# Monitoring and Evaluation NEWS

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# The Basic Necessities Survey (BNS)

What is it? | How does it work? | Potential limitations | Further analyses | Research which informed the design | Reports on its use | Related methods | pdf copy of this webpage |

## What is it?

The Basic Necessities Survey (BNS) is a method of measuring poverty that is:

- Simple to design and implement. The results are easy to analyse and to communicate to others
- Democratic in the way that it identifies what constitutes poverty and who is poor
- Rights-based, in its emphasis on entitlement

The Basic Necessities Survey (BNS) builds on and adapts earlier methods that have been used to measure poverty by measuring deprivation and which emphasise the "consensual" definition of poverty (See below). However, the BNS is innovative in the way in which (a) individual poverty scores and (b) a poverty line are both generated from respondents' survey responses.

Basic necessities are democratically defined as those items in a survey instrument that 50% or more of respondents agree "*are basic necessities that everyone should be able to have and nobody should have to go without*" Items are weighted for importance according to the percentage of respondents who say an item is a basic necessity (i.e. between 50% and 100%). Respondents' poverty (BNS) scores are based on the sum of the weightings of the basic necessities they have, as a

percentage of the total they could have if they had all basic necessities. The identification of a poverty line is described below.

The BNS combines two aspects of peoples lives: (a) their material conditions, (b) their perceptions of these material conditions. Both have consequences for the quality of their lives.

The BNS was developed by Rick Davies in 1997, and implemented by ActionAid Vietnam in 1997, 1998, 1999 and by the Pro Poor Centre (a Vietnamese NGO) in 2006 (See below). Its design built on earlier work by poverty researchers in the UK and Sweden (See below)

# How does it work? The basics of the Basic Necessity Survey (BNS)

Caveat: The BNS is a survey method, but this section does not explain how to do surveys. It only explains the central part of the BNS method

## AT THE PLANNING STAGE

1. Develop a *menu* of things, activities and services that *could be* considered as basic necessities.
    1. In the BNS, "*Poverty is defined as the lack of basic necessities. Basic necessities are those things that everyone should be able to have and no one should have to go without*"
        - This is a rights-oriented view, focusing on perceived entitlements.
    2. Ideally the items to be included on this menu should be identified through consultation with a range of people, including potential survey respondents. Small group discussions may be the best means of generating potential menu items.
    3. Examples of things, activities and services could include: having a bicycle, going on a holiday for a week once a year, and being able to obtain vaccination for one's children at a health centre in one's district.
        - The items on the menu should be easily and reliably observed, not vague or subjective, like "high self-esteem", or "a sustainable livelihood"

- They can include things, activities and services available within the respondent's community as well as being available within the respondent's house. For example, a health centre that is open seven days a week.

4. The items on the menu should range from those that almost everyone might agree are basic necessities to those that few will think are basic necessities, but perhaps more people will think so in the future. For example items like a television or a mobile phone.

## DURING THE SURVEY

1. In household survey ask people three questions
    1. "*Which of these items do you think are basic necessities, things that everyone should be able to have and no one should have to go without*"
        - This can be done by reading items out one at a time, or by asking people to sort cards into two piles, with one menu item written on each card
    2. "*Which of these items does your household have?*"
        - This can also be done by reading items out one at a time, or by asking people to sort cards into two piles, with one menu item written on each card
    3. "*Compared to other people in this x area* (same as area sampled), do you think your household is poor or not poor?"
        - This third question is optional. It is useful because it helps to define a poverty line using the BNS survey results, but it is not essential. More on this below...

## AFTER THE SURVEY

1. For each item, calculate the percentage of the respondents who say that item is a basic necessity
    1. Exclude those items where less than 50% of people said it was a basic necessity
        - This is a democratic approach. A decision by majority rule. Most people did not consider these items as basic necessities.

2. For all the rest give each item a weighting, which is equal to the percentage of people who said it is a basic necessity. This percentage could range from 50% to 100%.

3. Add up the weightings for all these items. This figure would represent the raw BNS score for an imagined household that had everything on the menu that has been democratically defined as a basic necessity.

2. For each actual household, add up the weightings for all the items on the menu (now defined as basic necessities) that they said they had. This is their raw BNS score

1. Convert this raw score into a percentage of the maximum possible raw score (step 1.3 above)

1. A household with a low percentage would have very few basic necessities, and a household with a high percentage would have most of them

3. Summarise the results

1. Calculate the average BNS % score for all the surveyed households. This describes the average depth or degree of poverty.

2. Make a graph showing the frequency distribution of BNS (%) scores, to visualise the distribution of poverty. Typically many will be poor in some respect (lacking a few basic necessities, and a few will be poor in many respects (lacking most basic necessities). However, the specific shape of the distribution will vary from community to community, and over time.

4. Optional: Identify a poverty line, defined as a specific BNS (%) score. This enables a head–count measure of poverty, which can complement the depth–of–poverty measure which 3.1 and 3.2 provide.

