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## **Dollars for Sense: Assessing Achievement Gaps in Arkansas in the Context of Substantial Funding Increases**

Joshua H. Barnett

Nathan C. Jensen

Gary W. Ritter

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**ARKANSAS EDUCATION REPORT**  
*Volume 5, Issue 3*

**DOLLARS FOR SENSE? ASSESSING ACHIEVEMENT GAPS  
IN ARKANSAS IN THE CONTEXT OF SUBSTANTIAL  
FUNDING INCREASES**

**By:**

**Joshua H. Barnett  
Nathan C. Jensen  
Gary W. Ritter**

**September 1, 2008**

**Office for Education Policy  
University of Arkansas  
211 Graduate Education Building  
Fayetteville, AR 72701  
Phone: (479) 575-3773  
Fax: (479) 575-3196  
E-mail: [oe@uark.edu](mailto:oe@uark.edu)**

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## EXECUTIVE SUMMARY

Over the last half century, more than forty states across the nation have experienced school finance lawsuits as a consequence of perceived and real funding gaps between rich and poor districts. Arkansas is one such state, with a long history of school funding battles in the courts. The legal challenges began in 1983, when the Arkansas Supreme Court initially found the state's school funding system unconstitutional under the equal protection clause of the state constitution. After a quarter century of court battles, the Arkansas state legislature made drastic additions to school funding, giving more resources to all students and categorical funding targeted to high-needs students.

In this paper, we report on our previous school finance analyses of the magnitude and distribution of funding to districts across the state. In short, we reveal that districts in Arkansas serving minority and low-income students have received increased levels of funding over the last five years. Specifically,

- Districts with the highest percentage of minority students receive, on average, \$1,203 more per pupil than do districts with the lowest percentage of minority students.
- Districts with the highest percentage of low-income students receive, on average, \$1,782 more per pupil than do districts with the lowest percentage of low-income students.

After establishing the fact that Arkansas' school finance system provided these targeted funding increases, we then move to the question of student performance. In particular, we track performance trends for minority and low-income students on the National Assessment of Education Progress (NAEP), the Arkansas Benchmark, and the ACT. This analysis allows us to examine whether increases in student performance, or the narrowing of achievement gaps, followed these targeted increases in financial resources. Specifically, we are interested in the three different “achievement gaps”: the white-black gap, the white-Hispanic gap, and the gap between those students eligible for free and reduced lunch (FRL) and those students not eligible for FRL. Our analysis revealed:

- **White-Black Achievement Gap**
  - The white-black achievement gap has remained relatively stable on the NAEP, with the exception of 4th grade math, where the gap has widened by 4 percentage points since 2003.
  - The achievement gap has remained similarly stable on the Arkansas Benchmark, again with the exception of 4th grade math, where the gap has narrowed by 7 percentage points.
  - The achievement gap on the ACT has widened by 0.3 points since 2003, with a current gap of 4.7 points.
- **White-Hispanic Achievement Gap**
  - The white-Hispanic achievement gap has widened in all areas measured on the NAEP.
  - The achievement gap has widened in all areas measured on the Arkansas Benchmark, with the exception of 8th grade reading, where the gap has narrowed by 1 percentage point.

- The achievement gap on the ACT has widened by 0.4 points since 2003, with a current gap of 2.6 points.
- FRL Eligible-Non FRL Eligible Achievement Gap
  - The FRL eligible-non FRL eligible achievement gap has widened in all areas measured on the NAEP.

This analysis of achievement gaps reveals that in nearly all measured areas, the gap between disadvantaged and advantaged students appears to be widening since the targeted increase in educational funding. Indeed, policymakers and educators should continue to pay close attention to the performance levels for the three student sub-groups assessed in this report, as the current achievement gaps are large and counter to the goal of educational equality.

For example, on the NAEP math exam, 46% of Arkansas' white 4th grade students and 31% of white 8th grade students earned a proficient score. By comparison, 12% of black 4th grade students and 22% of Hispanic 4th grade students achieved at a similar level. By eighth grade, the problems facing minority students are even more pronounced, as fewer than 10% of the students in either group reached proficiency. On the NAEP reading exam, the results are similarly problematic. While more than 30% of white students earned proficiency at both grade levels, fewer than one in ten black students and fewer than one in five Hispanic students achieved proficiency in reading.

Furthermore, the gaps between Arkansas' low-income and high-income students are also large; for instance, fewer than one in four students eligible for free and reduced lunch earned proficient scores on the fourth grade NAEP exam, as compared to more than half of their higher-income peers. These troubling trends are also reproduced on the Arkansas Benchmark exams and the ACT. For example, while the achievement gap is narrowing on the Arkansas Benchmark for black 4th grade students in math (by 7 percentage points), the fact that only 54% of black students are scoring in the proficient or advanced range, compared to 82% of white students, reinforces that policy makers and school officials have not yet attained the educational equality for which the set out to achieve.

In the end, Arkansas policymakers should feel encouraged, yet unsatisfied, by their previous efforts. The key point of the report is that stubborn gaps in achievement persist between advantaged and disadvantaged students across the state, even with the additional resources in place. It is imperative that policymakers and educators find effective ways to use the new resources to help all students, particularly disadvantaged students, meet the challenging standards now in place.

