

Predicting Proficiency on the Ohio's State Tests (OST) in Grades 3–8 based on NWEA MAP Growth Scores

July 2023

NWEA Psychometric Solutions

Linking Study Updates

Date	Description
2013-01	Initial study conducted for Ohio in ELA and mathematics in Grades 3–8 using Spring 2012 data.
2016-08	Incorporated the 2015 MAP Growth norms using Spring 2016 data.
2018-03	Updated the report for ELA, mathematics, and science using Spring 2017 data.
2020-07-23	Incorporated the 2020 MAP Growth norms using Spring 2017 data for ELA, mathematics, and science in Grades 3–8. A linking study for the OST End-of-Course (EOC) assessments in ELA and mathematics was also conducted. Results are provided in a separate report (NWEA, 2020).
2021-12-17	Updated the results for the OST Science assessment using Spring 2021 data. The ELA and mathematics results from July 2020 remain the same but are included in this report so all up-to-date OST 3–8 linking study results are in one place.
2023-01-06	Updated results for the OST ELA & Math assessments using Spring 2022 data. Science results from December 2021 remain the same. All up to date 3–8 linking study results are in this one report.
2023-03-24	Updated charts to gray scale and made minor modifications to some language within the report.
2023-07-05	Reviewed and updated the report <i>Section 3.4 Reading Grade 3 Cut Scores for Ohio’s TGRG Program</i> .

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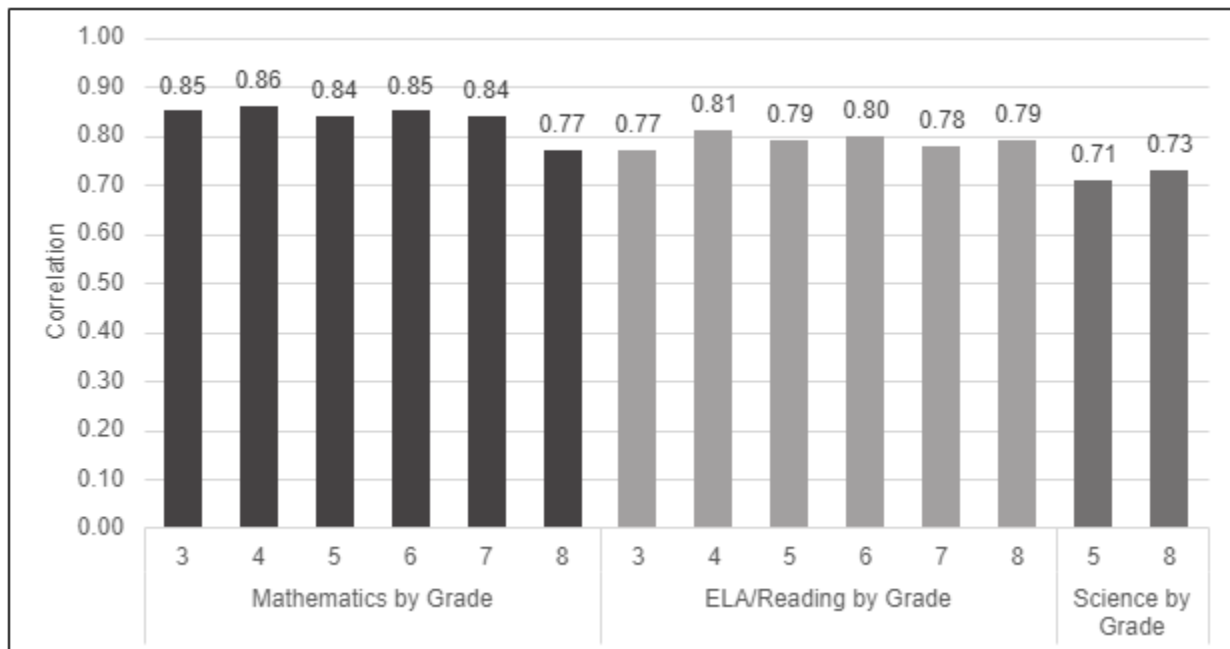
Executive Summary

Linking studies allow partners to use MAP® Growth™ Rasch Unit (RIT) scores throughout the year to predict their students' likely performance levels on the state summative assessment. This is accomplished through statistical analyses that produce RIT cut scores corresponding to the state summative performance levels. A *cut score* is the minimum score a student must get on a test to be placed at a certain performance level. The linking study for the Ohio's State Tests (OST) described in this report provides RIT cut scores for the fall, winter, and spring MAP Growth administrations that correspond to the OST performance levels for Mathematics and English Language Arts (ELA)/Reading in Grades 3–8 and for Science in Grades 5 and 8.

The linking study is based on test scores from students who took both the MAP Growth and OST assessments using Spring 2022 data for the targeted grades. The linking study sample included 71,975 students across 48 districts and 232 schools in Ohio. Scores from both tests were used as the basis for linking the two assessments.

Before the linking analyses began, NWEA confirmed that the MAP Growth and OST assessments are aligned based on the same or similar set of content standards to warrant a connection. The test links were further investigated by calculating the Pearson correlation coefficients that relate the relationship between the specific MAP Growth and OST test scores. At NWEA, a correlation of $r \geq 0.70$ is considered a “high” correlation and acceptable for publishing. This indicates that students who perform well on one assessment also tend to perform well on the other, and vice versa. A perfect positive correlation is 1.00. The correlations between the MAP Growth and OST test scores from Spring 2022, shown below, are consistent with our expectations that MAP Growth is a good assessment for predicting performance on the OST.

Figure E.1. Correlations between MAP Growth and OST Scores



The equipercentile linking method (Kolen & Brennan, 2004) and the 2020 MAP Growth norms (Thum & Kuhfeld, 2020) were then used to produce the RIT cut scores that correspond to performance on the OST assessment for every subject and grade. While RIT cut scores were generated for every performance level on the OST assessment, Table E.1 presents the *Proficient* cut scores that indicate the minimum score a student must get to be considered proficient (reaching *Proficient* or higher).

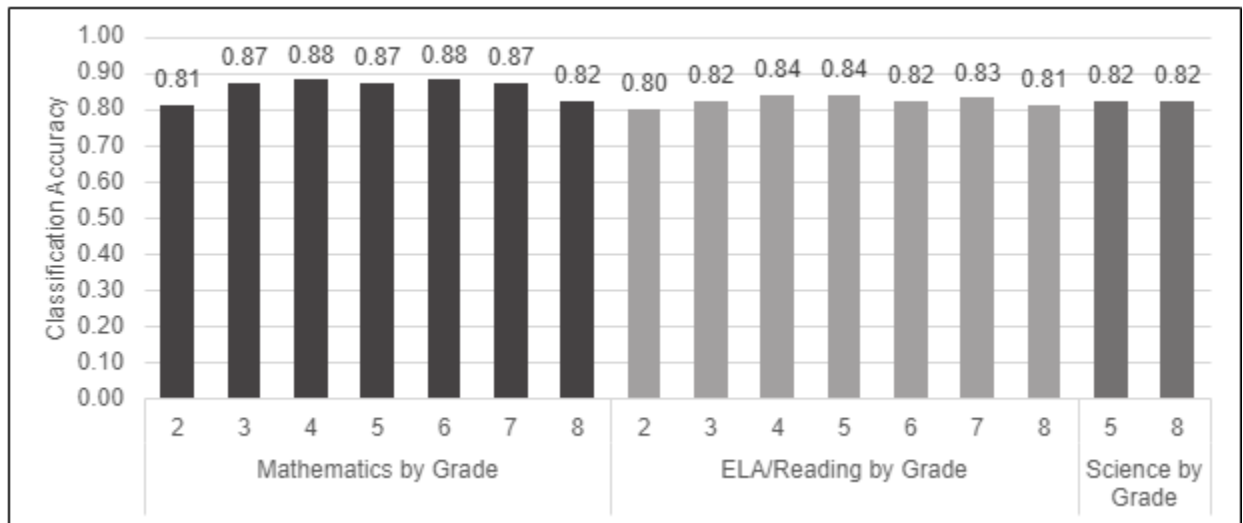
Table E.1. MAP Growth RIT Cut Scores for OST Proficiency

Assessment		Proficient Cut Scores by Grade						
		2	3	4	5	6	7	8
Mathematics								
OST Spring		–	700	700	700	700	700	700
MAP Growth	Fall	172	186	194	206	214	220	223
	Winter	182	194	201	212	219	224	226
	Spring	187	199	205	216	222	227	228
ELA/Reading								
OST Spring		–	700	700	700	700	700	700
MAP Growth	Fall	171	185	195	199	209	210	217
	Winter	180	193	201	204	212	214	220
	Spring	184	196	203	206	214	215	221
Science								
OST Spring		–	–	–	700	–	–	700
MAP Growth	Fall	–	–	–	199	–	–	207
	Winter	–	–	–	203	–	–	210
	Spring	–	–	–	205	–	–	211

Educators can use these cut scores to determine whether students are on track for proficiency on the state assessment. For example, the *Proficient* cut score on the Grade 3 OST Mathematics test is 700. A Grade 3 student with a MAP Growth Mathematics RIT score of 186 in the fall is likely to meet expectations on the OST Mathematics test in the spring, whereas a Grade 3 student with a RIT score lower than 186 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 expectations on the OST assessment by Grade 3.

