Florida's Race to the Top

Student Growth Implementation Committee

Webinar

June 7, 2011

The Purpose of Today's Webinar

- Clarify…

  the impact of "school component" on teacher value-added scores

- Discuss…

  the considerations associated with the choice of "school component" weighting coefficient "x"

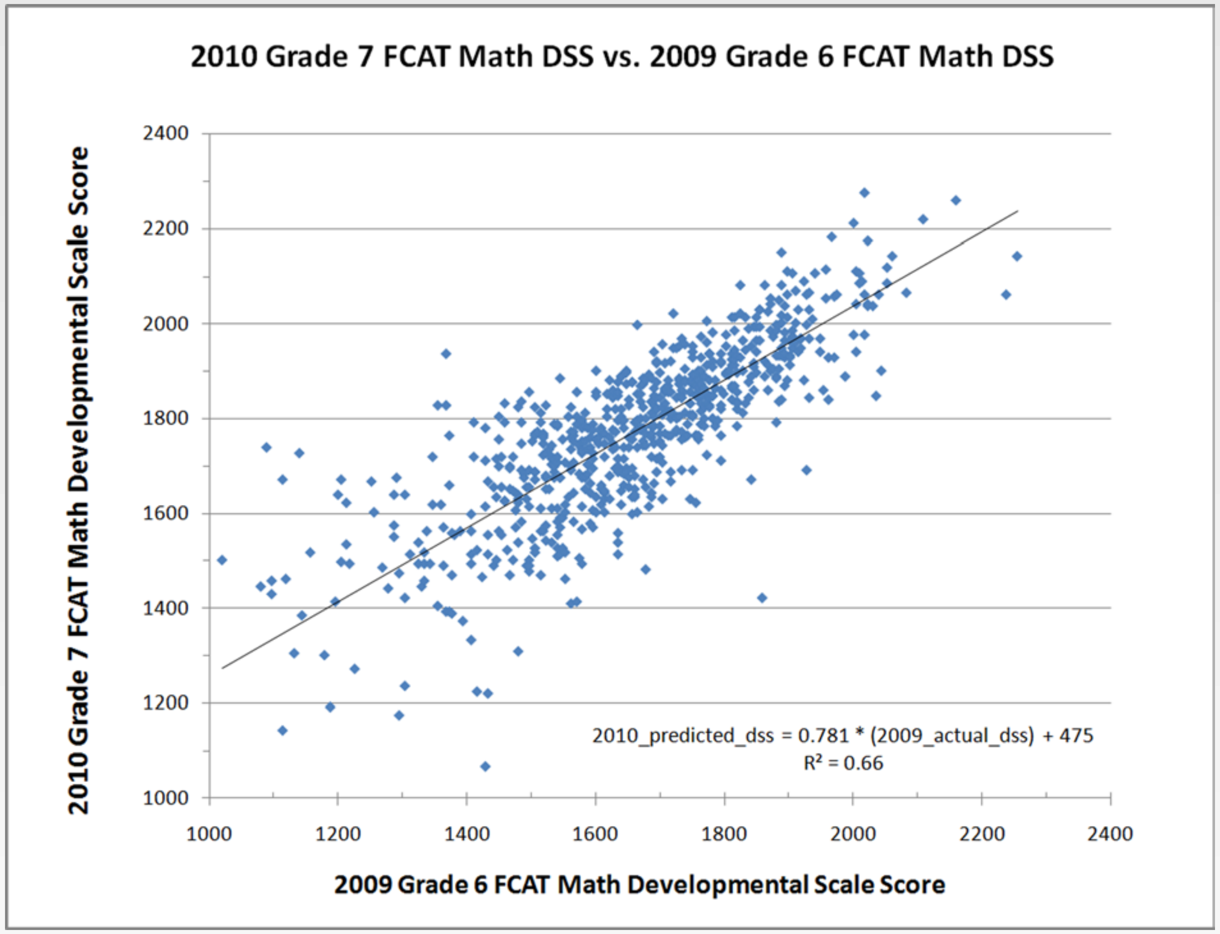
- Act…

  determine what that insight means *to* us and requires *of* us

How does a covariate model quantify teacher outcomes in terms of student growth?