# Dollars for Sense: An Evaluation of Arkansas Achievement Gaps in the Context of State-Wide Funding Increases

## I. INTRODUCTION

Over the last half century, more than forty states across the nation have experienced school finance lawsuits as a consequence of perceived and real funding gaps between rich and poor districts (Rebell, 2001). Arkansas is one such state, with a long history of school funding battles in the courts. The legal challenges began in 1983, when the Arkansas Supreme Court initially found the state's school funding system unconstitutional under the equal protection clause of the state constitution.

After nearly two decades of incremental changes, resulting at least in part from the court's watchful eye, the Arkansas legislature of 2003-04 increased the total state appropriation for elementary and secondary education by \$400 million to \$1.84 billion - a 24% increase over the previous year. This increase, however, did not fully satisfy the court mandate. In 2005 and 2007, the legislature opted to make further targeted increases to teacher salaries and school facilities. Finally, in May 2007, the Court decided the state had met its constitutional mandate and closed the case.

However, several questions remain in the background of this discussion about Arkansas' educational spending. The primary question is what the Arkansas legislature bought with all of the additional resources. That is, the presumption is often that more dollars are requested because dollars translate into improved student performance. This paper examines trends in student performance, including achievement gaps between student sub-groups, alongside trends in education spending across the state of Arkansas. To this aim, the paper is divided into two sections. First, a straightforward analysis of education spending in Arkansas is presented comparing Arkansas' spending levels for different types of students, specifically low-income and minority students. Second, a detailed exploration of how Arkansas students have performed is presented, though this information is not intended to provide a causal relationship between more dollars and higher performance. However, as noted in the policy discussion, across Arkansas (and we presume other states and nations), increased spending is often viewed as directly related to improved performance. We believe it is worth exploring whether this assumption held true in this state, which will assist policymakers, education officials, and citizens of Arkansas and other states in future funding discussions.

## II. RESEARCH QUESTIONS

- A. What is the current and historic level of educational funding in Arkansas?
  - 1. Have districts with higher percentages of low-income students received higher increases in funding?
  - 2. Have districts with higher percentages of minority students received higher increases in funding?
  
- B. How has student performance changed over the last five years as more resources have been put into the education system?
  - 1. Has the white-black gap decreased on the National Assessment of Education Progress (NAEP), the Arkansas Benchmark, and the ACT?
  - 2. Has the white-Hispanic gap decreased on the NAEP, the Arkansas Benchmark, and the ACT?
  - 3. Has the poverty gap decreased on the NAEP?

### **III. METHODOLOGY**

#### **A. Levels of Education Funding in Arkansas**

For question one, we provide a clear descriptive analysis of Arkansas per pupil expenditures. Using data from the National Center for Education Statistics, we ask which types of districts, and by proxy which students have benefited from the additional state dollars for education.

Specifically, this section examines the choices that policymakers in Arkansas made in an attempt to provide more resources to low-income students. We also examine the changes in funding for minority students since the achievement gap between these students and their white peers is a point of discussion. To examine the resources by student type, we divided the districts across the state into quintiles by percentage of low-income students (as determined by percentage of students who qualify for the federal free and reduced lunch program) and percentage of minority students.

#### **B. Student Performance and Achievement Gaps**

In this report, we assessed the extent to which these targeted increases in resources were followed by improvements in academic performance for disadvantaged students. We focused on three particular student sub-populations: black students, Hispanic students, and economically disadvantaged (as measured by eligibility for the federal free and reduced lunch program) students.

We assessed academic performance on three indicators of achievement: the National Assessment of Educational Progress (NAEP) exam, the Arkansas Benchmark exam, and the ACT exam. For the NAEP and the Benchmark Exam, the performance measure employed is the percentage of students performing in the proficient and advanced range. For the ACT, we report average scores for each of the relevant sub-groups. The purpose for these comparisons was to determine if the gap in achievements levels between disadvantaged and advantaged students was narrowing, which would lend support to the efficacy of increased per pupil expenditures for minority and FRL-eligible students.

Achievement gaps on the Arkansas Benchmark exam for FRL eligible and non-eligible students were not used for this report due to the differences by which students are categorized. For example, on the Benchmark, achievement levels are not reported for non-eligible students; data are only reported for FRL eligible students. Similarly, ACT scores for FRL eligible students are not available.

Testing data for the NAEP exam was obtained directly from the NAEP website. Data for the Arkansas Benchmark exam was obtained from two different websites: The National Office for Research on Measurement and Evaluation Systems (NORMES), and the Arkansas Department of Education (ADE). A breakdown of achievement levels by student sub-groups on the Arkansas Benchmark exam for the 2008 school year was only available on the ADE website. Therefore, for continuity purposes, ADE data on the Benchmark exam were used for 2006-2008, and NORMES data was used for 2004 and 2005. ACT data were also obtained from the ADE website.



For all three exams, achievement gaps were compared starting with the 2003-04 academic year, which allowed for a comparison prior to and after the implementation of the targeted finances (which began in the Fall of 2004). After 2003-04, data for every available school year was incorporated into this report.

