Predicting Performance on Tennessee Ready (TNReady) Based on NWEA MAP Growth Scores

July 2025

NWEA Psychometrics and Analytics

nwea

Linking Study Updates

Date	Description
2020-07	Conducted a linking study for grades 3–8 in mathematics and ELA based on the 2020 norms and Spring 2017 data.
2025-07	Updated the linking study based on the 2025 norms.

Acknowledgements: This report was made possible with the contributions of Yan Zhou, Ann Hu, Justin Schreiber, Christopher Wells, and Derek May. We appreciate our colleagues at NWEA and all our partners who provided data for the study.

Table of Contents

List of Tables

List of Figures

Executive Summary

To predict student achievement on Tennessee Ready (TNReady) assessments in grades 3–8 English language arts (ELA) and mathematics, NWEA® conducted a linking study using Spring 2017 data to derive Rasch Unit (RIT) cut scores on the MAP® Growth™ assessments that correspond to the TNReady achievement 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 TNReady *On Track* achievement level cut scores and the corresponding MAP Growth RIT cut scores that allow teachers to identify students who are on track for proficiency on the state summative test and those who are not. For example, the *On Track* cut score on the TNReady grade 3 ELA test is 359. A grade 3 student with a MAP Growth reading RIT score of 199 in the fall is likely to meet proficiency on the TNReady ELA test in the spring, whereas a grade 3 student with a MAP Growth reading RIT score lower than 199 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 TNReady 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 TNReady Proficiency

Assessment		*On Track* Cut Scores by Grade						
		2	3	4	5	6	7	8
ELA/Reading								
TNReady Spring		–	359	343	333	342	341	346
MAP Growth	Fall	187	199	207	216	219	223	227
	Winter	193	204	210	218	220	224	228
	Spring	196	206	212	219	221	225	229
Mathematics								
TNReady Spring		–	341	330	339	340	339	330
MAP Growth	Fall	181	191	206	219	220	231	237
	Winter	190	200	214	225	226	236	242
	Spring	195	206	219	229	230	238	244

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 spring instructional weeks set by partners.

E.1. Assessment Overview

The TNReady grades 3–8 ELA and mathematics tests are Tennessee's state summative assessments aligned to the Tennessee ELA and mathematics standards adopted in April 2016. Based on their test scores, students are placed into one of four achievement levels: *Below*, *Approaching*, *On Track*, and *Mastered*. These tests are used to provide evidence of student achievement in ELA and mathematics for various goals, such as satisfying the federal accountability requirements. The *On Track* cut score demarks the minimum level of achievement considered to be proficient. 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 2017 test administration, the equipercentile linking method was used to identify the spring MAP Growth scores that correspond to the spring TNReady achievement 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 cuts[1] 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 TNReady assessments in Spring 2017 were included in the study sample. Table E.2 presents the weighted numbers of Tennessee students from 7 districts and 248 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 achievement 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.

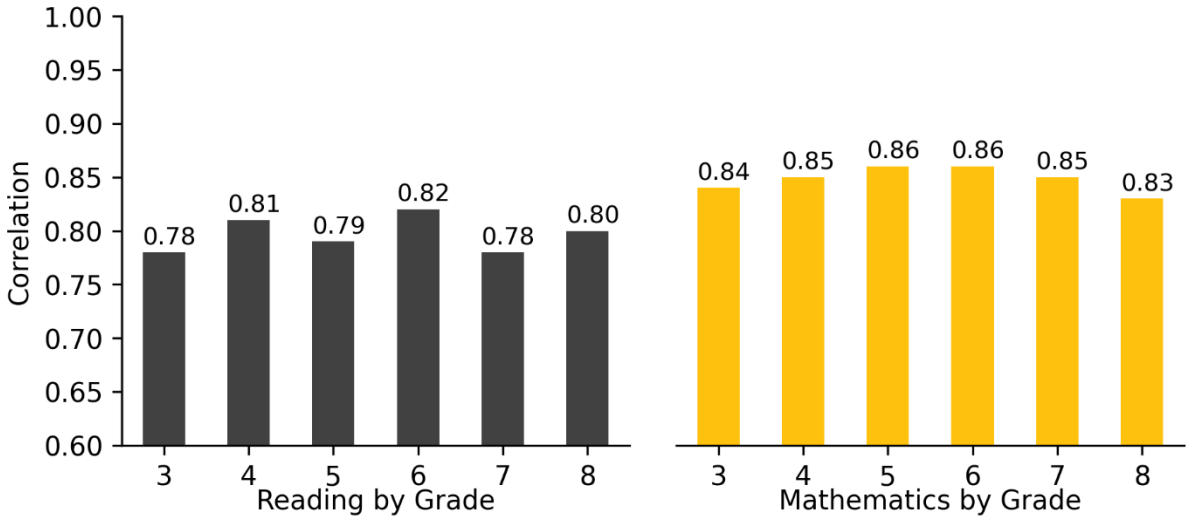
Table E.2. Linking Study Sample

Grade	# Students	
	ELA/Reading	Mathematics
3	14,072	10,400
4	13,936	9,913
5	11,372	7,876
6	9,459	6,298
7	9,364	6,219
8	9,429	5,560

E.4. Test Score Relationships

Correlations between MAP Growth RIT scores and TNReady scores range from 0.78 to 0.86 across both 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 TNReady assessments.

