

Linking Study Report: Predicting Performance on the State of Texas Assessments of Academic Readiness (STAAR) in Grades 3–8 based on NWEA MAP Growth Scores

July 2020

NWEA Psychometric Solutions



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Executive Summary

To predict student achievement on the State of Texas Assessments of Academic Readiness (STAAR) in Grades 3–8 Reading and Mathematics and Grades 5 and 8 Science, 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 STAAR 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 published in December 2017 to incorporate the new 2020 NWEA MAP Growth norms (Thum & Kuhfeld, 2020).

Table E.1 presents the STAAR *Meets Grade Level* performance 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 *Meets Grade Level* cut score on the STAAR Grade 3 Reading test is 1468. A Grade 3 student with a MAP Growth Reading RIT score of 193 in the fall is likely to meet proficiency on the STAAR Reading 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 educators can track early learners' progress toward proficiency on the STAAR test by Grade 3. These cut scores were derived based on the Grade 3 cuts and the 2020 NWEA growth norms for the adjacent grade (i.e., Grades 2 to 3).

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

Assessment		<i>Meets Grade Level</i> Cut Scores by Grade						
		2	3	4	5	6	7	8
Reading								
STAAR Spring		–	1468	1550	1582	1629	1674	1700
MAP Growth	Fall	181	193	205	211	217	218	219
	Winter	189	200	210	215	220	221	222
	Spring	193	203	212	217	221	222	223
Mathematics								
STAAR Spring		–	1486	1589	1625	1653	1688	1700
MAP Growth	Fall	183	196	209	215	221	227	230
	Winter	192	203	216	221	226	231	233
	Spring	197	208	220	225	229	234	235
Science								
STAAR Spring		–	–	–	4000	–	–	4000
MAP Growth	Fall	–	–	–	212	–	–	216
	Winter	–	–	–	215	–	–	218
	Spring	–	–	–	216	–	–	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 commonly 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 STAAR Grades 3–8 Reading and Mathematics and Grades 5 and 8 Science tests are Texas’ state summative assessments aligned to the Texas Essential Knowledge and Skills (TEKS) curriculum. Based on their test scores, students are placed into one of four performance levels: *Did Not Meet Grade Level*, *Approaches Grade Level*, *Meets Grade Level*, and *Masters Grade Level*. These tests are used to provide evidence of student achievement in Reading, Mathematics, and Science for various test score uses such as meeting the federal and state accountability requirements. The *Meets Grade Level* 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 STAAR performance level cut scores. Spring cuts for Grade 2 were derived based on the cuts for Grade 3 and the 2020 NWEA growth norms. MAP Growth fall and winter cut scores that predict proficiency on the spring STAAR test were then projected using the 2020 NWEA growth norms that provide expected score gains across test administrations.

E.3. Student Sample

Only students who took both the MAP Growth and STAAR assessments in Spring 2017 were included in the study sample. Table E.2 presents the weighted number of Texas students from eight districts and 351 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.

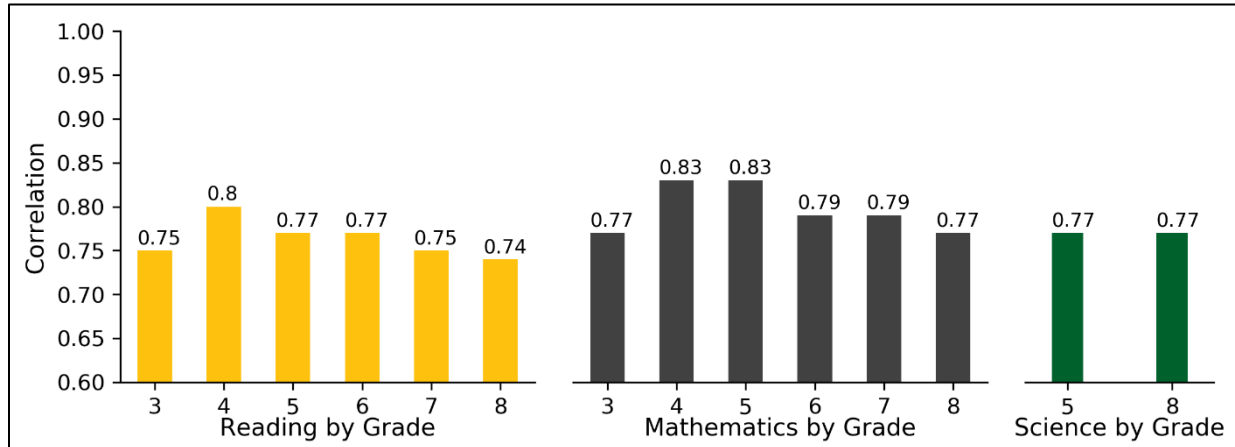
Table E.2. Linking Study Sample

Grade	#Students		
	Reading	Mathematics	Science
3	21,039	21,348	–
4	21,968	22,199	–
5	21,041	21,303	13,445
6	19,439	20,277	–
7	17,162	17,460	–
8	11,291	9,720	4,222

E.4. Test Score Relationships

Correlations between MAP Growth RIT scores and STAAR scores range from 0.74 to 0.83 across all 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 STAAR assessments.

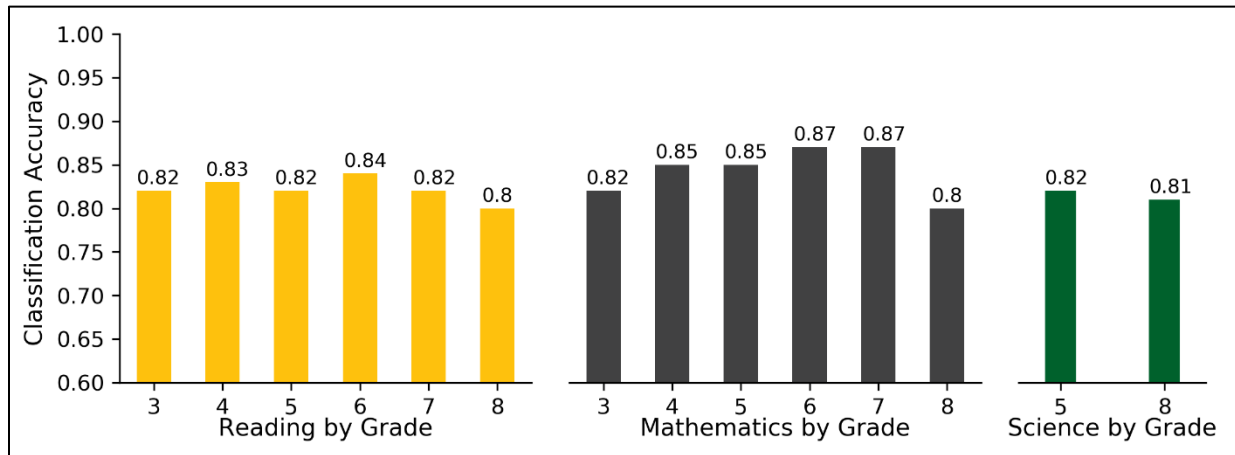
Figure E.1. Correlations between MAP Growth and STAAR



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 STAAR tests. For example, the MAP Growth Reading Grade 3 *Meets Grade Level* cut score has a 0.82 accuracy rate, meaning it accurately classified student achievement on the state test for 82% of the sample. The results range from 0.80 to 0.87 across all content areas, indicating that RIT scores have a high accuracy rate of identifying student proficiency on the STAAR tests.

