



Ghana

EquityTool: Update released November 4, 2019

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 The original version is no longer active but is available upon request.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 July 20, 2016

Source data: [Ghana MHS 2017](#)

of survey questions in original wealth index: 33

of variables in original index: 115

of survey questions in EquityTool: 11

of variables in EquityTool: 12



Questions:

		Option 1	Option 2	Option 3
Q1	Does this household have: a radio?	Yes	No	
Q2	a television?	Yes	No	
Q3	a computer/tablet computer?	Yes	No	
Q4	a refrigerator?	Yes	No	
Q5	a cabinet/cupboard?	Yes	No	
Q6	Does any member of this household own a wrist watch?	Yes	No	
Q7	Does any member of this household have a bank account?	Yes	No	
Q8	What is the main source of drinking water for members of your household?	Sachet Water	Other source of drinking water	
Q9	What kind of toilet facility do members of your household usually use?	Flush to manhole/septic tank (not shared)	Other toilet facility	

Q10	What type of fuel does your household mainly use for cooking?	Wood	LPG	Other source of cooking fuel
Q11	What is the main material of the floor of your dwelling?	Cement	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=26,324)	Urban only population (n=13,590)
% agreement	85.06	84.02
Kappa statistic	0.7666	0.7505

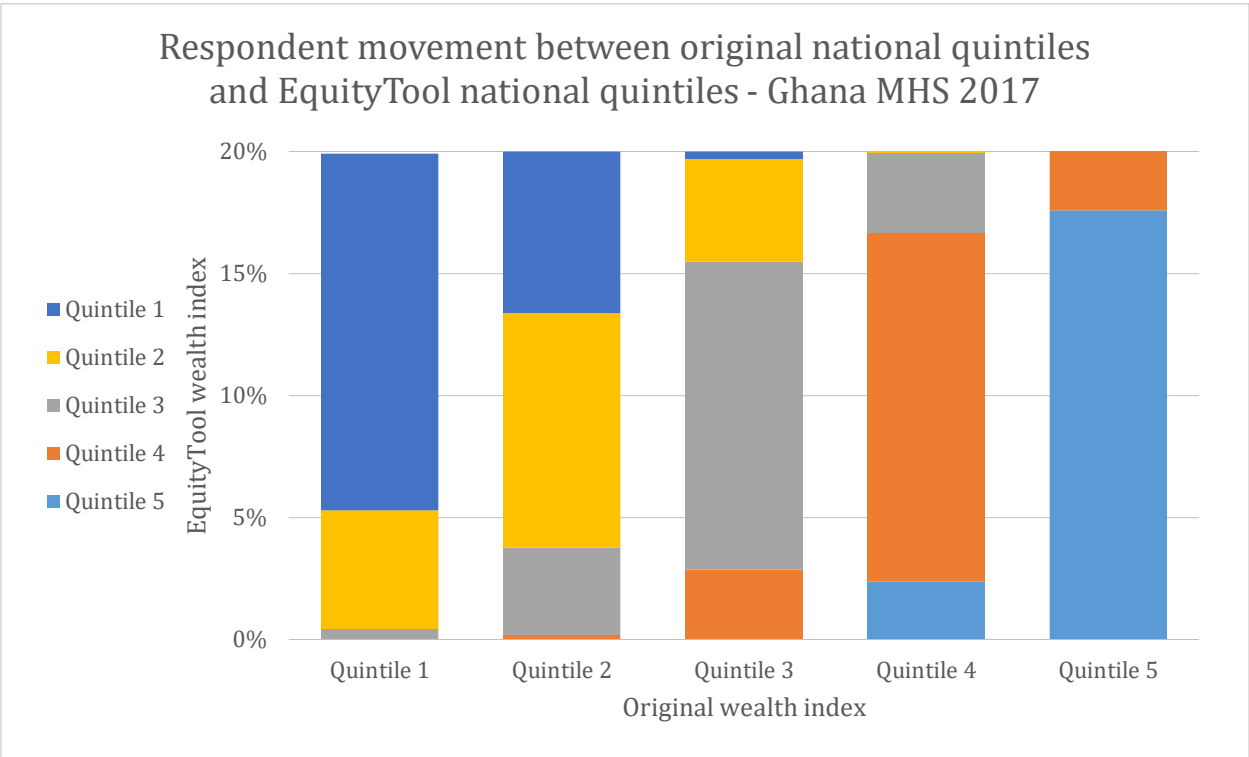
Respondents in the original dataset were divided into three groups for analysis – those in the 1st and 2nd quintiles (poorest 40%), those in the 3rd quintile, and those in the 4th and 5th quintiles (richest 40%). After calculating their wealth using the simplified index, they were again divided into 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 14.61% are still identified as being in the poorest quintile when we use the simplified index. However, approximately 4.87% 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 33 questions in the original survey.