Figure E.1. Correlations Between MAP Growth and TNReady

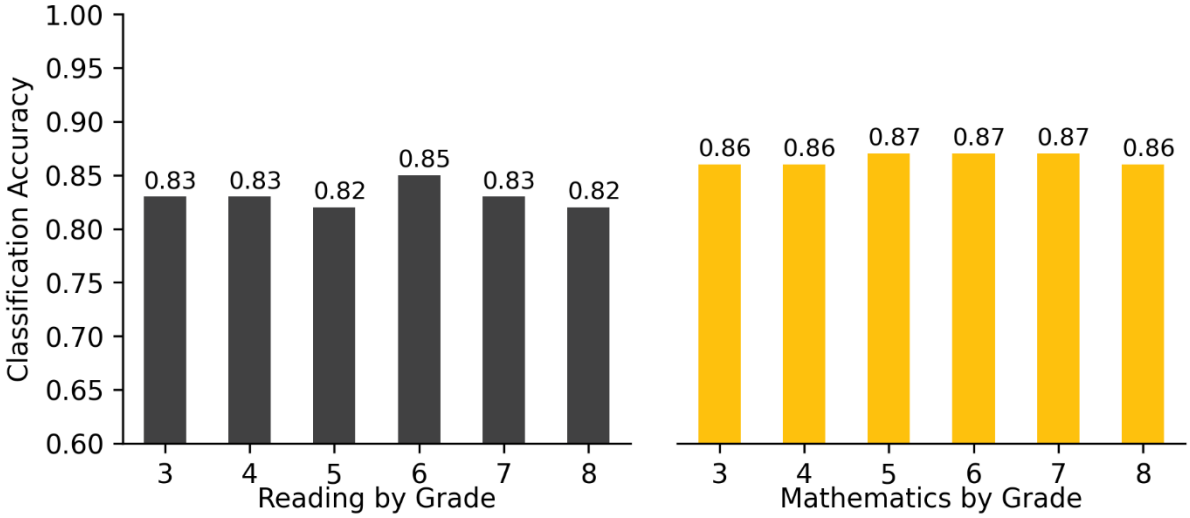


E.5. Accuracy of MAP Growth Classifications

Figure E.2 presents the classification accuracy statistics that show the proportion of students correctly classified by their RIT scores as proficient or not proficient on the TNReady tests.[2] For example, the MAP Growth reading grade 3 *On Track* cut score has a 0.83 accuracy rate, meaning it accurately classified student achievement on the state test for 83% of the sample. The results range from 0.82 to 0.87 across both content areas, indicating that RIT scores have a high accuracy rate of identifying student proficiency on the TNReady tests.

[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 in July 2020 to statistically connect the scores of the Tennessee Ready (TNReady) grades 3–8 English language arts (ELA) and mathematics assessments with Rasch Unit (RIT) scores from the MAP Growth assessments taken during the Spring 2017 term. The linking study has been updated since the previous version to incorporate the most recent NWEA MAP Growth norms (NWEA, 2025). In this updated study, MAP Growth cut scores are also included for grade 2 so that educators can track early learners' progress toward proficiency on the TNReady 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 TNReady achievement 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 TNReady tests
5. The probability of achieving grade-level proficiency on the TNReady assessments based on MAP Growth RIT scores from fall, winter, and spring using the 2025 norms

1.2. Assessment Overview

The TNReady grades 3–8 ELA and mathematics summative assessments are aligned to the Tennessee ELA and mathematics standards adopted in April 2016. Each assessment has three cut scores (i.e., the minimum score a student must get on a test to be placed in a certain achievement level) that distinguish between the following achievement levels: *Below*, *Approaching*, *On Track*, and *Mastered*. The *On Track* 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 2017 administrations of the MAP Growth and TNReady assessments. NWEA requested that Tennessee 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 Tennessee 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 and TNReady assessments in Spring 2017 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 achievement 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 achievement 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 TNReady achievement 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 on the spring TNReady 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 achievement 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 TNReady 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., TNReady). 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 as:

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

where $e_y(x)$ is the equipercentile equivalent of score x on the TNReady tests on the scale of MAP Growth, $P(x)$ is the percentile rank of a given score on the TNReady 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 TNReady 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 (*On Track* or *Mastered*) or not proficient (*Below* or *Approaching*). Table 2.1 describes the classification accuracy statistics provided in this report (Pommerich et al., 2004). The results are based on the Spring 2017 MAP Growth and TNReady data for the *On Track* cut score.

Table 2.1. Description of Classification Accuracy Summary Statistics

Statistic	Description	Interpretation
Overall Classification Accuracy Rate	(TP + TN) / (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
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

Statistic	Description	Interpretation
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 *On Track* 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 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 TNReady tests 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 *On Track* proficiency on the TNReady tests based on their fall or winter RIT score:

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

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 *On Track* 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 *On Track* proficiency on the TNReady test based on their spring RIT score (RIT_{Spring}):

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

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 TNReady assessments in Spring 2017 were included in the study sample. Data used in this study were collected from 7 districts and 248 schools in Tennessee. Table 3.1 presents the demographic distributions of race, sex, and achievement level in the original unweighted study sample. Table 3.2 presents the distributions of the student population who took the Spring 2017 TNReady tests (TDOE, 2017). Since the unweighted data are different from the general TNReady 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 TNReady 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	14,072	13,922	11,372	9,450	9,373	9,438
Race	Asian	2.8	2.5	2.8	2.7	3.2	2.2
	Black	54.5	55.3	60.6	60.1	62.0	55.6
	Hispanic	19.8	18.7	16.3	17.1	15.5	9.6
	Other	3.3	5.2	2.9	2.8	2.2	24.3
	White	19.5	18.2	17.4	17.4	17.0	8.3
Sex	Female	49.6	49.8	49.0	50.2	50.5	50.0
	Male	50.4	50.2	51.0	49.8	49.5	50.0
Achievement Level	*Below*	37.5	29.5	37.8	30.6	31.8	26.5
	Approaching	38.1	45.3	42.7	47.0	44.4	53.1
	On Track	20.2	22.3	16.6	18.8	21.0	16.9
	Mastered	4.2	2.9	2.8	3.6	2.8	3.5
Mathematics							
	Total N	10,400	9,913	7,876	6,298	6,213	5,560
Race	Asian	2.4	1.9	1.9	2.0	1.7	1.3
	Black	60.6	63.2	68.7	69.0	72.0	74.8
	Hispanic	18.7	17.4	14.1	15.1	13.4	12.1
	Other	3.4	4.0	3.1	3.2	2.6	4.6
	White	15.0	13.5	12.1	10.8	10.3	7.2
Sex	Female	49.8	49.6	49.8	50.3	50.9	48.5
	Male	50.2	50.4	50.2	49.7	49.1	51.5
Achievement Level	*Below*	32.6	39.7	40.4	40.7	43.4	58.9
	Approaching	36.7	33.9	35.0	36.4	42.0	31.2
	On Track	21.9	22.4	19.7	20.2	13.0	9.4
	Mastered	8.8	4.0	5.0	2.7	1.6	0.5

