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Our investments in education yield higher results than predicted considering the obstacles we face.

Per pupil spending in Kentucky ranks 36th nationally.

Kentucky ranks 25th in NAEP Proficiency Purchasing Power.

Kentucky faces many barriers to cost-effective education spending, yet performs better than expected.

Reducing Obstacles Will Yield Even Higher Academic Returns to Educational Investments

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What kind of return does Kentucky get on its investments in elementary and secondary education? Among the best in the nation given our poverty and undereducation. The amount of academic achievement in Kentucky, as measured by the National Assessment of Educational Progress (NAEP),¹ returned for every \$1,000 in per pupil spending, or NAEP Proficiency Purchasing Power (NAEP PPP), is higher than expected given the obstacles we face to cost-effective educational spending. Kentucky's NAEP PPP is 118% of predicted, ranking 8th nationally. Reducing these obstacles will help yield higher academic returns from future educational investments.

From 1984 to 2005, per pupil spending in Kentucky increased from about \$4,300 to \$7,600 in constant 2006 dollars (Figure 1); this represents an increase from 73% to 82% of the U.S. average.² When adjusted for cost-of-living differences, Kentucky ranks 36th (Table 2).³

The percentage of Kentucky students scoring proficient or higher on the NAEP math exams has been steadily increased since 1998, but the reading percentages have been essentially flat (Table 1).⁴ While Kentucky's NAEP proficiency rank is 37th,⁵ the level of NAEP proficiency returned for every \$1,000 in spending per pupil, NAEP PPP, is 25th (Table 2). Kentucky yields about 3.6 NAEP proficiency points for every \$1,000 in per pupil spending. Utah leads the nation at 6.1 points and New Mexico is last at 2.3.

Kentucky faces many obstacles to cost-effective educational spending. Using factors like poverty, parental education, number of limited English proficiency students, size of the rural population, obesity, students' health status, disability rates, and missed school days, Kentucky ranks 4th nationally on our Index of Obstacles.⁶ Yet, Kentucky's NAEP Proficiency Purchasing Power is 118% of predicted, deriving approximately 0.5 NAEP proficiency points more than expected for every \$1,000 in per pupil spending.⁷ Kentucky's national rank of 8th (Figure 2) is consistent with other studies that rank Kentucky relatively highly on educational efficiency and return on investment.⁸ As expected, states with fewer obstacles tend to have higher NAEP Proficiency Purchasing Power (Figure A.1).⁹ Moderating the deleterious effects of poverty on academic achievement, as well as developing healthier children and more educated parents, will help reduce these obstacles and facilitate even higher returns from future educational spending.

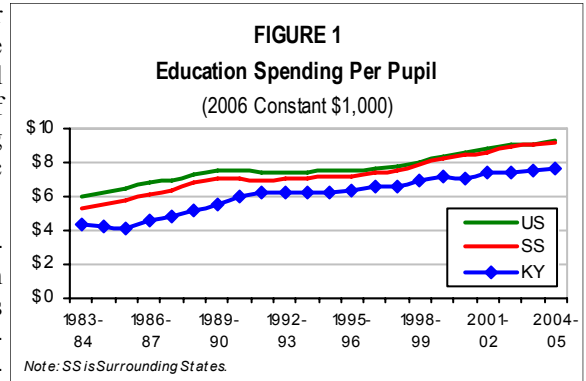


TABLE 1
Kentucky's Reading and Math NAEP Exams, Percentage Scoring Proficient or Higher, by Subject, Grade, and Year

	1998	2000	2002	2003	2005	2007
Reading 4	29%	—	30%	31%	31%	33%
Reading 8	30%	—	32%	34%	31%	28%
Math 4	—	17%	—	22%	26%	31%
Math 8	—	20%	—	24%	23%	27%

