5-31-2019

Monitoring multidimensional poverty in the U.S.

Sophie Mitra
Fordham University

Debra L. Brucker
University of New Hampshire, debra.brucker@unh.edu

Comments

This is an article published Economics Bulletin in 2019, available online.

Recommended Citation

Mitra, S. & Brucker, D. (2019). Monitoring multidimensional poverty in the U.S. Economics Bulletin, 39(2), 1272-1293. http://www.accessecon.com/Pubs/EB/2019/Volume39/EB-19-V39-I2-P122.pdf.

Economics Bulletin

Volume 39, Issue 2

Monitoring multidimensional poverty in the United States

Sophie Mitra
Fordham University

Debra Brucker
University of New Hampshire

Abstract

On the international stage, poverty is increasingly understood multi-dimensionally as a deprivation of wellbeing in several dimensions rather than solely as a lack of income or low consumption. In the U.S., recent research shows that many people who are not counted as poor under the official or supplemental measures of income poverty experience multidimensional poverty. Yet there is no monitoring of multidimensional poverty. This paper examines trends in multidimensional poverty in the U.S. since 2013 using a measure that includes deprivations in family income, self-reported health status, educational attainment, employment status, and health insurance coverage. Using Current Population Survey data for years 2013 to 2017, the percentage of the total population experiencing multidimensional poverty decreased significantly each year, from 13.8% in 2013 to 10.0% in 2017. However, between 2016 and 2017, the extent of the decline in multidimensional poverty was smaller than in earlier years and became less widely shared across population groups. Increased deprivations in health insurance explain this more limited decline in multidimensional poverty in 2017.

Sophie Mitra is grateful for support from Fordham University through a Faculty Research Grant and a Faculty Fellowship.
Citation: Sophie Mitra and Debra Brucker, (2019) "Monitoring multidimensional poverty in the United States", *Economics Bulletin*, Volume 39, Issue 2, pages 1272-1293
Contact: Sophie Mitra - mitra@fordham.edu, Debra Brucker - debra.brucker@unh.edu.
Submitted: February 08, 2019. **Published:** May 31, 2019.

1. Introduction

Poverty monitoring in the U.S. using the official poverty measure and the supplemental poverty measure has noted recent year-to-year decreases in poverty from 2013 to 2017 (Semega *et al*. 2018). Similar reductions have been found when measuring poverty based on consumption, or what people are able to purchase (Meyer and Sullivan 2018). However, these tools only capture poverty as material deprivation. Broader conceptualizations of poverty, those that go beyond material deprivation to consider deprivations on multiple fronts, can provide a useful counterpart to standard monitoring activities.

On the international stage, poverty is increasingly understood broadly as a deprivation of wellbeing rather than purely as a lack of income or other financial resources (Beja 2013; Madonia, Cracolici, and Cuffaro 2013; Narayan *et al*. 2000; OECD 2011; Stiglitz, Sen and Fitoussi 2009). Measures of this broader view of poverty typically capture people who simultaneously experience multiple deprivations in different dimensions (e.g. income, health). The analysis of multidimensional poverty and income poverty sometimes lead to different trends or groups being identified as disadvantaged (Alkire and Foster 2011; Alkire and Santos 2014; Alkire and Seth 2014; Alrkie *et al*. 2014; Bourguignon and Chakravarty, 2003; Brucker *et al*., 2015; Duclos, Sahn and Younger 2006; Neubourg, Chai, Milliano, Plavgo, and Wei 2011; Tsui 2002; UNDP 2010). In the U.S., researchers have very recently begun to explore the use of such multidimensional approaches (Dhongde & Havernman 2017; Glassman 2017, 2019; Mitra & Brucker 2016; Waglé 2008, 2014). Given recent declines in income and consumption poverty in the U.S. (Fontenot, Semega, & Kollar 2018; Meyer and Sullivan 2018), it is important to assess if similar changes are found while using a multidimensional poverty measure. We specifically address the following questions: Have there been significant changes in multidimensional poverty in the U.S. over the 2013-2017 period? If yes, how have changes in deprivations for different dimensions contributed to such changes in overall multidimensional poverty? Have the changes been experienced by all demographic groups?

The next section reviews the background to this research, followed by sections on the methodology, results, discussion, and conclusions.

2. Background

In the U.S., poverty is generally measured in one of two ways. The most commonly used measure is the official poverty measure (OPM). The OPM relies on a family's pre-tax total income and is based on a set of income thresholds, which do not include either capital gains or in-kind benefits. Thresholds vary by family size and composition (Short 2013). In 2017, 12.3 percent of the U.S. population, or 39.7 million people, were in poverty, according to the OPM (Dalaker 2018; Fox 2018). The official poverty rate decreased only 0.4 percentage point from 2016, a statistically insignificant change (Fontenot, Semega, & Kollar 2018).

In the past two decades, there have been efforts in the U.S. to develop an improved poverty measurement (Citro and Michael, 1995). The Supplemental Poverty Measure (SPM), a new poverty measure developed by the U.S. government, is the second measure that is now routinely used to monitor poverty in the U.S. (Chung, Isaacs, and Smeeding 2013; Hutto, Waldfogel, Kaushal, and Garfinkel 2011; Short 2013). The SPM threshold is adjusted to the needs of different family types and to geographic differences in housing costs using an

equivalence scale. In 2017, 13.9 percent of the population were poor, according to the SPM (Fox 2018). The SPM has recently been used to revisit poverty trends (Fox, Garfinkel, Kaushal, Waldfogel and Wimer 2014) or the situation of specific groups (Brucker *et al*. 2015) and geographies (e.g. Bohn *et al*. 2013 for California, Smeeding *et al*. 2014 for Wisconsin).

A consumption measure of poverty has been developed as another alternative to the official poverty measure, focusing on measuring what families purchase in terms of food, housing, transportation and other goods and services (Meyer & Sullivan 2018). Using an anchor year of 1980 in which 13 percent of the U.S. population experienced consumption poverty, Meyer and Sullivan estimate that the rate of consumption poverty dropped to 2.8% of the U.S. population in 2017. When 2015 is used as the anchor year, consumption poverty rates decreased from 14.7% in 2013 to 13.0% in 2017.

Mitra and Brucker (2016) developed a measure of multidimensional poverty for the U.S. which considered having family income below the official poverty line, having fair or poor health, having less than a high school education, being unemployed, and lacking health insurance as domains of interest. They found a limited overlap between people experiencing multidimensional and income poverty. Using in turn the Current Population Survey (CPS) and the American Community Survey (ACS), for 2012, they estimated that 15% of Americans experienced at least two deprivations. Nearly six percent of the population experienced multiple deprivations but were not considered income poor according to the official poverty measure (Mitra and Brucker 2016).