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 document presents results from a linking study conducted by NWEA in July 2020 to statistically connect the scores of the State of Texas Assessments of Academic Readiness (STAAR) assessments in Grades 3–8 Reading and Mathematics and Grades 5 and 8 Science 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 published in December 2017 to incorporate the new 2020 NWEA MAP Growth norms (Thum & Kuhfeld, 2020). In this updated study, MAP Growth cut scores are also included for Grade 2 so educators can track early learners' progress toward proficiency on the STAAR 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 STAAR performance levels using the equipercentile linking procedure for the spring results and the 2020 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 STAAR tests
5. The probability of achieving grade-level proficiency on the STAAR assessment based on MAP Growth RIT scores from fall, winter, and spring using the 2020 norms

1.2. Assessment Overview

The STAAR Grades 3–8 Reading and Mathematics and Grades 5 and 8 Science summative assessments are aligned to the Texas Essential Knowledge and Skills (TEKS) curriculum. 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: *Did Not Meet Grade Level*, *Approaches Grade Level*, *Meets Grade Level*, and *Masters Grade Level*. The *Meets Grade Level* 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 to 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 2020 (Thum & Kuhfeld, 2020).

2. Methods

2.1. Data Collection

This linking study is based on data from the Spring 2017 administrations of the MAP Growth and STAAR assessments. NWEA recruited Texas districts to participate in the study by sharing their student and score data for the target term. Districts also gave NWEA permission to access students' associated MAP Growth scores from the NWEA in-house database. Once Texas state score information was received by 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 STAAR 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 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 on 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:

- Calculate marginal distributions of race, sex, and performance level for the sample and population.
- Calculate post-stratification weights with the rake function from the survey package in R (Lumley, 2019).
- Trim the weight if it is not in the range of 0.3 to 3.0.
- Apply the weights to the sample before conducting the linking study analyses.

2.3. MAP Growth Cut Scores

The equipercntile linking method (Kolen & Brennan, 2004) was used to identify the spring MAP Growth RIT scores that correspond to the spring STAAR performance level cut scores. Spring cuts for Grade 2 were derived based on the cuts for Grade 3 and the 2020 NWEA growth norms. RIT fall and winter cut scores that predict proficiency on the spring STAAR test were then projected using the 2020 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 to 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 equipercntile linking method because that data are directly connected to the STAAR spring data used in the study. The equipercntile 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., STAAR). Its equipercntile equivalent score on Test Y (e.g., MAP Growth), $e_y(x)$, can be obtained through a cumulative-distribution-based linking function defined in Equation 1:

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

where $e_y(x)$ is the equipercentile equivalent of score x on STAAR on the scale of MAP Growth, $P(x)$ is the percentile rank of a given score on STAAR, 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. Equation 2 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:

$$RIT_{PredSpring} = RIT_{previous} + g \quad (2)$$

where:

- $RIT_{PredSpring}$ is the predicted MAP Growth spring score.
- $RIT_{previous}$ is the previous term's or grade's RIT score.
- 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 STAAR tests can be described using classification accuracy statistics based on the MAP Growth RIT spring cut scores that show the proportion of students correctly classified by their RIT scores as proficient (*Meets* or *Masters*) or not proficient (*Did Not Meet* or *Approaches*). Table 2.1 describes the classification accuracy statistics provided in this report (Pommerich, Hanson, Harris, & Scoring, 2004). The results are based on the Spring 2017 MAP Growth and STAAR data for the *Meets Grade Level* cut score.

Since Texas students do not begin taking the Texas assessment until Grade 3, longitudinal data were collected for the Grade 3 cohort in order to link the STAAR assessment to MAP Growth for Grade 2 to calculate the classification accuracy statistics. To accomplish this, 2016–2017 STAAR Grade 3 results were linked to MAP Growth data from Grade 3 students in 2016–2017 and Grade 2 students in 2015–2016. In this way, the data came from the same cohort of students beginning when they were in Grade 2 and continuing through Grade 3.

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 not-proficient students identified by MAP Growth in those observed as proficient on the state test
False Positive (FP) Rate	$FP / (FP + TN)$	Proportion of proficient students identified by MAP Growth in those observed as not proficient on the state test
Sensitivity	$TP / (TP + FN)$	Proportion of proficient students identified by MAP Growth in those observed as such on the state test
Specificity	$TN / (TN + FP)$	Proportion of not-proficient students identified by MAP Growth in those observed as such on the state test
Precision	$TP / (TP + FP)$	Proportion of observed proficient students 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.

*FP = false positives. FN = false negatives. TP = true positives. TN = true negatives.

2.5. Proficiency Projection

In addition to calculating the MAP Growth fall and winter cut scores, the MAP Growth conditional growth norms data were also used to calculate the probability of reaching proficiency on the STAAR test based on a student’s RIT scores from fall, winter, and spring. Equation 3 was used to calculate the probability of a student achieving *Meets Grade Level* proficiency on the STAAR test based on their fall or winter RIT score:

$$Pr(\text{Achieving Meets in spring} | \text{starting RIT}) = \Phi \left(\frac{RIT_{previous} + g - RIT_{SpringCut}}{SD} \right) \quad (3)$$

where:

- Φ is a standardized normal cumulative distribution.
- $RIT_{previous}$ is the student’s RIT score in fall or winter (or in spring of Grade 2).
- g is the expected growth from the previous RIT (e.g., fall or winter) to the spring RIT.
- $RIT_{SpringCut}$ is the MAP Growth *Meets Grade Level* cut score for spring. For Grade 2, this is the Grade 3 cut score for spring.
- SD is the conditional standard deviation of the expected growth, g .

Equation 4 was used to estimate the probability of a student achieving *Meets Grade Level* proficiency on the STAAR test based on their spring RIT score (RIT_{Spring}):

$$Pr(\text{Achieving Meets in spring} | \text{spring RIT}) = \Phi \left(\frac{RIT_{Spring} - RIT_{SpringCut}}{SE} \right) \quad (4)$$

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 STAAR Grades 3–8 assessments in Spring 2017 were included in the study sample. Data used in this study were collected from eight districts and 351 schools in Texas. 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 that took the Spring 2017 STAAR tests (TEA, 2017). Since the unweighted data are different from the general STAAR 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 STAAR student population distributions. The analyses in this study were therefore conducted based on the weighted sample.

Table 3.1. Linking Study Sample Demographics (Unweighted)

Linking Study Sample (Unweighted)							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
Reading							
Total N		21,039	21,946	21,062	19,439	17,145	11,291
Race	Asian	8.6	8.2	8.2	8.3	8.7	4.8
	Black	13.5	13.5	13.1	13.2	13.7	13.9
	Hispanic	34.9	35.3	35.8	36.1	34.9	45.8
	Multi-Race	2.8	2.5	2.4	2.2	2.1	1.4
	Other	5.1	4.9	5.2	5.6	6.4	4.6
	White	35.1	35.5	35.4	34.5	34.2	29.5
Sex	Female	48.5	48.7	49.8	48.6	47.9	47.0
	Male	51.5	51.3	50.2	51.4	52.1	53.0
Performance Level	<i>Did Not Meet</i>	29.3	31.7	27.3	35.9	32.9	34.9
	<i>Approaches</i>	26.1	25.3	26.1	29.2	32.0	32.8
	<i>Meets</i>	15.0	18.8	20.1	17.2	15.7	19.5
	<i>Masters</i>	29.6	24.1	26.5	17.7	19.5	12.9
Mathematics							
Total N		21,348	22,177	21,282	20,277	17,460	9,720
Race	Asian	8.5	8.2	8.1	7.9	7.2	2.7
	Black	13.4	13.4	13.0	13.4	14.0	14.5
	Hispanic	35.5	35.7	36.0	35.8	34.8	44.0
	Multi-Race	2.8	2.5	2.4	2.2	2.0	1.2
	Other	5.1	4.9	5.2	5.6	6.4	5.1
	White	34.7	35.3	35.4	35.2	35.6	32.3
Sex	Female	48.5	48.6	49.8	48.5	48.0	46.0
	Male	51.5	51.4	50.2	51.5	52.0	54.0
Performance Level	<i>Did Not Meet</i>	23.7	27.0	17.9	26.9	34.1	34.1
	<i>Approaches</i>	27.7	27.8	32.6	33.0	28.7	36.8
	<i>Meets</i>	20.9	18.0	23.5	22.0	21.4	23.6
	<i>Masters</i>	27.7	27.1	26.1	18.1	15.8	5.6

