

Mississippi Department of Education

Understanding the Mississippi Statewide Accountability System

This document begins with a brief description of the current accountability system and a concise history of accountability in Mississippi. It covers the Achievement Model, Growth Model, and High School Completion components of the system and explains how those components are used to assign an Accountability Status to schools and school districts.

There are examples showing calculations for the Quality of Distribution Index (QDI) in the Achievement Model and calculations for predictions, raw residuals, standardized residuals, and the growth composite in the growth model.

The appendix includes an explanation of Full Academic Year (FAY), and presents the prediction coefficients used in the 2009 Growth Model and examples of the accountability reports that are provided to school districts.

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Understanding the Mississippi Statewide Accountability System

Introduction

The Mississippi Statewide Accountability System provides an annual estimate of instructional effectiveness for each school district and most of the schools in the state. The system uses results from statewide assessments (tests) administered at certain grades and in certain high school courses. For most districts and for some schools, the system also uses information about high school completion.

Accountability systems in Mississippi are mandated by state law. Generally, the overall system characteristics and consequences for district and school performance are covered in the law while specific technical characteristics of the accountability models are developed and tested under the guidance of the Mississippi Department of Education and the Commission on School Accreditation. The accountability models are subjected to the state's Administrative Procedures Act (public comment) process and must be approved by the State Board of Education. Preliminary results from the accountability system are presented to school district personnel and are subject to a review process. After any data corrections, the final annual accountability results are approved by the State Board of Education and the results are published.

The annual accountability results can be accessed by the public through the Mississippi Assessment and Accountability Reporting System (MAARS) at <http://orshome.mde.k12.ms.us/ors>.

Newspapers, television stations, and many radio stations throughout the state cover the statewide or regional accountability results using information provided by the Department of Education.

The current accountability system was developed over a period of three years. The statewide language arts and mathematics curriculum frameworks were revised in 2006 and 2007 and were implemented during the 2007-2008 school year. New assessments in language arts and mathematics were developed, and pilot tested. The assessments (MCT2 for grades 3-8, Algebra I, English II) were implemented during the 2007-2008 school year. The current accountability system (based on the revised curriculum and new assessments) was developed in 2008 and 2009 and implemented for the first time during fall 2009.

Historical Perspective – Accountability in Mississippi

The current accountability system is actually the fourth comprehensive accountability system to be used in Mississippi. Following the Education Reform Act of 1982, the state developed new curriculum frameworks and several new assessment programs. The first statewide administration of the assessments occurred in the spring of 1987. The Mississippi Performance-Based Accreditation System was then developed and tested. The first accountability results were released in October 1988. That accountability system was the first in Mississippi and one of the first in the country. The system used data from the statewide assessments and assigned accreditation levels to each of the state's school districts. The system yielded results only at the district level – there were no school level results. Although envisioned as a system with five performance levels, the original model classified districts into only three levels (Level 1 through Level 3) due to nature of the initial minimal competency assessment programs. The first accountability system was used from 1988 through 1994.

In 1994, state legislation required that the accountability system be revised based on more rigorous curriculum guidelines and assessments. After the new curriculum and assessments were in place, the accountability model was revised and tested. The revised system again yielded results only at the district level. However, it classified districts into five accreditation levels (Level 1 through Level 5) and the system included a performance index ranging from 1.0 through 5.0 providing information on how a district performed within its assigned accreditation level. The second accountability system was used from 1995 through 1999.

In 1999, state legislation again required that the accountability system be revised. The curriculum was revised in 1999 and 2000 and new criterion-referenced assessments were developed. The new assessments were piloted in 2000, and administered live in 2001. A new accountability system was developed that produced results at the school level -- there were no district level results. Each school was classified into one of five accountability levels (Level 1 through Level 5). The system included two separate components – an achievement model and a growth model. In addition to its level, each school was assigned an Accountability Level Index ranging from 100 to 600 that provided information on how the school performed within its assigned accountability level. The third accountability system was used from 2003 through 2007.

No statewide accountability results were available in 2008 because the current accountability system was being developed. This document provides a basic description of the current system. More detailed information regarding the development of the accountability system can be found in documents listed in Appendix E.

Measures Used in the Statewide Accountability System

The accountability system uses two kinds of student level information – results from statewide assessments (the student testing programs) and data on school completion for a cohort of students tracked over five years.

Assessment Results

Results from the following assessments are used in the statewide accountability system. Additional information on the assessment programs can be found on Office of Student Assessment web page at <http://www.mde.k12.ms.us/ACAD/osa>.

Mississippi Curriculum Test – 2nd Edition (MCT2). The MCT2 is based on the revised statewide language arts and mathematics curricula. Tests in language arts and mathematics are administered each year in May to students enrolled in grades 3 through 8. The results include a numeric scale score and a proficiency level. The proficiency levels represent standards based on cut scores established by committees of Mississippi teachers and approved by the State Board of Education. The proficiency levels are Advanced, Proficient, Basic, and Minimal.

Subject Area Testing Program (SATP). The SATP includes end-of course tests in Algebra I, English II, Biology I, and U.S. History. The results from the SATP multiple-choice tests include a numeric scale score, a proficiency level, and a pass/fail status. Students take these tests when they complete the course and must achieve a passing score in order to obtain a high school diploma. Students who fail one of the tests can continue to take the test until they pass it. The accountability system uses the score from each student's first attempt on the multiple-choice tests. The English II writing assessment (essay) is not used in the accountability system.

Mississippi Alternate Assessment of the Extended Curriculum Frameworks (MAAECF). The MAAECF is a set of assessments designed for students with disabilities who cannot take the regular statewide assessment even with allowable accommodations and modifications. According to Federal law, the MAAECF can be administered only to students with significant cognitive disabilities (SCD). The MAAECF includes assessments in Language Arts, Mathematics, and Science. There are several levels of the assessments with separate scoring tables for students in each grade 3-8 plus high school. MAAECF results are reported only as proficiency levels.

School Completion Information

The state developed procedures for tracking cohorts of students using data in the Mississippi Student Information System (MSIS) -- the statewide student level database. The procedures allow the state to track selected cohorts (groups of students) over different periods of time. For each student in the cohort, the procedures determine whether the student graduated with a regular high school diploma, completed all requirements for a regular diploma except for a passing score on one or more of the SATP tests, completed school with an occupational diploma or a (special education) certificate of attendance, obtained a GED through an approved program, or dropped out before completing school. The

accountability system uses school completion data for a cohort of students beginning in 9th grade tracked over five years. Additional information on the use of school completion information in the accountability system is presented later in this document. Comprehensive information on the procedures for tracking student cohorts can be found on the Office of Dropout Prevention web page at http://www.mde.k12.ms.us/Dropout_Prevention.

How the Statewide Accountability System Works

The figure on the next page illustrates how the Statewide Accountability System works.

The Achievement Model provides a measure of overall school or district level performance during the previous school year. A Quality of Distribution Index (QDI) value is calculated using data from the MCT2 language arts and mathematics tests; SATP data from the Algebra I, Biology I, English II, and U.S. History tests; and results from the language arts and mathematics sections of the MAAECF. The QDI value ranges from 0 (100% of students scoring in the lowest proficiency level on the assessments) to 300 (100% of the students scoring in the highest proficiency level on the assessments). The formula for calculating the QDI is discussed in the Achievement Model section of this document.

