Tanzania

EquityTool: Update released April 3, 2017
The EquityTool has been updated based upon new source data. The original version is no longer active but is available upon request.
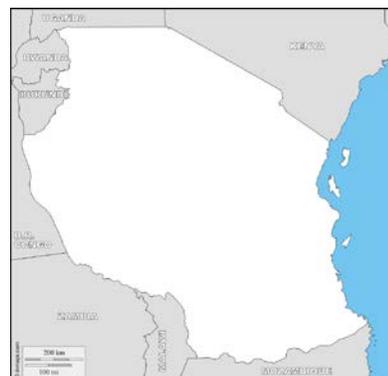**Previous version: released December 9, 2015**

Source data: Tanzania DHS 2015

# of survey questions in full wealth index: 33
# of variables in full index: 127

# of survey questions in EquityTool: 10
# of variables in EquityTool: 14

Questions:

	Question	Option 1	Option 2	Option 3
Q1	Does your household have…Electricity?	Yes	No	
Q2	… A television?	Yes	No	
Q3	…A radio?	Yes	No	
Q4	…An iron?	Yes	No	
Q5	Does any member of this household have a bank account?	Yes	No	
Q6	What is the main material of the floor of your dwelling?	Earth/Sand/Dung	Cement/Concrete	Other
Q7	What is the main material of the exterior walls of your dwelling?	Cement blocks	Other	
Q8	What is the main material of the roof of your dwelling?	Iron Sheet	Grass/Thatch/Palm Leaf/Mud	Other

Q9	What type of fuel does your household mainly use for cooking?	Firewood	Charcoal	Other
Q10	What is the main source of energy for lighting in the household?	Electricity	Battery/Solar powered Flashlight or Lamp	Other

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:

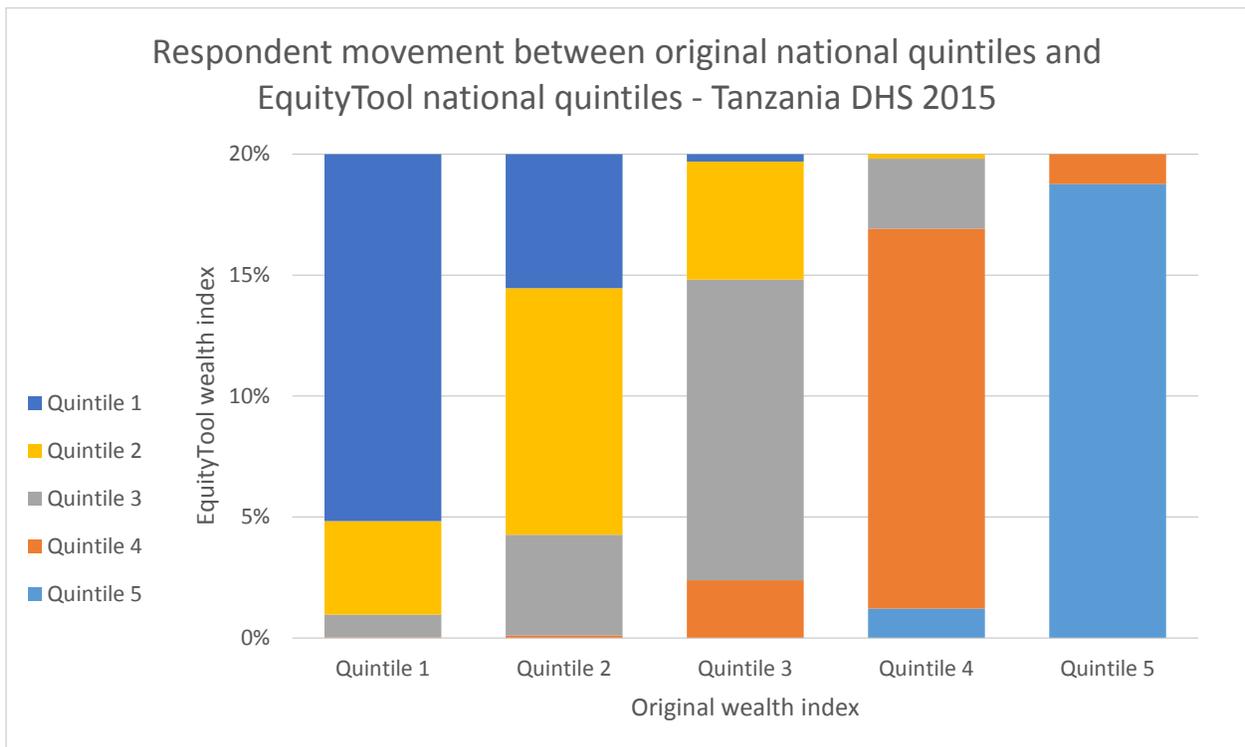|	National Population (n=12,563)	Urban only population (n=3,634)
% agreement	84.1%	85.8%
Kappa statistic	0.752	0.779

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 15.2% are still identified as being in the poorest quintile when we use the simplified index. However, approximately 3.9% 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 10 questions produces results that are not identical to using all 33 questions in the original survey.

