Evaluation of New York School Funding

Report Brief 2: Student Outcomes and Student Needs

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Introduction

Each state's constitution requires that their education funding system meet some criteria for quality for all students attending public schools. Although the phrasing of the constitutional requirements varies from state to state, in general, the notion that public education must meet some set of standards of quality has become known as *adequacy*. In New York State specifically, the Court of Appeals has declared that all children be provided a meaningful opportunity for a sound basic education, which the court defined as "the skills students need to function productively as civic participants capable of voting and serving on a jury." The Court also held that achieving a meaningful opportunity for a sound basic education requires sufficient levels of funding or resources. However, adequacy is first and foremost about the outcome goals expected of all students. When framed around student outcomes, adequacy can be determined by asking two questions:

1. Are New York's children meeting the educational outcome goals set by the state?

2. Do students across the state, regardless of their backgrounds or where they attend school have equal opportunity to meet those educational outcome goals?

In this brief, we examine student outcomes in New York to inform how the state can focus its efforts to achieve adequate funding. If students are not able to meet the state's educational goals, New York may consider increasing resource levels to improve the overall quality of education. Further, if students who attend districts and schools that serve higher need populations systematically have lower performance than students in districts and schools with lower-need populations, New York may consider providing higher-need districts and schools with more resources relative to lower-need districts and schools. In other words, achieving educational goals requires adequate funding. Examining the extent to which outcome goals are being met overall or by certain types of districts or schools is an indicator of whether the school funding system is achieving adequacy.

Approach to Evaluating Student Outcomes

To address the first research question, we conduct several sets of comparisons examining the level of overall student outcomes in the state:

- We examine the average statewide outcomes for math and English language arts (ELA) performance and graduation rate compared to New York's stated goals in its Every Student

Succeeds Act (ESSA) plan, as amended in 2023 (New York State Education Department, 2023).

- We compare New York's performance on the National Assessment of Educational Progress (NAEP) to two benchmarks – the proficiency benchmark set by NAEP and New York's proficiency benchmark equated to a NAEP Score – and to neighboring states.[1] Although state educational goals should not be dictated by performance relative to other states, comparisons to other states can provide a meaningful point of comparison, given that the setting of proficiency benchmarks can be somewhat arbitrary and may either be too low or overly ambitious. By contrast, the actual performance levels of other states are a tangible and perhaps more realistically achievable point of comparison. Relative performance is also practically meaningful. Students from New York will compete with students from neighboring states and beyond when applying to colleges and universities and when competing for jobs in the labor market. As such, the relative performance of students compared to other students regionally or nationally has important implications for future success.

- We examine the performance of three sets of schools – those that are relatively low performing, those performing near the state average, and those that are relatively high performing. Comparing these three groups allows us to understand how outcomes vary across New York's schools and to better understand what level of performance might be considered adequate.

To address the second research question, we examine the relationship between schools' average student outcomes and school-level measures of student need. Our resulting analyses use scatter plots and correlations to show the relationship between student outcomes and specific student need variables. We then use regression analysis to account for multiple student and school characteristics that may be related to student outcomes to isolate the relationship between specific student need variables and outcomes while controlling for other factors that may also be related to student outcomes.

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[1] NAEP proficiency benchmarks are typically higher than the benchmarks of most states and are meant to represent "solid academic performance for each grade assessed" (National Assessment Governing Board, n.d.). Because of rigorous proficiency benchmark set by NAEP, the National Assessment Governing Board cautions again interpreting NAEP proficiency as a metric for being on grade level (National Assessment Governing Board, 2018). New York equated proficiency benchmarks are based on a study by Ji et al. (2021), which determined the NAEP equivalent proficiency score for each state.

Student Outcomes and Student Needs in New York

Data

Data for these analyses predominately come from the New York School Report Card Data from 2018–19 through 2022–23.[2] These data contain school-aggregated enrollments and demographic characteristics, including the percentages of students who are economically disadvantaged, English language learners (ELLs), and students with disabilities (SWDs). In addition, these data include the following school-aggregated student outcome variables: the percentages of students who met various performance benchmarks in math and ELA in Grades 3–8, mean scale scores for math and ELA assessments in Grades 3–8, graduation rates, dropout rates, percentages of students who met the requirements for Regents and Regents with advanced designation, and the percentages of students who were chronically absent.[3]

We constructed an aggregate outcome score that describes overall school performance by combining the outcome measures described above. Combining multiple outcome measures into a single score – referred to as the outcome factor score – creates a more robust measure of school performance that reflects a broader set of education goals than any single outcome measure. To construct the outcome factor score, we conducted confirmatory factor analysis using a structural equation model that treats the overall outcome measure as a latent (i.e., unobserved) variable, which is estimated to best fit the data. Rather than make an arbitrary decision to weight each outcome equally or choose another arbitrary weighting scheme, the model uses the existing variation in outcomes across each measure to identify the relative importance of each measure to the unobserved outcome factor score. Another advantage of this approach is that the statistical program used to construct the factor score can appropriately generate a factor score even when individual measures are missing for some schools. For example, only schools serving Grade 12 students would be expected to have a graduation rate reported. The constructed outcome factor score has a mean of 0 and a standard deviation of 1. In other words, positive values represent above-average outcomes, and negative values represent below-average outcomes. Appendix A contains additional detail regarding the outcome factor score. Appendix B contains a table showing the means and standard deviations of key variables related to the analyses in this brief.

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[2] See https://data.nysed.gov/.

[3] New York reports 4-, 5-, and 6-year graduation rates. For the purpose of our analyses, we used the 4-year graduation rate. A Regents diploma requires a student pass a minimum of five Regents examinations in addition to meeting course and credit requirements. An advanced Regents diploma requires a student pass a minimum of eight Regents examinations in addition to meeting course and credit requirements. A student who is chronically absent is defined as missing at least 10% of instructional days. A detailed description of student performance data included in the New York School Report Card Data can be found here: https://data.nysed.gov/files/essa/22-23/glossary.pdf.

Student Outcomes and Student Needs in New York

Statewide Outcome Levels

In this section, we examine the statewide student outcome results to understand whether the state is meeting outcome goals for the typical student in the state. We begin by comparing statewide outcomes to New York's goals stated in its ESSA plan. We follow this with an analysis of New York's NAEP scores in comparison to benchmarks for proficiency and to neighboring states. Lastly, we examine outcomes in three groups of schools with differing performance levels to understand the variation in performance across New York's schools.

