

# Indonesia

## EquityTool: Update released December 14, 2020

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The original version is no longer active but is available upon request.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: [Indonesia DHS 2017](#)

# of survey questions in full wealth index: 31

# of variables in full index: 111

# of survey questions in EquityTool: 11

# of variables in EquityTool: 11



### Questions:

	Question	Option 1	Option 2
Q1	Does your household have... a computer?	Yes	No
Q2	... a refrigerator?	Yes	No
Q3	... a fan?	Yes	No
Q4	... a washing machine?	Yes	No
Q5	Does any member of your household own a watch?	Yes	No
Q6	Does any member of your household own a car or truck?	Yes	No
Q7	Does any member of your household have a bank account or an account in a cooperative?	Yes	No
Q8	What kind of toilet facility do members of your household usually use?	Private with septic tank	Other toilet facility
Q9	What type of fuel does your household mainly use for cooking?	Liquefied petroleum gas (LPG)	Other cooking fuel
Q10	What is the main material of the exterior walls of your dwelling?	Covered adobe	Other wall material

Q11

What is the main material of the floor of your dwelling?

Ceramic/marble

Other flooring 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=47963)	Urban only population (n=24560)
% agreement	85.6%	84.1%
Kappa statistic	.775	.752

Respondents in the original dataset were divided into three groups for analysis – those in the 1<sup>st</sup> and 2<sup>nd</sup> quintiles (poorest 40%), those in the 3<sup>rd</sup> quintile, and those in the 4<sup>th</sup> and 5<sup>th</sup> 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.

