School/District Performance Index - Report Notes

Overview

This report displays School and District Performance Indices (SPI/DPI) by subgroup for English Language Arts (ELA), Math, and Science achievement. The Smarter Balanced Assessment and the Connecticut Alternate Assessment (CTAA) are used for calculation of SPI/DPI for ELA and Math. Prior to the 2017-18 school year, the Connecticut Mastery Test(CMT), Connecticut Academic Proficiency Test(CAPT), and Skills Checklist were used for calculation of SPI/DPI for Science. After the 2017-18 school year, the Next Generation Science Standards (NGSS) assessment and Connecticut Alternate Science (CTAS) assessment will be used for calculation of SPI/DPI for Science. SPI/DPI for Science were not calculated during the 2017-18 school year as the NGSS and CTAS assessments were in the pilot phase. The SPI/DPI ranges in value from 0 to 100 points. Connecticut's ultimate target for a SPI/DPI is 75. Data from this report are housed in the Statewide Accountability File.

Performance Index Calculation Rules
Excerpt from Using Accountability Results to Guide Improvement, 4th edition (p. 51 – 55)

Overview

Subject-level indices are calculated at the student-, subgroup-, school- and district-levels. To calculate an index, a student's score in each subject on the Smarter Balanced Assessment (SB), SAT, or the CT Alternate Assessment (CTAA) must first be transformed into an index score. Detailed information regarding the calculation of each test specific score can be found in the section titled "Calculating the Performance Index".

Student Individual Performance Indices (IPIs) are derived separately for each subject (Math and English Language Arts).

School Performance Indices (SPIs) are calculated by averaging all of a given school's valid and non-excluded Student IPIs for the applicable subject. Only students enrolled in the school on October 1st of the testing year are included in SPI calculations.

District Performance Indices (DPIs) are calculated by averaging all of a given district's valid and non-excluded Student IPIs for the applicable subject. Note that students who are enrolled in 'Programs' or are outplaced are included in a given Public School Information System (PSIS) "Reporting District's" DPI. Only students enrolled in the district on October 1st of the testing year are included in DPI calculations.

- Connecticut excludes scores of "recently arrived" ELs from SPI and DPI calculations. "Recently arrived" ELs are defined as any EL enrolled for the first time in a U.S. school for fewer than 24 calendar months at the time of testing. Assessment scores for ELs who have attended U.S. schools for more than two years are included in the SPI and DPI

calculations. For additional information, please see the section titled "Connecticut Assessment and Accountability Reporting of "Recently Arrived" English Learners".

Participation Rates are calculated by dividing the number of students who attempted and/or completed the assessment by the total number of students who should have been administered the subject-level assessment. Details regarding whether students were participants or non-participants is contained in the section titled "Participation and Achievement Inclusion Rules."

File Preparation

All demographic data included in the assessment files were extracted from the CSDE frozen PSIS Registration File on the last day of the testing window. Only students in grades 3 through 8, and grade 11 are included in calculations for the standard and alternate ELA and mathematics assessments.

- English Learner (EL) "Flex" Group:
  As part of the Every Student Succeeds Act (ESSA), students who do not belong to the EL subgroup at the time of testing but who have been members of the EL subgroup any time up to four years prior are included in the EL flexibility subgroup used for Indicator 1 calculations. The previous subgroup status is determined using the EL PSIS Collection variable from the October, January and June collections of the current and four prior school years. Additionally, the testing demographic file is reviewed for all available and relevant years. (Note: The January PSIS collection was discontinued in 2017-18.)

The completion of a Learner Characteristics Inventory (LCI) is required for participation in any alternate assessment. Any CTAA student record or Connecticut Alternate Science Assessment (CTAS) without a completed LCI was invalidated. These students were included as non-participants on the standard assessment. In cases where a standard assessment record existed for a student with a completed LCI, the standard assessment record was invalidated and the student was included as a non-participant on the alternate assessment.

Participation and Achievement Inclusion Rules

Accountability reporting requires a series of decision rules that specify whether a student is included in performance index and participation rate calculations. The tables on the following pages provide a comprehensive list of the assessment status rules used for accountability calculations for all summative assessments.

