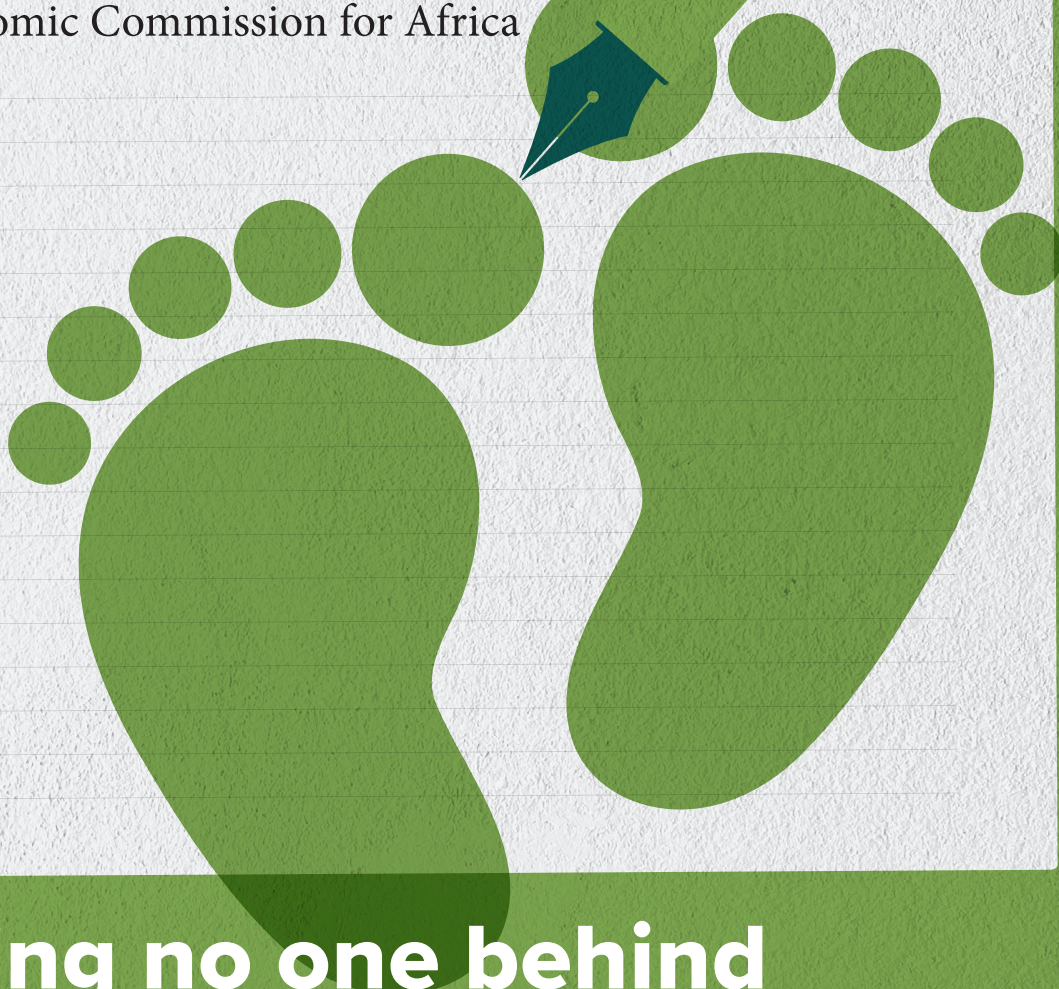




United Nations
Economic Commission for Africa



Leaving no one behind for civil registration in Africa

**Inequality in birth registration
in African countries**



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Executive summary

Data drawn from the surveys conducted in 37 African countries, as part of the Demographic and Health Surveys programme and the Multiple Indicator Cluster Surveys programme,¹ have been used to investigate factors influencing birth registration rates, focusing specifically on groups of children under 5 years of age who are likely to be left behind. In 24 of the 37 countries, registration rates were above 60 per cent. The countries in North Africa have achieved universal birth registration, and a small number of other countries, including Benin, the Comoros, the Congo, Côte d'Ivoire and Gabon, have made impressive progress, with registration rates above 90 per cent. Birth registration rates were below 50 per cent in 11 countries, including 4 countries – Angola, Chad, Ethiopia and Zambia – where the rates were below 30 per cent.

Several significant characteristics are common to children likely to be left behind. Children living in households in the bottom 40 per cent of the wealth distribution were shown to be at a disadvantage in 26 of the 37 countries. Children under the age of 2 years were the

second group of children most likely to be left behind. Countries with high inequality, identified with a high dissimilarity index score, had low birth registration rates, and the opposite trend was observed in countries with lower inequality, which tended to have high birth registration rates, and, thus, smaller variations in registration rates among different groups of children under 5 years of age. Birth registration inequalities were highest in Angola, Ethiopia, Guinea-Bissau, Uganda and Zambia.

In 13 countries, two surveys were conducted after 2015, which means that birth registration can be analysed over time. Significant factors driving the likelihood of children being left behind in those countries at the two survey points were the socioeconomic status – living in the bottom 40 per cent of the wealth distribution – of the household to which the children belong. In 5 of the 13 countries, national average birth registration rates improved by more than five percentage points between the two surveys; in four of those five countries, there was also an increase of at least five percentage points in registrations among the furthest left behind group.

¹ For more information about the surveys, see <https://dhsprogram.com/> and <https://mics.unicef.org/>.



I. Background

Many aspects of the current civil registration and vital statistics systems in Africa are legacies of colonial administrations, which were largely discriminative and limited registration of vital events to those of specified groups, mainly foreigners (Makannah, 1981; Jewkes and Wood, 1998). In the post-colonial era, efforts to improve civil registration and vital statistics systems on the continent have been hampered by poor legislative frameworks, inadequate infrastructure and weak coordination among stakeholders (Adair and Lopez, 2018). Extensive investments in improving the efficiency and completeness of civil registration and vital statistics systems in recent years globally, driven by investment by international organizations and development partners regionally, have produced positive outcomes across regions that had previously been left behind (Mills, Lee and Rassekh, 2019), including increased timely registration of births.

At the regional level, the creation of the Conference of African Ministers Responsible for Civil Registration has provided impetus for the improvement of civil registration and vital statistics in Africa and resulted in the introduction of the Africa Programme on Accelerated Improvement of Civil Registration and Vital Statistics Systems. The Programme reflected the political commitment and policy directives of the ministers responsible for civil registration that called for holistic and integrated approaches to reforming and improving civil registration and vital statistics systems on the continent (United Nations, Economic Commission for Africa (ECA); African Union Commission; and African Development Bank, 2012). Agenda 2063: The Africa We

Want, of the African Union, is a strategic continental framework for the social and economic transformation of Africa and includes, under aspiration 3, a goal to register every child's birth and other vital events. Pursuant to the African Charter on the Rights and Welfare of the Child, every child has the right: to a name from birth; to be registered immediately after birth; and to acquire a nationality. Furthermore, States are obliged under the Charter to acknowledge and recognize the right of each child to acquire the nationality of the State in the territory of which he or she was born.

At the global level, the importance of civil registration and vital statistics systems has been integrated into the framework of the Sustainable Development Goals. Two of the indicators for the Goals are explicitly focused on civil registration and vital statistics: indicator 16.9.1, for tracking the proportion of children under 5 years of age whose births have been registered with a civil authority; and indicator 17.19.2, for monitoring the proportion of countries that have conducted at least one population and housing census in the past 10 years and have achieved 100 per cent birth registration and 80 per cent death registration. Article 7 of the Convention on the Rights of the Child provides for the right of every child to be registered immediately after birth and to have the right from birth to a name, to acquire a nationality and, as far as possible, to know and be cared for by his or her parents.

The registration of vital events, including birth, is fundamental to the protection of the rights of individuals, given that it establishes a person's identity through an official and permanent record of their existence. It helps to ensure access

to opportunities, such as education, and protection against child labour. For women, it means financial inclusion, has implications for access to sexual and reproductive healthcare and to decent work and for protection against violence (United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP), 2024). That official record, demonstrated by possession of a birth certificate, helps to establish entitlement to nationality and is often a prerequisite for obtaining documentation that proves nationality.

According to the United Nations Children's Fund (UNICEF) (2024), approximately 88 per cent of unregistered births are in Southern Asia and sub-Saharan Africa. Of all unregistered children worldwide, more than half live in sub-Saharan Africa (UNICEF, 2024). Although impressive strides have been made in improving birth register completeness in recent years, evidence has shown that high-level indicators of completeness, typically used as evidence of improved registration, mask critical differences at the subpopulation and subregional levels (United Nations, ESCAP, 2024). The indicators fail to adequately convey the vastness and complexity of the populations and to identify those excluded.

