

Tiering's Targeting Efficiency

Many programs, including the child care center component of the CACFP, direct benefits to low-income people on a household-by-household basis, using a means test to determine the income eligibility of each beneficiary. The tiering policy for the child care homes portion of CACFP mandated in the PRWORA is an indirect mechanism for approximating the same result. By classifying family child care homes based on their location or the provider's household income, tiering is intended to direct the higher subsidy levels mainly to low-income children. Because any approximation cannot be expected to place all low-income children in Tier 1 homes, the policy includes the fall-back provision that Tier 2 providers may receive meal reimbursements at the Tier 1 rate for meals served to children from families who have been determined by the provider's sponsor to have incomes at or below 185 percent of the Federal poverty guidelines.

The analysis below examines the extent to which the tiering mechanism actually placed low-income children in Tier 1 homes and higher-income children in Tier 2 homes. It shows that tiering has been very effective in placing low-income children in Tier 1 homes, with 88 percent of low-income children so classified. Another 7 percent of low-income children are in Tier 2 homes that receive some meal reimbursements at the higher rate, indicating that only about 5 percent of low-income children in the CACFP do not have their meals subsidized at the higher rate. Tiering is less effective at limiting the higher reimbursement rate to low-income children. More than half of the participating children with household incomes above 185 percent of the poverty guideline are in Tier 1 homes.

Sensitivity of the Tiering Mechanism

Sensitivity is a measure of how fully a program captures the population subgroup it is meant to reach. In this case, tiering targets low-income children, so the sensitivity measure is the share of low-income children participating in the CACFP whose meals are reimbursed at Tier 1 rates.

In principle, the policy allows all participating low-income children's meals to be reimbursed at Tier 1 rates. If that occurred in practice, the tiering mechanism would be 100-percent sensitive. As it turns out, some low-income children receive meals that are not reimbursed at Tier 1 rates. These are children in Tier 2 homes in which either the provider has elected not to have the sponsor assess the income level or qualifying assistance program participation of the children's families, or the child's parents declined to report their family income or qualifying assistance program participation to the provider's sponsor.

Survey data analysis shows that the tiering mechanism is very sensitive—that is, the overwhelming majority of low-income children in the CACFP are served meals that are reimbursed at Tier 1 rates. The key factor is that 88 percent of low-income children are cared for by Tier 1 providers, who are always reimbursed at Tier 1 rates, as shown in Exhibit 5. This is a minimum or lower-bound measure of tiering's in-practice sensitivity.

In addition, some low-income children in Tier 2 homes had their meals reimbursed at the Tier 1 rate. This number cannot be measured precisely because sponsors are not permitted to tell their Tier 2 providers which children in their care qualify for Tier 1 reimbursement. The analysis therefore focuses on those low-income children who are in the care of Tier 2 providers who said in the survey that they receive some meal reimbursements at the higher rate. This amounts to 55 percent of all low-income children in the care of Tier 2 providers, or 6.8 percent of all low-income children. If all

of these low-income children receive meals reimbursed at the Tier 1 rates, then 95 percent of CACFP low-income children would have their meals subsidized at that higher level.

The 95-percent estimate must be considered somewhat imprecise. It may slightly underestimate the true share if some of the low-income children cared for by Tier 2 providers who were not sure about or did not report their meal reimbursement status actually received some Tier-1-reimbursed meals. The estimate may be somewhat high if some of the providers who reported higher reimbursements did not receive those reimbursements for all of the children shown by the survey to be low-income. Nonetheless, an in-practice sensitivity measure no lower than 88 percent, and probably in the neighborhood of 95 percent, indicates that the tiering mechanism is very effective at having low-income children’s meals reimbursed at Tier 1 rates.

Specificity of the Tiering Mechanism

Specificity is the complementary concept to sensitivity. A specificity measure indicates how effectively a program or benefit is limited to that population to which it is targeted. In this case, specificity is measured as the share of higher-income children participating in the CACFP that have their meals reimbursed at Tier 2 rates. If the targeting mechanism were to have perfect specificity, 100 percent of participating higher-income children’s meals would be reimbursed at Tier 2 rates and none at the Tier 1 rates.

