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ECONOMIC WELL-BEING AND WHERE WE LIVE: Accounting for Geographic Cost-of-Living Differences

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ABSTRACT

Regional cost-of-living differences affect the quality of life that individuals and families experience in different metropolitan areas. Yet, lack of metropolitan cost-of-living indexes has left analysts without the ability to make these adjustments. We evaluate seven alternative inter-regional cost-of-living measures based on: data collection methodologies, variables included in the measurement, applicability to measuring cost-of-living differences for high-, low- and moderate-income populations, availability, and affordability. Based upon these criteria, one of the measures was preferred when compared to the others. We constructed a regression model to expand the limited number of metropolitan areas covered by our preferred index. We then applied the preferred index to various metropolitan area data sets, including median household income, the number of people living in poverty, and family eligibility for the Free and Reduced Price School Lunch and Head Start programs to illustrate some of the potential policy and program impacts of adjusting economic indicators for geographic cost-of-living differentials.

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INTRODUCTION

The regional cost-of-living affects the quality of life that individuals and families experience in different places. An income of $62,732, the 2002 median household income in the United States for a family of four (Census, 2004), purchases a much higher standard of living in Wichita, KS, than in New York City. Yet, lack of available data directly measuring these differences, as well as disagreement on how to do so, has left analysts with manifestly inaccurate measures of economic wellbeing.[1] Income-based measures – particularly median household income, per capita income, and the proportion of the population with incomes below the poverty level – are frequently used by both researchers and policy makers to measure the relative economic wellbeing of an area's residents. Since cost-of-living varies significantly among U.S metropolitan areas, unadjusted income-based measures inevitably yield misleading results. While it is interesting to understand how these regional price differences affect quality-of-life measures, it is arguably more important as a determinant of the eligibility for social support and income transfer programs. More than 65 public programs, such as Medicaid, Food Stamps, Head Start and Title X Family Planning Services, base program eligibility on economic standards of wellbeing, but do not adjust for regional living cost differences (CRS, 2003). Other programs, such as the federal Community Development Block Grant Program, allocate funds based on the portion of the population with incomes below the poverty line.

[1] We acknowledge the role that cost-of-living (COL) differentials play in inter-regional residential and land markets in promoting migration. Regional differences in the cost-of-living are partially driven by differences in land costs, which in turn reflect the capitalized value of regional amenities and of agglomeration effects and other externalities. Regional COL differentials are a means of allocating a scarce resource, land, and providing an equilibrating mechanism that encourages migration from high COL locations to lower COL locations.

The impact of cost-of-living differences in measuring the portion of a metropolitan area's or city's population with poverty-level incomes is of particular concern because of the role that this variable plays in a number of redistributive and income maintenance public policies. Economic and community development programs such as the HOPE VI program and the Community Development Block Grant program provide financial assistance to communities based upon their level of need. Regional living costs, however, are not considered in the calculation of community need. In addition, regional cost-of-living differences directly affect the eligibility of individuals and families for income support and medical and food assistance programs. In 2002, there were over 80 federal means-tested programs providing cash and noncash benefits to poor individuals and families. Eligibility criteria for these programs were based upon: (1) the federal poverty guidelines or the Census Bureau's poverty thresholds (or a combination of both), (2) state or area median income, (3) the lower living standard income determined by the Bureau of Labor Statistics, (4) an absolute monetary standard, or (5) an income level considered to indicate "need," (CRS, 2003). With the exception of the qualification standards that are based upon state or area median income, and in some cases those that are based on multiples of the poverty standards,[2] the remaining programs do not take living costs into consideration when determining program eligibility.

Currently, there are over 25 federal programs that base eligibility on the official poverty standards (CRS, 2003). There are two measures used in determining eligibility for these programs: the federal poverty guidelines and the Census Bureau's poverty thresholds. In 2003, a family of four was considered to be poor under the federal poverty guidelines if they made $18,400 or less (Federal Register, 2003), while the same family size was considered poor under the Census Bureau's poverty threshold if they earned $18,810 or less (Census, 2004).

[2] Interstate differences in the COL are not the only determinant of the portion of the low-income population that is eligible for income support programs. States set their own eligibility requirements, with some being at 150 or 200 percent of the federal poverty level.

Regardless of the measure used, however, both standards are set at a single rate for all 48 contiguous states and the District of Columbia. Thus, according to these present standards, a family making $18,400 in San Francisco, CA is considered just as well off by the federal government as a family with the same income residing in Fargo, ND. Regardless of the fact that the family living in San Francisco is facing much higher living costs than the family living in Fargo, both face the same income qualification standards for federal programs that use the federal poverty line as a criterion for eligibility.

There is a clear distortion in having a single, national, poverty line.[3] The national poverty line can be thought of as a weighted average of the poverty lines in all the regions in the nation, with some areas being above and others below the national average. Because land costs, associated housing and rental prices, and insurance costs are typically lower in rural areas than in urban areas it is safe to assume that the national average poverty line overstates rural poverty and understates urban poverty. At the same time, the national average poverty line will understate the poverty rate in "expensive" central cities and overstate it in "cheaper" central cities. Since differences in per capita income, average household income and the portion of the population with incomes below the poverty line are frequently used to compare the quality of life in different places, not accounting for differences in the regional cost-of-living (COL) is distorting.

Most students of poverty and social policy agree that geographic living cost differentials should be taken into account when specifying standards of economic wellbeing. Yet geographic cost-of-living estimates vary a great deal depending upon the measure of COL that is used. For example, using four different COL measures, whose methodology we describe and critique in the

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[3] See Ruggles (1990) for a history of the establishment of the poverty line and its use in federal public policy. Three panels of the National Research Council (1995, 2000, and 2002) have looked at measurement issues related to poverty and cost-of-living adjustments. Citro and Michael (NRC 1995) report on the findings of a panel that looked at general poverty measurement issues. Citro and Kalton (NRC 2000) report on the findings of a panel that examined small area income and poverty measurement. This topic was also the subject of a report by the United States General Accounting Office in 1997. Schultze and Mackie (NRC 2002) led a panel that examined cost-of-living adjustments and their effect on measuring inflation and constructing price indices at the national level.

following section of the paper, results in very different measures of median household income. Median household income in 2000, as reported in the U.S. Bureau of the Census and not adjusted for regional cost-of-living differences, in a set of 15 metropolitan areas is reported in the second column of Table 1.[4] We then used four measures of COL variation to adjust median household income levels for geographic living cost differences: the Department of Housing and Urban Development's (HUD) Fair Market Rents (FMR) measure, the Economic Policy Institute's (EPI) Family Budgets Measure, the Brookings Institute's Metropolitan Price Indices, and ACCRA's Cost-of-Living Indices. The estimated purchasing power of a household's income varies a great deal depending on the COL adjustment used. In the San Francisco metropolitan area, for example, the Census Bureau's unadjusted median household income in 2000 was $63,297. Using the Fair Market Rent approach for measuring COL differences, the median household income in San Francisco is adjusted down to $20,591, using the EPI' Family Budget adjustment it is estimated at $45,537, using the Brookings Institute Index it is estimated at $37,574, and using the ACCRA index, it is $37,168. This represents a range in COL estimates of nearly $43,000, depending on the measure used. Although adjusted median household income measures do not vary as much for all MSAs/PMSAs as they do for San Francisco, all of the metropolitan areas in our sample vary by at least $5,600 in adjusted median income levels.

Table 1 about here

The measures of central tendency for median household income unadjusted for COL differences (reported at the bottom of the second column of Table 1) differ from the measures of central tendency for the distributions of median household income that were adjusted for inter-

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[4] The Metropolitan Statistical Areas (MSAs) and Primary Metropolitan Statistical Areas (PMSAs) included in Table 1 (and subsequent tables) were chosen for illustrative, not statistical, purposes from a study by the authors (2005). The 98 central cities included in the study had populations over 125,000 and were in MSAs or PMSAs with populations over 250,000 in 2000. The 15 MSAs/PMSAs included in our tables are a subset of those in the study. These 15 places were selected to be illustrative of America's metropolitan areas by region and size. They do not constitute a statistically valid random sample,

metropolitan area COL differences. HUD's Fair Market Rent measure produces the lowest average median household income estimates ($29,861), with the second-highest coefficient of variation (CV). The estimates of median household income produced with EPI's Family Budget, Brookings' Metropolitan Indices, and ACCRA's COL measure are much closer to one another as measured by their average values than is HUD's Fair Market Rent measure The average median household income estimates using the EPI's Family Budget COL adjustment is $41,083, Brookings Metropolitan Price Index is $38,271 and ACCRA's COL Series is $38,753 ACCRA's indices result in the highest variation among metropolitan areas.

The summary statistics from Table 1 demonstrate that failing to adjust for cost-of-living differences is likely to distort relative measures of wellbeing, and that different methods for adjusting the original data yield widely varying results. Thus, it is important to evaluate the different COL measures that are available to gauge the impact that their methodologies and data collection strategies have on measuring geographic differences in the COL on the economic well being of residents.

In the following sections we identify and evaluate seven alternative COL measures to gauge which of the measures is preferred as a means of adjusting for inter-area COL variation. We examine data collection methodologies, the components included in the measures, their applicability to low-, moderate- and high-income households and their availability and affordability for researchers. Based upon our evaluation, we prefer the ACCRA COL measure. The ACCRA data suffer from two important limitations however: the number of metropolitan areas covered is not exhaustive and different metropolitan areas are included each year due to the voluntary nature of the data collection. We propose a regression model in which we estimate the ACCRA COL indices for those metropolitan areas where original data are not available.[5] We

[5] ACCRA collects cost-of-living data at the MSA/PMSA level but only for those MSAs/PMSAs where the local ACCRA member organization voluntarily decides to participate.

then apply the ACCRA COL index to various data series to illustrate the impact of adjusting for geographic COL differentials.

COST-OF-LIVING MEASURES

There are two primary approaches to measuring geographic COL differences: measures based on geographic variations in housing costs and market basket measures. Housing-based measures rely on housing costs as the sole source of regional COL differences and do not take the costs of other goods and services into account. Market basket models are more inclusive in their approach and are rough approximations of the way the U.S. Bureau of the Census collects data for the Consumer Price Indexes, as they compare the costs of a constant combination of goods and services across geographic areas (the composition of the market basket remains the same across metropolitan areas).