Glassman (2017) used data from the ACS to estimate annual rates of multidimensional poverty from 2008 to 2016, where deprivations were measured for adults as lacking a high school degree or GED, living below the official poverty line, limited consumption (lacking at least one of the following: toilet, sink, running water, refrigerator, stove, bathtub/shower or health insurance), poor neighborhood quality (living in an area with 20 percent or greater poverty), disability, economic insecurity, and poor housing quality. An updated analysis published by Glassman (2019) found a 1.1 percentage point decrease in multidimensional deprivation from 2016 to 2017, from 16.4 to 15.3 percent.

Dhongde and Havernman (2017) used a multidimensional poverty measure to examine trends in the U.S during the five-year period following the Great Recession (2008-2013). Using ACS data, their measure included the following deprivations: having two or more disabilities, lack of a high school education, housing costs greater than 50% of household income, lack of health insurance, lack of English fluency, and more than one occupant per room. Dhongde and Haveman (2017) found a significant reduction in multidimensional poverty during the 2010-2013 economic recovery period and argue that their multidimensional poverty measure may better capture the consequences of the economic recovery than the OPM or the SPM. This paper extends such work on trends in multidimensional poverty by analyzing recent changes in multidimensional poverty since 2013 using the same data as what the U.S. Census Bureau uses to monitor poverty, i.e. CPS. It thus offers a potential additional poverty monitoring tool for the U.S.

3. Methodology

3.1. Measures

This paper uses the Alkire and Foster (2011) methodology. Put simply, this method counts deprivations for a set of dimensions that affect a person at the same time and compares

the deprivation count to a threshold. Dimensions are weighted: w_j is the weight of dimension j. Each individual i has a weighted count of dimensions where that person is deprived (c_i) across all measured dimensions: $0 \leq c_i \leq d$ where d is the number of dimensions; where $c_i = \sum_{j=1}^{d} w_j c_{ij}$ with c_{ij} a binary variable equal to one if individual i is deprived in dimension j, and zero otherwise. Dimensions can rely on ordinal and/or cardinal data. Let q_i be a binary variable equal to one if the person is identified as disadvantaged and equal to zero otherwise. A person is *identified as having multiple deprivations or being multiply deprived* if the person's count of deprivations is greater than some specified cutoff (k):

if $c_i \geq k$, then $q_i = 1$

if $c_i < k$, then $q_i = 0$

The *headcount ratio* for a given population is then the number of disadvantaged persons ($q=\Sigma q_i$) divided by the total population (n):

$H = q/n \qquad (1)$

To capture the breadth of deprivation experienced by the multi-dimensionally poor, in other words, the experience of deprivation in several dimensions, the average number of deprivations that a multi-dimensionally poor person faces is computed. The total number of deprivations experienced by multi-dimensionally poor people $c(k)$ is calculated as follows: $c(k)= \Sigma(q_i c_i)$ for i = 1…n. The *average deprivation share* is the total number of deprivations of the disadvantaged ($c(k)$) divided by the maximum number of deprivations that the poor could face (qd):

$A = c(k)/(qd) \qquad (2)$

The *adjusted headcount ratio* M_0 unites information on the prevalence of disadvantage and the breadth of disadvantage, combining the headcount ratio and average deprivation share:

$M_0 = HA = c(k)/(nd) \quad (3)$

It fulfills desirable axioms, is decomposable and can include discrete, cardinal and continuous data (Alkire and Foster 2011). M_0 can be decomposed by dimension to show which dimensions contribute most to individuals' disadvantage. Likewise, over time, changes in M_0 can be disaggregated into (i) changes in H and A, and (ii) changes of indicator contributions (Alkire and Foster 2011; Alkire *et al*. 2015; Alkire *et al.* 2017). This paper carries out the decomposition by indicator contributions using the formula $M_0 = \sum_j H_j/d$ where H_j is the share of the population that is both poor and deprived in dimension j.

Since multidimensional poverty measures require assumptions for the selection of dimensions, weights and thresholds, these assumptions are described in detail below. Results will be assessed with respect to some of these choices using sensitivity analyses. We use a cross-dimension threshold k=2 but also recalculate estimates for k=3 (Appendix 2). In another sensitivity analysis (Appendix 3), we relax two of the within dimension thresholds: for income, we use 200% of the OPM line instead of 100% and for employment, we consider deprivation to be unemployed, discouraged worker, conditionally interested worker, or employed part-time due to economic reasons instead of simply unemployed.

3.2 Data

We chose the March 2014 to March 2018[1] Annual Social and Economic Supplements (ASEC) of the Current Population Survey (CPS), reflecting the calendar years 2013 to 2017[2]. The CPS is a nationally representative household survey that collects individual and household level sociodemographic and economic data. We used replicate weights to weigh the data, per U.S. Census Bureau guidance. Doing so increases standard errors and thus provides a more conservative approach to estimating statistically significant differences. There are limitations with using this data for poverty measurement, as data collection excludes vulnerable populations who might be at higher risk of experiencing poverty, including persons who are living in institutions such as prisons or those who are homeless. Nonetheless, the CPS-ASEC is the source of official national estimates of poverty using both the OPM and SPM. We use it below for a measure of multidimensional poverty that can be compared and monitored alongside the OPM and the SPM.

3.3 Selecting Dimensions

The selection of dimensions for multidimensional measures of well-being or poverty/deprivations at an applied level can be difficult (Alkire 2007). In this paper, we draw from a list of dimensions of wellbeing developed by Stiglitz, Sen and Fitoussi (2009). This list was derived through an extended international consultative process towards developing and recommending indicators to measure economic and social progress. Stiglitz *et al*. (2009) recommended the following eight dimensions as constitutive parts of wellbeing: material wellbeing (income, consumption and wealth), health, education, personal activities (work, political voice and governance), social connections and relationships, environment (present and future) and insecurity of an economic and physical nature.

3.4 Indicators, Thresholds and Weights

The unit of analysis is the individual. We build a multidimensional measure with the following set of five dimensions out of those recommended by Stiglitz *et al*. (2009) and that are included in the CPS: material wellbeing (income), health, education, work, and insecurity (health insurance). Table I describes the indicators, thresholds and weights used in the measure for each dimension.

---

[1] The CPS ASEC data collects income data for the prior calendar year.

[2] We start from 2013 (March 2014 ASEC) as the measurement of income was then redesigned in the CPS. Covering earlier years would affect comparability of income across years. The other indicators of interest did not change from 2013 to 2017.

Table I: Dimensions, Indicators, Thresholds and Weights

Dimension	Indicator(s)	Threshold: Deprived if…	Weight
Material wellbeing			
	Family income	Individual is in a family where income in past year is below official poverty line	1
Health			
	Self-assessed health	Individual reports poor or fair health	1
Education			
	Educational attainment	Individual has less than high school educational attainment[1]	1
Personal activities			
	Employment status	Individual is unemployed in the past week[1,2]	1
Insecurity			
	Health insurance	Individual does not have health insurance coverage for the entire calendar year[3]	1

[1] For children (birth to age 17), this dimension is with respect to the family head.

[2] For older people (age 65 and over), this dimension is not included.