A myriad of barriers still affect birth registration in Africa. On the supply side, such constraints as financial costs associated with registration, distance to registration centres and awareness affect mainly populations that are marginalized (Paleker and others, 2023). On the demand side, factors at the household and individual levels, including household

socioeconomic status, location of the household and education level, combine to explain the low birth registration levels in several African countries (Aboagye and others, 2023; Zewoldi, 2022).

Work that has been done in Asia and the Pacific has resulted not only in assessments of average and aggregate progress, but also in analysis of the fulfilment of the transformative promise by the States Members of the United Nations to leave no one behind, identifying the populations that experience multiple and intersecting forms of discrimination and inequalities, and leading to efforts to ensure progress for all population groups at a disaggregated level (United Nations, ESCAP, 2024).

The present report helps to achieve the vision of the African Centre for Statistics at ECA of providing evidence-based research to identify barriers to universal registration of vital events. Building on the work done by ESCAP as part of the call, in the context of the 2030 Agenda for Sustainable Development, to leave no one behind, the report provides an investigation of the common characteristics and conditions that influence birth registration rates in Africa, with a particular focus on children under 5 years of age. The work is, therefore, directly linked with target 16.9 of the Sustainable Development Goals, on providing legal identity for all, including birth registration, by 2030, and indicator 16.9.1, on the proportion of children under 5 years of age whose births have been registered with a civil authority.



II. Data sources and methodology

A. Data sources

The present report focuses on disparities in birth registration within Africa. Data are drawn from surveys conducted as part of the Demographic and Health Surveys programme and the Multiple Indicator Cluster Surveys programme, including the enquiries regarding birth registration, conducted in 37 countries in the region after 2015, following the adoption of Sustainable Development Goal targets. The countries and surveys used in the analysis are shown in table 1. In eight other countries, the most recent surveys were undertaken prior to 2015, and, therefore, those countries were excluded from the analysis. Some countries, including

Botswana, Cabo Verde and Mauritius, had not conducted a survey under either of the programmes.² Somalia conducted, as part of the Demographic and Health Surveys programme, a survey in 2022, but there were concerns about the quality of some of the variables needed for the present purposes, and, therefore, it could not be included in the analysis.

The advantages of the programme surveys are the accessibility of the data sources and the consistency of questions across countries and time, which enables comparability.

Table 1 Countries and their surveys used in the analysis

Country	Subregion	Survey year(s)	
		Multiple Indicator Cluster Survey	Demographic and Health Survey
Algeria	North Africa	2018–2019	n/a
Angola	Southern Africa	n/a	2015–2016
Benin	West Africa	2021–2022	n/a
Burkina Faso	West Africa	n/a	2021
Burundi	East Africa	n/a	2016–2017
Cameroon	Central Africa	n/a	2018
Central African Republic	Central Africa	2018–2019	n/a
Chad	Central Africa	2019	n/a
Comoros	East Africa	2022	n/a
Congo	Central Africa	2014–2015	n/a
Côte d'Ivoire	West Africa	n/a	2021
Democratic Republic of the Congo	Central Africa	2017–2018	n/a
Eswatini	Southern Africa	2021–2022	n/a
Ethiopia	East Africa	n/a	2016
Gabon	Central Africa	n/a	2019–2021
Gambia	West Africa	n/a	2019–2020

² Botswana has a demographic survey but it is not part of the Demographic and Health Surveys programme nor the Multiple Indicator Cluster Surveys programme.

Ghana	West Africa	n/a	2022
Guinea	West Africa	n/a	2018
Guinea-Bissau	West Africa	2018–2019	n/a
Kenya	East Africa	n/a	2022
Lesotho	Southern Africa	2018	n/a
Liberia	West Africa	n/a	2019–2020
Madagascar	East Africa	n/a	2021
Malawi	Southern Africa	2019–2020	n/a
Mali	West Africa	n/a	2018
Mauritania	West Africa	n/a	2019–2021
Mozambique	Southern Africa	n/a	2022–2023
Nigeria	West Africa	2021	n/a
Rwanda	East Africa	n/a	2019–2020
Senegal	West Africa	n/a	2023
Sierra Leone	West Africa	n/a	2019
Togo	West Africa	2017	n/a
Tunisia	North Africa	2023	n/a
Uganda	East Africa	n/a	2016
United Republic of Tanzania	East Africa	n/a	2022
Zambia	Southern Africa	n/a	2018
Zimbabwe	Southern Africa	2019	n/a

Abbreviation: n/a, not applicable.

Birth registration questions have been treated as response variables. In the two surveys, birth registration is asked in relation to children under 5 years of age in questions to either the mother or the primary caregiver. The questions are: “Does (name) have a birth certificate?” and “Has (name)’s birth been registered with the civil registration authority?”. Responses to the questions and other factors were used to make profiles of respondents in order to gain a deeper understanding of the circumstances affecting birth registration.

Factors considered in the analysis included household-level variables, such as household wealth status and the urban or rural location of residence. The ethnicity, religion and language of

the household were also considered, for which those characteristics of the household head were used as a proxy. In the surveys of the Demographic and Health Surveys programme, however, ethnicity questions were targeted only at eligible men and women, which means that the information on the ethnicity of the children was limited to those for whom there was an eligible respondent. In some countries where Multiple Indicator Cluster Surveys were conducted, such as Zimbabwe, ethnicity was not considered, and, in those instances, ethnicity was excluded from the analysis. Individual-level variables used in the analysis were the age, marital status and education level of the mother and the sex and age of the child.

B. Methodology

1. Classification and regression trees

To ascertain the cohorts of children under 5 years of age exhibiting the most significant disparities in birth registration, classification and regression tree models have been developed for each country as binary regression trees using R, an open-source statistical software environment. The classification and regression tree is a machine-learning technique: specifically, it is a decision tree for building prediction models from data. It can handle classification and regression tasks. The models are created by recursively splitting the data and fitting a simple prediction model to each partition. As a result, the partitioning can be depicted as a decision tree. A tree consists of nodes and branches. The nodes represent decision points, and the branches represent the possible outcomes of those decisions. A tree has various types of nodes: roots,

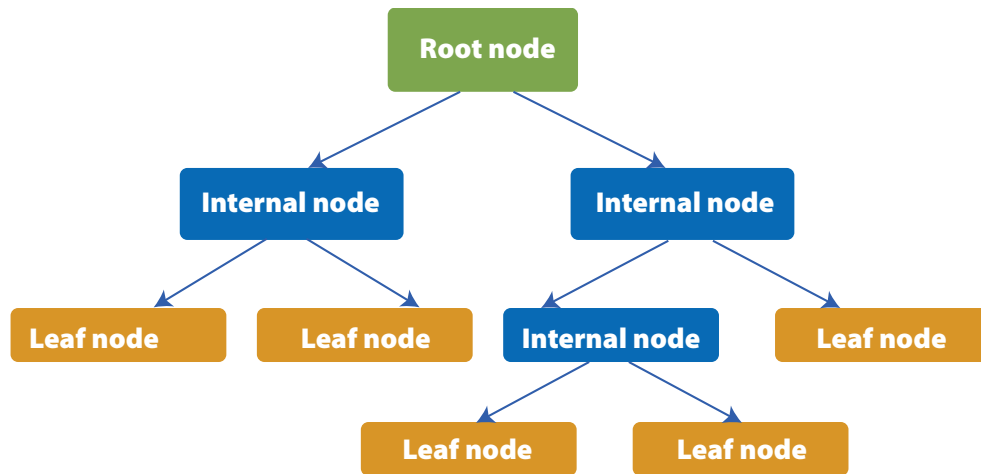
parents, children and leaves or terminals. The root node is the first or topmost node in a tree and refers to the entire sample; a parent node is a predecessor to another node; a child node is a descendant of a parent node; and a leaf or terminal node, which does not have a child, contains a predicted class label or value for the target variable. Terminal nodes are those that cannot be partitioned further, analogous to leaves on a real tree.

The classification and regression tree is used to evaluate every possible split at each node and select the route that results in maximized homogeneity of the target variable within each subset. The process is repeated until a stopping criterion is met, such as reaching the maximum tree depth or having too few instances in a leaf or terminal node.

In the present study, the analysis of variance method of the recursive partitioning in regression trees function in R has been used. The application of the algorithm results in nodes for each partition step by step, starting with the full sample. When a sample is partitioned, new nodes are created and an analysis of variance is conducted, in which variance is calculated and compared with the

previous partition. Each partition, and thus the new pair of nodes, is preserved when the decrease in variance reaches a predefined threshold, also known as the complexity parameter. New partitions cease being created if the best accessible partition does not meet the complexity parameter or other preset parameters (Roman, 2023).

Figure I Example of a classification and regression tree



Source: Author.