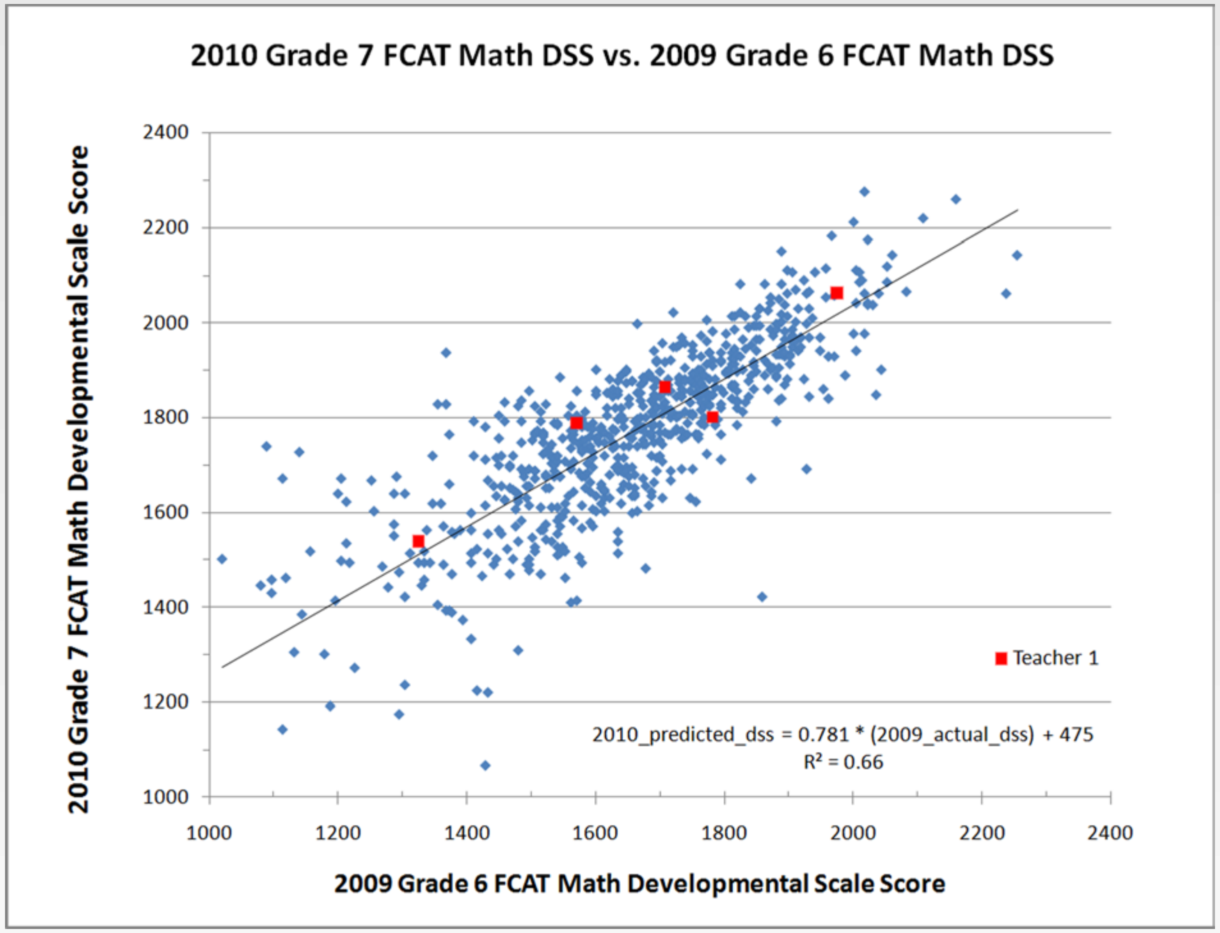
How does a covariate model quantify teacher outcomes in terms of student growth?

- Use statewide FCAT data to estimate relationship between current year and prior year



How does a covariate model quantify teacher outcomes in terms of student growth?

- Use statewide FCAT data to estimate relationship between current year and prior year
- Use resulting formula to calculate ***expected growth*** for each student for a given teacher in the current year

