2020 A-F Letter Grade Accountability System: Traditional Schools Business Rules

K-8 Model

Arizona

Department of Education

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Modified and Annotated Based on the Impact of COVID-19

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A-F Letter Grades contact:

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Legislation Based on Impact of the COVID-19 Pandemic

During the March 31st, 2020 State Board meeting it was determined that the 2018-2019 letter grades will be used for the 2019-2020 letter grades. In addition to carrying the overall grade over for the year, the following items will be completed.

- ADE will supply the field with limited reports in support of schools cleaning their data, checking for accuracy and putting in any corrections that may impact future accountability.
- The window for self-reported A-F components (CCRI, On-Track to Graduate, and Credits Earned) will be open from July 15, 2020 through August 28, 2020.
- The Department will provide a static file with all available data in the month of June for review. Corrections are due by the July 15th fiscal yearend deadline.
- Schools will be able to see available components, <u>without cumulative scoring</u>, in ADEConnect to track the changes longitudinally in the month August.
- A refresh will be completed in September with self-reported components.
- Components that will not be available for reporting will be identified throughout.

Introduction

These business rules detail Arizona's 2020 A-F Traditional K-8 Schools Letter Grade Accountability System for educators, parents, and other stakeholders. The Arizona Department of Education's (ADE) mission is to serve Arizona's education community, ensuring every child has access to an excellent education. As a state, we are also committed to holding schools accountable to this goal using a fair accountability model that differentiates the performance of schools.

Using the A-F Letter Grade Accountability System, Arizona makes annual accountability determinations for K-8 schools based on student academic outcomes, growth, and acceleration/readiness. The accountability system outlined here uses several metrics to measure student learning and growth in Arizona traditional K-8 public schools.

Business Rules

Once the Arizona State Board of Education approves the A-F Letter Grade Models for a given fiscal year, business rules that reflect the approved model are created and shared with stakeholders on the Accountability & Research website (http://www.azed.gov/accountability-research/resources/). Following the calculation of A-F Letter Grades, corresponding release by the State Board of Education, and conclusion of the appeals process, the ADE Accountability team adds descriptive statistics and graphs at which point the business rules are finalized.

Prior to the finalization of the business rules, some changes may occur including small edits to the text (e.g., punctuation, spelling, formatting, etc.), clarifications to the description of components and the addition of details (i.e., statewide averages). A footer appears on each page that contains the date on which the business rules were most recently updated. In addition, the last page includes a date and brief description of each change that occurs.

The Accountability & Research team will continue to post the most updated document as quickly as possible for stakeholders. To ensure you are using the most up to date version, you should bookmark the applicable link from our website as opposed to saving or printing a copy.

Overview of the A-F Letter Grade Accountability System

As outlined by A.R.S. §15-241, the State Board of Education (SBE) determined the criteria for each school classification. Details regarding A-F and the process can be found at https://azsbe.az.gov/f-school-letter-grades. The following outlines the traditional school K-8 model that was approved on January 27, 2020.

The A-F Letter Grade accountability system includes the following:

- 1. Percentage of proficient students on the AzM2 grade level assessment
- 2. Longitudinal indicators of relative student gain and growth towards proficiency/ maintenance of proficiency
- 3. EL language proficiency and growth
- 4. Indicators to measure students' ability to accelerate beyond elementary school

Per A.R.S. §15-241 (b), "Each school, charter holder and school district shall submit to the department any data that is required and requested and that is necessary to compile the achievement profile. A school or local education agency that fails to submit the information that is necessary is not eligible to receive monies from the classroom site improvement fund established by section 15-977". The complete A.R.S. §15-241 is available here: https://www.azleg.gov/ars/15/00241.htm.

Data Inclusion Criteria

AzM2, MSAA, AIMS Science, AIMS A Science and AZELLA data were used in the letter grade calculation after validation against the statewide Arizona Education Data Standards (AzEDS). Using the student's AzEDS identification as the unique identifier, integrity checks consider valid student enrollment and accurate student identification on test date relevant to the grade level and subject tested.

The following criteria outline specific details and descriptions of student data included in the calculation of the A-F Letter Grades for schools.

1-Year FAY (Full Academic Year) – Students were included in the proficiency, growth, and acceleration/readiness metrics of the A-F Letter Grade models if they were enrolled within the first ten school days of the school's calendar year and continuously enrolled until the first week day in May (May 1, 2020). Students with breaks in enrollment fewer than 10 calendar days in the same school are still considered FAY.

<u>2-year FAY</u> – Students who are FAY two consecutive years in a row (FY19, FY20) at the same school. 2-year FAY students are not included in 1-year FAY stability calculations.

<u>3-year FAY</u> – Students who are FAY three consecutive years in a row (FY18, FY19, FY20) at the same school. 3-year FAY students are not included in 2-year FAY and 1-year FAY stability calculations.

<u>AZELLA FAY</u> – Students were included in the EL calculations if they were enrolled within the first ten school days of the school's calendar year and continuously enrolled until the last day of the state testing window for AZELLA. Students with breaks in enrollment fewer than 10 calendar days in the same school are still considered AZELLA FAY.

<u>Chronically Absent</u> – a student is chronically absent if that student has absences (excused and unexcused) greater than 10% of a school's calendar year (e.g., 18 days for a school meeting 5 days per week). Schools can validate how many absences a student has using the STUD10 report in the AzEDS portal on ADEConnect. Additional information on what defines an absence can be found here: https://www.azleg.gov/viewdocument/?docName=https://www.azleg.gov/ars/15/00901.htm. Students who are enrolled in Kindergarten or are flagged as chronically ill in AzEDS are removed from the Chronic Absenteeism calculation.

Current Year – refers to FY20

<u>EL_FEP</u> – Any student identified with an EL need for Fiscal Year 2020 plus any student identified as Fluent English Proficient 1, 2, 3, or 4 years ago.

<u>English Learner (EL)</u> – Any student identified with an EL need (e.g., with a less than proficient score on AZELLA in the current or prior fiscal year).

Ethnicity – student data submitted via AzEDS in the ethnicity fields (i.e., White, African American,

Hispanic, Native American/Alaskan Indian, Asian, or Pacific Islander) is used for the subgroup calculations.

<u>Fluent English Proficient</u> – Any student identified with an EL need in a prior fiscal year who has reclassified as Proficient on the AZELLA 1, 2, 3, or 4 years ago.

Homeless – student data submitted via AzEDS in the Homeless field.

Income Eligibility 1 & 2 – student data submitted via AzEDS in the IncomeEligibility1 and IncomeEligibility2 fields are used to define an Income Eligibility 1 & 2 student. A student is defined as Income Elibility 1 & 2 if the school submits a 1/yes for either the IncomeEligibility1 or IncomeEligibility2 field.

<u>New School</u> – a school opened in the 2019-2020 school year with a new entity ID. These schools will not receive an A-F letter score grade their first year in operation.

<u>N-Size</u> – the minimum number of students required for the indicator to be calculated and the school eligible to earn the points. The N-Size for all indicators is 10 students.

<u>Parent in Military</u> – student data submitted via AzEDS in the Parent in Military field.

Prior Year – refers to FY19

<u>Recently Arrived English Learner (RAEL)</u> – A RAEL in the current year is a student who meets the following data criteria: 1) is new to Arizona schools as determined by having his/her first enrollment ever in an Arizona school and 2) is not proficient in English as determined by a less than proficient result on the AZELLA.

