THE MISSOURI GROWTH MODEL: OVERVIEW

September 26, 2013

Missouri Department
of Elementary and Secondary Education

Introduction

- Growth is the change in academic achievement for individual students across two or more points in time.

- Purpose of model is to measure how much growth (on average) is added or subtracted when students are in one *context* instead of another similar context.

- Examples of contexts
  - Schools
  - LEAs
  - Classrooms

Key Points

- The model predicts student growth and compares the prediction to the student's actual growth.
- MAP scores in English language arts and mathematics for grades 3-8 are used.
- The three most recent "growth years" are used:
  - 2010 score predicts 2011 score (growth year 1)
  - 2011 score predicts 2012 score (growth year 2)
  - 2012 score predicts 2013 score (growth year 3).

Stage One: Prediction

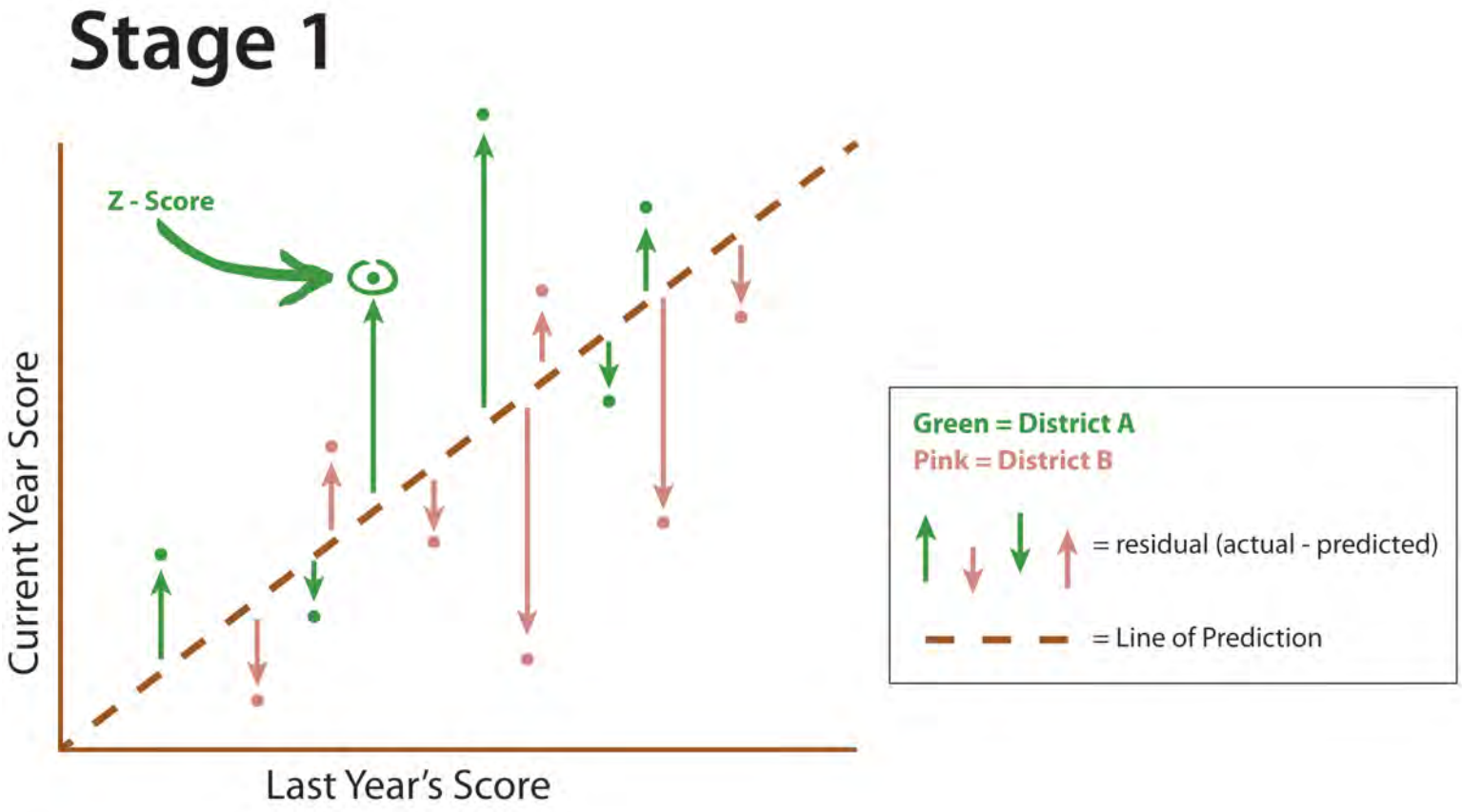
- Assessment scores are predicted based on last year's scores and student mobility.
- Context-level data (school average test scores, average mobility rates) help improve accuracy.
- The difference between actual student scores and their predicted scores is called a "residual."