Note: Data from the Grade 5/8 Science Test and results from the science section of the MAAECF will be included in the achievement model beginning in 2010.

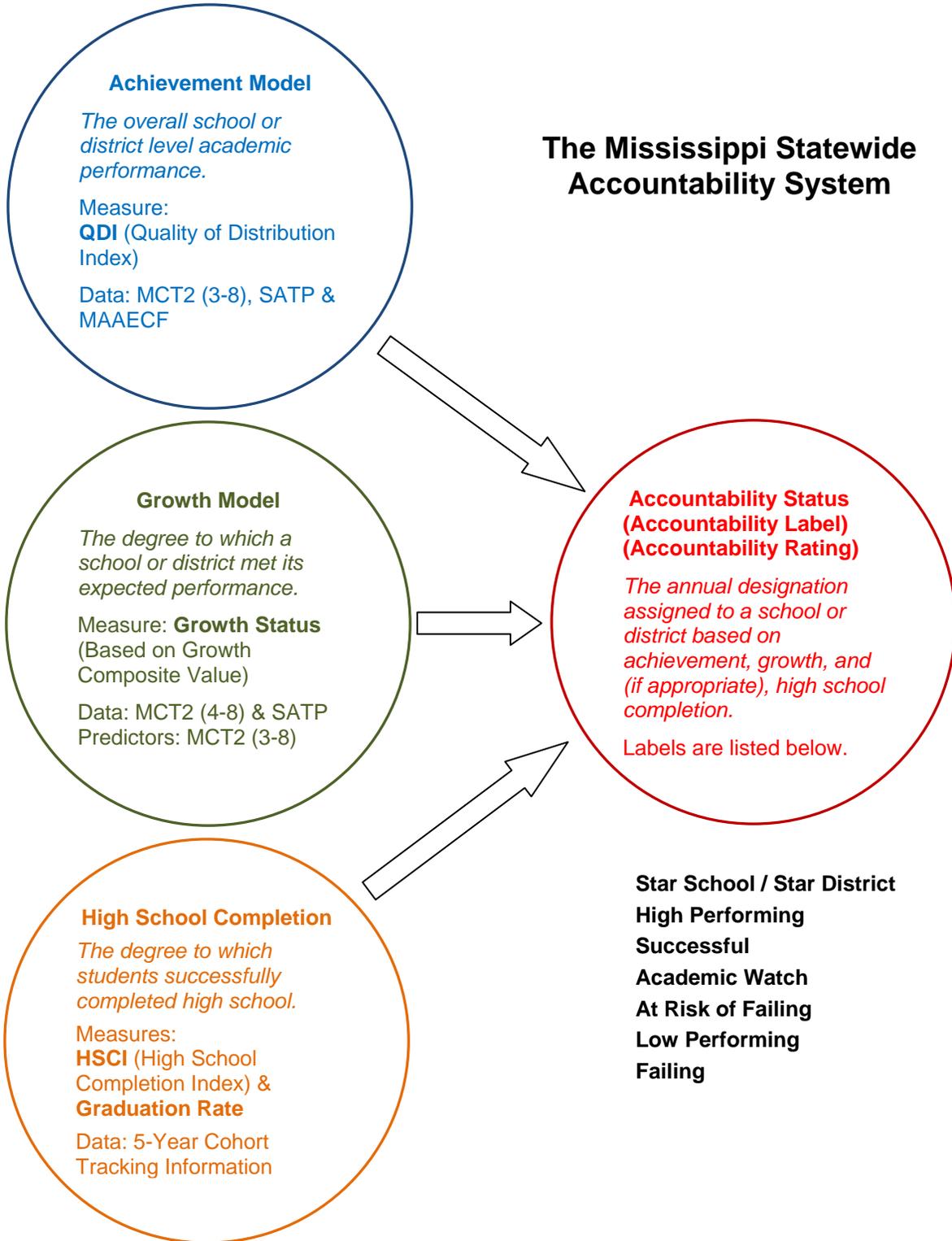
The Growth Model provides a measure of the degree to which a school or district met its expected performance during the previous school year. A Growth Composite value is calculated using data from the last two school years. Student performance on the MCT2 is used to predict student performance on the MCT2 the following year and student performance on the SATP tests the following year. For example, the 2009 Growth Model results used 2008 MCT2 data to predict student performance on the 2009 MCT2 and student performance on SATP tests administered during the 2008/2009 school year. The Growth Composite value ranges from small negative values (e.g., -3) through small positive values (e.g., +3). A value of 0 or higher indicates that the school or district met its performance expectation and results in a Growth Status of "Met." A negative value indicates that the school or district did not meet its performance expectation and results in a Growth Status of "Not Met." The prediction equations and the formula used for calculating the Growth Composite are discussed in the Growth Model section of this document.

Note: Since 2008 was the first live year for MCT2, only grade 8 and grade 9 SATP scores could be predicted for the 2008/2009 school year. In 2010, the growth model will add predictions for grade 10 SATP scores (including English II). In 2011, the growth model will add predictions for grade 11 SATP scores (including U.S. History).

The High School Completion component of the accountability system provides a measure of the degree to which students completed high school. This component of the accountability system applies only to schools and districts that have a graduating class (i.e., a 12th grade). Two separate measures are used – the High School Completion Index (HSCI), and the Graduation Rate. The measures are calculated by tracking a cohort of students beginning in 9th grade and continuing for five years (although most of the students complete school within four years, some take longer). HSCI values range from -300 (100% of students dropping out of school) through 300 (100% of students graduating with a standard high diploma within five years). The graduation rate is the percentage of students in the cohort graduating with a standard diploma within five years (0% through 100%).

The achievement, growth, and high school completion components are combined to yield an Accountability Status (sometimes called a label or rating). The method used for assigning accountability statuses is discussed in the Accountability Status section of this document.

The Mississippi Statewide Accountability System



The Achievement Model

The Achievement Model provides a measure of overall school or district level performance during the previous school year. A Quality of Distribution Index (QDI) value is calculated using data from the MCT2 language arts and mathematics tests; SATP data from the Algebra I, Biology I, English II, and U.S. History tests; and results from the language arts and mathematics sections of the MAAECF.

Assignment of Student Scores to Schools and Districts

Scores used for calculating QDI are the MCT2, SATP, and MAAECF scores from test administrations during the previous school year. The student scores used for calculating QDI for a particular school or district are selected as follows.

- Scores count at the school and/or district in which the student was enrolled for a Full Academic Year (FAY). A student who moved from one school to another during the school year may satisfy the FAY criteria at the district, but not at either school. In that case, the student's test scores will be included for calculating the district QDI, but will not be included when calculating QDI for either school.
- Scores for FAY students taking the Algebra I or Biology I test may also count at a high school for which the current school is a "feeder." This is explained in more detail below.
- Scores for FAY students taking the Algebra I or Biology I test at a high school may also count at a different school in which they satisfied FAY earlier. This is explained in more detail below.

In all of the above cases, if a special education student has a resident school code or resident district code (see special education screen in MSIS), his/her score(s) will be re-assigned to the corresponding resident school or district.

Special Procedures for Using Algebra I and Biology I Scores in the Achievement Model

Special procedures are used to encourage middle schools, 9th grade schools, and high schools to work collectively to ensure that students take Algebra I and Biology I when they are ready to take the course.

