

LIVING WAGE CALCULATOR
User's Guide / Technical Notes

2020 Update

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Introduction to living wage model

Analysts and policy makers often compare income to the federal poverty threshold in order 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 very basic food budget. The federal poverty measure does not take into consideration costs like childcare and health care that not only draw from one's income, but also are determining factors in one's ability to work and to endure the potential hardships associated with balancing employment and other aspects of everyday life. Further, poverty thresholds do not account for geographic variation in the cost of essential household expenses.

The living wage model is an alternative measure of basic needs. It is a market-based approach that draws upon geographically specific expenditure data related to a family's likely minimum food, childcare, health insurance, housing, transportation, and other basic necessities (e.g. clothing, personal care items, etc.) costs. The living wage draws on these cost elements and the rough effects of income and payroll taxes to determine the minimum employment earnings necessary to meet a family's basic needs while also maintaining self-sufficiency.

The living wage model is a 'step up' from poverty as measured by the poverty thresholds but it is a small 'step up', one that accounts for only the basic needs of a family. The living wage model does not allow for what many consider the basic necessities enjoyed by many Americans. It does not budget funds for pre-prepared meals or those eaten in restaurants. It does not include money for entertainment nor does it does not allocate leisure time for unpaid vacations or holidays. Lastly, it does not provide a financial means for planning for the future through savings and investment or for the purchase of capital assets (e.g. provisions for retirement or home purchases). The living wage is the *minimum* income standard that, if met, draws a very fine line between the financial independence of the working poor and the need to seek out public assistance or suffer consistent and severe housing and food insecurity. In light of this fact, the living wage is perhaps better defined as a minimum subsistence wage for persons living in the United States.

Family Compositions

The living wage calculator estimates the living wage needed to support families of twelve different compositions: one adult families with 0, 1, 2, or 3 dependent children, two adult families where both adults are in the labor force with 0, 1, 2, or 3 dependent children, and two adult families where one adult is not in the labor force with 0, 1, 2, or 3 dependent children.

For single adult families, the adult is assumed to be employed full-time. For two adult families where both adults are in the labor force, both adults are assumed to be employed full-time. For two adult families where one adult is not in the labor force, one of the adults is assumed to be employed full-time while the other non-wage-earning adult provides full-time childcare for the family's children. Full-time work is assumed to be year-round, 40 hours per week for 52 weeks, per adult.

Families with one child are assumed to have a 'young child' (4 years old). Families with two children are assumed to have a 'young child' and a 'child' (9 years old). Families with three children are assumed to have a 'young child', a 'child', and a 'teenager' (15 years old).

Geographic Definitions

The living wage is calculated at the county, metropolitan area, state, regional, and national level. Unless otherwise noted, geographic definitions are consistent with those published by the Office of Management and Budget, last updated in 2017.¹

The living wage is calculated for 383 metropolitan areas and all 50 states and the District of Columbia. It is not calculated for those who reside in Puerto Rico, Guam, or the Virgin Islands. Regional assignments are made by state according to Census definitions. Reported national values are calculated as the average values of the 50 states and Washington DC.²

Data Sources and Calculations

The living wage is defined as the wage needed to cover basic family expenses (basic needs budget) *plus* all relevant taxes. Values are reported in 2019 dollars. To convert values from annual to hourly, a work-year of 2,080 hours (40 hours per week for 52 weeks) per adult is assumed. The basic needs budget and living wage are calculated as follows:

$$\text{Basic needs budget} = \text{Food cost} + \text{childcare cost} + (\text{insurance premiums} + \text{health care costs}) + \text{housing cost} + \text{transportation cost} + \text{other necessities cost}$$

$$\text{Living wage} = \text{Basic needs budget} + (\text{basic needs budget} * \text{tax rate})$$

The following is an explanation of data sources for each component of the living wage:

Food. The food component of the basic needs budget was compiled using the USDA's low-cost food plan³ national average in June 2019.⁴ The low-cost plan is the second least expensive food plan offered from a set of four food plans that provide nutritionally adequate food budgets at various price points.⁵ The low-cost plan assumes that families select lower cost foods and that all meals (including snacks) are prepared in the home. The food component's value varies by family size and the ages of individual family members. Adult food consumption costs are estimated by averaging the low-cost plan food costs for males and females between 19 and 50. Child food consumption costs are estimated using the various categories in the low-cost food plan based on the child age assumptions detailed in the section Assumptions about Family Composition. The regional adjustment factor is based on estimated regional differences in raw and unprepared food

¹ <https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/bulletins/2017/b-17-01.pdf>

² The data was not skewed to justify the use of the median, instead of the mean.