Table 3.2. Spring 2017 TNReady Student Population Demographics

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
ELA							
	Total N	75,078	76,293	74,578	71,872	71,559	70,724
Race	Asian	2.3	2.3	2.3	2.3	2.3	2.3
	Black	24.4	23.8	23.4	22.8	22.7	23.1
	Hispanic	11.0	11.1	10.6	10.0	9.1	8.9
	Other	0.6	0.6	0.6	0.6	0.7	0.7
	White	61.7	62.3	63.1	64.3	65.2	65.1
Sex	Female	49.7	49.2	49.8	49.8	49.7	49.9
	Male	50.3	50.8	50.2	50.2	50.3	50.1
Achievement Level	*Below*	26.4	19.3	24.9	18.9	20.5	17.5
	Approaching	39.0	44.3	44.5	47.1	43.7	51.5
	On Track	27.5	31.7	25.7	27.9	30.9	25.3
	Mastered	7.1	4.8	4.9	6.2	4.8	5.6
Mathematics							
	Total N	76,304	76,892	75,441	72,136	71,567	62,055
Race	Asian	2.4	2.3	2.4	2.1	2.2	1.7
	Black	24.5	23.9	23.5	23.1	22.9	24.2
	Hispanic	11.2	11.3	10.8	10.2	9.4	9.3
	Other	0.6	0.6	0.7	0.6	0.7	0.7
	White	61.3	61.8	62.7	63.9	64.8	64.1
Sex	Female	49.6	49.2	49.8	49.8	49.7	49.3
	Male	50.4	50.8	50.2	50.2	50.3	50.7
Achievement Level	*Below*	24.0	25.1	27.2	24.7	24.4	34.5
	Approaching	35.2	33.9	34.9	36.2	44.1	34.5
	On Track	27.2	31.9	27.4	33.3	27.2	25.2
	Mastered	13.6	9.1	10.5	5.8	4.4	5.8

Table 3.3. Linking Study Sample Demographics (Weighted)

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
ELA/Reading							
	Total N	14,072	13,936	11,372	9,459	9,364	9,429
Race	Asian	2.3	2.3	2.3	2.3	2.3	2.3
	Black	24.4	23.8	23.4	22.8	22.7	23.1
	Hispanic	11.0	11.1	10.6	10.0	9.1	8.9
	Other	0.6	0.6	0.6	0.6	0.7	0.7
	White	61.7	62.2	63.1	64.3	65.2	65.0
Sex	Female	49.7	49.2	49.8	49.8	49.7	49.9
	Male	50.3	50.8	50.2	50.2	50.3	50.1
Achievement Level	*Below*	26.4	19.3	24.9	18.9	20.5	17.5
	Approaching	39.0	44.3	44.5	47.1	43.7	51.6
	On Track	27.5	31.7	25.7	27.9	30.9	25.3
	Mastered	7.1	4.8	4.9	6.2	4.8	5.6
Mathematics							
	Total N	10,400	9,913	7,876	6,298	6,219	5,560
Race	Asian	2.4	2.3	2.4	2.1	2.2	1.7
	Black	24.5	23.9	23.5	23.1	22.9	24.2
	Hispanic	11.2	11.3	10.8	10.2	9.4	9.3
	Other	0.6	0.6	0.7	0.6	0.7	0.7
	White	61.3	61.9	62.6	64.0	64.8	64.1
Sex	Female	49.6	49.2	49.8	49.8	49.7	49.3
	Male	50.4	50.8	50.2	50.2	50.3	50.7
Achievement Level	*Below*	24.0	25.1	27.2	24.7	24.4	34.5
	Approaching	35.2	33.9	34.9	36.2	44.1	34.5
	On Track	27.2	31.9	27.4	33.3	27.2	25.2
	Mastered	13.6	9.1	10.5	5.8	4.4	5.8

3.2. Descriptive Statistics

Table 3.4 presents descriptive statistics of the MAP Growth and TNReady test scores from Spring 2017, including the correlation coefficients (*r*) between them. The correlation coefficients between the scores range from 0.78 to 0.82 for ELA/reading and 0.83 to 0.86 for mathematics. 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 TNReady assessments.

Table 3.4. Descriptive Statistics of Test Scores

Grade	N	*r*	TNReady				MAP Growth			
			Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
ELA/Reading										
3	14,072	0.78	339.0	41.3	200	449	197.4	18.2	134	250
4	13,936	0.81	326.8	37.4	200	449	204.3	17.8	137	253
5	11,372	0.79	316.7	35.7	200	450	210.5	17.7	140	254
6	9,459	0.82	328.8	34.3	200	449	213.0	17.9	141	260
7	9,364	0.78	328.5	31.9	200	450	216.9	18.8	142	261
8	9,429	0.80	329.5	36.5	200	449	220.5	18.7	140	266
Mathematics										
3	10,400	0.84	329.6	40.5	200	450	199.6	15.0	133	259
4	9,913	0.85	318.0	41.9	200	450	209.8	16.6	138	263
5	7,876	0.86	320.4	45.3	200	450	219.0	18.6	141	279
6	6,298	0.86	326.2	38.4	200	449	220.6	18.5	142	282
7	6,219	0.85	318.0	39.0	200	444	225.8	19.5	138	269
8	5,560	0.83	305.8	38.7	200	398	228.3	19.4	140	268

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

3.3. MAP Growth Cut Scores

Table 3.5 and Table 3.6 present the TNReady 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 achievement level on the TNReady spring 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 199 in the fall is likely to reach *On Track* proficiency on the TNReady ELA test. A grade 3 student who obtained a MAP Growth reading RIT score of 204 in the winter is also likely to reach *On Track* proficiency on the TNReady. 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 achievement level could be different from the generic projection presented in this document. Partners are therefore encouraged to use the projected achievement level in students' profile, classroom, and grade reports in the NWEA reporting system since they reflect the specific instructional weeks set by partners.

