



July 2024

Research Roundup

The Relationship between Star Assessments and
PSSA Performance in 2022-23



THE SCHOOL DISTRICT OF
PHILADELPHIA





Agenda

1. Star Assessments and the Pennsylvania System of School Assessment (PSSA): Two Ways to Measure Student Progress in ELA & Math
2. Determining the Relationship between Star & PSSA
3. Implications of the Star-PSSA Relationship

This webinar is being recorded. The recording and a PDF of the slide deck will be available at: philasd.org/research/roundup

Evaluation, Research, and Accountability

philasd.org/era

The screenshot shows the website's navigation bar with links for Schools, Academics, Services, Our District, Careers, Contact Us, and Login. The main header reads "Evaluation, Research, and Accountability" with a breadcrumb trail: "YOU ARE HERE > Evaluation, Research, and Accountability > Evaluation, Research, and Accountability". Below this is a secondary navigation bar with links for News, About, Offices, Goals and Guardrails, Check & Reflect Series, Tools, Data, Reports, and Contact. The main content area features a grid of article cards with titles like "Listening and Learning: Teacher Attendance and Retention", "A Summary of the 2022-23 School Selection Process", "2022-23 PSSA Results for District Students", "Student Attendance Patterns in Philadelphia", and "School Selection: Enrollment of First-Time 9th Graders". Below the grid is a section titled "What can we help you find?" with four buttons: "ASSESSMENT INFORMATION", "QUIBAM", "GOALS AND GUARDRAILS", and "REPORT LIBRARY". At the bottom is a row of six image-based categories: "STUDENT LEARNING", "PERFORMANCE DATA", "SCHOOL SUPPORTS", "ASSESSMENTS & ACCOUNTABILITY", "SURVEYS", and "RESEARCH REVIEW COMMITTEE (RRC)".

What can we help you find?

Every year, we collect millions of data points on **student achievement, leadership, school climate, and progress.**

Our offices work with the data to evaluate and report outcomes and develop informational tools.

STUDENT LEARNING

PERFORMANCE DATA

SCHOOL SUPPORTS

ASSESSMENTS & ACCOUNTABILITY

SURVEYS

RESEARCH REVIEW COMMITTEE (RRC)

Office of Research and
Evaluation

District Performance Office

Planning and Evidence-Based
Supports Office

Office of Assessments
















Office of Data Governance

What is a Research Roundup?

- Regular webinar series with a focus on topics aligned to the [Goals & Guardrails](#) and [Accelerate Philly](#)
- Videos and slide decks available from previous sessions
- Sign up to be notified when webinars are scheduled and when recordings are available:

philasd.org/research/roundup

Research Roundup Topics

Mar 2022 	Literacy Performance in Grades K-3	Oct 2022 	PERC: Keystone Graduation Pathways	July 2023 	SPREE
April 2022 	Math Performance in Grades 3-8	Dec 2022 	District-Wide Surveys	Sept 2023 	Trends, Transitions, and Supports for English Learners
May 2022 	9th Grade "On Track" Rates and High School Graduation	Feb 2023 	Philadelphia Police School Diversion Program	Dec 2023 	The 9th Grade On-Track Metric
June 2022 	Food Insecurity in the School District of Philadelphia	April 2023 	Student Attendance	Feb 2024 	The Youth Risk Behavior Surveillance System (YRBS)
July 2022 	English Learners and Students in Special Education	May 2023 	Impact of Facility Investments in LA	Apr 2024 	Philly School Experience Survey (PSES)



Star Assessments and the PSSA: Two Ways to Measure Student Progress in ELA & Math

Assessments in SDP

INTERIM ASSESSMENTS

- Star Computer Adaptive Tests and Curriculum Based Measures
- Biology Benchmark

STATE STANDARDIZED ASSESSMENTS

- Pennsylvania System of School Assessment (PSSA)
- Pennsylvania Alternate System of Assessment (PASA)
- Keystone Exams
- ACCESS and Alt. ACCESS for English Learners

SUMMATIVE END-OF-COURSE EXAMS

- Civics Test
- National Occupational Competency Testing Institute (NOCTI) Assessments
- International Baccalaureate (IB) Exam
- Advanced Placement (AP) Exams