1. Identify the percentage of respondents who said they were poor (we will call this x%).

2. Move from the bottom of the curve describing the distribution of BNS % scores, (step 3.2 above) up to the point where now x% of the respondents are on the bottom half of the curve. Read off the BNS % score at that point. This BNS % score can now used as the poverty line. People below it are defined as poor.

3. This method assumes that while individual respondents may make errors of judgement about their poverty status, these errors are equally distributed. Some poor people class themselves as not–poor, and some not–poor describe themselves as poor. There are two other assumptions that can be made about the distribution of judgement errors, which are

discussed in the report on the 2006 BNS in Vietnam. The following graph uses the 2006 data.



**Distribution of BNS scores, Can Loc District 2006**
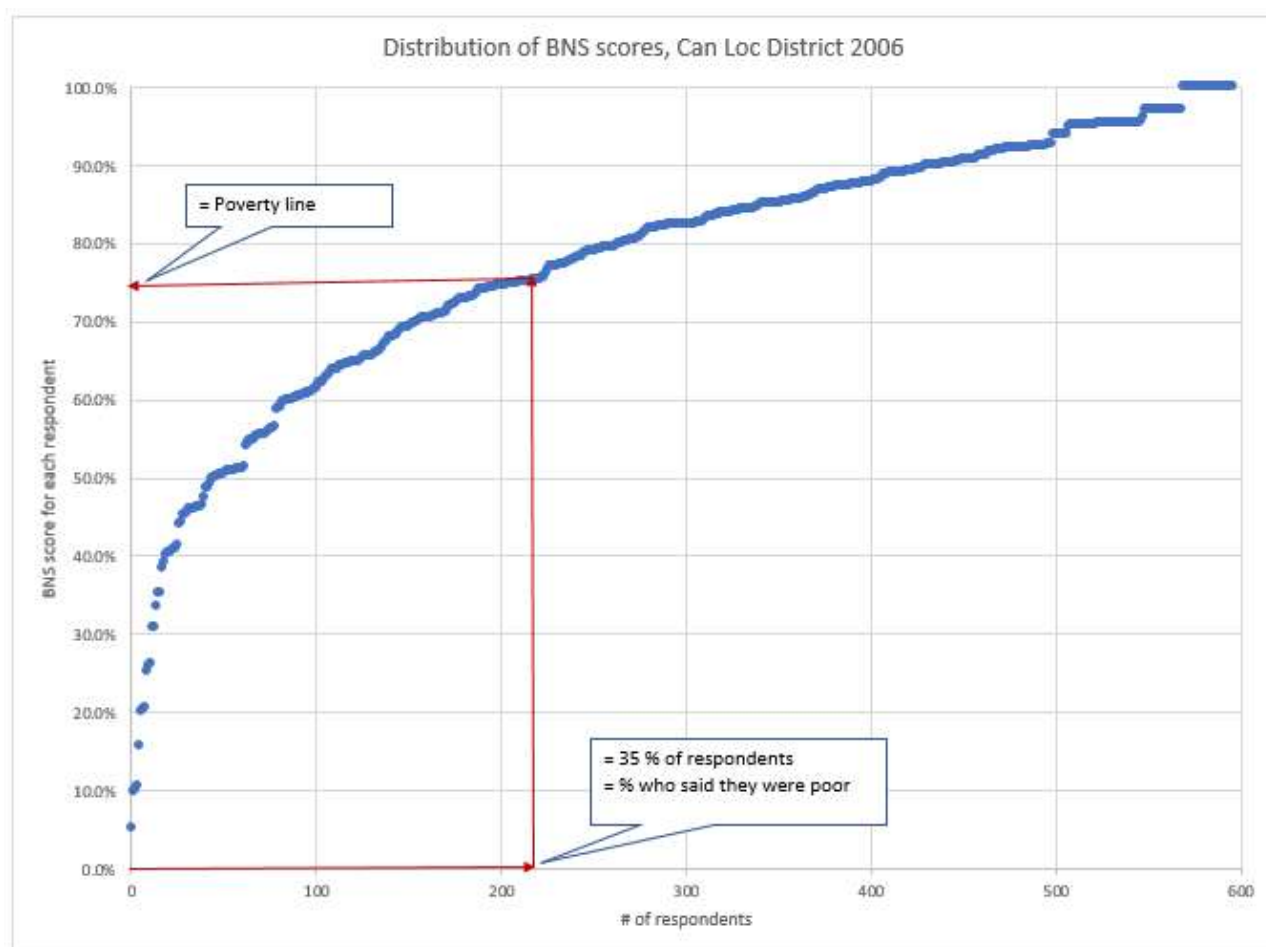
## Potential limitations

1. **Do different sections of the community have different views about what things are basic necessities? For example, women may have different views to men?**
   - High levels of agreement were found across age groups and gender in the UK. In South Africa high levels of agreement were found across age groups, gender, urban/rural, families with and without children – statistically significant correlations at level of $p<0.01$. See the graph below showing men versus women's judgements of basic necessities in the 2006 Vietnam (Can Loc) BNS.
   - In societies without pervasive mass media, or with more fragmented and isolated communities, there might be less consensus on expectations.