Table 3.5. MAP Growth Cut Scores—ELA/Reading

TNReady ELA				
Grade	***Below***	***Approaching***	***On Track***	***Mastered***
3	200–321	322–358	**359**–390	391–450
4	200–298	299–342	**343**–378	379–450
5	200–295	296–332	**333**–370	371–450
6	200–302	303–341	**342**–376	377–450
7	200–304	305–340	**341**–373	374–450
8	200–297	298–345	**346**–383	384–450

MAP Growth Reading								
Grade	***Below***		***Approaching***		***On Track***		***Mastered***	
	RIT	**Percentile**	**RIT**	**Percentile**	**RIT**	**Percentile**	**RIT**	**Percentile**
Fall								
2	100–159	1–27	160–186	28–83	**187**–209	84–98	210–350	99–99
3	100–176	1–33	177–198	34–77	**199**–217	78–96	218–350	97–99
4	100–182	1–23	183–206	24–72	**207**–226	73–95	227–350	96–99
5	100–195	1–32	196–215	33–75	**216**–231	76–94	232–350	95–99
6	100–197	1–25	198–218	26–71	**219**–233	72–92	234–350	93–99
7	100–200	1–24	201–222	25–73	**223**–239	74–94	240–350	95–99
8	100–201	1–20	202–226	21–74	**227**–243	75–94	244–350	95–99
Winter								
2	100–166	1–28	167–192	29–82	**193**–214	83–98	215–350	99–99
3	100–181	1–32	182–203	33–77	**204**–221	78–95	222–350	96–99
4	100–186	1–23	187–209	24–71	**210**–227	72–94	228–350	95–99
5	100–198	1–32	199–217	33–74	**218**–232	75–93	233–350	94–99
6	100–199	1–25	200–219	26–70	**220**–234	71–92	235–350	93–99
7	100–202	1–25	203–223	26–72	**224**–240	73–94	241–350	95–99
8	100–202	1–20	203–227	21–73	**228**–244	74–94	245–350	95–99
Spring								
2	100–172	1–30	173–195	31–79	**196**–215	80–97	216–350	98–99
3	100–186	1–34	187–205	35–74	**206**–222	75–94	223–350	95–99
4	100–190	1–26	191–211	27–70	**212**–228	71–93	229–350	94–99
5	100–201	1–35	202–218	36–72	**219**–233	73–92	234–350	93–99
6	100–202	1–28	203–220	29–69	**221**–235	70–91	236–350	92–99
7	100–204	1–27	205–224	28–72	**225**–241	73–93	242–350	94–99
8	100–205	1–24	206–228	25–73	**229**–245	74–94	246–350	95–99

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

TNReady Mathematics				
Grade	***Below***	***Approaching***	***On Track***	***Mastered***
3	200–304	305–340	**341**–370	371–450
4	200–294	295–329	**330**–372	373–450
5	200–299	300–338	**339**–373	374–450
6	200–306	307–339	**340**–381	382–450
7	200–294	295–338	**339**–378	379–450
8	200–295	296–329	**330**–366	367–450

MAP Growth Mathematics								
Grade	***Below***		***Approaching***		***On Track***		***Mastered***	
	RIT	**Percentile**	**RIT**	**Percentile**	**RIT**	**Percentile**	**RIT**	**Percentile**
Fall								
2	100–163	1–27	164–180	28–69	**181**–195	70–92	196–350	93–99
3	100–177	1–34	178–190	35–66	**191**–202	67–88	203–350	89–99
4	100–191	1–37	192–205	38–70	**206**–223	71–94	224–350	95–99
5	100–201	1–39	202–218	40–77	**219**–234	78–95	235–350	96–99
6	100–204	1–36	205–219	37–72	**220**–240	73–96	241–350	97–99
7	100–209	1–33	210–230	34–78	**231**–251	79–97	252–350	98–99
8	100–219	1–45	220–236	46–78	**237**–254	79–95	255–350	96–99
Winter								
2	100–172	1–29	173–189	30–70	**190**–203	71–92	204–350	93–99
3	100–185	1–33	186–199	34–66	**200**–212	67–88	213–350	89–99
4	100–198	1–36	199–213	37–70	**214**–231	71–94	232–350	95–99
5	100–207	1–40	208–224	41–77	**225**–241	78–95	242–350	96–99
6	100–210	1–38	211–225	39–71	**226**–247	72–96	248–350	97–99
7	100–213	1–34	214–235	35–78	**236**–256	79–97	257–350	98–99
8	100–223	1–45	224–241	46–79	**242**–259	80–95	260–350	96–99
Spring								
2	100–179	1–31	180–194	32–67	**195**–207	68–89	208–350	90–99
3	100–192	1–35	193–205	36–65	**206**–217	66–86	218–350	87–99
4	100–204	1–38	205–218	39–68	**219**–236	69–92	237–350	93–99
5	103–211	1–40	212–228	41–75	**229**–245	76–94	246–350	95–99
6	102–214	1–38	215–229	39–69	**230**–251	70–95	252–350	96–99
7	105–216	1–35	217–237	36–76	**238**–258	77–96	259–350	97–99
8	105–226	1–45	227–243	46–76	**244**–261	77–94	262–350	95–99

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.

3.4. Classification Accuracy

Table 3.7 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 TNReady tests, providing insight into the predictive validity of MAP Growth. The overall classification accuracy rates range from 0.82 to 0.85 for ELA/reading and 0.86 to 0.87 for mathematics. These values suggest that the RIT cut scores are good at classifying students as proficient or not proficient on the TNReady assessment.

