

THE 2007 NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS (NAEP) IN MATHEMATICS AND PER-PUPIL EXPENDITURES

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Abstract—This study examines the National Assessment of Educational Progress (NAEP) results of mathematics performance in states that reportedly have per-pupil expenditures that are approximately the same as or less than Iowa's. According to the U.S. Department of Education, Common Core of Data, Iowa and 22 other states spent less than \$8,000 per pupil. When per-pupil expenditures are considered, Kansas and North Dakota are the only states that consistently have more students scoring at the basic and proficient achievement levels in mathematics than Iowa.

Background—The National Assessment of Educational Progress (NAEP) is the only nationally representative and continuing assessment of what America's students know and can do in various subject areas. Assessments are conducted periodically in mathematics, reading, science, writing, the arts, civics, economics, geography, and U.S. history. For the most recent results of assessments, visit the Nation's Report Card website (<http://nationsreportcard.gov>). To see NAEP data, information about the NAEP program, and a schedule of future and past assessments and studies, explore this website (<http://nces.ed.gov/nationsreportcard>).

Under the current structure, the Commissioner of Education Statistics, who heads the National Center for Education Statistics in the U.S. Department of Education, is responsible by law for carrying out the NAEP project. The National Assessment Governing Board, appointed by the Secretary of Education but independent of the Department, sets policy for NAEP and is responsible for developing the framework and test specifications that serve as the blueprint for the assessments.

NAEP does not provide scores for individual students or schools; instead, it offers results regarding subject-matter achievement, instructional experiences, and school environment for populations of students (e.g., fourth-graders) and groups within those populations (e.g., female students, Hispanic students). NAEP results are based on a sample of student populations of interest.

The NAEP Mathematics assessment uses multiple-choice and constructed-response questions to examine student skills in number properties and operations, measurement, geometry, data analysis and probability, and algebra. NAEP mathematics scores range from 0 to 500, where 214 is considered Basic (meets grade 4 expectations), 249 is Proficient, and 282 is Advanced.

Method—This study examines the NAEP results of mathematics performance in states that reportedly have per-pupil expenditures that are approximately the same as or less than Iowa's. According to the U.S. Department of Education, Common Core of Data, Iowa and 22 other states spent less than \$8,000 per pupil.

Results—For grade four, the average mathematics score for students in Iowa in 2007 was 243. This was higher than that in 1992 (230) and was higher than that in 2005 (240). The percentage of fourth-grade students in Iowa who performed at or above Proficient was 43 percent. This was greater than that in 1992 (26 percent) and was greater than that in 2005 (37 percent), and the percentage of students in Iowa who performed at or above Basic was 87 percent.

For grade eight, the average mathematics score for students in Iowa in 2007 was 285. This was higher than that in 1990 (278) and was not significantly different from that in 2005 (284). The percentage of eighth grade students in Iowa who performed at or above Proficient was 35 percent. The percentage of students in Iowa who performed at or above Basic was 77 percent.

Iowa was one of 23 states reporting per-pupil expenditures of \$8,000 or less for the 2004-2005 school year (most recent data available). The expenditures included salaries, employee benefits, purchased services, and supplies, but excluded capital outlay, debt service, facilities acquisition and construction and equipment.