Comparing Performance to ESSA Plan Goals

In Exhibit 1, we show several of the state's 2022–23 performance measures in comparison to the state's goals as stated in the current draft amendments to its state ESSA plan (New York State Education Department, 2024). In New York's ESSA plan the state includes two goals for each performance measure. The state defines an "end goal" as "the level of performance that, in the future, the State wishes…to achieve" (New York State Education Department, 2023, p. 37). However, the state has no defined date for when the end goals are to be achieved. The state has established an end goal of 200 for most of the performance index measures for math and ELA achievement.[4] Based on how the state calculates the performance index, a goal of 200 would correspond to almost all students achieving proficiency. For graduation, the state has set an end goal of 95% for the 4-year graduation rate and end goals of 96% and 97% for the 5-year and 6-year graduation rates, respectively. In addition, the state sets "long-term goals," which are calculated as the performance levels needed to reduce the gaps between actual performance and the end goals by 20% within a 5-year period.

In Exhibit 1, we show the state's 2028–29 long-term goals and end goals as well as performance in 2022–23. For 2022–23 performance, we show the performance indexes calculated in two ways. The first figure displayed in each cell of the table (outside of the parentheses) is based on the students who actually participated in the tests. The second figure in parentheses accounts for nonparticipation below the required 95% participation rate, counting nonparticipating students as being in the lowest performance category.[5] The performance of test-takers is already near or above the state's long-term goals. Suggesting that low test participation is a large factor driving the setting of the current 2028–29 long term goals. Regardless of how the performance index is calculated, current performance is far from the state's end goal.

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[4] The performance index is an aggregation of different scoring levels and is New York's main test-based accountability measure. See https://data.nysed.gov/files/essa/22-23/glossary.pdf.

[5] ESSA requires states to account for participation below 95% as part of their state accountability systems. For descriptions of weighted and core subject performance see https://www.nysed.gov/sites/default/files/programs/accountability/posting-nysed-indicator-info-session-1-weighted-and-core-em.pdf.

The state's graduation rates are also not far off from the long-term goals. Although not shown in the exhibit, the state's graduation rates in 2022–23 actually surpassed the 2024–25 goals included in the currently approved state ESSA plan (New York State Education Department, 2023), resulting in the state substantially increasing the 2028–29 long-term goals for graduation relative to the prior goals. Although the state has made some progress in increasing graduation rates, and the long-term goals appear attainable, the state must make more progress to achieve its end goal. The 2022–23 4-year graduation rate indicates that for every 100 entering 9th graders, 13 do not graduate on time in 4 years. The state's end goal is to reduce that to only 5.

Exhibit 1. Performance Measures: Long-Term Goal and Recent Performance (2022–23)

Performance measure	2022–23 performance	2028–29 long-term goal	End goal
Grades 3–8 ELA Performance Index	134.0 (120.1)	136.1	200
Grades 3–8 Math Performance Index	138.7 (124.4)	139.5	200
High School ELA Performance Index	164.8 (131.6)	148.3	215
High School Math Performance Index	97.6 (59.0)	87.2	200
4-Year Graduation Rate	87.2%	88.8%	95%
5-Year Graduation Rate	89.1%	90.5%	96%
6-Year Graduation Rate	88.6%	90.3%	97%

Note. Performance indexes are calculated in two ways. "Core subject" performance is calculated based on the individuals who participated in the assessment and is shown outside of the parentheses. The "weighted" performance, shown in parentheses, downwardly adjusts the performance index by counting nonparticipating students (outside of the 95% participation requirement) as being in the lowest performance category. As such, true performance reasonably falls somewhere between the two numbers. Data are from the 2024 draft amended state ESSA plan and the state report card data.

New York NAEP Scores in Comparison to Proficiency Benchmarks and Performance in Other States

A challenge with using state assessment results is that they are not comparable over time or across states. Therefore, to better understand how New York's students perform in math and ELA, we examine NAEP scores for New York and five neighboring states (Exhibit 2).[6] To provide additional context to these state-specific results Exhibit B3 in Appendix B shows how student need in New York compares to other states based on several demographic measures.

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[6] NAEP scores are meant to be comparable over time and across states (U.S. Department of Education, 2010).

Exhibit 2. Comparison of Fourth- and Eighth-Grade Math and Reading Scores on the National Assessment of Educational Progress for New York and Five Neighboring States, 2004–2022
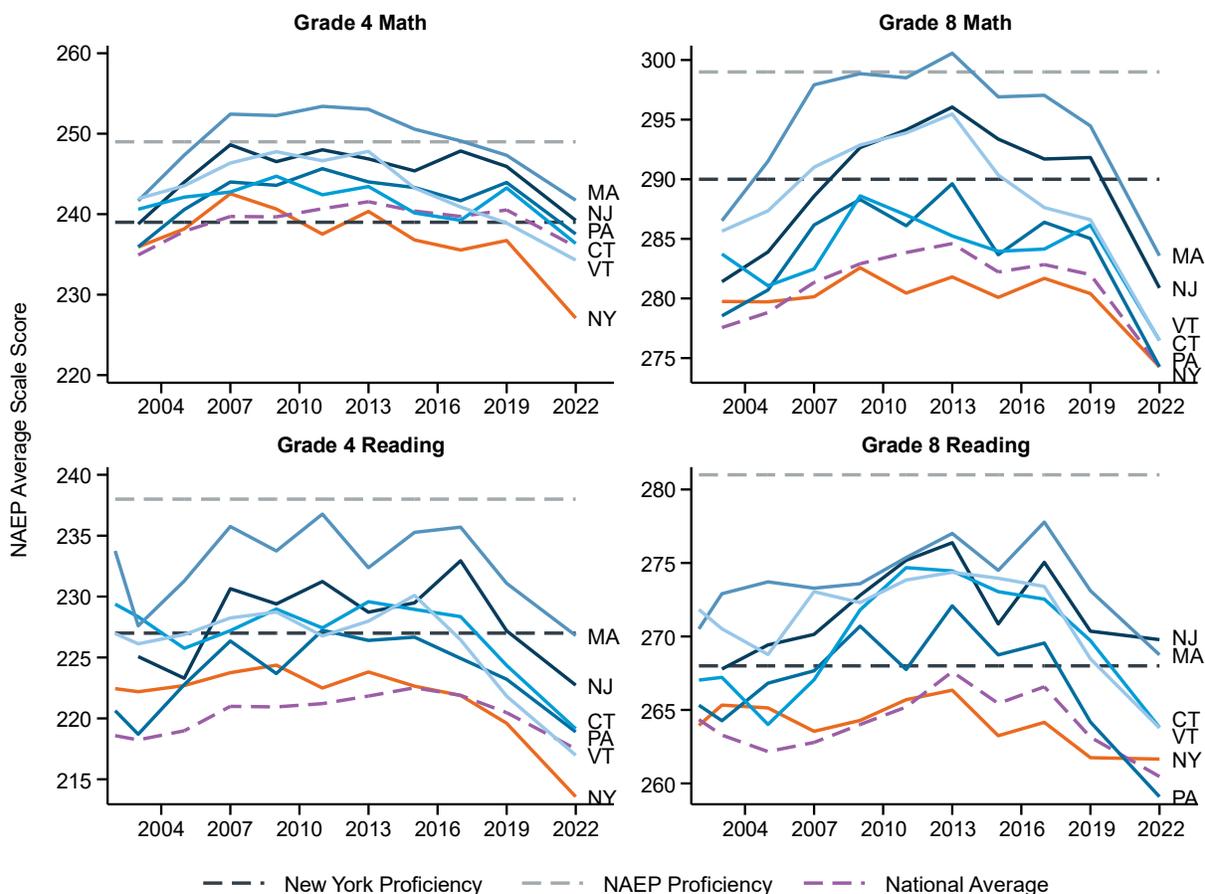
Note. NAEP average scale scores are from https://nces.ed.gov/nationsreportcard/. New York's NAEP equivalent proficiency benchmark is from Ji et al. (2021). CT = Connecticut; MA = Massachusetts; NJ = New Jersey; NY = New York; PA = Pennsylvania.

