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Trends and Determinants of Birth Registration Completeness in Zimbabwe, 2005-2015

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Abstract: Childbirth registration in Zimbabwe has decreased over the years, yet the risk factors associated with this incompleteness have not been explored. This study investigates the trends in birth registration completeness and factors associated with the decrease in birth registration among children aged 0-5 years from 2005-2015. We use data from the, 2005-06, 2010-11 and 2015 Zimbabwe Demographic and Health Survey. Trends in birth registration completeness based on survey year were calculated and multivariable logistic regression models were used to estimate the predictors of birth registration. Birth registration completeness was 75.4 percent, 47.3 percent, and 43.8 percent in 2005, 2010, and 2015, respectively. Inequities in birth registration completeness become apparent when examined by wealth, urban/rural location, geographical region, maternal education, healthcare utilisation, and marital status. Child age, maternal education, marital status, household wealth status, residence, province, and delivery place were significant predictors of birth registration. Efforts to improve birth registration in Zimbabwe should target children born at home, children born to single and young mothers, and children whose mothers are poor and reside in rural areas.

Keywords: Child · Birth registration · Completeness · Zimbabwe

1 Background

Globally, the births of one in four children under age 5 (166 million) are not formally registered, and 237 million are without a birth certificate (*UNICEF* 2020b). Birth registration establishes the legal existence of the child and provides the basis for safeguarding many of the child's rights. Birth registration has long been recognised as a fundamental human right under the UN Convention on the Rights of the Child and other international treaties (*African Union* 2012). However, birth registration remains incomplete in many low- and middle-income countries (LMICs), particularly

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in Asia and Sub-Saharan Africa (*Bhatia et al.* 2019). Almost all unregistered births occur in LMICs, and five countries – the Democratic Republic of the Congo, Ethiopia, India, Nigeria, and Pakistan – account for 50 percent of these births (*UNICEF* 2020b). Estimates of birth registration completeness show that only 45 percent of children under 5 years of age are registered in Sub-Saharan Africa (*UNICEF* 2020b). Eastern and Southern Africa are the regions with the lowest birth registration completeness rates in the world, estimated at 40 percent (*UNICEF* 2020b). Birth registration is very important as shown by Sustainable Development Goal (SDG) target 16.9, which aims to provide universal birth registration by 2030 (*Müller* 2015). However, if current trends persist, coupled with a rapidly growing population, 115 million children will be unregistered in Sub-Saharan Africa by 2030 (*UNICEF* 2020b).

A birth certificate facilitates access to essential services, such as health care, social services, and education (*World Bank* 2016). Without birth registration, children are unable to prove their age and therefore more vulnerable to violence, abuse, and exploitation (*UNICEF* 2020a). Unregistered children face an uncertain future since they may be cut off from routine immunisation, social assistance, inheritance, attending school, or registering for exams (*UNICEF* 2020a). Inequities in birth registration coverage exist both across and within countries, and for the latter, inequities are most pronounced by wealth and urban/rural location (*Bhatia et al.* 2019; *World Bank* 2016). Compounding barriers among the poorest and most marginalised populations means births are less likely to be registered, increasing children's vulnerability to being missed by essential services (*World Bank* 2016). Some concrete consequences of not having a birth registered include a greater likelihood of early marriage (*Bhabha* 2013; *Jayaraman et al.* 2016), poor health outcomes (*Comandini et al.* 2016), poor education outcomes (*Corbacho et al.* 2012), poor physical growth and development outcomes (*Jeong et al*. 2018) and child trafficking and exploitation (*Dunning et al.* 2014). Various structural and contextual factors determine birth registration completeness. Household wealth status, maternal education, marital status, the child's sex, age, health-care provider, ownership of a radio or mobile phone, region of residence, religion and women's autonomy are among the predictors of birth registration (*Abay/Gebre-Egziabher* 2020; *Candia* 2019; *Garenne et al.* 2016; *Isara/Atimati* 2015; *Juma et al.* 2016; *Kumari* 2019; *Makinde et al.* 2016; *Nascimento et al.* 2015; *Wodon/Yedan* 2019). In Ghana, birth registration is influenced by several socio-demographics including the child delivery place (*Amo-Adjei/Annim* 2015; *Dake/Fuseini* 2018). Similarly, in Laos, birth registration is determined by ethno-geographic factors such as geographic remoteness (*Nomura et al.* 2018). In India, women who reported more autonomy were significantly more likely to register their children's births (*Mohanty/Gebremedhin* 2018) while wealth and urban/rural inequities also determined birth registration (*Bhatia et al.* 2019).