[3] Health insurance coverage includes private health insurance (through an employer or union, coverage purchased directly by an individual from an insurance company), government health insurance (Medicaid, Medicare) or military health care.

The selection of indicators is challenging: unlike the European Union, the U.S. does not have a set of social indicators that are regularly compared or cross tabulated (Blank 2008; Couch and Pirog 2010). Of course, different U.S. government agencies produce different indicators and some of them are used below. We also, where possible, use thresholds similar to those commonly reported by federal agencies. For example, Barnett and Berchick (2017) and Berchick *et al*. (2018), when reporting on health insurance coverage, consider receipt of any health insurance coverage as a key threshold of interest in their report for the U.S. Census Bureau.

Material Wellbeing: A person is considered deprived if he/she is part of a family whose income is below the threshold specified under the OPM. The OPM provides different thresholds for different family sizes.

Health: Acknowledging that health is a complex and multifaceted construct that is difficult to measure, we use the available health status measure and consider an individual as deprived if he/she reports being in poor or fair health.

Education: A person is considered deprived if he/she has less than a high school diploma. For children (birth to age 17), the education dimension refers to the education status of the family head of the child[3].

Personal activities: A person is considered deprived if he/she was unemployed in the past week. This measure is adjusted for children and older people. For children (birth to age 17), the work dimension refers to the work status of the family head of the child. For older people (age 65 and over), the work dimension is not included in the multidimensional measure.

Insecurity: We use health insurance status as an indicator for economic security. A person is considered deprived if he/she is uninsured.

Some of the within-thresholds described above may not be appropriate for selected subgroups of the population. For persons age 65 and older, having less than a high school diploma may not equate to a deprivation on a similar level to that faced by working age persons who also lack a high school diploma yet are expected to compete for jobs in the labor market. Likewise, having fair health may not be a deprivation for older people. This paper covers the entire U.S. population and more fine-tuned multidimensional measures may be developed in future work for selected subgroups such as older people.

Weights are needed to aggregate across dimensions. There are different possible methods for setting up weights, for instance, asking people's opinions or using the observed distribution of deprivations (Decancq and Lugo 2013). In this paper, dimensions are considered as equally important and are given equal weights.

We also estimated two additional measures of multidimensional poverty. First, we increased the number of dimensions (k) in which someone would need to be deprived (from two to three) to be counted as multidimensionally poor. Next, we estimated a measure two thresholds were relaxed (income and employment).

3.5 Trend Analysis

In addition to estimating the headcount and adjusted headcount ratios commonly used in multidimensional empirical research, we test for significant differences in year to year rates of poverty using a Wald test.

[3] The family head is the person in whose name the house is owned or rented. If a married couple, either the husband or wife can be named the family head.

4. Results

We started by checking if the indicators selected above overlapped, i.e. captured similar information on deprivations, for the entire sample and by population subgroup. We conducted the redundancy analysis as per Alkire *et al.* (2015) and found limited overlap (results not shown here). We also calculated the Tetrachoric correlations of the indicators for each year. For instance, Appendix 1 shows correlations between deprivations for 2017 that range from a low of -0.011 between employment status and health to a high of .176 between educational attainment and family income. Correlation coefficients are thus low to medium for the indicators under use. Overall, the redundancy analysis and correlation coefficients suggest that none of the indicators provides redundant information.

Figure 1 and Table II depict trends for the total population for M_0 and H respectively.

Figure 1. Multidimensional adjusted headcount (M0) and confidence intervals

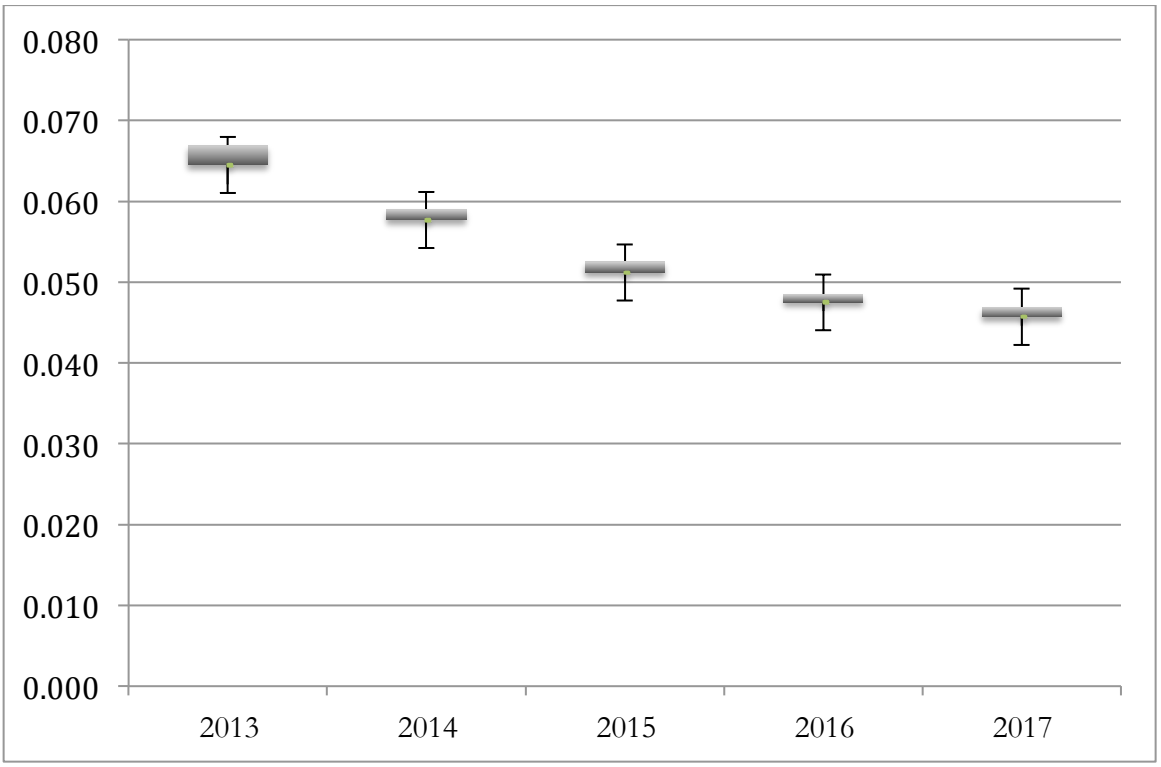


Figure 1 shows that M_0 declined from 2013 to 2017 from 0.065 to 0.046. Results in Table II indicate that the percentage of Americans experiencing multidimensional poverty (H) was 13.8% in 2013 and declined to 10.0% in 2017. Statistically significant reductions in multidimensional poverty for all Americans were found from year to year using the Wald test (Table II), although the extent of the reduction in poverty was smaller from 2016 to 2017 (from 10.3% to 10.0%).