In contrast to the tiering mechanism’s extremely high sensitivity, it has only moderate specificity. The survey analysis indicates that 42 percent of higher-income children participating in the CACFP are cared for by Tier 2 providers, and therefore have their meals reimbursed at the lower Tier 2 rates (Exhibit 5). Since no children in Tier 1 homes are reimbursed at the lower rate, 42 percent is the full value of the specificity measure.

Moderate specificity means that the tiering mechanism does not tightly exclude higher-income children from the higher Tier 1 reimbursement rates. More than half of all higher-income children participating in the family child care portion of the CACFP are served by Tier 1 homes and receive meals reimbursed at the Tier 1 rates.

Exhibit 5
Income Status of Children by Tier of Their CACFP Child Care Providers

Provider status	Child’s Household Income			Total
	Low ^a	Higher	Not Reported	
Tier 1	87.7%	58.5%	58.5%	68.9%
Tier 2:				
Some Tier 1 reimbursement	6.8	9.7	16.4	8.8
No Tier 1 reimbursement	5.6	31.8	25.1	22.3
Unweighted sample	296	855	33	1,184

^a Income at or below 185% of Federal poverty guideline.

Utilization of the Various Tier 1 Classification Criteria

Sponsors may classify a provider as Tier 1 based on any one of three criteria: residence in a low-income census block group area; residence in a low-income elementary school attendance area; and low income of the provider household, regardless of where it is located.

Residence in a low-income elementary school attendance area is by far the most common criterion by which providers have been classified as Tier 1. Sponsor-provided data indicate that more than two-thirds of the Tier 1 homes in the study (68 percent) were qualified by this criterion, as shown in Exhibit 6. Low provider income, although it was the second most commonly used criterion, was reportedly the qualifying method for just 17 percent of providers. Residence in a low-income census block group was very infrequently used to qualify homes as Tier 1, with only 2 percent of Tier 1 providers reportedly qualified on this basis. This low usage reflects FNS regulations that instruct sponsors to use the census block method only when busing, wide geographic coverage of rural areas, or other anomalies make the elementary school data less representative of the provider's location. Because sponsors provided no information on the qualifying criterion for 13 percent of the Tier 1 homes, it is likely that these figures understate somewhat the true proportions qualified by each criterion.¹⁴

The number of children in Tier 1 homes is split among the homes qualified by the different methods in parallel to the proportion of homes qualified by each method, with only small differences resulting from differences in the average number of children per provider. Tier 1 homes that qualified because they were in a low-income elementary school attendance area served a significantly higher percentage of low-income children than homes qualifying on the basis of low provider income (44 vs. 33 percent).

Exhibit 6
Utilization Characteristics of the Three Tier 1 Qualifying Criteria

	School Attendance Area	Provider Household Income	Census Block Group	Qualifying Criterion Not Reported
Tier 1 providers qualified by the criterion	68.4%	16.8%	2.1%	12.7%
Children in Tier 1 homes qualified by the criterion	69.4	18.8	0.9	10.8
Low-income children as a share of all children in Tier 1 homes qualified by the criterion	44.7	33.2	75.3 ^a	73.2

^a Percentage calculated for all homes that would qualify as Tier 1 by this criterion, because the number of cases actually qualified as Tier 1 on this basis is too small to permit separate estimation.

¹⁴ In addition, 4 percent of providers were reported by their sponsor to have been qualified on both the low-income school attendance area and low household income criteria. Sponsors are only required to report one qualifying criterion to their State agency even if a sponsor qualifies on multiple criteria. The double-reported cases are counted as being qualified by school attendance area in this analysis.

Sensitivity and Specificity of the Three Tier Classification Criteria

To understand better how each of the three tier classification criteria contributes to the overall policy result, it is useful to examine separately each criterion's sensitivity and specificity. Ideally, the analysis measure for each provider in the sample would be whether or not the provider met each of the three criteria. Such measures are available for all sample members for two of the three criteria: provider income (based on survey questions) and percentage of low-income children in the census block group (based on providers' 1999 addresses).

