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THE ECONOMIC POLICY INSTITUTE'S 2015 FAMILY BUDGET CALCULATOR

Technical Documentation

BY **ELISE GOULD, TANYELL COOKE, ALYSSA DAVIS, AND WILL KIMBALL**

This paper presents the methodology and data sources used in the 2015 update of the Economic Policy Institute's **Family Budget Calculator**. The budget calculator draws upon the most recent available data, which in many instances is data for 2014. In cases where 2014 data are not available, data from the latest available year are inflated to 2014 dollars. As such, the budgets should be considered as applying to 2014, even though they were published in 2015.

Definition of families

The size of a family dramatically affects the budget needed to maintain a secure yet modest standard of living. We have constructed budgets for 10 different types of families in each area. These families include a single person with no children; a married couple with no children; single-parent families with one, two, three, or four children; and a married couple with one, two, three, or four children.

Our definition of a single person with no children assumes that he or she is employed and is the head of household for federal income tax purposes. Our definition of a married couple with no children assumes both are employed, live together, and jointly file federal income taxes. Our definition of single-parent families assumes that the head of household is employed, lives with his or her children, and files as the head of household for federal income tax purposes. Our definition of two-parent families assumes that both partners are employed, live together with their children, and jointly file federal income taxes.

Families with one child are assumed to have a 4-year-old. Families with two children are assumed to have a 4-year-old and an 8-year-old. Families with three children are assumed to have a 4-year-old, an 8-year-old, and a 12-year-old. Families with four children are assumed to have a 4-year-old, an 8-year-old, a 12-year-old, and a 16-year-old.

Definition of areas

The 2015 EPI Family Budget Calculator presents data for 618 areas. Of these, 48 are statewide averages of rural areas; Rhode Island, New Jersey, and the District of Columbia do not have rural areas. Among the remaining 570 family budget areas, 485 are non-overlapping metropolitan statistical areas. Thirty-nine metropolitan areas cross state lines and generate 85 family budget areas to account for state-based variance within metropolitan areas.

A metropolitan statistical area (MSA) is defined by the Office of Management and Budget (2009) as having at least one urbanized area of 50,000 or more people, plus adjacent territory that has a high degree of social and economic integration with the core, as measured by commuting ties. Some of our data (those pertaining to housing) require us to use fair market rent (FMR) areas. FMR areas are published by the U.S. Department of Housing and Urban Development (HUD 2014a). They are divided into metropolitan FMR areas and nonmetropolitan FMR areas.

Since most metropolitan FMR areas correspond to an MSA, where possible we replaced metropolitan FMR areas with the corresponding MSAs in the list of family budget areas. Those without corresponding MSAs remain in the list of family budget areas as metropolitan FMR areas. The remaining nonmetropolitan FMR areas were labeled as non-MSA. The rural areas were also labeled as non-MSA. When regional breakdowns were used for budget calculations, they were based on the Census Bureau regions, per data availability (U.S. Census Bureau 2013).

Use the EPI Family Budget Calculator

<http://www.epi.org/resources/budget>

Read the overview

<http://www.epi.org/publication/what-families-need-to-get-by-epis-2015-family-budget-calculator>

Several of our components (child care and out-of-pocket medical costs) depend on the MSA categorization (i.e., whether or not an area is designated as an MSA) or on the population size of the MSA (transportation).

To make the 2015 EPI family budgets more user-friendly, we organized the budgets by United States Postal Service (USPS) Zone Improvement Plan (ZIP) codes. Using the U.S. Department of Housing and Urban Development's USPS ZIP Code Crosswalk Files (HUD 2015) and data from the Missouri Data Center (2012), we crossed our 618 unique MSA-based family budgets into their respective USPS ZIP codes.

Components of the 2015 EPI family budgets

The 2015 EPI family budgets consist of seven individual components: rent, food, transportation, child care, health care, taxes, and other items of necessity. The following sections describe the methodology used to construct a monthly cost for each of these seven components across the 618 areas.

