

Liberia

EquityTool: Update released November 1, 2016

The EquityTool has been updated based upon new source data. The original version is no longer active but is available upon request.

Previous version released December 9, 2015



Source data: [Liberia DHS 2013](#)

of survey questions in full wealth index: 36

of variables in full index: 114

of survey questions in EquityTool: 11

of variables in EquityTool: 12

Questions:

| | Question | Option 1 | Option 2 | Option 3 |
|----|---|----------------------------|-----------------------|----------|
| Q1 | Does your household have ... a generator? | Yes | No | |
| Q2 | ... a cupboard? | Yes | No | |
| Q3 | ... chairs? | Yes | No | |
| Q4 | ... a television? | Yes | No | |
| Q5 | Does any member of this household own a watch? | Yes | No | |
| Q6 | Does any member of this household have a bank account? | Yes | No | |
| Q7 | What type of toilet do you use in your household? | No facility / bush / field | Other type of toilet | |
| Q8 | What is the main source of energy for lighting in this household? | Electricity | Other lighting source | |

| | | | | |
|-----|--|---------------------|----------------|--------------------|
| Q9 | What type of fuel does your household mainly use for cooking? | Fire coal /charcoal | Wood | Other type of fuel |
| Q10 | What is the main material of the floor in your household? | Earth / sand / mud | Other material | |
| Q11 | What is the main material of the exterior walls in your household? | Mud and sticks | Other material | |

Technical notes:

The standard simplification process was applied to achieve high agreement with the original wealth index. Kappa was greater than 0.75 for the national and urban indices. Details on the standard process can be found [in this article](#). The data used to identify important variables comes from the [factor weights](#) released by ICF.

Level of agreement:

| | National Population (n=9,333) | Urban only population (n=3,450) |
|-----------------|----------------------------------|------------------------------------|
| % agreement | 90.0% | 86.1% |
| Kappa statistic | 0.844 | 0.782 |

Respondents in the original dataset were divided into three groups for analysis – those in the 1st and 2nd quintiles (poorest 40%), those in the 3rd quintile, and those in the 4th and 5th quintiles (richest 40%). After calculating their wealth using the simplified index, they were again divided into the same three groups for analysis against the original data in the full DHS. Agreement between the original data and our simplified index is presented above.

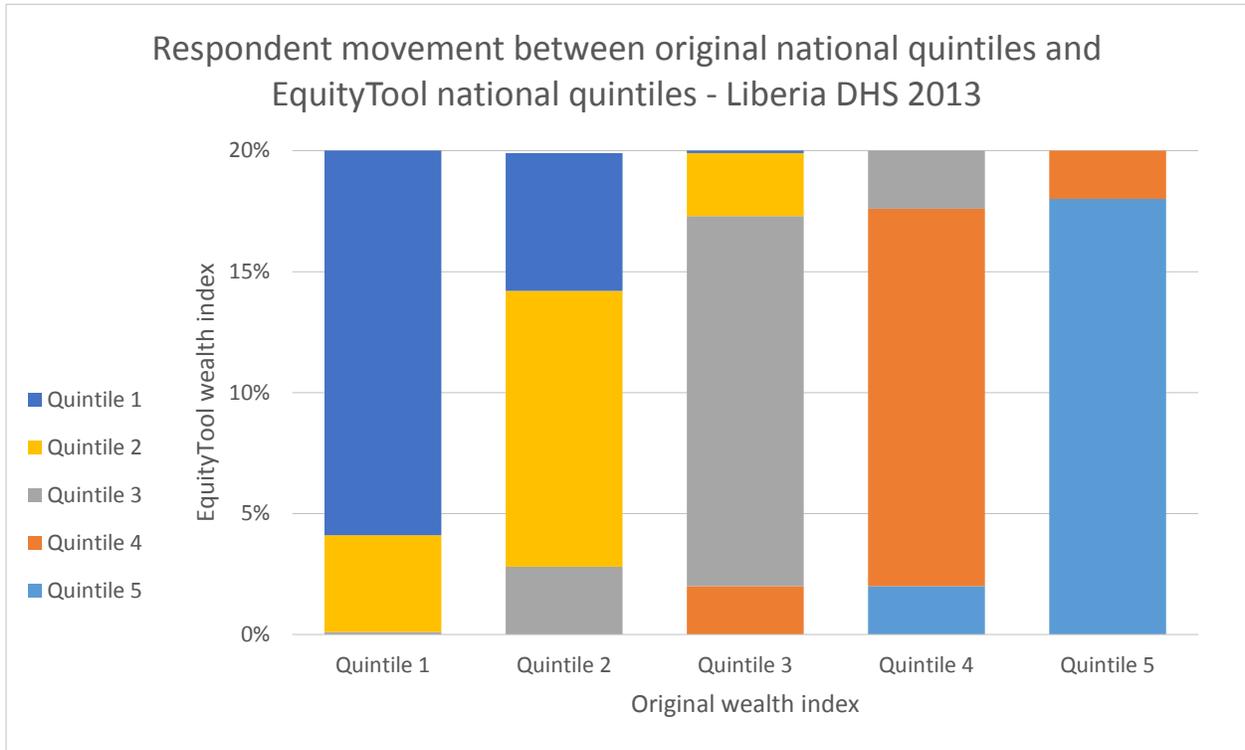
What does this mean?

