

Malawi

EquityTool: Update released 26th September 2017

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 The original version is no longer active but is available upon request.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: [DHS 2015-16](#)

of survey questions in full wealth index: 39

of variables in full index: 141

of survey questions in EquityTool: 10

of variables in EquityTool: 12



Questions:

	Question	Option 1	Option 2	Option 3
Q1	Does your household have: ... electricity?	Yes	No	
Q2	... a radio?	Yes	No	
Q3	... a television?	Yes	No	
Q4	... a bed with a mattress?	Yes	No	
Q5	... a sofaset?	Yes	No	
Q6	Does any member of this household own: a mobile phone?	Yes	No	
Q7	Does any member of this household have a bank account?	Yes	No	
Q8	What is the main material of the floor in your household?	Earth/sand	Cement	Other floor material
Q9	What is the main material of the roof in your household?	Thatch / palm leaf	Metal	Other roof material
Q10	What type of fuel does your household mainly use for cooking?	Wood	Other type of fuel	

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:

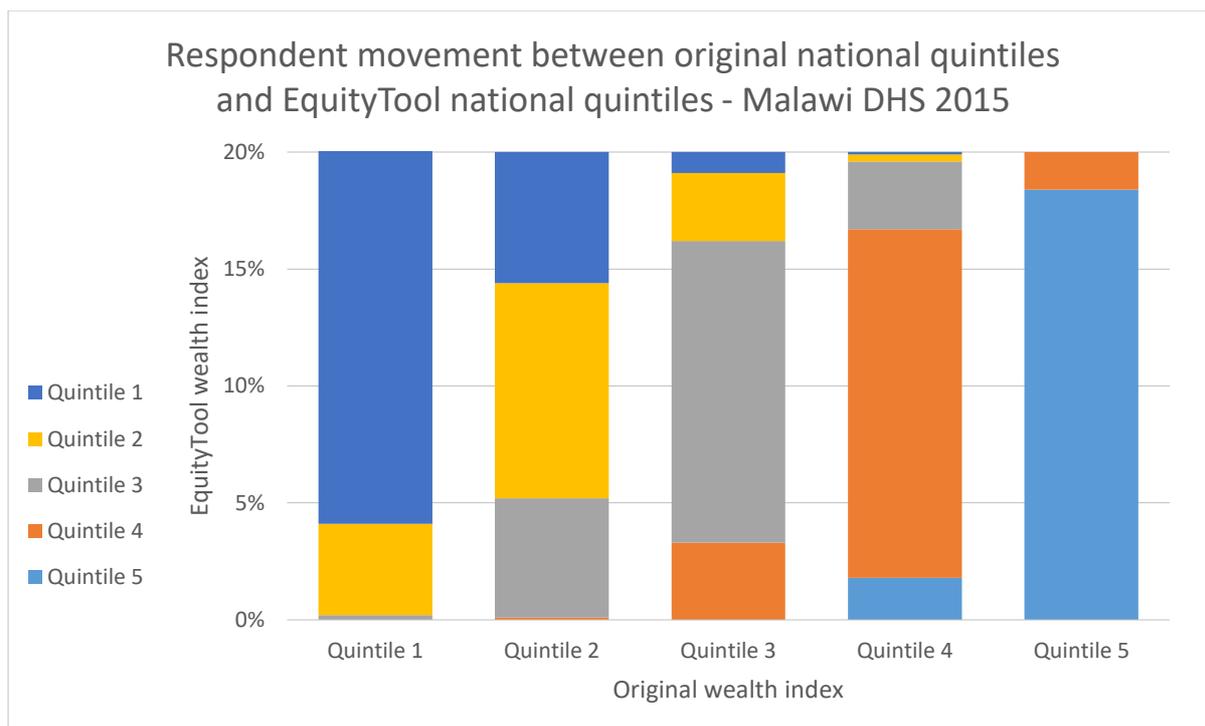
	National Population (n=26,361)	Urban only population (n=4,991)
% agreement	84.3%	88%
Kappa statistic	0.755	0.813

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.

