

Zimbabwe

EquityTool: Update released October 6th, 2021

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 The original version is no longer active but is available upon request.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 April 5th, 2017

First version released December 9th, 2015

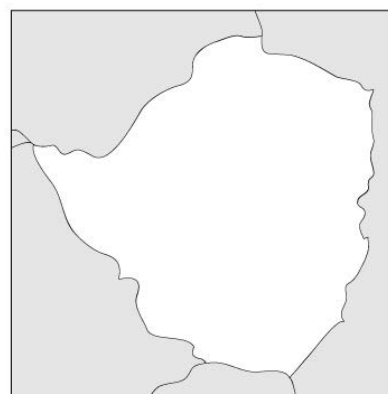
Source data: [Zimbabwe MICS 2019](#)

of survey questions in full wealth index: 76

of variables in full index: 244

of survey questions in EquityTool: 18

of variables in EquityTool: 18



Questions:

	Question	Option 1	Option 2
	DETERMINE IF THE RESPONDENT LIVES IN AN URBAN OR RURAL AREA	Urban	Rural
Q1	Does your household have ... electricity?	Yes	No
Q2	... a refrigerator?	Yes	No
Q3	... a microwave?	Yes	No
Q4	... an electric jug?	Yes	No
Q5	... an electric iron?	Yes	No
Q6	... a television	Yes	No
Q7	... a DVD/VCD player	Yes	No
Q8	... a sofa?	Yes	No
Q9	... a table?	Yes	No
Q10	... a wardrobe?	Yes	No

Q11	Does any member of your household have ... a computer?	Yes	No
Q12	... a bank account?	Yes	No
Q13	What is the main source of drinking water used by members of your household?	Piped into dwelling	Other
Q14	What kind of toilet facility do members of your household usually use? Is it shared?	Flush to piped sewer system, unshared	Other
Q15	Where is this toilet facility located?	In own dwelling	Other
Q16	Is the cooking usually done in the house in the main living space, in the house in a separate room, in a separate building, or outdoors?	In separate room in main house	Other
Q17	In your household, what type of cookstove is mainly used for cooking?	Electric stove	Other
Q18	At night, what does your household mainly use to light the household?	Electricity	Other

Technical notes:

Recreating the full index

To create the EquityTool, we simplify the original full wealth index that is found in the relevant benchmark dataset, usually using published factor weights. In the case of MICS data, the factor weights are not publicly available. However, UNICEF has shared the original syntax files used to create the wealth indices with us. We attempted to recreate the original wealth index, following the original syntax files. The MICS wealth index for Zimbabwe was constructed using a similar approach as the DHS Wealth Index. More information about how the DHS Wealth Index is constructed can be found [here](#). Factor weights used in the construction of the Zimbabwe MICS 2019 EquityTool are available upon request.

Simplification

We were unable to achieve agreement of $\kappa \geq 0.75$ between the original MICS wealth index and a simplified index using our standard simplification process (detailed [in this article](#)). Using a revised approach, detailed below, high agreement ($\kappa \geq 0.75$) for both urban and national indices was achieved.

The national factor weights used in that approach come from an analysis of the national population and contain only those variables which are related to the construct of wealth in the same way in both rural



and urban areas. The national factor weights are usually used in EquityTools to calculate national quintiles, as they reduce some known areas of respondent error in the survey.

However, to overcome the problem of low agreement using the standard simplification approach, we instead used factor weights from the rural and urban analyses, which select variables that related to wealth differently in urban and rural areas. For example, in an urban area, ownership of goats may be more strongly associated with being relatively poor than in rural areas. This is the case in Zimbabwe. A short list of variables, common to both urban and rural areas, were iteratively selected to find those which result in high agreement ($\kappa \geq 0.75$) against the original wealth index quintiles for national and urban populations.

