REPORT TO THE HOUSE AND SENATE COMMITTEES ON EDUCATION OF THE LOUISIANA LEGISLATURE

# LOUISIANA'S VALUE-ADDED ASSESSMENT MODEL

# FOR EDUCATOR EVALUATIONS AND SUPPORT:

# A REPORT IN RESPONSE TO LA. R.S. 17:3883(A)(8)

**March 1, 2023**

FROM THE BOARD OF ELEMENTARY AND SECONDARY EDUCATION

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## EXECUTIVE SUMMARY

In response to Act 54 of the 2010 Regular Session, the Louisiana Department of Education (LDOE) engaged internal and external groups through pilot programs, presentations, workgroups, and focus groups to collectively develop and refine the educator support and evaluation program (now known as "Compass") and the Louisiana value-added model. This collaborative effort was aimed at building a system that would not simply rate teachers' performance, but would provide teachers with important feedback and development opportunities needed to improve their professional practice and ultimately lead their students to achieve at higher levels.

Louisiana R.S. 17:3883(A)(8) requires the state Board of Elementary and Secondary Education (BESE) to, "Beginning in 2013 and thereafter, submit a written report to the Senate Committee on Education and the House Committee on Education, not later than March first of each year, and at such other times as requested by the committees, regarding the implementation, results, and effectiveness of the value-added assessment model as provided in this Part." This report provides detailed information regarding Louisiana's value-added model calculation method and highlights key findings. Notable among the findings are a group of educators who are consistently among the teachers whose students have made either the weakest or strongest educational gains. This is consistent with the results of analysis conducted in previous years. Consistent cross-year results, when they were evident for a teacher, provide a basis for engaging in substantive work to improve outcomes for those who teach students at the lowest performing levels and retain and reward those whose students have achieved and improved at the highest levels. Another noteworthy finding is that cross-year consistency is improving as local school systems are improving the quality of data collected and reported.

### Processes Supporting Development of the Value-Added Model

After the passage of Act 54 in 2010, the state board established the Advisory Committee on Educator Evaluations (ACEE) to fulfill the requirements set forth in law. Of its thirty-three members, nineteen were teachers, meeting the legal requirement for educators to comprise at least half of the panel. Other members included parents, legislators, school board members, BESE representatives, educator association representatives, and other school association representatives. The committee convened its first meeting in September 2010. ACEE members were charged to make recommendations to BESE regarding the value-added model, evaluations for non-tested grades and subjects, and setting standards of effectiveness for educators. Recommendations regarding these topics were presented to BESE in December 2011.

Second, the LDOE developed and implemented the Curriculum Verification and Reporting Portal (CVR), a secure online site where teachers can verify the accuracy of their student rosters and class schedules before the data are used in the value-added assessment. The CVR was developed to address two key concerns. The first was that a number of scholars had observed that data quality was a critical barrier to accurately estimating teacher contributions to student progress and the consistency of that contribution. The second was the need to create as much transparency as practical into the process of deriving value-added scores. With the launch of the CVR, teachers have the opportunity to know exactly which students are contributing to their results and correct data errors. The CVR also gives teachers, principals, and school system leaders access to the value-added results. Generally, the CVR portal is simple and follows common Internet conventions, with the expectation that most teachers would be able to use the portal without formal instruction. Live online training on the use of the CVR's features was provided at the request of educators. Technical support was provided for both data review and the statewide roster verification period. The portal had been tested with a small subset of pilot schools and districts for the 2008-2009 and 2009-2010 school data. Statewide pilot testing took place during the 2010-2011 and 2011-2012 school years, with full statewide implementation during 2012-2013.

The third process supporting the value-added component of the law was the field testing of the educator professional development, materials, and training. In 2010-2011, 19 volunteer school districts and two charter schools, for a total of 328 schools, participated in this process. During 2013-2014, value-added guidance was incorporated into Compass professional development, materials, and training. This included printed materials and PowerPoint presentations related to the verification process, Compass scoring process, and end-of-year guidance to reviewing and interpreting value-added results.

The fourth process supporting the deployment of the value-added model was the analytic work used to derive the results provided to the teachers. The analytic work was conducted by the LDOE staff, led by two Ph.D. level researchers with extensive experience with value-added models and their application to data in Louisiana, and in consultation with Dr. George Noell, a national expert on value-added models and at the time, a psychology professor at Old Dominion University. The remainder of this document summarizes, in brief, the analytic process and selected aggregated results from the 2021-2022 school year, for which the most recent data are available.

## Technical Process and Findings

### 1. Introduction

This technical document summarizes the examination of student-teacher achievement outcomes for the 2021-2022 school year that were shared with teachers statewide during

October 2022. Outcomes were assessed via a value-added model. The assessment used regression of student data (achievement, demographics, and attendance) to estimate typical student achievement, and then compared typical outcomes to actual outcomes. The calendar of activities related to the value-added model for the 2021-2022 school year is included in Appendix A.

The 2021-2022 school year represents the first year since the 2018-2019 school year where value-added results were calculated for use in teacher evaluations. On March 13, 2020, Louisiana Governor John Bel Edwards signed a proclamation closing all schools statewide due to COVID-19. On March 20, 2020, the U.S. Department of Education approved Louisiana's waiver request of assessment, accountability, and reporting requirements under the Elementary and Secondary Education Act, as amended by the Every Student Succeeds Act. As a result of both of these actions, Louisiana did not require standardized testing for the 2019-2020 school year. Without Spring 2020 statewide assessments, the value-added model could not be run for the 2019-2020 school year (lack of a current year test) and the 2020-2021 school year (lack of a first prior year test).

In the context of this report, *value-added analysis* (VAA) describes the use of demographics, discipline, attendance, and prior achievement history to estimate typical outcomes for students in a specific content (e.g., mathematics), based on a longitudinal data set derived from all students who took state-mandated tests in grades 4 through 12 in Louisiana. The analysis uses a relatively complex model that includes the grouping of students within classrooms.

The current model, where feasible, was developed to address concerns raised by researchers and policy makers regarding variable selection/inclusion and data quality, as they emerged in the application of value-added models. This included the use of a model process that permitted the inclusion of all students with prior achievement data (described below). The high level of test participation in Louisiana results in a substantially more complete database than is commonly available. The predictor variables were expanded to include non-test variables, such as attendance, disability diagnosis, and discipline history. The predictor variables were expanded to include class composition variables to address peer influences on achievement, as requested by the Advisory Committee on Educator Evaluation (ACEE).

## 2. Database Merging Process

Data were drawn from the standardized test files (LEAP 2025 assessments for grades 3-8 and high school) in the current year (2021-2022) and the most recent three years prior (2020-2021, 2018-2019, 2017-2018); the data system for student and teacher course schedules that links students to teachers; and supplemental student databases. Data analyses for the prior three school years were also conducted to supplement the current year work and provide a point of comparison. The testing and supplemental databases provided data regarding attendance, enrollment, mobility, exceptionality diagnosis, English Language Learner, economically

disadvantaged status, Section 504 status, and disciplinary infractions. Data regarding teachers were drawn from the state's teacher demographic database. A multistage process was used to create longitudinal records for students describing achievement, attendance, and demographic factors across years. The student and teacher databases were then linked. A list of data sources and elements is included in Appendix B.

Initially, duplicate records and multiple, partially complete records that described the same student within separate databases were resolved. Following this work, data files were merged in a series of steps and a further round of duplication resolution was undertaken. Students' data were linked across years based upon unique matches on the students' unique identification number developed pursuant to La. R.S. 17:3914 to maintain student privacy. Table 1 presents the number of records available in each content area.

***Table 1.*** Student and Teacher Counts by Overall and Content Area Results for 2021-2022

| | **Overall** | **ELA** | **Math** | **Science** | **Social Studies** | **Algebra I** | **Geometry** | **English I** | **English II** |
|---|---|---|---|---|---|---|---|---|---|
| **Students** | 307589 | 167142 | 168801 | 172041 | 172130 | 51920 | 37256 | 53075 | 46608 |
| **Teachers** | 12316 | 3939 | 3727 | 3072 | 3224 | 1076 | 671 | 923 | 779 |

Several important decision points are noteworthy. Initial records were limited to students who completed one assessment in grades 4-12 to permit the availability of one-year prior achievement data. In order to be included in the analyses, a student was required to be enrolled in the same school from October 1st or January start (for spring block courses) to the start of testing. A specific date of testing was not utilized due to varied start dates among districts with the use of computer-based testing.

Updates to the value-added analysis for the 2021-2022 school year are noted. Several student demographic factors received updates as more detailed data was available. The availability of individual indicators that contribute to an overall designation of economically disadvantaged allowed for a more detailed measurement when students may be eligible for more than one designation. A similar procedure is used for individual indicators of special education exceptionalities. Additionally, one special education exceptionality, Autism, met a minimum threshold count (greater than or equal to 50 records per path) to be included as a separate indicator within the model. Furthermore, an indicator for expulsion was also added to the model starting in the 2021-2022 school year. Student discipline is now measured by both the count of suspensions and expulsions. A full listing of student demographics included in the value-added analysis are found in Table 4.

Value-added analysis results from English Language Arts (ELA), Mathematics, Science, Social Studies, Algebra I, Geometry, English I, and English II contents were included Compass teacher evaluations. Content areas eligible for the value-added analysis also changed from the 2018-2019 school year to the 2021-2022 school year. The first full statewide administration of a

new Science assessment occurred in the 2018-2019 school year, which allowed for the inclusion of Science in the value-added analysis starting in the 2019-2020 school year. However, due to COVID-19 school closures and the lack of statewide administration of LEAP 2025 testing in Spring 2020, no value-added results for teachers were able to be calculated in the 2019-2020 and 2020-2021 school years. Thus, the 2021-2022 school year allows for the inclusion of Science in the value-added model. The historical availability of contents included in the value-added analysis are presented in Table 2.

***Table 2.*** Historical Content Availability in the Value-Added Analysis

| Content | Inclusion in Value-Added Analysis | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **2014-2015** | **2015-2016** | **2016-2017** | **2017-2018** | **2018-2019** | **2019-2020*** | **2020-2021*** | **2021-2022** |
| ELA | Yes | Yes | Yes | Yes | Yes | N/A | N/A | Yes |
| Math | Yes | Yes | Yes | Yes | Yes | N/A | N/A | Yes |
| Science | Yes | Yes | Yes | No | No | N/A | N/A | Yes |
| Social Studies | Yes | No | No | Yes | Yes | N/A | N/A | Yes |
| Algebra I | Yes | Yes | Yes | Yes | Yes | N/A | N/A | Yes |
| Geometry | Yes | Yes | Yes | Yes | Yes | N/A | N/A | Yes |
| English I | N/A | N/A | N/A | Yes | Yes | N/A | N/A | Yes |
| English II | No | No | No | No | Yes | N/A | N/A | Yes |

** Due to COVID-19, there was no statewide spring administration of LEAP 2025 assessments. With no statewide Spring 2020 assessments, value-added could not be calculated for the 2019-2020 (lack of current year test) and 2020-2021 (lack of first prior year test) school years.*

Further inclusionary criteria included that the students' attendance and achievement records be matched to the course offerings data to identify which courses the students took and who taught those courses. Additionally, the attendance and course databases were used to confirm that the student was enrolled in the same site. Descriptions of all exclusionary criteria are included in Appendix C.

Course codes were collapsed into groups that were associated with specific test areas (ELA, Mathematics, Science, Social Studies, Algebra I, Geometry, English I, and English II). Courses that did not fit these specific test areas, such as band, were dropped from the database. Eligible course codes used in the value-added analysis are included in Appendix D.

Additional work was conducted to complete the datasets. Student achievement scores were re-standardized to the mean and standard deviation across grade, school year, and content. Student records were placed into promotional paths, which refer to how many consecutive years a student had been promoted and had predictor data (i.e., Path 3 means the student was promoted for three consecutive years; Path 2 means the student was promoted for two consecutive years, and so on). A graphical display of promotional paths is presented in Figure 1.

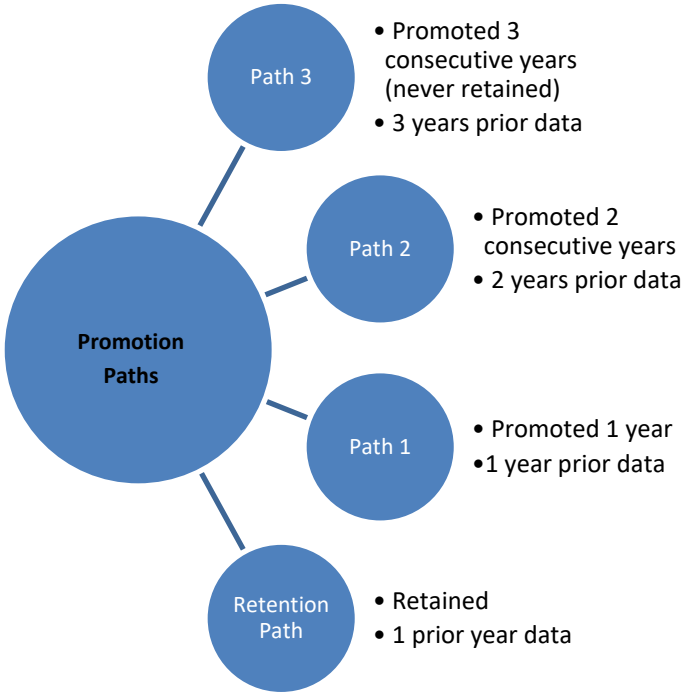



***Figure 1.*** Diagram of promotional paths

Table 3 describes the number of students in each path for each content area. This process was adopted for three reasons. First, it allowed retention of all student records with at least two consecutive years of testing. Second, the approach takes students' promotion histories into account. Third, it addressed a phenomenon that emerged in the data in which teachers in specific grade levels appeared to be systematically more or less effective than teachers in neighboring grades and the phenomenon appeared to be attributable to the pattern of promotions and retention being grade specific. For example, the percentage of retention in 4$^{th}$ grade is the highest among the grade spans assessed both in school years where previous state promotion policies applied and in school years where it is no longer applied. Additionally, placement into paths was also required by the social context of test administration. For example, until recently, 8$^{th}$ grade had been a high-stakes examination year in which promotion to high school was dependent on test performance. There remains a consistent (across students and years) positive shift in performance in the 8$^{th}$ grade compared to all neighboring grades, whether high stakes are applied or not. Failure to attend to this phenomenon would result in teachers in the 7$^{th}$ and 9$^{th}$ grades being consistently found to be substantially less effective than teachers in the 8$^{th}$ grade, as a result of the social context of test administration.

***Table 3.*** Student Record Counts in Each Promotional Path by Content Area for 2021-2022

| | **ELA** | **Math** | **Science** | **Social Studies** | **Algebra I** | **Geometry** | **English I** | **English II** |
|---|---|---|---|---|---|---|---|---|
| **Grade level** | Grades 4-8 | Grades 4-8 | Grades 4-8 | Grades 4-8 | Grades 6-12 | Grades 7-12 | Grades 6-12 | Grades 7-12 |
| **Retention Path** | 2683 | 2759 | 2741 | 2759 | 1548 | 409 | 1325 | 1018 |
| **Path 1** | 79241 | 77706 | 77485 | 76940 | 2260 | 2375 | 2431 | 3556 |
| **Path 2** | 33866 | 34052 | 32679 | 33307 | 1154 | 719 | 1339 | 1052 |
| **Path 3** | 57589 | 56621 | 60539 | 60639 | 29500 | 20254 | 32453 | 28079 |

Indicator variables were created to identify student characteristics. Indicator codes identified student characteristics using 0s and 1s. If a student has a 1 for an indicator variable, it means the student has any one of these characteristics. The final data structure contained a number of variables used to estimate typical student achievement outcomes and links students to teachers based on the course. Table 4 displays the student-level variables used in analyses that were included in the databases.

