ADJUSTED POVERTY MEASURES AND THE DISTRIBUTION OF TITLE I AID: DOES TITLE I REALLY MAKE THE RICH STATES RICHER?

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Abstract

Federal and state governments in the United States make extensive use of student poverty rates in compensatory aid programs like Title I. Unfortunately, the measures of student poverty that drive funding allocations under such programs are biased because they fail to reflect geographic differences in the cost of living. In this study, we construct alternative poverty income thresholds based on regional differences in the wage level for low-skilled workers. We then examine the distribution of Title I revenues after adjusting poverty rates for geographic differences in the cost of living and adjusting Title I revenues for geographic differences in the purchasing power of school districts. Our findings turn conventional wisdom on its head. We find that when we fully adjust for regional differences, Title I funding patterns disproportionately favor rural school districts in low cost-of-living states. We conclude with policy recommendations for revising Title I funding formulas.

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INTRODUCTION

Federal and state governments in the United States make extensive use of student poverty rates as indicators of educational need and subsequent drivers of educational funding.[1] The federal government uses Census Bureau estimates of poverty in distributing Title I funds, for example. And thirty-four states distribute categorical funds or additional dollars using student weights that are based on measures of student poverty, such as the share of students eligible for free or reduced price lunches under the National School Lunch Program (Verstegen and Jordan 2009).

Unfortunately, the measures of student poverty currently used for policy making (and policy analysis) are geographically biased. Despite well-recognized differences in the cost of living from one state to another or from one city to another within a state,[2] the income thresholds currently used to determine the numbers of students living in households that are below the poverty level are not adjusted in any way for regional differences in the cost of living. That is, the current counts of students living in poverty, which are regularly used to determine how educational and other public dollars are distributed, do not reflect any adjustment for regional differences in the cost of living. For instance, the U.S. Census Bureau produces the Small Area Income and Poverty Estimates (SAIPE) for school districts using a set of income thresholds that increase with family size but are the same in rural Alabama as in New York City.[3] Meanwhile, the share of students eligible for free or reduced price lunches, a proxy for student poverty that is commonly used in both research and policy, depends on the same set of nationwide income thresholds as are used to produce the SAIPE for school districts.[4]

The potential measurement problems arising from a lack of regional cost of living adjustments in the poverty estimates are obvious.[5] Poverty rates are intended to measure the share of families living at or below a designated

1. Rothstein (2004) provides extensive documentation of the link between student achievement and poverty, and numerous studies (see, e.g., Gronberg et al. 2004, 2005; Duncombe and Yinger 2005; Baker 2006, 2009; Gronberg, Jansen, and Taylor 2011) have documented the higher cost of education for economically disadvantaged (i.e., low-income) students.
2. For example, Renwick (2009) estimates there is a 41 percent differential in the cost of living between metropolitan areas of California and Iowa, and 43 and 32 percent differentials in the cost of living between metropolitan and non-metropolitan areas within California and Iowa, respectively. These cost of living differences produced by Renwick are based on the Regional Price Parities index that represents geographic differences in the prices of goods for the entire consumer basket of goods and services.
3. For the official definition of poverty, visit www.census.gov/hhes/www/poverty/poverty.html.
4. Students are also deemed eligible for the school lunch program if they are foster children, runaways, homeless, migrant, or otherwise categorically eligible (see USDA 2012).
5. This flaw in the way poverty is currently measured has been well recognized (see, e.g., Renwick 2009, 2011; Bartlett 2011; Short 2011; Marks et al. 2010). The issue has even been introduced into political debate (see, e.g., the testimony of Douglas Besharov before Congress in support of the Measuring American Poverty Act; Besharov 2007).

standard of living. A family with the poverty threshold level of income ($22,113 for two parents and two children in 2010) would be more able to buy more goods and services—and therefore maintain a higher standard of living—in a low cost-of-living state like Iowa, however, than in a high cost-of-living state like California. As a result, the current regime, with its fixed poverty thresholds, tallies relatively too many children as living in poverty in states or regions with relatively low cost of living. The reverse is true in states or regions with relatively higher cost of living.

The implications of this measurement error for education policy are large, and frequently overlooked. Most of the discussion about the bias in the poverty numbers naturally focuses on the implications for anti-poverty programs like the Supplemental Nutrition Assistance Program (SNAP), Temporary Assistance for Needy Families (TANF), or Medicaid. Key education policies are also affected. The question raised in this study is: What would be the implications for the distribution of federal poverty-based education aid if we regionally adjusted the current poverty statistics reported by the U.S. Census Bureau to better reflect differences in the *real* (i.e., cost-adjusted) incidence of student poverty?

THE LINK BETWEEN STUDENT POVERTY STATISTICS AND TITLE I

Title I is the largest educational grant program in the United States, and is specifically designed as a source of compensatory funding for low-income children. In 2011–12, the U.S. Department of Education appropriated $14.5 billion in federal aid through the Title I program (USDOE 2012).

There are four components to the Title I funding formula.[6] The first two components, Basic grants and Concentration grants, allocate funding to each school district based on Census Bureau estimates of the number of children in poverty (i.e., the SAIPE) and the average per-pupil expenditure in the state.[7] The higher the average per-pupil expenditure in the state, the larger is the Title I allocation. Each of these two components allocates a constant dollar amount per child in poverty within each state, but school districts must have at least 15 percent of the children in poverty to receive a Concentration grant. Basic and Concentration grants constituted roughly 54 percent of Title I funding in 2012 (USDOE 2012).

Targeted Assistance grants are the third component of the Title I formula. Targeted Assistance grants provide funding to school districts that increases as the share of children in poverty increases and as average per-pupil expenditure

6. Information on the structure of Title 1 funding comes from USDOE (1965).
7. The counts of children in poverty also include children in certain institutions for neglected or delinquent children and youth or in certain foster homes, and children in families receiving TANF payments above the poverty income level for a family of four (Riddle 2011).

in the state increases. As a result, districts with a higher share of students in poverty receive larger Targeted Assistance grants per pupil than districts with a smaller share of children in poverty. As with the Basic and Concentration grant programs, the only determinants of school district aid are the state average expenditure per pupil and the estimated number of students in poverty. Targeted Assistance grants constituted approximately 23 percent of Title I funding in 2012.

