# Human Needs Index

A timely, multidimensional view of poverty-related need

Report prepared by:

IUPUI

LILLY FAMILY SCHOOL OF PHILANTHROPY

INDIANA UNIVERSITY
Indianapolis

NOTE: Minor changes in all the yearly values were reported in the update issued in April 2016 because the researchers slightly refined the statistical model to include more frequently updated population values. This is a one-time change.

## The Salvation Army

The Salvation Army has been supporting those in need in His name without discrimination for more than 130 years in the United States. Nearly 30 million Americans receive assistance from The Salvation Army each year through a range of social services: food for the hungry, relief for disaster victims, assistance for the disabled, outreach to the elderly and ill, clothing and shelter to the homeless, and opportunities for underprivileged children. Eighty-two cents of every dollar The Salvation Army spends is used to support those services in 5,000 communities nationwide.

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## Foreword

This report presents the Human Needs Index (HNI), which was developed in a unique collaboration between Indiana University Lilly Family School of Philanthropy and the Salvation Army. 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 advantage of this approach is that it provides critical observations informing the work of nonprofit organizations and public policymakers in reducing poverty. An important contribution of the HNI is that it advances understanding by developing a valid and reliable instrument for measuring human need in real-time and for tracking trends in human need over time.

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. To achieve this aim, the HNI's seven indicator variables—*Meals Provided, Groceries Provided, Housing Assistance, Clothing Provided, Furniture Provided, Medical Assistance, and Energy Assistance—a*ggregated from the site level to state, regional, and national levels have been statistically tested and validated to ensure scientific rigor. The result is a comprehensive measure/score of need that can track changes in need-based demand, and that will be updated quarterly—two of the advantages that set the HNI apart from other measures of poverty- related need, which are unable to identify these variations either with such specificity or immediacy.

In this inaugural edition, the HNI was developed using the Salvation Army's recently available service data. The specific line-item data selected represent the variation in the most basic human needs: food, clothing, health and well-being services, and housing. 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. The HNI presents an opportunity for not only the Salvation Army, but also for other nonprofit organizations as well as policymakers, to enhance and magnify that work. To address a complex issue such as poverty requires a sensitive measurement tool that is timely in detecting need, accurate in informing decision-making, and precise in identifying how and what human needs were met. The HNI leverages these strengths and as a result is beneficial in revealing the dynamic aspects of need and vulnerability.

While governmental measures of poverty are useful, they are reported with a substantial lag. The real-time assessment of specific poverty-related need at the local and national levels is important for nonprofit organizations, like the Salvation Army, to effectively provide for those demanding assistance. This index not only elicits the breadth and depth of predominant factors affecting provisional need but it also tracks the evolution of human need over time and within specific communities. For example, included in this report is a discussion of chronic widespread national need that was precipitated by the economic shocks of the Great Recession; however, regional differences in the HNI are also witnessed, many of which were likely the result of acute events such as natural disasters and differences in how and when the Great Recession affected individual regions. Understanding the distinctive ways in which human need changes in specific locales and at particular times may inform public policy and address poverty-related human need and policy reform in a more deliberate, meaningful, and successful manner.

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 HNI, however, constructed from the Salvation Army's service data, is different from the traditional measures of need-based poverty in the detailed specificity it offers. This index provides a timely census of need in different locations (sites, states, and regions) from an enduring and

consistent sample of Salvation Army service sites. Therefore, variations in services provided are attributable to changes in the demand for, and not the supply of, services in these areas. In addition, referral service data were analyzed because referrals made to other organizations further confirm need is present but cannot be served by the Salvation Army. The HNI is comprised of indicators that represent features of well-being that may not be captured by traditional measures of need-based poverty—that is, it reflects need substantiated on consumption, instead of income, which may denote more extreme deprivation at the local level. Combining these factors, the HNI's greatest strength is that it illustrates a more intimate portrayal of need than any other index of its kind.

In the future we envision further disaggregating data so that the HNI can be used to measure increasingly more specific local levels (counties, metropolitan statistical areas, etc.) of specific need like energy and housing, as well as unmet need. To ensure its ongoing relevance and accuracy, the HNI will continue to be validated with external governmental data. Over time the HNI may also provide important insights highlighting the links between changes in poverty-related need and trends in governmental services associated with healthcare (such as the Affordable Care Act, for example), food insecurity, and housing policies. Finally, perhaps the HNI's greatest contribution to the field is that it uses objective nonprofit organizational data to measure poverty-related need—therefore advancing the mechanisms to combat poverty from anecdotal notions to evidence-based solutions.

## Introduction

The most recent statistics show that nearly 16 percent of Americans, or about 48.8 million people, live below the government-defined poverty line.[1] For many decades, policymakers, practitioners and nonprofit leaders have sought accurate and timely data to measure poverty, economic well-being, and vulnerability. And, greater emphasis is being placed on the numbers today, as data play a critical role in decision-making for organizations across sectors. However, very little is known about conditions facing the hungry, the homeless, or the unemployed, as income alone may not be an adequate measure of poverty.

The official definition of poverty in the United States relies on the measurement of "monetary income before taxes and does not include capital gains or noncash benefits (such as public housing, Medicaid, and food stamps)."[2] Official national poverty data are calculated using this Census Bureau definition of poverty, which has remained mostly unchanged since it was introduced in the 1960s[i] (see Appendix A for an environmental scan that provides a detailed history and discussion of poverty measures in the United States).

Today, nonprofit agencies have become vital partners in poverty reduction. Yet, while the efforts of nonprofit organizations in providing for basic human needs are well-known, data quantifying these effects and measuring the impact of nonprofit organizations in combating poverty have neither been in the public domain nor been used widely to inform policy debates on poverty. The Salvation Army, in particular, has played a critical and expanding role in improving the well-being of individuals and local communities. In fact, thousands of nonprofit organizations throughout the United States, including the Salvation Army, constitute the safety net of services addressing basic human needs.[3]

In addition to community outreach and support, the organization collects high-quality data on poverty-related social services provided within thousands of communities, states

[i] This measure is annually adjusted for inflation using the Consumer Price Index, and is useful for measuring long-term poverty trends; however, it provides only limited insights into the dynamics of poverty within distinctive households and among geographically diverse communities. The Census Bureau releases the poverty data in an annual report, the most recent of which was released in September 2014.

and regions in the U.S. These data afford a unique opportunity to address the call for increasingly more accessible and more rigorous data from nonprofit organizations to better illuminate trends in poverty over time. As such, Indiana University Lilly Family School of Philanthropy, in partnership with the Salvation Army, has analyzed and interpreted these service-related data as a means for measuring not only need but also the impact of the Salvation Army services.

In this document, we introduce the standardized Human Needs Index (HNI). The HNI was developed with the goal of illuminating trends in poverty and vulnerability by using newly available data from the Salvation Army. Ideally, the HNI will allow for comparison of human needs across regions and track the shifts in need over time. Indiana University Lilly Family School of Philanthropy and the Salvation Army intend for this information to be informative and useful in human service and policy-making work. The HNI will continue to be a reliable and timely measure that is a transparent and rigorous source of data that identifies trends in human need across time and communities in the United States.

The HNI intends to provide a timelier picture of poverty and to contribute to the discussion of poverty measures in the United States. Therefore, the HNI aims to answer the following question:

**What are the patterns of human need in the United States across time and regions?**

In constructing the HNI, four key components were identified that, taken together, allow us to measure dimensions of human need in a given geographic area:

- Food Security
- Clothing Assistance
- Health/Well-being Services
- Housing/Shelter Assistance

Each component is important to the overall HNI measurement and captures the extent to which the Salvation Army provides for people's basic needs by depicting whether individuals need assistance with clothing to wear, food to eat, basic medical care to improve health or treat illness, and shelter for housing. The HNI has been shown to be strongly correlated with governmental poverty-related measures, rising most sharply with increases in the Supplemental Nutrition Assistance Program (SNAP) benefit and steadily with the U.S. unemployment rate.

The results of the HNI suggest that the Salvation Army and other organizations involved in providing basic needs continue to be an essential element in combating poverty. The findings from this report concur with prior claims that government safety net services, in isolation, may not be adequate in serving individuals, families, and communities in need.[4,5] The HNI provides a retrospective investigation that is critical to understanding the current state of specific need-based demand across the U.S. and in comparing needs across specific regions of the country. By tracking trends over time, the HNI illuminates shifts in demand that are vital in effectively serving individuals and families in need, as well as in predicting when and where specific needs may arise. The HNI scores are predicated on monthly data that are finalized at the conclusion of each quarter—an important distinction that differentiates the HNI from other measures of poverty-related need. These "real time" data allow the HNI to emerge as a valuable tool and an important complement to existing poverty and vulnerability indicators.

The HNI is unique because it is the first measure of poverty-related need constructed from the analysis of a nonprofit social service organization's rich longitudinal service data. The breadth and depth of these service data allow for a transparent examination of human need across time and region. This investigation also is set within the scope of broader social- contextual explanations—both necessary elements in facilitating better understanding and initiating directed action to alleviate the complex multifaceted issue of poverty. Therefore, the evidence presented in this report may be used as a mechanism to elicit more-informed

decision-making, program-delivery, and evaluation techniques by nonprofit organizations and policymakers.

The construction of the HNI required that we capture the key elements of human needs, which would be comparable in scientific rigor to other indices used to measure other aspects of human need. The included poverty-related variables rely on Salvation Army service data and were selected to accurately reflect critical aspects of human need. We used local and national poverty indicators and unemployment rates along with historical Salvation Army service data to determine the most relevant indicators of human need across the United States. Principal Component Analysis (PCA) was used to determine the weights for each of the variables (see Appendix H, the Technical Appendix, for a complete description of the methodology used to construct the HNI).

The Human Needs Index includes site-level service data from Salvation Army's 2004-2014 program/fiscal years. These data have been aggregated to represent State, Regional, and National HNI Scores. While the focus is on both the regional and national HNI scores, trends in state scores are also provided in Table 1, Appendix B. Therefore, within the regional and national sections, this report:

- Displays HNI scores over time, 2004-2014. These years are Salvation Army program/fiscal years that span October 1-September 30.

- Provides contextual explanations for those factors that will most significantly influence HNI scores within particular years, as well as emerging trends from one month to another month and/or across years. Some factors are one-time events that impact HNI scores, while others are chronic influences that affect the HNI in predictable ways across time.

- Discusses which indicators within a particular year or month might be stimulating a change in HNI score.

This report begins with the presentation of national and regional HNI scores, as well as an explanation of those conditions that will affect HNI scores, followed by an overview of the methodology used in the development of the HNI. In addition, appendices containing raw data and additional presentations of data referenced in the report are included.

## Findings

Since the goal of the HNI is to better assist an audience of multiple stakeholders in assessing need and evaluating program through the illumination and comparison of patterns of need, the following section and subsections present national and regional models of the HNI (see Table 1, Appendix B, for State Composite Scores). It is important to note that individual indicator variables—*Meals Provided, Groceries Provided, Housing Assistance, Clothing Provided, Furniture Provided, Medical Assistance, and Energy Assistance*—are raw data representing quantifiable need-based services provided; therefore, these variables can be calculated to measure percentage changes over time. The HNI score, however, is a single calculation that symbolizes the net amount of all seven indicator variables and changes in those variables from a standardized baseline score (100) and from one time point to another. Finally, the HNI score, although derived from numerical computations, is a composite score only to be used in making comparisons in the overall provision of need-based services across time and location. Consequently, it is not appropriate to interpret variations in the HNI score as percentage points of change.

The presentation of the findings include both HNI scores, which illustrate overall trends in need, and individual indicator scores that demonstrate specific increases and decreases of need-based services over time. In addition, to assist in understanding the variability of the HNI score at particular time points, percentage changes in the net amount of indicator variables are also provided where appropriate.

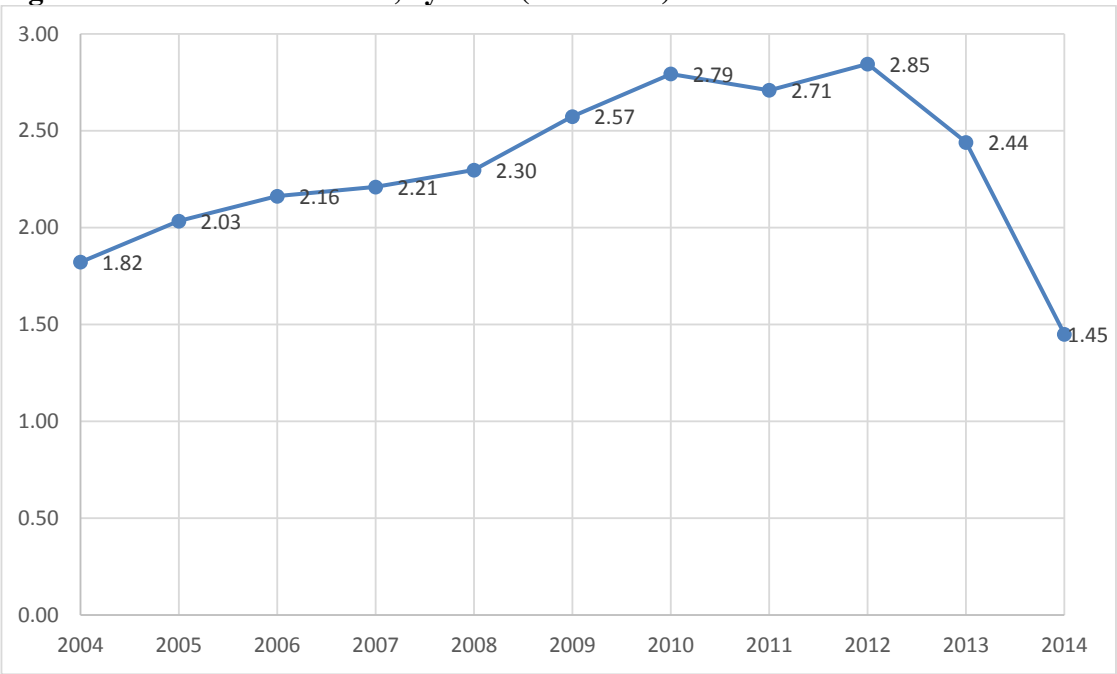
## National Human Needs Index (HNI)

The national HNI scores represent the degree of poverty-related need for the U.S. as a whole. In this section, HNI national scores are presented over time and a discussion of the variability of scores is also provided.

### National HNI Scores, by Year (2004-2014)

The HNI appears to mirror overall economic trends over time. As illustrated in Figure 1, the national HNI score was lowest in 2014 (1.45), lower even than in 2004 (1.82), which indicates that poverty-related need appears to be declining. At the start of the Great Recession, in 2008, the HNI score began a gradual increase, with a score of 2.30, and climbed from 2.57 to 2.79 in 2010, its highest peak until 2012, when it reached a score of 2.85. In the past year, HNI scores have begun to decline, reflecting an overall decrease in poverty-related need. Although the 2014 national HNI score has decreased substantially from the two previous yearsto below pre-Great Recession levels, it is still too early to tell if these numbers will remain low or if this was temporary. Preliminary 2015 values suggest need may still be elevated relative to pre-Great Recession, but markedly lower than 2010-2013.

**Figure 1. National HNI Scores, by Year (2004-2014)**



**The Great Recession's Impact on Human Need**

National HNI scores reveal a pattern that mirrors the economic volatility in the U.S. during the Great Recession. The Great Recession exerted a powerful impact on unemployment rates, personal income, and wealth, as well as the housing market in the U.S. The national HNI scores reflect this reduced economic activity as demonstrated by the lowest HNI scores occurring during the pre-Great Recession period (2004-2007), moderate scores appearing in the midst of the Great Recession (2008-2009), and the highest scores represented during the immediate post-Great Recession era (2010-2013). It is not surprising that the first substantial increase in HNI scores—a representation of increased need—is witnessed in 2010, the year immediately following the end of the Great Recession. This lag in demonstrated need is likely attributed to the depth of the recession and economic insecurity that individuals and households experienced—a result of this profound economic downturn and weak recovery.

As such, the greatest increases in need from 2009 to 2010 are seen in specific components of the HNI, including medical assistance that increased by 36 percent (from 16,770 service orders to 22,856 service orders), housing assistance that increased by 22 percent (from 10,880 service orders to 13,275 service orders), and furniture assistance that increased by 128 percent (from 333 service orders to 757 service orders). The variability of these indicators over time suggests that economic and financial shocks, including long-term unemployment, inability to pay mortgages or rent, and the loss of employer-sponsored health insurance may require a longer period of recovery. In addition, many individuals who faced job loss may have also experienced reduced access to credit, including home equity,

**According to the U.S. National Bureau of Economic Research, The Great Recession in the United States lasted from December 2007 to June 2009.**

which they might have used to buffer their food consumption during bouts of unemployment.[ii]

**Natural Disaster's Impact on Human Need**

Another important factor to consider when comparing national HNI scores over time is the effect of natural disasters. While these events are geographically specific, their impact is reflected in the national HNI score, as the elevation of specific poverty-related indicators are associated with services provided during natural disasters, therefore affecting the fluctuation of national HNI scores. For example, when the national HNI score increased in 2008 (2.30), the meal assistance indicator also reached its peak to the highest score among all other indicators. The increase in meal assistance is likely due to the Super Tuesday Tornado Outbreak of February 5-6, 2008, which included 87 tornados across nine states; Alabama, Arkansas, Kentucky, and Tennessee were among the hardest-hit states.[iii] In 2012, the national HNI reached its decade-high score (2.85), up from 2011 (2.71). A plausible explanation for this acute increase is the last few days of October 2012, when the Eastern United States experienced Hurricane Sandy, which left thousands of people homeless and millions without electricity.[iv] Consequently, reflecting these trends, the three greatest demands for assistance during this time were for furniture, witnessing a 104 percent increase (from 705 service orders to 1,437 service orders); housing, realizing a 15 percent increase (from 8,655 service orders to 9,954 service orders); and clothing, which increased by 25 percent (from 14,570 service orders to 18,236 service orders) from 2011 (see Table 1 and Figure 1, Appendix C, for a complete list of indicators and corresponding scores from 2004-2014).

[ii] Hurd, M. & Rohwedder, S. (2010). Effects of the financial crisis and the Great Recession on American households (Working Paper No. 16407). Retrieved from National Bureau of Economic Research website: http://www.nber.org/papers/w16407.pdf.

[iii] For more information, see: http://www.nws.noaa.gov/os/assessments/pdfs/super_tuesday.pdf

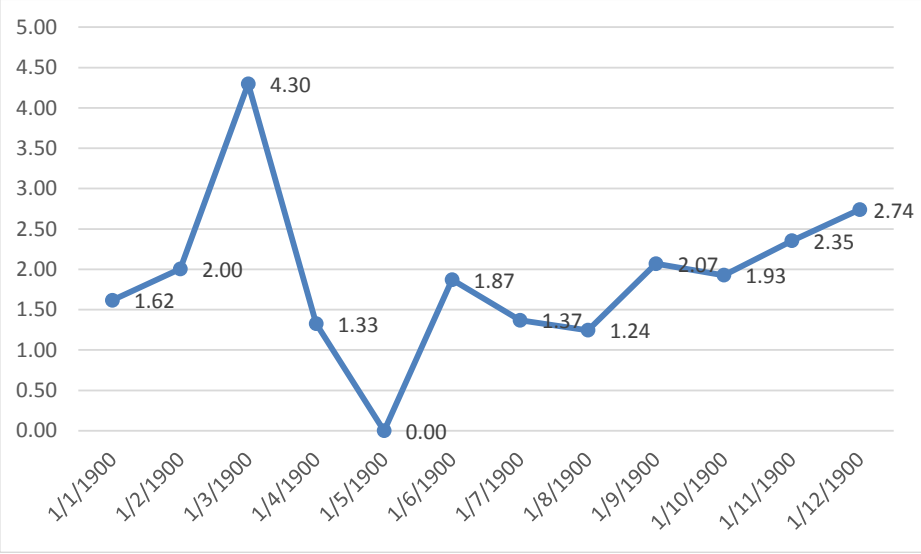
[iv] For more information, see: http://www.livescience.com/24380-hurricane-sandy-status-data.html

**Seasonality Impact on Human Need**

When yearly HNI scores are reduced into monthly or quarterly scores, trends suggest that seasonality may be an important factor in anticipating human need. For example, Figure 2 illustrates this trend for program/ fiscal year 2014. HNI scores began to climb in November 2013 (2.00); December 2013 (4.30) is markedly the highest score during the 2014 program and fiscal year. Scores began to decrease in January 2014 (1.33) and February 2014 (0.00), which represents the lowest score in the entire series; scores briefly increased again in March 2014 (1.87). While the scores presented here are specific to the most recent program year, the overall trend across years (and regions) illustrates poverty- related need increases late in the calendar year (see Table 1, Appendix D, for a complete list of National HNI scores by month, from 2004-2014). This increase in need at the end of the year is further demonstrated by the rise in the use of the Supplemental Nutrition Assistance Program (SNAP) benefit; while unmet need is also prominent as evidenced by the Salvation Army's referral data (see Table 7, Appendix H, for a complete list of governmental measures of need and Salvation Army referral data by month, from 2004-2014).