<u>Special Education Student</u> – Any student receiving special education services on October 1, 2019 as defined by Federal law. To confirm whether a student meets this criterion, schools can check their SPED07 report in the ESS Census Application. Information regarding the ESS Census process can be found here: http://www.azed.gov/specialeducation/data-management/federal-sped-census/

The table below describes the grade-level and FAY requirements for each indicator of the A-F Letter Grade Accountability System.

Indicator	Component	FAY	Grades
Proficiency	AzM2 ELA and Math	✓	3-8
(Not Available)	MSAA ELA and Math	✓	3-8
Growth	Growth on AzM2 ELA and Math	✓	3-8
(Not Available)			
EL	EL Proficiency and Growth	✓	K-8
Acceleration/Readiness	Grade 8 Mathematics Performance	✓	8
	(Not Available)		
	Grade 3 ELA	✓	3
	(Not Available)		
	Chronic Absenteeism		1-8
	Subgroup Improvement	✓	3-8
	(Not Available)		
	Special Education Inclusion	✓	K-8
Bonus	AIMS and AIMS-A Science	√	4 and 8
	(Not Available)		
	Special Education Enrollment	✓	K-8

Regardless of a student's special education status, the accountability system uses all verified AzM2 data from students enrolled the full academic year. For students who take the MSAA assessment and are enrolled the full academic year, these data are used in the Proficiency component but not in the calculation of student growth percentiles or student growth targets (Growth).

Students with a performance level reported from the AzM2 English Language Arts and Mathematics assessments, MSAA, and AIMS or AIMS A Science are utilized in certain calculations (detailed below). The department does not include AzM2, MSAA, AIMS or AIMS A Science test records for students where no answer items are selected and no scale score or performance level is assigned. The following table indicates the only valid performance levels on AzM2 or MSAA at all grade levels and for all subjects.

AzM2/MSAA	AIMS/AIMS A Science
Achievement Levels	Achievement Levels
Minimally Proficient	Falls Far Below
Partially Proficient	Approaches
Proficient	Meets
Highly Proficient	Exceeds

A-F Static File

The A-F static file merges assessment data with enrollment data from AzEDS to serve as the base for the majority of A-F Letter Grade calculations and to help schools understand performance based on various accountability-related business rules (i.e. FAY). Students are included in a school's static file if they meet any of the below criteria:

- Enrolled on November 1, 2019 in lieu of a Fall testing date
- Enrolled on the first day of the Spring AIMS Science State Testing Window (3/23/2020)
- Enrolled on the first day of the Spring AzM2 State Testing Window (3/30/2020)

Data in the Growth Model

Valid student assessment results must meet four criteria for inclusion in the growth model:

- 1. Student enrollment generates ADM in any Arizona public school (i.e., tuition payer code equal to 1 or FTE greater than 0).
- 2. Student has a test record from the 2019-2020 school-year.

Only FAY students contribute student growth percentile and student growth target data to the school's growth score calculation for accountability purposes.

- 3. Student also has a test record from the 2018-2019 school-year in the same subject.
- 4. Each student test record assesses consecutive grades (i.e., 2019 Grade 4 ELA & 2020 Grade 5 ELA, etc.) for grades 4-8 tests. Math SGP and SGT were modeled if there were more than 2000 test records sharing the same growth trajectory in the three years from 2018 to 2020, which include those accelerating students who took Algebra I right after they took the math test for grade 7 in the prior year. Students in grade 3 will not have a growth score as they do not have two consecutive test records.

Only test records which can be matched to a valid student enrollment are included in the accountability system. Test records with unverifiable information such as missing AzEDS ID numbers are excluded. To build the growth model, the ADE includes test records from students considered non-FAY at the time of testing. The growth model restricts the academic peer groups as much as possible to only students who are receiving a public education from an Arizona school that teaches grade level standards.

Timeline & Appeals

Information will be added once determined by the Arizona State Board of Education.

Cut Scores (Data Not Available in FY20)

- K-8 Letter Grade model is used for schools that serve grades Kindergarten through 8 (or any configuration within that such as K-7, 1-6, 6-8, etc.). K-8 schools eligible for 80 or more of the 100 total points available will receive a letter grade
- Due to the fact that schools can earn a different amount of points, cut scores for letter grades for all models were established on percentages. Percentage Earned = Total Points Earned (excluding bonus points) / Total Points Eligible.

Α	В	С	D	F
<mark>TBD</mark>	<mark>TBD</mark>	<mark>TBD</mark>	<mark>TBD</mark>	TBD

2020 A-F Traditional School Letter Grade Models

The K-8 A-F Letter Grade model aims to fairly and accurately depict a school's accountability determination in a manner which complies with state statute, State Board Rule, as well as other accountability requirements.

Schools that serve grades K-8 or any combination within (e.g., K-8, K-7, 1-5, 6-8, K-5, etc.) will be evaluated on the K-8 model. Non-Typical school configurations, those that serve grades K-12, 1-12, 2-12, 6-12, etc., are graded on both the K-8 and 9-12 models. Approved Alternative schools will be graded on the Alternative School Model. Small schools with fewer than 10 FAY students or schools not eligible for enough of the total 100 points (80 for K-8) will be Not Rated in Fiscal Year 2020.

N-Size

The K-8 traditional school model requires schools to have 10 FAY students in each indicator to be eligible to earn the points. Exceptions to this rule are:

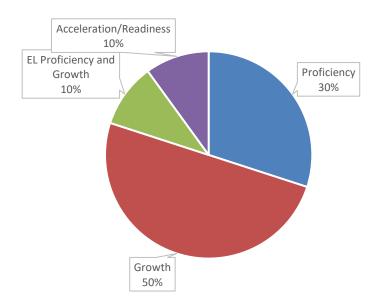
- Acceleration/Readiness Chronic Absenteeism requires an N-Size of 10 students including FAY and non-FAY
- Special Education enrollment bonus points do not require N-Size of 10
- Science Proficiency bonus points do not require N-Size of 10

Schools that do not meet the minimum N-Size of 10 FAY students cannot earn points for that indicator.

RAEL

Recently Arrived English Learner (RAEL) students in year 1 and year 2 students are excluded from proficiency calculations for ELA only.

K-8 Model



Weight	Indicators
30%	Proficiency, Statewide Assessment (Data Not Available)
50%	Growth, Statewide Assessment (Data Not Available)
10%	Proficiency and Growth, English Learners
10%	Acceleration / Readiness Measures (Some Data Not Available)

The K-8 model is based on a scale of 0-100 points for schools that have all available indicators; the scale is adjusted for those indicators that do not meet the N-Size. Indicators must have a minimum of 10 FAY students to count, excluding components in the Acceleration/Readiness indicator, special education enrollment bonus points and science proficiency bonus points. All indicators are capped at the total percent possible.

The following school configurations are graded on the K-8 model:

- K-8
- Configurations within K-8
 - o K-5
 - o K-6
 - o K-7
 - 0 6-8
 - o **5-8**
 - 4 4
 - 1-4Etc.

Proficiency (Data Not Available in FY20)

Proficiency results are worth 30% of a K-8 school's letter grade. The 2020 AzM2 or MSAA ELA and Math scores are utilized for grades 3-8 FAY students. Schools must have a minimum of 10 FAY students to be eligible for points. If a student took the same assessment twice, the higher score is utilized. Invalid test records count as not tested. Proficiency points are capped at 30. The achievement levels are weighted such that students scoring highly proficient earn the most points (see below).