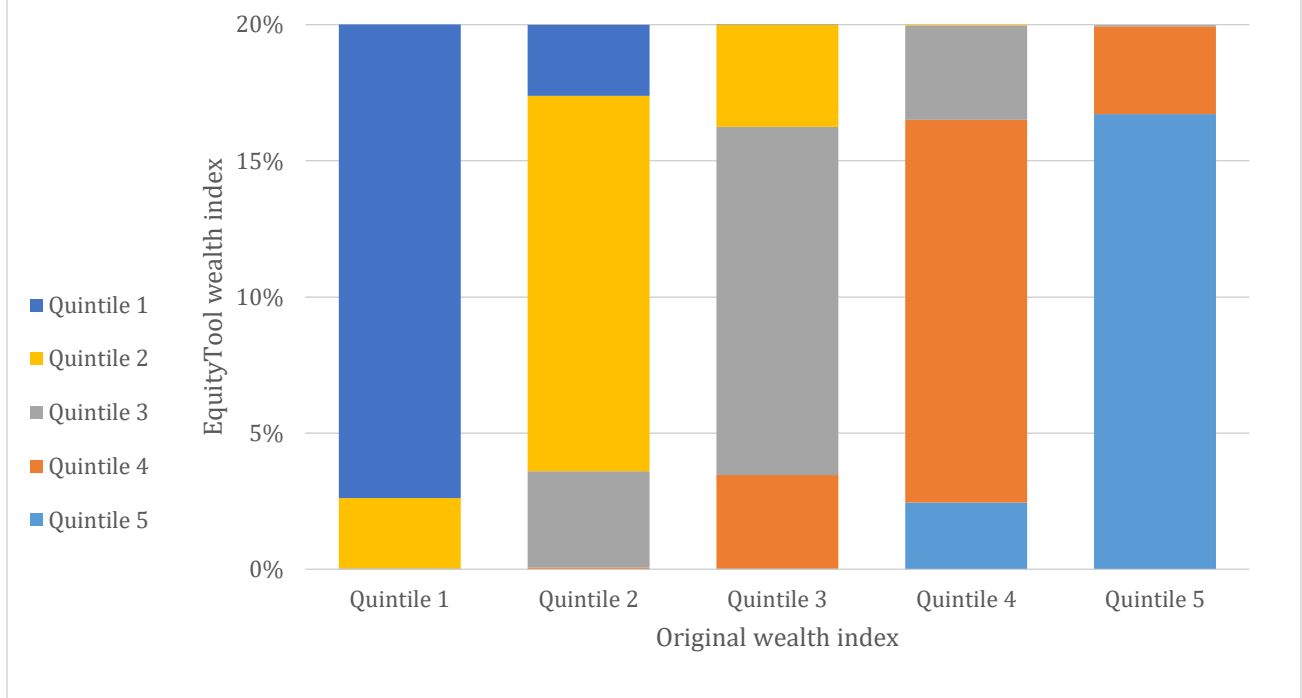
**What does this mean?**

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 87% are still identified as being in the poorest quintile when we use the simplified index. However, approximately 13% 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 31 questions in the original survey.



### Respondent movement between original national quintiles and EquityTool national quintiles - Indonesia DHS 2017



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	
<b>Original DHS National Quintiles</b>	Quintile 1	17.40%	2.58%	0.03%	0.00%	0.00%	20%
	Quintile 2	2.61%	13.79%	3.54%	0.06%	0.00%	20%
	Quintile 3	0.00%	3.75%	12.78%	3.45%	0.01%	20%
	Quintile 4	0.00%	0.03%	3.47%	14.05%	2.45%	20%
	Quintile 5	0.00%	0.00%	0.05%	3.21%	16.72%	20%
	Total	20.01%	20.15%	19.88%	20.78%	19.18%	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 - Indonesia DHS 2017



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	
<i>Original DHS Urban Quintiles</i>	Quintile 1	17.26%	2.69%	0.05%	0.00%	0.00%	20%
	Quintile 2	2.74%	13.35%	3.74%	0.17%	0.00%	20%
	Quintile 3	0.01%	3.89%	12.18%	3.90%	0.02%	20%
	Quintile 4	0.00%	0.06%	3.94%	14.82%	1.19%	20%
	Quintile 5	0.00%	0.00%	0.13%	6.94%	12.93%	20%
	Total	20.01%	19.99%	20.03%	25.83%	14.14%	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 3.6% of people in Indonesia 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 2017, 33% of people living in urban areas are in the richest national quintile, compared to only 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 provinces in Indonesia 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 2012. A new source survey, the Indonesia DHS 2017 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 Indonesia, 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 2012	DHS 2017
# of questions in EquityTool	10	11
# of questions in full wealth index	33	31
Kappa statistic (EquityTool vs full wealth Index) for 3 groups	National 0.772 Urban 0.755	National 0.775 Urban 0.752

### 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 3<sup>rd</sup> 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](mailto:support@equitytool.org).

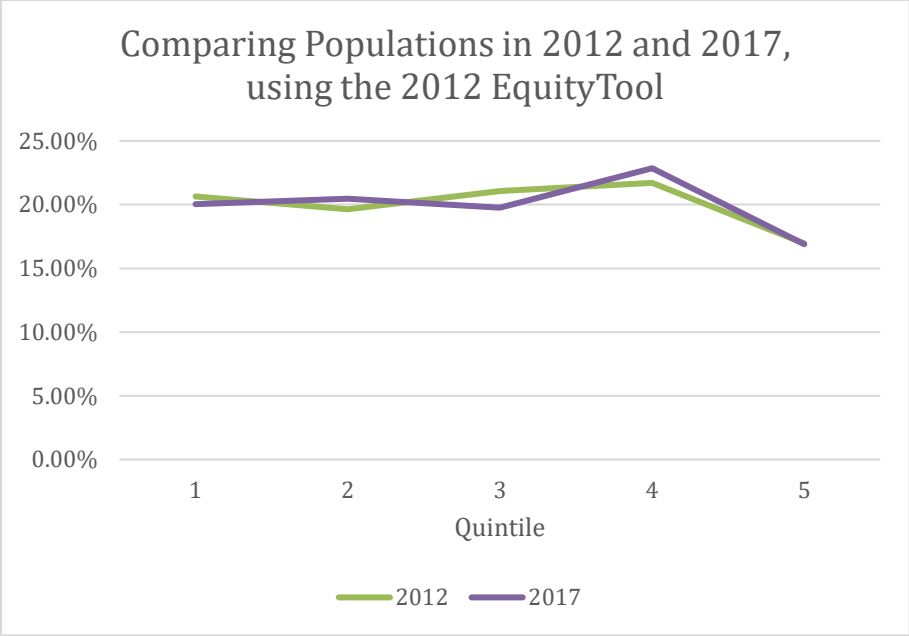
### **Technical comparison between the current and previous EquityTool**