The completeness of birth registration; the process of recording a child's birth in Zimbabwe remains low. Furthermore, the issuance of birth certificates, the legal document to prove identity is still far from being comprehensive. Current estimates show that 49 percent of children under age 5 are registered, with 45 percent of them possessing a birth certificate (*ZIMSTAT/UNICEF* 2019a). In Zimbabwe, birth

registration is compulsory and free under the 1986 Births and Deaths Registration Act [Chapter 5:02] (*Department of Registrar General Zimbabwe* 2005). Additionally, the government has undertaken measures such as decentralising birth registration, the issuance of birth records in vernacular languages, and annual outreach programmes in the form of mobile registrations to remove barriers associated with costs and to encourage birth registrations by bringing these services closer to people. Despite these measures, birth registration in Zimbabwe is far from comprehensive. Barriers to birth registration in Zimbabwe include insufficient staff at registering offices, time and financial costs associated with travelling to the registration centres, lack of awareness of the existing laws on birth registration, and a long list of requirements (*Justice for Children Trust* 2007; *Kidia* 2018; *Mashumba et al.* 2004; *Zimbabwe Human Rights Commission* 2020). Despite these low levels of birth registration, there is little empirical evidence on why birth registration completeness is low in Zimbabwe. *Chereni* (2016) examined the underlying dynamics of birth registration success but only focused on a single district. This paper presents trends in the completeness of birth registration from 2005-2015 in Zimbabwe and assesses differences in registration completeness among different groups of children. The paper also identifies factors that can predict the birth registration status of a child.

2 Data and Methods

This study uses data from the 2005-2006, 2010-2011 (hereafter 2005 and 2010), and 2015 Zimbabwe Demographic and Health Survey (ZDHS). The ZDHS is a nationally representative sample survey conducted every five years since 1988. The survey provides current demographic and health information for policy and programmatic purposes, such as monitoring progress in sustainable development indicators. Specific topics covered in the survey include information on (1) housing characteristics and household population; (2) characteristics of respondents; (3) marriage and fertility; (4) family planning; (5) maternal and child health; (6) birth registration; and (7) HIV/AIDS. The survey design of the ZDHS is a stratified two-stage cluster sampling method based on census enumeration areas (EAs) and household samples. The first stage covers the selection of EAs with probability proportional to the size. The second stage involves household selection, which was based on the EA. The analysis was limited to de jure resident children under five years of age with complete information on their birth registration status. The household file containing the birth registration module, children, and women datasets were retrieved for data analysis. These datasets were linked to assess birth registration completeness by socio-demographic characteristics of the child, mother, and household. Children with invalid or missing information were dropped from the analysis. As a result, the analysis was limited to a sample of children aged 0-5 years who had data on birth registration and demographic characteristics (2005; n = 4,438), (2010; n = 4,660) and (2015; n = 5,184).

2.1 Variables

Outcome Variable

The outcome variable in this study is the birth registration status. This variable was derived from the question asking if children aged 0-5 on the household roster have a birth certificate: Does (NAME) have a birth certificate? Responses to this question have four categories: (1) has a certificate, (2) is registered, (3) neither, or (4) don't know. The responses "has a certificate" and "is registered" were combined as one category while "neither" remained a separate category. For this study, children with the "don't know" response were dropped from the analysis since it was considered an invalid response. Children registered without a birth certificate or registered with a birth certificate were categorised as registered and coded "1", while those neither registered nor having a birth certificate were categorised as not registered and coded "0."

Explanatory Variables

The independent variables used in this study were categorised into five groups: the child's socio-demographic, maternal, household, geographical, and delivery characteristics. The child's characteristics include sex (male, female) and age (< 1 year, 1-2 years, and 3-4 years). The main household characteristic is wealth status (poorest, poorer, middle, richer, and richest). The mother's characteristics include: age (15-19, 20-24, 25-29, 30-34, 35+); level of education (none, primary, secondary, and higher); and marital status (never in a union, currently in union, and formerly in a union). Geographical characteristics include the place of residence (rural or urban), and region/province. Administratively, Zimbabwe has been divided into ten regions/provinces. Delivery characteristics cover the place of delivery (home, public health facility, private health facility, and others).

