

FORRESIGHT

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The State of the Commonwealth Index

New Index Measures Well-Being and Ranks Kentucky

By Amy L. Watts

At any given time, it is easy to learn how Kentucky compares with other states on a variety of factors. A look at a newspaper, listening to the news, or a quick Internet search is all it takes. Countless organizations, independent researchers, as well as myriad government agencies routinely rank the Commonwealth relative to other states in regard to various indicators. Some rankings profile a particular facet of the state, such as its economic or entrepreneurial performance, but such measures are inherently limited since they offer only a partial glimpse of life in the Commonwealth.

For example, data from the Federal Bureau of Investigation (FBI) show that Kentucky had the seventh lowest crime rate in the country in 2002. Equally positive, the U.S. Census Bureau reports that Kentucky's homeownership rate ranked 13th among the states in 2002. But in that same year Kentucky ranked 43rd in the proportion of adults aged 25 and older who had attained at least a bachelor's degree. These data indicate that Kentucky is a relatively safe place to live with abundant opportunity for homeownership, but lacks a large population of educated adults. What these data do not provide is an overall portrait of life in Kentucky. That is, given its many strengths and weaknesses, does Kentucky provide a relatively high quality of life for its citizens? And how has this status changed over time?

Here, we offer an answer to these questions based upon a newly constructed index of quality of life in Kentucky. The State of the Commonwealth Index is a single number that summarizes Kentucky's overall quality of life relative to other states over time. Based on data for 1990 to 2001 derived from national surveys and studies of various indicators of well-being in the states, the State of the Commonwealth Index includes factors ranging from teen pregnancy, poverty, and voter participation rates to toxic releases to air, water, and land. Together, they form a data-driven index that offers a richer understanding of how we are faring now and how our status has changed relative to other states.

How the Index Was Created

The State of the Commonwealth Index combines 26 long-term quality of life indicators from 1990 to 2001,¹ including measures of community attributes, education, the economy, the environment,

and government (see Table 1).² The index uses summary statistical information about each indicator to construct a number ranging from 0 to 1000 that expresses how each state's measure compares with that of other states. The higher the score, the better a state ranks.³ The final index score is the average of five subindex scores based on the quality of life themes measured by the indicators. They include five subindexes: communities, education, the economy, the environment, and government. Scores range from 0 to 200 based on the equal weights given to each theme. In addition to comparing Kentucky with all the states, a second index was created comparing Kentucky with its peer states.⁴ This group of states includes those demographically, geographically, and economically similar in makeup to Kentucky; 17 states are included in this second index.⁵

Although it is a comprehensive, data-driven index, caveats and complicating factors potentially affecting the outcome of its values include the choice of weighting scheme, the quantity and types of indicators included, and the inherent quantitative bias of the method. The framework used to construct the index was the result of 15 public forums held throughout Kentucky culminating in a state-wide conference in 1994, in which over 500 people participated. From these meetings a vision statement of Kentucky's future emerged that highlighted the five main themes used here to construct the subindexes. The weighting scheme reflects the values and priorities highlighted during these meetings.⁶ In addition, while countless quality of life indicators are available, those chosen reflect these same values and ideals presented by Kentuckians in their vision of the state's future. That said, arguably many facets define quality of life that do not easily lend themselves to quantification, inherently biasing any index of this kind toward those that can be quantified.⁷ These caveats notwithstanding, the final form and methodology used here are reasonable given the objective, unbiased approach taken to reflect the values and ideals generally held by many Kentuckians.

Over a Decade of Progress Kentucky Moves Up in Rank

Quality of life and well-being improved for Kentuckians as the State of the Commonwealth Index climbed six places from a rank of 46th nationally in 1990 to 40th by 2001. Table 2 shows the states ranked by their 2001 index scores, each one's corresponding 1990 rank by index score, and the net change in rank that occurred during the time period. These data reveal that regional differences

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TABLE 1
The 26 Long-Term Quality-of-Life Indicators Used in the State of the Commonwealth Index

Name	Description
<i>Communities</i>	
1. Crime Index	number of serious crimes reported to law enforcement per 100,000 persons
2. Employment Rate for Persons with Disabilities	percent of noninstitutionalized civilians with disabilities aged 25 through 61 who are employed
3. Homeownership Rate	percent of the total number of occupied households that are owner-occupied
4. Health Insurance Rate	percent of all people covered by private or government health insurance
5. Teen Birth Rate	number of births to girls aged 15 to 17 years old per 1,000 girls age 15 to 17 years old
6. Smoking Rate	percent of the population aged 18 and older who smoke
7. Charitable Contributions	average annual contributions deductions per total number of tax returns filed
<i>Education</i>	
8. High School Attainment Rate	percent of adults 25 to 64 years old with at least a high school diploma or equivalent
9. College Attainment Rate	percent of adults 25 to 64 years old with at least a four-year college degree
10. ACT Average Composite Score	state-level average composite ACT scores
11. 8th Grade NAEP Math Results	percent of 8th graders who scored at or above basic level on the National Assessment of Educational Progress Math Exam
<i>Economy</i>	
12. Per Capita Income	total personal income in constant 2000 dollars divided by total state population
13. Poverty Rate	three-year moving average of the percent of people living below the federal poverty level
14. Per Capita Gross State Product	total gross state product in constant 2000 dollars divided by total state population
15. Business Formation	number of establishments per 100 people
16. U.S. Patents	average annual number of U.S. patents issued per 10,000 business establishments
17. Home Computer Access	percent of people with access to a computer in their home
18. Internet Access	percent of people with access to the Internet anywhere
<i>Environment</i>	
19. Per Capita Air Emissions	total air emissions divided by total state population
20. Per Capita Surface Water Discharges	total surface water discharges divided by total state population
21. Per Capita Land Releases	total land releases divided by total state population
22. Air Quality	percent of people who live in counties that meet standards for air pollutants
23. Water Quality	percent of state population served by community water systems with no health-based violations
<i>Government</i>	
24. State and Local Government Efficiency	number of state residents served per 100 state and local government employees, excluding education employees
25. Women in State Legislature	percent of total state legislature offices held by women
26. Voting Participation Rates	percent of the citizen voting-age population that voted in the most recent presidential election

Note: The final index is weighted so that each of the five thematic categories (communities, education, economy, environment, and government) are equally weighted (i.e. 20 percent each).

