

 NIGERIA

NATIONAL IMMUNISATION COVERAGE SURVEY 2016/17

Final Report

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BILL & MELINDA
GATES foundation



The National Immunisation Coverage Survey was carried out in 2016/17 by the National Primary Healthcare Agency in collaboration with the National Bureau of Statistics. Technical support was provided by the United Nations Children's Fund (UNICEF). UNICEF and World Health Organization (WHO); The Bill and Melinda Gates Foundation provided technical and financial support.

The National Immunisation Coverage Survey follows previous surveys conducted in 2003, 2006 and 2010. This year, NICS was embedded in the Multiple Cluster Coverage Survey and has been conducted to measure vaccine antigen coverage in children aged 12 to 23 months in line with the recommendations of the World Health Organization's 015 Reference Manual for Vaccination Coverage Cluster Surveys.

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Summary Table of Survey Implementation and the Survey Population, NICS, 2016/17

Survey implementation			
Sample frame	2006 Nigeria National Population Census	Questionnaires	Household Children under five
- Updated	February 2016		
Interviewer training	July to August 2016	Fieldwork	September 2016 to January 2017
Survey sample			
Households		Children 12 to 23 months	
- Sampled	42,981	- Eligible	6360
- Occupied	41059	- Mothers/caretakers interviewed	6268
- Interviewed	40518	- Response rate (Per cent)	98.6
- Response rate (Per cent)	98.7		

Survey population			
Average household size	5.4	Percentage of population living in	
Percentage of population under:		- Urban areas	36.7
- 12 to 23 months	3.4	- Rural areas	63.3
- Age 18	46.9	- North Central	16.1
		- North East	16.5
		- North West	27.0
		- South East	9.5
		- South-South	12.5
		- South West	18.3

Housing characteristics	
Percentage of households with	
- Electricity	54.7
- Finished floor	67.8
- Finished roofing	82.9
- Finished walls	64.0
Mean number of persons per room used for sleeping	2.6

Household or personal assets	
Percentage of households that own	
- A television	46.9
- A refrigerator	21.7
- Agricultural land	62.7
- Farm animals/livestock	48.7
Percentage of households where at least a member has or owns a	
- Mobile phone	73.8
- Car or truck	10.9

Summary Table of Findings: NICS, 2016/17

Vaccinations			
No.	Indicator	Description	Value (95% CI)
1	Tuberculosis Immunisation coverage	Percentage of children age 12-23 months who received BCG vaccine by their first birthday	53 (51,56)
2	Polio Immunisation coverage	Percentage of children age 12-23 months who received the third dose of OPV vaccine (OPV3) by their first birthday	33 (31,35)
3	Diphtheria, pertussis and tetanus (DPT) Immunisation coverage	Percentage of children age 12-23 months who received the third dose of DPT vaccine (DPT3) by their first birthday	33 (31,35)
4	Measles Immunisation coverage	Percentage of children age 12-23 months who received measles vaccine by their first birthday	42(40,44)
	Hepatitis B Immunisation coverage	Percentage of children age 12-23 months who received the third dose of Hepatitis B vaccine (HepB3) by their first birthday	33 (31,35)
7	Yellow fever Immunisation coverage	Percentage of children age 12-23 months who received yellow fever vaccine by their first birthday	39 (37,41)
8	Full Immunisation coverage	Percentage of children age 12-23 months who received all vaccinations recommended in the national Immunisation schedule by their first birthday (measles by second birthday)	23 (21,25)

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Executive Summary

The Nigeria National Immunisation Coverage Survey (NICS) 2016/17 was carried out in 2016 and 2017 as part of the wider Multiple Indicator Cluster Survey (MICS). The main objectives were to provide reliable estimates for coverage in vaccination antigens for children between the ages of 12 – 23 months at state level. It was also to appraise the improvement or otherwise in Immunisation coverage since the last surveys from 2006 to 2010 and identify reasons for failure to immunize children. NICS 2016/17 was incorporated into the Nigeria MICS 2016/17 which is designed to provide information on several indicators on the situation of children, women and men in Nigeria. The sample size for the Nigeria MICS/NICS 2016/17 was however not sufficient to estimate state level vaccination coverage in twenty states. In these twenty states, supplemental sampling was conducted to meet the requirements for vaccine coverage estimation for urban and rural areas; six geopolitical zones; the 36 states of the Federation and the Federal Capital Territory.

The study was a two-stage cross sectional design involving the use of electronic questionnaires to interview mothers and child caretakers on Immunisation status of children. Survey methods were adapted from the 2015 WHO Reference Manual on Vaccination Coverage Cluster Surveys.

The survey was commissioned by the National Primary Healthcare Development Agency (NPHCDA) and implemented by the National Bureau of Statistics (NBS) with technical support and funding from WHO, UNICEF and the Bill and Melinda Gates Foundation. The entire duration of the survey was about a year and half with about four months for data collection.

Household response rate

From the 40,518 interviewed households, 6,360 mothers/caretakers of children age 12 to 23 months were identified. Of these, 6,268 were successfully interviewed, yielding a response rate of 98.3 percent within interviewed households.

Vaccination coverage

The National Crude Full Immunisation Coverage (FIC) is 26 % while Infant Immunisation Coverage is 17 %. The proportion of children with no evidences of vaccination (either card or recall) is 39%. Home based vaccination records were seen for only 29 percent of all children aged 12 to 23 months.

National coverage by antigen (card and recall) are as follows: BCG 53%; Hepatitis B birth dose 40%; Oral polio virus vaccine birth dose (OPV0) 47%; (OPV1) 56%; OPV3 39%; Pentavalent 1 vaccine 49%; Pentavalent 3 vaccine 33%; Yellow Fever 43%; and Measles 42%.

Further analysis of the indicators for each of the geopolitical zones shows that whilst the South West zone is consistently showing high Immunisation coverage for the basic and complimentary antigens - averaging 56% (FIC), the North-West zone falls behind with FIC of 9%.

Card availability rate is highest in the South West zone with 57% and least in North West zone with 16%.

The dropout rate between pentavalent 1 vaccine and pentavalent 3 vaccine (card and recall) nationally is 31%; 47% in North West zone and 21% in South West zone. Pentavalent 1 to Measles drop out nationally is 21%.

The main category of reasons for not vaccinating children was lack of information which led in all the zones, followed by lack of time. Fears and mistrust was also cited by many the respondents. Many caretakers, however, failed to give reasons for not presenting their children/wards for vaccination.

The table below summarizes the vaccination trend since 2006 for some key vaccination indicators (card and recall)

Indicators	Definition	NICS 2006(%)	NICS 2010(%)	NICS 2016/17
Tuberculosis Immunisation coverage	Percentage of children age 12-23 months who received BCG vaccine by their first birthday	69	76	53
Polio Immunisation coverage	Percentage of children age 12-23 months who received the third dose of OPV vaccine (OPV3) by their first birthday	61	74	39
Penta1 (Diphtheria, pertussis and tetanus (DPT)+Hep+Hib Immunisation coverage)	Percentage of children age 12-23 months who received the first dose of Pentavalent vaccine(Penta1) by their first birthday	72 (DPT1)	73 (DPT1)	49
Penta3 (Diphtheria, pertussis and tetanus (DPT)+Hep+Hib Immunisation coverage)	Percentage of children age 12-23 months who received the third dose of Pentavalent vaccine(Penta3) by their first birthday	54 (DPT3)	68 (DPT3)	33
Measles Immunisation coverage	Percentage of children age 12-23 months who received measles vaccine by their first birthday	62	64	42
Yellow fever Immunisation coverage	Percentage of children age 12-23 months who received yellow fever vaccine by their first birthday	43	60	39
Penta1-3 drop out	Penta1-3 dropout is the estimated percentage of children 12-23 months who received first dose but failed to receive subsequent or the final dose of Penta vaccine	18	3	31

Conclusions and Recommendations:

Data shows a drop-in coverage of most vaccine antigens and decline in the proportion of children fully immunized. The low card availability has persisted since the last NICS in 2010. Indicators calculated based only on card evidence showed even more decline compared to 2006 and 2010. Poor service access as shown by low Pentavalent 1 vaccine while low utilization as depicted by high dropout shows the poor health indicators that is seen for services rendered along the continuum of care nationwide. Investments to increase the number and improve the functionality of more primary health facilities national wide as currently embarked upon is a step in the right direction. Such improvement is needed in the areas of upgrading health facilities, supplies, drugs and additional human resources which must trained and motivated. When Immunisation indicators are compared to other indicators on maternal and child health at the state level from MICS/NICS 2016/17, it is seen that states with higher Immunisation coverage also have better maternal and child health parameters and vice versa. These points to a need for comprehensive maternal and child health interventions in all states if vaccination coverage is to be improved.

Data from other sources such as the health facility survey recently disseminated suggest strong support for supply side interventions but not so for demand side issues and this may account for the obvious poor performance of the Immunisation system nationally and across most of the states.

List of Abbreviations

BCG	Bacillus Calmette-Guérin (Tuberculosis)
CI	Confidence interval
cMYP	Comprehensive Multi-Year Plan
CSPRO	Census and Survey Processing System
DPT	Diphtheria Pertussis Tetanus
EA	Enumeration area
EPI	Expanded Programme on Immunisation
FCT	Federal Capital Territory
FIC	Fully immunised child; FIC1 Fully immunised child at one year of age
FMOH	Federal Ministry of Health
GVAP	Global Vaccine Action Plan, 2011–2020
HBR	Home based (vaccination) records
HepB	hepatitis B (vaccine); HepB 0 refers to hepatitis B vaccine at birth
Hib	<i>Haemophilus influenzae</i> type b
IPV	Inactivated polio vaccine
MDG	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
MICS5	Fifth global round of Multiple Indicator Clusters Surveys programme
FMoH	Federal Ministry of Health
MCV	Measles-containing vaccine: MCV1 refers to the first dose, MCV2 refers to the second dose
MOV	Missed opportunity for vaccination
NBS	National Bureau of Statistics
NICS	National Immunisation Coverage Survey
NPHCDA	National Primary Healthcare Development Agency
OPV	Oral polio vaccine
PCV	Pneumococcal conjugate vaccine
PENTA	Pentavalent vaccine containing vaccine antigens against Diphtheria, Pertussis, Tetanus, <i>Haemophilus Influenza</i> Type B and Hepatitis B.
PSU	Primary sampling unit
REC	Reach every child strategy
RED	Reach every district strategy
SDG	Sustainable Development Goals
SRS	Simple random sampling
UNICEF	United Nations Children’s Funds
VCQI	Vaccination Coverage Quality Indicators
VPDs	Vaccine preventable diseases
WHO	World Health Organization
YF	Yellow fever
YFV	Yellow fever vaccine

I. Introduction

Country context Nigeria

Nigeria is the most populous country in Africa with an estimated population of 191 million people in 2017, an annual population growth rate projected at 2.6%, a youthful population; the median age being 18 years and over 40 percent of the population is aged below 14 years. In 2016, close to seven million children were born adding to this youthful population.

The under-five mortality rate is 109 per 1000 livebirths. While the infant mortality rate is 69 deaths per 1000 live births. Vaccine preventable deaths such as pneumonia, diarrhoea and dehydration account to about 40% of under-five mortality. Malaria and neonatal causes also being major contributors to under-five mortality.

Nigeria is currently the second largest economy in Africa with the main economic activities being export of oil and gas, financial services, telecommunications, logistics and construction. The national poverty headcount ratio by the World Bank which estimates the proportion of the population living below the national poverty line is at 46%. The economy is expected to grow by 2.6% in 2017 having fallen from 7% year on year growth in the last decade against the backdrop of low international oil prices.

Nigeria has a federal governance system with 36 states and the Federal Capital Territory in Abuja. The states are further divided into 774 local government areas (LGAs) with 9565 wards. There are six distinct geopolitical zone i.e. South-South, South East, South West, North East, North West and North Central.

The Federal Ministry of Health is responsible for setting health policy and managing of tertiary and referral facilities. The National Primary Healthcare Development Agency (NPHCDA), a parastatal under the Federal Ministry of Health, is responsible for providing technical support for planning, management and implementation of Primary Health Care. NPHCDA is also mandated in the control of preventable illnesses include vaccine preventable illnesses. Primary health care facilities are run at the LGA level.

The key public health events that have impacted the Nigerian vaccination program in the recent past include the Ebola virus outbreak and the eradication of polio. An Ebola Virus Disease (EVD) outbreak which started on 24th July 2014 in the populous commercial city of Lagos and later in Port Harcourt led to 19 confirmed Ebola cases. There were 12 survivors and 7 deaths. Nigeria was declared Ebola free in October 2014¹. Nigeria, previously a polio endemic country, was removed from the list of polio endemic countries in 2014 by WHO and was in line to being declared polio free when two cases of wild polio virus were reported on the second-year anniversary since the last case of polio was reported in Africa.

Ongoing armed insurgency in Nigeria has resulted in displacements and interruption of provision of health services.² The conflict in the North-Eastern part of the country affecting mainly Borno, Yobe and Adamawa states has been ongoing for close to nine years now resulting in displacement of nearly two million individuals and disruption of primary healthcare services particularly the routine Immunisation system in the affected LGAs at the same time placing huge strain to the facilities near where internally displaced persons have sought refuge.

¹ <http://www.who.int/mediacentre/news/statements/2014/nigeria-ends-ebola/en/>

² <http://www.unocha.org/nigeria/about-ocha-nigeria/about-crisis>



FIGURE 1: MAP OF NIGERIA SHOWING STATE BOUNDARIES

Background to the vaccination program

Vaccination is a proven high impact intervention for reducing under-five mortality and morbidity. The last ten years have heralded huge advances in reduction of child mortality in many countries as a result of scaling up public health interventions for preventing infectious disease such as increasing distribution of bed-nets and increasing vaccination coverage. Introduction of new vaccines such as the pneumococcal conjugate vaccine and rotavirus vaccine has also further resulted in reduction of mortality and morbidity from pneumonia, diarrhoea and dehydration which were previously among the top contributors to child morbidity and mortality.

Despite proven success of vaccination in preventing illnesses and reducing mortality, many children remain unvaccinated and in a few countries vaccine preventable diseases remain the leading cause of under-five mortality.

Sustainable development goals (SDGs): Goal 3. Target 3.2: is on ending preventable deaths of newborns and children under five years by the year 2030. If this target is to be achieved, efforts must be made to ensure universal vaccine coverage of children with recommended vaccinations.

The Expanded Program on Immunisation (EPI) was introduced by the World Health Organization in 1974 whereas in Nigeria the EPI program was introduced in 1979. The original vaccination schedule was agreed upon in 1984 and has since been adopted in many countries.³ Hepatitis B vaccine was added to the routine vaccine schedule in 2004.

In Nigeria, Immunisation services are coordinated at the national level by the National Primary Health Care Development Agency (NPHCDA) through the Department of Immunisation & Disease Control supported by the Department of Logistics & Health Commodities. Routine Immunisation (RI) is provided largely through the public health system, with significant variations in contributions by private or non-profit organizations in the 36 States and Federal Capital Territory (FCT). In the public sector, RI services are largely provided at the primary health care facilities run by Local Government Areas (LGAs) and in some cases by States through the State Primary Healthcare Agencies/Boards. In addition to primary healthcare facilities, majority of secondary and tertiary health facilities provide routine Immunisation services.

National immunisation program strategic plan

In 2012, the World Health Assembly member states including Nigeria endorsed the Global Vaccine Action Plan 2011 to 2020 (GVAP) with its goals of eradicating polio; meeting global and regional vaccine elimination targets; meeting vaccine coverage targets for every region, country and community and introducing and improving vaccines and technologies. The GVAP goes beyond the Reach Every District (RED) strategy of building capacity at the district to address common obstacles to increasing Immunisation coverage, and emphasizes of the vaccination of every child.⁴

The Regional Strategic Plan for Immunisation 2014-2020 for the WHO-AFRO African⁵ region aims to ensure achievement of universal Immunisation coverage within the WHO African region through i) improving Immunisation coverage beyond current levels, ii) interruption of poliovirus transmission and containment, iii) attainment of measles elimination and iv) attainment and sustaining the elimination of other vaccine-preventable diseases. Importantly also this regional strategy hopes to inform national strategies within Africa.

The National health policy (2016) provides the direction necessary to support the achievement of significant progress in improving the performance of the Nigerian health system and lays emphasis on strengthening primary health care as the bedrock of national health system⁶. The national routine immunisation strategic plan 2013 to 2015 was developed to address unique challenges facing the immunisation program in Nigeria and to address specific recommendations made in the National Strategic Health Development Plan 2010 - 2015 (NSHDP) and comprehensive Multi-Year Plan (cYMP) 2011-2015. The key focus for the routine immunisation strategic plan is on intensifying vaccination coverage and reaching of every ward. The cYMP 2016-2020 builds on the previous cYMP and is aligned with the GVAP goals and regional targets on immunisation.

³ Nigeria, PAN Paediatric Association of. "Paediatric Association of Nigeria (PAN) Recommended Routine Immunisation Schedule for Nigerian Children." *Nigerian Journal of Paediatrics* 39, no. 4 (January 1, 2012): 152–58.

⁴ Global vaccine action plan 2011-2020.