The formula that represents the core of the algorithm is: $SS_E = SS_T - (SS_L + SS_R)$, where $SS_T = \sum (Y_i - \bar{Y})^2$ is the sum of squares for the parent node, SS_L and SS_R are the sums of squares for the left and right child nodes, respectively, and SS_E is the error sum of squares. The sum of squares is a measure of the deviation of data points $[Y_1, Y_2, \dots, Y_n]$ away from the mean value $\bar{Y}$. The analysis of variance test is applied in the classification and regression tree algorithm to each potential split or partition of the sample population based on factors, creating splits where the variance between the sum of squares of child nodes and the parent node are minimized. In the context of birth registration, SST refers to the

variance in the sum of squares for the proportion of children under 5 years of age who have their birth registered. The partitioning of the sample into L and R, or left and right nodes, respectively, depends on the variables chosen to explain birth registration. The use of classification and regression trees results in binary divisions and facilitates consideration of all potential combinations when there are multiple splits. L and R nodes are mutually exclusive and complementary, with each subject of analysis – in the present study, the subjects of analysis are children under 5 years of age – belonging to just one node at every partition of the tree generation.

To avoid overly complex trees and thereby avoid overfitting, the minimum sample size required for further splitting was set at 9 per cent of the total sample size and the maximum depth of the tree was set to six levels. As a result, the iterative process of building the tree stopped when splitting no longer added value to the predictions.

The present analysis is focused on certain demand-side factors that are likely to affect the registration of births. Household-level factors, including the household's position in the wealth distribution of the country – within the top 60 per cent or bottom 40 per cent – and the urban or rural place of residence are considered. Individual-level factors that are considered are the number of children under 5 years in the household; the child's age (1, 2, 3 or 4 years old), sex (boy or girl) and place of delivery (hospital or home/other); and the age group of the mother (15–24 years, 25–34 years or 35–49 years), her educational attainment (lower, secondary or higher education) and her marital status (currently married, formerly married or never married).

The 37 countries in the study did not conduct the surveys within the same year or period. The survey periods vary, from the survey conducted in 2015 in the Congo to the latest surveys conducted in 2023 in Lesotho, Mozambique and Senegal. The variation in timeliness of the survey implies that birth registration rates could have changed in some countries over time as a result of continued interventions.

Although the effect of supply-side factors that are likely to have an impact on the registration of births, such as distance to registration centres, cost of birth registration and awareness of the registration process, have been identified in research (Roman, 2023; Paleker and

others, 2023), they are not explored in the present paper.

Given the role played by ethnicity in Africa, explored, for example, by Alesina, Michalopoulos and Papaioannou (2012), Oino and Kioli (2014) and Idowu, Oladiti and Adenuga (2019), the ethnicity of the household head is also included in the analysis in countries where Multiple Indicator Cluster Surveys were conducted.

2. Dissimilarity index

In addition to classification and regression tree models, the dissimilarity index has been used in the present study. The index is a demographic tool that is commonly used to measure the extent to which two groups are evenly distributed across a larger area, on a range from 0.0 (complete integration) to 1.0 (complete segregation). The index was originally used in studies on residential segregation and, over time, has been used in various other fields to assess levels of inequality. In the present analysis, the index is used to compare the birth registration rates of each of the groups of children with the national average in each country. The groups are defined by combinations of categories of factors (United Nations, ESCAP, 2024).

The index is calculated using the formula $D = \frac{1}{2p} \sum_{i=1}^n \beta_i |p_i - \bar{p}|$ where n is the number of groups, which are defined using all possible combinations of factor categories, $\bar{p}$ is the average birth registration rate in the country, p_i is the birth registration rate of the i th group, and β_i is the weighted sampling proportion of the i th group where $\sum_{i=1}^n \beta_i = 1$. The values of D range from 0 (no inequality) to 1 (complete inequality) (Duncan and Duncan, 1955).



III. Characteristics of children with the lowest birth registration rates

The focus of the present section is the most disadvantaged children, specifically those with the lowest birth registration rate in each country, and the identification of shared circumstances among them.

The variance in the periods to which the surveys used in the present study pertain should be taken into consideration when interpreting the findings. In such countries as Angola, Burundi, the Congo, Ethiopia and Togo, the data used relate to a much earlier period compared with data for such countries as Lesotho, Mozambique and Senegal.

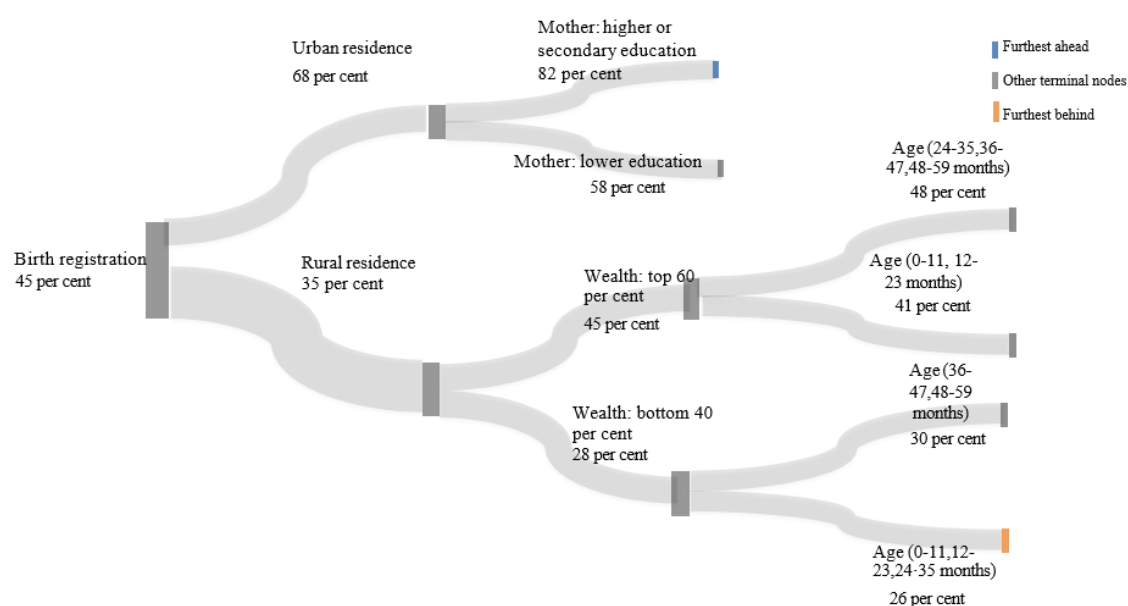
The application of the classification and regression tree method is demonstrated in figures II and III, which show the results for the Central African Republic and Lesotho, respectively. The figures illustrate the ways in which various factors interact to reveal the furthest ahead children and those likely to be left behind. For the Central African Republic, at the national level, 45 per cent of children under 5 years had their births registered. Looking at the furthest behind, of the factors considered, place of residence has the largest

significant differential effects on birth registration. Rural residence presents as a disadvantage: births were registered for only 35 per cent of children under 5 years of age in that group. For children from urban households, registration increased to 68 per cent.

Another circumstance affecting children under 5 years from rural areas is the wealth status of their household. Registration rates decline further to 28 per cent for children from households in the bottom 40 per cent of wealth distribution, whereas children from wealthier rural households fare much better, with birth registration rates increasing to similar rates that are observed at the national level in the country: 45 per cent.

The final split for children from poorer rural households compares children under 3 years of age with those aged 3 years or more. Registration rates for children under 3 years of ages decline further to a mere 26 per cent, compared to children of 3 or 4 years of age, whose registration rates increase slightly to 30 per cent. There are no further significant splits.

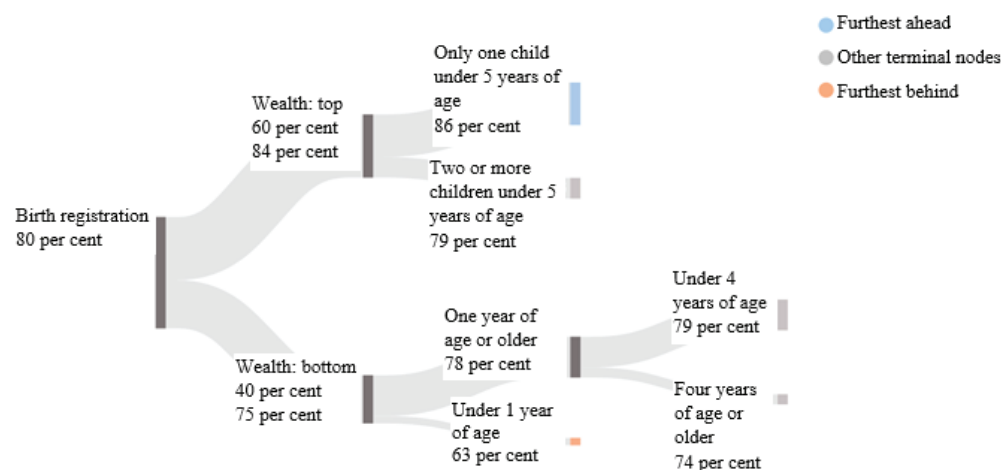
Figure II Classification and regression tree to show the percentage of birth registrations for children under 5 years of age in the Central African Republic



Source: Multiple Indicator Cluster Survey 2018–2019. Developed by ECA with support from ESCAP.