³ The USDA food plans are available at <https://www.fns.usda.gov/cnpp/usda-food-plans-cost-food-reports-monthly-reports>.

⁴ The USDA low-cost food plan for June 2019 is available at <https://fns-prod.azureedge.net/sites/default/files/media/file/CostofFoodJun2019.pdf>. June costs for each year are used to represent the annual average.

⁵ The Census Bureau uses the lowest cost food plan published by the USDA, the thrifty plan, in calculating the federal poverty thresholds. The use of the thrifty plan is a highly criticized because it does not provide a nutritious diet and it is only meant for temporary or emergency use (see e.g. Natale & Super, 1991). Such critiques provide compelling arguments against the use of the thrifty food plan in the living wage calculator.

prices. The regional adjustment factors by region are as follows: East (1.08), Midwest (0.95), South (0.93), and West (1.11).⁶

Childcare. The childcare component is constructed from state-level estimates published by the National Association of Child Care Resource and Referral Agencies in 2016.⁷ We assume that low-income families will select the lowest cost childcare option available; therefore we used the lowest cost option (family childcare or child care center). In instances where only one type of childcare cost for a specific age group was available, that childcare cost was used. In the instance that neither childcare type for a specific age group had an estimate (only occurs for school age care), we calculated the average percent difference between infant and school age care cost (for the cheapest care available) for all states with data by region. We then multiplied the appropriate average percent difference in infant care and school age care for the region in which the state is located by the cost to provide the cheapest type of infant care available the state to obtain an estimate for the cost of childcare for the missing age group. Values were inflated from 2016 to 2019 dollars using the Consumer Price Index inflation multiplier from the Bureau of Labor Statistics.⁸

Health. Typical health-related expenses are difficult to estimate due to the multitude of variables that potentially impact health care expenditures, such as the relative health of household members and the range of coverage and affiliated costs under alternative medical plans. The health component of the basic needs budget includes: (1) health insurance costs for employer sponsored plans, (3) medical services, (3) drugs, and (4) medical supplies.⁹ Costs for medical services, drugs and medical supplies were derived from 2017 national expenditure estimates by household size provided in the 2018 Bureau of Labor Statistics Consumer Expenditure Survey.¹⁰ These estimates were further adjusted for regional differences using annual income expenditure shares reported by region.¹¹ Values were inflated from 2018 to 2019 dollars using the Consumer Price Index inflation multiplier from the Bureau of Labor Statistics.¹²

Health insurance costs were calculated using the Health Insurance Component Analytical Tool (MEPSnet/IC) provided online by the Agency for Healthcare Research and Quality.¹³ This tool provides state-level estimates derived from the insurance component of the 2017 Medical

⁶ USDA Economic Research Service: Liebttag, E. S. (2007). Stretching the food stamp dollar: regional price differences affect affordability of food. Economic Information Bulletin Number 29-2.

⁷ State-level estimates for childcare costs are available at https://www.childcareaware.org/wp-content/uploads/2017/07/FINAL_SFS_REPORT.pdf. In 2018, we chose to inflate values from 2017, rather than use published estimates for 2018 because the 2018 estimates did not have a clearly defined or consistent methodology across states.

⁸ BLS inflation calculator, using June values, is available at http://www.bls.gov/data/inflation_calculator.htm.

⁹ For many low-income families, the assumption that their employer provides health insurance may be overly optimistic. Indeed and as documented by the Employee Benefit Research Institute, the offer rates of health insurance vary substantially by gender, level of education, and income (EBRI Brief #370). However, we felt comfortable with the assumption that the employer subsidizes coverage because our optimism likely produces living wage estimates that are *below* the living wage needed. Considering all factors and the unavoidable granularity of any living wage estimator, we felt that this decision was justified.

¹⁰ 2018 Consumer Expenditure Survey, Table 1400, available at <https://www.bls.gov/cex/2018/combined/cusize.pdf>.

¹¹ 2018 Consumer Expenditure Survey, Table 1800, available at <https://www.bls.gov/cex/2018/combined/region.pdf>.

¹² BLS inflation calculator, using June values, is available at http://www.bls.gov/data/inflation_calculator.htm.

