

# Composite Score Primer

Composite Scores were successfully generated for candidate schools. Composite scores were used to rank schools in terms of their likelihood of being considered for closure, consolidation, or merger. The scores were calculated based on three categories: equity, excellence, and effective use of resources: (See [Table A.1](#)).

- Equity was derived from the combination of three measures: school access, program access, and historical inequities.
- Excellence was derived from the combination of three measures: academic performance, school culture and climate, and socio-emotional development.
- Effective use of resources was derived from the combination of four measures: family choice and demand, student enrollment, teacher turnover, and building condition.

The overall composite score was created by an equation that weighted the categories and measures differently. (See [Appendix A.1](#)). The weights for the categories were set by the [District Advisory Committee](#) in combination with guidance provided by the district administration. These “global weights” were as follows: equity received a weight of 0.5 whereas excellence and effective use of resources received equal weights of 0.25. (see [Figure A.1](#)).

Weights for the individual metrics that comprised the categories of interest were established through a community survey of over 9000 responses. These weights were set as follows:

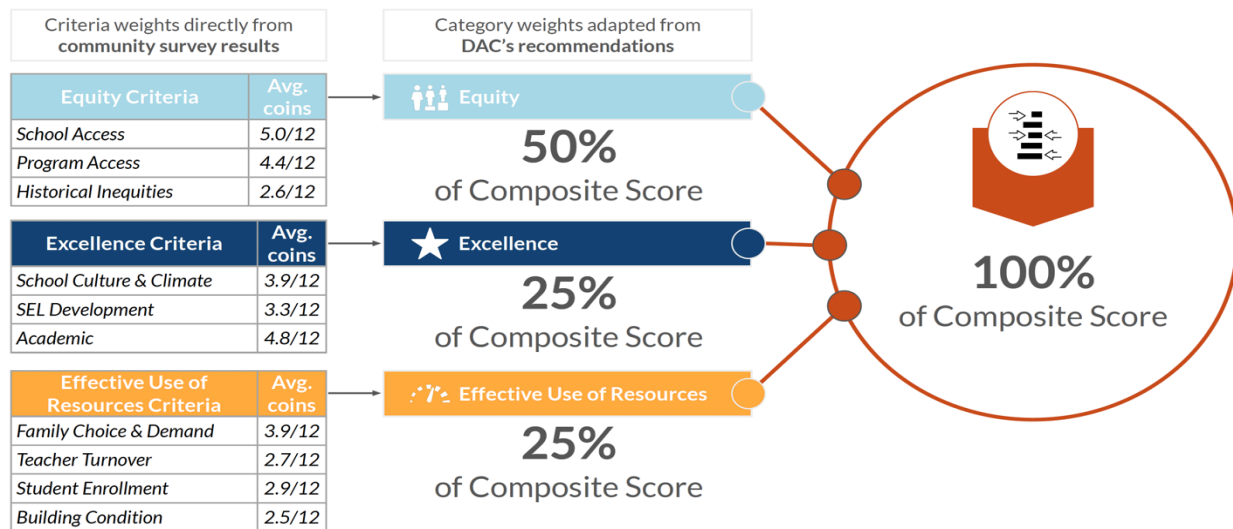
- Within Equity, school access received a weight of 5.0, program access received a weight of 4.4, and historical inequities received a weight of 2.6.
- Within the excellence category, academic performance received a weight of 4.8, school culture and climate received a weight of 3.9, and socio-emotional development received a weight of 3.3.
- Within the effective use of resources category, family choice and demand received a weight of 3.9, student enrollment received a weight of 2.9, teacher turnover received a weight of 2.6, and building condition received a weight of 2.5.

These metrics were combined to create an overall score, with greater emphasis on equity, reflecting the district's commitment to addressing access and program disparities.

The Equity category received a weight of 0.5 to reflect the district's commitment to equity by “balancing” the composite scores, i.e., by giving equity a weight equal to the other two categories combined. By incorporating equity in this way, the composite scores have been decoupled from traditional markers of disadvantage. In other words, by including the equity metrics and weighting

them as the district has done, traditional markers of disadvantage (e.g., poverty rates, percent Black, percent Latinx) no longer predict composite scores.