Across grades and subjects, New York's performance results have not met a level that would be deemed proficient based on the NAEP definition or the state's own definition (with the exception of Grade 4 math in some years; see Exhibit 2). However, the NAEP proficiency benchmarks are meant to show mastery over challenging content beyond most states' grade level standards, resulting in very few states meeting those benchmarks. New York's own proficiency benchmarks, by contrast, are meant to be attainable. In fact, we observe that a number of other states have often met or exceeded New York's proficiency benchmarks, equated to a NAEP score. With the exception of the most recent results (which were affected by the COVID-19 pandemic), Massachusetts and New Jersey exceeded New York's proficiency

benchmarks in most years, and most other states periodically met or exceeded New York's proficiency benchmarks in several of the grades and subjects. As such, with few exceptions over the analysis period, New York's performance has lagged the performance of all comparison states. Similarly, for a majority of the period state performance in math has also been lower than the national average for both 4th and 8th grade math.

Comparing Performance Across Three Groups of Schools

As a final way to examine typical outcome levels of schools in the state, we compare the individual outcomes of three groups of schools distinguished by their performance on the outcome factor score (Exhibit 3). Group 1 schools are a set of relatively low-performing schools, with outcome factor scores between -1.25 and -0.75; Group 2 schools are the set of schools performing at levels close to the state average, with outcome factor scores between -0.25 and 0.25; and Group 3 schools are a relatively high-performing set of schools, with outcome factor scores between 0.75 and 1.25. These three groups of schools can serve as reference points in a discussion about what level of outcomes would be considered adequate and reasonably attainable. The figure in Exhibit 3 shows that none of the three groups are at the extreme ends of the distribution, with a sizable share of schools performing lower than the Group 1 schools and another share of schools performing at levels higher than the Group 3 schools.

The table in Exhibit 3 shows that for all outcome measures average performance improves from Group 1 to Group 2 and then from Group 2 to Group 3. This finding serves as an additional point of validation for the approach used to generate the outcome factor score. Examining outcomes in these three groups also serves to contextualize various levels of the outcome factor score in familiar data points regularly reported on the state's school report cards. Among the schools in Group 1, the average math performance index is 82, and the average ELA performance index is just over 100. These scores are well below the state's long-term outcome goals presented in Exhibit 1. There are also several other outcomes that make clear that Group 1 schools are not achieving the state's goals. In particular, more than 40% of students in Group 1 schools are chronically absent, 82% of students graduate in 4 years, 77% of students earn a Regents diploma, and 12% earn an advanced Regents diploma, on average.

In the Group 2 schools, which represent schools near the statewide average of performance, the math and ELA performance indexes (124 and 132, respectively) are slightly below the 2028–29 long-term goals Grades 3–8 performance, and the 4-year graduation rate (91%) exceeds the state's long-term goal by two percentage points. However, there are still several measures that may be concerning. More than one fifth of students are chronically absent, and only about one third of students achieve advanced Regents designation.

Exhibit 3. Comparing the Distribution of Performance Across Three Groups of New York Schools, Using the Outcome Factor Score (2018–19 to 2022–23)
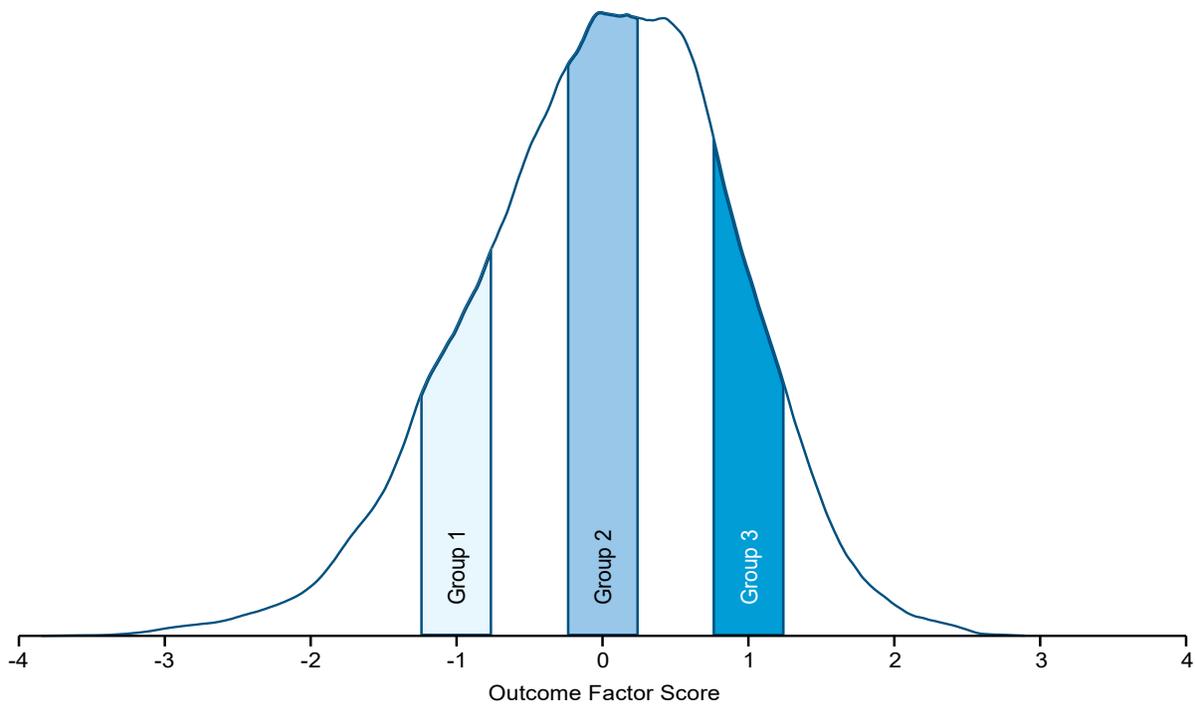
	Group 1		Group 2		Group 3	
	Mean	***n***	**Mean**	***n***	**Mean**	***n***
Math performance index	82.3	1,459	124.0	2,910	178.4	1,591
ELA performance index	101.6	1,548	131.9	3,162	175.6	1,676
Math Z-score	-0.6	2,104	-0.0	4,237	0.8	2,078
ELA Z-score	-0.7	2,103	-0.0	4,232	1.0	2,076
Chronic absenteeism %	42.7	2,823	21.9	5,116	10.4	2,629
Suspension %	2.6	2,851	2.5	5,180	1.0	2,641
Dropout %	7.2	889	4.1	1,352	1.0	571
4-year graduation %	82.0	866	91.0	1,322	96.1	559
Advanced Regents diploma %	12.4	887	36.2	1,352	61.1	570
Regents diploma %	76.6	887	87.3	1,352	95.2	570
Total *N*	2,851		5,181		2,641	

