



CONNECTICUT STATE DEPARTMENT OF EDUCATION

# Interpreting the Metrics in the Profile and Performance Report (PPR)

Performance Matters Forum  
September 11, 2018



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## Agenda

- Introduction/Refresher
- PPR as a Starting Point
  - EdSight Public, Secure, District-level data
- Data
  - Sources/Collection Procedures
- Metrics
  - Counts, Percentages, Averages, Derived Scores
- Analysis
  - Proportions Test



# What is the PPR?

**Connecticut State Department of Education**  
**DISTRICT PROFILE AND PERFORMANCE REPORT**  
**FOR SCHOOL YEAR 2014-15**

**Bridgeport School District**  
 Ms. Frances Robinson, Superintendent • 203-775-7322 • www.bridgeportschools.com

**District Information**  
 State Fiscal Year: 2014-15  
 Number of Schools/Programs: 46  
 Enrollment: 73,288  
 Per Pupil Expenditure: \$88,080  
 Total Expenditures: \$6,494,185  
 Reporting year (beginning the 2013-14 year)

**Students**  
 October 1, 2014 Enrollment

	Count	Percent of Total (%)	State
Female	35,306	48.2	48.3
Male	37,982	51.7	51.6
American Indian or Alaska Native	88	0.1	0.2
Black	955	1.3	0.7
Black or African American	7,712	10.5	12.9
Hispanic or Latino	18,325	25.0	23.1
Pacific Islander	23	0.0	0.0
Two or More Races	3,144	4.3	3.5
White	2,483	3.4	17.2
English Language Learners	2,292	3.1	6.2
Eligible for Free or Reduced-Priced Meals	-	-	17.8
Students with Disabilities	5,124	6.9	13.1

**Chronic Absenteeism and Suspension/Expulsion**

	Absenteeism <sup>1</sup>		Suspension/Expulsion <sup>2</sup>	
	Count	Rate (%)	Count	Rate (%)
Female	1,761	18.1	1,148	11.6
Male	2,233	19.5	1,193	18.4
Black or African American	2,286	27.1	2,471	25.7
Hispanic or Latino	2,665	24.1	1,395	18.4
White	381	15.4	211	8.8
English Language Learners	381	16.6	346	15.1
Eligible for Free or Reduced-Priced Meals	3,789	19.0	3,330	15.7
Students with Disabilities	829	16.1	793	22.2
State	3,789	19.0	3,343	15.7
State	384	7.2	384	7.2

Number of students in 2013-14 qualified as lowest under state statute: 2,062

<sup>1</sup>Student is chronically absent if the number percent is greater of the total number of absences in the school year for any reason. The chronically absent students are included from this calculation.

<sup>2</sup>This count was percentage of students who receive at least one in-school suspension, out-of-school suspension or expulsion.

- Yearly report for each school/district
- Replaced the Strategic School Profiles (SSPs)
- Contains key metrics on students, educators, instruction and performance
- Many metrics are part of the statewide accountability system
- Many metrics have associated interactive reports in EdSight



# How to Access the PPR

- [EdSight.ct.gov](http://EdSight.ct.gov)
- Direct links from homepage
- Overview > Profile and Performance Reports

**EdSight** INSIGHT INTO EDUCATION

**Overview** | Students | Educators | Instruction | Performance

**NEW THIS MONTH**

- 2017-18 Smarter Balanced Achievement
- 2017-18 Smarter Balanced Growth
- 2017-18 Connecticut SAT School Day Results

**DISTRICT/SCHOOL REPORT CARDS**  
 The Profile and Performance Report serves as Connecticut's "report card" for every district and school. It provides a summary of several metrics including enrollment, absenteeism, suspension/expulsion, expenditures, achievement, accountability, graduation, and college readiness.

