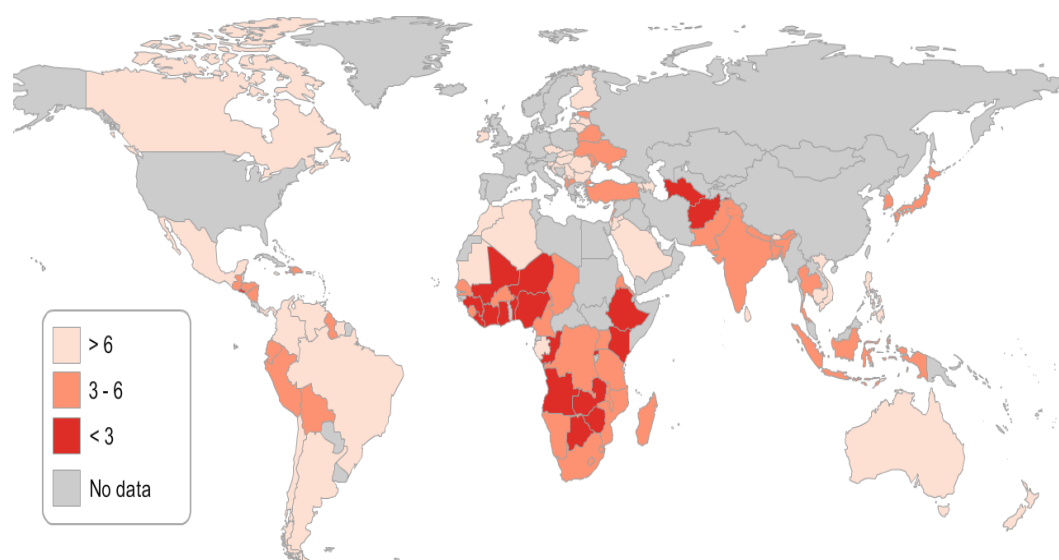


Challenges in estimating childlessness

Involuntary childlessness is a distressing condition for many men and women throughout the world. It is increasing in the developed world for a variety of reasons and has received much attention from many different disciplines. In many low income countries with high desired fertility levels, universal marriage and very little voluntary childlessness, the effects and implications of primary sterility, especially for women, can be devastating. It is clear that good data are needed on the levels of primary sterility in order to address this significant public health problem.

The United Nations Population Division routinely publishes data on childlessness for all countries for which data are available, with the main sources of data being population censuses and surveys, especially Demographic and Health Surveys (DHS). While it is expected that countries with high desired fertility and early and universal marriage will have lower levels of primary sterility, all other factors being equal, there is a physiological lower limit which has been identified through work on historical populations with fertility approximating natural fertility. This lower level of primary sterility is around 3% (Bongaarts and Potter 1983). However, many countries are expected to have higher levels of primary sterility due to sexually transmitted infections (including HIV) and the sequelae of unsafe abortions being key influences, with possibly also malaria, female genital mutilation, mumps and malnutrition contributing to elevated levels of sterility. Given the preponderance of these conditions in many parts of Africa, it is expected that primary sterility in Africa will be greater than the lower levels seen in populations such as the Hutterites (Frank 1983). Since fertility remains high in much of Africa, marriage is nearly universal and voluntary childlessness is negligible, it is expected that childlessness rates should approximate the levels of primary sterility although should be slightly higher.

Figure 1: Percent of women childless among all women aged 45-49 (latest available year since 2000)



Source: United Nations Population Division (2013). Map generated using StatPlanet

However, the childlessness data reported in the Demographic and Health Surveys for many countries for all women aged 40-44 or 45-49 (i.e. at the end of their childbearing years), especially in Africa are far lower than expected, even below the 3% reported as the lower bound in historical populations. This paper explores the reasons behind the very low levels of childlessness reported.

I identify the regions reporting particularly low childlessness and examine how this childlessness fits in with overall fertility trends, highlighting countries where the ratio of fertility to childlessness is particularly unusual. I also carry out a cohort analysis of the countries with low levels of childlessness where there is a series of DHS data across time in order to examine the trends in childlessness across cohorts and whether they match the expected pattern. Furthermore, I compare data from DHS on childlessness with those reported in censuses in countries where both a DHS and a census were conducted within the same time frame in order to examine the discrepancies between the data sources. Finally, I examine the DHS data which deviate most from the expected trends to identify whether there are any biases according to the background characteristics of the respondent, the household and/or the interviewer and adjustments which can be made to the data to account for any biases.

Initial findings show that the DHS data are indeed much lower than expected and the validity of the data is questionable.

Table 1 shows a cohort analysis of a number of countries with low levels of childlessness and three or more DHS waves. The findings demonstrate in some cases increasing levels of childlessness across cohorts – a situation which is unfeasible in the absence of certain highly unlikely significant demographic changes such as in-migration of significant numbers of childless women or significantly elevated mortality of women with children. Similarly, some of the decreases in childlessness between the age groups 40-44 and 45-49 are not consistent with the prevailing period fertility rates, indicating that the data measurement issues are not consistent with age.