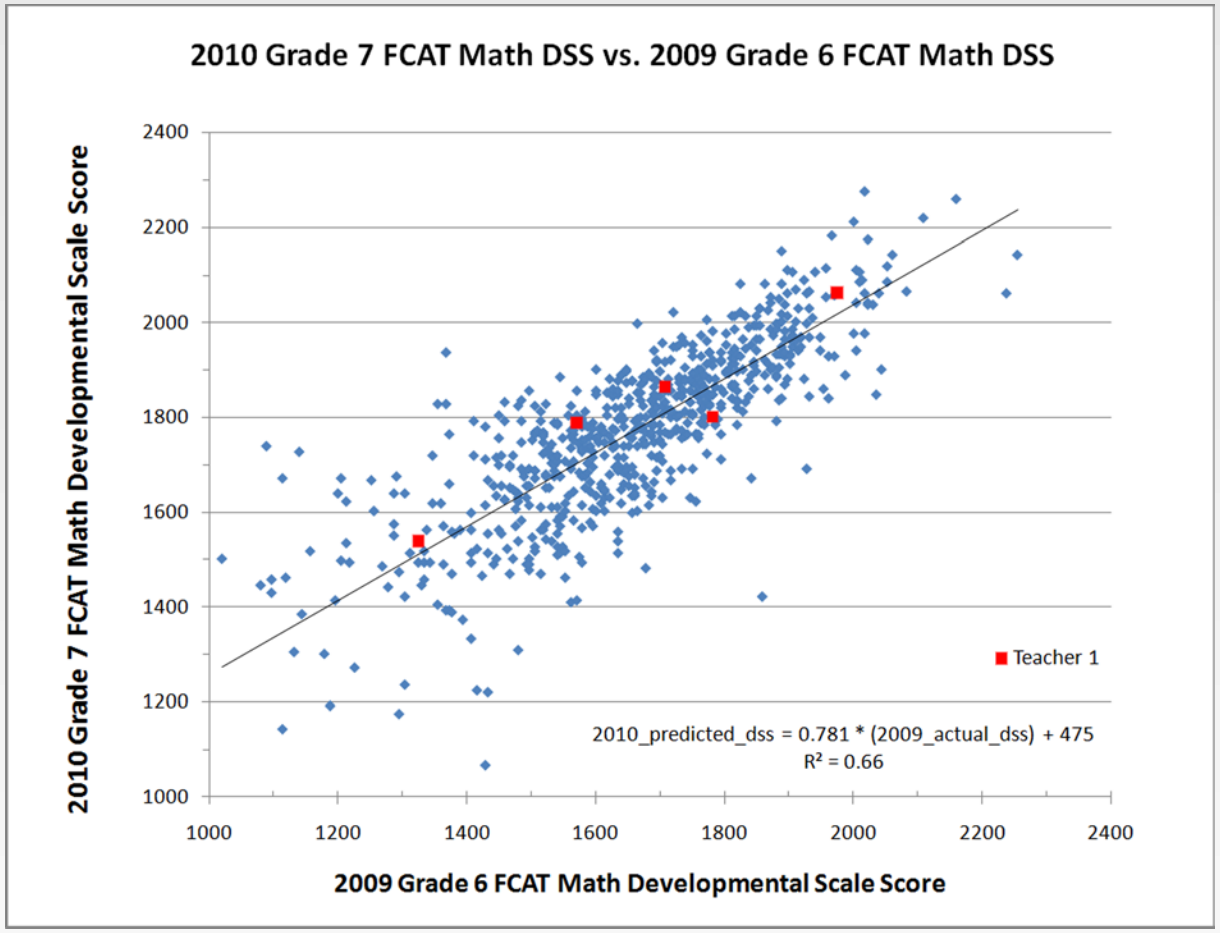


Teacher 1

Student	'09 Actual DSS A	'10 Actual DSS B	Expected Growth (.781*A) + 475 C
Mike J.	1325	1539	**1510**
Karen B.	1571	1789	**1702**
Isaac K.	1708	1865	**1809**
Willie T.	1782	1801	**1867**
Wendy B.	1975	2063	**2017**

How does a covariate model quantify teacher outcomes in terms of student growth?

- Use statewide FCAT data to estimate relationship between current year and prior year
- Use resulting formula to calculate ***expected growth*** for each student for a given teacher in the current year
- Calculate the ***residual*** (amount of growth above or below expected) for each student