## 2. Do people's views of what are basic necessities reflect their bounded realities? If they dont know how others live, how can they have such expectations?

- In the UK the expectations of poorest respondents were not significantly different from those of the richer respondents
- In South Africa "If people were only influenced by their own circumstances then there would not be so much agreement about what the necessities in life are between the different subgroups in the population" (Wright, Noble, Magasela, 2007)

## 3. Do people limit their view of what are necessities when they cant achieve them?

- In South Africa "Almost all respondents who lacked a socially perceived necessity said that they didn't have it and couldn't afford it. That is, there is very little evidence of people reporting that they had chosen not to possess any of the socially perceived necessities." (Wright, Noble, Magasela, 2007)



Gender differences in views of basic necessities
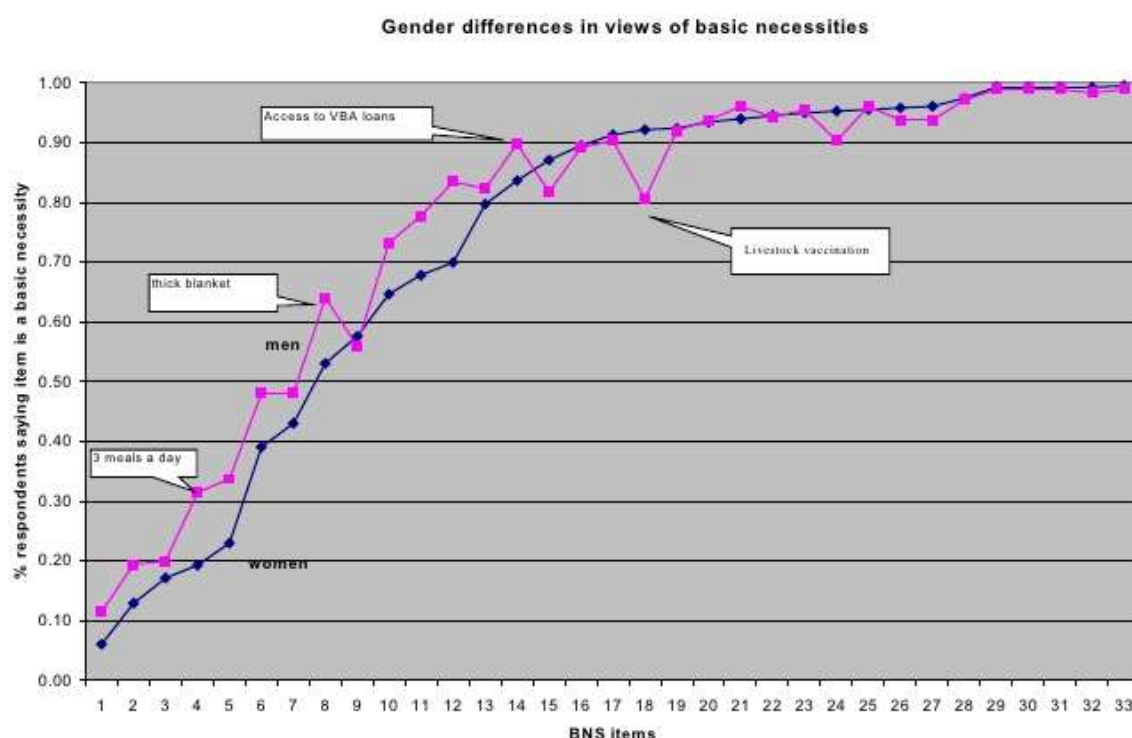
Correlation between men and women's views of what are basic necessities = 0.99

# Further analyses

Please note: These are not an essential part of the BNS process. They are simply extra options for analysis of BNS data, once collected.