Predictor Details

- Student-level predictors:
  - Last year's math score (+) – required when predicting a math score
  - Last year's English language arts score (+) – required when predicting an English language arts score
  - Mobility (-) – student not in school where tested for full academic year
  - Missing off-subject score (-)

- Context-level predictors:
  - Average prior-year math and ELA scores (+)
  - Average mobility rate (-)

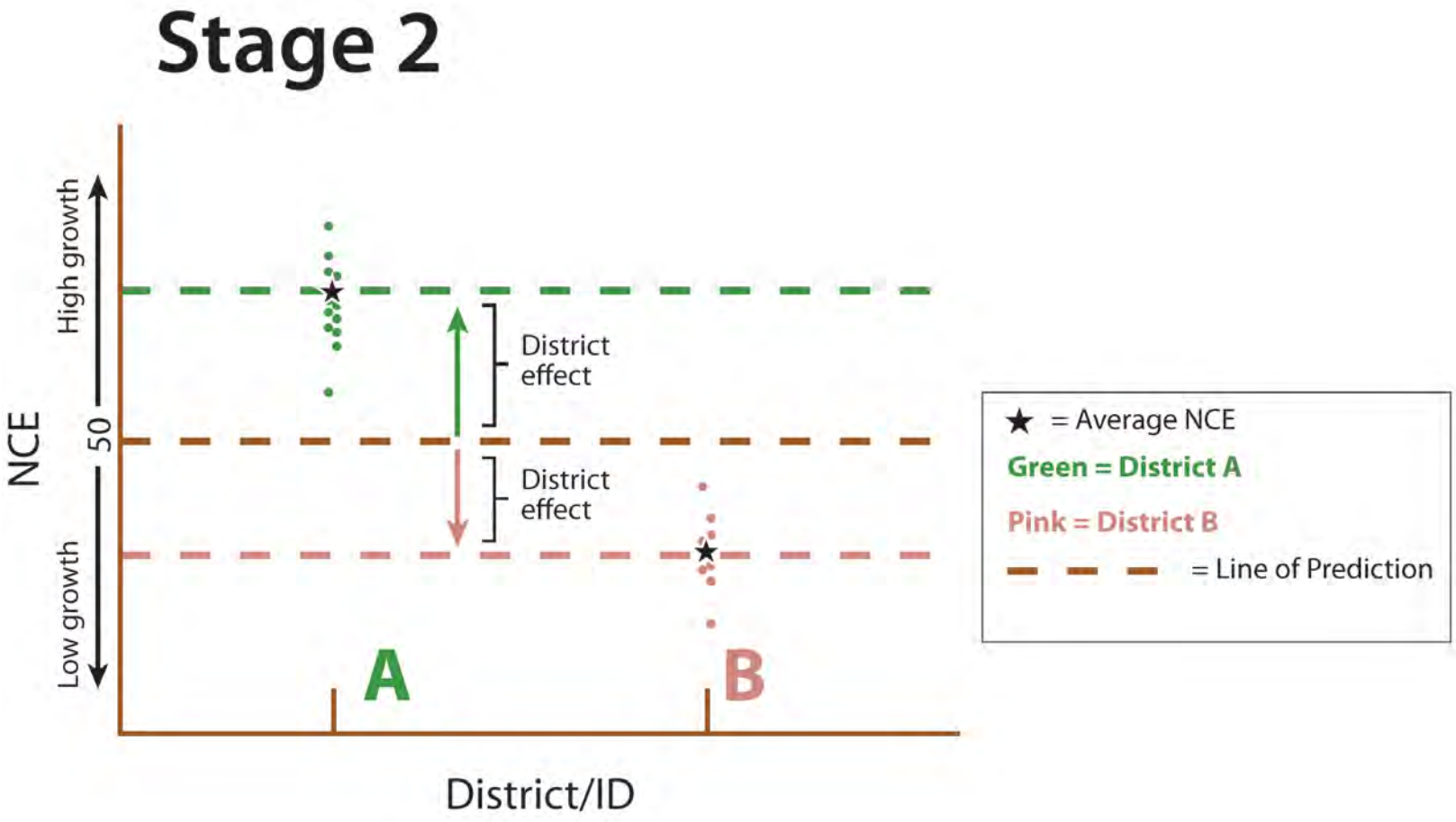
LEA Example


Stage 1
Z - Score
Current Year Score
Last Year's Score
Green = District A
Pink = District B
= residual (actual - predicted)
= Line of Prediction