Although the results show that MAP Growth scores can be used to accurately classify students as likely to be proficient on the TNReady tests, there is a notable limitation to how these results should be used and interpreted. TNReady 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 3.7. Classification Accuracy Results

Grade	N	Cut Score		Class. Accuracy	Rate		Sensitivity	Specificity	Precision	AUC
		MAP Growth	TNReady		FP	FN				
ELA/Reading										
3	14,072	206	359	0.83	0.15	0.22	0.78	0.85	0.74	0.90
4	13,936	212	343	0.83	0.14	0.22	0.78	0.86	0.76	0.91
5	11,372	219	333	0.82	0.16	0.22	0.78	0.84	0.68	0.90
6	9,459	221	342	0.85	0.14	0.18	0.82	0.86	0.76	0.92
7	9,364	225	341	0.83	0.16	0.19	0.81	0.84	0.74	0.90
8	9,429	229	346	0.82	0.18	0.19	0.81	0.82	0.67	0.89
Mathematics										
3	10,400	204	341	0.86	0.13	0.15	0.85	0.87	0.81	0.93
4	9,913	214	330	0.86	0.14	0.14	0.86	0.86	0.81	0.94
5	7,876	226	339	0.87	0.12	0.15	0.85	0.88	0.82	0.94
6	6,298	227	340	0.87	0.12	0.13	0.87	0.88	0.82	0.94
7	6,219	236	339	0.87	0.12	0.17	0.83	0.88	0.76	0.94
8	5,560	240	330	0.86	0.10	0.22	0.78	0.90	0.78	0.94

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

3.5. Proficiency Projections

Table 3.8 and Table 3.9 present the estimated probability of achieving *On Track* performance on the TNReady test 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 54% chance of reaching *On Track* proficiency or higher on the TNReady test. “Prob.” indicates the probability of obtaining proficient status on the TNReady test in the spring.

Table 3.8. 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	
				On Track	Prob.		*On Track*	Prob.		*On Track*	Prob.
2	5	196	142	No	<0.01	149	No	<0.01	153	No	<0.01
	10	196	148	No	<0.01	155	No	<0.01	159	No	<0.01
	15	196	152	No	<0.01	159	No	<0.01	164	No	<0.01
	20	196	156	No	<0.01	162	No	<0.01	167	No	<0.01
	25	196	159	No	<0.01	165	No	<0.01	170	No	<0.01
	30	196	161	No	0.01	168	No	<0.01	173	No	<0.01
	35	196	163	No	0.01	170	No	0.01	175	No	<0.01
	40	196	166	No	0.02	172	No	0.02	177	No	<0.01
	45	196	168	No	0.04	175	No	0.03	180	No	<0.01
	50	196	170	No	0.06	177	No	0.05	182	No	<0.01
	55	196	172	No	0.07	179	No	0.07	184	No	<0.01
	60	196	174	No	0.11	181	No	0.09	186	No	<0.01
	65	196	177	No	0.19	183	No	0.14	188	No	0.01
	70	196	179	No	0.22	186	No	0.24	191	No	0.08
	75	196	182	No	0.33	188	No	0.32	193	No	0.2
	80	196	184	No	0.41	191	No	0.41	196	Yes	0.5
	85	196	188	Yes	0.54	194	Yes	0.55	200	Yes	0.87
	90	196	192	Yes	0.71	199	Yes	0.73	204	Yes	0.99
	95	196	198	Yes	0.87	205	Yes	0.91	210	Yes	>0.99
3	5	206	155	No	<0.01	160	No	<0.01	164	No	<0.01
	10	206	161	No	<0.01	167	No	<0.01	171	No	<0.01
	15	206	166	No	<0.01	171	No	<0.01	175	No	<0.01
	20	206	169	No	<0.01	175	No	<0.01	179	No	<0.01
	25	206	172	No	<0.01	178	No	<0.01	182	No	<0.01
	30	206	175	No	0.01	180	No	0.01	184	No	<0.01
	35	206	178	No	0.02	183	No	0.02	187	No	<0.01
	40	206	180	No	0.04	185	No	0.02	189	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		*On Track*	Prob.		*On Track*	Prob.
	45	206	182	No	0.05	188	No	0.05	192	No	<0.01
	50	206	185	No	0.09	190	No	0.08	194	No	<0.01
	55	206	187	No	0.13	192	No	0.12	196	No	<0.01
	60	206	189	No	0.18	194	No	0.14	198	No	0.01
	65	206	192	No	0.25	197	No	0.24	201	No	0.08
	70	206	194	No	0.33	199	No	0.32	203	No	0.2
	75	206	197	No	0.41	202	No	0.45	206	Yes	0.5
	80	206	200	Yes	0.54	205	Yes	0.55	209	Yes	0.8
	85	206	204	Yes	0.67	209	Yes	0.73	213	Yes	0.98
	90	206	208	Yes	0.82	213	Yes	0.83	217	Yes	>0.99
	95	206	215	Yes	0.94	220	Yes	0.96	224	Yes	>0.99
	5	212	166	No	<0.01	170	No	<0.01	173	No	<0.01
	10	212	173	No	<0.01	177	No	<0.01	179	No	<0.01
	15	212	177	No	<0.01	181	No	<0.01	184	No	<0.01
	20	212	181	No	<0.01	184	No	<0.01	187	No	<0.01
	25	212	184	No	0.01	187	No	<0.01	190	No	<0.01
	30	212	186	No	0.01	190	No	0.01	193	No	<0.01
	35	212	189	No	0.03	193	No	0.02	195	No	<0.01
	40	212	191	No	0.05	195	No	0.04	198	No	<0.01
4	45	212	194	No	0.08	197	No	0.07	200	No	<0.01
	50	212	196	No	0.12	199	No	0.1	202	No	<0.01
	55	212	198	No	0.17	202	No	0.16	204	No	0.01
	60	212	200	No	0.24	204	No	0.23	207	No	0.08
	65	212	203	No	0.32	206	No	0.31	209	No	0.2
	70	212	205	No	0.41	209	No	0.45	211	No	0.39
	75	212	208	Yes	0.55	211	Yes	0.5	214	Yes	0.72
	80	212	211	Yes	0.64	214	Yes	0.65	217	Yes	0.92
	85	212	215	Yes	0.8	218	Yes	0.81	220	Yes	0.99