Rent

Data for rental costs come from the U.S. Department of Housing and Urban Development (2014a). HUD estimates FMRs in order to establish cost information for the federal government's Section 8 housing assistance programs (HUD 2014b). FMRs are used to ensure a sufficient supply of housing for these programs. HUD calculates FMRs using five-year data from the American Community Survey (ACS) and relies on the Office of Management and Budget for definitions of metropolitan areas. All counties that are not classified as metropolitan areas are classified as rural. To establish a family budget cost for housing in a rural area, rental costs for rural counties are averaged into one price to be applied as "rural rent" for the entire state. Data extracts of these cost estimates are made publicly available, and EPI made use of these data to construct our family budget measure.

Fair market rent estimates are provided at the 40th percentile of rent cost—the dollar amount below which 40 percent of standard quality rental units are rented. HUD also provides the 50th percentile of rental cost for each MSA. In fiscal 2014, 505 of the 524 MSAs had data for the 40th percentile, and 19 metro areas had data available only at the 50th percentile. For these 19 areas, the 40th percentile rental cost is derived by applying a ratio of the average 40th and 50th percentile rental costs for the other MSAs in the state.

HUD makes rental rates available for studio apartments and one-bedroom through four-bedroom apartments. The EPI family budgets assume that a one-person household uses a studio and a two-person household uses a one-bedroom apartment. Families with one or two children use the two-bedroom rate. Families with three or four children use the rate for a three-bedroom unit. Rental costs include shelter plus all tenant-paid utilities, excluding telephone service, cable or satellite service, and Internet service.

Food

Data for food costs are taken from the Center for Nutrition Policy and Promotion (CNPP) publication *Official USDA Food Plans: Cost of Food at Home at Four Levels* (USDA 2014). Presented there are the official USDA costs for four types of food plans that serve as national standards for nutritious diets: the "Thrifty Plan," "Low-Cost Plan," "Moderate-Cost Plan," and "Liberal Food Plan." We use the USDA "Low-Cost Plan," which assumes that almost all food is bought at a grocer and then prepared at home. We use June 2014 data, which represents the annual average monthly cost (Carlson,

Lino, and Fungwe 2007). The data are only available at the national level, and are thus the same for all family budget areas (except Alaska and Hawaii, as discussed below).

Family food costs are constructed from data for the following age categories: child age 4–5; child age 6–8; and averages are created from data for males and females age 12–13, age 14–18, and age 19–50.

- For single-parent households, we use an average of the male age 19–50 data and the female age 19–50 data to represent the adult in the household. For married-parent households, we assume one male age 19–50 and one female age 19–50 are the two adults in the household. All costs in the USDA food plans table are for individuals in four-person families; for individuals in families of other sizes, USDA suggests making the following adjustments to account for differences in returns to scale:

- One-person family: add 20 percent
- Two-person family: add 10 percent
- Three-person family: add 5 percent
- Five-person family: subtract 5 percent
- Six-person family: subtract 5 percent

- To calculate overall household food costs, we first adjust food costs for each person in the household and then sum the adjusted food costs.

- Example: For a one-parent, two-child household:

Food cost = [(average (female (age 19–50), male (age 19–50)))*1.05] + [child (age 4–5)*1.05] + [child (age 6–8)*1.05]

Note that for Alaska and Hawaii, separate food cost data are available in half-year increments. We use data for the second half of 2013 to compute household food costs for the four Alaska areas and the two Hawaii areas because it most closely represents the annual national data used for the other states. Note that only the “Thrifty Plan” is available for these states; there is no “Low-Cost Plan.” In addition, Alaska and Hawaii only have data available for children ages 6–8 and 9–11, so we imputed values for 4-year-old children, 12-year-old children, and 16-year-old children by applying the ratio of costs for relative age groups using the national data for the age groups available for Alaska and Hawaii.

The USDA food plans represent a nutritious diet at four different cost levels. The nutritional foundation of the plans consists of the 1997–2005 Dietary Reference Intakes, 2005 Dietary Guidelines for Americans, and 2005 MyPyramid food intake recommendations. In addition to cost, plans vary according to specific foods and quantities of foods. Another assumption underlying the food plans is that all meals and snacks are prepared at home. All four food plans are based on 2001–2002 data and updated to current dollars by using the Consumer Price Index for specific food items.

