

Introduction

This document provides a detailed description of the Closing Gaps Priority Area in the Accountability Report Card. It is meant to supplement, not replace, the information contained in the [Report Card Guide](#) and [Technical Guide](#).

Closing Gaps is one of four Priority Areas in the report cards, the others being Student Achievement, Growth, and On-Track and Postsecondary Readiness. The Closing Gaps Priority Area focuses on measuring how much districts and schools contribute toward closing statewide gaps in academic achievement and graduation rates. Closing Gaps has four component scores that are combined into an overall Closing Gaps score:

- Closing Achievement Gaps – English Language Arts
- Closing Achievement Gaps – Mathematics
- Closing Graduation Gaps – Four-Year Graduation Rate
- Closing Graduation Gaps – Six-Year Graduation Rate

Importance of Closing Gaps

Wisconsin has large and persistent achievement and graduation gaps affecting students across lines of race, socioeconomic status, language proficiency, and disability status. Policymakers and educators across the state are committed to promoting excellence for all by closing the gaps that separate Wisconsin students. The state has an expectation that all students, regardless of race, income, and ability, graduate from high school ready for college and careers.

Achievement gaps are a statewide problem. Gaps are not limited to a few schools, certain cities or specific districts. DPI has established goals for on-time high school graduation, proficiency and progress in English Language Arts (ELA) and mathematics. Closing the gaps in these areas are essential if we are to prepare all students for college and careers. The Closing Gaps Priority Area is designed to reward schools and districts that are improving the performance of their student subgroups in these areas.

What Does “Closing Gaps” Mean in the Report Cards?

Closing Gaps in the report cards assesses progress over time among historically marginalized student groups in the state, for whom we see large and persistent achievement and graduation gaps. The measure compares the trajectories of achievement and graduation rates among different groups over time. Ideally, groups that have lagged behind would show increasing rates of progress that would allow them to catch up to their counterparts. For example, in Wisconsin, there is a large achievement gap between white students and African American students. If a school improves the

performance of their African American students, and the performance of their white students is maintained, they are closing the black-white gap.

The two graphs below illustrate this. These graphs provide examples of how mathematics points-based proficiency rates¹ may change over time between white and black students:

Figure 1. Example Achievement over Time: Minimal Progress in Closing Gaps

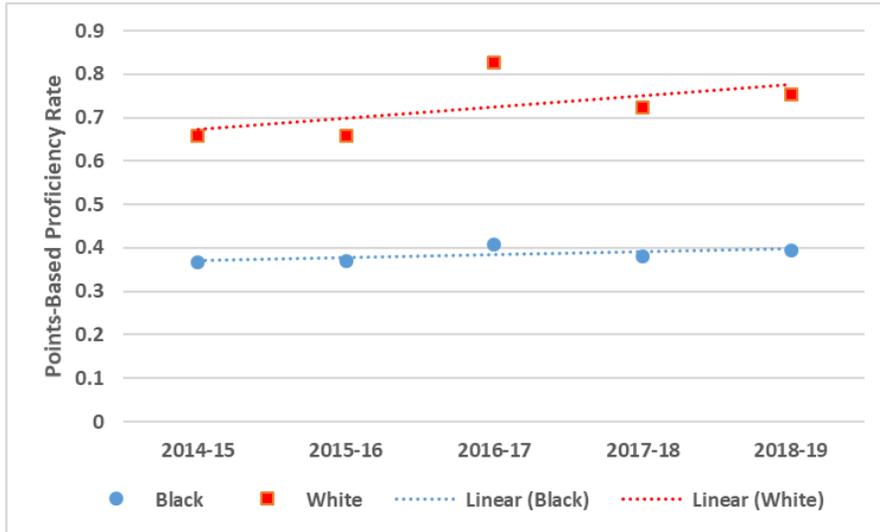
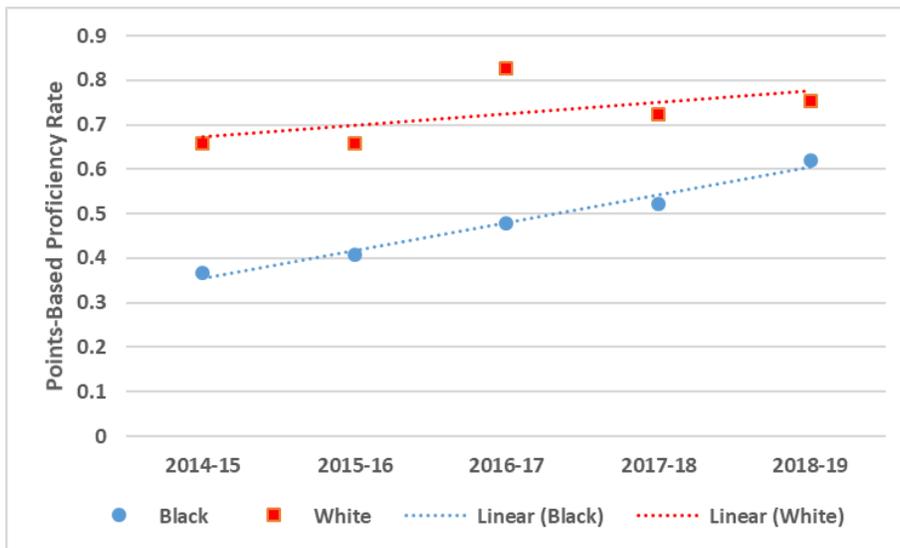


Figure 1 shows little progress towards closing the achievement gap. The line for black students (circles), which represents average progress over time, persistently falls below that for white students (squares). The two lines remain equally spaced for the first three years but then grow farther apart over time.