**Some states prevent utility companies from terminating service during the "cold" months or when the temperature falls below a specific temperature, therefore delaying energy needs until spring.**

**Figure 2.**



## Regional Models of the HNI

The Salvation Army's regional service areas are divided into four segments: Central, East, South, and West (Table 1, Appendix B, contains a complete list of states in each region). While the national Human Needs Index (HNI) scores are valuable to understanding overall poverty- related need and in measuring the effectiveness of response to that need in the United States as a whole, regional HNI scores may be more useful in understanding trends that are specific to a geographic area. In this section, regional annual HNI scores are presented over time, and a discussion of the variability of scores is also provided.

### Regional HNI Scores, by Year (2004-2014)

As presented in Figure 3, regional HNI scores across time suggest unique patterns based on geographical location, which is likely the result of the Great Recession and the length of recovery time needed in each region. In addition, regional HNI scores appear to be sensitive to natural disasters like hurricanes, tornadoes, and snowstorms that are geographically endemic but that often also traverse regional boundaries. Finally, the regional HNI scores also appear to represent the historical economic deprivation known to exist in the southern United States.

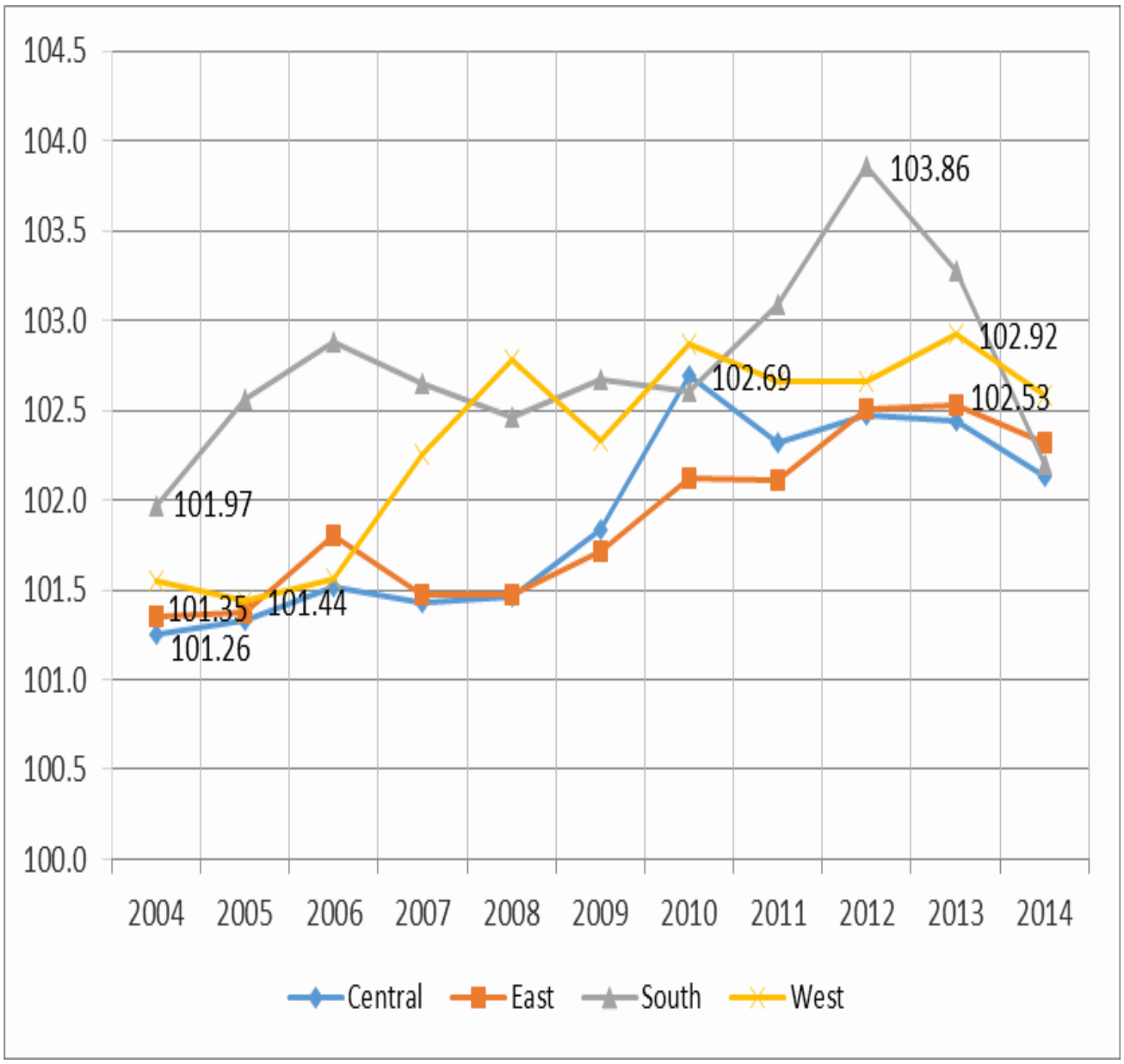
While the effects of the Great Recession are revealed in each region, the timing and impact are variable, as evidenced by HNI scores during particular years. For example, the Western region's HNI scores began to increase steadily in 2006 (101.56) and continued to rise until 2009 (102.33) when the score declined before increasing again in 2010 (102.87). This pattern seems to suggest that the Western region experienced the effects of the Great Recession more immediately and in longer duration than any other region.

The Central and Eastern regions' HNI scores illustrate very similar trends, each realizing initial increases in 2010, although the Eastern region experienced a considerably lower HNI score during that year (102.13) than the Central region (102.69)—its highest score during the decade. These patterns point to the lagged effects of the Great Recession. In addition, the

Eastern region increased again in 2012 (102.50) and continued at that level through 2013 (102.53)—indicative, perhaps, of the impact of Hurricane Sandy.

The Southern region's HNI score began more elevated than any other region—the start of a trend that continues over time. HNI scores in this region initially increased in 2005 (102.56) and then experienced a marked rise in 2012 (103.86). These patterns may indicate that poverty-related need is more prevalent in the Southern region and that need is exacerbated in times of natural disasters (see Table 1, Appendix E, for a complete list of regional scores by year).

**Figure 3. Regional HNI Scores, by Year (2004-2014)**



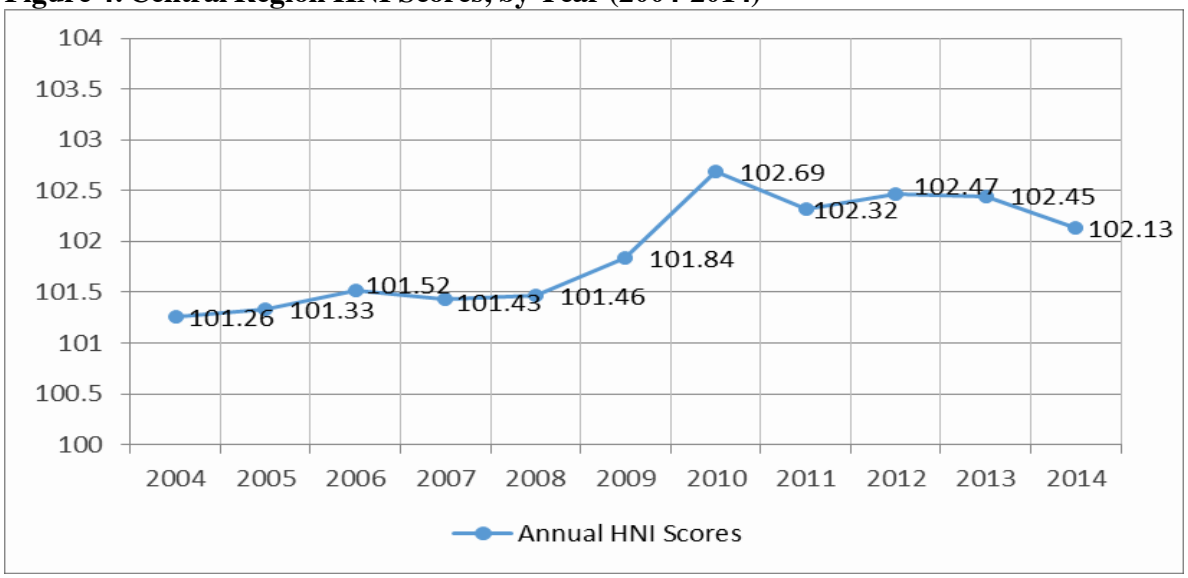
**1entral Region**

***Central Region HNI Scores, by Year (2004-2014)***

Central Region HNI scores remained fairly constant from 2004 (101.26) to 2008 (101.46) but increased sharply in 2009 (101.84) and achieved the highest level in 2010 (102.69). After 2010, the HNI scores began to decline slowly but remained higher than the pre-recession era, reaching 102.13 in 2014.

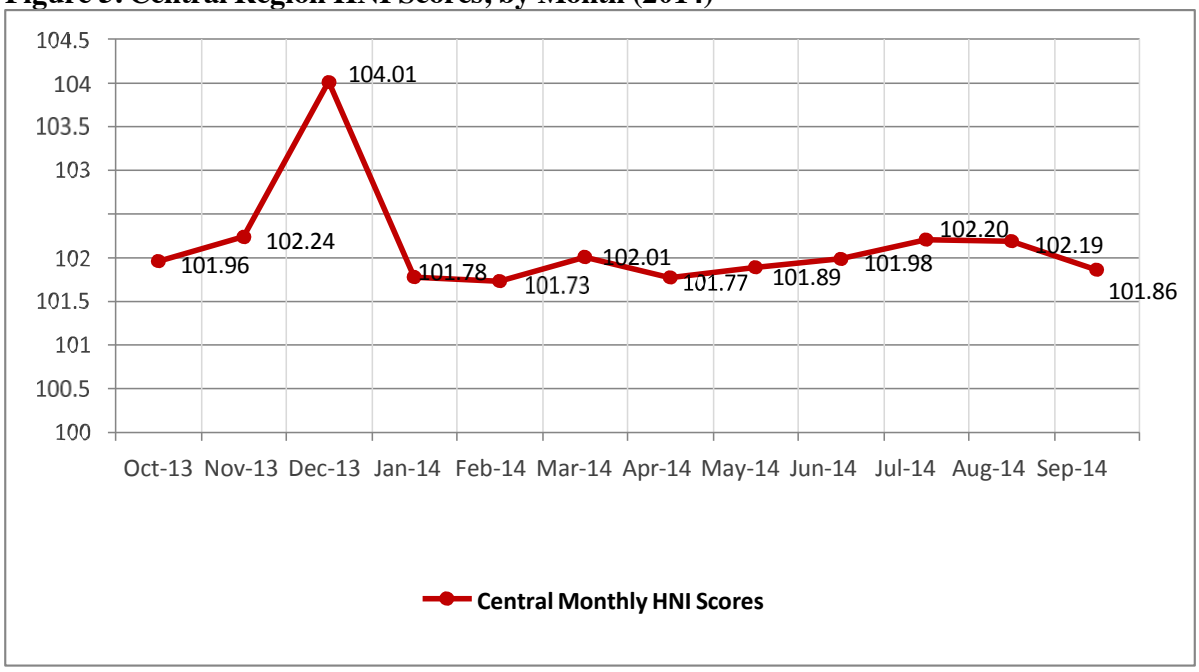
As Figure 4 depicts, the trend for Central region's HNI scores over time is comparable to the national HNI scores, and likely for similar reasons. While the Central region includes a few states impacted by the 2008 Super Tuesday Tornado, post-2008 HNI score variation might characterize the effects of both that natural disaster and the Great Recession. For example, the need for housing assistance rose from 2008 to 2009 (increasing by 46 percent—from 2,955 service orders to 4,327 service orders), and then peaked again in 2010—demonstrating a 119 percent increase from 2008 (from 2,955 service orders to 6,486 service orders). This considerable growth perhaps indicates Americans' need for affordable housing following a destructive tornado and during the wake of the Great Recession (see Table 1 and Figure 1, Appendix F, for a complete list of Central region indicator scores by year).

**Figure 4. Central Region HNI Scores, by Year (2004-2014)**



Seasonal effects on Central region HNI scores are similar to the trends at the national level. Figure 5, for example, demonstrates the most recent year's trend. The HNI score achieved its highest level in December 2013 (104.01) and then declined in January 2014 (101.78). Central region HNI scores increased in 2014, reaching slightly higher than normal levels in July and August (see Table 1, Appendix G, for a complete list of Central region HNI scores by month).

**Figure 5. Central Region HNI Scores, by Month (2014)**



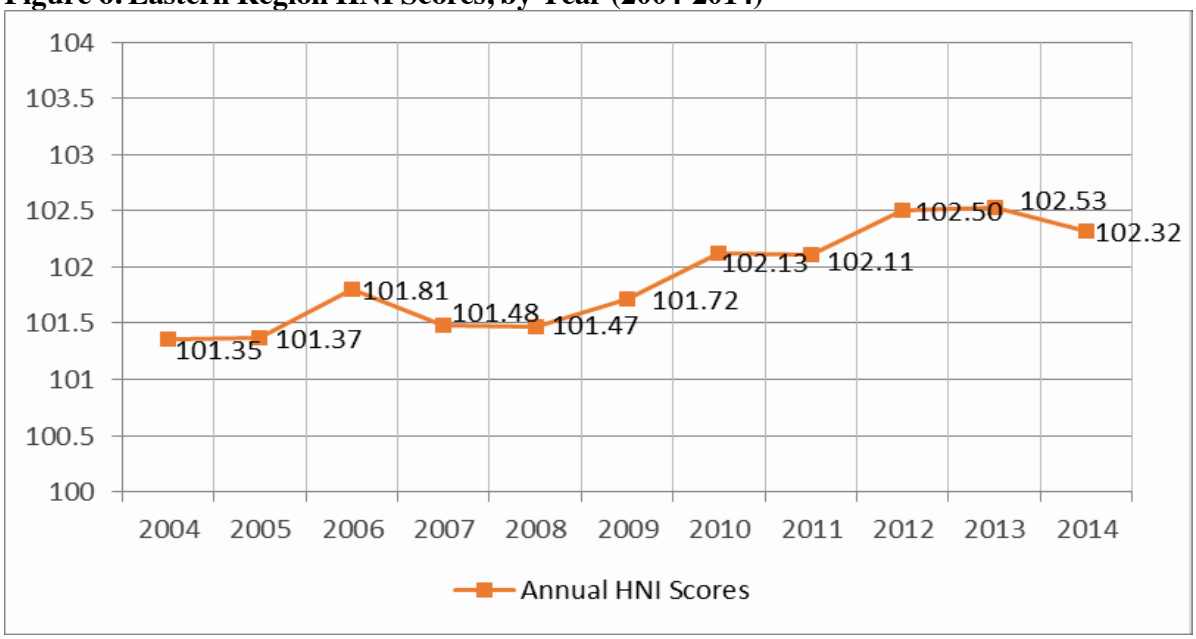
**Eastern Region**

***Eastern Region HNI Scores, by Year (2004-2014)***

In the Eastern region, HNI scores stayed relatively constant between 2004 and 2008. After 2008, these scores rose to reach 102.53 in 2013. The year 2014 represents a potential return to pre-recession levels.

As Figure 6 depicts, the Eastern region's HNI scores over time correspond with the national HNI scores, and in part, for similar reasons. The Eastern region experienced two major natural disasters during this decade. One event, Lake Storm "Aphid" in mid-October 2006, resulted in widespread power outages and extreme cold.[v] Then, in late October 2012, Hurricane Sandy hit the Eastern U.S. During both these years, the need for grocery assistance demonstrated more volatile changes, realizing a 67 percent increase from 2005 to 2006 (from 113,406 service orders to 189,154 service orders), and another dramatic rise in 2012, which was a 17 percent increase from 2011 (from 174,217 service orders to 204,413 service orders).

**Figure 6. Eastern Region HNI Scores, by Year (2004-2014)**

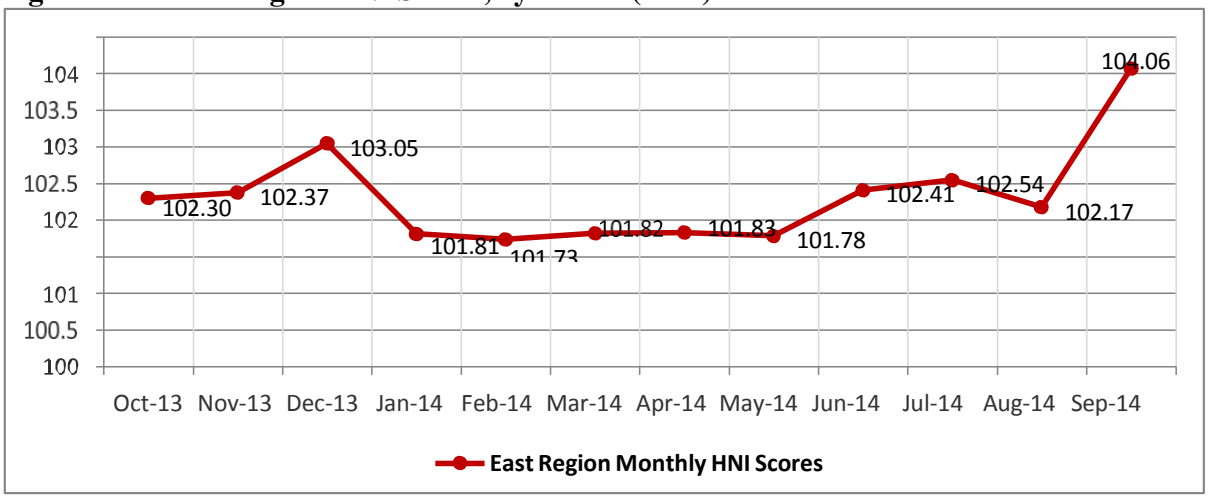



[v] For more information, see: http://www.erh.noaa.gov/buf/storm101206.html

The effects of the Great Recession were reflected in the Eastern region HNI scores after 2008, as the index reached 102.13 in 2010. More specifically, the ongoing increased need for assistance with furniture, groceries, and clothing was marked during the post-Great Recession years. The need for furniture assistance rose in 2013, which was an increase of 24 percent from the previous high in 2010 (from 312 service orders to 387 service orders). Greater need for grocery assistance was also realized in 2010, and then grew by 40 percent when hitting its peak in 2012 (from 146,074 service orders to 204,413 service orders), and remained elevated through 2014. Demand for clothing assistance demonstrates a post-Great Recession lag in need as it rose in 2010 and experienced a 104 percent increase (from 1,367 service orders to 2,788 service orders) between this time and upon reaching its peak in 2013 (see Table 2 and Figure 2, Appendix F, for a complete list of Eastern region indicator scores by year).

Seasonal effects on Eastern region HNI scores are comparable to the trends at the national level. Using the most recent year's data, for example, Figure 7 demonstrates HNI scores varying over time, with an increase in December 2013 to 103.05 and then a decline until slight growth was realized in March (101.82) and April (101.83). The index rose during the summer months before it reached its highest level (104.06) of the year in September 2014 (see Table 2, Appendix G, for a complete list of Eastern region HNI scores by month).