2.2 Analytical Approach

Descriptive and multivariable regression analyses are used in this study. First, we show the frequency distributions of the sample population's characteristics. Second, cross-tabulations describe the trends and completeness in birth registration across the years. Differences in the completeness of birth registration between the three survey years are then examined using the chi-squared test ($p < 0.05$). In the final analysis, binary multivariable logistic regression models are fitted to examine the associations between the explanatory variables and the outcome variable. Adjusted odds ratios (AORs), 95 percent Confidence Intervals (CI), and p-values are calculated with a statistical significance level set at $p < 0.05$. Survey weights and clustering within primary sampling units (PSUs) were included in these analyses, and they were carried out with Stata 14.0.

3 Results

Table 1 depicts the distribution of the sample's characteristics. Birth registration decreased from 75.4 percent in 2005 to 47.3 percent in 2010, and then to 43.8 percent in 2015. The mean age of the newly registered children was 1.9 years in 2005 and 2015, while it was 1.7 years in 2010. The sample was evenly distributed between males and females from 2005-2015. Almost one-quarter of the children across the surveys belong to the poorest households, and most were living in rural households. Regarding maternal factors, most mothers were aged 25-29 years, attained secondary education, and were currently in a union. Nearly two-thirds of the children (65 percent) were delivered in public health facilities in 2015. Manicaland (15.3 percent) and Harare (14.3 percent) had the most children, with Bulawayo (3.9 percent) having the lowest number of children in 2015.

Table 2 shows the proportion of registered children by various background characteristics in the 2005, 2010, and 2015 surveys. Overall, birth registration completeness significantly decreased by 32 percentage points from 75 percent in 2005 to 44 percent in 2015 ($p < 0.05$). Age showed a marked and continuous decrease in the proportion of registered births across all surveys. The decline in birth registration completeness was higher among children younger than one year between 2005 and 2015 (from 69 percent to 32 percent). Regarding household wealth status, while completeness of birth registration decreased slightly among the richest quintile between 2005 (85 percent) and 2015 (80 percent), it decreased substantially among the poorest over the same period; from 69 percent to 24 percent. Completeness of birth registration was higher in urban than in rural areas between 2005 and 2015. In rural areas, birth registration completeness more than halved during the same period (72 percent vs. 32 percent) compared to an 18 percent decrease in urban areas. The decline in birth registration completeness was higher among children of young mothers compared to old mothers (37 percent vs. 30 percent). Birth registration completeness tends to be higher among children of women with higher educational attainment. For instance, in 2015, the birth registration completeness among mothers with higher education was higher than that of those with no education (86 percent vs 13 percent). Similarly, the largest decrease was among children with mothers with no education (54 percent), compared to higher education (6 percent).

Considering the mother's marital status, the completeness of birth registration was higher among children from currently married women. While birth registration completeness showed a substantial decrease from 44 percent in 2010 to 28 percent in 2015 among children of women, not in a union, it remained stable (2010: 48 percent; 2015: 46 percent) among those currently in a union. Similar observations were made when stratifying data by geographical regions, with Manicaland and Midlands reporting less than a third of registered births (28 percent vs. 32 percent). In addition to Masvingo, the two regions recorded the greatest decreases in the completeness of birth registration between 2005 and 2015. Birth registration completeness was highest in the two urban provinces of Harare (66 percent) and Bulawayo (67 percent), followed by 51 percent in Mashonaland Central. Birth registration showed a striking

Tab. 1: Distribution of the characteristics of the sample, Zimbabwe, 2005-2015

Variables	2005	2010	2015
Birth registration status			
Not registered	1,092(24.6)	2,454(52.7)	2,916(56.2)
Registered	3,346(75.4)	2,206 (47.3)	2,628(43.8)
Child sex			
Male	2,220(50.0)	2,328(50.0)	2,537(48.9)
Female	2,219(50.0)	2,331(50.0)	2,648 (51.1)
Child age (years)			
Mean age	1.9	1.7	1.9
< 1	1,058(23.8)	1,317(28.3)	1,104 (21.3)
1-2	1,755(39.6)	1,849(39.7)	2,075(40.0)
3-4	1,625(36.6)	1,494 (32.1)	2,006(38.7)
Household wealth			
Poorest	1,073(24.2)	1,118(24.0)	1,266(24.4)
Poorer	983 (22.1)	1,010 (21.7)	1,035(20.0)
Middle	830 (18.7)	902 (19.4)	869 (16.8)
Richer	888(20.0)	958(20.6)	1,173(22.6)
Richest	664 (15.0)	671 (14.4)	841 (16.2)
Place of residence			
Urban	1,190(26.8)	1,285 (27.6)	1,570(30.3)
Rural	3,248(73.2)	3,375(72.4)	3,614(69.7)
Maternal age			
15-19	296 (6.7)	347 (7.5)	326 (6.3)
20-24	1,363(30.7)	1,343(28.8)	1,151(22.2)
25-29	2,077(46.8)	2,210 (47.4)	2,643 (51)
30-34	425 (9.6)	539 (11.6)	706 (13.6)
35+	276 (6.2)	221 (4.8)	359 (6.9)
Maternal education			
No education	171 (3.9)	82 (1.8)	60 (1.2)
Primary	1,624(36.6)	1,544 (33.1)	1,645 (31.7)
Secondary	2,544 (57.3)	2,910(62.5)	3,206 (61.8)
Higher	99 (2.2)	123 (2.7)	274 (5.3)
Marital status			
Never in union	174 (3.9)	157 (3.4)	184 (3.6)
Currently in union	3,765(84.8)	4,102(88.0)	4,580(88.3)
Formerly in union	500 (11.3)	401 (8.6)	420 (8.1)