Housing-based Measures

Housing-based COL measures rely on the assumption that housing costs are the only source of COL differences among areas, or that the other sources of price differences in a region's cost-of-living are highly correlated with its housing costs. Thus, housing-based COL measures estimate geographic COL differences based on housing costs alone, while other possible contributors, such as groceries, heating and cooling costs, automobile insurance, and clothing are omitted from the regional COL estimates. While housing-based COL measures are useful in estimating the relative costs of housing between geographic areas, they have weaknesses as a broader measure of the regional differences in the quality of life.

Housing-based methods depend on housing price data from one of two sources: the U.S. Census Bureau's American Housing Survey (AHS) or the U.S. Department of Housing and Urban Development's (HUD) Fair Market Rents. Data from The Census Bureau's American Housing Survey (AHS) report on housing and resident characteristics such as income levels,

housing and neighborhood quality, housing costs, equipment and fuel consumption, the size of housing units, and recent moves. These data are collected at the metropolitan statistical area (MSA) level every other year for a sample of housing units (AHS, 2004).

Fair Market Rents are rental cost measures derived from the AHS data, Census data, and random digit dialing telephone surveys. Fair Market Rents are used by HUD to determine program eligibility for Section 8 housing assistance voucher programs, and are estimated annually for 354 metropolitan areas and 2,350 non-metropolitan rural areas. Fair Market Rents estimates include shelter costs in a metropolitan area plus the cost of all utilities, except telephones. Fair Market Rents are currently set at the 40th percentile rental level, meaning that the lowest 40 percent of all rent and utility payments in a metropolitan area are at or below the Fair Market Rent dollar amount (HUD, 1995 pp. 2-3). Fair Market Rents are updated with AHS and Census data.

There are several examples of inter-regional COL measures that rely on housing data to achieve their geographic variation. Three of these measures include the Basic Needs Budget, the National Academy of Sciences' alternative to the official poverty measure, and the Brookings Institution's Metropolitan Price Indices.[6] The Basic Needs Budget was created by Trudi Renwick in her 1995 dissertation (Renwick 1995).[7] The purpose of the Basic Needs Budget was not to measure inter-area COL differences; rather the Basic Needs Budget was proposed as a

[6] Both the Basic Needs Budget and the NAS alternative measure are proposed alternative poverty measures to the current US Bureau of the Census poverty threshold. They are not currently used in any social programs. The Brookings Institute's Metropolitan Price Indices were employed for research purposes.

[7] The official poverty line, or threshold, was developed by economist Molly Orshansky of the Social Security Administration in 1963 based on the U S Department of Agriculture's economy food plan of 1961. Orshansky used the average national ratio of food expenditures to total family after tax income as measured by the 1955 Household Food Consumption Survey to estimate the minimum family income required to purchase the food basket (Orshansky 1975). To this day the market basket of food is repriced and used to estimate the poverty threshold. The size of the basket, and the resulting, poverty threshold is adjusted for family size (Ruggles 1990). The US Census Bureau maintains a web site on poverty research http://www.census.gov/hhes/www/povmeas.html. The US Census Bureau discusses the poverty threshold at: http://www.census.gov/hhes/poverty/povdef.html. The Office of Management and Budget's directive on the calculation and use of the poverty threshold can be found at: http://www.census.gov/hhes/poverty/povmeas/ombdir14.html.

measure of the income levels required for single parent families to maintain modest living standards. Thus, the Basic Needs Budget approximates how much income a family requires to purchase the contents of a standard market basket of goods including food, housing, health care, transportation, clothing, personal care, and child care. Geographic COL estimates are built into the Basic Needs Budget through the housing price input.

Housing prices included in the Basic Needs Budget are based upon AHS median rental housing cost data for three types of geographic areas: urban, suburban, and rural. Thus, three geographically distinct Basic Needs Budgets were developed: one for all urban residents nationally, a second measure for all suburban residents and a third for all rural residents. Beyond these three distinctions, however, the model does not account for differences between metropolitan housing markets or other locational attributes that affect geographic COL differences, such as food, clothing and insurance costs (Renwick, 1995).

A second housing-based COL measure was created in 1995 by the National Academy of Sciences' (NAS) Panel on Poverty and Family Assistance (NRC 1995, 2002). Similar to the Basic Needs Budget, the NAS measure is a proposed alternative to the current poverty threshold and is based upon the purchase price of a constant market basket of goods and services. But, like the Basic Needs Budget, geographic COL variation in the NAS model is derived from rental cost differences.

In order to measure geographic COL differentials, the NRC constructed 54 regional housing price indices derived from 1990 Fair Market Rent values. Each of the indices created by the NRC corresponds to a set of metropolitan areas, differentiated by population size, within a Census region. The nine Census regions (New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain and Pacific) were broken down into six population size categories:

- Nonmetropolitan areas
- Metropolitan areas under 250,000
- Metropolitan areas 250,000 – 500,000
- Metropolitan areas 500,000 – 1,000,000
- Metropolitan areas 1,000,000 – 2,500,000
- Metropolitan areas 2,500,000 or more

Thus, each of the nine Census regions had six possible Fair Market Rent values, for a total of 54 different COL differentials that were incorporated into the NAS poverty measure (NRC, 2002).

Similar to the NAS poverty measure, Berube and Thacher (2004) developed metropolitan price indices based upon Fair Market Rent values in their study of household income distributions in U.S. cities. They divided metropolitan Fair Market Rent values by the national average Fair Market Rents to get the relative COL index in specific metropolitan areas. They then multiplied the index value by 0.33 because, the 2000 Census and the Bureau of Labor Statistics Consumer Expenditure Survey indicated that individuals typically spend one-third of their income on housing and related expenses (Berube and Thacher, 2004; BLS, 2004). They then add .67 to the product in order to get a regional cost-of-living index, thereby making the cost of all goods other than housing constant across metropolitan areas.[8]

The three housing-based COL measures discussed, as well as housing-based COL measures in general, overstate inter-area COL differentials because housing costs vary geographically more than the costs of other goods. Table 2 illustrates the inter-area variation of the costs of housing, healthcare, utilities, groceries, transportation, and miscellaneous goods and services for the second quarter of 2004 for the nation's 26 largest MSAs (ACCRA, 2004). (The national average value for each sub-index and the overall index is 100.) The standard deviation for these 26 metropolitan areas are displayed for each sub-index, as is their correlation with

[8] For instance, for an MSA with an Fair Market Rent (FMR) value of $250 and a national average FMR of $400, the COL index value would be the following:

MSA FMR/National FMR: $250/ 400 = 0.625
Regional FMR ratio * Portion of budget spent on housing: 0.625 * 0.33 = 0.206
Where 0.33 is proportion of housing and related costs in the average household budget
Housing index + Portion of income spent on all other goods: 0.67 + 0.206 = 0.876
Where 0.67 is the portion of the average household budget not related to housing

housing costs. As the table illustrates, the standard deviation of the housing cost indices is more than four times greater than the next highest sub-index, the cost of healthcare. The standard deviation of housing is more than seven times that of miscellaneous goods and services, the category with the lowest standard deviation across all of the 26 largest metropolitan areas. Thus, it is clear that measures relying only on housing costs to adjust for COL differences will overstate those COL differences. This point is also illustrated in Table 1, because the median household incomes that are adjusted with Fair Market Rent measures are significantly lower than the COL adjustments based on the other measures.

Table 2 about here

Housing-based COL measures do not recognize regional variation in the 67% of the average after-tax household budget that is not related to household expenditures. This would not be a problem if inter-area variations in the costs of other goods were highly correlated with the inter-area variation in housing costs; however Table 2 shows that variations in the non-housing sub-index values do not necessarily correspond with variations in housing prices. This is particularly the case with health care (with a correlation of 0.36), utilities (correlation of 0.42), and miscellaneous goods and services costs (correlation of 0.68). Thus, COL measures that only take housing costs into consideration will be inaccurate.

Furthermore, Fair Market Rents have four additional problems as a generalized way of measuring inter-regional cost-of-living differences. First, Fair Market Rents were developed specifically for the Section 8 program, and were not intended as overall housing cost measures. Consequently, Fair Market Rents only measure rents, not total housing costs, nor costs associated with homeownership (Short, 2001). Second, Fair Market Rents only observe the expenses of recent movers, who are defined as people that have moved in the past year. This is problematic because recent movers only represent a small portion of the population, and it is likely that

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Thus, the cost-of-living in the MSA would be .876 of the national average COL, which is 1.00.

collecting data for recent movers results in an upward bias in the Fair Market Rent because long-term renters often experience discounted rents (NRC, 1995). Third, the National Research Council (1995) stated that the Fair Market Rent measure does not control for housing quality, and, as a consequence, substandard housing in low-income areas will exert a downward bias on the Fair Market Rent.[9] Fourth, because Fair Market Rents are calculated for the 40th percentile of the rent distribution it is skewed toward lower-income households, making it a poor representation of the cost-of-living experienced for the middle and upper levels of the income distribution. Thus, it is clear that relying on housing-based measures in general, and Fair Market Rent values in particular, as measures of geographic variations in living costs is problematic. A broader measure of geographic COL differences is necessary in order to accurately gauge inter-area living cost differentials and to make regional income measures better indicators of the economic well-being of residents.

Market Basket Measures

An alternative approach to housing-based measures for assessing geographic COL differences is to make use of market basket measures. Such measures estimate the relative costs of a constant combination of goods and services, or a market basket, across geographic areas. This approach offers a more accurate assessment of COL differences than do housing-based measures because it includes the relative prices of goods and services such as health care, transportation, food, clothing, and insurance—all of which are omitted in the housing-based measures.

Fundamental to market basket approaches to COL adjustments are consumer profiles. To determine the goods that are included in the market basket and the appropriate proportion of

[9] Malpezzi, Chun and Green's (1998) Place-to-Place Housing Price Indices addressed this issue by examining the impact of housing and neighborhood quality (among other variables), on variations in the price of housing using data from the Population Census' Public Use Microdata Samples (PUMS).

income spent on those goods, researchers construct profiles of consumers based upon consumption data from the U.S. Bureau of Labor Statistics' (BLS) Consumer Expenditure Survey data. Consumer profiles are usually derived from the national average consumption patterns of a study population (for instance, the national average expenditure patterns of a family of four, earning $55,000 per year), and the market basket of goods and services is then specified based upon average consumption patterns of the specified study population. The relative cost of obtaining the market basket across local areas is then compared and indices are constructed to measure how far prices in each locality deviate from the reference area or the national average.