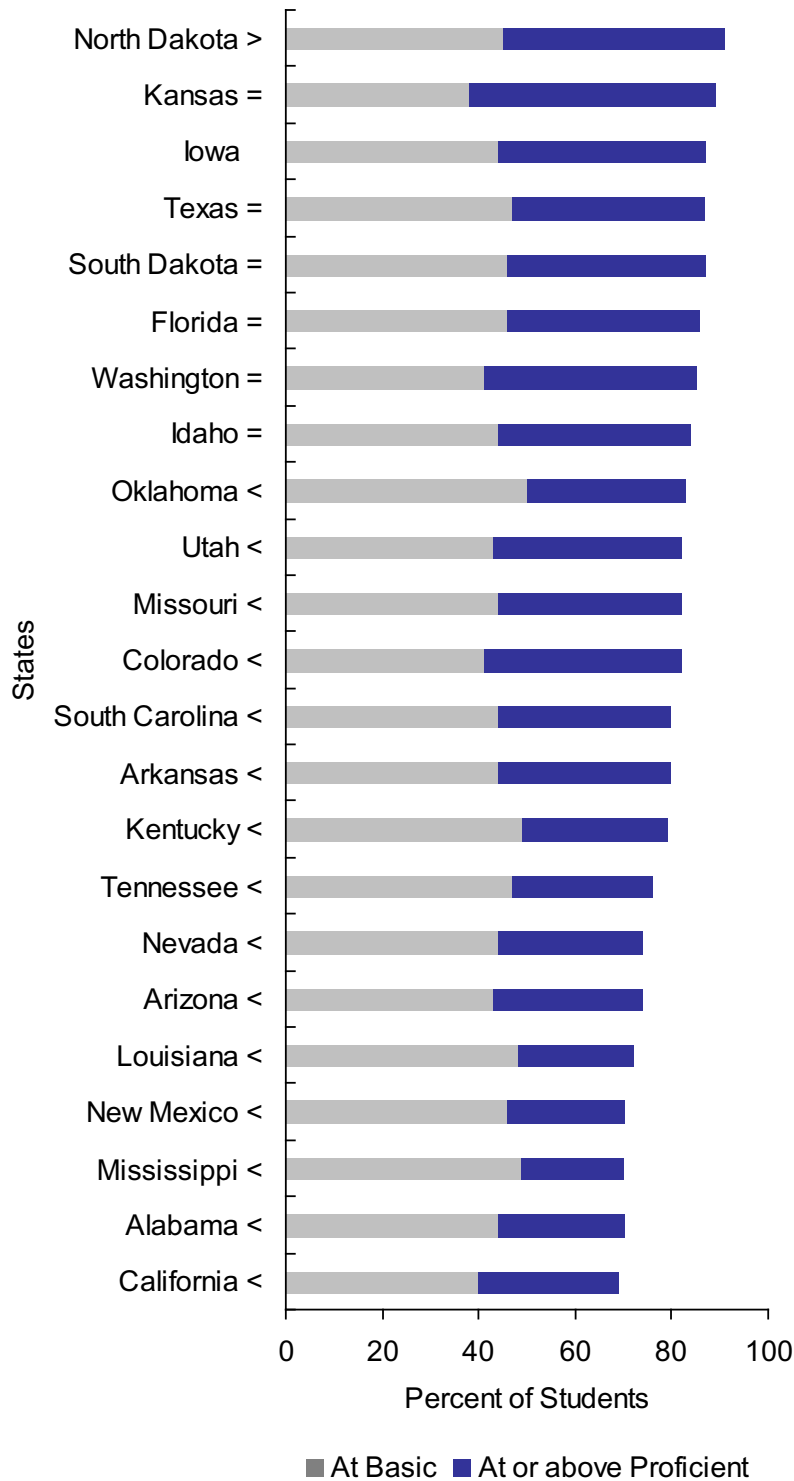
Figure 1—Per Pupil Expenditures

CATEGORY	STATES									
>12,001	NJ	NY	DC	CN						
11,501-12,000	VT	RI	MA							
10,501-11,000										
10,001-10,500	ME	PA	WY	MD						
9,501-10,000	NH	WI								
9,001-9,500	MI	OH	WF							
8,501-9,000	HI	IN	IL	VA	NE	MN	US			
8,001-8,500	OR	GA								
7,501-8,000	IA	KS	CA	MO	NM	ND	CO	WA	AR	SC
7,001-7,500	SD	TX	FL	KY	AL					
6,501-7,000	TN	NV	OK							
6,001-6,500	MS	ID	AZ							
5,501-6,000										
5,001-5,500	UT									

Source: U.S. Department of Education, Common Core of Data.

When per-pupil expenditures are considered, Kansas and North Dakota are the only states that consistently have more students scoring at the basic and proficient achievement levels in mathematics than Iowa does.