A score from the simplified index for urban residents (U_{score}) was regressed against the wealth index score variable created for the corrected full wealth index analysis (N_{score}), the same was done for rural residents (R_{score}), and the resulting coefficients are used to create a single national score (NatScore).

$$N_{score} = b_1 U_{score} + a_1$$

$$N_{score} = b_2 R_{score} + a_2$$

$$NatScore = b_1(U_{score})(Urban) + a_1(Urban) + b_2(R_{score})(Rural) + a_2(Rural)$$

Where Urban=1 if respondent lives in an urban area and 0 if otherwise, and Rural =1 if respondent lives in a rural area and 0 if otherwise.

Respondents' quintile assignments resulting from NatScore, the national wealth index score created from a simplified list of questions were compared to the quintile assignments resulting from the original wealth index with 244 variables using the kappa statistic.

The questions in the simplified index which resulted from this process differ from EquityTools that are created using our standard approach. Notably, we need to know whether the respondent lives in an urban or rural area, thus an additional question has been added to the EquityTool for Zimbabwe: 'Determine if the respondent lives in an urban or rural area'. In principle, the definition of 'urban' and 'rural' should match the definition used in the Zimbabwe MICS 2019. Typically, this definition is defined by the country, not the developers of the MICS. In practice, the user needs to decide how to determine if each respondent lives in an urban or rural area. Three approaches are presented below, with some notes on each. Whichever method is chosen, it should be uniformly applied across all surveys conducted.

1. Ask the respondent directly – 'is your home in an urban or rural area?' This relies on the respondent's understanding of 'urban' and 'rural'.
2. Allow the data collector to determine whether the respondent lives in an urban or rural area, based on available guidance. This will work best if the interviews take place in or very near to



people's homes, and if the data collectors can be trained on the same rules to determine if an area is urban or rural. One example of a rule is to classify 'peri-urban' areas on the edges of a city or town as urban. Another rule might be to classify an area as urban if it has a market center which operates daily.

3. If the interviews are taking place outside the home, then classify respondents based upon the location of the interview. For example, if interviews occur in health facilities, classify respondents as urban if the facilities are located in urban areas. Individuals may travel, so this method is also subject to error.

Level of agreement:

	National Population (n=11,091)	Urban only population (n=3,975)
% agreement	85.2%	84.3%
Kappa statistic	0.768	0.754

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 MICS. Agreement between the original data and our simplified index is presented above.

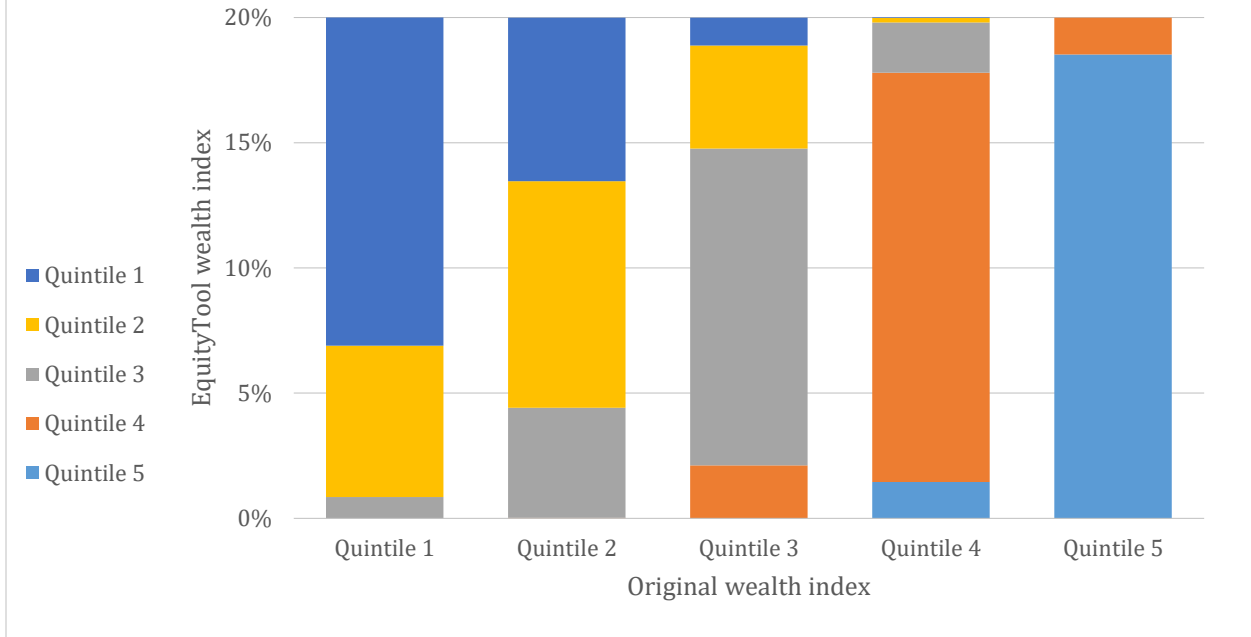
What does this mean?