Note. The *n* represents the numbers of school-by-year observations between the 2018–19 and 2022–23 school years for which a given outcome measure applies. The Total *N* represents the total number of school-by-year observations in a given group between the 2018–19 and 2022–23 school years.

Student Outcomes and Student Needs in New York

Finally, the relatively high-performing Group 3 schools have average outcome levels that are quite high and exceed the state's long-term goals. Math and ELA performance index scores are well above long-term goals and are even approaching the end goal of 200. More than 95% of students graduate in 4 years, exceeding the state's long-term goal and end goal. In addition, only 10% of students in Group 3 schools are chronically absent (New York defines the highest level of performance on chronic absenteeism as 10% or less).

## Student Outcomes in Relation to Student Need

In this section, we examine the relationships between student need variables and student outcomes. This analysis allows us to understand the extent to which the current system provides equal opportunity to students to achieve a common level of outcomes. The analysis also allows us to evaluate which student need variables are most strongly associated with poorer student outcomes. It is these variables that should be included in a state funding formula and should be used to drive additional funding to districts and schools.

We start by examining the relationship between the outcome factor score and the percentage of students who are economically disadvantaged. We follow this with analyses examining the associations between multiple student need measures and student outcomes.

Student Outcomes in Relation to Economic Disadvantage

As shown in Exhibit 4, there is a moderately strong negative relationship between the outcome factor score and the percentage of students who are economically disadvantaged in schools. Whereas the schools with the lowest percentage of students who are economically disadvantaged perform more than 1 *SD* above average (comparable to the Group 3 schools in Exhibit 3), the schools with the highest percentage of students who are economically disadvantaged perform about 1 *SD* below average (comparable to the Group 1 schools in Exhibit 3). The school-level scatter in the left panel of Exhibit 4 shows that there is a decent amount of variation in the outcome factor score at any given level of economic disadvantage, but that outcomes tend to be lower for schools with higher percentages of students who are economically disadvantaged resulting in a correlation coefficient of -.68. The binned scatter in the right panel shows the average performance for every two-point increment in the economically disadvantaged student percentage. Using this approach to visualizing the data shows that the relationship is strikingly linear, with average outcomes systematically decreasing as the level of economic disadvantage increases. This provides evidence that students in schools with higher levels of economic disadvantage are not being provided with an equal opportunity for educational success.
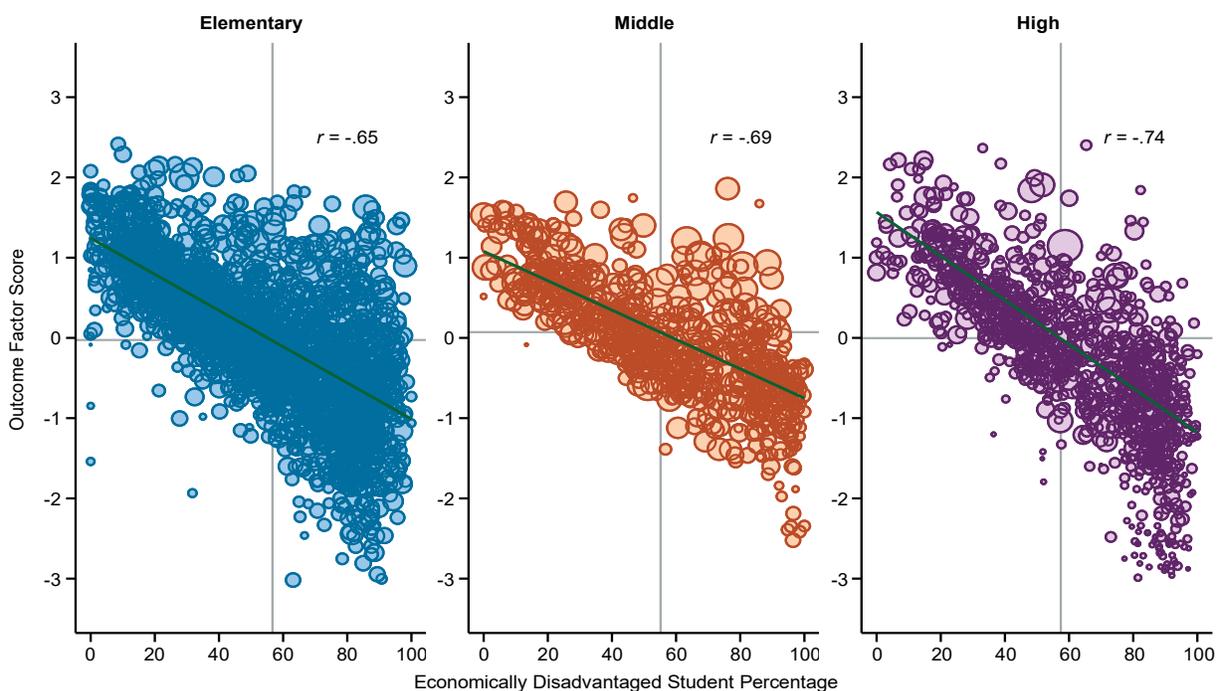
Exhibit 4. Relationship Between School-Level Student Outcomes and Percentage of Students Who Are Economically Disadvantaged (2022–23)
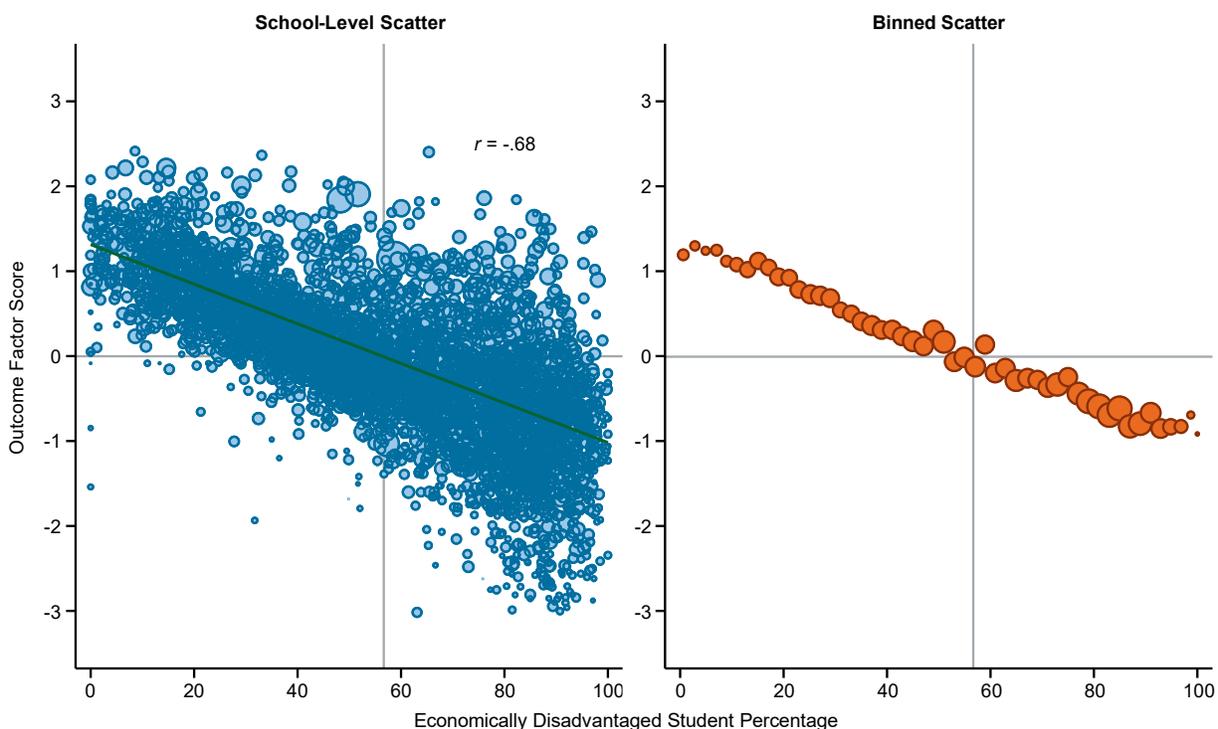
Note. Each dot in the school-level scatter represents a school. Each dot in the binned scatter represents the average outcome factor score for all schools within a given bin. Bins are defined using a width of two percentage points. The size of the dots in both panels is weighted by enrollment. The horizontal gray lines show the overall average outcome factor score, and the vertical gray lines show the overall average percentage of students who are economically disadvantaged. The green line in the school-level scatter is the line of best fit. The correlation coefficient in the school-level scatter is denoted by *r*.