**Figure A1: Components and Weighting Scheme of the Composite Score**



**Table A.1: Original Composite Scores Metrics**

	Criterion	Metric	Notes	Source
Equity	School Access - The availability of schools in a neighborhood	Average distance between the three closest schools with the same grade span.	School access was measured as the distance between a given school and the three nearest schools in the same grade span adjusted by the population density of the zip code of the focal school.	SFUSD administrative files (See <a href="#">table A.2</a> below for more information)
	Program Access - The availability of educational programs in a school	Percentage of students in each school participating in Language programs, Special Education programs, or Career Technical Education and Pathway programs.	Program access was measured as the unduplicated counts of ELL students, special education students, Language Pathways students, AVID students, and low-SES students.	SFUSD administrative files.
	Historical Inequities - Challenges and disparities rooted in a school's or community's	The average amount of historical neighborhood opportunity experienced by	Student home addresses were geocoded then merged with "upward mobility" data from the opportunity atlas. Scores for schools were then	Student home addresses gathered from SFUSD administrative files combined with neighborhood data from <a href="#">opportunityatlas.org</a> .

	history that affect educational opportunities today.	students in each school. This measure is gathered from the Opportunity Insight Lab's "upward mobility index," defined in terms of the eventual earnings of children who grew up in households in the 25 <sup>th</sup> percentile of income distribution.	computed as the average amount of opportunity experienced by students in each school. This measure captures historical conditions that lead to opportunity.	
Excellence	School Culture and Climate - A school community's perception of belonging, safety, and academic learning.	The percentage of families, staff, and students responding favorably to survey questions about a sense of belonging, safety, or academic support for learning.	Computed as the percentage of respondents who agreed or strongly agreed with positive statements on the school culture and climate survey, averaged across the student, staff, and family surveys. Any school with a missing value was assigned a value equal to the district average.	SFUSD administrative files.
	Socio-Emotional Development - Skills such as social awareness, self-management, growth mindset, and self-efficacy.	The percentage of students responding favorably to survey questions related to social awareness, self-management, growth mindset, or self-efficacy.	Measured as the average percent of respondents who agreed or strongly agreed with positive evaluations for growth mindset, self-efficacy, self-management, and social awareness. Any school with a missing value was assigned a value equal to the district average.	SFUSD administrative files.
	Academic Performance - How students perform academically in core subject areas currently and over time.	Average state assessments scores on English Language Arts and Math performance and growth. (Data from California School Dashboard)	Measured as the average student performance on statewide assessments and average year-over-year growth on statewide assessments. Each measure was first standardized then the resultant combined metric was then standardized.	SFUSD administrative files.
Effective use of resources	Family Choice and Demand for the School - The level of demand for a school from	The percentage of applicants ranking the school as one of their top three	Scores were calculated as the percentage of applicants who rated the school in top three. Data for Mission, SF	SFUSD administrative files.

	families as shown by school choices listed on a school application.	choices in their school application.	International, Independence, Ida B. Wells, and Downtown were assigned values equal to the district average because these are not schools of choice.	
	Teacher Turnover - How often teachers leave their jobs and are replaced by others.	The percentage of teachers who leave a school.	Teacher turnover was averaged across school years 2022-23 and 2023-24.	SFUSD administrative files.
	Student Enrollment - Student enrollment refers to the number of students attending a school as a percentage of the school's ideal capacity.	A school's 2023-2024 school year enrollment compared to its ideal enrollment.	Calculated as the average capacity of each school minus the total enrollment.	SFUSD administrative files.
	Building Condition - The condition of a school facility including its systems (e.g., heating, ventilation, and air conditioning, electrical, plumbing, roof, etc.), the interior and exterior of each building, and open space.	The school building's facility condition index (FCI) score. The FCI is an aggregate measure of the condition of all individual systems in a given facility. A lower FCI score indicates better school building conditions. (Data from VFA Facility Condition Assessment)	Schools with multiple locations were assigned the average FCI score for each of its locations.	SFUSD administrative files.