In an effort to maintain consistency with NAEP, we examined only the 4th and 8th grade achievement levels for the Arkansas Benchmark exam, as those are the only grade levels tested on the NAEP exam. By using these grades, as well as including ACT results, we are able to compare achievement gaps at the elementary, middle, and high school level. Additionally, we were able to base our findings on multiple examinations, rather than only a state or national exam.

In the following section, we provide a brief overview of changes in student expenditures over the last five years, followed by a comprehensive assessment of changes in student performance and achievement gaps during that same time period.

## IV. RESULTS

### A. Levels of Education Funding in Arkansas

Since 1960, Arkansas has spent less per pupil than most other states, generally ranking in the bottom 10 states (see Table 1). Historically, educational spending per pupil in Arkansas has remained about 20 percent behind the national average, and Arkansas spending has lagged behind the expenditures in neighboring states. Notwithstanding this trend, the 2003-04 Arkansas legislature – with direct encouragement from the Arkansas Supreme Court – decided to provide a significant increase to school funding. In 2004-05, after the large increase to Arkansas’ schools, per pupil expenditures in Arkansas increased to \$8,664, which was equal to the national average and second among neighboring states (trailing only Missouri by nearly \$50 per pupil).

**Table 1 : Cost-of-Living Adjusted Total Expenditures per Pupil for Arkansas and Regional States from 1959-60 to 2004-05**

State	1959-60	1969-70	1979-80	1989-90	1999-00	2004-05
Arkansas	\$255	\$642	\$1,781	\$3,942	\$6,366	\$8,664
Louisiana	\$414	\$721	\$1,993	\$4,342	\$6,958	\$7,475
Mississippi	\$235	\$572	\$1,899	\$3,532	\$6,114	\$7,475
Missouri	\$382	\$787	\$2,151	\$5,008	\$7,516	\$8,731
Oklahoma	\$357	\$692	\$2,207	\$4,018	\$6,609	\$7,572
Tennessee	\$267	\$635	\$1,833	\$4,107	\$6,544	\$7,680
Texas	\$374	\$702	\$2,155	\$4,669	\$7,617	\$8,150
US Average	\$375	\$816	\$2,272	\$4,980	\$7,392	\$8,701
% AR Diff. From US Avg.	32%	21%	22%	21%	14%	0%
AR Rank of 51 (high=1)	45	43	45	42	41	27

*Sources: Data from the National Council for Education Statistics, Digest of Education Statistics: Table 171 Current expenditure per pupil in average daily attendance in public elementary and secondary schools, by state or jurisdiction: Selected years, 1959–60 through 2003–04; Table 6. Student membership and current expenditures per pupil for public elementary and secondary education, by function, sub-function, and state or jurisdiction: Fiscal year 2005; Cost-of-living adjustment taken from the American Federation of Teachers Survey and Analysis of Teacher Salary Trends, 2002, Table I-5.*

This addition in resources was well received by most districts; however, in Arkansas, and likely across the country and globe, policymakers were concerned with the level of resources allocated to disadvantaged students. After all, the perceived and real funding shortages for these students have been the basis for virtually all school funding lawsuits. The remainder of this section examines the level of funding change for districts based on the percentage of FRL-eligible students and the percentage of minority students.

### 1. Districts with Higher Percentages of Minority Students

In 2003-04, the average spending in districts with the highest concentration of minority students (more than 43% of students) was \$7,014, compared to \$6,316 for districts with the lowest concentration of minority students. Historically, districts with more minority students have higher expenditure levels, and these same districts have also experienced the greatest increases in spending from 2003-04 to 2006-07. Table 2 highlights expenditure levels since 2003, based on the percentage of minority students in the district.

In short, as of 2007, districts with the highest percentage of minority students received substantially greater financial resources (Q5 - \$9,158) than did districts with the lowest percentage of minority students (Q1 - \$7,955), an overall difference of \$1,203.

**Table 2: Current Expenditures by % of Minority Students from 2003-04 to 2006-07**

Category	Category Definition	Districts	Students	2003-2004	2004-2005	2005-2006	2006-2007	% change 04-07
Quintile 1	0%-3.17%	50	47,967	\$6,316	\$7,119	\$7,587	\$7,955	26%
Quintile 2	3.18%-6.86	51	70,567	\$6,158	\$6,905	\$7,327	\$7,548	23%
Quintile 3	6.87%-20.50%	49	78,932	\$6,154	\$6,894	\$7,379	\$7,668	25%
Quintile 4	20.51%-43.39%	49	102,987	\$6,565	\$7,357	\$7,810	\$8,197	25%
Quintile 5	43.40%-above	46	159,412	\$7,014	\$7,906	\$8,757	\$9,158	31%
<b>Difference between Quintile 5-Quintile 1</b>				<b>\$698</b>	<b>\$787</b>	<b>\$1,170</b>	<b>\$1,203</b>	
State Total		245	459,865	\$6,569	\$7,378	\$7,971	\$8,315	27%

### 2. Districts with Higher Percentages of Low-Income Students

In 2003-04, the average spending in districts in the highest poverty quintile (more than 71% of students who qualify for free or reduced lunch) was \$7,290, compared to \$6,144 for districts in the lowest poverty quintile. Historically, districts with more poverty students have higher expenditure levels, and these same districts have also experienced the greatest increases in spending from 2003-04 to 2006-07. Table 3 highlights expenditure levels since 2003, based on the percentage of low-income students in the district.