OTHER TESTS

- The National Assessment of Educational Progress (NAEP)
- Kindergarten Entry Inventory (KEI)
- Naglieri NonVerbal Ability (NNAT) Test
- PSAT 8/9 and PSAT/NMSQT
- SAT
- ACT

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- ACT

Star Assessments

- **Star Assessments** are the District's required universal screening and progress monitoring tool.
- They are administered to students in grades K-12 each year in multiple testing windows that take place in the fall, winter, and spring.
- Star Assessments are **interim assessments** that can be used to:
 - Provide skill-level information to teachers to help adjust instruction.
 - Identify students at risk of not meeting yearly goals.
 - Track District-wide performance and growth.



Renaissance
Star Assessments

Types of Star Assessments

CAT

Computer Adaptive Tests (K-12)

CATs are administered on a computer, and the difficulty of questions varies depending on a students' performance within the test.

- K-2: Star Early Literacy
- 3-12: Star Reading
- 3-12: Star Math

CBM

Curriculum-Based Measures (K-5)

CBMs are 1-minute timed tests administered by a teacher, and they measure foundational skills in reading or math.

- Reading: Letter Naming, Letter Sounds, Phoneme Segmentation, Receptive Nonsense Words, Expressive Nonsense Words, Passage Oral Reading
- Math: Numeral Recognition, Quantity Comparison, Addition to 10, Addition to 20, Subtraction from 10, Mixed Addition and Subtraction, Multiplication to 100

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Star Reading and Star Math Content

Star Reading and Star Math content domains are aligned with the [Common Core](#).

Star Reading

- Word Knowledge and Skills
- Comprehension Strategies and Constructing Meaning
- Analyzing Literary Text
- Understanding Author's Craft
- Analyzing Argument and Evaluating Text

Star Math

- Numbers and Operations
- Algebra
- Geometry and Measurement
- Data Analysis, Statistics, Probability

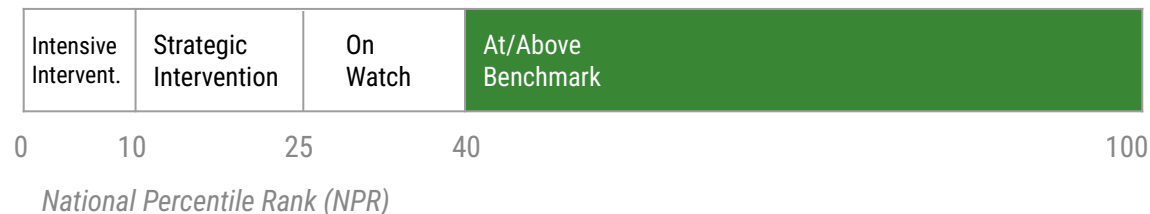
Star Performance Levels

Star Performance Levels are **norm-referenced** and describe student performance against a nationally representative sample of students.

Performance Levels

- At/Above Benchmark
- On Watch
- Strategic Intervention
- Intensive Intervention

Star Reading



Star Math



Pennsylvania System of School Assessment (PSSA)

- The **PSSA** is a standards-based, criterion-referenced test.
- The English/Language Arts (ELA) PSSA and Math PSSA are administered to all students in grades 3-8 near the end of each school year.
- The PSSA is a **summative** assessment that can be used to:
 - Inform curriculum instruction and improvement.
 - Provide information for accountability systems.



PSSA Performance Levels

PSSA Performance Levels are **criterion-referenced** and describe how students performed compared to academic standards.

Performance Levels

- Advanced
- Proficient
- Basic
- Below Basic

PENNSYLVANIA
System of School Assessment (PSSA)

Student Report

Student Name:
PA Student ID:
School:
District:
Test Date:
Grade:

What Is the Pennsylvania System of School Assessment (PSSA)?

- The PSSA is an assessment system used to measure a student's progression toward mastery of the

Student's Results				
Performance Level				
	Goal Range*			
	Below Basic	Basic	Proficient	Advanced
English Language Arts				✓
Mathematics			✓	
Science			✓	

* **Goal Range:** The goal range is for all students in the Commonwealth of Pennsylvania to score proficient or above.
^ **See inside for details**



Why do we look at Star and PSSA data?