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 MICS wealth index.

The graph below illustrates the difference between the EquityTool generated index and the full MICS wealth index. Among all of those people (20% of the population) originally identified as being in the poorest quintile, approximately 63.1% are still identified as being in the poorest quintile when we use the simplified index. However, approximately 30.3% 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 18 questions produces results that are not identical to using all 76 questions in the original survey.



Respondent movement between original national quintiles and EquityTool national quintiles - Zimbabwe MICS 2019

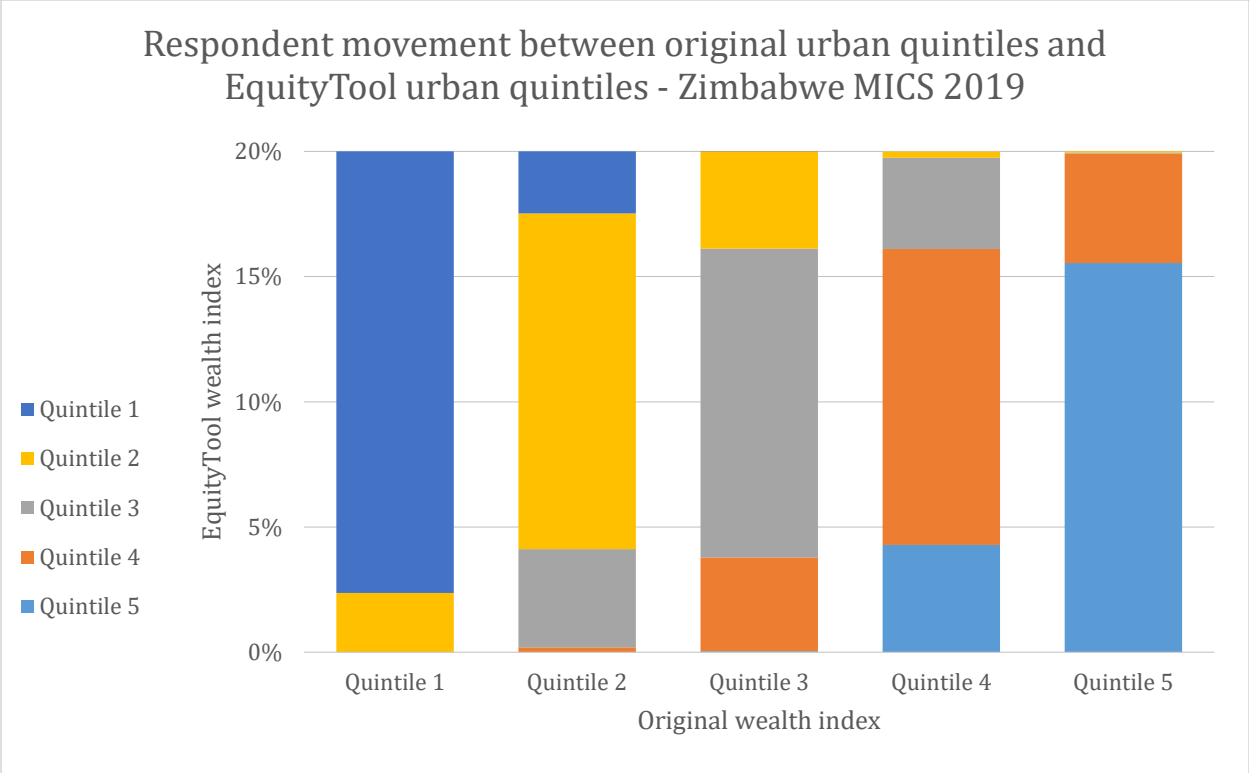


The following table provides the same information on the movement between national quintiles when using the EquityTool versus the original MICS wealth index:

		EquityTool National Quintiles					Total
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	
Original MICS National Quintiles	Quintile 1	13.10%	6.05%	0.85%	0.00%	0.00%	20%
	Quintile 2	6.53%	9.06%	4.40%	0.02%	0.00%	20%
	Quintile 3	1.11%	4.12%	12.65%	2.11%	0.00%	20%
	Quintile 4	0.02%	0.18%	2.01%	16.35%	1.45%	20%
	Quintile 5	0.00%	0.00%	0.00%	1.48%	18.52%	20%
	Total	20.76%	19.41%	19.91%	19.95%	19.97%	100%

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





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

		EquityTool Urban Quintiles					Total
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	