Linking Study Sample (Unweighted)							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
Science							
Total N		–	–	13,445	–	–	4,218
Race	Asian	–	–	9.7	–	–	8.1
	Black	–	–	12.3	–	–	12.5
	Hispanic	–	–	22.5	–	–	15.7
	Multi-Race	–	–	2.6	–	–	1.9
	Other	–	–	7.6	–	–	10.4
	White	–	–	45.4	–	–	51.4
Sex	Female	–	–	49.8	–	–	48.2
	Male	–	–	50.2	–	–	51.8
Performance Level	<i>Did Not Meet</i>	–	–	26.9	–	–	39.7
	<i>Approaches</i>	–	–	31.4	–	–	29.6
	<i>Meets</i>	–	–	22.9	–	–	18.6
	<i>Masters</i>	–	–	18.8	–	–	12.1

Table 3.2. Spring 2017 STAAR 3–8 Student Population Demographics

Spring 2017 STAAR 3–8 Population							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
Reading							
Total N		370,790	380,063	379,532	391,613	389,226	380,566
Race	Asian	4.8	4.5	4.4	4.3	4.3	4.3
	Black	13.5	13.3	12.9	12.4	12.4	12.4
	Hispanic	48.8	50.0	51.1	52.6	52.3	51.8
	Multi-Race	2.7	2.5	2.3	2.2	2.1	2.0
	Other	0.5	0.5	0.5	0.5	0.5	0.6
	White	29.8	29.2	28.7	28.0	28.3	28.9
Sex	Female	48.9	48.8	49.0	48.8	49.0	48.8
	Male	51.1	51.2	51.0	51.2	51.0	51.2
Performance Level	<i>Did Not Meet</i>	27.7	30.4	29.2	33.0	28.2	24.4
	<i>Approaches</i>	27.5	26.4	25.7	31.3	31.4	28.1
	<i>Meets</i>	15.8	19.2	20.1	18.3	18.3	25.0
	<i>Masters</i>	29.0	24.1	24.9	17.4	22.2	22.5
Mathematics							
Total N		389,765	395,332	387,610	384,610	355,878	324,154
Race	Asian	4.5	4.3	4.3	4.0	3.8	3.4
	Black	12.8	12.8	12.7	12.5	12.8	13.3
	Hispanic	51.2	51.9	52.2	52.9	53.5	53.3
	Multi-Race	2.5	2.4	2.3	2.2	2.1	2.0
	Other	0.5	0.5	0.5	0.5	0.5	0.6
	White	28.4	28.1	28.0	27.9	27.3	27.5

Spring 2017 STAAR 3–8 Population							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
Sex	Female	48.9	48.9	49.1	48.9	48.8	48.3
	Male	51.1	51.1	50.9	51.1	51.2	51.7
Performance Level	<i>Did Not Meet</i>	23.5	25.5	19.1	25.1	32.1	25.7
	<i>Approaches</i>	28.9	28.8	32.7	34.1	29.6	31.7
	<i>Meets</i>	22.2	19.2	24.3	23.4	22.5	30.3
	<i>Masters</i>	25.4	26.6	24.0	17.4	15.8	12.3
Science							
Total N		–	–	385,853	–	–	382,710
Race	Asian	–	–	4.3	–	–	4.3
	Black	–	–	12.8	–	–	12.4
	Hispanic	–	–	51.9	–	–	51.9
	Multi-Race	–	–	2.3	–	–	2.0
	Other	–	–	0.5	–	–	0.5
	White	–	–	28.2	–	–	28.8
Sex	Female	–	–	49.0	–	–	48.9
	Male	–	–	51.0	–	–	51.1
Performance Level	<i>Did Not Meet</i>	–	–	27.2	–	–	25.9
	<i>Approaches</i>	–	–	32.3	–	–	27.9
	<i>Meets</i>	–	–	23.1	–	–	28.2
	<i>Masters</i>	–	–	17.4	–	–	18.1

Table 3.3. Linking Study Sample Demographics (Weighted)

Linking Study Sample (Weighted)							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
Reading							
Total N		21,039	21,968	21,041	19,439	17,162	11,291
Race	Asian	4.8	4.5	4.4	4.3	4.3	4.3
	Black	13.5	13.3	12.9	12.4	12.4	12.4
	Hispanic	48.8	50.0	51.2	52.6	52.4	51.8
	Multi-Race	2.7	2.5	2.3	2.2	2.1	2.0
	Other	0.5	0.5	0.5	0.5	0.5	0.6
	White	29.8	29.2	28.7	28.0	28.3	28.9
Sex	Female	48.9	48.8	49.0	48.8	49.0	48.8
	Male	51.1	51.2	51.0	51.2	51.0	51.2
Performance Level	<i>Did Not Meet</i>	27.7	30.4	29.2	33.0	28.2	24.4
	<i>Approaches</i>	27.5	26.4	25.7	31.3	31.4	28.1
	<i>Meets</i>	15.8	19.2	20.1	18.3	18.3	25.0
	<i>Masters</i>	29.0	24.1	24.9	17.4	22.2	22.5

Linking Study Sample (Weighted)							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
Mathematics							
Total N		21,348	22,199	21,303	20,277	17,460	9,720
Race	Asian	4.5	4.3	4.3	4.0	3.8	3.4
	Black	12.8	12.8	12.7	12.5	12.8	13.3
	Hispanic	51.3	51.9	52.2	52.9	53.5	53.2
	Multi-Race	2.5	2.4	2.3	2.2	2.1	2.0
	Other	0.5	0.5	0.5	0.5	0.5	0.6
	White	28.4	28.1	28.0	27.9	27.3	27.5
Sex	Female	48.9	48.9	49.1	48.9	48.8	48.3
	Male	51.1	51.1	50.9	51.1	51.2	51.7
Performance Level	<i>Did Not Meet</i>	23.5	25.5	19.1	25.1	32.1	25.7
	<i>Approaches</i>	28.9	28.8	32.7	34.1	29.6	31.7
	<i>Meets</i>	22.2	19.2	24.3	23.4	22.5	30.3
	<i>Masters</i>	25.4	26.6	24.0	17.4	15.8	12.3
Science							
Total N		–	–	13,445	–	–	4,222
Race	Asian	–	–	4.3	–	–	4.3
	Black	–	–	12.8	–	–	12.4
	Hispanic	–	–	51.9	–	–	52.0
	Multi-Race	–	–	2.3	–	–	2.0
	Other	–	–	0.5	–	–	0.5
	White	–	–	28.2	–	–	28.8
Sex	Female	–	–	49.0	–	–	48.9
	Male	–	–	51.0	–	–	51.1
Performance Level	<i>Did Not Meet</i>	–	–	27.2	–	–	25.9
	<i>Approaches</i>	–	–	32.3	–	–	27.9
	<i>Meets</i>	–	–	23.1	–	–	28.2
	<i>Masters</i>	–	–	17.4	–	–	18.1

3.2. Descriptive Statistics

Table 3.4 presents descriptive statistics of the MAP Growth and STAAR test scores from Spring 2017, including the correlation coefficient (r) between them. The correlation coefficients between the scores range from 0.74 to 0.80 for Reading, 0.77 to 0.83 for Mathematics, and 0.77 for 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 STAAR Grades 3–8 assessments.