## MEASURING INEQUALITY

The BNS scores for each household can easily be sorted by size then cut and pasted into an online Gini Coefficient calculator, such as http://shlegeris.com/gini  When the Vietnam 2006 BNS data were used the online calculator generated the following result:
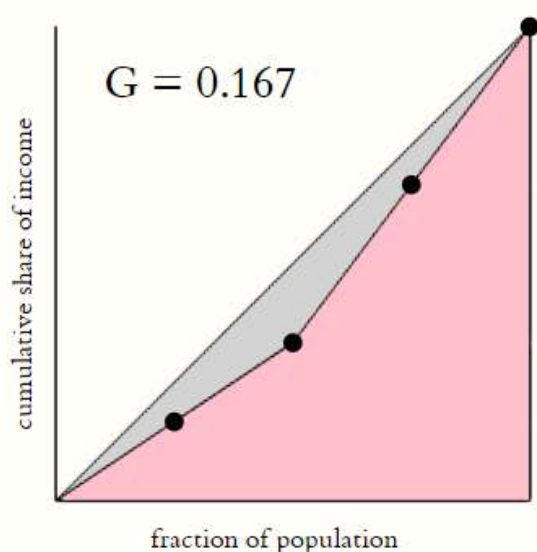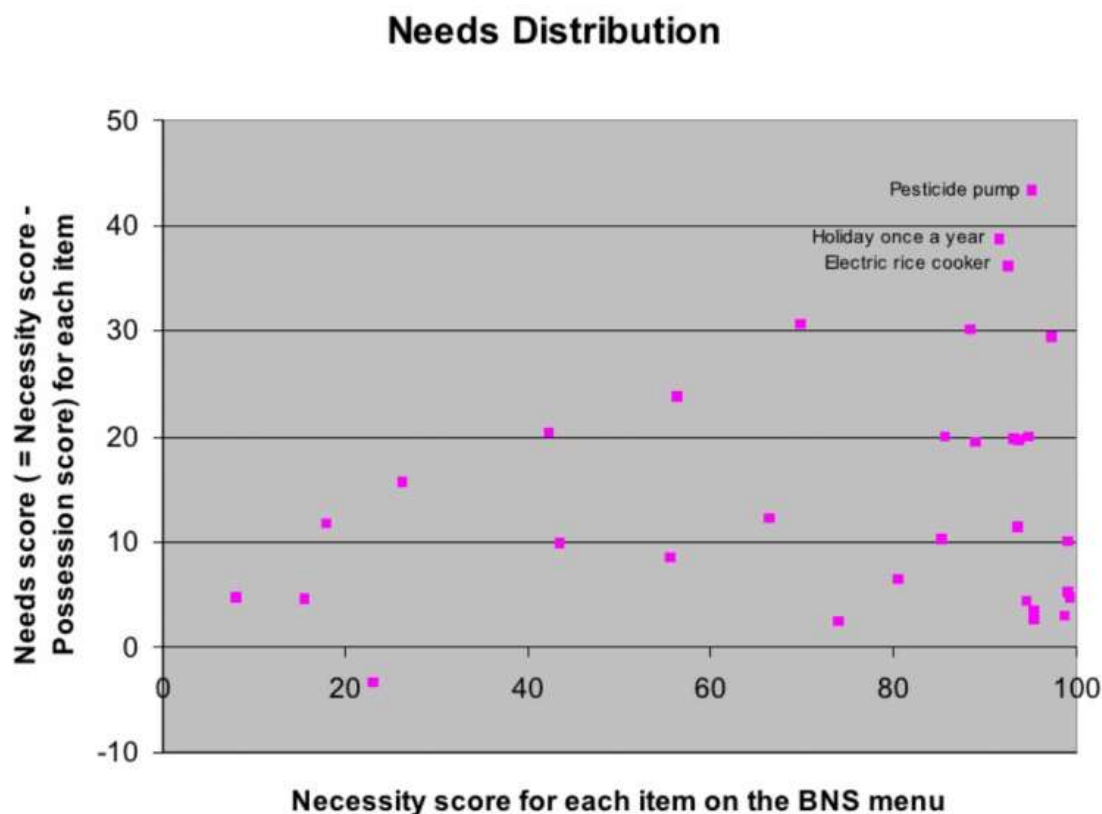


The Gini coefficient G is the area of the grey section of the Lorenz curve divided by the sum of the red and grey areas. If everyone has the same income, then it will be 0. If one person has all the money, it will be 1.

The 2006 BNS survey was of a rural community in central Vietnam. While poor by national standards there were not big differences in household wealth within the community.  The Gini coefficient for the country as a whole in the same year was 0.358

## IDENTIFYING NEEDS

The following graph uses data from the 1997 Vietnam (Can loc) BNS. The X axis represents the proportion of respondents who said an item was a basic necessity. Needs scores for individual items = (the necessity score for that item) – (proportion of respondents possessing that item)

**Needs Distribution**



Needs score ( = Necessity score - Possession score) for each item

Necessity score for each item on the BNS menu

## DEVELOPING SIMPLER PREDICTIVE MODELS OF POVERTY STATUS

There may be times when development project staff want to quickly identify the poverty status of a household, without going through a whole survey process. For example, to check the entitlement of a household to be included in an activity, or to check whether their status has changed as a result of inclusion. In these situations, all that may be needed is knowledge of whether a household is poor or not, not a more specific measure of their degree of poverty.

One way of doing this is to use a much shorter checklist, which can be derived from prior survey findings like the 2006 Vietnam BNS. One way of constructing such a checklist is in the form of a Decision Tree. A series of questions are asked and depending on the answers, the household concerned is classified as poor or not poor. The issue then is how to design such a Decision Tree. One means of doing so is to use a Decision Tree algorithm, usually found within more generic data mining packages such as RapidMiner. I have written a detailed account of the uses of Decision Trees as representations, and how to develop them, here. A Decision Tree algorithm can be used to find associations between survey responses, for example between specific items a household said they have, and

their overall BNS poverty score. It then represents these associations in the form of a Decision Tree.