A student's Algebra I and/or Biology I score(s) are be assigned to all higher level schools (i.e., schools containing higher grade levels) on the student's forward feeder pattern. In most cases, this will be one school. In some cases it will be two schools (e.g., 8th grade Algebra I score assigned to a stand-alone 9th grade school plus a 10-12 high school. This is called "forward-mapping."

A student's Algebra I and/or Biology I score(s) will be assigned to a maximum of one other school for each earlier school year. Full academic year status is used for assignment purposes and it is impossible for a student to satisfy FAY in more than one school during any school year. This is called "back-mapping."

For students taking Algebra I in a stand-alone 9th grade school, the score may be back-mapped to a different school where he/she was as an 8th grader and forward-mapped to the grade 10-12 high school.

The forward-mapping and back-mapping procedures are described in more detail beginning on the next page.

For Algebra I:

Current-Year School. If a student satisfies the definition of “Full Academic Year” (FAY) at the school in which he/she took the Algebra I test for the first time, the student’s Algebra I score will be included when calculating QDI for that school. This is the same logic used in the previous achievement model.

Forward-Mapping. This procedure counts a student’s Algebra I score at a school that the student may attend in the future.

- If a school containing grade 8 feeds a 9-12 high school, the eighth grade Algebra I scores for students meeting FAY will also be counted in the high school accountability results.
- If a stand-alone 9th grade school feeds a 10-12 high school, the ninth grade Algebra I scores for students meeting FAY will also be counted in the high school accountability results.
- If a school containing grade 8 feeds a stand-alone 9th grade school which feeds a 10-12 high school, the eighth grade Algebra I scores for students meeting FAY will be counted in the accountability results for both the 9th grade school and the 10-12 high school.

Note: The implementation logic for “forward-mapping” requires an accurate linking table containing all feeder/receiving schools within the 8-12 and 9-12 grade spans throughout the state.

Back-Mapping. This procedure counts a student’s Algebra I score at one or more schools in which the student met FAY during earlier school years.

- For an FAY student in a 9-12 high school, an Algebra I test score will also be counted at the school where the student was enrolled as an eighth grader if (1) the student met FAY as an eighth grader AND (2) both schools are in the same school district.
- For an FAY student in a 10-12 high school, an Algebra I test score will also be counted
 - at the school where the student was enrolled as a ninth grader if (1) the student met FAY as a ninth grader AND (2) both schools are in the same school district.
 - at the school where the student was enrolled as an eighth grader if (1) the student met FAY as an eighth grader AND (2) both schools are in the same school district

Note: The implementation for “back-mapping” does not require information concerning actual feeder/receiving school patterns. The appropriate back-mapping of test results is accomplished using FAY/enrollment and grade assignment data for students during earlier school years.

For Biology I:

Current-Year School. If a student satisfies the definition of “Full Academic Year” (FAY) at the school in which he/she took the Biology I test for the first time, the student’s Biology I score will be included when calculating QDI for that school. This is the same logic used in the previous achievement model.

Forward-Mapping. This procedure counts a student’s Biology I score at a school that the student may attend in the future.

- If a school containing grade 9 feeds a 10-12 high school, the ninth grade Biology I scores for students meeting FAY will also be counted in the high school accountability results.

Back-Mapping. This procedure counts a student’s Biology I score at a school in which the student met FAY during an earlier school year.

- For an FAY student in a 10-12 high school, a Biology I test score will also be counted at the school where the student was enrolled as a ninth grader if (1) the student met FAY as a ninth grader AND (2) both schools are in the same school district.

The QDI

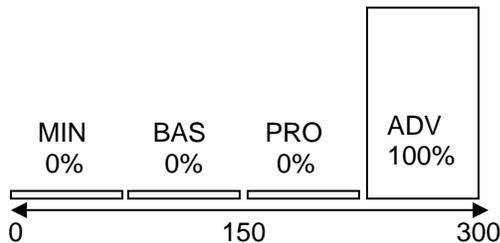
QDI (Quality of Distribution Index) represents an overall measure of student performance on statewide assessments during the previous school year. The QDI is based on a relatively simple concept – if more students score in the higher proficiency levels on the test, the distribution of scores is more “positive”.

$$\text{QDI} = (1 \times \% \text{Basic}) + (2 \times \% \text{Proficient}) + (3 \times \% \text{Advanced})$$

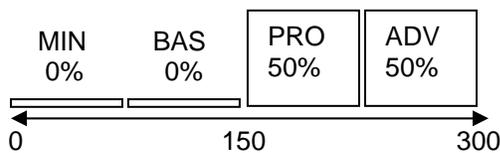
No credit is given for students scoring in the Minimal (lowest) proficiency level and the greatest credit is given for students scoring in the Advanced (highest) proficiency level. The QDI value can range from 0 (100% of students scoring Minimal) through 300 (100% scoring Advanced).

Examples of Different Score Distributions and Associated QDI Values

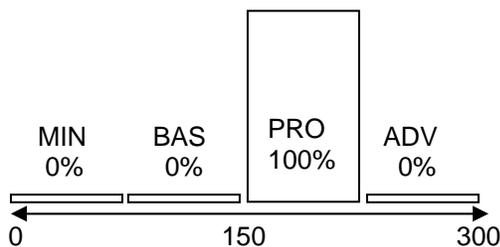
(MIN=Minimal, BAS=Basic, PRO=Proficient, ADV=Advanced)



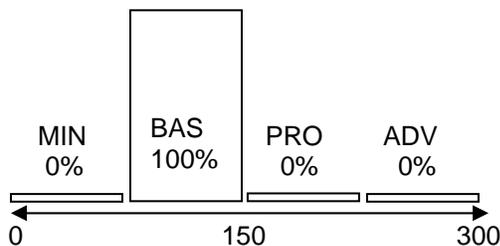
$$Qd = 0 + (2 \times 0) + (3 \times 100) = \mathbf{300}$$



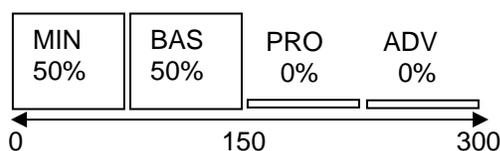
$$Qd = 0 + (2 \times 50) + (3 \times 50) = \mathbf{250}$$



$$Qd = 0 + (2 \times 100) + (3 \times 0) = \mathbf{200}$$



$$Qd = 100 + (2 \times 0) + (3 \times 0) = \mathbf{100}$$



$$Qd = 50 + (2 \times 0) + (3 \times 0) = \mathbf{50}$$

Calculation of the QDI Value

Under the Mississippi Achievement Model, a QDI is calculated for each school with assessment data and for each school district.

Once student level scores have been assigned to each school and district (including forward-mapped and back-mapped scores), computer programs calculate percentages of students scoring in each proficiency level separately by test/grade and across all tests/grades. Full precision/unrounded percentage values are used for calculating QDI. The percentage values are then rounded. The calculated QDI is rounded to one decimal place for certain reporting purposes and it is rounded to a whole number as the official QDI value for the school or district.

Note: The assignment of scores to a particular school is complex (requiring determination of FAY, back-mapping, forward mapping, and consideration of resident district and resident school codes). Therefore, any QDI value calculated using percentages from testing company reports or from the assessment results displayed in the Mississippi Assessment and Accountability Reporting System (MAARS) is only a rough approximation of the official QDI.