**Figure 7. Eastern Region HNI Scores, by Month (2014)**



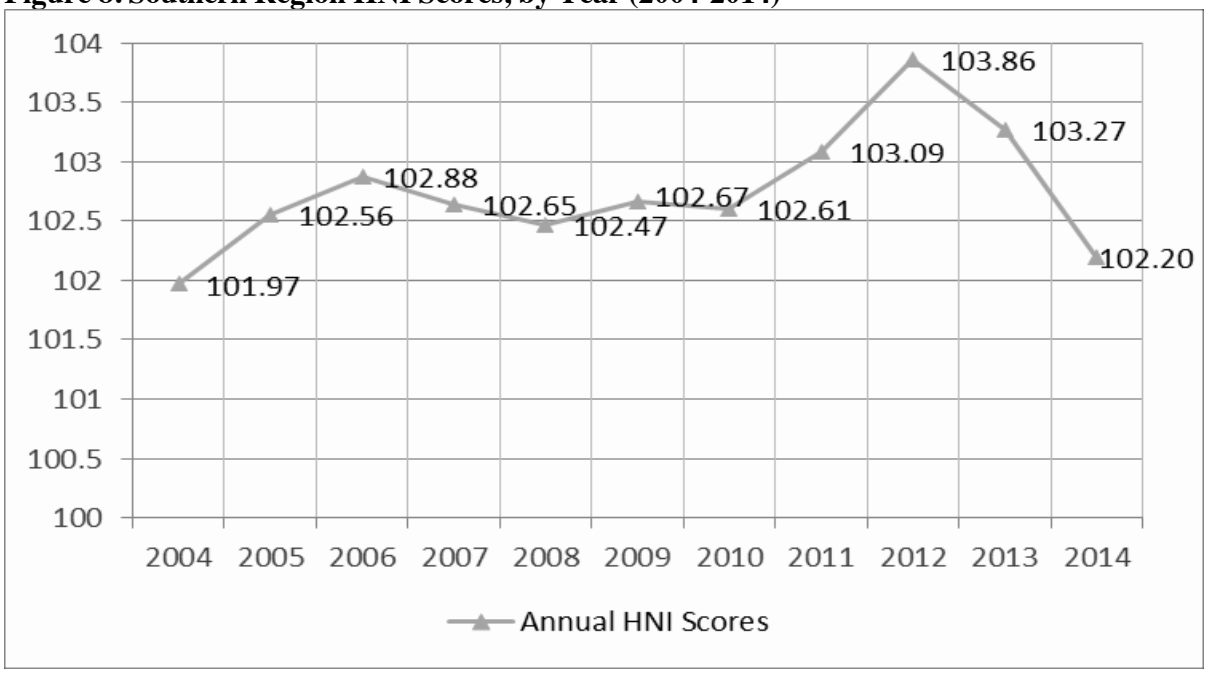
**Southern Region**

**Southern Region HNI Scores, by Year (2004-2014)**

Perhaps the most volatile of all regions, the Southern region's HNI scores display great variability over time. Reflecting Hurricane Katrina and other large-scale regional disasters, the index increased in 2006 to 102.88 and in 2012 to 103.86. The index then declined after 2012, reaching 102.20 in 2014.

As Figure 8 depicts, the Southern region's annual HNI scores over time are typically higher than any other region. One potential explanation for this trend may be the three large-scale natural disasters this region experienced during the past decade. The first year the HNI increased was 2006. In August of 2005, Hurricane Katrina hit the southern United States and left millions of people without homes.[vi] As such, three indicators realized immediate considerable increases. From 2004 to 2005, the need for housing assistance grew by 27 percent (from 2,373 service orders to 3,020 service orders); medical need increased by 59 percent (from 7,595 service orders to 12,098 service orders); and assistance with groceries increased by 68 percent (from 73,261 service orders to 122,734 service orders). In 2006, the year immediately following this disaster, energy assistance grew 14 percent from 2005 (from 10,008 service orders to 11,429 service orders).

**Figure 8. Southern Region HNI Scores, by Year (2004-2014)**




While the 2008 Southern region HNI score (102.47) only suggests a moderate amount of need, specific indicators of need rose more substantially. For example, meal assistance grew 27 percent from 2007 (from 1,171,429 service orders to 1,482,317 service orders). This increase

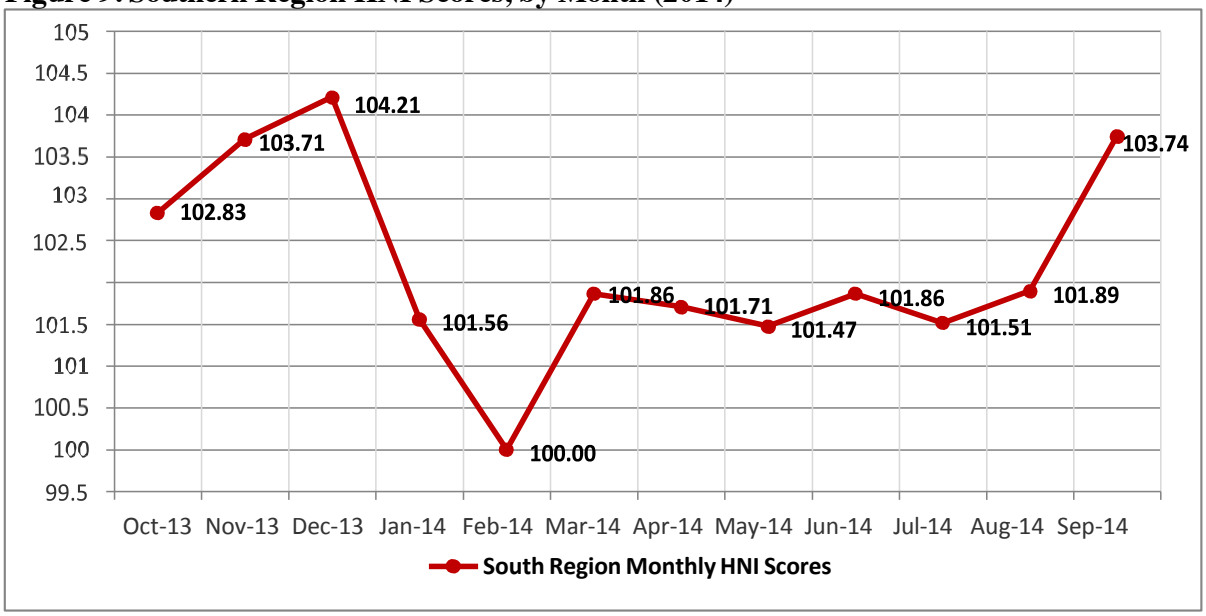
[vi] For more information, see: http://www.livescience.com/22522-hurricane-katrina-facts.html

most likely is in response to the immediate need for food after the February 2008 Super Tuesday Tornado outbreak that involved many Southern region states. Finally, in 2012, the Southern region HNI reached its decade-high score (103.86), which could be a result of many of the Southern states being affected by Hurricane Sandy. From 2011 to 2012, housing services increased 36 percent (from 2,596 service orders to 3,538 service orders), while clothing and furniture assistance rose 50 percent (from 4,656 service orders to 6,985 service orders) and 159 percent (from 266 service orders to 688 service orders), respectively (see Table 3 and Figure 3, Appendix F, for a complete list of Southern region indicator scores by year).

The effects of the Great Recession appeared to be less pronounced in the Southern region, perhaps due to the abundance of natural disasters during this same time. The Southern region's HNI remained fairly stable during 2007 (102.65) and 2008 (102.47) with only a modest increase in 2009 (102.67), while assistance with meals grew 27 percent from 2007 to 2008 (from 1,171,429 service orders to 1,482,317 service orders) and energy needs rose 21 percent from 2008 to 2009 (from 10,633 service orders to 12,835 service orders).

Seasonal effects on Southern region HNI scores are also similar to the trends at the national level. Figure 9 demonstrates the most recent year's data, for example. HNI scores are extremely variable, peaking in December 2013 at 104.21, dipping down to 100.00 in February 2014, before exhibiting a sharp rise in March (101.86), and then rising again to 103.74 in September 2014 (see Table 3, Appendix G, for a complete list of Southern region HNI scores by month).

**Figure 9. Southern Region HNI Scores, by Month (2014)**

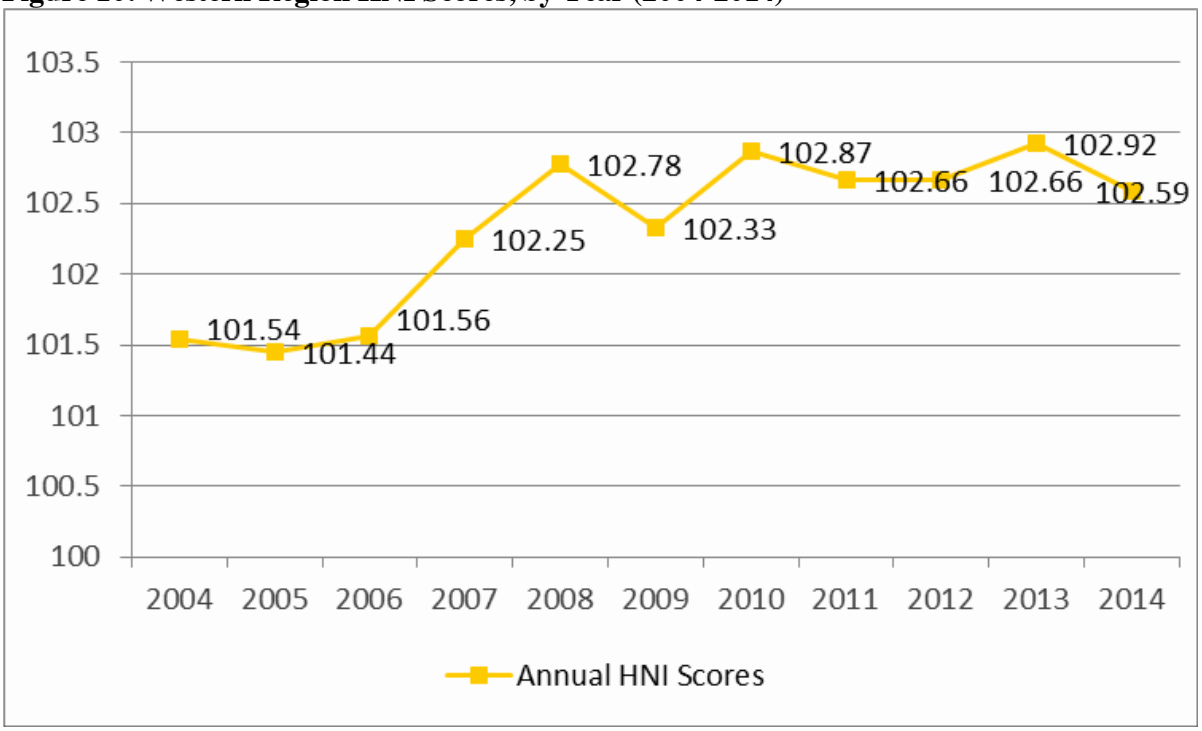


**Western Region**

***Western Region HNI Scores, by Year (2004-2014)***

While other regions' HNI scores were highly variable during the years prior to the Great Recession, the Western region HNI scores, as Figure 10 depicts, increased dramatically yet consistently. This pattern is revealed by scores rising from 101.56 in 2006 to 102.25 in 2007 to 102.78 in 2008. While every other region's HNI scores increased in 2009, the Western region's score declined to 102.33. Subsequently, scores remained fairly stable near 103 for the rest of the decade.

**Figure 10. Western Region HNI Scores, by Year (2004-2014)**



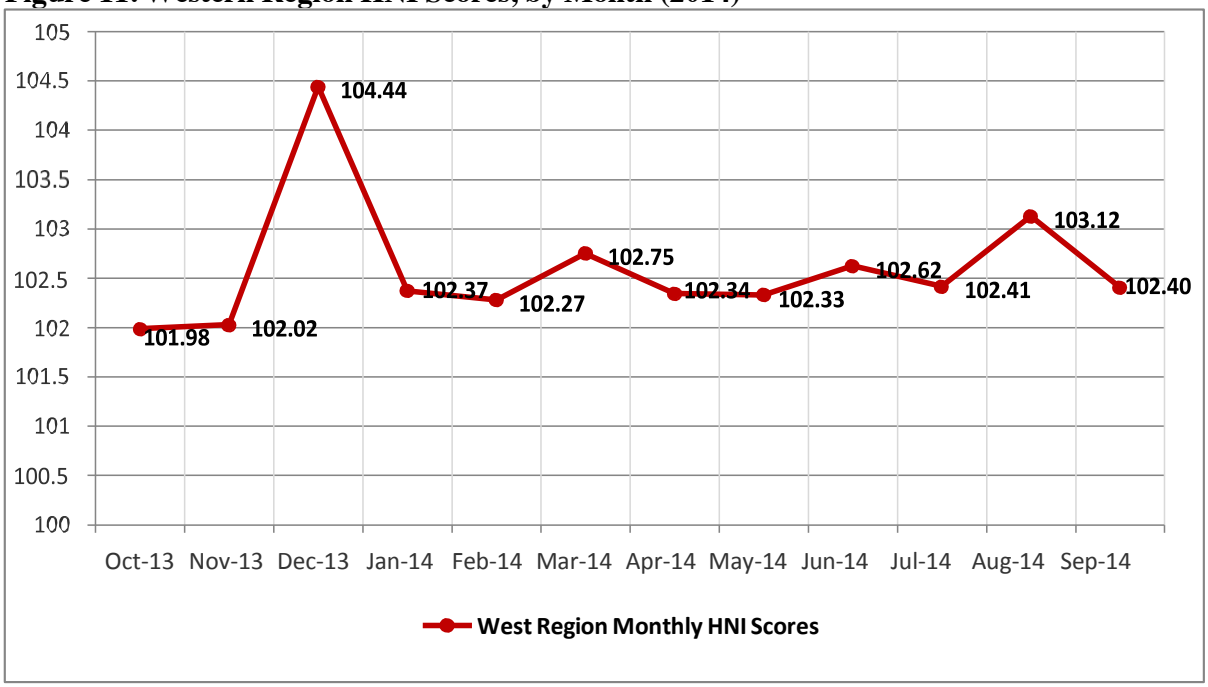
Although natural disasters, like wildfires, affected the Western U.S. for ongoing periods of time during 2004 - 2014, and therefore influenced the demand for acute assistance, the Western region witnessed more dramatic growth than any other region in HNI indicator scores after 2008. These scores reflect, perhaps, the more intense and far-reaching impact of the Great Recession on the Western U.S. Most notably, medical assistance, a service for which there is ongoing demand throughout each year and consistent need across the decade, witnessed a 104 percent increase in 2011 from the highest pre-Great Recession level in 2007 (from 7,199 service orders to 14,693 service orders). Clothing assistance peaked in 2008, a 37 percent increase from the highest pre-Great Recession level in 2007 (from 4,141 service orders to 5,677 service orders); clothing need then declined and became more stable, through 2014. Housing needs, though relatively constant through 2012, rose 125 percent from 2012 to 2013 (from 1,500 service orders to 3,375 service orders). Meanwhile the need for meals and energy remained constant throughout the decade.

The Western region's HNI scores trend may imply that the West experienced both the immediate and long-term impact of the Great Recession much more intensely than any of the other regions—perhaps due in part to the financial distress experienced from extensive job loss as well as the dramatic fluctuation in the housing market, including the substantial number of households that lost their primary residences due to foreclosure during this time, in this region[vii] (see Table 4 and Figure 4, Appendix F, for a complete list of Western region indicator scores by year).

[vii] For more information, see: Grusky, D.B., Western, B., & Wimer, C. (2011). The consequences of the Great Recession. In D.B. Grusky, B. Western, & C. Wimer (Eds.), *The Great Recession* (pp. 3-20). New York, NY: Russell Sage Foundation.

Seasonal effects on Western region HNI scores are also similar to the trends at the national level. Using the most recent year's data (presented in Figure 11), for example, HNI scores are variable, peaking dramatically in December 2013 at 104.44, and then dropping temporarily until March, when an increase is witnessed (102.75). Scores then reach another temporary increase in August (103.12), before they decrease again in September (102.40) (see Table 4, Appendix G, for a complete list of West region HNI scores by month).

**Figure 11. Western Region HNI Scores, by Month (2014)**



## Situations and Conditions Affecting the HNI

The influence of each of the poverty-related variables found to correlate with human need is assumed to be static; that is, their representation of human need is generally the same over time. However, when assembled together, some of the variables become more meaningful than others in their representation of human need and as indicators of poverty. Additionally, some indicators may remain more stable over time, irrespective of the micro or macro climate, while other indicators will be more sensitive to such dynamic change. This acute sensitivity to change in need is an important element of the HNI—a strength that sets it apart from other measures of poverty-related need that are unable to capture these variations either so immediately or so specifically.

Below are factors that will affect the influence of poverty-related variables used in constructing the HNI, therefore causing fluctuation in overall HNI scores. These situations and conditions may impact both the availability and accessibility of providing services, as well as impacting the demand for services.

### Systemic Factors Affecting Capacity

An important aspect of the HNI is that it measures the need for services and not the capacity to provide services. There are many factors that affect the capacity (supply) of resources required to provide services to those in need—and there are also many elements impacting the fluctuation in need (demand) for acquiring these services. Whenever there is a change in the factors of either supply or demand, market equilibrium will be affected. In order to understand real demand, and therefore true need, detailed information on the scale and impact of the supply and demand factor changes is warranted.

The overall economic climate influences the availability and the capacity of the Salvation Army's human and financial resources, as well as the financial resources of local, state, and federal governments that financially support the Salvation Army (and other nonprofit human service organizations) and associated resources and services. While human service organizations received only 11.7 percent of all charitable contributions in 2014 (a 3.6 percent

increase from 2013), nearly one-third (32.3 percent) of nonprofit revenues were provided by government funding in 2012.[viii] However, only 10 percent of the Salvation Army's financial support comes from government sources, which suggests that increases and decreases in this funding would likely only minimally impact changes in the organization's capacity to provide assistance to those in need. Therefore, variations in HNI scores reflect changes in the demand for services and not the supply of services.

In 2002, the first Salvation Army Ray & Joan Kroc Corps Community Center opened in San Diego as a result of a $90 million gift from Joan Kroc. Subsequent to her death, Mrs. Kroc left an additional $1.5 billion that was evenly split among the four Salvation Army territories for the construction of 28 additional Kroc Corps Community Centers. These centers are expected to provide opportunities that facilitate positive, life-changing experiences through art, athletics, personal development, spiritual discovery and community service for millions of children and their families.[ix] While Kroc Corps Community Centers were constructed to provide needed experiences for developing well-rounded individuals, their purpose is not to provide for basic needs. Therefore, the services provided by the Kroc Corps Center, while critical to the community, will not likely influence the demand for basic need assistance that is measured by the HNI.

**Seasonal Effects**

Basic human needs, while always essential, are also increasingly in demand during specific seasons of the year. Winter months, for example, often require more adequate clothing and shelter; individuals may experience increased utility costs and suffer from reduced health and well-being. In addition, due to increased need for temporary, part-time workers during the extended holiday season, decreased rates of unemployment may be observed. Some states also prevent utility companies from terminating service during the "cold" months or when the temperature falls below a specific temperature, therefore delaying energy needs until spring.

[viii] Urban Institute (2014). *The nonprofit sector in brief 2014: Public charities, giving, and volunteering*. *Washington, D.C.: McKeever, B.S. & Pettijohn, S.L.*

[ix] For more information, see: http://www.salvationarmyusa.org/usn/kroc-centers

December, consistently across years, is the month when the greatest need is witnessed, much of which is attributed to the demand for food (groceries provided). The Salvation Army's Christian tradition and the strong sense of giving by its supporters during the Christmas holiday season result in increased donations, which facilitates the expanded provision of goods and services to those in need during this time. However, it's estimated that greater than 50 percent of need during this time is not directly related to the holiday, and therefore the HNI score is not artificially inflated in the month of December—although the capacity for meeting greater need is possible due to increased donations during this season. The HNI scores will also reflect these variations.

**Natural Disasters**

Natural disasters such as hurricanes, floods, mudslides, tornadoes, and earthquakes not only substantially impact the stability of individual basic needs (food, clothing, shelter, health/ well-being) but also present considerable economic challenges for the afflicted communities. Natural disasters are not always predictable, but are known to strike during certain times of year and in specific geographical regions of the United States. While these events may increase the need for services, they may also limit the ability of the organization to provide the needed resources; each of these situations will likely be represented by HNI scores.