***Table 4.*** Student Level Variables Examined

| **Variable** |
|---|
| Emotional Disturbance |
| Speech and Language Impairment |
| Mild Intellectual Disability |
| Specific Learning Disability |
| Other Health Impairment |
| Autism |
| Special Education - Other |
| Gifted |
| Section 504 |
| English Language Learner |
| Supplemental Nutrition Assistance Program (SNAP) |
| Temporary Assistance for Needy Families (TANF) |
| Medicaid |
| Free Lunch |
| Reduced-price Lunch |
| Economically Disadvantaged - Other |
| Mobility |
| Student Absences |
| Suspensions |
| Expulsions |
| Prior English Language Arts Test (1-3 years based on path) |
| Prior Mathematics Test (1-3 years based on path) |
| Prior Science Test (1-3 years based on path) |
| Prior Social Studies Test (1-3 years based on path) |
| Squares and Cubes of all prior predictors were also entered |

## 3. Value-Added Analysis

Once the databases were constructed, the assessment of student-teacher achievement outcomes was calculated. Students who had multiple teachers in a content area were retained in the dataset for their promotional path for each teacher, but were weighted in proportion to the number of teachers they had in that subject. For example, if a student had two mathematics teachers, the student would have a 0.5 weight in contributing to each teacher's assessment

result. Analysis for each content area was conducted separately. The analysis was conducted in three steps. The first two steps were implemented separately for each promotion path and the final step brought all of the data together to obtain student-teacher achievement outcomes.

*Step 1*. In this step, data within each path were analyzed using a linear regression model with classroom centering to obtain the regression coefficients for each predictor. Separate intercepts were derived for each path. Descriptions of the formula and coefficients are located in Appendix E and Appendix F.

The possibility of crossing grade by path to obtain unique grade by path coefficients was examined and did not appear to be viable, due to the small number of students with some of the low-incidence predictors in some of the low population paths. In some atypical paths (e.g., 7th grade students with only one year of predictor data), there might be only 0, 1, or 2 students with a specific disability, opening up the possibility to severely distorted and unstable coefficients.

*Step 2*. The next step in the analysis used the coefficients within each path to derive the difference between each student's typical achievement and the actual measured achievement. It is a measure of whether the student met, exceeded, or failed to meet what was expected.

This was accomplished arithmetically by multiplying the student's predictor scores by the coefficients derived in Step 1 and summing to achieve the typical student achievement score. A capitation method was employed to prevent ceiling effects, thus preventing these scores from being beyond the results of the assessment. The capitation method was used to lower any predicted scores that were beyond an obtainable score on the assessment. This score was then subtracted from the actual achievement score to obtain the deviation score. If actual achievement for a student was higher than typical achievement for a student with that history (e.g., actual: 725; typical: 700), then the result would be positive (e.g., residual: 25). In contrast, if the actual score was less than the expected score, the residual would be negative.

*Step 3*. The final step in the assessment was to apply Bayesian shrinkage to the result. This step is commonly used in value-added analyses to reduce the impact of extreme variability across students in some teachers' classes, and to account for the fact that some teachers' results are based on a relatively small number of students. To complete this step, the residual data were fit as the outcome with the nesting structure, as illustrated in Figure 2.

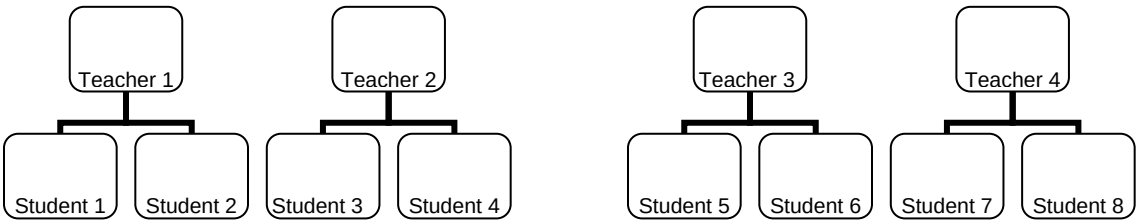



***Figure 2.*** Two Level Model Nesting Structure of Students within Classrooms

Class composition variables were included in the Hierarchical Linear Modeling (HLM) analysis in order to account for peer-to-peer effects within classes. Specifically, class composition

effects were modeled at Level 2 (teacher) by the class mean prior achievement in the content area (standard deviation units), mean suspensions, proportion of students with an economic disadvantage, and proportion of students diagnosed with a disability. Descriptions of student and classroom characteristics are located in Appendix G.

Classroom composition estimates and Bayesian shrinkage were averaged for students with multiple teachers in the same content area. Each teacher's shrunken Bayes intercept was extracted and became the student-teacher achievement outcome that was then reported to that teacher via the Compass Information System (CIS). Additionally, student-level reports were included for each teacher showing the students' expected and actual scaled scores, as well as demographic information.

Along with student residuals and individual value-added results by content, an overall composite percentile was provided for the teacher. To calculate the composite percentile, the number of students a teacher instructs in each content area, along with the teacher's specific content area percentile, was compiled into one database with all teachers statewide, regardless of content. The percentile rankings for each content area were converted into a normal curve equivalent (NCE) score. A normal curve equivalent score is a score that ranges from 1 to 99 and is expressed on an equal-interval scale. This step must take place because percentiles are not on an equal-interval scale and therefore do not allow for arithmetic computations, such as averaging. A weighted average for the NCE provided the results for the teacher. Weighting was based on the proportion of all student results available for that teacher that each NCE represented. Once the weighted average was calculated, the NCE score was then converted back to a percentile ranking. If a teacher only teaches in one content area, that teacher's final composite percentile will not change. However, if a teacher has multiple content areas, the teacher's final composite percentile will reflect a weighted average of how he/she scored in all content areas. This composite percentile ranking will be the final value-added evaluation score that is used to determine the teacher's level of effectiveness.

## 4. Standards of Effectiveness

The ACEE committee was responsible for recommending standards of effectiveness for teacher evaluations. These recommendations were submitted and accepted by BESE in December 2011. The current standards of effectiveness were modified and accepted by BESE in 2012. For teachers where value-added data are available, the composite percentile will be converted to a 1.0-4.0 scale to use in the teacher's final evaluation. Table 5 outlines the ranges for each rating.

***Table 5.*** Ranges for Standards of Effectiveness

| Effectiveness Level | Effectiveness Rating | Composite Percentile |
|---|---|---|
| Ineffective | 1 | 1-10 |
| Effective: Emerging | 2 | 11-49 |
| Effective: Proficient | 3 | 50-79 |
| Highly Effective | 4 | 80-99 |

## 5. Selected Results

*Stability of Teacher Results*

In order to examine the degree of stability of teacher outcomes across years, two sets of analyses were conducted. These analyses were conducted with the full set of data across the 2018-2019 and 2021-2022 school years, which represents a comparison of the current year and the third prior year instead of the last two consecutive years. Teacher value-added results were not calculated in the 2019-2020 and 2020-2021 school years due to no statewide testing in the 2019-2020 school year due to COVID-19. Results detailed below are for informational purposes, and represent a reduced sample of teachers that were instructing in the current year and three years prior.

The first analysis examined the stability of overall teacher ranks across years. Within each year, teachers were ranked as having results that fell in the set standards of effectiveness ranges. The data were examined for the stability of these rankings across years with verified rosters. The degree of stability is illustrated in Table 6.

***Table 6.*** Stability of the Overall Teacher Ranking

| 2018-2019 Overall Teacher Rank | | 2021-2022 Overall Teacher Rank | | | |
|---|---|---|---|---|---|
| | | **Ineffective 1% - 10%** | **Effective Emerging 11% - 49%** | **Effective Proficient 50% - 79%** | **Highly Effective 80% - 99%** |
| Ineffective 1% - 10% (542) | # | 110 | 259 | 129 | 44 |
| | % | 20.3% | 47.8% | 23.8% | 8.1% |
| Effective Emerging 11% - 49% (2364) | # | 240 | 1075 | 700 | 349 |
| | % | 10.2% | 45.5% | 29.6% | 14.8% |
| Effective Proficient 50% - 79% (1949) | # | 77 | 672 | 698 | 502 |
| | % | 4.0% | 34.5% | 35.8% | 25.8% |
| Highly Effective 80% - 99% (1377) | # | 26 | 257 | 442 | 652 |
| | % | 1.9% | 18.7% | 32.1% | 47.3% |

*Note: Stability rankings represent the following school years with available VAM data: 2021-2022 and 2018-2019. Due to COVID-19 school closures in March 2020, Spring 2020 assessments were not administered, and there was no teacher VAM in the 2019-2020 (lack of current year test) and 2020-2021 (lack of first prior year test) school years. Stability is typically calculated using consecutive years of data, however, it is presented within this document using the current year and third prior year for informational purposes only.*

The overall teacher results show moderate stability across years. Teachers were most likely to remain in the same effectiveness category or move to an adjacent category in the next year. Teachers who fell in the bottom 10$^{th}$ percentile in 2018-2019 were likely to fall in the bottom 10$^{th}$ percentile of results again or to move up one ranking to the 11$^{th}$-49$^{th}$ percentile range (68.1%). They were unlikely to move to the top of the distribution one year later. Teachers who were in the top 20$^{th}$ percentile in 2018-2019 were most likely to fall in the same range or drop by one range to the 50$^{th}$ - 89$^{th}$ percentile in 2021-2022 (79.4%). They were unlikely to move to the bottom of the distribution one year later.

Another way of examining stability is through the correlation coefficients in each content area. Table 7 below shows the correlation coefficients between teacher content results in the past three school years.

***Table 7.*** Correlation of Content Teacher Effects

| Content Area | Content Teacher Effects Correlation Coefficient | | | |
|---|---|---|---|---|
| | **2015-2016 to 2016-2017** *(number of teachers)* | **2016-2017 to 2017-2018** *(number of teachers)* | **2017-2018 to 2018-2019** *(number of teachers)* | **2018-2019 to 2021-2022*** *(number of teachers)* |
| English Language Arts | 0.371 (3,375) | 0.415 (3,276) | 0.417 (3,207) | 0.378 (1,984) |
| Mathematics | 0.585 (2,824) | 0.573 (2,781) | 0.557 (2,796) | 0.510 (1,838) |
| Science | 0.535 (2,316) | n/a | n/a | n/a |
| Social Studies | n/a | n/a | 0.481 (2,297) | 0.426 (1,372) |
| Algebra I | 0.634 (486) | 0.583 (524) | 0.638 (502) | 0.596 (310) |
| Geometry | 0.574 (360) | 0.552 (332) | 0.595 (329) | 0.504 (197) |
| English I | n/a | n/a | 0.490 (388) | 0.471 (251) |
| English II | n/a | n/a | n/a | 0.359 (209) |

** Correlations of content teacher effects are typically calculated between the current year and first prior year. The correlations for the 2021-2022 school year are compared to the third prior year of 2018-2019. Due to COVID-19 school closures in March 2020, Spring 2020 assessments were not administered, and there was no teacher VAM in the 2019-2020 (lack of current year test) and 2020-2021 (lack of first prior year test) school years.*

Overall, the content teacher results demonstrate moderate stability across years. A lower correlation in the 2021-2022 school year was seen in all content areas, though still moderate, due to the school years in comparison spanning three years instead of the most recent year. Increasing correlations are expected in the following years when the most recent prior year is available for correlation.

Additionally, a lower correlation was seen from 2013-2014 to 2014-2015, particularly in ELA (0.325), which may be due to the transition from previous Louisiana state assessments to assessments aligned with most recently adopted state academic standards. Lower correlations have been seen in other states' transition to newer tests in the past, with the correlation increasing once a consistent assessment has been in use. With the exception of the three-year correlation in the 2021-2022 school year, an increasing correlation is expected in ELA in the school years following the introduction of a new assessment and when the most recent prior year is available for correlation.

While the overall and content teacher results demonstrate moderate stability, the level of correlation across consecutive years suggests using caution in reaching conclusions from any single year's data. Further, the rank stability data in Tables 6 suggests that there is a group of

teachers who will remain in the top or bottom 10 percent of teachers over consecutive years, and about whom substantive efforts to either improve the results for their students (bottom 10 percent) or to retain those teachers (top 10 percent) may be warranted.

*Estimated Average Levels of Achievement*

A frequent question among educators enquired why some students have higher or lower expected growth than others. The value-added analysis anticipates how well students will perform on the test in comparison to their peers with similar prior test scores and demographic characteristics. Students may have different expected scores because they have different prior test histories and/or background characteristics.

A related concern of educators is that value-added results will not be fair to teachers of students who have historically been poorly performing. This is an incorrect assumption, as the model recognizes gains in student achievement when students score higher than expected compared to similar peers. Instead of meeting a static growth target (e.g., Mastery), student expected scores are calculated based on their prior test history and demographic factors.

In contrast, another concern of educators is that value-added results will not be fair to teachers of historically high performing students because the more advanced a student is, the more difficult it is to make additional gains. This, too, is an incorrect assumption. In addition to the model recognizing gains compared to similar peers, the model also accounts for exceptionally high performance at or near the ceiling of the assessment (e.g., less than 0.01% of students in grades 4-8 and less than 1.5% in Algebra I or Geometry, score near the ceiling of the assessments). Since Louisiana's state assessments have a ceiling of 850, it is not possible to score beyond the ceiling. As a result, an adjustment is made to the statistical model to address this ceiling. For students whose scores fall between 835 and 850, the VAM model automatically adjusts the expected score to 835 so that the students contribute positively to a teacher result.

One indicator of the extent to which these concerns emerge in the data is the correlations between the teachers' students' mean achievement levels and the teacher effects. If there was a substantial disadvantage in teaching historically poor performing students, there would be a strong positive correlation between typical achievement and teacher effects. In contrast, if there was a disadvantage in teaching advanced students, there would be a strong negative correlation. Ideally, there would be a very small to no correlation between typical student achievement and teacher effects. The data presented in Table 8 demonstrate a nearly zero or very small correlation between typical achievement and teacher effects for all content areas, indicating no disadvantage for teaching historically poor performing or historically high performing students. Similar correlations were also demonstrated in previous years.

***Table 8.*** Correlation of Student Prior Mean Achievement and Teacher Effect

| Content Area | Student Prior Mean Achievement and Teacher Effect Correlation | | | | | |
|---|---|---|---|---|---|---|
| | **2016-2017** | **2017-2018** | **2018-2019** | **2019-2020*** | **2020-2021*** | **2021-2022** |
| English Language Arts | -0.020 | -0.030 | -0.030 | n/a | n/a | -0.018 |
| Mathematics | -0.025 | -0.038 | -0.044 | n/a | n/a | -0.055 |
| Science | -0.031 | n/a | n/a | n/a | n/a | -0.025 |
| Social Studies | n/a | -0.025 | -0.036 | n/a | n/a | -0.023 |
| Algebra I | -0.053 | 0.072 | -0.040 | n/a | n/a | 0.140 |
| Geometry | 0.114 | 0.224 | 0.118 | n/a | n/a | 0.267 |
| English I | n/a | -0.033 | -0.076 | n/a | n/a | -0.016 |
| English II | n/a | n/a | 0.252 | n/a | n/a | 0.179 |

** Teacher VAM results were not calculated in the 2019-2020 and 2020-2021 school years due to the lack of statewide testing in Spring 2020 due to COVID-19.*

*Distribution of Student-Teacher Achievement Outcomes for 2021-2022*

The following figures present the distribution of teacher outcomes across content areas for 2021-2022. The graphs depict the number of teachers (y-axis) with each magnitude of teacher effect (x-axis).