- PSSAs are administered at the end of the school year, and we receive the data too late to be useful during the school year.
- It's important to understand how norm-referenced scores from Star relate to criterion-referenced scores from the PSSA.



Why is it important to look at Star and PSSA data?

Board's [Goals and Guardrails](#): Analysis can support use of the Star Assessments as **leading indicators** to monitor District-level progress on three of the five Goals that aim to improve proficiency on the PSSA ELA and the PSSA Math.

Goal 3: Math

The percentage of students in grades 3-8 who are proficient on the state Math assessment will grow from 20.7% in August 2023 to 52.0% by August 2030.



Leading Indicators

Updated August 2023

- 3.1: The percentage of students in grades 3-8 who are At Target on the District's within-year math assessment.
- 3.2: The percentage of students in grades 3-8 with high growth on the District's within-year math assessment.
- 3.3: The percentage of students in grades K-2 who are At Target on the District's required math Curriculum-Based Measures.

Research Questions



- What were the correlations between the Star Assessments and the PSSAs for ELA and Math?
- Among students who scored At/Above Benchmark on Star, what percentage actually scored Proficient or Advanced on the PSSA for ELA and Math?





Determining the Relationship between Star & PSSA

Overview of the Star-PSSA Analysis

Steps

1

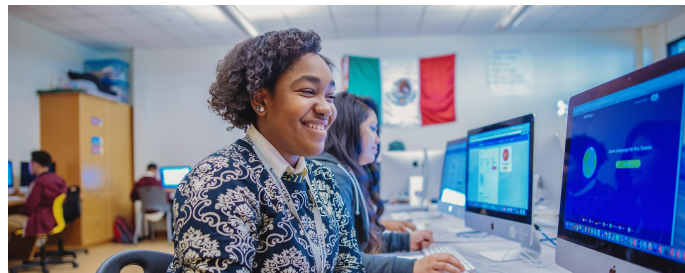
Created analytical samples for each required testing window (Fall, Winter 1, Spring) in the 2022-23 school year

2

Estimated the Pearson correlation coefficient

3

Calculated classification accuracy metrics



Limitation

The analysis does not tell us that Star performance determines PSSA performance.

PSSA ELA/Star Reading Sample Demographics

- Data includes all students who took both the PSSA ELA and Star Reading.
- Each student is included in every testing window where they had Star data.
- Samples in each window were roughly representative of District PSSA ELA test takers.

Group	PSSA (n = 45,573)	Star Testing Window		
		Fall (n = 42,875)	Winter 1 (n = 44,047)	Spring (n = 43,534)
Gender				
Female	49%	49%	49%	49%
Male	51%	51%	51%	51%
Race/Ethnicity				
Asian	10%	10%	10%	10%
Black/African American	44%	44%	44%	44%
Hispanic/Latino	26%	26%	26%	26%
Multi-Racial/Other	4%	4%	4%	4%
White	15%	15%	16%	15%
English Learner				
English Learner	17%	17%	17%	17%
Not an English Learner	83%	83%	83%	83%
Special Education				
Has an IEP	17%	17%	16%	16%
Does not have an IEP	83%	83%	84%	84%

PSSA Math/Star Math Sample Demographics

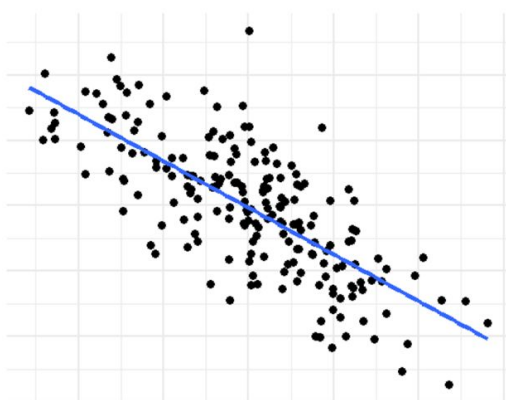
- Data includes all students who took both the PSSA Math and Star Math.
- Each student is included in every testing window where they had Star data.
- Samples in each window were roughly representative of District PSSA Math test takers.