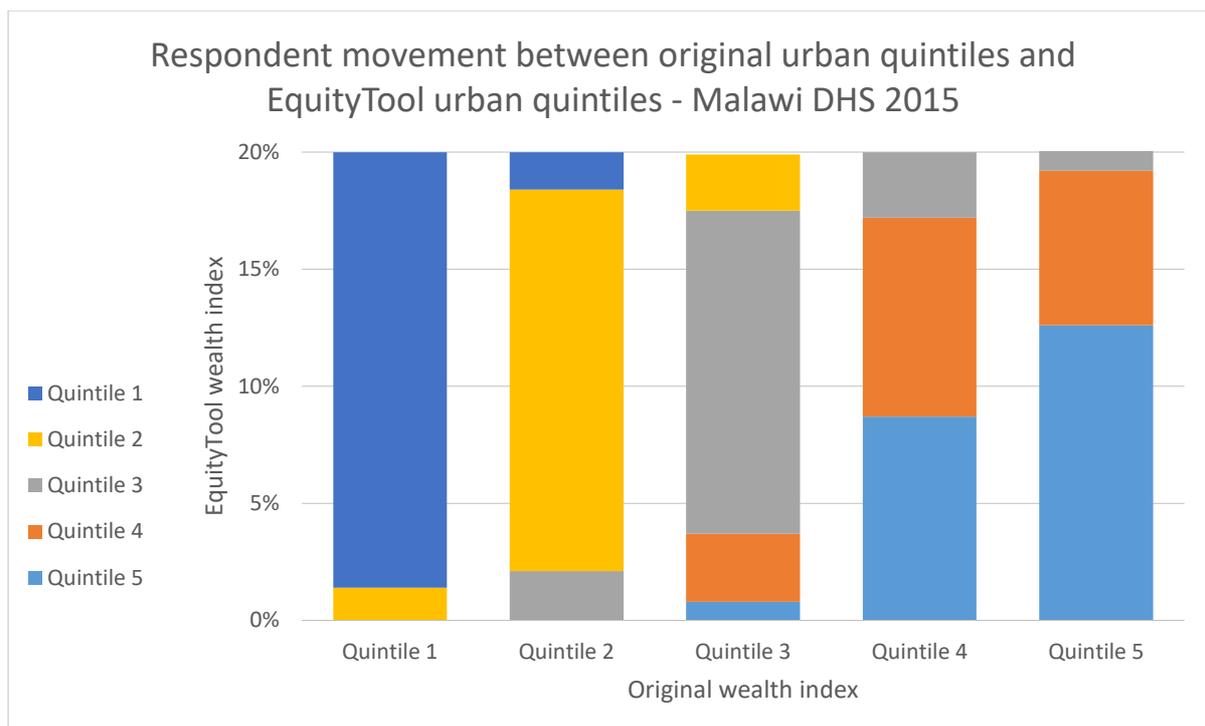
The graph below illustrates the difference between the EquityTool generated index and the full DHS wealth index. Among all of those people (20% of the population) originally identified as being in the poorest quintile, approximately 80% are still identified as being in the poorest quintile when we use the simplified index. However, approximately 20% 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 10 questions produces results that are not identical to using all 39 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					
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Original DHS National Quintiles	Quintile 1	16.00%	3.90%	0.20%	0.00%	0.00%	20.00%
	Quintile 2	5.60%	9.20%	5.10%	0.10%	0.00%	20.00%
	Quintile 3	0.90%	2.90%	12.90%	3.30%	0.00%	20.00%
	Quintile 4	0.10%	0.30%	2.90%	14.90%	1.80%	20.00%
	Quintile 5	0.00%	0.00%	0.00%	1.60%	18.40%	20.00%
	Total	22.50%	16.30%	21.10%	19.80%	20.20%	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					
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Original DHS Urban Quintiles	Quintile 1	18.60%	1.40%	0.00%	0.00%	0.00%	20.00%
	Quintile 2	1.60%	16.30%	2.10%	0.00%	0.00%	20.00%
	Quintile 3	0.00%	2.40%	13.80%	2.90%	0.80%	20.00%
	Quintile 4	0.00%	0.00%	2.80%	8.50%	8.70%	20.00%
	Quintile 5	0.00%	0.00%	0.90%	6.60%	12.60%	20.00%
	Total		20.20%	20.10%	19.60%	18.00%	22.10%

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 70.9% of people in Malawi live below \$1.90/day[1]. 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 Malawi, 75% of people living in urban areas are in the richest national quintile, compared to only 10.7% of those living in rural areas[2].
 - 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 districts in Malawi 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 2010. A new source survey, the DHS 2015-16 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 Malawi, 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	DHS 2010	DHS 2015-16
# of questions in EquityTool	17	10
# of questions in full wealth index	21	39
Kappa statistic (EquityTool vs full wealth Index) for 3 groups	National – 0.755	National – 0.755
	Urban – 0.909	Urban – 0.813

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 using the previous tool, it is best to continue to use the previous tool. However, if you have already started data collection, it is best to continue to use the previous tool to ensure consistency in your dataset. 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

Not of the questions and response options for the previous EquityTool are found in the new source data (DHS 2015-16). This makes comparison between the two versions of the EquityTool, and two different data sources, more difficult. Specifically, the previous EquityTool included separate options for unburnt and burnt bricks whereas the later DHS 2015 survey only includes a 'bricks' option. Where this has affected the analysis, we have noted it below.

