Adjusting the poverty measure for geographic variations: What difference would it make?

When the federal government distributes social welfare program funds, one criterion for allocation is the degree of poverty in particular states. Title I funding for schools, for example, takes into account the number of school-aged children whose family income is below the poverty line. The State Children's Health Insurance Program (SCHIP), Community Development Block Grants, and funding provided under the Individuals with Disabilities Education Act are other large programs that also take poverty rates into consideration.

The official measure that generates poverty rates for the nation at large and for state and local jurisdictions has long been criticized for its omissions and inadequacies, as discussed in the accompanying article by John Iceland. In 1995, a study by a National Academy of Sciences (NAS) panel on Poverty and Family Assistance recommended a series of changes; none has yet been implemented.[1]

Prominent among these changes was a suggested adjustment for regional variation in the cost of living. The official poverty measure does not take into account such differences. Housing costs vary significantly across the country and housing expenditures are a large component of household budgets. The NAS panel therefore recommended a first and partial step toward accounting for regional differences: adjusting the poverty thresholds for geographic differences in the cost of housing. But the panel was also careful to differentiate between use of the poverty measure for statistical purposes and its use for administrative purposes, such as setting eligibility and benefit standards for government assistance programs. There is, the panel noted, no necessary relationship between a statistical measure of need and the extent to which programs can or should be devised to alleviate need. Indeed, the poverty guidelines for welfare programs issued each year by the U.S. Department of Health and Human Services already include some geographic variation—they are 25 and 15 percent higher in Alaska and Hawaii, respectively.

Although differences in regional and state poverty rates are of interest in themselves, the authors' concern is more immediately practical. If poverty rates were adjusted for regional variation, what kinds of changes would ensue in the distribution of poverty and the allocation of federal funds?

To examine this issue the authors compared statistics produced by the current official poverty measure and an experimental poverty measure. They calculated state shares of the national total of people below poverty for the groups in which they were interested, using first the official measure and then an alternative measure that incorporated geographic adjustments.[2] In the analyses they pooled three recent years (1999–2001) of data from the Current Population Survey (CPS) to reduce variance in our results. Finally, they illustrated the consequences of introducing the experimental measure by examining what would happen to the allocation of funds under the major federal health insurance program for children, the SCHIP.

These results should be interpreted with caution. The amounts that the federal government ultimately distributes to the states are based not only on the data but on the interactions of the data with regulatory features and the allocation formulas for particular programs, as the authors note below.

Ways of adjusting for regional differences

The NAS panel developed a set of indexes for adjusting poverty thresholds in metropolitan and nonmetropolitan areas in each of the nine Census Bureau divisions of the country. To do so it used 1990 census data on rents for two-bedroom apartments that had plumbing, kitchen facilities, and electricity, and into which the occupant had moved within the last five years. First, metropolitan areas were grouped into five categories by population size; nonmetropolitan areas were included in the smallest category. The panel then computed index values using the cost of housing at the 45th percentile of housing costs for each area. Ultimately, the panel was able to create housing indexes for 41 geographic areas.

By this measure, the largest metropolitan areas of the Northeast and the West, with index values over 1.2, were the most expensive areas. The cheapest areas were

This *Focus* article summarizes a longer report, Charles Nelson and Kathleen Short, "The Distributional Implications of Geographic Adjustment of Poverty Thresholds," U.S. Bureau of the Census, Washington, D.C., December 8, 2003. A summary version, prepared for the National Academy of Sciences Workshop on Experimental Poverty Measures, June 2004, is C. Nelson, "Geographic Adjustments in Poverty Thresholds," May 26, 2004. The article in this *Focus* by John Iceland, rapporteur for the workshop, summarizes workshop conclusions.

nonmetropolitan areas and small cities (fewer than 250,000 inhabitants) in the Midwest, South, and West, with index values under 0.9. These indexes, the panel thought, were an improvement over existing procedures but were inevitably inaccurate because of the limitations in the available data. Housing costs vary widely within relatively small areas, and capturing the differences accurately requires housing data at a very fine level of detail.