Measures Using Secondary Data

Different types of market basket COL measures can be distinguished by examining their data collection methods. Market basket COL measures either use existing price data to construct COL indices, or they rely on information collected for the specific purpose of COL measurement. Measures that use existing price data, such as local retail surveys, state-level data, and national surveys that were conducted for other purposes, are referred to as secondary data measures. Measures that rely on original, first-hand, data that were collected for the specific purpose of COL measurement are primary data measures. Primary data measures collect information through either on-site reporting or the use of surveys designed specifically for the collection of COL information.

The Economic Research Institute (ERI), which is a private organization that conducts salary, compensation and benefits research for public and private sector clients, developed a software package that uses secondary data sources to estimate geographic COL differences. ERI's Relocation Assessor Software provides estimates of COL differentials for professional and managerial persons living in over 10,000 cities worldwide. Estimates of COL differentials are based upon the consumption patterns of professional and managerial persons, which are obtained

from the Consumer Expenditure Survey or equivalent international data sources. Then, using existing data sources, such as housing rental price data from local realtors' offices and local surveys of retail prices, ERI constructs estimates of geographic COL divergences based upon expenses for housing, transportation, health care, utilities, taxes and miscellaneous goods and services. Data for U.S. and Canadian residences are reported at the city level (defined by municipal boundaries) and the ZIP code level. COL information for all other international cities is only available at the city level (ERI, 2004).

ERI's Relocation Assessor software compares intra-metropolitan COL differentials for various profiles of professional-level households. In addition, variables such as family size, income level, vehicle type and housing size can be altered in the program so that users can project COL estimates that do not fit into ERI's pre-defined consumer profiles. Despite the software's flexibility in estimating the COL experiences for professional-level households, the weakness of the Relocation Assessor software is in its applicability to low- and moderate-income households. The data presented in the first column of Table 3 illustrates this point. Table 3 compares the proportion of income allotted to expenditures on major categories of goods used by three different COL measures with the actual expenditure data of low- and moderate income consumers obtained from the Consumer Expenditure Survey. The data in the first column of the table shows the Relocation Assessor software's apportionment of income into five categories of expenditures for a family of four earning the poverty wage. As the table illustrates, the Relocation Assessor software estimates that the family spends a negative portion of their income on miscellaneous goods and services. Thus, it is evident that the software package is not designed to estimate the expenditure realities of low income consumers. In addition, ERI only collects housing price data on "professional-standard housing." This further limits the program's applicability to low- and moderate-income households because the housing costs reflected in the

Relocation Assessor software are likely to be much higher than those faced by consumers of more limited means.

Table 3 about here

An alternative COL measure, the Family Budgets Methodology, is more sensitive to the life experiences of low- and moderate-income people. Family Budgets are a proposed poverty measure created by the Economic Policy Institute (EPI), which is a nonprofit research institute that studies issues pertaining to low- and middle-income workers. EPI's Family Budgets base geographic COL differentials on the consumption patterns of low-income consumers as reported by the Consumer Expenditure Survey. (However, they do not reflect the consumption patterns of middle- or high-income households.) Expenditures in six categories of goods, including housing, food, childcare, transportation, health care, other necessities, and taxes are analyzed and minimum-standard income levels, or Family Budgets, are estimated based upon consumption of these goods (EPI, 1999). These data are displayed in the second column of Table 3.

Similar to ERI's Relocation Assessor software, all of the Family Budgets price estimates are based on secondary data sources. For instance, projected food expenditures in the Family Budgets measure are based on the U.S. Department of Agriculture's Economy Food Plan, while health insurance costs are based on quotes from the Web-based health insurance provider eHealthInsurance Services, Inc. (EPI, 1999).

Geographic COL sensitivity is built into the Family Budgets poverty measure through the price estimates for housing, childcare, transportation, taxes and other necessities. First, housing prices are based upon Fair Market Rent values, which are collected at the Metropolitan Statistical Area (MSA) level. Second, childcare expenditures are based on price data obtained from the Children's Defense Fund, which reports average childcare costs for most states and a few U.S. cities. Next, transportation costs are estimated using data from the Nationwide Personal

Transportation Survey, and the IRS cost-per-mile rate. The National Transportation Survey indicates that the average annual miles driven varies by MSA size. For instance, in 1999, people residing in MSAs with less than 250,000 people drove 8,437 miles on average per year, while people in MSAs with 1 – 3 million people drove 9,121 miles per year, and those in non-metropolitan areas drove 10,541 miles per year (EPI, 1999). Subsequently, transportation costs are estimated by multiplying the average annual miles driven for the appropriate MSA size by the IRS standard mileage rate, which is $0.375 in 2004 (IRS, 2004). Fourth, the "other necessities" element of the Family Budgets depends on data from the Consumer Expenditure Survey, which reports that low-income families spend 31% of the cost of housing and food combined on other necessities. Thus, the projected cost of "other necessities" is equal to (Expenditures on Fair Market Rent housing + Economy Food Plan expenditures) * .31. Finally, tax expenditures are based on federal and state-level taxation levels (EPI, 1999).

In sum, the Family Budgets COL measure uses metropolitan-level price data for the costs of housing and transportation. However, because of the lack of available data, state-level price data are used for childcare services and taxes, national average price data are used for food and health insurance, and the cost of other necessities is predicted based on national average expenditures. Thus, although EPI's Family Budgets aim to measure local-level COL differentials faced by low- and moderate-income families, with the exception of housing and transportation costs, the Family Budgets do not fully reflect the prices generated within local economies. Furthermore, the Family Budgets use HUD's Fair Market Rent values to measure housing costs, which results in the measurement errors discussed in the previous section.

Several other private sources also measure geographic COL differentials based upon secondary price information. For instance, Sperling's *Best Places* develops an inter-area COL index based upon federal level data including the Bureau of Labor Statistics' Consumer Price Index (CPI), the Consumer Expenditure Survey, and the National Association of Home Builders

survey (NAHB). However, Sperling's indices appear to be conceptually incorrect because of their use of CPI price data. The CPI is a measure of inflation, not a measure of inter-area living cost differences. Thus, the CPI measures changes in prices over time within a geographic area, but cannot be used to accurately measure price differences among geographic areas (BLS, 2003). As a consequence, we have not included Sperling's measure or the CPI itself in our analysis. In addition, other sources such as Salary.com and Homefair.com each produce measures of inter-metropolitan COL variation based on national average consumption patterns. However, most of these COL measures are driven by estimated housing and transportation expenditures, and do not incorporate local-area price data on other items such as food and health care. As a result, they, too, were excluded from our analysis.

Most critics of the COL measures we have discussed argue that their weakness lies in the fact that they are based upon existing data sources (GAO, 1995). Accuracy in the baseline data is imperative to each measure's precision. Biases and inaccuracies will skew COL estimates when the COL measure is based on price data collected for other purposes. For instance, in the case of ERI's Relocation Assessor software program, data for COL estimates are obtained from existing, independent, local-level data sources. Unfortunately, many of these local sources employ different definitions and methodologies for collecting their data. Yet, because ERI collects price data on several different items in 10,000 different cities, it would be virtually impossible for them to identify and control for all of the data inconsistencies. Thus, it is likely that precision is lacking in measuring inter-regional cost-of-living differences.

In order to overcome the problem of local-level data unavailability and inconsistency, the other COL measures mentioned, including the Family Budgets methodology and the on-line COL calculators, often use large-level geographic data to measure COL differences. For instance, many of the measures use state-level data to predict portions of their local indices. However this, too, is problematic because living costs are likely to vary as much within states as

between them. The cost-of-living in metropolitan Chicago may have more in common with New York City than with Springfield, IL. Seattle, WA may have more in common with Portland, OR than with Spokane, WA. After reviewing 1990 Census data on housing costs, the National Research Council (1995) found that the population of a geographic area is a more important factor in predicting housing (and other) costs than is the state of residence. The NRC's panel argued that "most states include urban and rural areas that vary widely in population density and housing costs" (p. 62). Thus, COL indices that use state-level data to approximate living costs are less desirable than are measures that control for population size.

In conclusion, COL measures that are based upon secondary data sources lack accuracy because secondary price data are often only available at larger geographic levels that are not consistent with regional variations that are more closely associated with population size and density. In the event that local-level price data are available, they are often incompatible with one another due to the fact that data collection is not consistent, resulting in misconstrued COL measures. It is desirable, therefore, that COL measures be based on original data sources, where the data are collected under a consistent protocol, and where the purpose of the data collected is to measure inter-regional variation in the COL.

Primary Data Measures: As an alternative to basing COL projections on existing data sources, two groups have developed COL estimates using primary price information. Runzheimer International's Cost-of-Living Differentials predict COL differences for 350 domestic and international cities on a monthly basis using price data collected by on-site researchers (Runzheimer, 1994). In addition, the ACCRA, formerly the American Chamber of Commerce Research Association, develops COL indices for roughly 200 U.S. Metropolitan Statistical Areas (MSAs) and Primary Metropolitan Statistical Areas (PMSAs) every quarter. ACCRA collects its

data through self-administered surveys in which retailers respond to questions regarding the prices they charge for goods and services (ACCRA, 2004).

Like the measures discussed in previous sections, Runzheimer International's Cost-of-Living Differentials are market basket COL indices based on consumer profiles obtained from Consumer Expenditure Survey. COL Differentials are available for several profiles of consumers, although they are typically based on the consumption patterns of professional-level consumers. Runzheimer's COL measure is noteworthy in the rigor of its data collection procedures.

Runzheimer's COL Differentials measure is based upon costs of four categories of goods and services: transportation, housing, miscellaneous goods and services, and taxes. Runzheimer uses on-site researchers to collect price data for the transportation, housing and miscellaneous goods and services costs components of their COL index, and a predictive model is used to measure expected taxation expenditures.

One source of bias in Runzheimer's index comes from the transportation component. Runzheimer assumes that consumers own and operate their own vehicles, and that vehicles increase in value as consumer income increases. Transportation costs are predicted for each consumer profile based on automobile prices obtained from car dealerships within study areas (Runzheimer, 1994).

