DEMOGRAPHIC FACTORS IN THE NEW TEXAS SCHOOL ACCOUNTABILITY SYSTEM:

GROWTH AND ACHIEVEMENT PERFORMANCE BY RACE/ETHNICITY AND ECONOMIC STATUS

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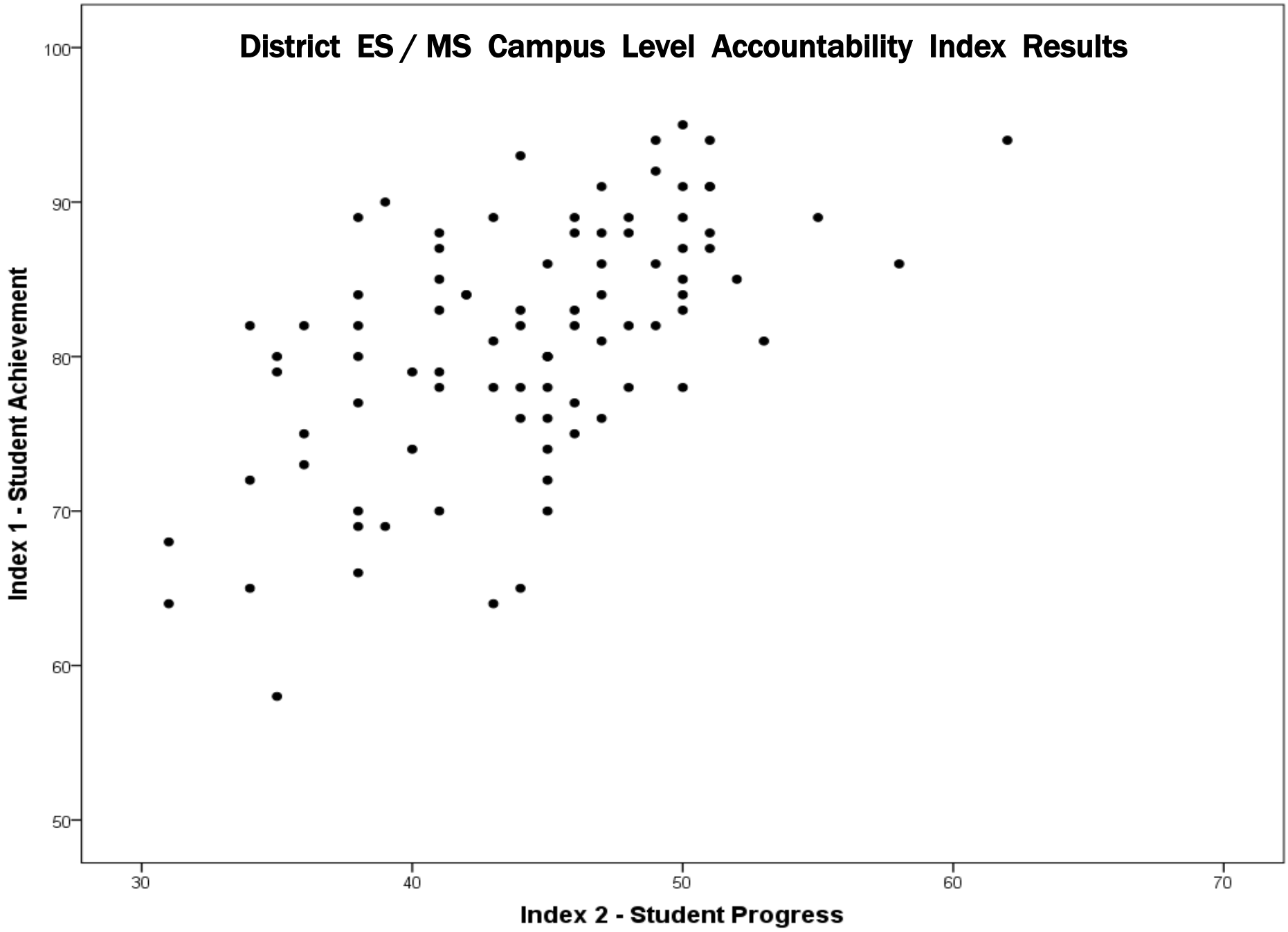
BACKGROUND