QDI Calculation Example:

Total number of test scores assigned to the school	105	
Number scoring Minimal	12	11.4285714%
Number scoring Basic	27	25.7142857%
Number scoring Proficient	46	43.8095238%
Number scoring Advanced	20	19.0476190%

$$\begin{aligned} \text{QDI} &= 25.7142857 + (2 \times 43.8095238) + (3 \times 19.0476190) = \\ &= 25.7142857 + 87.6190476 + 58.142857 \\ &= 170.4761903 \end{aligned}$$

The full precision QDI value rounds to 170.5 for reporting.

The full precision QDI value rounds to **170** as the official QDI value for the school.

Note: The official QDI is determined by rounding the full precision value; not by rounding the (already rounded) reporting value.

The Growth Model

The Growth Model provides a measure of the degree to which a school or district met its expected performance during the previous school year. A Growth Composite value is calculated using data from the last two school years. Student performance on the MCT2 is used to predict student performance on the MCT2 the following year and student performance on the SATP tests the following year. For example, the 2009 Growth Model results used 2008 MCT2 data to predict student performance on the 2009 MCT2 and student performance on SATP tests administered during the 2008/2009 school year.

Note: Since 2008 was the first live year for MCT2, only grade 8 and grade 9 SATP scores could be predicted for the 2008/2009 school year. In 2010, the growth model will add predictions for grade 10 SATP scores (including English II). In 2011, the growth model will add predictions for grade 11 SATP scores (including U.S. History).

The predictions are based on equations derived by running multiple regression analyses on student level assessment data. A multiple regression prediction equation with two predictors has the form

$$Y' = (b1 * X1) + (b2 * X2) + c \quad \text{where,}$$

Y' is the predicted score,

b1 is the regression (prediction) coefficient for the first predictor variable,

X1 is the numeric value of the first predictor variable,

b2 is the regression (prediction) coefficient for the second predictor variable,

X2 is the numeric value of the second predictor variable, and

c is a numeric constant.

In the Mississippi growth model, scale scores (SS) on the MCT2 language arts (LA) and mathematics (MA) tests are the predictor variables. The equation is used to predict the scale score on a subsequent test. For example,

$$\text{Predicted 2009 Grade 4 MCT2 SS}_{MA} = (b1 * 2008 \text{ Grade 3 MCT2 SS}_{LA}) + (b2 * 2008 \text{ Grade 3 MCT2 SS}_{MA}) + c$$

or

$$\text{Predicted 2009 Grade 9 Algebra I SS} = (b1 * 2008 \text{ Grade 8 MCT2 SS}_{LA}) + (b2 * 2008 \text{ Grade 8 MCT2 SS}_{MA}) + c$$

The regression equations predict performance at the student level. Although the predictions are not accurate enough for use at the student level, the positive and negative prediction errors tend to cancel each other, so average residual values for groups of students within a school or district are much more accurate.

There is a separate and unique prediction equation for each test. Once the prediction equations are developed, they are applied to the student level data to yield raw residuals (actual scale score minus predicted scale score). A residual value of 0 means the student performed exactly as expected based on his/her earlier performance. Negative residual values indicate performance that was below expectation – positive residual values indicate performance that was above expectation.

Standardization of the student level residual values is required in order to combine the results across tests for different grades and subjects. Student level residuals are standardized based on the statewide distribution of raw residuals.

Predictions, Calculation of Raw Residuals, and Standardization for a Hypothetical Student

1. Collect assessment data.

John Smith has an MCT2 data record from 2008.
He took the grade 3 level of the test and scored as follows.
Language Arts Scale Score = 149
Mathematics Scale Score = 151

John also has an MCT2 data record from 2009.
He took the grade 4 level of the test and scored as follows.
Language Arts Scale Score = 152
Mathematics Scale Score = 148

2. Determine the student's cohort.

Since John had MCT2 data from both 2008 and 2009 and the 2009 test was one level higher than the 2008 test, he can be included in the growth model.
He is part of the cohort called, "MCT2 Grade 3 to Grade 4."

3. Keep student only if FAY at the district level both years.

In 2007/2008, John satisfied Full Academic Year in the Green Hills school district. He moved twice within the district during the year, so he did not satisfy FAY at any school.

In 2008/2009, John satisfied FAY in the South Bay School District. He remained at one school all year satisfying FAY at Jefferson Elementary.

Note: John's data record is kept since he satisfied FAY at the district level both school years. His performance will be included in the 2009 district level accountability results for South Bay and the 2009 school level accountability results for Jefferson Elementary. Had he moved within South Bay School District during 2008/2009 and failed to satisfy FAY at a school, he would have been included in only the South Bay district level results for 2009.

4. Run multiple regression analysis for each prediction group.

John's data record containing his 2008 and 2009 MCT2 scores is used in two multiple regression analyses as follows.

- Cohort MCT2 Grade 3 to Grade 4 Predicting 2009 Language Arts Scale Score
- Cohort MCT2 Grade 3 to Grade 4 Predicting 2009 Mathematics Scale Score

The language arts (LA) prediction equation will take the form

$$\text{Predicted 2009 SS}_{LA} = (b_1 \times 2008 \text{ SS}_{LA}) + (b_2 \times 2008\text{-SS}_{MA}) + c$$

The mathematics (MA) prediction equation will take the form

$$\text{Predicted 2009 SS}_{MA} = (b_1 \times 2008 \text{ SS}_{LA}) + (b_2 \times 2008\text{-SS}_{MA}) + c$$

The regression coefficients (b_1 , b_2) and the constant values for LA and MA will be different.

The actual 2009 prediction equations for cohort "MCT2 Grade 3 to Grade 4" were

$$2009\text{-SS}_{LA} = (0.66740 \times 2008 \text{ SS}_{LA}) + (0.19352 \times 2008 \text{ SS}_{MA}) + 20.23434$$

$$2009\text{-SS}_{MA} = (0.35175 \times 2008 \text{ SS}_{LA}) + (0.44978 \times 2008 \text{ SS}_{MA}) + 30.64508$$

5. Predict 2009 scale scores and calculate residuals.

John's data record containing his 2008 and 2009 MCT2 scores is used to calculate his predicted values and raw residuals as follows.

$$\begin{aligned} \text{Predicted 2009 Language Arts Scale Score:} \\ (0.66740 \times 149) + (0.19352 \times 151) + 20.23434 = \\ 99.4426 + 29.22152 + 20.23434 = 148.89846 \end{aligned}$$

$$\begin{aligned} \text{Predicted 2009 Mathematics Scale Score:} \\ (0.35175 \times 149) + (0.44978 \times 151) + 30.64508 = \\ 52.41075 + 67.91678 + 30.64508 = 150.97261 \end{aligned}$$

$$\begin{aligned} \text{Language Arts Raw Residual:} \\ \text{Actual 2009 SS}_{LA} - \text{Predicted 2009 SS}_{LA} = \\ 152 - 148.89846 = +3.10154 \text{ (about 3 SS points above prediction)} \end{aligned}$$

$$\begin{aligned} \text{Mathematics Raw Residual:} \\ \text{Actual 2009 SS}_{MA} - \text{Predicted 2009 SS}_{MA} = \\ 148 - 150.97261 = -2.97261 \text{ (about 3 SS points below prediction)} \end{aligned}$$

