, *Basic*, *Proficient*, and *Advanced*. The *Proficient* cut score demarks the minimum level of achievement considered to be proficient for accountability purposes. MAP Growth tests are adaptive interim assessments aligned to state-specific content standards and administered in the fall, winter, and spring. Scores are reported on the RIT vertical scale with a range of 100–350.

E.2. Linking Methods

Based on scores from the Spring 2018 or Spring 2019 test administration, the equipercentile linking method was used to identify the spring MAP Growth scores that correspond to the spring Missouri performance level cut scores. MAP Growth spring cut scores for grade 2 were then derived from the spring cuts for grade 3 and the growth norms for the adjacent grade (i.e., grades 2 to 3). Similarly, the MAP Growth cut scores for the fall and winter administrations of all grades were derived from the spring administration cuts and the growth norms for either fall to spring or winter to spring, respectively. The spring cuts¹ for mathematics were adjusted for score alignment before deriving the cuts for grade 2 spring and for all grades' fall and winter administrations.

E.3. Student Sample

Only students who took both the MAP Growth and Missouri state assessments in either Spring 2018 or Spring 2019 were included in the study sample. Table E.2 presents the weighted numbers of Missouri students from 17 districts and 75 schools who were included in the linking study. The linking study sample is voluntary and can only include student scores from partners who share their data. Also, not all students in a state take MAP Growth. The sample may therefore not represent the general student population as well as it should. To ensure that the linking study sample represents the state student population in terms of race, sex, and performance level, weighting (i.e., a statistical method that matches the distributions of the variables of interest to those of the target population) was applied to the sample. As a result, the RIT cuts derived from the study sample can be generalized to any student from the target population. All analyses in this study for grades 3–8 were conducted based on the weighted sample.

¹ To enhance content validity, NWEA developed an Enhanced Item-Selection Algorithm (EISA) for the MAP Growth assessment to prioritize grade-level content. A pilot study (Meyer et al., 2023) showed that students taking MAP Growth with EISA demonstrated higher average math scores compared with those taking traditional MAP Growth. To improve score comparability, NWEA (Lewis & Kuhfeld, 2024) developed concordance tables to adjust mathematics scores from traditional assessments to align with scores from MAP Growth with EISA, or vice versa. Given that the data for this study were collected from traditional MAP Growth tests but that the results will be used for MAP Growth with EISA, the spring cuts for mathematics were adjusted using the concordance tables before being used to derive other cut scores. This score adjustment will become unnecessary for future linking studies once the new data from EISA tests are collected.

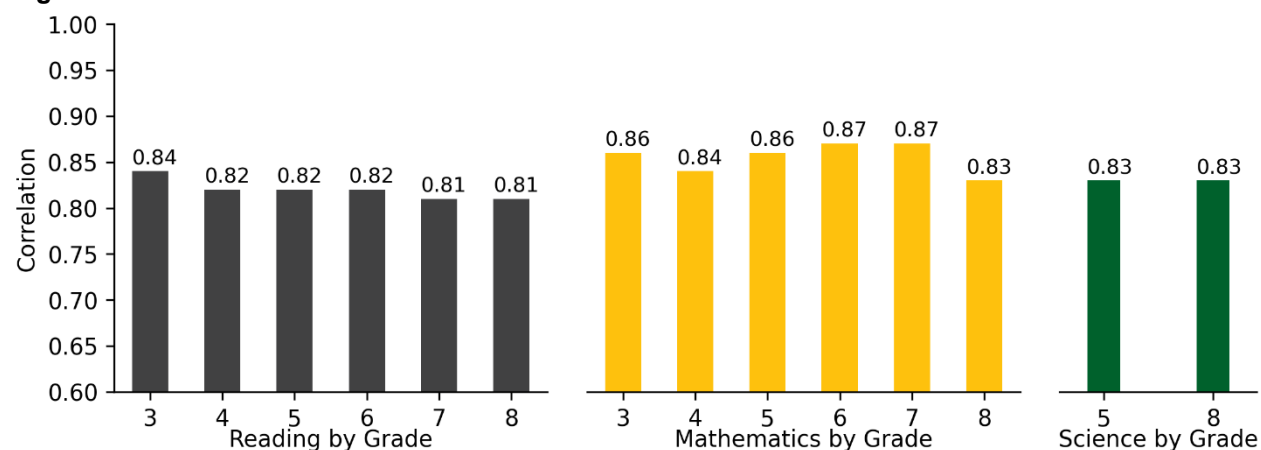
Table E.2. Linking Study Sample

Grade	# Students		
	ELA/Reading	Mathematics	Science
3	2,692	2,742	–
4	2,655	2,765	–
5	2,462	2,645	1,707
6	2,539	2,783	–
7	2,273	2,553	–
8	1,765	1,828	1,370

E.4. Test Score Relationships

Correlations between MAP Growth RIT scores and Missouri state test scores range from 0.81 to 0.87 across content areas, as shown in Figure E.1. These values indicate a strong relationship among the scores, which is important validity evidence for the claim that MAP Growth scores are good predictors of performance on the Missouri state summative assessments.

Figure E.1. Correlations Between MAP Growth and Missouri State Test Scores

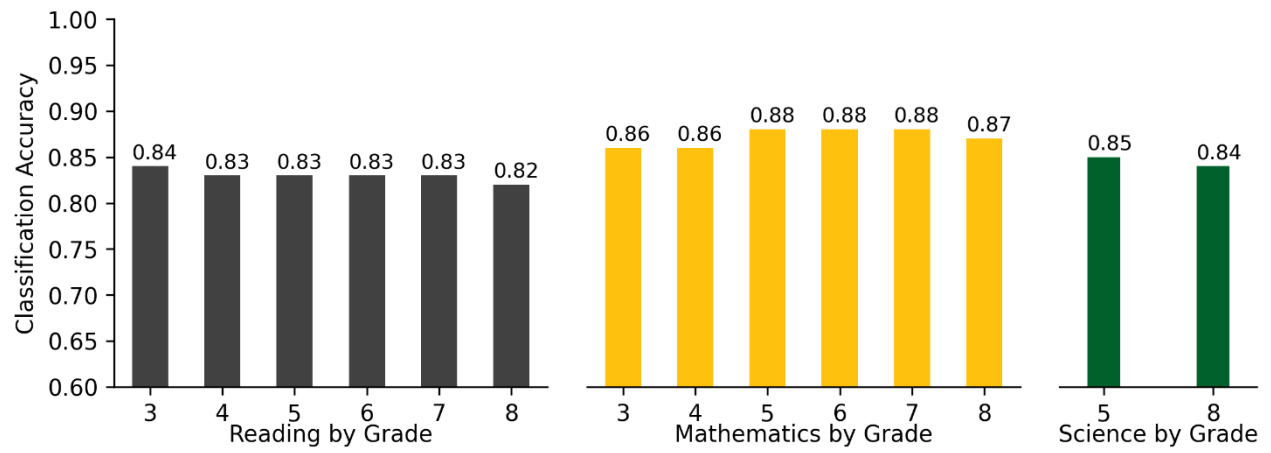


E.5. Accuracy of MAP Growth Classifications

Figure E.2 presents the classification accuracy statistics that show the proportion of students correctly classified by their RIT scores as proficient (*Proficient* or higher) or not proficient (lower than *Proficient*) on the Missouri state tests.² For example, the MAP Growth reading grade 3 *Proficient* cut score has a 0.84 accuracy rate, meaning it accurately classified student achievement on the state test for 84% of the sample. The results range from 0.82 to 0.88 across content areas, indicating that RIT scores have a high accuracy rate of identifying student proficiency on the Missouri state summative assessments.

² The classification accuracy calculations for the mathematics spring cuts were based on the concorded cut scores.

Figure E.2. Accuracy of MAP Growth Classifications



1. Introduction

1.1. Purpose of the Study

NWEA® is committed to providing partners with useful tools to help make inferences about student learning from MAP® Growth™ test scores. One important use of MAP Growth results is to predict a student's performance on the state summative assessment at different times throughout the year. This allows educators and parents to determine if a student is on track in their learning to meet state standards by the end of the year or, given a student's learning profile, is on track to obtain rigorous, realistic growth in their content knowledge and skills.

