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A Sixth of the Nation: Large City Reading Scores Will Improve Only Slightly by 2021

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Objectives. Two overarching questions guided the research of the study. The first question asked if either one or both of the two predictor variables could explain differences in reading scores between the lowest and highest TUDA districts. The second question asked if prospects were favorable or unfavorable for the lowest scoring TUDA districts to improve in meaningful ways in the next six years, that is, by 2021.

The first objective of the study was to present average fourth-grade NAEP reading scores for two groups of large city school districts which have participated in the Trial Urban District Assessment (TUDA) in various years during the 2003-2013 period. The second objective was to present longitudinal data for various years for the percentage of students eligible for free lunch for the “original group” of ten districts. The third objective was to determine correlations between the two respective predictor variables and the criterion variable, fourth-grade NAEP reading scores, for a second group of 21 TUDA districts. The fourth objective was to make projections for the 21 TUDA districts’ scores in 2015, 2017, 2019, and 2021 for 21 TUDA districts.

Background. The authors of “*Inequality at the Starting Gate* (Lee & Burken, 2002) state that “the least advantaged of America’s children, who also begin their formal schooling at a substantial cognitive disadvantage, are systematically mapped into the nation’s worst schools...The lowest quality schools are in America’s largest cities” (pp. 76-77).

TUDA Report Cards present demographic data including “percent eligible for free lunch.” The TUDA Report Cards do not report correlations between any of the demographic variables reported in the Report Cards and reading scores.

Smith (2002) reported a correlation of -0.83 between percentage of students eligible for free lunch and eighth-grade math scores for a sample of 82 large New York State school districts. Smith and Narrett (2013) correlated the percentages of eight-grade students with at least one college graduate parent with NAEP reading and math scores for 50 states. They reported correlations of .77 and .78 for reading, and correlations of .75 and .72 for math.

In 2009 the Council of the Great City Schools (CGCS), in partnership with American Institutes for Research, released a 400-page (on-line) research document. The title of the document is “*Pieces of the Puzzle: Factors in the Improvement of Urban School Districts on the NAEP Assessment of Educational Progress.*”

The CGCS study examined score changes in reading and math from 2003 to 2007 for eleven TUDA districts for grades four and eight. Although the study employed several demographic variables, including free lunch eligibility, no correlations between demographic variables and NAEP scores were reported. On average more gains were made in math than in reading.

The CGCS document reports scores for 11 TUDA districts for 2003 to 2007. The study reported in this paper (1) covers a ten-year period for ten TUDA districts, and (2) reports reading scores for 21 TUDA districts for 2011 and 2013.

As shown in the Results section below, fourth-grade reading scores are tragically low for many of the nation’s large city school districts. MacInnes (2009) states that “students who are not competent readers by the end of the third grade – certainly by the fourth grade – are pretty much doomed” (p 2).

Methodology.

1. Samples. Two samples were used in the study. The first sample consisted of ten TUDA city school districts. Typically each TUDA school district is located in a city with a population of 250,000 or more.

Each of the ten districts in the first sample participated in the TUDA assessments in the following years: 2003, 2005, 2007, 2009, 2011, and 2013.

The second sample consisted of 21 TUDA districts, including the ten districts in the first sample. Scores for the second sample are limited to two years, 2011 and 2013.

2. Variables. The NAEP fourth-grade average reading scores for each TUDA district constitute the criterion variable. There were two predictor variables. The first predictor variable was the percentage of fourth-grade students eligible for free lunch for each TUDA district. The second predictor variable was the mean household income for the district.

3. Data analysis. For the first sample of ten TUDA districts, longitudinal data for six assessment years – 2003, 2005, 2007, 2009, 2011, and 2013 - are presented in Table 1 and Table 2. The change in each TUDA district's reading scores between 2003 and 2013 was calculated and reported in Table 1. Changes in percentages of students eligible for free lunch are presented in Table 2.

Correlations were obtained between the percentages of students eligible for free lunch and fourth-grade NAEP reading scores for 21 TUDA districts for 2011 and 2013. These correlations are presented in Table 3. The correlation between mean household income and NAEP reading scores was calculated for the 21 TUDA districts for 2013. This correlation is reported in Table 4.

Results and Discussion.