**Periods of Reduced Economic Activity**

Indicators of economic activity, like unemployment rates, stock market valuations, personal income and wealth, housing prices and starts, etc., will likely have a variable impact on HNI scores.

## Limitations

Since the Great Recession, the demographics of human need have attracted growing attention. Investigating dimensions of race, ethnicity, and gender is an important part to understanding the face of poverty. Using the longitudinal need-based service data collected from individuals

and families that the Salvation Army works with from across communities in the U.S., the HNI uses scientific rigor and well-established econometric methodology to track patterns of need over time. While the results of the index reveal trends that capture poverty-related need across time and region, one limitation of the HNI is that it does not provide demographic information (race, ethnicity, and gender) about the individuals and families who are demanding these need- based services. However, the HNI can be used as a tool to better understand what is likely to happen and at what time, with data that could also suggest patterns of vulnerability in the economic climate or to unanticipated disasters—information that is critical in creating targeted efforts to alleviate poverty.

## Methodological Overview

The Human Needs Index (HNI) was developed through a rigorous methodology with the goal of informing nonprofit leaders and policymakers about the degree of poverty-related need and measuring the effectiveness of response to need, over time, in specific communities and across the country. To achieve this goal, a standardized index was constructed.

Constructing the HNI was an iterative process that employed empirical evidence, statistical methodologies, and expert consultation. We began this process by developing a conceptual framework for analyzing poverty by identifying appropriate line-item service variables that represented essential basic needs. The selection of variables was based on careful consideration of the literature and theoretical constructs associated with measuring poverty and human needs. Overall, we tested more than 450 combinations of variables to create the HNI—at the national, regional, and state level. From the more than 230 organizational service variables, we selected 21 material assistance and personalized service variables representative of basic human need—that is, the delivery of food, clothing, shelter, or health/ well-being services (see Table 2 in Appendix H, the Technical Appendix, for a complete list of variables considered for inclusion in the HNI).

Initial tests of these variables were conducted at the national level and by year, although subsequently, data were disaggregated to test variables at the service center site, county, state and territorial levels and by month. In testing the variables' ability to measure human need, we relied on external governmental measures of poverty including the poverty rate, unemployment rate, and the Supplemental Nutrition Assistance Program (SNAP) benefit usage. The statistically significant associations demonstrated with these government measures provided guidance in selecting which variables to include in preliminary modeling (see Table 3 in Appendix H, the Technical Appendix, for a list of these initial variables and corresponding correlations with external governmental data).

Next, the 30-member team of statisticians, program officers, economists, and National Advisory Board members from the Salvation Army and Indiana University Lilly Family School

of Philanthropy engaged in in-depth discussions about which variables dedicated to food, clothing, shelter, or health/well-being services were collected in all states and across all four regions during each year. As a result, three variables (Meals Provided, Clothing Provided, and Lodgings Provided) were initially selected for preliminary testing against the external government measures, individually and together as a test model (see Table 4.1 and Table 4.2 in Appendix H, the Technical Appendix, for a list of initial indicator variables and models and corresponding correlations to external governmental data, by territory). The results revealed positive and significant correlations. Thus, additional variables representing these basic needs were added for further model testing.

In the final iterations of creating the HNI, using the governmental measures as benchmark validation and the 21 material assistance and personalized service variables representative of basic human need, we employed three approaches to weighting variables to determine appropriateness for inclusion or exclusion in the final national and state-level models. The most parsimonious model (Model One) included three variables representing food, shelter, and health/well-being services. The weighting for this model was based on the geometric mean of the included variables. The second technique (Model Two) was the most analytical and pragmatic, in that it used both theoretical and empirical justifications for the weighting and selection of variables. The initial testing of this approach included five variables representing food, shelter, clothing, and health/well-being services. The third and final approach (Model Three) was also an analytic model that included all 21 variables. This process concluded with the presentation of the six strongest models derived from these distinctive approaches (see Table 5 in Appendix H, the Technical Appendix, for each of these weighted national and state models).

Ultimately, the second approach (Model Two) using Principal Components Analysis (PCA) was used to build the HNI because it allowed for both intuitive variable selection as well as statistical confirmation of individual variables' utility in the overall model measuring human need. Subsequently, to ensure the strongest, most appropriate model was selected, further discussions about, and statistical testing of, Model 2 were conducted. This concluding phase

of testing necessitated the retention of four variables, the removal of one variable, and the addition of three variables. The final model, therefore, includes seven (7) line-item variables and demonstrates strong correlations with benchmark data. These seven variables are both standardized (so that they are more comparable to each other) and adjusted on a per-capita basis, so they are comparable across states and time. Another important strength of the final model used to construct the HNI is that it is built from variables representing essential aspects of human need that are measured by the Salvation Army consistently across time and region. (see Table 6 in Appendix H, the Technical Appendix, for final national-level and state- level model correlations with governmental data using 2013 data).

**Table 1. Human Needs Index Indicators**

| HNI Indicator | HNI Indicator Description |
|---|---|
| **Meals Provided** | All meals provided whether purchased from another source or served through a Salvation Army facility. |
| **Groceries Provided** | Groceries provided by voucher or distributed through a food pantry or food bank. |
| **Housing Assistance** | The number of rent/mortgage assistance payments to establish and/or maintain an individual/family in their own home. |
| **Clothing Provided** | The number of clothing orders provided. |
| **Furniture Provided** | The number of furniture orders provided. |
| **Medical Assistance** | The number of medical orders provided (i.e., prescriptions) and the number of volunteers/hours served. |
| **Energy Assistance** | The number of energy assistance orders provided and the number of volunteers/hours served. |

**Interpretation of the HNI Scores**

The HNI has been standardized so that the minimum (baseline) value is 0 (resulting in an average of around 1.02), with a standard deviation of 1. The HNI's values are primarily useful for comparing conditions within or across communities in the United States. Variation in HNI scores from one time point to another indicate a net difference in the net amount of the seven key indicators (listed in Table 1 shown above) during that time frame. The difference between these two HNI scores signals changes in demand for need-based services, and likely indicates

either an improvement or decline in individuals' and communities' well-being between these two time points.

Further, variations in the HNI score likely also indicate similar changes in the use of SNAP benefits, the unemployment rate, and the number of referrals made by the Salvation Army to other community service providers (see Table 7 in Appendix H, the Technical Appendix, for a comparison among the national HNI scores and the governmental unemployment rate data, and the Supplemental Nutrition Assistance Program (SNAP) benefit data by month from 2004-2014). The HNI's strong correlations with these external variable values were verified by statistical testing during each phase of its construction. Therefore, HNI scores reflecting services provided by the Salvation Army would be related to and aligned with these (and other) indicators of economic conditions across the United States, thus, providing a strong and accurate representation of need on the local and national levels.

See Appendix H, the Technical Appendix, for a full explanation of how the HNI was constructed, including PCA equations presented in Table 1.

## Appendix A: Environmental Scan Report


# Human Needs Index

# Environmental Scan Report

**The Center on Philanthropy at Indiana University**[*]

**November 30, 2012**

### Executive Summary

This report assesses the feasibility of developing a methodology for calculating a Human Needs Index for use by the Salvation Army. This will eventually inform public dialogue and improve understanding of poverty and basic needs. The following document includes a literature review exploring concepts of poverty and the methodologies used in the indication and measurement of poverty, along with the relevance of poverty measures to local and national policymakers. We present the report in the following sections: 1) Quantifying Poverty: The Development of Poverty Measures, 2) The Multiple Dimensions of Poverty, 3) Other Considerations of Poverty: Can it Accurately be Measured?, 4) Creating an Index: Indicators of Poverty, 5) Beyond Poverty: Other Related Indices, and 6) The Feasibility of Developing a Human Needs Index for the Salvation Army.

The Salvation Army provides a unique role in meeting basic needs and reducing poverty. Uncertain state funding levels have created an increasingly visible role for nonprofits fighting poverty at local and national levels. 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

[*] Indiana University Lilly Family School of Philanthropy was formerly the Center on Philanthropy at Indiana University.

and tracking of poverty. Yet, in spite of nonprofits' centrality in addressing poverty, few nonprofit agencies have dedicated resources to measuring poverty. For the past four decades, researchers have relied solely on government data sources to assess the scope, magnitude, and distribution of poverty. With renewed interest and commitment to the accurate conceptualization of poverty at local and national levels, a unique opportunity arises for the Salvation Army and other nonprofit organizations to contribute to the national dialogue on poverty and basic needs.

To address this need for improved and accurate poverty measurement, the Salvation Army can create a Human Needs Index predicated on a host of available organizational data. Those statistics include the following: 1) meals provided, 2) housing assistance, 3) clothing provided, 4) medical orders provided, as well as 5) employment training/education, and 6) employment placement. Additionally, the inclusion of variables characterizing energy assistance and the number of persons transported may be considered.

Understanding the problem is the first step in solving it. The Salvation Army's investment in this index will allow evidence-based allocation of resources, better meeting the needs of its communities.[i] This environmental landscape of poverty will also serve the wider nonprofit community, as organizations nationwide may use the collected data to identify at-risk populations. As Salvation Army sets the precedence with data-focused poverty alleviation, the organization gains the opportunity to contribute to wider policy debates on poverty.

**Background and Setting**

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.

Nearly four decades later, 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 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).

Today, nonprofits have a critical role in improving the well-being 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 may be a unique opportunity for increasingly more accessible and rigorous data from nonprofit organizations to better illuminate trends in poverty over time.

**Defining Poverty**

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.)."[ii] 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.[iii] 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.

**1. Quantifying Poverty: The Development of Poverty Measures**

The section below describes how the U.S. has measured poverty at the individual and household levels in monetary terms. For comparison, this section presents other approaches created by economists.

***Definition and Use***

Researchers determined the 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).

***Limitations***

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.

***Alternative Approaches***

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.

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.

## 2. The Multiple Dimensions of Poverty

Multiple perspectives, both quantitative and qualitative, define the condition of poverty at the individual, household, and family levels. The sections below describe the most prominent perspectives by which social scientists can approach, define, and measure poverty. Researchers have explored these areas of measurement dichotomously through monetary measures and non-monetary measures.

### *The Monetary Dimension*

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).

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.

The World Bank Institute defines poverty as a "pronounced deprivation in well-being" (Khandker & Haughton, 2005, p.8). The notion of **well-being** captures health, nutrition, and literacy as well concepts that include social relationships, security and confidence. Investigating poverty in the context of overall well-being can be advantageous, because it provides non-monetary dimensions of welfare. well-being also includes a host of factors that determine an individual's or family's standard of living. For example, Etzioni (1968) suggested researchers assume there is a universal set of basic human needs that have attributes of their own and that are not determined by specific cultures, socioeconomic classes, or socialization processes. Etzioni proposes that people with well-balanced need satisfaction experience increased well-being than individuals who have disparate need satisfaction, with some needs being met frequently but others being met rarely. In contrast to Etzioni's assumption about the balance in frequency of needs satisfaction, some researchers believe that the poor can be identified by their deprivation of minimally acceptable levels of basic needs (Chakravarty & Silber, 2008).

***Non-Monetary Dimensions of Poverty***

Further, non-monetary factors substantively contribute to poverty's onset or absence within a household. Scholars have suggested these elements include, but are not limited to: health and nutrition, education and literacy, geography and race and ethnicity, and gender (Foster et al., 1984). Together, these factors provide insight into the non-monetary profile of poverty.

**Health and nutrition** are two important factors of well-being. As such, the World Bank (2011) has suggested that researchers dedicate attention to health and nutrition as distinct dimensions of recognizing deprivation. Practitioners identify the following of indicators of health: the incidence and prevalence of specific diseases and/or the life expectancy of different groups, number of visits to a hospital or health center, access to (and use of) specific medical services, and the percentage of children receiving vaccinations. Nutrition is a building block of health. Its lack or abundance determines levels of poverty or health, as it includes the availability and accessibility of food, the amount of food available, and food security, as well as the sufficiency of caloric intake and whether or not those calories are nutritionally adequate. During the Great Recession, participation in entitlement programs like SNAP increased due to a rise in unemployment and a decrease in incomes. Zedlewski and Huber (2012) reported that more than 46 million people received SNAP benefits in 2012, which was a 76 percent increase from 2007.

**Education** is also an important consideration in overall well-being. As literacy and formal schooling correlate positively with future income, access to education reduces poverty rates (Khandker & Haughton, 2005). Formal education and literacy allow individuals to access resources, improving living standards and basic needs attainment. As Clark (2012) reported, the Great Recession precluded many people from attending or continuing their education. As decreasing state funding has increased tuition costs, reduced scholarship money, and canceled hundreds of classes, the available of affordable education has declined. Even in a fragile job market, the unemployment rate for college graduates is less than five percent, which is half the rate of high school graduates.

**Geographic location** encompasses two dimensions of poverty: the cost of living and the nature of a household's surrounding area (Ziliak, 2006). One study has found that poverty is most intense among urban residents in the innermost parts of metropolitan areas and among rural residents with limited access to economic and social opportunities (Rodgers & Rodgers, 1991). The addition of race and/or ethnicity adds another dynamic to the geographic lens of poverty. Whereas Whites in rural farming communities have the highest incidence of poverty, minorities are most likely to be

poor when residing in central urban areas. During the Great Recession, poverty was greater among Hispanics and African-Americans than among Whites. The following 10 states witnessed the greatest increases in poverty: Florida, Nevada, Arizona, Michigan, Indiana, Ohio, California, Connecticut, South Carolina, and Minnesota/North Carolina/Wyoming (Seefeldt et al., 2012).

Another important dimension of poverty is **gender**. More men lost jobs than did women during the Great Recession, yet men have gained more jobs in the recovery (Kochhar, 2011). However, at any given time in history, more women than men have been in poverty. According to the "feminization of poverty" doctrine, women represent a disproportionate number of the world's poor; that trend is deepening. As the number of female-headed households increase, more women slip into poverty (Chant, 2006). The reality that women earn only 82.2 percent of men's median weekly income exacerbates poverty along gender lines (Hegewisch, Williams, & Harbin, 2012).

**Time**, another factor of poverty, transcends all previous dimensions. As Watts (1968) explained, "One does not immediately acquire or shed the afflictions we associate with the notion of poverty by crossing any particular income line" (p. 325). While measures of income and consumption seem to capture poverty, the definition of "being poor" varies across time, place, and person (Iceland, 2005). One's perspective of poverty fluctuates according to accepted social norms. Certain demographics or life events also correlate with varying rates of poverty. For example, the elderly population neither usually has a great deal of income nor consumes goods at the same rate as most other subgroups, but their assets may be greater than younger individuals who have higher income and consumption (Meyer & Sullivan, 2012). Others slip into poverty as they or another family member loses a job or becomes seriously ill. While some people are only in poverty for a limited period of time, others deal with persistent poverty throughout their entire lives. The Great Recession pushed some of those who were above the poverty line below it: participation in the entitlement, "safety net" programs increased, such as Temporary Assistance for Needy Families and federal housing assistance. During that time, the greatest increases in poverty were among children and working-age adults—not the elderly (Seefeldt et al., 2012) Those people

experiencing temporary poverty might need alternate programs, in comparison to those families experiencing persistent poverty. Given that some individuals, like heads of households with mental or physical disabilities, require a long-term approach to poverty alleviation, an accurate assessment of impoverished people must involve their capability to function in society (Khandker & Haughton, 2005).

### 3. Other Considerations of Poverty: Can it be Accurately Measured?

Measuring poverty accurately is challenging. Despite the highlighted criticisms of existing poverty measures, researchers believe accurate poverty measurement is possible. However, the measurement must continue to evolve over time. In particular, researchers must continuously prioritize two fundamental goals: 1) poverty measures should identify the most disadvantaged, and 2) they must assess changes over time among the most disadvantaged (Meyer & Sullivan, 2012).

Some efforts to eliminate the deficiencies in common poverty measures have proved less successful. The U.S. government released the Supplemental Poverty Measure in November 2011, designed as an alternative to the official U.S. poverty rate measure. While accounting for geographic region, this measure used income as the basic unit of measurement, but, unlike in other measures, income was conceptualized in regards to consumption. The Supplemental Poverty Measure also employed a more appropriate adjustment for family size and composition, expanding to include all persons within a household, since individuals who cohabitate commonly share resources. Instead of considering cash income only, this measure included tax credits like the Earned Income Tax Credit and the Child Tax Credit, along with noncash benefits such as food stamps. Moreover, several categories of expenses from income, including tax liabilities, payments for child support, child care, and out-of-pocket medical expenses were subtracted. Rather than establishing the poverty threshold on food costs alone, expenditure data for food, clothing, shelter, and utilities—directed by the Consumer Expenditure Survey—informed this measure of poverty.

Though the Supplemental Poverty Measure seemed to address most flaws of the official poverty measure, this measure does not take into account people's assets and savings that could be used for consumption. As a result, those who are categorized as poor are actually less disadvantaged than those who the official measure categorized as poor. One such group is the elderly, who, as a subgroup, are more likely to rely on assets and savings and have much larger out-of-pocket medical expenses than the rest of the population. In implementing the Supplemental Poverty Measure, researchers have found that, by examining the inclusion and exclusion characteristics, a determination can be made regarding the sensitivity of that measure in identifying the truly disadvantaged. Effective poverty measures, must allow robust testing methods to ensure that they capture the depth, distribution, and persistence of poverty.

## 4. Creating an Index: Indicators of Poverty

Measuring poverty through multidimensional indices is possible, but only if the criteria for index creation and the desired outcomes of the indices are tested for theoretical and practical viability. Bobbitt et al. (2005) proposed the following criteria be met when evaluating potential indicators; they should: 1) provide logical contributions to the concept being measured; 2) be universally interpretable; 3) be based in theory; 4) have associated data considered at the time of index-development; 5) include local data at the time of index-development, and obtain it from a reliable source; 6) have directional agreement; and 7) employ the same data-gathering methodology from year to year for annual comparisons in variability. Indicators for which consistent data are not available must be eliminated. If indicators that are used in an index change due to uncontrollable circumstances, the index will also have to be modified.

Yet even the criteria highlighted above do not capture how to fully develop effective indices. The weighting methodologies used to assign importance to dimensions and individual indicators are somewhat arbitrary. The theory that weights one indicator over another provides guidance for why specific dimensions are of greater importance when measuring the phenomenon at issue. Statistical methods such as factor analysis and regression can systematically assign weights to dimensions and

individual indicators. While it might be tempting to argue that not assigning weights eliminates the problem of arbitrariness, doing so could potentially exacerbate the problem by failing to provide an accurate illustration of the issue being measured. In sum, developing indices based on theory and evidence-based statistical practices is integral to understanding human need at the individual, community, regional, and national levels.

The following section provides three distinct examples of human needs/well-being indices and the methods by which they were created and scored.

1. Human Development Index (HDI)

   Like the index we propose, the HDI is a multidimensional measure which focuses on three dimensions: education, health, and income. The United Nations uses the HDI to determine overall development capabilities of citizens in countries around the world (Klugman et al, 2011). It is a well-regarded measure of well-being. A country receives a rating between 0 and 1 (http://hdr.undp.org/en/statistics/hdi/). This rating is determined based on indicator data relating back to each dimension. For example, the indicator used for the dimension of education is the average number of years of schooling. The country with the best average receives a rating of 1, and the country with the worst average receives a rating of 0. The index rates remaining countries between those scores, based on how well they performed on the indicator. The index can present measured results by geographic location or as a summary statistic, just as the Salvation Army index will provide.

   Leete (2005) described how the HDI is a valuable well-being index that has distinct advantages and disadvantages. For example, the HDI is a long-standing and widely used measure for summarizing human development. It is also an effective measure of individual human dimensions of well-being that does not fully equate human development with level of income. Additionally, the HDI is a simple measurement that is easily refined to provide comparable assessments across countries and over time. Criticisms of the HDI include its minimal areas of measurement. The index includes education, health, and income

dimensions of human development but neglects to evaluate important aspects of human rights. Secondly, HDI does not show inequity and is not gender sensitive in its measurement. Lastly, the HDI is not directly able to inform policy.