Child care

We utilize the Child Care Aware of America (2014) publication *Parents and the High Cost of Child Care*, which relies on data from the January 2013 State Child Care Resource and Referral Network survey. For the purposes of this study, we use Appendix Table 1, “2013 Average Annual Cost of Full-Time Care by State.” Several states in the survey report data on a delay, including Alabama, California, Delaware, Idaho, Iowa, Kentucky, Louisiana, Missouri, Pennsylvania, South

Carolina, South Dakota, Texas, Vermont, and Wyoming, which report 2012 data, and Nevada, New Hampshire, and New York, which report 2011 data. If an MSA is in multiple states, the dominant state containing the primary city, as defined by the Office of Management and Budget, is used.

For available years, we inflate all data to reflect real 2014 dollars using the Consumer Price Index of child care and nursery school for all urban consumers from the Bureau of Labor Statistics (BLS 2014b).

We calculate our child care costs for our family types based on the following assumptions:

- One child = cost of 4-year-old care
- Two children = cost of 4-year-old care + cost of one school-aged child
- Three children = cost of 4-year-old care + cost of one school-aged child + one-sixth the cost of one school-aged child
- Four children = cost of 4-year-old care + cost of one school-aged child + one-sixth the cost of one school-aged child

The following subsections explain these assumptions in greater detail.

Center care

We use cost estimates for center-based child care in the 570 MSAs. We chose center-based care because it is more regulated than family care, and because the costs of center care do not fluctuate as much as the costs of family care.

Family care

We use cost estimates for family-based care for the remaining 48 rural areas, operating under the assumption that they are simply more accessible to those located in rural areas.

Infant care

The family budgets do not include infant care in their child care costs because we do not have an infant as part of any family type. It should be noted, however, that infant center care is significantly more expensive than 4-year-old center care, so the child care component for some families may be underestimated.

Four-year-old care

Four-year-old care is full-time care. To approximate MSA and non-MSA care costs, we use center and family-based care estimates for all 4-year-olds, taken from Appendix 1 in CCAA (2014).

School-age child care

The survey for school-age care specifically represents the average annual cost of before- and after-school care, and therefore it does not include full-time, weekend, or full-day summer care. Because of the need for 8-year-olds to be in care during the summer, the cost of school-aged child care is somewhat underestimated.

We estimate that 12-year-olds need full-day care during the summer months only; thus, one-sixth the cost of care for one school-aged child is added to families with three and four children. For families with four children, we assume child care is not necessary for the fourth child, who is assumed to be 16 years old.

State-level estimates for school-age child care are not available for Minnesota and North Dakota. Regional averages, based on the Census Bureau regions and divisions, are taken for these states. Minnesota and North Dakota fall into the West North Central Division; for these states we thus use regional averages constructed from the states in this division (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota).

Transportation

Data on costs of transportation are derived from the Federal Highway Administration’s 2009 National Highway Transportation Survey (FHA 2009) and the Internal Revenue Service Announcement 2013-95 (IRS 2013). We use annualized vehicle miles traveled (VMT) for calculating both the total annual miles driven and to determine the trip purpose. While it is possible to use other metrics, such as person miles traveled, we judge that in many MSAs, the use of a vehicle may be necessary to get to and from major destinations, such as work, medical appointments, a grocery store, etc. In areas in which public transportation is accessible for traveling to and from major destinations, this cost may be overstated.

Our equations for calculating total transportation costs are as follows:

One-adult family transportation costs =

$$[(\% \text{ work \& non-social trips})/100 * (\text{average miles per month by MSA size}) * (\text{cost/mile})]$$

Two-adult family transportation costs =

$$[(\% \text{ work \& non-social trips})/100 * (\text{average miles per month by MSA size}) * (\text{cost/mile})] + [(\% \text{ work trips})/100 * (\text{average miles per month by MSA size}) * (\text{cost/mile})]$$