Table 1 below presents average reading scores for fourth-grade public school students over a ten year period for ten TUDA districts. The NAEP reading scores are for six NAEP assessments from 2003 to 2013. Reading scores for fourth-grade public school students in the Nation and for a reference group of large cities of at least 250,000 population are also shown in Table 1. The various TUDA Report Cards do not state how many large cities constitute the Large City reference group. In addition to the “250,000

or more population requirement”, a majority of a district’s students must be eligible for the National School Lunch Program.

Table 1
Fourth-grade average reading scores on six NAEP assessments for ten TUDA districts

Jurisdiction	2003	2005	2007	2009	2011	2013	Change
Nation	216	217	220	220	220	221	5
Large city	204	206	208	210	211	212	8
Charlotte	219	221	222	225	224	226	7
New York City	210	213	213	217	216	216	6
San Diego	208	208	210	213	215	218	10
Houston	207	211	206	211	213	208	1
Boston	206	207	210	215	217	214	8
Chicago	198	198	201	202	203	206	8
Atlanta	197	201	207	209	212	214	17
Cleveland	195	197	198	194	193	190	-5
Los Angeles	194	196	196	197	201	205	11
District of Columbia	188	191	197	203	201	206	18
Range	31	30	26	31	31	36	
Mean	202	204	206	209	210	210	

Note. TUDA districts arranged in rank-order according to scores in 2003.

Source. *The Nation's Report Card Trial Urban District Assessments Reading* for 2003, 2005, 2007, 2009, 2011, and 2013.

The reading scores over the ten year period provide the reader with information about the amount of change for the ten TUDA districts, the Nation, and for the Large City reference group.

For the Nation the mean score increased five score points from 2003 to 2013. Note that from 2007 to 2013 the mean score increased only one score point. For the Large City reference group, the mean scores increased eight score points over the ten year period. For the ten TUDA districts, the mean score increased from 202 in 2003 to 210 in 2013, an increase of eight points.

District of Columbia and Atlanta made the largest gains: District of Columbia gained 18 points; Atlanta gained 17 points. Cleveland was the only district which had a decrease in reading score; Cleveland had a decrease of five points.

Table 2 presents the percentages of fourth-grade public school students eligible for free lunch for the same ten TUDA districts as are listed in Table 1 above. The time period in Table 2 is the same as in Table 1, that is, the ten-year period from 2003 to 2013.

Table 2
Percentage of fourth-grade students eligible for free/reduced price lunch for ten TUDA districts, 2003-2013, various years

Jurisdiction	2003	2005	2007	2009	2011	2013	Change
Nation	44	45	45	47	52	54	10
Large City	69	71	70	71	73	73	4
Cleveland	100	100	100	100	100	100	0
New York City	89	86	85	87	90	79	-10
Chicago	85	84	86	87	88	84	-1
Los Angeles	83	85	77	84	83	83	0
Boston	81	83	81	79	88	85	4
Atlanta	81	76	75	74	75	73	-8
Houston	72	74	84	81	80	82	10
District of Columbia	70	76	66	70	72	76	6
San Diego	54	64	65	60	65	66	12
Charlotte	44	49	48	47	52	57	13
Mean	74	75	75	75	77	75	
Range	56	51	52	53	48	43	

Note. TUDA districts arranged in rank-order according to percentages in 2003.

Source. TUDA Report Cards for 2003, 2005, 2007, 2009, 2011, and 2013.

The percentages of free lunch eligible fourth-grade students for the Nation and for the Large City reference group provide a context for examining the longitudinal data for the ten TUDA districts. But first, note the percentages of eligible students for the Nation in Table 2. Probably the most significant – and the most sobering – set of figures presented in this paper are the percentages of students eligible for free lunch for the Nation. *In 2003 44 percent of the Nation’s fourth-grade public school students were eligible for free lunch; in 2013 54 percent were eligible.* Thus, over the ten-year period the percentage of fourth-grade students nationwide increased ten percentage points. Note that seven points of the ten point increase occurred from 2009 to 2013. Also presented in Table 2 are the percentages students eligible for free lunch for the Large City reference group. The percentages increased from 69 percent in 2003 to 73 percent in 2013.

For the purposes of this paper the percentages of free lunch eligible student in Table 2 provide evidence as to whether the free lunch percentages are characterized by “considerable stability” or by “considerable change” over the ten year period.