Figure 2. Example Achievement over Time: Making Progress in Closing Gaps



¹ The points-based proficiency rate is also used in the Student Achievement Priority Area. It is further described in the next section on page 3.

In Figure 2, the two lines converge, and this narrowing of the gap is indicative of practices resulting in a narrowing of the gap in student performance between black and white students. In Closing Gaps, more points are attained by schools for which a target subgroup is catching up to a statewide comparison group of peers at a fast rate, similar to what is shown in Figure 2.

What Goes Into the Closing Gaps Score?

The Closing Gaps Priority Area focuses on two types of gaps: academic achievement and graduation. In particular, it looks at how well schools are contributing to closing statewide achievement gaps in ELA and mathematics achievement and in four-year and six-year high school graduation rates. Since this Priority Area focuses on progress made over time, it uses at least three and up to the five most recent consecutive years of data.

A points-based proficiency rate – also used in the Achievement priority area – is the foundation of the ELA and mathematics gaps calculation. Points-based proficiency rate is based on the performance levels achieved by students who took the state assessment (Forward, DLM, ACT Aspire, or ACT with Writing) and works like this:

- For each student that scores in the Advanced performance level on the annual state test, the school earns 1.5 points; 1.0 point for students scoring Proficient; 0.5 point for students scoring Basic; and zero points for every student scoring in the Below Basic performance level.
- The sum of all of those points divided by the student count of all tested students (who were enrolled in the school for the full academic year) is the points-based proficiency rate. In the below example, the school has 54.5 proficiency points for the year, for a points-based proficiency rate of .401.

Performance Level	Points Multiplier	Students		Points
		Count	Percent	
Advanced	1.5	8	5.9%	12
Proficient	1.0	23	16.9%	23
Basic	0.5	39	28.7%	19.5
Below Basic	0.0	66	48.5%	0
Total Tested	-	136	100.0%	54.5

Group Comparisons

Schools are rewarded for showing progress in boosting ELA and mathematics scores, and graduation rates for select target groups in the school or district as compared to their complementary statewide comparison groups. This is designed to measure how well the performance of a subgroup at a particular school or district is doing relative to a broader comparison group of students across the state.

The Closing Gaps Priority Area is based on student subgroups, not the “all students” group. The target groups in this priority area are historically marginalized populations, for whom we see achievement and graduation gaps: racial/ethnic minorities, students with disabilities (SwD), English learners, and economically disadvantaged (ECD) students. This table lists these groups alongside of their statewide comparison group:

School Target Group	Statewide Comparison Group
American Indian or Alaskan Native	White
Asian	
Black or African American	
Hispanic/Latino	
Native Hawaiian or other Pacific Islander	
Two or More Races	
Students with Disabilities	Students without disabilities
English Learners	English proficient
Economically Disadvantaged	Not economically disadvantaged

Please note that the statewide comparison groups includes all students K-12 in that category. If a K-5 school has an ECD group, for example, the non-ECD comparison group would include all students statewide (K-12) who were tested and who were not ECD.

The achievement and graduation performances of all school target groups relative to their appropriate comparison groups are averaged to produce the Closing Gaps score. A school’s Closing Gaps score ultimately depends on the collective performance of its groups, so having multiple target groups does not necessarily advantage or disadvantage schools. It is true, however, that Closing Gaps scores for schools with only one or two target groups will be more sensitive to the performance of those groups, whereas scores for schools with many target groups will not be as influenced by very rapid or slow progress of one group over time.

Report Cards Without Closing Gaps Scores

A group must have at least 20 students per year for a minimum of three consecutive years in order to be included in the Closing Gaps calculations. “NA” is displayed on the report card when a group does not have the minimum number of students for the minimum number of years. A school must have at least one group or supergroup (see below) that meets these requirements in order to have a Closing Gaps score. If a school does not have a Closing Gaps score, it will be reflected on the front page of the report card with an “NA” for the priority area score.

In some cases, the front page of the report card will indicate an NA*. This asterisk (*) is to indicate that the Closing Gaps score is not provided because of a large change in score – at least 20 points – since the prior year. In most cases, such large changes in score is due to changes in student group size rather than changes in performance. Because schools and districts do not have control of the size of student groups, these large score changes are withheld and do not directly impact the overall score.

Year Comparisons

Note that the statewide comparison group calculation adjusts based on the number of consecutive years of data available for the school/district. For example, if the school/district has three years of data for their target group, the comparison group’s trend is limited to the same three years, even when five years are available for the statewide comparison group.² This is done in order to more appropriately compare school/district performance over time. In the example below, even though the performance of the statewide non-ECD group is available, the 2014-15 and 2015-16 data is not used when calculating the statewide group’s rate of change (the data for these years is listed as NA).