Respondent movement between original national quintiles and EquityTool national quintiles - Tanzania DHS 2015
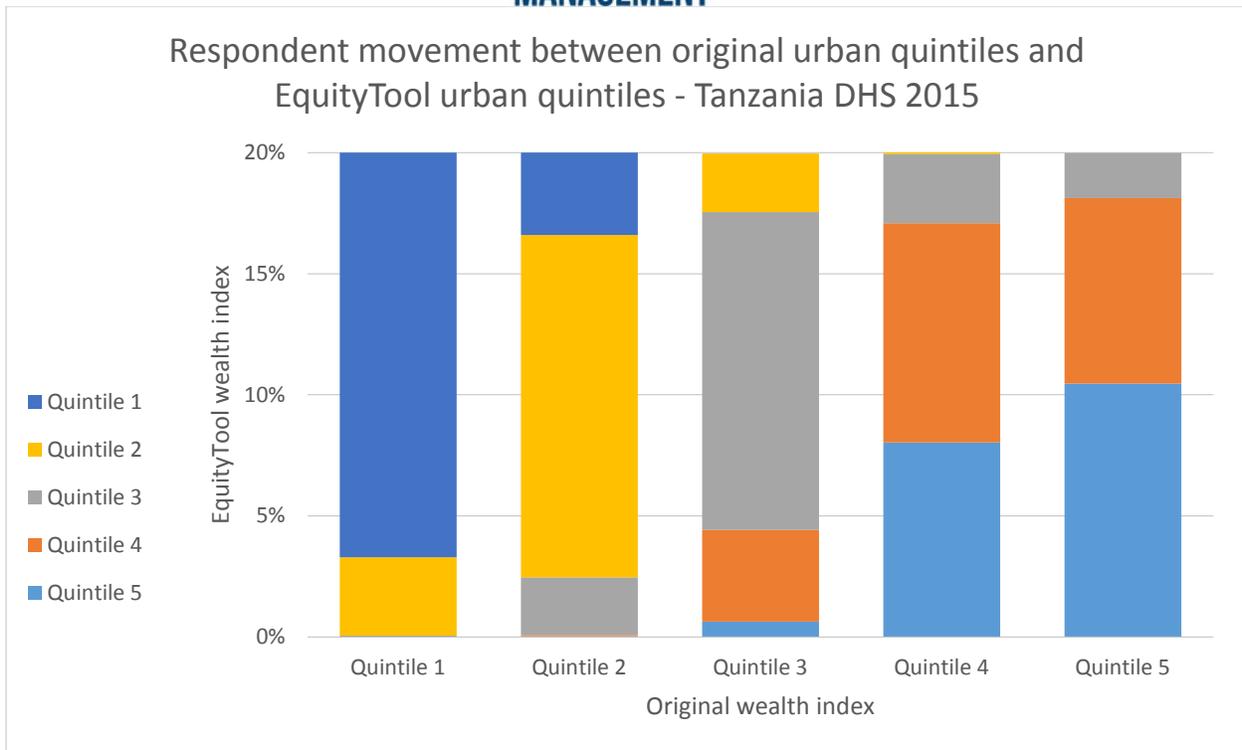
The following table provides the same information on the movement between national quintiles when using the EquityTool versus the original DHS wealth index:

		EquityTool National Quintiles					
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Original DHS National Quintiles	Quintile 1	15.2%	3.9%	0.9%	0.0%	0.0%	20%
	Quintile 2	5.5%	10.2%	4.2%	0.1%	0.0%	20%
	Quintile 3	0.3%	4.9%	12.4%	2.4%	0.0%	20%
	Quintile 4	0.0%	0.2%	2.9%	15.7%	1.2%	20%
	Quintile 5	0.0%	0.0%	0.0%	1.2%	18.8%	20%
	Total	21.0%	19.1%	20.4%	19.5%	20.0%	100%

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

Respondent movement between original urban quintiles and EquityTool urban quintiles - Tanzania DHS 2015