- Texas public school accountability system underwent complete revision in School Year 2012-13
- 4 indices of performance to calculate campus and district ratings, the second of which measures student progress or growth on the state exams
  - **District Correlation of Index 1 (Achievement) to Index 2 = .587** using Campus Level totals *(Elem & MS only)*
    - District Elem/MS/HS combined Correlation: .398
    - Statewide Elem/MS/HS combined Correlation: .391


District ES / MS Campus Level Accountability Index Results
Index 1 - Student Achievement
100
90
80
70
60
50
30
40
50
60
70
Index 2 - Student Progress

GROWTH MEASURES / VALUE ADDED

- Measures the changes in performance over a period rather than achieving a specified point
- Allows for historically lower achieving students/campuses/districts to show gains rather than just pass/fail
- Various methods to calculate
- Race to the Top
- Criticisms and Limitations

INDEX 2

- First growth measure in Texas for statewide accountability purposes
- 3-point scale (Did Not Meet Expectation, Met Expectation, and Exceeded Expectation)
- Calculated for race/ethnicity student groups as well as special education students and English Language Learners
- ***Gain Score*** = ***CY Scale Score*** – ***PY Scale Score*** then look up cut points on comparison chart

Values for Computing STAAR Progress Measures

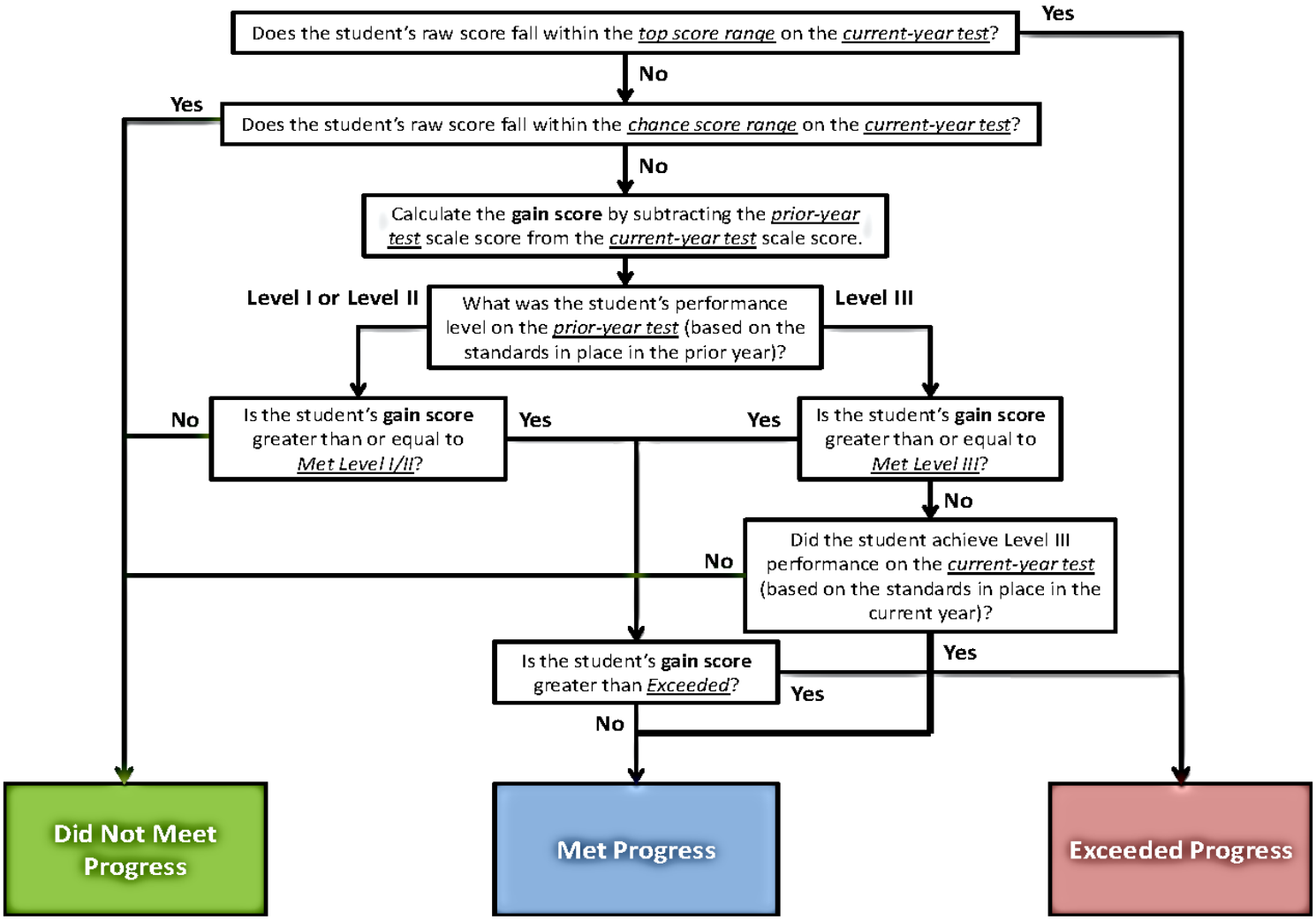
Current Year Test	Prior Year Test	Met Level I/II[1]	Met Level III[2]	Exceeded[3]	Top Score Range[4]	Chance Score Range[5]
Grade 4 Mathematics[6]	Grade 3 Mathematics	70	62	148	46-48	0-11
Grade 5 Mathematics[6]	Grade 4 Mathematics	28	33	111	48-50	0-11
Grade 6 Mathematics	Grade 5 Mathematics	31	52	135	50-52	0-12
Grade 7 Mathematics	Grade 6 Mathematics	20	36	140	52-54	0-12
Grade 8 Mathematics	Grade 7 Mathematics	22	65	185	54-56	0-13
Algebra I	Grade 7 Mathematics	2322	2535	2655	52-54	0-12
Algebra I	Grade 8 Mathematics	2300	2470	2633	52-54	0-12
Grade 4 English Reading	Grade 3 English Reading	82	78	165	42-44	0-11
Grade 5 English Reading	Grade 4 English Reading	32	34	117	44-46	0-11
Grade 6 Reading	Grade 5 English Reading	47	51	136	46-48	0-12
Grade 7 Reading	Grade 6 Reading	45	35	124	48-50	0-12
Grade 8 Reading	Grade 7 Reading	26	30	109	50-52	0-13
English I Reading	Grade 8 Reading	300	521	604	54-56	0-9
English II Reading	English I Reading	0	24	328	54-56	0-9
Grade 4 Spanish Reading	Grade 3 Spanish Reading	95	104	192	42-44	0-11
Grade 5 Spanish Reading	Grade 4 Spanish Reading	43	65	162	44-46	0-11
English II Writing	English I Writing	0	-68	408	60-62	0-15