⁵ 2015, World Health Organization. Regional Office for Africa, Regional Strategic Plan for Immunisation 2014-2020

⁶ Comprehensive Multi-Year plan 2016-2020

TABLE 1: CURRENT IMMUNISATION SCHEDULE FOR CHILDREN BELOW 12 MONTHS

Vaccine	Initial	Birth	6 weeks	10 weeks	14 weeks	9 months	12 months	Injection site
Bacillus Calmette–Guérin	BCG	Birth dose						Right Upper Arm - intradermal
Oral polio vaccine	OPV	Birth dose ¹	1st dose	2nd dose	3rd dose			Mouth – two drops
Hepatitis B at birth	HepB	Birth dose ²						Right thigh IM
Pentavalent (DPT-HBV and Hib)	Pentavalent		1st dose	2nd dose	3rd dose			Left thigh IM
Pneumococcal conjugate vaccine	PCV		1st dose	2nd dose	3rd dose			Right thigh
Inactivated Polio vaccine	IPV					1st dose**		Right thigh
Rotavirus vaccine	Rota		1st dose	2nd dose	3 rd dose			Oral
Measles	Measles					1st dose	2nd dose**	Left Upper Arm
Yellow Fever vaccine	Yellow Fever					YF dose		Right Upper Arm
Meningococcal vaccine	Conjugate A CSM ³						1st dose**	

** Currently not included when determining whether a child has been full vaccinated.
1, 2 if the child is older than 2 weeks skip the birth dose
3 Administered to children in the meningitis belt at 12 to 15 months of age
IM – intramuscular

The Nigerian EPI programme recommends that all children below one year receive a single dose of BCG vaccine, hepatitis B vaccine and oral polio vaccine at birth; three doses of pentavalent, three doses of pneumococcal conjugate vaccine, three doses of oral polio vaccine, a single dose of measles vaccine and yellow fever vaccine. Phased introduction of pentavalent vaccine which contains antigens for Diphtheria, Pertussis (whooping cough), Tetanus, Haemophilus Influenza Type B and Hepatitis B started June 2012 and was concluded in December 2013. By the end of 2015, Inactivated Polio Vaccine (IPV) had been introduced in all states in line with the World Health Assembly Polio Eradication & Endgame Strategic Plan 2013–2018, calling on countries to introduce at least one dose of the inactivated polio vaccine (IPV) and begin the phased removal of oral polio vaccines (OPV) beginning with the withdrawal of the type 2 component of trivalent oral polio vaccine (tOPV) for the elimination of circulating vaccine derived polio virus (cVDPV).

For effective management of vaccination programs, accurate immunisation coverage data is required to inform planning, logistics and health systems adjustments. Measuring vaccine coverage is therefore not only critical for benchmarking progress made but also for formulating new Immunisation strategies. Traditionally, vaccine coverage has been measured from reports of administrative records and from population-based surveys on vaccination status. Incompleteness and poor timeliness of administrative data limit its usefulness in informing the performance of routine immunisation in many countries. Furthermore, unreliable denominator (number of children within the vaccination age cohort) estimates further diminish the utility of administrative data in many countries with large inter-census intervals. In many countries, periodic household based immunisation surveys have been used to augment administrative reports on immunisation.

Historically there has been a disparity between vaccine coverage figures reported through administrative records and coverage figures from household based surveys with administrative records often reporting higher coverage than household based surveys. In many countries, the difference between coverage reported through administrative records and coverage reported by household surveys is more than 20 percent points. A Multiple Indicator Cluster Surveys (MICS) 2011

conducted in 26,900 randomly selected households reported that 62% of children aged 12 to 23 months had received BCG vaccination and 49 % had received measles vaccination by 12 months. The estimates of reported coverage from administrative data for BCG and measles vaccine for the same year were 76 percent and 89 percent respectively. Similarly, the Nigeria Demographic and Health survey (NDHS) conducted in 2013, 49 percent of children aged 12 to 23 months had received BCG vaccination at 12 months and 35% had received measles vaccine. Estimates from administrative records for the same year are 94% for BCG and 100% for measles.

Previously guidelines on conducting immunisation coverage surveys used a design where thirty clusters of seven children each were interviewed for their Immunisation status. Whereas that method was useful in determining coverage, it has inherent shortcomings including sampling and interviewer bias. Current guidelines, revised in 2015, recommend the use of weighted population based cluster surveys where the sample size is selected to meet specific inferential goals, households are selected by staff who are independent from the interviewers, and Immunisation status is collected for all children in all the selected of clusters.⁷

This report is based on the National Immunisation Coverage Survey, conducted in 2016 and 2017 by the National Primary Healthcare Development Agency (NPHCDA) and the National Bureau of Statistics(NBS). This survey has been designed to provide national and state level vaccination coverage in children aged 12 to 23 months. In Kano and Lagos, the survey has been designed to provide coverage to the senatorial district level.

Survey Objectives

The main objective of the study is to assess the National and Sub-national levels of Routine Immunisation (RI) coverage.

- i. Provide reliable data for:
 - a. Immunisation coverage of children age 12 to 23 months for the basic antigens: BCG, DPT 1-3, OPV 0-3, Measles
 - b. Immunisation coverage of children age 12 to 23 months for complementary antigens: Yellow fever, Hepatitis B and Vitamin A
- ii. Estimate the trend of Immunisation coverage since 2006
- iii. Provide a geographical database on Immunisation coverage (for mapping)
- iv. Determine the most frequent obstacles to utilization of Immunisation services
- v. Provide information on reasons for utilization or non-utilization of Immunisation services

⁷ WORLD HEALTH ORGANIZATION, Vaccination Coverage Cluster Surveys, Reference Manual, Version 3 Working Draft Updated July 2015

II. Sample and Survey Methodology

Sample Design

The sample for the 2016/17 Nigeria, National immunisation Coverage Survey (NICS) was designed to provide estimates of vaccine coverage for the country, zones and each of the 36 states and FCT. NICS was incorporated into the Nigeria, Multiple Indicator Cluster Survey (MICS) 2016/17 which is designed to provide information on several indicators on the situation of children, women and men in Nigeria. Within each state, 60 census enumeration areas were systematically selected with equal probability sampled apart from Lagos and Kano where 120 census enumeration areas were sampled. The higher sample size for Lagos and Kano conducted following requests by the respective State Bureau of Statistics in Kano and Lagos to have sufficient sample to disaggregate indicators at senatorial district level. The sample size for the Nigeria MICS 2016/17 was however not sufficient to estimate state level vaccination coverage for children aged 12 to 23 months in twenty states; in these twenty states, supplemental sampling was conducted to meet the requirements for vaccine coverage estimation. Figure 2 below illustrates the selection of supplemental enumeration areas.

Nigeria Supplemental NICS Cluster Survey Sampling

120 EAs selected in Kano and Lagos, while 60 EAs were selected in all other states shaded grey

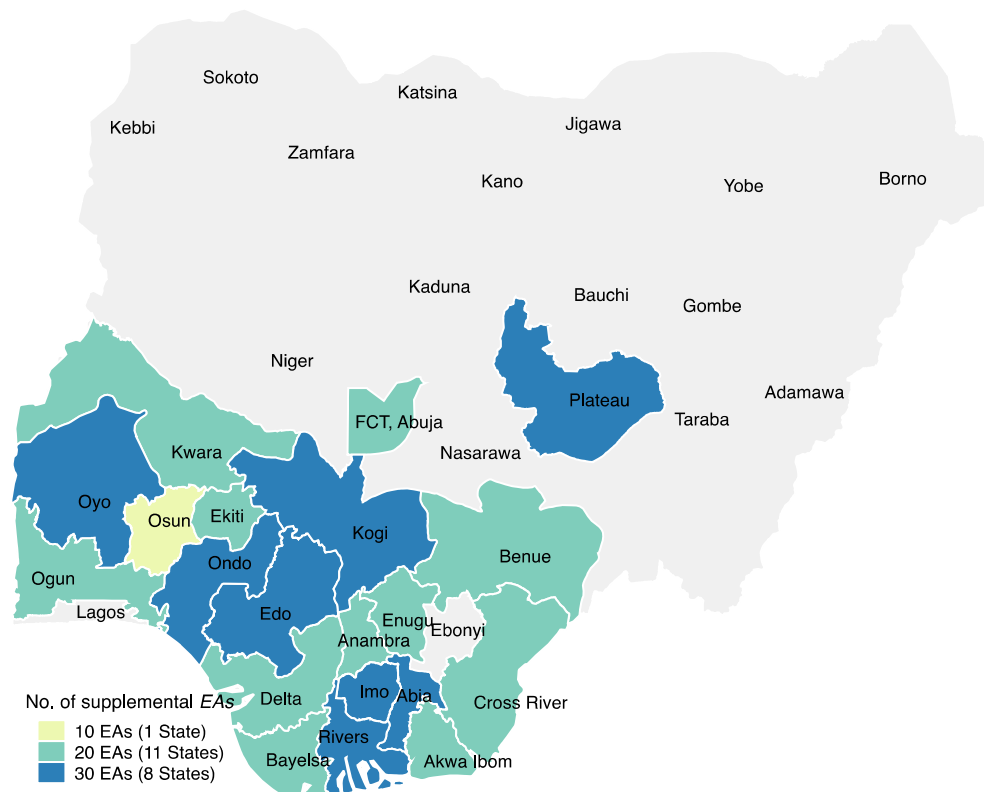


FIGURE 2: MAP SHOWING SELECTION OF SUPPLEMENTAL ENUMERATION AREAS

Following household listing carried out within the all selected enumeration areas, a systematic sample of 16 households was drawn in each enumeration area. States within each zone were identified as the main sampling strata while enumeration areas (EAs) within each state were identified as the main sampling units. The survey used the national sample frame, which is a list of enumeration areas (EAs) prepared for the 2006 Population Census. Two stage sampling was conducted with the first stage being the selection of enumeration areas within the strata while the second stage was the selection of households within each enumeration area.

Of combined sample MICS and supplemental sampling, 2,702 enumeration areas were covered during the fieldwork period. A more detailed description of the sample design can be found in Appendix A.

Questionnaires

The questionnaires used in Nigeria, NICS 2016/17 were based on the MICS5 questionnaire⁸ adapted for Nigeria. NICS 2016/17 was based on information collected from a household and an immunisation questionnaire. The household questionnaire was used to collect socio-demographic information and other general characteristics on all members of the household (usual residents), household and the dwelling units

In the MICS enumeration areas, individual questionnaires comprised of a questionnaire for individual women aged 15 – 49 years, a questionnaire for individual men aged 15 -49 years administered in every second household and a questionnaire for children under 5 years. The women questionnaire was administered in each household to all women age 15-49 years while the questionnaire for children under five was administered to mothers/caregiver for all children under five years old living within a selected household. Responses needed for computation of immunisation coverage indicators were contained in the household questionnaire and in the under-five questionnaire from the MICS set of questionnaires.

Within the supplemental enumeration areas, two questionnaires were administered to respondents: a household questionnaire for collecting basic demographic information on all the household members (usual residents), the household, and the dwelling and an immunisation questionnaire administered to mothers/caregiver for all children between aged 12 - 23 months living in the household. The immunisation questionnaire comprised of the child information module and immunisation module from the child under five questionnaires that was used in MICS. This allowed for pooling of data collected from MICS and from supplemental enumeration areas. The questionnaires and their corresponding modules are as listed below. Modules used to generate immunisation related indicators from MICS questionnaires have been asterisked.

⁸ The model MICS5 questionnaires can be found at <http://mics.unicef.org/tools#survey-design>.

TABLE 2: MODULES INCLUDED IN MICS QUESTIONNAIRE AND QUESTIONNAIRES FOR SUPPLEMENTAL ENUMERATION AREAS

	Household Questionnaire:	Questionnaire for Individual Women:	Questionnaire for Children Under Five:	Questionnaire for Individual Men:
MICS Questionnaires Modules	<ul style="list-style-type: none"> Household Information Panel** List of Household Members** Selection of One Child for Child Labour/Child Discipline Child Labour Household Characteristics** Insecticide Treated Nets Water and Sanitation** Handwashing Salt Iodization Water Quality Testing Information Panel Water Quality Testing Water Quality Testing Results 	<ul style="list-style-type: none"> Women's Information Panel Woman's Background Access to Mass Media and Use of Information/Communication Technology Birth History Desire for Last Birth Maternal and New-born Health Post-Natal Health Checks Illness Symptoms Contraception Female Genital Mutilation / Cutting Attitudes Towards Domestic Violence Marriage / Union Sexual Behaviour HIV / AIDS Tobacco and Alcohol Use Life Satisfaction 	<ul style="list-style-type: none"> Under-Five Child Information Panel** Age** Birth Registration Early Childhood Development Breastfeeding and Dietary Intake Immunisation** Care of Illness Anthropometry 	<ul style="list-style-type: none"> Man's Information Panel Man's Background Access to Mass Media Fertility Attitudes Towards Domestic Violence Marriage / Union Sexual Behaviour HIV / AIDS Circumcision Tobacco and Alcohol Use Life Satisfaction
		Household Questionnaire:	-	Immunisation questionnaire:
Supplemental EA Questionnaires	<ul style="list-style-type: none"> Household Information Panel List of Household Members Household Characteristics Water and Sanitation 	-	<ul style="list-style-type: none"> Under-Five Child Information Panel Age Immunisation 	-
		-	-	-
** Modules in MICS questionnaire included in questionnaires for supplemental enumeration areas Only modules with asterisks were administered in the supplemental enumeration areas.				

A pilot survey was conducted in Cross River, Enugu, Gombe, Lagos, Kaduna, Kano, Nasarawa and Oyo states in April 2016. Based on the results of the pilot, modifications were made to the structure and ordering of the questionnaires to generate a final set of questionnaires that were used for data collection. Copies of the NICS questionnaires are provided in Appendix F.

Training and Fieldwork

Two levels of training were conducted; the 1st level was training of trainers (TOT) while the 2nd, the zonal training for the fieldwork was conducted simultaneously in the six geo-political zones. Teams collecting data in the MICS5 enumeration areas were trained independently from teams collecting data in the supplementary enumeration areas. The trainings were also conducted over different durations in line with the different number of modules administered in the two surveys.

The 1st level training for MICS5 enumeration areas was held in Keffi, Nasarawa state for 60 facilitators comprising of NBS, NPHCDA staff and external coordinators. Training programme included sessions on survey design, interview techniques, explanation of the contents and how to complete the questionnaires using CAPI, mock interviews between trainees to gain practice in asking questions and field practice. Two rounds of field practice were organised towards the end of the training period for the trainees to carry out practice on how to conduct interview in purposively selected residential areas in 2 communities. Twenty-one days were used for this training with the first two weeks focusing on questionnaire content and interviewing techniques with the final week focused on interviewing using CAPI devices. The 2nd level: training was cascaded to six zonal training sites in Nasarawa, Kano, Lagos, Gombe, Enugu and Cross River states with each training venue targeting participants from the states within the geo-political zone.

In each state, the data were collected by two roving teams apart for Lagos and Kano which had four teams per state; each team comprised of 4 interviewers, one driver, one anthropometric measurer and a supervisor. Fieldwork began in September 2016 and was concluded in January 2017 with data collection being conducted over 75 days.

Training for participants collecting data in supplemental EAs followed similar structure as training for participants to collect data in MICS5 EAs but was conducted for a shorter duration since only immunisation related modules and the household questionnaire modules were covered during the training. The 1st level training was held in Akwanga, Nasarawa state and involved thirty-five (35) participants comprising of NBS and NPHCDA staff as well as the external coordinators. Training was conducted for 4 days with one day spent on the household questionnaire, the second day spent on the immunisation questionnaire and the last two days spent on use of CAPI device in role play to collect the data. The 2nd level: The second level training targeted enumerators and supervisors from the 20 states with supplemental sample and was conducted in four zonal sites for duration of one week.

The data collection in the supplemental enumeration areas was conducted by 47 teams, each comprising of three interviewers and a supervisor with each team covering ten enumeration areas to collect data. Data were collected over a period of three weeks in October 2016.

Survey Organisation

The National Bureau of Statistics (NBS), the National Primary Health Care Development Agency (NPHCDA), World Health Organisation (WHO) and other stakeholders constituted the survey organisation. The survey teams constituted (4 individuals per team, of which 1 team supervisor and 3 interviewers), national project director, national coordinator, training coordinators, technical coordinators, zonal controllers and state officer. Please refer to figure 1 for details of the structure of the survey team.

Team candidates were selected based on their experience in surveys and language skills to facilitate interviews with the respondents in their native language as much as possible.

The National Primary Health Care Development Agency (NPHCDA) commissioned Nigeria, NICS 2016/17 and provided technical assistance to the survey while the National Bureau of Statistics was the implementing agency. WHO and UNICEF provided additional technical assistance. Figure 3 shows the basic survey organization.