Equation components

- The share of work and non-social trips is calculated using the 2009 National Household Transportation Survey (NHTS), as 2009 is the most recent year for which data are available. The variable WHYTRP1S, or trip purpose summary, is used in conjunction with the variable Travel Day VMT to categorize each vehicle trip into the following purposes: home; work; school, day care, religious activity; medical, dental services; shopping, errands; social, recreational; family, personal business, obligations; transport someone; meals; and other purposes. We chose to make non-social trips the share of trips to home; school, day care, religious activity; medical, dental services; shopping, errands; family, personal business, obligations; and to transport someone.
- We decompose the trip purpose and average vehicle miles traveled by MSA size using the variable MSASIZE from the NHTS. MSASIZE uses the same definition of an MSA as does the Office of Management and Budget. The NHTS reports MSASIZE in six sizes, based on household population within a given area:
 - Not in an MSA (0–49,999 inhabitants)
 - In an MSA of 50,000–249,999 inhabitants
 - 250,000–499,999 inhabitants
 - 500,000–999,999 inhabitants

- 1,000,000–2,999,999 inhabitants
- 3,000,000+ inhabitants

- We group our MSAs by these six population categories using population data from the Office of Management and Budget.
- The IRS reports the standard mileage rates used to calculate the costs of operating an automobile for businesses, charitable, medical, or moving purposes. For 2014, the revised and most accurate standard mileage rates for the use of car, van, pickup, or panel truck is 56 cents per mile for business miles driven. The mileage rate includes fixed costs such as depreciation, lease payments, insurance, registration and license fees, and personal property taxes, and variable costs such as gasoline, oil, tires, and routine maintenance and repairs.

Example

Single parent in a rural area:

$$= (\% \text{ work \& non-social trips})/100 * (\text{average annual miles by MSA size})/12 * (\text{cost/mile}) = (84.4\%/100) * \$14,607/12 * (\$0.56) = .844 * \$1217.2 * \$0.56$$

$$= \$570.18$$

Thus, \$570.18 is the monthly transportation cost for a single parent who lives in a rural area.

Health care

Health care expenses have two components: Affordable Care Act (ACA) insurance premiums and out-of-pocket expenditures.

Premiums

Premiums were obtained through a review of insurer rate filings to state regulators, as well as through data published by the U.S. Department of Health and Human Services and The Henry J. Kaiser Family Foundation's Health Insurance Marketplace Calculator (Kaiser 2014).

Premiums are based on the lowest-cost bronze plan in the rating area, adjusted for family size, age of user, and tobacco surcharge (Kaiser 2014). The family budgets assume all adults are 40-year-old nonsmokers. EPI's 2015 family budgets do not take into consideration the two types of health insurance subsidies available through the state and federal health insurance exchanges: the premium tax credit and the cost-sharing subsidy. Therefore, the health budget may be overestimated and can be reduced by the size of the subsidy.

Out-of-pocket costs

Out-of-pocket costs are from the **MEPS Household Component (Full-Year Consolidated File)** for 2012, in 2012 dollars (HHS 2014).

We assume that everyone has private health insurance (defined by the variable PRIV12). Out-of-pocket medical expenditures are calculated for adults and children separately by region and are differentiated between MSAs and non-MSAs for those covered by private insurance (HHS 2014). Costs are estimated as follows:

- We use the regional breakdown of costs for both adults and children (using the variable REGION12, with the regions defined as Northeast, Midwest, South, and West).
- The data are divided into MSA data and non-MSA data (using the variable MSA12). For out-of-pocket costs, we use MSA data for those areas that are strictly MSAs, and we use non-MSA data for nonmetropolitan FMR areas and rural areas (see the above section titled “Definition of areas” for more detail on the distinction).
- We classify a child (regardless of family size) as age 17 and under, and an adult as age 18–64 (using the variable AGE12X). We did not break down data for children into smaller age groups or by gender because the resulting sample sizes were too small.
- For each family budget area, adult out-of-pocket costs are the mean costs (variable TOTSLF12) for adults age 18–64 with private insurance in one of four regions and the metropolitan classification in that region.
- Child out-of-pocket costs are the mean costs for children age 0–17 with private insurance in one of four regions and the metropolitan classification in that region in 2012.
- We compute total out-of-pocket costs (OOP) in the following way:

$$[(\text{number of parents}) * (\text{adult OOP})] + [(\text{number of children}) * (\text{child OOP})]$$

- Since out-of-pocket costs are annual numbers, we divided by 12 to get the total monthly out-of-pocket costs.
- The total out-of-pocket costs were adjusted for inflation to 2014 dollars using the regional breakdowns of the Consumer Price Index-All Urban Consumers for Medical Care (CPI-U-MC) from the Bureau of Labor Statistics (2013c).
- When computing the mean, we used a population weight (variable PERWT12F).