Note: Negative progress targets result from the use of horizontal scales (all writing and EOC tests have horizontal scales) and the movement across scales (from grades 3–8 to EOC). For more information please see question 6 in the STAAR Progress Measure Q & A document.

[1] Met Level I/II is the distance or difference between the final recommended Level II standards on the current-year and prior-year tests.
[2] Met Level III is the distance or difference between the Level III standards on the current-year and prior-year tests.
[3] Exceeded is the distance or difference between the current-year test Level III standard and the prior-year test final recommended Level II standard.
[4] Top Score Range is the range of the top three possible raw scores on the current-year test.
[5] Chance Score Range is the range of raw scores that could be reasonably attained through guessing alone. For reading and mathematics tests, chance is defined as ¼ of the multiple-choice questions. (Scores of zero are used for reading short answer questions to define chance.) For writing tests, chance is defined as ¼ of the multiple-choice questions plus the weighted value associated with summed scores of 2 on the essays (representing a rubric score of 1 from both readers).
[6] Applies for both English and Spanish mathematics.

Source: Texas Education Agency, "Calculating STAAR Progress Measures"

Guide to Computing STAAR Progress Measures



Source: Texas Education Agency, "Calculating STAAR Progress Measures"

METHODOLOGY

- An analysis was made of the results of the performance index on a large school district in San Antonio
  - Reading & Math, Grades 4 – 7
  - Chi-Square
  - Logistic Regression
- Compared the progress results to pass rates
  - Race/ethnicity
  - Economic disadvantaged status

RESEARCH QUESTIONS

- Do the same patterns of results exist for both achievement and progress for ***Black*** and ***Hispanic*** students compared to ***White*** students

- Do the same patterns of results exist for both achievement and progress for ***Economically Disadvantaged*** students compared to ***Non-Economically Disadvantaged*** students