In short, as of 2007, districts with the highest percentage of low-income students received substantially greater financial resources (Q5 - \$9,380) than did districts with the lowest percentage of low-income students (Q1 - \$7,598), an overall difference of \$1,782.

**Table 3: Current Expenditures by % of Low-income Students from 2003-04 to 2006-07**

Category	Category Definition	Districts	Students	2003-2004	2004-2005	2005-2006	2006-2007	% change 04-07
Quintile 1	0%-45.58%	55	131,188	\$6,144	\$6,881	\$7,298	\$7,598	24%
Quintile 2	45.59%-53.10%	59	122,371	\$6,455	\$7,237	\$7,831	\$8,145	26%
Quintile 3	53.11%-60.85%	49	109,174	\$6,807	\$7,663	\$8,416	\$8,797	29%
Quintile 4	60.86%-71.39%	44	51,226	\$6,728	\$7,515	\$8,167	\$8,601	28%
Quintile 5	71.40%-above	37	44,810	\$7,290	\$8,398	\$9,000	\$9,380	29%
<b>Difference between Quintile 5-Quintile 1</b>				<b>\$1,146</b>	<b>\$1,516</b>	<b>\$1,702</b>	<b>\$1,782</b>	
State Total		244	458,769	\$6,578	\$7,395	\$7,979	\$8,315	26%

The brief overview of educational funding in Arkansas presented here indicates that students in Arkansas, as compared to their peers across the nation, had access to lower levels of educational funding prior to the legislative action of 2004. However, after the legislative decisions of 2003-04 and the continual infusion of additional resources into education, Arkansas funding is near the national average and above neighboring states. Furthermore, Arkansas' per pupil expenditures equal the national average due to the dramatic \$1,737 funding increase from 2003 to 2007, rather than a funding decrease among neighboring states or the national average. Notwithstanding this increase for the average student, Arkansas increased expenditures even more dramatically for FRL-eligible students and minority students, \$1,804 and \$1,980 respectively. However, the legal mandates from the Supreme Court of Arkansas and other courts across the country required these funding changes; not with the motivation of simply equating the balance sheets. The motivation, at least in part, behind these funding changes was to improve student performance particularly for disadvantaged students. While we cannot determine if these funding changes directly caused improvements in student performance, we can examine any associated trends in overall student performance and the achievement gaps with the funding increases. The next section thoroughly examines student achievement and achievement gap levels in Arkansas.

## **B. Student Performance and Achievement Gaps**

Before looking at the student performance data, two previous points need to be reiterated. First, test data is limited. In Arkansas, as in nearly all other states, policymakers can opt to change the statewide test offered to students. For example, Arkansas students took the Stanford Achievement Test, Ninth Edition (SAT-9) prior to 2003, took the Iowa Test of Basic Skills until 2008, and students from 2008 until the next change will take the Stanford Achievement Test, Tenth Edition (SAT-10). Therefore, while the Arkansas exams are useful, they are Arkansas-specific and change over time. For this reason, we also examine data from consistent and

national assessments such as the National Assessment for Educational Progress (NAEP) and ACT standardized college entrance exam.

The second important point to reiterate is that the achievement gap data below are discussed in terms of percentage of students scoring proficient or advanced. We recognize that using this measure comes with some limitations, and using scaled scores might be preferable; however, it is used in this paper for two key reasons. One, proficient and advanced percentages are recognizable and discussed by school officials and policymakers. That is, these numbers are generally not confusing or created by complex statistical formulas that need expansive explanations. The purpose of this paper is to explore the trends in resources alongside trends in performance; therefore, we use the most straightforward data possible to encourage a straightforward discussion with school officials and policymakers. Two, both the NAEP and Arkansas Benchmark exams provide percentages of students scoring proficient and advanced data, which means we can be consistent across tests. The remainder of this section explores the achievement gaps between three groups: black and white students; Hispanic and white students; and FRL and non-FRL students.

### *1. White-Black Achievement Gap*

#### a. NAEP

Table 4 highlights the percentages of black and white students who performed at the proficient and advanced level on NAEP exams, as well as the achievement gap between the two groups of students. The percentages are based on testing data available from 2003-2007, and are grouped according to subject (reading and math) and grade level (4th and 8th grade). Recall the infusion of targeted resources for disadvantaged students began in 2004-05.

These data reveal contrasting trends in student performance by subject (see Table 4). In math, black students in both 4th and 8th grade made steady improvement since 2003, increasing by 7 percentage points in the 4th grade and 6 percentage points in the 8th grade. White students also made performance improvements, increasing by 12 percentage points in 4th grade and seven percentage points in 8th grade. This differential improvement between the student groups resulted in the achievement gap expanding by 5 percentage points in 4th grade and one percentage point in 8th grade. However, in reading, black and white student performance has remained relatively stable in 4th and 8th grade since 2003. The result of this consistent performance means that the white-black achievement gap has remained relatively stable, with a 27-percentage-point gap in 4th grade and a 24-percentage-point gap in 8th grade.