School Target Group Points-Based Proficiency Rates						State Comparison Group Points-Based Proficiency Rates					Rate of Change		Difference in Rate of Change		
Group	2014-15 Points	2015-16 Points	2016-17 Points	2017-18 Points	2018-19 Points	Group	2014-15 Points	2015-16 Points	2016-17 Points	2017-18 Points	2018-19 Points	School Target Group		State Comparison Group	
American Indian or Alaskan Native	NA	NA	NA	NA	NA	White	NA	NA	NA	NA	NA	NA	NA	NA	
Asian	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA
Black or African American	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA
Hispanic/Latino	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA
Native Hawaiian or Pacific Islander	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA
Two or More Races	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA
Students with Disabilities	NA	NA	NA	NA	NA	Students without Disabilities	NA	NA	NA	NA	NA	NA	NA	NA	
Economically Disadvantaged	NA	NA	0.652	0.482	0.469	Not Economically Disadvantaged	NA	NA	0.823	0.749	0.752	-0.087	-0.036	-0.051	
English Learners	NA	NA	NA	NA	NA	English Proficient	NA	NA	NA	NA	NA	NA	NA	NA	
"All 3" Supergroup	NA	NA	NA	NA	NA	Not in "All 3" Supergroup	NA	NA	NA	NA	NA	NA	NA	NA	
"SwD-ECD" Supergroup	NA	NA	NA	NA	NA	Not in "SwD-ECD" Supergroup	NA	NA	NA	NA	NA	NA	NA	NA	
"SwD-LEP" Supergroup	NA	NA	NA	NA	NA	Not in "SwD-LEP" Supergroup	NA	NA	NA	NA	NA	NA	NA	NA	
"ECD-LEP" Supergroup	NA	NA	NA	NA	NA	Not in "ECD-LEP" Supergroup	NA	NA	NA	NA	NA	NA	NA	NA	

Note: The state comparison group data in all tables in this document are for example only and should not be used as basis for calculating actual report card scores.

Supergroups

In some instances, a school’s non-racial student groups (SwD, EL, and ECD) may not meet the group size requirement (N=20) for calculating a Closing Gaps score. If this is the case, a supergroup is formed by combining at least two of these three groups so that the group size requirement is met. Schools with enough students for a SwD, EL, or ECD score do not have a supergroup that includes that group. Students are not counted more than once in a single supergroup.

There are four possible supergroups: the “SwD-ECD” supergroup, “SwD-EL” supergroup, “ECD-EL” supergroup, and “All 3” supergroup. Each supergroup is compared to the statewide group of students who would not meet any of the conditions for being in the particular supergroup.

School Target Group	Statewide Comparison Group
“All 3” Supergroup	Students who are not SwD, EL, or ECD
“SwD-ECD” Supergroup	Students who are not SwD or ECD
“SwD-EL” Supergroup	Students who are not SwD or EL
“ECD-EL” Supergroup	Students who are not ECD or EL

² In such cases, the restricted years for the comparison group will display NA.

For example, consider a school with 14 students with disabilities, 21 English learners, and 16 economically disadvantaged students. The school meets the group size requirement for EL students; however, there are too few SwD and ECD students for each group to be considered separately in Closing Gaps. However, if there are 25 students in the “SwD-ECD” supergroup (9 with disabilities, 11 economically disadvantaged, and 5 in both groups), then we can consider all of those students together in the supergroup. This supergroup would be compared to students statewide who are without disabilities and are not economically disadvantaged.

How is Gaps different than Growth?

Another priority area of the report card is School Growth, which measures the progress of individual students from one year to the next. This priority area is similar to Closing Gaps in that it is monitoring the progress of student performance in ELA and mathematics, but it differs from Closing Gaps in important ways. The main distinction is that School Growth is a value-added calculation that measures student-level change and controls for student demographics within the value-added model itself. The controls are intended to help measure a school or district’s contribution to the growth of its students, or how much “value” the school or district has added. Closing Gaps, on the other hand, measures a school’s group-level change. In other words, Closing Gaps reports on the performance of student groups in relation to statewide comparison groups; Growth reports on the performance of students relative to calculated predicted growth based upon the past performance of other students with similar test score histories and similar demographics.

Interpreting the Closing Gaps Score

Reading the Report Card Detail

The Closing Gaps section in the Report Card Detail contains a series of four tables: Closing Achievement Gaps – English Language Arts, Closing Achievement Gaps – Mathematics, Closing Graduation Gaps – Four Year, and Closing Graduation Gaps – Six Year tables. These tables contain the points that could be used to make graphs similar to those in **Figure 1** and **Figure 2**.

The Closing Gaps tables contain multiple columns with achievement or graduation data and rate calculations. For Closing Achievement Gaps, each table includes five points-based proficiency rate columns, representing the five most recent years and labeled “Points,” for both the school target groups and the state comparison groups. Points-based proficiency is calculated using the same method as is used for the Student Achievement Priority Area. The Closing Graduation Gaps tables are similar but show graduation rates in place of points-based proficiency rates.