Original MICS Urban Quintiles	Quintile 1	17.63%	2.37%	0.00%	0.00%	0.00%	20%
	Quintile 2	2.48%	13.41%	3.92%	0.19%	0.00%	20%
	Quintile 3	0.01%	3.88%	12.34%	3.74%	0.04%	20%
	Quintile 4	0.00%	0.25%	3.64%	11.82%	4.28%	20%
	Quintile 5	0.00%	0.04%	0.03%	4.38%	15.54%	20%
	Total	20.11%	19.95%	19.94%	20.13%	19.87%	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 33.9% of people in Zimbabwe 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 Zimbabwe, 59.1% of people living in urban areas are in the richest national quintile, compared to only 2.0% 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 Zimbabwe 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 April 5, 2017 which compared user data to a benchmark of DHS 2015. A new source survey, the Zimbabwe MICS 2019 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 Zimbabwe 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 2015	MICS 2019
# of questions in EquityTool	15	18
# of questions in full wealth index	43	76
Kappa statistic (EquityTool vs full wealth Index) for 3 groups	National 0.759 Urban 0.751	National 0.768 Urban 0.754



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 support@equitytool.org.

Technical comparison between the current and previous EquityTool

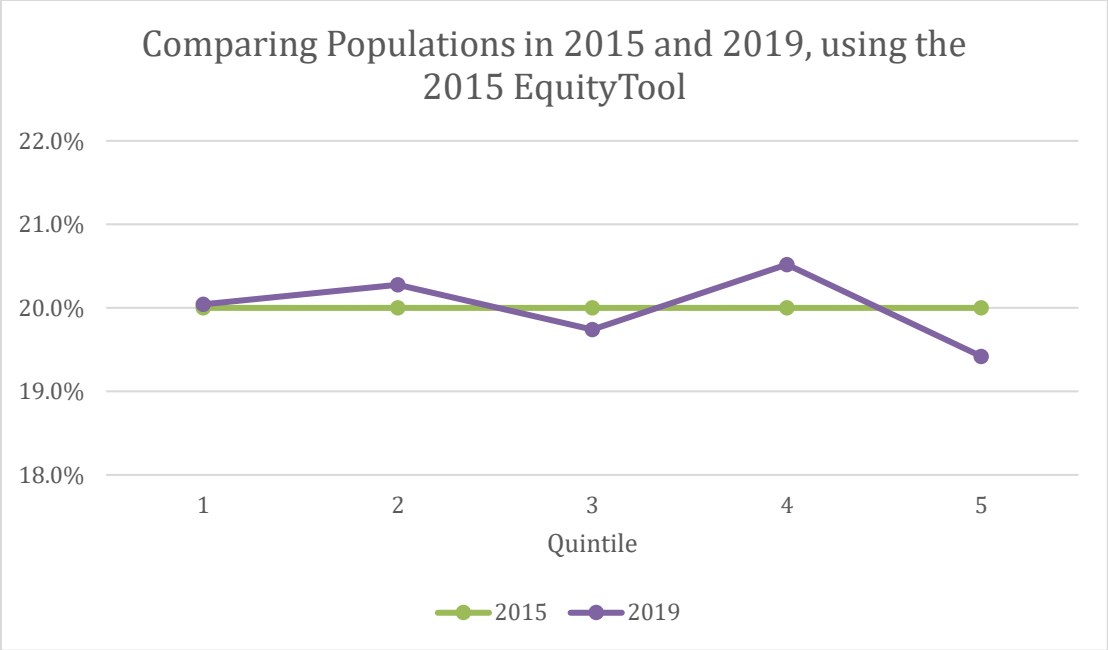
Not all of the questions and response options for the previous EquityTool are found in the new source data (MICS 2019). This makes comparison between the two versions of the EquityTool, and two different data sources, more difficult.