among the states did not change much during the 1990s. Those states that are “getting it right” tend to be located in the northeast and the midwest United States, whereas those states that ranked near or at the bottom all lie in the South, which has struggled to escape a legacy of poverty and undereducation. Inextricably linked, these weaknesses give rise to myriad negative, multigenerational outcomes. Furthermore, these extreme positions remained relatively static during the decade. The same top five states ranked by index score in 1990 remained there in 2001. Of the bottom five states, only Kentucky moved out of this category by 2001. Figure 1 shows the trajectory of Kentucky’s progress in both indexes over the period. Improvement began early in the period, followed by several years of losing ground, and then a major jump in both indexes in 1998. Although Kentucky has fallen slightly since 1998, it has maintained its net improvement compared to 1990.⁸

In terms of progress, Kentucky ranked among the top ten, with only seven other states climbing more places in rank than did the Commonwealth. Michigan increased the most in rank nationally, moving up 17 places, from 24th in 1990 to 7th in 2001. Utah declined the most in rank nationally, falling 12 places from 8th in 1990 to 20th in 2001. Kentucky’s net change in rank exceeded the majority of states. Approximately 36 states saw a net change in rank of five or fewer places in either the positive or negative direction.

Compared with its peers, Kentucky improved the most in rank. Table 3 shows that Kentucky moved up two places among its peer states from 12th in 1990 to 10th in 2001. This is the highest positive net change in rank for this group of states. Only Arkansas saw a comparable net change in rank, moving down two places from 11th

in 1990 to 13th by 2001. The remaining states changed by only one position or not at all.

In spite of this progress, Kentucky maintains a “below-average” status based on either comprehensive measure. Ranked 40th of the 50 states, the Commonwealth falls well short of the national average. Kentucky compares relatively better among its peer states, ranking 10th of the 17 states, but still falls short of the average for this group. While the state continues to lag behind national and peer state averages, the considerable improvement in these two index scores over the time period strongly suggests that commitments made to improving the social and economic well-being of citizens of the Commonwealth are achieving their desired result. However, they have not been sufficient to achieve parity or overcome the well-established positions of other states, which continue to make their own gains.

Education Continues to Pay and the Economy Grows

Kentucky improved its standing nationally and among its peer states in the majority of the 26 long-term quality of life indicators (see Table 4). The state made progress in 15 of the indicators both nationally and relative to the comparison states. Of the remaining indicators, Kentucky held steady on 3 and lost ground in 8 nationally, and 2 and 10, respectively, relative to its peer states. Most of the indicators that declined or held steady in rank measured Kentucky’s performance relative to other states in the areas of communities, the environment, and government. Kentucky declined in rank in all but one of the environmental indicators, two indicators of community attributes, and at least one of the govern-

TABLE 2
Kentucky and the 49 States, 2001,
1990 Index Scores, and Change in Rank

	2001	1990	Change in Rank
Minnesota	1	4	+3
Connecticut	2	3	+1
New Hampshire	3	2	-1
Vermont	4	1	-3
Wisconsin	5	5	0
Massachusetts	6	14	+8
Maryland	7	18	+11
Michigan	7	24	+17
Colorado	9	7	-2
Iowa	10	6	-4
South Dakota	11	22	+11
Kansas	12	11	-1
Washington	12	11	-1
Virginia	14	23	+9
Oregon	15	10	-5
Wyoming	16	13	-3
North Dakota	17	9	-8
Maine	18	15	-3
Pennsylvania	19	28	+9
Utah	20	8	-12
New Jersey	21	20	-1
Missouri	22	25	+3
Nebraska	23	16	-7
Rhode Island	24	31	+7
Illinois	25	30	+5
Ohio	26	27	+1
Alaska	27	29	+2
Idaho	28	17	-11
Delaware	29	26	-3
Hawaii	30	19	-11
Indiana	31	33	+2
Montana	32	21	-11
California	33	36	+3
New York	34	35	+1
Nevada	35	34	-1
Florida	36	37	+1
Arizona	37	32	-5
North Carolina	38	40	+2
Texas	39	39	0
Kentucky	40	46	+6
Georgia	41	42	+1
Oklahoma	42	38	-4
New Mexico	43	43	0
West Virginia	44	41	-3
Tennessee	45	45	0
Arkansas	46	44	-2
South Carolina	47	47	0
Alabama	48	48	0
Mississippi	49	49	0
Louisiana	50	50	0

ment indicators relative to both the United States and the peer states. Among the education indicators, only one held steady over the time period nationally and declined relative to the peer states. None of the economy indicators fell in rank either nationally or relative to the 17 peer states.

Improvements in Kentucky's historically weak performance areas of education and the economy account for the majority of the progress shown here. The net growth in Kentucky's education

and economy subindex scores from 1990 to 2001 represent approximately 70 percent of the growth in the state's overall index score among all the states and 80 percent among the peer states. As evidence of Kentucky's woefully inadequate educational system, ruled unconstitutional by the Kentucky Supreme Court in 1989, the Commonwealth placed 47th of the 50 states and 14th of the peer states based on a ranking of the 1990 education subindex scores (see Table 4). By 2001, the reforms that soon followed this ruling had been in effect for over a decade, along with approximately four years of reforms at the postsecondary level. Kentucky's education subindex over the same period advanced five places in rank to 42nd in the nation and four places to 10th among the peer states in 2001. A ranking of the states based on the indicator index scores shows that Kentucky held steady or improved in each one, with the exception of high school attainment rates relative to Kentucky's peer states. Kentucky's National Assessment of Educational Progress (NAEP) Eighth Grade Math Exam scores improved the most relative to the remaining education indicators. The percentage of Kentucky eighth-grade students scoring at or above the basic level on the NAEP Math Exam increased from 43 percent in 1990 to 63 percent in 2001. A ranking of the states based on the NAEP index scores shows Kentucky moving from 43rd in the nation and 12th among its peers in 1990 to 34th and 9th in 2001, respectively.