Table II: Multidimensional poverty headcount (%) by selected characteristics over time (2013-2017)

	2013	2014		2015		2016		2017		2013-2017 Change	
										Absolute (p.p)	Relative (%)
All	13.80	12.45	*	11.13	*	10.32	*	10.00	*	-3.80	-27.52%
White	12.62	11.43	*	10.13	*	9.52	*	9.09	*	-3.54	-28.01%
White, not Hispanic	8.61	7.74	*	6.86	*	6.53	*	6.31		-2.30	-26.68%
Black	21.07	18.82	*	17.39	*	15.66	*	15.35		-5.71	-27.12%
Asian	10.57	8.71	*	7.49	*	6.67		7.16		-3.41	-32.28%
Hispanic - any race	28.43	25.86	*	22.49	*	20.83	*	19.07	*	-9.36	-32.91%
Male	13.65	12.28	*	11.00	*	10.11	*	9.74	*	-3.91	-28.66%
Female	13.94	12.63	*	11.28	*	10.53	*	10.23		-3.71	-26.60%
Children	11.40	11.06		9.77	*	8.51	*	8.38		-3.02	-26.49%
Working age adults 18 to 64	14.95	13.12	*	11.78	*	10.95	*	10.50	*	-4.45	-29.75%
Age 65 and older	12.73	11.86		10.59	*	10.53		10.32		-2.41	-18.94%
Native born	11.86	10.79	*	9.73	*	8.96	*	8.72		-3.14	-26.45%
Foreign born	26.77	23.29	*	20.15	*	18.92	*	17.72	*	-9.05	-33.81%
With a disability	35.10	32.80		31.42	*	29.97		27.39	*	-7.71	-21.96%
With no disability	13.33	11.44	*	10.14	*	9.34	*	9.11		-4.23	-31.69%

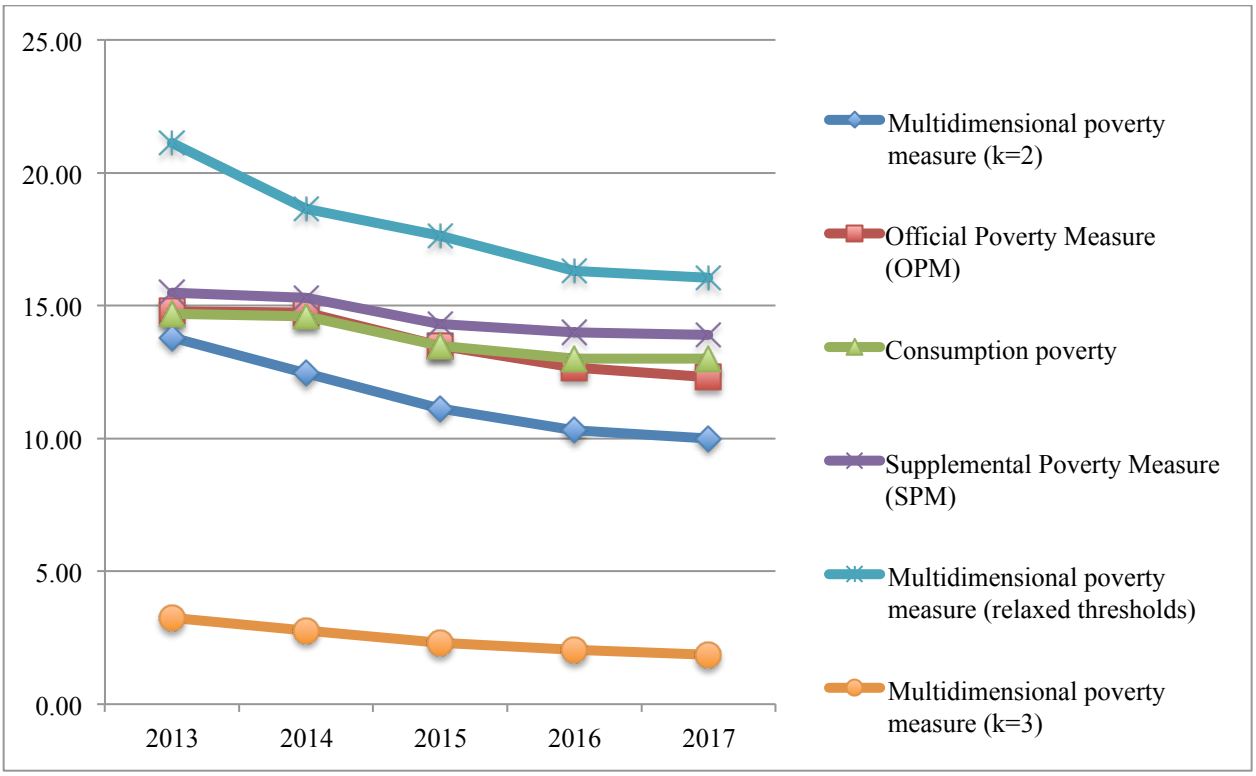
Notes: Statistical significance refers to the difference in the headcount with the previous year (e.g. 2016 vs 2015). It was assessed using the Wald chi-square statistic at the 95% level. This is based on standard errors calculated using replicate weights. p.p. stands for percentage points. The absolute change is the difference in headcount ratios for 2017 and 2013. The relative change is the difference in headcount ratios for 2017 and 2013 over the 2013 headcount ratio.

Source: Authors' calculations based on Current Population Survey, 2018, 2017, 2016, 2015, 2014 Annual Social and Economic Supplements.

Table II also shows results for population groups based on race/ethnicity, gender, age, nativity, and disability. In any given year, the odds of experiencing two or more deprivations were much higher for Hispanics, Blacks, working-age adults, immigrants, and persons with disabilities compared to their reference groups. Persons with disabilities experienced the highest rate of multidimensional poverty among all sub-groups, 27.4% in 2017 compared to 9.1% for those without disabilities. While all population groups experienced a decline in multidimensional poverty over the 2013-2017 period, reductions in multidimensional poverty over time were uneven among different groups. Where Hispanic persons saw significant year to year reductions in poverty from 2013 to 2017, Blacks saw significant year to year decreases in poverty from 2013 to 2016, but a stagnation between 2016 and 2017 (15.66% and 15.35% respectively). Similarly, non-Hispanic Whites saw reductions in multidimensional poverty in each year from 2013 to 2016, but no significant change in poverty rates from 2016 to 2017. Males, working-age adults, and immigrants saw consistent downward trends in multidimensional poverty from 2013 to 2017, while results were mixed for females, those of other age groups, and persons who were native born. In any given year, all or most groups of the 14 groups in Table 3 experienced a decline except for 2017 when the decline in multidimensional poverty was focused on six groups: Whites, Hispanics, males, working age adults, immigrants, and persons with disabilities. Appendices 2 and 3 show similar patterns using a higher cross-dimensional threshold (k=3) and more relaxed within-dimension thresholds for income and employment.

Figure 2 overlays our overall trend results with reported rates of OPM, SPM, consumption poverty, and our two additional measures of multidimensional poverty over the same period. Trends for all measures share a similar pattern, with decreases seen from 2013 to 2016 and a flattening between 2016 and 2017.