Note: Standard analysis with 8,923 observations.

Figure III Classification and regression tree to show the percentage of birth registrations for children under 5 years of age in Lesotho



Source: Demographic and Health Survey 2023. Developed by ECA with support from ESCAP.

Note: Standard analysis with 2,904 observations.

Table 2 shows the characteristics of children aged under 5 years who were most likely to be left behind in each country, in addition to the birth registration rate of the furthest behind group, the national average birth registration rate and the size of the furthest behind group, as a percentage of all children under 5 years of age. Defining characteristics of the furthest behind groups were the household being within the bottom 40 per cent of the wealth distribution, the child's age of less than 2 years, the rural residence of the household, the lower educational level of the mother or caregiver and the presence of two or more children aged under 5 years in the household. The socioeconomic status of the household was the most common circumstance for children left behind in over 90 per cent of the countries.

Although the circumstances differed among the 37 countries included in the present analysis, several commonalities were identified. The leading factor for

children whose births were less likely to be registered was the household's wealth status being within the bottom 40 per cent of the wealth distribution. Children from 26 of the 37 countries were within that category. Tunisia was the only country where children in the top 60 per cent of the distribution were less likely to be registered. In six countries – Central African Republic, Chad, Congo, Ethiopia, Guinea and Zambia – living both in a household in the bottom 40 per cent of the wealth distribution and in rural areas were circumstances that characterized children left behind. In some countries there were stark variations, such as Chad, where births were registered for only 9 per cent of children living in households in the bottom 40 per cent of the wealth distribution compared with for 50 per cent of children living in households from the top 60 per cent of the wealth distribution. The education level of the mother was a significant circumstance for the furthest behind children in only six countries, namely Algeria, the Central

African Republic, the Comoros, Congo, Liberia and Malawi. In all those countries, except for the Central African Republic, birth registration levels were higher than 60 per cent. The presence of two or more children under 5 years of age in the household was a meaningful factor in identifying children left behind in four countries, and the presence of three or more children under 5 year of age was a central factors in three countries.

Although questions about the ethnic group of the household head were asked only in Multiple Indicator Cluster Surveys, when that variable was assessed it became apparent that children in households headed by some ethnic groups in a small number of countries, including the Adja and Fulani ethnic groups in Benin, the Goran, Kanembou, Ouaddai and Zaghawa ethnic groups in Chad and the Bantu ethnic group in the Democratic Republic of the Congo, among others, had the lowest likelihood of having their birth registered. Children under 1 year of

age were less likely to have their births registered in several countries, including Angola, the Gambia, Ghana, Lesotho and Zimbabwe.

The size of the group likely to be left behind and the birth registration rate for that group varied across countries. Ethiopia stands out as the only country where in the furthest behind group, representing 10 per cent of the children, none had their births registered. The country also had the lowest birth registration at only 3 per cent.³ Zambia had the second lowest national average rate of birth registrations, at 14 per cent, and, of those most likely to be left behind in the country, only 6 per cent of births were registered. The size of the furthest behind group in Zambia was the highest among all the countries analysed, at 46 per cent. For Angola and Chad, the national averages were 25 per cent and 26 per cent respectively; however, only 7 per cent and 1 per cent of the furthest left behind groups were registered in those countries, respectively.

A. Variations within subregions

The analysis shows that birth registration rates were higher in North African countries than in countries in other subregions. National averages in Algeria and Tunisia were 100 per cent. Although birth registration among children left behind was high in both countries, at 99 per cent, the size of the group left behind in Algeria was noticeably high, at 27 per cent.

There was a mixed picture in West Africa, where a lower household wealth status was a major factor in being left behind. The national average birth registration rate ranged from 99 per cent in Benin to

45 per cent in Mauritania. The lowest birth registration rate among those left behind was in Mauritania, at 15 per cent, and the highest birth registration rate among those children left behind was in Côte d'Ivoire, at 93 per cent.

In Central Africa, two countries stand out: in the Congo and Gabon, national birth registration averages were more than 90 per cent, and the registration rates among the groups left behind were the highest, at 79 per cent and 90 per cent, respectively. The lowest birth registration rate was recorded in Chad, with a 26 per

³ The survey period for Ethiopia, like for Angola and the Congo, is relatively early, and, therefore, birth registration rates may have improved since.

cent national average and only a 9 per cent rate among children left behind.

In East Africa, Rwanda had the highest birth registration rate, at 86 per cent, followed by Burundi, at 83 per cent. At 77 per cent, Rwanda had the highest registration rate among children left behind. Ethiopia, at 0 per cent, and Uganda, at 24 per cent, had the lowest registration rates among their groups left behind in the subregion. The household wealth status was the most common determinant of being left behind in East Africa, affecting seven of the eight countries in the subregion.

In Southern Africa, household wealth status was a major factor in being left behind. The national average birth registration rate was lowest in Zambia, where only 14 per cent of children were registered. The registration rate for those children most likely to be left behind in that country was 6 per cent, a group that constituted almost half of the children aged under 5 years in the country. The picture was also poor in Angola, where only 25 per cent of children were registered nationally. Lesotho had the highest registration rate, including among the children that were most likely to be left behind.

Table 2 Common factors among the children under 5 years of age who are most likely to be left behind, by country and survey year

Country and year of survey	Wealth	Residence	Ethnicity	Mother's education level	Mother's age	Mother's marital status	Child's age	Language	Number of children under 5 years of age	Sex	Proportion of births registered among the furthest behind group (percentage)	National average birth registration rate (percentage)	Size of the furthest behind group (percentage)
Algeria, 2019	n/a	n/a	n/a	Lower	n/a	n/a	n/a	n/a	n/a	n/a	99	100	27
Angola, 2016	B40	n/a	..	n/a	n/a	n/a	<1 year	n/a	n/a	n/a	7	25	10
Benin, 2022	n/a	n/a	Adja, Fulani	n/a	n/a	n/a	n/a	n/a	n/a	n/a	83	93	17
Burkina Faso, 2021	B40	n/a	..	n/a	n/a	n/a	n/a	n/a	>=3	n/a	71	85	17
Burundi, 2017	B40	n/a	..	n/a	n/a	n/a	<2 years	n/a	n/a	n/a	69	83	18
Cameroon, 2018	B40	n/a	..	n/a	n/a	n/a	<3 years	n/a	>=3	n/a	38	62	12
Central African Republic, 2019	B40	Rural	n/a	Lower	n/a	n/a	0–35 months	n/a	n/a	n/a	26	45	24
Chad, 2019	B40	Rural	Goran, Kanembou, Ouaddai, Zaghawa	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1	26	12
Comoros, 2022	B40	n/a	n/a	Lower	n/a	n/a	n/a	n/a	>=2	n/a	88	95	17
Congo, 2015	n/a	Rural	n/a	Lower	n/a	n/a	n/a	n/a	n/a	n/a	79	96	6
Côte d'Ivoire, 2021	B40	n/a	..	n/a	n/a	n/a	n/a	n/a	>=2	n/a	93	96	32
Democratic Republic of the Congo, 2020	B40	n/a	Bantu	n/a	n/a	n/a	n/a	Kiswahili, Luba	n/a	n/a	16	40	12
Eswatini, 2022	B40	n/a	n/a	n/a	n/a	n/a	<2 years	n/a	n/a	n/a	49	66	18
Ethiopia, 2016	B40	Rural	..	n/a	n/a	n/a	3<=age<4	n/a	n/a	n/a	0	3	10
Gabon, 2021	B40	n/a	..	n/a	15–24 years	n/a	n/a	n/a	n/a	n/a	90	96	12
Gambia, 2020	n/a	Urban	..	n/a	n/a	n/a	<1 year	n/a	n/a	n/a	38	59	14
Ghana, 2022	n/a	n/a	..	n/a	n/a	n/a	<1 year	n/a	n/a	n/a	56	75	7
Guinea, 2018	B40	Rural	..	n/a	n/a	n/a	n/a	n/a	n/a	Female	46	62	21
Guinea-Bissau, 2019	n/a	Rural	Fulani, Papel	n/a	n/a	n/a	<36 months	n/a	n/a	n/a	27	46	19
Kenya, 2022	B40	n/a	..	n/a	n/a	n/a	>=3 years	n/a	>=2	n/a	62	76	8
Lesotho, 2023	B40	n/a	..	n/a	n/a	n/a	<1 year	n/a	n/a	n/a	63	80	7