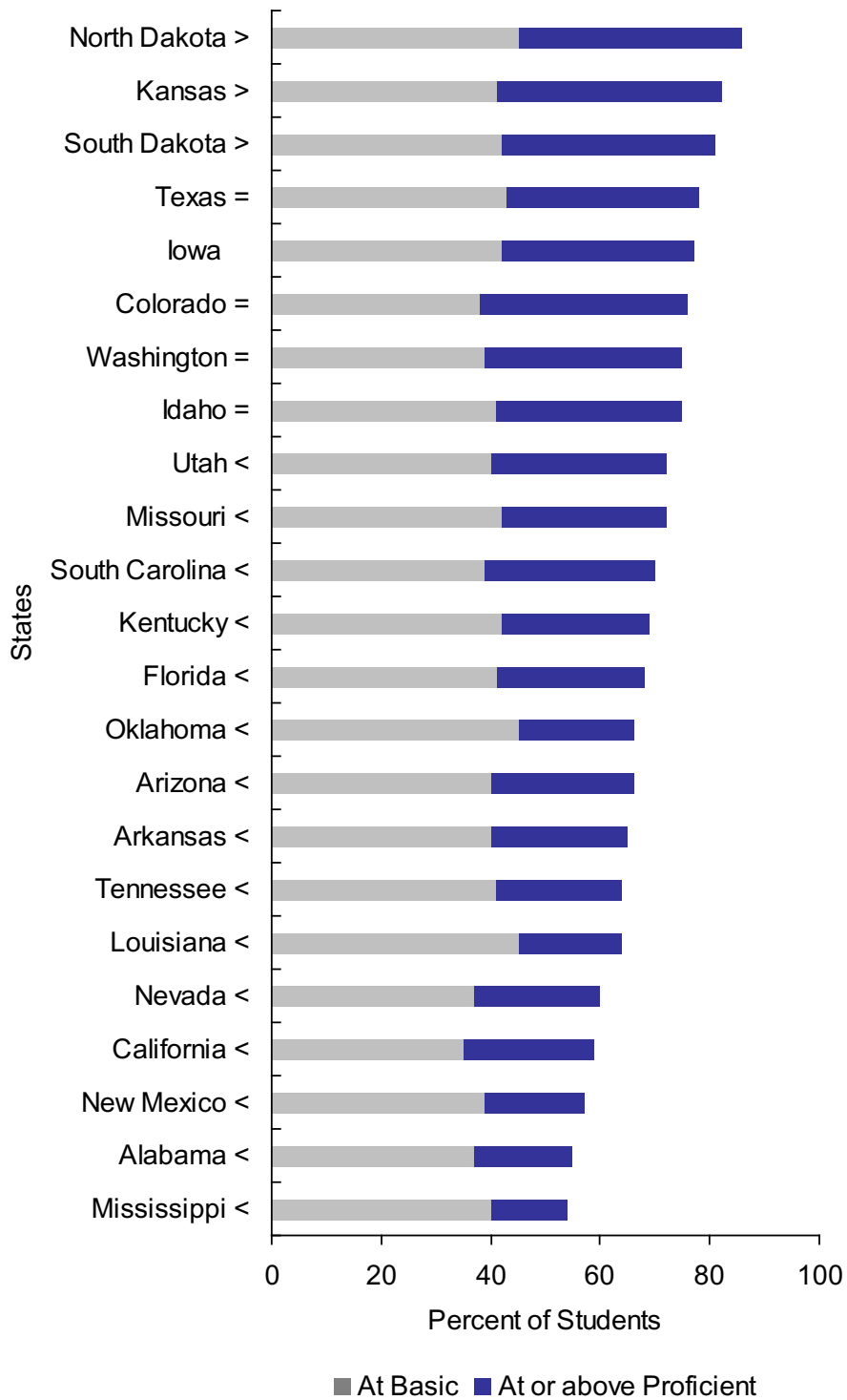
Figure 2—NAEP Grade 4 Mathematics for States with Per Pupil Expenditures \$8,000 or Less



> State had significantly more students Basic or above than did Iowa.
 = State had a similar amount of students Basic or above as Iowa.
 < State had significantly less students Basic or above than did Iowa.

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP) 2007 Mathematics Assessments.

Figure 3—NAEP Grade 8 Mathematics for States with Per Pupil Expenditures \$8,000 or Less



> State had significantly more students Basic or above than did Iowa.
 = State had a similar amount of students Basic or above as Iowa.
 < State had significantly less students Basic or above than did Iowa.

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP) 2007 Mathematics Assessments.

Conclusion—Iowa students perform well in mathematics when compared to other states spending \$8,000 or less per pupil. However, more research comparing the authorized uses of the per-pupil funding by districts in states and NAEP scores might be enlightening. For example, a comparison of median teacher compensation and NAEP scores could be undertaken. A comparison using other NAEP assessments is also suggested.