The remaining 23 percent of Title I funding comes from Education Finance Incentive grants (EFIG), which depend not only on the number of children in poverty and the state average per-pupil spending, but also on (1) a measure of state fiscal effort (the percentage of per-capita income spent on elementary and secondary education, relative to the national average) and (2) a measure of state school funding equity (a weighted coefficient of variation in district per-pupil expenditures, wherein children in poverty have a greater weight than other children.[8] States with higher fiscal effort receive larger EFIG allocations than other states. Meanwhile, states with lower funding equity (i.e., those with a higher weighted coefficient of variation) receive smaller EFIG allocations than other states, and the EFIG allocations are distributed more progressively within. The equity factor does not take state efforts at compensatory education into account, so that a state where all of the districts had equal expenditures per pupil would be deemed more equitable (and receive more Title I funding) than a state where all of the low-poverty districts had equal expenditures per pupil, and all of the high-poverty districts had higher expenditures per pupil. More importantly, the equity factor does not take regional differences in the cost of education into account, so states that equalized nominal expenditures would be deemed equitable, and states that adjusted nominal expenditures to perfectly equalize the purchasing power of school districts would be deemed inequitable.

Perceived flaws in the design of the Title I funding formulas have drawn considerable attention lately (Carey and Roza 2008; Liu 2007, 2008; Miller 2009a; Miller and Brown 2010a, b). Critics believe that Title I funding is wrongly targeted because distribution of EFIG funding tends to favor wealthy states and larger urban districts.[9] In other words, the critics argue that Title I funding makes rich states richer by allocating disproportionate funding to states that have greater fiscal capacity, and that Title I funding favors large

8. School districts with fewer than 200 students are not included when calculating the weighted coefficient of variation.

9. Additional criticisms of Title I funding point to the fact that three of the four formulas used to allocate dollars do not take into account state fiscal effort and state-minimum provisions guarantee relatively large allocations to states with small populations (see Miller 2009b).

districts in urban areas over comparably poor small districts in rural areas (Liu 2007, 2008; Miller 2009a; Miller and Brown 2010a, b).

In a frequently cited work, Liu (2008) examined regional disparities in the Title I funding formulas. His work focused on the relationship between Title I funding allocations, school district size, and state poverty rates. His analysis adjusted Title I funding for regional differences in the cost of education using the National Center for Education Statistics Comparable Wage Index (NCES-CWI), but did not similarly adjust the poverty rates for regional differences in the cost of living. He concluded that (1) "By allocating aid to states in proportion to state per-pupil expenditures, Title I reinforces vast spending inequalities between states to the detriment of poor children in high-poverty jurisdictions," and (2) "small or mid-sized districts that serve half or more of all poor children in areas of high poverty receive less aid than larger districts with comparable poverty" (Liu 2008, p. 973). Liu's article and related papers laid the groundwork for numerous other policy briefs to follow (Miller 2009a, Miller and Brown 2010a, b).

In this study, we extend Liu's analysis to control not only for regional differences in the cost of education, but also for regional differences in the poverty thresholds. In the first part of our analysis, we construct alternative poverty measures based on regional differences in the prevailing wage for workers with the typical characteristics of the working poor. In the second part of our analysis, we use national data on all school districts from 2007–08, 2008–09, and 2009–10 to estimate the average Title I revenues per student in poverty after adjusting poverty rates for geographic differences in the cost of living and adjusting Title I revenues for geographic differences in the cost of education. We evaluate the distribution of cost-adjusted Title I funding per child in poverty by state and by locale within-state, and find that disparities do exist. Our analysis, however, turns conventional wisdom on its head. We find that when we fully adjust for regional differences, Title I funding patterns disproportionately favor rural school districts in low cost-of-living states. We conclude with policy recommendations for revising Title I funding formulas.

CONSTRUCTING ALTERNATIVE POVERTY MEASURES

We follow a three-step strategy for constructing alternative poverty measures for all school districts in the contiguous lower forty-eight states. In the first step, we estimate the prevailing wage for individuals with the typical characteristics of the working poor in various labor markets across the United States. We use those wage levels as our best estimates of the income thresholds for poverty for each labor market. In the second step, we used those adjusted income thresholds to recalculate child poverty rates for each labor market area. The final step is to use the difference between current and adjusted poverty rates

at the labor market level as a poverty adjustment factor to adjust school district level poverty rates for all districts located within each labor market. We discuss each step in turn.

Adjusting the Poverty Thresholds

Our approach to regional poverty adjustment uses hedonic wage analysis to adjust the poverty income thresholds for regional differences in the cost of living and the access to desirable local amenities (such as public services, good climate, low crime rates, quality schools, or access to shopping and medical facilities). Essentially, we presume that if the prevailing wage in Chicago for a worker with poverty-level characteristics is 10 percent above the national average, then the poverty income threshold in Chicago should also be 10 percent above the national average.

There are three reasons that we use differences in prevailing wage levels as our measure of regional differences in the cost of living rather than relying on a market basket approach as in Renwick (2009), Marks et al. (2010), or Short (2011). First, differences in the prevailing wage reflect not only differences in the price of food and shelter, but they also reflect any differences in important community characteristics, such as climate, crime rates, or public amenities (Roback 1982; Gyourko and Tracy 1989). As such, they provide a more complete measure of the income needed to maintain a reasonable standard of living in each community.

Second, market-basket approaches presume that all families choose the same bundle of goods and services in all locations. Using differences in the prevailing wage to measure regional differences in the cost of living allows for the possibility that families may choose a more modest dwelling in amenity-rich locations like San Francisco than they would choose in other parts of the country.

Finally, wage data are available for all parts of the country, making it possible to develop cost-adjusted poverty thresholds for labor markets throughout the forty-eight states under analysis.

We estimate the prevailing wage for the working poor using a hedonic wage analysis modeled after Taylor and Fowler's 2006 Comparable Wage Index (CWI). The Taylor-Fowler CWI measures the prevailing wage for college graduates in 800 U.S. labor markets. Our current analysis estimates the prevailing wage for workers who do not have a college degree. We take this approach because most of the population living below the poverty threshold does not have a college degree, and the geographic pattern of wages may be different for college graduates than for other workers.

Following Taylor and Fowler (2006), we used a maximum likelihood regression and data from the 2008, 2009, and 2010 American Community

Survey (ACS) to generate estimates of the annual wage and salary income of individuals who have at most an associate's degree. The dependent variable was the log of annual wage and salary earnings. The independent variables were age, age squared, the amount of time worked, and a series of indicator variables for gender, race, educational attainment, occupation-by-year interactions, and industry-by-year interactions.[10] In addition, the estimation includes an indicator variable for each labor market area and random effects by state.[11] Appendix table A.1 presents coefficient estimates and standard errors from the hedonic wage model.