¹³ Available at http://meps.ahrq.gov/mepsweb/data_stats/MEPSnetIC.jsp.

Expenditure Panel Survey. The criteria for cost estimation using MEPSnet/IC tool were: “Private-Sector Establishments: State Specific Data for Private-Sector Establishments”, for each individual state, “Annual Premiums and Contributions per Enrolled Employee at Private-Sector Establishments”, All Employees Combined, either (1) “Single Plans”, (2) “Employee-plus-one Plans” or (3) “Family Plans.” We assumed that a single adult family uses a “Single Plan”, a two adult family uses an “Employee-Plus-One Plan,” and all other family types use a “Family Plan.”¹⁴ Values were inflated from 2018 to 2019 dollars using the Consumer Price Index inflation multiplier from the Bureau of Labor Statistics.¹⁵

Housing. The housing component captures the likely cost of rental housing in a given area in 2018 using HUD Fair Market Rents (FMR) estimates. The FMR estimates are produced at the sub-county and county levels.¹⁶ County FMRs were obtained by aggregating sub-county estimates (where sub-county estimates existed) using a population-weighted average using population estimates from the 2017 5-year estimates American Community Survey published by the Census Bureau.¹⁷ State and metropolitan area FMRs were also obtained by population weighting county FMRs.

The FMR estimates include utility costs and vary depending on the number of bedrooms in each unit, from zero to four bedrooms. We assumed that a one adult family would rent a single occupancy unit (zero bedrooms) for an individual adult household, that a two adult family would rent a one bedroom apartment, and that two adult and one or two child families would rent a two bedroom apartment. We further assumed that families with three children would rent a three bedroom apartment (the adults are allocated one bedroom and the children two bedrooms).

Transportation. The transportation component is constructed using 2018 national expenditure data by household size from the 2018 Bureau of Labor Statistics Consumer Expenditure Survey including: (1) Cars and trucks (used), (2) gasoline and motor oil, (3) other vehicle expenses, and (4) public transportation. Transportation costs cover operational expenses such as fuel and routine maintenance as well as vehicle financing and vehicle insurance but do not include the costs of purchasing a new automobile.¹⁸ These costs were further adjusted for regional differences using annual expenditure shares reported by region.¹⁹ Expenditures were selected by household size,

¹⁴ An alternate method using the MEPS query tool is simply to extract the data from the appropriate ‘quick’ tables available on the MEPS website. To obtain the mean employee contribution for a single plan by state we used Table X.C.1(2018), available at https://meps.ahrq.gov/data_stats/summ_tables/insr/state/series_10/2018/txc1.htm. To obtain the mean employee contribution for a plus-one plan by state, we used Table X.D.1(2018), available at https://meps.ahrq.gov/data_stats/summ_tables/insr/state/series_10/2018/txd1.htm. To obtain the mean employee contribution for a family plan by state, we used Table X.E.1(2018), available at https://meps.ahrq.gov/data_stats/summ_tables/insr/state/series_10/2018/txe1.htm.

¹⁵ BLS inflation calculator, using June values, is available at http://www.bls.gov/data/inflation_calculator.htm.

¹⁶ HUD provides sub-county data and defines the corresponding metropolitan area for sub-county data as a “HUD Metro Fair Market Rent Areas,” (HMFAs) when revised OMB definitions encompass area that is larger than HUD’s definitions of housing market areas. More information can be found in HUD’s Fair Market Rent Overview documentation <https://www.huduser.gov/portal/datasets/fmr.html#2019>.

¹⁷ 2018 5-year estimates were not available by the time of publication. The 2017 American Community Survey geographic definitions are available at <https://www.census.gov/programs-surveys/acs/geography-acs/geography-boundaries-by-year.2017.html>

¹⁸ 2018 Consumer Expenditure Survey, Table 1400, available at <https://www.bls.gov/cex/2018/combined/cusize.pdf>.