As further evidence that MAP Growth scores can be used to predict students' proficiency on the state test, NWEA calculated classification accuracy statistics that show how well the RIT scores can correctly classify, or predict, students as proficient on the state tests. For example, the Grade 3 MAP Growth Mathematics cut score correctly classified students' proficiency (*Proficient* or higher) on the OST Mathematics test 87% of the time. A high statistic indicates high accuracy. Overall, MAP Growth scores have a high accuracy rate of identifying student proficiency on the OST tests, as illustrated below.

Figure E.2. Accuracy of MAP Growth Classifications



Please note that the purpose of this report is to explain NWEA’s linking study methodology. It is not meant as the main reference for determining a student’s likely performance on the state summative assessment. The cut scores 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), whereas instructional weeks often vary by district. The cut scores in this report may therefore differ from the results in the NWEA reporting system that reflect the specific instructional weeks set by partners. Partners should therefore reference their MAP Growth score reports instead.

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 to statistically connect Rasch Unit (RIT) scores from the MAP Growth assessments with scores from the Ohio's State Tests (OST) Mathematics and English Language Arts (ELA)/Reading in Grades 3–8 and Science in Grades 5 and 8 taken during the Spring 2022 term.¹ MAP Growth cut scores are also included for Grade 2 so educators can track early learners' progress toward proficiency on the OST test by Grade 3. Specifically, this report presents the following results:

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

The linking study has been updated since the previous version published in December 2021.

1.2. Assessment Overview

The OST Grades 3–8 Mathematics and ELA, and Grades 5 and 8 Science tests are Ohio's state summative assessments aligned to the Ohio's Learning Standards. Based on their test scores, students are placed into one of five performance levels: *Limited*, *Basic*, *Proficient*, *Accomplished*, and *Advanced*. The *Proficient* cut score demarks the minimum level of achievement considered to be proficient for accountability purposes.

MAP Growth tests are adaptive interim assessments aligned to state-specific content standards and administered in the fall, winter, and spring. Scores are reported on the RIT vertical scale with a range of 100 to 350. NWEA conducts norming studies of student and school performance on MAP Growth assessments to aid the interpretation of scores. Growth norms provide expected score gains for a test from term to term, such as from fall to spring terms. The most recent norms study was conducted in 2020.

¹ This study provides MAP Growth cut scores that predict proficiency on the OST for Grades 2–8 only. They represent a higher level of achievement than universal screening cut scores designed to identify students with the most severe learning difficulties who may need intensive intervention. MAP Growth universal screening cut scores for Grades K–8 in reading and mathematics are available in a separate report (He & Meyer, 2021).

2. Methods

2.1. Data Collection

This linking study is based on data from the Spring 2022 administrations of the MAP Growth and OST assessments. NWEA recruited Ohio districts to participate in the study by sharing their student and score data for the target term. Districts also gave NWEA permission to use their students' MAP Growth scores from the NWEA in-house database. Once state score information was received by NWEA, each student's state testing record was matched to their MAP Growth score based on 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 OST assessments 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's test-taking student population in terms of race, sex, and performance level. These variables were selected because they are known to be correlated with students' academic achievement and are often available in state summative assessment reports. The weighted sample will match the target population as closely as possible on the key demographics and performance characteristics as defined by the state.

A raking procedure was used to calculate the post-stratification weights that either compensate for the underrepresentation of certain groups or attenuate the overrepresentation of certain groups. Raking uses iterative procedures to obtain weights that match sample marginal distributions to known population margins. The following steps were taken during this process:

1. Calculate marginal distributions of race, sex, and performance level for the sample and population.
2. Calculate post-stratification weights with the rake function from the survey package in R (Lumley, 2019).
3. Trim the weights that are outside the range of 0.3 to 3.0.
4. Apply the weights to the sample before conducting the linking study analyses.

2.3. Descriptive Statistics

Descriptive statistics are provided to summarize the test scores for both the MAP Growth and OST assessments, including the test score mean, standard deviation (SD), minimum, and maximum. The mean presents the average test scores across all students in the study sample, and the SD indicates the variability of test scores, revealing how students' scores are distributed around the average score, or mean. Correlation coefficients between the MAP Growth RIT scores and OST scores are also provided to answer the question, "How well do the test scores from MAP Growth that reference the RIT scale correlate to the scores obtained from the OST test that references some other scale in the same subject?" The correlations were calculated as follows:

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}} \quad (1)$$

where r is the correlation coefficient, x_i and y_i are the values of the x- and y-variables in a sample, and \bar{x} and \bar{y} are the mean of the values of the x- and y-variables.

2.4. MAP Growth Cut Scores

MAP Growth cut scores that predict student achievement on the OST assessments are reported for Grades 3–8, as well as for Grade 2 so educators can track early learners' progress toward proficiency on the OST test by Grade 3. Percentile ranks based on the 2020 NWEA norms are also provided. These are useful for understanding how students' scores compare to peers nationwide and the relative rigor of a state's performance level designations for its summative assessment.

The equipercentile linking method was used to identify the spring MAP Growth RIT scores for Grades 3–8 that correspond to the spring OST performance level cut scores. 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., OST). Its equipercentile equivalent score on Test Y (e.g., MAP Growth), $e_y(x)$, can be obtained through a cumulative-distribution-based linking function defined in Equation 2:

$$e_y(x) = G^{-1}[P(x)] \quad (2)$$

where $e_y(x)$ is the equipercentile equivalent of score x on OST on the scale of MAP Growth, $P(x)$ is the percentile rank of a given score on OST 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 to spring within the same grade or from spring of a lower grade to spring of the adjacent higher grade. This information was used to calculate the fall and winter cut scores for Grades 3–8. Equation 3 was used to determine the previous terms MAP Growth score needed to reach the spring cut score, considering the expected growth associated with the previous RIT score:

$$RIT_{PredSpring} = RIT_{previous} + g \quad (3)$$

where:

- $RIT_{PredSpring}$ is the predicted MAP Growth spring score.
- $RIT_{previous}$ is the previous terms RIT score.
- g is the expected growth from the previous fall or winter RIT to the spring RIT score.

Students do not take the OST assessment in Grade 2. Therefore, the MAP Growth conditional growth norms were also used to estimate the fall, winter, and spring cuts in Grade 2 that are needed to meet OST proficiency in Grade 3. To derive the Grade 2 spring cut scores, the growth score from spring of one year to the next was used (i.e., the growth score from spring of Grade 2 to spring of Grade 3). The estimations of fall and winter cuts followed the same process as above for Grades 3–8. For example, the projected growth from fall to spring in Grade 2 was used to calculate the fall cuts for Grade 2.

2.5. Classification Accuracy

The degree to which MAP Growth predicts student proficiency status on the OST tests can be described using classification accuracy statistics based on the MAP Growth spring RIT cut scores. The results show the proportion of students correctly classified by their RIT scores as proficient or not proficient on the OST test. The classification accuracy statistics for Grade 2 were calculated by obtaining current Grade 3 students' MAP Growth scores from the previous year. Thus, the classification accuracy statistics for Grade 2 represent how well these estimated RIT cuts predict proficiency in the OST assessments in Grades 3, respectively, in our study sample. Table 2.1 describes the classification accuracy statistics in this report (Pommerich et al., 2004).

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.

