



# THE ECONOMIC IMPACT OF CKDNT ON HOUSEHOLDS

SURVEY FINDINGS FROM A PILOT STUDY OF A WORKERS'  
ASSOCIATION, ASOCHIVIDA, AND OF THE COMMUNITIES OF LA ISLA,  
MANHATTAN, AND CANDALARIA, NICARAGUA

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# Executive Summary

The following findings are drawn from a pilot survey of households in 3 communities in Chichigalpa, Nicaragua, including La Isla, Manhattan, Candelaria, each of which provide labor for the Ingenio San Antonio sugar mill, and from Asochivida, an association of ex-mill workers and their widows. The sample of households is a purposive sample drawn specifically from households that have, or had, a member with Chronic Kidney Disease of non-traditional Etiology (CKDnt). As such, it is not meant to be a convenience sample or a random sample and, therefore, is not meant to be representative of the whole populations in these communities. Instead, the intent is to examine the nature of the economic effects that CKDnt has on households and their communities as a pilot study to assess our questionnaire and the feasibility of conducting a representative survey of this nature in this area.

Survey responses paint an interesting picture of those households affected by CKDnt; in general, respondents are less educated than the national average, earn considerably less than other rural workers, such as coffee bean pickers, and have a monthly income that falls far short of reported monthly expenses. This shortfall leads to borrowing from a range of sources, exhausting savings, and preventing them from growing savings. A substantial proportion of households are those with neither parent working, and a smaller, but still seemingly large, proportion of households has had a child leave school to help bring in income. The vast majority claiming to need medical assistance with CKDnt do not receive it.

On the other hand, respondents report that they generally believe that hard work and their own initiative are better predictors of their own, personal success than are fate and more powerful people. Nearly three-fourths report that they would move away for a better life, but also report that they either cannot afford to, have nowhere to go, and/or cannot leave their family and friends. Perhaps because they feel trapped in their current situation, a majority report that they expect life to become more difficult in the future, but they are, nonetheless, hopeful for their children's futures.

Our comparison of households with lower- and higher-earnings is revealing in several respects: higher-earners are far more likely to borrow in general, but less likely to report having spent their savings due to CKDnt; despite fairly wide differences in mean earnings, both groups similarly report that they have bought food on credit recently; and counterintuitively a significantly larger percent of lower-earners report saving some of their income than higher-earners. Lower-earners feel considerably stronger



about being in control over what happens in their lives, but both groups attribute success in life to hard work, and both groups are equally optimistic about their children's futures, even as they feel concerned about their own.

The picture that emerges from this initial examination of these two sub-populations is consistent with the picture presented by the totality of the households we surveyed—total earnings are inadequate to meet their needs, but for a few households, and the majority believes that hard work contributes to success. Nonetheless, there is concern among most that earnings in 2020 will be worse than 2019.

## *Objectives*

The following report addresses outcomes from a pilot survey of households in 3 communities in Chichigalpa, Nicaragua, including La Isla, Manhattan, Candelaria, each of which provide labor for the Ingenio San Antonio sugar mill, and Asochivida, an association of ex-mill workers and their widows. The sample of households is a purposive sample drawn specifically from households that have, or had, a member with CKDnt. As such, it is not a random sample and, therefore, is not meant to be representative of the whole populations in these communities. Instead, the intent is to examine the economic effects that CKDnt has on households and their communities as a pilot study to assess our questionnaire and the feasibility of, at a later date, fielding a representative survey of this nature in this community.

As a pilot study, it is small in scope (58 households), and modest as regards the inferences one can draw from the data. The three communities and Asochivida vary considerably by size, and allowances for this variance is made in the analysis (i.e., assigning weights). The communities are described in some detail below, but it is important, at the outset, to set expectations for the content. Significantly larger studies are planned that will also include homes that have not had members with CKDnt, from which more reliable causal inferences could be drawn.

## *Report structure*

The report is structured as follows: an overview of the methodology, basic descriptive and socio-economic statistics, selected findings from sub-group analyses, and conclusion.

## *Methods*

The primary screen for eligible households was either the presence of someone in the household with CKDnt or having lost a household member to CKDnt within the past 10 years. Each survey took approximately one hour, with data collected by one of two surveyors. The survey instrument was developed in English and then translated into Spanish by La Isla Network staff working in the area. The results were translated back into English by a University of Texas, Austin doctoral student who is a native Nicaraguan. Statistical analysis was conducted using Stata 15 software.