Stage Two: Measuring Impact

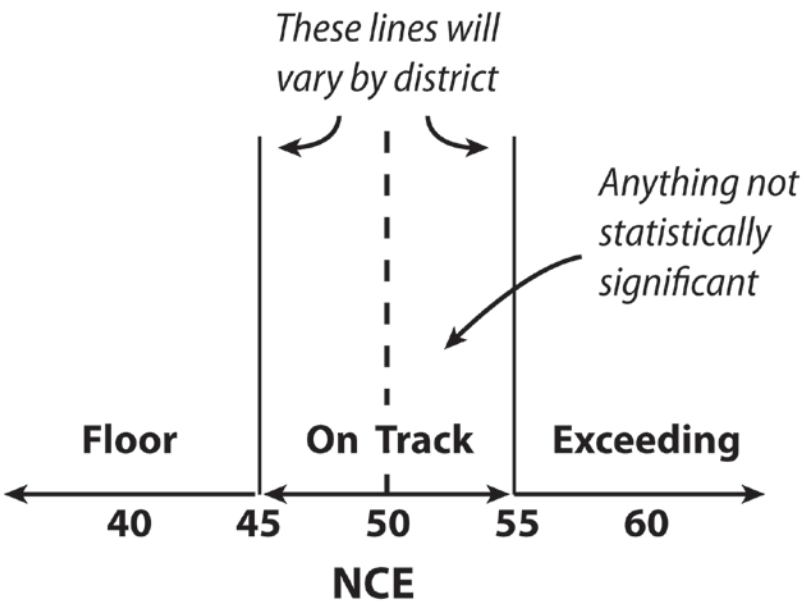
- For every prediction, a residual is calculated
  - Tied to students
  - Students tied to context
  - Residuals can be averaged by context
- Average residuals measure impact of the context
  - Do students tend to beat predictions or fall short?
- Statistical tests tell us whether the impact is different from "average"

LEA Example (Continued)



Growth in MSIP 5

- LEAs' average residuals are converted to NCEs
  - Resemble percentiles – NCEs of 1, 50, and 99 correspond to the same percentile
  - NCEs above 50 indicate the LEA tended to grow student scores above prediction
  - NCEs below 50 indicate the LEA tended to grow student scores below prediction.



MSIP 5 Scoring

Local Use of Growth Data

- DESE will provide LEAs with their students' residuals.
- LEAs will have ability to connect residuals to teachers
  - LEAs will exercise their own judgment to make the connection
  - DESE will NOT see the teacher linkages.
- Average residuals can tell whether students grew more or less with a given teacher.
- Just one more tool to help pinpoint strengths and weaknesses.
  - DESE will provide **guidance** on appropriate use of data.

Sample Data Report

Student ID	Exam Year	Exam Grade	Previous year math score (NCE units)	Predicted current year math score (NCE units)	Observed current year math score (NCE units)	* Residual (NCE units)	American Indian (=1)	Asian (=1)	Black (=1)	Hispanic (=1)	Multi-Race (=1)	FRL Eligible (=1)	Female (=1)	IEP Flagged (=1)	English as a Second Language (=1)	Student was in building where tested for less than the full school year (=1)	Super-subgroup (=1)
999487625	2010	04	56.1	55.3	72.5	**67.3**	0	0	0	0	0	0	0	0	0	0	0
999487625	2011	05	72.5	65.8	72.5	**56.7**	0	0	0	0	0	0	0	0	0	0	0
999487625	2012	06	72.7	66.2	55.3	**39.0**	0	0	0	0	0	0	0	0	0	0	0
888487625	2010	05	39.5	35.5	47.5	**62.0**	0	0	0	0	0	1	0	0	0	0	1
888487625	2011	06	47.3	41.2	46.6	**55.5**	0	0	0	0	0	1	0	0	0	0	1
888487625	2012	07	46.6	40.3	42.8	**52.5**	0	0	0	0	0	1	0	0	0	0	1
777487625	2010	06	53.8	48.3	59.3	**61.0**	0	0	0	0	0	1	0	1	0	1	1
777487625	2011	07	59.1	55.5	43.7	**38.2**	0	0	0	0	0	1	0	1	0	0	1
777487625	2012	08	43.5	45.2	44.5	**49.4**	0	0	0	0	0	1	0	1	0	0	1