Table 3.4. Descriptive Statistics of Test Scores

Grade	N	r	STAAR*				MAP Growth*			
			Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
Reading										
3	21,039	0.75	1440.1	161.5	765	1893	198.9	15.9	138	249
4	21,968	0.80	1513.9	152.4	842	1971	206.0	16.2	129	256
5	21,041	0.77	1552.8	146.6	870	1996	211.1	16.2	141	259
6	19,439	0.77	1575.1	139.8	905	2054	212.1	18.3	142	261
7	17,162	0.75	1638.3	136.6	969	2116	214.6	19.3	138	264
8	11,291	0.74	1672.7	132.2	968	2147	216.7	18.7	139	270
Mathematics										
3	21,348	0.77	1472.9	157.2	826	1889	205.4	13.7	135	280
4	22,199	0.83	1569.1	153.8	944	1997	215.8	15.6	140	305
5	21,303	0.83	1626.8	151.3	963	2062	222.5	16.8	144	298
6	20,277	0.79	1629.9	144.2	1068	2137	222.6	18.2	143	304
7	17,460	0.79	1652.8	137.0	1078	2169	225.1	20.1	136	309
8	9,720	0.77	1677.1	136.0	1039	2172	225.0	19.6	136	284
Science										
5	13,445	0.77	3842.4	509.9	1174	5566	211.0	12.7	157	255
8	4,222	0.77	3872.3	571.0	2209	6202	213.9	15.0	153	268

*SD = standard deviation. Min. = minimum. Max. = maximum.

3.3. MAP Growth Cut Scores

Table 3.5, Table 3.6, and Table 3.7 present the STAAR 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 STAAR Grades 3–8 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 193 in the fall is likely to reach *Meets Grade Level* proficiency on the STAAR Reading test. A Grade 3 student who obtained a MAP Growth Reading RIT score of 203 in the spring is also likely to reach *Meets Grade Level* proficiency on the STAAR. The spring cut score is higher than the fall cut score because growth is expected between fall and spring 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 commonly 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’ 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—Reading

STAAR Reading								
Grade	Did Not Meet		Approaches		Meets		Masters	
3	765–1344		1345–1467		1468 –1554		1555–1893	
4	842–1433		1434–1549		1550 –1632		1633–1971	
5	870–1469		1470–1581		1582 –1666		1667–1998	
6	905–1516		1517–1628		1629 –1717		1718–2054	
7	969–1566		1567–1673		1674 –1752		1753–2116	
8	968–1586		1587–1699		1700 –1782		1783–2153	
MAP Growth Reading*								
Grade	Did Not Meet		Approaches		Meets		Masters	
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall								
2	100–163	1–28	164–180	29–71	181 –190	72–88	191–350	89–99
3	100–178	1–31	179–192	32–64	193 –202	65–83	203–350	84–99
4	100–190	1–36	191–204	37–68	205 –212	69–82	213–350	83–99
5	100–197	1–34	198–210	35–64	211 –218	65–80	219–350	81–99
6	100–201	1–30	202–216	31–65	217 –225	66–82	226–350	83–99
7	100–203	1–26	204–217	27–58	218 –227	59–79	228–350	80–99
8	100–203	1–20	204–218	21–51	219 –229	52–75	230–350	76–99
Winter								
2	100–172	1–28	173–188	29–69	189 –197	70–86	198–350	87–99
3	100–186	1–32	187–199	33–64	200 –207	65–80	208–350	81–99
4	100–196	1–36	197–209	37–67	210 –216	68–80	217–350	81–99
5	100–202	1–34	203–214	35–63	215 –222	64–80	223–350	81–99
6	100–205	1–30	206–219	31–64	220 –227	65–80	228–350	81–99
7	100–206	1–26	207–220	27–59	221 –229	60–78	230–350	79–99
8	100–206	1–20	207–221	21–53	222 –230	54–73	231–350	74–99
Spring								
2	100–177	1–30	178–192	31–67	193 –201	68–85	202–350	86–99
3	100–190	1–34	191–202	35–63	203 –210	64–79	211–350	80–99
4	100–199	1–37	200–211	38–66	212 –218	67–80	219–350	81–99
5	100–204	1–34	205–216	35–64	217 –223	65–78	224–350	79–99
6	100–207	1–31	208–220	32–63	221 –228	64–79	229–350	80–99
7	100–208	1–27	209–221	28–58	222 –230	59–77	231–350	78–99
8	100–208	1–22	209–222	23–52	223 –231	53–72	232–350	73–99

*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. Bolded numbers indicate the cut scores considered to be at least proficient for accountability purposes.

Table 3.6. MAP Growth Cut Scores—Mathematics

STAAR Mathematics									
Grade	Did Not Meet		Approaches		Meets		Masters		
3	826–1359		1360–1485		1486 –1595		1596–1889		
4	944–1466		1467–1588		1589 –1669		1670–1997		
5	963–1499		1500–1624		1625 –1723		1724–2062		
6	1068–1535		1536–1652		1653 –1771		1772–2137		
7	1078–1574		1575–1687		1688 –1797		1798–2169		
8	1034–1594		1595–1699		1700 –1853		1854–2172		
MAP Growth Mathematics*									
Grade	Did Not Meet		Approaches		Meets		Masters		
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile	
Fall									
2	100–169	1–34	170–182	35–72	183 –192	73–91	193–350	92–99	
3	100–183	1–36	184–195	37–70	196 –203	71–87	204–350	88–99	
4	100–195	1–39	196–208	40–73	209 –215	74–86	216–350	87–99	
5	100–198	1–24	199–214	25–64	215 –224	65–84	225–350	85–99	
6	100–204	1–26	205–220	27–64	221 –231	65–85	232–350	86–99	
7	100–209	1–27	210–226	28–64	227 –238	65–85	239–350	86–99	
8	100–210	1–22	211–229	23–60	230 –243	61–83	244–350	84–99	
Winter									
2	100–178	1–34	179–191	35–72	192 –200	73–89	201–350	90–99	
3	100–191	1–37	192–202	38–68	203 –211	69–87	212–350	88–99	
4	100–202	1–41	203–215	42–74	216 –222	75–86	223–350	87–99	
5	100–204	1–26	205–220	27–64	221 –230	65–84	231–350	85–99	
6	100–209	1–27	210–225	28–64	226 –236	65–84	237–350	85–99	
7	100–212	1–26	213–230	27–64	231 –242	65–84	243–350	85–99	
8	100–214	1–24	215–232	25–59	233 –246	60–83	247–350	84–99	
Spring									
2	100–184	1–36	185–196	37–70	197 –205	71–88	206–350	89–99	
3	100–196	1–38	197–207	39–68	208 –215	69–84	216–350	85–99	
4	100–206	1–40	207–219	41–72	220 –226	73–85	227–350	86–99	
5	100–208	1–27	209–224	28–64	225 –234	65–82	235–350	83–99	
6	100–212	1–28	213–228	29–63	229 –239	64–83	240–350	84–99	
7	100–215	1–27	216–233	28–64	234 –245	65–84	246–350	85–99	
8	100–216	1–24	217–234	25–58	235 –248	59–82	249–350	83–99	

*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. Bolded numbers indicate the cut scores considered to be at least proficient for accountability purposes.