In Exhibit 5, we show the relationship between the outcome factor score and economic disadvantage, by school level (elementary, middle, and high school). The average outcome factor score and percentage of students who are economically disadvantaged do not differ substantially by school level. However, the negative relationship between student outcomes and economic disadvantage strengthens slightly with grade-level progression from elementary, to middle, to high school, as indicated by the increasingly negative correlation coefficients and the noticeably steeper line of best fit for high schools compared to elementary and middle schools. This finding suggests that the negative effects of economic disadvantage on educational outcomes may be compounded as students progress through their education, making it more difficult for schools serving high proportions of students who are economically disadvantaged in higher grades to overcome the challenges that economic disadvantage poses.

Exhibit 5. Relationship Between Student Outcomes and Percentage of Students Who Are Economically Disadvantaged, by School Level (2022–23)

Note. Each dot in the scatters represents a school. The size of the dots is weighted by school enrollment. The horizontal gray lines show the overall average outcome factor score, and the vertical gray lines show the overall average percentage of students who are economically disadvantaged. The green lines are the lines of best fit. The correlation coefficient is denoted by *r*. School level was assigned based on the grade range with the highest percentage of students, with the grade ranges being prekindergarten to Grade 5 (elementary), Grades 6–8 (middle), and Grades 9–12 (high).

Student Outcomes Across Different Student Need Measures

Although economic disadvantage is one of the critical measures of student need, student need is multifaceted. In addition, students with different characteristics may perform differently on different types of outcomes. We begin by showing the simple correlations between various outcome measures and several measures of student need. This is followed by results from a regression analysis that shows the relationships between the student outcome factor scores and student need variables, controlling for other student needs and school characteristics.

Simple Correlational Analysis of Student Outcomes and Student Need

The correlations presented in Exhibit 6 show that economic disadvantage is the student need variable most strongly associated with each individual outcome measure. In addition, among the outcome variables, the outcome factor score tends to be more strongly associated with student needs than other outcome variables. For example, the correlation between the outcome factor score and economic disadvantage is -.69. The next strongest outcome variable

associated with student needs is chronic absenteeism at .61. However, there is variation across outcomes in the association with particular student needs. Across outcome measures, the percentage of ELLs is most strongly associated with graduation rate (-.39), and the percentages of SWDs and students who are experiencing homelessness are most strongly associated with the percentage of students earning advanced Regents designation (-.43 and -.47, respectively).

Exhibit 6. Correlations Between Student Outcomes and Student Need Variables (2018–19 through 2022–23)

Student need variable (% of students)	Outcome FS	Math PI	ELA PI	Math Z-score	ELA Z-score	Drop. rate	Grad. rate	Adv. Reg.	Reg. dip.	Chron. abs.
Students who are economically disadvantaged	-.69	-.57	-.53	-.52	-.52	.37	-.49	-.60	-.47	.61
English language learners	-.33	-.25	-.27	-.24	-.27	.36	-.39	-.34	-.30	.25
Students with disabilities	-.42	-.31	-.25	-.30	-.26	.24	-.39	-.43	-.35	.40
Students experiencing homelessness	-.44	-.29	-.25	-.29	-.25	.28	-.40	-.47	-.35	.43
Students who are migrants	-.07	-.11	-.13	-.10	-.12	.11	-.03	-.02	-.03	.01
Students in foster care	-.33	-.31	-.26	-.27	-.25	.24	-.34	-.32	-.26	.34

Note. FS = factor score; PI = performance index; Drop. = dropout; Grad. = graduation; Adv. Reg. = advanced Regents; Reg. dip. = Regents diploma; Chron. abs. = chronic absenteeism.