## *Description of communities*

**La Isla (Guanacastal Sur district):** La Isla is located seven kilometers south of the municipality of Chichigalpa. This rural community has 110 families that total 400 people. Approximately 10% of the 110 families are headed by widows due to chronic kidney disease of non-traditional cause.

**Manhattan:** This community is relatively new, established about 10 years ago. It is situated 300 meters west of the La Isla community. It has a population of approximately 100 families totaling 300 people.

**Candelaria:** Pertains to an urban sector of Chichigalpa. The community is densely populated, approximately 15 hectares in area with a population of 500 people from 150 families.

The primary employer for all three communities is San Antonio Sugar Mill, where they primarily work as field laborers. The impact of CKDnt is extensive, with the majority of the families directly affected by the disease.

## *Descriptive statistics and initial observations*

The following provides an overview of the demographic and socio-economic survey results, including household characteristics, earnings, dis-savings and indebtedness, disease effects on total household income, medical care, basic needs, self-efficacy and resilience, and outlook for the future.

### *Household characteristics*

Our sample indicates that, with respect to household characteristics, those households with a member experiencing CKDnt also experience greater deprivation than the national average across a number of indicators.

- Average age of head of household = 47
- 59% report less than an elementary school education, compared to 74% nationally, and only 14% have completed some high school courses, compared to 41% nationally (UNESCO Institute for Statistics [UIStats]), 2020)
- 84% report that they are able to read, and 81% can write, compared to 83% for both indicators nationally (UISstats, 2020)
- 79% of heads of household are unemployed, compared to approximately 34% of Nicaragua's rural workforce (ILO Stats, 2020), and 82% of those reporting that they are unemployed in the surveyed households are unemployed because of CKDnt
- 22% of those surveyed have had a death due to CKDnt in the last 10 years
- 45% live in houses with 1 or fewer bedrooms

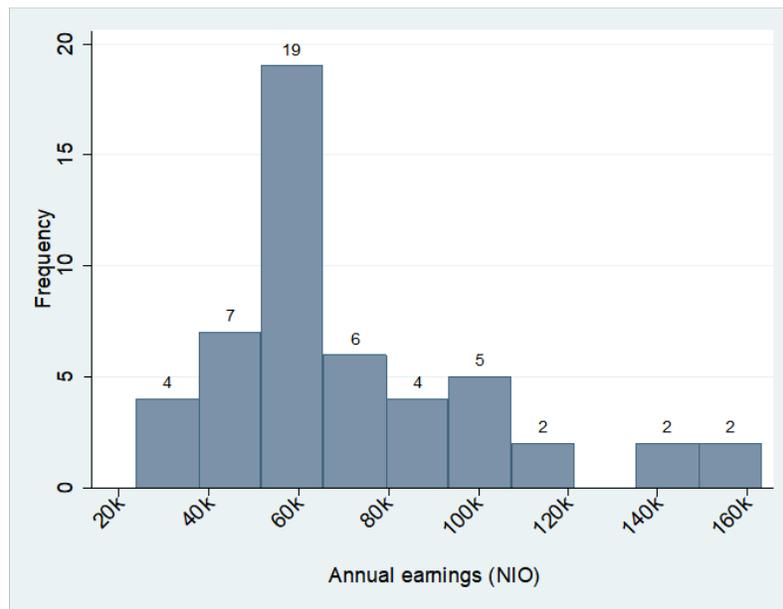
- 32% rely on well water, and 67% use water piped into their homes
- 86% rely on pit latrines

## Earnings

Annual mean earnings among the households were not dissimilar from earnings of agricultural workers elsewhere in Nicaragua, but monthly earnings fell short of estimated monthly expenditures by as much as a quarter of monthly earnings.

Chart 1 below depicts the earnings distribution of our sample, with the mode of households survey approximately 58,000 NIO.