Table 3.7. MAP Growth Cut Scores—Science

STAAR Science								
Grade	Did Not Meet		Approaches		Meets		Masters	
5	1174–3549		3550–3999		4000–4401		4402–5566	
8	793–3549		3550–3999		4000–4405		4406–6202	
MAP Growth Science*								
Grade	Did Not Meet		Approaches		Meets		Masters	
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall								
5	100–198	1–45	199–211	46–83	212–220	84–95	221–350	96–99
8	100–201	1–27	202–215	28–67	216–225	68–88	226–350	89–99
Winter								
5	100–202	1–45	203–214	46–81	215–222	82–93	223–350	94–99
8	100–205	1–30	206–217	31–65	218–226	66–86	227–350	87–99
Spring								
5	100–204	1–45	205–215	46–78	216–223	79–92	224–350	93–99
8	100–206	1–31	207–218	32–65	219–227	66–85	228–350	86–99

*Cut scores for fall and winter are derived from the spring cuts and growth norms based on the typical instructional weeks. Bolded 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 rate. These results indicate how well MAP Growth spring RIT scores predict proficiency on the STAAR tests, providing insight into the predictive validity of MAP Growth. The overall classification accuracy rate ranges from 0.76 to 0.84 for Reading, 0.77 to 0.87 for Mathematics, and 0.81 to 0.82 for Science. These values suggest that the RIT cut scores are good at classifying students as proficient or not proficient on the STAAR assessment. For Grade 2, the classification accuracy rate refers to how well the MAP Growth cuts can predict students' proficiency status on STAAR in Grade 3.

Although the results show that MAP Growth scores can be used to accurately classify students as likely to be proficient on the STAAR tests, there is a notable limitation to how these results should be used and interpreted. STAAR 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	STAAR		FP	FN				
Reading										
2	13,657	193	1468	0.76	0.14	0.33	0.67	0.86	0.83	0.85
3	21,039	203	1468	0.82	0.17	0.20	0.80	0.83	0.80	0.89
4	21,968	212	1550	0.83	0.12	0.23	0.77	0.88	0.83	0.92
5	21,041	217	1582	0.82	0.11	0.27	0.73	0.89	0.84	0.90
6	19,439	221	1629	0.84	0.13	0.23	0.77	0.87	0.77	0.91
7	17,162	222	1674	0.82	0.15	0.22	0.78	0.85	0.78	0.89
8	11,291	223	1700	0.80	0.13	0.27	0.73	0.87	0.83	0.88
Mathematics										
2	14,756	197	1486	0.77	0.14	0.31	0.69	0.86	0.86	0.86
3	21,348	208	1486	0.82	0.18	0.17	0.83	0.82	0.80	0.90
4	22,199	220	1589	0.85	0.12	0.19	0.81	0.88	0.85	0.93
5	21,303	225	1625	0.85	0.14	0.15	0.85	0.86	0.85	0.93
6	20,277	229	1653	0.87	0.12	0.14	0.86	0.88	0.83	0.94
7	17,460	234	1688	0.87	0.10	0.18	0.82	0.90	0.84	0.94
8	9,720	235	1700	0.80	0.08	0.37	0.63	0.92	0.86	0.88
Science										
5	13,445	216	4000	0.82	0.13	0.26	0.74	0.87	0.79	0.90
8	4,222	219	4000	0.81	0.12	0.28	0.72	0.88	0.83	0.89

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

3.5. Proficiency Projection

Table 3.9, Table 3.10, and Table 3.11 present the estimated probability of achieving *Meets Grade Level* performance on the STAAR test based on RIT scores from fall, winter, or spring. For example, a Grade 3 student who obtained a MAP Growth Reading score of 201 in the fall has an 83% chance of reaching *Meets Grade Level* proficiency or higher on the STAAR test. “Prob.” indicates the probability of obtaining proficient status on the STAAR test in the spring.

Table 3.9. Proficiency Projection based on RIT Scores—Reading

Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Meets	Prob.		Meets	Prob.		Meets	Prob.
2	5	193	147	No	<0.01	156	No	<0.01	160	No	<0.01
	10	193	153	No	<0.01	162	No	<0.01	166	No	<0.01
	15	193	157	No	<0.01	166	No	<0.01	170	No	<0.01
	20	193	160	No	0.01	169	No	<0.01	173	No	<0.01
	25	193	162	No	0.01	171	No	<0.01	175	No	<0.01
	30	193	164	No	0.02	173	No	<0.01	177	No	<0.01
	35	193	166	No	0.04	175	No	0.01	180	No	<0.01
	40	193	168	No	0.07	177	No	0.02	182	No	<0.01
	45	193	170	No	0.09	179	No	0.03	184	No	<0.01
	50	193	172	No	0.15	181	No	0.07	186	No	0.01
	55	193	174	No	0.21	183	No	0.13	188	No	0.06
	60	193	176	No	0.30	185	No	0.23	189	No	0.11
	65	193	178	No	0.40	187	No	0.35	192	No	0.38
	70	193	180	No	0.45	189	Yes	0.50	194	Yes	0.62
	75	193	183	Yes	0.60	191	Yes	0.65	196	Yes	0.83
	80	193	185	Yes	0.70	194	Yes	0.83	199	Yes	0.97
	85	193	188	Yes	0.79	197	Yes	0.93	202	Yes	>0.99
90	193	192	Yes	0.91	200	Yes	0.98	205	Yes	>0.99	
95	193	197	Yes	0.97	206	Yes	>0.99	211	Yes	>0.99	
3	5	203	159	No	<0.01	167	No	<0.01	170	No	<0.01
	10	203	165	No	<0.01	173	No	<0.01	176	No	<0.01
	15	203	169	No	<0.01	177	No	<0.01	180	No	<0.01
	20	203	173	No	0.01	180	No	<0.01	183	No	<0.01
	25	203	175	No	0.02	183	No	<0.01	186	No	<0.01
	30	203	178	No	0.04	185	No	<0.01	189	No	<0.01
	35	203	180	No	0.05	188	No	0.02	191	No	<0.01
	40	203	182	No	0.09	190	No	0.03	193	No	<0.01
	45	203	185	No	0.17	192	No	0.07	195	No	0.01
	50	203	187	No	0.21	194	No	0.13	197	No	0.03
	55	203	189	No	0.30	196	No	0.23	199	No	0.11
	60	203	191	No	0.39	198	No	0.35	201	No	0.27
	65	203	193	Yes	0.50	200	Yes	0.50	203	Yes	0.50
	70	203	195	Yes	0.55	202	Yes	0.65	206	Yes	0.83
	75	203	198	Yes	0.70	205	Yes	0.83	208	Yes	0.94
	80	203	201	Yes	0.83	207	Yes	0.91	211	Yes	0.99
	85	203	204	Yes	0.89	211	Yes	0.97	214	Yes	>0.99
90	203	208	Yes	0.96	215	Yes	>0.99	218	Yes	>0.99	
95	203	214	Yes	0.99	220	Yes	>0.99	224	Yes	>0.99	

Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Meets	Prob.		Meets	Prob.		Meets	Prob.
4	5	212	169	No	<0.01	176	No	<0.01	178	No	<0.01
	10	212	175	No	<0.01	182	No	<0.01	184	No	<0.01
	15	212	179	No	<0.01	186	No	<0.01	188	No	<0.01
	20	212	183	No	<0.01	189	No	<0.01	191	No	<0.01
	25	212	185	No	0.01	192	No	<0.01	194	No	<0.01
	30	212	188	No	0.02	194	No	<0.01	196	No	<0.01
	35	212	190	No	0.04	196	No	0.01	199	No	<0.01
	40	212	192	No	0.06	198	No	0.02	201	No	<0.01
	45	212	195	No	0.11	200	No	0.03	203	No	<0.01
	50	212	197	No	0.17	202	No	0.06	205	No	0.01
	55	212	199	No	0.24	205	No	0.17	207	No	0.06
	60	212	201	No	0.34	207	No	0.28	209	No	0.17
	65	212	203	No	0.39	209	No	0.42	211	No	0.38
	70	212	205	Yes	0.50	211	Yes	0.58	213	Yes	0.62
	75	212	208	Yes	0.66	213	Yes	0.72	216	Yes	0.89
	80	212	211	Yes	0.76	216	Yes	0.87	219	Yes	0.99
85	212	214	Yes	0.87	219	Yes	0.96	222	Yes	>0.99	
90	212	218	Yes	0.94	223	Yes	0.99	226	Yes	>0.99	
95	212	224	Yes	0.99	229	Yes	>0.99	232	Yes	>0.99	
5	5	217	178	No	<0.01	183	No	<0.01	185	No	<0.01
	10	217	183	No	<0.01	189	No	<0.01	191	No	<0.01
	15	217	187	No	<0.01	193	No	<0.01	194	No	<0.01
	20	217	191	No	0.01	196	No	<0.01	198	No	<0.01
	25	217	193	No	0.01	198	No	<0.01	200	No	<0.01
	30	217	196	No	0.04	201	No	<0.01	203	No	<0.01
	35	217	198	No	0.05	203	No	0.01	205	No	<0.01
	40	217	200	No	0.08	205	No	0.03	207	No	<0.01
	45	217	202	No	0.13	207	No	0.06	209	No	0.01
	50	217	204	No	0.20	209	No	0.13	211	No	0.03
	55	217	207	No	0.29	211	No	0.22	213	No	0.11
	60	217	209	No	0.39	213	No	0.35	215	No	0.27
	65	217	211	Yes	0.50	215	Yes	0.50	217	Yes	0.50
	70	217	213	Yes	0.56	217	Yes	0.58	219	Yes	0.73
	75	217	216	Yes	0.71	220	Yes	0.78	222	Yes	0.94
	80	217	218	Yes	0.8	222	Yes	0.87	224	Yes	0.99
85	217	221	Yes	0.87	226	Yes	0.97	228	Yes	>0.99	
90	217	225	Yes	0.95	229	Yes	0.99	231	Yes	>0.99	
95	217	231	Yes	0.99	235	Yes	>0.99	237	Yes	>0.99	

Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Meets	Prob.		Meets	Prob.		Meets	Prob.
6	5	221	183	No	<0.01	188	No	<0.01	189	No	<0.01
	10	221	189	No	<0.01	193	No	<0.01	195	No	<0.01
	15	221	193	No	<0.01	197	No	<0.01	199	No	<0.01
	20	221	196	No	<0.01	200	No	<0.01	202	No	<0.01
	25	221	199	No	0.02	203	No	<0.01	205	No	<0.01
	30	221	202	No	0.03	205	No	<0.01	207	No	<0.01
	35	221	204	No	0.06	208	No	0.02	209	No	<0.01
	40	221	206	No	0.10	210	No	0.04	211	No	<0.01
	45	221	208	No	0.13	212	No	0.09	213	No	0.01
	50	221	210	No	0.19	214	No	0.17	215	No	0.03
	55	221	212	No	0.28	216	No	0.22	217	No	0.11
	60	221	214	No	0.39	218	No	0.35	219	No	0.27
	65	221	217	Yes	0.50	220	Yes	0.50	222	Yes	0.62
	70	221	219	Yes	0.61	222	Yes	0.65	224	Yes	0.83
	75	221	221	Yes	0.72	225	Yes	0.83	226	Yes	0.94
	80	221	224	Yes	0.81	227	Yes	0.91	229	Yes	0.99
85	221	227	Yes	0.90	230	Yes	0.97	232	Yes	>0.99	
90	221	231	Yes	0.97	234	Yes	>0.99	236	Yes	>0.99	
95	221	237	Yes	>0.99	240	Yes	>0.99	242	Yes	>0.99	
7	5	222	187	No	<0.01	190	No	<0.01	191	No	<0.01
	10	222	193	No	<0.01	196	No	<0.01	197	No	<0.01
	15	222	197	No	<0.01	200	No	<0.01	201	No	<0.01
	20	222	200	No	0.01	203	No	<0.01	205	No	<0.01
	25	222	203	No	0.02	206	No	<0.01	207	No	<0.01
	30	222	206	No	0.06	209	No	0.02	210	No	<0.01
	35	222	208	No	0.10	211	No	0.04	212	No	<0.01
	40	222	210	No	0.16	213	No	0.06	214	No	0.01
	45	222	212	No	0.19	215	No	0.12	216	No	0.03
	50	222	214	No	0.28	217	No	0.22	218	No	0.11
	55	222	216	No	0.39	219	No	0.35	220	No	0.27
	60	222	218	Yes	0.50	221	Yes	0.50	223	Yes	0.62
	65	222	221	Yes	0.61	223	Yes	0.65	225	Yes	0.83
	70	222	223	Yes	0.72	226	Yes	0.83	227	Yes	0.94
	75	222	225	Yes	0.81	228	Yes	0.91	229	Yes	0.99
	80	222	228	Yes	0.90	231	Yes	0.97	232	Yes	>0.99
85	222	231	Yes	0.94	234	Yes	0.99	235	Yes	>0.99	
90	222	235	Yes	0.98	238	Yes	>0.99	239	Yes	>0.99	
95	222	241	Yes	>0.99	244	Yes	>0.99	245	Yes	>0.99	

Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Meets	Prob.		Meets	Prob.		Meets	Prob.
8	5	223	190	No	<0.01	193	No	<0.01	194	No	<0.01
	10	223	196	No	<0.01	199	No	<0.01	200	No	<0.01
	15	223	200	No	0.01	203	No	<0.01	204	No	<0.01
	20	223	204	No	0.03	206	No	<0.01	207	No	<0.01
	25	223	207	No	0.06	209	No	0.01	210	No	<0.01
	30	223	209	No	0.11	212	No	0.03	213	No	<0.01
	35	223	211	No	0.13	214	No	0.06	215	No	0.01
	40	223	214	No	0.24	216	No	0.13	217	No	0.03
	45	223	216	No	0.34	218	No	0.22	220	No	0.17
	50	223	218	No	0.45	221	No	0.42	222	No	0.38
	55	223	220	Yes	0.50	223	Yes	0.58	224	Yes	0.62
	60	223	222	Yes	0.61	225	Yes	0.72	226	Yes	0.83
	65	223	225	Yes	0.76	227	Yes	0.83	228	Yes	0.94
	70	223	227	Yes	0.83	229	Yes	0.91	231	Yes	0.99
	75	223	230	Yes	0.89	232	Yes	0.97	233	Yes	>0.99
	80	223	232	Yes	0.94	235	Yes	0.99	236	Yes	>0.99
	85	223	236	Yes	0.98	238	Yes	>0.99	239	Yes	>0.99
90	223	240	Yes	>0.99	242	Yes	>0.99	243	Yes	>0.99	
95	223	246	Yes	>0.99	248	Yes	>0.99	249	Yes	>0.99	

