LIVING WAGE CALCULATOR
User's Guide / Technical Notes

2014 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 child care 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, child care, 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 child care 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 in 2009.[1]

The living wage is calculated for 366 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 state living wage. The data was not skewed to justify the use of the median, instead of the mean. The national wage was also calculated as the population weighted total of the counties, however the results did not vary from the average state value.

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 while maintaining economic independence from publicly provided income and housing assistance. Values are reported in 2014 dollars. To convert values from annual to hourly, a work-year of 2,080 hours (52, 40 hour work weeks) is assumed. The basic needs budget is calculated as follows:

> **Basic needs budget = Food cost + child care cost + (insurance premiums + health care costs) + housing cost + transportation cost + other necessities cost**

The tax values are applied to the basic needs budget to calculate a living wage as follows:

> **Living wage = Basic needs budget + (basic needs budget*(taxes))**

The following is an explanation of data sources for each component of the basic needs budget and all relevant taxes.

Food.[2] The food component of the basic needs budget was compiled using the USDA's low-cost food plan US average in June 2014.[3] 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.[4] The low-cost plan assumes that families select lower cost foods and that all meals

[1] OMB published revised geographic boundaries in OMB bulletin 10-02 (December, 2009). Documentation is available at http://www.whitehouse.gov/sites/default/files/omb/assets/bulletins/b10-02.pdf (last accessed 3.30.2014).
[2] The file Food_Cost_2014.csv contains values used for the food costs component of the living wage calculator. This file is provided on the documentation DVD and a data dictionary is included in Appendix I.
[3] The values used in the food component are from the official USDA low-cost food plan through June, 2014 available at http://www.cnpp.usda.gov/sites/default/files/usda_food_plans_cost_of_food/CostofFoodJun2014.pdf (last visited 9.16.2014). June costs for each year are used to represent the annual average. The various USDA food plans are available at http://www.cnpp.usda.gov/USDAFoodCost-Home.htm (last visited 9.16.2014).
[4] 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 (article included on

(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 a based on estimated regional differences in raw and unprepared food prices. The regional adjustment factors by region are as follows: East (1.08), Midwest (0.95), South (0.93), and West (1.11).[5]

Child Care.[6] The child care component is constructed from a 2013 estimates published by the National Association of Child Care Resource and Referral Agencies. We assume that low-income families will select the lowest cost child care option available; therefore we used the lowest cost option (family child care or child care center). State-level estimates were used for all sub state-level estimates. In instances where only one type of child care cost for a specific age group was available, that child care cost was used. In the instance that neither child care 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 child care for the missing age group. Values were inflated to 2014 dollars using the Consumer Price Index inflation multiplier from the Bureau of Labor Statistics.[7]

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.[8] Costs for medical services, drugs and medical supplies were derived from 2013 cost estimates by household size provided in the 2014 Bureau of Labor Statistics Consumer Expenditure Survey.[9] The cost for

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documentation DVD)). Such critiques provide compelling arguments against the use of the thrifty food plan in the living wage calculator.

[5] USDA Economic Research Service: Liebtag, E. S. (2007). Stretching the food stamp dollar: regional price differences affect affordability of food. Economic Information Bulletin Number 29-2. No updates of the regional adjustment have been calculated or published, as of March, 30, 2014.

[6] The file ChildCare_Cost_2013.csv includes data downloaded from Child Care in America 2014 state fact sheets http://usa.childcareaware.org/sites/default/files/19000000_state_fact_sheets_2014_v04.pdf (last visited 9.16.2014). This file and report are included on the documentation DVD. A data dictionary is included in Appendix I.

[7] Inflation multiplier for 2010 = 1.092609, 2011= 1.059176, 2012 = 1.037701, and 2013 = 1.022721. BLS inflation calculator is available at http://www.bls.gov/data/inflation_calculator.htm (last visited 9.16.2014)

[8] 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(Available at http://www.ebri.org/pdf/briefspdf/EBRI_IB_04-2012_No370_HI-Trends.pdf) (last visited 3.30.2014)(included on documentation DVD). 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.

[9] The file Health_Cost_2013.csv contains data downloaded from the 2013 Consumer Expenditure Survey, Table 1400 and is included on the documentation DVD. A data dictionary is included in Appendix I.

medical services, drugs, and medical supplies were adjusted for regional differences using annual income expenditure shares reported by region.[10] Values were also inflated to 2014 dollars using the Consumer Price Index inflation multiplier from the Bureau of Labor Statistics.[11]

Health insurance costs were calculated using the Health Insurance Component Analytical Tool (MEPSnet/IC) provided online by the Agency for Healthcare Research and Quality[12]. This tool provides estimates derived from the insurance component of the 2013 Medical 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" (depending on family composition for which cost is estimated. Note 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"), "All Provider Types Combined", "Average Total Employee Contribution", "All Firms".[13] [14] Values were inflated to 2014 dollars using the Consumer Price Index inflation multiplier from the Bureau of Labor Statistics.[15]

Housing.[16] The housing component captures the likely cost of rental housing in a given area in 2014 using HUD Fair Market Rents (FMR) estimates. The FMR estimates are produced at the sub-county and county levels.[17] County FMRs were obtained by aggregating sub-county estimates (where sub-county estimates existed) using a population-weighted average. State and metropolitan area FMRs were also obtained by aggregating county FMRs using a population weighted average.