Consider the following example table for Closing Achievement Gaps:

Table 1. Example Closing Achievement Gaps Table

School Target Group Points-Based Proficiency Rates					State Comparison Group Points-Based Proficiency Rates					Rate of Change		Difference in Rate of Change		
Group	2014-15 Points	2015-16 Points	2016-17 Points	2017-18 Points	2018-19 Points	Group	2014-15 Points	2015-16 Points	2016-17 Points	2017-18 Points	2018-19 Points		School Target Group	State Comparison Group
Example School Target Group	0.351	0.480	0.593	0.452	0.678	Example State Comparison Group	0.793	0.811	0.825	0.843	0.846	0.201	0.050	0.151

Each points-based proficiency column is treated as a point on a scatterplot. A line of best fit is drawn through these points, giving more weight to years with more tested students, to create a trend line. The slope of this line is a group’s Rate of Change, representing the progress made by the group over time. Rates of change may be positive or negative, depending on whether a group’s achievement scores or graduation rate are improving over time. Rate of Change values closer to zero suggest little change over time, while those farther from zero indicate more change.

Finally, the table includes a “Difference in Rate of Change” column, showing the difference in the Rate of Change between the target group and the comparison group. A positive number means that the gap is decreasing (i.e., the Rate of Change of the target group is higher than that of the comparison group); a negative number means that the gap is increasing. A Difference in Rate of Change of “!” indicates that a subgroup has been awarded the highest change score observed for that subgroup at any school (or district) in the state for having an average points-based proficiency rate of greater than or equal to 0.9.

The Report Card Detail contains four tables: Closing Achievement Gaps – English Language Arts, Closing Achievement Gaps – Mathematics, Closing Graduation Gaps – Four Year, and Closing Graduation Gaps – Six Year. Unlike **Table 1**, these tables contain one row per target group. “NA” values indicate the school or district does not meet the minimum group size requirement of 20 students. **Table 2** and **Table 3** below show example tables for Closing Achievement Gaps – English Language Arts and Closing Graduation Gaps – Four Year as they would appear in the report cards:

Table 2. Example Closing Achievement Gaps – English Language Arts Table

Closing Achievement Gaps - English Language Arts Score: 32.6/50															
School Target Group Points-Based Proficiency Rates						State Comparison Group Points-Based Proficiency Rates					Rate of Change		Difference in Rate of Change		
Group	2014-15 Points	2015-16 Points	2016-17 Points	2017-18 Points	2018-19 Points	Group	2014-15 Points	2015-16 Points	2016-17 Points	2017-18 Points	2018-19 Points	School Target Group		State Comparison Group	
American Indian or Alaskan Native	0.433	0.468	0.513	0.446	0.435	White	0.657	0.658	0.826	0.723	0.741	-0.002	0.023	-0.025	
Asian	0.470	0.515	0.711	0.657	0.547		0.657	0.658	0.826	0.723	0.741	0.031	0.023	0.008	
Black or African American	0.420	0.382	0.478	0.466	0.344		0.657	0.658	0.826	0.723	0.741	-0.006	0.023	-0.029	
Hispanic/Latino	0.388	0.377	0.506	0.478	0.438		0.657	0.658	0.826	0.723	0.741	0.019	0.023	-0.004	
Native Hawaiian or Pacific Islander	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA
Two or More Races	NA	NA	0.741	0.652	0.625		NA	NA	0.826	0.723	0.741	-0.055	-0.043	-0.012	
Students with Disabilities	0.219	0.248	0.333	0.304	0.284	Students without Disabilities	0.634	0.634	0.801	0.693	0.709	0.019	0.021	-0.002	
Economically Disadvantaged	0.460	0.456	0.600	0.515	0.462	Not Economically Disadvantaged	0.705	0.710	0.877	0.769	0.785	0.006	0.022	-0.016	
English Learners	0.290	0.296	0.393	0.337	0.219	English Proficient	0.610	0.609	0.767	0.662	0.675	-0.010	0.018	-0.028	
"All 3" Supergroup	NA	NA	NA	NA	NA	Not in "All 3" Supergroup	NA	NA	NA	NA	NA	NA	NA	NA	
"SwD-ECD" Supergroup	NA	NA	NA	NA	NA	Not in "SwD-ECD" Supergroup	NA	NA	NA	NA	NA	NA	NA	NA	
"SwD-LEP" Supergroup	NA	NA	NA	NA	NA	Not in "SwD-LEP" Supergroup	NA	NA	NA	NA	NA	NA	NA	NA	
"ECD-LEP" Supergroup	NA	NA	NA	NA	NA	Not in "ECD-LEP" Supergroup	NA	NA	NA	NA	NA	NA	NA	NA	

In **Table 2**, seven school target groups met cell size for all five years of available data (American Indian or Alaskan Native, Asian, black or African American, Hispanic/Latino, students with disabilities, economically disadvantaged, and English Learners). These subgroups are compared to the five-year trend of the corresponding state comparison group.