Table 3.10. Proficiency Projection based on RIT Scores—Mathematics

Mathematics											
Grade	Start %ile	Spring Cut	Fall		Winter			Spring			
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Meets	Prob.		Meets	Prob.		Meets	Prob.
2	5	197	154	No	<0.01	163	No	<0.01	167	No	<0.01
	10	197	158	No	<0.01	167	No	<0.01	172	No	<0.01
	15	197	162	No	<0.01	171	No	<0.01	175	No	<0.01
	20	197	164	No	<0.01	173	No	<0.01	178	No	<0.01
	25	197	166	No	0.01	175	No	<0.01	180	No	<0.01
	30	197	168	No	0.01	177	No	<0.01	182	No	<0.01
	35	197	170	No	0.03	179	No	0.01	184	No	<0.01
	40	197	172	No	0.06	181	No	0.01	186	No	<0.01
	45	197	173	No	0.08	182	No	0.02	188	No	<0.01
	50	197	175	No	0.11	184	No	0.05	189	No	<0.01
	55	197	177	No	0.18	186	No	0.10	191	No	0.02
	60	197	178	No	0.22	187	No	0.15	193	No	0.08
	65	197	180	No	0.32	189	No	0.26	195	No	0.25
	70	197	182	No	0.44	191	No	0.42	196	No	0.37
	75	197	184	Yes	0.56	193	Yes	0.58	198	Yes	0.63
	80	197	186	Yes	0.62	195	Yes	0.74	201	Yes	0.92
	85	197	188	Yes	0.73	198	Yes	0.90	203	Yes	0.98
90	197	192	Yes	0.89	201	Yes	0.97	207	Yes	>0.99	
95	197	196	Yes	0.96	205	Yes	>0.99	212	Yes	>0.99	
3	5	208	166	No	<0.01	174	No	<0.01	178	No	<0.01
	10	208	171	No	<0.01	179	No	<0.01	183	No	<0.01
	15	208	175	No	<0.01	182	No	<0.01	186	No	<0.01
	20	208	177	No	<0.01	185	No	<0.01	189	No	<0.01
	25	208	179	No	<0.01	187	No	<0.01	192	No	<0.01
	30	208	181	No	0.01	189	No	<0.01	194	No	<0.01
	35	208	183	No	0.03	191	No	0.01	196	No	<0.01
	40	208	185	No	0.05	193	No	0.02	198	No	<0.01
	45	208	187	No	0.10	195	No	0.04	199	No	<0.01
	50	208	188	No	0.13	196	No	0.07	201	No	0.01
	55	208	190	No	0.21	198	No	0.14	203	No	0.04
	60	208	192	No	0.26	200	No	0.26	205	No	0.15
	65	208	194	No	0.37	201	No	0.33	207	No	0.37
	70	208	196	Yes	0.50	203	Yes	0.50	208	Yes	0.50
	75	208	198	Yes	0.63	205	Yes	0.67	211	Yes	0.85
	80	208	200	Yes	0.74	208	Yes	0.86	213	Yes	0.96
	85	208	202	Yes	0.83	210	Yes	0.93	216	Yes	>0.99
90	208	206	Yes	0.95	214	Yes	0.98	219	Yes	>0.99	
95	208	211	Yes	0.99	219	Yes	>0.99	224	Yes	>0.99	

Mathematics											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Meets	Prob.		Meets	Prob.		Meets	Prob.
4	5	220	176	No	<0.01	182	No	<0.01	185	No	<0.01
	10	220	181	No	<0.01	187	No	<0.01	191	No	<0.01
	15	220	185	No	<0.01	191	No	<0.01	194	No	<0.01
	20	220	187	No	<0.01	194	No	<0.01	197	No	<0.01
	25	220	190	No	<0.01	196	No	<0.01	200	No	<0.01
	30	220	192	No	<0.01	198	No	<0.01	202	No	<0.01
	35	220	194	No	0.01	200	No	<0.01	205	No	<0.01
	40	220	196	No	0.02	202	No	<0.01	207	No	<0.01
	45	220	198	No	0.04	204	No	0.01	209	No	<0.01
	50	220	200	No	0.07	206	No	0.02	211	No	<0.01
	55	220	201	No	0.10	208	No	0.04	212	No	<0.01
	60	220	203	No	0.17	210	No	0.10	214	No	0.02
	65	220	205	No	0.26	212	No	0.20	217	No	0.15
	70	220	207	No	0.37	214	No	0.33	219	No	0.37
	75	220	209	Yes	0.50	216	Yes	0.50	221	Yes	0.63
	80	220	212	Yes	0.68	219	Yes	0.74	224	Yes	0.92
	85	220	214	Yes	0.79	221	Yes	0.86	227	Yes	0.99
90	220	218	Yes	0.93	225	Yes	0.97	230	Yes	>0.99	
95	220	223	Yes	0.99	231	Yes	>0.99	236	Yes	>0.99	
5	5	225	184	No	<0.01	189	No	<0.01	191	No	<0.01
	10	225	190	No	<0.01	194	No	<0.01	197	No	<0.01
	15	225	193	No	<0.01	198	No	<0.01	201	No	<0.01
	20	225	196	No	<0.01	201	No	<0.01	205	No	<0.01
	25	225	199	No	<0.01	204	No	<0.01	207	No	<0.01
	30	225	201	No	0.02	206	No	<0.01	210	No	<0.01
	35	225	203	No	0.03	209	No	0.01	212	No	<0.01
	40	225	205	No	0.06	211	No	0.02	215	No	<0.01
	45	225	207	No	0.11	213	No	0.05	217	No	<0.01
	50	225	209	No	0.18	215	No	0.10	219	No	0.02
	55	225	211	No	0.27	217	No	0.20	221	No	0.08
	60	225	213	No	0.38	219	No	0.34	223	No	0.25
	65	225	215	Yes	0.50	221	Yes	0.50	225	Yes	0.50
	70	225	217	Yes	0.62	223	Yes	0.66	228	Yes	0.85
	75	225	219	Yes	0.73	225	Yes	0.80	230	Yes	0.96
	80	225	222	Yes	0.86	228	Yes	0.93	233	Yes	>0.99
	85	225	225	Yes	0.94	231	Yes	0.98	236	Yes	>0.99
90	225	229	Yes	0.98	235	Yes	>0.99	240	Yes	>0.99	
95	225	234	Yes	>0.99	241	Yes	>0.99	246	Yes	>0.99	