Achievement Level	Point Value
Minimally Proficient	0
Partially Proficient	0.6
Proficient	1.0
Highly Proficient	1.3

K-8 proficiency is calculated two ways: using a stability model and then all FAY students (1-, 2-, and 3-year). The higher of the two proficiency point totals will be used for letter grade calculations.

Stability model: This model weights student scores higher for students that have been at the same school for multiple years, and where the school has had the greatest opportunity to have the most impact, (see Table below for more detail). Schools that only have one or two years of proficiency will be weighted accordingly. Schools must have a minimum of 10 FAY students for each year. If the minimum is not met, those students are added to the next year. For example, if a school has eight 3-year FAY students, thirteen 2-year FAY, and twenty 1-year FAY students the 3-year and 2-year FAY group is merged as the minimum is not met for the 3-year. This would give the school twenty-one 2-year FAY students and twenty 1-year FAY.

	Max Proficiency Weights			
	3 years	3 years 2 Years 1 Year		
Years of Data	of FAY	of FAY	of FAY	
3 Years	15	10	5	
2 Years (Example: only serves Grade 7-8)		18	12	
1 Year (Example: School created two years ago)			30	

The percent proficient for each year of FAY for which a school is eligible is then weighted accordingly using the table above to determine points earned.

All FAY students: This model weights all FAY (1-,2-, and 3-year) students equally.

Percent Tested (Data Not Available in FY20)

Proficiency calculations are impacted by percent tested. Schools that do not meet the 95% test threshold mandated by law are negatively impacted on the proficiency calculation. Students are included in the 95% tested calculation for a school if they are enrolled in a tested grade (3-8) on the first day of the AzM2 state testing window.

The formula used is to calculate percent tested:

In Fiscal Year 2020, the first day of the AzM2 State Testing Window was March 30,2020.