The Two or More Races subgroup did not meet cell size for the first two years of the table, so only the most recent three years of data are used in its calculation. Thus, this subgroup is compared to the three-year trend of White student scores in the state.

The Native Hawaiian or Pacific Islander subgroup did not meet the cell size requirement to be included in the table. Furthermore, because the students with disabilities, economically disadvantaged, and English learner groups were included in the score, no supergroups needed to be formed. The inclusion of NA values (signifying the absence or suppression of data) in **Table 3** are determined in the same way due to group size and supergroup requirements of the target groups.

Table 3. Example Closing Graduation Gaps – Four Year Table

Closing Graduation Gaps - Four Year Score: 13.6/25															
School Target Group Graduation Rates						State Comparison Group Graduation Rates					Rate of Change		Difference in Rate of Change		
Group	2013-14 Graduation Rate	2014-15 Graduation Rate	2015-16 Graduation Rate	2016-17 Graduation Rate	2017-18 Graduation Rate	Group	2013-14 Graduation Rate	2014-15 Graduation Rate	2015-16 Graduation Rate	2016-17 Graduation Rate	2017-18 Graduation Rate	School Target Group		State Comparison Group	
American Indian or Alaskan Native	NA	NA	NA	NA	NA	White	NA	NA	NA	NA	NA	NA	NA	NA	
Asian	0.894	0.868	0.761	0.778	0.952		0.923	0.925	0.929	0.931	0.928	-0.009	0.002	-0.011	
Black or African American	NA	0.714	0.378	0.826	0.679		NA	0.925	0.929	0.931	0.928	0.029	0.001	0.028	
Hispanic/Latino	0.625	0.893	0.600	0.622	0.750		0.923	0.925	0.929	0.931	0.928	-0.002	0.002	-0.004	
Native Hawaiian or Pacific Islander	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	
Two or More Races	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	
Students with Disabilities	0.673	0.755	0.611	0.727	0.625		Students without Disabilities	0.904	0.905	0.912	0.914	0.910	-0.010	0.002	-0.012
Economically Disadvantaged	0.747	0.774	0.592	0.734	0.715		Not Economically Disadvantaged	0.931	0.932	0.939	0.940	0.936	-0.010	0.002	-0.012
English Learners	NA	NA	NA	NA	NA		English Proficient	NA	NA	NA	NA	NA	NA	NA	NA
"All 3" Supergroup	NA	NA	NA	NA	NA		Not in "All 3" Supergroup	NA	NA	NA	NA	NA	NA	NA	NA
"SwD-ECD" Supergroup	NA	NA	NA	NA	NA	Not in "SwD-ECD" Supergroup	NA	NA	NA	NA	NA	NA	NA	NA	
"SwD-LEP" Supergroup	NA	NA	NA	NA	NA	Not in "SwD-LEP" Supergroup	NA	NA	NA	NA	NA	NA	NA	NA	
"ECD-LEP" Supergroup	NA	NA	NA	NA	NA	Not in "ECD-LEP" Supergroup	NA	NA	NA	NA	NA	NA	NA	NA	

Understanding (!) Scores

A Difference in Rate of Change of “!” indicates that a group has been awarded the maximum possible score observed for that group at any school (or district) in the state for having an average points-based proficiency rate of greater than or equal to 0.9.

Calculating the Closing Gaps Score

Below are highlights of how Closing Gaps scores are calculated using the Closing Achievement Gaps and Closing Graduation Gaps components. See the [Technical Guide](#) or detailed walkthroughs and worksheets to calculate the Priority Area score using the data provided in the report cards.

Closing Achievement Gaps Calculations

Calculating the Closing Achievement Gaps score begins with a DPI calculation of the Rate of Change for the target group and statewide comparison group, which is provided in the Report Card Detail tables (see Appendix). As mentioned above, the Rate of Change represents the progress made by each group over time. Years with more tested students are weighted more heavily.

Next, the state comparison group Rate of Change is subtracted from the school target group Rate of Change for each subgroup to determine that subgroup’s Difference in Rate of Change:

$$\begin{aligned} \text{Difference in Rate of Change} \\ = \text{School Target Group Rate of Change} - \text{State Comparison Group Rate of Change} \end{aligned}$$

The Rate of Change calculations based on **Table 2** are below:

Amer Indian students: Difference in Rate of Change = $-0.002 - 0.023 = -0.025$

Asian students: Difference in Rate of Change = $0.031 - 0.023 = 0.008$

Black students: Difference in Rate of Change = $-0.006 - 0.023 = -0.029$

Hispanic students: Difference in Rate of Change = $0.019 - 0.023 = -0.004$

Two or More Races students: Difference in Rate of Change = $-0.055 - (-0.043) = -0.012$

*Notice that the calculation for Two or More Races uses a rate of change of the three-year trend (-0.043) for the comparison group (white) that is different from the calculations for the other race/ethnicity subgroups which use a five-year trend (0.023).

