**Introduction**

The 2015 Noble Prize winner in economics, Angus Deaton, warned against measuring economic well-being based upon income alone. National data like the unemployment and poverty rates offer a specific view of poverty in America but do not tell the full story. Another way to describe the state of society’s most vulnerable population is by looking at consumption-based needs – food, housing, transportation, etc.

Previously, nonprofit organizations have not been very involved in tracking poverty. Instead, their missions have been to directly assist the poor. Recently, however, the Indiana University Lilly Family School of Philanthropy partnered with the Salvation Army to evaluate whether their service data could be used to accurately measure poverty in America. From over 230 service variables, the researchers created a Human Needs Index (HNI) using seven key variables that can help policy makers and social-services providers understand the country’s most acute areas of need more quickly and effectively. This new index focuses on consumption, not income. The purpose of developing a consumption based measure of poverty was to allow for evaluation of whether someone can adequately meet life’s fundamental needs.

The HNI includes seven types of assistance provided: meals, groceries, clothing and furniture, as well as help with housing, medical and energy bills. The data that make up the index are comprehensive, derived since 2004 from the Salvation Army’s services in thousands of communities, urban and rural, in every region of the country. This information can complement anecdotal evidence to understand American poverty more clearly. For example, the data showed that after a high point of need in 2012, when the national HNI reached 2.8, the country dipped in 2014 to its lowest point of need since 2004, with an average of 1.4 (on the scale, zero is considered a low point in need). But several parts of the country are still struggling. In terms of need, Michigan and Nevada have yet to recover from the recession. The HNI also provides information about the needs in each region. Do people have adequate housing but too little to eat? Can they clothe themselves and their children but not pay their heating bills? Do they have to forgo other basic needs to get medical services? For instance, in March 2015, North Carolina and Minnesota had an almost identical HNI (1.16 and 1.15, respectively). However, North Carolina had more than 12 times the per capita energy assistance of Minnesota, while Minnesota registered higher per capita assistance levels for meals and groceries.

The United States is only as strong as our most vulnerable citizens. The Human Needs Index illustrates the kind of approach pioneered by Mr. Deaton. It provides leaders across the political spectrum with a tool as they assess how to make America stronger in the years ahead.

**Literature Review**

The U.S. Office of Management and Budget (OMB) defines and measures poverty at the individual, family, and household level. This measurement has a profound impact on how effectively government and nonprofit organizations meet the needs of the poor. Poverty is determined by using “a set of money income thresholds that vary by family size and composition to determine who is in poverty… The official poverty definition relies on monetary income before taxes and does not include capital gains or noncash benefits (such as public housing, Medicaid, and food stamps.).”[[1]](#footnote-1) The U.S. poverty rate is derived from the total number of households that operate below the established thresholds and is issued by the U.S. Census Bureau.[[2]](#footnote-2) Yet this standard is not universal. Government agencies, such as the Department of Health and Human Services, which oversees federal food and healthcare programs, may use their own poverty measurements to determine eligibility for benefits and services.

After the unemployment rate reached 7.1 percent and the poverty rate was in excess of 22 percent in 1964, President Lyndon B. Johnson declared the “War on Poverty” (Meyer & Sullivan, 2012). This declaration led to the expansion of federal programs to assist the poor: the permanent authorization of the food stamp program (Department of Social Services, 2011), the initiation of the Head Start program (U.S. Department of Health and Human Services, n.d.), and the implementation of Medicare (Rowland & Lyons, 1996) and Medicaid (GoMedicare, 2012). The U.S. government combined the War on Poverty with a new effort to define and measure poverty, including the collection of new data sources.

In 1963, Molly Orshanky of the Social Security Administration introduced the first poverty threshold in the United States (Fisher, 1997). Governmental and nonprofit organizations have used this measure, in updated versions, since that time to inform policy and programming decisions. Researchers determined this first official U.S. poverty threshold, the headcount ratio, by analyzing consumption activities of American families, as presented by findings of a 1955 Department of Agriculture’s Household Food Consumption Survey. This survey concluded that families comprised of three or more members spent approximately one-third of their net income on food (Fisher, 1997; Nelson & Lohmer, 2009). For an average three-person family, Orshansky multiplied the 1955 cost of a budget food plan by three to derive a poverty threshold. Researchers applied different multipliers to families with different compositions and sizes, as well as to families who lived on a farm. If a family did not meet the net income criteria to purchase at least the minimally nutritional food plan, then researchers designated that family as impoverished (Fisher, 1997).