**Chart 1. Earnings distribution**

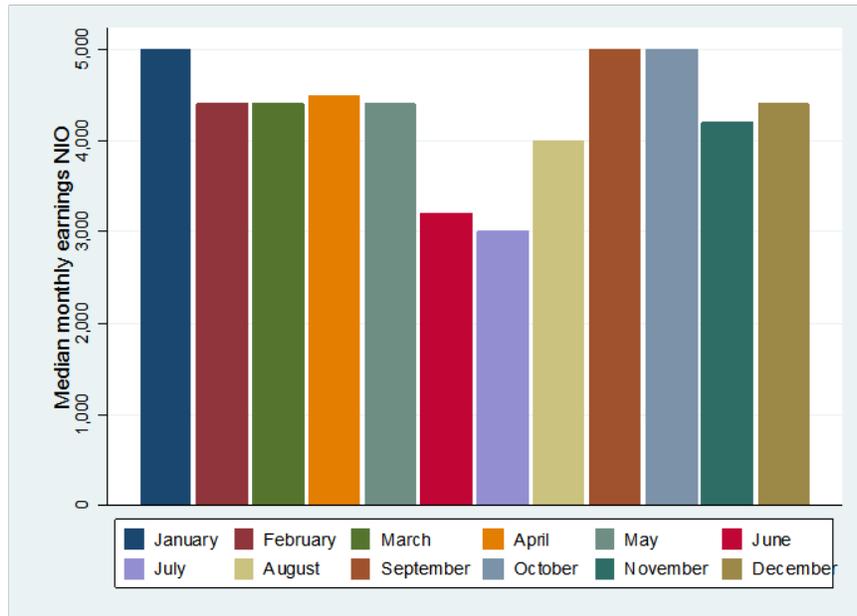


- Median annual earnings of those with earnings= 72,000 NIO<sup>1</sup> (vs. annual average earnings of 80,784 NIO for coffee bean pickers, per Andersen and Hernani-Limarino, 2017)
- Median monthly earnings of those with earnings = 6,000 NIO
- Median monthly “other earnings”= 4,667 NIO
- Median monthly total income (primary earnings plus “other income<sup>2</sup>”)=9,031 NIO
- Median annual total income (primary earnings plus “other income”)= 108,372 NIO

1 Conversion rate at \$1.00= 34.44 Nicaraguan Cordobas (NIO)

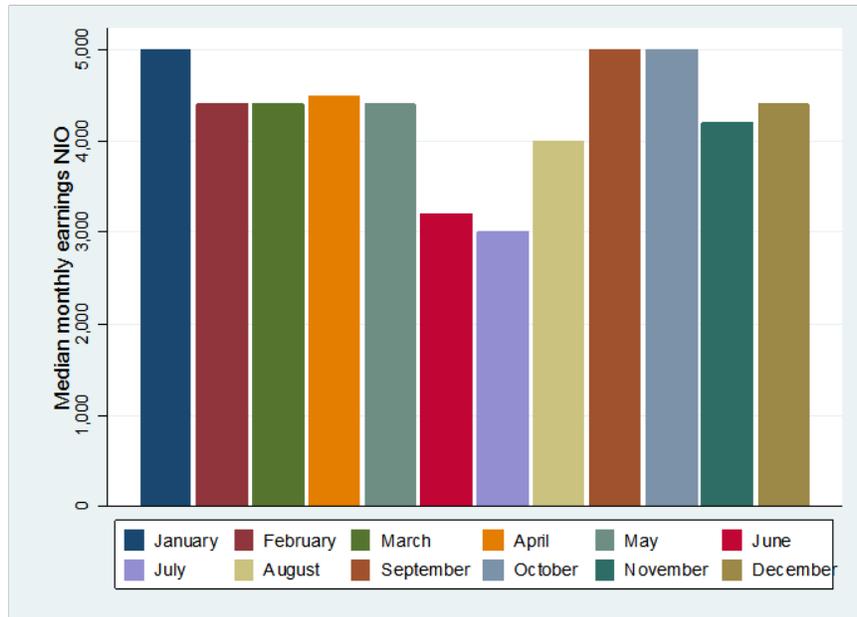
2 Income earned from handcrafts, or received in remittances, e.g.