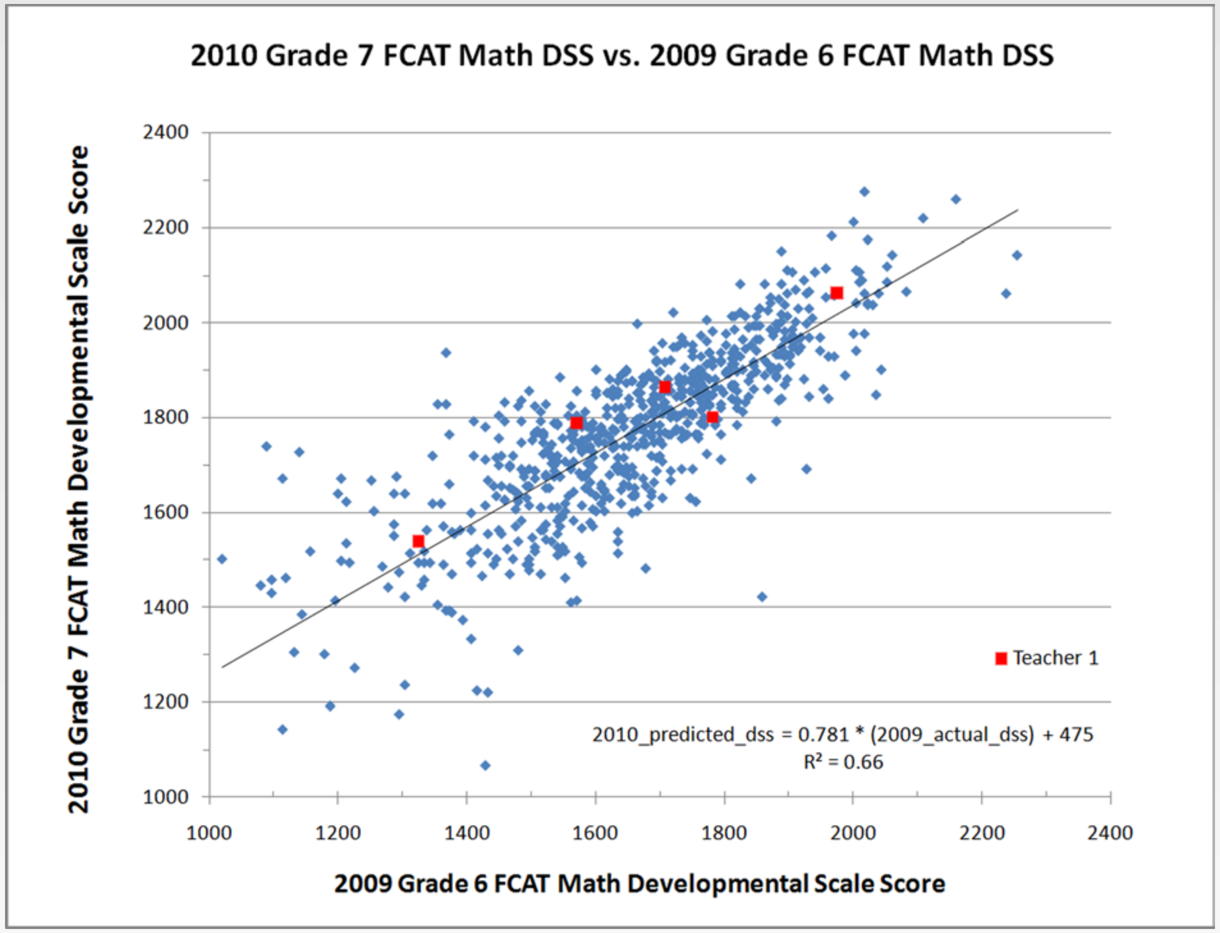
Teacher 1

Student	'09 Actual DSS A	'10 Actual DSS B	Expected Growth (.781*A) + 475 C	Residual B-C D
Mike J.	1325	1539	1510	**29**
Karen B.	1571	1789	1702	**87**
Isaac K.	1708	1865	1809	**56**
Willie T.	1782	1801	1867	**-66**
Wendy B.	1975	2063	2017	**46**

How does a covariate model quantify teacher outcomes in terms of student growth?

- Use statewide FCAT data to estimate relationship between current year and prior year
- Use resulting formula to calculate expected growth for each student for a given teacher in the current year
- Calculate the residual (amount of growth above or below expected) for each student
- Express teacher's student outcome *($Std_{outcomes}$) as the average* of residuals*

**the actual math is more complex, and returns a much more accurate estimate, than a simple average; but, for today's purpose, it will help to think of it this way.*



Teacher 1

Student	'09 Actual DSS A	'10 Actual DSS B	Expected Growth (.781*A) + 475 C	Residual B-C D
Mike J.	1325	1539	1510	29
Karen B.	1571	1789	1702	87
Isaac K.	1708	1865	1809	56
Willie T.	1782	1801	1867	-66
Wendy B.	1975	2063	2017	46
			Average Student Residuals ($Std_{outcomes}$) :	30

How is a teacher's value-added score (Tch_{vas}) related to his/her student outcomes ($Std_{outcomes}$) ?