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		*On Track*	Prob.		*On Track*	Prob.
	90	212	219	Yes	0.88	222	Yes	0.92	225	Yes	>0.99
	95	212	226	Yes	0.97	229	Yes	0.99	231	Yes	>0.99
5	5	219	175	No	<0.01	178	No	<0.01	180	No	<0.01
	10	219	181	No	<0.01	184	No	<0.01	186	No	<0.01
	15	219	186	No	<0.01	189	No	<0.01	191	No	<0.01
	20	219	189	No	<0.01	192	No	<0.01	194	No	<0.01
	25	219	192	No	0.01	195	No	<0.01	197	No	<0.01
	30	219	195	No	0.01	197	No	0.01	199	No	<0.01
	35	219	197	No	0.03	200	No	0.02	202	No	<0.01
	40	219	199	No	0.03	202	No	0.04	204	No	<0.01
	45	219	201	No	0.06	204	No	0.05	206	No	<0.01
	50	219	204	No	0.11	206	No	0.08	208	No	<0.01
	55	219	206	No	0.14	209	No	0.15	211	No	0.01
	60	219	208	No	0.2	211	No	0.18	213	No	0.04
	65	219	210	No	0.27	213	No	0.26	215	No	0.13
	70	219	213	No	0.36	215	No	0.35	217	No	0.28
	75	219	215	No	0.45	218	Yes	0.5	220	Yes	0.61
	80	219	218	Yes	0.6	221	Yes	0.65	223	Yes	0.87
	85	219	222	Yes	0.73	224	Yes	0.78	226	Yes	0.98
	90	219	226	Yes	0.86	228	Yes	0.9	230	Yes	>0.99
	95	219	232	Yes	0.97	235	Yes	0.99	237	Yes	>0.99
6	5	221	181	No	<0.01	183	No	<0.01	185	No	<0.01
	10	221	187	No	<0.01	189	No	<0.01	191	No	<0.01
	15	221	191	No	<0.01	193	No	<0.01	195	No	<0.01
	20	221	195	No	0.01	197	No	<0.01	198	No	<0.01
	25	221	198	No	0.01	199	No	0.01	201	No	<0.01
	30	221	200	No	0.02	202	No	0.02	203	No	<0.01
	35	221	202	No	0.03	204	No	0.03	206	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		*On Track*	Prob.		*On Track*	Prob.
	40	221	205	No	0.07	206	No	0.05	208	No	<0.01
	45	221	207	No	0.09	209	No	0.1	210	No	<0.01
	50	221	209	No	0.14	211	No	0.13	212	No	0.01
	55	221	211	No	0.2	213	No	0.19	214	No	0.02
	60	221	213	No	0.27	215	No	0.26	216	No	0.08
	65	221	215	No	0.31	217	No	0.35	218	No	0.2
	70	221	218	No	0.45	219	No	0.45	221	Yes	0.5
	75	221	220	Yes	0.55	222	Yes	0.6	223	Yes	0.72
	80	221	223	Yes	0.69	225	Yes	0.74	226	Yes	0.92
	85	221	226	Yes	0.8	228	Yes	0.84	229	Yes	0.99
	90	221	231	Yes	0.93	232	Yes	0.94	233	Yes	>0.99
	95	221	237	Yes	0.99	238	Yes	0.99	239	Yes	>0.99
7	5	225	185	No	<0.01	186	No	<0.01	187	No	<0.01
	10	225	191	No	<0.01	192	No	<0.01	193	No	<0.01
	15	225	195	No	<0.01	196	No	<0.01	197	No	<0.01
	20	225	198	No	<0.01	200	No	<0.01	201	No	<0.01
	25	225	201	No	0.01	202	No	0.01	203	No	<0.01
	30	225	204	No	0.02	205	No	0.01	206	No	<0.01
	35	225	206	No	0.03	207	No	0.03	208	No	<0.01
	40	225	208	No	0.05	210	No	0.06	211	No	<0.01
	45	225	210	No	0.08	212	No	0.07	213	No	<0.01
	50	225	212	No	0.12	214	No	0.11	215	No	<0.01
	55	225	214	No	0.15	216	No	0.16	217	No	0.01
	60	225	217	No	0.24	218	No	0.23	219	No	0.04
	65	225	219	No	0.32	220	No	0.31	221	No	0.13
	70	225	221	No	0.41	223	No	0.45	224	No	0.39
	75	225	224	Yes	0.55	225	Yes	0.55	226	Yes	0.61
	80	225	226	Yes	0.64	228	Yes	0.69	229	Yes	0.87

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		*On Track*	Prob.		*On Track*	Prob.
	85	225	230	Yes	0.79	231	Yes	0.8	232	Yes	0.98
	90	225	234	Yes	0.9	235	Yes	0.91	237	Yes	>0.99
	95	225	240	Yes	0.98	241	Yes	0.98	243	Yes	>0.99
8	5	229	188	No	<0.01	189	No	<0.01	190	No	<0.01
	10	229	194	No	<0.01	195	No	<0.01	196	No	<0.01
	15	229	198	No	<0.01	199	No	<0.01	200	No	<0.01
	20	229	201	No	<0.01	203	No	<0.01	203	No	<0.01
	25	229	204	No	0.01	205	No	<0.01	206	No	<0.01
	30	229	207	No	0.02	208	No	0.01	209	No	<0.01
	35	229	209	No	0.03	210	No	0.02	211	No	<0.01
	40	229	211	No	0.04	213	No	0.04	213	No	<0.01
	45	229	214	No	0.07	215	No	0.06	216	No	<0.01
	50	229	216	No	0.11	217	No	0.1	218	No	<0.01
	55	229	218	No	0.15	219	No	0.14	220	No	0.01
	60	229	220	No	0.21	221	No	0.2	222	No	0.02
	65	229	222	No	0.29	223	No	0.28	224	No	0.08
	70	229	225	No	0.41	226	No	0.41	227	No	0.28
	75	229	227	Yes	0.5	228	Yes	0.5	229	Yes	0.5
	80	229	230	Yes	0.63	231	Yes	0.64	232	Yes	0.8
	85	229	233	Yes	0.75	235	Yes	0.8	236	Yes	0.98
	90	229	238	Yes	0.89	239	Yes	0.9	240	Yes	>0.99
	95	229	244	Yes	0.97	245	Yes	0.98	246	Yes	>0.99