**Chart 2. Median monthly earnings**

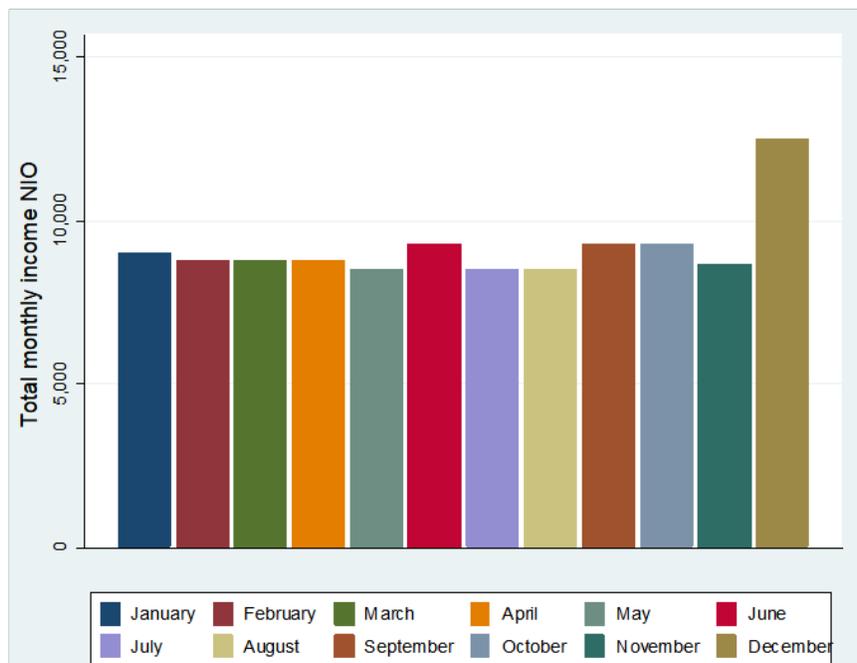


- Average monthly expenses =10,344.6 NIO. These expenses include electricity, food, water, education, medication, clothing, and housing.
- Average monthly shortfall = 1,300 NIO, or approximately 14% of total earnings (housing costs are estimated at 3,400 NIO/month)
- Charts below demonstrate how “other income” serves to smooth, somewhat, income over the course of the year. Additional study is needed to determine the other sources of income.

**Chart 3. Median monthly “other income”<sup>3</sup>**



**Chart 4. Total median monthly income**



### ***Dissavings and indebtedness***

This monthly shortfall between earnings and household expenditures (the costs of which are consistent with estimates from Andersen and Hernani-Limarino, 2017) contributes to dissavings and indebtedness. Comparable estimates

<sup>3</sup> The significant difference in December’s monthly income compared to the remainder of the year likely has to do with the payment of end-of-year pay bonuses equivalent to a month’s salary.

from elsewhere in the country are not readily available, but it is clear that borrowing is very common. It stands to reason that this level of borrowing contributes to long-term indebtedness.

- 95% report that monthly income does not cover monthly expenses
- 50% report spending savings as a result of member of households with CKDnt and, of those who used savings, 58% have done so within the last month
- 24% of households with CKDnt member have taken out a loan from a friend or family member to cover lost income
- 36% of households with CKDnt have taken out an interest-bearing loan to cover losses from CKDnt member, at an average interest rate 14%<sup>4</sup>
- 37% of households have received assistance other than money from friends and family members
- 84.5% report that they do not save money regularly
- 69% report difficulty in finding a place to borrow money
- 93% report that there is no formal source of financial assistance within the community
- 69% report receiving no formal financial support from any agency or organization or company
- 67% purchase food on credit, and have done so, on average, 5.5 days of the prior 7

### ***CKDnt Effects on household income***

Given that our sample was selected from households known to have, or have had, a member with CKDnt, it is not surprising that levels unemployment are exceptionally high, and that the large majority have experienced lengthy periods of unemployment. It is clear that CKDnt tends to remove afflicted individuals from the labor market, but it is instructive to consider that removal from the labor market has impacts that extend beyond the individual, and beyond the immediate problems generated by unemployment and illness. Household members who would not normally need to work tend to move into the labor market, and members in school, including minors, often drop out. The longer-term implications of this disinvestment in human capital development need further study.

