

“Education deserts” and school access in Uganda

Brief on physical access to public primary schools in Uganda

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What are education deserts?

An “education desert” is a geographical area whose inhabitants lack physical access to an educational facility (see for instance, [this post](#)). In this brief, this definition is operationalized in two different ways:

1. Main definition: areas in Uganda where there is no public primary school within a 5 km radius, and there are at least 500 people living there. Depending on the specific calculation, this restriction was changed so that there were 500 *children between ages 5 and 14* living there (as opposed to people of any age), but the text will specify which of the two restrictions is being used.
2. Secondary definition: areas in Uganda where there is no public primary school within a 3 km radius. This is a common “distance norm” used in international school planning.

What data is available to understand this issue in the Ugandan context?

This report draws from three primary data sources. First, this report leverages a roster of 20,791 primary schools in Uganda, of which we identify 10,960 as our “core set” of schools. This subset of schools includes public schools, and registered and/or licensed private schools¹. These data contain complete latitude and longitude coordinates so that they can be properly located within the country. To the best of our knowledge, this is the best and most complete roster of primary schools that exists for Uganda. However, it is possible that it is not complete, and hence this report might identify an area as not having primary schools nearby, when an actual school does exist and does not appear in the data. This report focuses on the “core set” of schools as defined above, and as such, any subsequent mention to a “school” is a reference to this group.

The second data source is geolocated population data, which come from the “Global High-Resolution Population Denominators Project.” These data tally how many people (in total, and specifically for the group of 5-14 years of age – roughly the appropriate age group for primary school) live within each 1 km-by-1 km cell in the country. Finally, this report uses layers showing the geographical boundaries of different administrative units, including districts, counties, and parishes, so that schools and pockets of population can be traced to specific administrative divisions.

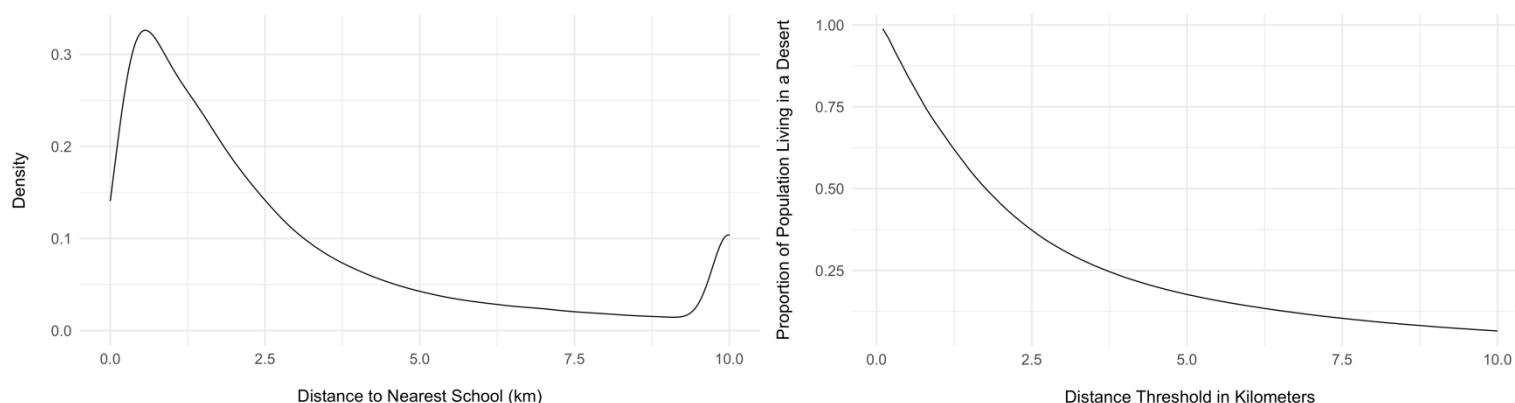
With these three pieces of information, one can overlay the location of all schools on the fine-grain population data, and identify what areas have large populations and few or no schools nearby. For more details on how this algorithm works, please see the corresponding [scientific publication](#).

¹ Note that we arrived to this specific inclusion criterion after internal discussions of what classifications are most likely to include schools which meet minimum educational requirements in Uganda. While we acknowledge that this dataset and the subsequent classification of schools are not perfectly accurate, our results here – in particular the geographic areas that need prioritization for school construction – remain constant even if we modify our inclusion criteria in meaningful ways. In other ways, regardless of which set of schools we turn our attention to, the sets of regions and districts that emerge as lacking physical access to school are very similar.