***Figure 3.*** English Language Arts Value-Added Distribution for 2021-2022

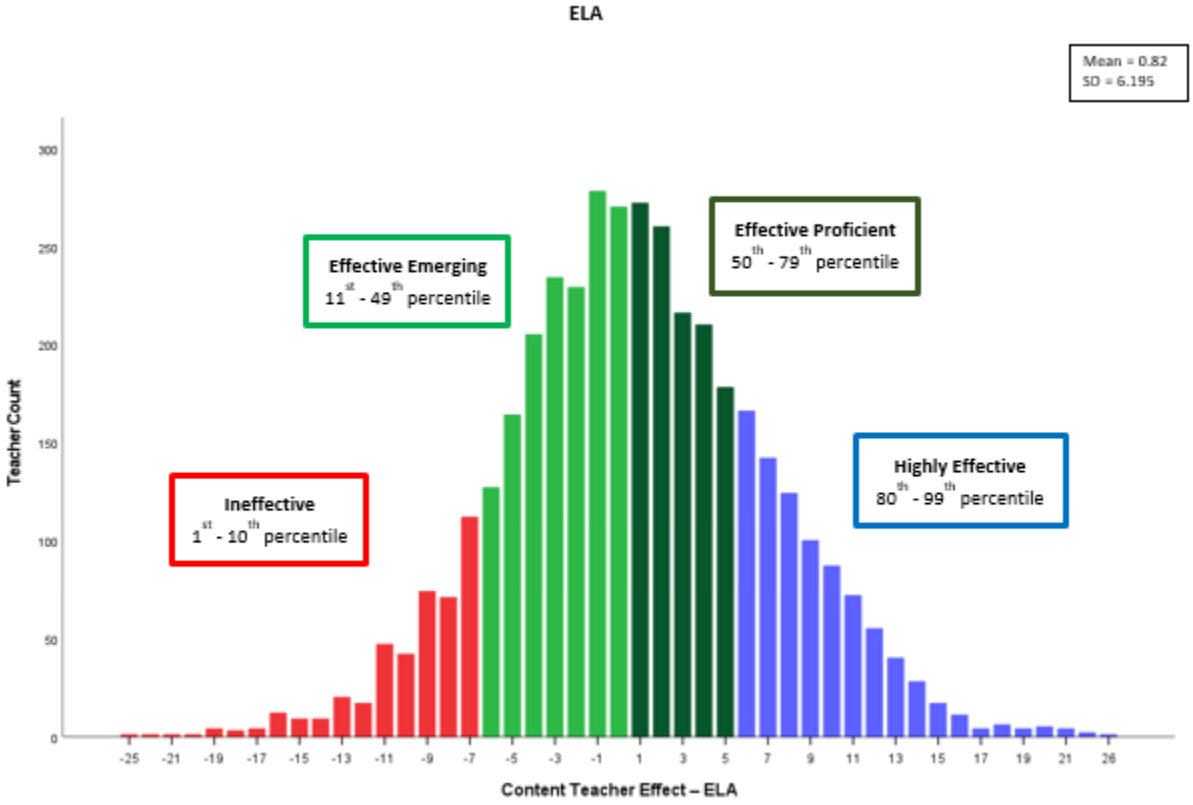


***Figure 4.*** Mathematics Value-Added Distribution for 2021-2022

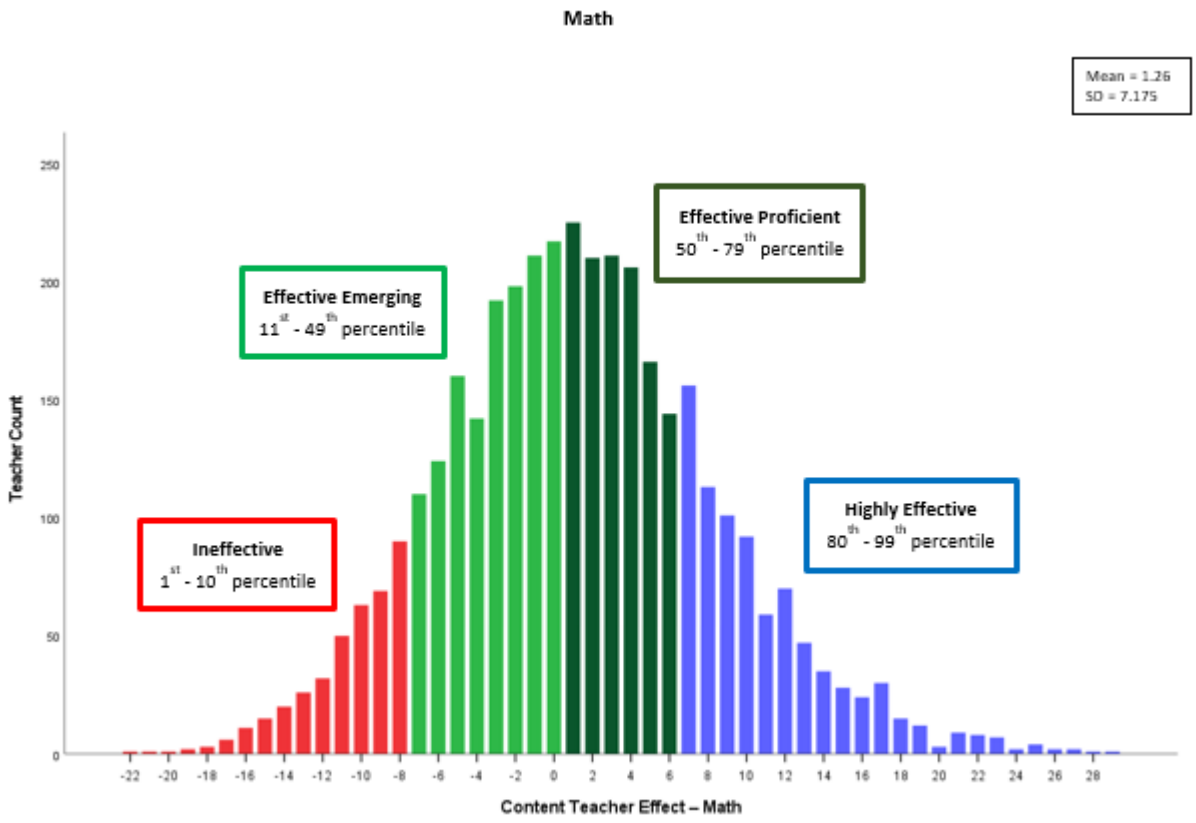


***Figure 5.*** Science Value-Added Distribution for 2021-2022

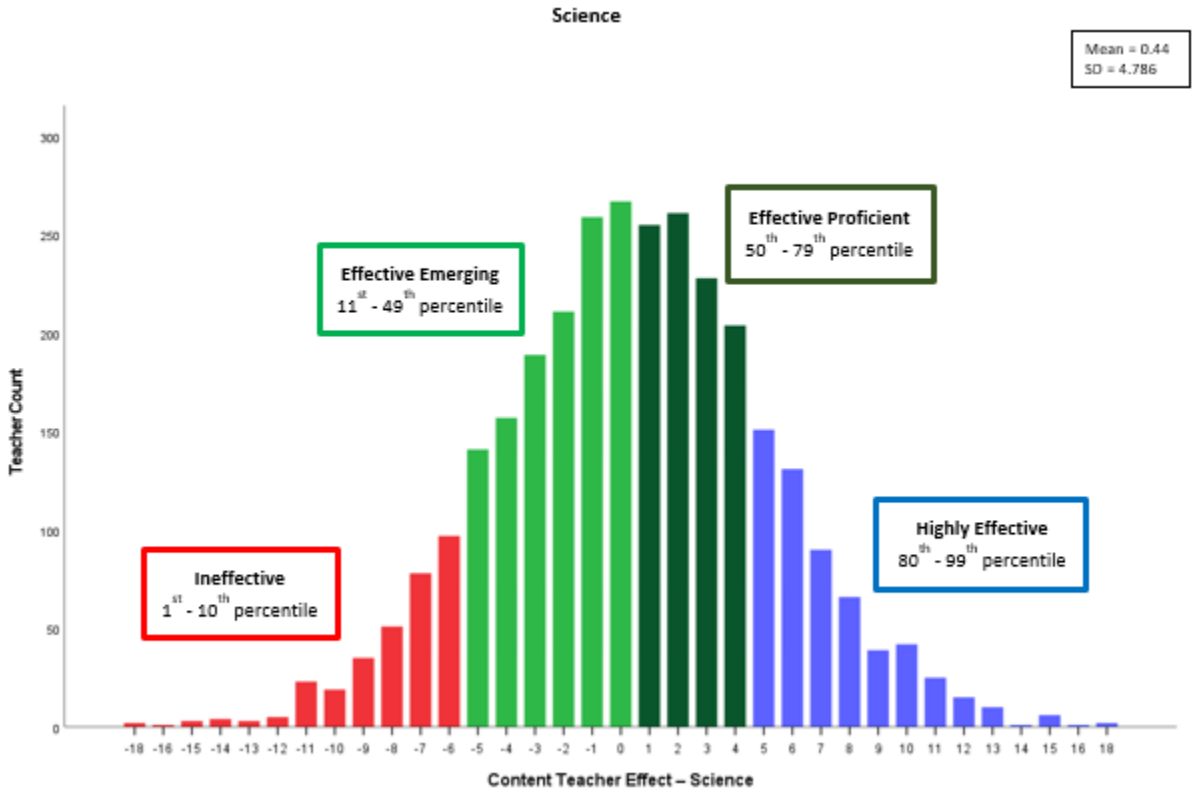


***Figure 6.*** Social Studies Value-Added Distribution for 2021-2022

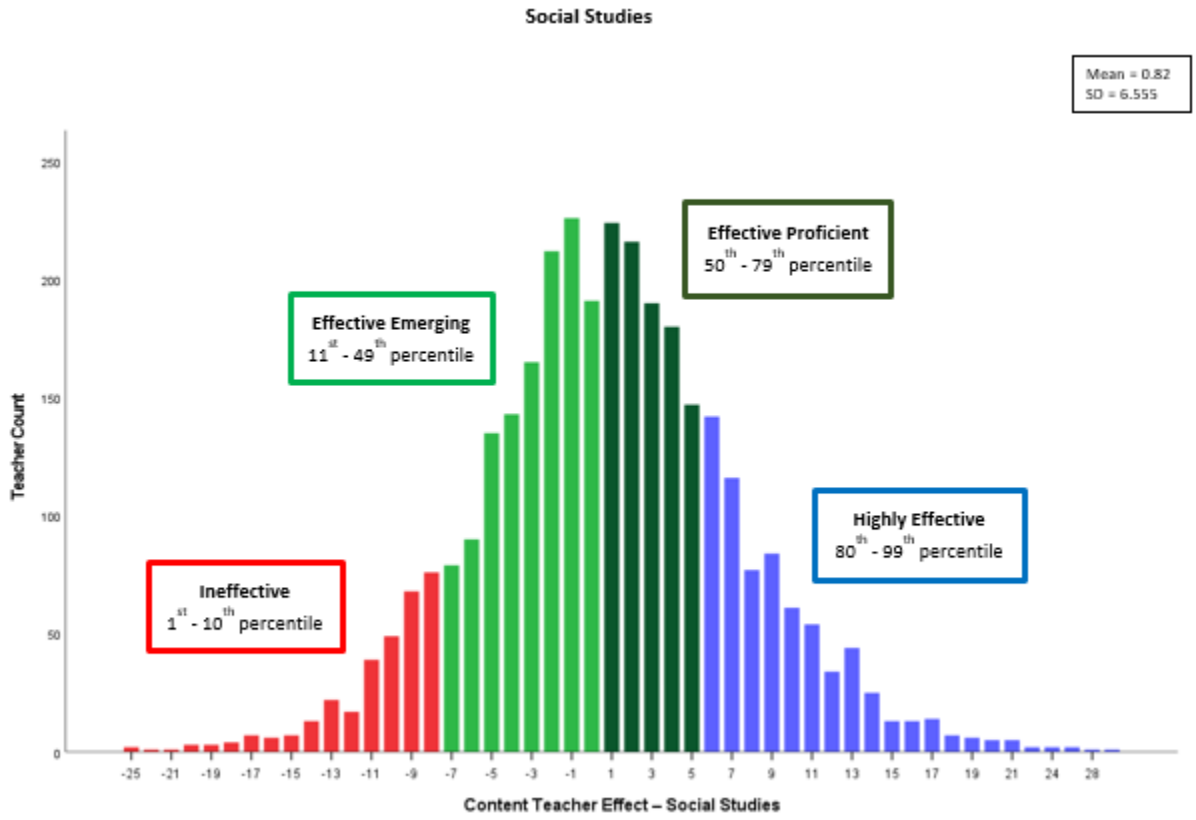


***Figure 7.*** Algebra I Value-Added Distribution for 2021-2022

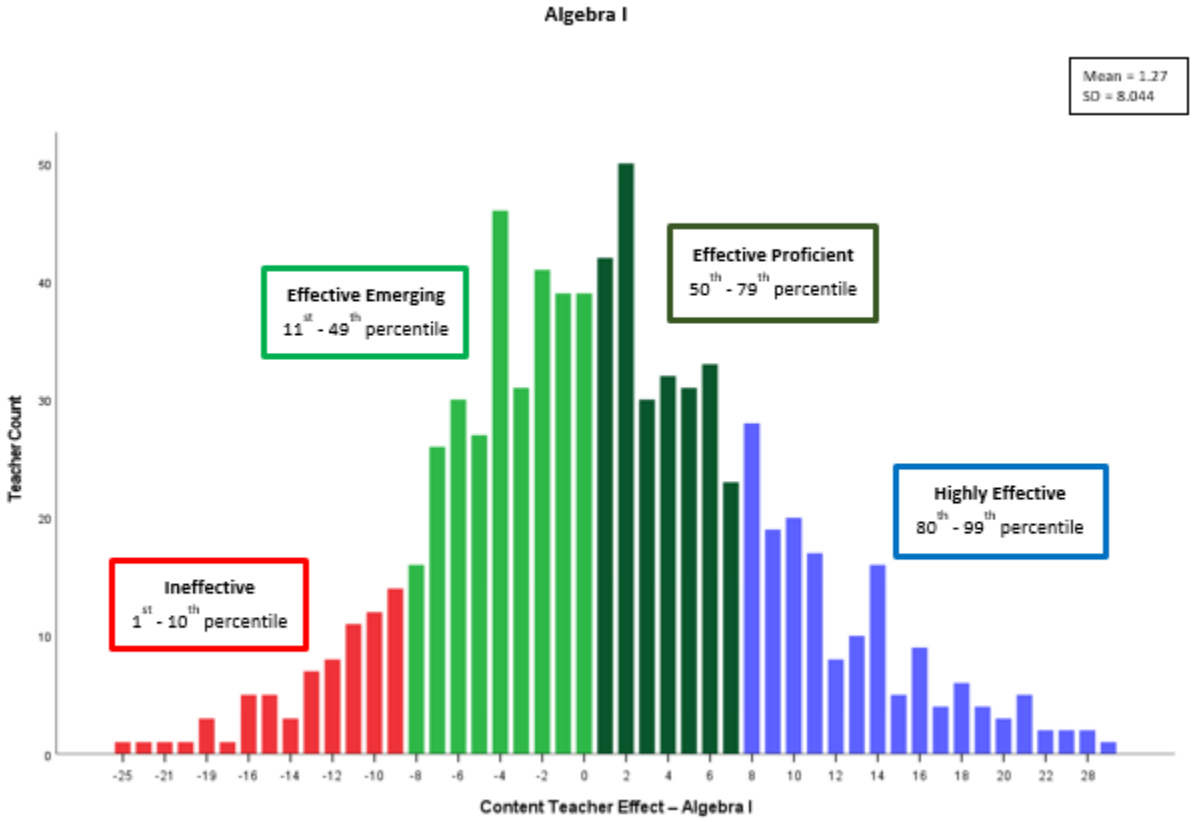


***Figure 8.*** Geometry Value-Added Distribution for 2021-2022

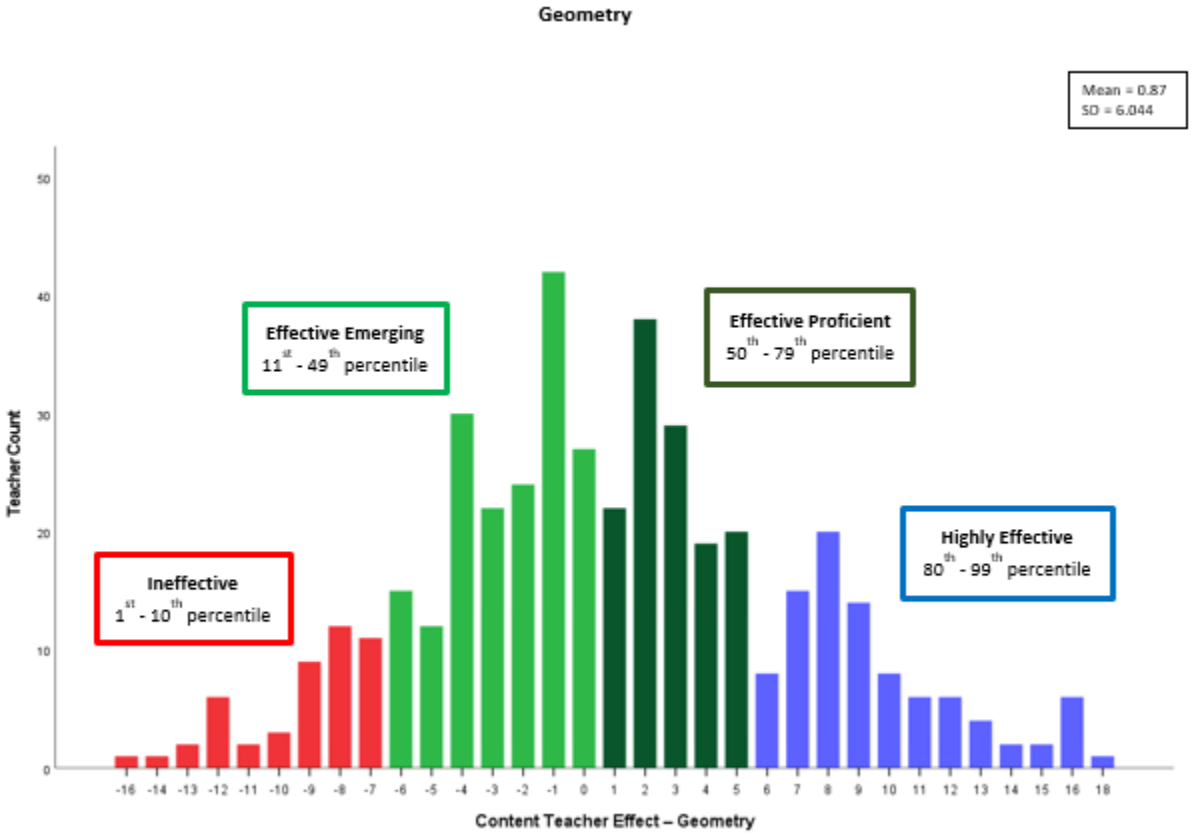


***Figure 9.*** English I Value-Added Distribution for 2021-2022

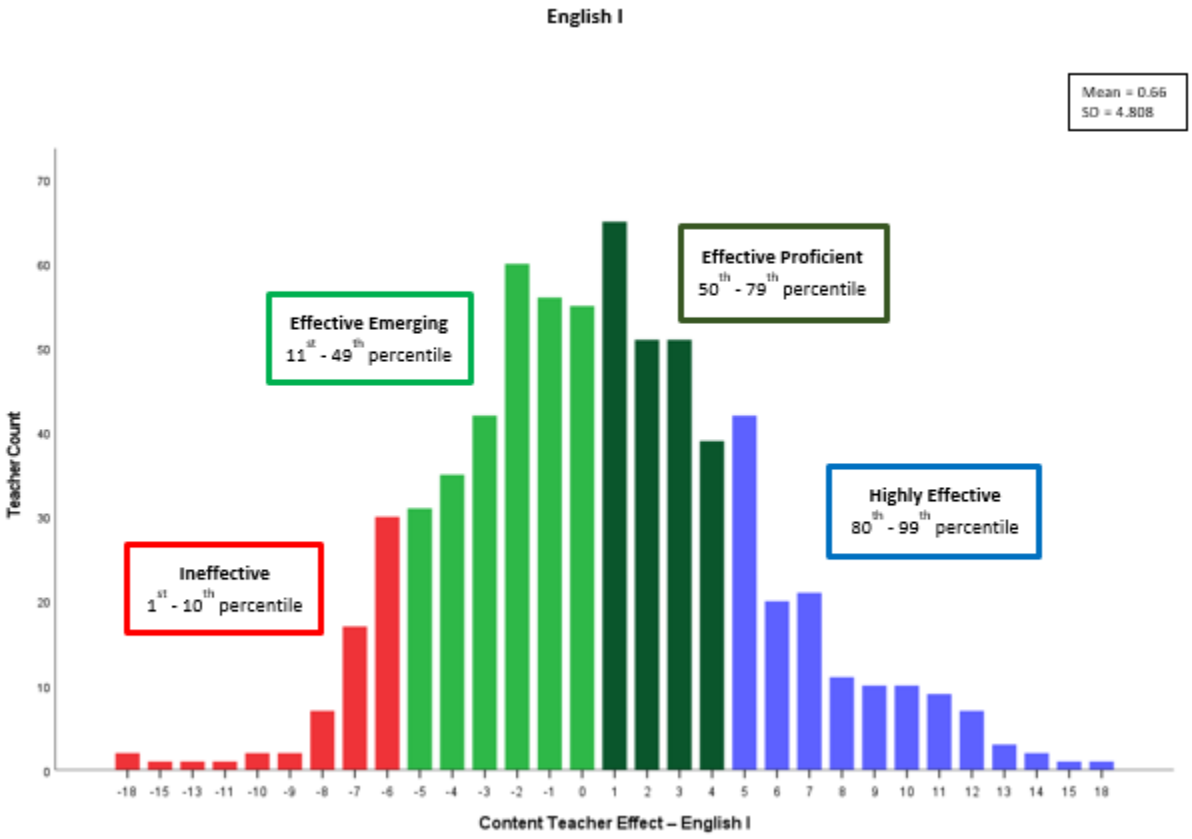
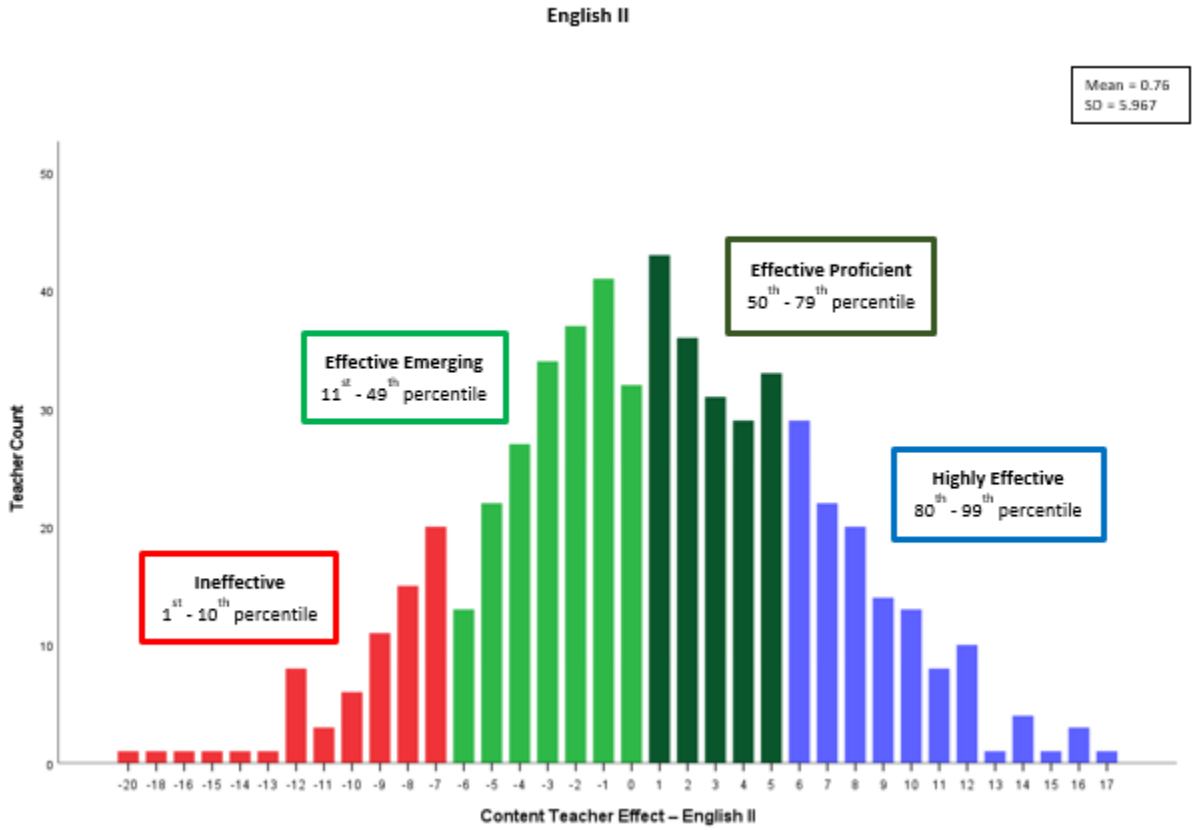


***Figure 10.*** English II Value-Added Distribution for 2021-2022



# APPENDIX

## Appendix A: 2021-2022 VAM Calendar

| |
|---|
| **October 2021** |
| SEE Quarter 1 Enrollment collection period |
| **November 2021** |
| Edlink October Enrollment snapshot |
| **December 2021** |
| Fall LEAP 2025 for high school assessment window |
| SEE Quarter 2 Enrollment collection period |
| **January 2022** |
| Edlink October CLASS snapshot |
| **February 2022** |
| Edlink February Enrollment snapshot |
| SER February MFP collection period |
| **April 2022** |
| LEAP 2025 assessment window |
| CVR View Only Period 4/11/22 – 4/29/22 |
| SEE Quarter 3 Enrollment collection period |
| **May 2022** |
| CVR Roster Verification 5/2/22 – 5/20/22 |
| Spring LEAP 2025 for high school assessment window |
| SEE Quarter 4 Enrollment collection period |
| **June 2022** |
| Assessment online clean-up of data |
| Assessment quality review |
| **July 2022** |
| Edlink Discipline End of Year snapshot |
| **August 2022** |
| LEAP 2025/LEAP 2025 for high school data is available |
| VAM analysis |
| **October 2022** |
| Release of teacher VAM results in Compass |
| **November 2022** |
| Compass teacher evaluations close |

## Appendix B: LDOE Source Data Systems and Elements Used in Value-Added Model

The ELA, Mathematics, Science, Social Studies, Algebra I, Geometry, English I, and English II content variables presented in the following data elements tables are used in the value-added model based on their availability.

**Edlink 360**

| Table | Year | Processing Period | Data Elements |