This report presents results from a linking study conducted by NWEA to statistically connect the scores of the Missouri Assessment Program (MAP) Grade-Level assessments in grades 3–8 English language arts (ELA) and mathematics and grades 5 and 8 science with Rasch Unit (RIT) scores from the MAP Growth assessments taken during the Spring 2018 term for ELA and mathematics and the Spring 2019 term for science. The linking study has been updated since the previous version to incorporate the most recent 2025 NWEA MAP Growth norms (NWEA, 2025). MAP Growth cut scores are also included for grade 2 so that educators can track early learners' progress toward proficiency on the state summative test by grade 3. This report presents the following results:

1. Student sample demographics
2. Descriptive statistics of test scores
3. MAP Growth cut scores that correspond to the Missouri performance levels using the equipercentile linking procedure for the spring results and the 2025 norms for the fall and winter results
4. Classification accuracy statistics to determine the degree to which MAP Growth accurately predicts student proficiency status on the Missouri state tests
5. The probability of achieving grade-level proficiency on the Missouri state assessment based on MAP Growth RIT scores from fall, winter, and spring using the 2025 norms

1.2. Assessment Overview

The MAP Grade-Level summative assessments in grades 3–8 ELA and mathematics and grades 5 and 8 science are aligned to the Missouri Learning Standards. Each assessment has three cut scores (i.e., the minimum score a student must get on a test to be placed in a certain performance level) that distinguish between the following performance levels: *Below Basic*, *Basic*, *Proficient*, and *Advanced*. The *Proficient* cut score demarks the minimum level of performance considered to be proficient for accountability purposes.

MAP Growth interim assessments from NWEA are computer adaptive and aligned to state-specific content standards. Scores are reported on the RIT vertical scale with a range of 100–350. Each content area has its own scale. To aid the interpretation of scores, NWEA periodically conducts norming studies of student and school performance on MAP Growth. Achievement status norms show how well a student performed on the MAP Growth test compared with students in the norming group by associating the student's performance on the MAP Growth test, expressed as a RIT score, with a percentile ranking. Growth norms provide expected score gains across test administrations (e.g., the relative evaluation of a student's growth from fall to spring). The most recent norms study was conducted in 2025 (NWEA, 2025).

2. Methods

2.1. Data Collection

This linking study is based on data from the Spring 2018 administrations of the MAP Growth and Missouri state assessments for ELA and mathematics and from Spring 2019 for science. NWEA requested that Missouri districts recruited to participate in the study share their student and score data for the target term. Districts also permitted NWEA to access students' associated MAP Growth scores from the NWEA in-house database. Once state score information was available to NWEA, each student's state testing record was matched to their MAP Growth score by using the student's first and last names, date of birth, student ID, and other available identifying information. Only students who took both the MAP Growth interim and state summative assessments in either Spring 2018 or Spring 2019 were included in the study sample.

2.2. Post-Stratification Weighting

Post-stratification weights were applied to the calculations to ensure that the linking study sample represented the state population in terms of race, sex, and performance level. These variables were selected because they are correlated with the student's academic achievement within this study and are often provided in the data for the state population. The weighted sample matches the target population as closely as possible for the key demographics and test score characteristics. Specifically, a raking procedure was used to calculate the post-stratification weights and improve the representativeness of the sample. Raking uses iterative procedures to obtain weights that match sample marginal distributions to known population margins. The following steps were taken during this process:

1. Calculate marginal distributions of race, sex, and performance level for the sample and population.
2. Calculate post-stratification weights with the rake function from the survey package in R (Lumley, 2019).
3. Apply the weights to the sample before conducting the linking study analyses.

2.3. MAP Growth Cut Scores

The equipercentile linking method (Kolen & Brennan, 2004) was used to identify the spring MAP Growth RIT scores that correspond to the spring Missouri performance level cut scores. Spring cuts for grade 2 were derived based on the cuts for grade 3 and the 2025 NWEA growth norms. RIT fall and winter cut scores that predict proficiency (*Proficient* or higher) on the spring state summative test were then projected using the 2025 growth norms. Percentile ranks are also provided that show how a nationally representative sample of students in the same grade scored on MAP Growth for each administration, which is an important interpretation of RIT scores. This is useful for understanding (1) how student scores compare with peers nationwide and (2) the relative rigor of a state's performance level designations for its summative assessment.

The MAP Growth spring cut scores for grades 3–8 could be calculated using the equipercentile linking method because that data are directly connected to the Missouri spring data used in the study. The equipercentile linking procedure matches scores on the two scales that have the same percentile rank (i.e., the proportion of tests at or below each score). For example, let x represent a score on Test X (e.g., MAP Grade-Level). Its equipercentile equivalent score on

Test Y (e.g., MAP Growth), $e_y(x)$, can be obtained through a cumulative-distribution-based linking function defined in as:

$$e_y(x) = G^{-1}[P(x)]$$

where $e_y(x)$ is the equipercentile equivalent of score x on the MAP Grade-Level tests on the scale of MAP Growth, $P(x)$ is the percentile rank of a given score on the MAP Grade-Level tests, and G^{-1} is the inverse of the percentile rank function for MAP Growth that indicates the score on MAP Growth corresponding to a given percentile. Polynomial loglinear pre-smoothing was applied to reduce irregularities of the score distributions and equipercentile linking curve.

The MAP Growth conditional growth norms provide students' expected score gains across terms, such as growth from fall or winter to spring within the same grade or from spring of a lower grade to the spring of the adjacent higher grade. This information can be used to calculate the fall and winter cut scores for grades 3–8 and the fall, winter, and spring cut scores for grade 2. The equation below was used to determine the previous term's or grade's MAP Growth score needed to reach the spring cut score, considering the expected growth associated with the previous RIT score:

$$RIT_{PredSpring} = RIT_{previous} + g$$

where:

- $RIT_{PredSpring}$ is the predicted MAP Growth spring score,
- $RIT_{previous}$ is the previous term's or grade's RIT score, and
- g is the expected growth from the previous RIT (e.g., fall or winter) to the spring RIT.

To derive the spring cut scores for grade 2, the growth score from spring of one year to the next was used (i.e., the growth score from spring grade 2 to spring grade 3). The calculation of fall and winter cuts for grade 2 followed the same process as the other grades. For example, the growth score from fall to spring in grade 2 was used to calculate the fall cuts for grade 2.

2.4. Classification Accuracy

The degree to which MAP Growth predicts student proficiency status on the state summative tests can be described using classification accuracy statistics based on the MAP Growth spring RIT cut scores that show the proportion of students correctly classified by their RIT scores as proficient (*Proficient* or higher) or not proficient (lower than *Proficient*). Table 2.1 describes the classification accuracy statistics provided in this report (Pommerich et al., 2004). The results are based on either the Spring 2018 or Spring 2019 MAP Growth and Missouri state test data for the *Proficient* cut score.

Table 2.1. Description of Classification Accuracy Summary Statistics

Statistic	Description	Interpretation
Overall Classification Accuracy Rate	$(TP + TN) / (\text{total sample size})$	Proportion of the study sample whose proficiency classification on the state test was correctly predicted by MAP Growth cut scores
False Negative (FN) Rate	$FN / (FN + TP)$	Proportion of students identified by MAP Growth as not proficient in those observed as proficient on the state test

Statistic	Description	Interpretation
False Positive (FP) Rate	FP / (FP + TN)	Proportion of students identified by MAP Growth as not proficient in those observed as not proficient on the state test
Sensitivity	TP / (TP + FN)	Proportion of students identified by MAP Growth as proficient in those observed as such on the state test
Specificity	TN / (TN + FP)	Proportion of students identified by MAP Growth as not proficient in those observed as such on the state test
Precision	TP / (TP + FP)	Proportion of students observed as proficient on the state test in those identified as such by the MAP Growth test
Area Under the Curve (AUC)	Area under the receiver operating characteristics (ROC) curve	How well MAP Growth cut scores separate the study sample into proficiency categories that match those from the state test cut scores. An AUC at or above 0.80 is considered “good” accuracy.

