

HEIGHT Poverty Measure 2021

Technical Documentation

By Sarbeswar Praharaj • March 1, 2022

Introduction

Analysts and policymakers often compare income to the federal poverty threshold to determine an individual's ability to live within a certain standard of living. However, poverty thresholds do not account for living costs beyond a basic food budget. The Census Bureau determines poverty status by using an official poverty measure (OPM) that compares pre-tax cash income against a threshold that is set at three times the cost of a minimum food diet in 1963 and adjusted for family size. In the decades since it was created, the costs of housing, transportation, child care, health care have risen far more rapidly than food costs, and even faster than wages. The Census poverty estimates not only limit poverty assessment criteria to food costs but also neglect regional variations in the cost of living. The local cost differentials in many neighborhoods, especially in Maricopa County, are significantly higher than state or national averages.

HEIGHT poverty measure addresses these gaps to build a methodology to capture the real nature of poverty. Valley of the Sun United Way has collaborated with the ASU Knowledge Exchange for Resilience to design a unique toolkit to measure and visualize the true costs of living at the neighborhood scale, highlighting the emerging gap between household income and living costs. The toolkit builds a living cost budget for various family sizes accounting for the costs of food, housing and utilities, health care, child care, transportation, taxes, and other essential needs. Analyzing those local costs of living with the household's income data, the tool determines how many households are struggling to meet basic living costs across neighborhoods. The data provides insights about families with different characteristics — whether the household includes children, whether the head of household is male or female, the number of adults in the household, and the ethnicity of householders — to enable communities to design interventions targeted to their specific needs.

The HEIGHT Poverty Measure focuses on households, not individuals. This means that if the tool suggests that 32% in Maricopa County are below the Real Cost Measure does not mean that 33% of all in the County are below the Real Cost Measure, but rather, 32% of households are below the Measure. One should therefore not use these numbers as a perfect proxy for all Arizona residents.

Household Cost Factors

The HEIGHT Poverty Measure household compositions reflect a wide variety by utilizing the number of persons in a household, including adults and children. We have developed a basic cost budget for four household sizes/types, including 1 Adult, 1 Adult + 1 Child, 2 Adults, 2 Adults + 1 Child.

Household budgets were constructed to include the costs of housing and utilities, food, health care, child care, transportation costs, taxes, and other miscellaneous costs.

For example, in Maricopa County, the total basic cost budget for families with 2 adults and 1 child is estimated at \$66,146. This is the sum total of Housing cost \$14,076 + Transportation cost \$13,341 + Food cost \$9,248 + Child care cost \$8,523 + Health care cost \$6,153 + Taxes \$9,101 + Other Miscellaneous costs \$5,704.

The **Housing Cost** is based on Housing and Urban Development's Fair Market Rent for 2020, which is provided at a county level. The Fair Market Rent is the 40th percentile of gross rents. The rent includes the sum of the rent paid to the owner plus any utility costs incurred by the tenant. Utilities include electricity, gas, water/ sewer, and trash removal services, but not telephone services. If the owner pays for all utilities, then the gross rent equals the rent paid to the owner. The assignment of the number of bedrooms is based on the assumption that a single adult will live in an efficiency unit (adults and children), a bedroom may have one or two adults, and a child will need added provisions.

Our **Food Cost** calculation uses 2020 (August) low-cost food plan from among the four plans designed by the United States Department of Agriculture (USDA) to ensure that people can acquire a sufficiently nutritious diet. All household members are assumed to be male, to allow for the maximum potential cost. As the USDA Food Plans are national figures, the Real Cost Measure utilizes the 2020 Grocery Index from the Cost of Living Index (COLI) published by the Council for Community and Economic Research to adjust figures to a county level.

Health Care Costs were derived using the national 2020 Consumer Expenditure Survey. We divided the household cost established by the CES by average household size and used that to approximate a per person cost for health care. We then adjusted this per-person cost by the Health Index of the Cost of Living Index published by the Council for Community and Economic Research and tailored them to the county level. All individuals in a county, regardless of age under 65, were assigned the same cost of health care.

The **Child Care Cost** is based on the 2018 Child care Market rate survey administered by the Arizona Department of Economic Security (DES). The cost is the average annual cost of care for a child in Registered Family Child Care Homes (the least expensive child care option). The DES specifies that the child care market rate survey reflects variations in the age of children, type of provider, and geographic service location.

The annual **Transportation Cost** is retrieved from the Bureau of Labor Statistics' annual Consumer Expenditure Survey (CES) National estimates. The total annual costs of transportation less outlays and public transportation is divided by the average earners in the household to give an average per-earner transportation cost. The HEIGHT Poverty Measure uses this national transportation estimate and adjusts it using the Transportation Index from the Cost of Living Index published by the Council for Community and Economic Research to adjust figures to a county level.

Taxes are considered as per the state and federal tax rates for filing as single or married individuals and also include the 100\$ rebates given if there is a child in the family and the 25\$ rebate given when there is an adolescent in the family. Income Tax Statistics report of the Arizona Department of Revenue was used for this measure.

Other amounts to **Miscellaneous Costs** which occur in day-to-day living, was amounted to be 10% of the subtotal of all other cost items. In the HEIGHT Poverty Measure, this amount is added before the tax burden is calculated.

Demographic Indicators

The HEIGHT Poverty Measure uses data from the American Community Survey (ACS) 5-Year Estimates (2014-2019) for demographic analysis. Information on income, family structure, gender, marital status, and race/ethnicity was obtained from ACS Public Use Micro Area files to determine the level of poverty in counties and neighborhood clusters.