|---|---|---|---|
| FTBL_ENROLLMENTS_DERIVATION_LDOE | Current Year | 1, 3 | BegSchSessYr |
| | | | LASID |
| | | | SiteCd |
| | | | EntryDt |
| | | | ExitDt |
| | | | AggrDaysAbsCnt |
| | | | MfpCountFlg_Oct1 |
| | | | MfpCountFlg_Feb1 |
| FTBL_DISCIPLINE_DERIVATION_LDOE | Current Year | 9 | BegSchSessYr |
| | | | ProcPeriodCd |
| | | | LASID |
| | | | ActionInterventionCd |
| DTBL_COURSES | Current Year | n/a | COURSE_KEY |
| | | | COURSE_CODE |
| | | | COURSE_NAME |
| | | | COURSE_STATUS |
| | | | SYS_PARTITION_VALUE |
| | | | CUR_VAM_ELIGIBLE_FLAG |
| | | | CUR_COURSE_CATEGORY_CODE |
| | | | SYS_DUMMY_IND |
| | | | SYS_DELETE_IND |
| LRS_STUDENT_VAM | Current Year | 9 | BegSchSessYr |
| | | | ProcPeriodCd |
| | | | VersionNum |
| | | | SponsorCd |
| | | | SiteCd |
| | | | ClassCd |
| | | | CourseCd |
| | | | CourseName |
| | | | CourseCategoryCd |
| | | | CourseCategoryDesc |
| | | | TeacherSocSecNum |
| | | | TeacherLastName |
| | | | TeacherFirstName |
| | | | CVRCoreCourseFlag |
| | | | ClassBeginDate |
| | | | ClassEndDate |
| | | | COURSE_OFFERINGS_KEY |
| LRS_CLASS_VAM | | 9 | BegSchSessYr |

| Table | Year | Processing Period | Data Elements |
|---|---|---|---|
| | Current Year | | ProcPeriodCd |
| | | | VersionNum |
| | | | SponsorCd |
| | | | SiteCd |
| | | | ClassCd |
| | | | CourseCd |
| | | | StudentIdNum |
| | | | CorrectedIDNum |
| | | | STUDENT_ANNUAL_GRADE_CODE |
| | | | CVRCoreCourseFlg |
| | | | SYS_PARTITION_VALUE |
| | | | COURSE_OFFERINGS_KEY |

**Curriculum Verification Results and Reporting Portal (CVR)** https://leads13.doe.louisiana.gov/cvr/

| Table | Year | Processing Period | Data Elements |
|---|---|---|---|
| VerifiedDataDownload.txt<br><br>Extract from CVR Portal pulled by Research team | Current year | 4 | BegSchSessYr |
| | | | ProcPeriodCd |
| | | | SponsorCd |
| | | | SiteCd |
| | | | TeacherSocSecNum |
| | | | CourseCd |
| | | | CourseName |
| | | | TeacherDidNotTeachThisClassFlag |
| | | | LASID |
| | | | StudentNotInClassFlag |
| | | | ClassBeginDate |
| | | | ClassEndDate |
| TeacherVerificationStatus.txt<br><br>Extract from CVR Portal pulled by Research team | Current year | 4 | BegSchSessYr |
| | | | SchoolYear |
| | | | ProcPeriodCd |
| | | | NetworkNumber |
| | | | SponsorCd |
| | | | SponsorName |
| | | | SiteCd |
| | | | SiteName |
| | | | TeacherSocSecNum |
| | | | TeacherName |
| | | | Verified |
| | | | VerificationCompleteDate |