What does school access to schools look like in Uganda?

Access to schools is very limited in Uganda. 1 in 3 children in Uganda – that is 3.8 million children between 0-14 years of age – lives further than 3 km to a school. Only about 3 in 10 children have a school within 1 km of where they live. Approximately, 1 in 6 of all children between 5-14 years of age, over two million children, live 5 km or further from a public primary school. These numbers support the fact that *for many children in Uganda, physical access to school is still a major barrier to education.*

Figure 1: description of Ugandan population given distance (km) to nearest public primary school



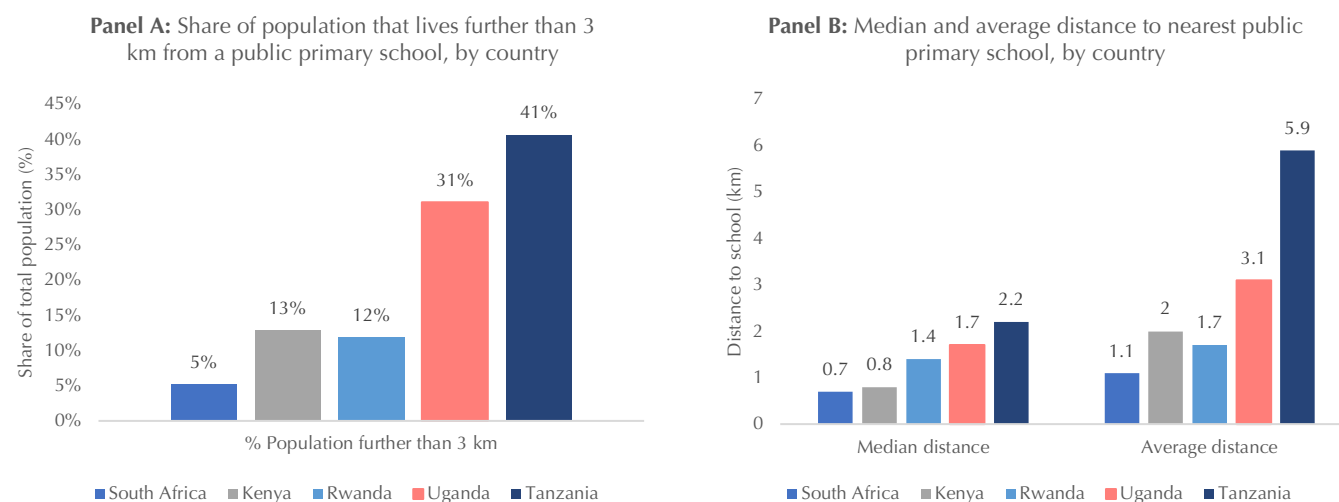
Panel A: distribution of the Ugandan population by distance to the nearest public primary school

Panel B: share of the Ugandan population living in an “education desert” by different distance thresholds

How does this level of access compare to other countries in the region?

The weak level of access to public primary schools in Uganda also lags behind that of regional counterparts. While the median distance to a school in Kenya is about half a mile, it is over a mile in Uganda. The share of the population that lives further than 3 km from a public primary school is more than twice as much as in Kenya or Rwanda, and it is approximately 6 times as much as in South Africa. In sum, Uganda’s level of physical access to schools performs poorly in both absolute and relative terms.