Smarter Balanced Assessment Data File Rules

Assessment	Test Status	Attempted Flag	Participation Numerator (Total Tested)	Participation Denominator (Total Students)	Accountability Achievement
Smarter Balanced ELA	Completed (submitted)	Y= Items completed	Yes: P	Yes	Yes: SS
	Expired (started, not submitted)		Yes: P	Yes	Yes: SS
	Invalidated		Yes: P	Yes	exclude
	Completed	P= Logged in, did not complete any items	No: NP	Yes	exclude
	Expired		Yes: P	Yes	Yes: LOSS
	Invalidated		Yes: P	Yes	exclude
	Invalidated	<>	Yes: P	Yes	exclude
	No record in testing file	Did not log in to test	No: NP	Yes	exclude
Smarter Balanced MATH	Completed (c/s, s/s)	Y	Yes: P	Yes	Yes: SS
	Expired (e/c, e/e)		Yes: P	Yes	Yes: SS
	Expired (e/i)		Yes: P	Yes	exclude
	Invalidated (i/i)		Yes: P	Yes	exclude
	Completed (c/i)	P	Yes: P	Yes	exclude
	Expired (e/c, e/e, e/r, e/i)		Yes: P	Yes	Yes: LOSS
	Invalidated (i/i)		Yes: P	Yes	exclude
	Completed (c,s/i)	N	Yes: P	Yes	exclude
	Expired (e/n)		No: NP	Yes	exclude
	Invalidated (i/i)		Not Applicable		
	Pending (c/n)		No: NP	Yes	exclude
	Pending (c/r)		Yes: P	Yes	exclude
	Invalidated (i/i)	<>	Yes: P	Yes	exclude
	No record in testing file		No: NP	Yes	exclude

Legend

Test Status:

        Completed = exam completed and submitted to be scored

        Expired = exam started but not submitted

        Invalidated = test invalidated

        Pending = One segment of the two part math exam never started or was reset by the test administrator (Pending exists for Smarter Balanced Math only)

        <> = Blank, no exam started by student

SUB-Statuses for Math exam (Sub-status is required because the exam has two segments: Multiple Choice and Performance Task)

      c = Completed; subtest submitted to be scored

      e = Expired; subtest not submitted

      i = Subtest invalidated

      r = Reset; subtest reset after started. Temporary test segment status only
           (typically occurs when appropriate accommodations have not been set in
           TIDE)

      n = No Activity; subtest status only. Never started/logged into the subtest;
           displays as blank.

      s = Scored; Completed subtest

Attempted Flag:

      Y = student attempted items within the exam

      P = student logged into exam but did not complete any items

      <> = Blank, no exam started by student OR exam invalidated before submitted for scoring

SS = Scale Score included in accountability calculations

LOSS = Record is assigned the Lowest Obtainable Scale Score (LOSS) and included in accountability calculations

Exclude = Record is excluded from inclusion in accountability calculations

Connecticut Alternate Assessment (CTAA) Data File Rules

Test Status	Attempted Flag	Participation Numerator (Total Tested)	Participation Denominator (Total Students)	Accountability Achievement
Completed		Yes: P	Yes	Yes: SS
Expired	Y	Yes: P	Yes	Yes: SS
Invalidated		Yes: P	Yes	exclude
Completed		Not Applicable		
Expired	P	Yes: P	Yes	Yes: LOSS
Invalidated		Yes: P	Yes	exclude
< >	< >	No: NP	Yes	exclude

Next Generation Science Standards Assessment (NGSS) and the Connecticut Alternate Science Assessment (CTAS) Data File Rules

Note: Results from the science assessments in 2017-18 were not reported and are not included in achievement calculations. However, participation rates were generated and included in 2017-18 accountability reports.

Test Status	Attempted Flag	Participation Numerator (Total Tested)	Participation Denominator (Total Students)
Completed		Yes: P	Yes
Expired	Y	Yes: P	Yes
Invalidated		Yes: P	Yes
< >	< >	No: NP	Yes

SAT Data File Rules

Number of Subject-Level Test Items Answered	Attempted-ness	SAT Student Participated Indicator = Y	Participation Numerator (Total Tested)	Participation Denominator (Total Students)	Accountability Achievement
>=1	Y	Y	Yes: P	Yes	Yes: SS
0	P		Yes: P	Yes	LOSS
< >	< >	N	No: NP	Yes	exclude
< >	< >	< >	No: NP	Yes	exclude

Performance Index Methodology
Excerpt from Using Accountability Results to Guide Improvement, 4th edition (p. 56 – 59)

Background
Connecticut first implemented a performance index for school and district accountability purposes in 2012. The performance index was calculated by converting Connecticut Mastery Test (CMT) and Connecticut Academic Performance Test (CAPT) achievement levels to a scale of 0 to 100. This approach recognized and valued improvement in student achievement at all performance levels, not just from 'not proficient' to 'proficient'. It raised expectations by setting the target that all students perform at the higher 'goal' level versus the 'proficient' level.

While practitioners were generally pleased with this index, they wondered if using scale scores to calculate the index instead of achievement levels would yield an even more precise measure of student achievement. Consequently, Connecticut State Department of Education (CSDE) staff consulted with faculty from the University of Connecticut to explore this possibility. The explanation that follows outlines the specific methodology for converting scale scores for the various state assessments into Connecticut's performance index.

Scale Scores Improve Index Calculations
Individual student results from the English language arts (ELA) and Mathematics assessments are reported in terms of scale scores and achievement levels. Achievement levels are used as a way of categorizing student performance in a content area. The levels represent broad groupings of performance that are developed based on the judgment of content experts. Operationally, the levels are used as a starting point in discussing a student's test scores.