As with the Taylor-Fowler CWI, we used the regression estimates to construct a Poverty-CWI.[12] The Poverty-CWI captures the differences in wage levels required to compensate workers for differences in the labor market specific attributes, such as the prices of goods, services, and other amenities (climate, crime rates, access to quality schools, medical facilities, parks, museums, etc.) associated with different regions within a state. The fact that individual wages not only contain information on the price levels of goods and services, but also capture the perceived amenities offered in different locations, distinguishes a comparable wage index from other cost indices based on a basket of goods (e.g., the familiar consumer price index or regional price parity rental prices). It is our use of labor market analysis that distinguishes this study from previous attempts (e.g., Renwick 2009, 2011) to adjust poverty rates for geographic differences in the "cost of living."

In effect, the Poverty-CWI provides an estimate of the differences in the total perceived cost of living in different regions/labor markets as reflected in labor market outcomes. The index is centered at 1.00 representing the national average, so that deviations from this figure denote how much more or less in percentage terms it costs to compensate workers to live and/or work in

10. The analysis also includes the interaction between gender and age to allow for the possibility that the relationship between age and earnings is different for women than for men.
11. The labor markets used to estimate our hedonic wage model and the NCES-CWI are based on "place-of-work areas" as defined by the Census Bureau. Census place-of-work areas are geographic regions designed to contain at least 100,000 persons. The place-of-work areas do not cross state boundaries and generally follow the boundaries of county groups, single counties, or Census-defined places (Ruggles et al. 2004). Counties in sparsely populated parts of a state are clustered together into a single Census place-of-work area. Each labor market in the CWI is either a single place-of-work area or a cluster of the place-of-work areas that constitute a metropolitan area. Whenever possible, Taylor and Fowler (2006) aggregated place-of-work areas in metropolitan areas to correspond to Core Based Statistical Areas (CBSAs). Place-of-work areas that straddled more than one CBSA were treated as separate labor markets. Because of differences between the Census and the ACS, our analysis includes 778 labor markets.
12. Thus, we calculate the least squares mean, or population marginal mean, for each labor market, and then divide each market-specific predicted wage by the national average predicted wage to yield the Poverty-CWI. This would be equivalent to identifying the demographic characteristics of the average person earning the poverty threshold annual income, and then predicting the wage for such a person in every labor market.

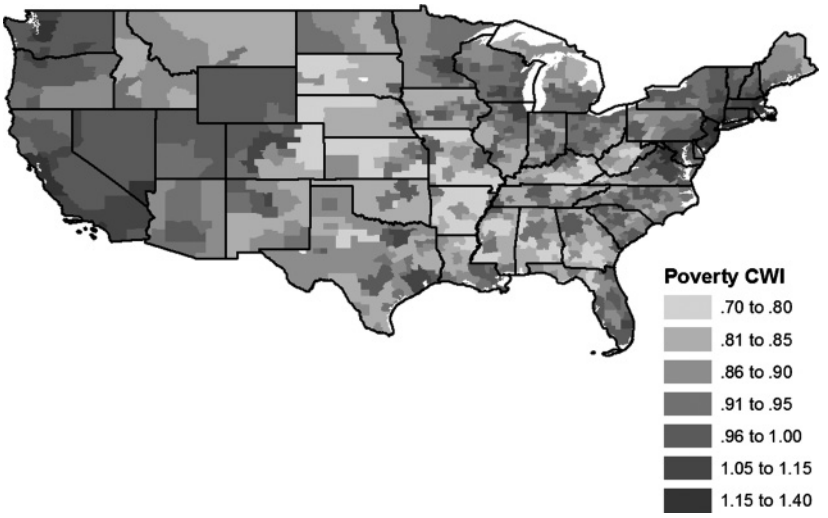

Figure 1. Nationwide Map of the Poverty Comparable Wage Index (CWI)

different labor markets. For example, a value for a given labor market of 1.25 indicates that it costs approximately 25 percent more than the national average to hire a comparable worker in this location, whereas a value of 0.75 indicates that it would cost 25 percent less than the national average to hire a similar staff person. Figure 1 provides a map of the Poverty-CWI across all counties in the mainland United States, with darker counties representing higher cost areas and lighter ones representing lower cost areas.

We next calculated the cost-adjusted poverty thresholds for each labor market by multiplying the Census poverty thresholds for each family configuration by the corresponding Poverty-CWI value for each labor market. There are different poverty thresholds for different family configurations. To be precise, there are forty-eight family configurations differentiated by overall size of family and number of children under the age of eighteen, each with its own unadjusted poverty threshold set by the Census. Because there are forty-eight existing family configuration-specific thresholds, there are forty-eight cost-adjusted poverty thresholds in each of the 778 labor market areas.[13]

Developing Poverty Adjustment Factors Using Unadjusted and Cost-Adjusted Poverty Counts

The second step uses the existing unadjusted (Census) poverty thresholds and the new cost-adjusted poverty thresholds to count the number of school-aged

13. A list of the forty-eight family configurations and the corresponding poverty thresholds for 2009 is provided in appendix table B.1.

children living in families below these levels in each labor market, according to the 2008, 2009, and 2010 ACS (the same data as were used to estimate the Poverty-CWI). The total number of children living in poverty within each labor market can thus be summed to provide the cost-adjusted and unadjusted poverty counts in each labor market.

The Poverty Adjustment Factor (PAF) is calculated for each labor market by taking the ratio of the cost-adjusted to unadjusted counts of students living in families in poverty. A PAF value greater than 1.00 indicates that the current unadjusted (Census) poverty rate for the given labor market underestimates the true incidence of poverty, whereas values less than 1.00 show the current unadjusted poverty measure overstates the true amount of poverty. For example, a PAF value of 1.15 indicates that the cost-adjusted poverty rate (the true relative poverty for a given labor market) is 15 percent higher than the unadjusted poverty rate, and a PAF of 0.85 indicates that the cost-adjusted poverty rate is 15 percent lower than the unadjusted poverty rate.

Table 1 summarizes the average PAFs across labor markets within regions (Regional Educational Laboratories) established for research purposes by the Institute of Education Sciences.[14] For the analyses herein as elaborated in the following section, we merge our poverty adjustment factors to school district level data, where school districts are clustered within labor markets. Ultimately, our intent is to discern the distribution of Title I resources to local education agencies, with respect to the estimated poverty rates in those local education areas and their location. The summaries in table 2 are based on local education area enrollment-weighted averages, using district-level enrollment data over the three-year period from 2008 to 2010.

On average, school districts within states belonging to the Northwest Regional Educational Laboratory have a poverty adjustment factor of 1.03. That is, the cost-adjusted poverty in districts in these states is, on average, three percent higher than the originally stated poverty. Districts in states in the Mid-Atlantic and Northeast regions experience the largest average cost adjustments to their poverty rates (12 and 13 percent, respectively) with the Western states close behind at 11 percent. Districts in the Southeast, Southwest, and Central (Plains/Mountain) have downward average cost adjustments to their poverty rates all on the order of 7 to 8 percent.