¹⁹ 2018 Consumer Expenditure Survey, Table 1800, available at <https://www.bls.gov/cex/2018/combined/region.pdf>.

instead of as a share of household income because transportation cost (i.e. gas, repairs, etc.) are roughly the same for all persons regardless of income. Values were inflated from 2018 to 2019 dollars using the Consumer Price Index inflation multiplier from the Bureau of Labor Statistics.²⁰

Other necessities. The basic needs budget includes cost estimates for items not otherwise included in the major budget components such as clothing, personal care items, and housekeeping supplies. Expenditures for other necessities are based on 2018 data by household size from the 2018 Bureau of Labor Statistics Consumer Expenditure Survey including: (1) Apparel and services, (2) Housekeeping supplies, (3) Personal care products and services, (4) Reading, and (5) Miscellaneous.²¹ These costs were further adjusted for regional differences using annual expenditure shares reported by region.²² Values were inflated from 2018 to 2019 dollars using the Consumer Price Index inflation multiplier from the Bureau of Labor Statistics.²³

Taxes. Estimates for federal and state taxes are included in the calculation of a living wage. Property taxes and sales taxes are already represented in the budget estimates through the cost of rent and other necessities.

Federal taxes are taken from the Urban-Brookings Tax Policy Center Microsimulation Model (version 0217-1)²⁴ and include: individual income taxes (after tax credits including the refundable portion of earned income and child tax credits), payroll taxes (including both the employee and employer portion of social security and medicare taxes), corporate income tax, estate tax, and excise tax. The federal tax rate for the middle quintile was 14.0% in 2017.

The state tax rate is taken from the state income tax rate, as reported by the CCH State Tax Handbook 2015, which reports 2016 tax rates.²⁵ The tax rate tier applied is determined by the pre-tax living wage, and includes deductions.²⁶

Comparisons to the Minimum Wage, Poverty Threshold, and Wages by Occupation

Minimum Wage: The minimum wage estimates the lowest threshold an employer can legally pay employees for certain types of work. For comparison, we used state minimum wage data was obtained from the United States Department of Labor as of July 1, 2018.²⁷ The federal minimum wage is used for states where the state minimum wage is less than the federal minimum of \$7.25.²⁸ The average minimum wage of all fifty states and the District of Columbia is used to estimate the national minimum wage.

²⁰ BLS inflation calculator, using June values, is available at http://www.bls.gov/data/inflation_calculator.htm

²¹ 2018 Consumer Expenditure Survey, Table 1400, available at <https://www.bls.gov/cex/2018/combined/cusize.pdf>.

²² 2018 Consumer Expenditure Survey, Table 1800, available at <https://www.bls.gov/cex/2018/combined/region.pdf>.

²³ BLS inflation calculator, using June values, is available at http://www.bls.gov/data/inflation_calculator.htm

²⁴ Federal tax data for 2017 are available at <http://www.taxpolicycenter.org/model-estimates/baseline-average-effective-tax-rates-march-2017/t17-0042-average-effective-federal>.

²⁵ The CCH State Tax handbook is available at <https://www.cchgroup.com/store/products/state-tax-handbook-2015-prod-10034384-0006/book-softcover-item-1-10034384-0006>. The 2017 values were not freely available at the time of publication.

²⁶ For example, if the living wage before taxes is \$25,000 and the second tier rate is for incomes \$10,000 to \$20,000 and the third tier rate is for incomes \$20,001 and \$30,000, the third tier is applied.

²⁷ Minimum wage data are available at <https://www.dol.gov/whd/minwage/america.htm>.

²⁸ Federal minimum wage data are available at <https://www.dol.gov/whd/minimumwage.htm>

Poverty Wage: The poverty threshold is defined by the Department of Health and Human Services. It is an administrative threshold to determine eligibility for financial assistance from the federal government. For comparison, we use the poverty thresholds for the 48 contiguous states, Washington DC, Alaska, and Hawaii, as of 2018.²⁹ The average poverty wage of all 50 states and the District of Columbia is used to estimate the national poverty wage.

Wages by Occupational Group: For comparison, we use the median hourly wage rates for 22 major occupations in the nation, all 50 states and Washington DC, and 381 metropolitan areas, as defined by the Bureau of Labor Statistics as of 2018.³⁰ Values were inflated to from 2018 to 2019 dollars using the Consumer Price Index inflation multiplier from the Bureau of Labor Statistics.³¹

²⁹ Poverty data are available at <https://aspe.hhs.gov/poverty-guidelines>.

³⁰ BLS publishes state and metropolitan level occupational employment and wage estimates based on data collected from employers in all industry divisions for two digit Standard Occupational Coded occupations. These estimates are available at <http://www.bls.gov/bls/blswage.htm>.

³¹ BLS inflation calculator, using June values, is available at http://www.bls.gov/data/inflation_calculator.htm.