More limited data are available for the third criterion, the percent of children qualifying for free and reduced-price lunches in the elementary school attendance area in which the provider resides. Of the 20 States in the study sample, 14 have data available on the percent of children qualifying for free and reduced-price lunches in specific elementary schools.¹⁵ In those 14 States, two proxies for residence in a low-income elementary school attendance area were created. As a broadly defined proxy, a provider was considered to be living in a low-income elementary school area if *any* one of the elementary schools with the provider's zipcode had 50 percent or more of its children receiving free or reduced-price school lunches. As a more narrowly defined proxy, a provider was considered to be living in a low-income elementary school area if *all* the schools with the provider's zipcode had 50 percent or more of their children receiving free or reduced-price lunches.

These independent measures of elementary schools' low-income status were constructed for 70 percent of the overall weighted sample of providers and 67 percent of the overall weighted sample of children, the slight difference again arising from a slightly lower average number of children cared for per provider in the 14 States compared with the overall 20 States. The measures were calculated for all sample members in the 14 States regardless of whether the sponsor reported classifying the provider as Tier 1 on the basis of elementary school attendance area. Because CACFP regulations indicate that this is normally the first criterion to be considered, most providers who could be classified as Tier 1 because they reside in a low-income elementary school attendance area are likely to be reported by the sponsor as having qualified on those grounds. However, the sponsor measure may understate the true proportion of providers that live in low-income school areas because sponsors did not report their qualifying methods for all providers.

Exhibit 7 shows sensitivity and specificity measures for the three classification criteria. The top panel includes the full sample, using the sponsor's reported classification as the basis for deciding whether the provider would meet the elementary school attendance area criterion. The middle panel uses the same measures but limits the analysis to the 14 States for which the independent measures of elementary school low-income status are available. The bottom panel is also limited to the 14 States and uses the independent measures of elementary school low-income status to show the ranges of sensitivity and specificity between the broad and narrow definitions of that status.

Among the three criteria, elementary school attendance area and provider low income are more sensitive than the low-income census block group criterion. The difference in sensitivity between the elementary school and census block group criteria is statistically significant. The ranking is

¹⁵ The school data are from the U.S. Department of Education, National Center for Educational Statistics, Public Elementary/Secondary School Universe Survey Data, school year 1997-98. Elementary schools were selected from the universe as those schools having a lowest grade of 5 or lower.

Exhibit 7
Sensitivity and Specificity of the Three Classification Criteria, Singly and in Combination

	Percent of Providers Who Would Qualify	Percent of Low-Income Children Who Would Be Included (Sensitivity)	Percent of Higher-Income Children Who Would Be Excluded (Specificity)
All States, elementary school qualification based on sponsor report:			
Single criterion			
Qualified for Tier 1 on elementary school area basis	46.7%	60.0%	58.4%
Survey measure of low-income provider	41.2	55.4	68.2
Low-income census block group residence	15.6	32.2	94.1
Either of two criteria			
Qualified elementary school area or survey provider income	65.3	85.3	39.0
Qualified elementary school area or census block group	51.5	75.2	56.0
Survey provider income or census block group	46.9	62.0	65.2
Any of three criteria			
Qualified elementary school area or survey provider income or census block group	67.6	86.5	37.5
14 States, elementary school qualification based on sponsor report:			
Single criterion			
Qualified for Tier 1 on elementary school area basis	56.4%	56.3%	54.1%
Survey measure of low-income provider	36.6	53.1	69.4
Low-income census block group residence	17.2	33.1	93.3
Either of two criteria			
Qualified elementary school area or survey provider income	73.9	84.7	36.4
Qualified elementary school area or census block group	60.6	73.9	51.8
Survey provider income or census block group	42.1	58.2	66.3
Any of three criteria			
Qualified elementary school area or survey provider income or census block group	74.8	85.3	35.6
14 States, independent measures of elementary school low-income status^a:			
Single criterion			
Estimates of low-income elementary school areas	25.9-73.1%	46.4-85.3%	78.4-32.1%
Survey measure of low-income provider	48.5	53.5	68.3
Low-income census block group provider residence	18.8	33.7	93.3
Either of two criteria			
Estimated elementary school areas or survey provider income	50.4-83.1	61.2-91.1	58.5-24.3
Estimated elementary school areas or census block group	36.3-73.8	53.7-85.6	74.4-31.2
Survey provider income or census block group	53.8	59.9	64.9
Any of three criteria			
Estimated elementary school areas or survey provider income or census block group	53.7-83.5	65.8-91.4	55.9-23.9