Compared to the national average, Arkansas' white-black achievement gap is smaller in all four comparisons of data from the NAEP – 4th and 8th grade math and reading.

**Table 4: Comparison of White & Black Student NAEP Performance from 2003-2007**

Student Performance	Math			Reading		
	2003	2005	2007	2003	2005	2007
<u>4th Grade</u>						
Black % Proficient & Advanced	5%	10%	12%	10%	10%	9%
White % Proficient & Advanced	34%	41%	46%	35%	37%	36%
<b>Arkansas White-Black Gap</b>	<b>-29%</b>	<b>-31%</b>	<b>-34%</b>	<b>-25%</b>	<b>-27%</b>	<b>-27%</b>
<i>US Average Gap</i>	-32%	-34%	-36%	-27%	-27%	-28%
<u>8th Grade</u>						
Black % Proficient & Advanced	3%	4%	9%	6%	8%	8%
White % Proficient & Advanced	24%	28%	31%	33%	32%	32%
<b>Arkansas White-Black Gap</b>	<b>-21%</b>	<b>-24%</b>	<b>-22%</b>	<b>-27%</b>	<b>-24%</b>	<b>-24%</b>
<i>US Average Gap</i>	-29%	-29%	-30%	-27%	-26%	-26%

**b. Arkansas Benchmark**

As noted previously, we are only reporting data for students in 4th and 8th grade. A review of the five-year performance levels for black students highlights opposing trends for the two different grade levels (see Table 5). For example, black students in the 8th grade have demonstrated consistent growth since 2004, while their 4th grade peers experienced growth in math but not reading. The performance levels of white students follow similar yearly trends as those of black students, which resulted in limited changes in the performance gaps between the two student groups. In 2008, the 4th grade reading gap returned to its lowest point in five years at 27 percentage points, the 8th grade math gap matched previous lows of 33 percentage points, while the 8th grade reading gap expanded back to 30 percentage points. The most notable gap on the Benchmark exam is for 4th grade math, where the performance gap has narrowed by 7 percentage points, from 35% in 2004 to 28% in 2008.

**Table 5: Comparison of White & Black Student Benchmark Performance from 2004-2008**

Student Performance	Math					Reading				
	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
<u>4th Grade</u>										
Black % Proficient & Advanced	39%	28%	36%	42%	54%	49%	31%	38%	37%	48%
White % Proficient & Advanced	74%	59%	68%	74%	82%	76%	60%	69%	67%	75%
<b>Arkansas White-Black Gap</b>	<b>-35%</b>	<b>-31%</b>	<b>-32%</b>	<b>-32%</b>	<b>-28%</b>	<b>-27%</b>	<b>-29%</b>	<b>-31%</b>	<b>-30%</b>	<b>-27%</b>
<u>8th Grade</u>										
Black % Proficient & Advanced	9%	10%	17%	22%	32%	28%	35%	44%	44%	45%
White % Proficient & Advanced	41%	43%	53%	57%	65%	62%	66%	73%	71%	75%
<b>Arkansas White-Black Gap</b>	<b>-32%</b>	<b>-33%</b>	<b>-36%</b>	<b>-35%</b>	<b>-33%</b>	<b>-34%</b>	<b>-31%</b>	<b>-29%</b>	<b>-27%</b>	<b>-30%</b>

**c. ACT**

A comparison of the average ACT scores for black and white students reveal similar trends for both student groups (see Table 6). Since 2003, there has been little deviation in the average score for black or white students. However, over the last five years, the average white ACT score has risen by 0.3 points, while the average score for black students has remained stable. As a result, the performance gap between the two student groups has widened at a rate consistent with the ACT growth for white students. It is important to note that the ACT is a voluntary exam, and the population of students taking the exam is not necessarily representative. Thus, the NAEP and Benchmark assessments are preferable for the comparison of achievement gaps.

**Table 6: Comparison of White & Black ACT Performance 2003-2007**

	2003	2004	2005	2006	2007
Average Black ACT Score	16.7	16.7	16.7	16.9	16.7
Average White ACT Score	21.1	21.2	21.2	21.5	21.4
<b>Arkansas White-Black Gap</b>	<b>-4.4</b>	<b>-4.5</b>	<b>-4.5</b>	<b>-4.6</b>	<b>-4.7</b>

**d. Summary**

A review of the performance levels and achievement gaps between black and white students reveals the occurrence of similar trends over the last five years. In nearly all instances, the achievement gap has either remained stable or grown wider since 2003. The only notable exception to this occurred on the 4th grade math Benchmark exam, where the achievement gap

narrowed by 7 percentage points. However, the consistent disparity in achievement levels, even as resources have substantially increased since 2007, highlights that more needs to be done to diminish the differences in achievement levels between black and white students in Arkansas.

## *2. White-Hispanic Achievement Gap*

### a. NAEP

On the NAEP exam, the white-Hispanic comparison is less straightforward than the white-black comparison. Outlined in Table 7 are the percentages of Hispanic and white students that perform at the proficient or advanced level on NAEP exams.