2.6. Proficiency Projections

Given that all test scores contain measurement errors, reaching the *Proficient* RIT cut does not guarantee that the student is proficient at the state test. Instead, we can claim that a student with 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 OST test in the spring based on a student's RIT scores from fall and winter (see Equation 4).

$$Pr(\text{Achieving Proficient in spring} | \text{starting RIT}) = \Phi \left(\frac{RIT_{previous} + g - RIT_{SpringCut}}{SD} \right) \quad (4)$$

where:

- Φ is the standard normal cumulative distribution function.
- $RIT_{previous}$ is the student's RIT score in fall or winter (or in spring of Grade 2).
- g is the expected growth from the previous fall or winter RIT to the spring RIT.
- $RIT_{SpringCut}$ is the MAP Growth cut score associated with state proficiency in 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 5 was used to estimate the probability of a student achieving *Proficient* performance on the OST test based on their spring RIT score (RIT_{Spring}):

$$Pr(\text{Achieving Proficient in spring} \mid \text{spring RIT}) = \Phi\left(\frac{RIT_{Spring} - RIT_{SpringCut}}{SE}\right) \quad (5)$$

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 OST assessments in Spring 2022 for the target subjects were included in the sample. Data were collected from 48 districts and 232 schools in Ohio. Table 3.1 presents the distributions of student race, sex, and performance level in the original unweighted study sample. Table 3.2 presents the distributions of the target population of students who took the OST tests. Since the original study sample is different from the target OST population, post-stratification weights were applied. Table 3.3 presents the demographic distributions of the sample after weighting, which are almost identical to the OST student population distributions.

Table 3.1. Linking Study Sample Demographics (Unweighted)

Linking Study Samples (Unweighted)							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
Mathematics							
Total N		12,291	12,278	11,440	11,602	10,375	7,775
Race*	African American	14.4	15.0	15.8	15.8	17.0	18.6
	American Indian and Others	8.2	7.9	8.0	7.6	7.9	8.3
	Asian/NHPI	4.8	4.7	3.7	4.6	3.4	2.4
	Hispanic	5.8	5.9	6.1	6.1	7.2	7.5
	White	66.7	66.6	66.4	66.0	64.5	63.2
Sex	Female	49.2	48.8	48.8	48.0	49.0	50.5
	Male	50.8	51.2	51.2	52.0	51.0	49.5
Performance Level	<i>Limited</i>	25.8	24.5	32.4	29.4	35.9	38.6
	<i>Basic</i>	13.0	9.1	10.6	15.3	15.0	17.2
	<i>Proficient</i>	20.0	16.9	23.9	23.5	23.0	29.0
	<i>Accomplished</i>	17.4	23.4	17.7	14.5	18.7	10.4
	<i>Advanced</i>	23.9	26.1	15.4	17.3	7.3	4.7
ELA/Reading							
Total N		12,055	12,378	11,947	11,814	10,968	11,062
Race*	African American	14.4	14.9	15.2	15.6	16.1	15.9
	American Indian and Others	8.2	7.9	8.0	7.7	7.7	7.4
	Asian/NHPI	4.8	4.8	4.6	4.8	4.2	4.3
	Hispanic	6.0	6.0	6.0	6.0	7.0	6.4
	White	66.6	66.4	66.3	66.0	65.0	65.9
Sex	Female	49.4	48.8	48.2	47.7	48.6	49.9
	Male	50.6	51.2	51.8	52.3	51.4	50.1
Performance Level	<i>Limited</i>	19.3	19.8	14.6	17.5	17.0	26.6
	<i>Basic</i>	20.0	15.6	19.0	23.2	20.9	17.0
	<i>Proficient</i>	19.8	20.5	19.6	23.3	22.1	28.2
	<i>Accomplished</i>	18.3	20.8	22.4	20.5	19.6	16.0
	<i>Advanced</i>	22.6	23.3	24.5	15.4	20.3	12.1

Linking Study Samples (Unweighted)							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
Science							
Total N		–	–	3,626	–	–	4,160
Race*	African American	–	–	24.3	–	–	21.4
	American Indian and Others	–	–	8.2	–	–	7.9
	Asian/NHPI	–	–	1.4	–	–	2.2
	Hispanic	–	–	6.6	–	–	5.0
	White	–	–	59.5	–	–	63.5
Sex	Female	–	–	48.7	–	–	50.4
	Male	–	–	51.3	–	–	49.6
Performance Level	<i>Limited</i>	–	–	23.1	–	–	20.7
	<i>Basic</i>	–	–	21.0	–	–	19.9
	<i>Proficient</i>	–	–	18.0	–	–	18.9
	<i>Accomplished</i>	–	–	18.6	–	–	24.8
	<i>Advanced</i>	–	–	19.3	–	–	15.6

*NHPI = Native Hawaiian or Pacific Islander. Other racial categories include Multi-race and Not Specified.

Table 3.2. OST Student Population Demographics

OST Student Population							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
Mathematics							
Total N		119,225	117,793	118,638	118,979	119,166	103,826
Race*	African American	17.4	17.2	17.6	17.2	17.4	18.3
	American Indian and Others	9.3	8.9	8.8	8.6	8.8	8.8
	Asian/NHPI	3.2	3.1	2.8	2.6	2.3	2.2
	Hispanic	4.5	4.4	4.4	4.3	4.5	4.9
	White	65.7	66.4	66.3	67.3	67.0	65.8
Sex	Female	49.2	48.5	48.7	48.7	49.2	49.1
	Male	50.8	51.5	51.3	51.3	50.8	50.9
Performance Level	<i>Limited</i>	29.0	27.0	35.0	34.0	39.0	40.0
	<i>Basic</i>	12.0	9.0	11.0	16.0	15.0	17.0
	<i>Proficient</i>	19.0	17.0	24.0	23.0	21.0	28.0
	<i>Accomplished</i>	18.0	24.0	16.0	12.0	17.0	10.0
	<i>Advanced</i>	22.0	24.0	14.0	15.0	8.0	4.0
ELA/Reading							
Total N		118,164	118,279	119,964	120,548	124,872	127,010
Race*	African American	17.4	17.1	17.5	17.1	16.8	16.0
	American Indian and Others	9.2	8.9	8.8	8.5	8.7	8.2
	Asian/NHPI	3.2	3.1	2.9	2.8	2.7	2.7
	Hispanic	4.5	4.4	4.4	4.2	4.4	4.4
	White	65.8	66.5	66.4	67.4	67.5	68.7

OST Student Population							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
Sex	Female	49.1	48.5	48.6	48.6	49.1	49.0
	Male	50.9	51.5	51.4	51.4	50.9	51.0
Performance Level	<i>Limited</i>	21.0	21.0	15.0	19.0	17.0	29.0
	<i>Basic</i>	21.0	16.0	20.0	25.0	23.0	18.0
	<i>Proficient</i>	19.0	20.0	20.0	23.0	23.0	28.0
	<i>Accomplished</i>	19.0	21.0	22.0	19.0	19.0	15.0
	<i>Advanced</i>	20.0	22.0	22.0	13.0	18.0	10.0
Science							
Total N		–	–	119,754	–	–	126,202
Race*	African American	–	–	17.4	–	–	15.9
	American Indian and Others	–	–	8.8	–	–	8.1
	Asian/NHPI	–	–	2.9	–	–	2.7
	Hispanic	–	–	4.4	–	–	4.4
	White	–	–	66.5	–	–	68.8
Sex	Female	–	–	48.6	–	–	49.0
	Male	–	–	51.4	–	–	51.0
Performance Level	<i>Limited</i>	–	–	18.0	–	–	18.0
	<i>Basic</i>	–	–	19.0	–	–	19.0
	<i>Proficient</i>	–	–	17.0	–	–	20.0
	<i>Accomplished</i>	–	–	18.0	–	–	27.0
	<i>Advanced</i>	–	–	28.0	–	–	16.0

*NHPI = Native Hawaiian or Pacific Islander. Other racial categories include Multi-race and Not Specified.