Achievement levels are derived from underlying scale scores. The underlying scale or ruler provides a more continuous measure of student performance such that one student with a significantly greater scale score than another student in the same achievement level can be said to be performing higher.

For district- and school-level accountability, Connecticut uses student scale scores, not achievement levels, to calculate performance index scores in ELA and Mathematics. This approach to performance index calculation acknowledges that the assessments were not developed to solely classify students into broad achievement levels. On the contrary, they were developed to provide a more precise measure of student performance.

This approach of mapping scale scores instead of achievement levels to index values is consistent with the position paper released by the Smarter Balanced Assessment Consortium wherein they assert that

> *"…they [achievement levels] will be less precise than scale scores for describing student gains over time or changes in achievement gaps among groups, since they do not reveal changes of student scores within the bands defined by the achievement levels. Furthermore, there is not a critical shift in student knowledge or understanding that occurs at a single cut score point. Thus, the achievement levels should be understood as*

representing approximations of levels at which students demonstrate mastery of a set of concepts and skills, and the scale scores just above and below an achievement level as within a general band of performance."

The index calculation is more sensitive to changes in student performance over time and provides an improved assessment of aggregate growth of students at the subgroup, school, and district levels.

The new calculation moves the performance index to a 0-110 scale. Important considerations in defining the index are that it allows for: (a) a comparison of schools and districts not only within a year, but also across years, and (b) bonus points to be assigned for the highest performing students (100-110). To meet these requirements, the individual student index will be set to zero if a student obtains the lowest obtainable scale score (LOSS) for the student's grade, and 110 if the student obtains the highest obtainable scale score (HOSS). Although the highest index value at the school, district, and subgroup level is 100, giving scores ranging from 100 to 110 to students who are the highest performing will have the effect of rewarding these schools and districts by weighting these scores additionally in the computation of the new performance index. Further information is provided in Tables 1-3, including the lowest and highest obtainable scores for all state assessments: Smarter Balanced ELA and Mathematics, the Connecticut Alternate Assessments (CTAA) in ELA and Mathematics, and SAT Evidence-based Reading and Writing and Mathematics.

Calculating the Performance Index

The formula used to convert student scale scores (Smarter Balanced, CTAA, and SAT) to an index value is presented below.

$$\textbf{Index} = \frac{\textbf{\textit{Scale Score} } - \textbf{\textit{LOSS}}}{\textbf{\textit{Range}}} * \textbf{110}$$

The following examples use information from Tables 1-3 to convert student scores to index values.

If a Grade 3 student earns a vertical scale score of 2400 on the ELA portion of the Smarter Balanced assessment, the index value for this score is 61.8. The calculation is performed as follows:

$$\textbf{Index} = \frac{\textbf{2400} - \textbf{2114}}{\textbf{509}} * \textbf{110} = \textbf{61.8}$$

If a Grade 8 student earns a scale score of 1276 on the Math portion of the CTAA assessment, the index value for this score is 92.9. The calculation is performed as follows:

$$\textbf{Index} = \frac{\textbf{1276} - \textbf{1200}}{\textbf{90}} * \textbf{110} = \textbf{92.9}$$

Finally, when a Grade 11 student earns a Mathematics scale score of 590 on the SAT, the index value for the score is 71.5. The calculation is performed as follows:

$$\textbf{Index} = \frac{\textbf{590} - \textbf{200}}{\textbf{600}} * \textbf{110} = \textbf{71.5}$$

Highest and Lowest Obtainable Scores and Range Tables

Table 1.
Smarter Balanced ELA and Mathematics
Highest (HOSS) and Lowest (LOSS) Obtainable Scale Scores and Range

Subject	Grade	LOSS	HOSS	RANGE	Subject	Grade	LOSS	HOSS	RANGE
ELA	3	2114	2623	509	MATH	3	2189	2621	432
	4	2131	2663	532		4	2204	2659	455
	5	2201	2701	500		5	2219	2700	481
	6	2210	2724	514		6	2235	2748	513
	7	2258	2745	487		7	2250	2778	528
	8	2288	2769	481		8	2265	2802	537

Table 2.
Connecticut Alternate Assessment (CTAA) ELA and Mathematics
Highest (HOSS) and Lowest (LOSS) Obtainable Scale Scores and Range

Subject	Grade	LOSS	HOSS	RANGE
ELA & MATH	3	1200	1290	90
	4	1200	1290	90
	5	1200	1290	90
	6	1200	1290	90
	7	1200	1290	90
	8	1200	1290	90
	HS	1200	1290	90

Table 3.
SAT Evidence-based Reading and Writing and Mathematics Highest (HOSS) and Lowest (LOSS)
Obtainable Scale Scores and Range

	LOSS	HOSS	RANGE
Evidence-Based Reading and Writing	200	800	600
Mathematics	200	800	600