Regression Analysis of the Outcome Factor Score in Relation to Student Need

These simple correlations do not account for the fact that student needs are correlated with each other. For example, schools with higher percentages of students who are economically disadvantaged also tend to have higher percentages of SWDs and ELLs (Exhibit B2 in Appendix B shows the correlations between student need variables). Therefore, the negative relationship between student outcomes and the level of economic disadvantage described previously could, in part, be due to lower outcomes associated with SWDs and ELLs. To disentangle the relationships between various student needs (and other school characteristics) and student outcomes, we use multiple regression modeling to estimate the relationships while controlling for other student need and school characteristic variables.

In Exhibit 7, we present the results of this regression analysis. In Model 1, we include only the three main student need variables: proportions of students who are economically disadvantaged, ELLs, and SWDs. In Model 2, we add several additional student need variables that are indicative of different types of economic disadvantage, including the proportions of students who are homeless, migrant, or in foster care. From Model 1, we see that each of the three main student need variables has an independent relationship with student outcomes. The

coefficients for these variables represent the estimated difference in outcomes for schools where all students (100%) are in the given student need category compared with schools where none of the students (0%) are in the given category. For example, the coefficient for economic disadvantage indicates that schools where all students are economically disadvantaged are expected to have student performance that is 2.3 SDs lower on the outcome factor score variable compared to schools where none of the students are economically disadvantaged. The coefficient for SWDs is even larger in magnitude than that for economic disadvantage, at -3.2. In Model 2, the coefficients for proportions of students who are homeless, migrant, and in foster care are also negative and statistically significant. However, the inclusion of these variables somewhat weakens the coefficients for economic disadvantage, ELLs, and SWDs. However, the addition of these variables does little to explain additional variation in the outcome factor score; the increase in R^2 is only .009.

To help interpret the coefficients, we show predicted outcomes at the 10th and 90th percentiles of each student need variable in Exhibit 8, where the predictions hold all other variables constant at their observed values. Using Model 1, we observe that a change from the 10th to 90th percentile of economic disadvantage (from 20% to 90% of students who are economically disadvantaged) results in a predicted decline in student outcomes of 1.63 SDs. The predicted decline in student outcomes from changes to the percentages of ELLs and SWDs from the 10th to 90th percentiles of those variables is quite a bit less. This is, in part, due to narrower 10th to 90th percentile ranges for ELLs and SWDs. However, for SWDs, we still observe a difference in predicted performance of almost 0.6 SDs when moving from the 10th to 90th percentile in the percentage of SWDs.

For Model 2, we see similar patterns. Despite very large coefficients, the change in outcomes across practical ranges of percentages for students who are homeless, migrant, or in foster care are modest due to relatively small differences across schools in the prevalence of those student groups. In short, the student need variables that are most strongly related to changes in student outcomes across schools are the percentages of students who are economically disadvantaged and SWDs.

Exhibit 7. Regression Results Examining Relationships Between School Characteristics and the Student Outcome Factor Score

	Model 1		Model 2	
	Coef.	SE	Coef.	SE
Student needs				
Economically disadvantaged proportion	-2.335*	(0.052)	-2.191*	(0.054)
English language learner proportion	-0.519*	(0.128)	-0.446*	(0.134)
Students with disabilities proportion	-3.253*	(0.226)	-2.911*	(0.222)
Homeless student proportion			-1.131*	(0.237)
Migrant student proportion			-5.348*	(1.243)
Foster student proportion			-13.22*	(1.915)
Proportions of enrollment, by grade				
Grades 6–8	0.019	(0.024)	0.0146	(0.023)
Grades 9–12	-0.087*	(0.023)	-0.082*	(0.023)
CWIFT geographic cost index	2.197*	(0.109)	2.309*	(0.111)
School and district size (scale)				
School < 200	-0.395*	(0.045)	-0.300*	(0.042)
School 200 to < 400	-0.228*	(0.020)	-0.184*	(0.020)
School 400 to < 600	-0.159*	(0.019)	-0.135*	(0.019)
District < 300	0.325*	(0.088)	0.278*	(0.084)
District 300 to < 600	0.270*	(0.040)	0.251*	(0.040)
District 600 to < 2000	0.089*	(0.021)	0.081*	(0.021)
Locale				
Suburb	-0.217*	(0.028)	-0.235*	(0.029)
Town	-0.175*	(0.037)	-0.147*	(0.038)
Rural	-0.076*	(0.035)	-0.074*	(0.036)
Charter indicator	0.272*	(0.045)	0.267*	(0.044)
Constant	1.508*	(0.059)	1.414*	(0.058)
Number of school X year observations	22,961		22,961	
Number of unique schools	4,722		4,722	
R^2	.607		.616	

Note. Coef. = coefficient; *SE* = standard error; CWIFT = Comparable Wage Index for Teachers. The coefficients shown are exponentiated Poisson coefficients and are interpreted relative to 1, such that values less than 1 represent lower spending and values greater than 1 represent higher spending. The models also include year fixed effects, which are not shown in the regression results. The constant term reflects the outcome factor score in the 2022–23 school year when all other covariates have a value of 0.

* $p < .05$.

Exhibit 8. Predicted Student Outcome Factor Scores at the 10th and 90th Percentiles of School-Level Student Need Variables

Student need variable	Prediction percentile	Level of student need variable at prediction percentile	Model 1		Model 2	
			Average predicted outcome factor score	Difference in predicted outcome factor score	Average predicted outcome factor score	Difference in predicted outcome factor score
Students who are economically disadvantaged	10th	19.9%	0.88	-1.63	0.84	-1.53
	90th	89.8%	-0.75		-0.69	
English language learners	10th	0.0%	0.10	-0.13	0.10	-0.11
	90th	25.2%	-0.03		-0.01	
Students with disabilities	10th	10.8%	0.26	-0.57	0.24	-0.51
	90th	28.3%	-0.32		-0.27	
Students experiencing homelessness	10th	0.0%			0.10	-0.16
	90th	14.2%			-0.06	
Students who are migrants	10th	0.0%			0.06	-0.01
	90th	0.1%			0.06	
Students in foster care	10th	0.0%			0.09	-0.16
	90th	1.2%			-0.06	

Discussion and Conclusion

The examination of student outcomes in relation to the state's goals and in relation to student needs is critical for understanding the adequacy of the educational system. For an education funding system to achieve adequacy, all students in the state should be provided the opportunity to meet the state's educational outcome goals. We conducted analyses to determine whether (a) the overall level of student outcomes in the state is meeting state goals and (b) equal opportunity to achieve goals is currently being provided across schools regardless of the levels of student need.