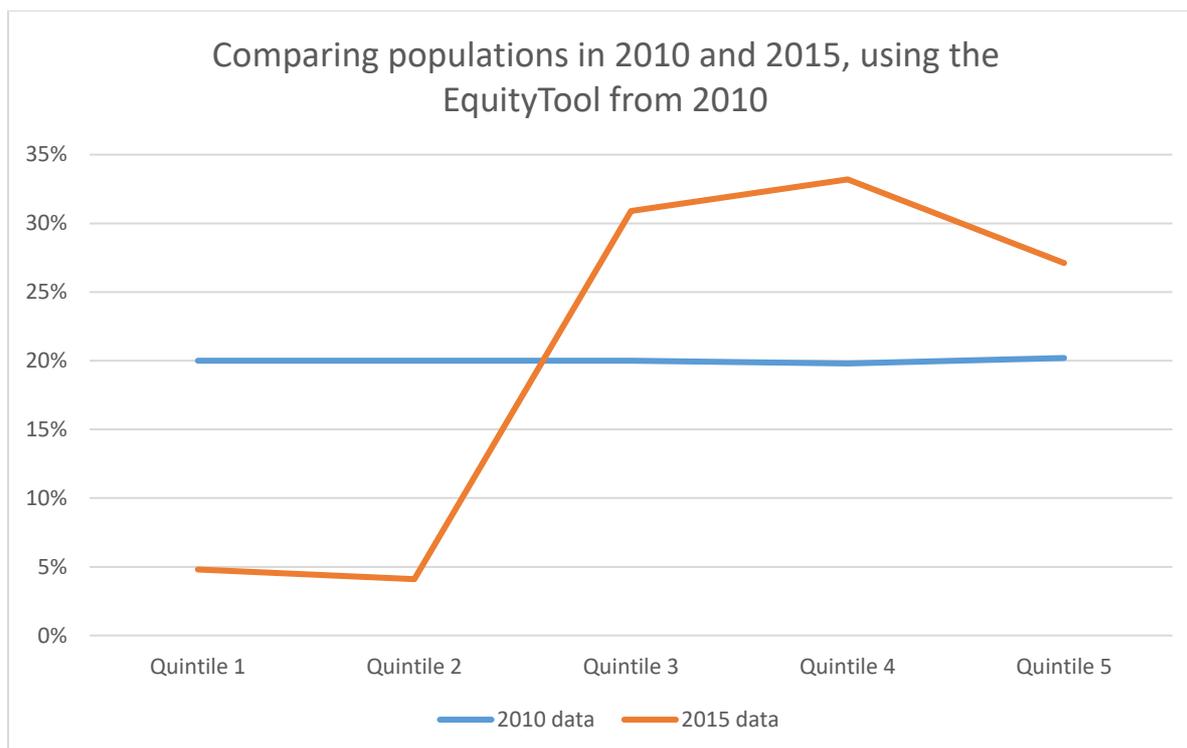
The comparison will be assessed in 3 different ways, described below.

1. Using the same 17 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 5 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 2010 DHS, is applied to the 2010 DHS data and the newer 2015-16 DHS data.

Since the 2015 DHS did not include separate 'unburnt bricks' and 'burnt bricks' options, a weighted average of the scores for these variables was applied to the 'bricks option'.

In 2010, the proportion of households in each of the 5 quintiles is very close to 20%. However, by 2015-16, the distribution is skewed heavily towards the wealthy. People become wealthier overall.



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

2. Keeping the same 17 questions and response options as the previous EquityTool, but calculating scores based upon the 2015-16 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.

Since the new wealth index does not use the variable 'shares toilet with other households', there was no score to use for this question from the older tool. Also, the score for 'bricks' was used in place of the separate scores for 'unburnt bricks' and 'burnt bricks' that were used in the previous tool.

The table below presents the agreement between the quintiles created from the full wealth index in the DHS 2015-16 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.

	2010 EquityTool	2010 questions, 2015 scoring	2015 EquityTool
Number of questions	17	16 (sharing toilet question was excluded)	10

Agreement	52%	83%	84.3%
Kappa	0.271	0.733	0.755

The current EquityTool has the best agreement with the full wealth index quintiles and is the only one that exceeds our minimum kappa statistic of 0.75, as well as using fewer questions. The previous tool, even when the scoring is updated, falls short of this standard. The reason for this difference is because these 17 questions are no longer the best predictors of the overall wealth distribution.

3. Comparing the previous 17 questions and scores, and the new EquityTool (10 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	4.4%	2.0%	15.7%	0.5%	0.0%	22.5%
	Quintile 2	0.3%	1.8%	11.4%	2.7%	0.0%	16.3%
	Quintile 3	0.0%	0.2%	3.5%	17.2%	0.1%	21.1%
	Quintile 4	0.0%	0.0%	0.2%	12.5%	7.1%	19.8%
	Quintile 5	0.0%	0.0%	0.0%	0.3%	19.9%	20.2%
	Total	4.8%	4.1%	30.9%	33.2%	27.1%	100.0%

The rightmost column indicates that the current EquityTool divides the population into 5 roughly equal groups. The bottom row shows that using the older EquityTool does not divide the population into equal quintiles – it puts more people into the higher quintiles. 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 using the current tool, only a fifth of them would have been considered in the poorest quintile in the previous tool (see the first row). Similarly, for those currently categorized as in the third quintile, more than 80% would have previously been categorized as being in the fourth quintile. If you had used the previous EquityTool, you can expect that with the current version, your respondents will look slightly more poor. This is not incorrect, but rather reflects the reality that we are measuring them against a more accurate benchmark.

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.

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

[2] From the Malawi DHS 2015-16 dataset household recode, available at <http://dhsprogram.com/>