Tab. 1: Continuation

Variables	2005	2010	2015
Place of delivery			
Home	1,367(30.8)	1,590 (34.1)	1,027(19.8)
Public health facility	2,450(55.2)	2,550 (54.7)	3,379(65.2)
Private health facility	584(13.2)	453 (9.7)	632(12.2)
Other	37 (0.8)	67 (1.4)	146 (2.8)
Region of residence			
Manicaland	589(13.3)	691 (14.8)	794(15.3)
Mashonaland Central	546(12.3)	515 (11.0)	513 (9.9)
Mashonaland East	338 (7.6)	483 (10.4)	488 (9.4)
Mashonaland West	434 (9.8)	583 (12.5)	670(12.9)
Matabeleland North	322 (7.2)	225 (4.8)	244 (4.7)
Matabeleland South	217 (4.9)	231 (5.0)	191 (3.7)
Midlands	692(15.4)	603 (13.0)	693(13.4)
Masvingo	589(13.3)	536 (11.5)	650(12.5)
Harare	514 (11.6)	620 (13.3)	742(14.3)
Bulawayo	199 (4.5)	172 (3.7)	201 (3.9)
Total	4,438	4,660	5,184

Source: ZDHS 2005-06, 2010-11 and 2015

difference in the delivery place: Completeness was higher among children born in public and private health facilities than at home. Children born at home and in other places had the lowest completeness of birth registration, which decreased drastically between 2005 and 2015.

Table 3 shows the logistic regression results for the predictors of birth registration in Zimbabwe. Age was the only significant child-level predictor of registration, while the sex of the child was not associated with birth registration in any survey. Children over two years of age had better odds of being registered than those below the age of one For instance, in 2010, children aged 3-4 years were three times as likely to be registered compared to children aged less than one (2010; aOR = 3.14; 95 percent CI = (2.63-3.76). At the household level, wealth was a significant predictor of birth registration. While wealth did not predict birth registration in 2005, the odds of getting registered increased with increased household wealth in subsequent years. In 2015, children from the richest households were 9 times as likely as children from the poorest households to get registered (2015; aOR = 9.17; 95 percent CI = (5.89-14.28). The place of residence was only a predictor of birth registration in 2010, remaining insignificant in the other years. Children from urban areas had better odds of being registered than rural children (2010; aOR = 0.70; 95 percent CI = (0.49-0.99). Furthermore, children from different parts of the country had different odds of being registered. These odds were much higher in the South and Southwestern

Tab. 2: Trends in birth registration completeness by child's, maternal, household, geographical and delivery characteristics in Zimbabwe, 2005-2015 (in %)

Variables	2005 (n = 4438)	2010 (n = 4660)	2015 (n = 5184)	% Change 2005-2015
Child sex				
Male	75.2	46.1	43.4	-31.8
Female	75.6	48.1	44.1	-31.5
Child age (years)				
< 1	69.2	34.8	31.5	-37.7
1-2	78.1	45.6	43.3	-34.8
3-4	76.5	60.6	50.9	-25.6
Household wealth				
Poorest	68.8	34.0	24.3	-44.5
Poorer	72.1	41.0	30.3	-41.8
Middle	75.2	44.4	39.4	-35.8
Richer	79.9	53.4	54.1	-25.8
Richest	85.2	74.3	79.7	-5.5
Place of residence				
Urban	83.7	63.9	65.8	-17.9
Rural	72.4	41.0	34.2	-38.2
Maternal age				
15-19	64.6	28.2	27.9	-36.7
20-24	74.2	42.6	36.3	-37.9
25-29	77.1	51.8	46.6	-30.5
30-34	77.6	50.0	51.2	-26.4
35+	76.2	55.6	46.6	-29.6
Maternal education				
No education	66.7	42.2	12.7	-54.0
Primary	69.0	35.7	30.0	-39.0
Secondary	79.4	52.6	47.8	-31.6
Higher	91.6	73.6	85.8	-5.8
Marital status				
Never in union	63.4	43.7	27.5	-35.9
Currently in union	75.8	48.3	45.8	-30.0
Formerly in union	76.9	39.2	28.5	-48.4
Place of delivery				
Home	64.2	31.9	24.2	-40.0
Public health facility	79.7	54.4	47.6	-32.1
Private health facility	84.7	62.6	57.9	-26.8
Other	59.7	40.3	30.6	-29.1