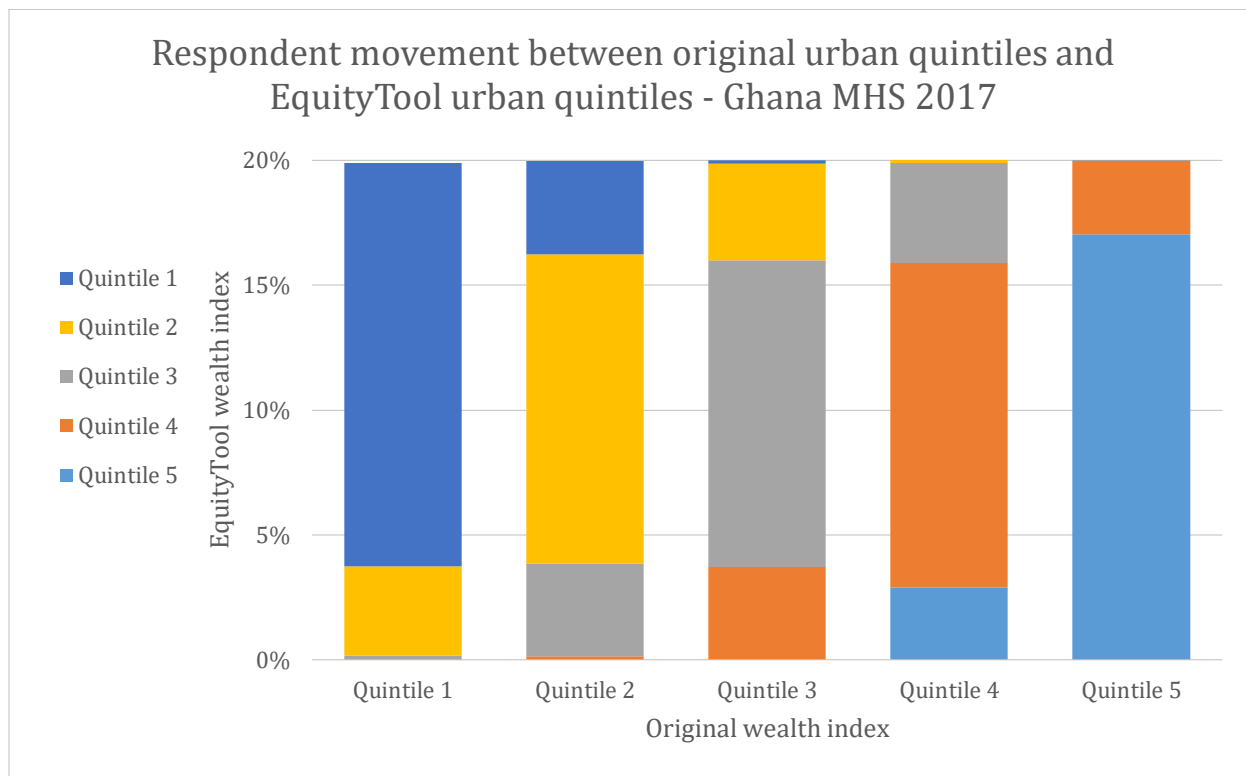


The following table provides the same information on the movement between national quintiles when using the EquityTool versus the original DHS wealth index:

		EquityTool National Quintiles					
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Original DHS National Quintiles	Quintile 1	14.61%	4.87%	0.43%	0.00%	0.00%	19.91%
	Quintile 2	6.61%	9.6%	3.59%	0.17%	0.01%	19.98%
	Quintile 3	0.32%	4.19%	12.63%	2.83%	0.03%	20.00%
	Quintile 4	0.00%	0.07%	3.28%	14.29%	2.36%	20.00%
	Quintile 5	0.00%	0.00%	0.01%	2.50%	17.59%	20.10%
	Total	21.54%	18.73%	19.94%	19.79%	19.99%	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	16.15%	3.58%	0.14%	0.02%	0.00%	19.89%
	Quintile 2	3.73%	12.41%	3.69%	0.15%	0.00%	19.98%
	Quintile 3	0.14%	3.87%	12.28%	3.69%	0.02%	20.00%
	Quintile 4	0.00%	0.13%	4.01%	13.01%	2.88%	20.03%
	Quintile 5	0.00%	0.00%	0.11%	2.94%	17.04%	20.09%
	Total	20.02%	19.99%	20.23%	19.81%	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 World Bank indicates that 13.3% of people in Ghana 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 Ghana, 34.7% of people living in urban areas are in the richest national quintile, compared to only 5.0% 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 districts in Ghana 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 July 20, 2016 which compared user data to a benchmark of 2014. A new source survey, the Ghana Maternal Health Survey 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 updated EquityTool was generated using the exact same methodology as the previous version, and in generating the updated 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 Ghana, 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.

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

² From the Ghana MHS (Special) 2017 dataset household recode, available at <http://dhsprogram.com/>



	Previous	Current
Source Data	DHS 2014	MHS 2017
# of questions in EquityTool	13	11
# of questions in full wealth index	50	33
Kappa statistic (EquityTool vs full wealth Index) for 3 groups	National 0.709 Urban 0.7	National 0.7666 Urban 0.7505

Practical considerations for users of the previous EquityTool

Comparing the results of surveys that used the previous EquityTool against those that use the updated 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 support@equitytool.org.

Technical comparison between the current and previous EquityTool

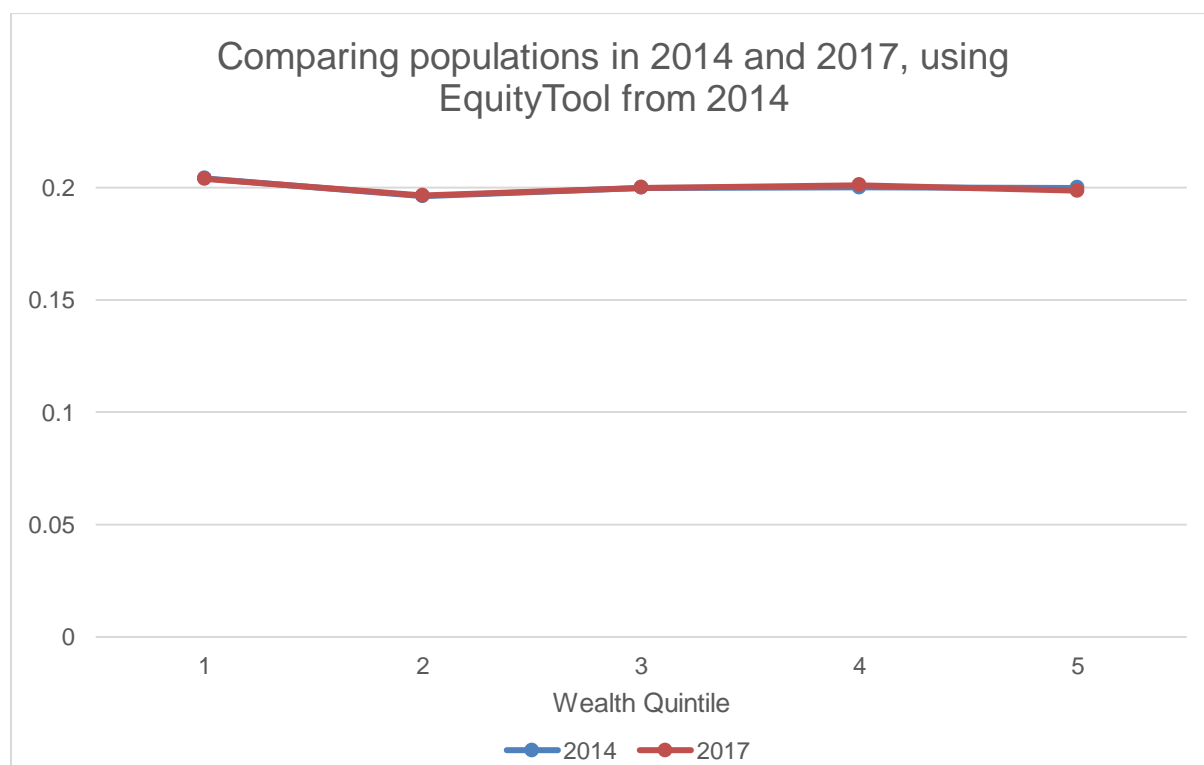
Not all of the questions and response options for the previous (DHS2014) EquityTool are found in the new source data (MHS2017). Of the 14 variables in the previous EquityTool, 13 can be found in the 2017 MHS dataset. The question “Does this household have a wall clock?” was not included in the most recent survey. This makes comparison between the two versions of the EquityTool, and two different data sources more difficult.