*Note: Achievement data in this report will be in "NCE" units, which resemble percentiles, but can be meaningfully averaged while percentiles cannot. For the residuals—

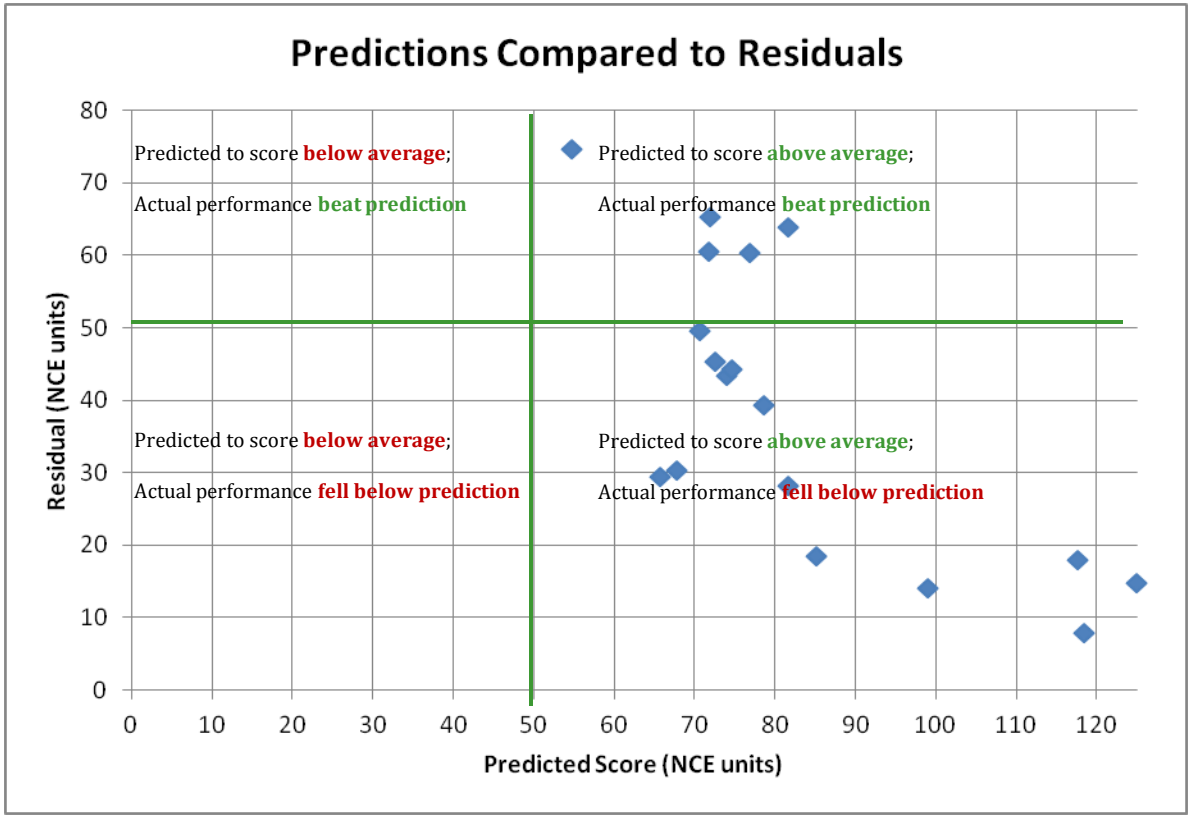
- NCE of 50 indicates performance that met expectation or prediction;
- NCE above 50 indicates performance exceeded prediction or over-performing; and
- NCE below 50 indicates performance fell below prediction or under-performing

