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NATIONAL CENTER ON
Performance Incentives

PROJECT ON INCENTIVES
IN TEACHING (POINT)

A Guide to Calculating Monetary Bonuses for Teachers

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Introduction

This guide provides information regarding monetary bonuses for teachers in the Project on Incentives in Teaching (POINT) experiment. The guide explains how the National Center on Performance Incentives counted the total number of students, determined whether a teacher was eligible for a bonus based on the performance of mathematics students, and calculated the total amount of the bonus in relation to the performance of non-mathematics students.

Counting the Total Number of Students

A middle school teacher was considered for a monetary bonus on the basis of his or her total number of mathematics students. To participate in the first year of the experiment, a teacher must be responsible for the instruction of ten or more mathematics students who were expected to take the TCAP at the end of the year.

The total number of mathematics students was determined by a careful review of district records and class rosters as of the twentieth day of school. Students who completed an alternative assessment were not counted toward the total number of students.

To make sure our records were correct, the National Center on Performance Incentives sent a class roster to every participating teacher. Teachers were strongly encouraged to notify us of any possible errors or discrepancies between the class roster and their personal records.

A senior member of our research staff consulted with district and school officials to review all teacher concerns and determine the final roster of students that would be counted toward your bonus eligibility. The National Center on Performance Incentives prioritized the confidentiality of teacher and student records when verifying the classroom rosters for all teachers.

Determining Bonus Eligibility

To determine your bonus eligibility, the National Center on Performance Incentives measured the progress of your mathematics students over the previous academic year using test score gains on the Tennessee Comprehensive Assessment Program (TCAP) exams. Before providing a few hypothetical examples of how we calculated bonus eligibility, we believe it helpful to explain three of the basic concepts in the monetary award system:

- State benchmarks for student performance;

- Teacher responsibility for all mathematics students; and

- Historical targets for teacher performance.

State Benchmarks for Student Performance

Our first consideration is that the progress of an individual student is compared with the progress of a typical student with the same TCAP score in the previous year. To compare the progress of a particular student and those students who previously received the same test score in the current year, the National Center on Performance Incentives used a state benchmark score for all individual test scores at every grade level.

The state benchmark score is the average test score in the current testing year for all Tennessee students in that grade and subject who demonstrated the same level of student achievement in the previous year. A teacher is considered for a bonus according to how well their student performs relative to the average Tennessee student who received the same test score in the previous year.

Teacher Responsibility for all Mathematics Students

The National Center on Performance Incentives will calculate bonus eligibility for an individual teacher based on his or her complete roster of mathematics students across different classes and grade levels.

If a teacher is responsible for two or more mathematics classes at the same grade level, regardless of the course titles, the final roster of students used for determining bonus eligibility will contain all mathematics students in that grade. Teachers with multiple classes are considered for a monetary bonus using the same historical standard as a teacher with one mathematics class. The state benchmark score is the same for all students at the same grade level regardless of the course title or subject area.

If a teacher is responsible for multiple classes at different grades, the state benchmark scores will be calculated separately for students in each grade. As a result, a student is compared only to the average Tennessee student at the same grade level.

Historical Targets for Teacher Performance

A third consideration in the experiment is that teachers are not competing against one another for bonuses. Teachers are being compared with all mathematics teachers who served in Metropolitan Nashville Public Schools (MNPS) during the two years prior to the start of the experiment. Since teachers are competing against historical targets of past performance, it is possible for all teachers in the treatment group to receive bonuses this year and in the future.

The total amount of the monetary bonus is based on the performance of your students relative to the past performance of students taught by MNPS teachers. The lowest target is based on the performance of students for the top 20% of MNPS teachers from 2004 to 2006. If a teacher's students perform at or above that threshold, then the teacher will qualify for a bonus of $5000. To qualify for the next highest bonus of $10,000, the teacher's students would need to perform at or above the top 15% of MNPS teachers. For a teacher to qualify for the highest bonus level of $15,000, the teacher's students must perform at the level of the top 5% of MNPS teachers.

Table 1 displays the monetary bonus levels and minimum thresholds for student performance. The minimum benchmark difference, which is fully explained in the next section (Page 6), indicates whether a teacher is eligible to receive a bonus and the base amount of the bonus level.

While your bonus eligibility is determined by the progress of your mathematics students over the year, the total amount of the monetary bonus may be affected by the progress of your non-mathematics students over the year (Page 14).