While the headcount ratio was advancement for its time, many economists now consider it too absolute for use. Such crude measures do not consider the distance a person is from the poverty line, the distribution of income among the poor, or the length of time a person spends in poverty (Sen, 1976). Additionally, the headcount ratio does not account for other costs that a typical family incurs monthly, which may rise over time—namely, housing. According to the Consumer Expenditure Survey for the year 2010, American households spent, on average, just over a third of their annual expenditures on housing and housing-related costs (http://www.bls.gov/cex/csxann10.pdf). In comparison, households spent only 13 percent on food.

The headcount ratio was also limited, because it did not take into account changes in the standard of living in the United States (Fisher, 1997) or provide for the regional variations of the cost of living across the United States. Since the official measure was adopted, the only major adjustment made to this poverty threshold has been for inflation using the Consumer Price Index (CPI) (Meyer & Sullivan, 2012). In 1969, researchers indexed the poverty threshold for the first time using the CPI rather than “by the per capita cost of the economy food plan” (Fisher, 1997, para. 8). While the poverty threshold for families of different sizes and compositions has been updated from time to time based on the cost of an economy food plan using the CPI, no other major revisions have taken place.

Social scientists have developed other measures that address an individual’s or a family’s distance from the poverty line, compensating for the limitations of the official U.S. poverty measure. This measure allows researchers to assess the severity of poverty, the potential of one becoming impoverished or overcoming poverty, and whether or not these transitions are temporary or ongoing.

Some scholars and policymakers have argued that the official poverty rate may not accurately capture the true level of poverty in the United States, either because the household poverty threshold is too low or because it does not effectively capture all the elements that constitute a family’s financial situation. In particular, the official poverty measure defines a family’s “resources” as pretax income, which does not account for payroll deductions in the form of tax liabilities, such as federal, state, Social Security, and Medicare taxes, or for other monthly expenses like student loans and mortgage payments. Additionally, measures that determine the poverty threshold do not address the use of tax credits or noncash benefits made available to low- income families, such as SNAP, government-assisted housing, and school lunch subsidies. Another important consideration in the determination of the official poverty rate is the way in which the resource-sharing unit is defined. Official poverty rates are determined by family income, which include only those resources for individuals related by blood or marriage, while residents within a housing unit who are not related are not considered a resource-sharing group.

As a result, the official poverty rate may underrepresent impoverished individuals. Meyer and Sullivan (2012) prescribe a comprehensive list of defining dimensions for a new poverty index. The first is to address the underlying resource measured—income or consumption. The former captures the potential goods consumed, while the latter describes resources actually used. The researchers also mandate setting a “time period,” a “resource sharing unit” (family or household), and a specific “threshold” to separate those above and below the poverty line. This last dimension may either be “absolute” or “relative,” and must undergo adjustments over time. The index must also allow researchers to equalize families of varying demographics and size, agreeing on a singular measure of poverty.

Social scientists have long defined U.S. household poverty in monetary terms, either from available household resources or total household consumption. The former, often used to determine entitlement eligibility in the United States, compares a family’s gross income against its size or its standard of living—sometimes upheld by drawing upon savings (Meyer & Sullivan, 2012). Income-defined measures of resources do not account for wealth accumulation, ownership of houses or cars, or access to credit, each of which directly affects the level of deprivation that families experience. Consumption as a measure of resources addresses whether families have specific goods at their disposal, such as adequate housing and food, as well as access to health care and education.

Between income and consumption as a measure of poverty, a number of researchers suggest that consumption is the better indicator. Ethnographic research in the United States suggests that citizens more accurately report consumption activities than income levels (Meyer & Sullivan, 2003). Low-income households, in particular, tend to underreport their income in order to be eligible to participate in government-funded transfer programs (Ziliak, 2006).