When shortening and simplifying the index to make it easier for programs to use to assess equity, it no longer matches the original index with 100% accuracy. At an aggregate level, this error is minimal, and this methodology was deemed acceptable for programmatic use by an expert panel. However, for any given individual, especially those already at a boundary between two quintiles, the quintile the EquityTool assigns them to may differ to their quintile according to the original DHS wealth index.

The graph below illustrates the difference between the EquityTool generated index and the full DHS wealth index. Among all of those people (20% of the population) originally identified as being in the poorest quintile, approximately 79.8% are still identified as being in the poorest quintile when we use the simplified index. However, approximately 19.9% of people are now



classified as being in Quintile 2. From a practical standpoint, all of these people are relatively poor. Yet, it is worthwhile to understand that the simplified index of 11 questions produces results that are not identical to using all 36 questions in the original survey.

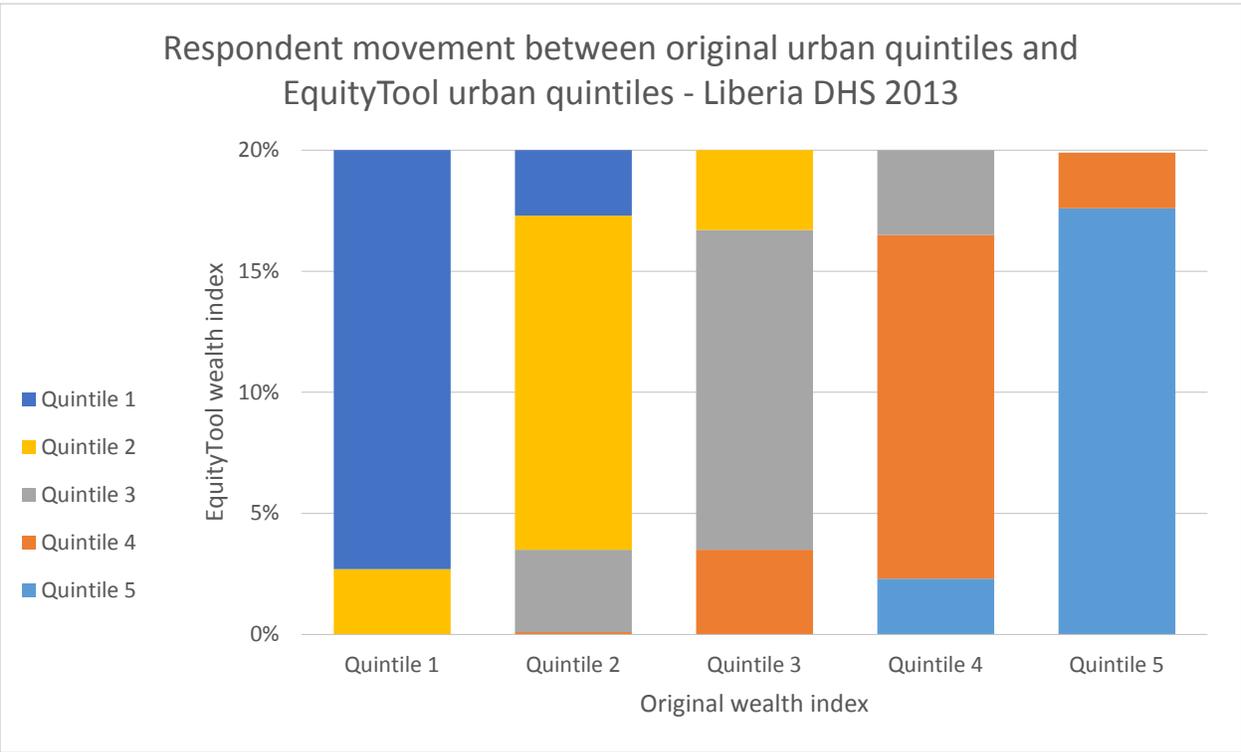


The following table provides the same information on the movement between national quintiles when using the EquityTool versus the original DHS wealth index:

| | | EquityTool National Quintiles | | | | | Total |
|---------------------------------|------------|-------------------------------|------------|------------|------------|------------|--------|
| | | Quintile 1 | Quintile 2 | Quintile 3 | Quintile 4 | Quintile 5 | |
| Original DHS National Quintiles | Quintile 1 | 15.95% | 3.98% | 0.07% | 0.00% | 0.00% | 20.00% |
| | Quintile 2 | 5.76% | 11.40% | 2.84% | 0.00% | 0.00% | 19.99% |
| | Quintile 3 | 0.11% | 2.56% | 15.36% | 1.97% | 0.00% | 20.00% |
| | Quintile 4 | 0.00% | 0.00% | 2.41% | 15.59% | 2.01% | 20.01% |
| | Quintile 5 | 0.00% | 0.00% | 0.01% | 2.00% | 17.99% | 20.00% |
| | Total | 21.82% | 17.94% | 20.68% | 19.56% | 20.00% | 100% |

The following graph provides information on the movement between urban quintiles when using the EquityTool versus the original DHS wealth index:





The following table provides the same information on the movement between urban quintiles when using the EquityTool versus the original DHS wealth index:

| | | EquityTool Urban Quintiles | | | | | Total |
|------------------------------|------------|----------------------------|------------|------------|------------|------------|--------|
| | | Quintile 1 | Quintile 2 | Quintile 3 | Quintile 4 | Quintile 5 | |
| Original DHS Urban Quintiles | Quintile 1 | 17.35% | 2.66% | 0.00% | 0.00% | 0.00% | 20.01% |
| | Quintile 2 | 2.71% | 13.80% | 3.40% | 0.11% | 0.00% | 20.02% |
| | Quintile 3 | 0.02% | 3.28% | 13.19% | 3.45% | 0.04% | 19.98% |
| | Quintile 4 | 0.00% | 0.06% | 3.53% | 14.22% | 2.26% | 20.07% |
| | Quintile 5 | 0.00% | 0.00% | 0.00% | 2.26% | 17.65% | 19.91% |
| | Total | 20.08% | 19.80% | 20.13% | 20.04% | 19.94% | 100% |

Data interpretation considerations:

1. This tool provides information on relative wealth – ‘ranking’ respondents within the national or urban population. The most recent available data from the WorldBank



indicates that 68.6% of people in Liberia live below \$1.90/day¹. This information can be used to put relative wealth into context.

2. People who live in urban areas are more likely to be wealthy. In Liberia, 34% of people living in urban areas are in the richest national quintile, compared to only 2% of those living in rural areas².
 - a. If your population of interest is predominantly urban, we recommend you look at the urban results to understand how relatively wealthy or poor they are, in comparison to other urban dwellers.
 - b. If the people you interviewed using the EquityTool live in rural areas, or a mix of urban and rural areas, we recommend using the national results to understand how relatively wealthy or poor they are, in comparison to the whole country.
3. Some counties in Liberia are wealthier than others. It is important to understand the country context when interpreting your results.
4. In most cases, your population of interest is not expected to be equally distributed across the five wealth quintiles. For example, if your survey interviewed people exiting a shopping mall, you would probably expect most of them to be relatively wealthy.

Changes from the previous EquityTool

We released an EquityTool on December 9 2015 which compared user data to a benchmark of 2011. A new source survey, the DHS 2013 was recently released, and allows us to benchmark results to a more recent population. This is important, because wealth generally increases over time, and comparing your respondents to an old benchmark population will lead to over-estimating the relatively wealthy in your survey. The new EquityTool was generated using the exact same methodology as the previous version, and in generating the new EquityTool, no attempt was made to account for the fact that a previous version existed. In other words, we did not explicitly try to keep the same questions or response options as the previous tool.