Liberia, 2020	n/a	n/a	..	Lower	n/a	Formerly married, never married	n/a	n/a	n/a	n/a	n/a	59	66	11
Madagascar, 2021	B40	n/a	..	n/a	n/a	n/a	<2 years	n/a	n/a	>=2	n/a	53	74	12
Malawi, 2020	n/a	n/a	Tumbuka, Lomwe, Sena, othera	Lower	n/a	n/a	n/a	n/a	n/a	n/a	n/a	50	67	8
Mali, 2018	B40	n/a	..	n/a	n/a	n/a	>=2 years	n/a	n/a	n/a	Female	75	87	13
Mauritania, 2021	B40	n/a	..	n/a	15–24 years	n/a	n/a	n/a	n/a	n/a	n/a	15	45	9
Mozambique, 2023	B40	n/a	..	n/a	25–49 years	n/a	<3 years	n/a	n/a	n/a	n/a	19	31	17
Nigeria, 2022	B40	n/a	Fulani, Kanuri	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	31	57	9
Rwanda, 2020	n/a	n/a	..	n/a	n/a	n/a	>1 year	n/a	n/a	n/a	n/a	77	86	20
Senegal, 2023	B40	n/a	..	n/a	15–24 years	n/a	n/a	n/a	n/a	n/a	n/a	71	81	12
Sierra Leone, 2019	B40	n/a	..	n/a	n/a	n/a	>=4 years	n/a	n/a	n/a	n/a	83	90	10
Togo, 2017	B40	n/a	Gourma, otherb	n/a	n/a	n/a	n/a	Kabye, otherc	n/a	n/a	n/a	58	83	14
Tunisia, 2018	T60	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	>=2	n/a	99	100	10
Uganda, 2022	B40	n/a	..	n/a	n/a	n/a	<1 year	n/a	n/a	n/a	n/a	24	32	9
United Republic of Tanzania, 2022	B40	n/a	..	n/a	n/a	n/a	n/a	n/a	n/a	>=3	n/a	50	68	13
Zambia, 2018	B40	Rural	..	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	6	14	46
Zimbabwe, 2019	n/a	Rural	..	n/a	n/a	n/a	0–11 months	n/a	n/a	n/a	n/a	20	49	13
Count	27	9	7	6	4	1	18	2	8	2	n/a	n/a	n/a	n/a

Source: ECA calculations based on latest surveys conducted as part of the Demographic and Health Surveys programme and the Multiple Indicator Cluster Surveys programme since 2015.

Note: B40 and T60 refer to households in the bottom 40 per cent and top 60 per cent, respectively, of the wealth distribution. Two dots (..) indicate the absence of data on ethnicity owing to the lack of a relevant question in the survey.

^a Excludes Chewa, Ngoni and Yao. ^b Excludes Adja, Ewe and Kabye. ^c Ewe, Mina and Moba-Gourma.

B. Differences in birth registration within and across countries

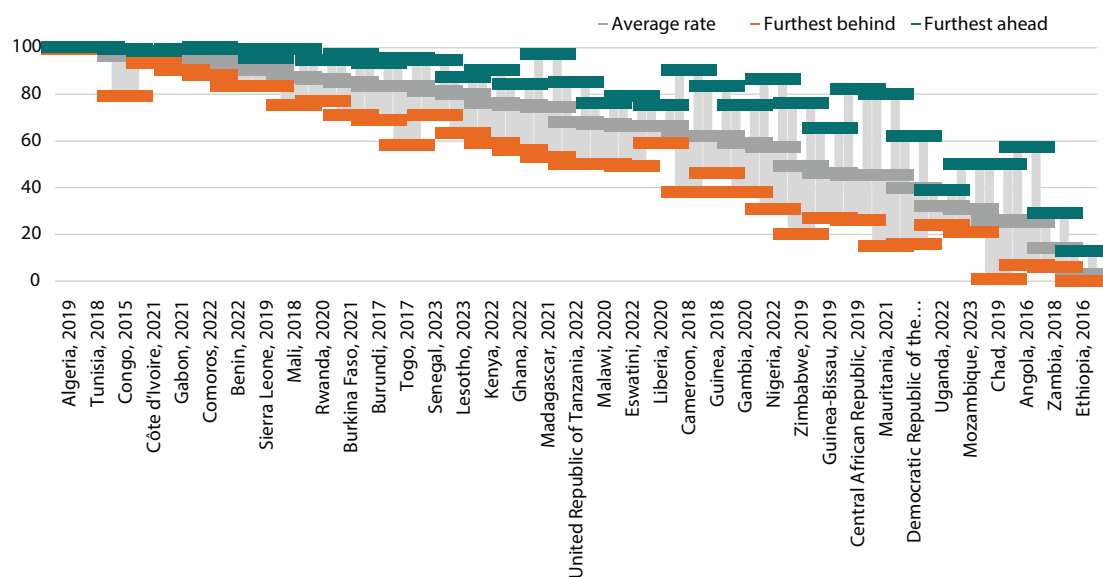
Figure IV shows differences in registration within each country in their reference years and enables comparison across the 37 countries analysed in the present paper. In 17 countries, including Angola, Ethiopia, Mozambique, Uganda and Zambia, less than 40 per cent of children under 5 years of age had their births registered, and the average registration rate across that group was 33.4 per cent. In some countries, including Algeria, the Congo, Côte d'Ivoire and Tunisia, there was almost universal birth registration. Generally, countries with lower birth registration rates tended to have larger differences between the furthest behind and the furthest ahead groups.

In most countries, the average birth registration rate was midway between the furthest behind children and those furthest ahead. In some countries, however, the average was skewed towards the furthest ahead, indicating the dire situation of the furthest behind children compared

with the furthest ahead. Countries in that group include, Ghana, Lesotho and Togo. In contrast, there are some countries, including Ethiopia, Liberia, Mozambique and Zambia, where the national average was skewed towards the furthest behind. In those countries, the situation of the furthest behind group was not very different from the national picture.

Countries with the highest birth registration rates tended to have lower variation between the furthest ahead and furthest behind children. That pattern was seen in Algeria, Côte d'Ivoire and Gabon, where the difference between the furthest ahead and furthest behind groups was less than 10 per cent. In some countries, however, including the Central African Republic, Mauritania, Nigeria and Zimbabwe, the difference between the two groups was more than 50 per cent.

Figure IV Birth registration rates within and across African countries (Percentage)



Source: ECA.

Note: The grey mark on each bar represents the national average birth registration rate, and the furthest ahead and furthest behind groups of children of 5 years of age are represented by blue and orange lines, respectively. The years to which the rates relate are given alongside the country names.



IV. Inequality in birth registration completeness within countries

The dissimilarity index has been used to compare the birth registration completeness of each group of children with the national average in each country, as described in section II. A value closer to zero indicates almost universal registration, whereas values closer to 1 indicate high inequality or that, for a given country, children under 5 years of age in only a specific group have their birth registered. The results of the comparison for African countries are shown in figure V. The average index score for the region was 0.16. A total of 14 countries had an index score above that average value, indicating higher levels of inequality. Countries with a score below the average include Algeria and Tunisia, with universal

registration, and Guinea and Liberia, with moderate registration rates. Countries with the lowest birth registration rates had the highest levels of inequality. Among those countries were Angola, Ethiopia, Guinea-Bissau, Uganda and Zambia. Ethiopia and Uganda were the most unequal countries in terms of registration rates, with index scores of more than 0.67 and 0.66, respectively, followed by Zambia, with a score of 0.42. In contrast, the countries with the lowest index scores were Algeria, Côte d'Ivoire, Ghana and Tunisia, where birth registration was universal or almost universal. The average birth registration rate in those countries varied little across various groups of children under 5 years of age.

Figure V Inequality in birth registration in African countries (Dissimilarity index)