Improving economic conditions during this relatively prosperous period for Kentucky helped bolster the Commonwealth's standing nationally and among its peers. A ranking of the states based on each one's economy subindex score places Kentucky 44th of the 50 states and 13th of the 17 peer states in 1990. By 2001, the Commonwealth climbed 7 places to 37th nationally and 4 places to 9th relative to its peer states. In a ranking of all the states and the

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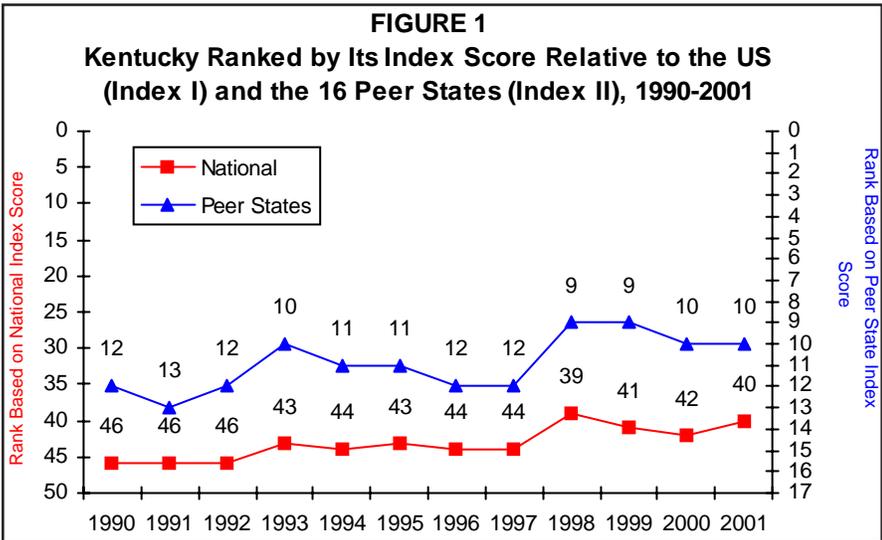
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its education and economy subindex scores in 2001. This also holds true for Kentucky's performance among its peer states, with the exception of Kentucky's 2001 rank based on its environment subindex score. However, the state improved in rank in only 2 of these 3 areas relative to the nation and in only 1 relative to the peer states. Kentucky's national and peer state ranks based on the communities subindex scores both increased 4 places. Kentucky increased 3 places in a ranking of the environment subindex score relative to all 50 states and held steady at 10th place in both 1990 and 2001 among its peers. In a ranking of the states based on the government subindex score, Kentucky dropped 5 places nationally and 1 place among its peers.

peer states by indicator index scores in this area, Kentucky held steady at its 1990 rank or improved in every indicator in this area. The state made considerable progress toward reducing poverty and increasing access to information technology during this period. Kentucky's poverty rate fell from 17 percent in 1990 to 13 percent in 2001. Based on rankings of state poverty index scores, this decline in poverty translated into increases in rank over the same period of 11 places nationally and 4 places among Kentucky's peer states. Home computer access climbed 6 places nationally and 3 places among the peer states over this period, while the percentage of those accessing the Internet in the last year increased 15 and 7 places, respectively.

In terms of performance, Kentucky places relatively well among the states in the areas of communities, environment, and government compared to the areas of education and the economy, but compares less favorably in terms of progress. Table 4 shows that, in general, Kentucky has performed relatively better in each of these three areas compared with its performance in the areas of education and the economy. Nationally, Kentucky's 2001 rank based on each of these three subindex scores exceeds its rank based on

Sustained Commitments to Education Key to Momentum

The State of the Commonwealth Index shows that Kentucky made great strides in improving quality of life in the state relative to the nation and its peer states between 1990 and 2001. The index is a single number that summarizes Kentucky's performance relative to other states in 26 long-term indicators of well-being, including measures of community attributes, education, the economy, the environment, and government. Using this measure to rank the states, Kentucky falls short of the national average and just below the average quality of life found in its peer states, but it improved its position considerably over the period. Only seven other states nationally climbed more places in rank than did Kentucky, and none of its peer states improved in rank more than did the Commonwealth.

As quality of life steadily improved in Kentucky throughout this time period, a consistent corollary to this growth was the state's commitment to improving its education system. The economic situation waxed and waned with fluctuations in the business cycle, but the state did not waver from policy initiatives taken to provide high-quality education for all Kentuckians. Vibrant communities, a beautiful environment, and honest participatory government remained characteristic of the quality of life found in the state but showed little to no growth, while dramatic growth occurred in the area of education and, in turn, overall quality of life.

Education pays—and everyone knows it. Research confirms what common sense suggests: more education is generally associated with greater earnings capacity.⁹ But the higher standard of living gained by a more educated populace involves much more than the obvious economic rewards. A range of other societal benefits accrue, from better health to increased volunteerism.¹⁰ In general, more education relates to higher incomes and lower poverty. Other benefits include increased access to and use of information technology and increased entrepreneurial activity, such as business formation and the patenting of new ideas and inventions. Beyond these economy-related outcomes are increases in voter participation rates, greater interest in the arts and other cultural activities, declines in crime, and lower reliance on public assistance programs.

TABLE 3
Index Scores for Kentucky and 16 Peer States, 2001, 1990, and Change in Rank

	2001	1990	Change in Rank
Michigan	1	1	0
Virginia	2	2	0
Missouri	3	3	0
Illinois	4	5	+1
Ohio	5	4	-1
Indiana	6	6	0
Florida	7	7	0
North Carolina	8	8	0
Georgia	9	9	0
Kentucky	10	12	+2
West Virginia	11	10	-1
Tennessee	12	13	+1
Arkansas	13	11	-2
South Carolina	14	14	0
Alabama	15	15	0
Louisiana	16	17	+1
Mississippi	17	16	-1

TABLE 4
Kentucky Ranked by Subindex Scores and Indicator Index Scores
2001 and 1990 and the Directional Net Change in Rank, 1990-2001