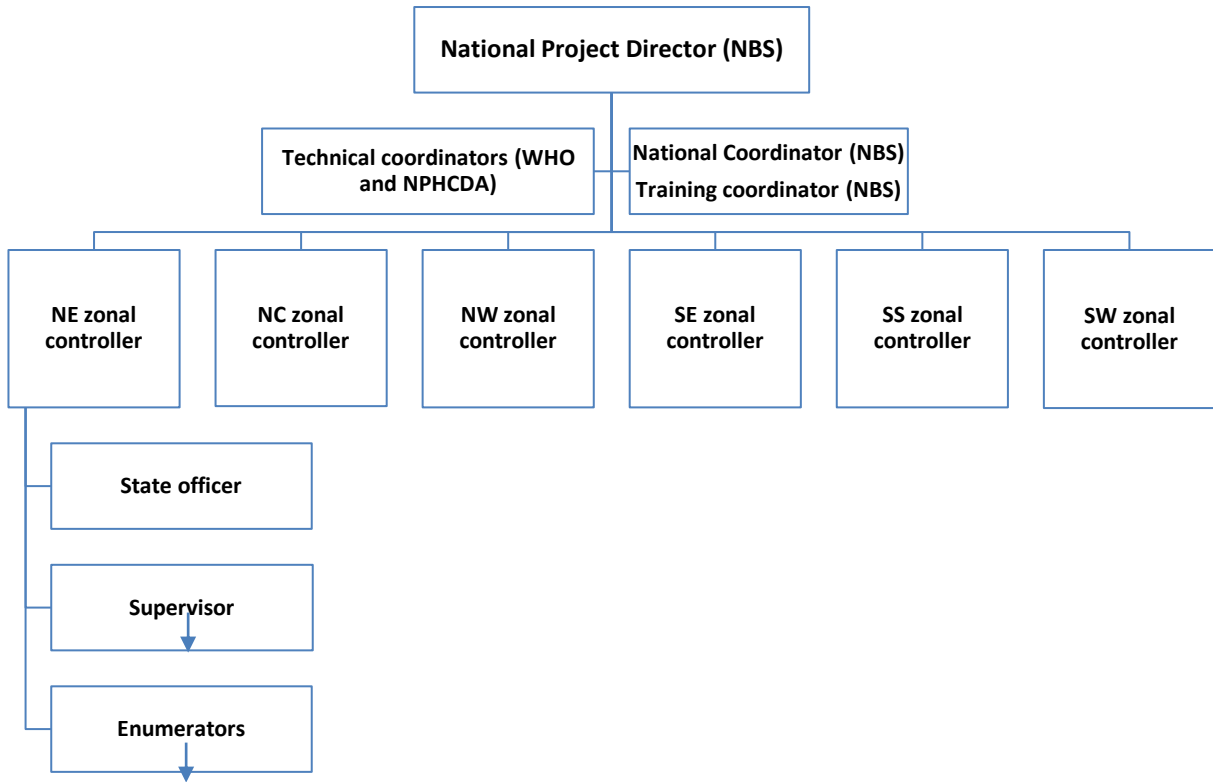


FIGURE 3: NICS ORGANISATIONAL AND OPERATIONAL STRUCTURE

Using computer assisted personal interviewing (CAPI), the data were electronically captured from the field and transmitted to a central server, using CPro CAPI application, Version 5.0.

Once an enumerator had completed data collection in a household which had been allocated to them, data were transferred to the supervisor's tablet for editing. The supervisor would then transmit data to a cloud based server on completion of data collection in an enumeration area. Procedures and standard programs developed under the global MICS programme and adapted to the Nigeria 2016 NICS questionnaire were used throughout. The data were then transferred to analysts at NBS where secondary data editing, tabulation and analysis were carried out. Data processing began simultaneously with data collection in September 2016 and was completed in February 2017. The required statistical tables were generated using SPSS⁹ and the Vaccination Coverage Quality Indicators (VCQI) package¹⁰ for analysis of immunisation data based on Stata version 14¹¹.

Survey constraints

Some of the constraints encountered during the entire survey management were security challenges while accessing some of the selected clusters in both MICS5 and the supplementary sample (NICS). In Borno, only 19 of the original 60 clusters were accessible. The second key challenge was poor or inexistent mobile network connectivity which led to late synchronisation of completed data real time. Inaccessibility due to difficult terrain, poor roads and presence of riverine enumeration areas which had to be accessed by boat also limited the speed with which teams could work and affected the team morale.

⁹ IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.

¹⁰ <http://www.technet-21.org/en/network/groups/293-vcqi>

¹¹ StataCorp. 2015. *Stata Statistical Software: Release 14*. College Station, TX: StataCorp LP.

III. Sample Coverage and the Characteristics of Households and Respondents

Sample Coverage

Out of a total of 44,960 households planned for selected for coverage, 42,981 were canvassed but only 41,059 were found to be occupied. Of these, 40,518 were successfully interviewed for a household response rate of 98.7 percent.

TABLE HH. 1: RESULTS OF HOUSEHOLD AND CHILDREN 12 TO 23 MONTHS RESPONSE RATES									
Number of households, and children 12 to 23 months old by interview results, and household, and children 12 to 23 months old response rates, NICS, 2016/17									
	Total	Area		Geopolitical zone					
		Urban	Rural	North central	North east	North west	South east	South south	South west
Households									
Sampled	42,981	14,568	28,413	8,422	4,620	7,586	6,288	7,788	8,277
Occupied	41,059	13,718	27,341	8,119	4,447	7,424	6,058	7,332	7,679
Interviewed	40,518	13,455	27,063	7,996	4,396	7,395	5,953	7,244	7,534
Household response rate	98.7	98.1	99.0	98.5	98.9	99.6	98.3	98.8	98.1
Children 12 to 23 months									
Eligible	6,360	1,821	4,539	1,222	926	1,951	618	843	800
Mothers/caretakers interviewed	6,268	1,797	4,471	1,200	909	1,943	607	819	790
12-23m response rate	98.6	98.7	98.5	98.2	98.2	99.6	98.2	97.2	98.8
12-23m overall response rate	97.3	96.8	97.5	96.7	97.0	99.2	96.5	96.0	96.9

The denominator for the household response rate is the number of households found to be occupied during fieldwork (HH9 = 01, 02, 04, 07); the numerator is the number of households with complete household questionnaires (HH9 = 01). The denominator for the response rate for the questionnaire for children 12 to 23 months is the number of 12 to 23 months identified in the household listing form (HH14); the numerator is the number of complete questionnaires for children 12 to 23 months (HH15).

Overall response rates are calculated for children 12 to 23 months by multiplying the household response rate by the children 12 to 23 months' response rates, respectively.

In the interviewed households, 6360 mothers/caregivers of children aged 12 to 23 months were identified. Of these, 6268 were successfully interviewed, yielding a response rate of 98.6 percent within interviewed households. Overall response rates of children aged 12 to 23 months was 97.3 percent.

From the table HH. 1 and HH2, the household response rates were similar for urban and rural areas. Most states had more than 98.0 percent household response rate apart from Ogun state with 97.1 percent response rate.

TABLE HH. 2: RESULTS OF HOUSEHOLD AND CHILDREN 12 TO 23 MONTHS RESPONSE RATES BY STATE

Number of households, and children 12 to 23 months old by interview results, and household, and children 12 to 23 months old response rates, NICS, 2016/17

	Households				Children 12 to 23 months			
	Sampled	Occupied	Interviewed	Household response rate	Eligible	Mothers/caretakers interviewed	12 to 23 months' response rate	12 to 23 months' overall response rate
Total	42,981	41,059	40,518	99	6,360	6,268	99	97
State								
Abia	1,440	1,387	1,362	98	150	145	97	95
Adamawa	845	832	823	99	142	139	98	97
Akwa Ibom	1,272	1,240	1,237	100	177	167	94	94
Anambra	1,240	1,166	1,135	97	118	115	97	95
Bauchi	959	952	952	100	227	221	97	97
Bayelsa	1,256	1,156	1,140	99	149	146	98	97
Benue	1,244	1,206	1,196	99	156	152	97	97
Borno	304	292	289	99	77	74	96	95
Cross River	1,200	1,130	1,122	99	128	122	95	95
Delta	1,226	1,150	1,120	97	148	146	99	96
Ebonyi	944	932	932	100	105	103	98	98
Edo	1,438	1,411	1,404	100	141	138	98	97
Ekiti	1,264	1,142	1,135	99	85	84	99	98
Enugu	1,264	1,215	1,203	99	116	115	99	98
Gombe	944	903	890	99	198	197	99	98
Imo	1,400	1,358	1,321	97	129	129	100	97
Jigawa	957	936	931	99	266	266	100	99
Kaduna	938	903	897	99	195	194	99	99
Kano	1,920	1,876	1,867	100	534	530	99	99
Katsina	958	949	949	100	255	253	99	99
Kebbi	944	922	920	100	214	214	100	100
Kogi	1,405	1,367	1,351	99	171	168	98	97
Kwara	1,234	1,200	1,184	99	120	119	99	98
Lagos	1,856	1,754	1,681	96	189	187	99	95
Nasarawa	928	888	878	99	170	167	98	97
Niger	960	912	898	98	190	188	99	97
Ogun	1,267	1,131	1,098	97	133	132	99	96
Ondo	1,411	1,363	1,359	100	150	147	98	98
Osun	1,079	975	958	98	88	88	100	98
Oyo	1,400	1,314	1,303	99	155	152	98	97
Plateau	1,385	1,341	1,315	98	228	226	99	97
Rivers	1,396	1,245	1,221	98	100	100	100	98
Sokoto	957	931	928	100	246	245	100	99
Taraba	848	766	745	97	101	98	97	94
Yobe	720	702	697	99	181	180	99	99
Zamfara	912	907	903	100	241	241	100	100
FCT Abuja	1,266	1,205	1,174	97	187	180	96	94

The denominator for the household response rate is the number of households found to be occupied during fieldwork (HH9 = 01, 02, 04, 07); the numerator is the number of households with complete household questionnaires (HH9 = 01). The denominator for the response rate for the questionnaire for children 12 to 23 months is the number of 12 to 23 months identified in the household listing form (HH14); the numerator is the number of complete questionnaires for children 12 to 23 months (HH15).

Overall response rates are calculated for children 12 to 23 months by multiplying the household response rate by the children 12 to 23 months' response rates, respectively.

Anambra, Imo and Taraba states with 97.3 percent each, Delta and FCT with 97.4 percent each and Lagos with 95.8 percent. The children 12-23 months' response rates were also similar across the states except Kwara, Osun and Taraba with 95.8, 95.6 and 92.5 percent respectively.

In addition, the household response rates across the geopolitical zones were similar. All the zones had more than 98.0 percent household response rate respectively. The response rate for children ranged from 97.3 to 99.4 across the geopolitical zones. Despite a generally high response rate for Borno State, only 19 enumeration areas could be visited due to ongoing armed conflict in the state and it is advised that results for this state be interpreted with caution. The difference between the sampled and occupied households

was due to households that moved away or not at home throughout the period of the survey and those that refused.

In several states enumeration areas could not be accessed; ongoing armed conflict in many regions precluded access of many enumeration areas. Table HH.3 below is a summary of states where enumeration areas could not be accessed.

TABLE HH. 3: NUMBER OF INACCESSIBLE ENUMERATION AREAS BY STATE				
State	Sampled enumeration areas	Inaccessible MICS EAs	Inaccessible supplementary EAs ¹	Total inaccessible EAs
<i>Total NIGERIA</i>	2,810	101	7	108
State				
Abia	90	0	0	0
Adamawa	60	7	-	7
Akwa Ibom	80	0	0	0
Anambra	80	0	1	1
Bauchi	60	0	-	0
Bayelsa	80	1	0	1
Benue	80	2	0	2
Borno ²	60	41	-	41
Cross River	80	2	1	3
Delta	80	2	1	3
Ebonyi	60	1	-	1
Edo	90	0	0	0
Ekiti	80	1	0	1
Enugu	80	1	0	1
Gombe	60	1	-	1
Imo	90	1	1	2
Jigawa	60	0	-	0
Kaduna	60	1	-	1
Kano	120	0	-	0
Katsina	60	0	-	0
Kebbi	60	1	-	1
Kogi	90	1	0	1
Kwara	80	2	0	2
Lagos	120	4	-	4
Nasarawa	60	2	-	2
Niger	60	0	-	0
Ogun	80	0	0	0
Ondo	90	0	0	0
Osun	70	1	1	2
Oyo	90	0	1	1
Plateau	90	2	1	3
Rivers	90	2	0	2
Sokoto	60	0	-	0
Taraba	60	7	-	7
Yobe	60	15	-	15
Zamfara	60	3	-	3
FCT Abuja	80	0	0	0

1 Hyphenated cells in states where there were no supplementary enumeration areas

2 Due to ongoing conflict in Borno State only 19 enumeration areas were accessible and included in the original selection.

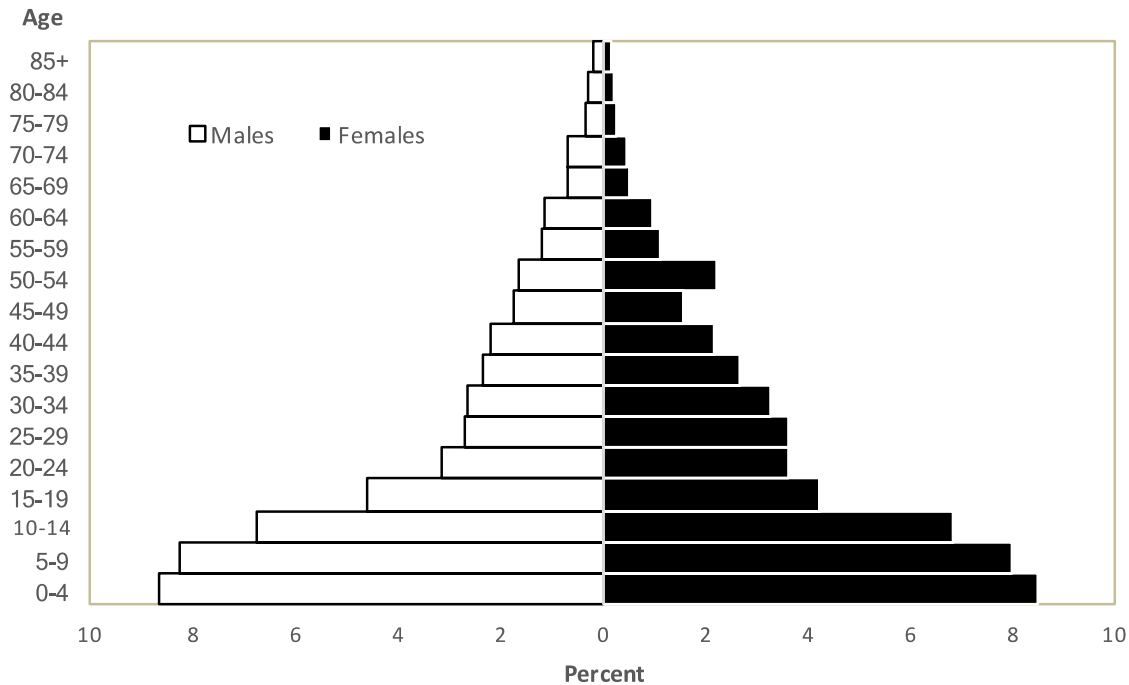
Characteristics of Households

The weighted age and sex distribution of the survey population is provided in Table HH.4. The distribution is also used to produce the population pyramid in Figure 4. In the 40,518 households successfully interviewed in the survey, a weighted total of 218,899 household members were listed. Of these, 108,443 were males, and 110,455 were females.

TABLE HH. 4: AGE DISTRIBUTION OF HOUSEHOLD POPULATION BY SEX						
Table HH.2: Age distribution of household population by sex Percent and frequency distribution of the household population by five-year age groups, dependency age groups, and by child (age 0-17 years) and adult populations (age 18 or more), by sex, NICS Nigeria, 2016/17						
	Total		Males		Females	
	Number	Percent	Number	Percent	Number	Percent
Total	217,820	100.0	107,872	100.0	109,946	100.0
Age						
0-4	37,331	17.1	18,888	17.5	18,443	16.8
5-9	35,366	16.2	18,000	16.7	17,366	15.8
10-14	29,508	13.5	14,674	13.6	14,834	13.5
15-19	19,236	8.8	10,050	9.3	9,185	8.4
20-24	14,727	6.8	6,865	6.4	7,862	7.2
25-29	13,816	6.3	5,932	5.5	7,884	7.2
30-34	12,945	5.9	5,826	5.4	7,119	6.5
35-39	10,882	5.0	5,126	4.8	5,755	5.2
40-44	9,489	4.4	4,757	4.4	4,732	4.3
45-49	7,181	3.3	3,818	3.5	3,363	3.1
50-54	8,449	3.9	3,594	3.3	4,855	4.4
55-59	5,015	2.3	2,565	2.4	2,450	2.2
60-64	4,551	2.1	2,483	2.3	2,068	1.9
65-69	2,709	1.2	1,561	1.4	1,148	1.0
70-74	2,575	1.2	1,526	1.4	1,049	1.0
75-79	1,236	0.6	716	0.7	520	0.5
80-84	1,106	0.5	637	0.6	470	0.4
85+	799	0.4	418	0.4	381	0.3
Missing/DK	899	0.4	435	0.4	464	0.4
Children 12 to 23 months old						
12 to 23 months	7,376	3.4	3,678	3.4	3,698	3.4
Other age groups	210,444	96.6	104,195	96.6	106,249	96.6
Dependency age groups						
0-14	102,205	46.9	51,563	47.8	50,642	46.1
15-64	106,291	48.8	51,017	47.3	55,273	50.3
65+	8,425	3.9	4,858	4.5	3,567	3.2
Missing/DK	899	0.4	435	0.4	464	0.4
Child and adult populations						
Children age 0-17 years	114,794	52.7	58,274	54.0	56,520	51.4
Adults age 18+ years	102,127	46.9	49,164	45.6	52,963	48.2
Missing/DK	899	0.4	435	0.4	464	0.4

Information on age and sex are collected in the List of Household Members in the Household Questionnaire (Questions HL6 and HL4). Missing information on sex is normally not expected; if few household members have missing sex in the final data set, this should be indicated in the final report in a footnote to the table, and such cases should be excluded from the table.