Note. FP = false positives; FN = false negatives; TP = true positives; TN = true negatives.

2.5. Proficiency Projections

Given that all test scores contain measurement errors, reaching the *Proficient* RIT cut does not guarantee that a student is proficient on the state test. Instead, it can be claimed that a student meeting the RIT cut score has a 50% chance of reaching proficiency (*Proficient* or higher) on the state test, with their chances increasing the greater their score is from the cut. The proficiency projections indicate these probabilities for various RIT scores throughout the year.

In addition to calculating the MAP Growth fall and winter cut scores (and the projected grade 2 cut scores), the MAP Growth conditional growth norms data were also used to calculate the probability of reaching proficiency on the Missouri state test based on a student’s RIT scores from fall, winter, and spring. The equation below was used to calculate the probability of a student achieving proficiency on the state summative test based on their fall or winter RIT score:

$$Pr(\text{Achieving proficiency in spring} | \text{starting RIT}) = \Phi \left(\frac{RIT_{previous} + g - RIT_{SpringCut}}{SD} \right)$$

where:

- Φ is a standardized normal cumulative distribution,
- $RIT_{previous}$ is the student’s RIT score in fall or winter,
- g is the expected growth from the previous RIT (e.g., fall or winter) to the spring RIT,
- $RIT_{SpringCut}$ is the MAP Growth *Proficient* cut score for spring, and
- SD is the conditional standard deviation of the expected growth, g .

The equation below was used to estimate the probability of a student achieving proficiency on the state summative test based on their spring RIT score (RIT_{Spring}):

$$Pr(\text{Achieving proficiency in spring} | \text{spring RIT}) = \Phi \left(\frac{RIT_{Spring} - RIT_{SpringCut}}{SE} \right)$$

where SE is the standard error of measurement for MAP Growth.

3. Results

3.1. Study Sample

Only students who took both the MAP Growth and Missouri state summative assessments in either Spring 2018 for ELA and mathematics or Spring 2019 for science were included in the study sample. Data used in this study were collected from 17 districts and 75 schools in Missouri. Table 3.1 presents the demographic distributions of race, sex, and performance level in the original unweighted study sample. Table 3.2 presents the distributions of the student population who took the Spring 2018 Missouri state tests in ELA and mathematics and the Spring 2019 tests in science. Since the unweighted data are different from the general Missouri student population, post-stratification weights were applied to the linking study sample to improve its representativeness. Table 3.3 presents the demographic distributions of the sample after weighting, which are almost identical to the Missouri student population distributions. The analyses in this study were therefore conducted based on the weighted sample.

Table 3.1. Linking Study Sample Demographics (Unweighted)

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
ELA/Reading							
Total N		2,697	2,663	2,467	2,547	2,280	1,770
Race	Asian/PI	1.6	1.7	1.4	2.1	2.2	1.6
	Black	5.5	6.6	7.5	6.4	5.6	7.3
	Hispanic	6.8	5.9	7.4	7.8	7.2	9.4
	Other	5.1	5.3	5.6	6.4	5.3	5.4
	White	81.1	80.5	78.2	77.3	79.7	76.4
Sex	Female	49.6	49.7	48.3	50.5	50.3	49.5
	Male	50.4	50.3	51.7	49.5	49.7	50.5
Performance Level	<i>Below Basic</i>	18.8	7.3	7.3	9.5	11.0	10.9
	<i>Basic</i>	26.7	33.9	37.3	34.0	39.0	40.4
	<i>Proficient</i>	28.8	33.8	30.3	28.3	21.1	31.9
	<i>Advanced</i>	25.7	24.9	25.1	28.3	28.9	16.8
Mathematics							
Total N		2,742	2,765	2,645	2,783	2,556	1,832
Race	Asian/PI	2.4	2.4	2.3	2.9	2.7	1.3
	Black	6.5	7.2	8.7	7.2	6.4	8.3
	Hispanic	6.6	6.1	7.9	7.3	7.1	8.7
	Other	5.7	6.0	6.6	6.5	5.6	5.1
	White	78.9	78.3	74.5	76.1	78.2	76.6
Sex	Female	48.8	49.8	47.9	50.6	50.6	48.9
	Male	51.2	50.2	52.1	49.4	49.4	51.1
Performance Level	<i>Below Basic</i>	20.4	21.0	20.0	22.7	18.7	31.3
	<i>Basic</i>	25.5	25.6	30.9	29.9	35.6	41.3
	<i>Proficient</i>	26.6	27.9	27.0	21.0	23.9	22.4
	<i>Advanced</i>	27.5	25.5	22.2	26.4	21.8	5.0

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
Science							
Total N		–	–	1,707	–	–	1,370
Race	Asian/PI	–	–	2.5	–	–	3.1
	Black	–	–	9.0	–	–	8.0
	Hispanic	–	–	7.7	–	–	9.7
	Other	–	–	5.7	–	–	4.7
	White	–	–	75.2	–	–	74.6
Sex	Female	–	–	49.9	–	–	50.9
	Male	–	–	50.1	–	–	49.1
Performance Level	<i>Below Basic</i>	–	–	20.6	–	–	17.4
	<i>Basic</i>	–	–	30.8	–	–	34.9
	<i>Proficient</i>	–	–	33.7	–	–	27.4
	<i>Advanced</i>	–	–	14.8	–	–	20.3

Note. PI = Pacific Islander; Other = American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, or not specified.

Table 3.2. Missouri Student Population Demographics

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
ELA (Spring 2018)							
Total N		67,932	69,593	69,835	67,941	66,833	66,276
Race	Asian/PI	2.2	2.2	2.1	2.2	2.2	2.3
	Black	16.6	16.4	16.3	16.0	15.4	15.6
	Hispanic	6.5	6.6	6.6	6.5	6.5	6.1
	Other	5.0	4.9	4.7	4.2	4.1	3.7
	White	69.7	69.9	70.2	71.1	71.8	72.4
Sex	Female	48.6	49.0	49.0	48.8	48.9	48.9
	Male	51.4	51.0	51.0	51.2	51.1	51.1
Performance Level	<i>Below Basic</i>	23.3	12.1	11.4	14.3	15.5	13.2
	<i>Basic</i>	27.9	37.5	40.4	37.1	40.5	37.5
	<i>Proficient</i>	27.0	29.9	26.2	26.3	19.9	30.0
	<i>Advanced</i>	21.6	20.2	21.8	22.0	23.8	19.0
Mathematics (Spring 2018)							
Total N		68,080	69,719	69,919	67,968	66,041	54,518
Race	Asian/PI	2.3	2.2	2.2	2.2	2.1	1.8
	Black	16.5	16.4	16.3	16.0	15.6	16.9
	Hispanic	6.5	6.6	6.6	6.6	6.6	6.3
	Other	5.0	4.9	4.7	4.2	4.1	3.7
	White	69.6	69.8	70.1	71.0	71.6	71.3
Sex	Female	48.6	49.0	49.0	48.8	49.0	48.1
	Male	51.4	51.0	51.0	51.2	51.0	51.9

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
Performance Level	<i>Below Basic</i>	25.1	27.3	24.2	27.7	25.2	32.9
	<i>Basic</i>	27.7	26.6	34.6	30.8	36.5	37.1
	<i>Proficient</i>	25.3	25.2	24.1	21.9	22.2	20.8
	<i>Advanced</i>	21.9	20.9	17.1	19.6	16.0	9.0
Science (Spring 2019)							
Total N		—	—	69,900	—	—	66,991
Race	Asian/PI	—	—	2.3	—	—	2.3
	Black	—	—	16.2	—	—	15.3
	Hispanic	—	—	7.0	—	—	6.8
	Other	—	—	5.0	—	—	4.3
	White	—	—	69.5	—	—	71.4
Sex	Female	—	—	48.9	—	—	48.8
	Male	—	—	51.1	—	—	51.2
Performance Level	<i>Below Basic</i>	—	—	26.1	—	—	22.7
	<i>Basic</i>	—	—	31.1	—	—	28.7
	<i>Proficient</i>	—	—	29.3	—	—	28.7
	<i>Advanced</i>	—	—	13.5	—	—	20.0

Note. PI = Pacific Islander; Other = American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, or not specified.