Table 1. Historical Performance of MNPS Teachers and Bonus Levels

Level	Percentile Rank in Distribution of MNPS Teachers	Base Amount of Monetary Bonus	Minimum Benchmark Difference to Qualify for Bonus
One	80 %	$ 5,000	+ 3.6
Two	85 %	$ 10,000	+ 5.9
Three	95 %	$ 15,000	+ 12.5

Hypothetical Cases

Here are four hypothetical cases to help you understand how we calculated bonus eligibility. These examples show a classroom teacher in one of four different circumstances, in order:

- Mr. Bailey - A teacher with one class of mathematics students who receives a monetary bonus.

- Ms. Carter - A teacher with two classes of mathematics students at the same grade level who receives a monetary bonus.

- Mrs. Lopez - A teacher with two classes of mathematics students at different grade levels who receives a monetary bonus.

- Mr. Stewart - A teacher with one class of mathematics students who does not receive a monetary bonus.

The narrative description for each teacher is presented with a class roster in the same format that you will receive in a confidential report. We discuss the first case in detail and focus on major differences in teacher circumstances for the three remaining cases.

Hypothetical Example - Mr. Bailey

Mr. Bailey is a mathematics teacher for ten students in the sixth grade. Table 2 shows the complete roster for Mr. Bailey. The class roster has a separate row for each of his ten students with their grade levels (Column 2), TCAP scores in the previous year (Column 3), and TCAP scores in the most recent year (Column 4). Additionally, the table displays the state benchmark score for each particular test score at the same grade level (Column 5).

The first pupil on the roster scored 392 on the TCAP in 2006. The state benchmark score for Student A is 437.6. This state benchmark represents the 2007 statewide average score obtained by students who, like Student A, had a score of 392 in 2006. The fourth column shows that Student A had a score of 440 in 2007. Thus, Student A gained 2.4 points more than the average Tennessee student who demonstrated the same level of student achievement in 2006. The table records the individual difference from state benchmark with the value of +2.4 for Student A (Column 6).

We perform the same calculation for other students on the roster. The individual differences, plus or minus, are recorded in the final column.

Teacher performance is measured by the average test score differences of all mathematics students. The final row at the bottom of the roster shows the average benchmark difference for all ten students. Table 2 indicates Mr. Bailey's students gained 6.1 points more, on average, than comparable students statewide.

To find out the bonus eligibility of Mr. Bailey, we compare his average benchmark difference of +6.1 to the historical performance of MNPS teachers in recent years. According to the historical targets listed in Table 1, Mr. Bailey will receive a monetary bonus.

Table 2. Mathematics Roster for Mr. Bailey, 2006-2007

Student	Grade	Individual TCAP Score 2006	Individual TCAP Score 2007	State TCAP Benchmark 2007	Individual Difference from State Benchmark
A	6	392	440	437.6	2.4
B	6	423	449	450.4	– 1.4
C	6	430	461	450.9	10.1
D	6	451	478	471.9	6.1
E	6	459	494	478.2	15.8
F	6	485	495	499.6	– 4.6
G	6	515	545	530.8	14.2
H	6	518	547	534.4	12.6
I	6	554	579	571.2	7.8
J	6	560	576	578.1	– 2.1

Average Benchmark Difference for Your Mathematics Students	6.1

Hypothetical Example - Mrs. Carter

Mrs. Carter is a mathematics teacher for two different classes in the eighth grade. Her Algebra course had ten pupils and her Honors Algebra course had seven pupils at the start of the school year. While Mrs. Carter was responsible for seventeen pupils, there are a total of ten students on her final roster because three students took an alternative test and four students withdrew from the district prior to the spring exams.

Table 3 shows the complete roster for Mrs. Carter. The class roster has a separate row for each student who took the spring exam, but it does not list the course title taught by Mrs. Carter. The state benchmark scores reflect the same value for comparable students in both courses because all ten students are tested at the same grade level.

The second pupil on the roster scored 447 on the TCAP in 2006. The state benchmark score for Student B is 459.3. This state benchmark represents the 2007 statewide average score obtained by students who, like Student B, had a score of 447 in 2006. The fourth column shows that Student B had a score of 470 in 2007. Thus, Student B gained 10.7 points more than the average Tennessee student who demonstrated the same level of student achievement in 2006. The table records the individual difference from state benchmark with the value of +10.7 for Student B (Column 6).