How is a teacher's value-added score (Tch_{vas}) related to his/her student outcomes ($Std_{outcomes}$) ?

- In models that do not estimate a "school component," all student outcomes are assumed to be directly attributable to the teacher

How is a teacher's value-added score (Tch_{vas}) related to his/her student outcomes ($Std_{outcomes}$) ?

- In models that do not estimate a "school component," all student outcomes are assumed to be directly attributable to the teacher

- As a result, the teacher's value-added score (Tch_{vas}) is essentially the average of the residuals observed in the teacher's students, relative to state expectations based on the factors accounted for in the model

In models that do not estimate a "school component":

$$Tch_{vas} = Std_{outcomes}$$

where

$Std_{outcomes}$ is essentially the average of residuals observed for all students taught by the teacher, relative to state expectations based on the factors accounted for in the model

How is a teacher's value-added score (Tch_{vas}) related to his/her student outcomes ($Std_{outcomes}$) ?

- In models that estimate a "school component," student outcomes *may* be attributable to both the teacher and factors related to the school

How is a teacher's value-added score (Tch_{vas}) related to his/her student outcomes ($Std_{outcomes}$) ?

- In models that estimate a "school component," student outcomes ***may*** be attributable to both the teacher and factors related to the school

- The teacher value-added score (Tch_{vas}) is calculated as the sum of student growth unique to the teacher (Tch_{comp}) and a percentage (x) of the average student growth in the school (Sch_{comp})

In models that estimate a "school component":

$$Tch_{vas} = Tch_{comp} + (x)*Sch_{comp}$$

The SGIC has chosen this type of model by choosing model "3c"

How is a teacher's value-added score (Tch_{vas}) related to his/her student outcomes ($Std_{outcomes}$) ?

- What may not be apparent is the teacher component (Tch_{comp}) is essentially the difference between the teacher's student outcomes ($Std_{outcomes}$) and the average student growth in the school (Sch_{comp})
- Taking that information into account, one can more easily evaluate the impact of the "school component" on a teacher's value-added score as it relates to his/her student outcomes

In models that estimate a "school component":

$$Tch_{vas} = Tch_{comp} + (x)*Sch_{comp}$$

where

$$Tch_{comp} = Std_{outcomes} - Sch_{comp}$$

Substituting for Tch_{comp} :

$$Tch_{vas} = (Std_{outcomes} - Sch_{comp}) + (x)*Sch_{comp}$$

The SGIC has chosen this type of model by choosing model "3c"

How is a teacher's value-added score (Tch_{vas}) related to his/her student outcomes ($Std_{outcomes}$)?

- **When x=1**, that means that all (or 100%) of the "school component" is included in the teacher's value-added score
- Including all of the "school component" (100%) in the teacher's value-added score essentially means that his/her score is equal to his/her students' outcomes (which are estimated relative to the state)
- This is essentially the result that would be calculated in a model that does not estimate a "school component"

In models that estimate a "school component" the school component can be adjusted or weighted:

$$Tch_{vas} = (Std_{outcomes} - Sch_{comp}) + (x)*Sch_{comp}$$

For *x*=1:

$$\mathbf{Tch_{vas} = (Std_{outcomes} - Sch_{comp}) + (1)*Sch_{comp}}$$

$$\mathbf{Tch_{vas} = Std_{outcomes}}$$

How is a teacher's value-added score (Tch_{vas}) related to his/her student outcomes ($Std_{outcomes}$)?

- **When x=0**, that means that none (or 0%) of the "school component" is included in the teacher's value-added score

- Including none of the "school component" (0%) in the teacher's value-added score essentially means that his/her score is equal to his/her students' outcomes (which are estimated relative to the state) minus the average performance of similar students at his/her school

- Thus, the teacher's value-added score becomes a reflection of his/her students' performance relative to the school

In models that estimate a "school component" the school component can be adjusted or weighted:

$$Tch_{vas} = (Std_{outcomes} - Sch_{comp}) + (x)*Sch_{comp}$$

For *x*=0:

$$\mathbf{Tch_{vas} = (Std_{outcomes} - Sch_{comp}) + (0)*Sch_{comp}}$$

$$\mathbf{Tch_{vas} = Std_{outcomes} - Sch_{comp}}$$

How does the choice of weighting coefficient (*x*) impact the value-added scores of teachers in *high growth* schools?