Table 3.3. Linking Study Sample Demographics (Weighted)

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
ELA/Reading							
Total N		2,692	2,655	2,462	2,539	2,273	1,765
Race	Asian/PI	2.2	2.2	2.1	2.2	2.2	2.3
	Black	16.6	16.4	16.3	16.0	15.4	15.6
	Hispanic	6.5	6.6	6.6	6.5	6.5	6.1
	Other	5.0	4.9	4.7	4.2	4.1	3.7
	White	69.7	69.9	70.3	71.1	71.8	72.3
Sex	Female	48.6	49.0	49.0	48.8	48.9	48.9
	Male	51.4	51.0	51.0	51.2	51.1	51.1
Performance Level	<i>Below Basic</i>	23.3	12.1	11.4	14.3	15.5	13.2
	<i>Basic</i>	28.0	37.6	40.5	37.2	40.6	37.6
	<i>Proficient</i>	27.1	30.0	26.3	26.4	20.0	30.1
	<i>Advanced</i>	21.6	20.3	21.8	22.1	23.9	19.1

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
Mathematics							
Total N		2,742	2,765	2,645	2,783	2,553	1,828
Race	Asian/PI	2.3	2.2	2.2	2.2	2.1	1.8
	Black	16.5	16.4	16.3	16.0	15.6	16.9
	Hispanic	6.5	6.6	6.6	6.6	6.6	6.3
	Other	5.0	4.9	4.7	4.2	4.1	3.7
	White	69.7	69.9	70.2	71.0	71.6	71.3
Sex	Female	48.6	49.0	49.0	48.8	49.0	48.1
	Male	51.4	51.0	51.0	51.2	51.0	51.9
Performance Level	<i>Below Basic</i>	25.1	27.3	24.2	27.7	25.2	33.0
	<i>Basic</i>	27.7	26.6	34.6	30.8	36.5	37.2
	<i>Proficient</i>	25.3	25.2	24.1	21.9	22.2	20.8
	<i>Advanced</i>	21.9	20.9	17.1	19.6	16.0	9.0
Science							
Total N		–	–	1,707	–	–	1,370
Race	Asian/PI	–	–	2.3	–	–	2.3
	Black	–	–	16.2	–	–	15.3
	Hispanic	–	–	7.0	–	–	6.8
	Other	–	–	5.0	–	–	4.3
	White	–	–	69.5	–	–	71.4
Sex	Female	–	–	48.9	–	–	48.8
	Male	–	–	51.1	–	–	51.2
Performance Level	<i>Below Basic</i>	–	–	26.1	–	–	22.7
	<i>Basic</i>	–	–	31.1	–	–	28.7
	<i>Proficient</i>	–	–	29.3	–	–	28.7
	<i>Advanced</i>	–	–	13.5	–	–	20.0

Note. PI = Pacific Islander; Other = American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, or not specified.

3.2. Descriptive Statistics

Table 3.4 presents descriptive statistics of the MAP Growth and Missouri state test scores from Spring 2018 for ELA and mathematics and Spring 2019 for science, including the correlation coefficients (r) between them. The correlation coefficients between the scores range from 0.81 to 0.84 for ELA/reading, 0.83 to 0.87 for mathematics, and is 0.83 for both grades in science. These values indicate a strong relationship among the scores, which is important validity evidence for the claim that MAP Growth scores are good predictors of performance on the Missouri state summative assessments.

Table 3.4. Descriptive Statistics of Test Scores

Grade	N	<i>r</i>	Missouri MAP				MAP Growth			
			Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
ELA/Reading										
3	2,692	0.84	361.3	42.3	160	560	198.3	15.5	148	238
4	2,655	0.82	386.0	40.5	170	570	205.8	14.6	150	251
5	2,462	0.82	401.1	40.0	286	600	211.7	15.4	151	256
6	2,539	0.82	410.9	35.7	302	583	215.8	14.7	158	253
7	2,273	0.81	427.1	39.1	304	630	218.3	15.3	154	260
8	1,765	0.81	438.9	40.4	284	586	221.7	14.7	159	253
Mathematics										
3	2,742	0.86	353.1	49.2	185	520	201.1	14.3	135	254
4	2,765	0.84	377.3	49.0	210	540	211.1	15.5	149	275
5	2,645	0.86	400.2	39.2	250	570	219.5	17.2	145	290
6	2,783	0.87	407.1	38.1	260	580	222.6	15.8	161	281
7	2,553	0.87	420.1	45.5	270	600	225.8	17.1	153	280
8	1,828	0.83	440.7	46.3	310	588	228.5	16.1	159	272
Science										
5	1,707	0.83	300.4	39.4	124	414	208.5	12.0	160	249
8	1,370	0.83	500.5	41.0	264	603	215.8	13.4	164	252

Note. SD = standard deviation; Min. = minimum; Max. = maximum.

3.3. MAP Growth Cut Scores

Table 3.5 through Table 3.7 present the Missouri state scale score ranges and the corresponding MAP Growth RIT cut scores and percentile ranges by content area and grade. These tables can be used to predict a student's likely performance level on the spring Missouri state assessment when MAP Growth is taken in the fall, winter, or spring. For example, a grade 3 student who obtained a MAP Growth reading RIT score of 193 in the fall is likely to achieve *Proficient* performance on the state summative ELA test. A grade 3 student who obtained a MAP Growth reading RIT score of 198 in the winter is also likely to achieve *Proficient* performance on the Missouri state assessment. The winter cut score is higher than the fall cut score because growth is expected between fall and winter as students receive more instruction during the school year.

Within this report, the cut scores for fall and winter are derived from the spring cuts and the typical growth scores from fall-to-spring or winter-to-spring. The typical growth scores are based on the default instructional weeks most encountered for each term (Weeks 4, 20, and 32 for fall, winter, and spring, respectively). Since instructional weeks often vary by district, the cut scores in this report may differ slightly from the MAP Growth score reports that reflect instructional weeks set by partners. If the actual instructional weeks deviate from the default ones, a student's projected performance level could be different from the generic projection presented in this document. Partners are therefore encouraged to use the projected performance level in students' score reports since they reflect the specific instructional weeks set by partners.

Table 3.5. MAP Growth Cut Scores—ELA/Reading

Missouri MAP ELA									
Grade	Below Basic		Basic		Proficient		Advanced		
3	160–330		331–363		364–394		395–560		
4	170–336		337–387		388–418		419–570		
5	210–350		351–402		403–430		431–600		
6	230–370		371–412		413–437		438–620		
7	240–383		384–434		435–455		456–630		
8	250–392		393–442		443–475		476–650		
MAP Growth Reading									
Grade	Below Basic		Basic		Proficient		Advanced		
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile	
Fall									
2	100–161	1–31	162–179	32–71	180–192	72–90	193–350	91–99	
3	100–178	1–37	179–192	38–67	193–204	68–86	205–350	87–99	
4	100–181	1–21	182–201	22–62	202–213	63–83	214–350	84–99	
5	100–184	1–13	185–210	14–65	211–220	66–83	221–350	84–99	
6	100–194	1–19	195–215	20–65	216–224	66–82	225–350	83–99	
7	100–198	1–20	199–220	21–69	221–226	70–80	227–350	81–99	
8	100–201	1–20	202–221	21–63	222–232	64–83	233–350	84–99	
Winter									
2	100–168	1–32	169–185	33–70	186–199	71–90	200–350	91–99	
3	100–183	1–36	184–197	37–66	198–208	67–84	209–350	85–99	
4	100–185	1–21	186–204	22–61	205–216	62–83	217–350	84–99	
5	100–187	1–13	188–213	14–66	214–221	67–81	222–350	82–99	
6	100–196	1–20	197–216	21–64	217–225	65–81	226–350	82–99	
7	100–199	1–20	200–221	21–68	222–227	69–79	228–350	80–99	
8	100–202	1–20	203–222	21–63	223–233	64–83	234–350	84–99	
Spring									
2	100–174	1–34	175–189	35–67	190–201	68–87	202–350	88–99	
3	100–188	1–39	189–200	40–64	201–210	65–82	211–350	83–99	
4	100–189	1–24	190–206	25–60	207–217	61–81	218–350	82–99	
5	100–191	1–16	192–214	17–64	215–222	65–79	223–350	80–99	
6	100–199	1–23	200–217	24–63	218–226	64–81	227–350	82–99	
7	100–202	1–23	203–222	24–67	223–228	68–79	229–350	80–99	
8	100–205	1–24	206–223	25–63	224–234	64–83	235–350	84–99	

Note. Cut scores for fall and winter are derived from the spring cuts and growth norms based on the typical instructional weeks. Spring cut scores for grade 2 were derived from the grade 3 cuts using the growth norms. Bold numbers indicate the cut scores considered to be at least proficient for accountability purposes.