Here below is a Decision Tree model produced by RapidMiner. Each branch is a different predictive model, that applies to a different sub-set of households. They can be read as follows:

- If a household does not have a "toilet made of stone" and does not have "an electric rice cooker" then it will be poor. When this prediction rule is applied to the BNS dataset 112 households were actually poor and 15 were not
- If a household does have a "toilet made of stone" and does have "a thick blanket" then it will be not poor. When this prediction rule is applied to the BNS dataset 334 households were not poor and 59 were poor

That mix is in effect a probability statement that respondents with those possessions will be poor or not. For example, at the end of the far right branch, the mix of 334 and 59 households means there is an 85% (334/393) likelihood that households with that branch's combination of possessions will not be poor
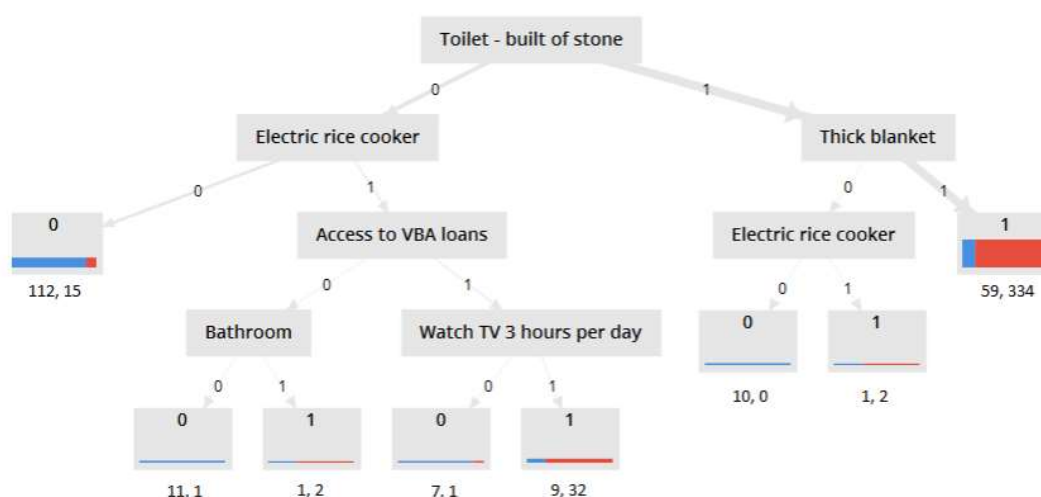


We can also measure the overall accuracy of the whole tree, made up of 8 different models (branches). This Decision Tree has an overall accuracy of 85%, with 3% False Positives (classified as poor but not really poor) and 12% False Negatives (classified as not-poor but not really not-poor).

## NETWORK VISUALISATION OF RELATIONSHIPS

Households surveyed with the BNS can be seen as connected to each other by similarity, to the extent that they possess the same sets of items on the BNS menu. Clusters of such households can be visualised and identified using social network analysis (SNA) software, such as UCINET&Netdraw.

For this visualisation below I imported the Vietnam 2006 BNS data in a matrix form, where rows = respondents representing households and columns = items on the BNS menu, with cell contents of 0 or 1 representing the row household's possession, or lack of, the column item. I then carried out these steps: (a) converting this two mode matrix into a one mode matrix showing households x households, where cell values represented the number of the same items they both possessed; (b) calculated the maximum number of items households shared with others; (c) displayed the matrix as a network diagram using NetDraw, showing only those relationships with the maximum number of shared items on the menu used in this BNS survey. These households represented about 18% of the households surveyed.
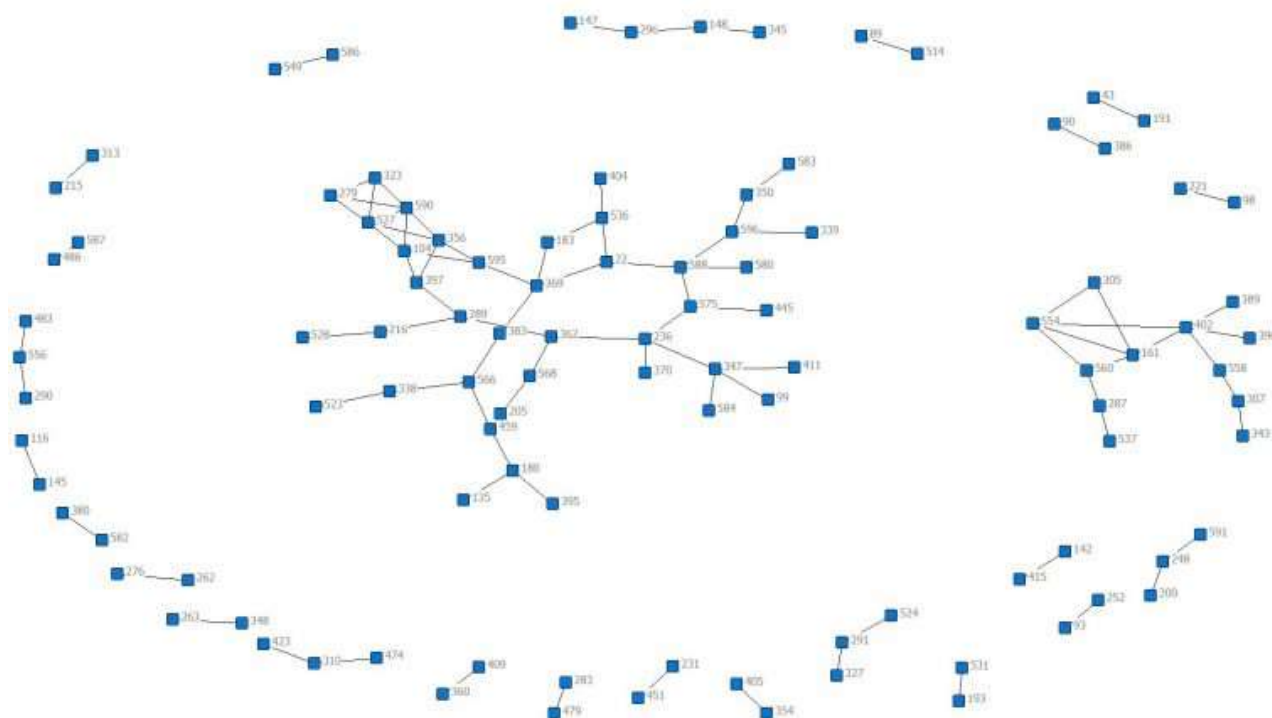