Group	PSSA (n = 46,321)	Star Testing Window		
		Fall (n = 43,374)	Winter 1 (n = 44,473)	Spring (n = 44,064)
Gender				
Female	49%	49%	49%	49%
Male	51%	51%	51%	51%
Race/Ethnicity				
Asian	10%	11%	10%	10%
Black/African American	44%	44%	44%	44%
Hispanic/Latino	26%	26%	26%	26%
Multi-Racial/Other	4%	4%	4%	4%
White	15%	16%	16%	16%
English Learner				
English Learner	18%	17%	18%	18%
Not an English Learner	82%	83%	82%	82%
Special Education				
Has an IEP	17%	16%	17%	16%
Does not have an IEP	83%	84%	83%	84%

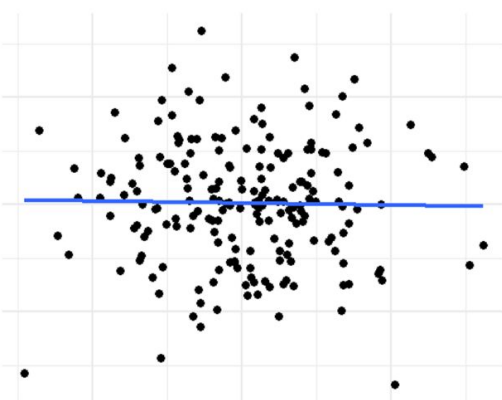
Finding Correlations between Two Datasets

The Pearson correlation coefficient ranges from -1 to 1 and expresses the linear relationship between two datasets.