While the poverty rate measures changes in poverty over time, it may provide limited insights into the dynamics of poverty within distinctive households and among geographically diverse communities. A multidimensional Human Needs Index addressing the scope of human needs, such as employment, food security, housing, healthcare, education, and other factors, as well as how these needs are being met at the community level may accurately reflect poverty within specific communities and how basic needs are being met.

Moreover, there are benefits to measuring poverty by income or consumption—both measures are easily quantifiable. However, when used alone, monetary indicators do not reveal the depth, persistence, and distribution of poverty at the individual, family, or national levels. In addition, the monetary approach poses complications in the policy arena, as economists and politicians often debate what measures should represent appropriate poverty thresholds. Questions arise, such as including which income sources should be attributed to the total income of the family, or whether the utility of measuring how many calories a person consumes per day should be the primary measure of poverty (Ziliak, 2006). Evidence from existing studies indicates that researchers must consider dimensions beyond income or consumption when analyzing the nature and effect of poverty.

**Theory and Hypotheses**

Nearly four decades after the first measure of poverty was developed, the role of the nonprofit sector in fighting poverty has expanded. Thousands of nonprofit organizations throughout the U.S. constitute the safety net of services addressing basic human needs (Allard, 2008). Nonprofit agencies have become vital partners in poverty reduction. Salamon (2002) estimated that the number of nonprofit human service organizations increased by 115 percent, that is approximately 23,000 organizations a year, from 1977 to 1997, compared to a 76 percent increase in among for-profit businesses. Allard (2008) reported that the number of nonprofit human service organizations increased by more than 60 percent between 1990 and 2003. Government spending on safety net programs has also increased, with the federal government support reaching $466 billion in 2011 (Center on Budget and Policy Priorities, 2012). The Supplemental Nutrition Program (SNAP) totaled $75 million in state and federal spending from 2007 to 2011 (U.S. Department of Agriculture, 2011). Previous estimates of the combined public and private expenditures for social service programs indicate the U.S. allocated between $150 and $200 billion annually (Allard, 2008). More recently, charitable giving to human service organizations totaled $35.39 billion (Giving USA, 2012).

As poverty rates increased 27 percent between 2006, the year before the onset of the Great Recession, and 2010 (Seefeldt, Abner, Bolinger, Xu & Graham, 2010), policymakers and researchers increasingly focused on the accurate measurement and tracking of poverty. For the past four decades, researchers have relied solely on government data sources to assess the scope, magnitude, and distribution of poverty. Today, nonprofits have a critical role in improving the wellbeing of individuals and of the local community. As Allard (2008) reported, employment-related, childcare, housing, and meal services not only address the immediate needs of individuals, but also improve neighborhoods, empower residents, and strengthen communities. However, data from nonprofit organizations has not been used widely to inform policy debates on poverty.

There is an opportunity for increasingly more accessible and rigorous data from nonprofit organizations to better illuminate trends in poverty over time. In the past, nonprofit organizations have been a part of policy discussions centered on reducing and alleviating poverty; but to date, very little nonprofit data have been used in effectively assessing poverty-related need that could potentially affect policy. The Salvation Army provides a unique role in meeting basic needs and poverty reduction. For more than 130 years the Salvation Army, operating 7,546 centers in communities across the U.S., has been "Doing the Most Good” to feed, to clothe, to comfort, and to care by providing food distribution, disaster relief, job training, shelter, energy assistance, rehabilitation centers, anti- human trafficking efforts, and a wealth of children's programs. Recently, the Salvation Army formed a unique collaboration with the Indiana University Lilly Family School of Philanthropy to create a new measure of poverty focusing on consumption-related variables instead of income. The Salvation Army collects extensive data regarding the services they provide clients. This project was aimed at providing a new lens on poverty-related need and therefore combines analysis of organizational service data with an assessment of governmental data to understand human need in communities across the U.S. This comprehensive examination considers the intersection of poverty-related human need and the impact of economic and social environments within communities and across time. The primary research questions posed by the team were:

1. Can nonprofit organizational service data be used to measure and assess poverty?
2. What organizational service data variables should be used to create an index measuring poverty?
3. How well does this new index based on consumption (indicated by nonprofit organizational service data) fit with current income-based indicators of poverty?