The expected pattern also holds for differences across locale within region. Whereas districts in northeastern metropolitan areas receive an average upward cost adjustment to their poverty estimates of 16 percent, districts in rural areas in those states receive an average downward adjustment of their poverty

14. A map of the Regional Educational Laboratories regions can be found at http://ies.ed.gov/ncee/edlabs/regions/.

Table 1. Regional and Locale Distributions of Poverty Adjustment Factors (PAF)

Region	Metropolitan	Micropolitan	Rural	Average Across Locales
Appalachia[a]				
Mean PAF	1.04	0.83	0.81	0.98
Standard Deviation	0.19	0.12	0.12	0.20
Central[b]				
Mean PAF	0.98	0.79	0.77	0.92
Standard Deviation	0.11	0.16	0.17	0.16
Mid-Atlantic[c]				
Mean PAF	1.14	0.89	0.83	1.12
Standard Deviation	0.15	0.14	0.11	0.17
Midwest[d]				
Mean PAF	1.04	0.86	0.82	1.00
Standard Deviation	0.10	0.12	0.12	0.13
Northeast[e]				
Mean PAF	1.16	0.94	0.89	1.13
Standard Deviation	0.14	0.07	0.13	0.16
Northwest[f]				
Mean PAF	1.07	0.89	0.87	1.03
Standard Deviation	0.14	0.13	0.12	0.16
Southeast[g]				
Mean PAF	0.95	0.84	0.81	0.93
Standard Deviation	0.08	0.11	0.10	0.10
Southwest[h]				
Mean PAF	0.97	0.75	0.73	0.93
Standard Deviation	0.11	0.13	0.13	0.14
West[i]				
Mean PAF	1.12	0.87	0.86	1.11
Standard Deviation	0.14	0.11	0.08	0.15
Average Across States				
Mean PAF	1.05	0.84	0.80	1.01
Standard Deviation	0.15	0.13	0.13	0.17

Notes: Each cell contains school district level enrollment-weighted average PAF across labor markets. Data from 2007–08, 2008–09, and 2009–10, U.S. Census Bureau Fiscal Survey of Local Governments, Elementary and Secondary School Finances (www.census.gov/govs/school/).
[a]Appalachia: Kentucky, Tennessee, Virginia, West Virginia.
[b]Central: Colorado, Kansas, Missouri, Nebraska, North Dakota, South Dakota, Wyoming.
[c]Mid-Atlantic: Delaware, Maryland, Pennsylvania, New Jersey.
[d]Midwest: Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, Wisconsin.
[e]Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont.
[f]Northwest: Idaho, Montana, Oregon, Washington.
[g]Southeast: Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina.
[h]Southwest: Arkansas, Louisiana, New Mexico, Oklahoma, Texas.
[i]West: Arizona, California, Nevada, Utah.

Table 2. State Poverty Rankings/Rates for the 48 Contiguous States and the District of Columbia, With and Without Adjustment, Sorted from Largest to Smallest Change

State	Unadjusted % Poverty (SAIPE)	Cost-Adjusted % Poverty	Change, %	Poverty Rank	Adjusted Poverty Rank
District of Columbia	28	32	5	2	1
Nevada	16	19	3	27	13
New York	18	21	3	18	5
New Jersey	12	14	3	42	31
California	18	20	2	17	6
Massachusetts	11	13	2	45	35
Maryland	10	12	2	48	40
Illinois	16	18	2	25	17
Connecticut	10	12	2	47	38
Washington	14	15	1	33	26
Rhode Island	16	17	1	26	23
Virginia	13	13	1	39	34
New Hampshire	9	9	0	49	49
Delaware	14	14	0	32	30
Wisconsin	14	14	0	35	32
Colorado	14	14	0	36	33
Pennsylvania	15	15	0	28	27
Vermont	12	11	0	43	42
Minnesota	11	11	0	44	43
Oregon	17	17	0	22	22
Arizona	20	20	0	14	7
Michigan	18	17	0	19	20
Ohio	18	17	–1	20	21
Utah	12	11	–1	41	44
Wyoming	11	10	–1	46	48
Indiana	17	16	–1	24	25
Georgia	20	19	–1	12	9
Florida	19	18	–1	16	19
Texas	22	21	–1	9	4
North Dakota	12	10	–1	40	47
North Carolina	20	18	–2	13	16
Nebraska	13	11	–2	37	45
Iowa	13	11	–2	38	46
Kansas	14	12	–2	34	39
Missouri	17	15	–2	23	28
Tennessee	21	19	–2	11	11

Table 2. Continued.

State	Unadjusted % Poverty (SAIPE)	Cost-Adjusted % Poverty	Change, %	Poverty Rank	Adjusted Poverty Rank
Maine	15	12	–2	31	37
New Mexico	24	21	–2	3	3
South Carolina	21	19	–2	10	14
Montana	17	15	–3	21	29
Idaho	15	12	–3	29	36
Alabama	22	19	–3	8	12
Louisiana	23	19	–3	5	8
Kentucky	22	19	–3	7	10
South Dakota	15	12	–3	30	41
West Virginia	23	19	–4	6	15
Oklahoma	20	16	–4	15	24
Mississippi	28	24	–4	1	2
Arkansas	23	18	–5	4	18

Note: Data from 2007–08, 2008–09, and 2009–10, U.S. Census Bureau Fiscal Survey of Local Governments, Elementary and Secondary School Finances (www.census.gov/govs/school/).

rates of 11 percent. The largest downward adjustments to poverty are found in rural labor markets in the Central and Southwestern states.

Nationally, the PAFs indicate that measured rates of child poverty are 5 percent too low in metropolitan areas, and 20 percent too high in rural communities, on average. As such, the PAFs clearly show that the geographic bias embedded in the SAIPE or the free and reduced price lunch statistics is large and economically meaningful.