Tab. 2: Continuation

Variables	2005 (n = 4438)	2010 (n = 4660)	2015 (n = 5184)	% Change 2005-2015
Region of residence				
Manicaland	83.2	43.0	28.3	-54.9
Mashonaland Central	63.8	45.8	51.3	-12.5
Mashonaland East	58.8	51.2	44.7	-14.1
Mashonaland West	66.1	36.6	42.0	-24.1
Matabeleland North	70.4	56.1	46.1	-24.3
Matabeleland South	65.1	54.8	40.7	-24.4
Midlands	83.7	46.6	32.2	-51.5
Masvingo	83.1	33.9	37.3	-45.8
Harare	81.6	58.5	66.3	-15.3
Bulawayo	83.7	77.9	67.0	-16.7
Overall	75.4*	47.3*	43.8*	-31.6

Note: * significantly different between the surveys at $p < 0.05$.
Source: ZDHS 2005-06, 2010-11 and 2015

provinces compared to other parts of the North and Eastern provinces. For instance, in Matabeleland and Bulawayo, children had higher odds of getting registered than children living in Manicaland in 2010 and 2015 (aOR ranging from 1.62 to 3.6). It is noteworthy that, in 2005, the odds of birth registration were highest in Manicaland, and the relationship pattern changed significantly between 2010 and 2015.

Other predictors of birth registration include maternal age, education, and marital status. Generally, the odds of registration increased with maternal age. For example, birth registration odds were highest for children of mothers who were aged 35 years and above in 2005 and 2015. Although not significant in other years, the mother's education increased the odds of childbirth registration in 2015. Children of mothers with higher educational attainment were 7.2 times as likely to get registered as children of mothers without any education (aOR = 7.18; 95 percent CI = (2.57-20.07). Similarly, maternal marital status was strongly associated with birth registration; women currently in a union had higher odds of childbirth registration across all years (aOR ranging from 1.55 to 2.32) compared to never-married women. Birth registration was also significantly associated with the child delivery place across all the surveys. The odds of registering the birth of a child delivered in a health facility were higher than children born at home. Children born in private health facilities were approximately 3 times as likely to get registered when compared to children born at home across all surveys (aOR = 3.11; 95 percent CI = 1.55-2.88; aOR = 2.59; 95 percent CI = 1.85-3.62; aOR = 2.38; 95 percent CI = 1.71-3.31).

Tab. 3: Multivariable associations between child's, maternal, household, geographical, and delivery characteristics and birth registration, Zimbabwe, 2005-2015

Variables	2005 aOR (95 percent CI)	2010 aOR (95 percent CI)	2015 aOR (95 percent CI)
Child sex			
Male (Ref.)			
Female	0.97 (0.83-1.12)	1.06 (0.92-1.21)	0.98 (0.84-1.14)
Child age (years)			
< 1 (Ref.)			
1-2	1.47 (1.17-1.83)***	1.6 (1.34-1.92)***	1.78 (1.43-2.21)***
3-4	1.30 (1.06-1.59)**	3.14 (2.63-3.76)***	2.42 (1.94-3.01)***
Household wealth			
Poorest (Ref.)			
Poorer	1.18 (0.89-1.55)	1.43 (1.13-1.80)**	1.23 (0.96-1.58)
Middle	1.18 (0.85-1.63)	1.38 (1.05-1.83)**	1.88 (1.45-2.43)***
Richer	1.35 (0.87-2.08)	1.67 (1.23-2.25)**	3.48 (2.44-4.96)***
Richest	1.49 (0.79-2.81)	3.22 (2.27-4.58)***	9.17 (5.89-14.28)***
Place of residence			
Urban (Ref.)			
Rural	0.74 (0.39-1.39)	0.70 (0.49–0.99)**	1.20 (0.83-1.72)
Maternal age			
15-19 (Ref.)			
20-24	1.34 (0.98-1.83)*	1.34 (0.93-1.91)	1.01 (0.70-1.47)
25-29	1.51 (1.09-2.08)**	1.81 (1.26-2.60)***	1.28 (0.91-1.81)
30-34	1.59 (1.08-2.35)**	1.93 (1.29-2.90)**	1.49 (1.02-2.19)**
35+	1.78 (1.11-2.88)**	2.61 (1.65-4.11)***	1.33 (0.87-2.03)