The limitations in this approach were particularly apparent when these indexes were used to examine state poverty rates. The NAS panel indexes were grouped by geographic location rather than housing costs per se. So, for example, all metropolitan areas in the New England division were given the same index value, even though costs vary widely. A Census Bureau report on alternative poverty measures found that the NAS indexes generated poverty rates that differed significantly from the rates under the official poverty measure and also from other experimental measures. For example, the official poverty rate for Maine was 10.1 percent. The rate calculated using the NAS indexes rose to 12.5 percent, whereas estimates using several alternate housing indexes, in contrast, produced rates of between 9.5 and 9.9 percent.[3] Clearly, indexes for a given census division might not adequately reflect differences in the cost of housing within that division.[4]

A second Census Bureau report on alternative poverty measures used geographic indexes based on Fair Market Rents (FMRs).[5] FMRs, which are prepared annually by the Department of Housing and Urban Development to administer Section 8 housing programs, are available for all metropolitan statistical areas and nonmetropolitan counties in the United States.[6] The Census Bureau analysts calculated two indexes for each state, one for metropolitan and the other for nonmetropolitan areas. These indexes thus provided finer-grained data than the NAS indexes used in the first report. There are some difficulties with the FMR indexes, but overall, they are updated regularly, allow housing prices to vary more widely within and among states, and appear to yield more reasonable estimates of poverty than other calculated indexes.[7] The FMR indexes are used in the analyses summarized here.

What changes does geographic adjustment bring?

State poverty rates and the geographic distribution of the poor both change, in some cases substantially, when geographic adjustments are added to the calculation of poverty thresholds. Poverty rates in states where housing costs are relatively low decline, as would be expected. For example, the poverty rate drops in Alabama from 14.8 to 10.2 percent, and in Mississippi from 16.8 to12.8 percent. Conversely, in states with high housing costs, poverty rates rise considerably. The California rate rises

from 13.1 to 18.4 percent and the New York rate from 14.1 to 18 percent.[8]

These differences in overall poverty rates translate into substantial differences in the geographic distribution of poor people in the United States. Using the same four states as an example, the authors find that the proportion of the U.S. poor population living in Alabama drops from 2 to 1.3 percent; the Mississippi share of the poor drops from 1.4 to 1 percent. The increases in the number of the poor in states with high housing costs, which also tend to be states with large populations, are comparably great. California's share of the U.S. poor population rises from 13.7 to 17.9 percent, and New York's share from 8.2 to 9.7 percent. Under the alternative measure, 19 states had lower poverty rates, 9 had higher rates. There was no substantial difference for the remaining 23 states, including the District of Columbia (Figure 1).

For school-aged children (5–17 years old), the differences between the poverty rates under the official and the geographically adjusted measure are also substantial.[9] In gauging the effect of geographic adjustment on poverty estimates, schoolchildren are a particularly important subgroup because their circumstances are used in the formula for distributing Title 1 funds, approximately $12 billion a year, to states and localities. For this group, the pattern in the four states used as examples resembles the changed distribution for the entire poverty population, but the differences for the Southern states are greater. Using the experimental measure, the school-age poverty rate dropped from 19.1 to 9.3 percent in Alabama and from 22.3 to 13.1 percent in Mississippi; it rose from 17.4 to 20.7 percent in California and from 19.6 to 20.4 percent in New York. These changes are also reflected in the

United States
Percentage Point Difference

■ Declined 0.2 or more (19)
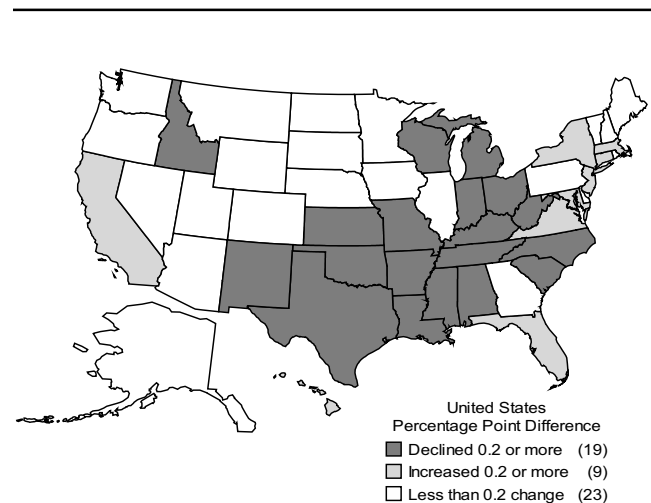▨ Increased 0.2 or more (9)
□ Less than 0.2 change (23)

Figure 1. Changes in the state distribution of all people in poverty when the official poverty measure is geographically adjusted. Three-year average, 1999–2001.