Adjusting School District Poverty Rates

The final step of this part of the analysis applies the calculated PAF to the unadjusted poverty rates for each school district in the labor market.[15] This approach assumes that the relative (proportional) adjustment in the counts and proportions of students living in families below the poverty threshold are constant across districts within a given labor market. This assumption is necessary to apply the adjustments of poverty rates for jurisdictions such as districts, which are more granular than that at which the CWI and PAF are calculated (i.e., the labor market). Table 2 summarizes the state average

15. As with the CWI, school districts are matched to labor market areas based on the counties in which the school districts are located, as indicated in the NCES Common Core of Data (see http://nces.ed.gov/ccd).

poverty and adjusted poverty rates based on enrollment weighted calculations using district level data. The findings show that in states with high adjustment factors—states requiring higher nominal income to achieve comparable real poverty thresholds—average district-level poverty rates are adjusted upward by 2 to 3 percentage points. New Jersey, for example, goes from an average district poverty rate of 12 percent to an average district poverty rate of 14 percent. By contrast, states in regions where lower nominal incomes to achieve comparable real poverty thresholds experience reductions in estimated poverty of similar magnitude.

These seemingly subtle overall shifts in poverty lead to significant reshuffling of the rank order of states in terms of poverty. For example, New York State ranks eighteenth in unadjusted poverty, but it ranks fifth in cost-adjusted poverty. California, which ranks seventeenth in unadjusted poverty, ranks sixth after the cost adjustments are applied. Indeed, all of the states where the enrollment-weighted average PAF is greater than 1.00 experience an upward cost adjustment in both their poverty rates and their poverty ranks. Most states where the average PAF is less than 1.00 experience a downward adjustment in their poverty ranks. A few states, however, such as Georgia and Texas, experience a downward cost adjustment to their poverty rates but an upward adjustment in their poverty ranks.

EVALUATING THE DISTRIBUTION OF TITLE I FUNDING

Previous studies critiquing the distribution of Title I funding across states have relied on a single year of data (see Carey and Roza 2008; Liu 2008). We rely on the most recent three-year panel (2008 to 2010) of local public school district fiscal data from the U.S. Census Bureau's fiscal survey of local governments (F-33).[16] Using panel data ensures that our analysis is not distorted by one-time anomalies in the annual data.

Our analysis focuses specifically on the distribution of Federal Compensatory Aid to local public school districts. We evaluate the distribution of (1) Federal Title I Revenue per Enrolled Pupil, (2) Federal Title I Revenue per Pupil in Poverty, (3) Federal Title I Revenue per Pupil in Cost-Adjusted Poverty, and (4) Cost-Adjusted Federal Title I Revenue per Pupil Adjusted for Geographic Differences in the Cost of Education (NCES-CWI) using Cost-Adjusted Poverty. In order to present a relatively simplified summary of Title I revenues, we evaluate those revenues by state and region. Prior research suggests that rich Northeastern states, such as New Jersey, New York, or

16. Unfortunately, data on Title I expenditures were surprisingly inconsistent for districts in some states for certain years, requiring these states be eliminated from our analyses for the years in question. The following states were excluded for the following years: Georgia in 2008 and 2009, Ohio in 2008 and 2009, Kentucky in all three years, and North Carolina in 2008 and 2010.

Massachusetts, make out particularly well in Title I funding per pupil in need, whereas Southeastern states appear to be at a particular disadvantage.

Within each region, we also evaluate the distribution of Title I funding by locale, specifically by metropolitan, micropolitan, and rural or other areas within states and regions.[17] Prior research suggests the highest per-pupil allocations of Title I aid occur in districts in metropolitan areas, with lower allocations in micropolitan, and especially rural, districts. But again, these disparities might be moderated after accounting both for the lower of the Title I dollar in metropolitan areas and for the higher poverty rates after adjusting poverty-income thresholds.

Table 3 summarizes the average Title I expenditures per pupil in poverty, cost-adjusted for regional variation in the value of the Title I dollar per pupil in unadjusted poverty (as in Liu 2008), and with adjustments to both poverty and purchasing power. Viewing the unadjusted data on Title I funding per child in poverty, it would appear that the highest rates of Title I allocation are in Northeastern metropolitan area school districts (at $1,867 per child in poverty). By contrast, the lowest Title I allocations are in Appalachian micropolitan districts and Western state rural districts, at less than $1,220 per pupil. In other words, the unadjusted pattern of Title I expenditures is largely consistent with previous research findings.

When adjusting for differences in purchasing power (as in Liu 2008) the Title I funding landscape shifts. We find that the highest Title I allocations are in micropolitan districts in Central states and rural districts in Central, Western, and Northwestern states, and the lowest Title I allocations per child in poverty are in metropolitan areas in Western states.

Adjusting for differences in poverty thresholds but not for differences in school district purchasing power yields the third set of columns in table 3. Again, we find that Title I allocations are highest in micropolitan districts in Central states, and lowest in Western metropolitan areas, on average.

Taking the final step and adjusting not only the purchasing power but also the poverty rates, we find that the pattern uncovered by the purchasing power adjustments is amplified. The highest, by far, Title I allotments per child in poverty are in micropolitan and rural districts in Central states and the lowest

17. Metropolitan and micropolitan statistical areas (metro and micro areas) are geographic entities defined by the Office of Management and Budget for use by federal statistical agencies in collecting, tabulating, and publishing federal statistics. The term "Core Based Statistical Area" is a collective term for both metro and micro areas. A metro area contains a core urban area of 50,000 or more population, and a micro area contains an urban core of at least 10,000 (but less than 50,000) population. Each metro or micro area consists of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core (see http://www.census.gov/population/metro/).

Table 3. Title I Revenue Distributions by Poverty and Adjusted Poverty by Region (in Dollars)

	Title I District Revenue per Poverty Pupil			CWI Adjusted Title I District Revenue per Poverty Pupil			Title I District Revenue per Cost-Adjusted Poverty Pupil			CWI Adjusted Title I District Revenue per Cost-Adjusted Poverty Pupil		
Region	**Metro**	**Micro**	**Rural**	**Metro**	**Micro**	**Rural**	**Metro**	**Micro**	**Rural**	**Metro**	**Micro**	**Rural**
Appalachia[a]												
Mean	1,420	1,216	1,465	1,266	1,293	1,547	1,385	1,498	1,806	1,258	1,601	1,922
Standard Deviation	520	431	533	477	446	543	561	674	703	576	725	758
Central[b]												
Mean	1,343	1,686	1,620	1,324	1,929	1,872	1,403	2,218	2,208	1,396	2,562	2,577
Standard Deviation	701	1,040	1,319	729	1,133	1,488	812	1,463	1,967	875	1,701	2,316
Mid-Atlantic[c]												
Mean	1,665	1,470	1,700	1,397	1,514	1,804	1,483	1,708	2,081	1,260	1,768	2,211
Standard Deviation	988	684	619	825	714	654	888	912	896	784	976	961
Midwest[d]												
Mean	1,484	1,296	1,279	1,349	1,402	1,411	1,419	1,567	1,607	1,301	1,701	1,779
Standard Deviation	1,018	580	590	906	641	658	957	809	801	880	912	913
Northeast[e]												
Mean	1,867	1,514	1,526	1,501	1,592	1,680	1,610	1,639	1,858	1,311	1,725	2,059
Standard Deviation	1,021	973	1,233	790	1,009	1,415	865	1,049	1,789	718	1,095	2,096
Northwest[f]												
Mean	1,443	1,474	1,717	1,348	1,616	1,955	1,375	1,722	2,035	1,301	1,897	2,329
Standard Deviation	681	848	1,454	684	964	1,740	727	1,060	1,850	783	1,225	2,227