Subindex or Indicator Name	National Index			Peer State Index		
	2001	1990	Change in Rank	2001	1990	Change in Rank
Communities	33	37	+4	7	11	+4
1. Crime Index	8	4	-4	2	2	0
2. Employment Rate for Persons with Disabilities	39	43	+4	8	12	+4
3. Homeownership Rate	13	31	+18	8	13	+5
4. Health Insurance Rate	23	26	+3	7	6	-1
5. Teen Birth Rate	33	36	+3	7	8	+1
6. Smoking Rate	50	49	-1	17	16	-1
7. Charitable Contributions	37	32	-5	14	13	-1
Education	42	47	+5	10	14	+4
8. High School Attainment Rate	47	47	0	16	14	-2
9. College Attainment Rate	40	45	+5	11	12	+1
10. ACT Average Composite Score	41	43	+2	9	11	+2
11. 8th Grade NAEP Math Results	34	43	+9	9	12	+3
Economy	37	44	+7	9	13	+4
12. Per Capita Income	40	44	+4	11	13	+2
13. Poverty Rate	33	44	+11	8	12	+4
14. Per Capita Gross State Product	41	41	0	12	13	+1
15. Business Formation	3	6	+3	2	5	+3
16. U.S. Patents	36	40	+4	12	15	+3
17. Home Computer Access	39	45	+6	9	12	+3
18. Internet Access	31	46	+15	6	13	+7
Environment	34	37	+3	10	10	0
19. Per Capita Air Emissions	43	38	-5	11	8	-3
20. Per Capita Surface Water Discharges	37	31	-6	9	8	-1
21. Per Capita Toxic Land Releases	38	14	-24	9	1	-8
22. Air Quality	25	18	-7	13	8	-5
23. Water Quality	29	46	+17	13	16	+3
Government	34	29	-5	8	7	-1
24. State and Local Government Efficiency	13	6	-7	5	3	-2
25. Women in State Legislatures	47	47	0	15	14	-1
26. Presidential Election Voting Participation Rate	31	34	+3	7	8	+1

Note: The indicator ranks are based on the index scores for each indicator used to calculate the final index score. An increase in rank, such as from 10th to 1st, signifies a positive increase in performance for that indicator regardless of what indicator it is. The last place ranking in smoking rate for Kentucky signifies that it has the highest adult smoking rate in the country, not the lowest. The index adjusts for the inverted nature of the original value so that it may be compared to and combined with the other indicators in a meaningful way.

These relationships help illustrate the importance of education as the foundation upon which quality of life is built. In the midst of cyclical downturns and slow-growth areas, the Commonwealth built momentum in closing the quality of life gap between itself and other states from 1990 to 2001, but much work remains before the state can claim parity with the rest of the nation and its peer states. An underlying constant across this period was Kentucky's commitment to education, from which many benefits accrue. Whether the state maintains this momentum in coming years will depend on its level of dedication to the policies and goals that brought it this far, most importantly by providing a high quality education *at all levels for all Kentuckians.* 

Notes

¹ 2001 is the last year for which we have data for all the indicators and all the states.

² For further information on the indicators and their sources see <http://www.kltprc.net/stateofthecommonwealthappendix.htm>.

³ The indicators were standardized to facilitate comparison among them and the combination of them into one summary statistic. By transforming all outcomes to Z-scores, with the same mean (0) and standard deviation (1), each indicator was able to 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 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, or, in this case, from 0 to 1000, with an average of 500. 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 500. Conceptually, the result represents the percentile ranking of the Z-scores, and it 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 per capita income, the first step in this method is to calculate the mean and standard deviation across all the states for a particular year. In 2001, Kentucky's per capita income was \$24,190. The mean and standard deviation across all 50 states for that year were \$28,416 and \$4,537, respectively. The Z-score

was calculated as $(\$24,190 - \$28,416) / \$4,537$, which equals a value of -0.9 . The probability value for this Z-score value is 0.176. This value was then multiplied by 1000 to obtain 176—Kentucky's per capita income index score for 2001 relative to the nation. The economy subindex score was then obtained by calculating the average of this score and the six other indicators included in this quality of life theme. Upon calculation of this score, the final index score was the average of each of the five subindex scores.

⁴ For further information on how these states were selected please see <http://www.kltprc.net/stateofthecommonwealthappendix.htm>.

⁵ The peer states include Alabama, Arkansas, Florida, Georgia, Illinois, Indiana, Louisiana, Michigan, Mississippi, Missouri, North Carolina, Ohio, South Carolina, Tennessee, Virginia, and West Virginia. Including Kentucky, the total number of states used in calculating this index is 17.

⁶ Choosing a weighting scheme can be problematic in that any one chosen inherently makes assumptions about the relative importance of the indicators and imposes those assumptions on the final calculation. For example, weighting the indicators equally in the index imposes the assumption that those themes with more indicators are more important than those with

fewer indicators. In this case, Kentucky is again ranked 46th in 1990 based on a ranking of the national index score and increases to 39th in 2001, as opposed to 40th in the weighting scheme used here. Attempts to resolve this situation compels the researcher to make judgements about the relative importance of the indicators and themes, which then biases the final outcome. For instance, weighting education more than the other four themes and ranking the states based on this new index score leads to the same ranks attained upon ranking the states based on the education subindex score. Carrying this notion further and assuming that college attainment is the most important indicator of quality of life, would lead to an index ranking that matches the results found when ranking the states based on this indicator index score. These are just a few examples of the possible weighting schemes that could be used to calculate the final index score and what the final outcomes would be if the weights are taken to an extreme, such as one theme or indicator being dominant in the final calculations. In the end, the results based on the more impartial weighting schemes are comparable and not that different from each other. In addition, the index score would only be able to be as great as any single indicator in extreme situations. And finally, these all require a certain subjectivity and judgement of the relative importance of each indicator. The current weighting scheme does not avoid this inherent bias, but instead draws upon the input of a multitude of people throughout the state rather than a few.

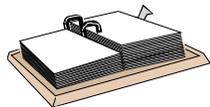
⁷ It is important to note that the indicators chosen here are simply that—they *indicate* certain notions of what constitutes a high quality of life. There are complicating factors that detract from complete and perfect measurement of the qualities represented here. For instance, state government efficiency is imperfect in that a pure interpretation of its definition indicates that one person offering services at the levels of state and local government would be the most efficient outcome. However, this measure assumes that, all other things equal, less state and local government workers serving more state residents is more efficient. That is, the quality of services offered remains the same as efficiency increases. Nevertheless, in this era of constrained resources and higher productivity in the face of technological advances, we believe this indicator reasonably captures the notion of efficiency in the services offered at the levels of state and local government.

⁸ For further information on the index scores please see <http://www.kltprc.net/stateofthecommonwealthappendix.htm>.

⁹ See for example: Gary Becker, *Human Capital* (1964; New York: National Bureau of Economic Analysis, 1975); Mark C. Berger and Dan Black, *The Long-Run Economic Impact of Kentucky Public Institutions of Higher Education* (Lexington, KY: University of Kentucky Department of Economics, 1993).