Source: <http://nces.ed.gov/nationsreportcard/>

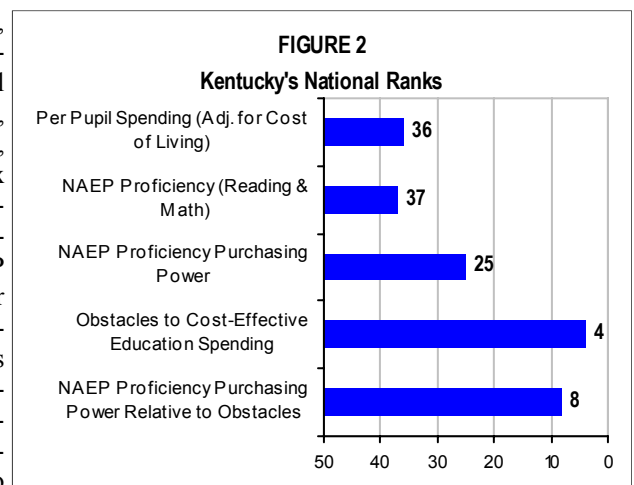


TABLE 2 - Selected Educational Indicators for Kentucky

Rank	State	Per Pupil Spending ¹⁰	Rank	State	NAEP Proficiency ¹¹	Rank	State	NAEP Proficiency Purchasing Power (NAEP Proficiency Returns per \$1,000) ¹²	Rank	State	Obstacles to Cost-Effective Educational Spending (Index) ¹³	Rank	State	NAEP Proficiency Purchasing Power Relative to Obstacles ¹⁴
1	NJ	\$ 12,252	1	MA	47.5%	1	UT	6.07	1	WV	0.81392	1	UT	137.5%
2	NY	\$ 12,218	2	MN	41.6%	2	ID	5.03	2	NM	0.77485	2	ID	129.2%
3	VT	\$ 12,105	3	VT	41.3%	3	WA	5.01	3	MS	0.75334	3	WA	128.5%
4	WY	\$ 11,126	4	NJ	41.3%	4	MA	4.79	4	KY	0.71686	4	TX	125.3%
5	DE	\$ 10,661	5	NH	40.7%	5	MN	4.67	5	AR	0.70718	5	NC	121.5%
6	CT	\$ 10,652	6	KS	38.9%	6	CO	4.54	6	AL	0.68972	6	MA	120.0%
7	RI	\$ 10,581	7	CT	38.3%	7	KS	4.38	7	OK	0.68328	7	AZ	119.6%
8	ME	\$ 10,539	8	PA	38.3%	8	NH	4.37	8	LA	0.67382	8	KY	118.2%
9	WI	\$ 10,199	9	MT	38.2%	9	NC	4.33	9	TN	0.66423	9	KS	117.7%
10	WV	\$ 10,073	10	ND	37.6%	10	MT	4.27	10	SC	0.66394	10	FL	116.1%
11	PA	\$ 9,985	11	OH	37.4%	11	SD	4.23	11	AK	0.62483	11	OK	112.3%
12	MA	\$ 9,930	12	WA	37.2%	12	TX	4.19	12	TX	0.60727	12	SC	110.2%
13	NE	\$ 9,930	13	WI	37.1%	13	AZ	4.13	13	NV	0.59638	13	MT	109.6%
14	MD	\$ 9,829	14	VA	37.0%	14	ND	4.10	14	IN	0.59493	14	CO	108.2%
15	IN	\$ 9,542	15	SD	36.9%	15	FL	4.10	15	AZ	0.57045	15	MN	107.8%
16	OH	\$ 9,441	16	WY	36.5%	16	VA	4.04	16	ME	0.5663	16	OR	107.7%
17	NH	\$ 9,323	17	ME	36.3%	17	IA	3.99	17	FL	0.54216	17	TN	107.3%
18	MI	\$ 9,197	18	CO	36.1%	18	OR	3.96	18	CA	0.5323	18	AK	107.0%
19	ND	\$ 9,181	19	IA	36.0%	19	OH	3.96	19	NC	0.53064	19	IN	105.7%
20	VA	\$ 9,169	20	NE	35.1%	20	PA	3.83	20	IL	0.52025	20	SD	105.6%
21	IA	\$ 9,026	21	ID	34.5%	21	MO	3.80	21	GA	0.50806	21	AR	105.1%
22	HI	\$ 9,022	22	MD	34.4%	22	WI	3.64	22	NY	0.50277	22	NH	104.4%
23	MT	\$ 8,951	23	NY	34.4%	23	IL	3.62	23	OR	0.48878	23	OH	103.2%
24	MN	\$ 8,891	24	IN	34.1%	24	CT	3.60	24	MO	0.48487	24	MO	103.1%
25	KS	\$ 8,862	25	DE	33.2%	25	KY	3.59	25	KS	0.47175	25	IL	100.8%
26	AR	\$ 8,790	26	UT	33.2%	26	IN	3.57	26	MI	0.46959	26	VA	99.7%
27	SD	\$ 8,736	27	OR	33.1%	27	NE	3.54	27	DE	0.46491	27	ME	99.6%
28	GA	\$ 8,658	28	NC	32.6%	28	AK	3.53	28	WY	0.43536	28	PA	99.2%
29	IL	\$ 8,621	29	TX	32.2%	29	OK	3.52	29	OH	0.43336	29	NV	98.3%
30	LA	\$ 8,582	30	MI	31.7%	30	SC	3.51	30	NJ	0.42932	30	IA	97.7%
31	AK	\$ 8,562	31	MO	31.5%	31	MD	3.50	31	PA	0.42231	31	ND	96.3%
32	NM	\$ 8,431	32	IL	31.2%	32	MI	3.45	32	RI	0.41974	32	CA	94.2%
33	OR	\$ 8,353	33	FL	30.9%	33	ME	3.45	33	NE	0.41868	33	MI	92.4%
34	SC	\$ 8,339	34	AK	30.2%	34	TN	3.42	34	ID	0.41323	34	NE	91.3%
35	MO	\$ 8,276	35	SC	29.3%	35	VT	3.41	35	WA	0.41125	35	WI	89.2%
36	KY	\$ 7,978	36	RI	29.1%	36	NJ	3.37	36	MT	0.41117	36	AL	88.3%
37	CO	\$ 7,939	37	KY	28.7%	37	CA	3.35	37	MA	0.37839	37	NJ	87.7%
38	AL	\$ 7,924	38	AR	28.3%	38	NV	3.32	38	SD	0.37416	38	WV	86.3%
39	TX	\$ 7,687	39	GA	26.8%	39	WY	3.28	39	VA	0.3575	39	WY	85.6%
40	FL	\$ 7,539	40	OK	25.8%	40	AR	3.22	40	WI	0.34695	40	GA	85.3%
41	NC	\$ 7,525	41	AZ	25.7%	41	DE	3.12	41	IA	0.34516	41	CT	84.8%
42	MS	\$ 7,513	42	TN	25.7%	42	GA	3.09	42	HI	0.3231	42	DE	83.2%
43	TN	\$ 7,506	43	WV	24.0%	43	NY	2.82	43	NH	0.30878	43	VT	81.1%
44	WA	\$ 7,432	44	CA	23.7%	44	RI	2.75	44	CO	0.30286	44	NM	80.3%
45	OK	\$ 7,331	45	NV	23.7%	45	AL	2.75	45	VT	0.30004	45	MD	80.1%
46	NV	\$ 7,141	46	HI	23.4%	46	HI	2.59	46	CT	0.28778	46	MS	79.6%
47	CA	\$ 7,081	47	AL	21.8%	47	WV	2.39	47	ND	0.28235	47	NY	77.4%
48	ID	\$ 6,867	48	LA	20.4%	48	LA	2.38	48	MN	0.25457	48	LA	75.4%
49	AZ	\$ 6,232	49	NM	19.5%	49	MS	2.34	49	MD	0.24172	49	RI	71.0%
50	UT	\$ 5,463	50	MS	17.6%	50	NM	2.31	50	UT	0.22601	50	HI	62.6%