Again, white students have shown consistent improvement in math since 2003 in both the 4th and 8th grade. However, Hispanic students demonstrated growth from 2003 to 2005, but then regressed in 2007. That trend is reflected in the math performance gap, which narrowed in 2005 (16 percentage points for 4th grade, 13 percentage points for 8th grade), and then grew wider in 2007 (24 percentage points for 4th grade, 23 percentage points for 8th grade).

Hispanic student performance in reading follows a pattern similar to math performance for 4th graders, where growth is observed between 2003 and 2005, with a decline in performance in 2007. However, from 2003 to 2005, 8th grade student performance showed a significant decline (12 percentage points), with only slight improvement in 2007. Because white student performance in reading remained relatively stable, the reading performance gap varies from year to year, although the current performance gap is wider across both grades than it was in 2003.

Compared to the national average, Arkansas' white-Hispanic achievement gap is smaller in all four comparisons of data from the NAEP – 4th and 8th grade math and reading.



**Table 7: Comparison of White & Hispanic Student NAEP Performance from 2003-2007**

Student Performance	Math			Reading		
	2003	2005	2007	2003	2005	2007
<u>4th Grade</u>						
Hispanic % Proficient & Advanced	15%	25%	22%	18%	21%	16%
White % Proficient & Advanced	34%	41%	46%	35%	37%	36%
<b>Arkansas White-Hispanic Gap</b>	<b>-19%</b>	<b>-16%</b>	<b>-24%</b>	<b>-17%</b>	<b>-16%</b>	<b>-20%</b>
<i>US Average Gap</i>	-27%	-28%	-29%	-25%	-24%	-25%
<u>8th Grade</u>						
Hispanic % Proficient & Advanced	7%	15%	8%	25%	13%	15%
White % Proficient & Advanced	24%	28%	31%	33%	32%	32%
<b>Arkansas White-Hispanic Gap</b>	<b>-17%</b>	<b>-13%</b>	<b>-23%</b>	<b>-8%</b>	<b>-19%</b>	<b>-17%</b>
<i>US Average Gap</i>	-25%	-24%	-26%	-25%	-23%	-24%

**b. Arkansas Benchmark**

The comparison of Hispanic and white students on the Benchmark exam, as shown in Table 8, reveals similar performance trends for students in 8th grade in both math and reading, as well as students in 4th grade reading. In the 8th grade, both Hispanic and white students have demonstrated consistent improvement for both math and reading. While there was a decline in performance from 2006 to 2007 in 8th grade reading, students in 8th grade math have made steady progress in each of the previous five years. However, because the white students in 8th grade still outperform Hispanic students in both subjects, the achievement gap between the two groups has persisted (19 percentage points in math, 21 percentage points in reading).

The performance trends for students in 4th grade have shown less stability from 2004 to 2008. In math and reading, both student groups declined after 2004, increased after 2005, and then decreased again in 2007 (with the lone exception of white students in math). However, since 2004, white students have shown an increase of 8 percentage points in the proficient to advanced range, compared to an increase of only 3 percentage points for Hispanic students. As a result, the achievement gap has widened in the last five years, with only a recent narrowing occurring between 2007 and 2008.

**Table 8: Comparison of White & Hispanic Student Benchmark Performance from 2004-2007**

Student Performance	Math					Reading				
	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
<u>4th Grade</u>										
Hispanic % Proficient & Advanced	64%	47%	57%	55%	67%	64%	44%	52%	44%	54%
White % Proficient & Advanced	74%	59%	68%	74%	82%	76%	60%	69%	67%	75%
<b>Arkansas White-Hispanic Gap</b>	<b>-10%</b>	<b>-12%</b>	<b>-11%</b>	<b>-19%</b>	<b>-15%</b>	<b>-12%</b>	<b>-16%</b>	<b>-17%</b>	<b>-23%</b>	<b>-21%</b>
<u>8th Grade</u>										
Hispanic % Proficient & Advanced	25%	25%	32%	39%	46%	40%	46%	57%	50%	54%
White % Proficient & Advanced	41%	43%	53%	57%	65%	62%	66%	73%	71%	75%
<b>Arkansas White-Hispanic Gap</b>	<b>-16%</b>	<b>-18%</b>	<b>-21%</b>	<b>-18%</b>	<b>-19%</b>	<b>-22%</b>	<b>-20%</b>	<b>-16%</b>	<b>-21%</b>	<b>-21%</b>

c. ACT

A comparison of the average ACT performance for Hispanic and white students is highlighted in Table 9. Since 2003, the average score for Hispanic students has shown a slight decline, decreasing from 18.9 in 2003 to 18.8 in 2007. As noted earlier, in the same time period, the average ACT score for white students has risen by 0.3 points. As a result, the achievement gap between the two student groups has widened from 2.2 points in 2003 to 2.6 in 2007.