A second type of network visualisation is also possible using BNS data.This would show households linked by shared views of what are and are not basic necessities. The literature that does exist on BNS and other "consensual" measures of poverty indicates that gender and other differences do not make a big difference to what people perceive as necessities. But these are single factor theories. It may be that combinations of respondent attributes are associated with differences in

perceptions of necessities. A network visualisation is one way of potentially finding such groups. Cluster analysis algorithms are another way.


## Research which informed the design of the BNS

These documents informed the design of the BNS in 1997 :

1. Mack, J., and Lansley, S. (1985) Poor Britain. Allen and Unwin. London. This reports on a 1983 survey.
   - "Only those items seen as a necessity by a majority of the population are classed as a 'necessity'".  The BNS adopted this feature.
   - The survey asked people to distinguish between items they lacked because they could not afford and those they lacked because they did not want them. The BNS does not make this distinction.
   - They defined poverty as 'an enforced lack of socially perceived necessities". Households lacking three or more necessities were deemed poor because deprivation on this scale was judges as likely to be enforced rather than chosen. The BNS does not use this criteria.
2. Frayman, H (1991) Breadline Britain 1990s. Booklet by London Weekend Television. This repeats the same survey in 1990, using the same definition and measurement approach
3. Gordon, D., Pantazis, C (eds) (1997) Breadline Britain 1990s. Ashgate Publishers Ltd.
   UK. This reports further analysis of the 1983 and 1990 surveys
4. Hallerod, B. (1994) A New Approach to the direct consensual measurement of poverty. Social Policy Research Centre Discussion Paper No. 50. University of New South Wales.
   - Hallerod constructed a "Proportional Deprivation Index" uses weightings from all items, including those seen as basic necessities by less than 50% of respondents. The BNS also constucts an index, but only uses those items seen as necessities by 50% or more of the respondents.
5. Hallerod, B. (1994) Poverty in Sweden: A New Approach to the Direct Measurement of Consensual Poverty. UMEA Studies in Sociology No. 106. Umea University. Umea. [no longer available on the internet?]

Note: The BNS combines the 50+% criteria used by the British surveys with the proportional deprivation index used in the Swedish survey. The method used to define a poverty line is unique to the BNS.

## Reports on its use

### IN VIETNAM

1. [The 2006 Basic Necessities Survey (BNS) in Can Loc District, Ha Tinh Province, Vietnam](A report by the Pro Poor Centre and Rick Davies.)
   - There is also an [online PowerPoint presentation](of the results of this survey,) 2007
2. [Beyond Wealth Ranking: The Democratic Definition and Measurement of Poverty] A Briefing Note prepared by [Rick Davies] (CDS Swansea for the ODI Workshop "*Indicators of Poverty: Operational Significance*", held on Wednesday, 8 October 1997 in London.
3. [The Basic Necessities Survey:. the experience of ActionAid Vietnam]. Rick Davies and William Smith, Hanoi, Vietnam September, 1998.