Table 1: Percent of women childless by age group, country and birth cohort

Country	Birth cohort	Age group of respondent			
		30-34	35-39	40-44	45-49
Benin	1962-1966	3	1.3	2.1	
	1957-1961		1.3	1	1.1
	1952-1956			2.2	2.5
Ethiopia	1966-1970	4.5	2.7	2.8	
	1961-1965		3.5	2.7	1.9
	1956-1960			1.8	1.6
Ghana	1964-1968	6.1	5.1	2.6	
	1959-1963	2.4	3.2	2.8	1.5
	1954-1958	2.2	4	1.1	1.6
	1949-1953		1.7	2.6	2.5
Kenya	1965/6-1969/70	2.7	2.8	2.6	
	1960/1-1964/5	4.5	2.4	1.9	0.7
	1955/6-1959/60	2.9	2.5	1.7	2.7
	1950/1-1954/5		2.2	2.7	2.6
	1945/6-1949/50			2.3	1.1
Nepal	1967-1971	4.5	3.1	3.1	
	1962-1966	5	4.2	3.7	4.2
	1957-1961		3.2	2.9	2.9

	1952-1956			3	3.1
Malawi	1962-1966	3	2.2	1.3	
	1957-1961		2.2	1.3	1.6
	1952-1956			1.8	2.1
Mali	1962-1966	3.4	3	2.5	
	1957-1961		1.9	2.6	2
	1952-1956			2.1	2.2
Rwanda	1966-1970	5.4	3.1	4.2	
	1961-1965		2.4	2.9	2
	1956-1960			1.3	2.2
Uganda	1961/2-1965/6	4.6	3.6	2.6	
	1956/7-1960/1		3.4	4.7	3.2
	1951/2-1955/6			2.2	3.7
Zambia	1967/8-1972/3	3.8	2.5	3.9	
	1962/3-1966/7	3.9	1.4	1.7	1.9
	1957/8-1962/3		2	1.3	1.8
	1952/3-1956/7			1.4	0.9
Zimbabwe	1965/6-1969-70	5.2	2.8	3	
	1960/1-1964/5	3.2	3.7	2.4	2.2
	1955/6-1959/60		2.1	2.7	2.6
	1950/1-1954/5			2.4	1.9

Source: DHS data

Childlessness is correlated with overall fertility trends. I examined the relationship between childlessness and fertility to see whether the very low levels of are consistent with high fertility. Results show that childless rates in sub-Saharan African countries other than Middle Africa are more likely to deviate from the predicted relationship with completed fertility for women aged 40 to 49.

Table 2 compares the DHS results with the census results where a DHS and a census were conducted within the same approximate timeframe. These results demonstrate the level of discrepancy between childlessness reported in the census and childlessness reported in the DHS. It is known that censuses under-report births, especially where the child died in infancy, so it is likely that the censuses are over-reporting childlessness. However, the relatively high difference between the estimates from the census and the estimates from the DHS is too great in many countries to be fully explained by under-reporting. It can be seen that the problem is particularly prevalent in sub-Saharan African countries.

Table 2: Comparison of childless rates of women aged 45-49 between the census and DHS in selected countries

Country	Census		DHS	
	Year	Value	Year	Value
Benin	1992	5.95	1996	1.30
Bolivia	2001	4.65	2003	3.70
Burkina Faso	2006	4.21	2003	0.90
Cambodia	2008	7.99	2010	7.70
Dominican Republic	2002	6.89	2002	4.50
Malawi	2008	3.36	2010	1.60
Mali	1998	6.75	2001	2.10
Mozambique	2007	7.26	2003	3.10
Nepal	2001	11.99	2001	3.00
Uganda	2004	4.67	2006	3.20
Zambia	1990	10.88	1992	1.40

Larsen discusses some of the issues with DHS data in sub-Saharan Africa (Larsen 2000, Larsen 2003). Due to the stigma attached to infertility, childless women may avoid being interviewed, not respond truthfully to questions on children ever born or not distinguish between biological and adopted/fostered children, leading to childlessness being underestimated. She suggests using the DHS estimates as a lower bound of primary infertility and also finds the DHS data on infertility can be to infer relative levels of infertility. However, since many surveys are reporting childlessness levels below that considered biologically feasible in any population and certainly not feasible in populations with high levels of sexually transmitted infections and unsafe abortions, it is probably not accurate to accept the childlessness reported by DHS as a lower bound.

Furthermore, using the reported estimates to infer relative levels of childlessness means that the bias in the surveys will be the same across countries and across regions within countries. Given that this will be influenced by the prevailing social and cultural norms, it cannot be assumed that this will be the case across or within regions. Indeed, it may not even be possible to use the reported data to determine temporal trends in the same country. The next stage of this study will look at the variation in reported childlessness within countries and also look at the interviewer effect and whether this remains constant across surveys in order to determine whether childless data can be used for relative analysis and whether any adjustments will need to be made to better reflect actual levels of childlessness.

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