2. The Department of Housing and Urban Development (HUD)

   HUD created an index with the two primary purposes of understanding individuals' current needs and monitoring changing community conditions (Eggers, 2007). The researchers began the process of developing this community needs index first by defining domains of community needs and then identifying indicators that appropriately operationalized those domains. Twenty-five variables were proposed in the beginning; however, two indicators were eliminated after a factor analysis was performed. This
   factor analysis identified two crime indicators, for which there was a significant amount of data missing (A list of the remaining 23 variables is included in Appendix 2).

   To prevent the population size of the city from affecting the magnitude of a particular indicator, researchers expressed all indicators as a percentage or ratio. HUD gathered data from a variety of governmental sources including the American Community Survey, decennial censuses, economic censuses, USPS vacancy surveys, Home Mortgage Disclosure Act records, and the Bureau of Labor Statistics Local Area Unemployment Statistics. HUD used standard factor analysis to identify patterned relationships among variables. Researchers identified three domains: needs associated with poverty and structural problems, needs associated with immigration and lack of affordable housing, and needs arising from limited economic prospects. Following the Haggerty et al. (2001) time series criteria, the researchers developed a methodology for applying factor analysis to the needs data at two points in time, contending that dimensions of need identified in the base year must still be relevant in the comparison year. The base year's means and standard deviations, used to standardize the scoring coefficients, must remain consistent and standardize the needs indicators in both years.

3. United Way –Larimer County

The 2002 Larimer County Index of Community Well-being was developed to assist a local United Way in determining funding priorities. This county-level well-being index was created in Larimer County, Colorado, as a vehicle for nonprofits to assess community needs (Bobbitt et al., 2005). The index was created through a five-step process: 1) determining the scope of the index; 2) identifying the indicators for inclusion; 3) scoring the indicators; 4) presenting and aggregating the indicators; and 5) validating the indicators. The index included five domains: 1) The Health Index, with indicators drawn from the Healthy People 2010 Index; 2) The Senior and Disabled Index, with indicators drawn from the Federal Interagency Forum on Aging Related Statistics; 3) The Nurturing the Next Generation Index, which used indicators from well-established human development theories; 4) The Basic Needs Index; and 5) The Self-Sufficiency Index. Listed indicators within each index were scored on a scale from 1 (poor) to 9 (excellent). Responses were tallied to provide a well-being score for each indicator and were also averaged within each of the five index categories to provide an overall score for that area of measurement (Compass of Larimer County, 2002). Collected data were then standardized and ranked. The index, however, was not designed to be reported as a single numeric value; therefore, specific focus areas of well-being were measured, but the overall well-being of the community was not able to be quantified.

***Well-being Indices***

When measuring well-being or "quality of life" through basic needs, indices are commonly used. In a recent investigation (Haggerty et al., 2001), researchers used 14 criteria to evaluate 22 quality of life indices used both in the United States and around the world. The most comprehensive well-being indices complied with a majority of the criteria outlined by Haggerty. This research (Haggerty et al., 2001) revealed the four most critical criteria in assisting nonprofit organizations in building an index with objective indicators include the following: 1) the index must have a clear and practical purpose; 2) it must be of assistance to policymakers in developing and accessing programs at every level of aggregation from the individual to the entire community; 3) it should be based on time series to allow monitoring and control as needed for

the purpose of assessing whether or not conditions are improving for the populations targeted by an intervention, and to forecast future conditions; 4) the index should be based on well- established theory regarding quality of life concepts, and it should be divided into specific dimensions while retaining the ability to be reported as a single number. While most indices reviewed by Haggerty et al. (2001) included these principles, important aspects of the criteria were omitted. Many indices were not embedded in well-established theory. Another commonly identified problem with many of the reviewed indices was that quality of life indices lacked reliability, validity, and sensitivity.

In contrast, a few recently developed indices with dimensions of well-being are worth mentioning as they meet most of the criteria outlined by Haggerty et al. (2001). An index of well-being allows social scientists to examine the utility of needs indices, informing policy and program decisions. Researchers created a county-level index of well-being in Larimer County, Colorado, as a vehicle for nonprofits to assess community needs (Bobbitt et al., 2005). The intended objective was to direct the funding priorities of the United Way. Researchers created the index through a five-step process: 1) determining the scope of the index; 2) identifying the indicators for inclusion; 3) scoring the indicators; 4) presenting and aggregating the indicators; and 5) validating the indicators. The five indices, based on each of the five domains identified, included: 1) the Health Index, with indicators drawn from the Healthy People 2010 Index; 2) the Senior and Disabled Index, with indicators drawn from the Federal Interagency Forum on Aging Related Statistics; 3) the Nurturing the Next Generation Index, which used indicators from well-established human development theories; 4) the Basic Needs Index; and 5) the Self-Sufficiency Index. Researchers standardized collected data and computed resulting standardized scores (z-scores) to calculate ranked normalized standardized scores (stanine scores). Although the overall research objective was met, it is important to note that one particularly important criterion identified by Haggerty et al. (2001) was violated. The index was not designed to be reported as a single numeric value; therefore, the overall well-being of the community was not able to be quantified.

## 5. Beyond Poverty: Other Related Indices

Though this report focuses on well-being and poverty, looking beyond the field of poverty measurement can reveal some lessons in the use of new data sources to capture human needs. The Tennessee Higher Education Commission's Educational Needs Index identifies the causal link between educational attainment and social welfare across Tennessee's 95 counties (Davis & Noland, 2003).

The index used 20 variables reflecting participation rates in postsecondary education, educational attainment levels, employment patterns, population growth, and socioeconomic status of county residents. Four domains encompassed these variables: educational, economic, growth, and market. Researchers assigned weights to the domains based on their relative importance in understanding the need and demand for postsecondary education and training. The literature review associated with the creation of the Educational Needs Index suggested that when using the index approach, a clear overall purpose of the index should be established, a finite set of indicators should be identified, and a limited number of data elements should be verified using regression analysis (Davis & Noland, 2003).

## 6. Feasibility of Developing a Human Needs Index for the Salvation Army

As demonstrated in the literature review, monetary indicators have historically characterized poverty. However, recent research has expanded poverty to include non-monetary factors that reflect other human needs.

The previous sections of this paper provided a detailed overview of how to define, measure, and account for the complex intersection of human needs and poverty. Specifically, this paper reviewed the following items: 1) the dimensions and indicators of poverty; 2) the approaches used to measure poverty; 3) guidelines for creating effective indices, with a specific focus on those that index poverty and well-being; and 4) the nonprofit agency's role in delivering programs and services that meet individual human needs.

The Salvation Army is a leader in providing programs and services addressing the multitude of needs for families and communities. These resources ensure the fulfillment of both immediate and long-term basic needs: emergency offerings of food, clothing, and shelter, and attainment of health-related services, sustainable employment placement, and educational opportunities.

The Salvation Army has made a commitment to accurate collection and analysis of its own organizational data, as well as community-level poverty data. With this evidence-based approach, the Salvation Army will be better able to address the varying types of poverty-related issues throughout each of its regions. With the agency's detailed, comprehensive data representing the impact these programs and services have had on individuals' well-being, the Salvation Army is uniquely positioned to create a Human Needs Index. This measure will evaluate poverty and quality of life with data-driven dimensions across the approximately 5,000 communities across the United States.

After a careful review of the ways in which poverty and well-being have been measured and indexed, the construction of a Human Needs Index will rely on host of available organizational data. Those statistics include the following: 1) meals provided, 2) housing assistance, 3) clothing provided, 4) medical orders provided, as well as 5) employment training/education, and 6) employment placement. Additionally, the inclusion of variables characterizing energy assistance and the number of persons transported may yield additional insights. Table 2 (Appendix 3) contains a list of specific variables included in the Salvation Army's dataset that have been identified for potential inclusion in the Human Needs Index.

The Salvation Army's Human Needs Index will evaluate individual sites in much the same way as the HDI evaluates countries. The index will assign sites a rating between 0 and 1, based on the governmental data collected on a specific indicator from one of the dimensions of basic needs. The scores from variable data of the different dimensions will be summed and averaged, creating a new overall score for each dimension and each site. The index will use government disaggregated Census estimates to create a poverty profile, representative of distinctive regions within the United

States. Researchers will then compare these profiles to internal Salvation Army data to determine how well the Salvation Army responds to the problems of poverty depth, distribution, and persistence in specific regions. The Salvation Army, as a result, will likely be able to discern the individual poverty status of regions in which it has site operations.

## Appendix 1

### Operationalization of Terms

**Measure:** 1) an adequate or due portion, a fixed or suitable limit, 2) the dimensions, capacity, or amount of something ascertained by measuring, 3) a measured quantity (amount, degree), 4) an instrument or utensil for measuring, 5) a standard or unit of measurement"

**Indicator:** 1) one that indicates, as an index hand (pointer), 2) any group of statistical values that taken together give an indication of the health of the economy

**Index:** 1) a device that serves to indicate a value or quantity, 2) something that leads one to a particular fact or conclusion, 3) a number derived from a series of observations and used as an indicator or measure.

**Factor Analysis:** 1) the analytical process of transforming statistical data (as measurements) into linear combinations of usually independent variables

***Regression Analysis:** 1) the use of statistical regression to make quantitative predictions of one variable from the values of another

Definitions from Merriam-Webster.com
*Definition from The FreeDictionary.com

# Appendix 2

## Table 1. The Department of Housing and Urban Development Domains and Index Variables

| Population Groups Which Might Have Needs Beyond Those of Average Citizens | Housing | Troubled Neighborhoods | Social and Economic | Complications Arising as the City Makes Efforts to Improve Itself | Detrimental Long-Term Trends |
|---|---|---|---|---|---|
| | | | | | |
| Poverty Population | Lack of Affordable Rental Housing | Population Living in High Poverty Census Tracts | School-Age Population Living in Poverty | City- Metropolitan Differences in Minority Population | Excess Infrastructure/Loss of Households |
| Children Living in the Population | Overcrowded Housing | Population Living in Moderate-Poverty Census Tracts | *Unemployment Rate | City- Metropolitan Differences in Poverty Rate | Change in Employment Base |
| Persons Over Age 74 Living in Poverty | Older Rental Housing Occupied by Poor Persons | Abandoned Buildings | | City- Metropolitan Differences in Median Family Income | Change in Concentration of Low-Income Families |
| Low-Income Population Excluding the Poverty Population | Mortgage Loan Denial Rate | | | | |
| Single-Parent Families | | | | | |
| Adults Without High School Diplomas | | | | | |
| Working-Age Persons Without a College Degree | | | | | |
| Recent Immigrants | | | | | |
| * Due to methodological issues, two additional variables were first used and then excluded: 1) The Rate of Violent Crimes and 2) The Rate of Non-Violent Crimes | | | | | |

## Appendix 3

### Table 1. Suggested Variables to be Used in the Salvation Army's Human Needs Index

| Name of Variable | Variable Number | Variable Series | Variable Description |
|---|---|---|---|
| Meals Provided | 5202 | Material Assistance | All meals provided whether purchased from another source or served through a Salvation Army facility. Count 1 meal for each person served, hence a mother and 2 children would be 3 meals multiplied by the number provided. |
| Snacks Provided | 5206 | Material Assistance | The total number of snacks served. A snack equals ½ meal. Multiply number of snacks by number of persons served. |
| Groceries, Orders Provided | 5207 | Material Assistance | Groceries provided by voucher or distributed through a food pantry or food bank. |
| Housing Assistance | 5223 | Material Assistance | Number of rent/mortgage assistance payments to establish and/or maintain an individual/family in their own home. |
| Clothing- Items Distributed | 5230 | Material Assistance | The number of clothing items provided. |
| Clothing- Orders Provided | 5231 | Material Assistance | The number of clothing orders provided. |
| Medical- Orders Provided | 5234 | Material Assistance | The number of medical orders provided (i.e., prescriptions). |
| Energy Assistance- Orders Provided | 5238 | Material Assistance | The number of energy assistance orders provided and the number of volunteers/hours served. |
| Transportation- Persons Transported | 5242 | Material Assistance | The number of individuals provided transportation during the month. This should be cumulative. Record the number of volunteers and hours served. |
| Employment Training/Education | 6810 | Personalized Services | Sessions held specifically for the purpose of employment training and/or education, for program participants. |
| Employment Placement | 6814 | Personalized Services | The cumulative number of referrals made. |

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[i] (http://www.salvationarmyusa.org/usn/www_usn_2.nsf/vw-local/About-us)
[ii] http://www.census.gov/hhes/www/poverty/about/overview/measure.html
[iii] http://www.census.gov/hhes/www/poverty/about/overview/measure.html

## Appendix B: State HNI Scores

### Table 1. State HNI Scores, by Year (2013 and 2014)

| State | State ID | Region | 2013HNI Score | 2014HNI Score | State | State ID | Region | 2013HNI Score | 2014 HNI |
|---|---|---|---|---|---|---|---|---|---|
| Connecticut | 9 | East | 100.28 | 100.36 | Alabama | 1 | South | 100.39 | 100.25 |
| Delaware | 10 | East | 100.06 | 100.09 | Arkansas | 5 | South | 100.35 | 100.20 |
| Maine | 23 | East | 100.11 | 100.11 | Washington, DC | 11 | South | 100.17 | 100.13 |
| Massachusetts | 25 | East | 100.54 | 100.55 | Florida | 12 | South | 101.89 | 101.55 |
| New Jersey | 34 | East | 100.45 | 100.38 | Georgia | 13 | South | 100.90 | 100.61 |
| New York | 36 | East | 102.00 | 101.83 | Kentucky* | 21 | South | 100.44 | 100.58 |
| Ohio** | 39 | East | 101.41 | 101.30 | Louisiana | 22 | South | 100.19 | 100.17 |
| Pennsylvania | 42 | East | 102.94 | 102.43 | Maryland | 24 | South | 100.19 | 100.18 |
| Rhode Island | 44 | East | 100.14 | 100.10 | Mississippi | 28 | South | 100.25 | 100.37 |
| Vermont | 50 | East | 100.06 | 100.07 | North Carolina | 37 | South | 101.01 | 100.85 |
| Illinois | 17 | Central | 101.56 | 101.43 | Oklahoma | 40 | South | 100.47 | 100.34 |
| Indiana | 18 | Central | 101.20 | 101.19 | South Carolina | 45 | South | 100.53 | 100.34 |
| Iowa | 19 | Central | 100.38 | 100.38 | Tennessee | 47 | South | 100.75 | 100.27 |
| Kansas | 20 | Central | 100.60 | 100.54 | Texas | 48 | South | 102.51 | 102.21 |
| Michigan | 26 | Central | 102.33 | 101.60 | Virginia | 51 | South | 100.76 | 100.77 |
| Minnesota | 27 | Central | 100.87 | 100.79 | West Virginia | 54 | South | 100.26 | 100.20 |
| Missouri | 29 | Central | 100.45 | 100.44 | Alaska | 2 | West | 100.08 | 100.08 |
| Nebraska | 31 | Central | 100.43 | 100.36 | Arizona | 4 | West | 101.09 | 101.07 |
| North Dakota | 38 | Central | 100.08 | 100.09 | California | 6 | West | 106.53 | 105.07 |
| South Dakota | 46 | Central | 100.10 | 100.10 | Colorado | 8 | West | 100.30 | 100.57 |
| Wisconsin | 55 | Central | 100.80 | 100.70 | Hawaii | 15 | West | 100.13 | 100.13 |
| | | | | | Idaho | 16 | West | 100.12 | 100.14 |
| | | | | | Montana | 30 | West | 100.10 | 100.08 |
| | | | | | Nevada | 32 | West | 100.63 | 100.74 |
| | | | | | New Mexico | 35 | West | 100.17 | 100.13 |
| | | | | | Oregon | 41 | West | 100.28 | 100.31 |
| | | | | | Utah | 49 | West | 100.04 | 100.06 |
| | | | | | Washington | 53 | West | 100.99 | 100.87 |
| | | | | | Wyoming | 56 | West | 100.06 | 100.05 |

* The Salvation Army provides services to the state of Kentucky from both the East and South regions; however, for the purposes of this study, all services provided to Kentucky were included in the South region.

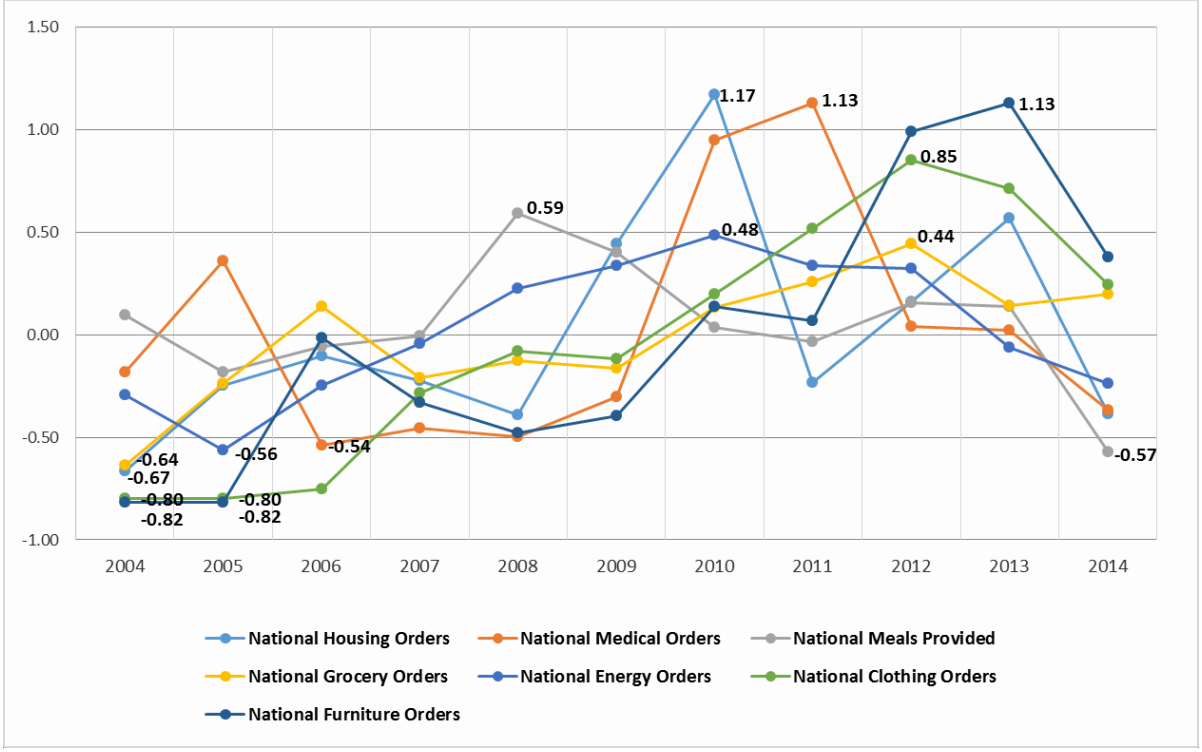
** The Salvation Army provides services to the state of Ohio from the East region, however, generally Ohio is included in the Central region by the U.S. Census.