**Connecticut Education at a Glance**

OVERVIEW	STUDENTS	EDUCATORS	PERFORMANCE
206 Public Schools/Programs	535,025 Chronic Absenteeism (CAP)	52,230.3 Union/Non-Union Staff	73.2 Statewide "A" Rate*
1,493 Public Schools/Programs	9.9%	8.7%	87.9% Four-year, 2010-2016 Graduation Rate*

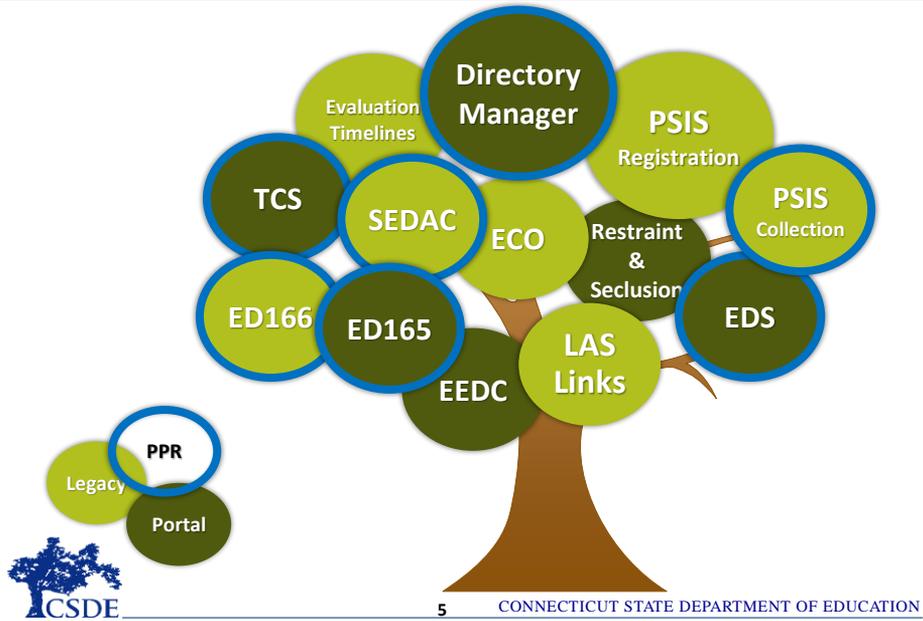
**Next Generation Accountability Results**

**Profile and Performance Reports**

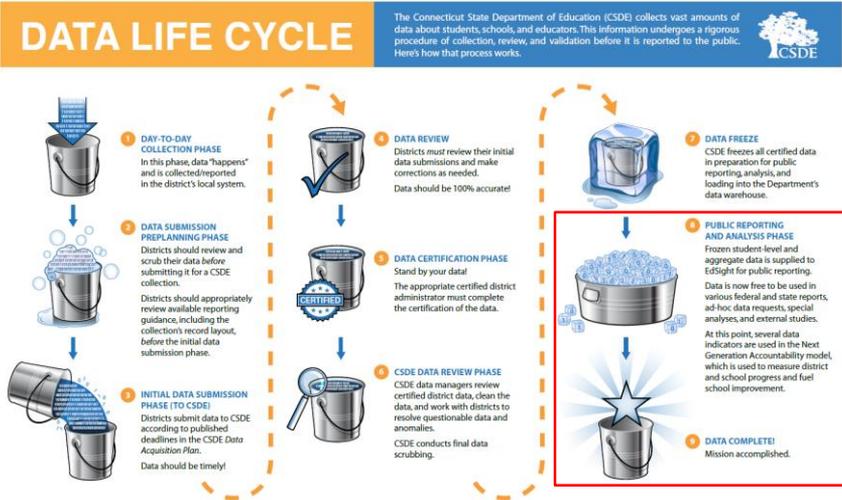
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# Multiple Data Sources