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	16.8%	3.2%	0.1%	0.0%	0.0%	20%
	Quintile 2	3.4%	14.1%	2.4%	0.1%	0.0%	20%
	Quintile 3	0.0%	2.4%	13.1%	3.8%	0.6%	20%
	Quintile 4	0.0%	0.1%	2.9%	9.1%	8.0%	20%
	Quintile 5	0.0%	0.0%	1.9%	7.7%	10.5%	20%
	Total	20.2%	19.9%	20.3%	20.6%	19.2%	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 46.6% of people in Tanzania 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 Tanzania, 57% of people living in urban areas are in the richest national quintile, compared to only 2% 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 regions in Tanzania 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 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 Tanzania, 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	AIS MIS 2011- 2012	DHS 2015
# of questions in EquityTool	8	10
# of questions in full wealth index	35	33
Kappa statistic (EquityTool vs full wealth Index) for 3 groups	National 0.756 Urban 0.750	National 0.752 Urban 0.779

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, 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 2015). This makes comparison between the two versions of the EquityTool, and two different data sources, easier. Furthermore, the chart below compares how the 2011 full wealth index and the 2015 full wealth index calculate wealth quintiles in the 2015 population. The previous wealth index is able to divide the 2015 population into five roughly equal quintiles.
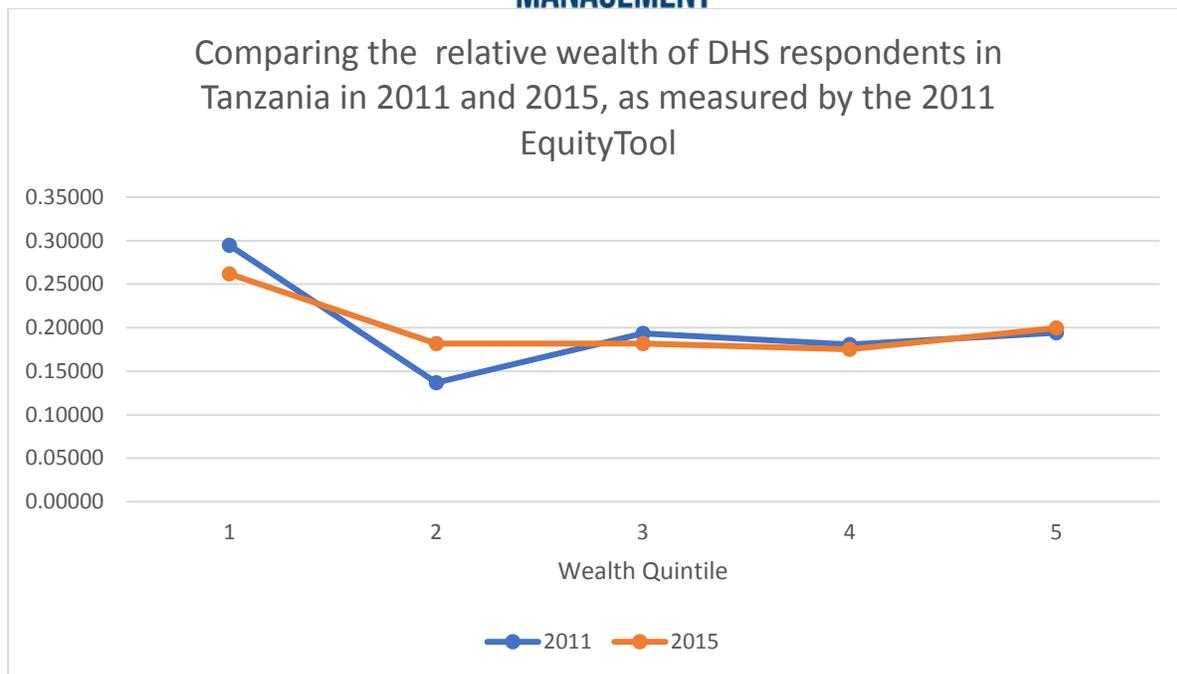
The wealth of the population has not changed much, but the factors that predict wealth may have.

Population: Tanzania DHS 2015 Respondents		2011 Full Wealth Index National Quintiles					
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
2015 Full Wealth Index National Quintiles	Quintile 1	16.8%	3.2%	0.1%	0.0%	0.0%	20%
	Quintile 2	3.4%	14.1%	2.4%	0.1%	0.0%	20%
	Quintile 3	0.0%	2.4%	13.1%	3.8%	0.6%	20%
	Quintile 4	0.0%	0.1%	2.9%	9.1%	8.0%	20%
	Quintile 5	0.0%	0.0%	1.9%	7.7%	10.5%	20%
	Total	20.2%	19.9%	20.3%	20.6%	19.2%	100%

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

1.   Using the same 8 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 4 years between the two source data studies, more people have acquired the assets that predicted wealth in 2011. In the graph below, the previous EquityTool is applied to the 2011 AIS MIS data from which it was derived (in blue) and to the newer 2015 DHS data (in orange). The previous EquityTool, when applied to the 2011 population, was able to distinguish between the bottom 40%, middle 20% and highest 20% of wealth with a high level of agreement to the full 2011 wealth index; however, it did a poorer job of evenly distributing respondents into the lowest two wealth quintiles. In 2015, the same EquityTool is better able to separate respondents into the two bottom quintiles, but has poorer overall agreement with the most up-to-date full wealth index (kappa < 0.75, see table below).