Percent Proficient for Schools that Meet 95% Tested

```
% Proficient for Schools Meeting 95% Tested  = 100 \left[ \frac{\left[ ((No.\ of\ FAY\ students\ PP\ on\ AzM2\ or\ MSAA\ ELA + No.\ of\ FAY\ students\ PP\ on\ AzM2\ or\ MSAA\ Math) 1.0)}{+((No.\ of\ FAY\ students\ HP\ on\ AzM2\ or\ MSAA\ ELA + No.\ of\ FAY\ students\ HP\ on\ AzM2\ or\ MSAA\ Math) 1.3)}{No.\ of\ FAY\ students\ tested\ on\ AzM2\ or\ MSAA\ ELA + No.\ of\ FAY\ students\ tested\ on\ AzM2\ or\ MSAA\ Math} \right]
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Schools that do not meet 95% tested will see an increase in the denominator of their proficiency calculation. The total number of students added to the denominator (and thereby included in the numerator as 0) equals the number of students needed to meet the 95% test threshold.

Example: A school was supposed to test 100 students. They tested 92. The school needed to test 95 students to meet or exceed the 95% test threshold. Because they did not meet the threshold we do the following:

Number of students needing to test to meet 95% – number of students actually tested

The number generated from the above subtraction is then added to the proficiency calculation denominator (see formula below).

Percent Proficient for Schools that DO NOT Meet 95% Tested

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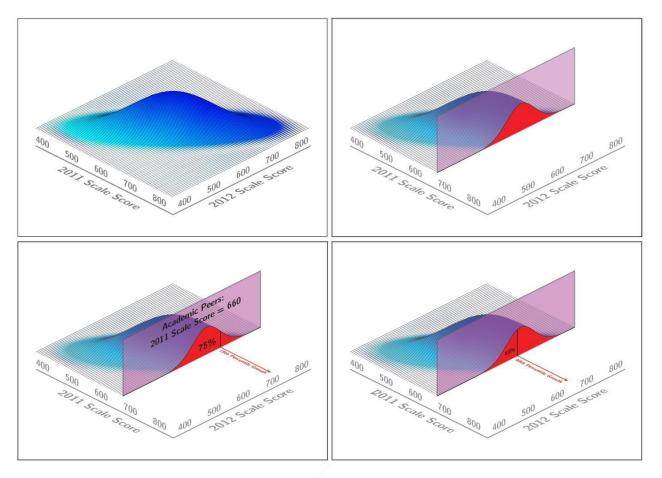
Growth Model (Data Not Available in FY20)

The purpose of the growth indicator is to recognize the academic growth a student has made in the past year, even if he/she has not yet reached grade-level proficiency. State statute mandates that the selected growth model measures even the lowest achieving students and the extent to which they grow academically from one year to the next.

Growth results are worth 50% of a K-8 school's letter grade. Schools must have a minimum of 10 FAY students with an SGP and SGT in each subject, ELA and Math, to be eligible for growth points. Thus, SGP for ELA is worth 12.5%, SGP for Math is worth 12.5%, SGT for ELA is worth 12.5%, and SGT for Math is worth 12.5%. Math growth points (SGP + SGT) are capped at 25 and ELA points (SGP + SGT) are capped at 25, thus making growth points capped at 50.

Student Growth Percentile (SGP)

An SGP describes the growth of a "typical" student based on the current-year test score compared with the current-year test scores of those students with the exact same prior test scores—his/her academic peers. In this sense, an SGP is a "norm-referenced quantification" (Betebenner, 2011, p. 3) of student academic growth. Comparison with academic peers is accomplished by employing quantile regression that relates the prior scores of each grade by subject cohort with their current-year scores. Each student is compared to his/her actual and conceptual academic peers. An SGP of 40 means that the student grew more than 40% of his/her academic peers in a year. In the event a student is without actual academic peers based on their individual data, the individual student is compared to his/her "conceptual" academic peers only. The use of this particular type of normed growth measure ensures that very low and/or high performing students can receive high growth scores relative to their peers with the same academic achievement history. The growth model includes only academic achievement data; Arizona's growth model does not control for student demographic information or subgroup membership.

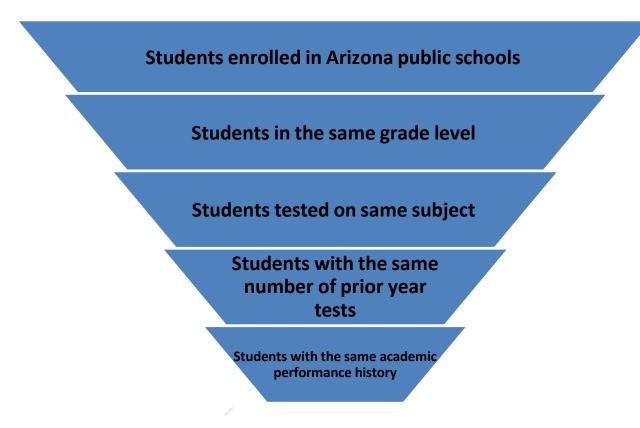


Conceptual illustration of the current year growth percentile based on prior and current year test performance (Betebenner, 2011)

In 2020, the AzM2 Grade 3-8 scale scores from 2018 to 2020 will be used to calculate growth for Grades 4-8. Grade 3 is the first grade Arizona students are given a statewide standardized assessment; therefore; Grade 4 is the first possible opportunity to assess growth for a student. Students must have scores for 2019 and 2020 and for two consecutive grade levels to receive an SGP.

The growth of all FAY students based on prior year scores comprises the school's growth calculations. Every FAY student for whom a student growth percentile (SGP) can be determined is considered in the growth of all students at a school. Students who retake the same grade level AzM2 assessment for two consecutive years are not assigned a growth score. The growth model does not compute an SGP for any student who is missing a prior year assessment (AzMERIT) even if a student has other test history; an assessment for the year prior is required.

When available, up to three years of test history were used in the determination of a student's current year SGP. If the student assesses anywhere in the state using their unique AzEDS identification number, these assessments can be linked longitudinally regardless of a new school of attendance. The growth model begins with all Arizona public school students, but academic peer groups are refined based on grade level, subject, and test history. Test history refers to the number of tests or data points available for each student as well as a comparison of scale scores – not performance levels.



To receive an SGP in English Language Arts, a student must take the test appropriate for the grade in which he/she is enrolled. For example, a student in Grade 5 must take the ELA Grade 5 test to receive an SGP. Students who take the same test for two consecutive years are not assigned an SGP.

Only the SGPs of FAY students contribute to the school's growth score. A categorical evaluation of school growth is used to obtain the growth score of all students in a school. To do this, the SGPs of FAY students are classified into three levels ranging from low to high:

L= Low (SGP 1-33)
A= Average (SGP 34-66)
H= High (SGP 67-99)

Then the percentage of students at the school level, using all grades, is calculated separately for each subject (English Language Arts and Mathematics) and for each of the categorical growth bands defined by the students' prior-year achievement level and current-year SGP growth level. The percentages are then weighted differently in the following ways:

Current-Year Student Growth Percentile			
Prior-Year Achievement Level	Weights		
Highly Proficient (HP)	0 1.00 1.00		
Proficient (P)	0	1.00	1.20
Partially Proficient (PP)	0 1.00 1.80		
Minimally Proficient (MP)	0 1.00 2.00		2.00
	1-33	34-66	67-99
	Low Growth	Average Growth	High Growth

The formula for the overall score of a school for each subject is:

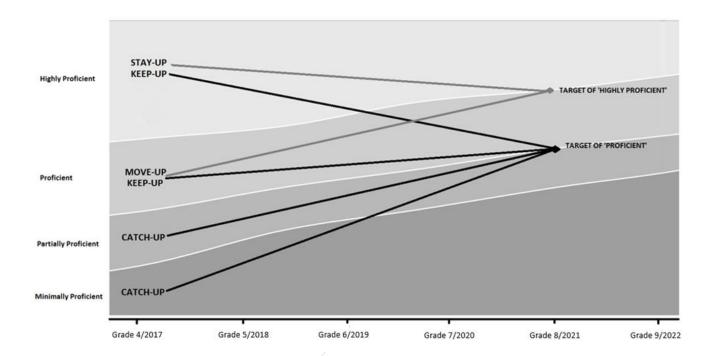
The SGP points of a school for each subject =
$$\begin{pmatrix} (\% \text{ of PY MP FAY students who made high growth } x2.00) \\ +(\% \text{ of PY PP FAY students who made high growth } x1.80) \\ +(\% \text{ of PY P FAY students who made high growth } x1.20) \\ +(\% \text{ of PY HP FAY who made high growth } x1.00) \\ +(\% \text{ of PY } (MP + PP + P + HP) \text{ who made average growth}) \end{pmatrix}$$

Student Growth Target (SGT)

Although the student growth percentile is a useful tool for summarizing where a student stands compared to their academic peers, no appeal is made to how much growth they must demonstrate in relation to a standard of achievement. A student's performance on the AzM2 is categorically represented by one of the following: minimally proficient, partially proficient, proficient, and highly proficient. A few key questions then arise about a student's growth given their performance status:

- 1) Is the growth demonstrated by the student sufficient for them to be on track towards proficiency in the future if they are currently non-proficient?
- 2) Is the growth demonstrated by the student sufficient for them to remain proficient in the future if they are currently proficient?