The structure of Nigeria shows a larger proportion of its population in the younger age group than in the older. About 46 percent of the population is under the age of 15 years, thereby contributing to the dependency ratio. The population pyramid show in Figure 4 indicates that there is even distribution at the base up to the age group 19–24



Note: # household members with missing age and/or sex are excluded

FIGURE 4: AGE AND SEX DISTRIBUTION OF HOUSEHOLD POPULATION, NIGERIA NICS, 2016/17

Table HH.4 provides basic background information on the households. Within households, the sex of the household head, region, area and number of household members, education of household head and ethnicity¹² of the household head are shown in the table. These background characteristics are used in subsequent tables in this report; the figures in the table are also intended to show the numbers of observations by major categories of analysis in the report.

Table HH.5 provide basic information on the households and children age 12-23 months by presenting the unweighted, as well as the weighted numbers. Information on the basic characteristics of households and children age 12-23 months interviewed in the survey is essential for the interpretation of findings presented later in the report and can provide an indication of the representativeness of the survey. The remaining tables in this report are presented only with weighted numbers.¹³

¹³ See Appendix A: Sample Design, for more details on sample weights.

TABLE HH. 5: HOUSEHOLD COMPOSITION

Percent and frequency distribution of households by selected characteristics, <i>NICS Nigeria, 2016/17</i>			
	Weighted percent	Number of households	
		Weighted	Unweighted
Total	100	40,518	40,518
Sex of household head			
Male	86.4	30,769	27,982
Female	13.6	4,855	5,919
Geopolitical zone			
<i>North central</i>	16.1	6,525	7,996
<i>North east</i>	16.5	6,695	4,396
<i>North west</i>	27	10,944	7,395
<i>South east</i>	9.5	3,869	5,953
<i>South-south</i>	12.5	5,080	7,244
<i>South west</i>	18.3	7,404	7,534
Area			
Urban	36.7	14,852	13,455
Rural	63.3	25,666	27,063
Number of household members			
1	10.4	4,213	5,225
2	9.6	3,878	4,450
3	12.6	5,097	5,395
4	13.8	5,587	5,541
5	12.9	5,217	5,250
6	11.2	4,554	4,566
7	8.7	3,506	3,233
8	5.9	2,371	2,110
9	4.3	1,731	1,444
10+	10.8	4,364	3,304
Education of household head			
None	22.1	8,957	9,054
Primary	19.2	7,790	9,045
Secondary / Secondary-technical	26.8	10,872	11,520
Higher	16.1	6,517	6,606
Non-formal	15.6	6,309	4,222
Missing/DK	0.2	73	71
Ethnicity of household head			
<i>Hausa</i>	39.8	16,142	11,380
<i>Igbo</i>	13.5	5,452	7,504
<i>Yoruba</i>	16.9	6,866	7,509
<i>Other ethnic group</i>	29.8	12,058	14,125
e	5.4		

Total weighted and unweighted numbers of households should be equal when normalized sample weights are used.

Tables HH.3 and HH.5 present main background characteristics of the household, women's, men's and under-5 samples, and should be produced and finalized before the rest of tables are produced, to ensure that the categories adopted for presentation in the tables will include sufficiently sized denominators. The selected characteristics used in these tables are those used as background characteristics in the topical tables in the following sections.

Religion/Language/Ethnicity of household head should be constructed from information collected in the Household Questionnaire, in questions HC1A, HC1B, and HC1C. In most surveys, some combination of these three questions will be used as the final variable that best describes the main socio-cultural or ethnic groups in the country.

TABLE HH. 6: HOUSEHOLD COMPOSITION (CONTINUED)

Percent and frequency distribution of households by selected characteristics, <i>NICS Nigeria, 2016/17</i>			
	Weighted percent	Number of households	
		Weighted	Unweighted
Total	100.0	40,518	40,518
State			
Abia	1.5	602	1,362
Adamawa	2.2	881	823
Akwa Ibom	2.4	992	1,237
Anambra	2.0	824	1,135
Bauchi	4.1	1,661	952
Bayelsa	0.9	369	1,140
Benue	3.0	1,199	1,196
Borno	4.4	1,791	289
Cross River	2.1	862	1,122
Delta	2.2	884	1,120
Ebonyi	1.6	642	932
Edo	2.1	864	1,404
Ekiti	1.1	438	1,135
Enugu	2.0	824	1,203
Gombe	1.6	634	890
Imo	2.4	978	1,321
Jigawa	3.4	1,376	931
Kaduna	4.9	1,974	897
Kano	5.6	2,266	1,867
Katsina	5.0	2,045	949
Kebbi	2.5	1,005	920
Kogi	1.9	757	1,351
Kwara	1.9	777	1,184
Lagos	5.7	2,324	1,681
Nasarawa	1.9	756	878
Niger	3.6	1,452	898
Ogun	1.8	712	1,098
Ondo	2.8	1,130	1,359
Osun	2.8	1,150	958
Oyo	4.1	1,651	1,303
Plateau	3.1	1,263	1,315
Rivers	2.7	1,109	1,221
Sokoto	2.4	984	928
Taraba	1.6	632	745
Yobe	2.7	1,096	697
Zamfara	3.2	1,294	903
FCT Abuja	0.8	322	1,174

Total weighted and unweighted numbers of households should be equal when normalized sample weights are used.

Tables HH.3 and HH.5 present main background characteristics of the household, women's, men's and under-5 samples, and should be produced and finalized before the rest of tables are produced, to ensure that the categories adopted for presentation in the tables will include sufficiently sized denominators. The selected characteristics used in these tables are those used as background characteristics in the topical tables in the following sections.

Religion/Language/Ethnicity of household head should be constructed from information collected in the Household Questionnaire, in questions HC1A, HC1B, and HC1C. In most surveys, some combination of these three questions will be used as the final variable that best describes the main socio-cultural or ethnic groups in the country.

The weighted and unweighted total numbers of households are equal, since survey weights were normalized¹³. Table HH.5 and HH.6 also show the weighted mean household size estimated by the survey. About 14 percent of the households are headed by female and 63 percent of the households live in the rural area. Also, Table HH.5 indicates that about 16 percent of the household heads do not have any formal education, while 18 percent have primary education.

Table HH.6 below provides information on the background characteristics of children age 12-23 months. The total numbers of weighted and unweighted observations are equal, since survey weights have been normalized. These include the distribution of children by several attributes: sex, geopolitical zone and area, age in months, respondent type, mother/caregiver education and wealth.

TABLE HH. 7: CHILDREN 12 TO 23 MONTHS' BACKGROUND CHARACTERISTICS			
Percent and frequency distribution of children 12 to 23 months of age by selected characteristics, <i>NICS Nigeria 2016/17</i>			
	Weighted percent	Number of children 12 to 23 months	
		Weighted	Unweighted
Total 12 to 23 months old	100.0	6,268	6,268
Sex			
Male	49.8	3,121	3,111
Female	50.2	3,147	3,157
Region			
<i>North central</i>	14.4	900	1,200
<i>North east</i>	21.5	1,346	909
<i>North west</i>	39.4	2,468	1,943
<i>South east</i>	5.6	353	607
<i>South-south</i>	8.0	503	819
<i>South west</i>	11.1	698	790
Area			
Urban	31.4	1,970	1,797
Rural	68.6	4,298	4,471
Respondent to immunisation questionnaire			
Mother	97.9	6,139	6,101
Other primary caretaker	2.1	129	167
Mother's education ^a			
<i>None</i>	28.6	1,792	1,581
<i>Primary</i>	14.3	896	1,014
<i>Secondary / Secondary-technical</i>	27.7	1,735	2,037
<i>Higher</i>	7.8	490	562
<i>Non-formal</i>	21.6	1,355	1,073
<i>Missing/DK</i>	0.0	1	1
Wealth index quintile			
Poorest	23.2	1,454	1,368
Second	21.9	1,370	1,354
Middle	19.2	1,205	1,241
Fourth	18.3	1,150	1,169
Richest	17.4	1,089	1,136
Religion/Language/Ethnicity of household head			
<i>Hausa</i>	56.5	3,544	2,791
<i>Igbo</i>	8.3	523	801
<i>Yoruba</i>	9.8	612	737
<i>Other ethnic group</i>	25.4	1,590	1,939

Total weighted and unweighted numbers of children 12 to 23 months should be equal when normalized sample weights are used.

TABLE HH. 7: CHILDREN 12 TO 23 MONTHS' BACKGROUND CHARACTERISTICS (CONTINUED)			
Percent and frequency distribution of children 12 to 23 months of age by selected characteristics, <i>NICS Nigeria 2016/17</i>			
	Weighted percent	Number of children 12 to 23 months	
		Weighted	Unweighted
Total 12 to 23 months old	100.0	6,268	6,268
State			
Abia	0.9	57	145
Adamawa	2.1	134	139
Akwa Ibom	1.9	120	167
Anambra	1.2	74	115
Bauchi	5.5	345	221
Bayelsa	0.7	41	146
Benue	2.1	132	152
Borno	6.7	421	74
Cross River	1.2	76	122
Delta	1.6	102	146
Ebonyi	0.9	59	103
Edo	1.3	81	138
Ekiti	0.5	30	84
Enugu	1.2	73	115
Gombe	2.0	122	197
Imo	1.4	91	129
Jigawa	5.4	337	266
Kaduna	6.0	376	194
Kano	8.8	554	530
Katsina	7.6	478	253
Kebbi	3.2	202	214
Kogi	1.4	89	168
Kwara	1.0	66	119
Lagos	3.9	244	187
Nasarawa	2.0	127	167
Niger	4.1	255	188
Ogun	1.2	72	132
Ondo	1.6	102	147
Osun	1.5	96	88
Oyo	2.5	155	152
Plateau	3.0	186	226
Rivers	1.3	82	100
Sokoto	3.5	218	245
Taraba	1.1	70	98
Yobe	4.0	253	180
Zamfara	4.8	303	241
FCT Abuja	0.7	46	180

Total weighted and unweighted numbers of children 12 to 23 months should be equal when normalized sample weights are used.

Housing characteristics, asset ownership, and wealth quintiles

Tables HH.6, HH.7 and HH.8 provide further details on household level characteristics. Table HH.6 presents information on housing characteristics, which reflect a household's socioeconomic situation. The table includes information on availability of electricity, type of flooring material and number of rooms used for sleeping. It also shows that about 58 percent of households in Nigeria have access to electricity (89 percent in urban areas and 36 percent in rural areas).

TABLE HH. 7: HOUSING CHARACTERISTICS

Percent distribution of households by selected housing characteristics, according to area of residence and regions, *NICS Nigeria, 2016/17*

	Area			Geopolitical zones					
	Total	Urban	Rural	North central	North east	North west	South east	South south	South west
Electricity									
Yes	54.7	86.6	36.2	48.9	38.7	40.6	67.5	70.5	77.5
No	45.3	13.4	63.8	51.1	61.3	59.3	32.4	29.5	22.5
Missing/DK	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Flooring									
Natural floor	30.8	8.7	43.3	26.8	47.7	52.0	12.0	13.2	8.6
Rudimentary floor	0.8	0.5	1.0	0.2	0.3	1.0	0.2	1.7	1.4
Finished floor	67.8	90.4	55.0	72.0	50.9	46.6	87.5	84.8	89.5
Other	0.6	0.5	0.7	1.0	1.0	0.4	0.2	0.3	0.5
Missing/DK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Roof									
Natural roofing	13.1	1.4	19.9	14.9	27.5	19.6	2.0	2.7	1.8
Rudimentary roofing	3.5	1.8	4.5	2.5	1.8	7.9	1.6	1.6	1.7
Finished roofing	82.9	96.5	75.0	82.3	70.6	71.1	96.4	95.7	96.2
Other	0.5	0.3	0.6	0.2	0.2	1.3	0.0	0.1	0.4
Missing/DK	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exterior walls									
Natural walls	15.8	3.8	22.7	13.8	35.4	24.2	3.0	5.3	1.2
Rudimentary walls	19.9	5.5	28.2	22.8	20.5	33.0	9.1	9.5	10.1
Finished walls	64.0	90.6	48.6	62.7	43.3	42.7	87.8	84.5	88.7
Other	0.4	0.2	0.5	0.7	0.7	0.1	0.1	0.7	0.1
Missing/DK	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Rooms used for sleeping									
1	33.4	42.6	28.1	24.8	22.3	23.4	31.7	44.5	59.3
2	31.6	29.2	33.0	31.6	35.5	34.2	31.8	30.4	24.8
3 or more	34.9	28.1	38.8	43.5	42.2	42.4	36.4	24.9	15.9
Missing/DK	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of households	40,518	14,852	25,665	6,525.2	6,695.0	10,943.8	3,869.2	5,080.2	7,404.5
Mean number of persons per room used for sleeping	2.6	2.6	2.6	2.4	2.8	2.9	2.1	2.4	2.5

Information on housing characteristics are obtained in the Household Characteristics module of the Household Questionnaire: Electricity (HC8A), flooring (HC3), roof (HC4), exterior walls (HC5) and rooms used for sleeping (HC2).

The mean number of persons per room used for sleeping is calculated by dividing the total number of household members (HH11) by the number of rooms used for sleeping (HC2). Households with missing information on the number of sleeping rooms are excluded from the calculation.

To limit the size of the table, detailed floor, roof, and exterior wall categories are not shown. If needed, these categories may be indicated in a footnote below the table, in the final report.

Additional relevant housing characteristics may be added to the table if included in the household questionnaire.

Most of the information collected on these housing characteristics are used in the construction of the wealth index.

In Table HH.8 households are distributed according to ownership of assets by households and by individual household members. This also includes ownership of dwelling. The table provides disaggregation of household and personal asset ownership by urban and rural areas and for the six geopolitical zones. Asset ownership by state is found in the appendix.

TABLE HH. 8: HOUSEHOLD AND PERSONAL ASSETS

Percentage of households by ownership of selected household and personal assets, and percent distribution by ownership of dwelling, according to area of residence and regions, NICS Nigeria, 2016/17									
	Area			Geopolitical zone					
	Total	Urban	Rural	North central	North east	North west	South east	South south	South west
Percentage of households that own a									
Radio	59.8	67.1	55.6	59.4	54.4	59.0	65.5	56.4	65.6
Television	46.9	74.0	31.2	48.4	29.3	26.4	62.1	67.1	70.0
Non-mobile phone	2.8	3.3	2.5	3.1	2.2	3.9	2.3	2.9	1.5
Refrigerator	21.7	40.1	11.0	19.6	10.1	13.1	29.3	35.5	33.4
VCR, VCD, DVD	41.5	65.3	27.8	43.3	24.7	23.4	57.0	59.8	61.5
Sewing machine	12.6	16.0	10.7	11.6	13.7	15.9	9.7	10.8	10.5
Clock	53.2	70.8	42.9	52.5	36.4	39.8	66.5	70.1	69.9
Generator	27.8	39.7	20.8	29.0	13.2	12.4	45.3	44.2	42.1
Computer	6.5	12.5	3.1	6.9	3.2	4.4	6.9	8.7	10.6
Water heater	9.3	17.3	4.6	9.0	6.6	8.6	6.2	11.7	12.8
Fan	47.7	77.7	30.3	43.6	28.0	28.6	64.5	69.5	73.4
Air conditioner	3.2	6.1	1.4	2.6	1.3	2.8	2.8	4.7	4.8
Blender/mixer/food processor	11.2	22.6	4.7	10.0	4.1	9.2	8.9	13.2	21.7
Manufactured bed	62.3	76.1	54.3	50.7	62.1	68.4	53.8	54.2	73.6
Cushioned chair	45.1	63.2	34.5	39.9	35.4	46.0	46.9	42.9	57.4
Percentage of households that own									
Agricultural land	62.7	32.7	80.2	69.7	70.1	78.3	66.2	52.0	32.6
Farm animals/Livestock	48.7	25.2	62.3	60.5	61.0	67.0	36.4	18.1	27.6
Percentage of households where at least one member owns or has a									
Watch	56.8	72.6	47.7	50.6	47.3	44.4	67.2	73.5	72.5
Mobile phone	73.8	89.6	64.7	79.1	69.1	57.8	79.0	83.5	88.0
Bicycle	19.6	12.9	23.5	14.8	27.7	27.7	23.6	16.1	5.0
Motorcycle or scooter	31.0	21.5	36.5	44.2	23.8	39.1	28.8	25.1	19.1
Animal-drawn cart	6.4	1.7	9.1	1.4	12.2	14.2	1.2	0.7	0.5
Car / truck	10.9	18.1	6.7	11.9	6.2	8.5	12.3	11.8	16.1
Boat with motor	1.8	1.0	2.2	2.4	1.0	1.3	1.4	4.4	1.0
Tricycle (Keke Napep)	1.7	2.3	1.3	1.1	1.7	2.0	2.8	1.7	0.9
Bank account	42.3	66.8	28.2	41.9	27.3	22.7	59.1	59.1	65.0
Ownership of dwelling									
Owned by a household member	68.5	44.4	82.4	73.1	78.8	86.8	71.8	53.8	36.4
Not owned	31.5	55.6	17.5	26.8	21.2	13.1	28.1	46.2	63.6
Rented	24.4	47.9	10.8	18.2	15.8	8.5	25.2	35.4	53.1
Other	7.1	7.7	6.7	8.5	5.5	4.6	2.9	10.8	10.5
Missing/DK	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0
Total	100	100	100	100.0	100	100	100.	100.0	100.0
Number of households	40518	14852	25666	6525	6695	10944	3869	5080	7404

Information on household and personal assets are obtained in the Household Characteristics module of the Household Questionnaire: Radio (HC8B), television (HC8C), Non-mobile telephone (HC8D), refrigerator (HC8E), agricultural land (HC11), farm animals/livestock (HC13), watch (HC9A), mobile telephone (HC9B). Bicycle (HC9C), motorcycle or scooter (HC9D), animal-drawn cart (HC9E), car or truck (HC9F), and boat with a motor (HC9G). Ownership of dwelling is based on responses to HC10.