How does the choice of weighting coefficient (x) impact the value-added scores of teachers in *high growth* schools?

- Let's start by looking at some fictional student growth data for School A

STUDENT DATA - School A (High Growth School)					
Ms. Smith		Ms. Brown		Mr. Jones	
Student	Residual	Student	Residual	Student	Residual
John D.	46	Peter S.	50	Mike A.	-12
Sue Q.	-12	Kevin C.	30	Jerry B.	-20
Jake S.	64	Gary R.	-20	Owen M.	38
David O.	58	Mary M.	27	Sara J.	55
		Sally N.	42	Tom S.	40
		Billy T.	52		

How does the choice of weighting coefficient (*x*) impact the value-added scores of teachers in *high growth* schools?

- Let’s start by looking at some fictional student growth data for School A
- $Std_{outcomes}$ for each teacher is calculated by summing the residuals, then dividing by the number of students

STUDENT DATA - School A (High Growth School)					
Ms. Smith		Ms. Brown		Mr. Jones	
Student	Residual	Student	Residual	Student	Residual
John D.	46	Peter S.	50	Mike A.	-12
Sue Q.	-12	Kevin C.	30	Jerry B.	-20
Jake S.	64	Gary R.	-20	Owen M.	38
David O.	58	Mary M.	27	Sara J.	55
		Sally N.	42	Tom S.	40
		Billy T.	52		

TEACHER TOTALS	Ms. Smith	Ms. Brown	Mr. Jones
Total Residuals (R_total)	156	181	101
Total Students (n)	4	6	5
STD_outcomes (R_total/n)	39	30	20

How does the choice of weighting coefficient (x) impact the value-added scores of teachers in *high growth* schools?

- Let's start by looking at some fictional student growth data for School A
- $Std_{outcomes}$ for each teacher is calculated by summing the residuals, then dividing by the number of students
- For x=1, the teacher's value-added score is essentially equal to $Std_{outcomes}$

STUDENT DATA - School A (High Growth School)					
Ms. Smith		Ms. Brown		Mr. Jones	
Student	Residual	Student	Residual	Student	Residual
John D.	46	Peter S.	50	Mike A.	-12
Sue Q.	-12	Kevin C.	30	Jerry B.	-20
Jake S.	64	Gary R.	-20	Owen M.	38
David O.	58	Mary M.	27	Sara J.	55
		Sally N.	42	Tom S.	40
		Billy T.	52		

TEACHER TOTALS	Ms. Smith	Ms. Brown	Mr. Jones
Total Residuals (R_total)	156	181	101
Total Students (n)	4	6	5
STD_outcomes (R_total/n)	39	30	20

TEACHER VALUE-ADDED SCORES (TCH_vas)	Ms. Smith	Ms. Brown	Mr. Jones
For X=1 (STD_outcomes)	39	30	20

How does the choice of weighting coefficient (x) impact the value-added scores of teachers in *high growth* schools?

- Let's start by looking at some fictional student growth data for School A

- $Std_{outcomes}$ for each teacher is calculated by summing the residuals, then dividing by the number of students

- For x=1, the teacher's value-added score is essentially equal to $Std_{outcomes}$

- For x=0, we must first estimate the "school component" by averaging the results for all students

STUDENT DATA - School A (High Growth School)					
Ms. Smith		Ms. Brown		Mr. Jones	
Student	Residual	Student	Residual	Student	Residual
John D.	46	Peter S.	50	Mike A.	-12
Sue Q.	-12	Kevin C.	30	Jerry B.	-20
Jake S.	64	Gary R.	-20	Owen M.	38
David O.	58	Mary M.	27	Sara J.	55
		Sally N.	42	Tom S.	40
		Billy T.	52		

TEACHER TOTALS	Ms. Smith	Ms. Brown	Mr. Jones
Total Residuals (R_total)	156	181	101
Total Students (n)	4	6	5
STD_outcomes (R_total/n)	39	30	20

SCHOOL TOTALS	Ms. Smith + Ms. Brown + Mr. Jones
Total Residuals (156 + 181 + 101)	438
Total Students (4 + 6 + 5)	15
SCH_comp (438 / 15)	29

How does the choice of weighting coefficient (x) impact the value-added scores of teachers in *high growth* schools?