- 3) Is the growth demonstrated by the student sufficient for them to be on track towards being highly proficient in the future if they are currently proficient?
- 4) Is the growth demonstrated by the student sufficient for them to remain highly proficient in the future if they are currently highly proficient?

To answer these questions, we compare a student's growth percentile with their growth target. A student growth target (SGT) is the minimum growth a student ought to exhibit in the year to achieve a future target. A SGT is determined by a pre-established future achievement target, a time-frame to reach the target, and the performance level of the student in the prior year. The graphic below displays how the SGTs are determined.



There are two pre-established targets: 'Proficient' and 'Highly Proficient'. The time frame to reach the targets is determined arbitrarily as within (or across) the next three years beyond the current year or by high school graduation, whichever comes first. The four categorical performance levels are shown on the vertical axis, and the grades/years are shown along the horizontal axis.

Students who were at the 'Minimally Proficient' performance level and the 'Partially Proficient' performance level in the prior year are labeled as 'Catch-Up' students. Among these non-proficient students, it is of key importance for them to catch up with the 'Proficient' target. Their SGTs are therefore the minimum growth they need demonstrate from the prior year to the current year to be on track to reach the target of 'Proficient' within the next three years. In other words, SGT is the level of difficulty of reaching a target of proficiency represented in a percentile.

Students who fell into the 'Proficient' or 'Highly Proficient' performance levels in the prior year are labeled as "Keep-Up" students and their first SGT is the minimum growth they need to demonstrate from the prior year to the current year to remain above the target of 'Proficient' across the next three years. Students who were proficient in the prior year are also subject to the second target of 'Highly Proficient'. For the students who were currently proficient, the second SGT is the minimum growth they need to demonstrate to move up to the 'Highly Proficient' level within the next three years. They are also labeled as "Move-Up" students. For the students who were currently highly proficient, the second SGT is the minimum growth they should demonstrate to remain at the highest performance level across

the next three years. They are also labeled as "Stay-Up" students.

For SGT calculations detailed below, all students were held to a proficient target (i.e., 'Catch-Up' or 'Keep-Up').

To know if a student met his/her target, we must compare the student's actual growth (SGP) to the student's target (SGT). Generally speaking, a student is deemed as on-track to reach the target in the time frame if his SGP is equal to or greater than his SGT. In contrast, a student is deemed as not being on-track if his SGP is less than his SGT. For the A-F calculations, three categories (see table below) were created by comparing SGP to SGT as opposed to the two just noted to allow students more opportunities for growth points. Students who surpassed their target by more than 10 percentile points were categorized as "exceeds target." For example, if a student had an SGP of 70 and an SGT of 50 this student grew 20 percentile points more than was needed in the current year to be on track to proficiency. Students can also be categorized as "exceeds target" if their SGP and their SGT scores are greater than or equal to 89. Students within plus or minus 10 percentile points were categorized as "at or near target" (e.g., an SGP of 35 with an SGT of 45, an SGP of 35 with an SGT of 25, etc.). Students who were below their target by more than 10 percentile points were categorized as "below target" (e.g., an SGP of 50 with an SGT of 62).

SGP is less than SGT by more than 10 percentile points	Below Target
SGP is within + or – 10 percentile points of SGT	At or Near Target
SGP is greater than SGT by more than 10 percentile points	
OR	Exceeds Target
SGP and SGT are greater than or equal to 89	

To evaluate a school's status in keeping its students on track towards being proficient, the state utilizes only four of the six student growth targets outlined above, the SGT (or the sufficient growth) for minimally proficient students to be on track to proficiency, the SGT (or the sufficient growth) for partially proficient students to be on track to proficiency, the SGT (or the sufficient growth) for proficient students to be on track to remain proficient, the SGT (or the sufficient growth) for highly proficient students to be on track to remain proficient. The percentage of FAY students in each category is calculated at the school level across all grades but separately for each subject (English Language Arts and Mathematics). These percentages are weighted differently in the following ways:

Current-Year Student Growth Target			
Prior-Year Achievement Level		Weights	
Highly Proficient (HP)	0	1.00	1.00
Proficient (P)	0	1.00	1.20
Partially Proficient (PP)	0	1.00	1.80
Minimally Proficient (MP)	0	1.00	2.00
	<10		>10
	percentile	+/- 10 percentile	percentile
	points of	points of target	points of
	target		target
	Below	At or Near	Exceeds
	Target	Target	Target

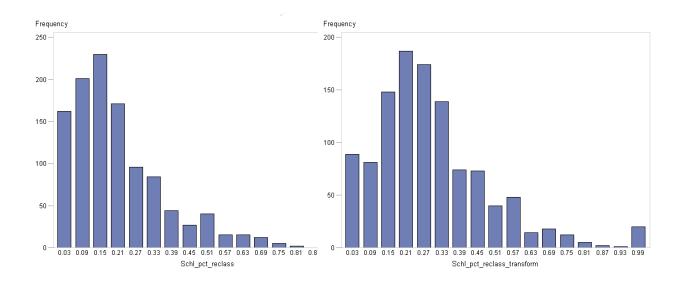
The SGT points of a school for each subject =

(% of PY MP FAY students in Exceeds Target x2.00)
+(% of PY PP FAY students in Exceeds Target x1.80)
+(% of PY P FAY students in Exceeds Target x 1.20)
+(% of PYHP FAY in Exceeds Target x 1.00)
+(% of PY (MP + PP + P + HP) in At or Near Target)

$$\label{eq:total Growth Points} \begin{split} & \textbf{Total Growth Points} = 100(((0.125x(SGP\ Math) + 0.125x(SGT\ Math)) + (0.125x(SGT\ ELA) + 0.125x(SGP\ ELA))) \\ & \textbf{Total Growth Max Points} = (Math\ max\ points\ 25) + (ELA\ max\ points\ 25) \end{split}$$

Normalizing EL Data

- While ideally all data would be normally distributed, most data is not. Normally distributed data means when visualized through a histogram that data is bell-curve shaped. Further, the mean (average) and median (the midpoint of the data) of the data are approximately the same. When data does not have a normal distribution, this is called a non-normal distribution. When data has a non-normal distribution, data can be "transformed" to have a normal distribution. Below is an example of non-normally distributed data and the same data that has been transformed to have a normal distribution.
- Data transformation means applying the same mathematical operation to each piece of the
 original data. The transformation process changes every school and student in the same way. A
 variety of statistical methods are used for normalizing data based upon which approach
 provides a distribution as close as possible to normal.
- Once transformed, the relationship between data points does not change, but the relationship
 across data points does. Transformation modifies all the data, in the same way, to normalize the
 distribution as much as possible. Individual school or student performance is not damaged or
 improved during the transformation process.
- Data is normalized for two reasons. First, most statistical methods used to analyze data include
 an assumption of a normal distribution. For potential analysis to be as accurate as possible, data
 needs to have as close as possible to a normal distribution. Second, letter grade scores are a
 combination of several indicators. For the combined letter grade to be as accurate as possible,