Ex.) Mrs. Smith's 5th Grade Students

Student ID	Exam Year	Exam Grade	Previous year math score (NCE units)	Predicted current year math score (NCE units)	Observed current year math score (NCE units)	**Residual (NCE units)**	American Indian (=1)	Asian (=1)	Black (=1)	Hispanic (=1)	Multi-Race (=1)	FRL Eligible (=1)	Female (=1)	IEP Flagged (=1)	English as a Second Language (=1)	Student was in building where tested for less than the full school year (=1)	Super-subgroup (=1)
1201584660	2012	05	72.6	76.9	87.2	60.3	0	0	0	1	0	0	1	0	0	0	1
2264033293	2012	05	74.5	67.8	48.1	30.3	0	0	0	0	0	0	0	0	0	0	0
9616980865	2012	05	86.6	78.6	67.9	39.3	0	0	0	0	0	0	1	0	0	0	0
4384716091	2012	05	102.5	99.0	63.0	14.0	0	0	0	0	0	0	1	0	0	0	0
2850256300	2012	05	77.5	72.0	87.2	65.2	0	0	0	0	0	0	0	0	0	0	0
6734811894	2012	05	66.5	65.8	45.1	29.4	0	0	0	0	0	0	1	0	0	0	0
2856304259	2012	05	144.5	117.7	85.7	18.0	0	0	0	1	0	0	1	0	0	0	1
4614013981	2012	05	60.4	54.7	79.3	74.6	0	0	0	1	0	1	0	0	0	0	1
2212764205	2012	05	78.1	72.5	67.9	45.4	0	0	0	0	0	0	1	0	0	0	0
1134468727	2012	05	71.4	70.7	70.4	49.6	0	0	0	0	0	1	0	0	0	0	1
2435958350	2012	05	144.5	118.5	76.3	7.9	1	0	0	0	0	1	1	0	0	0	1
1465337416	2012	05	70.2	71.8	82.3	60.5	0	0	0	0	0	0	0	1	0	0	1
5856878993	2012	05	144.5	124.9	89.7	14.8	0	0	0	0	0	0	1	0	0	0	0
3675861126	2012	05	66.5	74.0	67.4	43.4	0	0	0	0	0	0	0	0	0	0	0
3764829920	2012	05	70.2	74.6	68.9	44.3	0	0	0	0	0	0	1	0	0	0	0
6984106711	2012	05	89.7	85.1	53.6	18.4	0	0	0	0	0	0	0	0	0	0	0
3306210873	2012	05	81.8	81.7	60.0	28.3	0	0	0	0	0	0	1	0	0	0	0
9266798379	2012	05	83.6	81.7	95.6	63.9	0	0	0	0	0	0	1	0	0	0	0

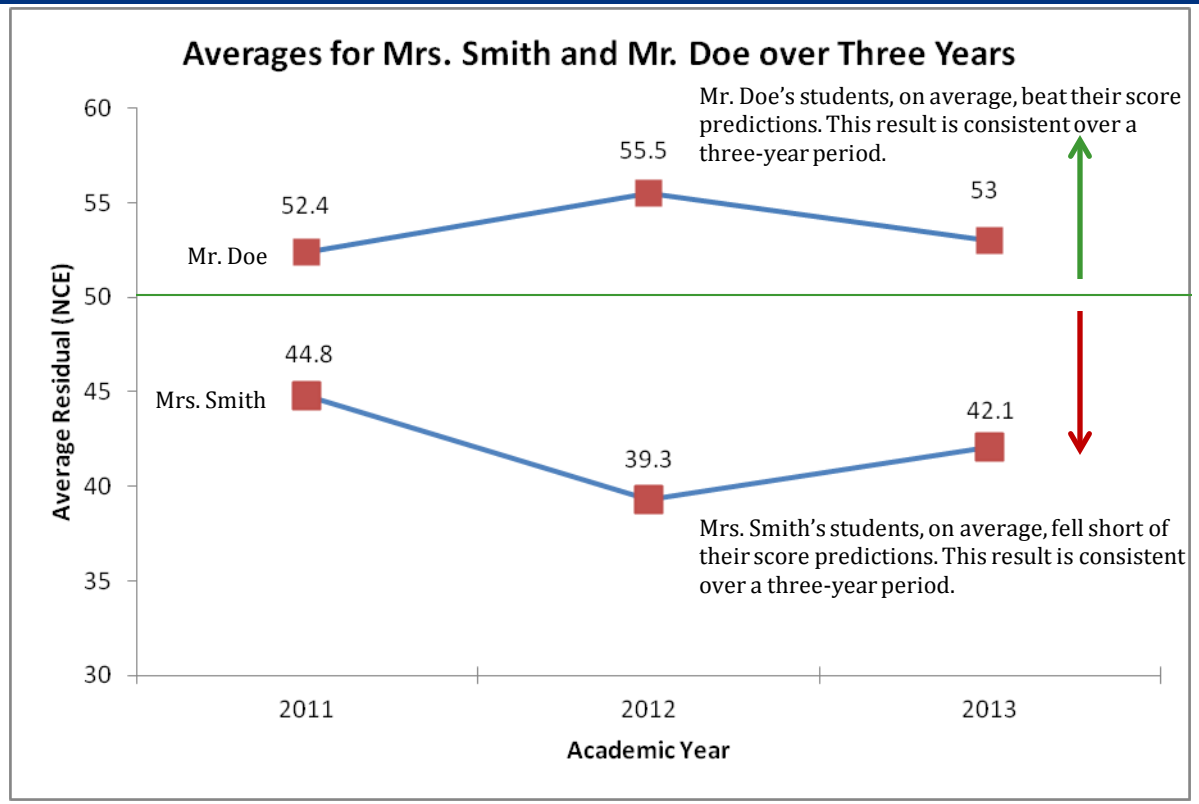
After receiving its 2012 math assessment data, Anytown R-V was able to find growth results for Mrs. Smith's 5th grade classroom of 18 students. The average NCE of these students' residuals was 39.3. However, the residuals making up this average are all spread out, ranging from a low of 7.9 to a high of 74.6.