The last column in Table 2 lists the changes for the ten TUDA districts between 2003 and 2013. Five districts had increases, two districts had no change, and three districts had decreases. The two largest increases were 12 (San Diego) and 13 (Charlotte-Mecklenburg). My interpretation of the free lunch percentages in Table 2 is that the percentages are characterized more by stability than by change.

A cursory inspection of Table 2 reveals that there are wide differences in the percentages of students eligible for free lunch. The districts are arranged in rank-order, based on their free lunch percentages in 2003. The three highest-ranked districts in 2003 - Cleveland, New York City, and Chicago - all had free lunch percentages of 80 percent or higher in all six years, save for New York City which in 2013 had 79 percent. In contrast, the three districts at the bottom of Table 2 – District of Columbia, San Diego, and Charlotte – all had free lunch percentages below 80 percent.

In Table 2 the differences between Cleveland and Charlotte are very large. In 2003, the difference in the percentage of free lunch students was 56 percentage points. The differences in the next five years were only slightly smaller – 51, 52, 53, 48, and 43 percentage points.

Table 3 is the main table in this paper. The primary purpose in listing the percent of eligible students together with reading score for each district was to enable the reader to observe the strong negative relationship between the two variables. None of the TUDA Report Cards presents TUDA district free lunch percentages together with the respective district average reading scores in the same table.

Table 3

Percentages of fourth-grade students eligible for free lunch and average NAEP reading scores for 21 TUDA districts for 2011 and 2013 together with the two correlations

Jurisdiction	2011		2013	
	Percent eligible free lunch	Average NAEP reading scores	Percent eligible free lunch	Average NAEP reading scores
Nation	52	220	54	221
Large City	73	211	73	212
Charlotte	52	224	57	226
Hillsborough Co (FL)	57	231	58	228
Austin	60	224	62	221
Jefferson Co (KY)	61	223	65	221
San Diego	65	215	66	218
Albuquerque	65	209	72	207
District of Columbia	72	201	73	214
Miami-Dade	74	221	74	223
Atlanta	75	212	76	206
Boston	80	217	79	216
Houston	80	213	82	208
Los Angeles	83	201	83	205
Milwaukee	83	195	83	199
Detroit	87	191	84	206
Chicago	88	203	85	214
Baltimore City	88	200	86	204
New York City	90	216	88	190
Philadelphia	90	199	91	196
Dallas	91	204	93	205
Fresno	93	194	94	200
Cleveland	100	193	100	190
Mean	78	209	79	209
Range	48	40	43	38
Correlation	-0.79		-0.87	
Slope	-0.69		-0.80	

Note: TUDA districts arranged in rank-order based on their percentages of students eligible for free lunch, 2011 and 2013, respectively.

Source: TUDA Report Cards for 2011 and 2013.

The correlation between the percent of students eligible for free lunch and fourth-grade reading scores is high, -0.79 for 2011. For 2013 the correlation is even higher, -0.87.

These correlations are unusually high, even for concurrent correlations where the criterion variable is test scores. Probably the best explanation of why the 2013 correlation (-0.87) is somewhat higher than the 2011 correlation (-0.79) is that New York City's free lunch percent in 2013 (79 percent) is 11 points lower than in 2011 when it was 90 percent. Thus, in 2011 New York City's position is near the bottom whereas in 2013 it is in the middle position.

Note that in both 2011 and 2013 Charlotte (more correctly Charlotte Mecklenburg), Hillsborough County (FL), Austin, and Jefferson County (KY) are the top four districts in terms of reading scores. In 2011 not only do these four districts score above the mean for the Large City reference group (211), they score at or above the mean (220) of the Nation. If one of these district's scores were reported alone, that is, without the respective free lunch percentage, the ordinary reader might reasonably assume that the district might score unusually high because of some unusually effective aspect of the district's educational program. Although it is quite likely that the more affluent districts have better educational programs – almost certainly they have, on average, better teachers - I submit that the primary explanation is that these four TUDA districts are relatively affluent, that is, their percentages of free lunch students are considerably lower than the other TUDA districts; twelve of the 21 TUDA districts have free lunch percentages of 80 or higher in 2011.

Consider the five districts with the lowest reading scores in 2011: Philadelphia (199), Milwaukee (195), Fresno (194), Cleveland (193); and Detroit (191). For these districts, the public relations consequences of reporting scores without free lunch percentages – or some measure of poverty – probably would be more serious than for the more affluent districts.