6. Determine standardization constants for each test.

The following are the standardization constants (means and standard deviations) calculated from the 2009 student level raw residual data distributions.

$$\begin{aligned} \text{Language Arts Raw Residuals for Cohort "MCT2 Grade 3 to Grade 4"} \\ \text{N-Count} &= 32,669 \\ \text{Mean} &= \sim 0 \text{ (this is the expected value)} \\ \text{Standard Deviation} &= 7.5930178 \end{aligned}$$

$$\begin{aligned} \text{Mathematics Raw Residuals for Cohort "MCT2 Grade 3 to Grade 4":} \\ \text{N-Count} &= 32,730 \\ \text{Mean} &= \sim 0 \text{ (this is the expected value)} \\ \text{Standard Deviation} &= 7.1603189 \end{aligned}$$

7. Calculate standardized residual values.

John's raw residuals are standardized using the means and standard deviations from the statewide distributions for Cohort "MCT2 Grade 3 to Grade 4." A raw residual is standardized by subtracting the statewide mean and dividing by the statewide standard deviation (SD).

$$\text{Standardized Residual} = (\text{Raw Residual} - \text{Statewide Mean}) / \text{Statewide SD}$$

$$\begin{aligned} \text{Language Arts Standardized Residual:} \\ (+3.10154 - 0) / 7.5930178 = +0.40847264 \text{ (about 4/10 SD above prediction)} \end{aligned}$$

Note: This value will be averaged with the standardized residuals for other students in this cohort to produce school and district level Mean Standardized Residual values.

$$\begin{aligned} \text{Mathematics Standardized Residual:} \\ (-2.97261 - 0) / 7.1603189 = -0.4151505 \text{ (about 4/10 SD below prediction)} \end{aligned}$$

Note: This value will be averaged with the standardized residuals for other students in this cohort to produce school and district level Mean Standardized Residual values.

Calculation of the Growth Composite

The standardized student level residuals for each test are averaged to yield mean standardized residual values for each school and school district. The standardization procedure produces values that can be combined across the tests for different grade levels and subject areas.

Each school has some combination of mean standardized residual values depending on the grade configuration and the SATP courses (if any) taught at the school. Most districts have mean standardized residual values for all of the tests.

Since the mean standardized residual values are directly comparable, they can be weighted (for the number of students contributing data toward the standardized value) and summed to yield a single Growth Composite value for the school or district.

The Growth Composite ranges from small negative values (e.g., -3) through small positive values (e.g., +3). A growth composite of zero (0) indicates that the typical student in the school “just met” his/her predicted performance. Growth composite values above and below zero represent distances from the predicted value in student-level standard deviation units.

The Growth Status

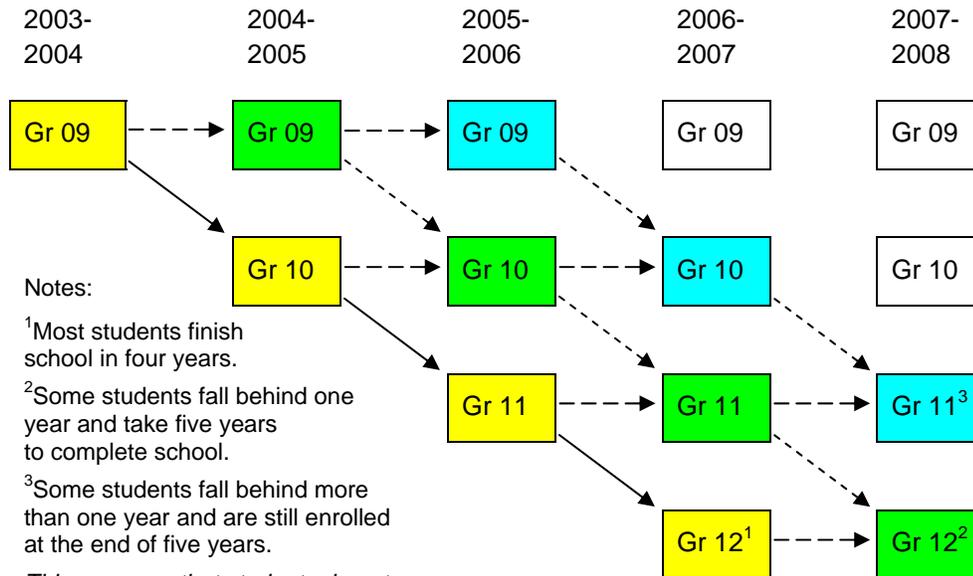
The growth composite values are used to assign each school and district a Growth Status. A growth composite value of 0 or higher indicates that the school or district met its performance expectation and results in a Growth Status of “Met.” A negative value indicates that the school or district did not meet its performance expectation and results in a Growth Status of “Not Met.”

Continued on Next Page

High School Completion

The High School Completion component of the accountability system provides a measure of the degree to which students completed high school. This component of the accountability system applies only to schools and districts that have a graduating class (i.e., a 12th grade). Two separate measures are used – the High School Completion Index (HSCI), and the Graduation Rate. The measures are calculated by tracking a cohort of students beginning in 9th grade and continuing for five years.

Tracking a Cohort of Students over Five Years



Notes:

¹Most students finish school in four years.

²Some students fall behind one year and take five years to complete school.

³Some students fall behind more than one year and are still enrolled at the end of five years.

This assumes that students do not drop out of school before finishing.

Graduation Rate and HSCI Calculations

The graduation rate is the percentage of students in the cohort graduating with a standard diploma within five years (0% through 100%).

The High School Completion Index (HSCI) uses the same 5-year student cohort, but it assigns partial credit for students who complete school but do not earn a regular high school diploma and students who are still enrolled at the end of five years. The HSCI formula assigns the following numeric values to different school completion conditions.

Standard Diploma	300
Met Requirements Except Graduation Test	150
Occupational Diploma	150
Certificate of Attendance	150
GED	125
Still Enrolled	50
Dropout	-300

HSCI values range from -300 (100% of students dropping out of school) through 300 (100% of students graduating with a standard high school diploma within five years).

The Accountability Status

The achievement, growth, and high school completion components are combined to yield an Accountability Status (sometimes called a label or rating). The figure on the next page shows how values on the separate components are used for assigning an accountability status to a school or district.

1. The school or district is placed in a row based on its QDI value.
2. The school or district is placed in a column based on its Growth Status.
3. If the school or district is in the top two rows (two highest QDI ranges) and it has a graduating class, the High School Completion Variables are used to differentiate between two possible labels.

Mississippi Statewide Accountability System Status Labels

QDI Range (2009 Values) ¹	Growth Status ²		High School Completion Variables
	Not Met	Met	
200-300	High Performing	Star School/District³	HSCI >= 230 or Grad Rate >= 80%
		High Performing	HSCI < 230 and Grad Rate < 80%
166-199	Successful	High Performing³	HSCI >= 200 or Grad Rate >= 75%
		Successful	HSCI < 200 and Grad Rate < 75%
133-165	Academic Watch	Successful	
100-132	At Risk of Failing	Academic Watch	
Below 100	Failing	Low Performing	

¹The QDI ranges for the top three achievement levels will increase between 2009 and 2012.