One of the response options for the previous EquityTool is not found in the new source data (DHS 2017). It is the answer option "baked brick," in response to the question regarding the main wall material for the household. This change makes it somewhat harder to compare 2017 and 2012 data using the previous equity tool. In the following comparisons, the variable baked brick has been dropped from the previous EquityTool.

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

1. Using the same 10 questions and response options (excluding baked brick wall material), 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, there has not been a significant change in assets that are indicative of wealth. In the graph below, the previous EquityTool, derived from the 2012 DHS, is applied to the 2012 DHS data and the newer 2017 DHS data. In 2012, the proportion of households in each of the 5 quintiles is close to 20%, though a higher percentage are in quintile 4, and a lower percentage in quintile 5. The discrepancy seen is due to the use of a shorter questionnaire than used by the DHS survey originally. Using 2017 data, we see a similar higher percentage in quintile 4 and lower in quintile 5.





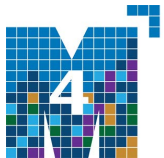
The distributions produced using the previous EquityTool and updated EquityTool categorize the same population into similar wealth quintiles, suggesting there would not be significant issues associated with continuing to use the previous tool.

2. Keeping the same 10 questions and response options (excluding baked brick wall material) as the previous EquityTool, but calculating scores based upon the 2017 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, except one, as the previous tool, we can see how well the resulting quintiles compare to the quintiles based on the full wealth index created by DHS.

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

	2012 EquityTool	2012 questions, 2017 scoring	2017 EquityTool
<b>Agreement</b>	78.9%	82.8%	85.6%
<b>Kappa</b>	0.670	0.731	0.775

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. The previous tool, even when the



scoring is updated, falls short of this standard. The reason for this difference is because these 10 questions are no longer the best predictors of the overall wealth distribution.

3. Comparing the previous 10 questions and scores, and the new EquityTool (11 questions) Although all but one of the questions in the previous EquityTool are found in the current EquityTool, we found that 10 questions were not enough to accurately predict wealth. Because more people may own the assets predictive of wealth in 2012, we need to add questions to differentiate people and households more accurately.

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	15.56%	4.18%	0.28%	0.00%	0.00%	20%
	Quintile 2	4.16%	10.60%	4.55%	0.82%	0.01%	20%
	Quintile 3	0.31%	4.95%	8.86%	5.19%	0.57%	20%
	Quintile 4	0.01%	0.73%	5.72%	10.57%	3.75%	21%
	Quintile 5	0.00%	0.00%	0.34%	6.27%	12.56%	19%
	Total	20.03%	20.46%	19.76%	22.85%	16.89%	100%

The rightmost column indicates that the current EquityTool does in fact evenly divide the population into 5 groups, with a slightly higher percentage of the population in quintile 4 (21%) than in quintile 5 (19%). The bottom row shows that using the older EquityTool also does a fairly good job of dividing the population into equal quintiles, however, it puts more people into quintile 4 (23%), and fewer into quintile 5 (17%). 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, 78% 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, 26% 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 fairly similar, but those in the top two quintiles may look slightly poorer. This difference is not likely to be programmatically significant, assuming that populations in quintiles 4 and 5 are equally of interest.

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](mailto:support@equitytool.org) and we will assist you.





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

[2] From the Indonesia DHS 2017 dataset household recode, available at <http://dhsprogram.com/>

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