Runzheimer collects local area housing price data on owner-occupied homes and rental properties. In order to estimate the housing costs borne by homeowners, Runzheimer determines the market value of the standard home (adjusted for the financial status of each consumer profile) at each geographic location. These data are obtained from local realtors and rental agencies. For rental properties, Runzheimer uses the average net rental cost in the MSA, which are based upon quotations obtained from rental agencies and other firms that manage rental properties in each

specific geographic location. Homeowners' or renters' insurance and utility costs are included in both cost estimates (Runzheimer, 1994).

Prices are also collected for 10 major categories of goods: food consumed at home, food consumed away from home, tobacco, alcohol, furnishings and household operations, domestic service, clothing, personal care, medical care, and recreation. Runzheimer collects prices directly for over 150 items at three different places in each location on a semi-annual basis (GAO, 1995). Runzheimer also developed a model to approximate annual federal, state, local, Social Security and sales taxes for each consumer profile at each location rather than collect tax data directly.

ACCRA takes an alternative approach to collecting primary data for measuring geographic COL differences. The ACCRA COL index measures geographic price differences based on information for 59 items classified into six categories: grocery items, housing, utilities, transportation, health care, and miscellaneous goods and services. Retailers recruited by local ACCRA members in each MSA respond to detailed surveys regarding prices they charge. The surveys are designed by ACCRA, yet are self-administered by respondents. Once local price data are obtained, they are compared to the national average of all prices, which is set at 100. Local-area COL indices are then expressed as a percentage of that number (ACCRA, 2004).

Evaluating the Cost-of-living Measures

Both Runzheimer International and ACCRA have developed powerful COL information with rigorous primary data collection methods. The EPI's Family Budgets measure and ERI's Relocation Assessor software provide insights into geographic COL differences using secondary data. Which of these measures provides the most useful and accurate understanding of geographic COL differentials? In order to evaluate the measures against one another, we compared their data collection methodologies, the components of the overall COL index, their

applicability to the full range of income classes, and their availability and affordability for researchers.

Data collection methods: We concluded in the previous section that market basket approaches are superior to housing-based approaches and that, among market basket approaches those that employ primary data collection methods (Runzheimer International and ACCRA) are superior to those that rely on secondary data collection methods. Collecting firsthand data allows both Runzheimer and ACCRA a greater degree of precision in terms of actual price information as well as the level of geographic sensitivity incorporated into the measures.

Comparing data collection methods, we found that Runzheimer employs superior information gathering techniques than does ACCRA. Runzheimer's measures are based on price data for 150 different goods and services gathered through the use of on-site researchers who are trained to gather the data in a consistent manner and the price information is updated monthly. ACCRA, on the other hand, collects price data on 59 goods and services through self-administered surveys filled out by volunteer retailers on a quarterly basis. Thus, it is clear that Runzheimer's data collection techniques are superior to ACCRA's in terms of the number of goods for which prices are collected, the methods of data collection, and the frequency of data updates.

Cost of purchasing the data: Data collection, however, does not come without costs. In terms of the availability and affordability of the four measures discussed, one sees great differences between the cost of obtaining the COL data from the sponsoring organization — ACCRA, EPI, ERI, and Runzheimer. EPI's Family Budgets COL measure is the most affordable option, as it is available on-line free of charge at www.epinet.org. ACCRA's COL index reports are the next most affordable option, with a one-year subscription to the report costing between $140 and $295. The report comes with four quarterly updates, and generally contains COL indices for approximately 300 cities in major metropolitan areas. A single quarterly ACCRA

COL report costs $70. ERI's Relocation Assessor software is the third most expensive COL measurement tool, with a one-year subscription with quarterly updates for 10,000 cities in 2004 costing $829. Finally, Runzheimer International has the most expensive option, with a basic charge of $345 for one COL index for one consumer profile at one location at one point in time. Discounts for larger purchases are available; indices for 100 locations can be purchased for $26,000 (GAO, 1995).

Applicability to the full range of income classes: The EPI's Family Budgets measure is the only COL measure that incorporates data on the consumption patterns of low-income households. ERI's Relocation Assessor software focuses on professional- and managerial-level consumers, as do the Runzheimer and ACCRA measures. The Relocation Assessor software uses Consumer Expenditure Survey data on the consumption patterns of "professional-level" consumers. Runzheimer's COL measures use consumer profiles that begin at income levels of $25,000 for individual wage earners and range up to $300,000. The cost data that Runzheimer collects typically comes from affluent municipalities within each MSA, while cost data from low- and middle-income municipalities are not reported. Similarly, ACCRA's consumer profile is for "moderately affluent professional and managerial households" (ACCRA, 2004). Operationally, these households are defined as those in which at least one spouse holds a professional or managerial occupation, or those that are in the top 20 percent of the income distribution in the MSA or PMSA. Both spouses are assumed to hold college degrees, and couples that are homeowners are assumed to have one child. In addition, most of ACCRA's cost data are collected from high-end retail establishments, such as specialty grocery stores, luxury beauty salons, and moderate- to high-priced clothing stores. Large discount stores, such as Wal-Mart or Target, are deliberately excluded from their data collection.

Despite the fact that ERI's Relocation Assessor, and the Runzheimer and ACCRA indices reflect the living expenses of higher-income households, it is useful to ascertain whether

or not they offer insights into the COL experiences of low- and moderate-income populations. This comparison is done in Table 3, where the consumption patterns of low- and moderate-income groups as reported in the Consumer Expenditure Survey are compared with those included in ERI's Relocation Assessor software, EPI's Family Budgets measure, and ACCRA's COL indices. Runzheimer's consumer profiles are not included in our comparison because the exact consumption patterns used to construct or weight their indices are not publicly available, and we were unable to obtain them from Runzheimer despite repeated requests.

Table 3 displays the distribution of spending across the five components of consumer spending—housing, health care, utilities, groceries, and miscellaneous goods and services. The right-hand column lists the distribution of spending for low-and-moderate income consumer units,[10] defined as those in the lowest two quintiles of the income distribution—with incomes less then or equal to $21,162 in 2002—in the U.S. Bureau of Labor Statistics' Consumer Expenditure Survey. The upper portion of the table lists the distribution without considering expenditures on income or payroll taxes. These tax payments were not considered because they are not part of the ACCRA methodology. The lower portion of the table shows percentage differences in the distribution of spending between the BLS' Consumer Expenditure Survey and the EPI, ERI, and ACCRA cost-of-living methodologies.

The distribution of spending that is reflected in ACCRA's methodology is the closest to the consumption patterns of low- and moderate-income consumer units in terms of expenditures on three categories of goods: housing/utilities, health care, and transportation The EPI's Family Budgets measure comes the closest to measuring the proportion of income spent on food, however it should be noted that the food expenditures category in the ERI's Relocation Assessor software includes other "consumable goods." It is impossible to separate out food expenditures

[10] A consumer unit, as defined by BLS, consists of any of the following, "(1) All members of a particular household who are related by blood, marriage, adoption, or other legal arrangements; (2) a person living alone or sharing a

from other consumable goods, and it is therefore cannot be ascertained if the Relocation Assessor's food expenditures are comparable to those of the Consumer Expenditure Survey or to the other cost-of-living measures. Part of what the ERI has included in consumable goods is most likely classified as a miscellaneous goods and services in the BLS statistical series.

According to the BLS' Consumer Expenditure Survey information in Table 3, low-income consumers spend the greatest proportion of their income on housing and utilities (34.2%), miscellaneous goods (24.3%) and transportation (17.9%). In addition, according to ACCRA's 2004 goods-based indices, housing costs represent the largest degree of variability among metropolitan areas (see Table 2). Thus, we concluded that it is of primary importance that COL measures closely represent the expenditure patterns of low- and moderate-income consumers on housing, and it is desirable that COL measures reflect the expenditures of low- and moderate-income consumers on miscellaneous goods and transportation. Based on these criteria, we concluded that the ACCRA COL index does the best job of the currently available methodologies of representing the cost-of-living realities faced by low- and moderate-income consumers while preserving the variation in the cost-of-living that exists between metropolitan areas.

Finally, we assessed the COL measures' usefulness based upon the components included in family expenses. The most obvious difference is that the EPI's Family Budgets measure, the ERI's Relocation Assessor software, and Runzheimer International all include taxation expenditures in their COL measures, while the other measures do not. However, although taxation levels do in fact vary across geographic areas, accounting for tax expenses in COL measurements is problematic because different relative tax rates exist largely because different communities purchase different bundles of goods and services. Differences in taxation

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household with others…who is financially independent; or (3) two or more persons living together who use their incomes to make joint expenditure decisions." Source: http://www.bls.gov/cex/csxfaqs.htm

expenditures partially represent varying relative costs of service delivery. However, without standardizing for the package of goods and services considered in taxation expenditures, it is conceptually inappropriate and misleading to include taxes in a cost-of-living methodology. High tax jurisdictions that provide high levels of quality public services are different form high tax jurisdictions that offer inefficient and low quality public services. State and local tax expenditures are therefore incomparable across geographic areas, and ACCRA is the only source that does not include taxes in their calculation, which we believes is appropriate.

Our evaluation of the usefulness of the cost-of-living methodologies results in four conclusions. First, in terms of accuracy, Runzheimer and ACCRA employ research methodologies that are far superior to the other two measures because they collect data firsthand. Between the two measures, however, Runzheimer International is preferred to ACCRA because Runzheimer uses on-site researchers to gather information, price data is collected for more items, and information is updated more frequently. Second, in terms of cost-effectiveness, we concluded that ACCRA is the best choice. Although the EPI's Family Budgets COL calculator is available on-line free of charge, the information used is based on secondary sources and they often do not have local cost-of-living information. ACCRA's cost-of-living report costs between $140 and $295 per year, but the degree of precision in ACCRA's measures far surpasses that of the Family Budgets. We conclude that ACCRA's Cost-of-living Index is the most cost-effective choice. Third, in terms of applicability to low- and moderate-income populations, we found that ACCRA is superior to the EPI's Family Budgets and the ERI's Relocation Assessor software. We do not have access to Runzheimer's consumer profiles, and therefore are unable to ascertain the applicability of their COL measures to low-income populations. Fourth, in terms of the expenditure components covered, it is inappropriate to include tax expenditures in COL measures unless service levels are controlled for and ACCRA is the only method that excludes

these costs. Thus, based on these four criteria and the information that was available to us, we concluded that ACCRA's COL Index is the preferred measure for our research purposes.