¹⁰ See for example: Amy L. Watts, *Education and the Common Good: Social Benefits of Higher Education in Kentucky*, Kentucky Long-Term Policy Research Center, Frankfort, Kentucky, 2001; Richard A. Krop, *The Social Returns to Increased Investment in Education: Measuring the Effect of Education on the Cost of Social Programs* (Santa Monica, CA: RAND Graduate School, 1998); and Georges Vernez, Richard A. Krop, and C. Peter Rydell, *Closing the Education Gap: Benefits and Costs* (Santa Monica, CA: RAND 1999).

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Resources Do Produce Results

By Blake Haselton and Michael Davis

In a 2003 *Foresight* article ("Do Resources Produce Results?"), University of Kentucky political science professor Phillip Roeder questioned whether increased spending on education since the enactment of the Kentucky Education Reform Act of 1990 (KERA) has led to increased student achievement in Kentucky. Here we examine this important public policy issue in more detail.

Prior to KERA, Kentucky's educational system was among the worst in the nation. In 1988 Kentucky ranked last in adult literacy and high school completion with rates of 69 percent and 53 percent, respectively, and at 11 percent, nearly last (49th) in the percent of adults with a four-year college degree. The state ranked 48th in K-12 per-pupil spending, 41st in pupil-teacher ratio, and 38th in average teacher salary.¹

In June 1989, in response to a lawsuit brought by the Council for Better Education Inc., the Kentucky Supreme Court issued what many have termed a landmark decision, declaring the entire system of common schools in Kentucky unconstitutional. The Court concluded that the state's system of common schools did not comply with the constitutional requirement that the General Assembly provide an efficient system of common schools throughout the state. The Court ruled that school systems must be funded adequately to achieve their goals and become substantially uniform throughout the state so "every child is provided with an equal opportunity to have an adequate education."² As envisioned by the Court, an adequate system of education as mandated by the state constitution must provide every child with at least seven capacities, including communication skills sufficient to function in society, satisfactory preparation to pursue a career, and skills necessary to compete favorably with students from other states.

The General Assembly's response to the court decision was swift and impressive. Eleven months after the court determined the entire system of education unconstitutional and directed the legislature to recreate it, the governor signed House Bill 940, the Kentucky Education Reform Act (KERA), into law.

Many of the questions raised by Roeder concerning education funding are similar to those articulated before the Kentucky Supreme Court in *Rose v. Council*. KERA required significant increases in educational funding and caused many people to question whether these increased funds would have any impact on student performance. Consequently, when evaluating whether additional funding for educational resources have an impact on educational outcomes, the first question should be, "Has progress been made

in educating Kentucky's children over the last decade?" Or, to put it more bluntly, "Is KERA working?"

Is KERA Working?

Regardless of one's feelings about KERA, most would admit that the increased education funding resulting from KERA has led to significant improvement in Kentucky's education system. Since our education was realigned and made our state's highest priority, student achievement has been positively affected. Kentucky has since soared on national achievement tests. For example, from 1992 to 2002, Kentucky increased six points in reading on the 4th Grade National Assessment of Educational Progress (NAEP) with only five other states showing larger gains.³ From 1998 to 2002, Kentucky increased three points on 8th Grade NAEP reading, which exceeded the national average increase, and only nine other states

had larger achievement gains. Furthermore, results from Kentucky's 2002 CTBS/5 assessment showed sustained progress in reading, language arts, and mathematics, with Kentucky now above the national average at all three testing stages: grades 3, 6, and 9.⁴

Increasingly, graduates of Kentucky's high schools are leading productive and successful lives. In 2000, Kentucky led the nation in the percentage increase in the high school completion rate for 25- to 34- year olds.⁵ Statistics from the Ken-

tucky Department of Education demonstrate that college enrollment has increased; 10.3 percent more graduating seniors enrolled in college in 2001 than in 1993.⁶ Moreover, in 2000, 95.4 percent of our graduating seniors were pursuing postsecondary education, employment, or military service.

Where Kentucky once had a system of education that no state would want, today Kentucky's is a model educational system that other states are emulating. It has consistently placed in the top five states for testing and accountability in *Education Week's* "Quality Counts" report. Where once our educational system was in a state of crisis, today Kentucky is recognized as an innovator and a leader in education. Our education system is no longer a disgrace. Instead, the improvement in our educational system is something that Kentuckians can view with great pride. However, because Kentucky began this long-range endeavor at or near the national bottom, our relatively rapid upward movement still leaves us with much ground to gain.

The National Research

Another way to evaluate whether additional funding for educational resources has an impact on educational outcomes is to examine the research on this subject. Contrary to Roeder's assertion that, "research that systematically and empirically links education resources to results is in short supply,"⁷ a rich and bountiful supply of research exists directly linking expenditures for edu-



cational resources to increases in student achievement. Indeed, the Kentucky Supreme Court in *Rose v. Council* reached the same conclusion: “Uniform testimony of expert witnesses at trial, corroborated by data, showed a definite correlation between the money spent per child on education and the quality of the education received.”⁸

A number of methodologically sound studies have shown that expenditures for certain programs and services do positively influence student achievement. For instance, the model experiment for class size reduction is Tennessee’s Student-Teacher Achievement Ratio (STAR) initiative.⁹ The format of the experiment was championed as both “systematic and empirical,” with renowned education professor Bruce J. Biddle noting, “The Star Project was arguably the largest, best-designed field experiment that has ever appeared for education.”¹⁰

The results of this initiative show that education resources for class-size reduction are strongly correlated with higher achievement in student performance. Kindergarten students in small classes were found to be three quarters of a month ahead of the students in standard-sized classes.¹¹ The small-class-size advantage for students after the first grade was nearly two months, and after the end of the fifth grade, students in smaller classes were five months ahead of their peers in standard-sized classes. Because the results of the STAR Project were both substantial and academically rigorous, more than 30 states have instituted some type of class-size reduction effort.

Although progress had been made in Kentucky, adequate funding to assure class-size reductions has not been. As recently as the 2001-02 school year, elementary class sizes in Kentucky averaged more than 25 students.¹²

This evidence demonstrates that methodologically sound, peer-reviewed research has linked educational resources to student achievement. And class-size reduction studies are not the exception; similar benefits can be seen for other educational expenditures, such as full-day kindergarten, but all require adequate resources.

Resolving the Paradox

Given the evidence we have presented thus far, how did Roeder reach the conclusion that a weak link exists between funding and student outcomes? We believe that his analysis of the education data is incomplete. Roeder did not consider many factors that influence the relationship between per pupil expenditures and district performance results. For instance, are the populations in the highest-performing districts similar to the populations in the lowest-performing districts? Was poverty, or population migration into or out of the district, or the size of the district, considered? Obviously, assuming similar populations, larger districts will require less per-pupil funding due to sheer economy of scale. Were student demographics considered? Students in poverty, students with learning disabilities, and students learning English as a second language require significantly more resources to achieve



proficiency in educational outcomes than students without these characteristics.