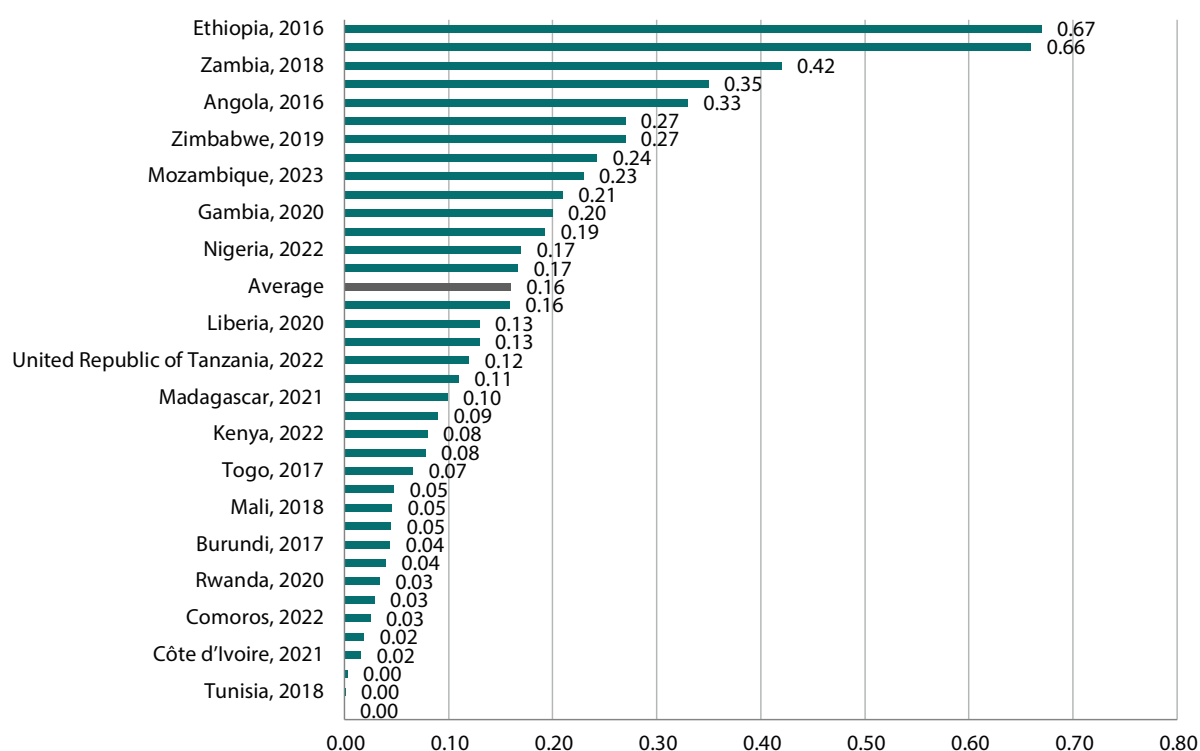
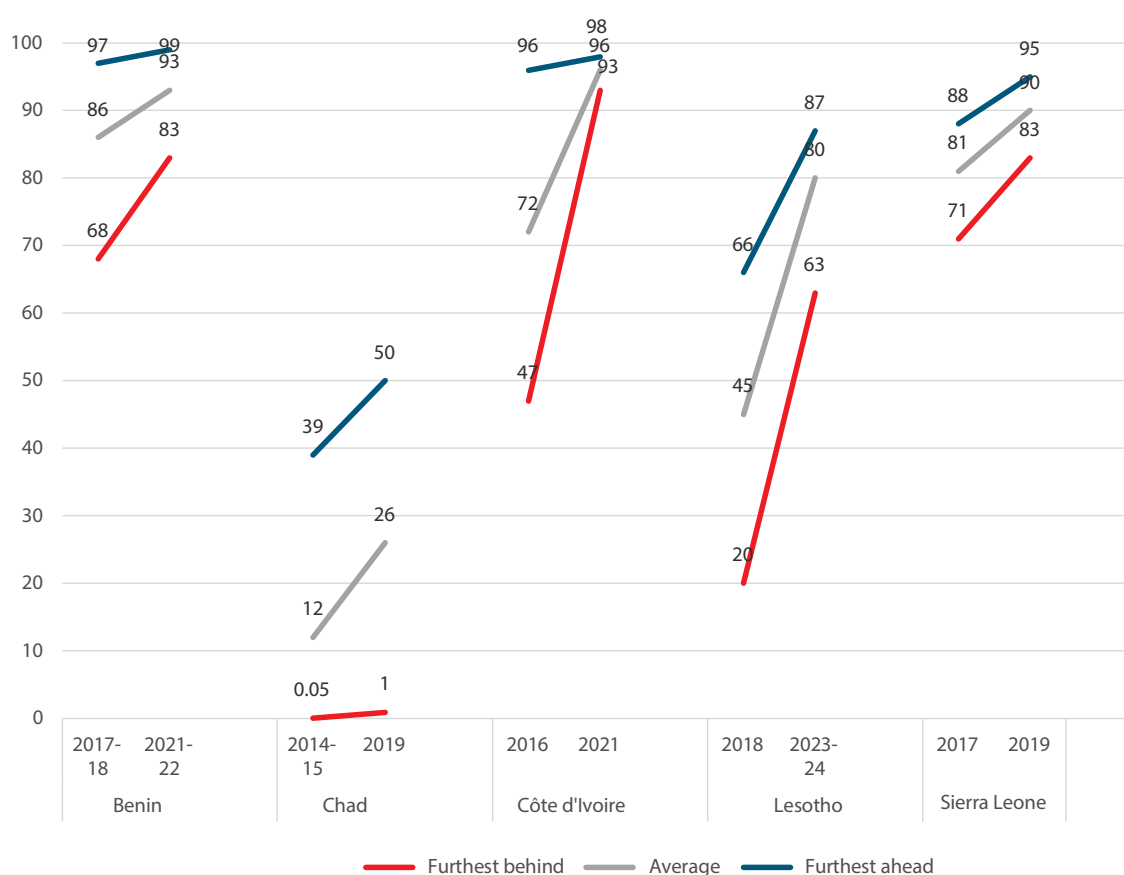


Figure VI Improvements in birth registration rates, by survey years (Percentage)



Source: ECA, based on latest surveys conducted as part of the Demographic and Health Surveys programme and the Multiple Indicator Cluster Surveys programme.

Note: Values for the dissimilarity index range from 0.0, no inequality, to 1.0, complete inequality. The years to which the index scores relate are alongside the country names.

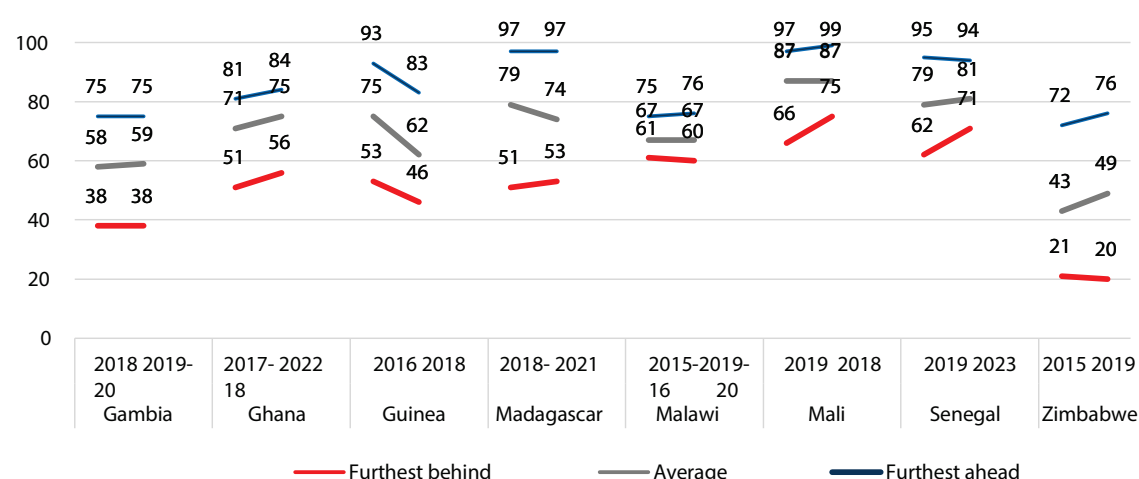


V. Birth registration rates over time

Of the 37 countries covered in the present analysis, 13 conducted at least two surveys after 2015, and, as a result, trends over a period of time can be analysed. It must be noted that the surveys included in the analysis were not always the same. In all the countries except for Senegal, the surveys were a mixture of the two survey programmes. The time between the two surveys varied from just one year, as in the Gambia, to two years in Côte d'Ivoire and five years in Chad. The length of the time between the two surveys could have an impact on the progress observed across the countries.

Figures VI and VII show trends in birth registrations observed in those countries over two points for those furthest behind, the national average and those furthest ahead. The trends can be divided into three groups. The first group, shown in figure VI, consists of five countries where there was an increase of five percentage points or more in birth registrations in at least two of the three indicators. Two countries stand out in this group: in Côte d'Ivoire and Lesotho there were increases of 49 and 43 percentage points in the furthest behind groups, respectively, between the two surveys. In four of the five countries, birth registrations among the furthest behind groups increased by at least five percentage points.

Figure VI Improvements in birth registration rates, by survey years (Percentage)



Source: ECA.