Table 3.6. MAP Growth Cut Scores—Mathematics

Missouri MAP Mathematics								
Grade	Below Basic		Basic		Proficient		Advanced	
3	185–325		326–361		362–389		390–520	
4	210–357		358–386		387–412		413–540	
5	250–376		377–409		410–434		435–570	
6	260–387		388–416		417–437		438–580	
7	270–393		394–434		435–461		462–600	
8	310–419		420–467		468–505		506–660	
MAP Growth Mathematics								
Grade	Below Basic		Basic		Proficient		Advanced	
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall								
2	100–163	1–27	164–178	28–64	179–191	65–88	192–350	89–99
3	100–177	1–34	178–189	35–64	190–199	65–84	200–350	85–99
4	100–192	1–39	193–203	40–66	204–215	67–87	216–350	88–99
5	100–199	1–34	200–215	35–72	216–228	73–91	229–350	92–99
6	100–206	1–41	207–218	42–70	219–228	71–87	229–350	88–99
7	100–210	1–35	211–225	36–69	226–237	70–88	238–350	89–99
8	100–218	1–42	219–234	43–75	235–247	76–91	248–350	92–99
Winter								
2	100–172	1–29	173–186	30–63	187–200	64–89	201–350	90–99
3	100–185	1–33	186–198	34–64	199–208	65–83	209–350	84–99
4	100–199	1–39	200–211	40–66	212–223	67–86	224–350	87–99
5	100–205	1–36	206–221	37–71	222–234	72–90	235–350	91–99
6	100–212	1–42	213–224	43–69	225–235	70–87	236–350	88–99
7	100–214	1–36	215–229	37–68	230–242	69–87	243–350	88–99
8	100–222	1–43	223–239	44–76	240–252	77–91	253–350	92–99
Spring								
2	100–179	1–31	180–192	32–62	193–204	63–85	205–350	86–99
3	100–192	1–35	193–204	36–63	205–214	64–81	215–350	82–99
4	100–205	1–40	206–216	41–64	217–228	65–84	229–350	85–99
5	100–209	1–36	210–225	37–70	226–238	71–88	239–350	89–99
6	100–216	1–42	217–228	43–67	229–239	68–85	240–350	86–99
7	100–217	1–37	218–232	38–67	233–244	68–85	245–350	86–99
8	100–225	1–43	226–241	44–73	242–254	74–89	255–350	90–99

Note. Cut scores for fall and winter are derived from the spring cuts and growth norms based on the typical instructional weeks. Spring cut scores for grade 2 were derived from the grade 3 cuts using the growth norms. Bold numbers indicate the cut scores considered to be at least proficient for accountability purposes.

Table 3.7. MAP Growth Cut Scores—Science

Missouri MAP Science								
Grade	Below Basic		Basic		Proficient		Advanced	
5	100–274		275–309		310–343		344–540	
8	285–467		468–509		510–536		537–710	
MAP Growth Science								
Grade	Below Basic		Basic		Proficient		Advanced	
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall								
5	100–194	1–32	195–205	33–64	206–217	65–89	218–350	90–99
8	100–200	1–26	201–215	27–66	216–225	67–86	226–350	87–99
Winter								
5	100–197	1–31	198–208	32–63	209–220	64–88	221–350	89–99
8	100–202	1–27	203–217	28–66	218–226	67–85	227–350	86–99
Spring								
5	100–200	1–33	201–210	34–61	211–221	62–86	222–350	87–99
8	100–204	1–29	205–218	30–65	219–227	66–83	228–350	84–99

Note. Cut scores for fall and winter are derived from the spring cuts and growth norms based on the typical instructional weeks. Bold numbers indicate the cut scores considered to be at least proficient for accountability purposes.

3.4. Classification Accuracy

Table 3.8 presents the classification accuracy summary statistics, including the overall classification accuracy rates. These results indicate how well MAP Growth spring RIT scores predict proficiency on the state summative tests, providing insight into the predictive validity of MAP Growth. The overall classification accuracy rates range from 0.82 to 0.84 for ELA/reading, 0.86 to 0.88 for mathematics, and 0.84 to 0.85 for science. These values suggest that the RIT cut scores are good at classifying students as proficient (*Proficient* or higher) or not proficient (lower than *Proficient*) on the Missouri state assessment.

Although the results show that MAP Growth scores can be used to accurately classify students as likely to be proficient on the Missouri state summative assessments, there is a notable limitation to how these results should be used and interpreted. The Missouri state test and MAP Growth assessments are designed for different purposes and measure slightly different constructs even within the same content area. Therefore, scores on the two tests cannot be assumed to be interchangeable. MAP Growth may not be used as a substitute for the state tests and vice versa.

Table 3.8. Classification Accuracy Results

Grade	N	Cut Score		Class. Accuracy	Rate		Sensitivity	Specificity	Precision	AUC
		MAP Growth	Missouri		FP	FN				
ELA/Reading										
3	2,692	201	364	0.84	0.17	0.15	0.85	0.83	0.82	0.93
4	2,655	207	388	0.83	0.20	0.14	0.86	0.80	0.81	0.91
5	2,462	215	403	0.83	0.15	0.19	0.81	0.85	0.83	0.92
6	2,539	218	413	0.83	0.16	0.17	0.83	0.84	0.83	0.92
7	2,273	223	435	0.83	0.13	0.21	0.79	0.87	0.82	0.92
8	1,765	224	443	0.82	0.18	0.17	0.83	0.82	0.82	0.91
Mathematics										
3	2,742	203	362	0.86	0.15	0.12	0.88	0.85	0.84	0.94
4	2,765	212	387	0.86	0.17	0.10	0.90	0.83	0.82	0.95
5	2,645	223	410	0.88	0.11	0.13	0.87	0.89	0.85	0.95
6	2,783	226	417	0.88	0.13	0.09	0.91	0.87	0.83	0.96
7	2,553	231	435	0.88	0.11	0.12	0.88	0.89	0.83	0.96
8	1,828	238	468	0.87	0.09	0.22	0.78	0.91	0.79	0.94
Science										
5	1,707	211	310	0.85	0.13	0.18	0.82	0.87	0.82	0.92
8	1,370	219	510	0.84	0.13	0.19	0.81	0.87	0.86	0.92

Note. Class. Accuracy = overall classification accuracy rate; FP = false positives; FN = false negatives; AUC = area under the ROC curve.

3.5. Proficiency Projections

Table 3.9 through Table 3.11 present the estimated probability of achieving proficiency on the Missouri state summative assessment based on RIT scores from fall, winter, or spring. For example, a grade 3 student who obtained a MAP Growth reading score of 200 in the fall has a 75% chance of reaching proficiency on the Missouri state test. “Prob.” indicates the probability of obtaining proficient status on the state summative test in the spring.