**Table A.2: Data Shared by SFUSD with Dr. Pearman's Team for Composite Score Calculation**

*Note: The data shared for each metric was the latest reliable available at the time of the data sharing (June 11, 2023).*

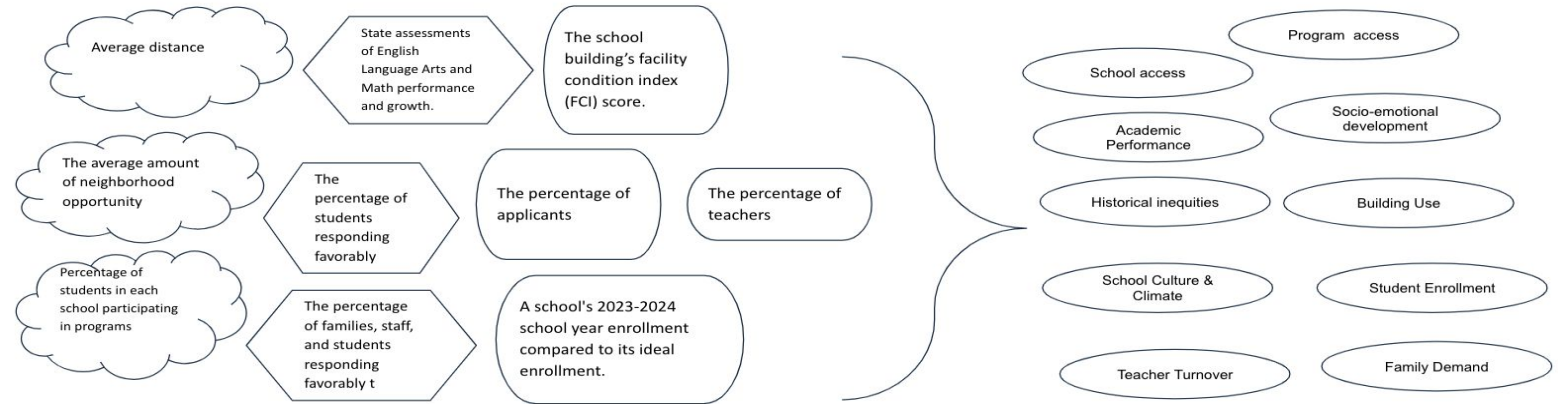
Category	Metric	Data	Year	Source	Description	Note
Equity	School Access	School Addresses	2023-24	SFUSD School Directory (RPA Table)	Dr. Pearman calculated the average distance to the three closest schools in the same grade band.	
Equity	Program Access	Unduplicated count of EL/ SPED/ Language Pathways/ CTE/ AVID/ Low SES Students at each site.	2023-24	SFUSD Student Demographics CBEDS Census Day Snapshot (RPA Table)	A student falling into more than one category counts only once	
Equity	Historical Inequity	Deidentified student home addresses	2023-24	SFUSD Student Demographics CBEDS Census Day Snapshot (RPA Table)	Dr. Pearman calculated. Students' neighborhood scores based on their residence, averaged at the school level.	
Excellence	Culture/Climate Survey	Whole school culture/climate survey score	2023-24	Panorama Survey; processed by RPA	Average of aggregated favorability scores of three groups: students, staff, and families	At elementary, only 4th and 5th graders take the survey.
Excellence	Social-Emotional Learning	Whole school social-emotional learning (SEL) survey score	2023-24	Panorama Survey; processed by RPA	Average across four domains of SEL skills: self-efficacy, growth mindset, social awareness, and self-management	At elementary, only 4th and 5th graders take the survey.
Excellence	Academic Performance	SBAC ELA performance and SBAC Math performance	2022-23	CA School Dashboard Research File	Performance is Average Distance From Standard of continuously enrolled students who took the Smarter Balanced summative assessment or California Alternative Assessment in ELA/Math (includes LOSS scores added due to the school, district, or student group not	2023-24 data was not available at the time of the data sharing.