**LDOE Assessment for Accountability Analysis-Pre-Data Certification**

| Table | Year | Processing Period | Data Elements |
|---|---|---|---|
| File extract provided by Accountability | Current year | n/a | TestSiteCode |
| | | | LASID |
| | | | TestType |
| | | | TestMonth |
| | | | TestDateYear |
| | | | OriginalDocumentGrade |
| | | | DocumentGrade |
| | | | SISGrade |
| | | | ELFlag |
| | | | EconomicallyDisadvantaged |
| | | | Section504Flag |
| | | | MigrantFlag |
| | | | SummarizedMcKinneyVentoActHomeless |
| | | | MilitaryAffiliated |
| | | | FosterCare |
| | | | Gender |
| | | | EthnicityRace |
| | | | TestTakenFlag_ELA |
| | | | TestTakenFlag_MTH |
| | | | TestTakenFlag_SCI |
| | | | TestTakenFlag_SST |
| | | | VoidFlag_ELA |
| | | | VoidFlag_MTH |
| | | | VoidFlag_SCI |
| | | | VoidFlag_SST |
| | | | AccountabilityCode_ELA |
| | | | AccountabilityCode_MTH |
| | | | AccountabilityCode_SCI |
| | | | AccountabilityCode_SST |
| | | | ELASS |
| | | | ELALVL |
| | | | MTHSS |
| | | | MTHLVL |
| | | | SCISS |
| | | | SCILVL |
| | | | SSTSS |
| | | | SSTLVL |
| | | | Subject_ALG |
| | | | Subject_GEO |
| | | | Subject_EN1 |
| | | | Subject_EN2 |
| | | | TestTakenFlagALG |
| | | | TestTakenFlagGEO |
| | | | TestTakenFlagEN1 |
| | | | TestTakenFlagEN2 |

| Table | Year | Processing Period | Data Elements |
|---|---|---|---|
| | | | VoidFlagALG |
| | | | VoidFlagGEO |
| | | | VoidFlagEN1 |
| | | | VoidFlagEN2 |
| | | | ALGAdministrativeError |
| | | | GEOAdministrativeError |
| | | | EN1AdministrativeError |
| | | | EN2AdministrativeError |
| | | | AccountabilityCode_ALG |
| | | | AccountabilityCode_GEO |
| | | | AccountabilityCode_EN1 |
| | | | AccountabilityCode_EN2 |
| | | | PreviouslyBankedALG |
| | | | PreviouslyBankedEN2 |
| | | | EOCALGBankFlag |
| | | | EOCGEOBankFlag |
| | | | EOCEN1BankFlag |
| | | | EOCEN2BankFlag |
| | | | ALGSS |
| | | | ALGLVL |
| | | | GEOSS |
| | | | GEOLVL |
| | | | EN1SS |
| | | | EN1LVL |
| | | | EN2SS |
| | | | EN2LVL |

**LDOE Assessment for Accountability Analysis-Post Appeal**

| Table | Year | Processing Period | Data Elements |
|---|---|---|---|
| File extract provided by Accountability | 1st prior year; 2nd prior year; 3rd prior year | n/a | LASID |
| | | | TestType |
| | | | TestMonth |
| | | | TestDateYear |
| | | | OriginalDocumentGrade |
| | | | DocumentGrade |
| | | | SISGrade |
| | | | TestTakenFlag_ELA |
| | | | TestTakenFlag_MTH |
| | | | TestTakenFlag_SCI |
| | | | TestTakenFlag_SST |
| | | | VoidFlag_ELA |
| | | | VoidFlag_MTH |
| | | | VoidFlag_SCI |
| | | | VoidFlag_SST |
| | | | AccountabilityCode_ELA |
| | | | AccountabilityCode_MTH |
| | | | AccountabilityCode_SCI |
| | | | AccountabilityCode_SST |
| | | | ELASS |
| | | | ELALVL |
| | | | MTHSS |
| | | | MTHLVL |
| | | | SCISS |
| | | | SCILVL |
| | | | SSTSS |
| | | | SSTLVL |
| | | | TestTakenFlagALG |
| | | | TestTakenFlagGEO |
| | | | TestTakenFlagEN1 |
| | | | TestTakenFlagEN2 |
| | | | VoidFlagALG |
| | | | VoidFlagGEO |
| | | | VoidFlagEN1 |
| | | | VoidFlagEN2 |
| | | | AccountabilityCode_ALG |
| | | | AccountabilityCode_GEO |
| | | | AccountabilityCode_EN1 |
| | | | AccountabilityCode_EN2 |
| | | | PreviouslyBankedALG |
| | | | PreviouslyBankedEN2 |
| | | | EOCALGBankFlag |
| | | | EOCGEOBankFlag |
| | | | EOCEN1BankFlag |
| | | | EOCEN2BankFlag |
| | | | ALGSS |

| Table | Year | Processing Period | Data Elements |
|---|---|---|---|
| | | | ALGLVL |
| | | | GEOSS |
| | | | GEOLVL |
| | | | EN1SS |
| | | | EN1LVL |
| | | | EN2SS |
| | | | EN2LVL |

**Scholarships for Educational Excellence (SEE)**

| Table | Year | Processing Period | Data Elements |
|---|---|---|---|
| dbo_Enrollment<br><br>File extract provided by Data Strategy and Governance | Current year | Q1, Q2, Q3, Q4 | BegSchSessYr |
| | | | LASID |
| | | | SiteCd |
| | | | FirstQuarterFlg |
| | | | SecondQuarterFlg |
| | | | ThirdQuarterFlg |
| | | | FourthQuarterFlg |

**Special Education Reporting (SER)**

| Table | Year | Processing Period | Data Elements |
|---|---|---|---|
| SER MFP Summary<br><br>External Contractor derived report from MFP count provided by Data Strategy and Governance | Current year | February | LASID |
| | | | CountedExcept1 |
| | | | CountedExcept2 |
| | | | CountedExcept3 |
| | | | CountedExcept4 |
| | | | CountedExcept5 |

**Economically Disadvantaged status**

| Table | Year | Processing Period | Data Elements |
|---|---|---|---|
| Oct 2021 ED Student List<br>Feb 2022 ED Student List<br><br>File extract provided by Data Strategy and Governance | Current year | 1, 3 | BegSchSessYr |
| | | | ProcPeriodCd |
| | | | SponsorCdSponsorName |
| | | | SiteCd |
| | | | SiteName |
| | | | StudentIdNum |
| | | | GradePlacementCd |
| | | | FedRaceEthnicityCd |
| | | | SNAP |
| | | | DSNAP |
| | | | TANF |

| Table | Year | Processing Period | Data Elements |
|---|---|---|---|
| | | | Medicaid |
| | | | FreeLunch |
| | | | ReducedLunch |
| | | | LEP |
| | | | Homeless |
| | | | Migrant |
| | | | Foster |
| | | | Correctional |
| | | | EconomicallyDisadvantaged |

**Appendix C: Value-Added Exclusion Reasons**

In order to ensure validity and reliability of the model, as recommended by experts, records must meet certain criteria for inclusion in the value-added model. The following is a list of exclusion reasons and descriptions.

1. Teacher did not teach class: The principal or CVR data manager selected the "Teacher did not teach class" button during roster verification, which removes the teacher-student link required for analysis. This designation is selected for the following reasons: the teacher moved between October 1 and testing (full year courses), October 1 – December EOC testing (fall semester courses), January start – May EOC testing (spring semester courses), had more than 60 approved absences at the time of verification, or never taught the class.

2. Student not in class: The teacher, principal, or CVR data manager selected the "Student not in class" button during roster verification, which removes the student from the class. This designation is selected for the following reasons: the student moved from the class, was absent for 20 or more consecutive days between October 1 and testing (full year courses), October 1 – December EOC testing (fall semester courses), January start – May EOC testing (spring semester courses), or was never in the teacher's class. Students may also be removed if they had 10 or more unexcused (does not have to be consecutive) absences within any school semester in that year (Act 515).

3. Enrolled in EOC course: Middle school students enrolled in an EOC course that take both the EOC and LEAP tests. For middle school students, the grades 3-8 test (ELA) is excluded because the high school test (English I) takes precedence as the higher-level test.

4. Dual enrollment in EOC course: Students enrolled concurrently in Algebra I and Geometry are excluded from the Geometry analysis because they are taking the current and prior tests in the same testing cycle. The student is eligible for the Algebra I analysis.

5. Did not take current year test in content: Student test records are coded with Test Taken Flag = N in the appropriate content in the current school year.

6. Content test score voided in current year: Student test records are coded with any void flag in the appropriate content in current school year. This also includes student test records that are coded as "illness: student intends to return to school" (Accountability Code = 03) or "the student is absent for entire test period or does not take all of the subtests due to short-term illness" (Accountability Code = 80) in the appropriate content in current school year.

7. Student listed in multiple grades in current year test file: Students having more than one grade level listed in the test file, each with its own test record in the current school year.

8. Did not take prior year test in content: Student test records are coded with Test Taken Flag = No in the appropriate content in the prior school year.

9. Content test score voided in prior year: Student test records are coded with any void flag in the appropriate content in prior school year. This also includes student test records that are

coded as “illness: student intends to return to school” (Accountability Code = 03) or “the student is absent for entire test period or does not take all of the subtests due to short-term illness” (Accountability Code = 80) in the appropriate content in prior school year.

10. Student listed in multiple grades in prior year test file: Students having more than one grade level listed in the test file, each with its own test record in the prior year school year.

11. Unable to match current year test record: Student’s unique ID on their enrollment record does not match to the same unique ID on a current year test record.

12. Ineligible grade in content: Students in certain grade levels or students without a grade level populated on their test record are ineligible for analysis. For example, a grade 3 student may have eligible test scores in the current year, but there is no statewide grade 2 test administered.

13. Unable to match prior year test record: Student’s unique ID on their enrollment record does not match to the same unique ID on a prior year test record.

14. Duplicate student-teacher link in content: Students assigned to the same teacher more than once in the same content. For example, a student may be enrolled in separate ELA and Reading courses with the same teacher. Only one student-teacher link is included in the ELA analysis.

15. Ineligible enrollment: Students not present at the same site code on October 1, February 1, and testing.

16. Ineligible grade progression: Students with non-sequential grade progression. Grade progression must also include the availability of valid tests all content areas in the prior year. For example, a student with an 8th grade test in the current year and 6th grade tests in the first prior year is excluded.

17. Insufficient number of cases for calculation: Students are ineligible when there are an insufficient number of cases for a Path to complete value-added calculations. For example, students are excluded if there fewer than 1,000 records for Path R (repeating a grade). Students are also excluded if they are the only student in their grade/path in the content.

18. Teacher with fewer than 10 eligible students: Teachers with fewer than 10 eligible student records have all student records ineligible for analysis. For example, a teacher has 12 Math students verified in the CVR. Two students were excluded due to ineligible enrollment and two students were excluded due to not taking the prior year test. The eight remaining student records are excluded because the teacher is left with fewer than 10 eligible student records.

## Appendix D: 2021-2022 Course Codes Eligible for Value-Added Model

| Course Code | Course Name | Content | Grade |
|---|---|---|---|
| 120300 | LANGUAGE ARTS; ELEMENTARY GRADES | ELA | 4-8 |
| 120306 | ENGLISH; 6TH GRADE DEPT. | ELA | 4-8 |
| 120310 | READING; ELEMENTARY GRADES | ELA | 4-8 |
| 120311 | READING; 6TH, 7TH, AND 8TH GRADES DEPT. | ELA | 4-8 |
| 120315 | ENGLISH AS A SECOND LANGUAGE; ELEMENTARY | ELA | 4-8 |
| 120331 | ENGLISH I | English I | All grades |
| 120332 | ENGLISH II | English II | All grades |
| 120378 | ENGLISH; 7TH AND 8TH GRADES DEPT. | ELA | 4-8 |
| 120411 | NOCCA INTEGRATED ENGLISH I | English I | All grades |
| 120412 | NOCCA INTEGRATED ENGLISH II | English II | All grades |
| 120519 | LASMSA COMPOSITION AND LITERATURE (EN 210) | English II | All grades |
| 120521 | LASMSA INTRODUCTION TO WRITING AND LITERATURE (EN 110) | English I | All grades |
| 120617 | English Language (Part 1): Cambridge IGCSE | English I | All grades |
| 120618 | English Language (Part 2): Cambridge IGCSE | English II | All grades |
| 120619 | English Literature (Part 1): Cambridge IGCSE | English I | All grades |
| 120620 | English Literature (Part 2): Cambridge IGCSE | English II | All grades |
| 120996 | PK-5 French Immersion Social Studies | Social Studies | 4-8 |
| 120997 | PK-5 French Immersion Math | Math | 4-8 |
| 120998 | PK-5 French Immersion Science | Science | 4-8 |
| 121020 | 6th grade French Immersion Social Studies | Social Studies | 4-8 |
| 121021 | 7th grade French Immersion Social Studies | Social Studies | 4-8 |
| 121022 | 8th grade French Immersion Social Studies | Social Studies | 4-8 |
| 121023 | 6th grade French Immersion Math | Math | 4-8 |
| 121024 | 7th grade French Immersion Math | Math | 4-8 |
| 121025 | 8th grade French Immersion Math | Math | 4-8 |
| 121026 | 6th grade French Immersion Science | Science | 4-8 |
| 121027 | 7th grade French Immersion Science | Science | 4-8 |
| 121028 | 8th grade French Immersion Science | Science | 4-8 |
| 122493 | PK-5 Spanish Immersion Math | Math | 4-8 |
| 122494 | PK-5 Spanish Immersion Science | Science | 4-8 |
| 122495 | PK-5 Spanish Immersion Social Studies | Social Studies | 4-8 |
| 122520 | 6th grade Spanish Immersion Social Studies | Social Studies | 4-8 |
| 122521 | 7th grade Spanish Immersion Social Studies | Social Studies | 4-8 |
| 122522 | 8th grade Spanish Immersion Social Studies | Social Studies | 4-8 |
| 122523 | 6th grade Spanish Immersion Math | Math | 4-8 |
| 122524 | 7th grade Spanish Immersion Math | Math | 4-8 |
| 122525 | 8th grade Spanish Immersion Math | Math | 4-8 |
| 122526 | 6th grade Spanish Immersion Science | Science | 4-8 |
| 122527 | 7th grade Spanish Immersion Science | Science | 4-8 |