Table 3.9. Proficiency Projection Based on RIT Scores—ELA/Reading

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
2	5	190	142	No	<0.01	149	No	<0.01	153	No	<0.01
	10	190	148	No	<0.01	155	No	<0.01	159	No	<0.01
	15	190	152	No	<0.01	159	No	<0.01	164	No	<0.01
	20	190	156	No	0.01	162	No	0.01	167	No	<0.01
	25	190	159	No	0.02	165	No	0.01	170	No	<0.01
	30	190	161	No	0.04	168	No	0.03	173	No	<0.01
	35	190	163	No	0.06	170	No	0.05	175	No	<0.01
	40	190	166	No	0.09	172	No	0.07	177	No	<0.01
	45	190	168	No	0.13	175	No	0.11	180	No	<0.01
	50	190	170	No	0.19	177	No	0.17	182	No	0.01
	55	190	172	No	0.22	179	No	0.24	184	No	0.04
	60	190	174	No	0.29	181	No	0.27	186	No	0.13
	65	190	177	No	0.41	183	No	0.36	188	No	0.28
	70	190	179	No	0.46	186	Yes	0.5	191	Yes	0.61
	75	190	182	Yes	0.59	188	Yes	0.59	193	Yes	0.8
	80	190	184	Yes	0.67	191	Yes	0.68	196	Yes	0.96
	85	190	188	Yes	0.78	194	Yes	0.8	200	Yes	>0.99
	90	190	192	Yes	0.89	199	Yes	0.91	204	Yes	>0.99
	95	190	198	Yes	0.96	205	Yes	0.98	210	Yes	>0.99
3	5	201	155	No	<0.01	160	No	<0.01	164	No	<0.01
	10	201	161	No	<0.01	167	No	<0.01	171	No	<0.01
	15	201	166	No	<0.01	171	No	<0.01	175	No	<0.01
	20	201	169	No	0.01	175	No	0.01	179	No	<0.01
	25	201	172	No	0.02	178	No	0.02	182	No	<0.01
	30	201	175	No	0.04	180	No	0.03	184	No	<0.01
	35	201	178	No	0.07	183	No	0.06	187	No	<0.01
	40	201	180	No	0.11	185	No	0.08	189	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	45	201	182	No	0.13	188	No	0.14	192	No	0.01
	50	201	185	No	0.22	190	No	0.2	194	No	0.02
	55	201	187	No	0.29	192	No	0.27	196	No	0.08
	60	201	189	No	0.37	194	No	0.32	198	No	0.2
	65	201	192	No	0.46	197	No	0.45	201	Yes	0.5
	70	201	194	Yes	0.54	199	Yes	0.55	203	Yes	0.72
	75	201	197	Yes	0.63	202	Yes	0.68	206	Yes	0.92
	80	201	200	Yes	0.75	205	Yes	0.76	209	Yes	0.99
	85	201	204	Yes	0.84	209	Yes	0.88	213	Yes	>0.99
	90	201	208	Yes	0.93	213	Yes	0.94	217	Yes	>0.99
	95	201	215	Yes	0.98	220	Yes	0.99	224	Yes	>0.99
4	5	207	166	No	<0.01	170	No	<0.01	173	No	<0.01
	10	207	173	No	<0.01	177	No	<0.01	179	No	<0.01
	15	207	177	No	0.01	181	No	<0.01	184	No	<0.01
	20	207	181	No	0.02	184	No	0.01	187	No	<0.01
	25	207	184	No	0.04	187	No	0.02	190	No	<0.01
	30	207	186	No	0.05	190	No	0.05	193	No	<0.01
	35	207	189	No	0.1	193	No	0.08	195	No	<0.01
	40	207	191	No	0.14	195	No	0.13	198	No	0.01
	45	207	194	No	0.2	197	No	0.19	200	No	0.02
	50	207	196	No	0.28	199	No	0.27	202	No	0.08
	55	207	198	No	0.36	202	No	0.35	204	No	0.2
	60	207	200	No	0.45	204	No	0.45	207	Yes	0.5
	65	207	203	Yes	0.55	206	Yes	0.55	209	Yes	0.72
	70	207	205	Yes	0.64	209	Yes	0.69	211	Yes	0.87
	75	207	208	Yes	0.76	211	Yes	0.73	214	Yes	0.98
	80	207	211	Yes	0.83	214	Yes	0.84	217	Yes	>0.99
	85	207	215	Yes	0.92	218	Yes	0.93	220	Yes	>0.99

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	90	207	219	Yes	0.96	222	Yes	0.98	225	Yes	>0.99
	95	207	226	Yes	0.99	229	Yes	>0.99	231	Yes	>0.99
5	5	215	175	No	<0.01	178	No	<0.01	180	No	<0.01
	10	215	181	No	<0.01	184	No	<0.01	186	No	<0.01
	15	215	186	No	<0.01	189	No	<0.01	191	No	<0.01
	20	215	189	No	0.01	192	No	0.01	194	No	<0.01
	25	215	192	No	0.02	195	No	0.01	197	No	<0.01
	30	215	195	No	0.04	197	No	0.03	199	No	<0.01
	35	215	197	No	0.07	200	No	0.06	202	No	<0.01
	40	215	199	No	0.09	202	No	0.1	204	No	<0.01
	45	215	201	No	0.14	204	No	0.12	206	No	0.01
	50	215	204	No	0.23	206	No	0.18	208	No	0.02
	55	215	206	No	0.27	209	No	0.3	211	No	0.13
	60	215	208	No	0.36	211	No	0.35	213	No	0.28
	65	215	210	No	0.45	213	No	0.45	215	Yes	0.5
	70	215	213	Yes	0.55	215	Yes	0.55	217	Yes	0.72
	75	215	215	Yes	0.64	218	Yes	0.7	220	Yes	0.92
	80	215	218	Yes	0.77	221	Yes	0.82	223	Yes	0.99
	85	215	222	Yes	0.86	224	Yes	0.9	226	Yes	>0.99
	90	215	226	Yes	0.94	228	Yes	0.96	230	Yes	>0.99
	95	215	232	Yes	0.99	235	Yes	>0.99	237	Yes	>0.99
6	5	218	181	No	<0.01	183	No	<0.01	185	No	<0.01
	10	218	187	No	<0.01	189	No	<0.01	191	No	<0.01
	15	218	191	No	0.01	193	No	<0.01	195	No	<0.01
	20	218	195	No	0.01	197	No	0.01	198	No	<0.01
	25	218	198	No	0.03	199	No	0.02	201	No	<0.01
	30	218	200	No	0.04	202	No	0.04	203	No	<0.01
	35	218	202	No	0.07	204	No	0.06	206	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	40	218	205	No	0.14	206	No	0.1	208	No	<0.01
	45	218	207	No	0.16	209	No	0.19	210	No	0.01
	50	218	209	No	0.23	211	No	0.22	212	No	0.04
	55	218	211	No	0.31	213	No	0.31	214	No	0.13
	60	218	213	No	0.4	215	No	0.4	216	No	0.28
	65	218	215	No	0.45	217	Yes	0.5	218	Yes	0.5
	70	218	218	Yes	0.6	219	Yes	0.6	221	Yes	0.8
	75	218	220	Yes	0.69	222	Yes	0.74	223	Yes	0.92
	80	218	223	Yes	0.8	225	Yes	0.84	226	Yes	0.99
	85	218	226	Yes	0.89	228	Yes	0.92	229	Yes	>0.99
	90	218	231	Yes	0.97	232	Yes	0.97	233	Yes	>0.99
	95	218	237	Yes	0.99	238	Yes	>0.99	239	Yes	>0.99
7	5	223	185	No	<0.01	186	No	<0.01	187	No	<0.01
	10	223	191	No	<0.01	192	No	<0.01	193	No	<0.01
	15	223	195	No	<0.01	196	No	<0.01	197	No	<0.01
	20	223	198	No	0.01	200	No	0.01	201	No	<0.01
	25	223	201	No	0.02	202	No	0.01	203	No	<0.01
	30	223	204	No	0.04	205	No	0.03	206	No	<0.01
	35	223	206	No	0.05	207	No	0.04	208	No	<0.01
	40	223	208	No	0.08	210	No	0.09	211	No	<0.01
	45	223	210	No	0.12	212	No	0.11	213	No	<0.01
	50	223	212	No	0.18	214	No	0.16	215	No	0.01
	55	223	214	No	0.21	216	No	0.23	217	No	0.04
	60	223	217	No	0.32	218	No	0.31	219	No	0.13
	65	223	219	No	0.41	220	No	0.4	221	No	0.28
	70	223	221	Yes	0.5	223	Yes	0.55	224	Yes	0.61
	75	223	224	Yes	0.64	225	Yes	0.64	226	Yes	0.8
	80	223	226	Yes	0.72	228	Yes	0.77	229	Yes	0.96