# Data Life Cycle



# Breadth of Data/Metrics



# PPR as a Starting Point

### PPR Next Generation Table

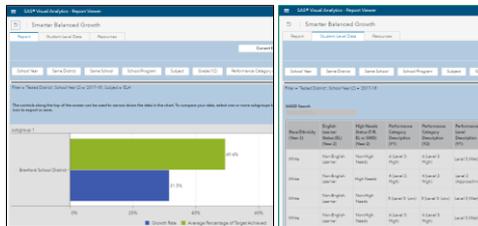
Indicator	Index/Rate
ELA Performance Index	All Students 51.5
	High Needs Students 47.5
Math Performance Index	All Students 44.8
	High Needs Students 41.1
Science Performance	All Students 40.1
	High Needs Students 36.7
ELA Academic Growth	All Students 48.8%
	High Needs Students 47.1%
Math Academic Growth	All Students 55.8%
	High Needs Students 53.3%
Chronic Absenteeism	All Students 18.3%
	High Needs Students 18.3%
Preparation for CCR	% Taking Courses 49.6%
	% Passing Exams 17.1%
On-track to High School Graduation	76.6%
4-year Graduation All Students (2016 Cohort)	66.5%
6-year Graduation - High Needs Students (2014)	76.6%
Postsecondary Entrance (Class of 2016)	59.3%
Physical Fitness (estimated part rate) and (fitness)	98.8%   45.8%
Arts Access	33.4%
<b>Accountability Index</b>	

### Public Growth Report

Smarter Balanced Growth Report, Trend State of Connecticut, ELA and Math, All Grades Combined, All Students [Export .csv file](#)

District	Subject	Growth Rate			Average Percentage of Target Achieved		
		School Year			School Year		
		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
State of Connecticut	ELA	43.1%	35.9%	40.3%	83.8%	55.4%	80.7%
	Math	43.0%	41.5%	41.7%	85.0%	81.7%	81.4%

### Secure Growth Report



## Metrics in the PPR

Counts

Percentages

Averages

Derived Scores



## Counts, Percentages and Averages

### Chronic Absenteeism and Suspension/Expulsion

	Chronic Absenteeism <sup>2</sup>		Suspension/Expulsion <sup>3</sup>	
	Count	Rate (%)	Count	Rate (%)
Female	45	8.5	76	14.2
Male	46	9.6	140	28.6
Black or African American	46	6.2	162	21.6
Hispanic or Latino	43	17.1	49	18.9
White	*	*	*	*
English Learners	8	16.3	12	24.0
Eligible for Free or Reduced-Price Meals	91	9.1	215	21.0
Students with Disabilities	19	18.3	34	29.6
District	91	9.1	216	21.1
State		9.9		6.7

### Classroom Teacher Attendance: 2015-16

	District	State
Average Number of FTE Days Absent Due to Illness or Personal Time	5.7	9.6



## Derived Scores

### Next Gen Results in the PPR (see page 6)

#### Next Generation Accountability Results

Connecticut's Next Generation Accountability System is a broad set of 12 indicators that help tell the story of how well a district/school is preparing its students for success in college, careers, and life. It moves beyond test scores and graduation rates to provide a more holistic, multifactor perspective of district and school performance.