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

1. Using 13 of the same 15 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 that changes is the benchmark against which respondents are compared. In the 4 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 2015 DHS, is applied to the 2015 DHS data and the newer 2019 MICS data. In 2015, the proportion of households in each of the 5 quintiles is very close to 20%. The factor weights from the original DHS 2015 wealth index were used for the comparison.





Often, we observe that the asset-based wealth distributions in a country change over time. However, in this case, the change between 2015 and 2019 seems to be minimal, suggesting there would not be significant issues associated with using the previous tool, or switching to the new one.

2. Keeping the same 15 questions and response options as the previous EquityTool, but calculating scores based upon the 2019 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 UNICEF. In the 2019 MICS, questions about household ownership of axes/hoes and satellite dishes/decoders were not asked and the questions about cattle were separated into cows/bulls and other cattle. Thus, new weights were not available for axes/hoes or satellite dishes/decoders questions, which were included in the previous Zimbabwe EquityTool. New weights were used for cattle by combining weights for cows/bulls and other cattle. Ownership of a satellite dish/decode and axes/hoes were dropped from the analysis.

The table below presents the agreement between the quintiles created from the full wealth index in the MICS 2019 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.



	2015 EquityTool	2015 questions, 2019 scoring	2019 EquityTool
Agreement	80.9%	79.8%	85.2%
Kappa	0.702	0.682	0.768

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 the 13 questions available of the original 15 questions are no longer the best predictors of the overall wealth distribution and because two of those questions were not available in the 2019 MICS dataset.

3. Comparing the previous 15 questions and scores, and the new EquityTool (18 questions)

Although all but two the questions in the previous EquityTool are found in the current EquityTool, we found that the 13 questions from the previous tool that were available in the 2019 MICS dataset were not enough to accurately predict wealth. Because more people may own the assets predictive of wealth in 2019 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	11.66%	6.51%	2.47%	0.11%	0.00%	20.76%
	Quintile 2	6.11%	7.48%	5.43%	0.39%	0.00%	19.41%
	Quintile 3	1.98%	5.41%	9.48%	2.97%	0.07%	19.91%
	Quintile 4	0.29%	0.87%	2.36%	13.84%	2.59%	19.95%
	Quintile 5	0.00%	0.00%	0.00%	3.20%	16.77%	19.97%
	Total	20.04%	20.28%	19.74%	20.52%	19.42%	100.00%

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 also divides the population into roughly equal 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, 56% 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, 14% 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 similar, but there may be some movement of households between adjacent quintiles.

Often, we observe that the asset-based wealth distributions in a country change over time. However, in this case, the change between 2015 and 2019 in Zimbabwe seems to be minimal, suggesting there would not be significant issues associated with using the previous tool, or switching to the new one.

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 Zimbabwe MICS 2019 dataset household recode, available at <http://mics.unicef.org/surveys>