Estimating Cost-of-living for Missing Areas

The only remaining weakness in using ACCRA's information for measuring geographic cost-of-living differences is that, although the data are reported for geographic areas that represent 70% of the U.S. population (ACCRA, 2003), the set of metropolitan areas for which cost-of-living index is available varies every quarter because participation in the ACCRA survey is voluntary.[11] As a consequence, the ACCRA data would appear to pose serious problems for research use because it is inconsistent and often unavailable for specific metropolitan areas and cities. However, we believe that cost-of-living adjustments for the missing regions can be estimated from the ACCRA data with sufficient accuracy to justify their use. The methodology and application of this estimation procedure is demonstrated in a study by three of the authors on the economic, social and fiscal health of urban areas (Authors, 2005). The authors created an index of city performance to measure the levels of urban distress experienced in U.S. cities. The distress measure was created for 1980 and 2000 for all cities with a population over 125,000 that were in MSAs with a population of at least 250,000. Levels of distress were measured based upon four indicators: the poverty rate, unemployment rate, median household income, and population change over the previous decade within each central city.

Based on their findings, the authors determined that their measure of urban distress would be improved if geographic cost-of-living differentials were incorporated into their assessment of the median household income in each central city. The authors originally attempted to use ACCRA's cost-of-living index to measure these differences. However, ACCRA's index was

[11] On average, ACCRA reports COL data on 200 metropolitan statistical areas each quarter. We do not have information about why regions do or do not particiapte to the ACCRA survey or why they drop in or out. There is a

not available for all 98 cities included in their study. Therefore, as a response, they specified a regression equation for estimating geographic cost-of-living indices for the several MSAs that were not included in the ACCRA reports they used.

As the first step in the analysis two separate regression equations were estimated, one for 1980 and a second for 2000. A sample of thirty-nine 1980 ACCRA index values and sixty-seven 2000 ACCRA index values were regressed against three independent variables The independent variables include the median owner-occupied housing value in the MSA, the natural log of population in the MSA, and the region in which the MSA is located. Median home value and population figures were obtained from the U.S. Census Bureau's American Housing Survey and the U.S. decennial Census of Population. The twelve regions used in the model were derived from the Bureau of Economic Analysis' eight regions, but were modified to better group regions by similarity in economic trends.[12]

When the ACCRA indices were regressed against the independent variables, the model produced an R-squared value of 0.789 for the year 2000 and 0.839 for 1980. These high R-squared values suggest that the independent variables (median home value, population and regional location) explain 79% to 84% of the variation in ACCRA Cost-of-living Index in 1980

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chance that there is some sort selection bias in the ACCRA data. We inspected the data and could not find any obvious omissions or pattern that should be considered.

[12] The twelve regions included in the model for this article are defined as follows:

1. Coastal Southeast: Florida, Georgia, North Carolina, South Carolina, Virginia
2. Continental Far West: California, Nevada, Oregon
3. Great Lakes: Illinois, Indiana, Michigan, Ohio, Wisconsin, all New York State MSAs west of Albany, and all Pennsylvania MSAs west of Philadelphia
4. Inland Southeast: Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Tennessee, West Virginia
5. Non-continental Far West: Alaska, Hawaii
6. Northern Mideast: New Jersey (except those in the NYC CMSA), New York (excluding those in Great Lakes region or NYC CMSA), Pennsylvania (excluding those in Great Lakes region)
7. Northern New England: Maine, New Hampshire, Vermont
8. Plains: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
9. Southern Mideast: Delaware, District of Columbia, Maryland
10. Southern New England: Connecticut, Massachusetts, Rhode Island
11. Southwest: Arizona, Colorado, Idaho, Montana, New Mexico, Oklahoma, Texas, Utah, Wyoming
12. New York City CMSA

and 2000. Furthermore, when the model is used to predict the cost-of-living index for a metropolitan area, the 1980 predicted and actual ACCRA indices have a correlation coefficient of .961, and the 2000 actual and predicted indices have a correlation coefficient of .882. Thus, the model can be used to predict the ACCRA cost-of-living indices for those metropolitan areas where there are missing observations (the time series of indices for a particular metropolitan area is interrupted because the survey was not undertaken for a specific number of time periods). This can be thought of as a "fill in the blank" use where data are missing episodically. The authors used the regression technique differently. They used the regression equation to estimate the cost-of-living index for metropolitan areas that were not part of the ACCRA dataset because the local chamber of commerce never joined with ACCRA's data collection effort.

Application of COL Adjustments: What Difference Does It Make?

As discussed in the beginning of this article, the primary public policy applications of cost-of-living adjustments involve measuring economic wellbeing. Typical indicators used to gauge economic wellbeing are the portion of the population or the percentage of households with incomes that are at, or below, the official poverty thresholds and median household income and per capita income. In order to assess the difference that would result if cost-of-living adjustments were applied to these measures, we applied the ACCRA Cost of Living Index to the official 2000 poverty guidelines and the 2000 median household incomes of a selection of 98 MSAs. The MSAs included in our selection are MSAs of at least 250,000 people that contained central cities with populations of at least 125,000 in 1980. Table 4 reports these results. The purchasing power of the median household income varies a great deal across metropolitan areas. In the San Francisco metro area, the Census-reported 2000 median household income of $55,221 is only equal to $32,423 after adjusting for living cost, while the purchasing power of New York's PMSA's median household income of $38,293 declines to $16,506. Overall, average

median household income levels in our group of 98 MSAs and PMSAs decreased by $2,489 when adjusted for cost-of-living differences.

Table 4 about here

The poverty guidelines, which are used by states in setting qualifying standards for a number of social welfare programs for households and individuals are currently set at uniform levels across the country—although states use different multiples of the poverty level to establish their qualifying standards. When adjusting for geographic living cost differentials however, the poverty guidelines show significant variation across the nation's metropolitan areas. The coefficient of variation for the maximum federal poverty level rises from zero to .21.[13] For the entire group of 98 MSAs/PMSAs included in the study by the authors, the mean household income poverty level for a family of four increases from the unadjusted level of $17,050 to an adjusted level of $18,272. The impact of adjusting for cost-of-living differences is particularly significant in cities with especially high living costs, such as in the New York City PMSA, where the poverty line would increase from $17,050 for a family of four to $38,744 if cost-of-living differentials were recognized.

The percentage and number of families that are considered to be poor would change dramatically in a number of metropolitan areas if the official income guidelines recognized metropolitan area differences in the cost-of-living. Table 5 illustrates the number of families that were considered to be below the poverty threshold in 1999 in the group of 15 metropolitan areas used earlier in this article, versus the number that would have been considered poor in the same year, had the poverty guidelines been adjusted for living cost differences.[14] (See Appendix A for the results for all 98 MSAs and PMSAs). In the New York City PMSA, the number of families considered to be poor in 1999 rises from 16.4% of all families in the PMSA to 37.4%.

[13] The coefficient of variation of poverty line has to be zero by definition because it is the same across the nation.
[14] Using data from the U.S. Census Bureau on family income by family size in 1999, we interpolated both the number of families considered poor under current standards as well as the number of poor families that would be

This represents a real increase of 461,937 families. Several jurisdictions see gains in the number of families considered poor (although all are not as large as New York City's), while others experience losses in their poor populations.

Table 5 about here

Accounting for regional differences in the cost-of-living would have an impact on the number of people and families affected by public policies. Table 6 shows the change in the number of families that would be eligible for the Free and Reduced Price School Lunch and Head Start programs in the group of 15 metropolitan areas that have been followed in this article.[15] The Free and Reduced Price School Lunch program provides free and reduced-price lunches for school-aged children from families with incomes at or below 130% of the poverty level. The Head Start program provides early childhood and preschool education for children under 5 from families with incomes below 100% of the poverty guideline. As Table 6 depicts, adjusting for metropolitan cost-of-living differences when determining poverty levels greatly increases the number of people eligible for social services in high-cost MSAs and PMSAs, while it decreases the number in low-cost MSAs and PMSAs. In New York City, for example, 337,562 more families qualify for free lunches and 113,959 more families qualify for Head Start. In low-cost MSAs and PMSAs, such as Kansas City, MO, program eligibility for free lunches and Head Start decreases by 700 families and 184 families respectively.

Table 6 about here

Conclusion

Economic indicators of wellbeing, such as the official poverty measure and median household income, are currently insensitive to geographic cost-of-living differentials. This is

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considered poor under income-adjusted standards. A detailed explanation of our methodology is contained within the table.

problematic because real income indicators do not account for the geographic differences in the purchasing power of income and the subsequent differences in living standards faced by individuals and families across geographic areas. While several cost-of-living measures exist, they vary greatly in their accuracy, cost-effectiveness, applicability to low-income populations and appropriateness of their components. Based upon these criteria, we conclude that the ACCRA COL measure is preferred for our research purposes, and we have developed a simple regression model to remedy the problem of ACCRA's omission in some metropolitan areas. Coupled with our regression model, individuals, policymakers and analysts that wish use ACCRA indices, can now do so without facing the limitations of data unavailability.

[15] Using income data from the Census Bureau, we interpolated the number of children currently available for the selected programs, and compared that with the interpolated number that would be available for the same programs under COL-adjusted qualification standards. A detailed explanation of our calculations is available in the table.

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Table 1

Reported Census Median Household Income and Estimated Median Household Income after Adjusting for Cost of Living Differences

Metropolitan Area	Reported Median Household Income, 1999[1]	Estimated Median Household Income After Cost of Living Adjustment				Range of Household Median Income
		HUD Fair Market Rent (FMR)[2]	Economic Policy Institute Family Budget[3]	Brookings Institute Metropolitan Price Indices[4]	ACCRA Cost of Living Series[5]	
Albuquerque, NM MSA	**$39,088**	$29,600	$38,701	$35,349	$38,739	$9,488
Atlanta, GA MSA	**$51,948**	$32,326	$48,100	$43,276	$50,484	$19,622
Baton Rouge, LA MSA	$38,438	$41,110	**$43,189**	$37,735	$38,095	$2,079
Boston, MA-NH PMSA	**$55,183**	$25,956	$38,590	$40,229	$41,151	$29,227
Chicago, IL PMSA	**$51,680**	$30,047	$45,333	$41,757	$42,188	$21,633
Evansville-Henderson, IN-KY MSA	$39,307	$35,096	**$42,725**	$37,814	$41,289	$7,629
Jacksonville, FL MSA	$42,439	$34,872	**$46,129**	$38,718	$44,115	$11,257
Jersey City, NJ PMSA	**$40,293**	$22,286	$36,300	$31,810	$24,704	$18,007
Kansas City, MO-KS MSA	$46,193	$35,642	$46,193	$42,086	**$47,136**	$11,494
New York, NY PMSA	**$41,053**	$19,766	$30,186	$30,290	$17,695	$21,287
Philadelphia, PA-NJ PMSA	**$47,536**	$28,533	$42,067	$38,972	$40,047	$19,003
San Francisco, CA PMSA	**$63,297**	$20,591	$45,537	$37,574	$37,168	$42,706
Spokane, WA MSA	**$37,308**	$31,671	**$37,308**	$35,234	$34,290	$5,637
Springfield, MA MSA	**$40,740**	$27,602	$32,079	$35,206	$33,781	$13,138
Washington, DC-MD-VA-WV PMSA	**$62,216**	$32,814	$43,814	$48,016	$50,418	$29,402
Mean	$46,448	$29,861	$41,083	$38,271	$38,753	$17,441
Std. Deviation	8,603	5,964	5,366	4,511	8,810	
Coefficient of Variation	0.19	0.20	0.13	0.12	0.23	

Notes:

Highest median household income after adjusted for metropolitan cost of living (COL) is listed in **bold**.