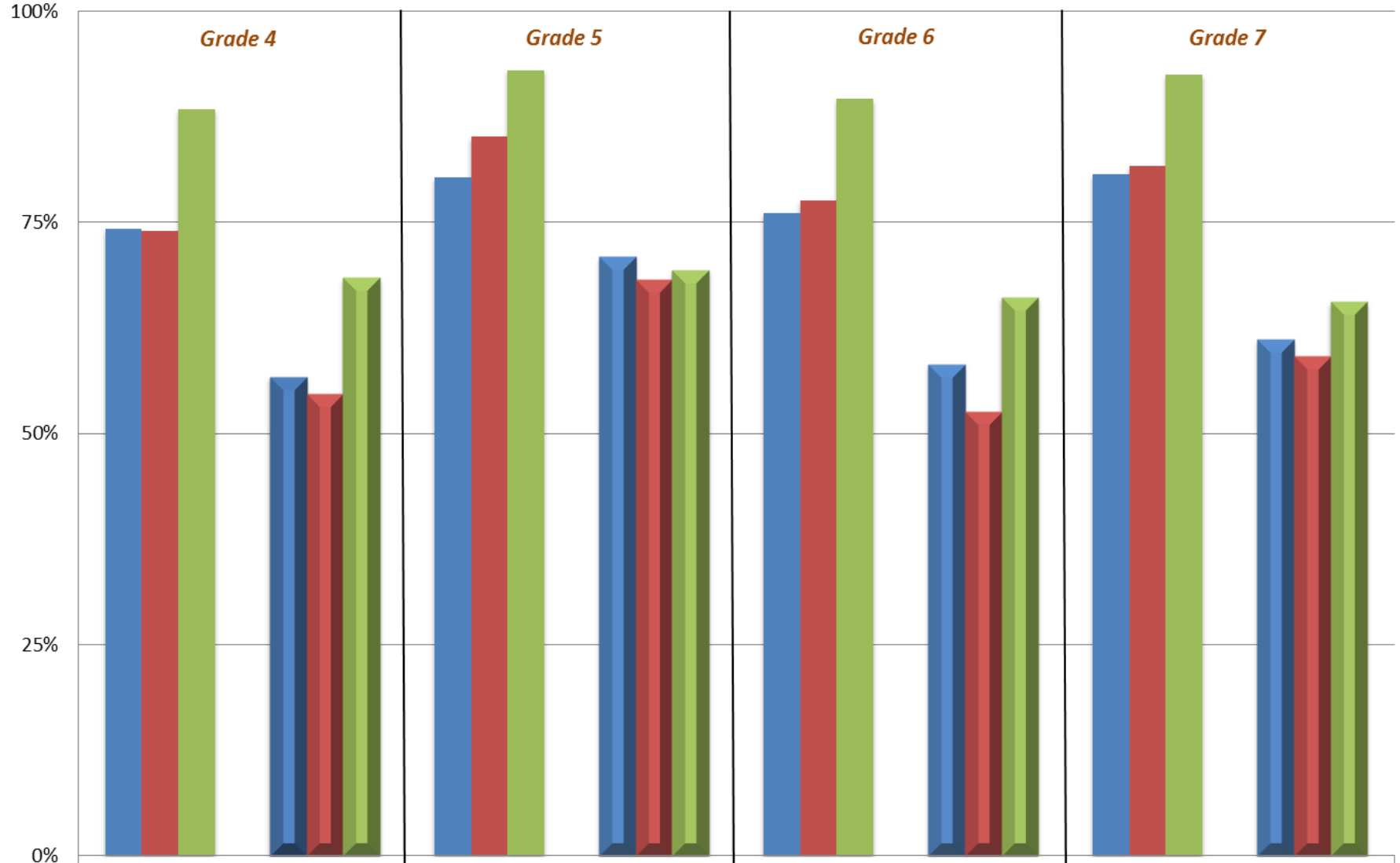
DATA

- State of Texas Assessments of Academic Readiness (STAAR) exams
  - Statewide standardized accountability tests
  - Began Spring 2012 replacing the TAKS exams
  - Grades 3 to 8 and End-of-Course for High School
  - Regular / Modified / Alt versions (only Regular versions used in this analysis)