| Course Code | Course Name | Content | Grade |
|---|---|---|---|
| 122528 | 8th grade Spanish Immersion Science | Science | 4-8 |
| 123112 | 6th grade Mandarin Immersion Social Studies | Social Studies | 4-8 |
| 123113 | 7th grade Mandarin Immersion Social Studies | Social Studies | 4-8 |
| 123114 | 8th grade Mandarin Immersion Social Studies | Social Studies | 4-8 |
| 123115 | 6th grade Mandarin Immersion Math | Math | 4-8 |
| 123116 | 7th grade Mandarin Immersion Math | Math | 4-8 |
| 123117 | 8th grade Mandarin Immersion Math | Math | 4-8 |
| 123118 | 6th grade Mandarin Immersion Science | Science | 4-8 |
| 123119 | 7th grade Mandarin Immersion Science | Science | 4-8 |
| 123120 | 8th grade Mandarin Immersion Science | Science | 4-8 |
| 123125 | PK-5 Mandarin Immersion Science | Science | 4-8 |
| 123126 | PK-5 Mandarin Immersion Social Studies | Social Studies | 4-8 |
| 123127 | PK-5 Mandarin Immersion Math | Math | 4-8 |
| 150800 | SCIENCE; ELEMENTARY GRADES | Science | 4-8 |
| 150806 | SCIENCE; 6TH GRADE DEPT. | Science | 4-8 |
| 150807 | LIFE SCIENCE; 7TH GRADE DEPT. | Science | 4-8 |
| 150808 | LIFE SCIENCE; 8TH GRADE DEPT. | Science | 4-8 |
| 150878 | SCIENCE; 7TH AND 8TH GRADES DEPT. | Science | 4-8 |
| 150879 | INTEGRATED SCIENCE (GRADES 6-8) | Science | 4-8 |
| 150907 | EARTH SCIENCE; 7TH GRADE DEPT. | Science | 4-8 |
| 150908 | EARTH SCIENCE; 8TH GRADE DEPT. | Science | 4-8 |
| 160300 | MATHEMATICS; ELEMENTARY GRADES | Math | 4-8 |
| 160306 | MATHEMATICS; 6TH GRADE DEPT. | Math | 4-8 |
| 160321 | ALGEBRA I | Algebra I | All grades |
| 160323 | GEOMETRY | Geometry | All grades |
| 160331 | APPLIED ALGEBRA I | Algebra I | All grades |
| 160332 | APPLIED GEOMETRY | Geometry | All grades |
| 160338 | ALGEBRA I - PART II | Algebra I | All grades |
| 160340 | INTEGRATED MATHEMATICS II | Algebra I | All grades |
| 160341 | INTEGRATED MATHEMATICS III | Geometry | All grades |
| 160342 | APPLIED MATHEMATICS I | Math | 4-8 |
| 160361 | NOCCA INTEGRATED MATHEMATICS I | Algebra I | All grades |
| 160362 | NOCCA INTEGRATED MATHEMATICS II | Geometry | All grades |
| 160377 | GRADE 7 MATH-ADVANCED COURSE | Math | 4-8 |
| 160378 | MATHEMATICS; 7TH AND 8TH GRADES DEPT. | Math | 4-8 |
| 160380 | ALGEBRA I; 6TH, 7TH, 8TH DEPT. | Algebra I | All grades |
| 220000 | SOCIAL STUDIES; ELEMENTARY GRADES | Social Studies | 4-8 |
| 220006 | SOCIAL STUDIES; 6TH GRADE DEPT. | Social Studies | 4-8 |
| 220078 | SOCIAL STUDIES 7TH AND 8TH GRADES DEPT. | Social Studies | 4-8 |
| 700011 | FLOATING TEACHER (ELEM.) | ELA, Math, Science, Social Studies | 4-8 |
| 900000 | TITLE I (MATHEMATICS PULL-OUT CLASS) | Math | 4-8 |

| Course Code | Course Name | Content | Grade |
|---|---|---|---|
| 900010 | TITLE I (READING/LANGUAGE ARTS PULL-OUT CLASS) | ELA | 4-8 |
| 900016 | HOSPITAL/HOMEBOUND REG ED | ELA, Math, Science, Social Studies | 4-8 |
| 700011 | FLOATING TEACHER (ELEM.) | ELA, Math, Science, Social Studies | 4-8 |

## Appendix E: 2021-2022 Value-Added Analysis Equations

Retention Path R:

Typical Score = Intercept +
(Emotional Disturbance * Emotional Disturbance coefficient) +
(Specific Learning Disability * Specific Learning Disability coefficient) +
(Mild Intellectual Disability * Mild Intellectual Disability coefficient) +
(Other Health Impairment * Other Health Impairment coefficient) +
(Speech or Language Impairment * Speech or Language Impairment coefficient) +
(Autism * Autism coefficient) +
(Disability Other * Disability Other coefficient) +
(SNAP * SNAP coefficient) +
(TANF * TANF coefficient) +
(Medicaid * Medicaid coefficient) +
(Free Lunch * Free Lunch coefficient) +
(Reduced-price Lunch * Reduced-price Lunch coefficient) +
(Economically Disadvantaged – Other * Economically Disadvantaged – Other coefficient) +
(English Language Learner * English Language Learner coefficient) +
(Gifted * Gifted coefficient) +
(Section 504 Status * Section 504 Status coefficient) +
(Student Absences * Student Absences coefficient) +
(Suspension Count * Suspension Count coefficient) +
(Expulsion Count * Expulsion Count coefficient) +
(Mobility * Mobility coefficient) +
(1st prior ELA * 1st prior ELA coefficient) +
(1st prior MTH * 1st prior MTH coefficient) +
(1st prior SCI * 1st prior SCI coefficient) +
(1st prior SST * 1st prior SST coefficient) +
(1st prior ELA square * 1st prior ELA square coefficient) +
(1st prior MTH square * 1st prior MTH square coefficient) +
(1st prior SCI square * 1st prior SCI square coefficient) +
(1st prior SST square * 1st prior SST square coefficient) +
(1st prior ELA cube * 1st prior ELA cube coefficient) +
(1st prior MTH cube * 1st prior MTH cube coefficient) +
(1st prior SCI cube * 1st prior SCI cube coefficient) +
(1st prior SST cube * 1st prior SST cube coefficient).

Promotional Path 1:

Typical Score = Intercept +
(Emotional Disturbance * Emotional Disturbance coefficient) +
(Specific Learning Disability * Specific Learning Disability coefficient) +
(Mild Intellectual Disability * Mild Intellectual Disability coefficient) +
(Other Health Impairment * Other Health Impairment coefficient) +
(Speech or Language Impairment * Speech or Language Impairment coefficient) +
(Autism * Autism coefficient) +
(Disability Other * Disability Other coefficient) +
(SNAP * SNAP coefficient) +
(TANF * TANF coefficient) +
(Medicaid * Medicaid coefficient) +
(Free Lunch * Free Lunch coefficient) +
(Reduced-price Lunch * Reduced-price Lunch coefficient) +
(Economically Disadvantaged – Other * Economically Disadvantaged – Other coefficient) +
(English Language Learner * English Language Learner coefficient) +
(Gifted * Gifted coefficient) +
(Section 504 Status * Section 504 Status coefficient) +
(Student Absences * Student Absences coefficient) +
(Suspension Count * Suspension Count coefficient) +
(Expulsion Count * Expulsion Count coefficient) +
(Mobility * Mobility coefficient) +
(1st prior ELA * 1st prior ELA coefficient) +
(1st prior MTH * 1st prior MTH coefficient) +
(1st prior SCI * 1st prior SCI coefficient) +
(1st prior SST * 1st prior SST coefficient) +
(1st prior ELA square * 1st prior ELA square coefficient) +
(1st prior MTH square * 1st prior MTH square coefficient) +
(1st prior SCI square * 1st prior SCI square coefficient) +
(1st prior SST square * 1st prior SST square coefficient) +
(1st prior ELA cube * 1st prior ELA cube coefficient) +
(1st prior MTH cube * 1st prior MTH cube coefficient) +
(1st prior SCI cube * 1st prior SCI cube coefficient) +
(1st prior SST cube * 1st prior SST cube coefficient).

Promotional Path 2:

Typical Score = Intercept +
(Emotional Disturbance * Emotional Disturbance coefficient) +
(Specific Learning Disability * Specific Learning Disability coefficient) +
(Mild Intellectual Disability * Mild Intellectual Disability coefficient) +
(Other Health Impairment * Other Health Impairment coefficient) +
(Speech or Language Impairment * Speech or Language Impairment coefficient) +
(Autism * Autism coefficient) +
(Disability Other * Disability Other coefficient) +
(SNAP * SNAP coefficient) +
(TANF * TANF coefficient) +
(Medicaid * Medicaid coefficient) +
(Free Lunch * Free Lunch coefficient) +
(Reduced-price Lunch * Reduced-price Lunch coefficient) +
(Economically Disadvantaged – Other * Economically Disadvantaged – Other coefficient) +
(English Language Learner * English Language Learner coefficient) +
(Gifted * Gifted coefficient) +
(Section 504 Status * Section 504 Status coefficient) +
(Student Absences * Student Absences coefficient) +
(Suspension Count * Suspension Count coefficient) +
(Expulsion Count * Expulsion Count coefficient) +
(Mobility * Mobility coefficient) +
(1st prior ELA * 1st prior ELA coefficient) +
(1st prior MTH * 1st prior MTH coefficient) +
(1st prior SCI * 1st prior SCI coefficient) +
(1st prior SST * 1st prior SST coefficient) +
(3rd prior ELA * 3rd prior ELA coefficient) +
(3rd prior MTH * 3rd prior MTH coefficient) +
(3rd prior SCI * 3rd prior SCI coefficient) +
(3rd prior SST * 3rd prior SST coefficient) +
(1st prior ELA square * 1st prior ELA square coefficient) +
(1st prior MTH square * 1st prior MTH square coefficient) +
(1st prior SCI square * 1st prior SCI square coefficient) +
(1st prior SST square * 1st prior SST square coefficient) +
(1st prior ELA cube * 1st prior ELA cube coefficient) +
(1st prior MTH cube * 1st prior MTH cube coefficient) +
(1st prior SCI cube * 1st prior SCI cube coefficient) +
(1st prior SST cube * 1st prior SST cube coefficient) +
(3rd prior ELA square * 3rd prior ELA square coefficient) +
(3rd prior MTH square * 3rd prior MTH square coefficient) +
(3rd prior SCI square * 3rd prior SCI square coefficient) +
(3rd prior SST square * 3rd prior SST square coefficient) +
(3rd prior ELA cube * 3rd prior ELA cube coefficient) +
(3rd prior MTH cube * 3rd prior MTH cube coefficient) +
(3rd prior SCI cube * 3rd prior SCI cube coefficient) +
(3rd prior SST cube * 3rd prior SST cube coefficient).

Promotional Path 3:

Typical Score = Intercept +
(Emotional Disturbance * Emotional Disturbance coefficient) +
(Specific Learning Disability * Specific Learning Disability coefficient) +
(Mild Intellectual Disability * Mild Intellectual Disability coefficient) +
(Other Health Impairment * Other Health Impairment coefficient) +
(Speech or Language Impairment * Speech or Language Impairment coefficient) +
(Autism * Autism coefficient) +
(Disability Other * Disability Other coefficient) +
(SNAP * SNAP coefficient) +
(TANF * TANF coefficient) +
(Medicaid * Medicaid coefficient) +
(Free Lunch * Free Lunch coefficient) +
(Reduced-price Lunch * Reduced-price Lunch coefficient) +
(Economically Disadvantaged – Other * Economically Disadvantaged – Other coefficient) +
(English Language Learner * English Language Learner coefficient) +
(Gifted * Gifted coefficient) +
(Section 504 Status * Section 504 Status coefficient) +
(Student Absences * Student Absences coefficient) +
(Suspension Count * Suspension Count coefficient) +
(Expulsion Count * Expulsion Count coefficient) +
(Mobility * Mobility coefficient) +
(1st prior ELA * 1st prior ELA coefficient) +
(1st prior MTH * 1st prior MTH coefficient) +
(1st prior SCI * 1st prior SCI coefficient) +
(1st prior SST * 1st prior SST coefficient) +
(3rd prior ELA * 3rd prior ELA coefficient) +
(3rd prior MTH * 3rd prior MTH coefficient) +
(3rd prior SCI * 3rd prior SCI coefficient) +
(3rd prior SST * 3rd prior SST coefficient) +
(4th prior ELA * 4th prior ELA coefficient) +
(4th prior MTH * 4th prior MTH coefficient) +
(4th prior SCI * 4th prior SCI coefficient) +
(4th prior SST * 4th prior SST coefficient) +
(1st prior ELA square * 1st prior ELA square coefficient) +
(1st prior MTH square * 1st prior MTH square coefficient) +
(1st prior SCI square * 1st prior SCI square coefficient) +
(1st prior SST square * 1st prior SST square coefficient) +
(1st prior ELA cube * 1st prior ELA cube coefficient) +
(1st prior MTH cube * 1st prior MTH cube coefficient) +
(1st prior SCI cube * 1st prior SCI cube coefficient) +
(1st prior SST cube * 1st prior SST cube coefficient) +
(3rd prior ELA square * 3rd prior ELA square coefficient) +
(3rd prior MTH square * 3rd prior MTH square coefficient) +
(3rd prior SCI square * 3rd prior SCI square coefficient) +
(3rd prior SST square * 3rd prior SST square coefficient) +
(3rd prior ELA cube * 3rd prior ELA cube coefficient) +
(3rd prior MTH cube * 3rd prior MTH cube coefficient) +
(3rd prior SCI cube * 3rd prior SCI cube coefficient) +
(3rd prior SST cube * 3rd prior SST cube coefficient) +

(4th prior ELA square * 4th prior ELA square coefficient) +
(4th prior MTH square * 4th prior MTH square coefficient) +
(4th prior SCI square * 4th prior SCI square coefficient) +
(4th prior SST square * 4th prior SST square coefficient) +
(4th prior ELA cube * 4th prior ELA cube coefficient) +
(4th prior MTH cube * 4th prior MTH cube coefficient) +
(4th prior SCI cube * 4th prior SCI cube coefficient) +
(4th prior SST cube * 4th prior SST cube coefficient).