**Table 9: Comparison of Hispanic & White ACT Performance 2003-2007**

	2003	2004	2005	2006	2007
Average Hispanic ACT Score	18.9	18.6	18.6	18.9	18.8
Average White ACT Score	21.1	21.2	21.2	21.5	21.4
<b>Arkansas White-Hispanic Gap</b>	<b>-2.2</b>	<b>-2.6</b>	<b>-2.6</b>	<b>-2.6</b>	<b>-2.6</b>

d. Summary

A review of the performance levels and achievement gaps between Hispanic and white students reveal a pattern similar to that of the white-black achievement gap. In the three areas evaluated (the NAEP, Arkansas Benchmark, and ACT), the achievement gap has either remained stable or widened since 2003. While there are a number of instances of Hispanic students showing increases in performance levels, white students continue to demonstrate higher levels of achievement which has led to the persistence of the achievement gap. These trends also

challenge the efficacy of the funding increases, and support the need for further action to be taken to ensure that the educational needs of Hispanic students in Arkansas are being met.

### 3. Poverty Achievement Gap

The final analysis of performance trends compares students eligible for free and reduced lunch to students not eligible for the program, as outlined in Table 10. In math, eligible students in both 4th and 8th grade have shown consistent improvement in performance on NAEP examinations from 2003 to 2007. However, in reading, those same students have steadily declined in performance since 2003, with decreases of 3 percentage points in 4th grade and 4 percentage points in 8th grade.

The performance trends for non-eligible students have shown consistent improvement since 2003 across both subjects and grade levels. As a result, the performance gap between FRL non-eligible and eligible students consistently widened each year, with the largest gap evident in 4th grade math performance.

Compared to the national average, Arkansas' poverty gap is smaller in all four comparisons of data from the NAEP – 4th and 8th grade math and reading.

**Table 10: Comparison of FRL Eligible & Non-Eligible Student NAEP Performance from**

Student Performance	Math			Reading		
	2003	2005	2007	2003	2005	2007
<u>4th Grade</u>						
FRL Eligible % Proficient & Advanced	18%	22%	24%	20%	19%	17%
Non-Eligible % Proficient & Advanced	37%	48%	54%	39%	43%	44%
<b>Arkansas Poverty Gap</b>	<b>-19%</b>	<b>-26%</b>	<b>-30%</b>	<b>-19%</b>	<b>-24%</b>	<b>-27%</b>
<i>US Average Gap</i>	-30%	-31%	-31%	-26%	-27%	-27%
<u>8th Grade</u>						
FRL Eligible % Proficient & Advanced	12%	13%	14%	19%	16%	15%
Non-Eligible % Proficient & Advanced	25%	30%	35%	34%	35%	36%
<b>Arkansas Poverty Gap</b>	<b>-13%</b>	<b>-17%</b>	<b>-21%</b>	<b>-15%</b>	<b>-19%</b>	<b>-21%</b>
<i>US Average Gap</i>	-26%	-26%	-27%	-24%	-23%	-24%

The performance trends on the NAEP exam highlight the discrepancy between FRL eligible and non-eligible students. In the four NAEP exams, the achievement gap has widened by a sizable margin since 2003 as a result of diminishing achievement levels in reading for eligible students, or greater performance increases by those students not FRL eligible. When taken in context with the performance of Hispanic and black students, it appears that improvements for key sub-groups have not followed the targeted increase in financial resources.

## C. Comprehensive Gap Summary

Table 11 presents a summary of the achievement gaps for each of the previously analyzed student sub-groups. The figures reflect the change in achievement levels from the first available testing period prior to the increase in targeted financial resources to current levels of student achievement. In this table, a negative figure denotes an achievement gap that is growing wider, whereas a positive figure reflects that the gap has narrowed. For example, the achievement gap for black and white students in the 4th grade on the math section of the NAEP exam has widened by 5 percentage points since 2003. Conversely, the achievement gap has narrowed by 7 percentage points for the same group of students on the Arkansas Benchmark exam. In total, of the 22 different student achievement comparisons, there were 15 instances of the achievement gap widening by more than 1 percentage point.

**Table 11: Summary of Achievement Gaps among Arkansas Student Sub-Groups**

	White-Black Achievement Gap	White-Hispanic Achievement Gap	FRL/Non-FRL Achievement Gap
<u>NAEP</u>			
4th Grade Math	-5 pts.	-5 pts.	-11 pts.
4th Grade Reading	-2 pts.	-3 pts.	-8 pts.
8th Grade Math	-1 pts.	-6 pts.	-8 pts.
8th Grade Reading	+3 pts.	-9 pts.	-6 pts.
<u>Arkansas Benchmark</u>			
4th Grade Math	+7 pts.	-5 pts.	*
4th Grade Reading	0 pts.	-9 pts.	*
8th Grade Math	-1 pts.	-3 pts.	*
8th Grade Reading	+4 pts.	+1 pts.	*
<u>ACT</u>	-0.3 pts.	-0.4 pts.	*

\*Data not available

Note: NAEP and Arkansas Benchmark achievement gaps represent percentage point differences of proficient and advanced scores. The ACT achievement gap reflects differences in composite scores.

As we discussed previously, the motivation for using three different tests, including the NAEP and statewide exam, was to triangulate the story. We want to know if the achievement gaps are changing. The results of our analyses presented in Table 11 (above) show that the NAEP and Arkansas statewide exam are generally consistent – with only the 4th grade math white-black gap and 8th grade reading white-Hispanic gap presenting different results. The reason for these differences is unknown, but we will continue to follow these gaps to determine if this variation continues.