Indicator		Index/Rate	Target	Points Earned	Max Points	% Points Earned	State Average Index/Rate
ELA Performance Index	All Students	51.5	75	34.3	50	68.7	67.1
	High Needs Students	47.5	75	31.7	50	63.4	55.9
Math Performance Index	All Students	44.8	75	29.9	50	59.8	62.2
	High Needs Students	41.1	75	27.4	50	54.7	50.5
Science Performance	All Students	40.1	75	26.7	50	53.5	55.3
	High Needs Students	36.7	75	24.5	50	49.0	45.2
ELA Academic Growth	All Students	48.8%	100%	48.8	100	48.8	55.4%
	High Needs Students	47.1%	100%	47.1	100	47.1	49.8%
Math Academic Growth	All Students	55.8%	100%	55.8	100	55.8	61.7%
	High Needs Students	53.3%	100%	53.3	100	53.3	53.7%
Chronic Absenteeism	All Students	18.3%	<=5%	23.3	50	46.6	9.9%
	High Needs Students	18.3%	<=5%	23.3	50	46.6	15.8%
Preparation for CCR	% Taking Courses	49.6%	75%	33.1	50	66.1	70.7%
	% Passing Exams	17.1%	75%	11.4	50	22.8	43.5%
On-track to High School Graduation		76.6%	94%	40.7	50	81.5	87.8%
4-year Graduation All Students (2016 Cohort)		66.5%	94%	70.7	100	70.7	87.4%
6-year Graduation - High Needs Students (2014)		76.6%	94%	81.5	100	81.5	82.0%
Postsecondary Entrance (Class of 2016)		59.3%	75%	79.1	100	79.1	72.0%
Physical Fitness (estimated part rate) and (fitness)		98.8%   45.8%	75%	30.6	50	61.1	92.0%   51.6%
Arts Access		33.4%	60%	27.8	50	55.7	50.5%
<b>Accountability Index</b>				<b>801.1</b>	<b>1350</b>	<b>59.3</b>	

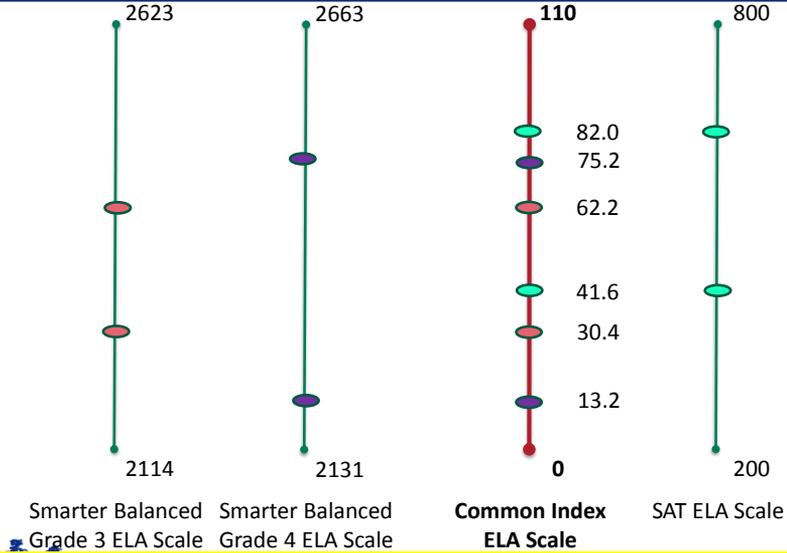


## Indicator 1: The Performance Index (DPI/SPI)

- Achievement (or) Status measure –how well the students are doing academically in a given school year.
- The DPI/SPI represent **average performance** in a subject (i.e., ELA, Math, or Science).
- It is based on a student's score, not the achievement level.
- It is a more accurate way to evaluate performance, track trends, set targets, and measure gaps than past approaches like “percent goal” ([see article on pages 1 and 2 of our October newsletter](#)).



## First, Map All Scores onto a Common Index Scale

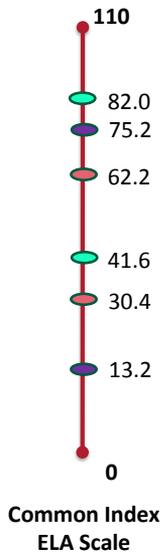


**How do we do that? See pages 58-61 of [Using Accountability Results to Guide Improvement](#)**

## Average the Transformed Scores to Calculate the Index



$$\frac{82.0 + 75.2 + 62.2 + 41.6 + 30.4 + 13.2}{6} = 50.8$$



## Interpreting the DPI/SPI

- What’s a good DPI/SPI?
  - Ultimate target is 75.
  - At a DPI/SPI of 75, students are, on average, performing solidly in the desired achievement level
- Trend—improvement over time for the same school/district/student group
- Achievement gap – size of gap between groups
- Norm-referenced interpretations
  - Compared to each other (e.g., The school with higher index in a district has higher overall performance.)
  - Compared to statewide distribution of all schools (e.g., Is my school in the top 10% of all schools statewide?)