Negative



Zero

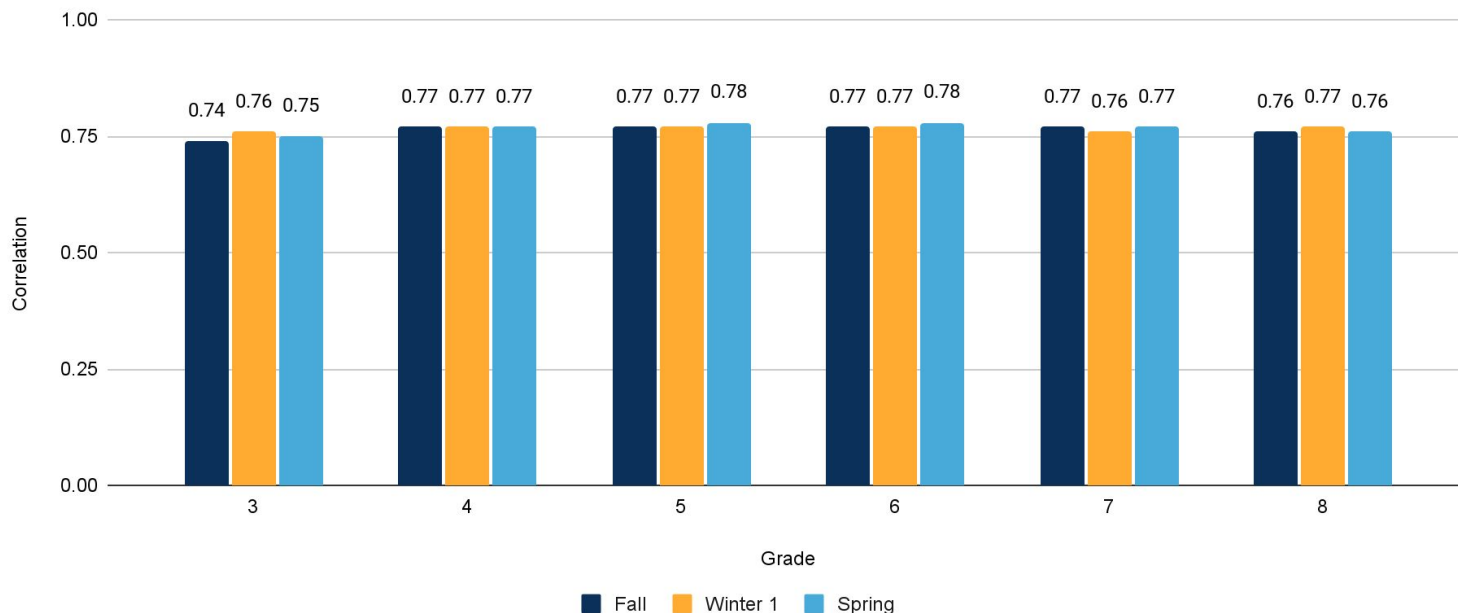


Positive



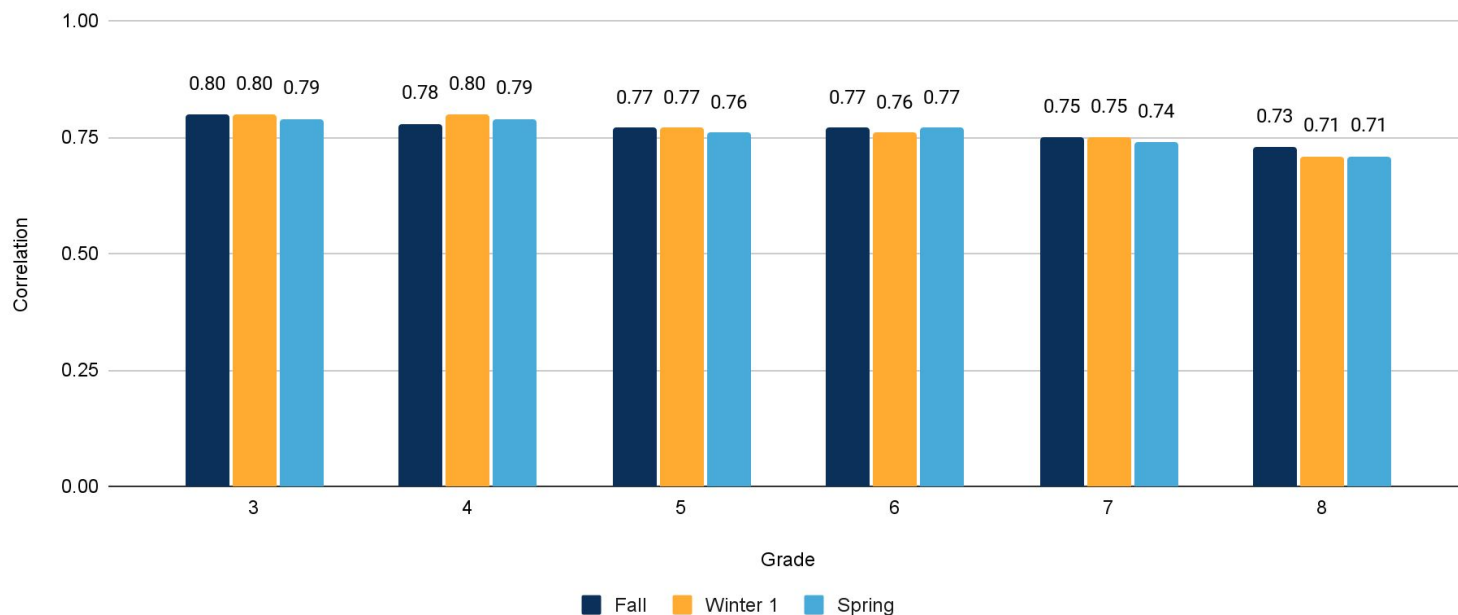
Correlation between Star and PSSA

The correlation between Star Reading and PSSA ELA ranged from .74 to .78 across grades and testing windows.



Correlation between Star and PSSA

The correlation between Star Math and PSSA Math ranged from .71 to .80 across grades and testing windows.



Classification Accuracy

		PSSA			
		Proficient/Advanced	Basic/Below Basic		
Star	At/Above Benchmark	Correct	Incorrect	Total At/Above Benchmark	Positive Predictive Value
	Below Benchmark <i>On Watch, Strategic Intervention, Intensive Intervention</i>	Incorrect	Correct	Total Below Benchmark	Negative Predictive Value
		Total Proficient/Advanced	Total Basic/Below Basic		
		Sensitivity	Specificity		

Star Reading Classification Accuracy

- The ability to correctly classify students who scored Proficient/Advanced improved throughout the year.
- There was greater accuracy classifying students who scored Basic/Below Basic.
- 82% to 85% of students who scored At/Above Benchmark also scored Proficient/Advanced, depending on testing window.