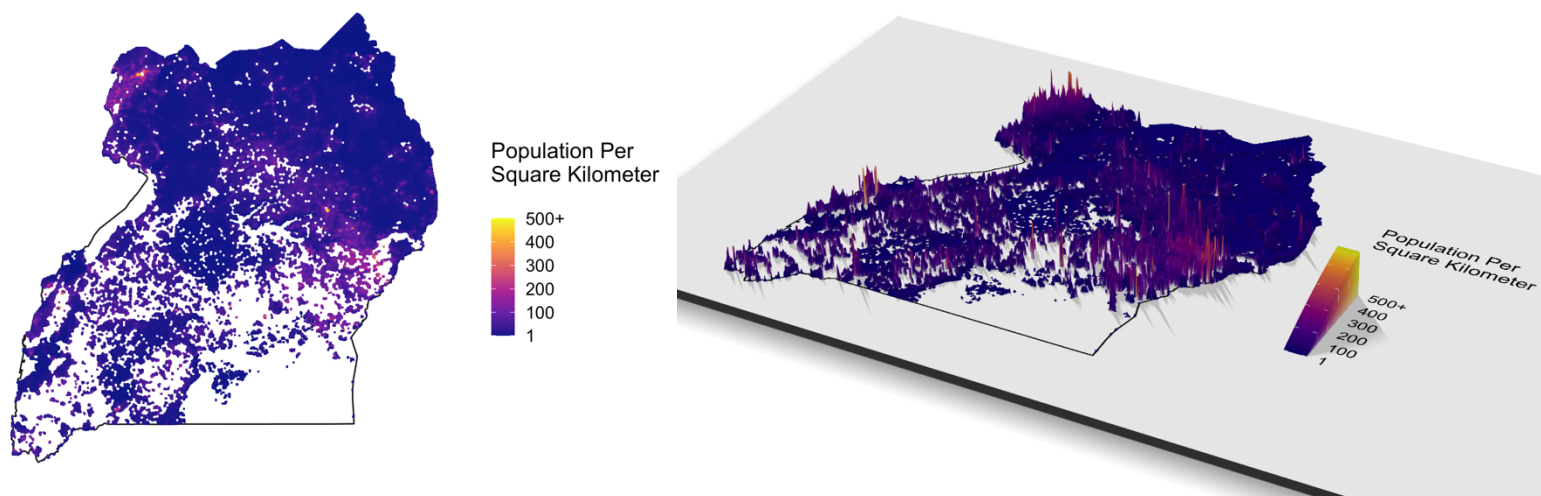
Figure 2: comparison of physical access to education in Ugandan with other Sub-Saharan African countries



How are educational deserts spread out geographically across Uganda?

Physical access to schools is unequal throughout Uganda. The figure below shows the areas (i.e., cells of 1km-by-1km) where people live further than 3 km from the nearest public primary school, weighted by the total population in each cell. Cells with more yellow and orange tones represent the most populated education deserts. From these figures, it appears that areas in the north-western and eastern portions of the country stand out as regions where there are critical masses of people without physical access to schools. However, there are large education deserts (i.e., “lighter color zones” in the map below) other regions in more Southern areas of Uganda.

Figure 3: detailed visualization of where populations further than 3 km from public primary schools are



Panel A: two-dimensional map showing the location of the largest concentrations of people living further than 3 km from a public primary school, where the color of the bar represents higher population densities

Panel B: three-dimensional map showing the location of the largest concentrations of people living further than 3 km from a public primary school, where the height and the color of the bar represents higher population densities

How many parishes are there without a school?

Few parishes in Uganda have a public primary school within their borders. As Table 1 below shows, slightly over half of all parishes have a school. This means that there are around 3,600 parishes that do not have a school. When we include all 20,791 primary schools in this analysis, about 71% of all parishes have at least one school, meaning that *at least 2,000 parishes do not have any type of school within their borders.*

Table 1: parishes without schools within their borders		
	Core schools	All schools
Share of parishes with school	51.6%	70.8%
Number of parishes <i>without</i> a school	3,598	2,069

What districts have the highest degree of “education deserts”?

The top districts where education deserts affect most children are in the Northern and Eastern regions. For instance, there are over 840,000 million children in the Apac, Arua, Lira, and Yuru districts who live further than 3 km from a school. In total, there are over 1.2 million children who live further than 3 km in the northern regions that make up the top 10 in terms of districts by physical access to education. In the Eastern district instead, looking only at Soroti, Kumi, and Katakwi, there are almost half a million children living further than 3 km from a school. In total, there are 1.7 million children living further than 3 km from a school across all top 10 districts by physical access to school. Figure 4 and Table 2 below provide further details about these districts.