### ELSEWHERE

1. Cool Earth, [What is a basic necessity]? 2017
2. WCS Madagascar, [THE MAMABAY LANDSCAPE/SEASCAPE], 2017 The BNS is being used to monitor the impact of activities on household well-being.
3. Travers et al, [Taking action against wildlife crime in Uganda], IIED, 2017. "A key socio-economic characteristic we investigated was household poverty, which is commonly linked to wildlife crime. We measured poverty using two approaches for each household: a method called the basic necessity survey (BNS) (Davies and Smith 1998) and a list of indicators used by the Uganda Bureau of Statistics to calculate a Ugandan multi-dimensional poverty index score (UBOS 2014a). We included some items in the basic necessity survey specifically so that our data would be comparable with the multi-dimensional poverty index score, facilitating comparisons with national poverty assessments"

4. Ibbett H (2015) [Understanding the impact of local people on Bengal florican populations in central Cambodia.](#) Imperial College London. "The [BNS] Poverty Index score was normally distributed and positively correlated with the Wealth Ranking Score (Kendall's Tau, tau 0.4906151, p-value < 2.2e–16), demonstrating that both estimations of wealth were consistent. Results presented from here onwards use the Poverty Index Score as an indicator of wealth, as this was considered the more robust measure of wealth"

5. Mariel Harrison's [Penetrating the Impenetrable: Establishing profiles and motivations of resource users at Bwindi Impenetrable  National Park, Uganda](#), 2013. "Two different methods of measuring wealth were used; the Basic Necessities Survey (BNS) (Davies 2013), and direct observation of household indicators of wealth...The observational wealth score was normally distributed, and was positively correlated with the BNS (Kendall's tau = 0.128, p = 0.009)"

6. Tom Clement's PhD Thesis "[Money for Something? Investigating the effectiveness  of biodiversity conservation interventions in the Northern Plains of Cambodia](#)" Livelihood and poverty assessments focused on objective measures that could be verified visually  (e.g. the type of house or owning a mini-tractor) rather than collecting data on incomes, which would be easy to falsify. Consumption data was also not collected, due to the problems with recall periods (Wilkie, 2007) and because obtaining reliable consumption data would necessitate multiple visits to the survey households in different seasons. Instead, the Basic Necessities Survey (BNS; Davies & Smith, 1998; Pro-Poor Centre & Davies, 2006) was used as a measure of household poverty. The BNS calculates an index of poverty for every household in the sample, relative to a locally-derived definition of poverty, and is based on previous methods that have been used in both developed and developing countries (Mack & Lansley, 1985; Hallerod, 1994; Noble et al., 2008, for  further details see below)"

7. David Wilkie's ["Assessing the impact of conservation and development on rural livelihoods:  Using a modified Basic Necessities Survey (BNS) in experimental and control communities](#)", 2012. "A Guide to using a modified Basic Necessities Survey (BNS) to assess whether actions to conserve biodiversity or actions to alleviate poverty influence local families livelihoods either positively or negatively."

8. [The Purus Project Full Monitoring Plans A Tropical Forest Conservation Project in Acre, Brazil](#) (2012) by Brian McFarland from CarbonCo. "CarbonCo,

Carbon Securities, and Moura & Rosa also conducted a Basic Necessities Survey (BNS) in March 2012 among the sixteen communities. Essentially, a focus group was created among the Project Proponents and the community to identify the top 25 assets or services which

were believed to be basic necessities or things that no one from the local communities should have to live without. The Project Proponents then individually surveyed each of the 16 communities and only those assets or services which at least 50% of the communities deemed a basic necessity were included in the final calculations of a poverty index and poverty score"

9. Tony Kaseke, Crop production Engineer in Democratic Republic of Congo, is using a version of the BNS in **2011**, using guidance provided by the World Conservation Society. Tony looked at the degree of inequality in surveyed communities by constructing a Lorenze Curve from the BNS data.

10. *Social and Biodiversity Impact Assessment (SBIA) Manual for REDD+ Projects PART 2 – Social Impact Assessment ToolBox* by Michael Edwards, September **2011**. This has a section on the use of the BNS (section 8, pages 54-58)>

11. The Katine VSLA Project Baseline Survey Report. "This report was prepared for the CARE SUSTAIN project in Uganda, by Margaret Kemigisa, a Ugandan Consultant, in December 2008. The SUSTAIN project is promoting Village Savings and Loans (VSL methodology in Katine Sub County, Soroti district... The survey aimed at establishing the overall poverty and welfare status of VSLA clients/house holds & non VSLA clients (control group), livelihood sources of different social groupings of VSLA and non VSLA clients, socio-economic characteristics of the groups that benefit from the Katine VSLA project and financial services available in Katine VSLA operational areas....The survey employed the basic necessities approach and used a control group of Non VSLA clients in Kamuda sub-county; it covered a total of 116 VSLA clients and 116 Non VSLA clients. Suggested contact for further information: " Barnes, Helen" barnes@careinternational.org

- The main limitation of this use of the BNS was the inclusion of items that were not clearly defined and so could not be reliably observed to be present or absent by different observers . For example, "education", "markets", "enough food", "drugs" etc. Unfortunately, the survey analysis did not include calculation of BNS scores for each household, and any examination of the distribution of BNS scores across households. Not really an example of good practice.