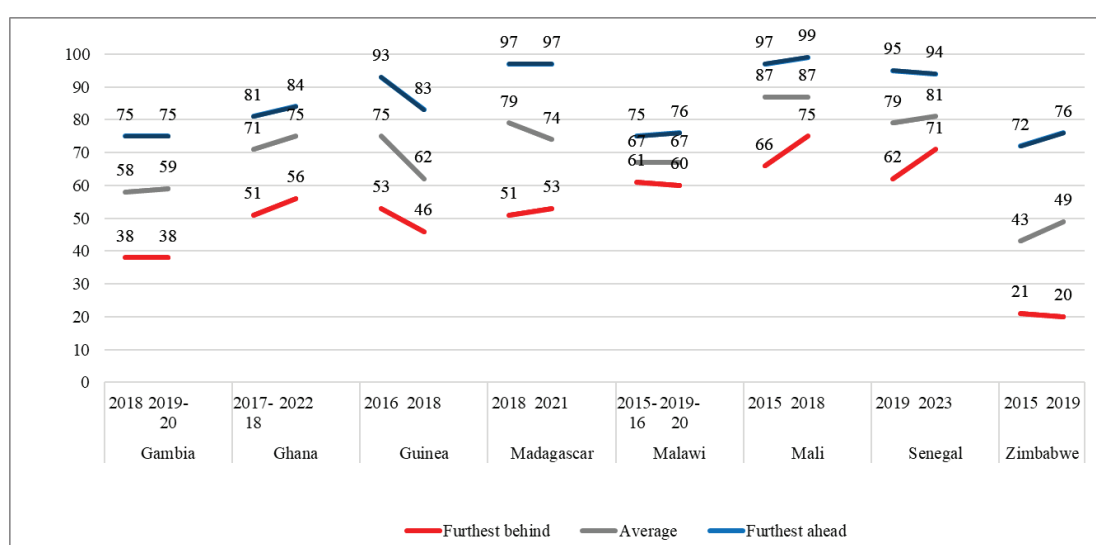
The second and third groups are shown in figure VII. The second group consists of countries where there was a decline in registrations of five percentage points or more in at least two of the three indicators between the two surveys. The third group

comprises countries where there was stagnation between the two surveys, as represented by an increase or decrease of less than five percentage points, or no change at all, in at least two of the three indicators.

Seven of the eight countries in the two groups experienced stagnation. Although there were impressive increases in registrations among the furthest behind groups in Ghana, Mali and Senegal, the increases or decreases in the other two indicators in those countries were by less than five percentage points, resulting in their classification among stagnating countries. In Ghana, although there was an increase in all three indicators, including a five percentage point increase in registrations for the furthest behind group, the increases in the other two indicators were not sufficient

for the country to avoid classification within the group of stagnating countries. Guinea was the only country where all the three indicators declined between the two points. There was stagnation in the Gambia in the furthest behind and furthest ahead groups. In Zimbabwe, where registrations among the furthest behind group declined between the two surveys, an increase in the national average seems to have been driven by an increase in registrations among the furthest ahead group, which increased from 72 to 76 per cent between the two surveys.

Figure VII Stagnation and declines in birth registration rates, by survey years (Percentage)



Source: ECA.

In addition to changes between two surveys within a country in the proportion of children left behind or the birth registration rates of the groups of children, the group of children left behind in one period may not be the same in the subsequent period. Table 3 shows the most, second most and third most significant factors that characterize the

furthest left behind children over the two survey points for each country, the survey names and year.

Table 3 Significant factors of children left behind, by country and survey

Factors						
Country	Survey year	Survey type	Proportion of registered births among the furthest behind group (percentage)	Most significant	Second most significant	Third most significant
Malawi	2019–2020	Multiple Indicator Cluster Survey-6	50	Ethnicity: Tumbuka, Lomwe, Sena and others (excluding Chewa, Yao and Ngoni)	Mother's education: Lower	Ethnicity: Tumbuka, Sena
	2015–2016	Demographic and Health Surveys	61	Residence: rural	Children aged 4 years and above	Sex: female
Zimbabwe	2019	Multiple Indicator Cluster Survey-6	20	Residence: rural	Children aged less than 1 year	n/a
	2015	Demographic and Health Surveys	21	Residence: rural	Wealth: B40	Two or more children under 5 years
Chad	2019	Multiple Indicator Cluster Survey-6	0.9	Residence: rural	Ethnicity: Goran, Kanembou, Ouaddai, Zaghawa and others	Wealth: B40
	2014–2015	Demographic and Health Surveys	0.05	Residence: rural	Children aged less than 2 years	Mother's age: 25–29 years
Lesotho	2023–2024	Demographic and Health Surveys	63	Wealth: B40	Children aged less than 2 years	n/a
	2018	Multiple Indicator Cluster Survey	20	Wealth: B40	Children aged less than 1 year	n/a
Benin	2021–2022	Multiple Indicator Cluster Survey-6	83	Adja, Fulani	n/a	n/a
	2017–2018	Demographic and Health Surveys	68	Wealth: B40	Children aged less than 2 years	n/a
Côte d'Ivoire	2021	Demographic and Health Surveys	93	Wealth: B40	Two or more children under 5 years	n/a
	2016	Multiple Indicator Cluster Survey-5	47	Wealth: B40	Akan, Mandé, other	Children below 2
Gambia	2019–2020	Demographic and Health Surveys	38	Children aged less than 1 year	Residence = urban	n/a
	2018	Multiple Indicator Cluster Survey-6	38	Children aged less than 2 years	Children aged less than 1 year	n/a
Ghana	2022	Demographic and Health Surveys	56	Children aged less than 1 year	Mother's education: Lower	n/a
	2017–18	Multiple Indicator Cluster Survey-6	51	Wealth: B40	Religion: indigenous, traditional, Christian, none	Children aged less than 1 year
Guinea	2018	Demographic and Health Surveys	46	Residence: rural	Wealth: B40	Sex: female
	2016	Multiple Indicator Cluster Survey-5	53	Wealth: B40	Ethnicity: Fulani; Malinke	Ethnicity: Fulani
Mali	2018	Demographic and Health Surveys	75	Wealth: B40	Children aged less than 2 years	Sex: female
	2015	Multiple Indicator Cluster Survey-5	66	Wealth: B40	Fulani, Songhai, Khassonké	n/a
Senegal	2023	Demographic and Health Surveys	71	Wealth: B40	Mother's age: 15–19	n/a
	2019	Demographic and Health Surveys	63	Wealth: B40	Children aged less than 1 year	n/a
Sierra Leone	2019	Demographic and Health Surveys	83	Children aged 4 years and above	Wealth: B40	n/a
	2017	Multiple Indicator Cluster Survey-6	71	Children aged less than 1 year	Wealth: B40	n/a
Madagascar	2021	Demographic and Health Surveys	53	Wealth: B40	Two or more children under 5 years	Children aged less than 2 years
	2018	Multiple Indicator Cluster Survey	51	Religion: traditional, animist or other (not Catholic, Protestant or Muslim)	Wealth: B40	Two or more children under 5 years

Source: ECA.

Note: “Wealth: B40” means the wealth of the household to which the child belongs is in the bottom 40 per cent of the wealth distribution of the country; “n/a” indicates that the furthest left behind group was not defined by a second or third most significant factor, as applicable.

For most countries, one or more factors that indicated the likeliness of a child being left behind in birth registration were the same between the two surveys. In Chad, Côte d'Ivoire, Guinea, Lesotho, Madagascar, Mali, Sierra Leone and Zimbabwe, children from poor households, with a wealth status within the bottom 40 per cent of the wealth distribution, were most likely to be left behind in both years. In the Gambia, Ghana, Lesotho and Côte d'Ivoire, children under 1 year of age were likely to be left behind in both years. Children from rural households in Chad and Zambia were disadvantaged in both years.

In Benin and Malawi, the characteristics of children most likely to be left behind changed over the two survey periods. Nesting or loose associations of significant factors at the two points in time appear logical and cannot be ruled out. In Malawi, in 2015, children from rural households who were 4 years old were the furthest behind, whereas in 2019 children from households headed by individuals from the Tumbuka, Lomwe and Sena ethnic groups and whose mothers had a lower level of education were the furthest behind.



VI. Discussion

Birth registration is the first point of contact with the State when recognizing the existence of an individual. Registering a birth provides legal protection for children, for example against child labour and early marriage, and access to services offered by the State. Although significant progress in birth registration has been achieved in Africa, pockets of children continue to be marginalized as a result of their circumstances.

The aim of the present paper was to identify groups of children under 5 years of age who are likely to be left behind in birth registration as a result of a set of factors. Although various factors have been shown to have a significant influence on whether a child is likely to be left behind in birth registration, children living in households in the bottom 40 per cent of the wealth distribution were shown to be at a disadvantage in 26 of the 37 countries. Children below 2 years of age are the second group of children who were most likely to be left behind. The analysis of countries that undertook two surveys, which allows for comparisons of birth registration over time, highlighted the significance of those two factors.

Countries in North Africa are very close to achieving universal birth registration. Other countries, including Benin, the Comoros, the Congo, Côte d'Ivoire and Gabon have made impressive progress, with birth registrations above 90 per cent. Eleven of the 37 countries had birth registration rates below 50 per cent, including Angola, Chad, Ethiopia and Zambia, which had rates below 30 per cent. The consistent factors defining the group of children left behind in those countries was the socioeconomic status

– being within the bottom 40 per cent of the wealth distribution – of the household to which the children belong. Angola, Ethiopia, Guinea-Bissau, Uganda and Zambia were the top five countries for birth registration inequalities.