- Let's start by looking at some fictional student growth data for School A
- $Std_{outcomes}$ for each teacher is calculated by summing the residuals, then dividing by the number of students
- For x=1, the teacher's value-added score is essentially equal to $Std_{outcomes}$
- For x=0, we must first estimate the "school component" by averaging the results for all students
- Now we may calculate our value-added scores for x=0

STUDENT DATA - School A (High Growth School)					
Ms. Smith		Ms. Brown		Mr. Jones	
Student	Residual	Student	Residual	Student	Residual
John D.	46	Peter S.	50	Mike A.	-12
Sue Q.	-12	Kevin C.	30	Jerry B.	-20
Jake S.	64	Gary R.	-20	Owen M.	38
David O.	58	Mary M.	27	Sara J.	55
		Sally N.	42	Tom S.	40
		Billy T.	52		

TEACHER TOTALS			
	Ms. Smith	Ms. Brown	Mr. Jones
Total Residuals (R_total)	156	181	101
Total Students (n)	4	6	5
STD_outcomes (R_total/n)	39	30	20

SCHOOL TOTALS	
	Ms. Smith + Ms. Brown + Mr. Jones
Total Residuals (156 + 181 + 101)	438
Total Students (4 + 6 + 5)	15
SCH_comp (438 / 15)	29

TEACHER VALUE-ADDED SCORES (TCH_vas)			
	Ms. Smith	Ms. Brown	Mr. Jones
For X=1 (STD_outcomes)	39	30	20
Fox X=0 (STD_outcomes - SCH_comp)	10	1	-9

How does the choice of weighting coefficient (*x*) impact the value-added scores of teachers in *low growth* schools?

How does the choice of weighting coefficient (*x*) impact the value-added scores of teachers in *low growth* schools?

- Let's start by looking at some fictional student growth data for School B

STUDENT DATA - School B (Low Growth School)					
Ms. Johnson		Ms. Lewis		Mr. Smith	
Student	Residual	Student	Residual	Student	Residual
Jerry S.	-14	John T.	20	Jerry B.	-82
Allen B.	-64	Scott B.	-60	Mike O.	-90
Sue O.	4	Lisa I.	-72	Jake S.	2
Sally B.	-2	Mary M.	-33	Sara J.	15
		Tom J.	-18	Ellen P.	-46
		Laura R.	-12		

How does the choice of weighting coefficient (*x*) impact the value-added scores of teachers in *low growth* schools?

- Let's start by looking at some fictional student growth data for School B
- $Std_{outcomes}$ for each teacher is calculated by summing the residuals, then dividing by the number of students

STUDENT DATA - School B (Low Growth School)					
Ms. Johnson		Ms. Lewis		Mr. Smith	
Student	Residual	Student	Residual	Student	Residual
Jerry S.	-14	John T.	20	Jerry B.	-82
Allen B.	-64	Scott B.	-60	Mike O.	-90
Sue O.	4	Lisa I.	-72	Jake S.	2
Sally B.	-2	Mary M.	-33	Sara J.	15
		Tom J.	-18	Ellen P.	-46
		Laura R.	-12		

TEACHER TOTALS			
	Ms. Johnson	Ms. Lewis	Mr. Smith
Total Residuals (R_total)	-76	-175	-201
Total Students (n)	4	6	5
STD_outcomes (R_total/n)	-19	-29	-40

How does the choice of weighting coefficient (*x*) impact the value-added scores of teachers in *low growth* schools?

- Let's start by looking at some fictional student growth data for School B
- $Std_{outcomes}$ for each teacher is calculated by summing the residuals, then dividing by the number of students
- For x=1, the teacher's value-added score is essentially equal to $Std_{outcomes}$

STUDENT DATA - School B (Low Growth School)					
Ms. Johnson		Ms. Lewis		Mr. Smith	
Student	Residual	Student	Residual	Student	Residual
Jerry S.	-14	John T.	20	Jerry B.	-82
Allen B.	-64	Scott B.	-60	Mike O.	-90
Sue O.	4	Lisa I.	-72	Jake S.	2
Sally B.	-2	Mary M.	-33	Sara J.	15
		Tom J.	-18	Ellen P.	-46
		Laura R.	-12		

TEACHER TOTALS	Ms. Johnson	Ms. Lewis	Mr. Smith
Total Residuals (R_total)	-76	-175	-201
Total Students (n)	4	6	5
STD_outcomes (R_total/n)	-19	-29	-40

TEACHER VALUE-ADDED SCORES (TCH_vas)	Ms. Johnson	Ms. Lewis	Mr. Smith
For X=1 (STD_outcomes)	-19	-29	-40

How does the choice of weighting coefficient (*x*) impact the value-added scores of teachers in *low growth* schools?