Students with Disabilities: Difference in Rate of Change = $0.019 - 0.021 = -0.002$

Economically Disadvantaged students: Difference in Rate of Change = $0.006 - 0.022 = -0.016$

Limited English Proficient students: Difference in Rate of Change = $-0.010 - 0.018 = -0.028$

Next, we average the Difference in Rate of Change scores for each group in the school together. A formula is then applied to the Closing Achievement Gaps score to put it on the same scale as Student Achievement. The numbers in the formula were determined from statistical modeling of the Student Achievement, Growth, and Closing Gaps Priority Areas.

Closing Achievement Gaps Score

$$= [(Average\ Difference\ in\ Rate\ of\ Change * 4.77) + 0.72] * Possible\ Points$$

Below are these steps applied to the school in **Table 2**:

Average Change Score

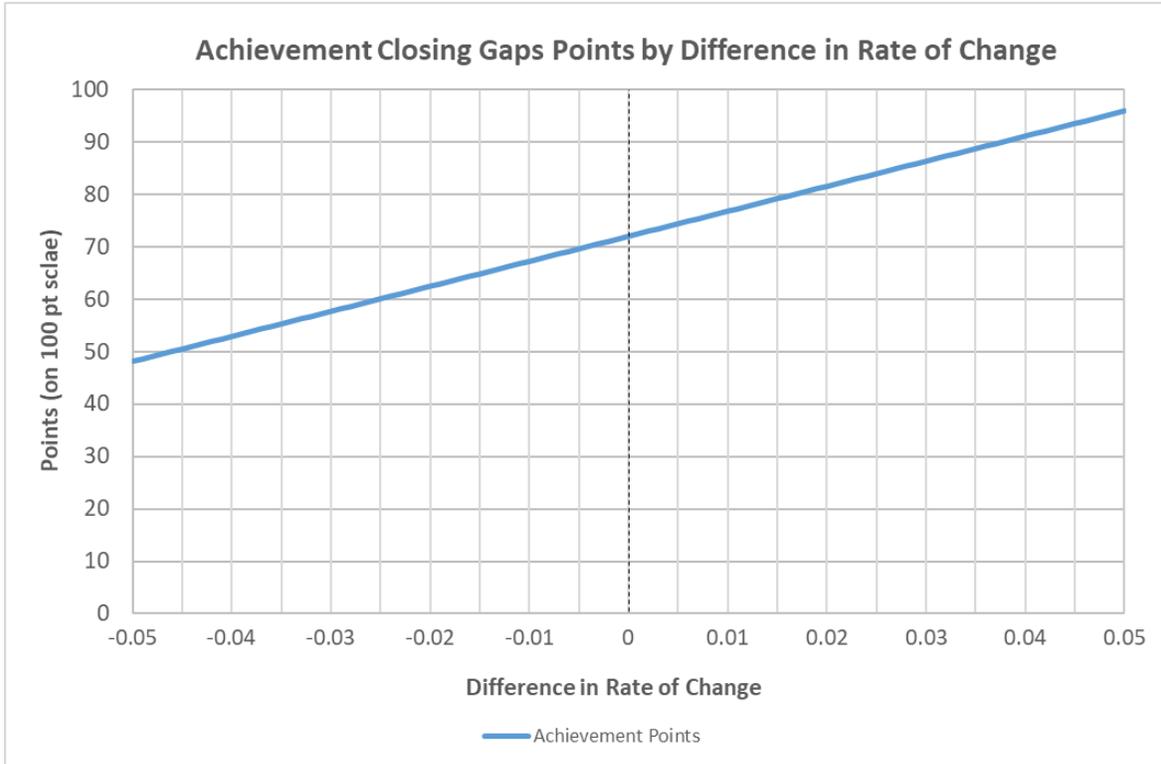
$$= \frac{-0.025 + 0.008 + (-0.029) + (-0.004) + (-0.012) + (-0.002) + (-0.016) + (-0.028)}{8}$$
$$= -0.0135;$$

Possible Points = 50

*Closing Achievement Gaps Score = $[(-0.0135 * 4.77) + 0.72] * 50 = 32.8$*

(The score of 32.6 from **Table 2** is caused by rounding differences in the index.)

Note that the number of possible Closing Achievement and Graduation Gaps points depend on which data components are available. A comprehensive list of possible weights and points scenarios are outlined in detail in the “Calculating the Final Closing Gaps Score” section on page 14. The above example calculates a Closing Achievement Gaps - ELA score on a 50-point scale. Below is a chart that demonstrates how the difference in rate of change impacts Closing Achievement Gaps points using a 100-point scale.



Closing Graduation Gaps Calculations

Closing Graduation Gaps score calculations are similar to those for Closing Achievement Gaps, with some differences:

1. “Students in Cohort” takes the place of “Students Tested.”
2. “Graduation Rates” take the place of “Points-Based Proficiency Rates.”
3. The 4-year and 6-year Closing Graduation Gap cohort scores are calculated separately. Each is calculated as the average difference in rate of change for subgroups in that cohort.
4. The Closing Graduation Gaps score is the average of the Closing Graduation Gaps – 4-Year Cohort score and the Closing Graduation Gaps – 6-Year Cohort score, adjusted to align with the scale used in the Student Achievement Priority Area. If only one cohort score is available, the Closing Graduation Gaps score is equal to that cohort score. The numbers in the score formula below that align Closing Graduation Gaps to Student Achievement are different. Again, these numbers were determined from statistical modeling of the Student Achievement, Growth, and Closing Gaps Priority Areas. The number of possible points are discussed in the “Calculating the Final Closing Gaps Score” section below.