Tab. 3: Continuation

Variables	2005 aOR (95% CI)	2010 aOR (95% CI)	2015 aOR (95% CI)
Maternal education			
No education (Ref.)			
Primary	0.89 (0.56-1.40)	0.84 (0.47-1.49)	2.4 (0.94-6.11)*
Secondary	1.16 (0.73-1.84)	1.18 (0.64-2.15)	3.1 (1.21-7.96)**
Higher	2.09(0.83-5.25)	1.45 (0.66-3.19)	7.18 (2.57-20.07)***
Marital status			
Never in union (Ref.)			
Currently in union	1.75 (1.08-2.82)**	1.55 (1.03-2.34)**	2.32 (1.59-3.37)***
Formerly in union	1.78 (1.04-3.06)	0.99 (0.62-1.60)	0.97 (0.61-1.55)
Place of delivery			
Home (Ref.)			
Public health facility	1.67 (1.35-2.08)***	1.85 (1.54-2.21)***	2.01 (1.59-2.54)***
Private health facility	2.11 (1.55-2.88)***	2.59 (1.85-3.62)***	2.38 (1.71-3.31)***
Other	0.57 (0.26-1.27)	1.62 (0.96-2.71)*	1.28 (0.81-2.02)
Region of residence			
Manicaland (Ref.)			
Mashonaland Central	0.38(0.22-0.64)***	1.48 (1.00-2.19)**	3.60 (2.41-5.39)***
Mashonaland East	0.25 (0.16-0.40)***	1.52 (1.01-2.28)**	1.93 (1.26-2.96)**
Mashonaland West	0.38(0.24-0.62)***	0.75 (0.52-1.09)	1.78 (1.18-2.69)**
Matabeleland North	0.59(0.35-0.98)**	2.36 (1.56-3.58)***	3.09 (2.01-4.76)***
Matabeleland South	0.39(0.25-0.62)***	2.04 (1.38-3.02)***	1.81 (1.16-2.83)**
Midlands	1.00 (0.67-1.48)	1.18 (0.80-1.76)	0.99 (0.69-1.41)
Masvingo	0.99 (0.63-1.55)	0.67 (0.43-1.03)*	1.32 (0.90-1.96)
Harare	0.40 (0.21-0.78)**	0.75 (0.49-1.14)	1.64 (1.09-2.46)**
Bulawayo	0.47(0.24-0.94)**	2.07 (1.28-3.37)**	1.62 (1.09-2.4)**

Note: OR, odds ratio, *** $p < 0.001$, ** $p < 0.05$, * $p < 0.1$

Source: ZDHS 2005-06, 2010-11 and 2015

4 Discussion

Our analysis showed a low national birth registration completeness of 44 percent in 2015, comparable to the recent estimates from the Multiple Indicator Monitoring Survey (*ZIMSTAT/UNICEF* 2019a). Birth registration completeness decreased substantially by 31.6 percent between 2005 and 2015. Estimates in other LMICs have reported a decrease in birth registration completeness over the same period (*Bhatia et al.* 2019). In Zimbabwe, the decrease in completeness rates experienced across the years is a significant observation that may result from the socio-economic and political environment. The decrease in registration coincides with a period of rapid socio-economic challenges, resulting in the near collapse of the social services sector in Zimbabwe (*Nyazema* 2010). As the economic crisis peaked in 2008, birth registration sharply declined from 2005 to 2015. Birth registration is still low in Zimbabwe, 19 percent of children aged 0-1 year are currently registered (*ZIMSTAT* 2022). Our analysis shows that the decline in birth registration completeness was more pronounced among the poorest households and rural households. This points to the role of poverty in accelerating the decrease in national birth registration completeness rates since 76 percent of rural residents in Zimbabwe are poor (*ZIMSTAT/UNICEF* 2019b). While officially, birth registration is free, previous studies in Zimbabwe showed that indirect costs associated with transport to registration centres, food, and accommodation remain a barrier to registration (*Justice for Children Trust* 2007; *Mashumba et al.* 2004; *Zimbabwe Human Rights Commission* 2020). The poorest and most marginalised populations face multiple barriers, which might have been exacerbated by the economic crisis, resulting in unregistered births (*World Bank* 2016). People living in poverty make decisions focused on coping with present stressful circumstances, often at the expense of future goals (*Sheehy-Skeffington/Rea* 2017). In the context of hyperinflation in Zimbabwe, this means birth registration was less likely to be prioritised by households.