For the most part, I suggest that the reporting of TUDA scores – or more often "Percent Proficient" – in a given district's local newspaper more often than not reports only the scores; information which would be useful in interpreting the scores typically is lacking.

Table 4 presents mean household income together with fourth-grade NAEP reading scores for 2013 for 21 TUDA districts.

Table 4

Mean household income and mean average fourth-grade NAEP reading score, various years (TUDA districts arranged in rank-order by household income)

TUDA district	Mean household income 2009-2013	Average reading score 2013
Nation	\$53,000	221
District of Columbia	\$79,500	206
San Diego	\$71,500	218
Charlotte	\$68,000	226
Austin	\$66,000	221
Boston	\$62,000	214
Jefferson Co (KY)	\$61,500	221
Albuquerque	\$61,000	207
Hillsborough Co (FL)	\$59,000	228
Atlanta	\$58,000	214
New York City	\$58,000	216
Chicago	\$54,000	206
Los Angeles	\$53,000	205
Baltimore city	\$50,000	204
Houston	\$50,000	208
Miami-Dade	\$49,000	223
Philadelphia	\$46,500	200
Dallas	\$43,500	205
Milwaukee	\$41,000	199
Fresno	\$38,000	196
Cleveland	\$33,000	190
Detroit	\$32,000	190
		Correlation 0.70
Range	\$47,500	38
Mean	\$53,700	209

Sources: National Center for Education Statistics, Common Core of Data (<http://nces.ed.gov/ccd>). A First Look: 2013 Mathematics and Reading Trial Urban District Assessment, p.5.

The income figures are for a five year period, 2009-2013. The reader should note that these income figures represent all households in a given district. Thus, these income figures probably provide a more accurate picture of a district's economic condition than do the free lunch percentages which pertain primarily to households with public school students.

The correlation between mean household income and fourth-grade reading scores for the 21 TUDA districts in Table 4 is 0.70, a moderately high correlation. This correlation is considerably lower than the

correlation of -0.87 reported in Table 3 between percentage of students eligible for free lunch and fourth-grade reading scores in 2013.

The income figures for Cleveland and Detroit seem to deserve special mention. Cleveland has a mean household income of \$33,000; Detroit has a mean household income of \$32,000. The national mean is \$53,000. Thus, each district has a mean income approximately \$20,000 lower than the national mean.

It is difficult to imagine that either of these two districts can improve its educational program in any meaningful way in the next ten years or so.

Table 5 presents in the first two columns actual fourth-grade reading scores for the 21 TUDA districts together with mean scores for the Nation and for the Large City reference group, for 2011 and 2013. The last four columns in Table 5 report *predicted* scores for 2015, 2017, 2019, and 2021, respectively.

Table 5

Predicted fourth-grade average reading scores for 2015, 2017, 2019, and 2021 for 21 TUDA districts, together with predicted average scores for the Nation and Large City

Jurisdiction	2011 Actual	2013 Actual	2015 Predicted	2017 Predicted	2019 Predicted	2021 Predicted
Nation	220	221	221	221	221	221
Large City	211	212	212	212	213	213
Hillsborough Co (FL)	231	228	229	230	231	232
Charlotte	224	226	227	228	229	230
Miami-Dade	221	223	223	224	225	225
Austin	224	221	222	224	224	224
Jefferson Co (KY)	223	221	222	223	224	225
San Diego	215	218	220	221	222	223
New York City	216	216	217	218	219	220
Atlanta	212	214	216	218	220	220
Boston	217	214	215	216	217	218
Houston	213	208	210	211	212	213
Albuquerque	209	207	209	210	211	212
Chicago	203	206	207	208	209	210
District of Columbia	201	206	208	210	212	214
Dallas	204	205	206	207	207	207
Los Angeles	201	205	207	209	209	209
Baltimore city	200	204	204	204	204	204
Philadelphia	199	200	200	200	200	200
Milwaukee	195	199	200	200	200	200
Fresno	194	196	198	200	200	200
Cleveland	193	190	190	190	190	190
Detroit	191	190	190	190	190	190
Mean	209	209	210	211	212	213
Range	40	38	39	40	41	42

Note. TUDA districts arranged in rank-order according to their scores in 2013.

Source. "The Nations Report Card, Trial Urban District Assessment: Reading 2011."