For those who have not previously conducted an EquityTool based study in Liberia, the remainder of this section is not particularly relevant. For those who have used the previous EquityTool, you may be interested to know how the two versions compare.

| | Previous | Current |
|-------------------------------------|----------|----------|
| Source Data | 2011 MIS | 2013 DHS |
| # of questions in EquityTool | 14 | 11 |
| # of questions in full wealth index | 31 | 36 |

¹ From povertydata.worldbank.org, reporting Poverty headcount ratio at \$1.90/day at 2011 international prices.

² From the Liberia DHS 2013 dataset household recode, available at <http://dhsprogram.com/>



| | | |
|--|-----------------------------------|-----------------------------------|
| Kappa statistic (EquityTool vs full wealth Index) for 3 groups | National – 0.857 Urban – 0.788 | National – 0.844 Urban – 0.782 |
|--|-----------------------------------|-----------------------------------|

Practical considerations for users of the previous EquityTool

Comparing the results of surveys that used the previous EquityTool against those that use the current EquityTool is difficult. It will not always be clear whether any difference is because of actual differences in the wealth level of the respondents or because the EquityTool has changed.

The technical comparison section below, particularly the 3rd comparison, illustrates how quintile results compare when using the previous EquityTool and the current one. Generally, there is a partial shift down in quintiles when using a more recent EquityTool. In other words, the current EquityTool will usually put some respondents into a lower quintile than the previous one would.

It is generally best to use the current version of the EquityTool, since it will give a more accurate quintile estimates. If you are currently collecting data with the previous tool, it is best to continue to use the previous tool. Note that if you have created a survey in the EquityTool web application using the previous EquityTool, that survey will continue to use the previous EquityTool.

If conducting a follow-up survey to a baseline that used the previous EquityTool, and the most important result is change from the baseline, it may be preferable to continue to use the previous EquityTool for comparability. If you need to do this, please contact us at equitytool@m4mgmt.org.

Technical comparison between the current and previous EquityTool

All of the questions and response options for the previous EquityTool are found in the new source data (DHS 2013). This makes comparison between the two versions of the EquityTool, and two different data sources, easier.

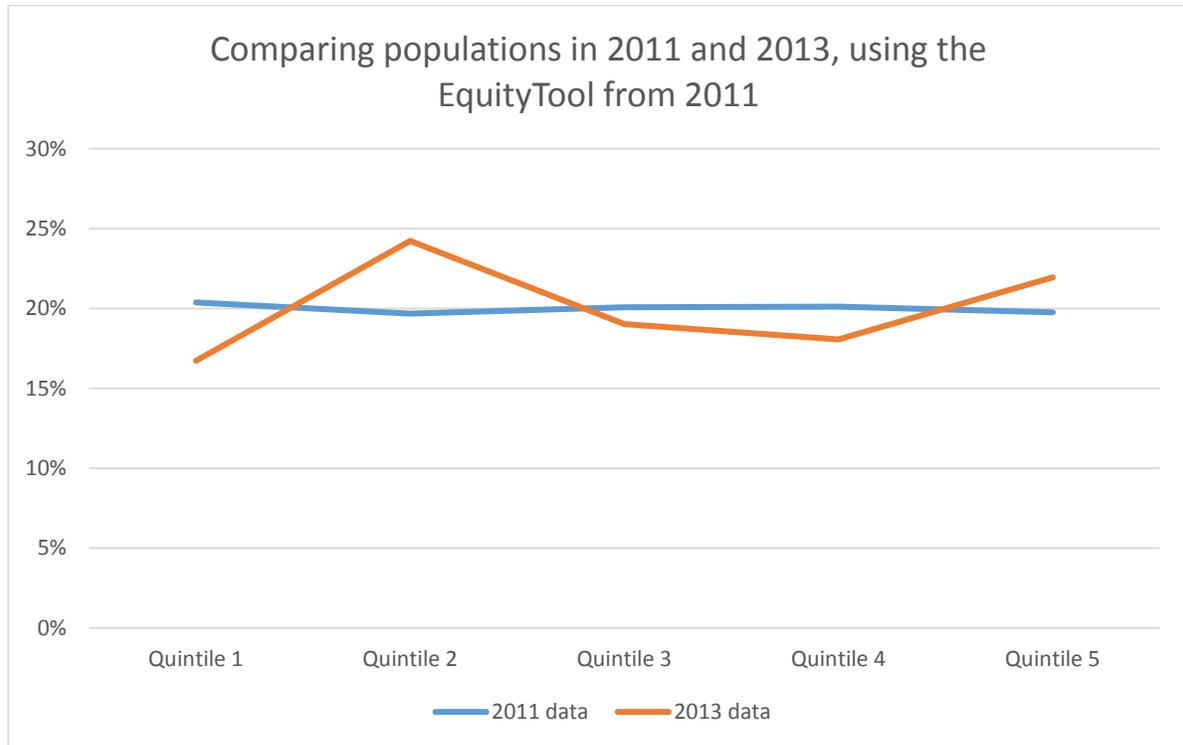
The comparison will be assessed in 3 different ways, described below.