Source: C. Nelson and K. Short, "The Distributional Implications of Geographic Adjustment of Poverty Thresholds," U.S. Bureau of the Census, Washington, D.C., December 8, 2003, Table 3.
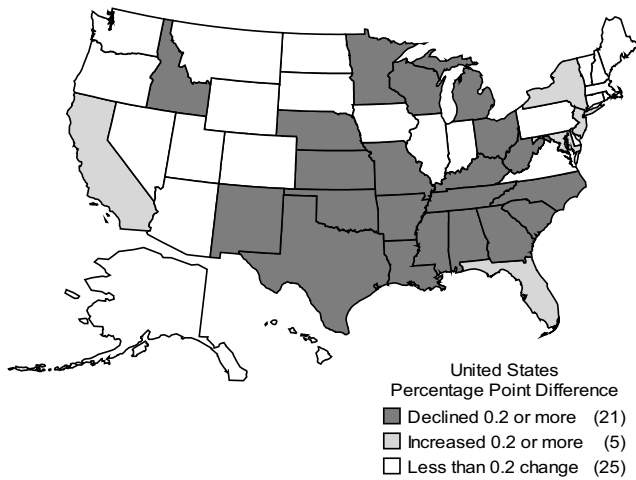
Figure 2. Changes in the state distribution of related children aged 5–17 in poverty when the official poverty measure is geographically adjusted. Three-year average, 1999–2001.

Source: C. Nelson and K. Short, "The Distributional Implications of Geographic Adjustment of Poverty Thresholds," U.S. Bureau of the Census, Washington, D.C., December 8, 2003, Table 5.

geographic distribution of related school-aged children in poverty (Figure 2). Again, substantially more states have lower poverty rates under the alternative measure; almost half show little or no difference.

Funding for other programs that use poverty thresholds would also change if the official poverty measure were to be replaced by the geographically adjusted measure. Take, for example, the percentage of children who do not have health insurance and who live in families with incomes under 200 percent of poverty. This particular statistic is used in calculating the allocations of federal funds under the SCHIP, which is administered by the Centers for Medicare and Medicaid Services, an agency of the Department of Health and Human Services, and which allocates $3–4 billion annually to the states. Although 42 states would see little change in the percentage of children in this category, 5 (mostly Southern) states would see declines of 0.2 percentage points or more, and 4 states (California and states in the Northeast) would see similar increases.

In the next section of this article the SCHIP is used as an example of how program funding might change if the poverty measure were to include adjustments for regional variation in housing costs.

Geographic adjustment and the SCHIP funding formula

The SCHIP provides a particularly convenient tool for exploring the effects of geographic adjustment, for its

formula uses direct CPS estimates of low-income children and low-income uninsured children; it is, the authors note, the only federal funding formula to do so.

The SCHIP formula uses three components: the number of children under 19 who are living in families with incomes under 200 percent of the family's poverty threshold, the number of such children without insurance, and a cost factor. This last factor is based on a calculated ratio of the state's average annual wage in the health industry to the national average annual wage in that industry. In addition, statutory limits insure that there are "floors and ceilings"—for example, a state cannot receive less than 90 percent of its previous year's allocation. The allocations for fiscal year 2004 based on this formula ranged from $3.8 million in Vermont to $534 million for California. Total allocations for the fiscal year were $3.1 billion.

Geographic adjustment, as would be expected, makes substantial differences (Figure 3). It would, moreover, result in a fairly large reallocation of funding from Southern states to states in the West and Northeast. Only 9 states would see no change in their allocations. Of the other 42, 17 (including the District of Columbia) would see increases ranging from 0.5 percent (Michigan) to over 27 percent (New Jersey). The remaining 25 states would all see declines, and 7 of them would lose over 10 percent of their allocation. Louisiana and Alabama would lose the most—14.5 percent—followed by Kentucky, Arkansas, West Virginia, Idaho, and North Dakota. Details of the reallocation for a selection of states appear in Table 1; these are the low- and high-housing-cost states, Alabama, Mississippi, California and New York; two other states with over a million poor children under the current official definition (Florida and Texas); and a Midwestern
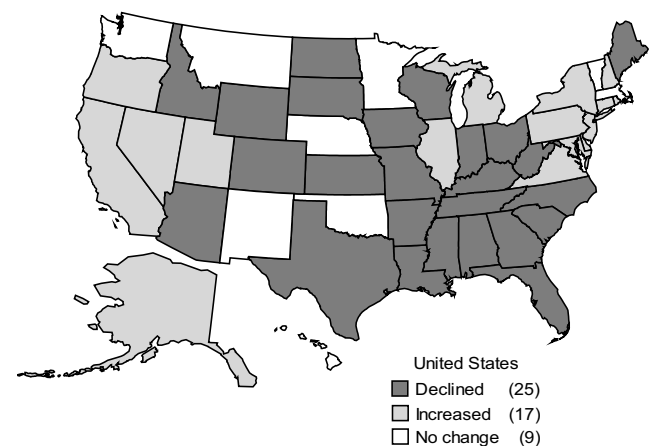

Figure 3. Changes in the State Children's Health Insurance Program allotments when the official poverty measure is geographically adjusted, FY 2004.