^a The first percentage in the ranges of percentages shown for low-income elementary school areas is based on provider location in a zipcode area with **all** low-income schools, the second percentage is based on provider location in a zipcode area with **any** low-income school.

about the same with the independent elementary school measures, if the mid-point between the broad and narrow definitions is used in the comparison. The narrow definition restricts the number of

qualifying providers to a much lower number than the number given Tier 1 status on that basis by their sponsors while the broad definition qualifies many more providers on this basis than sponsors do. The number of providers who actually live in qualifying elementary school areas is probably larger than the narrow definition allows, but smaller than the broad definition allows, and probably not far from the number sponsors have defined as living in such areas.

As is often the case when program policies are subjected to sensitivity and specificity tests, those indicators of the tiering mechanisms' policy fit are inversely related. Low-income census block residence has the highest specificity rating, as over 90 percent of higher income children are not served by providers in these areas. Provider low income and low-income elementary school have significantly lower specificity ratings, 68 percent at best.

Survey data suggest that many sponsors approach the tier classification process in a hierarchical manner, considering elementary school area first, provider income second, and census block group third. The first stage of this process would classify about half of providers as Tier 1, which would put about 60 percent of low-income children in Tier 1 homes, and exclude about an equal percentage of higher-income children from Tier 1. The second stage, which considers providers' low-income status, would classify about another 20 percent of providers as Tier 1, bringing the percentage of low-income children placed in Tier 1 up to about 85 percent, and causing specificity to drop below 40 percent—both statistically significant changes. The final stage, including providers in low-income census block groups, changes very little. It adds a further 2 percent or so of providers to Tier 1, places about 87 percent of low-income children in Tier 1 homes, and leaves specificity still essentially unchanged at around 38 percent.

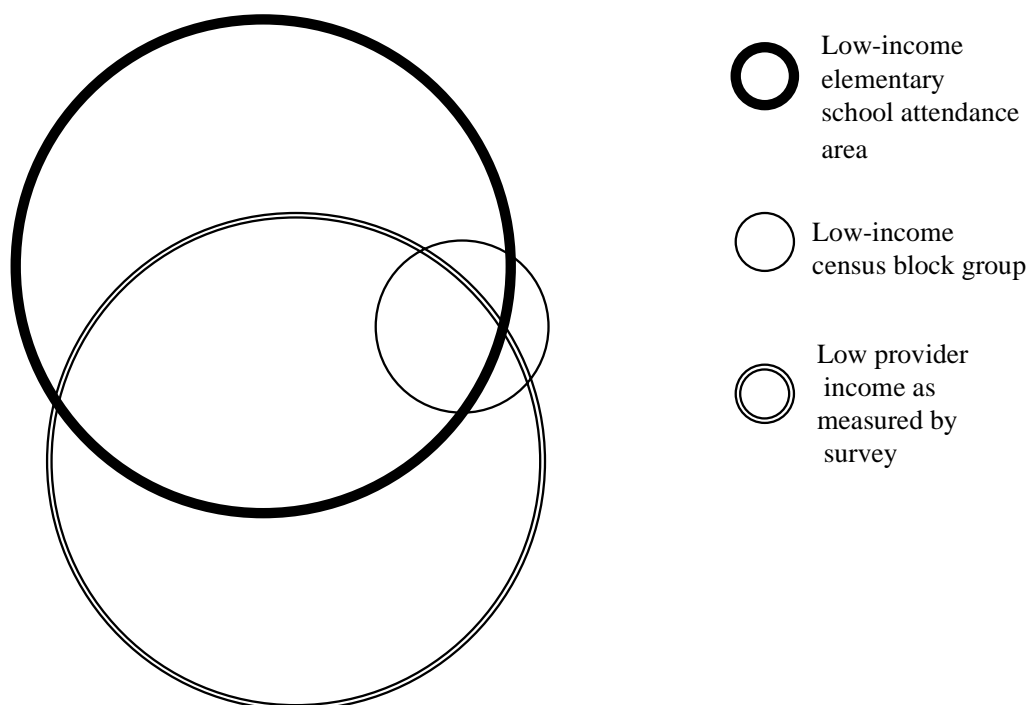
Overlaps Among the Classification Criteria