Key:

| **Abbreviation** | **Variable** |
|---|---|
| ELA | Prior English Language Arts Test Restandardized Scaled Score |
| MTH | Prior Mathematics Test Restandardized Scaled Score |
| SCI | Prior Science Test Restandardized Scaled Score |
| SST | Prior Social Studies Test Restandardized Scaled Score |
| (content area) square or (content area) cube | Squares and Cubes of all prior predictors |

## Appendix F: 2021-2022 Value-Added Analysis Coefficients

| 2021-2022 ELA All Paths Coefficients | | | | |
|---|---|---|---|---|
| **Predictor** | **Path R** | **Path 1** | **Path 2** | **Path 3** |
| Intercept | -14.30 | -1.09 | -0.50 | 1.03 |
| Emotional Disturbance | -4.17 | -6.58 | -5.06 | -6.67 |
| Specific Learning Disability | -12.21 | -8.40 | -4.67 | -7.30 |
| Mild Intellectual Disability | -13.75 | -14.03 | -8.92 | -10.82 |
| Other Health Impairment | -6.24 | -7.80 | -5.62 | -6.74 |
| Speech or Language Impairment | 2.86 | -1.79 | -2.34 | -0.66 |
| Autism | -8.20 | -2.71 | -6.07 | -1.45 |
| Special Education - Other | 2.56 | -6.53 | 0.70 | -5.00 |
| SNAP | -0.49 | -0.37 | -0.04 | -0.05 |
| TANF | 0.45 | -1.10 | -0.57 | 0.31 |
| Medicaid | 1.51 | -0.38 | -0.67 | -0.07 |
| Free lunch | 0.94 | -0.73 | -0.30 | 0.15 |
| Reduced-price lunch | 2.77 | 0.05 | 0.63 | -0.12 |
| Economically Disadvantaged - Other | 3.90 | -0.16 | 0.53 | 0.41 |
| English Language Learner | -13.05 | -7.86 | -4.26 | -1.63 |
| Gifted | -0.14 | 3.98 | 1.29 | -0.23 |
| Section 504 | -5.16 | -4.87 | -3.77 | -4.44 |
| Student Absences | -0.10 | -0.12 | -0.13 | -0.12 |
| Suspensions | -0.16 | -0.24 | -0.22 | -0.27 |
| Expulsions | -0.09 | -0.07 | -0.04 | -0.08 |
| Mobility | -0.21 | -0.57 | -0.33 | -0.66 |
| 1st prior ELA | 20.84 | 15.35 | 12.47 | 16.37 |
| 1st prior MTH | 1.38 | 3.32 | 1.06 | 2.31 |
| 1st prior SCI | 6.28 | 5.62 | 3.54 | 2.22 |
| 1st prior SST | 6.23 | 5.40 | 4.88 | 5.89 |
| 3rd prior ELA | NA | NA | 5.24 | 4.85 |
| 3rd prior MTH | NA | NA | -0.21 | 0.18 |
| 3rd prior SCI | NA | NA | 1.26 | -1.00 |
| 3rd prior SST | NA | NA | 1.52 | 0.50 |
| 4th prior ELA | NA | NA | NA | 4.07 |
| 4th prior MTH | NA | NA | NA | -0.60 |
| 4th prior SCI | NA | NA | NA | NA |
| 4th prior SST | NA | NA | NA | -0.37 |
| 1st prior ELA square | -0.24 | 0.12 | 0.78 | 0.55 |
| 1st prior MTH square | -1.72 | -0.05 | -0.03 | 0.12 |
| 1st prior SCI square | 0.44 | 0.26 | -0.50 | -0.19 |
| 1st prior SST square | 1.14 | 0.78 | 0.66 | 0.48 |
| 1st prior ELA cube | -0.99 | -0.62 | -0.42 | -0.54 |
| 1st prior MTH cube | -0.58 | 0.08 | 0.15 | 0.03 |
| 1st prior SCI cube | -0.37 | -0.22 | 0.00 | 0.05 |

| 2021-2022 ELA All Paths Coefficients | | | | |
|---|---|---|---|---|
| **Predictor** | **Path R** | **Path 1** | **Path 2** | **Path 3** |
| 1st prior SST cube | -0.08 | -0.16 | -0.15 | -0.18 |
| 3rd prior ELA square | NA | NA | 0.20 | 0.16 |
| 3rd prior MTH square | NA | NA | -0.23 | -0.29 |
| 3rd prior SCI square | NA | NA | -0.08 | -0.47 |
| 3rd prior SST square | NA | NA | 0.03 | -0.03 |
| 3rd prior ELA cube | NA | NA | -0.12 | -0.07 |
| 3rd prior MTH cube | NA | NA | 0.18 | 0.12 |
| 3rd prior SCI cube | NA | NA | -0.06 | 0.16 |
| 3rd prior SST cube | NA | NA | -0.04 | 0.02 |
| 4th prior ELA square | NA | NA | NA | 0.29 |
| 4th prior MTH square | NA | NA | NA | -0.22 |
| 4th prior SCI square | NA | NA | NA | NA |
| 4th prior SST square | NA | NA | NA | -0.35 |
| 4th prior ELA cube | NA | NA | NA | -0.11 |
| 4th prior MTH cube | NA | NA | NA | 0.06 |
| 4th prior SCI cube | NA | NA | NA | NA |
| 4th prior SST cube | NA | NA | NA | 0.11 |

| 2021-2022 Math All Paths Coefficients | | | | |
|---|---|---|---|---|
| **Predictor** | **Path R** | **Path 1** | **Path 2** | **Path 3** |
| Intercept | -13.01 | -0.46 | 0.16 | 0.96 |
| Emotional Disturbance | 1.93 | -2.31 | -3.79 | -2.50 |
| Specific Learning Disability | -3.25 | -3.09 | -1.24 | -2.84 |
| Mild Intellectual Disability | -1.35 | -4.33 | -3.00 | -3.90 |
| Other Health Impairment | -1.57 | -3.00 | -2.03 | -2.88 |
| Speech or Language Impairment | 2.76 | 0.56 | 0.36 | 0.11 |
| Autism | -2.03 | -0.34 | -2.08 | -0.23 |
| Special Education - Other | 1.09 | -2.53 | 1.28 | -1.95 |
| SNAP | 1.47 | -0.69 | -0.19 | -0.06 |
| TANF | -0.59 | -1.61 | -2.81 | -0.71 |
| Medicaid | -1.63 | -0.75 | -0.94 | -0.45 |
| Free lunch | 0.64 | -0.52 | 0.05 | 0.13 |
| Reduced-price lunch | 0.27 | 0.47 | -0.04 | 0.28 |
| Economically Disadvantaged - Other | -0.57 | 0.08 | 0.21 | 0.32 |
| English Language Learner | -3.07 | -1.80 | 1.17 | 0.92 |
| Gifted | 10.43 | 5.66 | 4.40 | 0.99 |
| Section 504 | -3.06 | -3.13 | -1.29 | -1.94 |
| Student Absences | -0.14 | -0.21 | -0.16 | -0.14 |
| Suspensions | -0.10 | -0.26 | -0.25 | -0.23 |
| Expulsions | -0.03 | -0.04 | -0.10 | -0.09 |
| Mobility | 0.00 | -1.23 | -0.53 | -1.13 |
| 1st prior ELA | 3.79 | 1.92 | 2.44 | 2.43 |
| 1st prior MTH | 21.66 | 21.24 | 13.05 | 14.00 |
| 1st prior SCI | 4.75 | 3.43 | 4.34 | 3.81 |
| 1st prior SST | 2.39 | 1.16 | 1.14 | 2.05 |
| 3rd prior ELA | NA | NA | -0.19 | -0.81 |
| 3rd prior MTH | NA | NA | 8.25 | 5.92 |
| 3rd prior SCI | NA | NA | 0.42 | 1.53 |
| 3rd prior SST | NA | NA | -0.62 | -0.79 |
| 4th prior ELA | NA | NA | NA | -1.52 |
| 4th prior MTH | NA | NA | NA | 3.43 |
| 4th prior SCI | NA | NA | NA | NA |
| 4th prior SST | NA | NA | NA | -0.61 |
| 1st prior ELA square | -1.83 | -0.14 | -0.10 | -0.66 |
| 1st prior MTH square | 0.69 | 1.75 | 1.30 | 1.59 |
| 1st prior SCI square | -0.02 | 0.62 | -0.06 | 0.72 |
| 1st prior SST square | -0.72 | 0.43 | 0.09 | 0.01 |
| 1st prior ELA cube | -0.77 | 0.03 | 0.04 | 0.04 |
| 1st prior MTH cube | -1.40 | -1.10 | -0.57 | -0.50 |
| 1st prior SCI cube | -0.31 | 0.01 | -0.14 | -0.03 |
| 1st prior SST cube | -0.42 | -0.01 | 0.09 | -0.08 |
| 3rd prior ELA square | NA | NA | 0.11 | 0.02 |

| 2021-2022 Math All Paths Coefficients | | | | |
|---|---|---|---|---|
| **Predictor** | **Path R** | **Path 1** | **Path 2** | **Path 3** |
| 3rd prior MTH square | NA | NA | 0.14 | 0.59 |
| 3rd prior SCI square | NA | NA | 0.12 | -0.22 |
| 3rd prior SST square | NA | NA | 0.02 | -0.05 |
| 3rd prior ELA cube | NA | NA | 0.02 | 0.05 |
| 3rd prior MTH cube | NA | NA | -0.32 | -0.25 |
| 3rd prior SCI cube | NA | NA | 0.06 | -0.08 |
| 3rd prior SST cube | NA | NA | 0.06 | 0.08 |
| 4th prior ELA square | NA | NA | NA | -0.12 |
| 4th prior MTH square | NA | NA | NA | 0.34 |
| 4th prior SCI square | NA | NA | NA | NA |
| 4th prior SST square | NA | NA | NA | -0.18 |
| 4th prior ELA cube | NA | NA | NA | 0.14 |
| 4th prior MTH cube | NA | NA | NA | -0.04 |
| 4th prior SCI cube | NA | NA | NA | NA |
| 4th prior SST cube | NA | NA | NA | 0.11 |

| 2021-2022 Science All Paths Coefficients | | | | |
|---|---|---|---|---|
| **Predictor** | **Path R** | **Path 1** | **Path 2** | **Path 3** |
| Intercept | -12.01 | -0.46 | 0.18 | 1.00 |
| Emotional Disturbance | 14.59 | -2.14 | -0.52 | -1.32 |
| Specific Learning Disability | -7.97 | -7.26 | -1.87 | -1.91 |
| Mild Intellectual Disability | 1.90 | -10.98 | -6.27 | -4.28 |
| Other Health Impairment | -4.95 | -4.72 | -1.99 | -0.95 |
| Speech or Language Impairment | 7.18 | 1.80 | 1.18 | 0.76 |
| Autism | 8.87 | -0.72 | 1.34 | 4.78 |
| Special Education - Other | -7.58 | -5.50 | -1.15 | -3.86 |
| SNAP | -0.18 | -0.87 | -0.29 | -0.65 |
| TANF | 2.24 | -0.37 | -0.91 | -0.21 |
| Medicaid | -1.37 | -0.66 | -0.60 | -0.12 |
| Free lunch | 1.51 | -0.46 | -0.28 | -0.15 |
| Reduced-price lunch | 2.70 | 0.73 | 0.14 | 0.37 |
| Economically Disadvantaged - Other | -1.50 | -0.36 | 0.26 | 0.08 |
| English Language Learner | -4.59 | -2.73 | -0.60 | 0.21 |
| Gifted | 10.51 | 5.15 | 2.97 | 1.59 |
| Section 504 | -3.14 | -2.33 | -0.60 | -0.43 |
| Student Absences | -0.13 | -0.10 | -0.08 | -0.07 |
| Suspensions | -0.14 | -0.27 | -0.21 | -0.21 |
| Expulsions | -0.10 | -0.04 | -0.05 | -0.06 |
| Mobility | -0.97 | -0.42 | -0.87 | -0.56 |
| 1st prior ELA | 9.22 | 8.06 | 5.59 | 3.29 |
| 1st prior MTH | 5.77 | 6.05 | 3.66 | 4.97 |
| 1st prior SCI | 13.06 | 9.63 | 9.71 | 8.20 |
| 1st prior SST | 7.92 | 5.81 | 5.07 | 5.67 |
| 3rd prior ELA | NA | NA | 2.32 | 0.92 |
| 3rd prior MTH | NA | NA | 1.08 | 0.01 |
| 3rd prior SCI | NA | NA | 4.24 | 4.59 |
| 3rd prior SST | NA | NA | 0.60 | 1.02 |
| 4th prior ELA | NA | NA | NA | 0.79 |
| 4th prior MTH | NA | NA | NA | -0.21 |
| 4th prior SCI | NA | NA | NA | NA |
| 4th prior SST | NA | NA | NA | 0.92 |
| 1st prior ELA square | -1.37 | -0.33 | -0.33 | -0.63 |
| 1st prior MTH square | -0.19 | 0.42 | 0.49 | 0.35 |
| 1st prior SCI square | 1.31 | 1.21 | 1.02 | 1.04 |
| 1st prior SST square | 2.32 | 0.89 | 1.06 | 0.75 |
| 1st prior ELA cube | -0.92 | -0.34 | -0.24 | 0.04 |
| 1st prior MTH cube | -0.52 | -0.20 | -0.06 | -0.14 |
| 1st prior SCI cube | -0.57 | -0.40 | -0.41 | -0.32 |
| 1st prior SST cube | 0.21 | -0.27 | -0.17 | -0.19 |
| 3rd prior ELA square | NA | NA | -0.11 | -0.27 |

| 2021-2022 Science All Paths Coefficients | | | | |
|---|---|---|---|---|
| **Predictor** | **Path R** | **Path 1** | **Path 2** | **Path 3** |
| 3rd prior MTH square | NA | NA | -0.10 | -0.04 |
| 3rd prior SCI square | NA | NA | 0.72 | 0.46 |
| 3rd prior SST square | NA | NA | -0.05 | 0.58 |
| 3rd prior ELA cube | NA | NA | -0.19 | 0.00 |
| 3rd prior MTH cube | NA | NA | 0.09 | -0.03 |
| 3rd prior SCI cube | NA | NA | -0.13 | -0.11 |
| 3rd prior SST cube | NA | NA | 0.01 | 0.10 |
| 4th prior ELA square | NA | NA | NA | -0.34 |
| 4th prior MTH square | NA | NA | NA | -0.05 |
| 4th prior SCI square | NA | NA | NA | NA |
| 4th prior SST square | NA | NA | NA | 0.38 |
| 4th prior ELA cube | NA | NA | NA | 0.00 |
| 4th prior MTH cube | NA | NA | NA | 0.05 |
| 4th prior SCI cube | NA | NA | NA | NA |
| 4th prior SST cube | NA | NA | NA | 0.06 |

| 2021-2022 Social Studies All Paths Coefficients | | | | |
|---|---|---|---|---|
| **Predictor** | **Path R** | **Path 1** | **Path 2** | **Path 3** |
| Intercept | -16.73 | -0.55 | 0.08 | 1.67 |
| Emotional Disturbance | -1.28 | -3.52 | -4.64 | -2.19 |
| Specific Learning Disability | -5.53 | -5.99 | -4.44 | -2.41 |
| Mild Intellectual Disability | -1.25 | -6.56 | -7.62 | -1.01 |
| Other Health Impairment | -5.90 | -5.23 | -4.31 | -2.64 |
| Speech or Language Impairment | 2.03 | 1.77 | 0.49 | 1.35 |
| Autism | 21.19 | -3.95 | -1.52 | 2.21 |
| Special Education - Other | -17.83 | -2.42 | -0.27 | -1.05 |
| SNAP | -0.29 | -1.25 | -0.22 | -0.06 |
| TANF | 3.39 | -0.42 | 0.69 | 0.31 |
| Medicaid | -0.33 | -0.99 | -0.69 | -0.57 |
| Free lunch | 0.66 | -0.48 | -0.49 | 0.00 |
| Reduced-price lunch | -0.62 | 0.06 | -0.06 | -0.19 |
| Economically Disadvantaged - Other | -0.14 | -0.88 | 0.63 | 0.62 |
| English Language Learner | -6.45 | -2.70 | 0.20 | -0.47 |
| Gifted | 15.34 | 4.81 | 2.56 | 0.35 |
| Section 504 | -6.41 | -3.12 | -3.12 | -2.12 |
| Student Absences | -0.12 | -0.15 | -0.14 | -0.11 |
| Suspensions | -0.26 | -0.26 | -0.30 | -0.27 |
| Expulsions | 0.00 | -0.11 | -0.05 | -0.10 |
| Mobility | -1.01 | -0.87 | -0.49 | -0.33 |
| 1st prior ELA | 13.76 | 11.26 | 8.97 | 8.39 |
| 1st prior MTH | 4.66 | 5.06 | 1.89 | 2.06 |
| 1st prior SCI | 10.97 | 9.05 | 6.43 | 5.65 |
| 1st prior SST | 17.97 | 10.80 | 11.61 | 15.29 |
| 3rd prior ELA | NA | NA | 2.75 | 2.18 |
| 3rd prior MTH | NA | NA | -0.31 | -0.29 |
| 3rd prior SCI | NA | NA | 2.78 | 1.52 |
| 3rd prior SST | NA | NA | 3.09 | 5.04 |
| 4th prior ELA | NA | NA | NA | 1.10 |
| 4th prior MTH | NA | NA | NA | -0.97 |
| 4th prior SCI | NA | NA | NA | NA |
| 4th prior SST | NA | NA | NA | 2.11 |
| 1st prior ELA square | -2.67 | -0.04 | -0.13 | -0.74 |
| 1st prior MTH square | -1.31 | 0.17 | 0.01 | -0.10 |
| 1st prior SCI square | 0.73 | 0.86 | -0.06 | 0.49 |
| 1st prior SST square | 1.03 | 2.32 | 2.34 | 2.15 |
| 1st prior ELA cube | -1.74 | -0.67 | -0.42 | -0.25 |
| 1st prior MTH cube | -0.98 | -0.19 | 0.01 | 0.09 |
| 1st prior SCI cube | -0.76 | -0.55 | -0.26 | -0.31 |
| 1st prior SST cube | -2.01 | -0.53 | -0.56 | -1.03 |
| 3rd prior ELA square | NA | NA | -0.06 | -0.24 |