- 85% of heads of households have experienced some period of unemployment in the last 6 months
- 21% of heads of household have been out of work between 1-5 years
- On average, 3 people in addition to the head of household depend on his/her income, with approximately 36%

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<sup>4</sup> For example, if a household borrows the total amount needed to cover monthly shortfall (1997 NIO) at 13.6% interest, they will pay 3250 NIO, approximately, in interest each year, assuming they are able to pay off the full balance each month, which seems unlikely.

of heads of household supporting 3-8 additional household members

- In 23% of households, neither parent is employed
- 81% of households report that someone in their household has stopped working within last 10 years because of CKDnt and, of those, 39% required a second household member to enter the labor force
- 15% of those households with a member who left the labor force also had a member drop out of school to enter the labor force
- 12% of households receive remittances and, of those that do receive remittances, 33% have received them within the month

### ***Medical care of household member with CKDnt***

Again, given that the initial screen for this survey was whether or not a household had a member with CKDnt, the indicators reflecting medical care and need are not surprising; the needs are high, but the availability of dialysis is limited by income.

- 85% receive medical attention
- 91% report that they are taking medication for kidney failure/disease
- 88% report that they pay out of pocket for medication
- Only 15.4% are currently receiving hemodialysis (none reported receiving peritoneal dialysis) and, of those who do, they receive treatment, on average, 3x/week, and 94% of these households receive social security
- 39% report receiving no assistance with CKDnt from either government, NGO, or company and, of those who feel that they do receive help with CKDnt, 75% report that it comes from the ex-worker association, Asochivida
- 95% report that they would participate in educational programs re: coping with CKDnt



### ***Meeting basic needs***

Concomitant with the economic impact of CKDnt on households, there is the expected impact on meeting basic needs that reductions in income entail, and the long-term impact on health that comes with these reductions. While the survey was not designed to capture longitudinal outcomes, the findings suggest what these outcomes may be—ill-health, stunting, psychological harm, and narrowing of mental and emotional “bandwidth” to deal with problems or

plan. In addition, while Asochivida is able to assist to a limited extent, it is not capable of meeting the food needs of the communities in full.

- 86% of households report that CKDnt has made meeting household needs more difficult
- 22% of households receive food assistance from government, an NGO, or an employer and, of those who receive food assistance, 62% receive it from Asochivida
- Of those who received food assistance, 78% received in the prior 12 months
- 88% report that in the prior week that they have had inadequate food and, on average, those who report that they have had insufficient food state that this has been the case for 4.8 days in the past week
- 37% report having borrowed food in the past week and, of those who borrowed food in the past week, they did so 4 days of the prior 7
- Only 5% report receiving emergency assistance from the government
- 77% report that there is no program in their community that provides food aid
- 20% collect wild food, hunt, or grow their own food, 2 times per week on average
- 15% have resorted to consuming stored seed, 5 days of the prior 7, on average
- 62% report that they have limited portion sizes, 5 of prior 7 days, on average
- 43% report that they reduce the adult portions so the children have more to eat, 5 of prior 7 days, and 40% have skipped a meal on average 3 days in the prior 7
- 97% report that there is no source of non-food items (e.g., dry goods, building materials, etc.) in their community
- 87% of those with a household member who has died from CKDnt report that they have received no assistance with burial expenses

## ***Self-efficacy and resilience***

Given the responses to other questions, it was somewhat surprising to find a high-level of self-efficacy and community resilience. By large margins, respondents stated that, in effect, their fate is in their hands, and that hard work pays off. This sentiment is perhaps belied by medical and economic outcomes evident in the survey responses but, nonetheless, respondents' attitudes regarding their ability to exert influence over their own lives are generally positive.

- 88% feel that hard work, rather than luck (12%) is key to success they, themselves, have had
- 81% report that they have not received any sort of vocational training

- 91% either agree or strongly agree that what they have they have because they worked hard for it
- In general (vs. opinions about their own lives), only 30% feel that success or failure is due to destiny; 70% feel each person is responsible for own success
- 62% either disagree or strongly disagree that their lives are controlled by more powerful people
- 80% either agree or strongly agree that one's life, in general, is determined by one's own actions
- 60% either disagree or strongly disagree that it isn't worthwhile to plan too far in advance
- 71% report that they would move to another place for a better life if they could, but 75% of them report that they can't afford to move, 17% report that they have nowhere to go, and 50% of them say they can't leave family and friends

## Outlook

The relatively strong sense of self-efficacy is tempered by expectations that there will be little improvement in their quality of life or general well-being. Moreover, the constant presence of CKDnt cases causes fear that the disease is unavoidable.

- 57% of households anticipate that their ability to meet household needs will become more difficult in 2020, but 90% are hopeful for their children's future
- 65% report either emotional or psychological damage to the family as a result of CKDnt. "It kills the dreams that we have a future." "There are now a lot of orphans who have to enter work early."