DATA

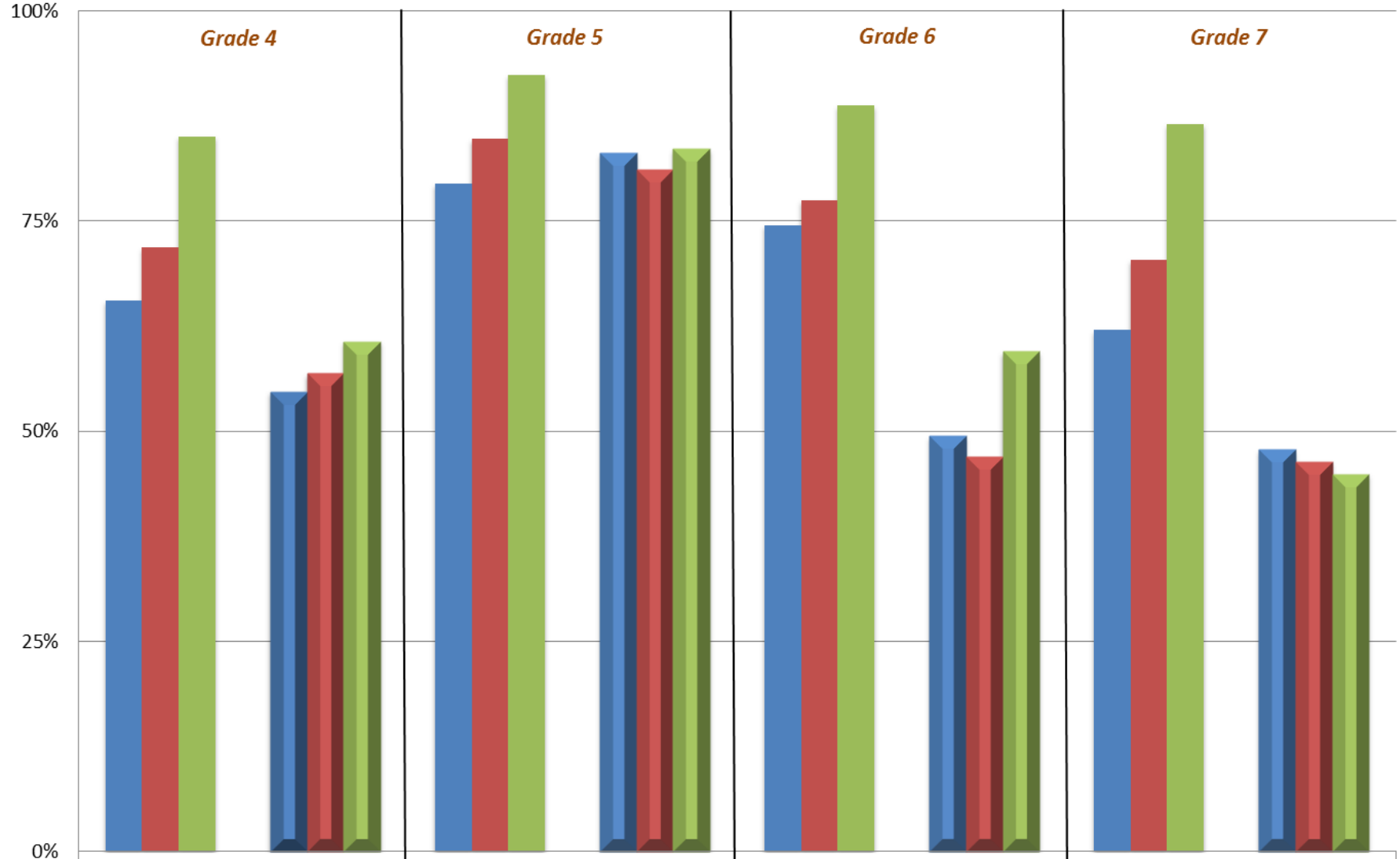
- 2 Subjects, 4 Grade Levels, ~ 6000 per Grade
- Approx 23,600 race/ethnicity observations
  - Black: ~ 1,400
  - Hispanic: ~ 17,300
  - White: ~ 4,900
- Approx 25,000 economic status observations
  - Economic Disadvantaged: ~ 13,000
  - Not Economic Disadvantaged: ~ 12,000