Figure 2. Poverty rates over time for different measures



It is important for policy to understand which dimensions contributed to the change in multidimensional poverty. Figure 3 starts by showing trends in deprivation rates for each indicator for the entire population. Comparing 2013 and 2017, downward trends are found over the period for all indicators. There is a large variation though in the progress across indicators: the smallest reduction in deprivation rates is for health status (0.8 percentage point) and the largest for health insurance (4.4 percentage points). Health insurance is the only dimension for which the deprivation rate declined only in the first half of the study period with a plateau since 2015.

Figure 3: Deprivation rates and confidence intervals over time for each indicator

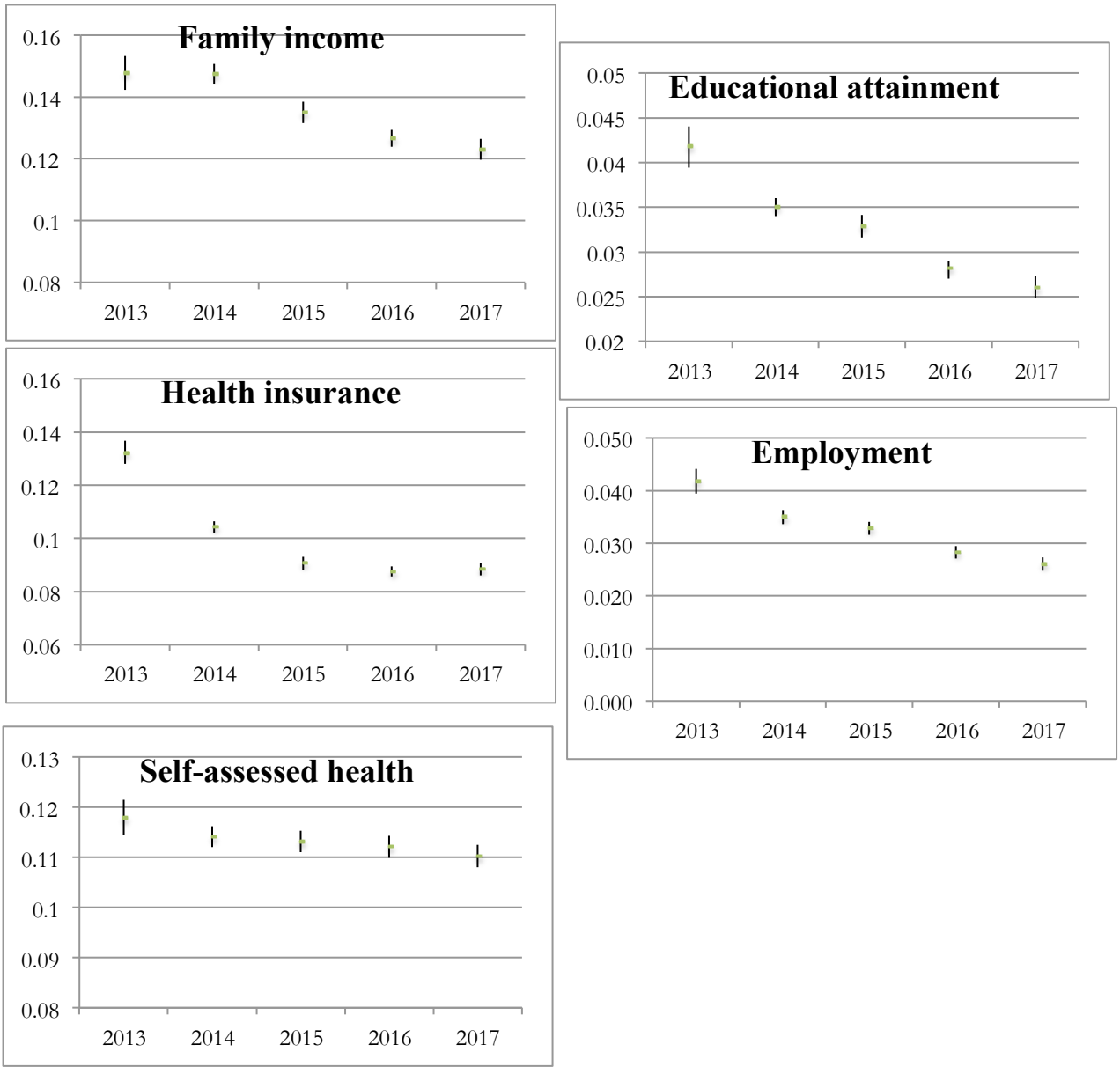


Table III decomposes M_0 across dimensions to get the *relative* contribution of each dimension over time. The bottom row of Table III shows M_0 estimates found in Figure 1, which is simply the average of the H_j, that is, the share of the population who is deprived in dimension *j* among the multi-dimensionally poor. For each dimension, the first row shows H_j and the second row gives the same result in percentage terms, i.e. the percentage of deprivation in dimension *j* out of all deprivations experienced by the poor. Again, health insurance is the indicator for which the largest reduction is observed from 0.065 in 2013 to 0.039 in 2017.

Table III: Decomposition of multidimensional poverty adjusted headcount (M0) across dimensions

	2013	2014	2015	2016	2017
Family income (H_1)	0.088	0.083	0.074	0.067	0.065
Percentage contribution	28.21%	29.82%	29.71%	29.23%	29.45%
Self-assessed health (H_2)	0.055	0.049	0.046	0.045	0.043
Percentage contribution	17.45%	17.47%	18.53%	19.87%	19.59%
Educational attainment (H_3)	0.080	0.075	0.067	0.062	0.060
Percentage contribution	25.56%	27.00%	27.09%	27.00%	27.14%
Employment status (H_4)	0.025	0.020	0.018	0.015	0.013
Percentage contribution	7.91%	7.30%	7.06%	6.52%	6.00%
Health insurance (H_5)	0.065	0.051	0.044	0.040	0.039
Percentage contribution	20.87%	18.40%	17.60%	17.37%	17.82%
M_0	0.065	0.0577	0.0512	0.0475	0.0457
Percentage contribution	100%	100%	100%	100%	100%

Throughout the years, low income and limited educational attainment are the two most common deprivations among the multi-dimensionally poor. Have the contributions of different dimensions to multidimensional poverty changed between 2013 and 2017? There has been a drop in the contribution of health insurance deprivation to multidimensional poverty, followed by employment deprivation. However, from 2016 to 2017, the percentage contribution of health insurance deprivation increased (by 0.45 percentage point) while that of employment deprivation continued to decline (by 0.52 percentage point). Such a decomposition could be extended to show results for each of the population groups in Table II.

5. Discussion

In the U.S., many people are not counted as poor under the official or supplemental measures of income poverty, while they experience multidimensional poverty (Dhongde and Haveman 2017; Glassman 2017; Mitra and Brucker 2016). Yet, there is no monitoring of multidimensional poverty. This paper offers a way to standardize the monitoring of trends in multidimensional poverty in the U.S..