Additional household and personal assets should to be added to the questionnaires (for wealth index construction) and shown in this table.

Missing/DK values are included in the denominators and households with missing information are considered not to own or have these assets. However, a careful examination of the extent of missing values needs to be undertaken prior to the construction of this table. If Missing/DK cases exceed 5 percent, this should be shown in the table.

Most of the information collected on household and personal assets are used in the construction of the wealth index.

Ownership of agricultural land and farm animals is higher in rural areas compared to urban areas. Households in the South West and the South South zones have lowest ownership of agricultural land and farm animals compared to households in the other four zones. Households in the South West and the South South zones also have the lowest ownership of dwellings.

TABLE HH. 9: WEALTH QUINTILESPercent distribution of the household population by wealth index quintile, according to area of residence and regions, *Survey name, Year*

	Wealth index quintile					Total	Number of household members
	Poorest	Second	Middle	Fourth	Richest		
Total	21.4	20.8	19.9	19.1	18.9	100.0	217820
Area							
Urban	2.9	4.8	15.1	31.3	45.9	100.0	73538
Rural	30.8	28.9	22.4	12.8	5.1	100.0	144282
Geopolitical zone							
North central	20.3	21.9	22.8	18.5	16.6	100.0	36351
North east	28.0	23.7	23.5	18.6	6.2	100.0	44342
North west	33.7	27.1	16.8	11.6	10.8	100.0	73314
South east	3.9	16.1	26.1	29.7	24.2	100.0	15622
South south	3.0	12.4	25.7	30.9	27.9	100.0	20666
South west	3.4	6.6	10.7	25.3	53.9	100.0	27526
State							
Abia	0.9	11.7	27.9	35.6	23.8	100.0	2285
Adamawa	22.2	23.9	26.9	18.0	9.0	100.0	5253
Akwa Ibom	4.1	13.3	31.4	31.3	19.8	100.0	4461
Anambra	3.3	11.5	15.1	28.8	41.3	100.0	3390
Bauchi	43.1	30.7	14.2	7.0	5.0	100.0	10492
Bayelsa	2.3	14.0	33.4	28.3	22.1	100.0	1565
Benue	29.3	25.8	17.8	16.4	10.8	100.0	5971
Borno	6.2	14.5	35.0	37.7	6.6	100.0	13271
Cross River	7.4	22.0	32.1	23.9	14.6	100.0	3577
Delta	1.4	11.3	23.2	31.9	32.1	100.0	3422
Ebonyi	7.8	33.1	33.4	19.5	6.1	100.0	2697
Edo	1.3	5.1	9.0	43.3	41.3	100.0	3287
Ekiti	2.4	6.2	19.0	34.3	38.1	100.0	1432
Enugu	3.7	14.7	23.5	34.8	23.3	100.0	3309
Gombe	42.4	27.0	14.0	10.3	6.4	100.0	3948
Imo	3.6	12.4	31.7	29.7	22.7	100.0	3940
Jigawa	50.3	29.8	8.7	6.7	4.4	100.0	9619
Kaduna	11.9	19.4	27.5	20.6	20.6	100.0	12497
Kano	20.5	30.4	21.6	15.3	12.2	100.0	16218
Katsina	43.0	27.6	11.7	8.3	9.5	100.0	13125
Kebbi	43.7	24.1	16.0	8.3	7.8	100.0	6467
Kogi	8.1	20.8	30.1	24.1	16.9	100.0	3606
Kwara	11.4	17.2	17.1	27.3	27.0	100.0	3290
Lagos	0.0	0.0	1.2	13.3	85.4	100.0	8924
Nasarawa	8.4	31.3	32.5	17.5	10.3	100.0	4549
Niger	20.1	21.0	26.5	18.4	13.9	100.0	9541
Ogun	2.4	7.4	19.5	28.0	42.8	100.0	2739
Ondo	4.3	15.3	16.1	26.9	37.4	100.0	4019
Osun	1.8	7.1	17.1	38.5	35.5	100.0	3983
Oyo	9.2	9.9	11.1	29.7	40.1	100.0	6429
Plateau	33.8	19.2	15.3	13.4	18.4	100.0	7653
Rivers	1.2	9.6	26.2	27.1	35.9	100.0	4354
Sokoto	46.0	28.5	11.2	8.4	5.9	100.0	6195
Taraba	27.3	31.4	21.9	14.1	5.2	100.0	3568
Yobe	41.5	24.7	19.9	8.4	5.6	100.0	7811
Zamfara	40.2	29.3	14.0	7.5	8.9	100.0	9193
FCT Abuja	3.9	12.5	22.6	22.6	38.3	100.0	1739

Wealth index quintiles are constructed by using data on housing characteristics, household and personal assets, and on water and sanitation via principal components analysis.

Household members should be equally distributed to the five wealth index quintiles for the total sample, in the first row of the table (percentages that deviate from the equal distribution of 20 percent per quintile by 0.1 - 0.2 percent are permissible). Other background characteristics (such as Religion/Language/Ethnicity, education and sex of household head) may be added to the table, if needed.

Table HH.9 shows how the household populations in areas and regions are distributed according to household wealth quintiles.

Majority of the households in the poorest and second poorest quintiles and in states in the three northern

zones with Bauchi, Gombe, Jigawa, Katsina, Kebbi, Sokoto, Yobe and Zamfara states with more than 40 percent of households in the poorest wealth quintile. Anambra, Edo, Lagos, Ogun and Oyo states on the other hand have more than 40 percent of all households in the richest wealth quintile. Lagos state has the highest number of households in the richest wealth quintile with 85 percent of all households in Lagos in the richest quintile.

VI. Vaccination coverage

Immunisation Coverage of all Antigens: Full Immunisation Coverage (Card and Recall)

Crude full Immunisation coverage describes the situation whereby children have received all antigens defined for by the expanded programme on immunisation (EPI) without regard to the specified age or time interval between doses as prescribed by the national schedule. A child is considered fully vaccinated if he/she has received BCG vaccine, at least three doses of Polio vaccines, three doses of Pentavalent and one of Measles vaccine.

Twenty-three percent of eligible children between the age 12 to 23 months have received all the vaccines. There is no difference in proportion fully immunisation between males and females. However, only 16 percent of children living in the rural areas are fully immunised compared to 38 percent of children living in urban areas. Distribution of full immunisation by geopolitical zone shows that South West (50 percent), South-South (43 percent) and South East (44 percent) have high full Immunisation coverage while North West has the lowest proportion with 8 percent full coverage. Figure 5 below shows full coverage by state. Lagos state has the highest percentage of 68 percent while Sokoto and Jigawa states only 2 percent of children are fully immunised.

Full immunisation increased with the wealth index. Only 5 percent of children aged 12 to 23 months are fully immunised in the poorest wealth quintile while 48 percent of children are immunised in the richest wealth index. Few children (6 percent) of mothers or caregivers with non-formal education are fully immunised. Full immunisation increases with the level of education with 24 percent of children aged 12 to 23 months from mothers or care givers with primary education being fully immunised while 55 percent children aged 12 to 23 months from mothers or care givers with higher education being fully immunised. Only 7 percent of children of mother of caregivers aged 15 to 19 years are fully immunised while between 22 and 27 percent of children aged 12 to 23 months are fully immunised if their mothers or caregivers are older than 19 years old.

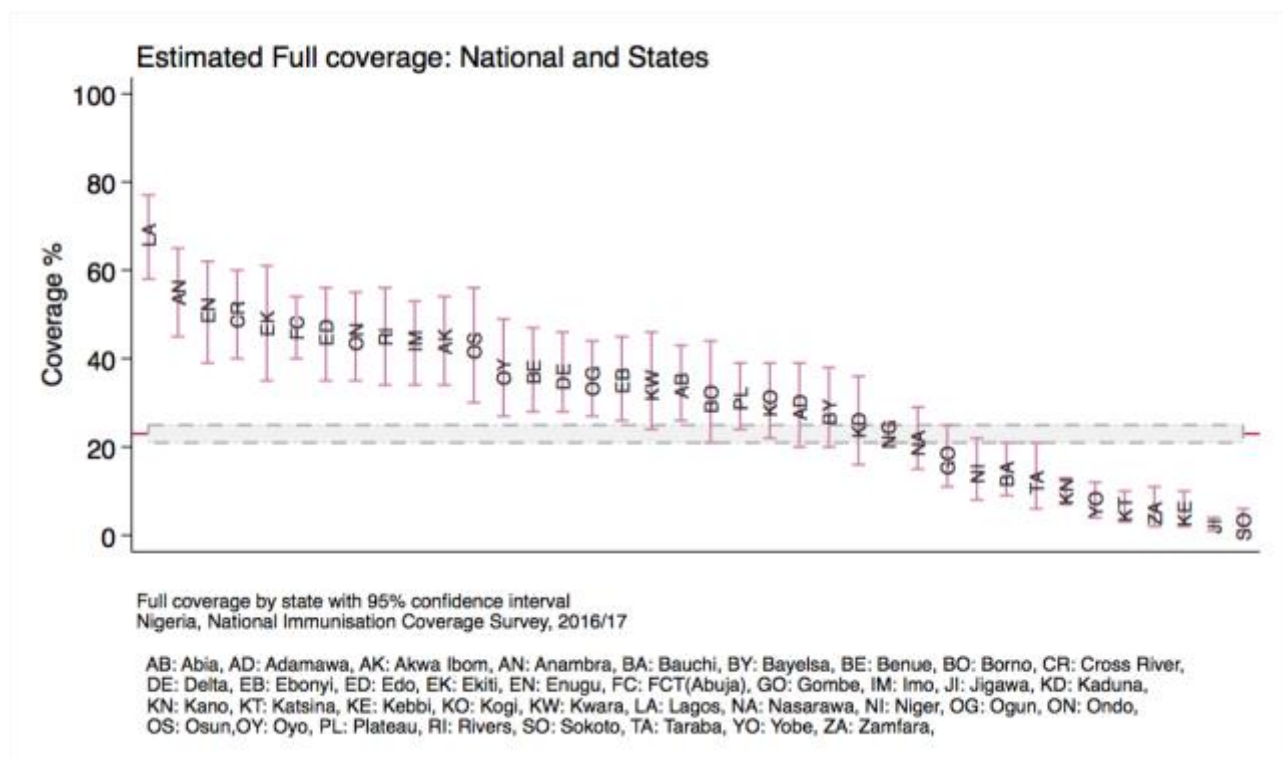


FIGURE 5: SHOWING STATE AND NATIONAL PROPORTION OF CHILDREN FULLY IMMUNISED

TABLE IM. 1: ESTIMATED % OF CHILDREN 12-23 MONTHS WITH ANY EVIDENCE OF VACCINATION, NIGERIA COMBINED MICS/NICS, 2016-17Percentage of children age 12-23 months currently vaccinated against vaccine preventable childhood diseases, *Nigeria MICS/NICS 2016-17*

	Full		None		Card Seen		Children age 12-23 months	
	%	95% CI	%	95% CI	%	95% CI	N	weighted N
NIGERIA	23	(21,25)	40	(38,42)	29	(27,31)	6,268	6,268
Geopolitical Zone								
North Central	26	(23,30)	30	(25,34)	31	(27,35)	1,200	900
North East	20	(15,26)	42	(35,48)	24	(20,30)	909	1,346
North West	8	(7,11)	61	(57,64)	16	(13,18)	1,943	2,468
South East	44	(40,49)	8	(5,11)	47	(42,52)	607	353
South South	43	(38,47)	14	(11,17)	52	(47,56)	819	503
South West	50	(45,55)	11	(8,16)	57	(53,62)	790	698
Area								
Urban	38	(35,42)	20	(17,24)	42	(38,45)	1,797	1,970
Rural	16	(14,17)	49	(46,51)	23	(21,25)	4,471	4,298
Sex								
Male	23	(21,25)	39	(36,42)	29	(26,31)	3,111	3,121
Female	23	(21,26)	40	(37,43)	29	(27,31)	3,157	3,147
Caretaker's Education								
Primary	24	(21,28)	34	(30,38)	32	(28,36)	1,014	896
Secondary/technical	41	(38,45)	14	(12,16)	47	(44,50)	2,037	1,735
Higher	55	(49,60)	4	(3,7)	52	(47,58)	562	490
Non-formal	5	(3,8)	66	(62,70)	11	(8,15)	1,073	1,355
Missing	9	(7,11)	58	(54,62)	18	(15,21)	1,582	1,792
Caretaker's Age								
15-19	7	(5,11)	64	(58,70)	15	(11,20)	351	377
20-29	22	(20,24)	41	(38,44)	29	(27,31)	2,830	2,873
30-39	27	(24,29)	33	(30,36)	33	(30,36)	2,337	2,324
40-49	21	(17,26)	44	(39,49)	24	(20,28)	608	587
50+	21	(13,30)	43	(33,54)	21	(14,31)	122	93
DNK	(*)	(*)	(*)	(*)	(*)	(*)	20	14
Wealth index quintile								
Poorest	5	(4,7)	67	(63,71)	12	(10,14)	1,368	1,454
Second	11	(9,13)	52	(48,56)	19	(16,22)	1,354	1,370
Middle	22	(19,26)	39	(34,44)	31	(27,35)	1,241	1,205
Fourth	36	(30,42)	20	(17,24)	39	(34,44)	1,169	1,150
Richest	48	(44,53)	10	(7,13)	51	(47,56)	1,136	1,089
Ethnicity								
Hausa	10	(8,12)	56	(53,59)	16	(14,18)	2,791	3,544
Igbo	45	(41,50)	8	(6,11)	49	(44,53)	801	523
Yoruba	51	(46,56)	10	(7,13)	56	(51,60)	737	612
Other	33	(29,37)	25	(22,29)	41	(38,44)	1,939	1,590

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All percentages are weighted estimates of population characteristics, taking into account sampling design and probability of respondent selection

c. Evidence of vaccination is from either a date or tick mark on home-based record (vaccination card) or from caretaker's recall of the child's vaccination history

d. Fully vaccinated (full) means that the child had evidence of receiving: BCG, OPV1-3, Penta (DPT + HepB + Hib)1-3, and Measles

e. Not vaccinated (none) means that the child had no evidence of receiving: BCG, OPV1-3, Penta1-3, or Measles

f. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record

TABLE IM. 2: ESTIMATED % OF CHILDREN 12-23 MONTHS WITH ANY EVIDENCE OF VACCINATION, NIGERIA COMBINED MICS/NICS, 2016-17 (CONTINUED)

Percentage of children age 12-23 months currently vaccinated against vaccine preventable childhood diseases, Nigeria MICS/NICS 2016-17