 all data included in the grade calculation needs to approximately have a normal distribution.



EL Proficiency and Growth

English Learner proficiency and growth is worth 10% of a K-8 school's letter grade. Schools must have a minimum of 10 AZELLA FAY students to be eligible for the points. EL proficiency is worth 5% and EL growth is worth 5%.

EL calculations include students in grades K-8 with an EL need (e.g., with a less than proficient score on AZELLA in the current or prior fiscal year), including recent arrivals. EL students must also be AZELLA FAY. To be included in the EL growth calculations, two test records are required. Invalid test records count as not tested. Schools with less than 10 AZELLA FAY EL students are not eligible for these points. EL proficiency calculates the proficiency percentage of EL students. The following formula is used.

$$\textit{EL School Proficiency} \% = 100 \\ \boxed{ \frac{(\textit{No. of AZELLA FAY students proficient on AZELLA)}{(\textit{No. of AZELLA FAY students with an EL need, including parent withdrawals, who had a valid current AZELLA proficiency level)} }$$

To earn proficiency points, the school's EL proficiency percentage is compared to the State's current year proficiency percentage.

$$ELK - 8 \, Statewide \, CY \, Proficiency \, \%$$

$$= 100 \left[\frac{(Sum \, of \, School \, Averages \, that \, have \, the \, necessary \, AZELLA \, FAY \, n - count)}{(No. \, of \, Schools \, that \, have \, the \, necessary \, AZELLA \, FAY \, n - count \, to \, be \, eligible \, for \, points)} \right]$$

Up to 5 points are awarded for proficiency using the following system:

TRANSFORMED	Range	Points
EL Proficiency is greater than or equal to the EL Statewide Current	26.20 - 100	5
Year Percent Proficient		
EL Proficiency standard deviation compared to the EL Statewide	19.53 – 26.19	4
Current Year Percent Proficient is between -0.01 and -0.50		
EL Proficiency standard deviation compared to the EL Statewide	12.86 – 19.52	3
Current Year Percent Proficient is between -0.51 and -1.00		
EL Proficiency standard deviation compared to the EL Statewide	0.00 – 12.85	2
Current Year Percent Proficient is between -1.01 and -2.00		
EL Proficiency standard deviation compared to the EL Statewide	0.00 - 0.00	1
Current Year Percent Proficient is between -2.01 and -3.00		
If a school's EL Proficiency is 0%, due to no reclassification	0.0000	0

EL growth calculates the growth percentage of EL students using their current year compared to prior year AZELLA results, unless they are kindergarten students in which case the placement test is compared to the current year reassessment. Kindergarten students who take a placement test prior to 1/1 and then take a spring reassessment will be included. In addition, any student who takes a placement exam for the first time by October 1st and then takes a spring reassessment will be included. Students who had a placement exam in one school and a reassessment in another school within the same school year will not be included as they will not qualify as AZELLA FAY.

The table below shows how many points each level of growth is worth.

Prior Year Achievement Level	Current Year Achievement Level	Point Value
Basic/Intermediate	Intermediate	
Pre-Emergent/Emergent	Basic	1
Basic	Intermediate	1
Intermediate	Proficient	
Pre-Emergent/Emergent	Intermediate	
Basic/Intermediate	Proficient	2
Basic	Proficient	
Pre-Emergent/Emergent	Proficient	3

The following formula is used to calculate growth:

To earn growth points, the school's EL growth percentage is compared to the State's current year growth percentage.

$$ELK - 8 \, Statewide \, Current \, Year \, Growth \, Percent \\ = 100 \left[\frac{(Sum \, of \, EL \, Growth \, of \, all \, schools \, AZELLA \, FAY \, n - count \, to \, be \, eligible \, for \, points)}{No. \, of \, schools \, that \, have \, the \, necessary \, AZELLA \, FAY \, n - count \, to \, be \, eligible \, for \, points} \right]$$

Up to 5 points are awarded for growth using the following system:

TRANSFORMED	Range	Points
EL Growth is greater than or equal to the EL Statewide Current	57.78 – 100	5
Year Percent Growth		
EL Growth standard deviation compared to the EL Statewide	47.27 – 57.77	4
Current Year Percent Growth is between -0.01 and -0.50		
EL Growth standard deviation compared to the EL Statewide	36.76 - 47.26	3
Current Year Percent Growth is between -0.51 and -1.00		
EL Growth standard deviation compared to the EL Statewide	15.74 – 36.75	2
Current Year Percent Growth is between -1.01 and -2.00		
EL Growth standard deviation compared to the EL Statewide	0.00 – 15.73	1
Current Year Percent Growth is between -2.01 and -3.00		
If a school's EL Growth is 0%, due to no Growth	0.0000	0

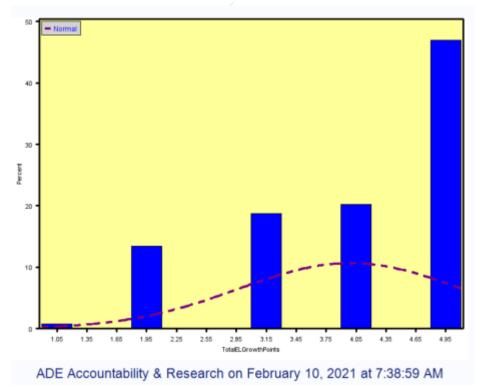
Statistics and Graphs for EL Proficiency and Growth

For meaning of terms please see Appendix: List of Statistical Summary Tables and Graph Definitions (see page 39)

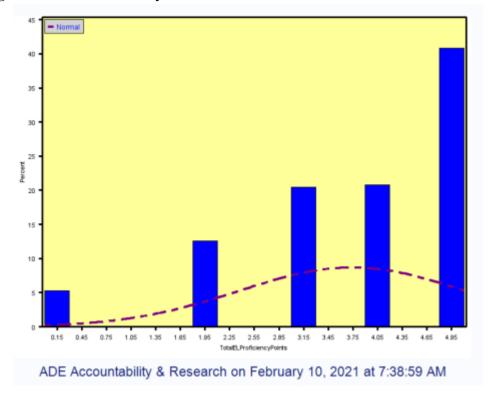
Summary Tables			
	TotalELProficiencyPoints	TotalELGrowthPoints	ELProficiencyandGrowthPoints
Max	5.00	5.00	10.00
Mean	3.74	3.99	4.97
Min	0.00	1.00	0.00
Range	5.00	4.00	10.00
StdDev	1.38	1.12	4.13
Var	1.89	1.26	17.09
Median	4.00	4.00	6.00
Q1	3.00	3.00	0.00
Q3	5.00	5.00	9.00
P1	0.00	2.00	0.00
P5	0.00	2.00	0.00
P10	2.00	2.00	0.00
P90	5.00	5.00	10.00
P95	5.00	5.00	10.00
P99	5.00	5.00	10.00

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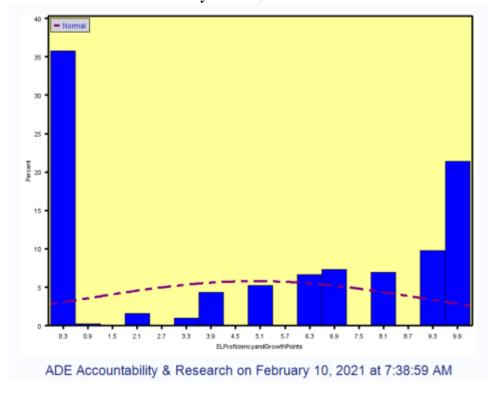
Total English Learner Growth Points



Total English Learner Proficiency Points



English Learner Total Points Proficiency and Growth



Acceleration/Readiness

The acceleration/readiness indicator is worth 10% of a K-8 school's letter grade. Not all schools are eligible for each metric. Acceleration/Readiness points are capped at 10. The following will be utilized in the Acceleration/Readiness indicator to determine eligibility and points:

Metric	N-Size of 10 or more	Points Available to Earn	
	FAY students to be		
	eligible		
Grade8 Math Performance	✓	5	
Grade 3 ELA Minimally Proficient	✓	5	
Chronic Absenteeism	10 N-size FAY and	2	
	non-FAY	2	
Subgroup Improvement	Py subgroup	2 points per subgroup up to 6 points	
	By subgroup	total	
Special Education Inclusion	✓	2	

All prior year comparisons included in the Acceleration/Readiness component are pulled over from the prior year's information. The only exception is Grade 8 Mathematics Performance as it is new in Fiscal Year 2020.

Grade 8 Mathematics Performance (Data Not Available in FY20)

The intent of this metric is to incentivize schools to increase their percent highly proficient and decrease their percent minimally proficient on the Grade 8 AzM2/MSAA Mathematics assessment annually. The calculations include any FAY student who takes the Grade 8 AzM2/MSAA Mathematics assessment in Fiscal Year 2020. Schools can earn points for either the increase of highly proficient, the decrease of minimally proficient, and/or maintaining applicable thresholds of highly proficient and minimally proficient students. It is possible for a school to earn only 2.5 points for meeting highly proficient or minimally proficient criteria or 5 points for meeting both highly proficient and minimally proficient criteria.

Note that in Fiscal Year 2020, the prior year calculations include all mathematics assessments taken by 8^{th} grade students including grade 8 (AzMERIT/MSAA) and EOC AzMERIT assessments.

The following formulas are used to calculate percentages for current year and prior year.

Increasing Highly Proficient

$$8th \ Grade \ CY \ Highly \ Proficient\%$$

$$= 100 \left[\frac{(No. of \ CY \ Grade \ 8 \ FAY \ students \ that \ are \ HP \ on \ AzM2 \ Math \ assessment)}{(Total \ CY \ FAY \ enrollment \ for \ Grade \ 8 \ students)} \right]$$