1. Using the same 14 questions and response options, and scoring system as in the previous EquityTool, with two different benchmark populations.

This analysis simulates results if the only thing which changes is the benchmark against which respondents are compared. In the 2 years between the two source data studies, more people have acquired assets that are indicative of wealth. In the graph below, the previous EquityTool, derived from the 2011 MIS, is applied to the 2011 MIS data and the newer 2013 DHS data. In 2011, the proportion of households in each of the 5 quintiles is



very close to 20%. The discrepancy seen is due to the use of a shorter questionnaire than used by the DHS survey originally. However, by 2013, the distribution has changed with more people in quintiles 2 and 5.



We do not use the previous questions and weights, because over time, the population has changed. Thus, comparing your respondents to this skewed distribution becomes challenging.

2. Keeping the same 14 questions and response options as the previous EquityTool, but calculating scores based upon the 2014 data.

As an alternative, one might wish to use the same questions as the previous tool, but update the weighting. This seems reasonable, as the relative contribution of each asset towards overall wealth may have changed over time. Using new weights, but the same variables as the previous tool, we can see how well the resulting quintiles compare to the quintiles based on the full wealth index created by ICF.

The table below presents the agreement between the quintiles created from the full wealth index in the 2013 dataset and the quintiles created by the previous EquityTool, the previous EquityTool variables with updated weighting, and the current EquityTool. As with the agreement statistics above, these figures are for the bottom 2 quintiles, middle quintile and top 2 quintiles.



| | 2011 EquityTool | 2011 questions, 2013 scoring | 2013 EquityTool |
|------------------|-----------------|------------------------------|-----------------|
| Agreement | 90% | 90% | 90% |
| Kappa | 0.835 | 0.851 | 0.845 |

The previous EquityTool achieved a high level of agreement with the full wealth index quintiles even in the 2013 DHS dataset. This was improved by updated the scoring. However, the 2013 EquityTool achieved a similar level of agreement with three fewer questions, making it the most efficient option.

3. Comparing the previous 14 questions and scores, and the new EquityTool (11 questions) The table below shows how the previous and current EquityTool compare, using the same population. This is analogous to a comparison of the two versions of the EquityTool on the population you surveyed using our previous EquityTool.

| | | Previous EquityTool Quintiles | | | | | |
|------------------------------|------------|-------------------------------|------------|------------|------------|------------|--------|
| | | Quintile 1 | Quintile 2 | Quintile 3 | Quintile 4 | Quintile 5 | Total |
| Current EquityTool Quintiles | Quintile 1 | 17.00% | 3.00% | 0.00% | 0.00% | 0.00% | 20.00% |
| | Quintile 2 | 3.26% | 14.45% | 2.26% | 0.01% | 0.00% | 19.99% |
| | Quintile 3 | 0.03% | 2.29% | 15.24% | 2.44% | 0.00% | 20.00% |
| | Quintile 4 | 0.00% | 0.00% | 2.40% | 15.31% | 2.30% | 20.01% |
| | Quintile 5 | 0.00% | 0.00% | 0.07% | 2.68% | 17.25% | 20.00% |
| | Total | 20.29% | 19.74% | 19.97% | 20.44% | 19.56% | 100% |

The cells within the table indicate how respondents are categorized, if measured using the two different tools. Of those who are categorized as quintile 1 (poorest) using the current tool, 85% of them would have been considered in quintile 1 in the previous tool (see the first row). The table shows that the previous tool would provide largely similar results to the current version. The main benefit of using the current version is that it uses a shorter and more efficient questionnaire.

Metrics for Management provides technical assistance services to those using the EquityTool, or wanting to collect data on the wealth of their program beneficiaries. Please contact equitytool@m4mgmt.org and we will assist you.