For 2013 scores: "A First Look: 2013 Mathematics and Reading Trial Urban District Assessment," p. 5

For the most part the predicted score values were determined by simply extending the score trends of 2011 and 2013. Underlying the predictions for the 2015-2021 period was the assumption that the percentage of fourth-grade students eligible for free lunch would increase only slightly for the 2015-2021 period for the 21 TUDA districts.

The reader should note that I have not predicted any increase in the mean score for the Nation over the six year period. For three assessment years – 2007, 2009, and 2011 – the Nation’s public school fourth-

grade mean score of 220 was unchanged. It increased to 221 in 2013. My prediction is that the mean score for the Nation will remain unchanged at 221 over the next four assessments.

In Table 5 I have predicted that the 2013 gap between the Nation and the Large City reference group will remain at nine points over the six year period, from 2015 to 2021.

I have predicted that Atlanta and the District of Columbia will continue to make gains at a faster rate than the other TUDA districts.

Finally, I have predicted that the highest scoring districts in 2011 and 2013 will remain the highest scoring districts in 2021, and that Cleveland and Detroit will remain the lowest scoring districts in 2021.

For the lowest scoring districts, say, those predicted to have scores of 200 or below in 2021, these projections imply adult lives of despair, lives without hope, for tens of thousands young men and women who are presently in the primary grades. In my view it is virtually certain that the educational conditions in the nation's largest cities will not improve hardly at all in the next ten or twenty years

Conclusions.

1. NAEP fourth-grade reading scores increased very little over the ten-year period, 2003-2013. Scores for the Nation increased five points; for the Large City reference group, eight points.
2. The gap between the mean reading scores of the Nation and the mean reading scores of the Large City reference group has remained large and nearly constant over the ten-year period, 2003-2013. In 2003 the gap was 12 score points, in 2013 the gap was ten score points.
3. For the ten TUDA districts which had reading scores over the ten-year period, the district mean scores differed considerably. In 2003 Charlotte had the highest score (219), District of Columbia had the lowest score (188). Charlotte scored above the national mean in all six assessments whereas the other nine districts all scored below the national mean in all six assessments.

4. For the 21 TUDA districts which had reading scores in 2011 and 2013, the rank-order of scores in 2013 changed very little from 2011. The five highest scoring districts in 2011 were the five highest scoring districts in 2013; the five lowest scoring districts in 2011 were the five lowest scoring districts in 2013;

5. For the 21 TUDA districts tested in 2011 and 2013, there was a very high relationship between the percentage of students eligible for free lunch and reading score. For 2011 the correlation was -0.79; for 2013 the correlation was -0.87. I assert that a TUDA district's free lunch percentage is the single best indicator of district's scores on the fourth-grade NAEP reading test.

6. On average scores for the 21 TUDA districts in 2011 did not change in 2013; the mean fourth-grade reading score was 209 in both and 2013.

7. For the 21 TUDA districts tested in 2013, the correlation between mean household income and fourth-grade NAEP reading score was moderately high, 0.70. For the top five scoring districts, the median household income was \$61,500. For the lowest five scoring districts, the median household income was \$38,000. Thus, the difference in median household income was \$23,500.

8. For the Nation, mean public school fourth-grade reading score was a constant 220 in 2007, 2009, and 2011. In 2013, the mean reading score increased one-point to 221. For the Nation, I have predicted that the mean reading score will remain unchanged at 221 for 2017, 2019, and 2021.

9. In my view it is virtually certain that the educational achievement in our nation's largest urban school districts will not improve significantly in the next ten to twenty years. For the most part the urban – non urban gaps have been in place for twenty-five years or so.

Educational implications. The percentage of students eligible for free lunch is highly related (inversely) to reading scores. Free lunch percentages are very slowly increasing, not decreasing, for the Nation and for large cities. In this paper, I have projected that reading scores for large city school

districts will improve hardly at all – they may well decrease slightly – in the next six years. As a nation, we are creating a permanent underclass, young men and women whose life prospects are bleak.

Post script. The preliminary results of the 2015 NAEP assessment were released October 28, 2015, too late for the TUDA district results to be incorporated into this paper. However, I can report here some 2015 results for public schools for the Nation. For both fourth-grade and eighth-grade, math scores declined slightly. Eighth-grade reading scores declined, and fourth-grade reading scores remained unchanged at 221.

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