Southeast[g]												
Mean	1,418	1,339	1,402	1,360	1,435	1,540	1,510	1,645	1,794	1,454	1,770	1,979
Standard Deviation	417	471	534	403	514	584	453	634	737	460	710	838
Southwest[h]												
Mean	1,267	1,398	1,462	1,176	1,570	1,697	1,338	1,916	2,080	1,254	2,161	2,423
Standard Deviation	642	589	1,120	629	674	1,335	729	907	1,879	737	1,074	2,250
West[i]												
Mean	1,368	1,271	1,216	1,168	1,443	1,402	1,232	1,505	1,425	1,061	1,723	1,654
Standard Deviation	698	722	780	585	850	902	624	912	942	549	1,093	1,114

Notes: Each cell contains school district level enrollment-weighted averages. Data from 2007–08, 2008–09, and 2009–10, U.S. Census Bureau Fiscal Survey of Local Governments, Elementary and Secondary School Finances (www.census.gov/govs/school/).
Regional cost adjustment based on updated Education Comparable Wage Index for 2008 to 2010 (http://bush.tamu.edu/research/faculty/Taylor_CWI/).
[a]Appalachia: Kentucky, Tennessee, Virginia, West Virginia.
[b]Central: Colorado, Kansas, Missouri, Nebraska, North Dakota, South Dakota, Wyoming.
[c]Mid-Atlantic: Delaware, Maryland, Pennsylvania, New Jersey.
[d]Midwest: Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, Wisconsin.
[e]Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont.
[f]Northwest: Idaho, Montana, Oregon, Washington.
[g]Southeast: Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina.
[h]Southwest: Arkansas, Louisiana, New Mexico, Oklahoma, Texas.
[i]West: Arizona, California, Nevada, Utah.

Title I allotments are in districts in metropolitan areas in Western states. On average, Title I allotments in metropolitan areas in the Western states are less than half of the Title I allotment in rural areas of the Central, Mid-Atlantic, Northeast, Northwest, or Southwest regions. On average, within each region, districts in metropolitan areas have significantly lower cost-adjusted Title I funding per adjusted-poverty child than do micropolitan or rural districts. These findings run in stark contrast with those popularized in policy reports intended to influence Title I re-authorization.

Table 4 drills down to examine Title I allocations in six large, diverse states. Again, the pattern is clear. Unadjusted, Title I revenues per poverty pupil appear to favor metropolitan districts over rural ones in five of the six states. (Texas is the lone exception.) In stark contrast, fully adjusting the allocations reveals that current Title I policy actually strongly favors rural and micropolitan districts in all six states.

Furthermore, as table 5 illustrates, we find no evidence that Title I allocations are systematically lower for small districts than for large ones. If anything, our evidence suggests that once we fully adjust the allocations for regional differences there is either a negative correlation or no correlation between school district size and the Title I allocations per pupil.

CONCLUSIONS AND POLICY RECOMMENDATIONS

Our analysis demonstrates that it is feasible to estimate, with publicly available data, cost-adjusted poverty measures for all school districts in the nation. It also demonstrates that a failure to make adjustments for regional differences in the cost of living leads to inaccurate measures of the percentage of students who are really living below the poverty threshold. We show that adjusting the poverty thresholds to account for differences in the cost of living can have large effects on our perceptions of relative poverty. Absent adjustment, the child poverty rates in California and New York are the seventeenth and eighteenth highest in the nation, respectively, whereas after adjustment they are sixth and fifth.

Our analysis also casts considerable doubt on conventional wisdom suggesting that Title I over-subsidizes districts in rich states and larger districts in metro areas. We find that—if anything—Title I fails to adequately support economically disadvantaged students in metropolitan areas.

As such, our analysis suggests that the Title I formula components that have been heavily criticized, in particular the role of state average per-pupil expenditures in determining allotments, are not leading to demonstrably inequitable outcomes of the sort found in prior work. Although it seems illogical on its face to provide states with poverty-based funding according to their own level of spending, there is no doubt that Title I aid should account

Table 4. Title I Revenue Distributions in Selected Large Diverse States (in Dollars)

	Title I District Revenue per Poverty Pupil			CWI Adjusted Title I District Revenue per Poverty Pupil			Title I District Revenue per Cost-Adjusted Poverty Pupil			CWI Adjusted Title I District Revenue per Cost-Adjusted Poverty Pupil		
Region	**Metro**	**Micro**	**Rural**	**Metro**	**Micro**	**Rural**	**Metro**	**Micro**	**Rural**	**Metro**	**Micro**	**Rural**
California												
Mean	1,422	1,272	1,268	1,188	1,611	1,619	1,258	1,607	1,546	1,058	2,041	1,979
Standard Deviation	723	590	544	598	765	732	638	765	697	547	1,001	947
Florida												
Mean	1,444	1,373	1,371	1,379	1,585	1,703	1,510	1,869	1,955	1,446	2,165	2,434
Standard Deviation	310	268	448	285	329	556	306	461	752	300	577	947
Illinois												
Mean	1,577	1,293	1,273	1,313	1,390	1,366	1,378	1,517	1,561	1,153	1,635	1,679
Standard Deviation	1,128	500	531	922	554	584	970	628	677	810	704	750
New York												
Mean	1,949	1,479	1,562	1,524	1,550	1,659	1,649	1,621	1,674	1,305	1,700	1,779
Standard Deviation	975	635	613	693	626	658	783	658	676	595	655	727
Pennsylvania												
Mean	1,751	1,407	1,698	1,575	1,468	1,827	1,711	1,661	2,116	1,551	1,737	2,278
Standard Deviation	963	722	668	824	758	704	908	961	978	816	1,020	1,042
Texas												
Mean	1,166	1,388	1,564	1,045	1,595	1,825	1,189	1,982	2,309	1,076	2,291	2,706
Standard Deviation	511	499	1,454	478	590	1,745	562	884	2,523	557	1,089	3,031

Notes: Each cell contains school district level enrollment-weighted averages. Data from 2007–08, 2008–09, and 2009–10 U.S, Census Bureau Fiscal Survey of Local Governments, Elementary and Secondary School Finances (www.census.gov/govs/school/).
Regional cost adjustment based on updated Education Comparable Wage Index for 2008 to 2010 (http://bush.tamu.edu/research/faculty/Taylor_CWI/).