```
8th Grade PY Highly Proficient%
= 100 \left[ \frac{(No. of PY Grade 8 FAY students that are HP on AzMERIT Math assessment)}{(Total PY FAY enrollment for Grade 8 students)} \right]
```

Decreasing Minimally Proficient

The following details how points are earned.

Grade 8 Mathematics Performance Points (0, 2.5, or 5 points)

- A school's current year percentage of students who take the 8th grade math assessment and score highly proficient is greater than the school's prior year percentage of students who take an 8th grade math assessment and score highly proficient = 2.5 points
- A school's current year percentage of students who take the 8th grade math assessment and score highly proficient is greater than or equal to 60% = 2.5 points
- A school's current year percentage of students who take the 8th grade math assessment and score minimally proficient is less than the school's prior year percentage of students who take an 8th grade math assessment and score minimally proficient = 2.5 points
- A school's current year percent of students who take the 8th grade math assessment and score minimally proficient is less than or equal to 10% = 2.5 points

Grade 3 ELA Reduction in FAY Minimally Proficient (Data Not Available in FY20)

The intent of this metric is to reduce the percentage of grade 3 students who are minimally proficient on AzM2 ELA from prior year to current year. To be eligible for these points, a school must meet the minimum N-Size of 10 FAY students. Schools can earn five points two different ways:

- 1. Decreasing the school's prior year percent minimally proficient
- 2. Have a current year percent minimally proficient less than 12%

Below are the formulas used to calculate the percentages:

Grade 3 ELA Current Year

$$\textit{Minimally Proficient } \% = 100 \left[\frac{\textit{(No. of CY Grades 3 ELA FAY students who were MP)}}{\textit{(Total CY Grade 3 ELA FAY Students with a valid test score)}} \right]$$

Grade 3 ELA Prior Year

$$\textit{Minimally Proficient } \% = 100 \left[\frac{(\textit{No. of PY Grades 3 ELA FAY students who were MP)}}{(\textit{Total PY Grade 3 ELA FAY Students with a valid test score})} \right]$$

Grade 3 ELA Reduction in FAY MP = (Grade 3 ELA CY MP % - Grade 3 ELA PY MP %)

The following details how points are earned. These are all or nothing points.

Grades 3 ELA Reduction Points (0 or 5 points)

- A school's current year minimally proficient percentage is less than the school's prior year minimally proficient percentage = 5 points
- A school's current year minimally proficient percentage is less than 12% = 5 points
- A school's current year minimally proficient percentage is greater than or equal to the school's prior year minimally proficient percentage = 0 points

Reduction in Chronic Absenteeism

The intent of this metric is to reduce the school's chronic absenteeism percentage from prior year to current year. This calculation includes grades 1-8 students. Students who are flagged as chronically ill in AzEDS are removed from the chronic absenteeism calculation. All absences reported for a student whether excused or unexcused are included. To be eligible for these points, a school must meet the minimum N-Size of 10 students. Schools can earn two points two different ways:

- 1. Decreasing the school's prior year chronic absenteeism percentage
- 2. Have a current year chronic absenteeism percentage less than 4%

Below are the formulas used to calculate the percentages:

CY Chronic Absenteeism
$$\% = 100 \left[\frac{(No.\,of\,\,CY\,\,students\,\,who\,\,have\,\,greater\,\,than\,\,10\%\,\,absences)}{(Total\,\,CY\,\,students)} \right]$$

PY Chronic Absenteeism $\% = 100 \left[\frac{(No.\,of\,\,PY\,\,students\,\,who\,\,have\,\,greater\,\,than\,\,10\%\,\,absences)}{(PY\,\,year\,\,students)} \right]$

Chronic Absenteeism Reduction = (CY Chronic Absenteeism % - PY Chronic Absenteeism %)

The following details how points are earned. These are all or nothing points.

Reduction in Chronic Absenteeism Points (0 or 2 points)

- A school's current year chronic absenteeism percentage is less than the school's prior year chronic absenteeism percentage = 2 points
- A school's current year chronic absenteeism percentage is less than 4% = 2 points
- A school's current year chronic absenteeism percentage is greater than or equal to the school's prior year chronic absenteeism percentage = 0 points

Subgroup Improvement (Data Not Available in FY20)

The intent of this metric is to see annual improvement in subgroup (SG) proficiency in AzM2 ELA and Math. The following subgroups are evaluated by test subject (ELA, Math):

- 1. White
- 2. Hispanic
- 3. Native American/Alaskan Indian
- 4. Asian
- 5. African American
- 6. Pacific Islander
- 7. Two or More Races
- 8. Special Education
- 9. Economically Disadvantaged
- 10. Parent in Military
- 11. EL and FEP1-4
- 12. Homeless
- 13. Foster care

To be eligible, each subgroup must have a least 10 FAY students at the school level. The n-count must be met in both the current year and prior year. If a school meets the N-Size for all subgroups, they would have 26 chances (13 subgroups times 2 subjects) to earn up to 6 points with each subgroup worth 2 points.

The formulas below are calculated for each subgroup and subject (ELA and Math). The same weighting system used in proficiency calculations is applied to these calculations.