All indices are indexed to 100, which represents the national average. Adjusted median household income levels were derived by dividing the median household income in a metropolitan area reported by the U.S. Bureau of the Census by the appropriate index and multiplying by 100. For instance, in Albuquerque, the original median household income ($39,088) was divided by the FMR index of 132.1, arriving at a quotient of 295.9. That number was then multiplied by 100, arriving at an adjusted income of $29,600. This method was used for all adjusted income levels in all subsequent tables.

The Metropolitan Statistical Areas (MSAs) and Primary Metropolitan Statistical Areas (PMSAs) included in Table 1 (and subsequent tables) were chosen from a study by Hill, Furdell and Wolman (2003), in which the authors studied urban distress in 98 central cities. The central cities included in their study were cities with populations over 125,000 that were in MSAs/PMSAs with populations of over 250,000 in 2000. The 15 MSAs/PMSAs included in our tables are a subset of the MSAs/PMSAs that were represented in the study by Hill, et al. The 15 MSAs/PMSAs that we selected to include in our tables were based on the criteria of national regional representation and variations in size. The set of 15 MSAs/PMSAs was chosen for illustrative purposes and is not a statistically representative sample.

[1] Source: U.S. Census Bureau, 2000. http://factfinder.census.gov/servlet/DTGeoSearchByListServlet?ds_name=DEC_2000_SF3_U&_lang=en&_ts=111680527320

[2] FMR value based on two bedroom apartment in 2000. MSA/PMSA FMRs are indexed to national average FMR, which was $443 for a 2 bedroom apartment in 2000. Source: U.S. Department of Housing and Urban Development. http://www.huduser.org/datasets/fmr.html

[3] Family Budgets values are based on two-parent, one-child family, 1999. MSA/PMSA values are indexed to national average Family Budget values. Source: http://www.epinet.org

[4] Brookings Institute Metropolitan Price Indices are based on the study by Berube & Thacher, 2004. The original indices used in the study were based on 1999 FMR values, and were calculated using the following formula: metropolitan FMR/national FMR * 0.33 + 0.67. We applied Berube & Thacher's formula to 2000 FMR values to increase comparability between the indices included in Table 1.

[5] ACCRA indices are for the fourth quarter, 2000

Table 2

ACCRA Cost of Living Index Values for the 26 Largest Metropolitan Areas
Second Quarter 2004

Component of the Cost of Living Index	Index Values			Correlation With Housing Index
	Highest	Lowest	Std. Deviation	
Housing	259.8	79.3	58.8	
Health Care	138.3	82.9	13.7	0.36
Utilities	134.1	90.4	12.2	0.42
Groceries	133.3	85.9	10.8	0.79
Transportation	131.9	95.7	10.4	0.79
Miscellaneous goods and service	124.3	95.3	8.3	0.68

National average = 100.0

Source: Accra at http://www.accra.org/media/

Table 3

Distribution of Expenditures by Major Categories of Goods Compared to the U.S. Bureau of Labor Statistics' Consumer Expenditure Survey Data for the Lowest 40% of the Income Distribution

Distribution of expenditures without payroll or income taxes

Component of the Cost of Living Indices	Economic Research Institute Relocation Assessor[1]	Economic Policy Institute Family Budget[2]	ACCRA Cost of Living Index[3]	S Bureau of Labor Statistics nsumer Expenditure Survey ow and Moderate-Income Consumers[4]
Housing/Utilities	42.8%	19.7%	13.0%	16.0%
Health Care	45.9%	21.8%	39.0%	34.2%
Transportation	8.9%	8.8%	10.0%	17.9%
Groceries	7.1%	10.5%	4.0%	7.7%
Miscellaneous goods and services	-4.7%	39.2%	34.0%	24.3%

Differences between the distribution of consumer expenditures: COL methodology and the Consumer Expenditure Survey[5]

Component of the Cost of Living Indices	Economic Research Institute Relocation Assessor	Economic Policy Institute Family Budget	ACCRA Cost of Living Index	S Bureau of Labor Statistics nsumer Expenditure Survey ow and Moderate-Income Consumers[6]
Housing/Utilities	26.8%	3.7%	-3.0%	16.0%
Health Care	11.7%	-12.4%	4.8%	34.2%
Transportation	-9.0%	-9.0%	-7.9%	17.9%
Groceries	-0.6%	2.8%	-3.7%	7.7%
Miscellaneous goods and services	-28.9%	14.9%	9.8%	24.3%

Notes:

EPI's Family Budgets and ERI's Relocation Assessor include adjustments for local taxation expenditures, however these results are reported without the tax component to maintain comparability with the other indices.

1 ERI estimates are for a family of 4 earning $18,850 in 2004. Homeowners/renters insurance is included as a housing cost. The Relocation Assessor software produces a negative value for Miscellaneous Goods and Services because the algorithm used in the computer program is not designed to compute expenditures for low-income families.
Source: ERI's Platform Library, CD ROM, April 2004

2 EPI Family Budget for a 2 parent, 2 child household in 1999. Miscellaneous expenditures include childcare (24.4%) and miscellaneous goods (11.5%)
Source: http://www.epinet.org/datazone/fambud/xls/2p2c.xls

3 Expenditure weights were updated in 2003 based on U.S. Bureau of Labor Statistics Consumer Expenditure data. ACCRA indices typically construct two separate sub-indices for housing and utilities, however the two categories were combined in order to increase comparability between indices.
Source: ACCRA Cost of Living Index Manual, 2003

4 Average expenditures for consumer units in 2002 with incomes in the lowest quintile ($8,316 per year) and in the second quintile ($21,162 per year).
Source: U.S. Bureau of Labor Statistics, Consumer Expenditure Survey, 2004, http://www.bls.gov/cex/2002/Standard/quintile.pdf

5 Calculated as the percentage distribution from the COL methodology Less the percentage distribution in the BLS CEX

6 The material in this column is carried over from the upper portion of the table.

Table 4
ACCRA-Adjusted Poverty Guidelines and Median Household Income for 98 Metropolitan Areas, 2000