## Next Gen Results in the PPR (see page 6)

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Science Performance	All Students	40.1	75	26.7	50	53.5	55.3
	High Needs Students	36.7	75	24.5	50	49.0	45.2
ELA Academic Growth	All Students	48.8%	100%	48.8	100	48.8	55.4%
	High Needs Students	47.1%	100%	47.1	100	47.1	49.8%
Math Academic Growth	All Students	55.8%	100%	55.8	100	55.8	61.7%
	High Needs Students	53.3%	100%	53.3	100	53.3	53.7%
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	High Needs Students	18.3%	<=5%	23.3	50	46.6	15.8%
Preparation for CCR	% Taking Courses	49.6%	75%	33.1	50	66.1	70.7%
	% Passing Exams	17.1%	75%	11.4	50	22.8	43.5%
On-track to High School Graduation		76.6%	94%	40.7	50	81.5	87.8%
4-year Graduation All Students (2016 Cohort)		66.5%	94%	70.7	100	70.7	87.4%
6-year Graduation - High Needs Students (2014)		76.6%	94%	81.5	100	81.5	82.0%
Postsecondary Entrance (Class of 2016)		59.3%	75%	79.1	100	79.1	72.0%
Physical Fitness (estimated part rate) and (fitness)		98.8%   45.8%	75%	30.6	50	61.1	92.0%   51.6%
Arts Access		33.4%	60%	27.8	50	55.7	50.5%
<b>Accountability Index</b>				<b>801.1</b>	<b>1350</b>	<b>59.3</b>	



## The Two Main Growth Statistics

**Growth Rate**

Percentage of  
**STUDENTS**  
who met their  
growth targets

**Average Percentage  
of Target Achieved**

Percentage of  
**TARGET**  
that was achieved by  
students on average

For a full explanation, watch this video:

<https://youtu.be/x5kTnp5I1UY>



## National Assessment of Educational Progress (NAEP)

**National Assessment of Educational Progress (NAEP): Percent At or Above Proficient<sup>1</sup>**

READING	NAEP 2015		NAEP 2013
	Grade 4	Grade 8	Grade 12
Connecticut	43%	43%	50%
National Public	35%	33%	36%
MATH	Grade 4	Grade 8	Grade 12
Connecticut	41%	36%	32%
National Public	39%	32%	25%

<sup>1</sup>NAEP is often called the "Nation's Report Card." It is sponsored by the U.S. Department of Education. This table compares Connecticut's performance to that of national public school students. Performance standards for state assessments and NAEP are set independently. Therefore, one should not expect performance results to be the same across Smarter Balanced and NAEP. Instead, NAEP results are meant to complement other state assessment data. To view student subgroup performance on NAEP, [click here](#).



## A Short Lesson on the Differences Between Proportions

- Everything we know using social science data is known *relative to some comparison figure*.
  - General Rule: The more observations, the better
  - General Rule: The more representative, the better
- **It is important to know what figure it is that serves as the comparison, the number of observations, and the similarity of the comparison group to your focal group.**



## Why?

- Summary indicators vary in stability based on the size of the group that is summarized.
  - Small groups vary widely
    - Individuals in small groups represent a large portion of the indicator
    - A change in one individual in a small group has a large influence on the summary indicator
  - Large groups vary narrowly
    - Individuals in large groups represent a small portion of the indicator
    - A change in one individual in a large group has a small influence on the summary indicator



## In Other Words...

- *The truth* about a group as reported by a summary statistic like a proportion, average, or indicator is a value that is somewhere near the reported figure.
- *The range of possibilities* is dependent on the size of the group from which the summary statistic was calculated.



## “4 out of 5 Dentists...”

- This phrase has a different meaning depending upon whether you knew that the total group polled was 5 versus 5000.
  - In the case of 5 dentists, if one dentist decided differently, the results would sway greatly.
  - In the case of 5000, one dentist deciding differently would change the results imperceptibly.