Table 3.3. Linking Study Sample Demographics (Weighted)

Linking Study Samples (Weighted)							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
Mathematics							
Total N		12,291	12,401	11,440	11,602	10,375	7,697
Race*	African American	17.4	17.2	17.6	17.2	17.4	18.3
	American Indian and Others	9.3	8.9	8.8	8.6	8.8	8.8
	Asian/NHPI	3.2	3.1	2.8	2.6	2.3	2.2
	Hispanic	4.5	4.4	4.4	4.3	4.5	4.9
	White	65.7	66.4	66.3	67.3	67.0	65.8
Sex	Female	49.2	48.5	48.7	48.7	49.2	49.1
	Male	50.8	51.5	51.3	51.3	50.8	50.9
Performance Level	<i>Limited</i>	29.0	26.7	35.0	34.0	39.0	40.4
	<i>Basic</i>	12.0	8.9	11.0	16.0	15.0	17.2
	<i>Proficient</i>	19.0	16.8	24.0	23.0	21.0	28.3
	<i>Accomplished</i>	18.0	23.8	16.0	12.0	17.0	10.1
	<i>Advanced</i>	22.0	23.8	14.0	15.0	8.0	4.0

Linking Study Samples (Weighted)							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
ELA/Reading							
Total N		12,055	12,378	11,828	11,696	10,968	11,062
Race*	African American	17.4	17.1	17.5	17.1	16.8	16.0
	American Indian and Others	9.2	8.9	8.8	8.5	8.7	8.2
	Asian/NHPI	3.2	3.1	2.9	2.8	2.7	2.7
	Hispanic	4.5	4.4	4.4	4.2	4.4	4.4
	White	65.8	66.5	66.4	67.4	67.5	68.7
Sex	Female	49.1	48.5	48.6	48.6	49.1	49.0
	Male	50.9	51.5	51.4	51.4	50.9	51.0
Performance Level	<i>Limited</i>	21.0	21.0	15.2	19.2	17.0	29.0
	<i>Basic</i>	21.0	16.0	20.2	25.3	23.0	18.0
	<i>Proficient</i>	19.0	20.0	20.2	23.2	23.0	28.0
	<i>Accomplished</i>	19.0	21.0	22.2	19.2	19.0	15.0
	<i>Advanced</i>	20.0	22.0	22.2	13.1	18.0	10.0
Science							
Total N		–	–	3,626	–	–	4,160
Race*	African American	–	–	17.4	–	–	15.9
	American Indian and Others	–	–	8.8	–	–	8.1
	Asian/NHPI	–	–	2.9	–	–	2.7
	Hispanic	–	–	4.4	–	–	4.4
	White	–	–	66.5	–	–	68.8
Sex	Female	–	–	48.6	–	–	49.0
	Male	–	–	51.4	–	–	51.0
Performance Level	<i>Limited</i>	–	–	18.0	–	–	18.0
	<i>Basic</i>	–	–	19.0	–	–	19.0
	<i>Proficient</i>	–	–	17.0	–	–	20.0
	<i>Accomplished</i>	–	–	18.0	–	–	27.0
	<i>Advanced</i>	–	–	28.0	–	–	16.0

*NHPI = Native Hawaiian or Pacific Islander. Other racial categories include Multi-race and Not Specified.

3.2. Descriptive Statistics

Table 3.4 presents descriptive statistics of the MAP Growth and OST test scores from Spring 2022, including the correlation coefficient (r) between them. The correlations between the scores are 0.77 to 0.86 for Mathematics, 0.77 to 0.81 for ELA/Reading, and 0.71 or 0.73 for Science. These values indicate a high positive correlation among the scores, which is important validity evidence for the claim that MAP Growth scores are good predictors of performance on the OST assessments.

Table 3.4. Descriptive Statistics of Test Scores

Grade	N	r	OST*				MAP Growth*			
			Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
Mathematics										
3	12,291	0.85	710.4	48.5	587	818	200.7	16.0	132	266
4	12,401	0.86	719.7	50.4	605	835	210.0	18.0	129	274
5	11,440	0.84	704.1	38.3	624	804	215.9	19.2	126	283
6	11,602	0.85	700.0	38.5	616	790	220.3	17.9	153	284
7	10,375	0.84	697.8	36.1	605	806	224.2	19.0	157	283
8	7,697	0.77	698.1	23.7	633	774	224.1	17.3	159	293
ELA/Reading										
3	12,055	0.77	709.5	46.8	545	863	197.1	17.5	132	246
4	12,378	0.81	712.7	49.6	549	846	204.9	17.5	140	251
5	11,828	0.79	716.0	46.8	552	848	209.5	17.3	141	263
6	11,696	0.80	703.7	41.7	555	851	213.6	16.4	155	262
7	10,968	0.78	709.9	41.6	568	833	216.7	16.8	151	268
8	11,062	0.79	699.9	34.2	586	805	220.0	17.0	150	276
Science										
5	3,626	0.71	715.6	50.4	571	845	208.3	14.1	156	254
8	4,160	0.73	716.2	47.0	587	868	214.6	14.7	158	259

*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 OST scale score ranges and the corresponding MAP Growth RIT cut scores and percentile ranges by content area and grade. Bolded numbers highlight the cut scores considered to be proficient for accountability purposes. These tables can be used to gauge a student’s likely performance level on the OST spring assessment when MAP Growth is taken in the fall, winter, or spring. For example, a Grade 3 student who obtained a MAP Growth Mathematics RIT score of 186 in the fall is likely to achieve *Proficient* performance on the OST Mathematics test. The same is true for a Grade 3 student who obtained a MAP Growth Mathematics RIT score of 199 in the spring. The spring cut score is higher than the fall cut score because of expected growth during the school year as students receive more instruction.

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 substantially from the default ones, a student’s expected performance level could be different from the projections presented in this report. Partners are therefore encouraged to use the projected performance level in students’ score reports since they reflect the specific instructional weeks set by partners.

Table 3.5. MAP Growth Cut Scores—Mathematics

OST Mathematics										
Grade	Limited		Basic		Proficient		Accomplished		Advanced	
3	587–682		683–699		700–724		725–752		753–818	
4	605–685		686–699		700–724		725–758		759–835	
5	624–686		687–699		700–724		725–748		749–804	
6	616–681		682–699		700–724		725–743		744–790	
7	605–683		684–699		700–724		725–754		755–806	
8	633–689		690–699		700–724		725–743		744–774	
MAP Growth Mathematics										
Grade	Limited		Basic		Proficient		Accomplished		Advanced	
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall										
2	100–165	1–23	166–171	24–40	172–180	41–67	181–190	68–88	191–350	89–99
3	100–179	1–25	180–185	26–42	186–193	43–65	194–201	66–83	202–350	84–99
4	100–188	1–22	189–193	23–34	194–202	35–58	203–211	59–80	212–350	81–99
5	100–198	1–24	199–205	25–41	206–217	42–71	218–226	72–87	227–350	88–99
6	100–204	1–26	205–213	27–47	214–223	48–71	224–231	72–85	232–350	86–99
7	100–212	1–33	213–219	34–49	220–231	50–74	232–244	75–91	245–350	92–99
8	100–213	1–27	214–222	28–45	223–237	46–75	238–247	76–88	248–350	89–99
Winter										
2	100–174	1–23	175–181	24–43	182–189	44–67	190–198	68–86	199–350	87–99
3	100–187	1–26	188–193	27–43	194–200	44–63	201–208	64–82	209–350	83–99
4	100–194	1–22	195–200	23–36	201–209	37–59	210–218	60–80	219–350	81–99
5	100–204	1–26	205–211	27–42	212–223	43–71	224–232	72–87	233–350	88–99
6	100–209	1–27	210–218	28–48	219–228	49–70	229–236	71–84	237–350	85–99
7	100–215	1–32	216–223	33–49	224–235	50–74	236–248	75–91	249–350	92–99
8	100–217	1–29	218–225	30–45	226–240	46–74	241–250	75–87	251–350	88–99
Spring										
2	100–180	1–26	181–186	27–42	187–194	43–65	195–203	66–85	204–350	86–99
3	100–192	1–27	193–198	28–43	199–205	44–63	206–213	64–81	214–350	82–99
4	100–199	1–24	200–204	25–35	205–213	36–58	214–222	59–78	223–350	79–99
5	100–208	1–27	209–215	28–42	216–227	43–70	228–236	71–85	237–350	86–99
6	100–212	1–28	213–221	29–47	222–231	48–69	232–239	70–83	240–350	84–99
7	100–218	1–33	219–226	34–50	227–238	51–74	239–251	75–90	252–350	91–99
8	100–219	1–29	220–227	30–44	228–242	45–73	243–252	74–86	253–350	87–99