Our results indicate that in the U.S., recent changes in multidimensional poverty point to a decline since 2013. This result is consistent with trends seen using measures of income or consumption poverty (Fontenot, Semega, & Kollar 2018; Meyer & Sullivan 2018). However, the downward trend in poverty for the total U.S. population from 2013 to 2016 appears to be flattening out across all poverty measures in 2017. From 2016 to 2017, we find that multidimensional poverty decreased only 0.3 percentage point (from 10.3% to 10.0%). OPM poverty decreased 0.4 percentage point (from 12.7% to 12.3%) and SPM poverty decreased 0.1 percentage point (from 14.0% to 13.9%) (Fontenot, Semega, and Kollar 2018; Fox 2018). Consumption poverty, using 2015 as the anchor year, was at 13.0% in 2016 and 2017 (Meyer and Sullivan, 2018). Continued monitoring needs to determine whether poverty in all its forms has indeed plateaued.

The population as a whole experienced a decline in multidimensional poverty over the 2013-2017 period. In any given year, all or most groups experienced a decline except for 2017 when the decline in multidimensional poverty became less widely shared across population groups. Our results examining changes in poverty from 2016 to 2017 for different racial and ethnic groups are consistent with those found by Dalaker (2018) when examining trends in OPM. Dalaker (2018) found no statistically significant changes in rates of poverty for blacks, Asians and non-Hispanic whites from 2016 to 2017. In terms of age group differences, statistically significant reductions in multidimensional poverty occurred for the working-age each year while results were mixed for other age groups. In fact, older adults had similar rates of multidimensional poverty from 2015 to 2017 and children had similar rates from 2016 to 2017. Rates of SPM poverty by age group did not change from 2016 to 2017 (Fox 2018). As for gender, while only males experienced significantly lower multidimensional poverty in 2017, only females saw their rates of OPM poverty significantly go down during that year (Fontenot, Semega and Kollar 2018). This points out the usefulness of using a multidimensional measure as it can reveal different trends.

Another important benefit of using a multidimensional measure such as one based on Alkire and Foster (2011) is its decomposability into deprivation rates dimension by dimension, contributing a comprehensive and nuanced understanding of poverty, beyond material concerns. Deprivations in health insurance decreased most sharply from 2013 to 2016. This could be explained by demographic changes, as the U.S. population is aging and thus a larger share of persons becomes eligible for Medicare with each passing year. In addition, many of the expanded opportunities to access health insurance through the provisions of the Affordable Care Act (ACA) took effect in 2014 (Kaiser Family Foundation 2013). Some of the provisions of the ACA began to erode, however, in 2016 as new Congressional and executive branch leaders reduced enrollment outreach efforts, proposed changes to Medicaid, and passed legislation phasing out the tax penalty that incented participation in health plans (Artiga, Foutz, and Damico 2018; Kaiser Family Foundation 2018). As our data shows, from 2016 to 2017, increases were seen in health insurance deprivation while employment deprivation continued to decline. This suggests that, overall, people were gaining jobs but losing health insurance. Similarly, although lack of employment is less of a concern in recent years for many Americans, low levels of family income remain a primary concern. Employment alone is not enough to ensure that income deprivation is avoided. The quality of jobs currently held by Americans, where many employees, particularly those in vulnerable populations such as persons with disabilities or persons who are black, are working in low-wage, non-benefited positions likely contributes to this finding (Brucker & Henly 2019; Kalleberg *et al*. 2011; Jones & Schmitt 2016).

6. Conclusion

In the U.S., many people do not meet official measures of income poverty, but still face multiple deprivations in other areas. A multidimensional measure of poverty such as the one used in this paper including income, health, education, personal activities (work), and insecurity (health insurance) is a useful complement to current poverty monitoring in the U.S. as it clearly captures the simultaneous experience of different types of deprivation and different areas of policy focus. Although it is beyond the scope of this paper to offer an assessment of specific programs or broad policies such as the War on Poverty, the measure of multidimensional poverty that is developed here also provides an additional tool to measure their impacts.

References

Alkire, Sabina. 2007. "Choosing Dimensions: The Capability Approach and Multidimensional Poverty." In *The Many Dimensions of Poverty*, edited by N. Kakwanit and J. Silber, 89-119. New York: Palgrave-MacMillan.

Alkire, Sabina, Mauricio Apablaza, Satya Chakravarty and Gaston Yalonetzky. 2014. "Measuring Chronic Multidimensional Poverty." *Journal of Policy Modeling* 39(6): 983-1006.

Alkire, Sabina, Paola Ballon, James Foster, Jose M. Roche, Maria E. Santos and Suman Seth. 2015. *Multidimensional Poverty Measurement and Analysis: A Counting Approach.* Oxford University Press (Chapter 7).

Alkire, Sabina and James Foster. 2011. "Counting and Multidimensional Poverty Measurement." *Journal of Public Economics* 95: 476-487.

Alkire, Sabina, James Foster and Maria E. Santos. 2011. "Where did Identification Go?" *Journal of Economic Inequality* 9: 501-505.

Alkire, Sabina., Jose M. Roche, and Ana Vaz. 2017. "Changes Over Time in Multidimensional Poverty: Methodology and Results for 34 Countries". *World Development* 94: 232-249.

Alkire, Sabina and Maria E. Santos 2014. "Measuring Acute Poverty in the Developing World: Robustness and Scope of the Multidimensional Poverty Index. *World Development* 59: 251-274.

Alkire, Sabina and Suman Seth. 2014. "Selecting a Targeting Method to Identify BPL Households in India." *Social Indicators Research* 112: 417-446.

Artiga, Samantha, Julia Foutz and Anthony Damico, A. 2018. "Health care coverage by race and ethnicity: Changes under the ACA." San Francisco, CA: Kaiser Family Foundation. Available: https://www.kff.org/report-section/health-coverage-by-race-and-ethnicity-changes-under-the-aca-key-findings/ .

Bailey, Martha J. and Sheldon Danziger (Eds.). 2013. *Legacies of the War on Poverty. The National Poverty Center Series on Poverty and Public Policy*. New York: Russell Sage Foundation.

Barnett, Jessica C. and Edward R. Berchick. 2017. "Health Insurance Coverage in the United States: 2016." P60-260. Washington, DC: U.S. Census Bureau.

Beja, Edsel. 2013. "Subjective Well-being Approach to the Valuation of International Development: Evidence for the Millennium Development Goals." *Social Indicators Research* 111: 141-159.

Berchick, Edward R., Emily Hood and Jessica C. Barnett. 2018. "Health Insurance Coverage in the United States: 2017". Current Population Reports P60-264.Washington, DC: U.S. Census Bureau.

Blank, Rebecca M. 2008. "Presidential Address: How to Improve Poverty Measurement in the United States." *Journal of Policy Analysis and Management*, 27: 233-254.