Total health care costs

We compute total health care costs in the following way:

$$[\text{Total premium}] + [\text{Total out-of-pocket cost}]$$

Change in methodology

The health care methodology of the 2015 Family Budget Calculator differs from that of previous editions because it reflects changes to the private market for health insurance and the creation of state-based health insurance exchanges. These changes are one of the main reasons why the 2015 family budgets are not comparable to earlier family budgets.

In the 2013 edition of the Family Budget Calculator, we assumed that everyone had employer-sponsored health insurance. We used the total premium cost (what both the employee and employer contribute) to better reflect a measure of total compensation. Therefore, if the employer didn’t provide it, the family budget still allowed for the full amount. This affected estimates of premiums and out-of-pocket costs because employer-sponsored health insurance was assumed in the compilation of both data sets.

In the current edition, we calculate premiums based on the lowest-cost bronze plan and calculate out-of-pocket expenditures based on estimates for all types of private insurance, both employer-sponsored and non-group insurance.

Other necessities

Our calculation of “other necessities” is derived from the Bureau of Labor Statistics (BLS) Consumer Expenditures Survey (BLS 2014a). We consider other items of necessity as items that do not fall into the aforementioned categories, but are nevertheless necessary for a reasonably secure yet modest standard of living. These items include apparel, entertainment, personal care expenses, household supplies (including furnishings and equipment, household operations, housekeeping supplies, and telephone services), reading materials, school supplies, and other miscellaneous items of necessity.

We use the Consumer Expenditure Survey (CES) data for families in the second fifth of the overall income distribution. In the 2013 CES expenditure table “Quintiles of income before taxes,” “other necessities” is the proportion of costs for these items in relation to the costs of food and housing. In 2013, the proportion was 48.3 percent. Therefore, we devise our estimate of other necessities by applying this percent to each respective family budget’s food and housing costs.

Change in methodology

In the previous editions of the Family Budget Calculator, other necessities did not take into account a number of items, including household supplies, furnishings and equipment, household operations, housekeeping supplies, and telephone services. Therefore, the costs of other necessities in the 2015 Family Budget Calculator are significantly higher than those in the previous edition.

Taxes

The family budget components, without taxes, sum to the family’s post-tax income. To calculate the family budget tax component, a pre-tax income level had to be estimated using a tax rate and the post-tax income.

We utilized the National Bureau of Economic Research’s Internet TAXSIM Version 9.3 with ATRA to calculate these tax rates (NBER 2013). The TAXSIM model accepts 22 input variables, including state, marital status, dependent exemptions, wage income, other incomes, rent paid, child care expenses, and capital gains and losses (Feenberg et al. 1993). We ran the TAXSIM model for each family type across all 618 areas.

Our input variables were (variables not listed were input as zero):

- State
- Marital status (single for one-parent families, married for two-parent families)
- Dependent exemptions (one for each child)
- Wage and salary income of taxpayer (entire post-tax family budget for one-parent families)
- Wage and salary income of spouse (for two-parent families, the post-tax family budget was split evenly between the two parents)
- Rent paid (the annual cost of rent for each family budget, which is used to calculate state property tax rebates in certain states)
- Child care expenses (the annual cost of child care for each family budget)
- Number of dependents under age 17 (one for each child)

The TAXSIM model takes these inputs and calculates three outputs: federal tax liability, state tax liability, and FICA tax liability. All of these liabilities are for year 2013 tax law. Additionally, the TAXSIM model calculates FICA liability as the full 15.3 percent tax from both the employer and employee side; we cut this in half to more accurately represent the typical taxpayer. Local taxes, such as county- or city-level income taxes, are not included in this model. Sales taxes are also not included.

As aforementioned, it is not accurate to simply input the post-tax family budgets as the wage incomes and use the TAXSIM output as the tax rates. To correct for this, we input the post-tax family budgets and obtained the tax rates and established these as a lower floor for tax rates (because the pre-tax incomes will almost always be higher than these post-tax incomes, these tax rates must be lower given our assumptions about sources of income and the income ranges we are considering). We then established an upper bound of tax rates by taking the post-tax family budget and multiplying it by 1.25 and inputting these budgets into the TAXSIM model.