	Full		None		Card Seen		Children age 12-23 months	
	%	95% CI	%	95% CI	%	95% CI	N	weighted N
NIGERIA	23	(21,25)	40	(38,42)	29	(27,31)	6,268	6,268
State								
North Central								
FCT-Abuja	47	(40,54)	10	(6,16)	55	(46,64)	180	46
Benue	37	(28,47)	27	(19,37)	38	(30,47)	152	132
Kogi	30	(22,39)	21	(15,29)	41	(33,50)	168	89
Kwara	34	(24,46)	24	(15,36)	20	(13,29)	119	66
Nasarawa	21	(15,29)	32	(23,42)	26	(19,35)	167	127
Niger	14	(8,22)	48	(38,58)	25	(16,37)	188	255
Plateau	31	(24,39)	16	(10,24)	31	(24,39)	226	186
North East								
Adamawa	29	(20,39)	30	(20,42)	46	(36,56)	139	134
Bauchi	14	(9,21)	52	(41,63)	20	(13,28)	221	345
Borno	31	(21,44)	13	(7,23)	32	(21,46)	74	421
Gombe	17	(11,25)	35	(27,45)	26	(18,35)	197	122
Taraba	12	(6,21)	57	(44,69)	22	(14,33)	98	70
Yobe	7	(4,12)	80	(71,87)	7	(3,14)	180	253
North West								
Jigawa	2	(1,4)	69	(60,76)	12	(8,16)	266	337
Kaduna	25	(16,36)	47	(34,60)	23	(15,33)	194	376
Kano	10	(7,13)	62	(56,67)	20	(16,24)	530	554
Katsina	6	(3,10)	58	(50,67)	19	(13,26)	253	478
Kebbi	5	(2,10)	65	(56,74)	13	(8,20)	214	202
Sokoto	2	(1,6)	78	(70,84)	5	(3,9)	245	218
Zamfara	5	(2,11)	54	(46,61)	8	(5,14)	241	303
South East								
Abia	34	(26,43)	10	(6,17)	40	(32,48)	145	57
Anambra	55	(45,65)	6	(2,15)	45	(35,54)	115	74
Ebonyi	35	(26,45)	16	(7,33)	50	(38,62)	103	59
Enugu	51	(39,62)	5	(2,10)	53	(40,65)	115	73
Imo	44	(34,53)	3	(1,7)	47	(37,58)	129	91
South South								
Akwa Ibom	44	(34,54)	16	(10,25)	47	(37,57)	167	120
Bayelsa	28	(20,38)	26	(19,34)	37	(29,46)	146	41
Cross River	50	(40,60)	11	(5,20)	54	(44,64)	122	76
Delta	36	(28,46)	17	(10,27)	51	(40,62)	146	102
Edo	46	(35,56)	1	(0,4)	56	(44,67)	138	81
Rivers	45	(34,56)	14	(6,28)	60	(48,71)	100	82
South West								
Ekiti	48	(35,61)	5	(2,12)	65	(53,76)	84	30
Lagos	68	(58,77)	5	(1,16)	68	(58,76)	187	244
Ogun	35	(27,44)	18	(12,27)	45	(36,54)	132	72
Ondo	45	(35,55)	13	(7,22)	48	(38,57)	147	102
Osun	43	(30,56)	10	(5,19)	54	(43,64)	88	96
Oyo	37	(27,49)	19	(11,32)	54	(42,65)	152	155

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All percentages are weighted estimates of population characteristics, taking into account sampling design and probability of respondent selection

c. Evidence of vaccination is from either a date or tick mark on home-based record (vaccination card) or from caretaker's recall of the child's vaccination history

d. Fully vaccinated (full) means that the child had evidence of receiving: BCG, OPV1-3, Penta (DPT + HepB + Hib)1-3, and Measles

e. Not vaccinated (none) means that the child had no evidence of receiving: BCG, OPV1-3, Penta1-3, or Measles. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record

Nigeria - Fully vaccinated (crude)

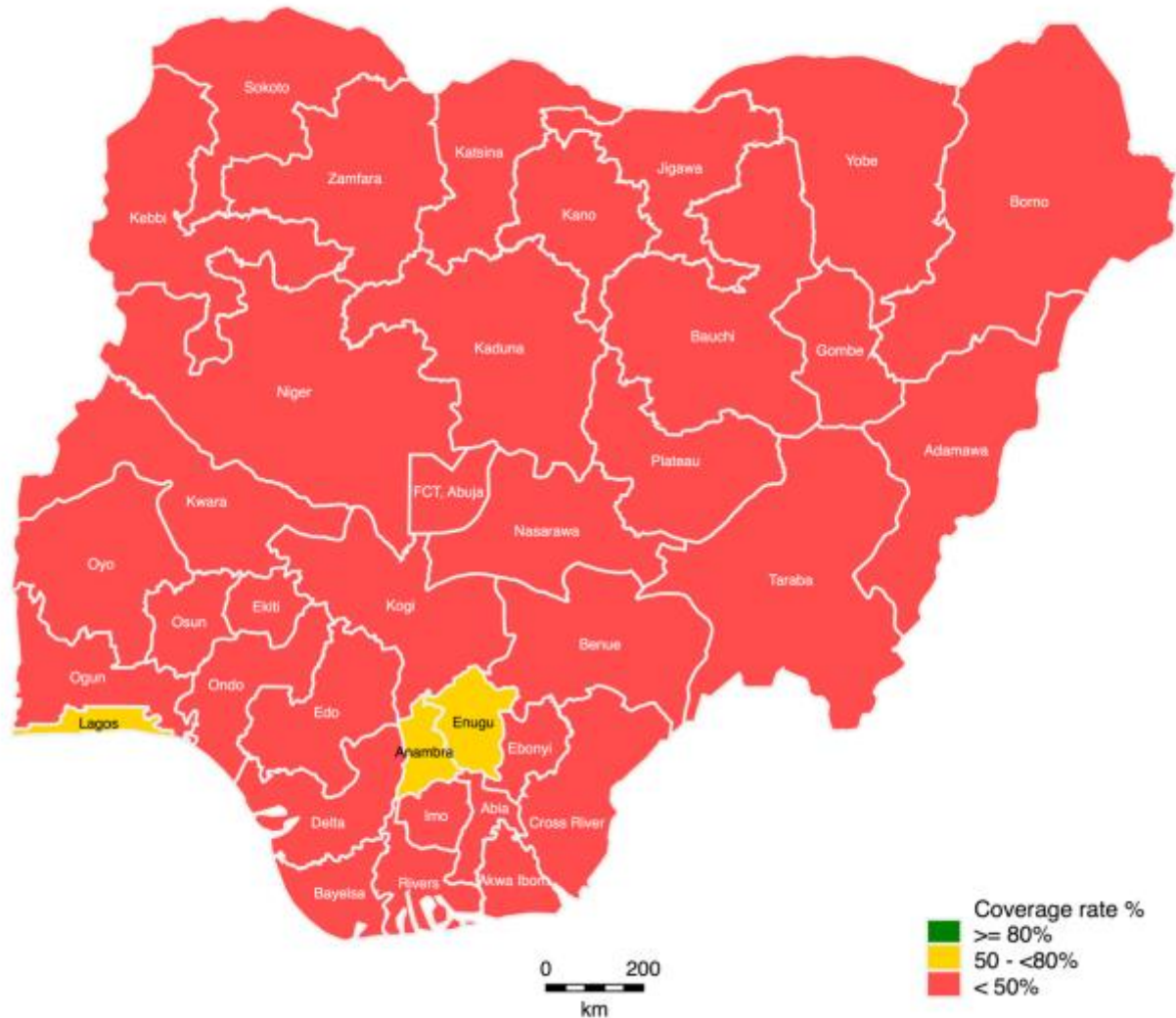


FIGURE 6: MAP SHOWING THE PERCENTAGE OF CHILDREN 12 TO 23 MONTHS FULLY VACCINATED BY STATE

Using program cut off used to determine the level of immunisation, red category to determine coverage below 50%, yellow colour for coverage between 51 and 80 percent and green colour for coverage over 80 percent, only three states have full immunisation coverage above 50 percent as seen in figure 6 above.

BCG Coverage

The bacille Calmette-Guérin (BCG) vaccine is administered against *Mycobacterium tuberculosis* (Mtb) the causative organism for tuberculosis is recommended for children living in countries with high risk of tuberculosis. BCG is a live attenuated vaccine and is administered intradermally, normally into the lateral aspect of the left upper arm at the level of the insertion of the deltoid muscle. BCG is administered at birth and is recommended that BCG is given within the first month of life.

At national level, 53 percent of children age 12-23 months have received BCG vaccination. There was no difference in BCG vaccination by gender with 54 percent for male children and 53 percent for female children having received the vaccine. When BCG vaccination is characterised by geopolitical zone, South East has the

highest percentage coverage rate at 93 percent while the North West has the least coverage rate of 37 percent.

Generally, states in the southern part of Nigeria have higher rates of BCG vaccination compared to their counterparts in northern Nigeria. In the North-Central zone, FCT Abuja has the highest coverage rate of BCG vaccination at 87 percent while in Niger state, only 38 percent of children aged 12 to 23 months have received BCG vaccination. In the North-East zone, Adamawa State has the highest proportion (67 percent) while Yobe State has the least BCG coverage rate for children 12 to 23 months is 16 percent. The North-West zone has low percentage coverage rate. Kaduna state has 51 percent while Sokoto state has the least proportion at 16 percent. Within the South-South zone, Edo has the highest percentage at 97 percent) coverage while Bayelsa has the least BCG coverage at 66 percent. In the South West, Lagos State has 93 percent have received BCG vaccination while Oyo with 77 percent has the least BCG coverage.

BCG Scar

BCG scar develops in children within 12 weeks after BCG vaccination in about 9 in every 10 children who receive vaccination. BCG scar is used as a surrogate marker for BCG vaccination. In addition to use of card evidence and recall for BCG vaccination, all children 12 to 23 months were examined for evidence of BCG scar. BCG scar is tabulated in table IM3 in annex table A1.

TABLE IM. 3: ESTIMATED % OF CHILDREN 12-23 MONTHS WITH ANY EVIDENCE OF VACCINATION BCG AND HEPATITIS B AT BIRTH, NIGERIA COMBINED MICS/NICS, 2016-17Percentage of children age 12-23 months currently vaccinated against vaccine preventable childhood diseases, *Nigeria MICS/NICS 2016-17*

	Percentage of children who received:						Children age 12-23 months	
	BCG		HepB at Birth		Card seen			
	%	95% CI	%	95% CI	%	95% CI	N	weighted N
NIGERIA	53	(51,56)	30	(28,32)	29	(27,31)	6,268	6,268
Geopolitical Zone								
North Central	63	(58,68)	38	(34,42)	31	(27,35)	1,200	900
North East	53	(45,60)	19	(15,24)	24	(20,30)	909	1,346
North West	30	(27,33)	14	(12,16)	16	(13,18)	1,943	2,468
South East	90	(86,93)	65	(60,70)	47	(42,52)	607	353
South South	84	(80,87)	58	(54,63)	52	(47,56)	819	503
South West	86	(81,89)	60	(55,65)	57	(53,62)	790	698
Area								
Urban	75	(70,79)	47	(43,51)	42	(38,45)	1,797	1,970
Rural	44	(41,46)	22	(21,24)	23	(21,25)	4,471	4,298
Sex								
Male	54	(51,57)	30	(28,32)	29	(26,31)	3,111	3,121
Female	53	(50,56)	30	(28,33)	29	(27,31)	3,157	3,147
Caretaker's Education								
Primary	61	(56,65)	33	(30,37)	32	(28,36)	1,014	896
Secondary/technical	82	(80,85)	50	(47,53)	47	(44,50)	2,037	1,735
Higher	94	(91,96)	69	(63,75)	52	(47,58)	562	490
Non-formal	24	(20,28)	8	(6,12)	11	(8,15)	1,073	1,355
Missing	33	(30,37)	15	(13,18)	18	(15,21)	1,582	1,792
Caretaker's Age								
15-19	30	(25,36)	17	(13,23)	15	(11,20)	351	377
20-29	52	(49,55)	29	(27,32)	29	(27,31)	2,830	2,873
30-39	60	(56,64)	34	(32,37)	33	(30,36)	2,337	2,324
40-49	49	(44,55)	25	(21,29)	24	(20,28)	608	587
50+	53	(42,63)	33	(24,43)	21	(14,31)	122	93
DNK	(*)	(*)	(*)	(*)	(*)	(*)	20	14
Wealth index quintile								
Poorest	23	(20,26)	10	(8,12)	12	(10,14)	1,368	1,454
Second	39	(35,43)	17	(15,20)	19	(16,22)	1,354	1,370
Middle	55	(50,60)	30	(26,34)	31	(27,35)	1,241	1,205
Fourth	76	(72,79)	44	(38,49)	39	(34,44)	1,169	1,150
Richest	87	(84,90)	59	(55,63)	51	(47,56)	1,136	1,089
Ethnicity								
Hausa	35	(32,38)	15	(13,17)	16	(14,18)	2,791	3,544
Igbo	89	(86,92)	64	(59,69)	49	(44,53)	801	523
Yoruba	87	(83,90)	62	(58,67)	56	(51,60)	737	612
Other	71	(67,74)	41	(37,44)	41	(38,44)	1,939	1,590

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All percentages are weighted estimates of population characteristics, taking into account sampling design and probability of respondent selection

c. Evidence of vaccination is from either a date or tick mark on home-based record (vaccination card) or from caretaker's recall of the child's vaccination history

d. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record

TABLE IM. 4: ESTIMATED % OF CHILDREN 12-23 MONTHS WITH ANY EVIDENCE OF VACCINATION BCG AND HEPATITIS B AT BIRTH,, NIGERIA COMBINED MICS/NICS, 2016-17 (CONTINUED)

Percentage of children age 12-23 months currently vaccinated against vaccine preventable childhood diseases, Nigeria MICS/NICS 2016-17

	Percentage of children who received:						Children age 12-23 months	
	BCG		HepB at Birth		Card seen			
	%	95% CI	%	95% CI	%	95% CI		
NIGERIA	53	(51,56)	30	(28,32)	29	(27,31)	6,268	6,268
State								
North Central								
FCT-Abuja	87	(81,92)	69	(62,75)	55	(46,64)	180	46
Benue	66	(56,75)	54	(45,63)	38	(30,47)	152	132
Kogi	73	(65,80)	47	(39,55)	41	(33,50)	168	89
Kwara	72	(60,82)	47	(35,59)	20	(13,29)	119	66
Nasarawa	64	(53,73)	34	(25,43)	26	(19,35)	167	127
Niger	38	(27,50)	21	(14,31)	25	(16,37)	188	255
Plateau	80	(72,87)	40	(31,49)	31	(24,39)	226	186
North East								
Adamawa	67	(55,78)	35	(26,45)	46	(36,56)	139	134
Bauchi	41	(31,52)	14	(9,21)	20	(13,28)	221	345
Borno	81	(68,89)	24	(14,38)	32	(21,46)	74	421
Gombe	54	(44,64)	30	(22,40)	26	(18,35)	197	122
Taraba	40	(28,53)	24	(15,35)	22	(14,33)	98	70
Yobe	16	(10,25)	3	(1,6)	7	(3,14)	180	253
North West								
Jigawa	26	(19,33)	11	(8,16)	12	(8,16)	266	337
Kaduna	51	(38,64)	27	(18,39)	23	(15,33)	194	376
Kano	34	(28,39)	11	(9,15)	20	(16,24)	530	554
Katsina	28	(22,36)	17	(11,24)	19	(13,26)	253	478
Kebbi	23	(15,32)	11	(7,16)	13	(8,20)	214	202
Sokoto	16	(11,23)	5	(2,10)	5	(3,9)	245	218
Zamfara	19	(13,27)	11	(7,18)	8	(5,14)	241	303
South East								
Abia	87	(79,92)	66	(57,73)	40	(32,48)	145	57
Anambra	88	(79,94)	75	(64,83)	45	(35,54)	115	74
Ebonyi	83	(66,92)	62	(49,73)	50	(38,62)	103	59
Enugu	93	(87,96)	69	(58,78)	53	(40,65)	115	73
Imo	96	(91,98)	55	(43,67)	47	(37,58)	129	91
South South								
Akwa Ibom	82	(73,89)	59	(50,68)	47	(37,57)	167	120
Bayelsa	66	(55,75)	34	(26,43)	37	(29,46)	146	41
Cross River	88	(79,94)	45	(33,57)	54	(44,64)	122	76
Delta	81	(71,88)	65	(54,74)	51	(40,62)	146	102
Edo	97	(92,99)	70	(60,78)	56	(44,67)	138	81
Rivers	82	(68,91)	62	(49,73)	60	(48,71)	100	82
South West								
Ekiti	86	(75,93)	56	(43,69)	65	(53,76)	84	30
Lagos	93	(82,97)	71	(61,79)	68	(58,76)	187	244
Ogun	80	(71,87)	57	(47,67)	45	(36,54)	132	72
Ondo	83	(74,90)	44	(33,56)	48	(38,57)	147	102
Osun	87	(78,93)	60	(47,72)	54	(43,64)	88	96
Oyo	77	(64,86)	57	(45,68)	54	(42,65)	152	155

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All percentages are weighted estimates of population characteristics, taking into account sampling design and probability of respondent selection

c. Evidence of vaccination is from either a date or tick mark on home-based record (vaccination card) or from caretaker's recall of the child's vaccination history

d. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record

Hepatitis B at Birth

Hepatitis B (HepB) vaccine is administered against hepatitis B virus causative organism for hepatitis B. Hepatitis B at birth is a monovalent dose which is followed by three monovalent doses which are given in combination with DPT vaccine and Haemophilus influenza type B vaccine.

About 3 in every 10 children age 12-23 months have received HepB at birth. Analysis by geopolitical zones shows that HepB at Birth for children age 12-23 months is higher in the South East (65 percent), closely followed by South west at 60 percent while North West has the least (14 percent).

Further disaggregation by state in the North central shows that FCT has 69 percent coverage, Benue has 54 percent while the other states within the zone have less than 50 percent. Generally, states in the North East and North West have less than 40 percent coverage. Sokoto and Yobe States recorded 5 percent and 3 percent respectively. All the states in the South East have more than 50 percent coverage rate. Anambra state has the highest coverage of 75 percent, closely followed by Enugu state (69 percent) while Imo State has the least (55 percent). In the South-South states, Edo has the highest coverage rate of 70 percent while Bayelsa has the least 34 percent. Similarly, all the states in the South West have more than 50 percent coverage except Ondo that has 44 percent. Hepatitis B at birth coverage in urban area is about 47 percent while that of rural area is 22 percent.