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	85	223	230	Yes	0.85	231	Yes	0.86	232	Yes	0.99
	90	223	234	Yes	0.94	235	Yes	0.94	237	Yes	>0.99
	95	223	240	Yes	0.99	241	Yes	0.99	243	Yes	>0.99
8	5	224	188	No	<0.01	189	No	<0.01	190	No	<0.01
	10	224	194	No	<0.01	195	No	<0.01	196	No	<0.01
	15	224	198	No	0.01	199	No	<0.01	200	No	<0.01
	20	224	201	No	0.02	203	No	0.02	203	No	<0.01
	25	224	204	No	0.04	205	No	0.02	206	No	<0.01
	30	224	207	No	0.06	208	No	0.05	209	No	<0.01
	35	224	209	No	0.09	210	No	0.08	211	No	<0.01
	40	224	211	No	0.13	213	No	0.12	213	No	<0.01
	45	224	214	No	0.18	215	No	0.17	216	No	0.01
	50	224	216	No	0.25	217	No	0.24	218	No	0.04
	55	224	218	No	0.33	219	No	0.32	220	No	0.13
	60	224	220	No	0.41	221	No	0.41	222	No	0.28
	65	224	222	Yes	0.5	223	Yes	0.5	224	Yes	0.5
	70	224	225	Yes	0.63	226	Yes	0.64	227	Yes	0.8
	75	224	227	Yes	0.71	228	Yes	0.72	229	Yes	0.92
	80	224	230	Yes	0.82	231	Yes	0.83	232	Yes	0.99
	85	224	233	Yes	0.89	235	Yes	0.92	236	Yes	>0.99
	90	224	238	Yes	0.96	239	Yes	0.97	240	Yes	>0.99
	95	224	244	Yes	0.99	245	Yes	>0.99	246	Yes	>0.99

Table 3.10. Proficiency Projection Based on RIT Scores—Mathematics

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
2	5	193	147	No	<0.01	155	No	<0.01	161	No	<0.01
	10	193	153	No	<0.01	161	No	<0.01	167	No	<0.01
	15	193	157	No	0.01	165	No	<0.01	171	No	<0.01
	20	193	160	No	0.02	168	No	0.01	174	No	<0.01
	25	193	162	No	0.03	171	No	0.02	177	No	<0.01
	30	193	165	No	0.06	173	No	0.04	179	No	<0.01
	35	193	167	No	0.09	175	No	0.07	181	No	<0.01
	40	193	169	No	0.14	177	No	0.12	183	No	<0.01
	45	193	171	No	0.2	179	No	0.14	185	No	0.01
	50	193	173	No	0.27	181	No	0.21	187	No	0.04
	55	193	175	No	0.31	183	No	0.3	189	No	0.13
	60	193	177	No	0.4	185	No	0.4	192	No	0.39
	65	193	179	Yes	0.5	187	Yes	0.5	194	Yes	0.61
	70	193	181	Yes	0.6	189	Yes	0.55	196	Yes	0.8
	75	193	183	Yes	0.69	192	Yes	0.7	198	Yes	0.92
	80	193	186	Yes	0.77	194	Yes	0.79	201	Yes	0.99
	85	193	189	Yes	0.86	197	Yes	0.88	204	Yes	>0.99
	90	193	193	Yes	0.93	201	Yes	0.94	208	Yes	>0.99
	95	193	198	Yes	0.98	207	Yes	0.99	214	Yes	>0.99
3	5	205	158	No	<0.01	166	No	<0.01	171	No	<0.01
	10	205	164	No	<0.01	172	No	<0.01	177	No	<0.01
	15	205	168	No	<0.01	176	No	<0.01	181	No	<0.01
	20	205	171	No	0.01	179	No	<0.01	185	No	<0.01
	25	205	174	No	0.02	182	No	0.01	188	No	<0.01
	30	205	176	No	0.04	184	No	0.03	190	No	<0.01
	35	205	178	No	0.06	186	No	0.05	193	No	<0.01
	40	205	180	No	0.1	189	No	0.11	195	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	45	205	182	No	0.15	191	No	0.17	197	No	0.01
	50	205	184	No	0.22	193	No	0.2	199	No	0.04
	55	205	186	No	0.3	195	No	0.29	201	No	0.13
	60	205	188	No	0.4	197	No	0.39	203	No	0.28
	65	205	190	Yes	0.5	199	Yes	0.5	206	Yes	0.61
	70	205	192	Yes	0.6	201	Yes	0.61	208	Yes	0.8
	75	205	195	Yes	0.74	204	Yes	0.76	211	Yes	0.96
	80	205	197	Yes	0.81	206	Yes	0.83	213	Yes	0.99
	85	205	200	Yes	0.9	210	Yes	0.92	217	Yes	>0.99
	90	205	204	Yes	0.96	214	Yes	0.97	221	Yes	>0.99
	95	205	210	Yes	0.99	220	Yes	>0.99	227	Yes	>0.99
4	5	217	171	No	<0.01	176	No	<0.01	180	No	<0.01
	10	217	177	No	<0.01	183	No	<0.01	187	No	<0.01
	15	217	181	No	<0.01	187	No	<0.01	191	No	<0.01
	20	217	184	No	0.01	190	No	<0.01	195	No	<0.01
	25	217	186	No	0.01	193	No	0.01	198	No	<0.01
	30	217	189	No	0.03	196	No	0.02	201	No	<0.01
	35	217	191	No	0.05	198	No	0.03	203	No	<0.01
	40	217	193	No	0.09	200	No	0.06	206	No	<0.01
	45	217	195	No	0.13	202	No	0.1	208	No	0.01
	50	217	197	No	0.19	204	No	0.16	210	No	0.02
	55	217	199	No	0.27	207	No	0.28	212	No	0.08
	60	217	201	No	0.35	209	No	0.33	215	No	0.28
	65	217	203	No	0.45	211	No	0.44	217	Yes	0.5
	70	217	205	Yes	0.55	213	Yes	0.56	220	Yes	0.8
	75	217	208	Yes	0.69	216	Yes	0.72	222	Yes	0.92
	80	217	210	Yes	0.77	219	Yes	0.84	225	Yes	0.99
	85	217	214	Yes	0.89	222	Yes	0.92	229	Yes	>0.99