## Summary: descriptive statistics

Survey responses paint an interesting picture of those households affected by CKDnt; in general, households surveyed are less well-educated than the national average, earn considerably less than other rural workers, such as coffee bean pickers, and have a monthly income that falls far short of reported monthly expenses. This shortfall leads to borrowing from a range of sources, exhausting savings, and, generally, preventing them from growing savings. A substantial proportion of households are those with neither parent working and a smaller, but still seemingly large, proportion of households has had a child leave school to help bring in income. The vast majority claiming to need medical assistance with CKDnt do not receive it.

On the other hand, respondents report that they are, generally, of the belief that hard work and their own initiative are better predictors of their own, personal success than are fate and more powerful people. Nearly three-fourths report that they would move away for a better life, but also report that they either cannot afford to, have nowhere to go, and/or cannot leave their family and friends. Perhaps because they feel trapped in their current situation, a majority report that they expect life to become more difficult in 2020, but they are, nonetheless, hopeful for their children's futures.

The picture that emerges from this pilot examination of these two sub-populations is consistent with the picture presented by the whole population—total earnings is inadequate to meet their needs, except for a few households, but the majority believes that hard work contributes to success. Nonetheless, there is concern among most that earnings in 2020 will be worse than in 2019.



## **Discussion**

The study of the economic impact of CKDnt on households and communities is still in its infancy, but the preceding analysis from a small, purposive survey drawn specifically from households that have, or had, a member with CKDnt contains several potentially valuable contributions to the field. Some of these findings are intuitive: the survey respondents are less well-educated than the national average, earn less than other rural workers, and have a monthly income that falls well short of reported monthly expenses. Other findings, while also intuitive, are understudied: monthly income shortfalls among respondents lead to borrowing from a range of sources, exhausting savings, and preventing many of them, but not all, from adding to their savings. A substantial proportion of households are those with neither parent working and a smaller, but still seemingly large, proportion of households has had a child leave school to help bring in income.

Despite severe economic disadvantage, respondents report that they are, generally, of the belief that hard work and their own initiative are better predictors of their own, personal success than are fate and more powerful people. Nearly three-fourths report that they would move away for a better life, but also report that they either cannot afford to, have nowhere to go, and/or cannot leave their family and friends. Perhaps because they feel trapped in their current situation, a majority report that they expect life to become more difficult in 2020, but they are, nonetheless, hopeful for their children's futures.

Our comparison of lower- and higher-earning households is revealing in several respects: higher-earners are far more likely to borrow, but less likely to report having spent their savings due to CKDnt; despite fairly wide differences in mean earnings, both groups are nearly as likely to report that they have bought food on credit recently; and a significantly larger percent of lower-earners report saving some of their income than higher-earners. Lower-earners feel considerably stronger about being in control over what happens in their lives, but both groups attribute success in life to hard work, and both groups are equally optimistic about their children's futures.

## Next steps

Our study raises several interesting questions that merit additional study. First, and most important, a study that expands on this purposive survey to include non-CKDnt households is clearly needed for a picture of how CKDnt households differ from non-CKDnt households. This study was intended as a feasibility study to determine whether and to what extent we could collect reliable data from these communities. We are now confident that we can. Second, additional information on sources of other income, on the extent to which the need for dialysis exceeds the availability, and on the level of household debt and how it is retired is needed. Third, a follow-on survey of these communities needs to address the fact that the work done by most of the members of these communities is being mechanized, displacing significant numbers of workers. And we need to study how these workers cope with the loss of employment—do they relocate, are they hired by other sugar mills, do they take up another line of work, etc.?

What is clear, however, is that CKDnt affects not only the worker himself and his household, but also future generations as opportunities for their children diminish, or are closed off entirely, as a result of the disease. Further research into this aspect of the disease is also needed.

## Glossary of terms

1. Total income: for the purposes of this study, we combined reported earnings with reported other income to generate a measure for total income
2. Dis-savings: spending savings to cover expenses not otherwise covered by total income
3. Basic needs: for the purposes of this study, we define basic needs as housing, food and water, clothing, and medicine
4. Self-efficacy: the sense that one is able to live a life of one's own choosing
5. Resilience: the ability to endure hardship and retain a sense of self-efficacy

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