The reasons for the decline in birth registration completeness in Zimbabwe are multifaceted. Poor governance, systems issues, poor infrastructure, limited capacity, and limited funding may all have caused a sharp decline in registration. For example, insufficient and unmotivated personnel at registering offices contribute to slow and poor service delivery, which may discourage people from registering births (*Justice for Children Trust* 2007; *Mashumba et al.* 2004). System challenges were exacerbated by the economic crisis, since most public sector employees either left their jobs permanently, were absent, or were on frequent strikes, compromising service delivery (*Nyazema* 2010). Economic hardships resulting in systematic corruption in the form of demands of "informal payments" such as bribes may explain why registration fell in this period and most steeply among the poor. Furthermore, the incompleteness of birth registrations is linked to poor political commitment, inadequate policies, and a historical lack of investment in CRVS systems. Political interests in the polarised environment from 2000-2008 may have resulted in the government failing to implement the provisions of the Births and Deaths Registration Act [Chapter 5:02]. Additionally, responsibility for managing the national vital registration system cuts across several government institutions,

each with their own bureaucratic bottlenecks. While childbirth registration is managed by the Registrar General, which falls under the Ministry of Home Affairs, other components of child protection issues are housed at the Ministry of Social Welfare and the Ministry of Health. To our knowledge, no policy document details how these institutions should interact and harmonise their operations. As a result, a poor policy environment and lack of coordination have resulted in gaps in birth registration completeness.

The decline in completeness rates experienced over the years was higher among younger children than older ones, as multivariable analyses showed older children having better odds of being registered. This may be attributed to a shorter registration opportunity in young children compared to older children. Consequently, births are not registered immediately when children are born in Zimbabwe. Births are registered when children are about to enter school or sit for their primary education examinations. One implication of late registration is that it may be associated with increased errors and the falsification of birth dates (*Makinde et al.* 2016). The lack of explicit punitive measures or penalties for late birth registration within six weeks under the law means that late birth registration in Zimbabwe will likely continue. However, a late penalty fee can also lead to unintended consequences through falsification of dates of birth if people know they will be charged when their children are registered late.

Our study demonstrated that household wealth status is likely the most powerful predictor of birth registration. Consistent with the findings of previous studies (*Bhatia et al.* 2019; *Dake/Fuseini* 2018; *Duff et al.* 2016; *Wodon/Yedan* 2019), the present study showed that children from wealthier households were more likely to be registered. Economically well-off households have greater access to information, money, and other resources needed for birth registration and acquiring a birth certificate (*Chereni* 2016). As shown in this study, poor households were less likely to register their children, suggesting that poverty is a barrier to birth registration. While our results show rural-urban differentials in the decline in birth registration, place of residence was only a predictor of birth registration in 2010. Past studies have also reported rural-urban differentials in the completeness of birth registration (*Bhatia et al.* 2019; *Nomura et al.* 2018). This finding may point to the height of the crisis in 2008, when differences between urban and rural areas in Zimbabwe were more pronounced in terms of access to public services. For rural residents, birth registration is linked to financial and opportunity costs associated with travelling to the registration centres (*Justice for Children Trust* 2007; *Mashumba et al.* 2004). The effect of residence may have been moderated by wealth quintiles which tend to classify urban households as wealthier than rural ones in the DHS. However, this finding is worrying, since 61.4 percent of the population lives in rural areas and new rural resettlements are being developed in farming communities across the country (*ZIMSTAT* 2022). A significant regional difference in birth registration was also found in our study. The results show lower levels of birth registration in the Matebeleland provinces in 2005 compared to the other provinces. This was largely due to parents themselves not having registered births either, leading to a cycle of non-registration due to the strict requirements of providing the father's details

when registering. However, in 2015 children from the Matebeland provinces had higher odds of being registered. This change may be attributed to government and civil society efforts to ensure that all children, especially those from Matebeleland regions, are registered (*Zimbabwe Human Rights Commission* 2020). Manicaland province recorded the largest decrease in birth registration completeness over the reference period. This may be due to the fact that the population has a high total fertility rate and that the region is home to the majority of conservative Apostolic Christian sects that do not use health services or register the births of their children (*Maguranyanga* 2009; *ZIMSTAT* 2022).

