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Kentucky's educational status has improved since the early 1990s, but progress relative to other states has stalled in recent years.

The index includes educational attainment and achievement measures.

Caveats

Kentucky Ranks 35th on Education Index

By Amy Watts (amy.watts@lrc.ky.gov)

The most current data reveal that Kentucky's national educational rank was 35th in 2007—a marked improvement from 43rd in 1992, but a slight drop from 34th in 2005. The ranking is based on multiple educational attainment and achievement factors that are combined into a single index. The index shows that Kentucky has made educational improvements over the years and gained ground on other states. While the marginal drop in rank indicates that progress has stalled relative to the other states in recent years, only two states that were in the bottom ten in 1992 had managed to climb out of that group by 2007: Kentucky and North Carolina (see Table 1).

The indicators that make up the index measure educational attainment, such as high school and college attainment percentages, as well as educational achievement, like the percentage of students scoring proficient or higher on the various National Assessment of Educational Progress (NAEP) reading, math, and science exams. Seven indicators are used in the index for 1992 and eleven for 2007 (see Table 2).

At least four caveats to this index should be noted. First, as mentioned above, not all of the indicators used in 2007 were available in 1992. Consequently, one should be aware of the factors being compared when making comparisons between years. Second, there are, undoubtedly, fundamentally important indicators not included in the index, like those that measure the achievement gaps. Third, we give equal weight to each indicator, but, arguably, some indicators are more important than others. However, due

to its somewhat subjective nature, any weighting scheme would have its own limitations. Fourth, while rankings are ideal for determining the relative positions of states, they reveal nothing about the distance between states. Knowing that Kentucky is 35th and Massachusetts is 1st does not reveal how near or far Kentucky is from Massachusetts. Table 3, however, shows how Kentucky's values compare to the average for the top ten states, which is illustrative of how far Kentucky must go before reaching the upper echelon of "smart states."

TABLE 1
The Bottom 10 States in 1992 and Each State's Rank in 2007

	1992	2007
New Mexico	41	47
North Carolina	42	34
Kentucky	43	35
South Carolina	44	41
Tennessee	45	42
West Virginia	46	45
Arkansas	47	43
Alabama	48	46
Louisiana	49	50
Mississippi	50	49

Source: KLTPRC calculations based on multiple data sources

TABLE 2
Selected Education Indicators for Kentucky, 1992, 2007

	1992		2007	
	Value	Rank	Value	Rank
HS Diploma or Higher*	77%	46	86%	43
Two-Year Degree or Higher*	22%	45	33%	45
Bachelor's Degree or Higher*	18%	44	24%	44
9-12th Grade Dropout Rates	-	-	3.3%**	19
ACT State Composite Scores	20.0	40	20.7	36
8th Grade Math NAEP***	14%	40	27%	37
8th Grade Reading NAEP	-	-	28%	33
8th Grade Science NAEP	-	-	31%**	22
4th Grade Math NAEP	13%	42	31%	42
4th Grade Reading NAEP	23%	40	34%	27
4th Grade Science NAEP	-	-	36%	9

* Percentage of adults 25 to 64 years old.

** 2006 data used for 2007 dropout rate and 2005 data used for 2007 science scores in both 4th and 8th grades.

*** The six NAEP indicators show the percentage of students scoring proficient or higher. A dash (-) in a cell indicates that data were not available for those years or any years prior.

Source: KLTPRC calculations based on multiple data sources

Although Kentucky has progressed from its early 1990s status, it still has far to go to reach a top ten ranking.

Compared to our past and relative to the nation, these data show significant educational progress. Kentucky has moved from the bottom fifth of states in educational performance to the bottom third. However, Kentucky's educational progress appears to have stalled relative to other states in the last few years. That is, although Kentucky has been improving, so have the other states—and they've done so at a pace similar to or greater than our rate of improvement. In addition, there is a substantial achievement and attainment gap between Kentucky and the top ten states, indicating there is much work to be done.

TABLE 3 Comparing Education Indicators for Kentucky and the Average of the Top 10 States, 2007		
Education Indicators	Kentucky	Average for Top 10 States
HS Diploma or Higher	86%	93%
Two-Year Degree or Higher	33%	47%
Bachelor's Degree or Higher	24%	36%
9th-12th Grade Dropout Rates	3.3%	2.6%
ACT State Composite Scores	20.7	22.5
8th Grade Math NAEP	27%	40%
8th Grade Reading NAEP	28%	37%
8th Grade Science NAEP	31%	39%
4th Grade Math NAEP	31%	50%
4th Grade Reading NAEP	34%	40%
4th Grade Science NAEP	36%	35%
Note: The top 10 states based on the education index are MA, VT, NH, MN, NJ, CT, ND, WI, MT, and KS.		

Method

The education index combines seven to eleven education indicators covering 1992 to 2007, including measures of educational attainment and achievement.¹ The index uses summary statistical information about each indicator to construct a number ranging from 0 to 1 that expresses how each state's measure compares to other states. The higher the score, the better a state ranks among the states. The final index score is the average of eleven indicator scores based on indicators in each of the quality of life areas.

The indicators were standardized to facilitate their comparison with each other and their combination into one summary statistic. By transforming all outcomes to Z-scores, with the same mean (0) and standard deviation (1), all of the indicators could be compared and combined using a common yardstick. Although the use of standardized outcome measures provides a common yardstick with which to compare and combine the different indicator measures, it still is not completely satisfying for the purpose of presentation. This drawback is attributable to the fact that standardized outcomes can take on an infinite range of values that indicate only the direction and number of standard deviations of the difference between the given score and the mean score for the particular outcome. In contrast, the probability values associated with the standardized outcome scores represent a measure with more intuitive appeal. They range from 0 to 1, with an average of 0.50. These values were derived directly from the Z-scores, using a cumulative standard normal distribution. For example a Z-score of 0 equals a probability of 50 percent or, here, an index score of 0.50, indicating that a state's value for that indicator is equal to the 50-state average for that year. Conceptually, the result represents the percentile ranking of the Z-scores, and indicates the extent to which the state performed well or poorly relative to the other states included in the calculation of the index.

For example, using the high school diploma attainment rate, the first step in this method is to calculate the mean and standard deviation across all the states for a particular year. In 2007, Kentucky's high school diploma attainment rate was 86 percent. The mean and standard deviation across all 50 states for that year were 90 percent and 4 percent, respectively. The Z-score was calculated as $(0.90 - 0.86) / 0.04$. The probability value for this Z-score value is 0.14. The education index score was then obtained by calculating the average of this score and the other ten education indicators.

¹ A list of sources for the indicators is available at http://www.kltprc.net/policynotes/pn0027_appendix.pdf.