## V. DISCUSSION

### A. Key Findings

Table 12 provides a summary of the trends of Arkansas' achievement gaps, which highlights an alarming trend for Hispanic and FRL-eligible students. For these two groups, there was no evidence of the achievement gap narrowing, a trend that challenges the perceived effectiveness of targeted funding increases. Further, while black students do seem to be showing some academic improvement when compared to white students, the overall trend of achievement gaps in the state of Arkansas expose a problem that has not yet been fully addressed.

**Table 12: Summary of Arkansas Achievement Gaps**

	<b>Black &amp; White Students</b>	<b>Hispanic &amp; White Students</b>	<b>FRL &amp; Non-FRL Students</b>
Achievement Gap Narrows	3	0	0
Achievement Gap Remains Stable	3	1	0
Achievement Gap Widens	3	8	4

While some achievement gaps appear to be narrowing, as is the case in three of the white-black comparisons, the current performance levels for these student groups provide a more complete picture of the progress made by students in Arkansas. Current levels of performance on all three examinations analyzed for this report are outlined in Table 13. These data call attention to the overwhelming disparity in student subgroup performance that is still occurring in the state, and stress the need for more to be done to ensure that the needs of all students in Arkansas are being met.

On the NAEP mathematics exam, 46% of Arkansas' white 4th grade students and 31% of white 8th grade students earned a proficient score. By comparison, 12% of black 4th grade students and 22% of Hispanic 4th grade students achieved at a similar level. By eighth grade, the problems facing minority students are even more pronounced, as fewer than 10% of the students in either group reached proficiency. On the NAEP reading exam, the results are similarly problematic. While more than 30% of white students earned proficiency at both grade levels, fewer than one in ten black students and fewer than one in five Hispanic students achieved proficiency in reading.

Furthermore, the gaps between Arkansas' low-income and high-income students are also large; for instance, fewer than one in four of students eligible for free and reduced lunch earned proficient scores on the fourth grade NAEP exam, as compared to more than half of their higher-income peers. These troubling trends are also reproduced on the Arkansas Benchmark exams and the ACT. For example, while the achievement gap is narrowing on the Arkansas Benchmark for black 4th grade students in math (by 7 percentage points), the fact that only 54% of black students are scoring in the proficient or advanced range, compared to 82% of white students,

reinforce that policy makers and school officials have not yet attained the educational equality for which they set out to achieve.

**Table 13: Summary of Current Performance for Arkansas Students**

	NAEP				Arkansas Benchmark				ACT
	4th Grade		8th Grade		4th Grade		8th Grade		
	Math	Reading	Math	Reading	Math	Reading	Math	Reading	
White	46%	36%	31%	32%	82%	75%	65%	75%	21.4
Black	12%	9%	9%	8%	54%	48%	32%	45%	16.7
Hispanic	22%	16%	8%	15%	67%	54%	46%	54%	18.8
FRL Eligible	24%	17%	14%	15%	*	*	*	*	*
FRL Non-Eligible	54%	44%	35%	36%	*	*	*	*	*

\*Data not available

## B. Final Thoughts

Arkansas policymakers have achieved a great deal over the past few years, increasing overall funding substantially statewide, particularly in districts with high percentages of disadvantaged students. At the same time, Arkansas has made considerable strides in improving the educational opportunities for all students. Over the past few years, for instance, the number of Advanced Placement courses offered to students have steadily risen. Furthermore, the state recently implemented Smart Core, a rigorous secondary level curriculum with the ambitious goal of ensuring that all high school graduates are prepared for higher education. As if to reinforce such improvement, U.S. Secretary of Education Margaret Spellings recently praised Arkansas and Massachusetts as the two states leading the way in setting new standards in their respective educational systems.

Nevertheless, it is also apparent that disadvantaged students are still not receiving the academic support they need. The fact that performance increases have not quickly followed funding increases is disappointing. While we realize that long-term changes take time to take hold, we also fear that the targeted funding is not being employed effectively for the targeted students. Indeed, current data provided by the state do not allow us to examine whether targeted funds reached specific students in a district because public school funding data are only available at a district level. So, while we know that certain districts are receiving more resources, we cannot say that the schools – much less the students – are truly receiving these additional resources. If state policymakers were to insist on the reporting of school expenditures at a school-level, interested persons would be able to explore where resources are being used effectively and ineffectively.

In the end, Arkansas policymakers should feel encouraged, yet unsatisfied, by their previous efforts. Indeed, Arkansas' attainment of educational adequacy should be hailed as a long-overdue achievement but should not be viewed as an ending point. Much work remains. Too many of our high school graduates require remediation when they reach college. Fewer than one in four 8th grade students scored at proficient or above in the most recent administration of the NAEP. Most importantly, the analyses presented here emphasize that stubborn gaps in achievement persist between advantaged and disadvantaged students across the state, even with the additional resources in place. It is imperative that policymakers and educators find effective ways to use the new resources to help all students, including disadvantaged students, meet the challenging standards now in place.

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