STAAR Reading Achievement vs Growth: Race/Ethnicity



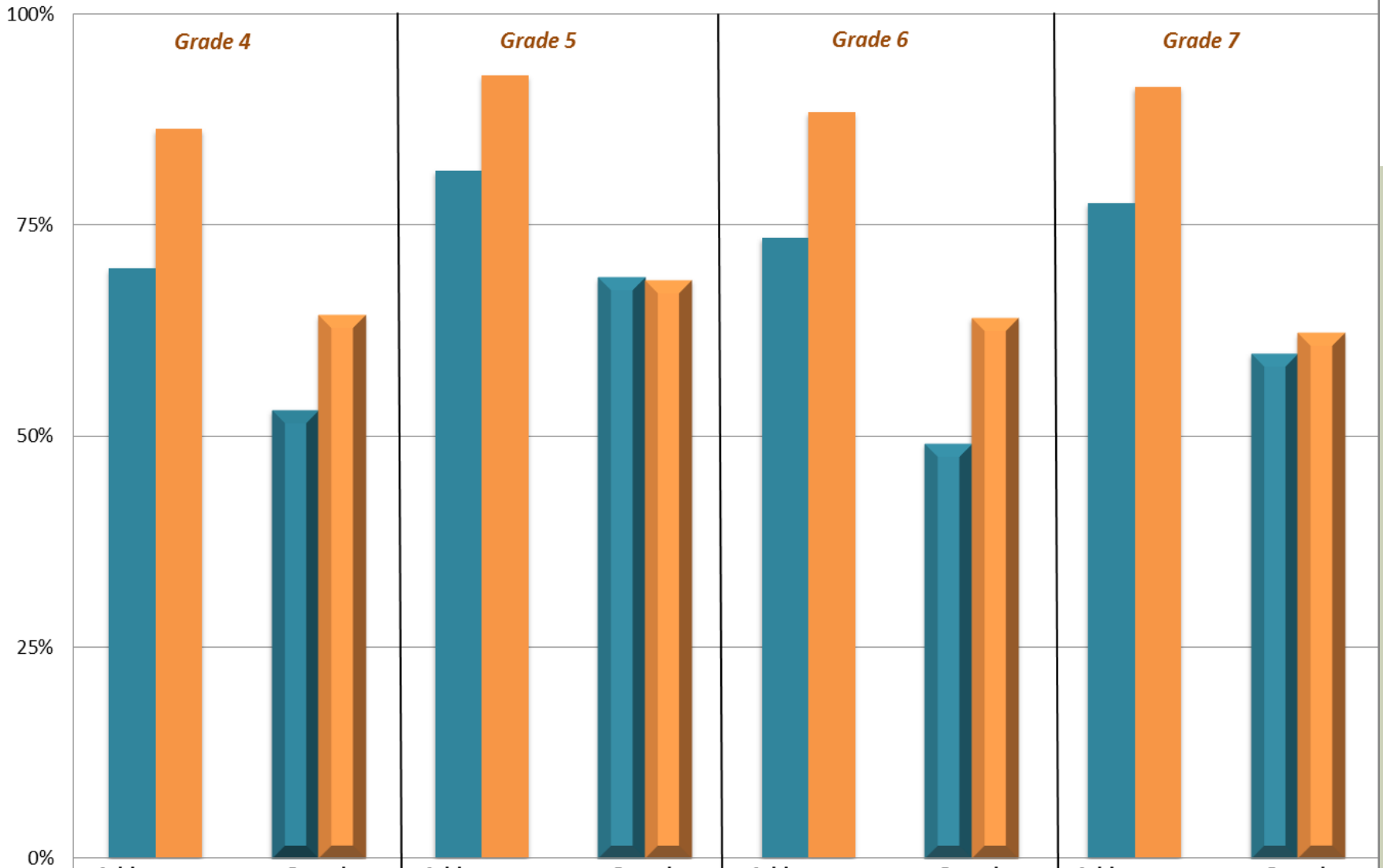
	Grade 4		Grade 5		Grade 6		Grade 7	
	Achievement	Growth	Achievement	Growth	Achievement	Growth	Achievement	Growth
Black	74.3%	56.7%	80.4%	70.9%	76.2%	58.2%	80.7%	61.1%
Hispanic	74.0%	54.7%	85.2%	68.2%	77.7%	52.5%	81.7%	59.2%
White	88.5%	68.4%	93.1%	69.3%	89.7%	66.1%	92.6%	65.6%