Bohn, Sarah, Caroline Danielson, Matt Levin, Marybeth Mattingly and Christopher Wimer. 2013. "The California Poverty Measure: A New Look at the Social Safety Net." San Francisco, CA: Public Policy Institute of California. http://www.faccc.org/wp-content/uploads/2014/11/ca_poverty_measure_ppic.pdf .

Bourguignon, Francois and Satya R. Chrakravarty. 2003. "The Measurement of Multidimensional Poverty." *Journal of Economic Inequality* 1: 25-49.

Brucker, Debra L. and Megan Henly. 2019. "Job Quality for Americans with Disabilities." *Journal of Vocational Rehabilitation* 50(2): 121-130.

Brucker, Debra. L., Sophie Mitra, Navena Chaitoo, and Joseph Mauro. 2014. "More Likely to Be Poor Whatever the Measure: Working Age Persons with Disabilities in The United States." *Social Science Quarterly* 96, no. 1: 273-296. DOI: 10.1111/ssqu.12098

Census Bureau. 2013. "Educational Attainment in the United States: 2013." Accessed on May 19th, 2014 at: http://www.census.gov/hhes/socdemo/education/data/cps/2013/tables.html

Chung, Yiyoon, Julia Isaacs and Timothy Smeeding. 2013. "Advancing Poverty Measurement and Policy: Evidence from Wisconsin during the Great Recession." *Social Service Review* 87(3): 525-555.

Citro, Constance F. and Robert T. Michael. 1995. *Measuring poverty: A new approach*. Washington, DC: The National Academies Press.

Ciula, Raffaele and Curtis Skinner. 2014. "Income and Beyond: Taking the Measure of Child Deprivations in the United States." *Child Indicators Research* 8(3): 491-515. DOI: 10.1007/s12187-014-9246-6

Couch, Kenneth A, and Maureen A. Pirog. 2010. « Poverty Measurement in the United States, Europe and Developing Countries. » *Journal of Policy Analysis and Management* 29 **:** 217-226.

Dalaker, Joseph. 2018. "Poverty in the United States in 2017: In brief." Washington, DC: Congressional Research Service.

Danziger, Sheldon H., Gary D. Sandefur and Daniel H. Weinberg, Editors. 1994. *Confronting Poverty: Prescription for Change.* Cambridge, MA: Harvard University Press.

Decancq, Koen and Maria Ana Lugo. 2013. "Weights in Multidimensional Indices of Wellbeing: An Overview." *Econometric Reviews* 32: 7-34.

DeNavas-Walt, Carmen, Bernadetter D. Proctor and Jessica Smith. 2013. *Income, poverty and health insurance coverage in the United States: 2012*. U.S. Census Bureau Current Population

Reports P60-245. Washington, DC: U.S. Census Bureau.

Dhongde, Shatakshee & Robert Haveman. 2017. "Multi-dimensional Poverty in the U.S." *Social Indicators Research* 133: 477-500. DOI: 10.1007/s1205-016-1379-1.

Duclos, Jean-Yves, David Sahn, and Stephen Younger, S. D. 2006. "Robust Multidimensional Poverty Comparisons with Discrete Indicators of Well-being." *Economic Journal*, 116(, 514): 943-968.

Fontenot, Kayla, Jessica Semega, and Melissa Kollar. 2018. "Income and Poverty in the United States: 2017." Washington, DC: U.S. Census Bureau.

Foster, James E., Joel Greer, and Erik Thorbecke. 1984. "A Class of Decomposable Poverty Measures." *Econometrica* 52: 761–766.

Fox, Liana. 2018. "The Supplemental Poverty Measure: 2017." P60-265. Washington, DC: U.S. Census Bureau.

Fox, Liana, Irwin Garfinkel, I., Neeraj Kaushal, Jane Waldfogel and Christopher Wimer. 2014. *Waging War on Poverty: Historical trends in poverty using the Supplemental Poverty Measure.* NBER Working paper NO. 19789. Cambridge, MA: The National Bureau of Economic Research.

Glassman, Brian. 2017. "A Multidimensional Poverty Measure using the American Community Survey." Paper presented at the Southern Economic Association Annual Meeting, November 2017. SEHSD working paper number 2017-47.

Glassman, Brian. 2019. "Multidimensional Deprivation in the United States: 2017." Washington, DC: US Census Bureau.

Hutto, Nathan, Jane Waldfogel, Neeraj Kaushal and Irwin Garfinkel. 2011. "Improving the Measurement of Poverty." *Social Service Review* 85 (1): 39–74.

Jones, Janelle and John Schmitt. 2016. "Trends in Job Quality for African-American Workers, 1979-2011." *Review of Black Political Economy* 43: 1-19.

Kaiser Family Foundation (KFF). 2013. "Summary of Affordable Care Act." San Francisco, CA: KFF. Available: https://www.kff.org/health-reform/fact-sheet/summary-of-the-affordable-care-act/

Kaiser Family Foundation (KFF). 2018. "Note on Summary of Affordable Care Act." San Francisco, CA: KFF. Available: https://www.kff.org/health-reform/fact-sheet/summary-of-the-affordable-care-act/

Kalleberg, Arne L. 2011. *Good jobs, bad jobs: the rise of polarized and precarious employment systems in the United States, 1970s–2000s.* New York: Russell Sage.

Kasarda, John D. 1992. "The Severely Distressed in Economically Transforming Cities." In A. V. Harrell and G. E. Peterson (Eds.), *Drugs, Crime and Social Isolation*. Washington, DC: The Urban Institute Press.

Madonia, Giuseppina, Maria F. Cracolici, and Miranda Cuffaro. 2013. "Exploring Wider Well-being in the EU-15 Countries: An Empirical Application of the Stiglitz Report." *Social Indicators Research* 111: 117-140.

Marlier, Eric and Anthony B. Atkinson. 2010. "Indicators of Poverty and Social Exclusion in a Global Context." *Journal of Policy Analysis and Management*, 29: 285-304.

Meyer, Bruce D. and James X. Sullivan. 2018. *Annual Report on US Consumption Poverty: 2017.* Chicago: University of Chicago.

Mincy, Ronald B. 1994. "The underclass: concept, controversy, and evidence." In Danziger, S. H., Sandefur, G. D., and Weinberg, D. H. (Eds.), *Confronting Poverty: Prescription for Change*, (pp. 109-146). Cambridge, MA: Harvard University Press.

Mincy, Ronald B., Isabel V. Sawhill and Doublas A. Wolf. 1990. "The Underclass: Definition and Measurement." *Science* 248: 450-453.

Mitra, Sophie and Debra L. Brucker. 2016. "Income Poverty and Multiple Deprivations in a High-income Country: The Case of the United States." *Social Science Quarterly*, 98(1): 37-56.

Mitra, Sophie, Kristin Jones, Brandon Vick, David Brown, Eileen McGinn, and Mary Jane Alexander. 2013. "Implementing a Multi-dimensional Poverty Measure using Mixed Methods." *Social Indicators Research* 110: 1061-1081.