Source: C. Nelson and K. Short, "The Distributional Implications of Geographic Adjustment of Poverty Thresholds," U.S. Bureau of the Census, Washington, D.C., December 8, 2003, Table 10.

Table 1
State Children's Health Insurance Program (SCHIP) Funding Allocations for Selected States,
FY 2004, under Different Poverty Definitions: Official vs. Alternative Measures

State	No. of Children (000)		Adjusted Proportion of Total Allocation (%)		State Allocation		
	Official	Geographically Adjusted	Official	Geographically Adjusted	Official	Geographically Adjusted	Percentage Change
Selected States with Low Housing Costs							
Alabama	314	334	1.74	1.49	$54,679.333	$46,775,427	-14.5
Mississippi	229	243	1.17	1.08	36,897,326	33,905,608	-8.1
Selected States with High Housing Costs							
California	2,701	3,726	17.00	18.12	533,990,797	569,275,528	6.6
New York	1,130	1,632	6.89	7.69	216,455,790	241,641,263	11.6
Other States with over 1 Million Children							
Florida	1,054	1,327	6.16	6.00	193,614,837	188,491,700	-2.7
Texas	1,937	2,279	10.53	9.57	330,851,514	300,735,755	-9.1
Midwestern States							
Illinois	661	888	3.85	4.00	120,969,643	125,623,444	3.9
Indiana	317	371	1.72	1.56	54,026,680	48,986,132	-9.3
Iowa	125	152	0.63	0.61	19,703,423	19,231,441	-2.4
Michigan	488	635	2.84	2.85	89,138,280	89,610,392	0.5
Minnesota	171	230	0.97	0.97	30,626,504	30,626,504	0.0
Ohio	602	708	3.30	3.28	103,803,316	103,152,819	-0.6
Wisconsin	248	304	1.38	1.31	43,504,958	41,271,821	-5.1

group. For one of the seven Midwestern states, there would be no difference; four would see small changes, and two would be fairly substantial losers.

The adjusted measure of need discussed here represents only one component of a complex allocation formula and process. Such a change rarely occurs alone; it is more likely to take place in the context of other changes to formulas or policies. Adjusting poverty thresholds for geographic differences in the cost of living would clearly be a complex statistical activity, and because relevant data are currently limited, it might well result in erroneous poverty classifications. These issues, however, are subject to empirical resolution. The question of how to resolve the differences between gainers and losers if such a change were implemented is less easily answered. The consequences within the Midwestern regional grouping alone reveal how complex might be the political and policy processes of revising the poverty measure.■

[1] C. Citro and R. Michael, *Measuring Poverty: A New Approach* (Washington, D.C.: National Academy of Sciences, 1995).

[2] The experimental measure does include a few other differences, but analyses including the official measure, this experimental measure, and another experimental measure that did not include the geographic adjustment showed that the regional adjustment is by far the major contributor to state-level differences in the proportion of people in poverty.

[3] K. Short, "Where We Live: Geographic Differences in Poverty Thresholds," Poverty Measurement Working Paper, U.S. Census Bureau, Washington, D.C., January 2001.

[4] Also in 1995, the General Accounting Office (GAO, now the Government Accountability Office) explored the feasibility of methods of adjusting poverty thresholds for geographic cost-of-living variance. From a long list, only three were considered even moderately promising. U.S. General Accounting Office, *Poverty Measurement: Adjusting for Geographic Cost-of-Living Differences*, GAO/GGD-95-64, March 1995.

[5] K. Short, *Experimental Poverty Measures: 1999*, Current Population Report P60-216, U.S. Census Bureau, Washington, D.C., 2001.

[6] Section 8 housing vouchers subsidize rent so that low-income families can afford decent and safe housing. The family pays 30 percent of its income toward rent and utilities, and a subsidy paid to the landlord covers the rest. Income eligibility limits for the voucher program are set as percentages of the local area median income. Difficulties with the FMRs are summarized in Nelson, "Geographic Adjustments."

[7] A report on poverty from the Census Bureau explored six alternative poverty measures based on the NAS panel's recommendations. Three of them are adjusted for regional differences in housing costs although they differ in their treatment of medical costs. B. Proctor and J. Dalaker, *Poverty in the United States: 2002*, Current Population Report P60-222, U.S. Census Bureau, Washington, DC, 2003.

[8] The national poverty rate is 0.9 percentage points lower under the official measure than under the geographically adjusted measure; even factoring this in, the differences are still large.

[9] The national poverty rate for this group is 15.1 percent under the official definition and 13.1 percent under the geographically adjusted definition.