Table 5. Correlations Between School District Enrollment and Title I Revenue Distributions in Selected Large Diverse States

	Title I District Revenue per Poverty Pupil	CWI Adjusted Title I District Revenue per Poverty Pupil	Title I District Revenue per Cost-Adjusted Poverty Pupil	CWI Adjusted Title I District Revenue per Cost-Adjusted Poverty Pupil
California	0.0306	−0.0041	0.0025	−0.0287
Florida	0.1119	−0.0873	−0.1290	−0.2450
Illinois	0.0599	0.0290	0.0230	−0.0030
New York	0.0412	0.0173	0.0225	−0.0003
Pennsylvania	0.1034	0.0578	0.0322	−0.0061
Texas	−0.0545	−0.0835	−0.0834	−0.0989

Notes: Data from 2007–08, 2008–09, and 2009–10, U.S. Census Bureau Fiscal Survey of Local Governments, Elementary and Secondary School Finances (www.census.gov/govs/school/). Regional cost adjustment based on updated Education Comparable Wage Index for 2008 to 2010 (http://bush.tamu.edu/research/faculty/Taylor_CWI/).

for regional differences in the cost of education, and little doubt that current poverty measures fail to accurately reflect the geographic distribution of student need. A fair Title I funding formula that incorporated appropriate adjustments for geographic differences in the cost of education and in the poverty thresholds might still appear to favor "richer" states and school districts in large urban areas. A strong and positive correlation between fiscal capacity and Title I aid is not sufficient evidence that the Title I formulas are flawed.

There is other, more persuasive evidence that the existing Title I formulas are flawed. Our analysis demonstrates that the inaccuracy embedded in existing measures of student poverty is large and economically meaningful. Because Title I relies on biased measures of student need and fails to adjust for regional differences in the cost of education, it strongly favors school districts in low cost-of-living areas at the expense of school districts in high cost-of-living areas. Given that low-income minority students disproportionately attend school districts in high cost-of-living areas, this pattern is particularly disquieting.

Fortunately, it should be relatively straightforward to resolve the flaws in the Title I funding formulas. First, the baseline measure of student poverty should be changed to incorporate geographic differences in the cost of living. We favor adjusting the poverty thresholds using labor market analysis because that approach provides a more complete picture of regional differences in the cost of living. Nevertheless, other strategies such as the market-basket adjustments proposed by Meyer and Sullivan (2012) or Renwick (2009) also have

merit. Second, Title I funding allocations should be adjusted for uncontrollable differences in the cost of education rather than state average expenditure levels, so that Title I funds have the same purchasing power in every district. The Taylor-Fowler CWI could be easily updated to use for such adjustments. Finally, we recommend that the formula used to distribute EFIG funding be revised to incorporate a more sophisticated measure of equity. The existing measure (a weighted coefficient of variation) measures equality, not equity, and therefore penalizes states that equalize school district purchasing power in the face of regional differences in the cost of education.

Our analysis focuses specifically on Title I funding but our basic conclusions also apply to compensatory aid programs within states. We find that geographically adjusting the poverty thresholds for differences in the cost of living leads to substantial changes in poverty rates within states, not just between states. As such, our analysis suggests that the compensatory education components of state aid formulas, which, like Title I, are based on geographically unadjusted measures of student need, may be over-targeting resources to rural districts and under-targeting resources to urban districts. The guidelines we suggest applying to the distribution and equity evaluation of Title I funding, therefore, also apply to state school finance formulas.

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REFERENCES

Baker, Bruce D. 2006. Evaluating the reliability, validity, and usefulness of education cost studies. *Journal of Education Finance* 32(2): 170–201.

Baker, Bruce D. 2009. Within-district resource allocation and the marginal costs of providing equal educational opportunity: Evidence from Texas and Ohio. *Education Policy Analysis Archives* 17(3): 1–31.

Bartlett, Bruce. 2011. Poverty rates: How a flawed measure drives policy. *The Fiscal Times*, 11 November. Available http://www.thefiscaltimes.com/Columns/2011/11/11/Poverty-Rates-How-a-Flawed-Measure-Drives-Policy.aspx#page1. Accessed 22 April 2013.

Besharov, Douglas J. 2007. *Measuring poverty in America: Testimony before the Subcommittee on Income Security and Family Support Committee on Ways and Means*. Washington, DC: American Enterprise Institute for Public Policy Research.

Carey, Kevin, and Marguerite Roza. 2008. *School funding's tragic flaw*. Seattle, WA: Center on Reinventing Public Education, University of Washington.

Duncombe, William, and John Yinger. 2005. How much more does a disadvantaged student cost? *Economics of Education Review* 24(5): 513–32. doi:10.1016/j.econedurev.2004.07.015

Gronberg, Timothy J., Dennis W. Jansen, and Lori L. Taylor. 2011. The adequacy of educational cost functions: Lessons from Texas. *Peabody Journal of Education* 86(1): 3–27. doi:10.1080/0161956X.2011.539953

Gronberg, Timothy J., Dennis W. Jansen, Lori L. Taylor, and T. Kevin Booker. 2004. School outcomes and school costs: The cost function approach. Unpublished paper, Texas A&M University.

Gronberg, Timothy J., Dennis W. Jansen, Lori L. Taylor, and T. Kevin Booker. 2005. School outcomes and school costs: A technical supplement. Unpublished paper, Texas A&M University.

Gyourko, Joseph, and Joseph Tracy. 1989. The importance of local fiscal conditions in analyzing local labor markets. *Journal of Political Economy* 97(5): 1208–31. doi:10.1086/261650

Liu, Goodwin. 2007. How the federal government makes rich states richer. *Colleagues* 2(2): 8–10.

Liu, Goodwin. 2008. Improving Title I funding equity across states, districts, and schools. *Iowa Law Review* 93(3): 973–1013.

Marks, Joanna, Julia Isaacs, Timothy Smeeding, and Katherine Thornton. 2010. *Development of the Wisconsin Poverty Measure: Methods and findings for 2008*. Available www.irp.wisc.edu/research/povmeas/ASA_SPM_WIPOV_2010.pdf. Accessed 13 March 2013.

Meyer, Bruce D., and James X. Sullivan. 2012. Identifying the disadvantaged: Official poverty, consumption poverty, and the new supplemental poverty measure. *Journal of Economic Perspectives* 26(3): 111–36. doi:10.1257/jep.26.3.111

Miller, Raegan. 2009a. *Secret recipes revealed: Demystifying the Title I Part A funding formulas*. Washington, DC: Center for American Progress.