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[10] The file Health_Region_2013.csv contains data downloaded from the 2013 Consumer Expenditure Survey, Table 1800 and is included on documentation DVD. A data dictionary is included in Appendix I.

[11] Inflation multiplier for 2010 = 1.092609, 2011= 1.059176, 2012 = 1.037701, and 2013 = 1.022721. BLS inflation calculator is available at http://www.bls.gov/data/inflation_calculator.htm (last visited 9.16.2014)

[12] Available at http://meps.ahrq.gov/mepsweb/data_stats/MEPSnetIC.jsp (last visited 9.16.2014).

[13] An alternate method using the MEPS query tool is simply to extract the data from the appropriate 'quick' tables available on the MEPS website. We used Table X.C.1(2012) (available at http://meps.ahrq.gov/mepsweb/data_stats/summ_tables/insr/state/series_10/2013/txc1.htm) (last visited 9.16.2014) to obtain the mean employee contribution for a single plan by state. We used Table X.D.1(2012) (available at http://meps.ahrq.gov/mepsweb/data_stats/summ_tables/insr/state/series_10/2013/txd1.htm) (last visited on 9.16.2014) to obtain the mean employee contribution for a plus-one plan by state. We used Table X.E.1(2012) (available at http://meps.ahrq.gov/mepsweb/data_stats/summ_tables/insr/state/series_10/2013/txe1.htm) (last accessed on 9.16.2014) to obtain the mean employee contribution for a family plan by state.

[14] The file Health_Insurance_2013.csv contain the various numbers we used to estimate the medical cost component of the living wage calculator and is included on the documentation DVD. A data dictionary is included in Appendix I.

[15] Inflation multiplier for 2010 = 1.092609, 2011= 1.059176, 2012 = 1.037701, and 2013 = 1.022721. BLS inflation calculator is available at http://www.bls.gov/data/inflation_calculator.htm (last visited 9.16.2014)

[16] The file House_Cost_2014.csv contains county and sub-county level data used to estimate the housing component of the living wage calculator and is included on the documentation DVD. A data dictionary is included in Appendix I.

[17] 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 http://www.huduser.org/portal/datasets/fmr.html (last accessed 3.30.2014).

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.[18] The transportation component is constructed using 2013 data by household size from the 2014 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. These costs were further adjusted for regional differences using annual expenditure shares reported by region.[19] Expenditures were selected by household size, 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 to 2014 dollars using the Consumer Price Index inflation multiplier from the Bureau of Labor Statistics.[20]

Other necessities.[21] 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 2013 data by household size from the 2014 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. These costs were further adjusted for regional differences using annual expenditure shares reported by region.[22] Values were inflated to 2014 dollars using the Consumer Price Index inflation multiplier from the Bureau of Labor Statistics.[23]

Taxes.[24] Estimates for payroll taxes, state income tax, and federal income tax 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.

A flat payroll tax and state income tax rate is applied to the basic needs budget. Payroll tax is a nationally representative rate as specified in the Federal Insurance Contributions Act.[25] The state

[18] The file Transportation_Cost_2013.csv contains data from the 2014 Consumer Expenditure Survey, Table 1400 and is included on documentation DVD. A data dictionary is included in Appendix I.
[19] The file Transportation_Region_2013.csv contains data from the 2014 Consumer Expenditure Survey, Table 1800 and is included on documentation DVD. A data dictionary is included in Appendix I.
[20] Inflation multiplier for 2010 = 1.092609, 2011= 1.059176, 2012 = 1.037701, and 2013 = 1.022721. BLS inflation calculator is available at http://www.bls.gov/data/inflation_calculator.htm (last visited 9.16.2014)
[21] The file Other_Cost_2013.csv contains data from the 2014 Consumer Expenditure Survey, Table 1400 and is included on documentation DVD. A data dictionary is included in Appendix I.
[22] The file Other_Region_2013 contains data from the 2014 Consumer Expenditure Survey, Table 1800 and is included on the documentation DVD. A data dictionary is included in Appendix I.
[23] Inflation multiplier for 2010 = 1.092609, 2011= 1.059176, 2012 = 1.037701, and 2013 = 1.022721. BLS inflation calculator is available at http://www.bls.gov/data/inflation_calculator.htm (last visited 9.16.2014)
[24] The file Taxes_2013.csv contains data used to calculate the tax component of the living wage calculator. A data dictionary is included in Appendix I.
[25] The payroll tax rate (Social Security and Medicare taxes) is 6.2% of total wages as of 2014.

tax rate is taken from the second lowest income tax rate for 2011 for the state as reported by the CCH State Tax Handbook (the lowest bracket was used if the second lowest bracket was for incomes of over $30000) (we assume no deductions).[26] The federal income tax is calculated as a percentage of total income based on the average tax paid by median-income four-person families as reported by the Tax Policy Center of the Urban Institute and Brookings Institution for 2013.[27]

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 January 1, 2014.[28] The federal minimum wage is used by state when the state minimum wage does not exceed it.