Mathematics											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Meets	Prob.		Meets	Prob.		Meets	Prob.
6	5	229	188	No	<0.01	192	No	<0.01	194	No	<0.01
	10	229	194	No	<0.01	198	No	<0.01	200	No	<0.01
	15	229	198	No	<0.01	202	No	<0.01	205	No	<0.01
	20	229	201	No	<0.01	205	No	<0.01	208	No	<0.01
	25	229	204	No	<0.01	208	No	<0.01	211	No	<0.01
	30	229	206	No	0.01	211	No	<0.01	214	No	<0.01
	35	229	209	No	0.03	213	No	<0.01	216	No	<0.01
	40	229	211	No	0.06	215	No	0.01	218	No	<0.01
	45	229	213	No	0.10	217	No	0.03	221	No	<0.01
	50	229	215	No	0.17	220	No	0.10	223	No	0.02
	55	229	217	No	0.27	222	No	0.20	225	No	0.08
	60	229	219	No	0.38	224	No	0.34	227	No	0.25
	65	229	221	Yes	0.50	226	Yes	0.50	230	Yes	0.63
	70	229	223	Yes	0.62	228	Yes	0.66	232	Yes	0.85
	75	229	226	Yes	0.78	231	Yes	0.86	235	Yes	0.98
	80	229	228	Yes	0.86	234	Yes	0.96	238	Yes	>0.99
	85	229	231	Yes	0.94	237	Yes	0.99	241	Yes	>0.99
90	229	235	Yes	0.99	241	Yes	>0.99	245	Yes	>0.99	
95	229	241	Yes	>0.99	247	Yes	>0.99	252	Yes	>0.99	
7	5	234	192	No	<0.01	194	No	<0.01	196	No	<0.01
	10	234	198	No	<0.01	201	No	<0.01	203	No	<0.01
	15	234	202	No	<0.01	205	No	<0.01	207	No	<0.01
	20	234	206	No	<0.01	209	No	<0.01	211	No	<0.01
	25	234	208	No	<0.01	212	No	<0.01	214	No	<0.01
	30	234	211	No	<0.01	215	No	<0.01	217	No	<0.01
	35	234	213	No	0.01	217	No	<0.01	220	No	<0.01
	40	234	216	No	0.03	219	No	<0.01	222	No	<0.01
	45	234	218	No	0.07	222	No	0.03	224	No	<0.01
	50	234	220	No	0.13	224	No	0.07	227	No	0.01
	55	234	222	No	0.21	226	No	0.14	229	No	0.04
	60	234	225	No	0.37	229	No	0.33	231	No	0.15
	65	234	227	Yes	0.50	231	Yes	0.50	234	Yes	0.50
	70	234	229	Yes	0.63	233	Yes	0.67	236	Yes	0.75
	75	234	232	Yes	0.79	236	Yes	0.86	239	Yes	0.96
	80	234	235	Yes	0.90	239	Yes	0.96	242	Yes	>0.99
	85	234	238	Yes	0.96	243	Yes	>0.99	246	Yes	>0.99
90	234	243	Yes	>0.99	247	Yes	>0.99	251	Yes	>0.99	
95	234	249	Yes	>0.99	254	Yes	>0.99	257	Yes	>0.99	

Mathematics											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Meets	Prob.		Meets	Prob.		Meets	Prob.
8	5	235	194	No	<0.01	196	No	<0.01	197	No	<0.01
	10	235	201	No	<0.01	203	No	<0.01	205	No	<0.01
	15	235	205	No	<0.01	208	No	<0.01	210	No	<0.01
	20	235	209	No	<0.01	212	No	<0.01	214	No	<0.01
	25	235	212	No	0.01	215	No	<0.01	217	No	<0.01
	30	235	215	No	0.02	218	No	<0.01	220	No	<0.01
	35	235	218	No	0.04	221	No	0.01	223	No	<0.01
	40	235	220	No	0.07	223	No	0.02	225	No	<0.01
	45	235	223	No	0.16	226	No	0.07	228	No	0.01
	50	235	225	No	0.24	228	No	0.15	230	No	0.04
	55	235	227	No	0.33	231	No	0.34	233	No	0.25
	60	235	230	Yes	0.50	233	Yes	0.50	235	Yes	0.50
	65	235	232	Yes	0.61	236	Yes	0.73	238	Yes	0.85
	70	235	235	Yes	0.76	238	Yes	0.85	241	Yes	0.98
	75	235	238	Yes	0.88	241	Yes	0.95	244	Yes	>0.99
	80	235	241	Yes	0.94	244	Yes	0.99	247	Yes	>0.99
	85	235	245	Yes	0.98	248	Yes	>0.99	251	Yes	>0.99
90	235	249	Yes	>0.99	253	Yes	>0.99	256	Yes	>0.99	
95	235	256	Yes	>0.99	260	Yes	>0.99	263	Yes	>0.99	

Table 3.11 Proficiency Projection based on RIT Scores—Science

Science											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Meets	Prob.		Meets	Prob.		Meets	Prob.
5	5	216	181	No	<0.01	185	No	<0.01	186	No	<0.01
	10	216	185	No	<0.01	189	No	<0.01	191	No	<0.01
	15	216	188	No	<0.01	192	No	<0.01	194	No	<0.01
	20	216	190	No	<0.01	194	No	<0.01	196	No	<0.01
	25	216	192	No	0.01	196	No	<0.01	198	No	<0.01
	30	216	194	No	0.02	198	No	<0.01	200	No	<0.01
	35	216	196	No	0.03	200	No	0.01	202	No	<0.01
	40	216	197	No	0.03	201	No	0.01	203	No	<0.01
	45	216	199	No	0.06	203	No	0.02	205	No	<0.01
	50	216	200	No	0.08	204	No	0.04	206	No	<0.01
	55	216	202	No	0.13	206	No	0.08	208	No	0.01
	60	216	203	No	0.16	207	No	0.10	209	No	0.02
	65	216	205	No	0.19	209	No	0.14	211	No	0.07
	70	216	206	No	0.24	210	No	0.18	213	No	0.19
	75	216	208	No	0.33	212	No	0.30	214	No	0.28
	80	216	210	No	0.39	214	No	0.43	216	Yes	0.50
	85	216	212	Yes	0.50	216	Yes	0.57	219	Yes	0.81
90	216	215	Yes	0.67	219	Yes	0.76	222	Yes	0.96	
95	216	220	Yes	0.84	224	Yes	0.95	226	Yes	>0.99	
8	5	219	188	No	<0.01	191	No	<0.01	191	No	<0.01
	10	219	193	No	<0.01	196	No	<0.01	196	No	<0.01
	15	219	196	No	0.01	199	No	<0.01	199	No	<0.01
	20	219	198	No	0.02	201	No	<0.01	202	No	<0.01
	25	219	201	No	0.04	204	No	0.01	204	No	<0.01
	30	219	203	No	0.07	206	No	0.02	206	No	<0.01
	35	219	205	No	0.09	207	No	0.03	208	No	<0.01
	40	219	206	No	0.12	209	No	0.06	210	No	<0.01
	45	219	208	No	0.18	211	No	0.11	212	No	0.02
	50	219	210	No	0.25	212	No	0.15	213	No	0.04
	55	219	211	No	0.30	214	No	0.24	215	No	0.12
	60	219	213	No	0.35	216	No	0.36	217	No	0.28
	65	219	215	No	0.45	217	No	0.43	219	Yes	0.50
	70	219	217	Yes	0.55	219	Yes	0.57	221	Yes	0.72
	75	219	219	Yes	0.60	221	Yes	0.70	223	Yes	0.88
	80	219	221	Yes	0.70	223	Yes	0.81	225	Yes	0.96
	85	219	223	Yes	0.79	226	Yes	0.92	228	Yes	>0.99
90	219	227	Yes	0.91	229	Yes	0.97	231	Yes	>0.99	
95	219	231	Yes	0.97	234	Yes	>0.99	236	Yes	>0.99	

References

- Kolen, M. J., & Brennan, R. L. (2004). *Test equating, scaling, and linking*. New York: Springer.
- Lumley, T. (2019). *Survey: Analysis of complex survey samples*. R package version 3.36. Retrieved from <https://CRAN.R-project.org/package=survey>.
- Pommerich, M., Hanson, B., Harris, D., & Sconing, J. (2004). Issues in conducting linkage between distinct tests. *Applied Psychological Measurement*, 28(4), 247–273.
- Texas Education Agency (TEA). (2017). *STAAR statewide summary reports 2016–2017*. Retrieved from <https://tea.texas.gov/student-assessment/testing/staar/staar-statewide-summary-reports-2016-2017>.
- Thum, Y. M., & Kuhfeld, M. (2020). *NWEA 2020 MAP Growth achievement status and growth norms for students and schools*. NWEA Research Report. Portland, OR: NWEA.