# Appendix C: National HNI Indicator Scores, by Year (2004-2014)

**Table 1. National HNI Indicators, by Year (2004-2014)**

| Year | National Housing Orders | National Medical Orders | National Meals Provided | National Grocery Orders | National Energy Orders | National Clothing Orders | National Furniture Orders |
|---|---|---|---|---|---|---|---|
| 2004 | -0.67 | -0.18 | 0.10 | -0.64 | -0.30 | -0.80 | -0.82 |
| 2005 | -0.25 | 0.36 | -0.18 | -0.24 | -0.56 | -0.80 | -0.82 |
| 2006 | -0.10 | -0.54 | -0.06 | 0.14 | -0.25 | -0.75 | -0.01 |
| 2007 | -0.22 | -0.46 | -0.01 | -0.21 | -0.04 | -0.28 | -0.33 |
| 2008 | -0.39 | -0.50 | 0.59 | -0.13 | 0.22 | -0.08 | -0.48 |
| 2009 | 0.44 | -0.30 | 0.40 | -0.17 | 0.34 | -0.12 | -0.40 |
| 2010 | 1.17 | 0.95 | 0.04 | 0.13 | 0.48 | 0.20 | 0.14 |
| 2011 | -0.23 | 1.13 | -0.03 | 0.26 | 0.34 | 0.52 | 0.07 |
| 2012 | 0.16 | 0.04 | 0.16 | 0.44 | 0.32 | 0.85 | 0.99 |
| 2013 | 0.57 | 0.02 | 0.14 | 0.14 | -0.06 | 0.71 | 1.13 |
| 2014 | -0.39 | -0.37 | -0.57 | 0.20 | -0.24 | 0.24 | 0.38 |

**Figure 1. National HNI Indicator Scores, by Year (2004-2014)**



## Appendix D: National HNI Scores, by Month (2004-2014)

**Table 1. National HNI Scores, by Year (2004-2014)**

| | Month | HNI Monthly Score | | Month | HNI Monthly Score | | Month | HNI Monthly Score | | Month | HNI Monthly Score |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **2004** | January | 100.10 | **2005** | January | 100.53 | **2006** | January | 101.47 | **2007** | January | 101.64 |
| | February | 100.16 | | February | 100.01 | | February | 100.00 | | February | 100.18 |
| | March | 100.14 | | March | 100.15 | | March | 100.85 | | March | 100.41 |
| | April | 100.19 | | April | 100.25 | | April | 100.59 | | April | 100.65 |
| | May | 100.33 | | May | 100.27 | | May | 100.33 | | May | 100.52 |
| | June | 100.29 | | June | 100.24 | | June | 100.19 | | June | 100.85 |
| | July | 100.22 | | July | 100.46 | | July | 101.38 | | July | 100.72 |
| | August | 100.40 | | August | 100.26 | | August | 101.93 | | August | 100.77 |
| | September | 101.10 | | September | 103.15 | | September | 101.55 | | September | 101.40 |
| | October | 100.43 | | October | 100.71 | | October | 100.75 | | October | 100.91 |
| | November | 100.22 | | November | 100.36 | | November | 100.45 | | November | 101.12 |
| | December | 101.52 | | December | 101.79 | | December | 102.46 | | December | 103.72 |
| **2008** | January | 100.41 | **2009** | January | 100.43 | **2010** | January | 102.12 | **2011** | January | 101.36 |
| | February | 100.33 | | February | 100.48 | | February | 101.10 | | February | 100.91 |
| | March | 100.59 | | March | 100.82 | | March | 101.41 | | March | 101.20 |
| | April | 100.74 | | April | 100.59 | | April | 101.09 | | April | 101.19 |
| | May | 100.43 | | May | 101.28 | | May | 102.14 | | May | 101.58 |
| | June | 100.70 | | June | 101.07 | | June | 101.13 | | June | 101.29 |
| | July | 100.46 | | July | 100.99 | | July | 101.75 | | July | 102.07 |
| | August | 101.02 | | August | 102.04 | | August | 101.96 | | August | 101.95 |
| | September | 101.51 | | September | 101.83 | | September | 101.96 | | September | 102.64 |
| | October | 100.92 | | October | 101.41 | | October | 101.64 | | October | 101.48 |
| | November | 100.92 | | November | 102.03 | | November | 101.83 | | November | 101.52 |
| | December | 102.54 | | December | 104.12 | | December | 103.69 | | December | 105.04 |
| **2012** | January | 101.79 | **2013** | January | 102.02 | **2014** | January | 100.87 | | | |
| | February | 101.37 | | February | 101.39 | | February | 100.24 | | | |
| | March | 101.68 | | March | 102.12 | | March | 101.07 | | | |
| | April | 101.55 | | April | 101.51 | | April | 100.86 | | | |
| | May | 101.42 | | May | 101.68 | | May | 100.76 | | | |
| | June | 101.51 | | June | 102.03 | | June | 101.32 | | | |
| | July | 101.98 | | July | 101.82 | | July | 101.24 | | | |
| | August | 101.79 | | August | 102.13 | | August | 101.53 | | | |
| | September | 105.09 | | September | 102.00 | | September | 102.25 | | | |
| | October | 101.53 | | October | 101.35 | | October | 100.14 | | | |
| | November | 102.01 | | November | 101.84 | | November | 100.59 | | | |
| | December | 105.08 | | December | 103.76 | | December | 101.65 | | | |

## Appendix E: All Regional HNI Scores, by Year (2004-2014)

**Table 1. All Regional HNI Scores, by Year (2004-2014)**

| Year | Central | East | South | West |
|---|---|---|---|---|
| **2004** | 101.26 | 101.35 | 101.97 | 101.54 |
| **2005** | 101.33 | 101.37 | 102.56 | 101.44 |
| **2006** | 101.52 | 101.81 | 102.88 | 101.56 |
| **2007** | 101.43 | 101.48 | 102.65 | 102.25 |
| **2008** | 101.46 | 101.47 | 102.47 | 102.78 |
| **2009** | 101.84 | 101.72 | 102.67 | 102.33 |
| **2010** | 102.69 | 102.13 | 102.61 | 102.87 |
| **2011** | 102.32 | 102.11 | 103.09 | 102.66 |
| **2012** | 102.47 | 102.50 | 103.86 | 102.66 |
| **2013** | 102.45 | 102.53 | 103.27 | 102.92 |
| **2014** | 102.13 | 102.32 | 102.20 | 102.59 |

## Appendix F: All Regional HNI Indicator Scores, by Year (2004-2014)

**Table 1. Central HNI Indicator Scores, by Year (2004-2014)**

| Year | National Housing Orders | National Medical Orders | National Meals Provided | National Grocery Orders | National Energy Orders | National Clothing Orders | National Furniture Orders |
|---|---|---|---|---|---|---|---|
| 2004 | -0.25 | -0.66 | -0.42 | -0.69 | -0.12 | -0.58 | -0.50 |
| 2005 | 0.15 | -0.71 | -0.48 | -0.66 | -0.12 | -0.58 | -0.50 |
| 2006 | 0.02 | -0.58 | -0.29 | -0.34 | 0.10 | -0.58 | -0.50 |
| 2007 | 0.18 | -0.65 | -0.28 | -0.64 | 0.13 | -0.58 | -0.50 |
| 2008 | 0.38 | -0.67 | -0.56 | -0.54 | 0.16 | -0.58 | -0.50 |
| 2009 | 1.26 | -0.67 | -0.37 | -0.45 | 0.20 | -0.38 | -0.40 |
| 2010 | 2.66 | -0.66 | -0.05 | -0.38 | 0.21 | 0.44 | -0.05 |
| 2011 | 0.20 | -0.64 | -0.28 | -0.34 | 0.10 | 0.62 | 0.18 |
| 2012 | 0.05 | -0.59 | -0.19 | -0.43 | 0.10 | 0.97 | 0.28 |
| 2013 | 0.69 | -0.64 | -0.09 | -0.45 | 0.11 | 0.52 | 0.43 |
| 2014 | -0.13 | -0.64 | -0.68 | -0.43 | 0.09 | 0.46 | 0.33 |

**Figure 1. Central HNI Indicator Scores, by Year (2004-2014)**

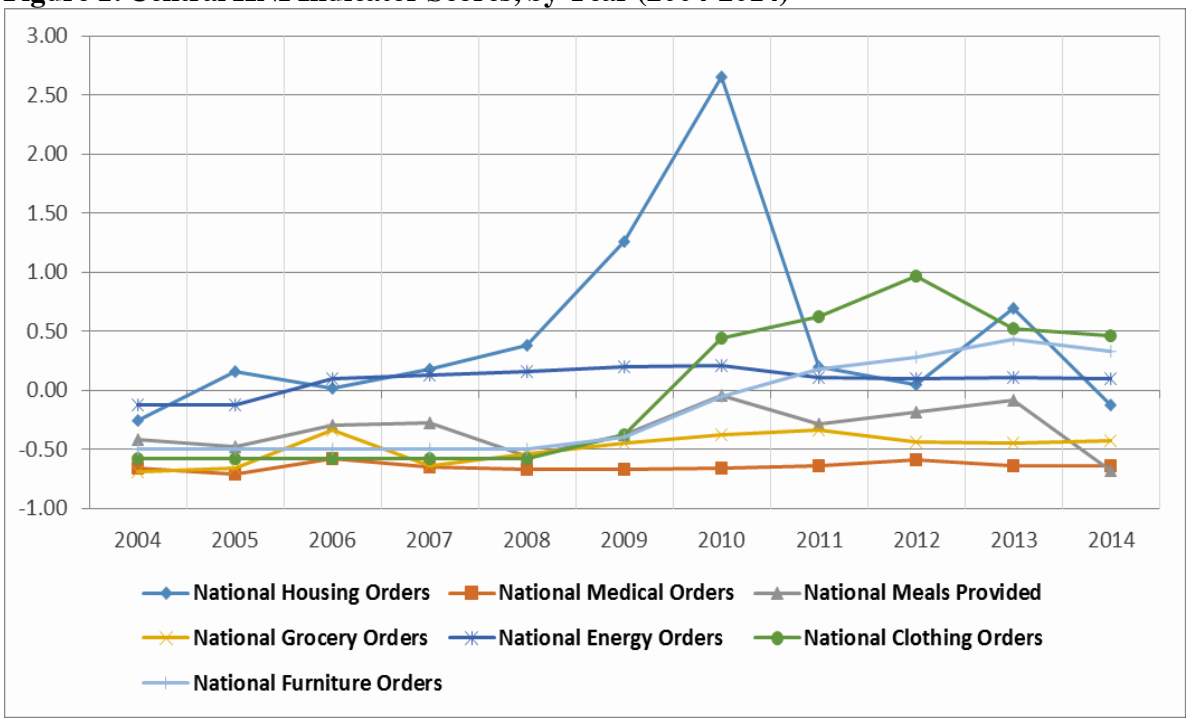


**Table 2. Eastern HNI Indicator Scores, by Year (2004-2014)**

| Year | National Housing Orders | National Medical Orders | National Meals Provided | National Grocery Orders | National Energy Orders | National Clothing Orders | National Furniture Orders |
|---|---|---|---|---|---|---|---|
| 2004 | -0.64 | -0.62 | 0.16 | -0.26 | -0.67 | -0.58 | -0.50 |
| 2005 | -0.74 | -0.72 | 0.05 | 0.03 | -0.83 | -0.58 | -0.50 |
| 2006 | -0.66 | -0.77 | -0.02 | 1.14 | -0.74 | -0.55 | -0.50 |
| 2007 | -0.54 | -0.75 | -0.10 | 0.09 | -0.73 | -0.54 | -0.39 |
| 2008 | -0.69 | -0.77 | -0.17 | 0.10 | -0.68 | -0.43 | -0.44 |
| 2009 | -0.45 | -0.76 | -0.18 | 0.02 | -0.40 | -0.21 | -0.20 |
| 2010 | -0.34 | -0.71 | -0.37 | 0.51 | -0.37 | -0.22 | 0.46 |
| 2011 | -0.56 | -0.66 | -0.48 | 0.92 | -0.68 | 0.06 | -0.15 |
| 2012 | 0.07 | -0.65 | -0.47 | 1.36 | -0.68 | -0.17 | 0.45 |
| 2013 | -0.02 | -0.67 | -0.50 | 0.88 | -0.60 | 0.15 | 0.69 |
| 2014 | -0.58 | -0.64 | -0.82 | 1.04 | -0.68 | 0.05 | 0.54 |

**Figure 2. Eastern HNI Indicator Scores, by Year (2004-2014)**

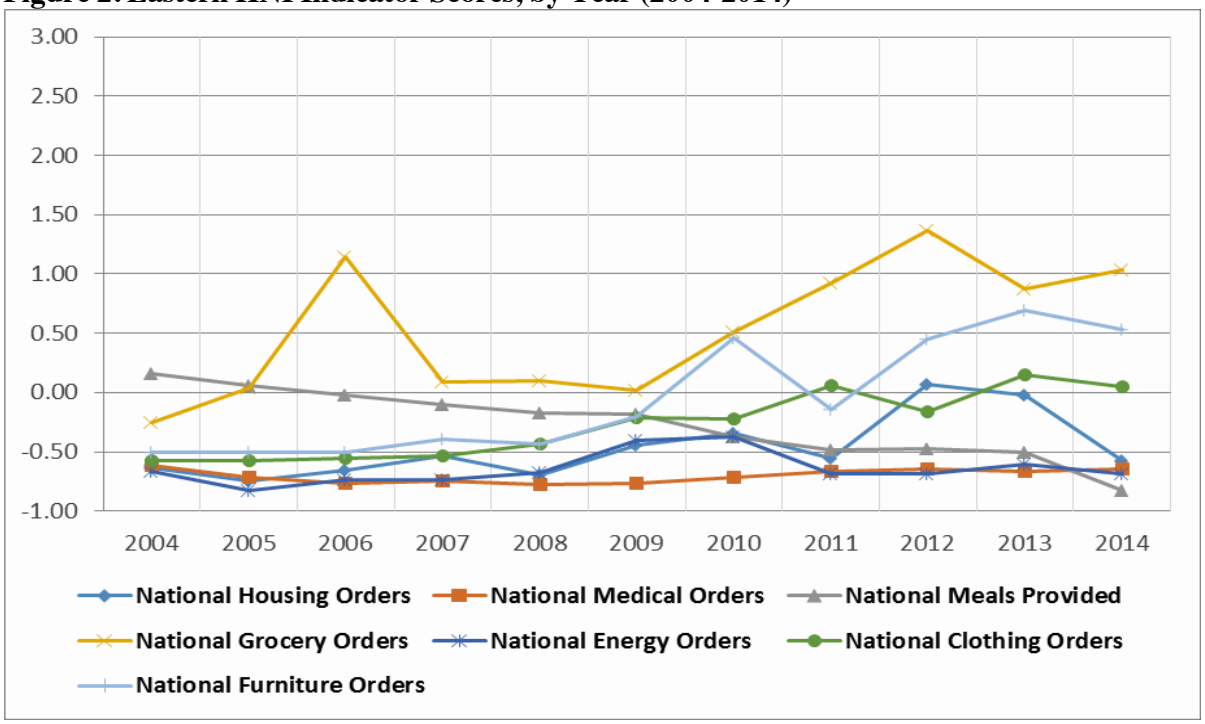


**Table 3. Southern Region HNI Indicator Scores, by Year (2004-2014)**

| Year | National Housing Orders | National Medical Orders | National Meals Provided | National Grocery Orders | National Energy Orders | National Clothing Orders | National Furniture Orders |
|---|---|---|---|---|---|---|---|
| 2004 | 0.00 | 0.68 | 0.89 | -0.55 | 0.46 | -0.58 | -0.50 |
| 2005 | 0.42 | 1.70 | 0.70 | 0.17 | 0.61 | -0.58 | -0.50 |
| 2006 | 0.39 | 0.51 | 0.82 | -0.19 | 0.91 | -0.49 | 1.40 |
| 2007 | 0.29 | 0.28 | 1.03 | 0.02 | 0.76 | -0.21 | 0.28 |
| 2008 | -0.09 | 0.21 | 2.29 | -0.45 | 0.74 | -0.14 | -0.11 |
| 2009 | 0.24 | 0.07 | 1.76 | -0.22 | 1.20 | 0.10 | -0.18 |
| 2010 | 0.31 | 0.22 | 0.97 | -0.02 | 1.41 | -0.08 | -0.21 |
| 2011 | 0.15 | 0.24 | 1.04 | -0.13 | 1.64 | 0.63 | 0.32 |
| 2012 | 0.75 | -0.19 | 1.18 | -0.03 | 1.48 | 1.24 | 1.62 |
| 2013 | -0.15 | -0.68 | 1.27 | -0.31 | 0.90 | 1.08 | 1.52 |
| 2014 | 0.15 | -0.68 | 0.83 | -0.43 | 0.74 | -0.07 | 0.11 |

**Figure 3. Southern Region HNI Indicator Scores, by Year (2004-2014)**

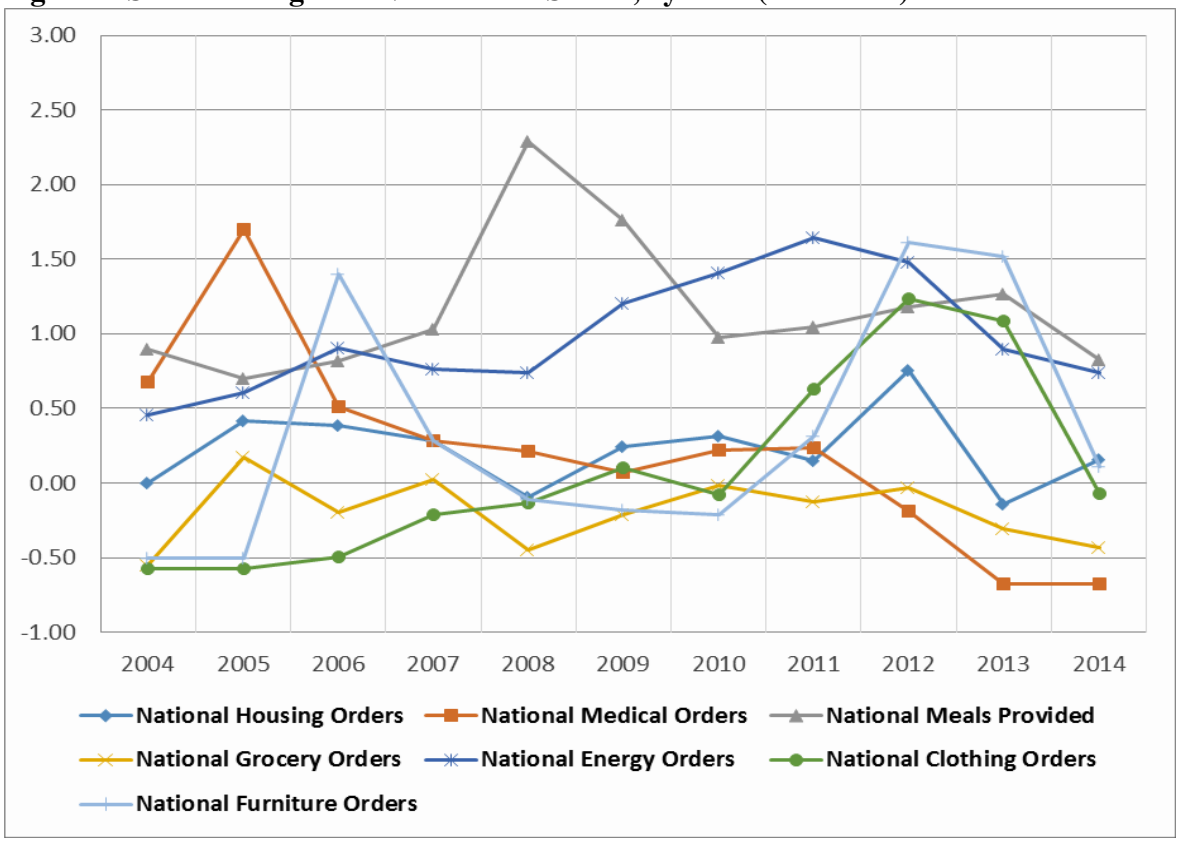
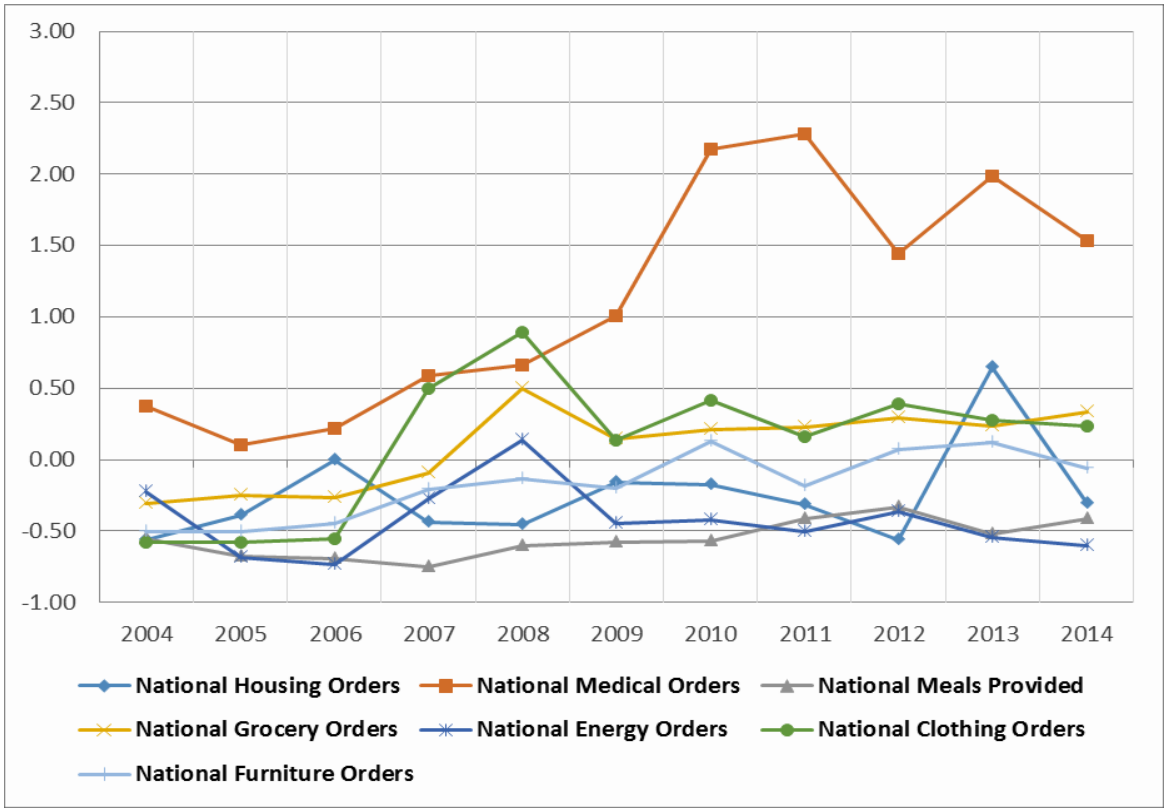