We perform the same calculation for other students regardless of their course title. Just like the case of Mr. Bailey, teacher performance for Mrs. Carter is measured by the average test score changes of all mathematics students. Table 3 indicates Mrs. Carter's students gained 10.7 points more, on average, than comparable students statewide.

To find out the bonus eligibility of Mrs. Carter, we compare her average benchmark difference of +10.7 to the historical performance of MNPS teachers. According to the historical targets listed in Table 1, Mrs. Carter will receive a monetary bonus.

Table 3. Mathematics Roster for Mrs. Carter, 2006-2007

Student	Grade	Individual TCAP Score 2006	Individual TCAP Score 2007	State TCAP Benchmark 2007	Individual Difference from State Benchmark
A	8	426	466	460.4	5.6
B	8	447	470	459.3	10.7
C	8	455	484	472.0	12.0
D	8	462	487	472.4	14.6
E	8	468	494	485.8	8.2
F	8	515	532	522.8	9.2
G	8	526	545	534.6	10.4
H	8	534	556	543.0	13.0
I	8	556	580	566.2	13.8
J	8	566	582	577.8	4.2

Average Benchmark Difference for Your Mathematics Students	10.2

Hypothetical Example - Mrs. Lopez

Mrs. Lopez is a mathematics teacher with a seventh grade class and an eighth grade class. Her seventh grade class has five pupils and her eighth grade class has five pupils. All ten pupils took the spring exams.

Table 4 shows the complete roster for Mrs. Lopez. The class roster has a separate row for each student and indicates the student's grade level. All of the ten students are clustered with peer students in the same grade. Since the state benchmark scores are calculated using statewide averages for students in a specific grade, students in different grades who have the same 2006 score may have different benchmark scores. This is best explained with the comparison below.

The fourth pupil on the roster scored 496 on the TCAP in 2006. The state benchmark score for Student D is 511.1. This state benchmark represents the 2007 statewide average score obtained by seventh grade students who, like Student D, had a score of 496 in 2006. The fourth column shows that Student D had a score of 513 in 2007. Thus, Student D gained 1.9 points more than the average Tennessee seventh grader who demonstrated the same level of student achievement in 2006. The table records the individual difference from state benchmark with the value of +1.9 for Student D.

The seventh pupil on the roster scored 496 on the TCAP in 2006. The state benchmark score for Student G is 505.7. This state benchmark represents the 2007 statewide average score obtained by eighth grade students who, like Student G, had a score of 496 in 2006. The fourth column shows that Student G had a score of 513 in 2007. Thus, Student G gained 7.3 points more than the average Tennessee eighth grader who demonstrated the same level of student achievement in 2006. The table records the individual difference from state benchmark with the value of +7.3 for Student G.

We perform the same calculation for other students using the state benchmark score for their grade level. Just like the case of Mr. Bailey, teacher performance for Mrs. Lopez is measured by the average test score changes of all mathematics students. Table 4 indicates Mrs. Lopez's students gained 6.3 points more, on average, than comparable students statewide.

To find out the bonus eligibility of Mrs. Lopez, we compare her average benchmark difference of +6.3 to the historical performance of MNPS teachers. According to the historical targets listed in Table 1, Mrs. Lopez will receive a monetary bonus.

Table 4. Mathematics Roster for Mrs. Lopez, 2006-2007

Student	Grade	Individual TCAP Score 2006	Individual TCAP Score 2007	State TCAP Benchmark 2007	Individual Difference from State Benchmark
A	7	480	509	494.3	14.7
B	7	483	505	496.4	8.6
C	7	490	519	504.3	14.7
D	7	496	513	511.1	1.9
E	7	505	517	519.7	− 2.7
F	8	488	498	498.5	− 0.5
G	8	496	513	505.7	7.3
H	8	506	526	514.4	11.6
I	8	515	531	522.8	8.2
J	8	529	536	537.1	− 1.1

Average Benchmark Difference for Your Mathematics Students	6.3

Hypothetical Example - Mr. Stewart

Mr. Stewart is a mathematics teacher for one class of seventh grade students. His Algebra course had thirteen pupils at the start of the school year. There are a total of ten students on his final roster because two students transferred to a remedial course in October and district officials invalidated the test score of one student.

The first pupil on the roster scored 496 on the TCAP in 2006. The state benchmark score for Student A is 511.1. This state benchmark represents the 2007 statewide average score obtained by students who, like Student A, had a score of 496 in 2006. The fourth column shows that Student A had a score of 523 in 2007. Thus, Student A gained 11.9 points more than the average Tennessee student who demonstrated the same level of student achievement in 2006. The table records the individual difference from state benchmark with the value of +11.9 for Student A.