					meeting the federal 95% participation rate requirement).	
Excellence	Academic Performance	SBAC ELA change and SBAC Math change	2022-23	CA School Dashboard Research File	Change is difference between current status and prior status	2023-24 data was not available at the time of the data sharing.
Effective Use of Resources	Family Demand	Demand for schools as a top choice	2022-23; 2023-24	SFUSD Enrollment Center	Average percentage of transition grade (K/6/9) school applicants that specify the school as a top 3 choice across two years	2022-23 data was from the 2023-24 application year; 2023-24 data was from the 2024-25 application year
Effective Use of Resources	Teacher Turnover	Annual rate of teacher turnover at each site	2021-22; 2022-23	SFUSD HR Department	Percentage of teachers who do not return to the same site from one year to the next	
Effective Use of Resources	School Enrollment	Maximum ideal capacity of school	2023-24	SFUSD Enrollment Center	These capacities are estimated by SFUSD staff and are different from capacities used for enrollment purposes.	Enrollment share is calculated using this as the denominator and 2023-24 CBEDS enrollment counts
Effective Use of Resources	Building Condition	Facility Condition Index	6/7/2024	VFA (external contractor)	The index is a ratio of the cost of repairs and maintenance to the facility's replacement value	

**How will the composite score be  
calculated?**

# The composite score calculation is a multi- step process

To ensure that each **metric score** can be compared as an apple to apple, a “standardized score” will be calculated for each metric.



The **weighted standardized score** will be weighted based on the number of coins for each metric based on the results of community survey

$$\text{Equity} = \left[ \frac{5}{12} \text{SchoolAccess} + \frac{4.4}{12} \text{ProgramAccess} + \frac{2.6}{12} \text{HistoricalInequity} \right]$$

$$\text{Excellence} = \left[ \frac{4.8}{12} \text{AcademicPerformance} + \frac{3.9}{12} \text{SchoolCulture} + \frac{3.3}{12} \text{SEL} \right]$$

$$\text{Effective Use} = \left[ \frac{3.9}{12} \text{Demand} + \frac{2.9}{12} \text{Enrollment} + \frac{2.6}{12} \text{Turnover} + \frac{2.5}{12} \text{BuildingUse} \right]$$

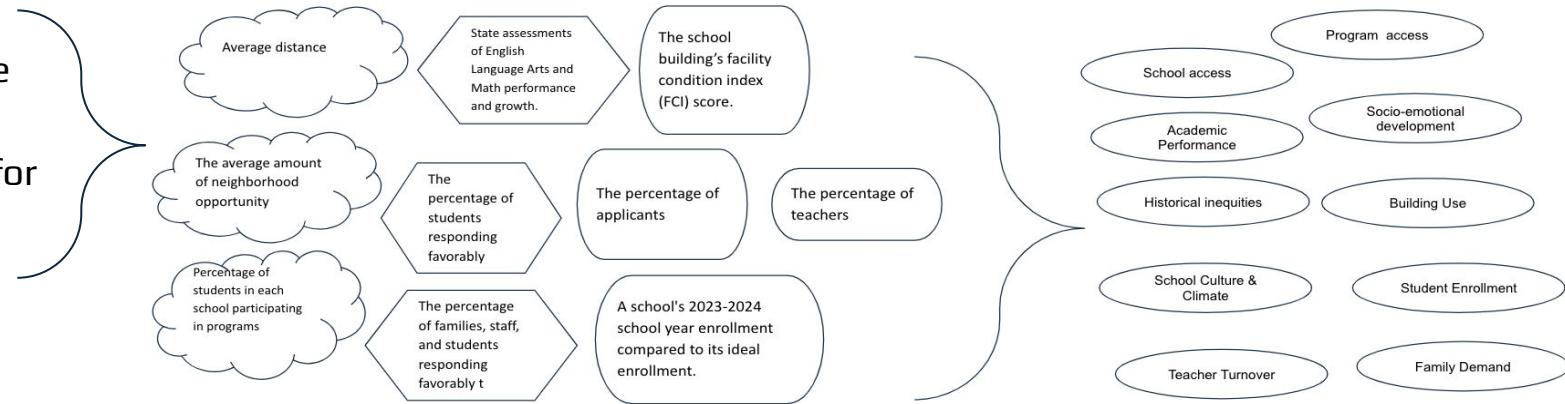
The **composite score** will be based on the weight of the category and the weight of the criterion in each the category

$$\text{Composite Score} = \frac{1}{2} \text{Equity} + \frac{1}{4} \text{Excellence} + \frac{1}{4} \text{Effective Use Resources}$$