Once we had the lower and upper bounds of tax rates, we calculated an accurate average of these tax rates using a weighting procedure, described below:

1. Multiply the lower bound (post-tax family budget) and upper bound (post-tax family budget * 1.25) inputs by (1 – calculated tax rate)
2. Calculate the difference between the actual post-tax family budget and the lower bound calculated in step one: [post-tax family budget – lower bound]
3. Calculate the difference between the upper bound and the actual post-tax family budget calculated in step one: [upper bound – post-tax family budget]
4. Calculate the difference between the upper bound and the lower bound calculated in step one: [upper bound – lower bound]
5. Calculate the weight for the lower bound, which is equal to the upper–post-tax budget difference divided by the upper–lower difference:
$$\frac{[upper\ bound - post\ tax\ family\ budget]}{[upper\ bound - lower\ bound]}$$
6. Calculate the weight for the upper bound, which is equal to [1 – lower weight (calculated in step five)]
7. Multiply the lower bound tax rate from TAXSIM by the lower bound weight from step five: lower bound tax rate *
$$\frac{[upper\ bound - post\ tax\ family\ budget]}{[upper\ bound - lower\ bound]}$$
8. Multiply the upper bound tax rate from TAXSIM by the upper bound weight from step six: upper bound tax rate * [1 – lower weight (calculated in step five)]
9. Add these two weights to get the final, weighted tax rate: [step seven + step eight]

The final tax rate calculated in step nine is then applied to the post-tax family incomes [post-tax family budget * (1 + final weighted tax rate)], to obtain a pre-tax income. The difference between the pre- and post-tax incomes is the annual tax bill for the family budget unit. This annual tax bill is then adjusted for inflation to 2014 dollars using the regional breakdowns of the Consumer Price Index-Research Series Using Current Methods (CPI-U-RS) from the Bureau of Labor Statistics (BLS 2014c).

In cases where the post-tax budget exceeds the bounds, we increase the budget multiplier by increments of .05 (1.3, 1.35, 1.4, 1.45, 1.5) until the post-tax budget no longer exceeds the upper bound.

About the authors

Elise Gould, senior economist, joined EPI in 2003 and is the institute's director of health policy research. Her research areas include wages, poverty, economic mobility, and health care. She is a co-author of *The State of Working America, 12th Edition*. In the past, she has authored a chapter on health in *The State of Working America 2008/09*; co-authored a book on health insurance coverage in retirement; published in venues such as *The Chronicle of Higher Education*, *Challenge Magazine*, and *Tax Notes*; and written for academic journals including *Health Economics*, *Health Affairs*, *Journal of Aging and Social Policy*, *Risk Management & Insurance Review*, *Environmental Health Perspectives*, and *International Journal of Health Services*. She holds a master's in public affairs from the University of Texas at Austin and a Ph.D. in economics from the University of Wisconsin at Madison.

Tanyell Cooke joined EPI in 2014. As a research assistant, she supports the research of EPI's economists on topics such as wages, labor markets, inequality, education, race and ethnicity, and immigration. She holds a B.A. in economics and statistics from The George Washington University.

Alyssa Davis joined EPI in 2013 as the Bernard and Audre Rapoport Fellow. She assists EPI's researchers in their ongoing analysis of the labor force, labor standards, and other aspects of the economy. Alyssa aids in the design and execution of research projects in areas such as poverty, education, health care, and immigration. She also works with the Economic Analysis and Research Network (EARN) to provide research support to various state advocacy organizations. Alyssa has previously worked in the Texas House of Representatives and the U.S. Senate. She holds a B.A. from the University of Texas at Austin.

Will Kimball joined EPI in 2013. As a research assistant, he supports the research of EPI's economists on topics such as wages, labor markets, macroeconomics, international trade, and health insurance. Prior to joining EPI, Will worked at the Center on Budget and Policy Priorities and the Center for Economic and Policy Research. He holds a B.A. in economics and political science from the University of Connecticut.

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