As an illustration, the data from which Roeder produced his Table 1 can be re-analyzed with respect to poverty, measured in this case by the percentage of students eligible for free lunch under federal guidelines. The eligibility rate for Kentucky students statewide is approximately 38.8 percent. All but two of the highest-performing school districts fall below this rate, whereas all of the lowest-performing school districts exceed

it. In fact, a student living in one of the lowest-performing districts is 178 percent more likely to be in poverty than a student in one of the highest-performing districts. Students in poverty have been shown to require more services and more help, and therefore more funding per pupil in order to achieve similar outcomes. Regrettably, Roeder does not account for the socioeconomic status of these students. By not accounting for the district-level percentage of students eligible for free lunch, a reliable proxy for poverty, Roeder’s results present the counterintuitive impression that higher levels of education funding lead to lower student achievement.

Why Public Education Is Our Future

The Kentucky constitutional delegates of 1891 made a radical decision: they concluded that education should assume priority

TABLE 1: Comparison of Highest- and Lowest-Performing School Districts, 1999-2000					
Highest-Performing			Lowest-Performing		
School District	CATS 2000 INDEX†	% Students Eligible for Free Lunch‡	School District	CATS 2000 INDEX	% Students Eligible for Free Lunch
Anchorage Independent	87.3	0.00	Covington Independent	47.1	64.24
Fort Thomas Independent	80.0	2.73	West Point Independent	48.2	66.67
Oldham County	76.6	10.26	Harlan County	49.7	67.63
Walton Verona Independent	74.8	12.56	Providence Independent	50.4	65.46
Daviess County	73.7	23.15	Clay County	50.6	66.26
Beechwood Independent	72.9	2.72	Knox County	51.0	90.71
Murray Independent	72.1	23.09	McCreary County	51.5	71.36
Science Hill Independent	70.8	34.55	Owsley County	51.7	82.97
Glasgow Independent	70.4	32.02	Breathitt County	52.2	68.69
Hancock County	69.6	22.26	Gallatin County	52.9	40.82
Pikeville Independent	69.3	30.89	Floyd County	53.1	62.24
Elizabethtown Independent	69.2	27.64	Elliott County	53.1	61.26
McLean County	69.2	34.61	Martin County	53.2	62.24
Paintsville Independent	69.1	39.63	Dayton Independent	53.5	49.53
Crittenden County	69.0	34.04	Jackson Independent	53.7	55.02
Anderson County	68.8	18.97	Letcher County	53.9	56.14
Boone County	68.2	13.20	Greenup County	54.1	44.77
Rockcastle County	66.9	45.95	Knott County	54.8	59.69
Average (unweighted)		22.7	Average (unweighted)		63.1

† Column IDX00TOT of PRS00DST.DBF, Kentucky Department of Education
‡ 1999-2000 District Profile, Kentucky Department of Education, <http://170.180.8.163/district%20profile/mainpage.cfm>

over all other public goals for the Commonwealth. Considering the age, one in which the skyscraper, the washing machine, and the escalator were novelties, this was truly a visionary concept. Today, this argument is no longer radical but so mainstream as to be nearly universally accepted. Today, we take for granted that a person without an adequate education—without the ability to read, write, and communicate effectively, without the ability to solve problems and analyze alternatives, without a basic knowledge of our political, social, and economic systems—has little chance to find meaningful employment, lead a productive life, or participate fully as a contributing citizen. Today, we hold that an adequate education is essential for everyone. This is not merely an accepted public policy aspiration, it is a legally binding requirement under *Rose v. Council*: “All children in Kentucky have a constitutional right to an adequate education.”¹³ Just as we recognize that individual success requires an adequate education, we also must recognize that our state’s very prosperity, in the fullest sense of the word, depends upon the adequacy of the education we provide each and every child in the Commonwealth.

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Notes

- ¹ Prichard Committee for Academic Excellence, *Gaining Ground: Hard Work and High Expectations for Kentucky Schools*, (Author: Lexington, 1999).
- ² *Rose v. Council for Better Education, Inc.*, 790 S.W. 2d 186 (1989).
- ³ National Assessment of Educational Progress (NAEP) website <<http://nces.ed.gov/nationsreportcard/sitemap.asp>>.
- ⁴ Kentucky Department of Education (KDE) website <<http://www.kde.state.ky.us>>.
- ⁵ U.S. Bureau of the Census, 2000 Decennial Census (SF3, PCT25).
- ⁶ KDE, “Non-Academic Data: 1993 – 2001, Region and State Totals,” July 2002.
- ⁷ Phillip W. Roeder, “Do Resources Produce Results?,” *Foresight* 10.1 (2003): 6-9
- ⁸ *Rose v. Council* 198.
- ⁹ Attempting to demonstrate the effectiveness of class size reduction before committing additional funding, Tennessee legislators authorized a four-year study in which kindergarten, first, second, and third grade students and teachers were randomly assigned to: (a) classrooms of 13 to 17 pupils, (b) classrooms of 22 to 25 pupils, or (c) classrooms of 22 to 25 pupils and the teacher was assisted by an aide. Curriculum and standardized tests were issued to assess student performance in reading, mathematics, and basic study skills for 6,500 pupils at approximately 80 schools.
- ¹⁰ B. Biddle and D. Berliner, “What Research Says About Small Classes and Their Effects,” *WestEd* (PP-02-01) Winter 2002: 1-24.
- ¹¹ J. Finn and C. M. Achilles, “Tennessee’s Class Size Study: Findings, Implications, and Misconceptions,” *Education Evaluation and Policy Analysis* 21.2 (1999): 97-110.
- ¹² KDE, “2001-2002 School Profile” <<http://170.180.8.163/district%20profile/mainpage.cfm>>.
- ¹³ *Rose v. Council* 213.