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	90	217	217	Yes	0.95	226	Yes	0.98	233	Yes	>0.99
	95	217	223	Yes	0.99	232	Yes	>0.99	240	Yes	>0.99
5	5	226	180	No	<0.01	183	No	<0.01	186	No	<0.01
	10	226	185	No	<0.01	189	No	<0.01	192	No	<0.01
	15	226	189	No	<0.01	194	No	<0.01	197	No	<0.01
	20	226	193	No	<0.01	197	No	<0.01	200	No	<0.01
	25	226	195	No	<0.01	200	No	<0.01	204	No	<0.01
	30	226	198	No	0.01	203	No	<0.01	206	No	<0.01
	35	226	200	No	0.02	205	No	0.01	209	No	<0.01
	40	226	202	No	0.04	207	No	0.02	211	No	<0.01
	45	226	204	No	0.06	210	No	0.04	214	No	<0.01
	50	226	206	No	0.1	212	No	0.08	216	No	<0.01
	55	226	208	No	0.15	214	No	0.13	218	No	0.01
	60	226	210	No	0.22	216	No	0.2	221	No	0.08
	65	226	212	No	0.3	219	No	0.33	223	No	0.2
	70	226	215	No	0.45	221	No	0.44	226	Yes	0.5
	75	226	217	Yes	0.55	224	Yes	0.61	228	Yes	0.72
	80	226	220	Yes	0.7	226	Yes	0.72	232	Yes	0.96
	85	226	223	Yes	0.81	230	Yes	0.87	235	Yes	0.99
	90	226	227	Yes	0.92	234	Yes	0.96	240	Yes	>0.99
	95	226	233	Yes	0.99	240	Yes	0.99	246	Yes	>0.99
6	5	229	184	No	<0.01	187	No	<0.01	190	No	<0.01
	10	229	190	No	<0.01	194	No	<0.01	197	No	<0.01
	15	229	194	No	<0.01	198	No	<0.01	201	No	<0.01
	20	229	197	No	<0.01	201	No	<0.01	205	No	<0.01
	25	229	199	No	0.01	204	No	<0.01	208	No	<0.01
	30	229	202	No	0.02	207	No	0.01	211	No	<0.01
	35	229	204	No	0.03	209	No	0.01	213	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	40	229	206	No	0.05	212	No	0.04	216	No	<0.01
	45	229	208	No	0.09	214	No	0.07	218	No	<0.01
	50	229	210	No	0.13	216	No	0.11	220	No	0.01
	55	229	212	No	0.19	218	No	0.17	223	No	0.04
	60	229	214	No	0.27	220	No	0.25	225	No	0.13
	65	229	216	No	0.36	223	No	0.39	227	No	0.28
	70	229	219	Yes	0.5	225	Yes	0.5	230	Yes	0.61
	75	229	221	Yes	0.64	228	Yes	0.66	233	Yes	0.87
	80	229	224	Yes	0.77	231	Yes	0.79	236	Yes	0.98
	85	229	227	Yes	0.87	234	Yes	0.89	239	Yes	>0.99
	90	229	231	Yes	0.95	238	Yes	0.96	244	Yes	>0.99
	95	229	237	Yes	0.99	245	Yes	>0.99	251	Yes	>0.99
7	5	233	189	No	<0.01	191	No	<0.01	192	No	<0.01
	10	233	195	No	<0.01	197	No	<0.01	199	No	<0.01
	15	233	199	No	<0.01	202	No	<0.01	204	No	<0.01
	20	233	203	No	<0.01	206	No	<0.01	208	No	<0.01
	25	233	206	No	0.01	209	No	<0.01	211	No	<0.01
	30	233	208	No	0.01	211	No	0.01	214	No	<0.01
	35	233	211	No	0.03	214	No	0.02	216	No	<0.01
	40	233	213	No	0.06	216	No	0.03	219	No	<0.01
	45	233	215	No	0.09	219	No	0.07	221	No	<0.01
	50	233	217	No	0.14	221	No	0.12	224	No	0.01
	55	233	219	No	0.2	223	No	0.18	226	No	0.02
	60	233	222	No	0.31	226	No	0.3	229	No	0.13
	65	233	224	No	0.4	228	No	0.4	231	No	0.28
	70	233	226	Yes	0.5	231	Yes	0.5	234	Yes	0.61
	75	233	229	Yes	0.64	233	Yes	0.6	237	Yes	0.87
	80	233	232	Yes	0.77	236	Yes	0.74	240	Yes	0.98

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	85	233	235	Yes	0.86	240	Yes	0.88	244	Yes	>0.99
	90	233	239	Yes	0.94	245	Yes	0.97	249	Yes	>0.99
	95	233	246	Yes	0.99	251	Yes	>0.99	256	Yes	>0.99
8	5	242	192	No	<0.01	194	No	<0.01	196	No	<0.01
	10	242	199	No	<0.01	201	No	<0.01	203	No	<0.01
	15	242	203	No	<0.01	206	No	<0.01	208	No	<0.01
	20	242	207	No	<0.01	210	No	<0.01	212	No	<0.01
	25	242	210	No	<0.01	213	No	<0.01	215	No	<0.01
	30	242	212	No	<0.01	216	No	<0.01	218	No	<0.01
	35	242	215	No	0.01	219	No	0.01	221	No	<0.01
	40	242	217	No	0.02	221	No	0.01	224	No	<0.01
	45	242	220	No	0.04	224	No	0.03	226	No	<0.01
	50	242	222	No	0.07	226	No	0.05	229	No	<0.01
	55	242	224	No	0.1	228	No	0.08	231	No	<0.01
	60	242	227	No	0.18	231	No	0.16	234	No	0.01
	65	242	229	No	0.25	233	No	0.23	237	No	0.08
	70	242	232	No	0.37	236	No	0.35	239	No	0.2
	75	242	234	No	0.45	239	No	0.45	242	Yes	0.5
	80	242	237	Yes	0.59	242	Yes	0.6	246	Yes	0.87
	85	242	241	Yes	0.75	246	Yes	0.77	250	Yes	0.99
	90	242	246	Yes	0.9	251	Yes	0.92	255	Yes	>0.99
	95	242	252	Yes	0.97	258	Yes	0.99	262	Yes	>0.99

Table 3.11. Proficiency Projection Based on RIT Scores—Science

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
5	5	211	179	No	<0.01	182	No	<0.01	184	No	<0.01
	10	211	184	No	<0.01	187	No	<0.01	189	No	<0.01
	15	211	187	No	0.01	190	No	0.01	192	No	<0.01
	20	211	190	No	0.03	193	No	0.02	195	No	<0.01
	25	211	192	No	0.05	195	No	0.03	197	No	<0.01
	30	211	194	No	0.07	197	No	0.05	199	No	<0.01
	35	211	196	No	0.11	199	No	0.09	201	No	<0.01
	40	211	198	No	0.17	201	No	0.15	203	No	0.01
	45	211	199	No	0.21	203	No	0.23	205	No	0.04
	50	211	201	No	0.29	204	No	0.23	207	No	0.13
	55	211	203	No	0.34	206	No	0.33	208	No	0.2
	60	211	204	No	0.39	208	No	0.44	210	No	0.39
	65	211	206	Yes	0.5	209	Yes	0.5	212	Yes	0.61
	70	211	208	Yes	0.61	211	Yes	0.62	214	Yes	0.8
	75	211	210	Yes	0.71	213	Yes	0.72	216	Yes	0.92
	80	211	212	Yes	0.79	216	Yes	0.81	218	Yes	0.98
	85	211	215	Yes	0.86	218	Yes	0.88	221	Yes	>0.99
	90	211	218	Yes	0.93	221	Yes	0.95	224	Yes	>0.99
	95	211	223	Yes	0.98	226	Yes	0.99	229	Yes	>0.99
8	5	219	186	No	<0.01	187	No	<0.01	188	No	<0.01
	10	219	191	No	<0.01	193	No	<0.01	194	No	<0.01
	15	219	195	No	0.01	196	No	<0.01	197	No	<0.01
	20	219	198	No	0.02	199	No	0.01	200	No	<0.01
	25	219	200	No	0.03	202	No	0.02	203	No	<0.01
	30	219	202	No	0.05	204	No	0.04	205	No	<0.01
	35	219	204	No	0.08	206	No	0.07	207	No	<0.01
	40	219	206	No	0.13	208	No	0.11	209	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				<i>Proficient</i>	<i>Prob.</i>		<i>Proficient</i>	<i>Prob.</i>		<i>Proficient</i>	<i>Prob.</i>
	45	219	208	No	0.16	210	No	0.17	211	No	0.01
	50	219	210	No	0.22	211	No	0.17	213	No	0.04
	55	219	211	No	0.26	213	No	0.25	215	No	0.13
	60	219	213	No	0.35	215	No	0.34	217	No	0.28
	65	219	215	No	0.45	217	No	0.45	219	Yes	0.5
	70	219	217	Yes	0.5	219	Yes	0.55	221	Yes	0.72
	75	219	219	Yes	0.6	221	Yes	0.66	223	Yes	0.87
	80	219	222	Yes	0.74	224	Yes	0.79	226	Yes	0.98
	85	219	224	Yes	0.81	227	Yes	0.89	228	Yes	0.99
	90	219	228	Yes	0.92	230	Yes	0.95	232	Yes	>0.99
	95	219	233	Yes	0.98	236	Yes	0.99	238	Yes	>0.99

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