Polio

Polio is a highly infectious viral disease that can cause irreversible paralysis and death in affected individuals. The zero dose of bivalent oral polio virus vaccine (bOPV) should be administered at birth, or as soon as possible after birth, to maximize seroconversion rates following subsequent doses and to induce mucosal protection. The primary series consisting of 3 bOPV doses plus 1 IPV dose are initiated from the age of 6 weeks with a minimum interval of 4 weeks between the bOPV doses. IPV is given at 14 weeks of age and is usually co-administered with the third bOPV dose.¹⁴

Polio at birth

About one in two children (47 percent) between the age 12-23 months in Nigeria received Oral Polio Vaccine (OPV) at birth. Further analysis by geopolitical zone has the same trend as those for BCG as HepB at birth. South East has the highest percentage (82 percent) closely followed by South West (78 percent), North West has the least coverage for polio at birth (29 percent). Disaggregation of coverage by states in the North Central, one half (50 percent) of the children age 12-23 months have received polio at birth except Niger (34 percent). Among the states in the North East, Adamawa have the highest (54 percent) while Yobe has the least percentage of 12 percent. Polio at birth coverage in the states in the North West is generally low. None of the states has up to 50 percent coverage and in Sokoto only 13 percent of children have received polio at birth. The coverage for polio at birth in states to the south ranges from 66 percent in Ondo State in the South-East zone to 89 percent in Edo in the South-South zone.

The table IM.01 shows that 73 percent of the eligible children in the urban received polio at birth compare to rural with 41 percent. Further disaggregation by ethnicity shows substantial difference among the major ethnic groups. Igbo has 83 percent, followed by Yoruba 79 percent and Hausa has the least 31 percent.

Oral polio virus vaccine

The coverage rate for the third dose of oral polio vaccine (OPV3) in Nigeria is 33 percent compared to 50 percent for the first dose of oral polio vaccine (OPV1) and 42 percent for the second dose of oral polio virus vaccine (OPV2). Generally, there is drop-out from OPV1 through OPV3 nationally and across all states. This may be attributed to missed opportunities as well as lack of information or awareness. The findings from the zones show that South

¹⁴ http://www.who.int/immunisation/policy/immunisation_routine_table1.pdf?ua=1

West has the highest proportion of children 12 to 23 months who have received OPV3 at 63 percent while North West has the lowest proportion of children who have received OPV3 at 19 percent. In the North-West zone, Kaduna State has the highest proportion of 34 percent while Sokoto and Jigawa have 7 percent coverage. Generally, states in the southern part of Nigeria have higher OPV3 coverage except Bayelsa with 28 percent OPV3 coverage. There is no difference in OPV3 coverage by gender of the child. However, OPV3 coverage is higher in urban areas and increases with the wealth index and mother's education.

**TABLE IM. 5: ESTIMATED % OF CHILDREN 12-23 MONTHS WITH ANY EVIDENCE OF VACCINATION, NIGERIA
COMBINED MICS/NICS, 2016-17**Percentage of children age 12-23 months currently vaccinated against vaccine preventable childhood diseases, *Nigeria MICS/NICS 2016-17*

	Percentage of children who received:											
	Polio										Children age 12-23 months	
	At birth		1		2		3		Card seen		N	weighted N
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI		
NIGERIA	47	(45,49)	50	(48,52)	42	(41,44)	33	(31,35)	29	(27,31)	6,268	6,268
Geopolitical Zone												
North Central	56	(51,61)	59	(55,63)	53	(49,57)	37	(34,41)	31	(27,35)	1,200	900
North East	42	(36,47)	46	(41,52)	37	(32,42)	30	(25,35)	24	(20,30)	909	1,346
North West	29	(26,32)	29	(27,33)	24	(21,26)	19	(17,22)	16	(13,18)	1,943	2,468
South East	82	(78,86)	80	(75,83)	71	(66,75)	52	(48,57)	47	(42,52)	607	353
South South	72	(68,76)	78	(74,81)	69	(65,73)	53	(49,57)	52	(47,56)	819	503
South West	78	(73,83)	80	(75,84)	73	(68,77)	60	(55,65)	57	(53,62)	790	698
Area												
Urban	68	(64,73)	68	(64,72)	60	(56,64)	48	(45,52)	42	(38,45)	1,797	1,970
Rural	38	(35,40)	41	(39,44)	35	(33,37)	26	(25,28)	23	(21,25)	4,471	4,298
Sex												
Male	49	(46,52)	51	(48,54)	43	(41,46)	33	(31,36)	29	(26,31)	3,111	3,121
Female	46	(44,49)	48	(46,51)	42	(39,45)	33	(31,36)	29	(27,31)	3,157	3,147
Caretaker's Education												
Primary	52	(48,56)	54	(49,58)	47	(43,51)	35	(31,39)	32	(28,36)	1,014	896
Secondary/technical	73	(70,76)	74	(71,77)	64	(61,68)	52	(48,56)	47	(44,50)	2,037	1,735
Higher	90	(87,93)	82	(77,86)	75	(69,80)	61	(56,67)	52	(47,58)	562	490
Non-formal	22	(18,27)	27	(23,31)	21	(18,25)	17	(15,20)	11	(8,15)	1,073	1,355
Missing	28	(24,31)	32	(29,36)	26	(23,30)	18	(16,21)	18	(15,21)	1,582	1,792
Caretaker's Age												
15-19	26	(21,32)	28	(22,34)	22	(18,28)	15	(11,20)	15	(11,20)	351	377
20-29	47	(44,50)	49	(46,51)	41	(38,44)	33	(31,36)	29	(27,31)	2,830	2,873
30-39	53	(50,56)	55	(52,59)	48	(46,51)	37	(35,40)	33	(30,36)	2,337	2,324
40-49	39	(34,44)	46	(41,51)	41	(36,46)	31	(26,36)	24	(20,28)	608	587
50+	50	(40,60)	44	(34,54)	36	(27,47)	24	(17,34)	21	(14,31)	122	93
DNK	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	20	14
Wealth index quintile												
Poorest	19	(16,22)	26	(23,30)	22	(19,25)	16	(14,19)	12	(10,14)	1,368	1,454
Second	34	(30,37)	38	(35,42)	31	(28,35)	24	(21,27)	19	(16,22)	1,354	1,370
Middle	48	(44,53)	48	(44,53)	41	(36,45)	32	(28,36)	31	(27,35)	1,241	1,205
Fourth	68	(63,73)	67	(62,71)	58	(52,63)	45	(40,50)	39	(34,44)	1,169	1,150
Richest	80	(76,84)	78	(74,82)	70	(65,74)	57	(52,61)	51	(47,56)	1,136	1,089
Ethnicity												
Hausa	32	(29,35)	34	(31,37)	27	(25,30)	22	(19,24)	16	(14,18)	2,791	3,544
Igbo	83	(79,86)	79	(75,83)	70	(65,75)	52	(48,57)	49	(44,53)	801	523
Yoruba	80	(75,83)	82	(78,85)	74	(70,78)	61	(56,65)	56	(51,60)	737	612
Other	58	(55,62)	62	(59,66)	55	(51,58)	42	(39,46)	41	(38,44)	1,939	1,590

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All percentages are weighted estimates of population characteristics, taking into account sampling design and probability of respondent selection

c. Evidence of vaccination is from either a date or tick mark on home-based record (vaccination card) or from caretaker's recall of the child's vaccination history

d. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record

TABLE IM. 6: ESTIMATED % OF CHILDREN 12-23 MONTHS WITH ANY EVIDENCE OF VACCINATION, NIGERIA COMBINED MICS/NICS, 2016-17 (CONTINUED)

Percentage of children age 12-23 months currently vaccinated against vaccine preventable childhood diseases, Nigeria MICS/NICS 2016-17

	Percentage of children who received										Children age 12-23 months weighted	
	Polio								Card seen			
	At birth		1		2		3		%	95% CI		
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI		
NIGERIA	47	(45,49)	50	(48,52)	42	(41,44)	33	(31,35)	29	(27,31)	6,268	6,268
State												
North Central												
FCT-Abuja	84	(78,89)	72	(64,78)	66	(57,73)	56	(49,62)	55	(46,64)	180	46
Benue	63	(53,72)	66	(57,75)	63	(53,71)	45	(36,55)	38	(30,47)	152	132
Kogi	63	(53,71)	60	(51,69)	47	(38,56)	36	(28,45)	41	(33,50)	168	89
Kwara	62	(49,73)	70	(59,79)	64	(53,74)	41	(30,53)	20	(13,29)	119	66
Nasarawa	60	(48,70)	58	(48,67)	49	(39,59)	33	(25,42)	26	(19,35)	167	127
Niger	34	(24,45)	45	(36,54)	40	(31,49)	25	(17,34)	25	(16,37)	188	255
Plateau	68	(57,77)	68	(59,76)	64	(55,73)	47	(41,53)	31	(24,39)	226	186
North East												
Adamawa	54	(42,66)	60	(50,70)	51	(40,62)	41	(31,51)	46	(36,56)	139	134
Bauchi	29	(20,39)	38	(29,47)	33	(26,42)	27	(19,35)	20	(13,28)	221	345
Borno	66	(54,76)	69	(58,78)	51	(39,63)	42	(32,52)	32	(21,46)	74	421
Gombe	45	(35,55)	50	(42,58)	41	(32,51)	36	(28,45)	26	(18,35)	197	122
Taraba	34	(23,48)	31	(22,42)	21	(13,32)	18	(11,28)	22	(14,33)	98	70
Yobe	12	(7,20)	15	(10,23)	13	(8,19)	9	(6,15)	7	(3,14)	180	253
North West												
Jigawa	26	(19,35)	16	(11,22)	10	(7,14)	7	(4,11)	12	(8,16)	266	337
Kaduna	41	(30,53)	40	(28,53)	37	(26,49)	34	(24,47)	23	(15,33)	194	376
Kano	29	(24,35)	27	(23,33)	19	(15,23)	14	(10,18)	20	(16,24)	530	554
Katsina	33	(26,40)	33	(26,41)	28	(22,35)	21	(16,28)	19	(13,26)	253	478
Kebbi	23	(18,30)	26	(19,35)	18	(13,24)	12	(8,18)	13	(8,20)	214	202
Sokoto	13	(8,19)	15	(11,21)	10	(6,15)	7	(4,12)	5	(3,9)	245	218
Zamfara	23	(17,31)	43	(36,50)	38	(31,46)	35	(28,43)	8	(5,14)	241	303
South East												
Abia	81	(74,87)	77	(69,84)	69	(60,77)	43	(35,52)	40	(32,48)	145	57
Anambra	85	(75,91)	84	(75,90)	81	(71,88)	62	(52,72)	45	(35,54)	115	74
Ebonyi	78	(63,88)	70	(56,80)	61	(48,72)	47	(36,58)	50	(38,62)	103	59
Enugu	88	(81,93)	80	(71,86)	70	(60,79)	60	(48,71)	53	(40,65)	115	73
Imo	80	(70,87)	84	(74,91)	71	(60,80)	48	(38,57)	47	(37,58)	129	91
South South												
Akwa Ibom	71	(60,79)	76	(67,83)	71	(62,79)	59	(50,67)	47	(37,57)	167	120
Bayelsa	48	(38,59)	64	(56,71)	55	(47,63)	35	(27,44)	37	(29,46)	146	41
Cross River	69	(58,79)	83	(73,89)	77	(66,85)	59	(49,68)	54	(44,64)	122	76
Delta	71	(61,79)	72	(61,80)	58	(49,67)	48	(39,57)	51	(40,62)	146	102
Edo	89	(82,94)	87	(80,92)	78	(68,86)	53	(42,63)	56	(44,67)	138	81
Rivers	75	(62,85)	81	(68,89)	70	(59,80)	56	(44,68)	60	(48,71)	100	82
South West												
Ekiti	84	(72,92)	76	(60,87)	72	(55,84)	58	(44,70)	65	(53,76)	84	30
Lagos	88	(78,94)	91	(81,96)	86	(77,92)	75	(65,82)	68	(58,76)	187	244
Ogun	76	(65,84)	69	(60,77)	58	(48,67)	48	(39,57)	45	(36,54)	132	72
Ondo	66	(55,76)	77	(68,84)	71	(61,80)	53	(44,63)	48	(38,57)	147	102
Osun	79	(66,88)	77	(65,86)	68	(54,79)	54	(42,66)	54	(43,64)	88	96
Oyo	70	(57,80)	73	(60,82)	64	(51,74)	49	(38,61)	54	(42,65)	152	155

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All percentages are weighted estimates of population characteristics, taking into account sampling design and probability of respondent selection

c. Evidence of vaccination is from either a date or tick mark on home-based record (vaccination card) or from caretaker's recall of the child's vaccination history

d. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record

Pentavalent vaccine

Pentavalent vaccine contains antigen for protection against diphtheria, pertussis, tetanus, haemophilus

influenza type B and hepatitis B. it is recommended for that three doses of pentavalent vaccine are given during the first year of life with the first dose given at 6 weeks and 2 subsequent doses at intervals of 4-8 weeks each. The last dose of the primary series should be completed by the age of 6 months. Pentavalent vaccine which was introduced in Nigeria in May 2012 has the overall goal of reducing the morbidity and mortality in infants (0-11 months).

In Nigeria, 49, 40 and 33 percent of the eligible children received pentavalent 1 vaccine, pentavalent 2 vaccine and pentavalent 3 vaccine respectively. There was no marked difference in vaccination coverage between boys and girls, however, for all the three pentavalent vaccinations a larger proportion - by 1 to 2 percent - of boys than girls were vaccinated.

Generally pentavalent vaccination was higher in the South- West and South-South zones and in the North East and North West zones across the three vaccine doses. Like other vaccines discussed, nearly twice the proportion of eligible children living in urban areas were vaccinated than were eligible children living in rural areas.

Pentavalent vaccination increased across the wealth quintiles with only 20 percent of children in the poorest quintile receiving the first pentavalent vaccine contrasted with 82 percent of eligible children in the richest wealth quintile.

Eligible children whose mothers or caregivers had non-formal education had the lowest pentavalent vaccination while for children whose mothers or caregivers had attended school, pentavalent vaccination increased with the level of education. Pentavalent 1 coverage was 55 percent in children whose mothers or caregivers had primary school education compared to 92 percent for mothers or caregivers of children who have attained higher education.

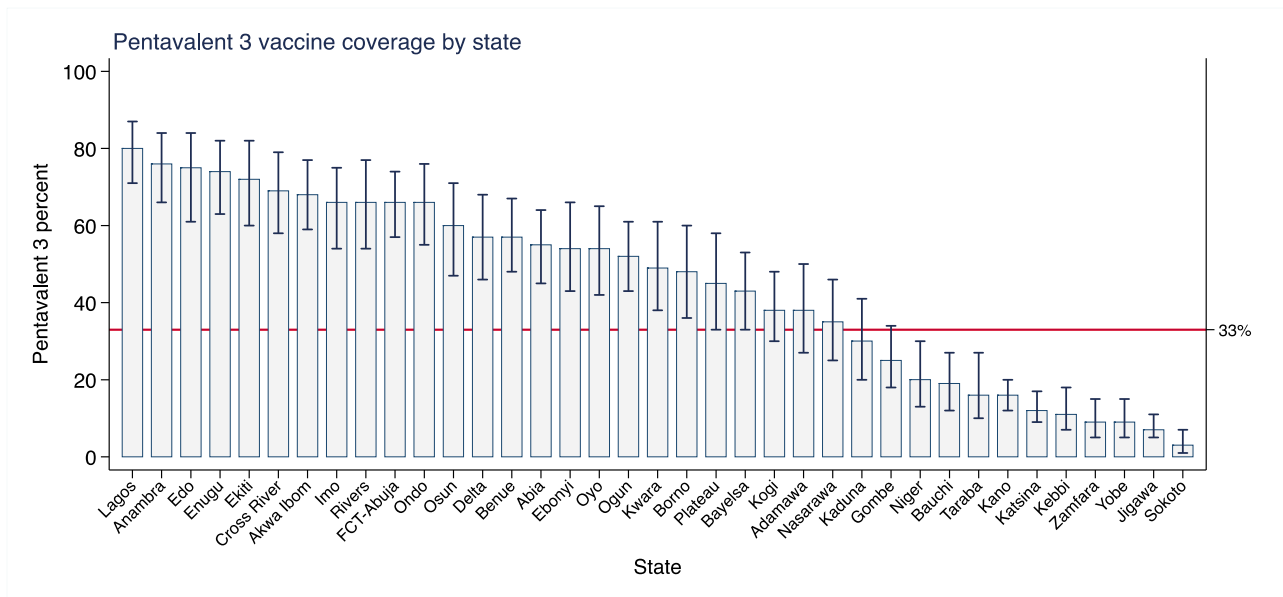


FIGURE 7: PENTAVALENT 3 VACCINE COVERAGE BY STATE

TABLE IM. 7: ESTIMATED % OF CHILDREN 12-23 MONTHS WITH ANY EVIDENCE OF VACCINATION, NIGERIA COMBINED MICS/NICS, 2016-17Percentage of children age 12-23 months currently vaccinated against vaccine preventable childhood diseases, *Nigeria MICS/NICS 2016-17*