The three classification criteria overlap substantially in terms of the providers whom they would classify as Tier 1. Nonetheless, both low-income elementary school and provider low income make substantial independent contributions to the overall Tier 1 classification. Roughly a third of providers qualify for Tier 1 based on their elementary school attendance area (either sponsor-defined or defined by the independent measures in the 14 States), but not on the other two criteria. Roughly one quarter of providers would qualify only on the basis of their own low income.

The low-income census block group criterion has the greatest overlap with the other two. About 2 percent of providers would be classified as Tier 1 only on the basis of their census block group location. These relationships among the classification criteria are graphically illustrated in the Venn diagram in Exhibit 8.

Exhibit 8

Overlap of Tier 1 Provider Qualifying Methods



Note: The area of the circles is proportional to the included population; the area of the overlap is approximate.

Tier 1 Reimbursements for Tier 2 Providers

Tier 2 providers may ask their sponsors to determine the eligibility of children in the provider's care for meal reimbursements at the Tier 1 rates. This "safety net" provision is designed to allow low-income children who are not served by a Tier 1 provider to receive meals reimbursed at the higher level. Because children's eligibility is determined individually, it is reasonable to assume that the specificity of this mechanism is almost 100 percent—that is, practically all higher-income children in Tier 2 homes have their meals reimbursed at the Tier 2 rate rather than the higher Tier 1 rate. The sensitivity of the mechanism is not predictable, however, because it depends on whether providers ask their sponsors to determine the children's eligibility and, if so, whether the children's parents supply the information that sponsors request.

Asked whether they received higher reimbursement for any children in their care, 23 percent of Tier 2 providers answered that they did (73 percent answered that they did not and 4 percent said they did not know or failed to answer the question). This is reasonably consistent with national administrative data, which indicate that 28 percent of all Tier 2 providers participating in March-June 1999, had some meals reimbursed at the higher level.

The low-income children in the care of providers reporting some Tier 1 reimbursements comprise 56 percent of all low-income children served by Tier 2 providers. Thus, 56 percent is a rough estimate of the sensitivity rate of the safety net mechanism. The true rate could be higher if some of the uncertain or nonreporting providers actually receive some Tier 1 reimbursements.

The providers reporting some Tier 1 reimbursements have substantial proportions of low-income children. About 27 percent of the children in their care are low-income. In contrast, the providers who said they received no Tier 1 reimbursements had only 9 percent low-income children, a statistically significant difference. (For purposes of comparison, 45 percent of children in Tier 1 homes are low-income.)

The relatively high proportion of low-income children served by the Tier 2 providers receiving some Tier 1 reimbursements raises the question of whether some of these providers might actually qualify as Tier 1 but are erroneously classified. The study cannot answer this question precisely, however, because the information available to sponsors is likely to be more accurate than the measures used here (for example, the information that sponsors use to determine provider income is considerably more detailed than that obtained in the survey). Among the Tier 2 providers reporting that they receive some Tier 1 reimbursements, 19 percent had low income as measured by the survey, 2 percent resided in low-income census block groups, and about 32 percent (of those for whom school area information is available) resided in low-income school areas. These figures are much lower than the corresponding figures for Tier 1 providers (59, 23, and about 60 percent, respectively), suggesting that there is no widespread failure to apply the Tier 1 qualifying criteria.