Figure 4: districts with highest number of children in “education deserts”

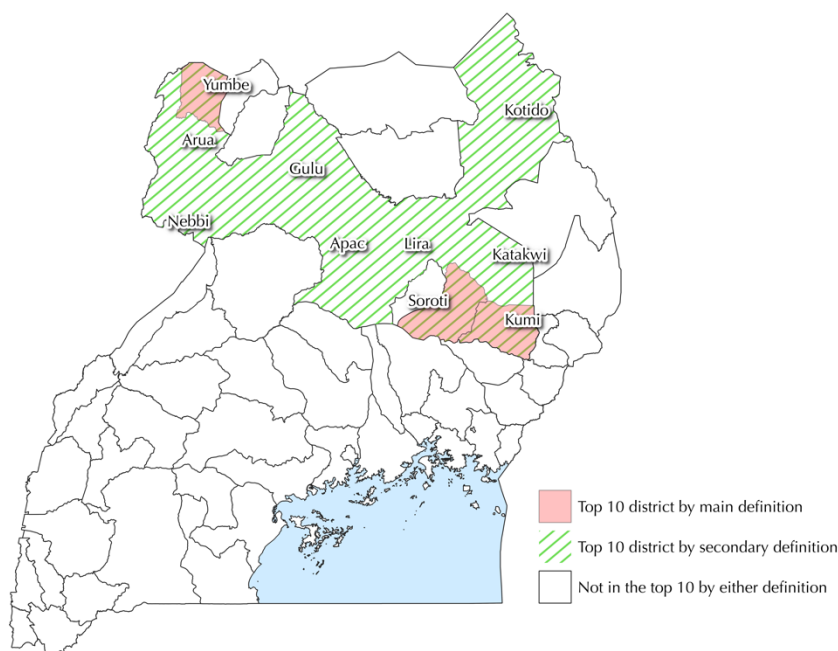


Table 2: Children living in education deserts by district				
Ranking	By the main definition		By the secondary definition	
	District	Population	District	Population
1	Soroti	9,075	Arua	270,231
2	Yumbe	2,270	Apac	211,737
3	Kumi	1,336	Kumi	191,049
4 ²			Lira	185,817
5			Yumbe	175,763
6			Soroti	158,885
7			Gulu	146,914
8			Katakwi	139,030
9			Kotido	112,836
10			Nebbi	106,456

² There are not enough “education deserts” by the main (i.e., more “strict”) definition when we include all schools in our core set. Therefore, we only report the top three districts by this definition in Table 2.

What are the top 10 counties and sub-counties by number of children without access to a public primary school?

Table 3: Children living in education deserts, by county						
Ranking	District	By the main definition		District	By the secondary definition	
		County	Population		County	Population
		Soroti				
1	Soroti	(Municipality)	7,056	Yumbe	Aringa	175,763
2	Yumbe	Aringa	2,270	Kumi	Kumi	84,608
3	Soroti	Soroti	2,020	Soroti	Soroti	82,764
4	Kumi	Kumi	713	Apac	Oyam	81,718
5 ³	Kumi	Ngora	624	Kumi	Bukedea	62,389
6				Katakwi	Amuria	60,092
7				Arua	Maracha	59,363
8				Arua	Terego	58,586
9				Apac	Kole	57,681
10				Pader	Agago	55,810

Table 4: Children living in education deserts, by sub-county								
Ranking	District	By the main definition			District	By the secondary definition		
		County	Sub-county	Population		County	Sub-county	Population
		Soroti						
1	Soroti	(Municipality)	Eastern Division	4,164	Yumbe	Aringa	Kuru	31,955
2	Soroti	(Municipality)	Western Division	2,291	Yumbe	Aringa	Romogi	27,895
3	Yumbe	Aringa	Kuru	2,270	Yumbe	Aringa	Odravu	27,746
4	Soroti	Soroti	Soroti	2,020	Masindi	Kibanda	Kiryandongo	27,740
5	Kumi	Kumi	Kumi Tc	713	Yumbe	Aringa	Midigo	27,583
6	Kumi	Ngora	Ngora	624	Yumbe	Aringa	Drajani	25,027
7	Soroti	Soroti	Northern Division	601	Hoima	Buhaguzi	Kyangwali	25,022
8					Mayuge	Bunya	Malongo	23,477
9					Nakapiripirit	Chekwii	Kakomongole	20,308
10					Yumbe	Aringa	Kei	19,833

³ There are not enough “education deserts” by the main (i.e., more “strict”) definition when we include all schools in our core set. Therefore, we only report the top five and seven counties and sub-counties respectively by this definition in Tables 3 and 4.