Table 3.6. MAP Growth Cut Scores—ELA/Reading

OST ELA										
Grade	Limited		Basic		Proficient		Accomplished		Advanced	
3	545–671		672–699		700–724		725–751		752–863	
4	549–673		674–699		700–724		725–752		753–846	
5	552–668		669–699		700–724		725–754		755–848	
6	555–667		668–699		700–724		725–750		751–851	
7	568–669		670–699		700–724		725–748		749–833	
8	586–681		682–699		700–724		725–743		744–805	
MAP Growth Reading										
Grade	Limited		Basic		Proficient		Accomplished		Advanced	
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall										
2	100–155	1–13	156–170	14–45	171–181	46–73	182–193	74–91	194–350	92–99
3	100–172	1–20	173–184	21–45	185–193	46–66	194–204	67–86	205–350	87–99
4	100–183	1–22	184–194	23–45	195–203	46–66	204–212	67–82	213–350	83–99
5	100–185	1–12	186–198	13–36	199–207	37–58	208–217	59–79	218–350	80–99
6	100–193	1–15	194–208	16–46	209–218	47–69	219–227	70–85	228–350	86–99
7	100–195	1–13	196–209	14–39	210–219	40–63	220–228	64–80	229–350	81–99
8	100–207	1–27	208–216	28–47	217–229	48–75	230–237	76–87	238–350	88–99
Winter										
2	100–165	1–15	166–179	16–46	180–189	47–71	190–200	72–90	201–350	91–99
3	100–180	1–20	181–192	21–47	193–200	48–66	201–210	67–85	211–350	86–99
4	100–190	1–23	191–200	24–45	201–208	46–65	209–216	66–80	217–350	81–99
5	100–191	1–13	192–203	14–36	204–211	37–56	212–221	57–78	222–350	79–99
6	100–198	1–17	199–211	18–44	212–221	45–69	222–229	70–83	230–350	84–99
7	100–199	1–14	200–213	15–41	214–222	42–63	223–230	64–79	231–350	80–99
8	100–210	1–27	211–219	28–48	220–230	49–73	231–238	74–86	239–350	87–99
Spring										
2	100–170	1–16	171–183	17–45	184–193	46–70	194–204	71–89	205–350	90–99
3	100–184	1–22	185–195	23–46	196–203	47–65	204–212	66–83	213–350	84–99
4	100–193	1–24	194–202	25–45	203–210	46–64	211–218	65–80	219–350	81–99
5	100–194	1–15	195–205	16–37	206–213	38–56	214–222	57–76	223–350	77–99
6	100–200	1–18	201–213	19–46	214–222	47–67	223–230	68–83	231–350	84–99
7	100–201	1–15	202–214	16–41	215–223	42–62	224–231	63–79	232–350	80–99
8	100–212	1–29	213–220	30–47	221–231	48–72	232–239	73–85	240–350	86–99

Table 3.7. MAP Growth Cut Scores—Science

OST Science										
Grade	Limited		Basic		Proficient		Accomplished		Advanced	
5	559–663		664–699		700–724		725–752		753–845	
8	575–673		674–699		700–724		725–765		766–868	
MAP Growth Science										
Grade	Limited		Basic		Proficient		Accomplished		Advanced	
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall										
5	100–185	1–10	186–198	11–45	199–205	46–68	206–214	69–89	215–350	90–99
8	100–195	1–14	196–206	15–41	207–215	42–67	216–227	68–91	228–350	92–99
Winter										
5	100–190	1–12	191–202	13–45	203–209	46–68	210–217	69–87	218–350	88–99
8	100–199	1–16	200–209	17–42	210–217	43–65	218–228	66–89	229–350	90–99
Spring										
5	100–193	1–15	194–204	16–45	205–210	46–64	211–218	65–85	219–350	86–99
8	100–201	1–19	202–210	20–42	211–218	43–65	219–229	66–88	230–350	89–99

3.4. Third Grade Reading Guarantee

The purpose of Ohio’s Third Grade Reading Guarantee (TGRG) program is to identify K–3 students who are behind in reading, allowing schools to provide additional support to help students achieve reading success by the end of Grade 3. In June 2023, the Ohio State Board of Education decided that students who score 690 and higher on the OST ELA test or 48 and higher on the reading subscore will be eligible for TGRG promotion at the end of the year.² Table 3.8 presents the MAP Growth Reading RIT cut scores corresponding to the TGRG promotion cuts, including the MAP Growth classification accuracy results based on a sample of 8,179 students for whom we have both MAP Growth Reading RIT and OST Reading subscore information from Spring 2022.

Table 3.8. MAP Growth Reading Grade 3 Cut Scores for Ohio’s TGRG Program

Grade	OST Cut Score	MAP Growth Cut		Class. Accuracy
		RIT	Percentile	
OST ELA				
3	690	192	38	0.84
OST Reading				
3	48	192	38	0.86

Given the promotion cuts may change in a given year, Table 3.9 and Table 3.10 provide additional RIT scores corresponding to the OST ELA and Reading scores below and above the current promotion cuts to extend the range of cut scores to cover all possible future OST promotion cuts.

² <https://education.ohio.gov/Topics/Learning-in-Ohio/Literacy/Third-Grade-Reading-Guarantee>

Table 3.9. MAP Growth Reading Grade 3 Cut Scores for Ohio’s TGRG Program Extended Above and Below the Current Promotion Cuts—OST ELA

OST ELA	MAP Growth	
	RIT	Percentile
672	185	23
673	185	23
674	186	25
675	186	25
676	186	25
677	187	27
678	187	27
679	188	29
680	188	29
681	189	31
682	189	31
683	189	31
684	190	33
685	190	33
686	191	35
687	191	35
688	191	35
689	192	38
690	192	38
691	193	40
692	193	40
693	193	40
694	194	42
695	194	42
696	194	42
697	195	45
698	195	45
699	196	47
700	196	47

Table 3.10. MAP Growth Reading Grade 3 Cut Scores for Ohio’s TGRG Program Extended Above and Below the Current Promotion Cuts—OST Reading

OST Reading	MAP Growth	
	RIT	Percentile
43	183	19
44	185	23
45	187	27
46	189	31
47	191	35
48	192	38
49	194	42
50	196	47
51	197	50
52	199	55
53	200	57
54	202	62
55	203	64
56	205	69

3.5. Classification Accuracy

Table 3.11 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 OST tests, providing insight into the predictive validity of MAP Growth. The overall classification accuracy rate ranges from 0.81 to 0.88 for Mathematics, 0.80 to 0.84 for ELA/Reading, and 0.82 for Science. These values suggest that the RIT cut scores are effective at classifying students as proficient or not proficient on the OST assessment. For Grade 2, the classification accuracy rate refers to how well the MAP Growth cuts can predict students’ proficiency status on OST in Grade 3.

Although the results show that MAP Growth scores can be used to predict student proficiency with relatively high accuracy on the OST tests, there is a notable limitation to how these results should be used and interpreted. The OST 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 3.11. Classification Accuracy Results

Grade	N	Cut Score		Class. Accuracy*	Rate*		Sensitivity	Specificity	Precision	AUC*
		MAP Growth	OST		FP	FN				
ELA/Reading										
2	9,178	184	700	0.80	0.24	0.18	0.82	0.76	0.85	0.86
3	12,055	196	700	0.82	0.23	0.14	0.86	0.77	0.84	0.89
4	12,378	203	700	0.84	0.20	0.13	0.87	0.80	0.88	0.91
5	11,828	206	700	0.84	0.23	0.12	0.88	0.77	0.87	0.90
6	11,696	214	700	0.82	0.20	0.16	0.84	0.80	0.84	0.90
7	10,968	215	700	0.83	0.22	0.13	0.87	0.78	0.86	0.90
8	11,062	221	700	0.81	0.20	0.17	0.83	0.80	0.82	0.89
Mathematics										
2	9,396	187	700	0.81	0.20	0.18	0.82	0.80	0.87	0.88
3	12,291	199	700	0.87	0.18	0.09	0.91	0.82	0.88	0.93
4	12,401	205	700	0.88	0.19	0.08	0.92	0.81	0.90	0.94
5	11,440	216	700	0.87	0.14	0.11	0.89	0.86	0.88	0.94
6	11,602	222	700	0.88	0.11	0.13	0.87	0.89	0.88	0.94
7	10,375	227	700	0.87	0.12	0.13	0.87	0.88	0.86	0.94
8	7,697	228	700	0.82	0.18	0.18	0.82	0.82	0.77	0.90
Science										
5	3,626	205	700	0.82	0.25	0.15	0.85	0.75	0.85	0.87
8	4,160	211	700	0.82	0.24	0.14	0.86	0.76	0.86	0.88

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

3.6. Proficiency Projections

Table 3.12, Table 3.13, and Table 3.14 present the estimated probability of achieving *Proficient* performance on the OST test based on RIT scores from fall, winter, or spring. Due to measurement error in all test scores, the *Proficient* MAP Growth cuts do not guarantee that a student will reach proficiency on the OST. They instead indicate a 50% chance that a student will reach a particular performance level. Therefore, these projections further elucidate the *Proficient* cut scores by providing the likelihood of reaching proficiency on the OST in the spring at a given percentile throughout the year.

For example, the spring Grade 3 *Proficient* RIT cut score for Mathematics is 199, which indicates a 50% chance of achieving proficiency in the spring, as shown in Table 3.12. An educator can also use the table to estimate that a Grade 3 student who obtained a MAP Growth Mathematics score of 187 in the fall has a 56% probability of reaching *Proficient* or higher on the OST test in the spring.