QDI Range	Year 2009	Year 2010	Year 2011	Year 2012
Top Range	200-300	214-300	227-300	240-300
	166-199	176-213	185-226	194-239
	133-165	138-175	143-184	147-193
	100-132	100-137	100-142	100-146
Bottom Range	Below 100	Below 100	Below 100	Below 100

²Met indicates a growth composite of 0 or above; Not Met indicates a negative growth composite value.

³Note: Schools and districts without a graduating class are assigned this label.

Appendix A Full Academic Year

In order for a student's test data to be included in the accountability system, the student must have received instruction in the target school and/or district for a certain period of time – called a Full Academic Year (FAY). FAY is defined separately for test scores reflecting instruction during a traditional year and for scores from fall-only and spring-only courses taught at some high schools.

The information used to determine a student's FAY status comes from the monthly data transmissions in the Mississippi Student Information System (MSIS). If a student is enrolled in a public school district for any length of time during a monthly reporting period, the district's student data management package sends a record for the student to MSIS. If a student moves from one public school district to another during a reporting period, both districts will send a record to MSIS.

There are nine MSIS reporting periods for each school year. The first monthly data are transmitted at the end of September. That transmission covers the period from the opening of school in the district (generally, early- to mid August) through September 30. The first reporting period is called "Month 1." The other eight reporting periods end on the last day of each subsequent month – October through May.

The computer programs that determine each student's FAY status use the last district and school in which the student was enrolled during each reporting period. For every student, there are nine data records each containing a district and school code (or blanks if the student was enrolled in no public school district during the reporting period). The following is an example of the data records for a student who was not enrolled in a public school district during August or September (Month 1), enrolled in Nichols Elementary School (042) in Biloxi (2420) during the middle of October (Month 2) and moved to Gorenflo Elementary (024) – also in Biloxi – during April (Month 8).

Month 1	<blank>	Month 6	2400042
Month 2	2400042	Month 7	2400042
Month 3	2400042	Month 8	2400024 (note change in school code)
Month 4	2400042	Month 9	2400024
Month 5	2400042		

A student's test data will be included for accountability purposes at a school if

- **MCT2, MAAECF and Spring SATP data for students on a traditional schedule:**
 - **Month 8 school = same school on 6 of the 7 earlier monthly records (Month 1 through Month 7).**
 - **Month 7 school = same school on all 6 of the earlier monthly records (Month 1 through Month 6).**
- **Fall SATP data for students on a semester/block schedule:**
 - **Month 3 school = same school on Month 1 and Month 2 records.**
- **Spring SATP data for students on a semester/block schedule:**
 - **Month 8 school = same school on Month 5, Month 6, and Month 7 records**

The same procedure is used to determine if a student met FAY at the district level.

The sample data record above reflects a student who met Full Academic Year at the district level (2400), but did not meet FAY at any school. The student's test scores would be included in Biloxi's accountability results, but they would not be included in the accountability results for any school.

Appendix B
2009 Growth Model Prediction Coefficients and Constants

Important! Predictions made for individual students using the coefficients in this table are useful ONLY when the residuals are combined with those from a sufficient number of other students to yield a reliable school or district level mean residual value. Use of predictions for individual students for ANY other purpose constitutes an INVALID use of these equations.

Cohort	b_1 (predictor 1 = SS_{LA})	b_2 (predictor 2 = SS_{MA})	Constant
For Predicting 2009 MCT2 Language Arts Scale Score			
Grade 3 >> Grade 4	0.66740	0.19352	20.23434
Grade 4 >> Grade 5	0.56645	0.28808	20.95114
Grade 5 >> Grade 6	0.61304	0.23745	22.16681
Grade 6 >> Grade 7	0.50552	0.34008	22.40117
Grade 7 >> Grade 8	0.50192	0.34635	22.24909
For Predicting 2009 MCT2 Mathematics Scale Score			
Grade 3 >> Grade 4	0.35175	0.44978	30.64508
Grade 4 >> Grade 5	0.27038	0.58263	22.22587
Grade 5 >> Grade 6	0.32465	0.55164	19.05126
Grade 6 >> Grade 7	0.23739	0.56952	30.21002
Grade 7 >> Grade 8	0.22812	0.59003	28.21435
For Predicting 2009 SATP Scale Score			
Grade 7 >> Algebra 1 Grade 8	0.40050	0.66937	491.80214
Grade 8 >> Algebra 1 Grade 9	0.21497	0.65138	523.83792
Grade 8 >> Biology 1 Grade 9	2.62037	1.98362	-333.47681

Appendix C
2009 Growth Model Residual Standardization Constants

Important! Predictions made for individual students are useful ONLY when the standardized residuals are combined with those from a sufficient number of other students to yield a reliable school or district level mean standardized residual value. Use of predictions for individual students for ANY other purpose constitutes an INVALID use.

Cohort	Standardization Constant ¹
For Standardizing 2009 MCT2 Language Arts Raw Residuals	
Grade 3 >> Grade 4	7.5930178
Grade 4 >> Grade 5	7.2360555
Grade 5 >> Grade 6	6.9665475
Grade 6 >> Grade 7	7.9015985
Grade 7 >> Grade 8	7.3824539
For Standardizing 2009 MCT2 Mathematics Raw Residuals	
Grade 3 >> Grade 4	7.1603189
Grade 4 >> Grade 5	7.3118151
Grade 5 >> Grade 6	7.0806733
Grade 6 >> Grade 7	6.5080958
Grade 7 >> Grade 8	7.7447762
For Standardizing 2009 SATP Raw Residuals	
Grade 7 >> Algebra 1 Grade 8	8.3427013
Grade 8 >> Algebra 1 Grade 9	7.7274918
Grade 8 >> Biology 1 Grade 9	32.8065407

The standardization constant is the standard deviation for the student level distribution of raw residual values. A student's raw residual is standardized by dividing it by the value shown in this table. The standardized residual will be in "z-score" format where 0 indicates that the student's raw residual was the same as the statewide mean value. Non-zero values indicate how far above (positive values) or below (negative values) the statewide mean the student's residual value fell (in standard deviation units).

Appendix D Accountability Reports

Publicly-Accessible Reports

Once the final accountability results are approved by the Mississippi State Board of Education, they are published. The results are accessible by the public through the web-based Mississippi Assessment and Accountability Reporting System (MAARS). The Office of Research and Statistics posts a list of district and school level accountability results in MAARS. Accountability results for a particular district or school can also be accessed using the MAARS “Search for...” feature.

Access MAARS from the Mississippi Department of Education’s main web page or, directly, at <http://orshome.mde.k12.ms.us/ors>

A. Accessing a Complete List of District and School Level Accountability Results

From the MAARS Main Page, click on “Accountability Information” and select the desired year. Click “Accountability Results” to see links to the available reports.

Under “State Achievement and Growth Models,” the District and School Level Results links will download a file (Microsoft Excel 2007 spreadsheet or PDF) containing a record for each district and school. The accountability results appear in the following columns.

District	4-digit district code plus 3-digit school code (000 for a district record)
District Name	
School Name	
Accreditation Status	Assigned by the Office of Accreditation (not covered in this document)
Accountability Status	
QDI	
Growth Status	
Graduation Rate	
HSCI	

B. Accessing the Accountability Results for a Particular District or School

From the MAARS Main Page, click on “Search for State, District, or School Data”

A page appears containing the most recent state level data. Drop down lists allow the user to select the school year, any school district, and any school. Accountability results can be displayed for the selected district or school by clicking on the data tab labeled “Accountability.”