**Table 4. West HNI Indicator Scores, by Year (2004-2014)**

| Year | National Housing Orders | National Medical Orders | National Meals Provided | National Grocery Orders | National Energy Orders | National Clothing Orders | National Furniture Orders |
|---|---|---|---|---|---|---|---|
| 2004 | -0.56 | 0.37 | -0.55 | -0.31 | -0.22 | -0.58 | -0.50 |
| 2005 | -0.39 | 0.10 | -0.68 | -0.25 | -0.68 | -0.58 | -0.50 |
| 2006 | 0.00 | 0.22 | -0.69 | -0.27 | -0.73 | -0.55 | -0.45 |
| 2007 | -0.44 | 0.59 | -0.75 | -0.09 | -0.27 | 0.50 | -0.21 |
| 2008 | -0.45 | 0.66 | -0.61 | 0.50 | 0.14 | 0.90 | -0.14 |
| 2009 | -0.16 | 1.00 | -0.58 | 0.15 | -0.45 | 0.14 | -0.20 |
| 2010 | -0.17 | 2.17 | -0.57 | 0.21 | -0.42 | 0.42 | 0.13 |
| 2011 | -0.32 | 2.28 | -0.42 | 0.23 | -0.51 | 0.16 | -0.19 |
| 2012 | -0.56 | 1.44 | -0.33 | 0.29 | -0.37 | 0.39 | 0.07 |
| 2013 | 0.65 | 1.99 | -0.52 | 0.24 | -0.55 | 0.27 | 0.12 |
| 2014 | -0.30 | 1.53 | -0.41 | 0.33 | -0.60 | 0.23 | -0.06 |

**Figure 4. West HNI Indicator Scores, by Year (2004-2014)**



# Appendix G: Regional HNI Scores, by Month (2004-2014)

## Table 1. Central HNI Scores, by Month (2004-2014)

| | Month | HNI Monthly Score | | Month | HNI Monthly Score | | Month | HNI Monthly Score | | Month | HNI Monthly Score |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **2004** | January | 101.00 | **2005** | January | 101.25 | **2006** | January | 101.30 | **2007** | January | 101.22 |
| | February | 101.36 | | February | 101.04 | | February | 101.31 | | February | 101.15 |
| | March | 101.18 | | March | 101.18 | | March | 101.64 | | March | 101.31 |
| | April | 101.18 | | April | 101.23 | | April | 102.43 | | April | 101.44 |
| | May | 101.49 | | May | 101.35 | | May | 101.29 | | May | 101.34 |
| | June | 101.39 | | June | 101.09 | | June | 101.28 | | June | 101.94 |
| | July | 101.21 | | July | 101.42 | | July | 101.40 | | July | 101.34 |
| | August | 101.47 | | August | 101.24 | | August | 101.35 | | August | 101.26 |
| | September | 101.02 | | September | 101.24 | | September | 101.25 | | September | 101.28 |
| | October | 101.89 | | October | 101.51 | | October | 101.64 | | October | 101.17 |
| | November | 101.25 | | November | 101.38 | | November | 101.15 | | November | 101.18 |
| | December | 101.81 | | December | 102.08 | | December | 102.05 | | December | 102.15 |
| **2008** | January | 101.23 | **2009** | January | 101.58 | **2010** | January | 102.60 | **2011** | January | 101.87 |
| | February | 101.15 | | February | 101.27 | | February | 102.42 | | February | 101.44 |
| | March | 101.40 | | March | 101.71 | | March | 102.32 | | March | 101.68 |
| | April | 102.09 | | April | 101.63 | | April | 101.97 | | April | 101.62 |
| | May | 101.32 | | May | 102.53 | | May | 102.49 | | May | 102.35 |
| | June | 101.79 | | June | 102.07 | | June | 102.15 | | June | 102.03 |
| | July | 101.26 | | July | 101.78 | | July | 102.60 | | July | 102.56 |
| | August | 101.50 | | August | 102.50 | | August | 102.96 | | August | 102.32 |
| | September | 101.32 | | September | 101.95 | | September | 101.92 | | September | 102.31 |
| | October | 101.15 | | October | 102.62 | | October | 102.65 | | October | 102.00 |
| | November | 101.52 | | November | 103.13 | | November | 102.43 | | November | 102.36 |
| | December | 102.36 | | December | 105.08 | | December | 104.51 | | December | 107.29 |
| **2012** | January | 101.92 | **2013** | January | 102.00 | **2014** | January | 101.78 | | | |
| | February | 101.74 | | February | 101.82 | | February | 101.73 | | | |
| | March | 101.70 | | March | 102.04 | | March | 102.01 | | | |
| | April | 101.91 | | April | 102.26 | | April | 101.77 | | | |
| | May | 101.87 | | May | 102.32 | | May | 101.89 | | | |
| | June | 101.93 | | June | 102.56 | | June | 101.98 | | | |
| | July | 102.39 | | July | 102.55 | | July | 102.20 | | | |
| | August | 102.44 | | August | 102.45 | | August | 102.19 | | | |
| | September | 102.07 | | September | 102.18 | | September | 101.86 | | | |
| | October | 102.09 | | October | 101.96 | | October | 101.93 | | | |
| | November | 102.30 | | November | 102.24 | | November | 102.26 | | | |
| | December | 104.77 | | December | 104.01 | | December | 103.78 | | | |

## Table 2. Eastern HNI Scores, by Month (2004-2014)

| | Month | HNI Monthly Score | | Month | HNI Monthly Score | | Month | HNI Monthly Score | | Month | HNI Monthly Score |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **2004** | January | 101.20 | **2005** | January | 101.05 | **2006** | January | 104.52 | **2007** | January | 101.22 |
| | February | 101.16 | | February | 100.98 | | February | 101.15 | | February | 101.26 |
| | March | 101.33 | | March | 101.28 | | March | 102.51 | | March | 101.38 |
| | April | 101.25 | | April | 101.25 | | April | 101.23 | | April | 101.49 |
| | May | 101.27 | | May | 101.29 | | May | 101.40 | | May | 101.56 |
| | June | 101.45 | | June | 101.40 | | June | 101.50 | | June | 101.37 |
| | July | 101.32 | | July | 101.41 | | July | 101.24 | | July | 101.51 |
| | August | 101.40 | | August | 101.66 | | August | 101.45 | | August | 101.46 |
| | September | 101.78 | | September | 101.71 | | September | 101.49 | | September | 101.46 |
| | October | 101.17 | | October | 101.40 | | October | 101.46 | | October | 101.32 |
| | November | 101.31 | | November | 101.49 | | November | 101.43 | | November | 101.43 |
| | December | 101.98 | | December | 102.29 | | December | 102.10 | | December | 101.94 |
| **2008** | January | 101.43 | **2009** | January | 101.14 | **2010** | January | 102.70 | **2011** | January | 101.90 |
| | February | 101.19 | | February | 101.16 | | February | 101.38 | | February | 101.61 |
| | March | 101.51 | | March | 101.70 | | March | 101.75 | | March | 102.00 |
| | April | 101.39 | | April | 101.52 | | April | 101.59 | | April | 101.76 |
| | May | 101.48 | | May | 101.54 | | May | 102.63 | | May | 101.88 |
| | June | 101.54 | | June | 101.43 | | June | 101.76 | | June | 101.86 |
| | July | 101.43 | | July | 101.93 | | July | 102.75 | | July | 102.02 |
| | August | 101.49 | | August | 101.96 | | August | 102.12 | | August | 102.36 |
| | September | 101.53 | | September | 102.01 | | September | 102.05 | | September | 102.85 |
| | October | 101.48 | | October | 101.78 | | October | 101.85 | | October | 102.13 |
| | November | 101.51 | | November | 102.01 | | November | 102.18 | | November | 102.10 |
| | December | 103.21 | | December | 103.00 | | December | 103.01 | | December | 103.05 |
| **2012** | January | 101.87 | **2013** | January | 103.30 | **2014** | January | 101.81 | | | |
| | February | 102.71 | | February | 101.88 | | February | 101.73 | | | |
| | March | 102.26 | | March | 103.00 | | March | 101.82 | | | |
| | April | 102.13 | | April | 102.12 | | April | 101.83 | | | |
| | May | 102.27 | | May | 102.13 | | May | 101.78 | | | |
| | June | 102.05 | | June | 102.25 | | June | 102.41 | | | |
| | July | 102.23 | | July | 102.59 | | July | 102.54 | | | |
| | August | 102.39 | | August | 102.09 | | August | 102.17 | | | |
| | September | 104.83 | | September | 102.41 | | September | 104.06 | | | |
| | October | 102.13 | | October | 102.30 | | October | | | | |
| | November | 102.35 | | November | 102.37 | | November | | | | |
| | December | 104.10 | | December | 103.05 | | December | | | | |

## Table 3. Southern Region HNI Scores, by Month (2004-2014)

| | Month | HNI Monthly Score | | Month | HNI Monthly Score | | Month | HNI Monthly Score | | Month | HNI Monthly Score |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **2004** | January | 101.89 | **2005** | January | 102.66 | **2006** | January | 101.86 | **2007** | January | 103.93 |
| | February | 101.70 | | February | 101.79 | | February | 101.60 | | February | 101.73 |
| | March | 101.68 | | March | 101.91 | | March | 101.92 | | March | 102.26 |
| | April | 101.88 | | April | 101.98 | | April | 101.98 | | April | 102.32 |
| | May | 102.00 | | May | 101.82 | | May | 101.86 | | May | 102.16 |
| | June | 101.71 | | June | 101.90 | | June | 101.72 | | June | 102.49 |
| | July | 101.98 | | July | 101.99 | | July | 104.98 | | July | 102.60 |
| | August | 102.18 | | August | 101.65 | | August | 105.85 | | August | 102.87 |
| | September | 102.69 | | September | 107.86 | | September | 104.55 | | September | 103.69 |
| | October | 101.99 | | October | 102.80 | | October | 102.47 | | October | 101.87 |
| | November | 101.86 | | November | 101.96 | | November | 102.25 | | November | 102.00 |
| | December | 103.25 | | December | 103.49 | | December | 102.97 | | December | 102.87 |
| **2008** | January | 101.92 | **2009** | January | 102.08 | **2010** | January | 102.47 | **2011** | January | 102.40 |
| | February | 102.04 | | February | 102.30 | | February | 102.08 | | February | 102.02 |
| | March | 102.31 | | March | 102.31 | | March | 102.20 | | March | 102.24 |
| | April | 102.06 | | April | 102.12 | | April | 102.20 | | April | 102.04 |
| | May | 102.11 | | May | 102.34 | | May | 102.64 | | May | 102.82 |
| | June | 102.17 | | June | 102.14 | | June | 102.16 | | June | 102.84 |
| | July | 102.20 | | July | 102.56 | | July | 102.40 | | July | 103.94 |
| | August | 103.06 | | August | 103.02 | | August | 102.62 | | August | 103.48 |
| | September | 104.97 | | September | 103.90 | | September | 104.05 | | September | 106.61 |
| | October | 103.70 | | October | 102.14 | | October | 102.52 | | October | 103.32 |
| | November | 102.50 | | November | 102.88 | | November | 102.64 | | November | 102.94 |
| | December | 103.02 | | December | 103.44 | | December | 103.48 | | December | 103.70 |
| **2012** | January | 103.72 | **2013** | January | 102.70 | **2014** | January | 101.56 | | | |
| | February | 102.73 | | February | 102.61 | | February | 100.00 | | | |
| | March | 104.17 | | March | 102.90 | | March | 101.86 | | | |
| | April | 103.36 | | April | 102.81 | | April | 101.71 | | | |
| | May | 103.12 | | May | 102.94 | | May | 101.47 | | | |
| | June | 103.90 | | June | 103.64 | | June | 101.86 | | | |
| | July | 103.81 | | July | 103.09 | | July | 101.51 | | | |
| | August | 103.12 | | August | 104.90 | | August | 101.89 | | | |
| | September | 108.37 | | September | 104.41 | | September | 103.74 | | | |
| | October | 102.50 | | October | 102.83 | | October | 101.36 | | | |
| | November | 103.08 | | November | 103.71 | | November | 101.74 | | | |
| | December | 103.69 | | December | 104.21 | | December | 101.89 | | | |

**Table 4. Western HNI Scores, by Month (2004-2014)**

| | Month | HNI Monthly Score | | Month | HNI Monthly Score | | Month | HNI Monthly Score | | Month | HNI Monthly Score |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2004 | January | 101.35 | 2005 | January | 101.45 | 2006 | January | 101.38 | 2007 | January | 103.46 |
| | February | 101.62 | | February | 101.34 | | February | 101.33 | | February | 101.66 |
| | March | 101.53 | | March | 101.32 | | March | 101.43 | | March | 101.88 |
| | April | 101.51 | | April | 101.38 | | April | 101.41 | | April | 102.07 |
| | May | 101.46 | | May | 101.53 | | May | 101.50 | | May | 101.81 |
| | June | 101.29 | | June | 101.38 | | June | 101.21 | | June | 101.60 |
| | July | 101.18 | | July | 101.49 | | July | 101.55 | | July | 101.81 |
| | August | 101.26 | | August | 101.24 | | August | 102.09 | | August | 101.96 |
| | September | 102.70 | | September | 102.16 | | September | 102.38 | | September | 102.83 |
| | October | 101.11 | | October | 101.44 | | October | 101.78 | | October | 103.41 |
| | November | 101.22 | | November | 101.31 | | November | 101.53 | | November | 103.76 |
| | December | 101.71 | | December | 101.75 | | December | 104.61 | | December | 108.22 |
| 2008 | January | 101.87 | 2009 | January | 101.75 | 2010 | January | 103.29 | 2011 | January | 102.78 |
| | February | 101.88 | | February | 102.06 | | February | 102.27 | | February | 102.52 |
| | March | 101.92 | | March | 102.10 | | March | 102.81 | | March | 102.50 |
| | April | 101.80 | | April | 101.74 | | April | 102.34 | | April | 102.76 |
| | May | 101.67 | | May | 102.24 | | May | 103.25 | | May | 102.65 |
| | June | 102.29 | | June | 102.45 | | June | 102.32 | | June | 101.96 |
| | July | 101.92 | | July | 101.95 | | July | 102.44 | | July | 102.63 |
| | August | 102.31 | | August | 103.39 | | August | 102.68 | | August | 102.52 |
| | September | 102.28 | | September | 102.91 | | September | 103.19 | | September | 102.21 |
| | October | 101.66 | | October | 102.49 | | October | 102.66 | | October | 102.12 |
| | November | 102.26 | | November | 102.51 | | November | 102.69 | | November | 102.19 |
| | December | 103.47 | | December | 104.86 | | December | 104.06 | | December | 105.37 |
| 2012 | January | 102.78 | 2013 | January | 102.83 | 2014 | January | 102.37 | | | |
| | February | 102.18 | | February | 102.72 | | February | 102.27 | | | |
| | March | 102.14 | | March | 103.02 | | March | 102.75 | | | |
| | April | 102.47 | | April | 102.39 | | April | 102.34 | | | |
| | May | 102.11 | | May | 102.76 | | May | 102.33 | | | |
| | June | 101.89 | | June | 102.75 | | June | 102.62 | | | |
| | July | 102.63 | | July | 102.05 | | July | 102.41 | | | |
| | August | 102.45 | | August | 102.19 | | August | 103.12 | | | |
| | September | 103.61 | | September | 102.41 | | September | 102.40 | | | |
| | October | 102.71 | | October | 101.98 | | October | 102.38 | | | |
| | November | 102.85 | | November | 102.02 | | November | 102.95 | | | |
| | December | 106.40 | | December | 104.44 | | December | 104.09 | | | |

## Appendix H: Technical Appendix

Creating the Human Needs Index (HNI) was an iterative process that included creating and testing numerous preliminary indices. The first step in building preliminary indices was to identify appropriate variables to serve as indicators. Prospective variables for the HNI were identified and discussed by a 30-member project team of statisticians, program officers, economists, and National Advisory Board members from the Salvation Army and Indiana University Lilly Family School of Philanthropy based on careful consideration of the literature and theoretical constructs associated with measuring poverty and human needs. Joint monthly meetings between the two organizations were held from May 2013-December 2014, during which time a final set of potential variables to be included in the HNI were tested and selected.

Simple Principle Components Analysis (PCA) was used to create the final HNI from this large number of monthly variables. The main variation among all the indices tested was how the included variables were selected. First, the value of each variable was converted into a standardized value consisting of a mean of 0 and a standard deviation of 1. This procedure is a relatively common practice to allow immediate comparisons among a diverse set of variables. Initially, variables were grouped by specific criteria, multiple times, in attempts to create the strongest model. More commonly, though, correlations were computed among the selected variables and compared to external data sources (governmental unemployment rate data and SNAP benefit data) as well as internal data sources (referrals made to other organizations when a particular need could not be met) as benchmarks. The variables that were significantly correlated were then grouped together and weighted via PCA. For different indices, different cut-off points were used to identify the minimum Eigen value (a measurement of how much a particular variable contributed to the index; it is not unusual to limit variable inclusion by selecting some cut-off boundary, so that only the most valuable variables are used for the index) for inclusion in the HNI. The specifics of this analysis are described below, and computation equations are provided.

**Mathematical Construction of the National, Regional, and State HNI**

Principal component analysis (PCA) works by transforming the data in such a way as to represent some selection of data in a smaller number of dimensions while losing the least amount of information. In our application, we are using it to take seven variables and, by summing the resultant principal component scores, create a single index (the HNI).

These scores are defined as:

$$t_{k(i)} = \mathbf{x}_{(i)} * \mathbf{w}_{(k)}$$

Where *k* is = 1,…,*p*, with *p* being the number of components calculated (equal to the number of variables, so here it's seven), and i = 1,…,*n*, with n being the number of observations. This is repeated for each value of *k*. To generate the weights (**w**) used to create these scores, **w** must be the solution to the maximization:

$$\mathbf{w}_{(1)} = \max_{\|\mathbf{w}\|=1} \sum_{i} (\mathbf{x}_{(i)} * \mathbf{w})^2$$

In other words, for each component the weight must maximize the sum of the square of each variable times the weight, for each observation, while the weighting vector must have a norm of 1 (a norm being a bit like a sum but in two-dimensional terms).

This equation is modified after the first component. The additional components are calculated similarly, but with a modified **x** in which the previous principal components are subtracted from the original **x**.