Another Look at Mrs. Smith's 5th Graders



All of Mrs. Smith's students are predicted to score well, but a significant number of them fall short.

The Long View



Mrs. Smith's 5th graders, on average, fell below prediction (average NCE less than 50) for three consecutive years. Growth data over multiple years can help reveal patterns. Can Mr. Doe help Mrs. Smith try new strategies to raise her students' academic achievement?

Reflections

- **An average residual tells *part of the story*:**

  -Pro: using the average helps keep from putting too much focus on any one student

  -Con: if the data are very spread out, the average may not be as meaningful

- **Graphing the data on *an entire classroom at once* helps tell the full story**

- **One year of data – *was it a fluke?***

- **How does Mrs. Smith *compare to Anytown's* other 5th grade teachers?**

Remember…

- Multiple years of data such as NCEs are used ***as one of multiple measures***

To Access Student Growth Data

Missouri Department of Elementary and Secondary Education - Windows Internet Explorer

http://dese.mo.gov/

Jay Nixon, Governor
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- 06-17-13 - 2013 Data Release Reminders
- 06-03-13 - Changes in Certification Processing Fees
- 05-29-13 - Substitute System for Time and Effort Reporting Update
- 05-16-13 - Change in ParaProfessional Test

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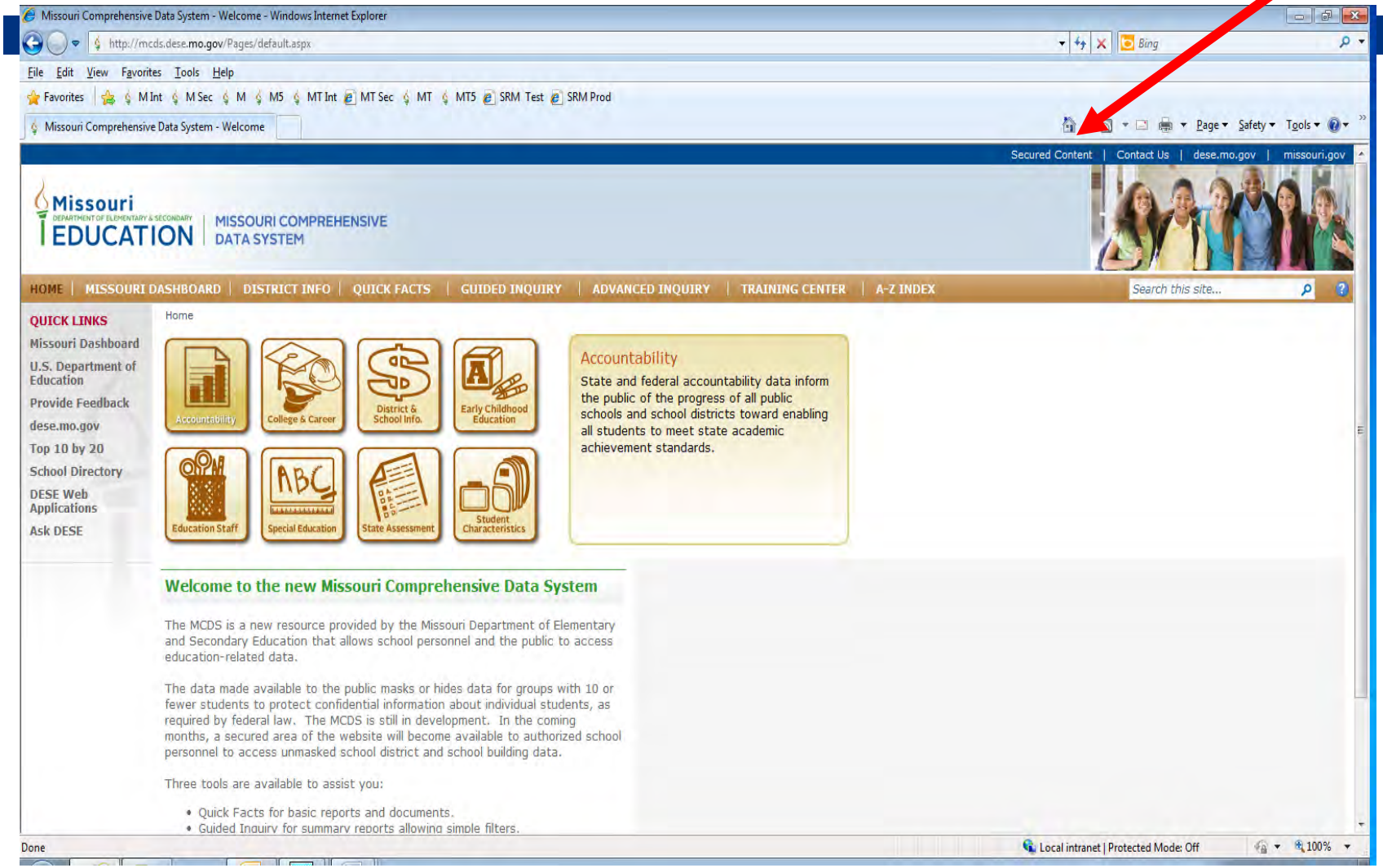

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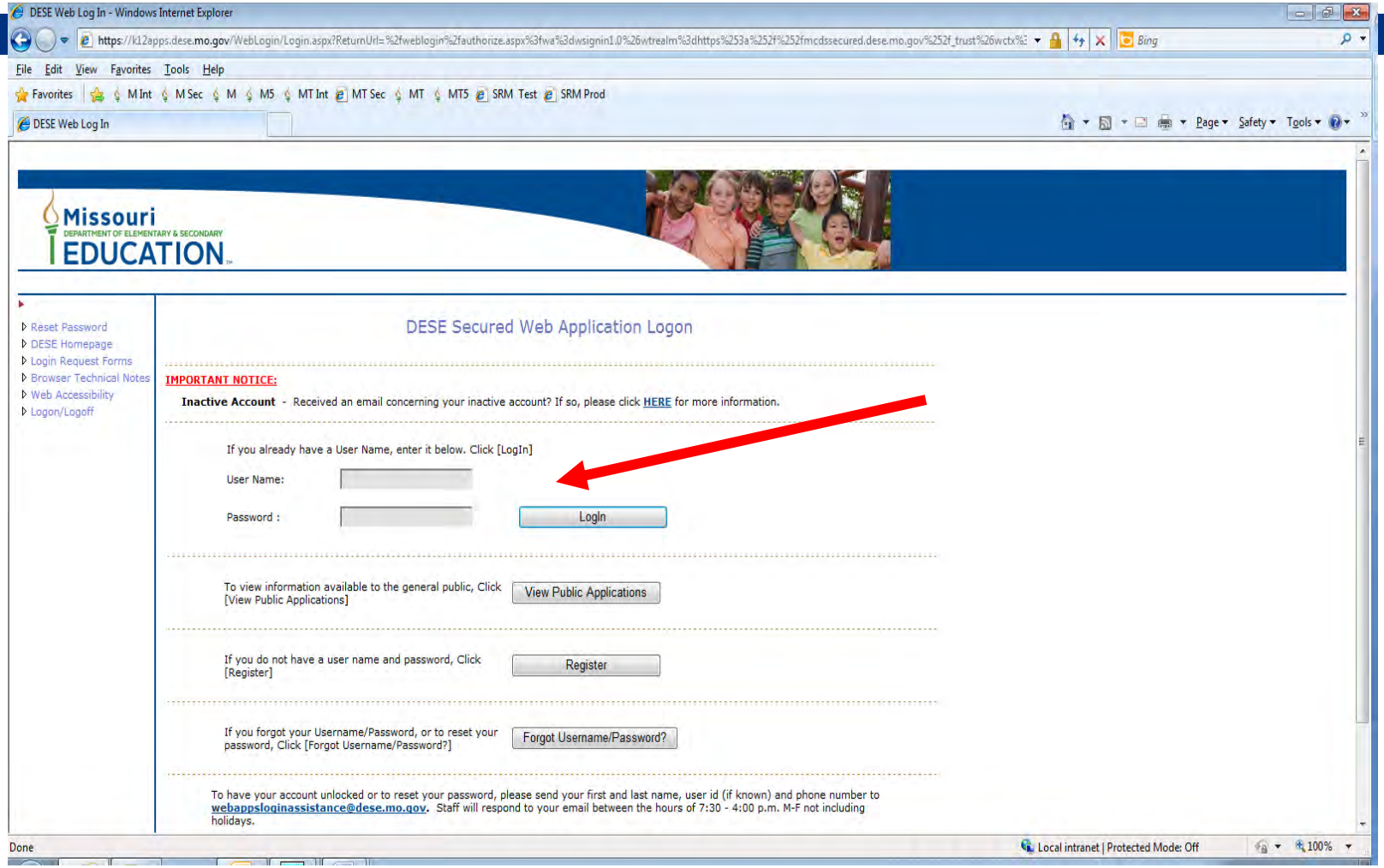