Table 3.12. Proficiency Projections 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	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
2	5	187	154	No	<0.01	163	No	<0.01	167	No	<0.01
	10	187	158	No	0.02	167	No	<0.01	172	No	<0.01
	15	187	162	No	0.08	171	No	0.02	175	No	<0.01
	20	187	164	No	0.11	173	No	0.05	178	No	<0.01
	25	187	166	No	0.18	175	No	0.10	180	No	0.01
	30	187	168	No	0.27	177	No	0.20	182	No	0.04
	35	187	170	No	0.38	179	No	0.34	184	No	0.15
	40	187	172	Yes	0.50	181	No	0.42	186	No	0.37
	45	187	173	Yes	0.56	182	Yes	0.50	188	Yes	0.63
	50	187	175	Yes	0.62	184	Yes	0.66	189	Yes	0.75
	55	187	177	Yes	0.73	186	Yes	0.80	191	Yes	0.92
	60	187	178	Yes	0.78	187	Yes	0.85	193	Yes	0.98
	65	187	180	Yes	0.86	189	Yes	0.93	195	Yes	>0.99
	70	187	182	Yes	0.92	191	Yes	0.97	196	Yes	>0.99
	75	187	184	Yes	0.96	193	Yes	0.99	198	Yes	>0.99
	80	187	186	Yes	0.97	195	Yes	>0.99	201	Yes	>0.99
	85	187	188	Yes	0.99	198	Yes	>0.99	203	Yes	>0.99
90	187	192	Yes	>0.99	201	Yes	>0.99	207	Yes	>0.99	
95	187	196	Yes	>0.99	205	Yes	>0.99	212	Yes	>0.99	
3	5	199	166	No	<0.01	174	No	<0.01	178	No	<0.01
	10	199	171	No	0.01	179	No	<0.01	183	No	<0.01
	15	199	175	No	0.04	182	No	0.01	186	No	<0.01
	20	199	177	No	0.07	185	No	0.03	189	No	<0.01
	25	199	179	No	0.13	187	No	0.07	192	No	0.01
	30	199	181	No	0.21	189	No	0.14	194	No	0.04
	35	199	183	No	0.31	191	No	0.26	196	No	0.15
	40	199	185	No	0.44	193	No	0.42	198	No	0.37
	45	199	187	Yes	0.56	195	Yes	0.58	199	Yes	0.50
	50	199	188	Yes	0.63	196	Yes	0.67	201	Yes	0.75
	55	199	190	Yes	0.74	198	Yes	0.80	203	Yes	0.92
	60	199	192	Yes	0.79	200	Yes	0.90	205	Yes	0.98
	65	199	194	Yes	0.87	201	Yes	0.93	207	Yes	>0.99
	70	199	196	Yes	0.93	203	Yes	0.97	208	Yes	>0.99
	75	199	198	Yes	0.96	205	Yes	0.99	211	Yes	>0.99
	80	199	200	Yes	0.98	208	Yes	>0.99	213	Yes	>0.99
	85	199	202	Yes	0.99	210	Yes	>0.99	216	Yes	>0.99
90	199	206	Yes	>0.99	214	Yes	>0.99	219	Yes	>0.99	
95	199	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	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
4	5	205	176	No	<0.01	182	No	<0.01	185	No	<0.01
	10	205	181	No	0.02	187	No	<0.01	191	No	<0.01
	15	205	185	No	0.07	191	No	0.03	194	No	<0.01
	20	205	187	No	0.13	194	No	0.10	197	No	<0.01
	25	205	190	No	0.26	196	No	0.14	200	No	0.04
	30	205	192	No	0.37	198	No	0.26	202	No	0.15
	35	205	194	Yes	0.50	200	No	0.42	205	Yes	0.50
	40	205	196	Yes	0.63	202	Yes	0.58	207	Yes	0.75
	45	205	198	Yes	0.74	204	Yes	0.74	209	Yes	0.92
	50	205	200	Yes	0.83	206	Yes	0.86	211	Yes	0.98
	55	205	201	Yes	0.87	208	Yes	0.93	212	Yes	0.99
	60	205	203	Yes	0.93	210	Yes	0.97	214	Yes	>0.99
	65	205	205	Yes	0.96	212	Yes	0.99	217	Yes	>0.99
	70	205	207	Yes	0.98	214	Yes	>0.99	219	Yes	>0.99
	75	205	209	Yes	0.99	216	Yes	>0.99	221	Yes	>0.99
	80	205	212	Yes	>0.99	219	Yes	>0.99	224	Yes	>0.99
85	205	214	Yes	>0.99	221	Yes	>0.99	227	Yes	>0.99	
90	205	218	Yes	>0.99	225	Yes	>0.99	230	Yes	>0.99	
95	205	223	Yes	>0.99	231	Yes	>0.99	236	Yes	>0.99	
5	5	216	184	No	<0.01	189	No	<0.01	191	No	<0.01
	10	216	190	No	<0.01	194	No	<0.01	197	No	<0.01
	15	216	193	No	0.02	198	No	<0.01	201	No	<0.01
	20	216	196	No	0.05	201	No	0.01	205	No	<0.01
	25	216	199	No	0.11	204	No	0.05	207	No	<0.01
	30	216	201	No	0.22	206	No	0.10	210	No	0.02
	35	216	203	No	0.32	209	No	0.26	212	No	0.08
	40	216	205	No	0.44	211	No	0.42	215	No	0.37
	45	216	207	Yes	0.56	213	Yes	0.58	217	Yes	0.63
	50	216	209	Yes	0.68	215	Yes	0.74	219	Yes	0.85
	55	216	211	Yes	0.78	217	Yes	0.85	221	Yes	0.96
	60	216	213	Yes	0.86	219	Yes	0.93	223	Yes	0.99
	65	216	215	Yes	0.92	221	Yes	0.97	225	Yes	>0.99
	70	216	217	Yes	0.95	223	Yes	0.99	228	Yes	>0.99
	75	216	219	Yes	0.98	225	Yes	>0.99	230	Yes	>0.99
	80	216	222	Yes	0.99	228	Yes	>0.99	233	Yes	>0.99
85	216	225	Yes	>0.99	231	Yes	>0.99	236	Yes	>0.99	
90	216	229	Yes	>0.99	235	Yes	>0.99	240	Yes	>0.99	
95	216	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	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
6	5	222	188	No	<0.01	192	No	<0.01	194	No	<0.01
	10	222	194	No	<0.01	198	No	<0.01	200	No	<0.01
	15	222	198	No	0.01	202	No	<0.01	205	No	<0.01
	20	222	201	No	0.02	205	No	<0.01	208	No	<0.01
	25	222	204	No	0.06	208	No	0.01	211	No	<0.01
	30	222	206	No	0.10	211	No	0.04	214	No	<0.01
	35	222	209	No	0.22	213	No	0.10	216	No	0.02
	40	222	211	No	0.32	215	No	0.20	218	No	0.08
	45	222	213	No	0.44	217	No	0.34	221	No	0.37
	50	222	215	Yes	0.56	220	Yes	0.58	223	Yes	0.63
	55	222	217	Yes	0.68	222	Yes	0.74	225	Yes	0.85
	60	222	219	Yes	0.78	224	Yes	0.86	227	Yes	0.96
	65	222	221	Yes	0.86	226	Yes	0.93	230	Yes	>0.99
	70	222	223	Yes	0.92	228	Yes	0.97	232	Yes	>0.99
	75	222	226	Yes	0.97	231	Yes	0.99	235	Yes	>0.99
	80	222	228	Yes	0.99	234	Yes	>0.99	238	Yes	>0.99
85	222	231	Yes	>0.99	237	Yes	>0.99	241	Yes	>0.99	
90	222	235	Yes	>0.99	241	Yes	>0.99	245	Yes	>0.99	
95	222	241	Yes	>0.99	247	Yes	>0.99	252	Yes	>0.99	
7	5	227	192	No	<0.01	194	No	<0.01	196	No	<0.01
	10	227	198	No	<0.01	201	No	<0.01	203	No	<0.01
	15	227	202	No	<0.01	205	No	<0.01	207	No	<0.01
	20	227	206	No	0.01	209	No	<0.01	211	No	<0.01
	25	227	208	No	0.02	212	No	<0.01	214	No	<0.01
	30	227	211	No	0.05	215	No	0.03	217	No	<0.01
	35	227	213	No	0.10	217	No	0.07	220	No	0.01
	40	227	216	No	0.21	219	No	0.14	222	No	0.04
	45	227	218	No	0.37	222	No	0.33	224	No	0.15
	50	227	220	Yes	0.50	224	Yes	0.50	227	Yes	0.50
	55	227	222	Yes	0.63	226	Yes	0.67	229	Yes	0.75
	60	227	225	Yes	0.79	229	Yes	0.86	231	Yes	0.92
	65	227	227	Yes	0.87	231	Yes	0.93	234	Yes	0.99
	70	227	229	Yes	0.93	233	Yes	0.97	236	Yes	>0.99
	75	227	232	Yes	0.97	236	Yes	>0.99	239	Yes	>0.99
	80	227	235	Yes	0.99	239	Yes	>0.99	242	Yes	>0.99
85	227	238	Yes	>0.99	243	Yes	>0.99	246	Yes	>0.99	
90	227	243	Yes	>0.99	247	Yes	>0.99	251	Yes	>0.99	
95	227	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	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
8	5	228	194	No	<0.01	196	No	<0.01	197	No	<0.01
	10	228	201	No	<0.01	203	No	<0.01	205	No	<0.01
	15	228	205	No	0.01	208	No	<0.01	210	No	<0.01
	20	228	209	No	0.03	212	No	<0.01	214	No	<0.01
	25	228	212	No	0.07	215	No	0.01	217	No	<0.01
	30	228	215	No	0.16	218	No	0.05	220	No	<0.01
	35	228	218	No	0.24	221	No	0.15	223	No	0.04
	40	228	220	No	0.33	223	No	0.27	225	No	0.15
	45	228	223	Yes	0.50	226	Yes	0.50	228	Yes	0.50
	50	228	225	Yes	0.61	228	Yes	0.66	230	Yes	0.75
	55	228	227	Yes	0.72	231	Yes	0.85	233	Yes	0.96
	60	228	230	Yes	0.84	233	Yes	0.93	235	Yes	0.99
	65	228	232	Yes	0.90	236	Yes	0.98	238	Yes	>0.99
	70	228	235	Yes	0.96	238	Yes	0.99	241	Yes	>0.99
	75	228	238	Yes	0.98	241	Yes	>0.99	244	Yes	>0.99
	80	228	241	Yes	>0.99	244	Yes	>0.99	247	Yes	>0.99
85	228	245	Yes	>0.99	248	Yes	>0.99	251	Yes	>0.99	
90	228	249	Yes	>0.99	253	Yes	>0.99	256	Yes	>0.99	
95	228	256	Yes	>0.99	260	Yes	>0.99	263	Yes	>0.99	