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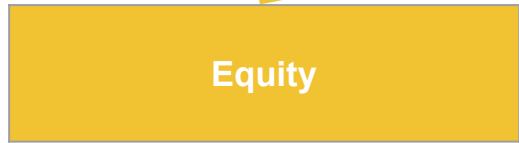
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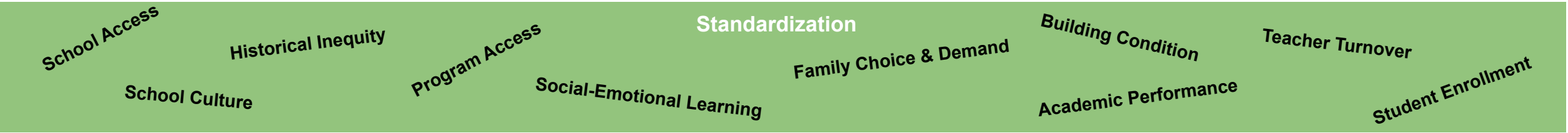
$$\text{Composite Score} = \frac{1}{2} \text{Equity} + \frac{1}{4} \text{Excellence} + \frac{1}{4} \text{Effective Use Resources}$$



Weights		Standardized Score	
5.22/12	x	School Access	
4.4/12	x	+ Program Access	
2.6/12	x	+ Historical Inequity	

Weights		Standardized Score	
4.8/12	x	Academic Performance	
3.9/12	x	+ School Culture	
3.3/12	x	+ Social-Emotional Learning	

Weights		Standardized Score	
3.9/12	x	Student Enrollment	
2.9/12	x	+ Building Condition	
2.9/12	x	+ Family Choice & Demand	
2.5/12	x	+ Teacher Turnover	



# Composite score

- A higher composite score means a school is less likely to be identified for closure, merger or co-location.
- Composite scores will be comparable across schools and should be interpreted as **a global score that captures how much a school aligns with the stated preferences, values, and priorities of SFUSD's community partners.**
- Composite scores can be scaled to allow for a more intuitive distribution (e.g., 1-100).

# APPENDIX:

1. Tutorial on standardization, which is a key part of computing the composite score
2. How the composite score will be calculated
3. How the coin distribution going to be used to calculate weights in the final composite score?

Tutorial on standardization, which is a key part of computing the composite score...

# Standardization

- A key challenge with creating a composite score based on different metrics is that the metrics are not directly comparable.
  - How do you combine how well a school does academically with the quality of its facilities?
- One way to do it is to **standardize** each metric.
  - Standardization of a given metric tells us where a school lands in the distribution of all schools on the same metric.
  - We can then combine across all metrics a school's relative placement to other schools in the district.
  - Standardization allows for “apples to apples” comparisons across the different metrics.

# Standardization

Standardization is accomplished in four steps:

1. Calculate the district-wide average for a given metric.
2. Create a *demeaned score* for each school by subtracting the district-wide average from each school's score on the metric of interest.
3. Calculate the standard deviation, which is another way of saying how much range there is in the distribution.
4. Divide the school's demeaned score by the standard deviation to tell us how much different the school's score is from others.

# Standardization

**Example: School Access (the average distance to the three nearest schools in the same grade band.)**

School A = 1.75 mile

School B = 2.2 mile

School C = .75 mile

Step 1) Calculate the average across all schools:

$$(1.75+2.2+.75)/3 = 1.57 \text{ miles}$$



# Standardization

**Example: School Access (the average distance to the three nearest schools in the same grade band.)**

Step 3) Calculate the standard deviation:

$$\sigma = \sqrt{\frac{\sum(X - \mu)^2}{n - 1}}$$

$$\sigma = \sqrt{\frac{(1.75 - 1.57)^2 + (2.2 - 1.57)^2 + (.75 - 1.57)^2}{3 - 1}}$$

$$\sigma = 0.74$$

# Standardization

**Example: School Access (the average distance to the three nearest schools in the same grade band.)**

Step 4) Divide each school's demeaned score by the standard deviation to tell us how much different each school's score is from others..

$$\text{School A} = .18/.74 = 0.24$$

$$\text{School B} = .63/.74 = 0.85$$

$$\text{School C} = -.82/.74 = -1.11$$

In this scenario, School B would be less likely to close as the metric score is the highest of the 3.