The goal of this project was to use the Salvation Army’s rich collection of service data to expand the pathways through which individuals and communities in poverty are identified and targeted so that immediate and long-term solutions to improve these conditions can be implemented.

**Data**

The data used for constructing the HNI come directly from the Salvation Army, aggregated at the state level and recorded monthly. While in the planning phases many more variables were considered, the final index consists of only seven, defined in Table X. Though limited data is available for some US territories, the HNI consists only of the 50 states and the District of Columbia.

**Table X:**

|  |  |  |  |
| --- | --- | --- | --- |
| Salvation Army Service Line-item Variable | Line-item Description | National Monthly Mean (n = 135) | National Monthly St. Dev (n = 135) |
| Meals Provided | All meals provided whether purchased from another source or served through a  Salvation Army facility. | 3,635,514 | 435,233 |
| Grocery Orders | Groceries provided by voucher or distributed through a food pantry or food bank. | 440,487 | 188,585 |
| Housing Assistance | The number of rent/mortgage assistance payments to establish and/or maintain an individual/family in their own home. | 9,401 | 3,253 |
| Medical Orders | The number of medical orders provided (i.e., prescriptions). | 18,262 | 4,827 |
| Energy Orders | The number of energy assistance orders provided. | 28,385 | 8,213 |
| Clothing Orders | The number of clothing orders provided. | 8,740 | 10,366 |
| Furniture Orders | The number of furniture orders provided. | 655 | 789 |

At present, the only changes made to these values are standardizing them (mean of 0 with a standard deviation of 1), adjusting them on a per-capita basis, and aggregating them at a national-monthly level for the national version of the HNI. The population measurement used for the per-capita adjustment is the seasonally-adjusted civilian non-institutional population available from the Bureau of Labor Statistics on a monthly statewide basis.

The measurements used for correlation comparisons with the HNI are per-capita SNAP persons participating and the unemployment rate. These were selected in part due to their availability at the state-month level.

**Methodology**

To create the HNI, two separate principle component analyses (PCA) were run on the seven standardized, per-capita values, one on the state monthly data (n = 6,885), and one on the aggregated national data (n = 135). From the seven generated components, only those with an eigenvalue >= 1 are included. Additionally, the analysis is only run on data from 2014 and before; this is to keep the equation (and resultant index values) constant through time as more data is continually added. Additionally, each index is standardized and rescaled so that the minimum value is zero[[3]](#footnote-3) and the standard deviation is one.

The equation for the state index is:

The equation for the national index is:

To test for relevancy, these indices were then pairwise correlated with the relevant percentage of the population receiving SNAP benefits or percentage unemployed. While significant in both cases, the level of correlation was much higher on a national scale than state scale (though this may be due more to the lower variance seen at the national level; notice that the correlation between SNAP and unemployment percentages is higher as well).

**Table XX: Pairwise Correlation of HNI With Government Measurements**

|  |  |  |  |
| --- | --- | --- | --- |
| **National (Monthly)** |  |  |  |
|  | National Unemployment % | National SNAP % | National HNI |
| National Unemployment % | 1 |  |  |
| National SNAP % | 0.7286\*\*\* | 1 |  |
| National HNI | 0.3159\*\*\* | 0.2416\*\*\* | 1 |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| **State (Monthly)** |  |  |  |
|  | State Unemployment % | State SNAP % | State HNI |
| State Unemployment % | 1 |  |  |
| State SNAP % | 0.5614\*\*\* | 1 |  |
| State HNI | 0.1841\*\*\* | 0.1057\*\*\* | 1 |

**Discussion/Conclusions**

1. <http://www.census.gov/hhes/www/poverty/about/overview/measure.html> [↑](#footnote-ref-1)
2. <http://www.census.gov/hhes/www/poverty/about/overview/measure.html> [↑](#footnote-ref-2)
3. Due to the constraint of constancy for older index values, it is feasible (perhaps likely) that there will in the future be HNI values below 0, since this zero-point is defined as the minimum in extant data at the time of initial publication of the HNI. [↑](#footnote-ref-3)