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for service in the interest of Kentucky’s future



Nominations for the 2004 Vic Hellard Jr. Award are now being accepted by the Board of the Kentucky Long-Term Policy Research Center. Given annually in memory and recognition of Mr. Hellard’s leadership and service to the Commonwealth, this honor recognizes an individual who, by his or her example and leadership, has advanced citizen goals for the future. Nominating letters should explain how the candidate:

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Scanning Kentucky

Emerging trends and issues that may affect the Commonwealth's future

Secondhand Smoke

While smoking has declined slowly but steadily over the past 20 years, 46.5 million U.S. adults continue to smoke cigarettes, according to a Gallup Organization analysis. Cigarette smoking, Gallup notes, causes an estimated 440,000 deaths each year, one in five in the United States, or disability for about half of regular users. Tobacco use results in more than \$75 billion in medical costs and an estimated \$80 billion in indirect costs related to losses of productivity. And because smoking rates run about 50 percent higher among Medicaid recipients compared to the general population, an estimated 14 percent of Medicaid expenditures are tied to smoking.



And evidence of the consequences of smoking and secondhand smoke continue to mount. *Medscape* reports that a recent Wales study published in the *American Journal of Psychiatry* confirms findings from prior studies linking maternal smoking to symptoms of attention deficit hyperactivity disorder (ADHD) in their children.

Some dramatic but unanticipated evidence of the danger of secondhand smoke was found recently in Helena, Montana, where citizens voted in June 2002 to ban smoking in all public buildings, including restaurants, bars, and casinos. Soon afterwards, doctors at the local hospital noticed that heart attack admissions were dropping. So they conducted a study to measure the smoking ban's short-term effects. The study showed two trends. First, there was no change in heart attack rates for patients who lived outside city limits. But for city residents, the rates plummeted by 58 percent in just six months. When the Montana state legislature rescinded the ban in December 2002 under pressure from the Montana Tavern Association and tobacco lobbyists, heart attack rates bounced back up almost as quickly as they had dropped. Just 30 minutes of exposure to secondhand smoke causes platelets in the bloodstream to become stickier. When that happens, the blood clots that can block arteries and cause heart attacks form more easily.

In Arizona, the Department of Health Services and the Phoenix Mercury of Women's National Basketball Association fame have joined forces to send the message that smoking is dangerous for young girls "because it is so quickly addictive."

In spite of the clear and costly dangers of smoking, *Medscape* reports Campaign for Tobacco Free Kids data showing that 46 states that accepted cash settlements from the tobacco companies five years ago, ostensibly to defray the health care costs they had borne as a result of smoking and work to discourage it, are spending only a fraction of those funds on antismoking campaigns. And those campaigns have been cut by 25 percent in the past two years.

Implications for Kentucky. By most measures, Kentucky's antismoking campaign has offered an anemic response to a huge problem. Kentucky had the highest 2001 rate of current smokers in

the nation: 31.9 percent of men and 30 percent of women 18 years of age and older, according to the National Cancer Institute (NCI).

While research shows that female lung cancer rates are soaring nationally and posing a far greater threat to women's lives than breast cancer, Kentucky women continue to head yet another undesirable list: they die of lung cancer at a rate higher than in any other state, according to the NCI. Between 1996 and 2000, the annual death rate here among women with lung and bronchus cancer was 52.3 per 100,000 population compared with a U.S. average of 40.7 deaths. Between 1990 and 2000, according to NCI reports, lung cancer rates among women in Kentucky rose 1.7 percent, compared to a national increase of 0.2 percent.

Men in Kentucky also lead the nation in lung cancer mortality rates: 114.5 deaths per 100,000 compared with 77.9 deaths nationally between 1997 and 2001. During this same time period, an average of 3,146 Kentucky men and women died every year of lung cancer.

As evidence of the consequences and the costs of smoking continue to mount and Medicaid costs threaten to tilt out of control, the once unconditional support that tobacco companies, farmers, and smokers held here is yielding to new previously unthinkable change. The city of Lexington's response has been to adopt a no-smoking ordinance applicable to all public places. Having withstood a state Supreme Court challenge, it is now in effect. Many expect the move to embolden other cities and local governments in the state. Kentucky lawmakers also moved this past session to restrict smoking to designated areas in the Capitol and its annex.

Is Our Commitment to Poor Elders Waning?

Some advocates fear budgets will be balanced on the backs of the poor elderly and disabled as states retool their Medicaid programs to weather a still unresolved fiscal crisis. In Kentucky, 2003 changes in Medicaid eligibility resulted in a number of elderly and disabled beneficiaries losing coverage of their nursing home and in-home care. Families of the affected recipients sued the state. While Governor Fletcher has restored the benefits in question, a Medicaid shortfall of uncertain proportions still looms here as in most states. Many states are cutting benefits from this income-based and largely federally funded program in an effort to manage the shortfall.

Nursing homes, which receive a substantial portion of Medicaid dollars, face their own problems. Some advocates for the elderly have suggested that government should be looking more closely at the quality of care in nursing homes, rather than finding ways to terminate benefits for those who reside in them. Critical shortages of nursing staff at all levels, it is argued, are jeopardizing the quality of care that elders receive in these institutions. As a consequence, advocates infer, the state is financing a level of care that many nursing homes cannot achieve.

As a rule, the frontline caregivers of nursing homes, aides and certified nursing assistants (CNAs), earn low wages for difficult,

challenging work. Turnover rates are phenomenally high—107.6 percent in Kentucky in 2002 among CNAs. But turnover rates among registered nurses (RNs), from directors of nursing (53.6 percent) to staff RNs (68.3 percent), and licensed practical nurses (64.5 percent) were also high here in 2002, according to the American Health Care Association's annual report. As a consequence, bonds with caregivers are often short-lived.

Nationally, large homes with empty beds and a need for cash are taking any patients they can get, regardless of age or medical history. Some of the younger patients have histories of drug abuse, mental illness, or complex medical problems. Some pose a potential threat to residents or staff members who are not usually trained to deal with such patients. Staffing standards, advocates argue, should be linked to Medicaid nursing home reimbursement levels to create incentives for change and alleviate problems with care.

Although all states have laws and services in place to detect elder abuse in private residences, a University of Iowa (UI) study finds that the way domestic elder abuse cases are detected and handled differs significantly across states as the relevant state laws and regulations vary greatly. As presented in the *American Journal of Public Health*, this national study concluded that documentation of reports of abuse, investigations, and their outcomes varies as widely as the terminology used to define elder abuse in state laws. Further, the study concluded that states which require mandatory tracking of elder abuse reports have far higher investigation rates and that case workers who specialize in elder abuse had higher substantiation rates.