Narayan, Deepa, Raj Patel, R., Kai Schafft, Anne Rademacher and Sarah Koch-Schulte. 2000. *Voices of the Poor: Can Anyone Hear Us?* Washington, DC: World Bank.

Neubourg, Chris D., Jingqing Chai, Marlous de Milliano, Ilze Plavgo, I., and Ziru Wei. 2011. *CC-MODA Study Technical Note Multiple Overlapping Deprivation Analysis.* Office of Research Working Paper WP-2012-05. Florence, Italy: UNICEF. Retrieved April 15, 2014, from http://www.unicef-irc.org/MODA/

OECD. 2011. *How is Life? Measuring Well-Being*. Paris, France: Organization of Economic Cooperation and Development Publishing.

Short, Kathleen. 2013. *The Research Supplemental Poverty Measure: 2012*. U.S. Census Bureau Current Population Reports P60-247. Washington, DC: U.S. Census Bureau.

Smeeding, Timothy, Julia B. Isaacs, and Katherina A. Thornton. 2014. "Wisconsin Poverty Report: Jobs Recover to Help Reduce Poverty in 2012." Madison, WI: University of Wisconsin,

Institute for Research on Poverty. http://www.irp.wisc.edu/research/WisconsinPoverty/pdfs/WI-PovertyReport2014.pdf

Stiglitz, Joseph E., Amartya K Sen, and Jean-Paul Fitoussi. 2009. *Report by the Commission on the Measurement of Economic Performance and Social Progress*. Paris: Commission on the Measurement of Economic Performance and Social Progress. Retrieved April 19th 2019, from https://ec.europa.eu/eurostat/documents/118025/118123/Fitoussi+Commission+report

Tsui, Kai-yuen. 2002. "Multidimensional poverty indices" *Social Choice and Welfare* 19: 69-93.

UNDP. 2010. *The Real Wealth of Nations: Pathways to Human Development. Human Development Report 2010.* New York, NY: United Nations Development Program.

Waglé, Udaya R. 2014. "The Counting-based Measurement of Multidimensional Poverty: The Focus on Economic Resources, Inner Capabilities, and Relational Resources in the United States." *Social Indicators Research*, 115: 223-240.

Waglé, Udaya R. 2008. "Multidimensional Poverty: An Alternative Measurement Approach for the United States?" *Social Science Research,* 37: 559-580.

APPENDICES

Appendix 1. Tetrachoric correlation coefficients of deprivation indicators

	Family income	Self-assessed health	Educational attainment	Employment status	Health insurance
Family income	1				
Self-assessed health	0.091	1			
Educational attainment	0.176	0.103	1		
Employment status	0.086	-0.011	0.027	1	
Health insurance	0.104	-0.017	0.095	0.043	1

Source: Authors' calculations based on Current Population Survey, Annual Social and Economic Supplements (2018). Coefficients for other years are available from the authors

Appendix 2. Multidimensional poverty headcount (H) (%) by selected characteristics over time (2013-2017) with *k*=3

	2013	2014		2015		2016		2017		2013-2017 Change Absolute (p.p)	2013-2017 Change Relative (%)
All	3.26	2.76	*	2.30	*	2.05	*	1.86	*	-1.40	-42.94%
White	2.91	2.54	*	2.01	*	1.84	*	1.65	*	-1.26	-43.30%
White, not Hispanic	1.77	1.60		1.26	*	1.14		1.04		-0.73	-41.08%
Black	5.41	4.31	*	4.28		3.40	*	3.94		-1.47	-27.14%
Asian	2.32	1.35	*	1.33		1.13		0.87		-1.45	-62.47%
Hispanic - any race	7.51	6.36	*	4.90	*	4.40		3.94	*	-3.57	-47.51%
Male	3.10	2.74	*	2.25	*	1.95	*	1.85		-1.25	-40.36%
Female	3.41	2.78	*	2.35	*	2.13	*	1.87	*	-1.54	-45.16%
Children	1.72	1.59		1.34	*	1.12		1.00		-0.72	-41.79%
Working age adults 18 to 64	4.03	3.35	*	2.79	*	2.45	*	2.26	*	-1.77	-43.86%
Age 65 and older	2.45	2.12		1.79	*	1.81		1.58	*	-0.87	-35.59%
Native born	2.61	2.25	*	1.85	*	1.65	*	1.53		-1.08	-41.31%
Foreign born	7.63	6.06	*	5.21	*	4.56	*	3.88	*	-3.75	-49.11%
With a disability	10.49	9.26		8.81	*	7.90		7.20		-3.29	-31.35%
With no disability	3.51	2.84	*	2.28	*	1.99	*	1.85	*	-1.66	-47.26%

Notes as in Table II.
Source: Authors' calculations based on Current Population Survey, 2018, 2017, 2016, 2015, 2014 Annual Social and Economic Supplements.

Appendix 3. Multidimensional poverty headcount (H) (%) by selected characteristics over time (2013-2017) with expanded within dimension thresholds

	2013	2014		2015		2016		2017		2013-2017 Change Absolute (p.p)	2013-2017 Change Relative (%)
All	21.123	18.54	*	17.64	*	16.3	*	16.05		-5.07	-24.02%
White	19.7	17.51	*	16.36	*	15.26	*	14.86	*	-4.84	-24.57%
White, not Hispanic	14.34	12.51	*	11.65	*	10.99	*	10.74		-3.60	-25.10%
Black	30.169	25.71	*	25.82		23.81	*	23.41		-6.76	-22.40%
Asian	16.23	13.88	*	11.94	*	11.03		11.28		-4.95	-30.50%
Hispanic - any race	41.01	36.95	*	34.25	*	30.83	*	29.62	*	-11.39	-27.77%
	0	0		0		0		0			
Male	20.97	18.39	*	17.38	*	16.05	*	15.65		-5.32	-25.37%
Female	21.27	18.88	*	17.9	*	16.55	*	16.43		-4.84	-22.76%
	0	0		0		0		0			
Children	18.27	14.74	*	16.28	*	14.26	*	14.13		-4.14	-22.66%
Working age adults 18 to 64	22.17	19.7	*	17.85	*	16.53	*	16.19		-5.98	-26.97%
Age 65 and older	21.24	20.37		18.91	*	18.45		18.28		-2.96	-13.94%
	0	0		0		0		0			
Native born	18.79	16.45	*	15.84	*	14.53	*	14.37		-4.42	-23.52%
Foreign born	36.73	32.85	*	29.18	*	27.5	*	26.31	*	-10.42	-28.37%
	0	0		0		0		0			
With a disability	49.77	46.09	*	44.5	*	43.29		40.18	*	-9.59	-19.27%
With no disability	19.96	17.45	*	15.61	*	14.26	*	14.21		-5.75	-28.81%

Notes as in Table II.
Source: Authors' calculations based on Current Population Survey, 2018, 2017, 2016, 2015, 2014 Annual Social and Economic Supplements.