12. FREEDOM FROM HUNGER *Mali Poverty Outreach Study of the Kafo Jiginew and Nyèsigiso Credit and Savings with Education Programs* Anastase Nteziyaremye and Barbara MkNelly May 2001 RESEARCH PAPER NO. 7. See section 1.0 Clients' Relative Poverty by Financial Product: Basic Needs Survey (pages 9–11 on the method, pages 17-25 on the results and pages 81–83 for the BNS survey format). The BNS survey was used to find out if a specific credit package (CEE) was better at reaching relatively poorer households than the credit unions' other financial products. 498 randomly selected clients from different financial products of two credit union networks were interviewed. The method and results are both well described.

## MANUALS

1. Wilkie, D., Wieland, M. and Detoeuf, D. 2015. A guide to the modified Basic Necessities Survey: Why and how to conduct BNS in conservation landscapes. WCS, New York, USA
2. REDD and Livelihoods, WCS, 2013. Includes 8 slides explaining how to do a BNS
3. *Social Assessment of Conservation Initiatives: A Review of Rapid Methodologies*. 2010. IIED. See 13 references to/discussions of BNS, via Google Books key word search
4. USAID Wildlife Conservation Society Technical Manual 4 (2007) Household surveys – a tool for conservation design, action and monitoring. Pages 8–11

## OTHER MORE RECENT DOCUMENTS OF INTEREST

1. FAHMY E, SUTTON E and PEMBERTON S (2015) Are We All Agreed? Consensual Methods and the 'Necessities of Life' in the UK Today. Journal of Social Policy 44(3): 591–610. DOI: 10.1017/S0047279415000033.
2. Lutfun Nahar Lata, Md. Abdul Woha, Relative Deprivation in Dhaka City: A Case Study of Dhanmondi, 2010. "This study was undertaken to replicate Gordon et al.'s Poverty and Social Exclusion (PSE) Survey in Britain, 1999 in the context of Bangladesh"
3. Findings from the Indicators of Poverty and Social Exclusion Project: A Profile of Poverty using the Socially Perceived Necessities Approach (2008) Gemma

Wright. Department of Social Development, Republic of South Africa. NB: Wright et al use Hallerod's Proportional Deprivation Index, which includes items that less than 50% of the respondents see as necessities. A poverty line cut off point on the PDI score distribution was identified using self-reported poverty status (as with the BNS)  but using a method described as "quite technically complex".

4. Noble MWJ, Wright GC, Magasela WK, et al. (2008) ~~Developing a Democratic Definition of Poverty in South Africa~~. Journal of Poverty 11(4): 117–141. DOI: 10.1300/J134v11n04_06.

5. *Towards a Democratic* Definition *of Poverty: Socially Perceived Necessities in South Africa* (2007) Gemma Wright, Michael Noble and Wiseman Magasela. Cape Town: HSRC Press.

6. Consensual Poverty in Britain, Sweden and Bangladesh:A Comparative Study Ahmed, A.I.M.U. Bangladesh e-Journal of Sociology, 2007, 4(2), pp.1–22. "The study focuses on the construction of a normative deprivation index for Bangladesh, which in the traditions of Townsend (1979), Mack and Lansley (1985, 1992), Halleröd (1994) and Gordon et al. (2000), underscores items the lack of which would constitute poverty. …The data for this study come from a sample survey of 1,914 respondents, 1,207 males and 707 females, from all over Bangladesh in 2000"

# Related methods

1. The use of weighted checklists to assess the performance of services having more than one dimension to their performance. Such as health centres or schools. These can combine measures of expectations and actual performance, and combine both in an aggregate performance score

2. Schreiner's Simple Poverty Scorecard (SPS). See my comparison of the SPS with the BNS

   • The Grameen Foundation has subsequently developed and widely promoted, the  Progress Out of Poverty Score, based on Schreiner's method

     • There has been some questioning about the applicability of the Progress out of Poverty Index, particularly from NGOs. "For instance, there is only one PPI Index for India, yet everyone knows that poverty lines are much different in the North vs. South and rural vs. urban"

3. BBC report of a recent study by Joseph Rowntree Foundation (JRF) includes a video of people in UK classifying items as essentials, or non-essentials. See also another BBC item on the same report, called the Basics of Britain

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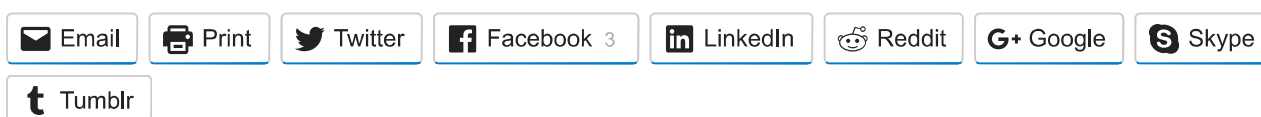
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