STAAR Math Achievement vs Growth: Race/Ethnicity



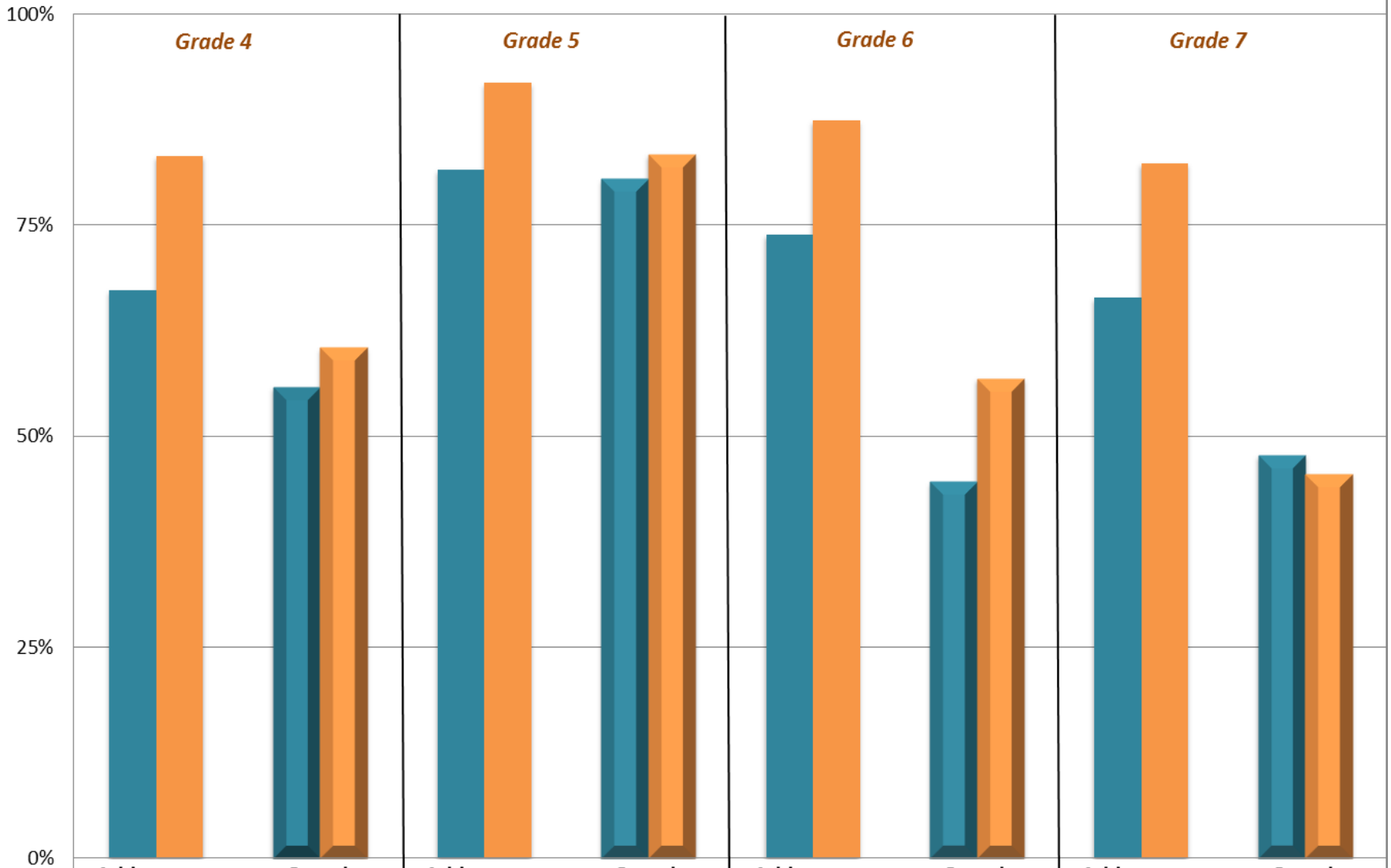
	Grade 4		Grade 5		Grade 6		Grade 7	
	Achievement	Growth	Achievement	Growth	Achievement	Growth	Achievement	Growth
Black	65.6%	54.7%	79.5%	83.1%	74.6%	49.4%	62.1%	47.8%
Hispanic	71.9%	56.9%	84.8%	81.1%	77.5%	46.9%	70.4%	46.4%
White	85.1%	60.6%	92.5%	83.6%	88.8%	59.5%	86.6%	44.9%

STAAR Reading Achievement vs Growth: Economically Disadvantaged



	Grade 4		Grade 5		Grade 6		Grade 7	
	Achievement	Growth	Achievement	Growth	Achievement	Growth	Achievement	Growth
EcoDis	69.9%	53.1%	81.5%	68.8%	73.6%	49.1%	77.7%	59.8%
Not EcoDis	86.4%	64.3%	92.8%	68.5%	88.4%	64.0%	91.4%	62.2%