⁸The author wishes to acknowledge the invaluable comments from Steve Clements, Marcia Seiler, and Susan Perkins Weston on an earlier draft. The author is solely responsible for any errors.
¹The National Assessment of Educational Progress (NAEP) is a nationally representative assessment in various subjects. Here we focus on reading and math. For more information on NAEP, refer to <<http://nces.ed.gov/nationsreportcard/>>. ²Education spending per pupil is calculated from total primary and secondary enrollment and current expenditure data available online from the National Center for Education Statistics, Common Core of Data <<http://nces.ed.gov/ccd/>>. We convert spending levels to 2006 constant dollars using the U.S. Department of Labor, Bureau of Labor Statistics, consumer price index (CPI-U). ³Quality Counts, Education Week, Vol. 27, No. 18, January 10, 2008, p. 57. The \$7,600 is in constant dollars and has not been adjusted for regional cost differences, while the \$7,978 in Table 2 is in current dollars and has been adjusted for regional cost differences. ⁴Refer to the technical appendix for information on the NAEP exclusion rates and their potential impact on Kentucky's NAEP scores <http://www.klprc.net/policynotes/pn0026_appendix.pdf>. Also, we do not include data prior to 1998 since special accommodations were not allowed. ⁵Kentucky's NAEP proficiency percentage is 28.7%, which is the average percentage of students scoring proficient or higher on the 2005 and 2007, 4th and 8th grade, reading and math exams. In a ranking of all states, Kentucky is 37th. ⁶Refer to the technical appendix for information on the index of obstacles to cost-effective educational spending <http://www.klprc.net/policynotes/pn0026_appendix.pdf>. ⁷See the technical appendix for an explanation of the method <http://www.klprc.net/policynotes/pn0026_appendix.pdf>. ⁸Refer to *Leaders and Laggards: A State-by-State Report Card on Educational Effectiveness*, Feb. 2007, U.S. Chamber of Commerce <<http://www.uschamber.com/icw/reportcard/>> and *The Teachability Index: Can Disadvantaged Students Learn?*, Sept. 2004, Manhattan Institute <http://www.manhattan-institute.org/html/ewp_06.htm>. ⁹Refer to the technical appendix <http://www.klprc.net/policynotes/pn0026_appendix.pdf>. ¹⁰Per Pupil Spending (2005) represents adjusted per-pupil expenditures that account for regional cost differences in current dollars. ¹¹NAEP Proficiency is the average percentage of 4th and 8th graders scoring proficient or higher on the NAEP math and reading exams in 2005 and 2007. ¹²NAEP Proficiency Purchasing Power is the number of NAEP proficiency points for every \$1,000 in per pupil spending. ¹³Obstacles to Cost-Effective Educational Spending (Index Score) combines eight factors into one index (i.e., percent of children with at least one parent with a postsecondary degree; percent of students eligible for free/reduced lunch; percent of limited English proficiency students; percent of students living in a rural area; percent of children and teens who are overweight or obese; percent of children whose health is fair or poor; percent of students with a disability; and percent of students who have missed 11 or more days of school due to illness or injury). ¹⁴NAEP Proficiency Purchasing Power Relative to Obstacles represents the difference between the predicted and actual NAEP proficiency returns based on our regression model. Refer to technical appendix for more detailed information on these variables and the method <http://www.klprc.net/policynotes/pn0026_appendix.pdf>.