Selected MSAs/PMSAs	Federal Poverty Guideline, Family of Four, 1999				Median Household Income, 2000			
	Reported Federal Maximum Income Level	ACCRA Cost-of-living Adjusted Maximum Income Level	Difference (ACCRA - Federal)		U.S. Bureau of the Census	ACCRA Cost-of-living Adjusted Median Income	Difference (ACCRA - Federal)	
			Dollar	Percent[2]			Dollar	Percent[2]
Akron, OH	$16,700	$16,932	$232	1.4%	$31,835	$31,398	-$437	-1.4%
Albuquerque, NM	$16,700	$16,850	$150	0.9%	$38,272	$37,931	-$341	-0.9%
Anaheim-Santa Ana, CA	$16,700	$23,052	$6,352	38.0%	$47,122	$34,138	-$12,984	-27.6%
Atlanta, GA	$16,700	$17,184	$484	2.9%	$34,770	$33,790	-$980	-2.8%
Austin, TX	$16,700	$16,015	-$685	-4.1%	$42,689	$44,514	$1,825	4.3%
Baltimore, MD	$16,700	$16,199	-$501	-3.0%	$30,078	$31,008	$930	3.1%
Baton Rouge, LA	$16,700	$16,850	$150	0.9%	$30,368	$30,097	-$271	-0.9%
Birmingham-Hoover, AL	$16,700	$16,166	-$534	-3.2%	$26,735	$27,619	$884	3.3%
Boston, MA-NH	$16,700	$22,395	$5,695	34.1%	$39,629	$29,552	-$10,077	-25.4%
Bridgeport-Stamford-Norwalk, CT	$16,700	$28,301	$11,601	69.5%	$34,658	$20,451	-$14,207	-41.0%
Buffalo-Niagara Falls, NY	$16,700	$16,516	-$184	-1.1%	$24,536	$24,809	$273	1.1%
Charlotte-Gastonia-Concord, NC-SC	$16,700	$16,784	$84	0.5%	$46,975	$46,741	-$234	-0.5%
Chattanooga, TN-GA	$16,700	$16,500	-$200	-1.2%	$32,006	$32,395	$389	1.2%
Chicago, IL	$16,700	$20,460	$3,760	22.5%	$38,625	$31,527	-$7,098	-18.4%
Cincinnati, OH-KY-IN	$16,700	$16,617	-$84	-0.5%	$29,493	$29,641	$148	0.5%
Cleveland-Lorain-Elyria, OH	$16,700	$18,721	$2,021	12.1%	$25,928	$23,129	-$2,799	-10.8%
Colorado Springs, CO	$16,700	$16,550	-$150	-0.9%	$45,081	$45,490	$409	0.9%
Columbus, OH	$16,700	$16,800	$100	0.6%	$37,897	$37,671	-$226	-0.6%
Corpus Christi, TX	$16,700	$14,064	-$2,636	-15.8%	$36,414	$43,240	$6,826	18.7%
Dallas, TX	$16,700	$16,800	$100	0.6%	$37,628	$37,404	-$224	-0.6%
Dayton, OH	$16,700	$16,834	$134	0.8%	$27,423	$27,205	-$218	-0.8%
Denver, CO	$16,700	$18,019	$1,319	7.9%	$39,500	$36,608	-$2,892	-7.3%
Des Moines, IA	$16,700	$15,494	-$1,206	-7.2%	$38,408	$41,399	$2,991	7.8%
Detroit-Warren-Livonia, MI	$16,700	$18,954	$2,254	13.5%	$29,526	$26,015	-$3,511	-11.9%
El Paso, TX	$16,700	$14,504	-$2,196	-13.2%	$32,124	$36,988	$4,864	15.1%
Evansville, IN-KY	$16,700	$15,898	-$802	-4.8%	$31,963	$33,575	$1,612	5.0%
Flint, MI	$16,700	$16,037	-$663	-4.0%	$28,015	$29,174	$1,159	4.1%
Fort Lauderdale, FL	$16,700	$17,069	$369	2.2%	$37,887	$37,069	-$818	-2.2%
Fort Wayne, IN	$16,700	$15,648	-$1,052	-6.3%	$36,518	$38,973	$2,455	6.7%
Fort Worth-Arlington, TX	$16,700	$16,917	$217	1.3%	$37,074	$36,598	-$476	-1.3%
Fresno, CA	$16,700	$17,936	$1,236	7.4%	$32,236	$30,015	-$2,221	-6.9%
Gary, IN	$16,700	$16,622	-$78	-0.5%	$27,195	$27,323	$128	0.5%
Grand Rapids-Wyoming, MI	$16,700	$17,168	$468	2.8%	$37,224	$36,210	-$1,014	-2.7%
Greensboro-High Point, NC	$16,700	$16,132	-$568	-3.4%	$39,661	$41,057	$1,396	3.5%
Hartford-West Hartford-East Hartford, C	$16,700	$20,171	$3,471	20.8%	$24,820	$20,549	-$4,271	-17.2%
Honolulu, HI	$16,700	$25,708	$9,008	53.9%	$45,112	$33,709	-$11,403	-25.3%
Houston, TX	$16,700	$15,865	-$835	-5.0%	$36,616	$38,543	$1,927	5.3%
Indianapolis, IN	$16,700	$16,232	-$468	-2.8%	$40,051	$41,205	$1,154	2.9%
Jackson, MS	$16,700	$15,347	-$1,353	-8.1%	$30,414	$33,095	$2,681	8.8%
Jacksonville, FL	$16,700	$16,065	-$635	-3.8%	$40,316	$41,909	$1,593	4.0%
Jersey City, NJ	$16,700	$27,233	$10,533	63.1%	$37,862	$23,218	-$14,644	-38.7%
Kansas City, MO-KS	$16,700	$16,366	-$334	-2.0%	$37,198	$37,957	$759	2.0%
Knoxville, TN	$16,700	$15,965	-$735	-4.4%	$27,492	$28,757	$1,265	4.6%
Lansing-East Lansing, MI	$16,700	$17,635	$935	5.6%	$34,833	$32,986	-$1,847	-5.3%
Las Vegas-Paradise, NV	$16,700	$17,802	$1,102	6.6%	$44,069	$41,341	-$2,728	-6.2%
Lexington-Fayette, KY	$16,700	$16,266	-$434	-2.6%	$39,813	$40,876	$1,063	2.7%
Little Rock-North Little Rock, AR	$16,700	$15,882	-$818	-4.9%	$37,572	$39,508	$1,936	5.2%
Los Angeles-Long Beach, CA	$16,700	$20,959	$4,259	25.5%	$36,687	$29,233	-$7,454	-20.3%
Louisville, KY-IN	$16,700	$15,932	-$768	-4.6%	$28,843	$30,234	$1,391	4.8%
Madison, WI	$16,700	$17,625	$925	5.5%	$41,941	$39,740	-$2,201	-5.2%
Memphis, TN-MS-AR	$16,700	$15,180	-$1,520	-9.1%	$32,285	$35,517	$3,232	10.0%
Miami, FL	$16,700	$17,769	$1,069	6.4%	$23,483	$22,070	-$1,413	-6.0%
Milwaukee-Waukesha-West Allis, WI	$16,700	$18,200	$1,500	9.0%	$32,216	$29,561	-$2,655	-8.2%
Minneapolis-St. Paul-Bloomington, MN-WI	$16,700	$17,568	$868	5.2%	$37,974	$36,097	-$1,877	-4.9%
Mobile, AL	$16,700	$15,431	-$1,269	-7.6%	$31,445	$34,031	$2,586	8.2%
Montgomery, AL	$16,700	$16,182	-$518	-3.1%	$35,627	$36,767	$1,140	3.2%
Nashville-Davidson--Murfreesboro, TN	$16,700	$15,949	-$752	-4.5%	$39,232	$41,081	$1,849	4.7%
New Haven-Milford, CT	$16,700	$20,558	$3,858	23.1%	$29,604	$24,049	-$5,555	-18.8%
New Orleans-Metairie-Kenner, LA	$16,700	$16,573	-$127	-0.8%	$27,133	$27,342	$209	0.8%
New York, NY	$16,700	$38,744	$22,044	132.0%	$38,293	$16,506	-$21,787	-56.9%
Newark, NJ	$16,700	$29,857	$13,157	78.8%	$26,913	$15,053	-$11,860	-44.1%
Norfolk, NE	$16,700	$16,182	-$518	-3.1%	$31,815	$32,833	$1,018	3.2%
Oakland, CA	$16,700	$23,512	$6,812	40.8%	$40,055	$28,451	-$11,604	-29.0%
Oklahoma City, OK	$16,700	$15,030	-$1,670	-10.0%	$34,947	$38,830	$3,883	11.1%
Omaha-Council Bluffs, NE-IA	$16,700	$15,949	-$752	-4.5%	$40,006	$41,891	$1,885	4.7%
Orlando, FL	$16,700	$16,333	-$367	-2.2%	$35,732	$36,536	$804	2.2%
Paterson-Clifton-Passaic, NJ	$16,700	$22,300	$5,600	33.5%	$32,778	$24,546	-$8,232	-25.1%
Philadelphia, PA-NJ	$16,700	$19,823	$3,123	18.7%	$30,746	$25,902	-$4,844	-15.8%
Phoenix-Mesa-Scottsdale, AZ	$16,700	$17,251	$551	3.3%	$41,207	$39,891	-$1,316	-3.2%
Pittsburgh, PA	$16,700	$17,035	$335	2.0%	$28,588	$28,026	-$562	-2.0%
Portland-Vancouver, OR-WA	$16,700	$18,788	$2,088	12.5%	$40,146	$35,685	-$4,461	-11.1%
Providence-New Bedford-Fall River, RI-M	$16,700	$19,788	$3,088	18.5%	$26,867	$22,675	-$4,192	-15.6%
Raleigh-Cary, NC	$16,700	$16,917	$217	1.3%	$46,612	$46,014	-$598	-1.3%
Richmond, VA	$16,700	$17,351	$651	3.9%	$31,121	$29,953	-$1,168	-3.8%
Riverside-San Bernardino-Ontario, CA	$16,700	$18,637	$1,937	11.6%	$41,646	$37,317	-$4,329	-10.4%
Rochester, NY	$16,700	$16,724	$24	0.1%	$27,123	$27,084	-$39	-0.1%
Rockford, IL	$16,700	$15,932	-$768	-4.6%	$37,667	$39,483	$1,816	4.8%

Sacramento, CA	$16,700	$18,888	$2,188	13.1%	$37,049	$32,758	-$4,291	-11.6%
Salt Lake City, UT	$16,700	$17,543	$843	5.0%	$36,944	$35,169	-$1,775	-4.8%
San Antonio, TX	$16,700	$14,930	-$1,770	-10.6%	$36,214	$40,508	$4,294	11.9%
San Diego-Carlsbad-San Marcos, CA	$16,700	$21,142	$4,442	26.6%	$45,733	$36,124	-$9,609	-21.0%
San Francisco, CA	$16,700	$28,443	$11,743	70.3%	$55,221	$32,423	-$22,798	-41.3%
San Jose, CA	$16,700	$28,112	$11,412	68.3%	$70,243	$41,728	-$28,515	-40.6%
Seattle-Bellevue-Everett, WA	$16,700	$21,477	$4,777	28.6%	$45,736	$35,563	-$10,173	-22.2%
Shreveport-Bossier City, LA	$16,700	$14,954	-$1,746	-10.5%	$30,526	$34,090	$3,564	11.7%
Spokane, WA	$16,700	$18,170	$1,470	8.8%	$32,273	$29,663	-$2,610	-8.1%
Springfield, MA	$16,700	$20,140	$3,440	20.6%	$30,417	$25,221	-$5,196	-17.1%
St. Louis, MO-IL	$16,700	$16,149	-$551	-3.3%	$27,156	$28,083	$927	3.4%
Stockton, CA	$16,700	$17,883	$1,183	7.1%	$35,453	$33,108	-$2,345	-6.6%
Syracuse, NY	$16,700	$16,867	$167	1.0%	$25,000	$24,752	-$248	-1.0%
Tacoma, WA	$16,700	$17,385	$685	4.1%	$37,879	$36,387	-$1,492	-3.9%
Tampa-St. Petersburg-Clearwater, FL	$16,700	$16,286	-$414	-2.5%	$34,415	$35,289	$874	2.5%
Toledo, OH	$16,700	$17,084	$384	2.3%	$32,546	$31,814	-$732	-2.2%
Tucson, AZ	$16,700	$17,017	$317	1.9%	$30,981	$30,403	-$578	-1.9%
Tulsa, OK	$16,700	$15,615	-$1,086	-6.5%	$35,316	$37,771	$2,455	7.0%
Washington, DC-MD-VA-WV	$16,700	$20,608	$3,908	23.4%	$40,127	$32,518	-$7,609	-19.0%
Wichita, KS	$16,700	$16,065	-$635	-3.8%	$39,939	$41,517	$1,578	4.0%
Worcester, MA	$16,700	$19,485	$2,785	16.7%	$35,623	$30,531	-$5,092	-14.3%
Summary Statistics								
Mean	$16,700	$18,272	$1,572	9.4%	$35,372	$32,883	($2,489)	-6.4%
Standard deviation		3,806	3,806	22.8%	6,994	6,605	5,845	13.9%
Coefficient of variation		0.21	2.42	2.42	0.20	0.20	-2.35	-2.16

The Metropolitan Statistical Areas (MSAs) and Primary Metropolitan Statistical Areas (PMSAs) included in Table 5 were chosen from a study by Furdell, Hill and Wolman (2004), in which the authors studied urban distress in 98 central cities. The central cities included in their study were cities with populations over 125,000 that were in MSAs/PMSAs with populations of over 250,000 in 2000. The 15 MSAs/PMSAs included in our tables are a subset of the MSAs/PMSAs that were represented in the study by Furdell, et al. The 15 MSAs/PMSAs that we selected to include in our tables were based on the criteria of national regional representation and variations in size. The set of 15 MSAs/PMSAs was chosen for illustrative purposes and is not a statistically representative sample.