Teacher performance is measured by the average test score changes of all mathematics students. The final row at the bottom of the roster shows the average benchmark difference for all ten students. Table 5 indicates Mr. Stewart's students gained 3 points more, on average, than comparable students statewide.

To find out the bonus eligibility of Mr. Stewart, we compare his average benchmark difference of +3.0 to the historical performance of MNPS teachers in recent years. According to the historical targets listed in Table 1, Mr. Stewart will *not* receive a monetary bonus.

Table 5. Mathematics Roster for Mr. Stewart, 2006-2007

Student	Grade	Individual TCAP Score 2006	Individual TCAP Score 2007	State TCAP Benchmark 2007	Individual Difference from State Benchmark
A	7	496	523	511.1	11.9
B	7	505	529	519.7	9.3
C	7	521	541	536.0	5.0
D	7	521	544	536.0	8.0
E	7	526	547	541.5	5.5
F	7	534	548	550.4	– 2.4
G	7	546	567	563.5	3.5
H	7	553	563	570.6	– 7.6
I	7	576	593	592.4	0.6
J	7	583	594	597.4	– 3.4

Average Benchmark Difference for Your Mathematics Students	3.0

Calculating the Total Amount of the Monetary Bonus

While your bonus eligibility is determined by the progress of your mathematics students over the year, the total amount of the monetary bonus may be affected by the progress of your non-mathematics students over the year.

If a teacher is responsible for students in subjects other than mathematics, the teacher will receive a second set of tables. Just as the first set of tables listed mathematics students, the second set of tables will display the progress of your students in each of the subjects that is assessed by TCAP (English and Language Arts, Science, and Social Studies). To receive the base amount of the monetary bonus shown in Table 1, the average benchmark difference of students that a teacher instructs in other subjects must meet or exceed the district target. The district target is defined as the district's average test score change in other subjects demonstrated by historical standards of student performance (2004 to 2006).

A hypothetical example may offer a helpful way to explain the bonus calculation process. For the purposes of simplicity, we return to the case of Mr. Bailey, a sixth grade teacher of ten mathematics students eligible for a bonus of $10,000 (See Page 6).

To determine the total amount of the monetary bonus, we calculate the number of students that Mr. Bailey instructs in subjects other than mathematics. District and school records indicate Mr. Bailey has 10 mathematics students as well as 10 pupils in science.

Since Mr. Bailey qualifies for a $10,000 bonus in mathematics, he will receive the full amount of the monetary bonus if the average difference of his 10 science students meets or exceeds the district target. If his science students perform below the district target, the total amount of Mr. Bailey's award will be reduced by the proportion of his pupils in science.

Table 6 shows the complete roster of science students for Mr. Bailey. The class roster has a separate row with each science student. Teacher performance is measured by the average test score changes of all science students. The final row at the bottom of the roster shows the average difference for all ten students. Table 5 indicates Mr. Bailey's students gained 2.4 points less, on average, than comparable students statewide.

To find out the total amount of the bonus for Mr. Bailey, we compare his average benchmark difference of –2.4 to the district target. The average difference is less than the district target of –1.9, so the total amount of the bonus is reduced by the proportion of his pupils in a science course. Since Mr. Bailey has ten math students (50%) and ten science students (50%) for a total of twenty pupils, he loses 50% of his bonus and receives $5,000 rather than $10,000.

Students in subjects that are not tested under TCAP, including Music, Art, and Foreign Languages, do not affect the total amount of your monetary bonus. Your total number of students, which is used to calculate the total amount of your monetary bonus, does not include any students in subjects that are not tested under TCAP as well as students without valid results.

Table 6. Science Roster for Mr. Bailey, 2006-2007

Student	Grade	Individual TCAP Score 2006	Individual TCAP Score 2007	State TCAP Benchmark 2007	Individual Difference from State Benchmark
A	6	164	173	177.8	– 4.8
B	6	169	172	179.9	– 7.9
C	6	176	178	182.5	– 4.5
D	6	185	186	190.7	– 4.7
E	6	189	191	192.9	– 1.9
F	6	191	193	194.2	– 1.2
G	6	201	202	202.4	– 0.4
H	6	204	205	205.3	– 0.3
I	6	206	208	206.8	1.2
J	6	208	209	208.5	0.5

Average Benchmark Difference for Your Science Students	– 2.4