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



1. Using the same 13 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 three years between the two source data studies, in many cases, more people have acquired assets that are indicative of wealth. However, in the case of Ghana, we can see that this may not be the case. In the graph below, the previous EquityTool, derived from the 2014 DHS, is applied to the 2014 DHS data and the newer 2017 MHS data³. In both 2014 and 2017, the proportion of households in each of the 5 quintiles is very close to 20%. Of the twelve variables in the updated EquityTool, eight of them were also in the 2014 EquityTool. These results suggest that especially for these eight assets included in both EquityTools, but also more broadly, there has not been a lot of change in asset-based wealth in Ghana from 2014 to 2017.



While generally it is not recommended to use the previous questions and weights, in this case, it appears that using the previous questions and weights would be valid given a lack of change in the population's wealth.

³ Since not all variables of the previous EquityTool are available in the 2017 MHS data, we re-calculated the agreement and kappa scores for the "reduced" EquityTool, without the wall clock question. The "reduced" 2014 EquityTool has a 81.49% agreement and a kappa of 0.7109 in national populations. In urban populations, the "reduced" 2014 EquityTool has a 79.36% agreement and a kappa of 0.6770.



2. Keeping the same 13 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 MHS 2017 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.

	2014 EquityTool	2014 questions, 2017 scoring	2017 EquityTool
Agreement	86.04%	86.66%	85.06%
Kappa	0.7818	0.7915	0.7666

Given the lack of change in the Ghanaian population’s wealth, the 2014 EquityTool, either with the original scoring, or with the updated scoring, has a better agreement with the full wealth index quintiles, since it has more variables. All of these options surpass our standard of a minimum kappa statistic of 0.75.

3. Comparing the previous 12 questions and scores, and the updated EquityTool (11 questions)

The table below shows how the previous and updated EquityTool compare, when both are calculated on the same population from the 2017 MHS data source. Be aware that since not all of the questions from the previous EquityTool are available in this data source, this is not indicative of the way your respondents’ wealth may be distributed as measured by the previous EquityTool. Indeed, removing the wall clock variable from the previous EquityTool limits its level of agreement to the 2014 benchmark population as described on the previous page.

		Previous EquityTool Quintiles					
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
	Quintile 1	15.74	4.45	0.21	0.00	0	20.39%
	Quintile 2	5.66	10.27	3.63	0.09	0	19.65%



Current EquityTool Quintiles	Quintile 3	0.14	3.96	12.82	3.04	0.03	19.99%
	Quintile 4	0	0.05	3.29	13.58	3.19	20.11%
	Quintile 5	0	0	0	3.09	16.77	19.86%
	Total	21.53%	18.73%	19.95%	19.80%	19.99%	100%

The rightmost column indicates that the current EquityTool does in fact evenly divide the population into 5 groups. The bottom row shows that using the older EquityTool does not divide the population into equal quintiles as well. It puts slightly more people into the lowest quintile, at the cost of the second quintile. If you had used the previous EquityTool, you can expect that with the current version, your respondents may look slightly different. 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 support@equitytool.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 Ghana 2017 MHS dataset household recode, available at <http://dhsprogram.com/>