*%tile = Percentile.

Table 3.13. Proficiency Projections based on RIT Scores—ELA/Reading

ELA/Reading											
Grade	Start %ile*	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
2	5	184	147	No	<0.01	156	No	<0.01	160	No	<0.01
	10	184	153	No	0.02	162	No	<0.01	166	No	<0.01
	15	184	157	No	0.06	166	No	0.01	170	No	<0.01
	20	184	160	No	0.12	169	No	0.03	173	No	<0.01
	25	184	162	No	0.15	171	No	0.07	175	No	<0.01
	30	184	164	No	0.21	173	No	0.13	177	No	0.01
	35	184	166	No	0.30	175	No	0.23	180	No	0.11
	40	184	168	No	0.40	177	No	0.35	182	No	0.27
	45	184	170	No	0.45	179	No	0.43	184	Yes	0.50
	50	184	172	Yes	0.55	181	Yes	0.57	186	Yes	0.73
	55	184	174	Yes	0.65	183	Yes	0.71	188	Yes	0.89
	60	184	176	Yes	0.75	185	Yes	0.83	189	Yes	0.94
	65	184	178	Yes	0.82	187	Yes	0.90	192	Yes	0.99
	70	184	180	Yes	0.85	189	Yes	0.95	194	Yes	>0.99
	75	184	183	Yes	0.93	191	Yes	0.98	196	Yes	>0.99
	80	184	185	Yes	0.96	194	Yes	>0.99	199	Yes	>0.99
	85	184	188	Yes	0.98	197	Yes	>0.99	202	Yes	>0.99
90	184	192	Yes	0.99	200	Yes	>0.99	205	Yes	>0.99	
95	184	197	Yes	>0.99	206	Yes	>0.99	211	Yes	>0.99	
3	5	196	159	No	<0.01	167	No	<0.01	170	No	<0.01
	10	196	165	No	0.01	173	No	<0.01	176	No	<0.01
	15	196	169	No	0.03	177	No	<0.01	180	No	<0.01
	20	196	173	No	0.07	180	No	0.01	183	No	<0.01
	25	196	175	No	0.11	183	No	0.05	186	No	<0.01
	30	196	178	No	0.21	185	No	0.09	189	No	0.01
	35	196	180	No	0.25	188	No	0.23	191	No	0.06
	40	196	182	No	0.34	190	No	0.29	193	No	0.17
	45	196	185	Yes	0.50	192	No	0.43	195	No	0.38
	50	196	187	Yes	0.55	194	Yes	0.57	197	Yes	0.62
	55	196	189	Yes	0.66	196	Yes	0.71	199	Yes	0.83
	60	196	191	Yes	0.75	198	Yes	0.83	201	Yes	0.94
	65	196	193	Yes	0.83	200	Yes	0.91	203	Yes	0.99
	70	196	195	Yes	0.86	202	Yes	0.95	206	Yes	>0.99
	75	196	198	Yes	0.93	205	Yes	0.99	208	Yes	>0.99
	80	196	201	Yes	0.97	207	Yes	>0.99	211	Yes	>0.99
	85	196	204	Yes	0.98	211	Yes	>0.99	214	Yes	>0.99
90	196	208	Yes	>0.99	215	Yes	>0.99	218	Yes	>0.99	
95	196	214	Yes	>0.99	220	Yes	>0.99	224	Yes	>0.99	

ELA/Reading											
Grade	Start %ile*	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
4	5	203	169	No	<0.01	176	No	<0.01	178	No	<0.01
	10	203	175	No	0.01	182	No	<0.01	184	No	<0.01
	15	203	179	No	0.03	186	No	<0.01	188	No	<0.01
	20	203	183	No	0.08	189	No	0.02	191	No	<0.01
	25	203	185	No	0.13	192	No	0.06	194	No	<0.01
	30	203	188	No	0.20	194	No	0.13	196	No	0.01
	35	203	190	No	0.29	196	No	0.22	199	No	0.11
	40	203	192	No	0.39	198	No	0.35	201	No	0.27
	45	203	195	Yes	0.50	200	No	0.42	203	Yes	0.50
	50	203	197	Yes	0.61	202	Yes	0.58	205	Yes	0.73
	55	203	199	Yes	0.71	205	Yes	0.78	207	Yes	0.89
	60	203	201	Yes	0.80	207	Yes	0.87	209	Yes	0.97
	65	203	203	Yes	0.83	209	Yes	0.94	211	Yes	0.99
	70	203	205	Yes	0.89	211	Yes	0.97	213	Yes	>0.99
	75	203	208	Yes	0.95	213	Yes	0.99	216	Yes	>0.99
	80	203	211	Yes	0.97	216	Yes	>0.99	219	Yes	>0.99
85	203	214	Yes	0.99	219	Yes	>0.99	222	Yes	>0.99	
90	203	218	Yes	>0.99	223	Yes	>0.99	226	Yes	>0.99	
95	203	224	Yes	>0.99	229	Yes	>0.99	232	Yes	>0.99	
5	5	206	178	No	0.01	183	No	<0.01	185	No	<0.01
	10	206	183	No	0.03	189	No	<0.01	191	No	<0.01
	15	206	187	No	0.08	193	No	0.03	194	No	<0.01
	20	206	191	No	0.17	196	No	0.09	198	No	0.01
	25	206	193	No	0.24	198	No	0.13	200	No	0.03
	30	206	196	No	0.39	201	No	0.28	203	No	0.17
	35	206	198	No	0.44	203	No	0.42	205	No	0.38
	40	206	200	Yes	0.56	205	Yes	0.58	207	Yes	0.62
	45	206	202	Yes	0.66	207	Yes	0.72	209	Yes	0.83
	50	206	204	Yes	0.76	209	Yes	0.83	211	Yes	0.94
	55	206	207	Yes	0.83	211	Yes	0.91	213	Yes	0.99
	60	206	209	Yes	0.89	213	Yes	0.96	215	Yes	>0.99
	65	206	211	Yes	0.94	215	Yes	0.98	217	Yes	>0.99
	70	206	213	Yes	0.95	217	Yes	0.99	219	Yes	>0.99
	75	206	216	Yes	0.98	220	Yes	>0.99	222	Yes	>0.99
	80	206	218	Yes	0.99	222	Yes	>0.99	224	Yes	>0.99
85	206	221	Yes	>0.99	226	Yes	>0.99	228	Yes	>0.99	
90	206	225	Yes	>0.99	229	Yes	>0.99	231	Yes	>0.99	
95	206	231	Yes	>0.99	235	Yes	>0.99	237	Yes	>0.99	