# Standardization

**Example: School Access (the average distance to the three nearest schools in the same grade band.)**

Step 2) Subtract the average from each school's score:

$$\text{School A} = 1.75 - 1.57 = .18$$

$$\text{School B} = 2.2 - 1.57 = .63$$

$$\text{School C} = .75 - 1.57 = -.82$$

Step 3) Calculate the standard deviation:

# Standardization

**Example: School Access (the average distance to the three nearest schools in the same grade band.)**

Step 3) Calculate the standard deviation:

$$\sigma = \sqrt{\frac{\sum(X - \mu)^2}{n}}$$

$$\sigma = \sqrt{\frac{(1.75 - 1.57)^2 + (2.2 - 1.57)^2 + (.75 - 1.57)^2}{3}}$$

$$\sigma = 0.61$$

# Standardization

**Example: School Access (the average distance to the three nearest schools in the same grade band.)**

Step 4) Adjust the school's metric by the standard deviation to tell us how much different the school's score is from others..

$$\text{School A} = .18/.61 = 0.30$$

$$\text{School B} = .63/.61 = 1.03$$

$$\text{School C} = -.82/.61 = -1.34$$

In this scenario, School B would be less likely to close as the metric score is the highest of the 3.

**How will the composite score be calculated?**

# The composite score calculation is a multi- step process

- Each School will receive a **metric score** for every criterion based on the assigned [metric and meaning](#)
- To ensure that each metric can be compared as an apple to apple, a **standardized score** will be calculated for each metric. For example, a standardized score allow us to combine how well a school does academically with the quality of its facilities into the composite score.
- The standardized score will become a **weighted standardized score** based on the number of coins for each metric score (the number of coins is based on the results of community survey)
- The **composite score** will be based on the weight of the category and the weight of the criterion in each the category

$$\text{Composite Score} = \frac{1}{2} \text{Equity} + \frac{1}{4} \text{Excellence} + \frac{1}{4} \text{Effective Use Resources}$$

1. Each School will receive a **metric score** for every criterion based on the assigned [metric and meaning](#)

Equity
<i>School Access</i>
<i>Program Access</i>
<i>Historical Inequities</i>

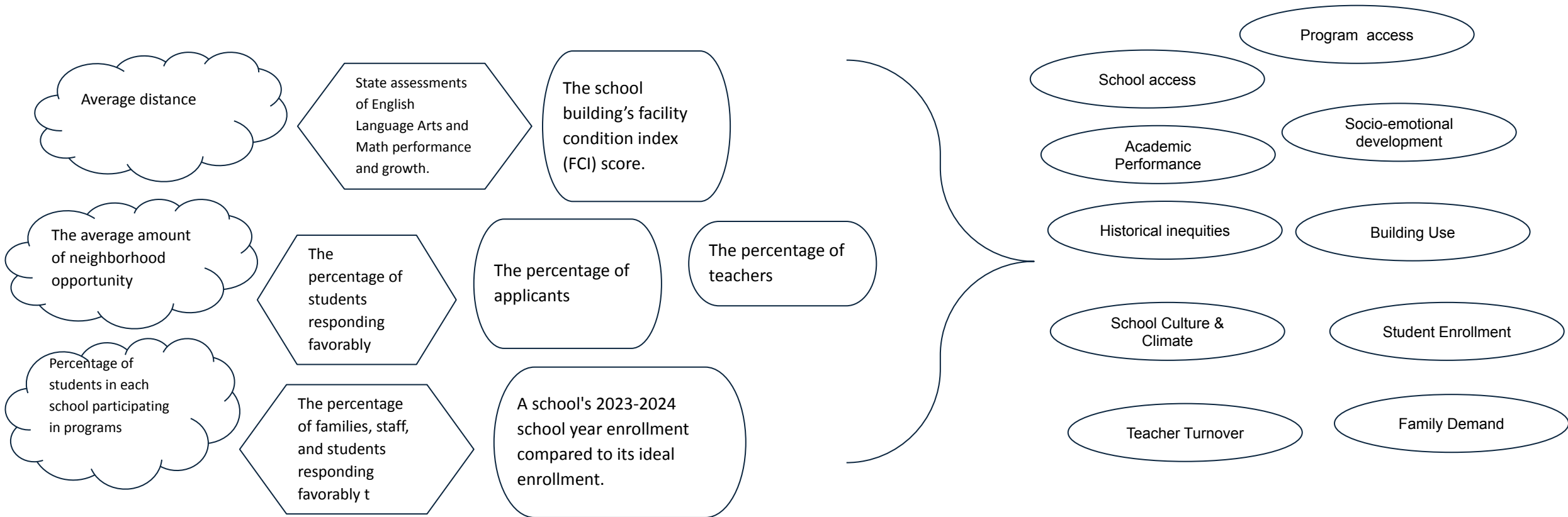
Excellence
School culture & climate
Academic Performance
Socio-emotional development