STAAR Math Achievement vs Growth: Economically Disadvantaged



	Grade 4		Grade 5		Grade 6		Grade 7	
	Achievement	Growth	Achievement	Growth	Achievement	Growth	Achievement	Growth
EcoDis	67.3%	55.8%	81.6%	80.5%	73.9%	44.6%	66.4%	47.7%
Not EcoDis	83.2%	60.5%	91.9%	83.4%	87.5%	56.8%	82.4%	45.5%

RESULTS: CHI-SQUARE

- All sub-groups showed statistically significant differences between their pass rates in both Reading and Math at all grade levels

- However, the sub-groups were **no longer significantly different** in their Index 2 performance in **Grade 7 Math and Grades 5 and 7 Reading**

RESULTS: CHI-SQUARE

Significance (Reading)

Grade/Group	Achievement	Growth
4 - Ethnicity/Race *(n=5814)*	.000	.000
4 - Economic Status *(n=6125)*	.000	.000
5 - Ethnicity/Race *(n=5922)*	.000	**.721**
5 - Economic Status *(n=6242)*	.000	**.825**
6 - Ethnicity/Race *(n=5832)*	.000	.000
6 - Economic Status *(n=6190)*	.000	.000
7 - Ethnicity/Race *(n=6033)*	.000	.002
7 - Economic Status *(n=6033)*	.000	**.159**

RESULTS: CHI-SQUARE

Significance (Math)

Grade/Group	Achievement	Growth
4 - Ethnicity/Race *(n=5845)*	.000	.006
4 - Economic Status *(n=6160)*	.000	.000
5 - Ethnicity/Race *(n=5911)*	.000	.000
5 - Economic Status *(n=6231)*	.000	**.825**
6 - Ethnicity/Race *(n=5855)*	.000	.000
6 - Economic Status *(n=6212)*	.000	.000
7 - Ethnicity/Race *(n=6037)*	.000	**.375**
7 - Economic Status *(n=6388)*	.000	**.205**

RESULTS: LOGISTIC REGRESSION

- Achievement:

  The odds of Black/Hispanic or Economically Disadvantaged students passing ranged from approximately 0.3 to 0.4 compared to White or Not Economically Disadvantaged students (i.e. they had only a 1/3 as high odds as White or Not Economically Disadvantaged students)

- Growth:

  The odds rose to approximately **0.7-0.8 (or about 3/4 odds of meeting growth)** compared to White or Not Economically Disadvantaged students

RESULTS: LOGISTIC REGRESSION

Odds Ratios (Reading)

Group	Achievement	Growth
Model 1: White as Comparison Group		
Black	.346	.780
Hispanic	.386	.685
Model 2: Not Economic Disadvantaged as Comparison Group		
Economic Disadvantaged	.352	.744

RESULTS: LOGISTIC REGRESSION

Odds Ratios (Math)

Group	Achievement	Growth
Model 1: White as Comparison Group		
Black	.311	.863
Hispanic	.420	.826
Model 2: Not Economic Disadvantaged as Comparison Group		
Economic Disadvantaged	.412	.822

DISCUSSION

- Implications
  - Major differences between Achievement versus Progress measures
    - Patterns of Results Change
    - 1 District for 1 Year: Will differences persist?
  - Could shift Accountability Ratings of Campuses/Districts
    - Traditionally high achieving Campuses/Districts may receive lower ratings
    - Campuses/Districts with high levels of Blacks/Hispanics or Economically Disadvantaged may receive improved ratings
  - Likely to have a role in future Teacher/Principal Evaluations
  - Unusual method of calculation

DISCUSSION

- Changes in Future Years
  - ***2014:*** Modified and Alt versions, Students skipping grade levels, English Language Learner Progress Measure
  - ***2015:*** Writing included, Modified exams discontinued
- Other Growth Measure Methods
  - SAS EVAAS
  - Education Resource Group (ERG)
  - Hierarchical Linear Modeling and other prediction models

SOURCES

- Texas Education Agency
  - “Calculating STAAR Progress Measures”
  - “State of Texas Assessments of Academic Readiness (STAAR) Progress Measure Questions and Answers”
- Haertel, Edward H. “Reliability and Validity of Inferences About Teachers Based on Student Test Scores”, Educational Testing Service, (March 22, 2013).
- McCaffrey,Daniel F.; Lockwood, J. R.; Koretz, Daniel M.; and Hamilton, Laura S. "Evaluating Value-Added Models for Teacher Accountability", RAND Corporation, 2003.
- Sanders, William L., et al. “A Response to Criticisms of SAS EVAAS”, SAS Institute Inc., (November 2009).