Note: Neighborhood clusters, or public use microdata areas defined by the United States Census Bureau, are contiguously consolidated neighborhoods consisting of 100,000 - 200,000 people. There are 54 neighborhood clusters in Arizona. Neighborhood clusters are more statistically reliable than zip codes and census tracts.

The size of a family significantly affects the budget needed to maintain a modest yet adequate standard of living. We have constructed budgets for four different types of families in each area. These families include a single person with no children; a married couple with no children; singleparent families with one children; and a married couple with one children. We make assumptions about each of the four family prototypes in order to generate specific cost estimates for each family type's tax liability, child care expenses, food costs, etc.

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.

Geographic Definitions

The HEIGHT Poverty Measure focuses on various levels of geography, including the calculation of county-level data for household budgets regarding expenses—food, housing, child care, health care, transportation, taxes, and miscellaneous—which is then used to build budgets based on the household type (1 adult, 2 adults, etc.) for residents of those counties. Using this country-specific data enables substantially more accuracy than would an approach reliant on federal or statewide averages, especially given Arizona’s diversity of regional economies.

The HEIGHT Poverty Measure also utilizes public use microdata areas (PUMA’s) for demographic analyses. PUMA’s are contiguous neighborhood clusters consisting of 100,000 – 200,000 people and are defined at the conclusion of every decennial census. There are currently 59 neighborhood clusters in Arizona. The adoption of public use microdata areas offers us the ability to examine what the living cost looks like across and within counties and is generally more statistically reliable than counties and census tracts.

All PUMA boundaries utilize the 2010 census and were mapped accordingly.

Uniform Distribution Assumption When Using Income data

When using the AMERICAN Community Survey income data, we assume that households are uniformly distributed within each income band (e.g., \$10,000 to \$14,000). The following example discusses how the uniform distribution assumption was employed.

First, we determined the basic cost budgets for various types and sizes of families accounting for all the household cost factors mentioned above. Then, we analyzed data from the American Community Survey (ACS) 5-Year Estimates (2014-2019) to determine how many households have income below those basic budgets. The percentage of households living below the basic cost budget is referred to as the ones below poverty measure.

Here is a demonstration of how we determine the number of households below poverty measure for 2 Adults 1 Child family in Maricopa County:

- Let us keep the income structure provided through ACS as a reference point, as shown in Figure 1.
- Also, considering the 2 Adults 1 Child family structure, the basic cost budget was estimated to be \$66,145.
- So, the count of families below poverty measure would be sum of the number of families from the following income group/band - (Less than \$10000) + (\$10000 to \$14999) + (\$15000 to \$19999) + (\$20000 to \$24999) + (\$25000 to \$29999) up until \$60000 to \$66145.

- However, in the last group, the range is actually ending at \$74,999. For that group, we consider that the families are uniformly distributed. Hence, we calculate $\{(\$66,145 - \$60,000)/15000\} = 0.4096$. Here we divided it by \$15,000 because the range of the group was from \$60,000 till \$74,999. Then we multiply .4096 by the number of families in the group = 27,277, this is equal to 11,174. So, basically, the number of families below poverty measure in the income group/band \$60,000 to \$74,999 is estimated at 11,174.
- Adding all the families with income below the basic cost budget gives us the total number of families below poverty measure:
 $(4,425+3,637+4,891+7,256+7,707+8,758+8,179+9,486+8,791+21,426+11,174) = 95,730$.
- The total number of families with 2 Adults 1 Child is divided by the total number of families below poverty measure to estimate the percentage of families below poverty measure.

Maricopa County, Arizona	
2 Adults	Estimate
▼ With own children of the householder under 18 years:	302,341
Less than \$10,000	4,425
\$10,000 to \$14,999	3,637
\$15,000 to \$19,999	4,891
\$20,000 to \$24,999	7,256
\$25,000 to \$29,999	7,707
\$30,000 to \$34,999	8,758
\$35,000 to \$39,999	8,179
\$40,000 to \$44,999	9,486
\$45,000 to \$49,999	8,791
\$50,000 to \$59,999	21,426
\$60,000 to \$74,999	27,277
\$75,000 to \$99,999	48,233

Figure 1: Income bands provided through the ACS

Data Sources

Source Agency	Web Link	Indicator
U.S. Census Bureau	https://data.census.gov/cedsci/	Demographic and income data <ul style="list-style-type: none"> – Families and household structure – Race and ethnicity – Income
The Department of Housing and Urban Development, Office of Policy Development and Research	https://www.huduser.gov/portal/datasets/fmr.html	Housing costs (Rent plus utilities)
United States Department of Agriculture	https://www.fns.usda.gov/cnpp/usda-food-plans-cost-food-reports-monthly-reports	Cost of Food (Federal low-cost plan)
U.S. Bureau of Labor Statistics, Consumer Expenditure Surveys	https://www.bls.gov/cex/	National estimates of: <ul style="list-style-type: none"> – Health care cost – Transportation cost
Arizona Department of Economic Security	https://des.az.gov/files/2018-child-care-market-rate-survey.pdf	Cost of Child Care in Registered Family Child Care Homes
Arizona Department of Revenue	https://azdor.gov/reports-statistics-and-legal-research/individual-income-tax-statistics	Individual Income Tax Statistics for Counties and Cities
Council for Community and Economic Research	https://www.coli.org/	Cost of Living Index for Counties <ul style="list-style-type: none"> – Groceries Cost Index – Transportation Cost Index – Health care Cost Index