Our analysis of the overall level of student outcomes suggests that the state is performing well in meeting some of its stated goals, but not all of them. In particular, the graduation rate in the state in 2022–23 already exceeded the long-term goals the state set to achieve by 2025–26, resulting in the state increasing its graduation goals for 2028–29. Other measures, however, provide a starker viewpoint of student performance in the state. On NAEP, average student performance in New York has consistently lagged both the NAEP and state-equated

benchmarks of proficiency and the performance of neighboring states. In addition, in New York public schools with outcomes near the statewide average, almost 22% of students are chronically absent, and only 36% of students earn the advanced Regents designation, an important metric for college and career readiness in the state.

Our analyses of the relationship between school-level outcomes and student needs of schools show that schools with higher-need student populations have systematically lower student outcomes. The level of economic disadvantage of schools is the student need variable most strongly related to lower student outcomes, although the percentages of SWDs and ELLs also independently exhibit prominent relationships with lower student outcomes. These patterns suggest the current differentiation of funding based on student needs in the state does not provide sufficiently more resources to districts and schools serving higher need student populations necessary to support equal opportunity to achieve common outcomes.

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Appendix A. Outcome Factor Score

Exhibit A1 shows the structural equation model used to generate the factor scores, along with the standardized factor loadings for each outcome measure. As shown, assessment scores and chronic absenteeism generate the strongest factor loadings. with a magnitude of almost 0.8, although the signs are opposite due to the nature of the outcomes. The percentage of students qualifying for advanced Regents designation is the next strongest factor loading (0.72), followed by the Regents diploma, graduation rate, and dropout rate.

Exhibit A1. Structural Equation Model Used to Generate the Outcome Factor Score
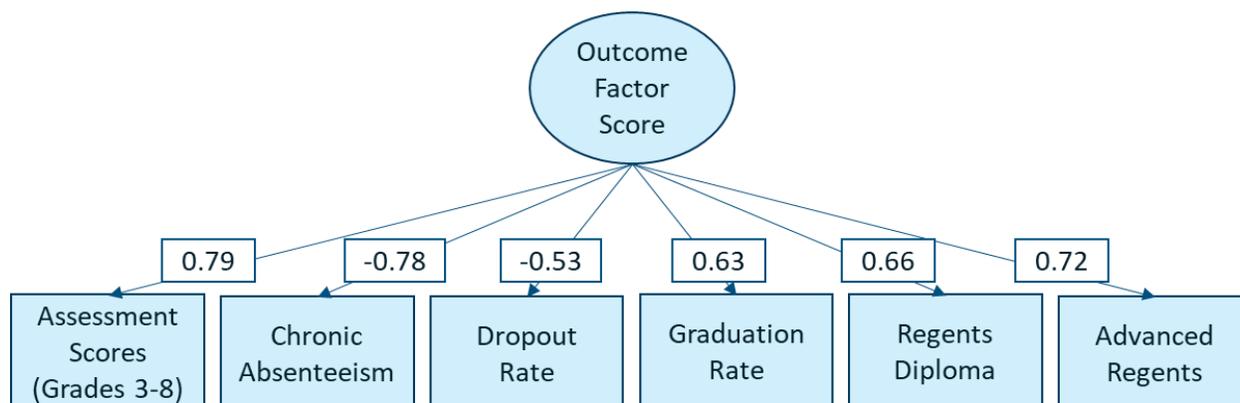
Note. The model is weighted by enrollment. The model also allowed for the error terms between dropout rate and graduation rate, dropout rate and Regents diploma, and graduation rate and Regents diploma to be correlated. Chronic absenteeism, dropout rate, graduation rate, and Regents diploma percentages were transformed using a logit transformation. All variables were then standardized as z scores prior to inclusion in the model. All factor loadings are statistically significant ($p < .001$).

To demonstrate that the outcome factor score is working as intended, we show the correlation between the outcome factor score and a number of student outcomes in Exhibit A2. The outcome factor score is strongly correlated with each of the student outcomes included in the correlation table. By contrast, not all student outcomes are strongly correlated with each other. For example, the correlation between the percentage of students earning a Regents diploma and math Z-scores is only .12. This indicates that the outcome factor score is a better representation of the collection of outcomes included than any individual outcome measure.

To ensure that the estimation of the outcome factor score was also not unduly affected by the pandemic we examined the year-to-year correlations of the outcome factor score. For example, the correlation between the outcome factor score in 2018–19 and that in 2019–20 was .94. The lowest correlation across two consecutive years in the outcome factor score was 0.88 between 2020–21 and 2021–22, indicating that the pandemic did not substantially disrupt trends in year-

to-year performance. In addition, the correlations between the outcome factor score and key student need variables were consistent over time, also indicating that the patterns of student outcomes with respect to student need were not substantially altered by the pandemic. For example, correlations between the outcome factor score and the economically disadvantaged student percentage by year ranged from -.67 (in 2020–21) to -.71 (in 2019–20) with the remaining years having correlations of -.68 or -.69.

Exhibit A2. Correlations Between Student Outcome Variables

	Outcome FS	Math PI	ELA PI	Math Z-score	ELA Z-score	Drop. rate	Grad. rate	Adv. Reg.	Reg. dip.	Chron. abs.
Outcome FS	1.00									
Math PI	.86	1.00								
ELA PI	.84	.85	1.00							
Math Z-score	.88	.89	.84	1.00						
ELA Z-score	.87	.87	.93	.90	1.00					
Drop. rate	-.60	-.27	-.32	-.24	-.33	1.00				
Grad. rate	.72	.35	.36	.31	.37	-.67	1.00			
Adv. Reg.	.81	.28	.31	.21	.29	-.43	.51	1.00		
Reg. dip.	.71	.15	.23	.12	.20	-.62	.80	.54	1.00	
Chron. abs.	-.83	-.60	-.52	-.55	-.53	.42	-.59	-.52	-.49	1.00