	Star Testing Window		
	Fall	Winter 1	Spring
Grade 3-8 Average			
Sensitivity	67%	73%	74%
Specificity	94%	92%	92%
Positive Predictive Value (PPV)	85%	83%	82%
Negative Predictive Value (NPV)	83%	86%	87%
Grade 3-5 Average			
Sensitivity	72%	80%	83%
Specificity	92%	89%	88%
PPV	81%	78%	76%
NPV	87%	91%	92%
Grade 6-8 Average			
Sensitivity	61%	65%	65%
Specificity	95%	95%	95%
PPV	89%	88%	88%
NPV	79%	81%	81%

Star Math Classification Accuracy

- The ability to correctly classify students who scored Proficient/Advanced improved throughout the year.
- There was greater accuracy classifying students who scored Basic/Below Basic.
- 74% to 85% of students who scored At/Above Benchmark also scored Proficient/Advanced, depending on testing window.

	Star Testing Window		
	Fall	Winter 1	Spring
Grade 3-8 Average			
Sensitivity	58%	70%	78%
Specificity	97%	95%	93%
Positive Predictive Value (PPV)	85%	79%	74%
Negative Predictive Value (NPV)	90%	92%	94%
Grade 3-5 Average			
Sensitivity	57%	72%	79%
Specificity	97%	95%	92%
PPV	86%	81%	76%
NPV	88%	92%	93%
Grade 6-8 Average			
Sensitivity	59%	67%	76%
Specificity	97%	96%	93%
PPV	83%	76%	71%
NPV	91%	93%	95%



Implications of the Star-PSSA Relationship

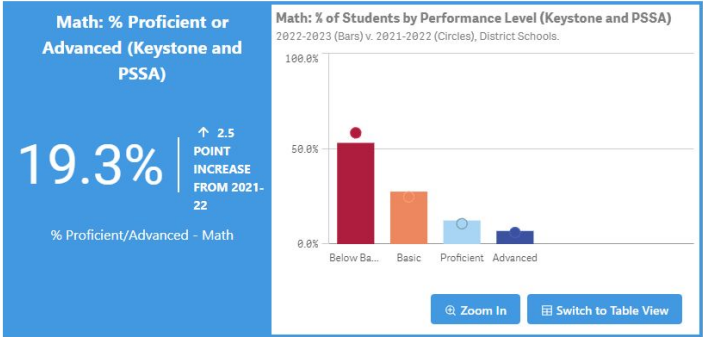
Conclusions

- Correlations suggested that performance on the Star CATs and the PSSAs were highly related.
- Classification accuracy suggested that both Star Reading and Star Math:
 - Accurately identified students who scored Basic/Below Basic in all testing windows.
 - Were less accurate when identifying students who scored Proficient/Advanced in the fall, but improved throughout the year.
- For Star Reading, sensitivity was relatively low for grades 6-8 throughout the year.
- Results support Star's use as a leading indicator, but also suggest we may need to review the At/Above Benchmark performance cutscore for grades 6-8 Star Reading.
- Results for 2022-23 similar to 2021-22, and analyses will be repeated for 2023-24.

Explore Star and PSSA Results

Interactive PSSA & Keystone Dashboard

dashboards.philasd.org/extensions/pssa-keystone-public/index.html#/



Research & Reports

<https://www.philasd.org/research/>

Research Roundups

- [Literacy Performance in Grades K-3](#)
- [Math Performance in Grades 3-8](#)

Goals & Guardrails Progress Monitoring

www.philasd.org/era/goals-and-guardrails/progress-monitoring-calendar-2021/

2024

MONTH	TOPIC	DATA
February	Math Goal 3	Math Performance, Grades 3-8
March	Reading Goals 1 & 2	ELA Performance, Grades K-3 ELA Performance, Grades 3-8



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PHILADELPHIA

Questions?