- Let's start by looking at some fictional student growth data for School B
- $Std_{outcomes}$ for each teacher is calculated by summing the residuals, then dividing by the number of students
- For x=1, the teacher's value-added score is essentially equal to $Std_{outcomes}$
- For x=0, we must first estimate the "school component" by averaging the results for all students

STUDENT DATA - School B (Low Growth School)					
Ms. Johnson		Ms. Lewis		Mr. Smith	
Student	Residual	Student	Residual	Student	Residual
Jerry S.	-14	John T.	20	Jerry B.	-82
Allen B.	-64	Scott B.	-60	Mike O.	-90
Sue O.	4	Lisa I.	-72	Jake S.	2
Sally B.	-2	Mary M.	-33	Sara J.	15
		Tom J.	-18	Ellen P.	-46
		Laura R.	-12		

TEACHER TOTALS		
Ms. Johnson	Ms. Lewis	Mr. Smith
Total Residuals (R_total)		
-76	-175	-201
Total Students (n)		
4	6	5
STD_outcomes (R_total/n)		
-19	-29	-40

SCHOOL TOTALS
Ms. Johnson + Ms. Lewis + Mr. Smith
Total Residuals (-76 + -175 + -201)
-452
Total Students (4 + 6 + 5)
15
SCH_comp (-452 / 15)
-30

How does the choice of weighting coefficient (*x*) impact the value-added scores of teachers in *low growth* schools?

- Let's start by looking at some fictional student growth data for School B
- $\text{Std}_{\text{outcomes}}$ for each teacher is calculated by summing the residuals, then dividing by the number of students
- For x=1, the teacher's value-added score is essentially equal to $\text{Std}_{\text{outcomes}}$
- For x=0, we must first estimate the "school component" by averaging the results for all students
- Now we may calculate our value-added scores for x=0

STUDENT DATA - School B (Low Growth School)					
Ms. Johnson		Ms. Lewis		Mr. Smith	
Student	Residual	Student	Residual	Student	Residual
Jerry S.	-14	John T.	20	Jerry B.	-82
Allen B.	-64	Scott B.	-60	Mike O.	-90
Sue O.	4	Lisa I.	-72	Jake S.	2
Sally B.	-2	Mary M.	-33	Sara J.	15
		Tom J.	-18	Ellen P.	-46
		Laura R.	-12		

TEACHER TOTALS		
Ms. Johnson	Ms. Lewis	Mr. Smith
Total Residuals (R_total)		
-76	-175	-201
Total Students (n)		
4	6	5
STD_outcomes (R_total/n)		
-19	-29	-40

SCHOOL TOTALS
Ms. Johnson + Ms. Lewis + Mr. Smith
Total Residuals (-76 + -175 + -201)
-452
Total Students (4 + 6 + 5)
15
SCH_comp (-452 / 15)
-30

TEACHER VALUE-ADDED SCORES (TCH_vas)		
Ms. Johnson	Ms. Lewis	Mr. Smith
For X=1 (STD_outcomes)		
-19	-29	-40
Fox X=0 (STD_outcomes - SCH_comp)		
11	1	-10

What are the considerations of choosing values close to **0** (meaning 0%) for the school component weighting coefficient (*x*)?

- There will be one model, but different standards in terms of student outcomes depending on the school
- Teachers with high student growth in high growth schools may earn lower Tch_{vas} than teachers with lower growth at low growth schools
- There will be difficulty in differentiating among teachers, especially across schools

Considerations

What are the considerations of choosing the value of 1 (meaning 100%) for the school component weighting for coefficient (*x*)?

- There will be one model, with the same standard in terms of student outcomes regardless of the school
- Teachers with high student growth in high growth schools will earn higher Tch_{vas} than teachers with much lower growth at low growth schools, regardless of how the teachers' performances compare to their respective schools
- There will not be difficulty in differentiating among teachers across schools because the values remain at a statewide comparison

Considerations

Committee decision on weighting for coefficient (*x*)?

1. Discussion of considerations
2. Motion on coefficient (*x*)
   - Explain rationale for any/all motion/s
3. Vote
   - Explain rationale behind committee's final decision for clarification to the Commissioner

Recommendation