Note. FS = factor score; PI = performance index; Drop. = dropout; Grad. = graduation; Adv. Reg = advanced Regents; Reg. dip. = Regents diploma; Chron. abs. = chronic absenteeism.
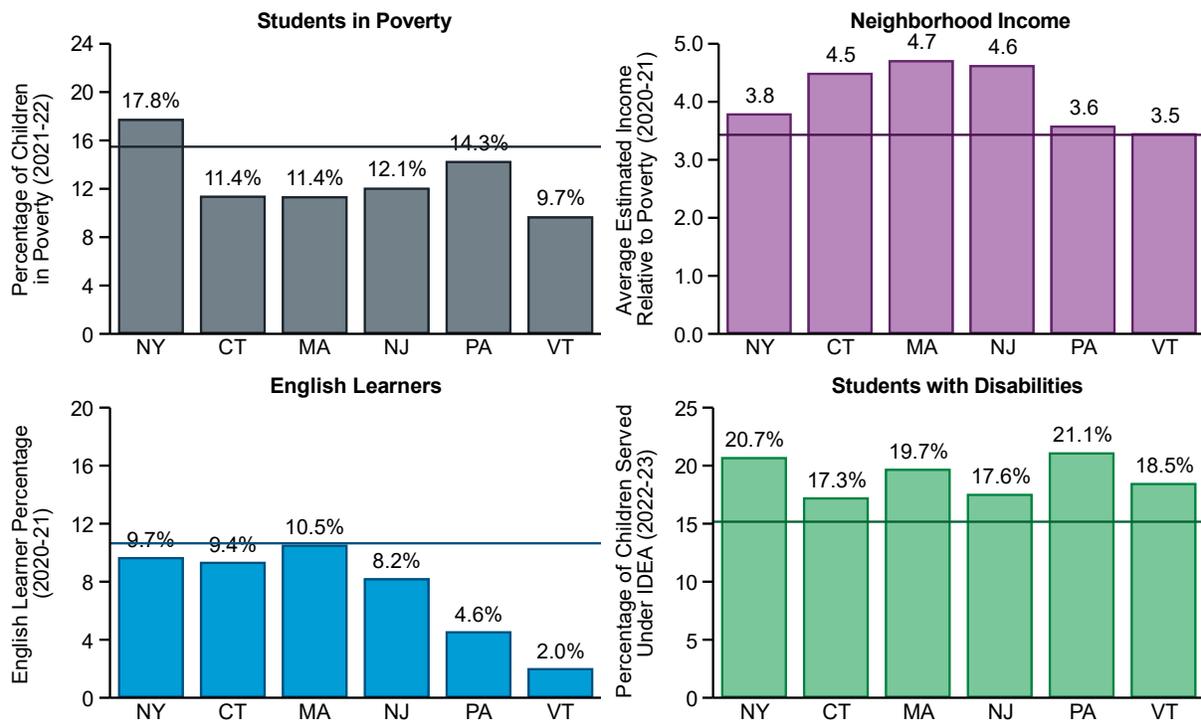
Appendix B. Additional Exhibits

Student Outcomes and Student Needs in New York

Exhibit B1. School-Level Variables

Variable	All years		2022–23 only	
	Mean	*SD*	**Mean**	*SD*
Outcome factor score	0.00	0.87	0.00	0.87
Math performance index	129	47	139	43
ELA performance index	137	39	134	38
Math Z-score	0.07	0.72	0.09	0.77
ELA Z-score	0.09	0.87	0.13	0.98
Dropout rate	4.4%	5.2%	4.3%	4.8%
Graduation rate	88.4%	11.7%	90.0%	10.1%
Advanced Regents %	39.1%	25.7%	36.6%	25.1%
Regents diploma %	84.5%	15.0%	86.6%	13.9%
Chronic absenteeism rate	25.6%	17.3%	28.9%	16.1%
Suspension rate	2.5%	4.5%	3.6%	5.3%
Economic disadvantage %	55.7%	26.0%	56.4%	25.4%
English language learners %	9.2%	11.8%	9.7%	12.3%
Students with disabilities %	17.1%	6.2%	17.5%	6.2%
Homeless %	4.0%	5.6%	4.5%	5.8%
Migrant %	0.1%	0.4%	0.1%	0.5%
Foster %	0.3%	0.5%	0.3%	0.5%
Middle school enrollment %	22.9%	35.5%	22.7%	35.2%
High school enrollment %	31.0%	43.7%	31.4%	43.8%
School enrollment	848	721	824	707
School enrollment < 200	1.8%		2.3%	
School enrollment 200 to < 400	19.4%		20.6%	
School enrollment 400 to < 600	26.9%		27.2%	
School enrollment ≥ 600	51.9%		49.9%	
District enrollment < 300	0.4%		0.4%	
District enrollment 300 to < 600	1.5%		1.6%	
District enrollment 600 to < 2000	13.5%		14.0%	
District enrollment ≥ 2000	84.6%		83.9%	
Comparable Wage Index for Teachers (NY centered)	0.28	0.11	0.28	0.10
Locale: City	46.8%		45.5%	
Locale: Suburb	36.2%		37.4%	
Locale: Town	6.3%		6.4%	
Locale: Rural	10.8%		10.7%	
Charter	6.4%		7.1%	
Number of schools	22,961		4,596	

Note. Averages are weighted by student enrollment. *SD*s of binary variables are not shown. The statistics in the All years column are based on data from 2018–19 through 2022–23. Only observations with a non-missing outcome factor score are included in the averages. The CWIFT is centered on the minimum CWIFT value in New York, giving the minimum cost district based on the CWIFT a value of 0.

Exhibit B2. School-Level Correlations Between Student Need Variables

	Students who are economically disadvantaged %	English language learners %	Students with disabilities %	Students experiencing homelessness %	Students who are migrants %	Students in foster care %
Students who are economically disadvantaged	1.00					
English language learners	0.52	1.00				
Students with disabilities	0.32	0.14	1.00			
Students experiencing homelessness	0.61	0.49	0.29	1.00		
Students who are migrants	0.00	-0.02	-0.05	-0.06	1.00	
Students in foster care	0.28	0.05	0.37	0.30	0.03	1.00

Exhibit B3. Statewide Measures of Student Need and Ratio of Neighborhood Income to Poverty

Students in Poverty

NY: 17.8%, CT: 11.4%, MA: 11.4%, NJ: 12.1%, PA: 14.3%, VT: 9.7%

(Percentage of Children in Poverty (2021-22))

Neighborhood Income

NY: 3.8, CT: 4.5, MA: 4.7, NJ: 4.6, PA: 3.6, VT: 3.5

(Average Estimated Income Relative to Poverty (2020-21))

English Learners

NY: 9.7%, CT: 9.4%, MA: 10.5%, NJ: 8.2%, PA: 4.6%, VT: 2.0%

(English Learner Percentage (2020-21))

Students with Disabilities

NY: 20.7%, CT: 17.3%, MA: 19.7%, NJ: 17.6%, PA: 21.1%, VT: 18.5%

(Percentage of Children Served Under IDEA (2022-23))

Note. The national average is depicted by a horizontal line in each panel of the figure. For poverty, district level estimates were aggregated at the state and national levels weighting by district enrollment. Neighborhood income is calculated using neighborhood income estimates relative to the federal poverty threshold, aggregated within each state and nationally weighting by school enrollment, and divided by 100 to report average income relative to the federal poverty line.

Source. Percentages of EL students and students with disabilities: Digest of Education Statistics (Office of Planning, Evaluation, and Policy Development, 2024). Percentage of children living in poverty: SAIPE (United States Census Bureau, 2021). Neighborhood income: School-level Education Demographic and Geographic Estimates (EDGE; NCES, n.d.).

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