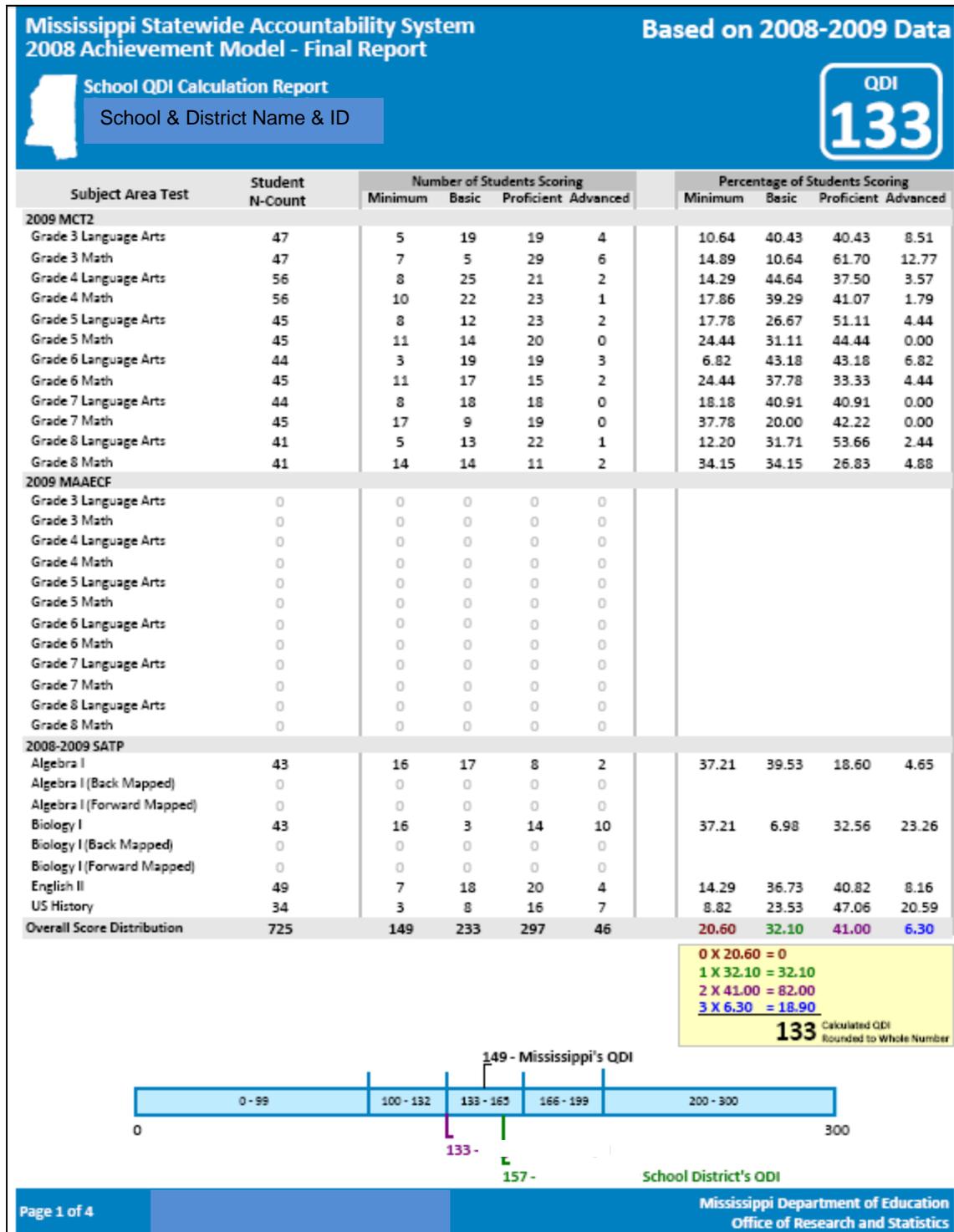
Secure District Reports

District personnel can access secure reports and data on the web using an assigned userid and password. Preliminary accountability reports are posted for districts to review. After a formal review and correction of any data errors, the Mississippi State Board of Education approves the final accountability results and the Office of Research and Statistics posts the publicly accessible reports in MAARS (see above) and makes the final secure accountability reports available to districts.

Beginning on the next page are samples of the secure accountability reports.

- Sample School Level Report for the **Achievement Model** (QDI Calculation Report)
- Sample School Level Report for the **Growth Model** (Growth Report)
- Sample School Level **High School Completion** Index Report (HSCI Report)
- Sample School Performance Report (reports the **Accountability Label**)

Sample School Level Report for the **Achievement Model** (QDI Calculation Report)



The school level and district level reports are formatted the same. Data are displayed only for variables on which the school or district had data.

This is a secure report provided to school districts. This report is not publicly available because it could identify individual students (particularly the MAAECF section).

Sample School Level Report for the **Growth Model** (Growth Report)

Mississippi Statewide Accountability System
2008 Accountability Model - Final Report

School Growth Report

School & District Name & ID

2008-2009

Did Not Meet Growth

Growth is a measurement tool to ensure that a student receives, at a minimum, one year's worth of learning in one year. If, based on the prediction model, the students on average in a school receive at least one year's learning in one year, the school will have met growth.

To be included in the growth predictions, a student must meet three criteria:

- meet full academic year at the district level in both 2007/2008 and 2008/2009,
- have MCT2 scores from 2007/2008, and
- have 2008/2009 score(s) from MCT2 Grade 8 Algebra, Grade 9 Algebra, and/or Grade 9 Biology.

It is important to note that since growth on each of the subject area tests is predicted from performance on the MCT2, growth on the English II subject area test cannot be predicted prior to 2009/2010 testing and growth on the US History subject area test cannot be predicted prior to 2010/2011 testing. This delay is a result of the year in which students are typically tested on the subject area test.

Knowing the student's performance on both the Language Arts and Mathematics sections of the 2007-2008 MCT2 and the average performance of all students in the state, a regression model was developed to predict the student's performance on the 2008-2009 MCT2, Algebra I and Biology I tests.

The difference between a student's actual MCT score and his/her expected (predicted) scale score on either the MCT2 or the SATP is called a residual. The residual values for the student level predictions are averaged to yield a raw mean residual for the school. The raw mean residuals are standardized (for comparability), weighted according to the number of students, and combined. When combined, the standardized weighted growth residuals form the school's growth composite. If the growth composite value reaches zero, the school has met its expected growth for the year. If the value falls below zero, the school has failed to meet its expected growth.