Effective Use of Resources
Family Choice and Demand for the School
Teacher Turnover
Student Enrollment
Building Use



# Standardization

2. To ensure that each metric score can be compared as an apple to apple, a **standardized score** will be calculated for each metric. This is because each criterion does not have a standard metric - the metric vary to ensure we can measure the different values we have.



# Composite Score

3. The “standardized score” will be weighted based on the number of coins for each metric based on the results of community survey

School Access	5.0	0.42
Program Access	4.5	0.38
Historical Inequities	2.6	0.22

School culture & climate	4.0	0.33
Academic Performance	3.4	0.28
Socio-emotional development	4.7	0.39

Family Choice and Demand for the School	3.9	0.33
Teacher Turnover	2.6	0.22
Student Enrollment	2.9	0.24
Teacher Building Use	2.6	0.22

School access X .42

Program access X .38

Historical inequities X .22

School Culture &  
Climate x .33

Socio-emotional  
development X .28

Academic Performance x  
.39

Family Demand x .33

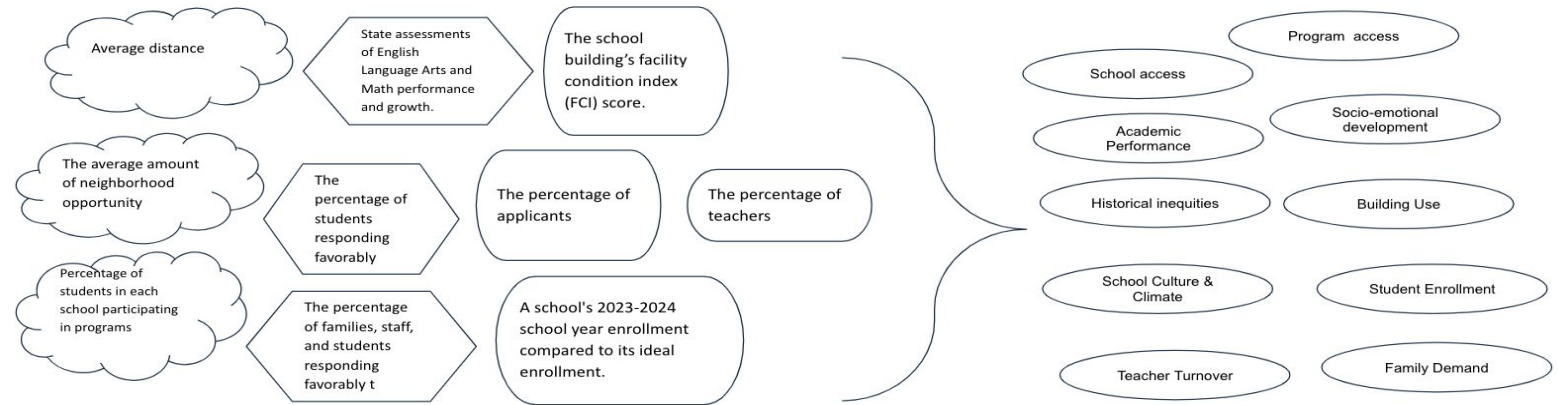
Building Use x .22

Student Enrollment x .24

Teacher Turnover x .22

# The composite score calculation is a multi- step process

To ensure that each **metric score** can be compared as an apple to apple, a “standardized score” will be calculated for each metric.