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 and for Alaska and Hawaii, as of 2014.[29]

Wages by Occupational Group: For comparison, we use the median hourly wage rates for 22 major occupations in all 50 states and 364[30] metropolitan areas, as defined by the Bureau of Labor Statistics as of 2013.[31] Values were inflated to 2014 dollars using the Consumer Price Index inflation multiplier from the Bureau of Labor Statistics.[32]

[26] State income tax rates are for the 2011 tax year. These rates were taken from the 2011 CCH Tax Handbook (various organizations provide the CCH State Tax Handbook rates (including The Tax Foundation)). No updates were available as of March, 2014.

[27] The Tax Policy Center reported that the average federal income tax rate for 2013 was 5.32%. This estimate includes the effects of (1) the Earned Income Tax Credit (assuming two eligible children), (2) the Child Tax Credit expansion as part of EGTRRA, and (3) the Making Work Pay Credit enacted in the American Recovery and Reinvestment Act of 2009. http://www.taxpolicycenter.org/taxfacts/displayafact.cfm?Docid=226

[28] Available at http://www.dol.gov/whd/state/stateMinWageHis.htm and http://www.dol.gov/whd/minwage/america.htm#Montana%20-%202014%20minimum%20wage (last visited 9.16.2014). Data is included on documentation DVD as MinimumWage_2014.csv. A data dictionary is included in Appendix I.

[29] Available at http://aspe.hhs.gov/poverty/14poverty.cfm (last visited 9.16.2014).

[30] BLS reports data for 366 metropolitan areas, however data for Manchester-Nashua, NH and Providence-New Bedford-Fall River, RI-MA was reported separtely for portions in respective states. Instead of employment-weighting the median wage for these metropolitan areas, we do not report values for these metropolitan areas.

[31] 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 (last visited 3.30.2014) and are included on the documentation DVD as Occ_2013.csv. A data dictionary is included in Appendix I.

[32] Inflation multiplier for 2010 = 1.092609, 2011= 1.059176, 2012 = 1.037701, and 2013 = 1.022721. BLS inflation calculator is available at http://www.bls.gov/data/inflation_calculator.htm (last visited 9.16.2014)

Appendix I: Data Dictionary of Files Used to Calculate the Living Wage

A LivingWage_2013.do STATA text file that combines data, performs regional adjustments, and calculates the living wage is included in the documentation DVD.

Variable Name	Variable type	Variable Defintion	Coding Notes
geography	text	Unit of geography	County, Metro, or State
censusregion	text	Census region of the geography	M, N, S, or W
statefips	numeric	Primary state ID number	
state	text	Primary state name	50 states and DC
stateabr	text	Primary state abbreviation	(e.g., AL)
state2	text	Secondary state abbreviation	Only available for metropolitan areas that cross two state boundaries
state3	text	Tertiary state abbreviation	Only available for metropolitan areas that cross three state boundaries
state4	text	Quaternary state abbreviation	Only available for metropolitan areas that cross four state boundaries
cbsa	numeric	Metropolitan area ID number	
cbsa_name	text	Metropolitan area name	
top100	numeric	Is the metropolitan area the largest 100 by population as of 2010 Census	1 if in the top 100
countyfips	numeric	County ID number	
countyname	text	county name	
familysize	numeric	Number of people in family	Ranges from 1 to 5
familycomposition	text	Number of adults, adults in the labor force, and/or children in family	Coded as #A#LF#C (e.g., 2A1LF1C) ; #A = number of adults, #LF = number of adults earning wages, #C =children. If #LF is excluded, all adults are assumed to be earning wages (e.g., 2A2C families have two adults earning wages).
childcare_cost	numeric	Cost of childcare ($2014)	
health_cost	numeric	Cost of healthcare ($2014)	
food_cost	numeric	Cost of food ($2014)	
trans_cost	numeric	Cost of transportation ($2014)	
other_cost	numeric	Cost of other necessities ($2014)	
house_cost	numeric	Cost of housing ($2014)	
tax	numeric	Cost of all taxes ($2014)	
income	numeric	Annual living wage, including the cost of all taxes ($2014)	Sum of childcare_cost, health_cost, food_cost, trans_cost, other_cost, house_cost, and tax, by family composition
income_pretax	numeric	Annual living wage, not including the cost of all taxes ($2014)	Sum of childcare_cost, health_cost, food_cost, trans_cost, other_cost, and house_cost, by family composition
income_hrly	numeric	Hourly living wage, including the cost of all taxes ($2014)	
income_pretax_h	numeric	Hourly living wage, not including the cost of all taxes	
poverty	numeric	Annual maximum wage of families classified as in poverty ($2014)	
poverty_hrly	numeric	Hourly wage of families classified as in poverty ($2014)	Annual wage / 2080 hours
minwage	numeric	Annual minimum wage ($2014)	
minwage_hrly	numeric	Hourly minimum wage ($2014)	Annual minimum wage / 2080 hours