Miller, Raegan. 2009b. *Interactive map: Title I education grants-funding formulas create unfair allocations*. Available www.americanprogress.org/issues/2009/08/title1_map.html. Accessed 13 March 2013.

Miller, Raegan, and Cynthia Brown. 2010a. *Spoonful of sugar: An equity fund to facilitate a single, fair and equitable formula for ESEA Title I Part A*. Washington, DC: Center for American Progress.

Miller, Raegan, and Cynthia Brown. 2010b. *Bitter pill, better formula: Toward a single, fair and equitable formula for ESEA Title I Part A*. Washington, DC: Center for American Progress.

Renwick, Trudi. 2009. Alternative geographic adjustments of US poverty thresholds: Impact on state poverty rates. Paper presented at the Annual Meeting of the Statistical Association, Section on Social Statistics, Washington, DC, August.

Renwick, Trudi. 2011. Geographic adjustments of supplemental poverty measure thresholds: Using the American Community Survey five-year data on housing costs. Paper presented at the Allied Social Science Association Convention, Denver, CO, January.

Riddle, Wayne. 2011. *Title I and high schools: Addressing the needs of disadvantaged students at all grade levels*. Washington, DC: Alliance for Excellent Education Policy Brief.

Roback, Jennifer. 1982. Wages, rents, and the quality of life. *Journal of Political Economy* 90(6): 1257–78. doi:10.1086/261120

Rothstein, Richard. 2004. *Class and schools: Using social, economic, and educational reform to close the black-white achievement gap*. Washington, DC: Economic Policy Institute.

Ruggles, Steven, Matthew Sobek, J. Trent Alexander, Catherine A. Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander. 2004. Integrated public use microdata series: Version 3.0 (machine-readable database). Minneapolis, MN: Minnesota Population Center, University of Minnesota.

Short, Kathleen. 2011. *The research supplemental poverty measure: 2010. Current Population Reports*. Washington, DC: U.S. Census Bureau.

Taylor, Lori, and William J. Fowler, Jr. 2006. A comparable wage approach to geographic cost adjustment. NCES Research and Development Report 2006–321, Washington, DC: U.S. Department of Education.

United States Department of Agriculture (USDA). 2012. *Eligibility manual for school meals*. Available www.fns.usda.gov/cnd/Guidance/EliMan.pdf. Accessed 6 February 2013.

United States Department of Education (USDOE). 1965. *Improving basic programs operated by local educational agencies (Title I, Part A)*. Available www2.ed.gov/programs/titleiparta/index.html. Accessed 13 March 2013.

United States Department of Education (USDOE). 2012. *Fiscal year 2013 President's budget*. Available www2.ed.gov/about/overview/budget/budget13/13pbapt.pdf. Accessed 13 March 2013.

Verstegen, Deborah A., and Teresa S. Jordan. 2009. A fifty-state survey of school finance policies and programs: An overview. *Journal of Education Finance* 34(3): 213–30.

APPENDIX

Table A.1. Hedonic Wage Analysis for Workers Who Do Not Have a College Degree

Dependent Variable – Log of Annual Income			
Explanatory Variables	**Estimate**	**Standard Error**	***p***
Usual hours worked per week (log)	1.0354	0.0017	<.0001
Worked 27 to 39 weeks last year	−0.5210	0.0017	<.0001
Worked 40 to 47 weeks last year	−0.2192	0.0016	<.0001
Worked 48 to 49 weeks last year	−0.0910	0.0025	<.0001
Not an English speaker	−0.1907	0.0035	<.0001
Age	0.0615	0.0002	<.0001
Age, squared	−0.0006	0.0000	<.0001
Age * Female	−0.0196	0.0003	<.0001
Age * Female, squared	0.0002	0.0000	<.0001
Less than 9th grade education	−0.2021	0.0023	<.0001
9th Grade	−0.1771	0.0032	<.0001
10th Grade	−0.1510	0.0028	<.0001
11th Grade	−0.1440	0.0025	<.0001
12th Grade, no diploma	−0.1186	0.0027	<.0001
Regular high school diploma	−0.0383	0.0012	<.0001
GED or alternative credential	−0.0961	0.0019	<.0001
Some college but less than 1 year (reference group)			
1 or more years of college, no degree	0.0208	0.0012	<.0001
Associates degree	0.0550	0.0014	<.0001
Female	0.2697	0.0067	<.0001
Male (reference group)	.	.	.
American Indian	−0.0541	0.0039	<.0001
Black/African American	−0.0974	0.0013	<.0001
Chinese	−0.1912	0.0046	<.0001
Japanese	−0.0228	0.0085	<.0001
Other Asian or Pacific Islander	−0.1134	0.0024	0.0071
Other race	−0.0336	0.0020	<.0001
Two or more major races	−0.0461	0.0027	<.0001
White (reference group)	.		
Hispanic	−0.0733	0.0014	<.0001
Year 2008	−0.1130	0.0347	0.0011
Year 2009	−0.0406	0.0363	0.2640
Number of observations			
R-square	0.5861		

Note: The model also includes 778 labor market fixed effects, 1,357 year × occupation fixed effects, 780 year × industry fixed effects, and random effects for states.

Table B.1. 2009 Poverty Thresholds by Size of Family and Number of Related Children Under 18 Years (in Dollars)

Size of Family Unit	Weighted Average Thresholds	Related Children under 18 Years								
		None	One	Two	Three	Four	Five	Six	Seven	Eight or more
One person (unrelated individual)	10,956									
Under 65 years	11,161	11,161								
65 years and over	10,289	10,289								
Two people	13,991									
Householder under 65 years	14,439	14,366	14,787							
Householder 65 years and over	12,982	12,968	14,731							
Three people	17,098	16,781	17,268	17,285						
Four people	21,954	22,128	22,490	21,756	21,832					
Five people	25,991	26,686	27,074	26,245	25,603	25,211				
Six people	29,405	30,693	30,815	30,180	29,571	28,666	28,130			
Seven people	33,372	35,316	35,537	34,777	34,247	33,260	32,108	30,845		
Eight people	$37,252	$39,498	$39,847	$39,130	$38,501	$37,610	$36,478	$35,300	$35,000	
Nine people or more	$44,366	$47,514	$47,744	$47,109	$46,576	$45,701	$44,497	$43,408	$43,138	$41,476

Source: U.S. Census Bureau (www.census.gov/hhes/www/poverty/data/threshld/thresh09.html).