## Two Important Perspectives:

- **Statistical Significance**
  - An objective conclusion based on some strict assumptions that aren't always met.
  - A mathematical calculation
- **Educational Significance**
  - A subjective conclusion based on what the number may represent in the context of an analysis or evaluation.
  - A matter of considered, expert opinion



## About Proportions...

- The numerical value of a proportion of a whole varies between zero and 1.
- Sometimes this value is multiplied by 100 so that it can be reported as a percentage.
- A percentage can be re-converted to a proportion by dividing the percentage by 100.
- Sometimes percentages are reported as a "rate."



## Possible Comparisons

- A reported proportion for a district can be compared to the same proportion reported for
  - another district, the state, or a national figure
  - a subgroup versus another subgroup
  - one year versus another year



## Two-Step Interpretation of Possible Changes in Proportions

- First, determine whether the proportions are different from one another
- Second, consider the direction of change of the focal group as compared to the comparison group



## When is a difference different enough to say that they are different?

- Educational Significance – when the difference between proportions seems relevant based on considered subjective judgement
- Statistical Significance – A crude estimate for this would be when knowing the group sizes and the proportions to be compared, **a calculated benchmark value exceeds 2.0.**



## Here's how it is done:

- You need to know
  - The proportions in question
  - The number of members in the groups from which the proportions were calculated.
- Calculate the Benchmark Value using
  - the actual difference between the proportions and
  - a “measuring stick” value.



## Difference Between Proportions: Ingredients

- $p_1$  and  $p_2$  = the proportions you want to compare.
- $q = (1 - p)$
- $q_1$  and  $q_2$  = the q-values for the proportions you want to compare
- $n_1$  and  $n_2$  = the group sizes used for  $p_1$  and  $p_2$



## The Calculation

$$\text{Benchmark\_Value} = \frac{p_1 - p_2}{\sqrt{\frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}}}$$

- “ $p_1$  and  $p_2$ ” is the difference between the proportions you are comparing
- Make the larger of the proportions  $p_1$  to avoid negative numbers.

- $\sqrt{\frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}}$  is the measuring stick part



## Here's an example

- Your school has 100 6<sup>th</sup> graders of whom 16% were English Learners.
- Your state has 40,000 6<sup>th</sup> graders of whom 13% were English Learners.
- Are the proportions of grade 6 ELs *statistically* different from one another?



## A School Compared to the State

	School	State			
n	100	40000	p1 = 0.16	q1 = 0.84	n1 = 100
PCT_EL	16%	13%	p2 = 0.13	q2 = 0.87	n2 = 40000
Prop_EL	0.16	0.13			

$$\text{Benchmark\_Value} = \left[ \frac{0.16 - 0.13}{\sqrt{\frac{0.16 * 0.84}{100} + \frac{0.13 * 0.87}{40000}}} \right] = 0.82$$

Because  $0.82 < 2.0$ , there is no statistical evidence that the proportions are different



## A Region Compared to a Region

	EAST	WEST			
n	4111	4000	p1 = 0.16	q1 = 0.84	n1 = 4111
PCT_EL	16%	13%	p2 = 0.13	q2 = 0.87	n2 = 4000
Prop_EL	0.16	0.13			

$$\text{Benchmark\_Value} = \left[ \frac{0.16 - 0.13}{\sqrt{\frac{0.16 \cdot 0.84}{4111} + \frac{0.13 \cdot 0.87}{4000}}} \right] = 3.84$$

Because  $3.84 < 2.0$ , statistical evidence suggests that the proportions are different



## Notes

- This is a crude indicator of the statistical significance of a difference between proportions.
- A more precise understanding of this process is part of a Statistics 1 course.
- Both Statistical Significance and Educational Relevance are important elements of interpretation and decision-making, but neither is the final word.