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Early Childhood Education

This data includes information about Missouri early childhood programs and initiatives, including educator qualifications and Parents as Teachers participation.

Welcome to the new Missouri Comprehensive Data System

The MCDS is a new resource provided by the Missouri Department of Elementary and Secondary Education that allows school personnel and the public to access education-related data.

The data made available to the public masks or hides data for groups with 10 or fewer students to protect confidential information about individual students, as required by federal law. The MCDS is still in development. In the coming months, a secured area of the website will become available to authorized school personnel to access unmasked school district and school building data.

Three tools are available to assist you:

- Quick Facts for basic reports and documents.
- Guided Inquiry for summary reports allowing simple filters.

https://mcdssecured.dese.mo.gov/quickfacts/Pages/State-Assessment.aspx

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MAP Data Download supporting documentation is located here - http://dese.mo.gov/MOSIS/documents/MAPDataDocumentation2013.xls

State Assessment

Type	Name	Description	Assistance Info
	MAP_District_Disaggregate_Final	Raw Data: 2013 District Level MAP and EOC Disaggregate	
	MAP_District_Final	Raw Data: 2013 District Level MAP and End-of-Course (EOC)	
	MAP_School_Disaggregate_Final	Raw Data: 2013 School Level MAP and EOC Disaggregate	
	MAP_School_Final	Raw Data: 2013 School Level MAP and End-of-Course (EOC)	

MAP Data Downloads

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Name	Type	Size	Date Modified
2013	Folder		8/14/2013 3:51:31 PM
001090	Folder		9/5/2013 11:25:02 AM
2013_MAP_Data_001090.zip	ZIP File	367079	9/3/2013 11:32:18 AM
2013_MAP_Data_001090_Achievement_Level.zip	ZIP File	61359	8/14/2013 9:47:06 AM
2013_MAP_Data_001090_Content_Standard_Report.zip	ZIP File	8373	7/26/2013 2:57:57 PM
2013_MAP_Data_001090_Content_Standard_Summary.zip	ZIP File	6296	7/26/2013 2:57:57 PM
2013_MAP_Data_001090_Item_Agg.zip	ZIP File	16107	7/26/2013 2:57:57 PM
2013_MAP_Data_001090_MAP_History_Indicators.zip	ZIP File	3801	7/19/2013 1:35:01 PM
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2013_MAP_Data_001090_Student_Test.zip	ZIP File	129699	8/14/2013 9:47:07 AM
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2013_MAP_Data_001090_VAM_Comm_Arts_Student.zip	ZIP File	9744	9/3/2013 11:32:12 AM
2013_MAP_Data_001090_VAM_Math_Student.zip	ZIP File	9738	9/3/2013 11:32:12 AM
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