After these steps are complete, this gives us *p* components of *p* coefficients each (so here, seven components with seven coefficients corresponding to each variable). Of the *p* possible number of these components to use, we select however many had an Eigenvalue above one (which is a standard measure of relevance). Our final index is then generated by:

$$HNI_i = \sum_{k=1}^{r} \mathbf{x}_{(i)} * \mathbf{w}_{(k)}$$

Where *k* = 1,…,*r*, with r being the number of components with an Eigenvalue greater than or equal to one. The indices we present here have also been standardized to have a minimum value of 0 and a standard deviation of one.

The exact values of **w** will vary depending on which version of the index we're examining, as this is individually calculated for each level of analysis, national, regional, and state. These values are presented below.

The variables used are all standardized at their respective levels. This is done such that the average value of the variable is 0, with a standard deviation of 1. This is done so that all the variables are more comparable to each other, which facilitates our analysis. Due to this, the coefficients below can be compared, and are a valid method of assigning importance or impact of each variable to the overall index.

This analysis typically results in an index with a mean around zero, and a standard deviation around one. After some discussion with [[however we refer to the group w/in SA we communicated with]], it was decided the index could be more easily understood if re-standardized to have a minimum value of 0 and a standard deviation of one. So technically each value below is sent through this equation before resulting in the final values summarizing the index presented below each set of coefficients:

$$HNI_{Final} = \frac{(HNI - \min(HNI))}{stdev(HNI)}$$

As mentioned, the variables are standardized at their respective levels. Because of this, the smaller the unit of analysis gets, the larger the maximum value tends to be. This is simply because there are a far greater number of observations for the smaller units (132 on the national level to 6729 on the state level), and thus it's more likely that extreme values will appear. Corresponding to this, we see some degree of difference in the means of the two indices, but it is not a particularly significant difference, indicating that the difference in maximum values is likely due to the number of observations and not a difference in distributions.

**Table 1. Final Human Needs Index Equations**

| |
|---|
| National:<br><br>$HNI_{Nat} = 0.461 \cdot HouseOrders_{NatPCStd} + 0.310 \cdot MedicalOrders_{NatPCStd} + 0.757 \cdot MealsProvided_{NatPCStd} + 1.148 \cdot GroceryOrders_{NatPCStd} + 0.286 \cdot EnergyOrders_{NatPCStd} + 0.841 \cdot ClothingOrders_{NatPCStd} + 0.104 \cdot FurnitureOrders_{NatPCStd}$<br><br>Mean: 2.29; Std Dev: 1; Min: 0; Max: 5.70 |
| $PCStdPCStdPCStdPCStdPCStdPCStdPCStd$ State: |
| State:<br><br>$HNI_{State} = 0.392 \cdot HouseOrders_{StatePCStd} + 0.544 \cdot MedicalOrders_{StatePCStd} + 0.600 \cdot MealsProvided_{StatePCStd} + 0.547 \cdot GroceryOrders_{StatePCStd} + 0.237 \cdot EnergyOrders_{StatePCStd} + 1.03 \cdot ClothingOrders_{StatePCStd} + 0.885 \cdot FurnitureOrders_{StatePCStd}$<br><br>Mean: 1.02; Std Dev: 1; Min: 0; Max: 28.7 |

Table 2 below illustrates the initially considered 21 material assistance and personalized service variables representative of human need that were selected from the more than 230 organizational service variables, which were analyzed for inclusion in the HNI.

**Table 2. Indicator Variables Considered for Inclusion in the Human Needs Index**

| Salvation Army Service Line-item Variable | Line-item Description |
|---|---|
| **Persons Served** | All persons served (unduplicated) during the month. |
| **Persons Served First Time** | Persons not served previously during the year (October – September). |
| **Meals Provided** | All meals provided whether purchased from another source or served through a Salvation Army facility. |
| **Snacks Provided** | The total number of snacks served. A snack equals ½ meal. |
| **Grocery Orders** | Groceries provided by voucher or distributed through a food pantry or food bank. |
| **Salvation Army Lodging** | Record only lodging provided in Salvation Army facilities. A "lodging" equals one person housed for one night. |
| **Non-Salvation Army Lodgings** | Record only lodgings purchased from another source, i.e., hotel, motel, or mission. A "Lodging" equals one person housed for one night. |
| **Housing Assistance Orders** | The number of rent/mortgage assistance payments to establish and/or maintain an individual/family in their own home. |
| **Clothing Distributed** | The number of clothing items provided. |
| **Furniture Distributed** | The number of furniture items provided. |
| **Medical Orders** | The number of medical orders provided (i.e., prescriptions). |
| **Energy Orders** | The number of energy assistance orders provided. |
| **Persons Transported** | The number of individuals provided transportation during the month. This should be cumulative. |
| **Employment Training/Education** | Sessions held specifically for the purpose of employment training and/or education, for program participants. |
| **Employment Placement** | The cumulative number of referrals made. |
| **Mass Feeding** | The number of meals served & volunteers/volunteer hours (includes seasonal, disaster and local emergency feeding services.) |
| **Persons Served Home Meals** | Record the unduplicated count of persons served home-delivered meals during the month. |
| **Home-Delivered Meals** | The total number of home-delivered meals during the month. |
| **Clothing Orders** | The number of clothing orders provided. |
| **Furniture Orders** | The number of furniture orders provided. |
| **Referrals** | "Referrals to Other Community Resources," which is more than just giving information; it is making a specific arrangement for individuals to apply to another source, i.e., social agency employment sources, clinics, for help. |

As depicted in Table 3 below, we relied on external governmental measures of poverty including the unemployment rate and the Supplemental Nutrition Assistance Program (SNAP) benefit usage to test the variables' ability to measure human need. The testing of these variables and associated relationships with the governmental variables provided guidance in the retention, addition, and selection of variables (representing human need) included in the early stages of modeling.

**Table 3. Potential Indicator Variables and Relationships with Governmental Data**

| | **Unemployment** | **Food Stamp Usage** |
|---|---|---|
| **Group Homes**<br>**Persons served: first time** | Positive Relationship<br>Positive Relationship | Positive Relationship<br>Positive Relationship |
| **Grocery Orders** | Insignificant | Positive Relationship |
| **Housing Assistance Orders** | Insignificant | Positive Relationship |
| **Energy Orders** | Insignificant | Positive Relationship |
| **Persons Transported** | Insignificant | Positive Relationship |
| **Medical Orders** | Positive Relationship | Insignificant |
| **Toys Distributed** | Positive Relationship | Positive Relationship |
| **Medical Clinics** | Negative Relationship | Negative Relationship |

Tables 4.1 and 4.2 below illustrate a later phase of testing of the HNI, in which three variables (Meals Provided, Clothing Provided, and Lodgings Provided) were selected for preliminary testing against the external government measures, individually (in Table 4.1) and together as a test model (in Table 4.2). These variables were selected for initial testing because they are collected in all states, across the four regions.

**Table 4.1. Initial Indicator Variable Correlations with Governmental Data, by Territory**

| | Correlation for Meals Provided | | |
|---|---|---|---|
| | **Unemployment Rate** | **Poverty Rate** | **Food Stamp Rate** |
| **All States** | 0.20 | 0.16 | Insignificant |
| **East Territory** | Insignificant | 0.59 | Insignificant |
| **West Territory** | 0.27 | 0.18 | -0.17 |
| **South Territory** | Insignificant | Insignificant | -0.23 |
| **Central Territory** | 0.65 | 0.29 | 0.48 |
| | **Correlation for Clothing Provided** | | |
| | **Unemployment Rate** | **Poverty Rate** | **Food Stamp Rate** |
| **All States** | 0.13 | 0.22 | 0.12 |
| **East Territory** | 0.22 | 0.49 | 0.20 |
| **West Territory** | 0.23 | 0.19 | Insignificant |
| **South Territory** | Insignificant | Insignificant | Insignificant |
| **Central Territory** | 0.55 | 0.33 | 0.57 |
| | **Correlation for Lodgings Provided** | | |
| | **Unemployment Rate** | **Poverty Rate** | **Food Stamp Rate** |
| **All States** | 0.15 | 0.21 | Insignificant |
| **East Territory** | Insignificant | 0.60 | Insignificant |
| **West Territory** | 0.23 | Insignificant | Insignificant |
| **South Territory** | Insignificant | Insignificant | -0.25 |
| **Central Territory** | 0.63 | 0.28 | 0.50 |

**Table 4.2. Initial Indicator Model Correlations with Governmental Data, by Territory**

| | Unemployment Rate | Poverty Rate | Food Stamp Rate |
|---|---|---|---|
| **East Territory** | Insignificant | 0.60 | Insignificant |
| **West Territory** | 0.26 | 0.18 | -0.17 |
| **South Territory** | Insignificant | Insignificant | -0.23 |
| **Central Territory** | 0.66 | 0.30 | 0.51 |

Table 5 depicts the six strongest models derived from the three distinctive approaches to weighting the selected variables. This testing was conducted to determine combinations of variables appropriate for inclusion or exclusion in the final national and state-level models. The approach in Model Two was chosen, however, subsequent to this testing. A different configuration of variables was selected to comprise the final HNI model (the results of the final model are presented below in Table 6).

**Table 5. Weighted Model Correlations with Governmental Data, at National and State Level**

| | NATIONAL LEVEL INDEX | | STATE LEVEL INDEX | |
|---|---|---|---|---|
| **Model** | **Unemployment** | **Percent SNAP** | **Unemployment** | **Percent SNAP** |
| Model One | 0.38* | 0.32* | 0.22* | -0.03* |
| Model Two | 0.32* | 0.24* | 0.18* | 0.11* |
| Model Three | Insignificant | Insignificant | 0.14* | Insignificant |

* Represents a significance level of .05 or higher.

The correlations between the final HNI model and other measures of poverty-related services are presented in Table 6. This model was selected because it allowed for intuitive variable selection and statistical confirmation of individual variables' utility in the overall model measuring human need. As illustrated below, the final model is not only significantly correlated with governmental measures of poverty, but it is also significantly correlated with the Salvation Army's referral services. Significant correlation with referral services was an important consideration when choosing this model as the final HNI, because referrals indicate need that is present but is not able to be served by the Salvation Army.

**Table 6. Final Model Correlations with Governmental Data, at National and State Level**

| Model | Unemployment | Percent SNAP | Referrals |
|---|---|---|---|
| National HNI | 0.32* | 0.24* | 0.48* |
| State Level HNI | 0.18* | 0.11* | 0.06* |

* Represents a significance level of .05 or higher.

Table 7 shows a comparison among the national HNI scores and the governmental unemployment rate data, the Supplemental Nutrition Assistance Program (SNAP) benefit data, and the Salvation Army Referral data, by month from 2004-2014.

**Table 7. National HNI Scores and Benchmark Measures, by Month**

| | Month | HNI Monthly Score | National Unemployment Rate Percentage | National SNAP Percentage | Salvation Army Referrals |
|---|---|---|---|---|---|
| 2004 | | | | | |
| | January | 1.23 | 5.7 | 8.04 | 196,509 |
| | February | 1.56 | 5.6 | 8.04 | 140,302 |
| | March | 1.44 | 5.8 | 8.14 | 126,773 |
| | April | 1.45 | 5.6 | 8.16 | 127,392 |
| | May | 1.80 | 5.6 | 8.18 | 143,878 |
| | June | 1.61 | 5.6 | 8.24 | 128,414 |
| | July | 1.59 | 5.5 | 8.32 | 127,399 |
| | August | 2.01 | 5.4 | 8.38 | 149,442 |
| | September | 2.98 | 5.4 | 8.48 | 157,437 |
| | October | 1.77 | 5.5 | 8.92 | 159,678 |
| | November | 1.39 | 5.4 | 8.54 | 145,768 |
| | December | 3.02 | 5.4 | 8.65 | 147,856 |
| 2005 | | | | | |
| | January | 1.92 | 5.3 | 8.63 | 156,768 |
| | February | 0.99 | 5.4 | 8.56 | 123,267 |
| | March | 1.30 | 5.2 | 8.61 | 131,623 |
| | April | 1.37 | 5.2 | 8.58 | 143,885 |
| | May | 1.57 | 5.1 | 8.59 | 156,553 |
| | June | 1.37 | 5.0 | 8.63 | 136,690 |
| | July | 1.97 | 5.0 | 8.63 | 140,776 |
| | August | 1.42 | 4.9 | 8.69 | 144,492 |
| | September | 5.32 | 5.0 | 9.24 | 188,124 |
| | October | 2.22 | 5.0 | 9.40 | 167,706 |
| | November | 1.55 | 5.0 | 10.04 | 139,373 |
| | December | 3.41 | 4.9 | 9.02 | 141,203 |
| 2006 | | | | | |
| | January | 3.13 | 4.7 | 8.91 | 137,618 |
| | February | 1.04 | 4.8 | 8.80 | 122,510 |
| | March | 2.23 | 4.7 | 8.83 | 128,171 |
| | April | 2.11 | 4.7 | 8.72 | 134,491 |
| | May | 1.43 | 4.6 | 8.72 | 124,831 |
| | June | 1.22 | 4.6 | 8.73 | 167,160 |
| | July | 2.14 | 4.7 | 8.69 | 180,814 |
| | August | 2.18 | 4.7 | 8.73 | 151,440 |
| | September | 2.91 | 4.5 | 8.75 | 187,637 |
| | October | 2.26 | 4.4 | 8.77 | 148,391 |
| | November | 1.31 | 4.5 | 8.76 | 154,984 |
| | December | 3.99 | 4.4 | 8.79 | 167,538 |
| 2007 | | | | | |
| | January | 2.77 | 4.6 | 8.77 | 130,513 |
| | February | 1.15 | 4.5 | 8.69 | 118,921 |
| | March | 1.45 | 4.4 | 8.76 | 121,518 |
| | April | 1.90 | 4.5 | 8.72 | 137,412 |
| | May | 1.46 | 4.4 | 8.76 | 125,156 |
| | June | 1.87 | 4.6 | 8.82 | 125,264 |
| | July | 2.05 | 4.7 | 8.81 | 145,670 |
| | August | 1.89 | 4.6 | 8.90 | 138,934 |
| | September | 2.97 | 4.7 | 8.90 | 152,675 |
| | October | 1.92 | 4.7 | 8.92 | 140,071 |
| | November | 2.02 | 4.7 | 8.96 | 138,031 |
| | December | 5.06 | 5.0 | 9.03 | 133,491 |
| 2008 | | | | | |
| | January | 1.39 | 5.0 | 9.09 | 122,856 |
| | February | 1.22 | 4.9 | 9.07 | 122,332 |
| | March | 1.85 | 5.1 | 9.14 | 134,917 |
| | April | 1.79 | 5.0 | 9.20 | 124,603 |
| | May | 1.69 | 5.4 | 9.28 | 123,758 |
| | June | 2.20 | 5.6 | 9.36 | 134,575 |
| | July | 1.68 | 5.8 | 9.47 | 142,359 |
| | August | 2.87 | 6.1 | 9.59 | 164,032 |
| | September | 4.36 | 6.1 | 10.28 | 154,658 |
| | October | 2.72 | 6.5 | 10.09 | 138,207 |
| | November | 2.01 | 6.8 | 10.10 | 143,058 |
| | December | 3.78 | 7.3 | 10.32 | 128,457 |
| 2009 | | | | | |
| | January | 1.36 | 7.8 | 10.45 | 123,463 |
| | February | 1.41 | 8.3 | 10.55 | 114,660 |
| | March | 2.17 | 8.7 | 10.74 | 157,319 |
| | April | 1.54 | 9.0 | 10.93 | 138,314 |
| | May | 2.48 | 9.4 | 11.13 | 145,733 |
| | June | 2.12 | 9.5 | 11.35 | 150,425 |
| | July | 2.28 | 9.5 | 11.58 | 146,184 |
| | August | 3.64 | 9.6 | 11.78 | 175,620 |
| | September | 3.33 | 9.8 | 11.99 | 242,328 |
| | October | 2.33 | 10.0 | 12.22 | 158,347 |
| | November | 3.17 | 9.9 | 12.38 | 171,916 |
| | December | 5.05 | 9.9 | 12.63 | 172,484 |
| 2010 | | | | | |
| | January | 2.79 | 9.7 | 12.77 | 148,005 |
| | February | 2.04 | 9.8 | 12.81 | 131,430 |
| | March | 2.62 | 9.9 | 12.97 | 144,338 |
| | April | 1.91 | 9.9 | 13.08 | 152,707 |
| | May | 2.89 | 9.6 | 13.19 | 164,126 |
| | June | 2.17 | 9.4 | 13.33 | 157,358 |
| | July | 2.68 | 9.5 | 13.51 | 148,723 |
| | August | 3.25 | 9.5 | 13.68 | 170,497 |
| | September | 3.41 | 9.5 | 13.83 | 239,410 |
| | October | 2.61 | 9.5 | 13.92 | 168,035 |
| | November | 2.58 | 9.8 | 14.04 | 159,760 |
| | December | 4.57 | 9.4 | 14.18 | 156,926 |
| 2011 | | | | | |
| | January | 2.27 | 9.1 | 14.21 | 177,018 |
| | February | 1.57 | 9.0 | 14.21 | 135,027 |
| | March | 2.02 | 9.0 | 14.32 | 144,342 |
| | April | 1.94 | 9.1 | 14.34 | 146,595 |
| | May | 2.64 | 9.0 | 14.57 | 149,678 |
| | June | 1.92 | 9.1 | 14.49 | 138,338 |
| | July | 3.19 | 9.0 | 14.53 | 156,318 |
| | August | 2.70 | 9.0 | 14.67 | 155,152 |
| | September | 4.20 | 9.0 | 14.81 | 151,929 |
| | October | 2.36 | 8.8 | 14.79 | 156,930 |
| | November | 2.34 | 8.6 | 14.80 | 151,124 |
| | December | 5.35 | 8.5 | 14.86 | 153,210 |
| 2012 | | | | | |
| | January | 2.53 | 8.2 | 14.83 | 158,714 |
| | February | 1.73 | 8.3 | 14.79 | 142,019 |
| | March | 2.55 | 8.2 | 14.80 | 137,915 |
| | April | 2.37 | 8.2 | 14.75 | 159,963 |
| | May | 2.02 | 8.2 | 14.82 | 142,228 |
| | June | 2.34 | 8.2 | 14.86 | 138,916 |
| | July | 3.24 | 8.2 | 14.91 | 152,818 |
| | August | 2.50 | 8.1 | 14.98 | 147,518 |
| | September | 4.71 | 7.8 | 15.16 | 167,872 |
| | October | 2.10 | 7.8 | 15.10 | 154,938 |
| | November | 2.35 | 7.8 | 15.14 | 151,517 |
| | December | 5.70 | 7.9 | 15.16 | 148,871 |
| 2013 | | | | | |
| | January | 2.10 | 7.9 | 15.15 | 139,930 |
| | February | 1.85 | 7.7 | 15.07 | 126,146 |
| | March | 2.80 | 7.5 | 15.12 | 138,165 |
| | April | 1.96 | 7.5 | 15.05 | 132,823 |
| | May | 1.89 | 7.5 | 15.07 | 133,998 |
| | June | 2.94 | 7.5 | 15.10 | 147,283 |
| | July | 2.39 | 7.3 | 15.05 | 130,753 |
| | August | 2.54 | 7.2 | 15.05 | 135,582 |
| | September | 2.89 | 7.2 | 14.93 | 135,077 |
| | October | 1.62 | 7.2 | 14.95 | 137,836 |
| | November | 2.00 | 7.0 | 14.83 | 140,959 |
| | December | 4.30 | 6.7 | 14.74 | 162,336 |
| 2014 | | | | | |
| | January | 1.33 | 6.6 | 14.65 | 125,960 |
| | February | 0.00 | 6.7 | 14.53 | 125,633 |
| | March | 1.87 | 6.7 | 14.50 | 146,533 |
| | April | 1.37 | 6.3 | 14.54 | 137,006 |
| | May | 1.24 | 6.3 | 14.52 | 135,451 |
| | June | 2.07 | 6.1 | 14.60 | 141,853 |
| | July | 1.93 | 6.2 | 14.59 | 133,295 |
| | August | 2.35 | 6.1 | 14.58 | 143,840 |
| | September | 2.74 | 5.9 | 14.56 | 139,040 |
| | October | 0.07 | 5.7 | | 71,125 |
| | November | 0.81 | 5.8 | | 70,496 |
| | December | 1.60 | 5.6 | | 60,050 |

## Citations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