Implications for Kentucky. As fiscal pressures mount, states are adopting different approaches to the dilemmas they have been dealt. Some are sharpening the focus of their commitment to Medicaid—introducing the disciplines of managed care, experimenting with disease management programs, emphasizing home care, and requiring prior approval for some medications and generic alternatives. Other states have simply lowered the income ceiling that triggers eligibility without imposing more rigorous fiscal management of the program. Kentucky's 2003 response to what many have long argued was an inevitable fiscal crisis has been a blend of the two that, by many accounts, was disastrous for some poor and disabled elders.

Retirement in the Red?

More than half of Americans are very (24 percent) or moderately (30 percent) worried about their financial security in retirement, Gallup reports. What's more, in a separate April 2004 survey, Gallup found that retirement topped the list of financial concerns for Americans, with 52 percent saying they were worried, compared with 44 percent who said they were not. Usually secure public employees have also been discomfited by news of the billions of dollars in losses by state pension funds, which saw their assets fall by 6 percent in 2002 while liabilities grew by 10 percent.

Some older workers may find ammunition for actions against their employers in a federal court ruling which held that IBM was guilty of age discrimination when it changed its pension plan twice in the 1990s. If upheld on appeal, "cash-balance" plans, which IBM shifted to in 1999 and many employers have adopted in recent



years, could be ruled discriminatory. Cash-balance plans are based on interest rates, rather than employee salaries, which rise with age and tenure. Thus, older employees are generally losers when employers shift to a cash-balance structure. An estimated 2 million workers are now covered under such plans, according to *The New York Times*.

Implications for Kentucky. Anxiety about prospects for retirement likely runs high in our disproportionately poor and rapidly aging state. While our survey evidence (see *Planning for the Future*, 2002) suggests that, unlike current retirees who rely heavily on Social Security, Kentucky's Baby Boomers are more likely to expect their future retirement income to come from a range of sources, their savings rates were quite low.

For Kentucky taxpayers in general, the grossly underfunded health care benefits package that is part of an inviolable contract with current state employees is further reason for concern over the long term. State contributions to the fund that finances health care for state retirees have fallen far short of actuarial recommendations for a number of years. Teachers, however, enjoy no inviolable contract. Thus, retired teachers face the possibilities of paying a higher portion of their premiums, having their benefits reduced, or losing them altogether within a few years unless additional contributions are made to the fund. House Bill 434, introduced in the 2004 session, would have established an "employer medical insurance fund stabilization contribution," but no funds were allocated for it in either the Senate or House versions of the budget.

Thus, taxpayers, many of them retirees, could face the prospect of higher taxes in the future to meet the costs of financing promised health care benefits for public employees. What's more, the steadily rising cost of health care now figures prominently into financing retirement, and many current and coming retirees may never recoup stock market losses. Thus, for the foreseeable future, the so-called Golden Years have lost their sheen for many older Kentuckians.

Cash-Strapped Schools Adopt New Strategies

Cash-strapped schools are using various techniques to save dollars while maintaining quality. By adopting a four-day school week, a school district of 1,900 students in the western Kentucky farming and coal mining region hopes to save about 2 percent of its annual spending—or \$200,000—on bus service, substitute teachers, and utilities. The first district in Kentucky to adopt a shorter school week, mostly rural school systems have made the switch to save money in at least 10 other states.

While studies link junk food and soft drinks to childhood obesity, many schools are embracing corporate advertising and sales as a means to revenue. Rather than promoting healthy choices, exclusive agreements with soft drink bottlers, for example, compel school districts to increase the number of vending machines in schools to increase sales, according to the Education Policy Studies Laboratory at Arizona State University. Evidence suggests that trends towards commercialization in schools will not soon abate.

Implications for Kentucky. Experiments with school-day schedules must be closely monitored to learn how and if this savings strategy affects student performance.

In regard to childhood obesity, which has been linked to chronic adult health conditions, a 2003 School Policy Survey <www.mc.uky.edu/tobaccopolicy/> conducted by the University of Kentucky College of Nursing for the Cabinet for Health Services

found that 70.1 percent of Kentucky schools have exclusive contracts with a soft drink vendor. Fewer than half (45.2 percent) of schools or their school districts report having a policy in place that prohibits or limits junk foods in school vending machines. Further, only 18.9 percent of Kentucky schools prohibit the use of junk food as a reward for good behavior, and only 19.2 percent restrict its use as a reward for academic performance. And 30.4 percent of schools report that the sale of junk food is “often” part of fundraising efforts at their schools.

Prison Overcrowding, Long Sentences Costing Cash-Short States

States are taking a closer look at the criminal justice policies that swelled prisons and saddled them with unmanageable costs. Even New York, whose Gov. Nelson Rockefeller first politicized crime, particularly drug crimes, is gradually backing away from the harsh penalties of the past that imposed long prison sentences for possession of even small quantities of drugs. Gov. George Pataki has granted clemency to 26 of the most compelling cases of overzealous prosecution of drug offenses, according to *The New York Times*, and, overall, he is pursuing a far different approach than Rockefeller did in the 1970s, granting early release to nonviolent offenders, including drug offenders.

Research offers compelling reasons to revisit the policies of the past. A recent study concludes that jails and prisons have become the nation’s default mental health system, that as many as 1 in 5 of the 2.1 million



Americans in jail and prison are seriously mentally ill, far outnumbering those in mental hospitals. The country’s prison population has quadrupled over the past 30 years.

As a result of studies like these and lean fiscal times, state legislatures are rethinking their costly approaches to crime. In the past year, about 25 states have passed laws eliminating some of the lengthy mandatory minimum sentences, restoring early release for parole, and offering treatment instead of incarceration for some drug offenders.

Nationwide, nearly two thirds of released inmates are rearrested within three years, and such recidivism has contributed further to the prison population. Most criminals return to crime because it is all they know, says Dr. Mimi Silbert, who holds a Ph.D. in criminology. She founded the Delancey Street Foundation in 1971 which operates on the principle that the most important thing for its participants to learn is how to build a life in society, *The New York Times* reports. Delancey Street has no social workers or therapists. The residents teach and support one another while working and learning skills.

Implications for Kentucky. Alternative strategies, such as drug courts, for dealing with nonviolent crime have become increasingly important considerations, as the fiscal and human toll of simplistic responses to crime mounts. The problem of recidivism points to the inadequacies of a system that at great long-term cost pays too little attention to preparing inmates for social re-entry. *ES*

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