Table 3.9. 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	
				On Track	Prob.		*On Track*	Prob.		*On Track*	Prob.
2	5	195	147	No	<0.01	155	No	<0.01	161	No	<0.01
	10	195	153	No	<0.01	161	No	<0.01	167	No	<0.01
	15	195	157	No	<0.01	165	No	<0.01	171	No	<0.01
	20	195	160	No	0.01	168	No	0.01	174	No	<0.01
	25	195	162	No	0.02	171	No	0.01	177	No	<0.01
	30	195	165	No	0.03	173	No	0.02	179	No	<0.01
	35	195	167	No	0.06	175	No	0.04	181	No	<0.01
	40	195	169	No	0.09	177	No	0.07	183	No	<0.01
	45	195	171	No	0.14	179	No	0.09	185	No	<0.01
	50	195	173	No	0.2	181	No	0.14	187	No	0.01
	55	195	175	No	0.23	183	No	0.21	189	No	0.04
	60	195	177	No	0.31	185	No	0.3	192	No	0.2
	65	195	179	No	0.4	187	No	0.4	194	No	0.39
	70	195	181	Yes	0.5	189	No	0.45	196	Yes	0.61
	75	195	183	Yes	0.6	192	Yes	0.6	198	Yes	0.8
	80	195	186	Yes	0.69	194	Yes	0.7	201	Yes	0.96
	85	195	189	Yes	0.8	197	Yes	0.82	204	Yes	0.99
	90	195	193	Yes	0.89	201	Yes	0.91	208	Yes	>0.99
	95	195	198	Yes	0.97	207	Yes	0.98	214	Yes	>0.99
3	5	206	158	No	<0.01	166	No	<0.01	171	No	<0.01
	10	206	164	No	<0.01	172	No	<0.01	177	No	<0.01
	15	206	168	No	<0.01	176	No	<0.01	181	No	<0.01
	20	206	171	No	0.01	179	No	<0.01	185	No	<0.01
	25	206	174	No	0.01	182	No	0.01	188	No	<0.01
	30	206	176	No	0.03	184	No	0.02	190	No	<0.01
	35	206	178	No	0.05	186	No	0.04	193	No	<0.01
	40	206	180	No	0.08	189	No	0.08	195	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		*On Track*	Prob.		*On Track*	Prob.
	45	206	182	No	0.13	191	No	0.13	197	No	0.01
	50	206	184	No	0.19	193	No	0.17	199	No	0.02
	55	206	186	No	0.26	195	No	0.24	201	No	0.08
	60	206	188	No	0.35	197	No	0.34	203	No	0.2
	65	206	190	No	0.45	199	No	0.45	206	Yes	0.5
	70	206	192	Yes	0.55	201	Yes	0.55	208	Yes	0.72
	75	206	195	Yes	0.7	204	Yes	0.71	211	Yes	0.92
	80	206	197	Yes	0.78	206	Yes	0.8	213	Yes	0.98
	85	206	200	Yes	0.87	210	Yes	0.89	217	Yes	>0.99
	90	206	204	Yes	0.95	214	Yes	0.96	221	Yes	>0.99
	95	206	210	Yes	0.99	220	Yes	>0.99	227	Yes	>0.99
4	5	219	171	No	<0.01	176	No	<0.01	180	No	<0.01
	10	219	177	No	<0.01	183	No	<0.01	187	No	<0.01
	15	219	181	No	<0.01	187	No	<0.01	191	No	<0.01
	20	219	184	No	<0.01	190	No	<0.01	195	No	<0.01
	25	219	186	No	0.01	193	No	<0.01	198	No	<0.01
	30	219	189	No	0.02	196	No	0.01	201	No	<0.01
	35	219	191	No	0.03	198	No	0.02	203	No	<0.01
	40	219	193	No	0.05	200	No	0.03	206	No	<0.01
	45	219	195	No	0.09	202	No	0.06	208	No	<0.01
	50	219	197	No	0.13	204	No	0.1	210	No	0.01
	55	219	199	No	0.19	207	No	0.2	212	No	0.02
	60	219	201	No	0.27	209	No	0.24	215	No	0.13
	65	219	203	No	0.35	211	No	0.33	217	No	0.28
	70	219	205	No	0.45	213	No	0.44	220	Yes	0.61
	75	219	208	Yes	0.6	216	Yes	0.61	222	Yes	0.8
	80	219	210	Yes	0.69	219	Yes	0.76	225	Yes	0.96
	85	219	214	Yes	0.84	222	Yes	0.87	229	Yes	>0.99