The **weighted standardized score** will be weighted based on the number of coins for each metric based on the results of community survey

$$\text{Equity} = \left[ \frac{5}{12} \text{SchoolAccess} + \frac{4.4}{12} \text{ProgramAccess} + \frac{2.6}{12} \text{HistoricalInequity} \right]$$

$$\text{Excellence} = \left[ \frac{4.8}{12} \text{AcademicPerformance} + \frac{3.9}{12} \text{SchoolCulture} + \frac{3.3}{12} \text{SEL} \right]$$

$$\text{Effective Use} = \left[ \frac{3.9}{12} \text{Demand} + \frac{2.9}{12} \text{Enrollment} + \frac{2.6}{12} \text{Turnover} + \frac{2.5}{12} \text{BuildingUse} \right]$$

The **composite score** will be based on the weight of the category and the weight of the criterion in each the category

$$\text{Composite Score} = \frac{1}{2} \text{Equity} + \frac{1}{4} \text{Excellence} + \frac{1}{4} \text{Effective Use Resources}$$

How is the coin distribution going to be used to calculate weights in the final composite score?

# Composite score

In the current plan, each category (*equity*, *excellence*, *effective use of resources*) will be weighted as seen below.

$$\text{Composite Score} = \frac{1}{2} \text{Equity} + \frac{1}{4} \text{Excellence} + \frac{1}{4} \text{Effective Use Resources}$$

- Within each category, each metric will receive a weight equal to the relative number of coins that community members gave it.
- As described previously, each metric will be **standardized** so that we can compare “apples” to “apples”

# Composite score: Example

- Equity is comprised of three metrics: *school access*, *program access*, and *historical inequity*.
- On average, community members gave *school access* 5 coins, *program access* 4.4 coins, and *historical inequity* 2.6 coins.
- The relative contribution of each metric would be calculated as follows:

$$\text{Equity} = \left[ \frac{5}{12} \text{SchoolAccess} + \frac{4.4}{12} \text{ProgramAccess} + \frac{2.6}{12} \text{HistoricalInequity} \right]$$

# Example: School A

Each metric will be standardized across all schools.

$$\text{Equity} = \left[ \frac{5}{12} \text{SchoolAccess} + \frac{4.4}{12} \text{ProgramAccess} + \frac{2.6}{12} \text{HistoricalInequity} \right]$$

$$\text{Equity} = \left[ \frac{5}{12} (1.9) + \frac{4.4}{12} (-0.7) + \frac{2.6}{12} (0.8) \right]$$

$$\text{Equity} = 0.71$$

The same approach is used with the  
other categories



# Example: School A

$$\text{Excellence} = \left[ \frac{4.8}{12} \textit{AcademicPerformance} + \frac{3.9}{12} \textit{SchoolCulture} + \frac{3.3}{12} \textit{SEL} \right]$$

$$\text{Excellence} = \left[ \frac{4.8}{12} (-1.1) + \frac{3.9}{12} (0.5) + \frac{3.3}{12} (1.8) \right]$$

$$\text{Excellence} = 0.22$$

# Example: School A

$$\text{Efficiency} = \left[ \frac{3.9}{12} \textit{Demand} + \frac{2.9}{12} \textit{Enrollment} + \frac{2.6}{12} \textit{Turnover} + \frac{2.5}{12} \textit{BuildingUse} \right]$$

$$\text{Efficiency} = \left[ \frac{3.9}{12} (1.2) + \frac{2.9}{12} (0.4) + \frac{2.6}{12} (0.8) + \frac{2.5}{12} (-1.8) \right]$$

$$\text{Efficiency} = 0.29$$

# Example: School A

The final composite score for Example School A will be a linear composite of the scores for equity, excellence, and effective use of resources:

Composite Score =  $\frac{1}{2}$  *Equity* +  $\frac{1}{4}$  *Excellence* +  $\frac{1}{4}$  *Effective Use Resources*

Composite Score =  $\frac{1}{2}$  (0.71) +  $\frac{1}{4}$  (0.22) +  $\frac{1}{4}$  (0.29)

Composite Score = 0.48