Comparing the relative wealth of DHS respondents in Tanzania in 2011 and 2015, as measured by the 2011 EquityTool

2. Keeping the same 8 questions and response options as the previous EquityTool, but calculating scores based upon the 2015 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 DHS 2015 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, 2015 scoring	2015 EquityTool
Agreement	81.7%	81.6%	84.1%
Kappa	0.71	0.71	0.75

The current EquityTool has the best agreement with the full wealth index quintiles and is the only one that meets our minimum kappa statistic of 0.75. The previous tool, even when the scoring is updated, falls short of this standard. The reason for this difference is because these 8 questions are no longer the best predictors of the overall wealth distribution.

3.   Comparing the previous 8 questions and scores, and the new EquityTool (10 questions). Although all but one of the questions in the previous EquityTool are found in the current EquityTool, we found that 8 questions were not enough to accurately predict wealth. Because more people may own the assets predictive of wealth in 2011, we need to add questions to differentiate people and households more accurately.

The graph 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.
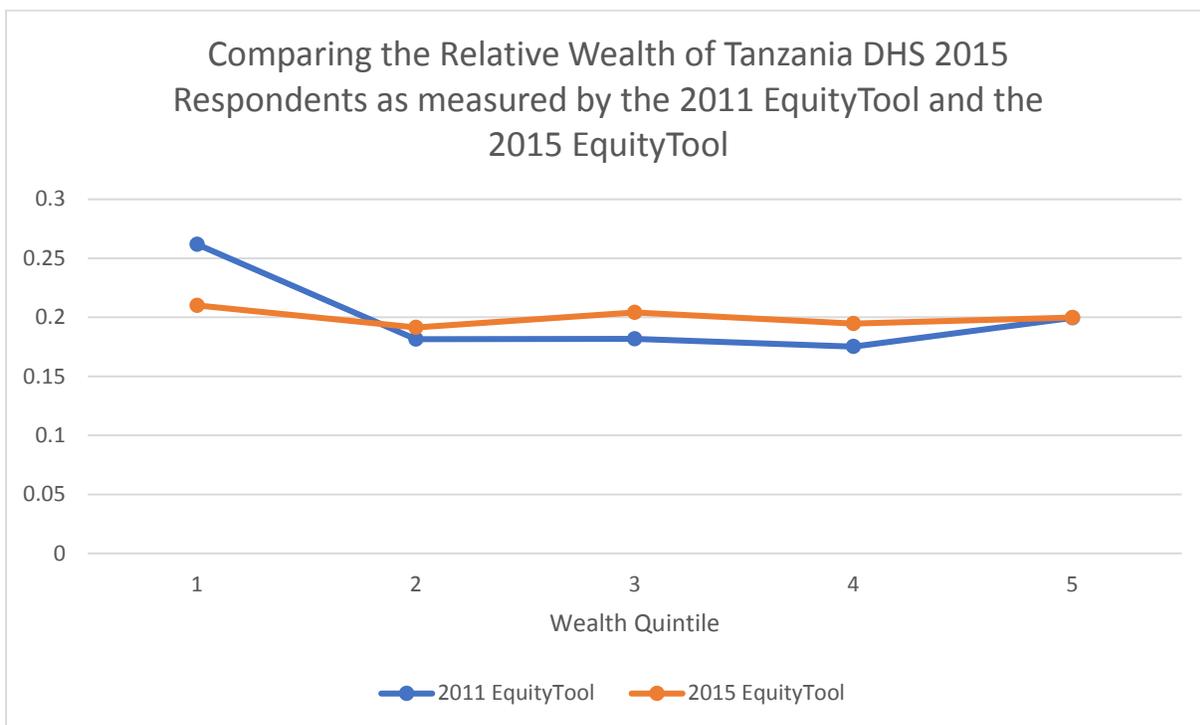
The orange line indicates that the current EquityTool does in fact evenly divide the population into 5 groups. The blue line shows that using the older EquityTool does not divide the population into equal quintiles. If you had used the previous EquityTool, you may not see much difference in how your respondents fall among the lower 40%, middle 20%, and upper 40% of

the wealth distribution; however, some respondents in the lowest 40% may appear to be in a different wealth quintile when measured with the newest tool.

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.

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[1] From povertydata.worldbank.org, reporting Poverty headcount ratio at $1.90/day at 2011 international prices.
[2] From the Tanzania DHS 2015 dataset household recode, available at http://dhsprogram.com/