Bolded MSAs/PMSAs are the regions for which the ACCRA COL index was predicted using our regression model.

1 ACCRA-adjusted poverty levels were derived by dividing the appropriate index by 100, and multiplying by the current poverty guideline.
Example: The calculation for Albuquerque's poverty level was (100.9/100) * 16,700 = 16,850
ACCRA-adjusted median household incomes were derived by dividing the appropriate index by 100 and dividing into the current median household income.
Example: The calculation for Albuquerque's median household income was 38,272/(100.9/100) = 37,931

2 The percentage difference was calculated as [(ACCRA-Federal)/Federal]

Table 5

Effect of Using ACCRA's Cost-of-living Adjustments to Estimates of the Poverty level and the number of Families with Incomes at, or Below, the Poverty Level in 1999

MSA/PMSA	Current Federal Maximum Poverty Income Level		ACCRA Cost-of-living Adjusted Poverty Estimates		
	Number of Poor Families	Poor Families as % of Total Families	Number of Poor Families	Poverty Families % of Total Families	Change in Number of Poor Families
Albuquerque, NM MSA	18,738	10.2%	19,007	10.4%	269
Atlanta, GA MSA	71,856	6.8%	74,612	7.1%	2,756
Baton Rouge, LA MSA	18,616	11.9%	18,843	12.1%	227
Boston, MA-NH PMSA	48,576	5.9%	71,271	8.6%	22,695
Chicago, IL PMSA	157,961	7.8%	202,844	10.0%	44,883
Evansville-Henderson, IN-KY MSA	5,820	7.3%	5,395	6.7%	-425
Jacksonville, FL MSA	23,249	12.6%	21,969	7.5%	-1,280
Jersey City, NJ PMSA	19,346	13.4%	35,510	24.5%	16,164
Kansas City, MO-KS MSA	28,711	6.1%	27,934	6.0%	-777
New York, NY PMSA	361,531	16.4%	823,468	37.4%	461,937
Philadelphia, PA-NJ PMSA	105,515	8.1%	148,500	11.4%	42,985
San Francisco, CA PMSA	19,798	5.2%	43,793	11.5%	23,995
Spokane, WA MSA	8,793	8.2%	10,042	9.4%	1,249
Springfield, MA MSA	14,896	10.2%	18,647	12.8%	3,751
Washington, DC-MD-VA-WV PMSA	63,080	5.1%	82,954	6.7%	19,874

The Metropolitan Statistical Areas (MSAs) and Primary Metropolitan Statistical Areas (PMSAs) included in Table 6 were chosen from a study by Hill, Furdell and Wolman (2004), in which the authors studied urban distress in 98 central cities. The central cities included in their study were cities with populations over 125,000 that were in MSAs/PMSAs with populations of ov
The 15 MSAs/PMSAs included in our tables are a subset of the MSAs/PMSAs that were represented in the study by Hill, et al. The 15 MSAs/PMSAs that we selected to include in our tables were national regional representation and variations in size. The set of 15 MSAs/PMSAs was chosen for illustrative purposes and is not a statistically representative sample.
See Appendix C for current and adjusted families in poverty for all 98 MSAs/PMSAs and the unadjusted federal poverty guidelines for all family sizes.

Federal poverty guidelines from U.S. Department of Health and Human Services were used as opposed to the U.S. Census Bureau's Federal Poverty Standards. because HHS' poverty guidelines are used more frequently to determine program eligibility than the Census' poverty standards.
For a detailed discussion of poverty guidelines and poverty standards, see (The Institute for Research on Poverty, 2003).

Using data from the U.S. Census Bureau on family income by family size (1999), we interpolated both the number of families considered poor under current standards as well as the number of poor families considered poor under income-adjusted standards.
The calculation used for the number of two person poor families under current standards in Albuquerque, NM is as follows:

Federal poverty guideline for a family of two: $11,060	
Number of two person families earning less than $10,000 in Albuquerque, NM	5,173
Number of two person families earning $10,000 - $14,999 in Albuquerque, NM	4,858
Poverty guideline - Lower bound of range ($11,060 - $10,000)	1,060
Upper bound of range - Lower bound of range ($14,999 - $10,000)	4,999
Percent of category that are poor: (1,060/4,999)	23.2%
0.23(5,173) = 1,127 families in category that are poor	1,127
Two person poor families under current standards (5,173 + 1,127)	6,300

The same calculation was used for all MSAs/PMSAs for all family sizes (up to 7 or more people). The total number of poor families is the aggregate number of poor families at each family size in ea
The same calculation was used for current and income-adjusted standards.

ACCRA-adjusted poverty guideline and median household income levels were derived by dividing the reported federal level by the appropriate index, multiplied by 0.01.

The total number of poor families (under current and income-adjusted standards) is the aggregate number of poor families at each family size in each MSA/PMSA

Poor families as a percent of total families = (total number of poor families)/(total families)

Table 6

Change in the Number of Families Eligible for Social Programs in 1999 if Cost of Living Adjustments Were Permissible

MSA/PMSA	Change in Eligibility for Free School Lunch through the Free and Reduced-Price Lunch Program1 Poor families with children aged 5 - 17		Change in Eligibility of Families for Head Start Program2 Poor families with children under 5	
	Number	Percent Difference	Number	Percent Difference
Albuquerque, NM MSA	253	1.3%	65	0.9%
Atlanta, GA MSA	2,985	4.1%	700	3.5%
Baton Rouge, LA MSA	689	3.7%	169	3.8%
Boston, MA-NH PMSA	24,882	49.0%	7,030	49.0%
Chicago, IL PMSA	48,509	30.7%	15,528	30.6%
Evansville-Henderson, IN-KY MSA	-540	-9.5%	-127	-9.6%
Jacksonville, FL MSA	-2,089	-8.4%	-493	-8.4%
Jersey City, NJ PMSA	16,151	80.5%	4,520	80.8%
Kansas City, MO-KS MSA	-700	-2.4%	-184	-2.5%
New York, NY PMSA	337,562	98.0%	113,959	100.9%
Philadelphia, PA-NJ PMSA	26,520	24.7%	6,088	24.4%
San Francisco, CA PMSA	25,473	117.7%	10,940	118.2%
Spokane, WA MSA	1,356	14.9%	480	14.7%
Springfield, MA MSA	3,697	25.3%	920	25.2%
Washington, DC-MD-VA-WV PMSA	21,850	33.9%	5,963	33.9%

1 Children eligible for free school lunches under the Free and Reduced-Price School Lunch Program are school-aged children whose annual family income is at or below 130% of the federal poverty guidelines. Children with family incomes greater than 130% but less than 185% of the federal poverty guidelines are eligible for reduced-price lunches, however we did not include reduced-price lunches in our analysis.

The following calculation was used to calculate the COL-adjusted and unadjusted number of families elibible for free lunches: (Albuquerque, NM MSA)

Unadjusted Federal Poverty Guideline for 2 person families	11,060	Unadjusted Poverty Guideline for 2 person families	11,060
Adjusted for COL by ACCRA Index/100: 100.9/100 = 1.009	11,160		
Adjusted for Program Eligibility (130% of poverty): 11,160 * 1.3	14,508	Adjusted for Program Eligibility: 11,060 * 1.3	14,378
Number of 2 person families earning less than 10,000	5,173	Number of 2 person families earning less than 10,000	5,173
Number of 2 person families earning 10,000 - 14,999	4,858	Number of 2 person families earning 10,000 - 14,999	4,858
Upper bound of range - lower bound of range: 14,999 - 10,000	4,999	Uppoer bound of range - lower bound of range: 14,999 - 10,000	4,999
Adjusted povery guideline - lower bound of range: 14,508 - 10,000	4,508	130% of poverty guideline - lower bound of range: 14,378 - 10,000	4,378
Percent of range that are poor: 4,508/4,999	0.902	Percent of category that are below 130% of poverty: 4,378/4,999	0.876
Imputed families below 130% of poverty: .902 * 4,858	4,381	Imputed families below 130% of poverty: .876 * 4,858	4,255
Total 2 person families with COL-adjusted incomes $\leq$ 130% of poverty: 5,173 + 4,38	9,554	Total 2 person families with incomes $\leq$ 130% of poverty: 5,173 + 4,255	9,428

This calculation was repeated for all family sizes, up to families with 7 or more persons. Totals for Albuquerque are as follows:

Families with COL-adjusted incomes at or below 130% of poverty		Families with incomes at or below 130% of poverty	
2 person families	9554	2 person families	9,428
3 person families	6759	3 person families	6,677
4 person families	5673	4 person families	5,598
5 person families	3274	5 person families	3,341
6 person families	1554	6 person families	1,535
7 person families	1250	7 person families	1,236
Total families	28,063	Total families	27,815
Percent of poor families in Albuquerque with children aged 5 - 17	0.259	Percent of poor families in Albuquerque with children aged 5 - 17	0.259
Total families eligible for free lunches	7,262	Total families eligible for free lunches	7,197
Change: 7,197-7,262	65		
Percent Difference: (7,197-7,262)/7,262	0.9%		

2 The Head Start program is available to pre-school aged children from families with incomes at or below 100% of the federal poverty guideline. The same basic calculation as above was used to determine the number of families eligible for Head Start. The only differences were: (1) there was no need to adjust incomes by a multiplier for program eligibility. and (2) the total number of families eligible for the Head Start program was multiplied by the percentage of poor families in each MSA with children under 5 (as opposed to children aged 5 - 17).

Sources: Population estimates are based on data obtained from U.S. Census Bureau, SF-3 and SF-4 files. http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_lang=en&_ts=
Program eligibility data obtained from CRS Report for Congress, "Cash and Noncash Benefits for Persons with Limited Income: Eligibility Rues, Recipient and Expenditure Data, FY 2000 - FY 2002," November, 2003, Report Order Code RL32233.