Closing Graduation Gaps Score

$$= [(Average\ of\ 4\ -\ year\ and\ 6\ -\ year\ Closing\ Graduation\ Gap\ Cohort\ Scores * 2.82) + 0.55] * Possible\ Points$$

Below shows the calculations for the example high school in **Table 3**:

$$\begin{aligned} \text{Difference in Rate of Change} \\ = \text{School Target Group Rate of Change} - \text{State Comparison Group Rate of Change} \end{aligned}$$

$$\text{Asian students: Difference in Rate of Change} = -0.009 - 0.002 = -0.011$$

$$\text{Black students: Difference in Rate of Change} = 0.029 - 0.001 = 0.028$$

$$\text{Hispanic students: Difference in Rate of Change} = -0.002 - 0.002 = -0.004$$

*Notice that the calculation for black subgroup uses a rate of change of the four-year trend (0.001) for the comparison group (white) that is different from the calculations for the other race/ethnicity subgroups which use a five-year trend (0.002).

$$\text{Students with Disabilities: Difference in Rate of Change} = -0.010 - 0.002 = -0.012$$

$$\begin{aligned} \text{Economically Disadvantaged students: Difference in Rate of Change} &= -0.010 - 0.002 \\ &= -0.012 \end{aligned}$$

$$\text{Average Change Score} = \frac{-0.011 + 0.028 + (-0.004) + (-0.012) + (-0.012)}{5} = -0.0022$$

$$\text{Possible Points} = 25$$

$$\text{Closing Graduation Gaps Score} = [(-0.0022 * 2.82) + 0.55] * 25 = 13.6$$

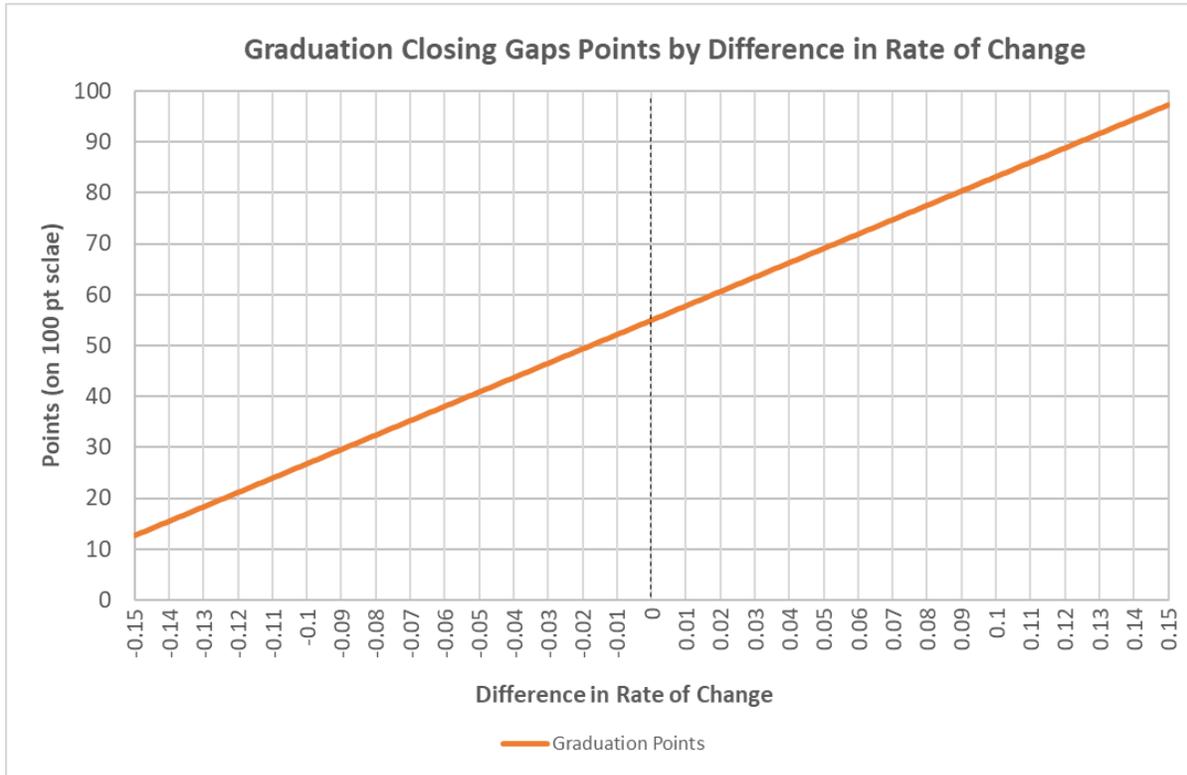
If a school has both a Closing Graduation Gaps – Four Year and a Closing Graduation Gaps – Six Year score then they need to be added together to create an overall Closing Graduation Gaps score:

$$\begin{aligned} \text{Closing Graduation Gaps Score} \\ = \text{Closing Graduation Gaps Four Year Score} \\ + \text{Closing Graduation Gaps Six Year Score} \end{aligned}$$

The school in Table 3 has a Closing Graduation Gaps – Six Year score of 14.2 (calculations not shown), so its Closing Graduation Gaps score is:

$$\text{Closing Graduation Gaps Score} = 13.6 + 14.2 = 27.8$$

The above example calculates a Closing Graduation Gaps – Six Year score on a 25-point scale. Below is a chart that demonstrates how the difference in rate of change converts to Closing Graduation Gaps points using a 100-point scale.