The assessment of inequality has shown that countries with high inequality, scoring towards 1 on the dissimilarity index, tended to have low birth registration levels. In those countries, a particular group of children under 5 years of age were less likely to have their birth registered than other groups. In countries with lower levels of inequality, the opposite trend was observed: there were higher birth registration rates, indicating smaller differences in registration among groups of children under 5 years of age.

In 6 of the 13 countries that carried out at least two surveys after 2015, there were gains of more than five percentage points in the national average birth registration rate between the surveys. In four countries – Benin, Côte d'Ivoire, Lesotho and Sierra Leone – birth registrations increased by more than five percentage points in the furthest behind group. In Côte d'Ivoire, Lesotho and Sierra Leone there were improvements in the national average, the furthest behind group and the furthest ahead group. There was stagnation or a decline in registration in eight countries between their two survey points. Registrations stagnated in seven countries, including Ghana, Mali and Senegal where, despite impressive progress in registrations among the furthest behind groups, changes in the other two indicators were insufficient for them to be classified otherwise. Guinea was the only country where registrations

declined in all the three indicators between its two survey points.

The same group of children from poor households – being within the bottom 40 per cent of the wealth distribution – were left furthest behind at both points in Côte d'Ivoire, Guinea, Lesotho, Madagascar, Mali and Sierra Leone. In Chad and

Zimbabwe, the furthest behind children were from rural households. Children under 1 year of age were left furthest behind at both points in the Gambia and Ghana. Only in Benin and Malawi was there total variation between the two surveys in the furthest behind groups of children.



VII. Policy implications

The present analysis shows that, for birth registration, children living in poor households, children living in rural households and younger children are more likely to be left behind than other children. Children in marginalized households may, therefore, experience accessibility

challenges and could be affected by a lack of child-focused policies. As a result, the policy proposals set out in the following paragraphs are recommended for countries with lower birth registration rates

A. Strategies for poor and rural households

Instituting targeted strategies aimed at poor and rural households will go a long way to addressing the challenges in such countries as Chad, Ethiopia, Uganda and Zambia. Such strategies could include the decentralization of civil registration services and strengthened partnerships with stakeholders that are present in rural areas, such as providers of healthcare and education, in order to improve accessibility to registration services and eliminate costs for poor households. Research has shown the effects of supply-side factors that are likely to affect the registration of births, among which were the distance to registration

centres, a lack of infrastructure and an inability to decentralize civil registration services (UNICEF, 2019). In countries in East and Southern Africa, most civil registration offices had limited capacity for decentralization, and the local offices that had been created had limited functionality (UNICEF, 2020). In countries where decentralization measures had been implemented, there was evidence to show that the implementation tended to be on a pilot basis, limited to few districts or even local offices, and was ultimately unsustainable. Local governments are challenged by their inability to scale up their success and reap the benefits.

B. Child-focused policies

Implementing child-focused policies and strategies could be critical to addressing some of the findings in the present study. Although countries have passed legislation requiring registration within a specified period after birth, it can be difficult to enforce the requirements, owing to various reasons, including a lack of capacity, the centralization of services and weak coordination among important stakeholders, such as healthcare providers. The delayed registration of births, or lack thereof, has implications

beyond access to services, including for infant mortality: countries that are unable to account for all their births and the causes of death among children dying immediately after birth perpetuate the scandal of invisibility. Countries are taking steps to improve registration, however. In Ethiopia, campaigns for prioritizing registration of children aged between 5 and 17 years have been launched in an effort to reduce the backlog of unregistered births.

C. Birth declaration

The role of notifying the civil registration system of a birth can be delegated to a healthcare facility in which the birth occurred. The number of births occurring within such facilities has increased in recent years in most countries. Civil registration systems have been unable to leverage that development, however, for

better birth registration outcomes. Most African civil registration systems remain passive, which means that the burden of registration falls on parents. Introducing birth declarations by healthcare facilities as part of the system ensures that the State assumes the responsibility of registering all births that occur in such facilities.

D. Registration incentives

Incentives for the registration of births have been shown to result in positive outcomes. The incentives can be financial and non-financial. For instance, Namibia introduced financial incentives that become accessible upon the registration of a birth (UNICEF, 2020). In addition, parents are more likely to register the birth of their children when access to social services hinges on registration. In South Africa, a child support cash

transfer scheme has been described as a significant contributor to the increase in birth registrations in the country from 21.2 per cent in 1992 to 84.1 per cent 2012 (World Bank, 2016). Non-monetary incentives, such as the removal of registration fees, have produced positive results in a number of countries.



VIII. Conclusion

The present study has shown that, as birth registration rates improve in Africa, there are pockets of children who are likely to be left behind, largely as a result of their circumstances. Attending to supply-side barriers to birth registration, including infrastructure constraints, a lack of targeted policies and coordination among important stakeholders, will go a long way to addressing the situation of children in marginalized households.

Countries in the region have invested extensive resources in improving civil registration and vital statistics systems in recent years. The primary focus for most countries has been on updating legislation to enforce requirements for registering events, coordinating civil registration and vital statistics activities and creating institutions necessary for enhancing the civil registration and vital statistics systems. Most countries that have been reviewed in the present study updated their birth and death registration legislation in recent years. The period in which births must be registered ranges from 90 days in the Democratic Republic of Congo and Ethiopia to 10 days in Benin and Tunisia. The biggest challenge has been the lack of capacity for enforcing timely registration of births. For instance, notwithstanding the legal provision for registration within one month of birth in Zambia, registrations levels within the legally required period were only 7 per cent in 2020, and 77 per cent of births were registered after 12 months (Zambia, Zambia Statistics Agency and Ministry of Home Affairs, 2022).

The secondary focus has been on developing identity management systems and issuing legal identity documents

to address colonial backlogs. In recent years, the focus has turned towards the digitalization of systems (Musoni, Domingo and Ogah, 2023). Integrating identity management systems into the civil registration system has become important to ensuring that the civil registration system serves as the foundation for individual identification and entry into population registers (African Union, Zambia, ECA and African Development Bank, 2019). The unintended consequence of those interventions has been a large number of late registrations and a lack of focus on addressing national and international reporting requirements, such as on the indicators for the Sustainable Development Goals, in particular indicator 16.9.1. Registration rates for children under 5 years of age remain low in a number of countries, despite the investments that have been made in civil registration and vital statistics systems. Uganda and Zambia are examples in that regard: they are among the countries that have implemented large-scale population registration measures and the mass issuance of legal identity (UNICEF, 2020).

As African countries register their populations and clear the backlog from colonial periods, developing and implementing policies targeted at the registration of children under 1 year and those under 5 years will not only help to achieve Sustainable Development Goal target 16.9, but will also enable countries to account for the situation of all children and improve data on births and deaths of children in their countries. Involving important stakeholders, such as providers of healthcare, will reduce the risk of excluding children who die soon after birth but before their birth is registered.

Annex

Birth registration rates among the furthest behind and furthest ahead groups of children under 5 years of age, the gap between the furthest ahead and the furthest behind groups, and the national average, by country and survey year

Country, survey year	Furthest behind (percentage)	National average (percentage)	Furthest ahead (percentage)	Gap (percentage points)
Algeria, 2019	99	100	100	1
Angola, 2016	7	25	57	50
Benin, 2022	83	93	99	16
Burkina Faso, 2021	71	85	97	26
Burundi, 2017	69	83	93	24
Cameroon, 2018	38	62	90	52
Central African Republic, 2019	26	45	82	56
Chad, 2019	0.9	26	50	49
Comoros, 2022	88	95	100	12
Congo, 2015	79	96	99	20
Côte d'Ivoire, 2021	93	96	98	5
Democratic Republic of the Congo, 2020	16	40	62	46
Eswatini, 2022	49	66	79	30
Ethiopia, 2016	0	3	13	13
Gabon, 2021	90	96	99	9
Gambia, 2020	38	59	75	37
Ghana, 2022	56	75	84	28
Guinea, 2018	46	62	83	37
Guinea-Bissau, 2019	27	46	65	38
Kenya, 2022	59	76	90	31
Lesotho, 2023	63	80	87	24
Liberia, 2020	59	66	75	16
Madagascar, 2021	53	74	97	44
Malawi, 2020	50	67	76	16
Mali, 2018	75	87	99	24
Mauritania, 2021	15	45	80	65
Mozambique, 2023	19	31	50	31
Nigeria, 2022	31	57	86	55
Rwanda, 2020	77	86	94	17
Senegal, 2023	71	81	94	23
Sierra Leone, 2019	83	90	95	12
Togo, 2017	58	83	95	37
Tunisia, 2018	99	100	100	1
Uganda, 2022	24	32	39	15
United Republic of Tanzania, 2022	50	68	85	35
Zambia, 2018	6	14	29	23
Zimbabwe, 2019	20	49	76	56

Source: ECA calculations based on latest surveys conducted as part of the Demographic and Health Surveys programme or Multiple Indicator Cluster Surveys programme from 2015 to 2023.

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