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		*On Track*	Prob.		*On Track*	Prob.
	90	219	217	Yes	0.91	226	Yes	0.96	233	Yes	>0.99
	95	219	223	Yes	0.98	232	Yes	0.99	240	Yes	>0.99
5	5	229	180	No	<0.01	183	No	<0.01	186	No	<0.01
	10	229	185	No	<0.01	189	No	<0.01	192	No	<0.01
	15	229	189	No	<0.01	194	No	<0.01	197	No	<0.01
	20	229	193	No	<0.01	197	No	<0.01	200	No	<0.01
	25	229	195	No	<0.01	200	No	<0.01	204	No	<0.01
	30	229	198	No	<0.01	203	No	<0.01	206	No	<0.01
	35	229	200	No	0.01	205	No	<0.01	209	No	<0.01
	40	229	202	No	0.01	207	No	0.01	211	No	<0.01
	45	229	204	No	0.03	210	No	0.02	214	No	<0.01
	50	229	206	No	0.05	212	No	0.03	216	No	<0.01
	55	229	208	No	0.08	214	No	0.06	218	No	<0.01
	60	229	210	No	0.12	216	No	0.1	221	No	0.01
	65	229	212	No	0.19	219	No	0.2	223	No	0.04
	70	229	215	No	0.3	221	No	0.28	226	No	0.2
	75	229	217	No	0.4	224	No	0.44	228	No	0.39
	80	229	220	Yes	0.55	226	Yes	0.56	232	Yes	0.8
	85	229	223	Yes	0.7	230	Yes	0.76	235	Yes	0.96
	90	229	227	Yes	0.85	234	Yes	0.9	240	Yes	>0.99
	95	229	233	Yes	0.97	240	Yes	0.98	246	Yes	>0.99
6	5	230	184	No	<0.01	187	No	<0.01	190	No	<0.01
	10	230	190	No	<0.01	194	No	<0.01	197	No	<0.01
	15	230	194	No	<0.01	198	No	<0.01	201	No	<0.01
	20	230	197	No	<0.01	201	No	<0.01	205	No	<0.01
	25	230	199	No	<0.01	204	No	<0.01	208	No	<0.01
	30	230	202	No	0.01	207	No	0.01	211	No	<0.01
	35	230	204	No	0.02	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	
				On Track	Prob.		*On Track*	Prob.		*On Track*	Prob.
	40	230	206	No	0.04	212	No	0.03	216	No	<0.01
	45	230	208	No	0.07	214	No	0.05	218	No	<0.01
	50	230	210	No	0.11	216	No	0.09	220	No	<0.01
	55	230	212	No	0.16	218	No	0.14	223	No	0.02
	60	230	214	No	0.23	220	No	0.21	225	No	0.08
	65	230	216	No	0.31	223	No	0.34	227	No	0.2
	70	230	219	No	0.45	225	No	0.45	230	Yes	0.5
	75	230	221	Yes	0.6	228	Yes	0.61	233	Yes	0.8
	80	230	224	Yes	0.73	231	Yes	0.75	236	Yes	0.96
	85	230	227	Yes	0.84	234	Yes	0.86	239	Yes	0.99
	90	230	231	Yes	0.93	238	Yes	0.95	244	Yes	>0.99
	95	230	237	Yes	0.99	245	Yes	>0.99	251	Yes	>0.99
7	5	238	189	No	<0.01	191	No	<0.01	192	No	<0.01
	10	238	195	No	<0.01	197	No	<0.01	199	No	<0.01
	15	238	199	No	<0.01	202	No	<0.01	204	No	<0.01
	20	238	203	No	<0.01	206	No	<0.01	208	No	<0.01
	25	238	206	No	<0.01	209	No	<0.01	211	No	<0.01
	30	238	208	No	<0.01	211	No	<0.01	214	No	<0.01
	35	238	211	No	0.01	214	No	<0.01	216	No	<0.01
	40	238	213	No	0.01	216	No	0.01	219	No	<0.01
	45	238	215	No	0.03	219	No	0.02	221	No	<0.01
	50	238	217	No	0.04	221	No	0.03	224	No	<0.01
	55	238	219	No	0.07	223	No	0.06	226	No	<0.01
	60	238	222	No	0.14	226	No	0.12	229	No	0.01
	65	238	224	No	0.2	228	No	0.18	231	No	0.02
	70	238	226	No	0.27	231	No	0.26	234	No	0.13
	75	238	229	No	0.4	233	No	0.35	237	No	0.39
	80	238	232	Yes	0.55	236	Yes	0.5	240	Yes	0.72

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		*On Track*	Prob.		*On Track*	Prob.
	85	238	235	Yes	0.69	240	Yes	0.7	244	Yes	0.96
	90	238	239	Yes	0.83	245	Yes	0.88	249	Yes	>0.99
	95	238	246	Yes	0.97	251	Yes	0.98	256	Yes	>0.99
8	5	244	192	No	<0.01	194	No	<0.01	196	No	<0.01
	10	244	199	No	<0.01	201	No	<0.01	203	No	<0.01
	15	244	203	No	<0.01	206	No	<0.01	208	No	<0.01
	20	244	207	No	<0.01	210	No	<0.01	212	No	<0.01
	25	244	210	No	<0.01	213	No	<0.01	215	No	<0.01
	30	244	212	No	<0.01	216	No	<0.01	218	No	<0.01
	35	244	215	No	0.01	219	No	<0.01	221	No	<0.01
	40	244	217	No	0.01	221	No	0.01	224	No	<0.01
	45	244	220	No	0.03	224	No	0.02	226	No	<0.01
	50	244	222	No	0.04	226	No	0.03	229	No	<0.01
	55	244	224	No	0.07	228	No	0.05	231	No	<0.01
	60	244	227	No	0.13	231	No	0.1	234	No	<0.01
	65	244	229	No	0.18	233	No	0.16	237	No	0.02
	70	244	232	No	0.28	236	No	0.26	239	No	0.08
	75	244	234	No	0.37	239	No	0.35	242	No	0.28
	80	244	237	Yes	0.5	242	Yes	0.5	246	Yes	0.72
	85	244	241	Yes	0.68	246	Yes	0.69	250	Yes	0.96
	90	244	246	Yes	0.85	251	Yes	0.87	255	Yes	>0.99
	95	244	252	Yes	0.96	258	Yes	0.98	262	Yes	>0.99

References

Kolen, M. J., & Brennan, R. L. (2004). *Test equating, scaling, and linking: Methods and practices* (2nd ed.). Springer. https://doi.org/10.1007/978-1-4939-0317-7

Lewis, K., & Kuhfeld, M. (2024). *MAP Growth with enhanced item-selection algorithm: Updates on score comparability*. NWEA Research Report. NWEA. https://www.nwea.org/uploads/Research-MAP-Growth-with-enhanced-item-selection-algorithm-updates-on-score-compatibility_NWEA_Research_Guide.pdf

Lumley, T. (2019). *Survey: Analysis of complex survey samples*. (R package version 3.36) [Computer software]. Available from https://CRAN.R-project.org/package=survey.

Meyer, J. P., Hu, A. H., & Li, S. (2023). *Content Proximity Spring 2022 Pilot Study Research Brief.* NWEA Research Report. NWEA. https://www.nwea.org/uploads/Content-Proximity-Project-and-Pilot-Study-Spring-2022-Research-Report.pdf

NWEA. (2025). *MAP Growth achievement status and growth norms for students and schools*. [Tech Rep.]. NWEA.

Pommerich, M., Hanson, B., Harris, D., & Sconing, J. (2004). Issues in conducting linkage between distinct tests. *Applied Psychological Measurement*, *28*(4), 247–273. https://doi.org/10.1177/0146621604265033

Tennessee Department of Education (TDOE). (2017). *TNReady ACH operational 2016–2017 technical bulletin*. Questar Assessment.