Calculating the Final Closing Gaps Score

The front page of the report cards reports three Closing Gaps subscores: English Language Arts Achievement Gaps, Mathematics Achievement Gaps, and Graduation Rate Gaps. Only schools that graduate students receive Closing Graduation Gaps scores. If both the Closing Achievement Gaps and Closing Graduation Gaps components apply for a district or school, each component score counts for half of the Priority Area score. If only one applies, the score for that component is the score for the Priority Area. The weighting of component scores are outlined in the table on the following page.

	Scenario 1 Achievement Only		Scenario 2 Graduation – Four Year Only		Scenario 3 Graduation – Six Year Only		Scenario 4 Both Graduation		Scenario 5 Achievement and Graduation	
Component	Present?	Possible points	Present?	Possible points	Present?	Possible points	Present?	Possible Points	Present?	Possible points
Closing English Language Arts Achievement Gaps	Yes	50	No	-	No	-	No	-	Yes	25
Closing Mathematics Achievement Gaps	Yes	50	No	-	No	-	No	-	Yes	25
Closing Graduation Gaps – Four Year	No	-	Yes	100	No	-	Yes	50	Yes	25
Closing Graduation Gaps – Six Year	No	-	No	-	Yes	100	Yes	50	Yes	25
	Scenario 6 Achievement and Graduation – Four Year		Scenario 7 Achievement and Graduation – Six Year		Scenario 8 ELA Achievement and Graduation		Scenario 9 Math Achievement and Graduation			
Component	Present?	Possible points	Present?	Possible points	Present?	Possible points	Present?	Possible Points		
Closing English Language Arts Achievement Gaps	Yes	25	No	25	No	50	No	-		
Closing Mathematics Achievement Gaps	Yes	25	No	25	No	-	No	50		
Closing Graduation Gaps – Four Year	No	50	Yes	-	No	25	Yes	25		
Closing Graduation Gaps – Six Year	No	-	No	50	Yes	25	Yes	25		

Appendix: Technical Calculation of Rate of Change

The Rate of Change column in the Closing Achievement Gaps tables is calculated using a weighted least-squares (WLS) regression of points-based proficiency rates. Points-based proficiency rates for a target student group or state comparison group are calculated across the most recent three (up to five) years. These values are calculated in the same way as in the Student Achievement area, in which students earn points for their schools based on whether they are partially proficient (Basic), proficient, or perform beyond the proficiency threshold (Advanced). Points based on student proficiency are awarded as follows:

- Advanced level: 1.5 points
- Proficient level: 1 point
- Basic level: 0.5 points
- Below Basic level: 0 points

A school's points-based proficiency rate is the average points earned by students in the school:

$$\text{Points – Based Proficiency Rate} = \frac{\text{Number Scoring Advanced} * 1.5 + \text{Number Scoring Proficient} * 1 + \text{Number Scoring Basic} * 0.5 + \text{Number Scoring Below Basic} * 0}{\text{Number of Students Tested}}$$

This same equation is also used to calculate the points-based proficiency rate of the state comparison groups.

The WLS regression models proficiency rates for each subgroup in a school or district, and each corresponding state comparison group as a function of time:

$$y_t = \beta_0 + \beta_1 t + \varepsilon_t$$

where $t = 0$ represents the current time, $t = -1$ represents the year immediately prior to the current year, and so on. y_t is the outcome of interest, which in this case is the points-based proficiency rate at time t . There are n_t students are tested at each time t , and each error term (ε_t) is assumed to have mean 0 and variance proportional to $1/n_t$, with covariances of 0 among the ε_t . β_1 is the slope of this linear model, whose WLS estimate is consequently is the Rate of Change shown in the Closing Gaps table.

The estimators for β_0 and β_1 can be derived mathematically and work out to be:

$$\beta_0 = \frac{\sum_{t=-4}^0 n_t y_t - \hat{\beta}_1 \sum_{t=-4}^0 n_t t}{\sum_{t=-4}^0 n_t}$$

$$\beta_1 = \frac{\sum_{t=-4}^0 t n_t y_t - (\sum_{t=-4}^0 n_t y_t \cdot \sum_{t=-4}^0 t n_t) / \sum_{t=-4}^0 n_t}{\sum_{t=-4}^0 n_t t^2 - (\sum_{t=-4}^0 t n_t)^2 / \sum_{t=-4}^0 n_t}$$

The Rate of Change calculation for Closing Graduation Gaps is analogous, except that y_t represents the graduation rate and n_t is the number of students in the cohort.