Subject Area Test	Student N-Count	Mean Raw Residual	Mean Standardized Residual	Weighted Mean Standardized Residual
Mississippi Curriculum Test, 2nd Edition (MCT2)				
MCT2 Language Arts: 2008 Grade 3 to 2009 Grade 4	49	-3.518	-0.463	-0.051
MCT2 Mathematics: 2008 Grade 3 to 2009 Grade 4	49	-5.560	-0.777	-0.086
MCT2 Language Arts: 2008 Grade 4 to 2009 Grade 5	41	-3.843	-0.531	-0.049
MCT2 Mathematics: 2008 Grade 4 to 2009 Grade 5	41	-5.983	-0.818	-0.075
MCT2 Language Arts: 2008 Grade 5 to 2009 Grade 6	39	3.624	0.520	0.046
MCT2 Mathematics: 2008 Grade 5 to 2009 Grade 6	40	0.817	0.115	0.010
MCT2 Language Arts: 2008 Grade 6 to 2009 Grade 7	37	-2.843	-0.360	-0.030
MCT2 Mathematics: 2008 Grade 6 to 2009 Grade 7	37	-5.573	-0.856	-0.071
MCT2 Language Arts: 2008 Grade 7 to 2009 Grade 8	35	0.410	0.056	0.004
MCT2 Mathematics: 2008 Grade 7 to 2009 Grade 8	35	-4.890	-0.631	-0.050
Mississippi Subject Area Testing Program (SATP)				
Algebra I 2008/2009 Grade 8 (from 2008 MCT2)	0			
Algebra I 2008/2009 Grade 9 (from 2008 MCT2)	18	-5.489	-0.710	-0.029
Biology I 2008/2009 Grade 9 (from 2008 MCT2)	24	7.404	0.226	0.012
↓ Sum ↓				-0.369
Growth Composite				-0.369
Did Not Meet Growth, Growth Composite Less than Zero				

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Mississippi Department of Education
Office of Research and Statistics

The school level and district level reports are formatted the same. Data are displayed only for variables on which the school or district had data.

This is a secure report provided to school districts. This report is not publicly available because it could identify individual students.

Mississippi Statewide Accountability System
2008 Achievement Model - Final Report

School HSCI Report

School & District Name & ID

2008-2009

Graduation
Rate

85.5%

HSCI

213

About HSCI

The High School Completion Index (HSCI) is used in determining the accountability rating of schools with grades 9-12 and school districts. HSCI is based on the status of students five years after first entering ninth grade and includes the status of all students in this 5-year cohort. The Mississippi Board of Education has indicated a school or school district should demonstrate high performance with regards to HSCI to receive the highest rating in addition to excelling in the QDI and student growth metrics.

About Graduation Rates

The Mississippi Statewide Accountability system uses a combination of HSCI and graduation rate to assign the most appropriate label for a school district's overall designation. In addition to HSCI, a 5-year graduation rate based on a 5-year cohort of students is calculated.

Calculating HSCI for this District

N-Count	39.18		
Traditional Diplomas (Graduates)	33.50	X 300 =	10,050.00
Passed All Requirements Except for Subject Area Tests	0.00	X 150 =	0.00
GED Recipients	0.00	X 125 =	0.00
Occupational Diploma	0.00	X 150 =	0.00
Certificate of Attendance	0.00	X 150 =	0.00
Still Attending School	0.00	X 50 =	0.00
Dropouts	5.68	X -300 =	-1,704.00
Sum	8,346.00	÷ 39.18 =	213.00

HSCI Values are rounded to whole numbers

- Districts with schools where 9th grade is contained separate from 10-12 grade will be issued an HSCI value based upon the students who actually attended the school containing the 9th grade.
- A 10-12 grade school will be issued a HSCI value based on the students who actually attended the school containing grades 10-12.

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Mississippi Department of Education
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The school level and district level reports are formatted the same.

Sample School Performance Report (reports the **Accountability Label**)

Mississippi Statewide Accountability System **Based on 2008-2009 Data**
2008 Achievement Model - Final Report

School Performance Report
School & District Name & ID

2008-2009 Overall State Accountability Label

Failing At-Risk of Failing Low Performing **Academic Watch** Successful High Performing Star School

Factors that Determine This Rating

Quality of Distribution Index

The Quality of Distribution Index is a representation of the distribution of student scores across the various state-wide assessment instruments.

The score at the right represents this district's QDI on a scale of 0 - 300 (higher is better).

To find out more about this district's QDI, turn to the QDI Report in blue.

QDI
133

High School Completion Index and Graduation Rate

The High School Completion Index (HSCI) is used in determining the accountability rating of schools with grades 9-12 and school districts. HSCI is based on the status of students five years after first entering ninth grade and includes the status of all students in this 5-year cohort.

The two indicators to the left represent this district's graduation rate (expressed as a percentage) and the district's High School Completion Index (on a scale of -300 to 300).

To find out more about this district's HSCI, turn to the HSCI Report in orange.

Graduation Rate
85.50%

HSCI
213

Growth Status

Growth is a measurement tool to ensure that a student receives, at a minimum, one year's worth of learning in one year. If, based on the prediction model, the students on average in a school receive at least one year's learning in one year the school will have met growth.

The two statuses of this component are "Met" and "Not Met".

To find out more about this district's growth status, turn to the Growth Report in purple.

Growth
Not Met

Page 1 of 1 Mississippi Department of Education
Office of Research and Statistics

The school level and district level reports are formatted the same.

Appendix E

Where to Find Additional Information

Information about the Statewide Accountability System

Mississippi's Accountability System: A New Challenge [Media Briefing]. November 19, 2009, Office of Instructional Programs and Services, Mississippi Department of Education. This is a PDF containing slides from a PowerPoint presentation.

<http://orshome.mde.k12.ms.us/ors/Accountability%20System%20Media%20Briefing%20%2811-19-09%29.pdf>

Mississippi Statewide Accountability System / Development of the New Models for Achievement and Growth: Report #1. November 26, 2008 (Revised). Office of Research and Statistics, Mississippi Department of Education. This PDF describes the development of the current achievement model.

http://research.mde.k12.ms.us/pub/docs/MSAS_New_Report_1.pdf

Approval to revise the State Accountability Rating System. Office of Accreditation, Mississippi Department of Education. This PDF contains the text from the State Board of Education agenda item where the new accountability system was approved (details for the growth model were established later – see below).

http://www.mde.k12.ms.us/accred/2009_Board%20Accountability-1.pdf

Development of a Growth Model for the 2009 Statewide Accountability System: Report #2. September 21, 2009. Office of Research and Statistics, Mississippi Department of Education. This PDF describes the development of the current growth model.

<http://www.mde.k12.ms.us/accred/Growth%20Model%20Development%20-%20Report%202.pdf>

Procedures for Calculating Graduation, Completion and Dropout Counts and Rates by Tracking Cohorts of Students in MSIS. March 28, 2007 (Revised). Mississippi Department of Education. This PDF describes the approved procedures for calculating the graduation rate used in the statewide accountability system.

<http://research.mde.k12.ms.us/pub/docs/GCD%20for%20APA%20Revised%2003282007.pdf>

Mississippi Assessment and Accountability Reporting System (MAARS)

The following link points to the main web page for MAARS – the web portal operated by the Department of Education – Office of Research and Statistics. <http://orshome.mde.k12.ms.us/ors>

Information about the Statewide Curriculum Frameworks

The following link points to the main web page for the Mississippi Department of Education – Office of Curriculum and Instruction. <http://www.mde.k12.ms.us/acad/id/curriculum/Curr.htm>

Information about the Statewide Assessment Programs

The following link points to the main web page for the Mississippi Department of Education – Office of Student Assessment. <http://www.mde.k12.ms.us/ACAD/osa/>

Accreditation Policies and Procedures

The following link points to the main web page for the Mississippi Department of Education – Office of Accreditation. <http://www.mde.k12.ms.us/accred/accred.html>