Women's use of modern healthcare facilities is another major predictor of birth registration. In this study, children's birth registration was higher among those born in health facilities. Studies conducted in Ghana and Uganda found a similar association between delivery place and birth registration (*Candia* 2019; *Dake/Fuseini* 2018). This relationship may explain in part the decline in birth completeness rates observed over the years, as institutional deliveries decreased in the same period (*ZIMSTAT/ ICF International* 2016). Women who use maternal health services may be provided with information on the benefits of birth registration, and linked to the registration centres after delivery (*World Health Organization* 2013). Thus, improving maternal healthcare services, besides directly affecting the health of the women and children concerned, can contribute toward raising birth registration completeness in Zimbabwe. Children delivered in health facilities receive birth confirmation records to facilitate birth registration. The government has set up registration centres at major hospitals (*Department of Registrar General Zimbabwe* 2022). Nevertheless, the government has also designed a birth confirmation record for children born within the community to reduce the obstacles to registration.

The mothers' socio-demographic characteristics make a significant difference for the birth registration status of their children. For instance, married women had higher chances of registering their children compared to never-married women. Unlike single women, married women may receive support from their partners in registering their children. While legally women can register their children's births, cultural values place greater importance on the child taking up the father's last name, limiting single women from registering births without the consent of the father. Furthermore, our study demonstrated that the odds of birth registration increase with the increasing mother's age, although not consistently. This finding is, however, at odds with findings in Ghana, where registration decreased with increases in the mother's age (*Dake/Fuseini* 2018). Furthermore, educated women were more likely to register their children's births. This finding is consistent with several other studies conducted in low- and middle-income countries (*Nascimento et al*. 2015; *Nomura et al.* 2018; *Wodon/Yedan* 2019). Mothers' education may also influence childbirth registration in several ways. Educated women have better access to birth registration information and are aware of the negative consequences of not registering their children. Moreover, education creates better economic outcomes for women, eliminating the financial obstacles associated with birth registration. Additionally, educated women have greater autonomy and decision-making abilities, facilitating

birth registration. As observed, women's autonomy in India significantly increased the chances of birth registration (*Mohanty/Gebremedhin* 2018).

The DHS and MICS provide the best estimates for the completeness of birth registration in Zimbabwe. This study used these nationally representative estimates to explore the level, trends, and predictors of birth registration in Zimbabwe. This is the first analysis of its kind in Zimbabwe and the findings are nationally representative and can be generalised to the whole country. Although this study reached its aims and important policy implications can be drawn from the results, it has some limitations. First, data on birth registration in the ZDHS was collected at the household level and may have been provided by an individual other than the parents, raising the possibility of recall bias. Second, most births were recorded as registered without presenting the birth certificate. Therefore, we cannot be certain that all those who stated that their child had been registered but did not present a birth certificate had indeed registered the child. Since secondary data was used, information on other important factors such as service satisfaction and distance to registration centres that could have explained non-registration could not be ascertained. Further investigations of birth registration should collect detailed community-based data that can contribute to improving accessibility to birth registration in Zimbabwe and increase people's willingness to register births. Additionally, more evidence is required to ascertain the impact of the COVID-19 pandemic on birth registrations in Zimbabwe. The Registration Offices in the country were closed for more than a year, resulting in births occurring during the pandemic not being registered by the civil registration systems.

5 Conclusions

Birth registration in Zimbabwe declined between 2005 and 2015, with more than half of childbirths currently unregistered. The decline in birth registration can be attributed to the socioeconomic conditions prevailing in the country. Furthermore, poor governance, systems issues, poor infrastructure, limited capacity, and limited funding may have contributed to the sharp decline in registration rates. Age and household wealth continue to significantly affect whether a child's birth is registered. In addition, location influences the chances of registration, as children in the southwestern part of the country had higher registration chances. Urban children had significantly higher registration chances than their rural counterparts. Improving birth registration completeness in Zimbabwe should be a key priority for the government and other stakeholders. This may include strategies to eliminate barriers, especially among poor and rural households, and to increase awareness of the benefits of birth registration to avoid late registration. Efforts should be made to improve the linkages between birth registration and maternal healthcare services for the mutual benefit of the mother and child. The government should develop policy directions to harmonise the activities of different departments to eliminate bottlenecks in the provision of birth registration services. Birth registration remains

an important right to protect children, which should be prioritised in achieving the 2030 Agenda.

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