ELA/Reading											
Grade	Start %ile*	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
6	5	214	183	No	<0.01	188	No	<0.01	189	No	<0.01
	10	214	189	No	0.01	193	No	<0.01	195	No	<0.01
	15	214	193	No	0.02	197	No	<0.01	199	No	<0.01
	20	214	196	No	0.06	200	No	0.01	202	No	<0.01
	25	214	199	No	0.13	203	No	0.04	205	No	<0.01
	30	214	202	No	0.19	205	No	0.09	207	No	0.01
	35	214	204	No	0.28	208	No	0.22	209	No	0.06
	40	214	206	No	0.39	210	No	0.35	211	No	0.17
	45	214	208	No	0.44	212	Yes	0.50	213	No	0.38
	50	214	210	Yes	0.56	214	Yes	0.65	215	Yes	0.62
	55	214	212	Yes	0.67	216	Yes	0.72	217	Yes	0.83
	60	214	214	Yes	0.76	218	Yes	0.83	219	Yes	0.94
	65	214	217	Yes	0.84	220	Yes	0.91	222	Yes	0.99
	70	214	219	Yes	0.90	222	Yes	0.96	224	Yes	>0.99
	75	214	221	Yes	0.94	225	Yes	0.99	226	Yes	>0.99
	80	214	224	Yes	0.97	227	Yes	>0.99	229	Yes	>0.99
85	214	227	Yes	0.99	230	Yes	>0.99	232	Yes	>0.99	
90	214	231	Yes	>0.99	234	Yes	>0.99	236	Yes	>0.99	
95	214	237	Yes	>0.99	240	Yes	>0.99	242	Yes	>0.99	
7	5	215	187	No	<0.01	190	No	<0.01	191	No	<0.01
	10	215	193	No	0.01	196	No	<0.01	197	No	<0.01
	15	215	197	No	0.04	200	No	0.01	201	No	<0.01
	20	215	200	No	0.10	203	No	0.03	205	No	<0.01
	25	215	203	No	0.16	206	No	0.09	207	No	0.01
	30	215	206	No	0.28	209	No	0.22	210	No	0.06
	35	215	208	No	0.39	211	No	0.35	212	No	0.17
	40	215	210	Yes	0.50	213	No	0.42	214	No	0.38
	45	215	212	Yes	0.56	215	Yes	0.58	216	Yes	0.62
	50	215	214	Yes	0.67	217	Yes	0.72	218	Yes	0.83
	55	215	216	Yes	0.76	219	Yes	0.83	220	Yes	0.94
	60	215	218	Yes	0.84	221	Yes	0.91	223	Yes	0.99
	65	215	221	Yes	0.90	223	Yes	0.96	225	Yes	>0.99
	70	215	223	Yes	0.94	226	Yes	0.99	227	Yes	>0.99
	75	215	225	Yes	0.97	228	Yes	>0.99	229	Yes	>0.99
	80	215	228	Yes	0.99	231	Yes	>0.99	232	Yes	>0.99
85	215	231	Yes	>0.99	234	Yes	>0.99	235	Yes	>0.99	
90	215	235	Yes	>0.99	238	Yes	>0.99	239	Yes	>0.99	
95	215	241	Yes	>0.99	244	Yes	>0.99	245	Yes	>0.99	

ELA/Reading											
Grade	Start %ile*	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
8	5	221	190	No	<0.01	193	No	<0.01	194	No	<0.01
	10	221	196	No	<0.01	199	No	<0.01	200	No	<0.01
	15	221	200	No	0.02	203	No	<0.01	204	No	<0.01
	20	221	204	No	0.05	206	No	0.01	207	No	<0.01
	25	221	207	No	0.11	209	No	0.03	210	No	<0.01
	30	221	209	No	0.17	212	No	0.06	213	No	0.01
	35	221	211	No	0.20	214	No	0.13	215	No	0.03
	40	221	214	No	0.34	216	No	0.22	217	No	0.11
	45	221	216	No	0.45	218	No	0.35	220	No	0.38
	50	221	218	Yes	0.55	221	Yes	0.58	222	Yes	0.62
	55	221	220	Yes	0.61	223	Yes	0.72	224	Yes	0.83
	60	221	222	Yes	0.71	225	Yes	0.83	226	Yes	0.94
	65	221	225	Yes	0.83	227	Yes	0.91	228	Yes	0.99
	70	221	227	Yes	0.89	229	Yes	0.96	231	Yes	>0.99
	75	221	230	Yes	0.94	232	Yes	0.99	233	Yes	>0.99
	80	221	232	Yes	0.96	235	Yes	>0.99	236	Yes	>0.99
85	221	236	Yes	0.99	238	Yes	>0.99	239	Yes	>0.99	
90	221	240	Yes	>0.99	242	Yes	>0.99	243	Yes	>0.99	
95	221	246	Yes	>0.99	248	Yes	>0.99	249	Yes	>0.99	

*%tile = Percentile.

Table 3.14. Proficiency Projections 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	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
5	5	205	181	No	0.02	185	No	<0.01	186	No	<0.01
	10	205	185	No	0.04	189	No	0.01	191	No	<0.01
	15	205	188	No	0.10	192	No	0.04	194	No	<0.01
	20	205	190	No	0.16	194	No	0.08	196	No	<0.01
	25	205	192	No	0.19	196	No	0.14	198	No	0.02
	30	205	194	No	0.28	198	No	0.18	200	No	0.07
	35	205	196	No	0.39	200	No	0.30	202	No	0.19
	40	205	197	No	0.39	201	No	0.36	203	No	0.28
	45	205	199	Yes	0.50	203	Yes	0.50	205	Yes	0.50
	50	205	200	Yes	0.56	204	Yes	0.57	206	Yes	0.62
	55	205	202	Yes	0.67	206	Yes	0.70	208	Yes	0.81
	60	205	203	Yes	0.72	207	Yes	0.76	209	Yes	0.88
	65	205	205	Yes	0.76	209	Yes	0.82	211	Yes	0.96
	70	205	206	Yes	0.81	210	Yes	0.86	213	Yes	0.99
	75	205	208	Yes	0.87	212	Yes	0.92	214	Yes	>0.99
	80	205	210	Yes	0.90	214	Yes	0.96	216	Yes	>0.99
	85	205	212	Yes	0.94	216	Yes	0.98	219	Yes	>0.99
90	205	215	Yes	0.98	219	Yes	>0.99	222	Yes	>0.99	
95	205	220	Yes	>0.99	224	Yes	>0.99	226	Yes	>0.99	
8	5	211	188	No	0.02	191	No	<0.01	191	No	<0.01
	10	211	193	No	0.06	196	No	0.01	196	No	<0.01
	15	211	196	No	0.12	199	No	0.04	199	No	<0.01
	20	211	198	No	0.15	201	No	0.08	202	No	<0.01
	25	211	201	No	0.25	204	No	0.19	204	No	0.02
	30	211	203	No	0.35	206	No	0.24	206	No	0.07
	35	211	205	No	0.40	207	No	0.30	208	No	0.19
	40	211	206	No	0.45	209	No	0.43	210	No	0.38
	45	211	208	Yes	0.55	211	Yes	0.57	212	Yes	0.62
	50	211	210	Yes	0.65	212	Yes	0.64	213	Yes	0.72
	55	211	211	Yes	0.70	214	Yes	0.76	215	Yes	0.88
	60	211	213	Yes	0.75	216	Yes	0.85	217	Yes	0.96
	65	211	215	Yes	0.82	217	Yes	0.89	219	Yes	0.99
	70	211	217	Yes	0.88	219	Yes	0.94	221	Yes	>0.99
	75	211	219	Yes	0.91	221	Yes	0.97	223	Yes	>0.99
	80	211	221	Yes	0.94	223	Yes	0.99	225	Yes	>0.99
	85	211	223	Yes	0.97	226	Yes	>0.99	228	Yes	>0.99
90	211	227	Yes	0.99	229	Yes	>0.99	231	Yes	>0.99	
95	211	231	Yes	>0.99	234	Yes	>0.99	236	Yes	>0.99	

*%tile = Percentile.

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