```
SG \ CY \ Proficiency \% = 100 \left[ \frac{\left( (No. of \ CY \ FAY \ students \ in \ the \ SG \ that \ are \ PP \ on \ AzM2 \ or \ MSAA) 1.0 \right)}{\left( Total \ CY \ FAY \ students \ in \ the \ SG \ that \ are \ PP \ on \ AzM2 \ or \ MSAA) 1.3 \right)}{\left( Total \ CY \ FAY \ students \ in \ the \ SG \ who \ took \ the \ test \right)} \right] \\ SG \ PY \ Proficiency \% = 100 \left[ \frac{\left( (No. of \ PY \ FAY \ students \ in \ the \ SG \ that \ are \ PP \ on \ AzMERIT \ or \ MSAA) 1.0 \right)}{\left( (No. of \ PY \ FAY \ students \ in \ the \ SG \ that \ are \ PP \ on \ AzMERIT \ or \ MSAA) 1.0 \right)} \right] \\ + \left( (No. of \ PY \ FAY \ students \ in \ the \ SG \ that \ are \ HP \ on \ AzMERIT \ or \ MSAA) 1.3 \right)}{\left( Total \ PY \ FAY \ students \ in \ the \ SG \ who \ took \ the \ test \right)}
```

The following details how points are earned. These points are incremental, such that a school can earn 2, 4, or 6 points.

Subgroup Improvement Points (Up to 6 points; each subgroup and subject is worth 2 points)

- Each subgroup and subject is evaluated separately
- If eligibility is met:
 - A school's subgroup current year proficiency percentage is greater than the school's subgroup prior year proficiency percentage = 2 points
 - A school's current year subgroup proficiency percentage is less than or equal to the school's subgroup prior year proficiency percentage = 0 points

Special Education Inclusion

The intent of this metric is to reward schools that have greater than the state average (TBD) of special education (SPED) students in general education classroom at least 80% of the day. This calculation includes grades K-8 students. To be eligible for these points, a school must meet the minimum N-Size of 10 FAY students.

School Level FAY SPED Inclusion %

 $= \frac{\textit{No. of FAY SPED students spending } 80\% \textit{ of more of their day in the general education classroom}}{(\textit{Total CY FAY enrollment})}$

Special Education Inclusion Points (0 or 2 points)

 Schools with greater than 8.93% of their FAY population in special education spending 80%+ of their day in the general education classroom receive points

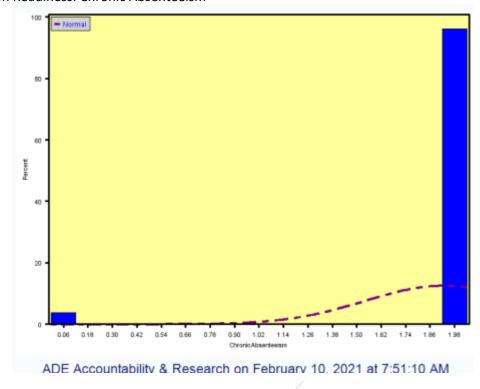
Statistics and Graphs for Acceleration and Readiness

For meaning of terms please see Appendix: List of Statistical Summary Tables and Graph Definitions (see page 37)

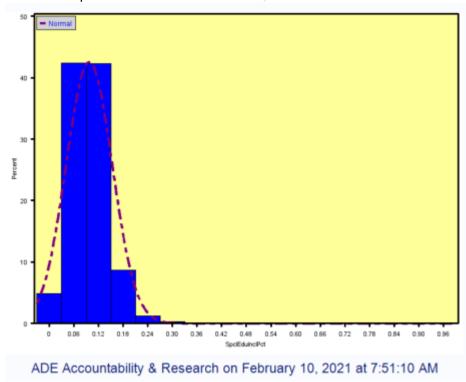
Summary Tables			
	ChronicAbsenteeism	SpcIEduInclPct	TotalARPoints
Max	2.00	0.97	4.00
Mean	1.92	0.10	2.92
Min	0.00	0.00	0.00
Range	2.00	0.97	4.00
StdDev	0.38	0.06	1.15
Var	0.15	0.00	1.32
Median	2.00	0.09	4.00
Q1	2.00	0.07	2.00
Q3	2.00	0.12	4.00
P1	0.00	0.00	0.00
P5	2.00	0.03	2.00
P10	2.00	0.05	2.00
P90	2.00	0.15	4.00
P95	2.00	0.17	4.00
P99	2.00	0.24	4.00

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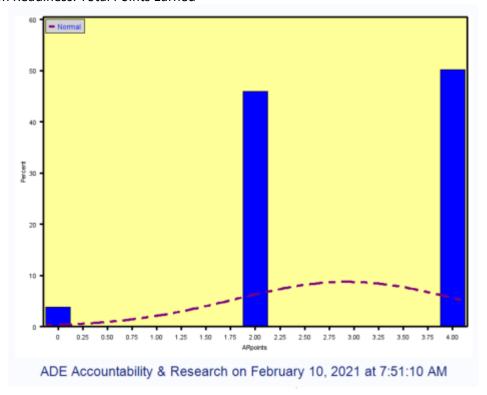
Acceleration Readiness: Chronic Absenteeism



Acceleration Readiness: Special Education Inclusion



Acceleration Readiness: Total Points Earned



Bonus Points

Schools can earn bonus points two different ways.

Special Education Enrollment

Schools with high populations of FAY students enrolled in special education will earn bonus points. Bonus points were awarded based on the distance from the school's percentage to the statewide average.

The following formulas are used for the calculations:

School Level CY FAY SPED Program Enrollment %
$$= 100 \left[\frac{(No. of \ CY \ FAY \ students \ who \ are \ enrolled \ in \ a \ SPED \ program)}{(Total \ CY \ FAY \ enrollment)} \right]$$
Statewide CY FAY SPED Program Enrollment %
$$[(No. of \ CY \ FAY \ students \ who \ are \ enrolled \ in \ a \ SPED \ program)]$$

$$= 100 \left[\frac{(No. of CY FAY students who are enrolled in a SPED program)}{(Total CY FAY enrollment)} \right]$$

FAY Special Education Program Enrollment Bonus Points (0, 1, 1.5, or 2 points)

Points are awarded based on the following:

Bonus Points	Range
2	At or above 80% of the statewide average
	(9.65%)
1.5	At 70% to 79% of the statewide average
	(8.44% - 9.64%)
1	At 60% to 69% of the statewide average
	(7.24% - 8.43%)
0	Below 60% of the statewide average
	(7.24%)

Science Proficiency (Data Not Available in FY20)

Schools can earn up to 3 bonus points on science achievement of FAY students.

The following formula is used for the calculations:

Science Percent Proficient =
$$100 \left[\frac{(No. of CY FAY students that are P or HP on AIMS or AIMS - A Science)}{(No. of FAY students tested on AIMS or AIMS - A Science)} \right]$$

The following details how points are earned.

Science Proficiency Bonus Points (0, 1.5 or 3 points)

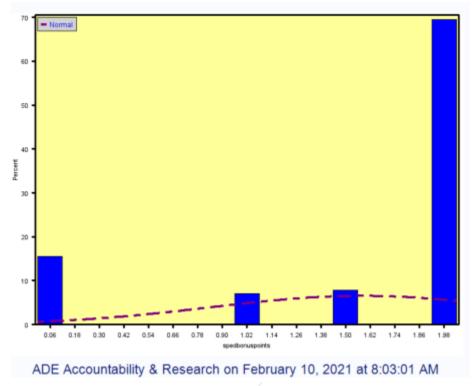
- A school's current year percentage of proficient students is greater than or equal to TBD = 3 points
- A school's current year percentage of proficient students is greater than TBD and less than TBD = 1.5 points

	-
	spedbonuspoints
Max	2.00
Mean	1.58
Min	0.00
Range	2.00
StdDev	0.73
Median	2.00
Var	0.53
Q1	1.50
Q3	2.00
P1	0.00
P5	0.00
P10	0.00
P90	2.00
P95	2.00
P99	2.00

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Statistics and Graphs for Bonus Points

For meaning of terms please see Appendix: List of Statistical Summary Tables and Graph Definitions (page 37)



Calculating Total Points (Data Not Available in FY20)

Schools that meet the N-Size for every indicator can earn up to 100 points:

$$\begin{aligned} & \textbf{Letter Grade} \\ & = \begin{bmatrix} \left(0.30(Proficiency)\right) + \left(0.50(Growth)\right) + (EL\ Proficient\ Points) \\ & + (EL\ Growth\ Points) + (Acceleration\ -\ Readiness\ Points) \end{bmatrix} + Bonus\ Points \end{aligned}$$

Schools that meet the N-Size for every indicator except for EL Proficiency and Growth can earn up to 90 points:

Letter Grade

$$= 100 \frac{\left| \frac{\left[(0.30(Proficiency)) + (0.50(Growth)) \right]}{+ (Acceleration - Readiness Points)} \right| + Bonus Points}{90}$$

Schools that do not meet the N-Size EL Proficiency and Growth and do not qualify for any

acceleration/readiness indicators (i.e., do not meet the N-Size of 10 FAY students or is not eligible) can earn up to 80 points:

Letter Grade

$$= 100 \left| \frac{\left[\left(0.30(Proficiency) \right) + \left(0.50(Growth) \right) \right]}{80} \right| + Bonus\ Points$$

Schools without enough students to be eligible for 80 points will be not rated in FY18.

Appendix

List of Acronyms and Abbreviations

Acronym/Abbreviation	Meaning
ADM	Annual Daily Membership
AIMS	Arizona Instrument to Measure the Standard
AIMS-A	Arizona Instrument to Measure the Standard – A (Special Education Test)
AVG	Average
AzEDS	Arizona Education System
AZELLA	Arizona English Language Learner Assessment
AzM2	Arizona's Measurement of Educational to Inform Teaching
CCRI	College and Career Readiness Index
CY	Current Year
EL	English Language
ELA	English Language Arts
EOC	End of Course
FAY	Full Academic Year
FY	Fiscal Year
HP	Highly Performing on AzM2
MP	Minimally Performing on AzM2
MSAA	Multi-State Alternate Assessment
No.	Number
Р	Proficient Performing on AzM2
PP	Partially Performing on AzM2
PY	Previous Year
RAEL	Recently Arrived English Learner
SG	Subgroup
SPED	Special Education
SGP	Student Growth Percentile
SGT	Student Growth Target

List of Statistical Summary Tables and Graph Definitions

Term	Full Name	Definition	
Max	maximum	The largest observation	
Min	minimum	The smallest observation	
Mean	aka "average"	The sum of all numbers divided by the number of observations	
Range	range	The difference between the lowest and highest value	
StdDev	standard deviation	Is a measure of the amount of variation or dispersion of a set of values	
StdErr	standard error	Is the standard deviation of its sampling distribution or an estimate of that standard deviation	
Var	variance	Is the expectation of the squared deviation of a random variable from its mean	
Median	median	The middle observation in a set of data	
Q1	quartile one (first quartile)	A number for which 25% of the data is less than that number	
Q3	quartile three (third quartile)	A number for which 75% of the data is less than that number	
P1	1 st percentile	Is a measure used in statistics indicating the value below which	
		a given percentage of observations in a group of observations	
		falls. Only 1% of observations are below this number.	
P5	5 th percentile	Is a measure used in statistics indicating the value below which	
		a given percentage of observations in a group of observations	
		falls. Only 5% of observations are below this number	
P10	10 th percentile	Is a measure used in statistics indicating the value below which	
		a given percentage of observations in a group of observations	
		falls. Only 10% of observations are below this number	
P90	90 th percentile	Is a measure used in statistics indicating the value below which	
		a given percentage of observations in a group of observations	
		falls. 90% of observations are below this number	
P95	95 th percentile	Is a measure used in statistics indicating the value below which	
		a given percentage of observations in a group of observations	
	/ / / / / / / / / / / / / / / / / / /	falls. 95% of observations are below this number	
P99	99 th percentile	Is a measure used in statistics indicating the value below which	
		a given percentage of observations in a group of observations	
		falls. 99% of observations are below this number	