| 2021-2022 Social Studies All Paths Coefficients | | | | |
|---|---|---|---|---|
| **Predictor** | **Path R** | **Path 1** | **Path 2** | **Path 3** |
| 3rd prior MTH square | NA | NA | -0.25 | -0.12 |
| 3rd prior SCI square | NA | NA | -0.03 | -0.24 |
| 3rd prior SST square | NA | NA | 0.16 | 1.06 |
| 3rd prior ELA cube | NA | NA | -0.16 | -0.06 |
| 3rd prior MTH cube | NA | NA | 0.17 | -0.03 |
| 3rd prior SCI cube | NA | NA | -0.12 | -0.09 |
| 3rd prior SST cube | NA | NA | -0.10 | -0.15 |
| 4th prior ELA square | NA | NA | NA | -0.32 |
| 4th prior MTH square | NA | NA | NA | -0.04 |
| 4th prior SCI square | NA | NA | NA | NA |
| 4th prior SST square | NA | NA | NA | 0.36 |
| 4th prior ELA cube | NA | NA | NA | 0.01 |
| 4th prior MTH cube | NA | NA | NA | 0.02 |
| 4th prior SCI cube | NA | NA | NA | NA |
| 4th prior SST cube | NA | NA | NA | -0.01 |

| 2021-2022 Algebra I All Paths Coefficients | | | | |
|---|---|---|---|---|
| **Predictor** | **Path R** | **Path 1** | **Path 2** | **Path 3** |
| Intercept | -7.61 | -3.39 | -4.13 | 1.49 |
| Emotional Disturbance | -4.33 | NA | NA | 5.34 |
| Specific Learning Disability | -5.48 | 1.37 | 9.87 | 2.37 |
| Mild Intellectual Disability | -6.06 | NA | NA | 8.33 |
| Other Health Impairment | -4.18 | 3.99 | 13.19 | 1.21 |
| Speech or Language Impairment | -12.01 | NA | NA | 5.33 |
| Autism | 3.50 | NA | NA | 1.71 |
| Special Education - Other | -9.07 | -0.26 | 4.53 | 2.12 |
| SNAP | -0.96 | -0.66 | 0.11 | -0.20 |
| TANF | -0.15 | NA | NA | -0.67 |
| Medicaid | -0.42 | -1.56 | -2.17 | -0.97 |
| Free lunch | -2.32 | 0.62 | -0.71 | -0.48 |
| Reduced-price lunch | 3.34 | -4.22 | NA | 0.47 |
| Economically Disadvantaged - Other | 0.74 | -5.28 | -0.67 | 0.29 |
| English Language Learner | -6.03 | 5.63 | 15.17 | 3.70 |
| Gifted | 15.18 | 5.28 | 2.62 | 5.68 |
| Section 504 | -3.87 | -2.37 | 1.07 | -0.18 |
| Student Absences | -0.11 | -0.18 | -0.06 | -0.13 |
| Suspensions | -0.23 | -0.10 | -0.04 | -0.13 |
| Expulsions | -0.01 | -0.11 | -0.21 | -0.06 |
| Mobility | -1.73 | -1.59 | 5.50 | -0.45 |
| 1st prior ELA | NA | 3.58 | 3.48 | 2.59 |
| 1st prior MTH | 9.86 | 15.41 | 14.32 | 11.00 |
| 1st prior SCI | NA | 3.75 | 3.82 | 3.47 |
| 1st prior SST | NA | 3.36 | 2.55 | 2.48 |
| 3rd prior ELA | NA | NA | 0.44 | -0.51 |
| 3rd prior MTH | NA | NA | 7.85 | 5.67 |
| 3rd prior SCI | NA | NA | 3.02 | 0.97 |
| 3rd prior SST | NA | NA | -3.82 | -0.12 |
| 4th prior ELA | NA | NA | NA | -1.07 |
| 4th prior MTH | NA | NA | NA | 3.80 |
| 4th prior SCI | NA | NA | NA | NA |
| 4th prior SST | NA | NA | NA | -0.05 |

| 2021-2022 Geometry All Paths Coefficients | | | | |
|---|---|---|---|---|
| **Predictor** | **Path R** | **Path 1** | **Path 2** | **Path 3** |
| Intercept | -12.34 | -1.97 | -0.81 | 1.29 |
| Emotional Disturbance | NA | NA | NA | -1.53 |
| Specific Learning Disability | -9.11 | -4.76 | NA | -0.67 |
| Mild Intellectual Disability | NA | NA | NA | NA |
| Other Health Impairment | -0.48 | -4.90 | NA | -2.60 |
| Speech or Language Impairment | NA | NA | NA | -0.02 |
| Autism | NA | NA | NA | 0.31 |
| Special Education - Other | -6.72 | -0.90 | -1.20 | 0.65 |
| SNAP | -0.65 | -2.78 | 3.69 | -0.47 |
| TANF | NA | NA | NA | -0.07 |
| Medicaid | 0.31 | -3.11 | -1.07 | -0.42 |
| Free lunch | -0.87 | -0.04 | -2.74 | -0.27 |
| Reduced-price lunch | NA | 1.89 | NA | 1.20 |
| Economically Disadvantaged - Other | -1.22 | 3.09 | -0.38 | -0.49 |
| English Language Learner | -8.16 | -2.34 | 5.84 | 0.25 |
| Gifted | 14.00 | 5.85 | 4.27 | 3.44 |
| Section 504 | -4.43 | -5.48 | -2.01 | -0.95 |
| Student Absences | -0.01 | -0.18 | -0.29 | -0.11 |
| Suspensions | -0.47 | -0.38 | -0.12 | -0.16 |
| Expulsions | 0.01 | -0.02 | -0.02 | -0.07 |
| Mobility | -3.81 | -3.32 | -5.17 | 0.11 |
| 1st prior MTH | 7.99 | 13.51 | 12.91 | 12.20 |
| 3rd prior ELA | NA | NA | -0.62 | -0.98 |
| 3rd prior MTH | NA | NA | 6.44 | 4.26 |
| 3rd prior SCI | NA | NA | 2.58 | 2.75 |
| 3rd prior SST | NA | NA | -0.50 | 0.25 |
| 4th prior ELA | NA | NA | NA | -0.59 |
| 4th prior MTH | NA | NA | NA | 2.57 |
| 4th prior SCI | NA | NA | NA | NA |
| 4th prior SST | NA | NA | NA | 0.15 |

| 2021-2022 English I All Paths Coefficients | | | | |
|---|---|---|---|---|
| **Predictor** | **Path R** | **Path 1** | **Path 2** | **Path 3** |
| Intercept | -17.37 | -7.20 | -6.09 | 2.41 |
| Emotional Disturbance | -3.38 | NA | NA | -5.56 |
| Specific Learning Disability | -9.02 | -6.45 | -2.62 | -4.51 |
| Mild Intellectual Disability | -9.16 | NA | NA | -5.12 |
| Other Health Impairment | -11.67 | -7.98 | -0.32 | -4.04 |
| Speech or Language Impairment | -6.91 | NA | NA | -2.89 |
| Autism | 0.94 | NA | NA | -3.32 |
| Special Education - Other | -7.66 | -11.12 | -2.60 | -1.81 |
| SNAP | -1.50 | -1.17 | 0.49 | -0.18 |
| TANF | -4.86 | NA | NA | -1.74 |
| Medicaid | -1.01 | -1.56 | 0.26 | -0.17 |
| Free lunch | -0.04 | 1.61 | -3.00 | -0.29 |
| Reduced-price lunch | 3.25 | -0.55 | NA | 1.25 |
| Economically Disadvantaged - Other | 0.12 | 2.06 | 3.54 | 0.29 |
| English Language Learner | -10.27 | -7.94 | 0.11 | -1.47 |
| Gifted | -4.39 | 7.48 | 3.72 | 2.39 |
| Section 504 | -6.60 | -6.04 | 0.64 | -3.03 |
| Student Absences | -0.13 | -0.08 | -0.10 | -0.10 |
| Suspensions | -0.11 | -0.16 | -0.10 | -0.22 |
| Expulsions | -0.04 | -0.03 | -0.01 | -0.07 |
| Mobility | 1.71 | -0.46 | -2.75 | -0.56 |
| 1st prior ELA | 16.38 | 15.82 | 12.63 | 11.90 |
| 1st prior MTH | NA | 2.24 | 1.12 | 1.44 |
| 1st prior SCI | NA | 4.27 | 3.14 | 3.35 |
| 1st prior SST | NA | 8.43 | 5.77 | 5.46 |
| 3rd prior ELA | NA | NA | 5.43 | 5.63 |
| 3rd prior MTH | NA | NA | 1.65 | 0.53 |
| 3rd prior SCI | NA | NA | 1.77 | 0.50 |
| 3rd prior SST | NA | NA | 1.12 | 0.52 |
| 4th prior ELA | NA | NA | NA | 3.98 |
| 4th prior MTH | NA | NA | NA | -0.72 |
| 4th prior SCI | NA | NA | NA | NA |
| 4th prior SST | NA | NA | NA | 0.16 |

| 2021-2022 English II All Paths Coefficients | | | | |
|---|---|---|---|---|
| **Predictor** | **Path R** | **Path 1** | **Path 2** | **Path 3** |
| Intercept | -23.45 | -5.52 | -1.26 | 6.00 |
| Emotional Disturbance | NA | NA | NA | -3.64 |
| Specific Learning Disability | -13.19 | -18.73 | -4.59 | -2.22 |
| Mild Intellectual Disability | -12.44 | NA | NA | 3.82 |
| Other Health Impairment | -11.48 | -13.25 | NA | -3.45 |
| Speech or Language Impairment | -6.70 | NA | NA | -1.35 |
| Autism | 1.61 | NA | NA | 1.46 |
| Special Education - Other | -7.29 | -10.41 | -5.95 | 0.05 |
| SNAP | -1.76 | -4.25 | -2.57 | 0.13 |
| TANF | 8.41 | NA | NA | -2.36 |
| Medicaid | 0.61 | -3.89 | -4.20 | 0.44 |
| Free lunch | 0.46 | -0.82 | 4.52 | -0.61 |
| Reduced-price lunch | -7.25 | 0.34 | NA | -0.11 |
| Economically Disadvantaged - Other | -7.00 | 1.93 | 3.25 | -1.18 |
| English Language Learner | -10.76 | -15.03 | 4.11 | 3.22 |
| Gifted | 18.30 | 14.87 | -0.67 | 0.31 |
| Section 504 | -9.10 | -13.33 | -7.24 | -3.52 |
| Student Absences | -0.05 | -0.26 | -0.28 | -0.15 |
| Suspensions | -0.33 | -0.62 | -1.15 | -0.34 |
| Expulsions | -0.04 | -0.04 | -0.03 | -0.08 |
| Mobility | -0.65 | 1.64 | 7.97 | -0.93 |
| 1st prior ELA | 19.31 | 24.99 | 23.62 | 21.75 |
| 3rd prior ELA | NA | NA | 7.63 | 7.27 |
| 3rd prior MTH | NA | NA | 2.87 | 0.72 |
| 3rd prior SCI | NA | NA | 2.54 | 1.43 |
| 3rd prior SST | NA | NA | 2.27 | 3.74 |
| 4th prior ELA | NA | NA | NA | 4.51 |
| 4th prior MTH | NA | NA | NA | -0.20 |
| 4th prior SCI | NA | NA | NA | NA |
| 4th prior SST | NA | NA | NA | 1.27 |

## Appendix G: Value-Added Student and Classroom Characteristics

State law requires that the value-added model take into account "important student factors, which includes but is not limited to special education, eligibility for free or reduced price meals, student attendance, and student discipline." Student and classroom characteristics are controlled for statistically in the value-added model, which helps to facilitate fair comparisons of teachers with different student groups. The following is a list of characteristics and descriptions.

### Student Characteristics

1. Prior year assessment scores: Up to three years of prior scaled scores from Louisiana's statewide regular assessment. Scaled scores for each content and year are converted to z-scores by grade and test year. The following content areas were utilized where available:

    a. English Language Arts
    b. Mathematics
    c. Science
    d. Social Studies
    e. Algebra I
    f. Geometry
    g. English I
    h. English II

2. Disability status: Seven dichotomous variables, indicating the presence or absence of the disability, were derived from data reported by districts via all exceptionality data elements (not limited to the primary exceptionality only) in the February 1 Special Education Reporting (SER) Summary File. Seven disability categories were derived:

    a. Emotional Disturbance
    b. Speech and Language Impairment
    c. Mild Intellectual Disability
    d. Specific Learning Disability
    e. Other Health Impairment
    f. Autism
    g. Special Education – Other (all other special education exceptionalities not included above due to low incidence in the state)

3. Gifted status: A dichotomous variable, indicating whether or not the student has a gifted exceptionality, was derived from data reported by districts via all exceptionality data elements (not limited to the primary exceptionality only) in the February 1 SER Summary File.

4. Section 504 status: A dichotomous variable, indicating whether or not the student receives Section 504 accommodations, was derived from data pre-coded or bubbled in the current year assessment file.

5. English Language Learner status: A dichotomous variable, indicating whether or not the student has a limitation of English proficiency, was derived from data pre-coded or bubbled in the current year assessment file.

6. Economically Disadvantaged status: Six dichotomous variables, indicating the presence or absence of an economic disadvantage, were derived from a report provided by the Data Strategy and Governance team. Six indicators were derived:

    a. Supplemental Nutrition Assistance Program (SNAP), including the Disaster-Supplemental Nutrition Assistance Program (DSNAP)
    b. Temporary Assistance for Needy Families (TANF)
    c. Medicaid
    d. Free lunch
    e. Reduced-price lunch
    f. Economically Disadvantaged – Other, which includes the indicators not included above due to low incidence in the state:
        i. Homeless
        ii. Migrant
        iii. Awaiting foster care
        iv. Incarcerated children

7. Mobility status: A dichotomous variable, indicating whether or not the student changed schools, was derived from data submitted by districts as of the Edlink Enrollment February 1 snapshot. Students with enrollment at more than one site code were designated as mobile.

8. Student absences: The count of student absences submitted by districts as of the February 1 Enrollment Edlink snapshot.

9. Suspensions: The count of student suspensions submitted by districts as of the Discipline end of year Edlink snapshot.

10. Expulsions: The count of student expulsions submitted by districts as of the Discipline end of year Edlink snapshot.

**Classroom/Teacher Characteristics**

11. Prior year content score average: The average student z-scores in the first prior year of the content analyzed per teacher.

12. Economically disadvantaged proportion: The proportion of students with an economic disadvantage per teacher.

13. Special education proportion: The proportion of students with a disability per teacher.

14. Suspensions average: The average of student suspension counts per teacher.