	Pentavalent						Card seen		Children age 12-23 months	
	1		2		3		%	95% CI	N	weighted N
	%	95% CI	%	95% CI	%	95% CI				
NIGERIA	49	(46,51)	40	(38,42)	33	(31,35)	29	(27,31)	6,268	6,268
Geopolitical Zone										
North Central	59	(54,63)	48	(44,53)	39	(34,44)	31	(27,35)	1,200	900
North East	47	(39,55)	37	(31,45)	28	(22,35)	24	(20,30)	909	1,346
North West	25	(23,28)	17	(15,20)	14	(12,16)	16	(13,18)	1,943	2,468
South East	85	(81,89)	74	(69,78)	66	(61,71)	47	(42,52)	607	353
South South	80	(76,83)	72	(68,76)	65	(60,69)	52	(47,56)	819	503
South West	82	(77,85)	73	(68,78)	66	(61,71)	57	(53,62)	790	698
Area										
Urban	69	(65,73)	59	(55,63)	51	(47,55)	42	(38,45)	1,797	1,970
Rural	39	(37,42)	31	(29,34)	25	(23,28)	23	(21,25)	4,471	4,298
Sex										
Male	50	(47,53)	41	(38,44)	33	(30,35)	29	(26,31)	3,111	3,121
Female	48	(45,51)	39	(36,42)	34	(31,37)	29	(27,31)	3,157	3,147
Caretaker's Education										
Primary	55	(50,60)	46	(41,51)	38	(34,43)	32	(28,36)	1,014	896
Secondary/technical	76	(73,79)	66	(62,69)	57	(53,60)	47	(44,50)	2,037	1,735
Higher	92	(89,95)	81	(77,85)	74	(68,79)	52	(47,58)	562	490
Non-formal	19	(16,24)	13	(10,18)	9	(7,12)	11	(8,15)	1,073	1,355
Missing	29	(26,33)	21	(18,24)	15	(13,18)	18	(15,21)	1,582	1,792
Caretaker's Age										
15-19	23	(18,28)	18	(14,23)	15	(11,19)	15	(11,20)	351	377
20-29	47	(44,50)	38	(35,41)	32	(30,35)	29	(27,31)	2,830	2,873
30-39	56	(52,59)	47	(43,50)	39	(36,41)	33	(30,36)	2,337	2,324
40-49	47	(42,53)	36	(31,42)	31	(26,36)	24	(20,28)	608	587
50+	45	(35,56)	39	(29,50)	33	(24,43)	21	(14,31)	122	93
DNK	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	20	14
Wealth index quintile										
Poorest	20	(17,23)	14	(12,16)	10	(8,12)	12	(10,14)	1,368	1,454
Second	34	(30,39)	26	(22,30)	20	(17,24)	19	(16,22)	1,354	1,370
Middle	49	(45,53)	39	(35,43)	33	(29,36)	31	(27,35)	1,241	1,205
Fourth	71	(66,75)	61	(55,66)	51	(45,56)	39	(34,44)	1,169	1,150
Richest	82	(78,86)	71	(67,75)	63	(59,67)	51	(47,56)	1,136	1,089
Ethnicity										
Hausa	29	(26,33)	22	(19,25)	16	(14,18)	16	(14,18)	2,791	3,544
Igbo	85	(82,89)	74	(69,78)	66	(61,70)	49	(44,53)	801	523
Yoruba	84	(80,87)	75	(71,79)	67	(63,71)	56	(51,60)	737	612
Other	66	(62,70)	56	(52,59)	49	(45,53)	41	(38,44)	1,939	1,590

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All percentages are weighted estimates of population characteristics, taking into account sampling design and probability of respondent selection

c. Evidence of vaccination is from either a date or tick mark on home-based record (vaccination card) or from caretaker's recall of the child's vaccination history

d. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record

TABLE IM. 8: ESTIMATED % OF CHILDREN 12-23 MONTHS WITH ANY EVIDENCE OF VACCINATION, NIGERIA COMBINED MICS/NICS, 2016-17 (CONTINUED)Percentage of children age 12-23 months currently vaccinated against vaccine preventable childhood diseases, *Nigeria MICS/NICS 2016-17*

	Pentavalent						Card seen		Children age 12-23 months	
	1		2		3		%	95% CI	N	weighted N
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	N	weighted N
NIGERIA	49	(46,51)	40	(38,42)	33	(31,35)	29	(27,31)	6,268	6,268
State										
North Central										
FCT-Abuja	88	(82,92)	72	(65,78)	66	(57,74)	55	(46,64)	180	46
Benue	68	(59,77)	59	(50,68)	57	(48,67)	38	(30,47)	152	132
Kogi	64	(54,73)	48	(39,56)	38	(30,48)	41	(33,50)	168	89
Kwara	71	(59,81)	61	(51,71)	49	(38,61)	20	(13,29)	119	66
Nasarawa	56	(48,64)	45	(35,54)	35	(25,46)	26	(19,35)	167	127
Niger	36	(26,48)	31	(22,42)	20	(13,30)	25	(16,37)	188	255
Plateau	70	(61,78)	57	(47,67)	45	(33,58)	31	(24,39)	226	186
North East										
Adamawa	57	(45,68)	50	(39,62)	38	(27,50)	46	(36,56)	139	134
Bauchi	35	(25,47)	25	(18,34)	19	(12,27)	20	(13,28)	221	345
Borno	73	(58,84)	64	(50,75)	48	(36,60)	32	(21,46)	74	421
Gombe	45	(36,54)	29	(21,39)	25	(18,34)	26	(18,35)	197	122
Taraba	36	(24,50)	20	(12,31)	16	(10,27)	22	(14,33)	98	70
Yobe	18	(11,28)	11	(7,18)	9	(5,15)	7	(3,14)	180	253
North West										
Jigawa	19	(14,26)	9	(6,13)	7	(5,11)	12	(8,16)	266	337
Kaduna	44	(32,56)	33	(23,44)	30	(20,41)	23	(15,33)	194	376
Kano	28	(23,33)	21	(17,26)	16	(12,20)	20	(16,24)	530	554
Katsina	28	(22,35)	18	(13,24)	12	(9,17)	19	(13,26)	253	478
Kebbi	20	(13,29)	17	(11,25)	11	(7,18)	13	(8,20)	214	202
Sokoto	9	(6,15)	5	(3,10)	3	(1,7)	5	(3,9)	245	218
Zamfara	15	(10,22)	10	(6,16)	9	(5,15)	8	(5,14)	241	303
South East										
Abia	82	(74,88)	69	(59,77)	55	(45,64)	40	(32,48)	145	57
Anambra	90	(81,95)	82	(74,89)	76	(66,84)	45	(35,54)	115	74
Ebonyi	80	(64,90)	66	(53,77)	54	(43,66)	50	(38,62)	103	59
Enugu	85	(76,91)	79	(69,86)	74	(63,82)	53	(40,65)	115	73
Imo	88	(81,93)	72	(61,80)	66	(54,75)	47	(37,58)	129	91
South South										
Akwa Ibom	80	(70,87)	73	(64,81)	68	(59,77)	47	(37,57)	167	120
Bayelsa	61	(52,69)	50	(41,60)	43	(33,53)	37	(29,46)	146	41
Cross River	83	(74,90)	77	(66,85)	69	(58,79)	54	(44,64)	122	76
Delta	76	(67,83)	64	(54,72)	57	(46,68)	51	(40,62)	146	102
Edo	89	(78,94)	86	(77,92)	75	(61,84)	56	(44,67)	138	81
Rivers	82	(68,91)	73	(61,82)	66	(54,77)	60	(48,71)	100	82
South West										
Ekiti	87	(75,94)	80	(67,89)	72	(60,82)	65	(53,76)	84	30
Lagos	94	(84,98)	86	(76,92)	80	(71,87)	68	(58,76)	187	244
Ogun	71	(61,80)	59	(49,68)	52	(43,61)	45	(36,54)	132	72
Ondo	76	(66,85)	71	(60,81)	66	(55,76)	48	(38,57)	147	102
Osun	83	(72,90)	66	(52,77)	60	(47,71)	54	(43,64)	88	96
Oyo	69	(57,79)	65	(52,76)	54	(42,65)	54	(42,65)	152	155

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All percentages are weighted estimates of population characteristics, taking into account sampling design and probability of respondent selection

c. Evidence of vaccination is from either a date or tick mark on home-based record (vaccination card) or from caretaker's recall of the child's vaccination history

d. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record

Yellow fever vaccine

Yellow fever is an acute viral haemorrhagic disease transmitted by infected mosquitoes. Vaccination is the most important means of preventing yellow fever and routine immunisation of children with yellow fever vaccine is a key strategy in achieving high vaccination coverage and prevent yellow fever disease outbreaks.¹⁵ The table IM.0% shows that about 4 in 10 (43 percent) of eligible children in Nigeria received yellow fever vaccine. Disaggregation by sex shows no significant difference between male (44 percent) and female (43 percent). The table also shows that South East, South-South, South West and North Central have coverage above 50 percent while North East and North West have 32 percent and 19 percent coverage respectively. Distribution by state shows that states in the North East and North West generally have less than 50 percent coverage rate while states in the South East, South-South and South West have more than 50 percent coverage.

Measles vaccine

Measles is a highly contagious disease caused by measles virus and was previously a leading cause of childhood morbidity and mortality. Routine vaccination of children with measles vaccine is a key public health strategy of preventing measles infection and is usually administered as a single vaccine or in combination with other vaccine antigens. In Nigeria, measles vaccine is administered as a single vaccine at nine months.

At national level, 42 percent of the children between the age 12-23 months received Measles Containing Vaccine 1 (MCV1). Analysis by sex shows 42 percent of both male and female children received MCV1. Further disaggregation by geopolitical zone reveals that South West and South East have 72 and 73 percent respectively closely followed by South-South with 69 percent and the least is North West with 22 percent coverage. Like other vaccine antigens, measles coverage is higher in urban areas compared to rural areas, vaccination coverage in the richest households is more than four times that of the poorest households, and measles vaccination coverage also increases with increase in education of the mother or caregiver.

¹⁵ <http://www.who.int/mediacentre/factsheets/fs100/en/>

TABLE IM. 9: ESTIMATED % OF CHILDREN 12-23 MONTHS WITH ANY EVIDENCE OF VACCINATION – MEASLES AND YELLOW FEVER, NIGERIA COMBINED MICS/NICS, 2016-17Percentage of children age 12-23 months currently vaccinated against vaccine preventable childhood diseases, *Nigeria MICS/NICS 2016-17*

	Yellow fever		Measles (MCV1)		Vitamin A				Card Seen		Children age 12-23 months weighted	
	%	95% CI	%	95% CI	1		2		%	95% CI	N	N
NIGERIA	39	(37,41)	42	(40,44)	13	(12,15)	8	(7,9)	29	(27,31)	6,268	6,268
Geopolitical Zone												
North Central	50	(45,54)	52	(48,57)	12	(10,14)	8	(7,11)	31	(27,35)	1,200	900
North East	33	(27,40)	36	(29,43)	6	(4,9)	2	(1,3)	24	(20,30)	909	1,346
North West	19	(17,22)	22	(20,25)	5	(4,6)	4	(3,5)	16	(13,18)	1,943	2,468
South East	70	(65,74)	73	(68,77)	27	(22,32)	14	(10,18)	47	(42,52)	607	353
South South	68	(64,72)	69	(65,73)	30	(27,35)	15	(12,18)	52	(47,56)	819	503
South West	68	(64,73)	72	(67,76)	39	(34,44)	24	(20,29)	57	(53,62)	790	698
Area												
Urban	61	(56,65)	63	(58,67)	23	(20,27)	14	(12,17)	42	(38,45)	1,797	1,970
Rural	29	(27,31)	32	(30,34)	9	(8,10)	5	(4,6)	23	(21,25)	4,471	4,298
Sex												
Male	39	(36,41)	42	(39,44)	13	(12,15)	8	(7,9)	29	(26,31)	3,111	3,121
Female	39	(36,42)	42	(38,45)	13	(12,15)	7	(6,8)	29	(27,31)	3,157	3,147
Caretaker's Education												
Primary	42	(38,47)	46	(42,51)	12	(10,15)	6	(5,8)	32	(28,36)	1,014	896
Secondary/technical	63	(59,67)	66	(63,69)	23	(21,26)	14	(12,16)	47	(44,50)	2,037	1,735
Higher	87	(83,90)	89	(85,92)	40	(34,46)	25	(20,31)	52	(47,58)	562	490
Non-formal	14	(11,19)	17	(13,21)	2	(1,3)	1	(1,2)	11	(8,15)	1,073	1,355
Missing	19	(16,22)	22	(19,25)	5	(4,7)	3	(2,4)	18	(15,21)	1,582	1,792
Caretaker's Age												
15-19	19	(15,25)	21	(16,26)	5	(3,9)	4	(2,8)	15	(11,20)	351	377
20-29	38	(35,41)	40	(37,43)	12	(11,14)	7	(6,8)	29	(27,31)	2,830	2,873
30-39	44	(41,47)	48	(45,52)	16	(14,19)	10	(8,11)	33	(30,36)	2,337	2,324
40-49	36	(31,42)	38	(33,44)	10	(8,14)	6	(4,8)	24	(20,28)	608	587
50+	43	(33,54)	44	(34,54)	14	(8,23)	12	(6,21)	21	(14,31)	122	93
DNK	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	20	14
Wealth index quintile												
Poorest	14	(11,16)	16	(13,19)	3	(2,4)	2	(1,2)	12	(10,14)	1,368	1,454
Second	23	(20,27)	27	(24,31)	6	(5,8)	3	(2,5)	19	(16,22)	1,354	1,370
Middle	38	(34,43)	41	(37,45)	11	(9,13)	7	(5,9)	31	(27,35)	1,241	1,205
Fourth	56	(50,62)	59	(54,65)	18	(15,22)	10	(8,12)	39	(34,44)	1,169	1,150
Richest	74	(71,78)	76	(72,80)	33	(30,38)	20	(17,24)	51	(47,56)	1,136	1,089
Ethnicity												
Hausa	21	(19,24)	24	(22,27)	5	(4,6)	3	(2,4)	16	(14,18)	2,791	3,544
Igbo	72	(68,76)	75	(70,78)	29	(25,33)	16	(13,20)	49	(44,53)	801	523
Yoruba	71	(67,75)	75	(71,79)	37	(33,42)	24	(20,28)	56	(51,60)	737	612
Other	54	(51,58)	56	(52,60)	17	(15,20)	9	(8,11)	41	(38,44)	1,939	1,590

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All percentages are weighted estimates of population characteristics, taking into account sampling design and probability of respondent selection

c. Evidence of vaccination is from either a date or tick mark on home-based record (vaccination card) or from caretaker's recall of the child's vaccination history

d. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record

TABLE IM. 10: ESTIMATED % OF CHILDREN 12-23 MONTHS WITH ANY EVIDENCE OF VACCINATION MEASLES AND YELLOW FEVER, NIGERIA COMBINED MICS/NICS, 2016-17 (CONTINUED)Percentage of children age 12-23 months currently vaccinated against vaccine preventable childhood diseases, *Nigeria MICS/NICS 2016-17*

	Yellow fever		Measles (MCV1)		Vitamin A				Card seen		Children age 12-23 months weighted	
	%	95% CI	%	95% CI	1		2		%	95% CI	N	N
					%	95% CI	%	95% CI				
NIGERIA	39	(37,41)	42	(40,44)	13	(12,15)	8	(7,9)	29	(27,31)	6,268	6,268
State												
North Central												
FCT-Abuja	74	(64,81)	76	(67,84)	24	(17,33)	16	(10,24)	55	(46,64)	180	46
Benue	51	(40,61)	54	(43,64)	20	(13,30)	15	(9,24)	38	(30,47)	152	132
Kogi	56	(45,66)	65	(55,74)	18	(13,25)	12	(8,18)	41	(33,50)	168	89
Kwara	68	(55,78)	67	(54,77)	15	(9,24)	14	(8,22)	20	(13,29)	119	66
Nasarawa	47	(36,58)	50	(39,60)	10	(6,16)	8	(5,13)	26	(19,35)	167	127
Niger	29	(21,38)	31	(23,41)	3	(2,7)	3	(1,6)	25	(16,37)	188	255
Plateau	66	(55,74)	65	(55,74)	11	(6,17)	7	(3,13)	31	(24,39)	226	186
North East												
Adamawa	44	(33,56)	49	(38,60)	7	(4,14)	2	(1,5)	46	(36,56)	139	134
Bauchi	22	(15,31)	22	(16,31)	9	(5,15)	3	(1,7)	20	(13,28)	221	345
Borno	51	(37,64)	58	(44,71)	6	(2,15)	1	(0,5)	32	(21,46)	74	421
Gombe	30	(23,39)	32	(25,41)	10	(6,16)	3	(1,7)	26	(18,35)	197	122
Taraba	25	(17,35)	29	(19,43)	7	(3,14)	4	(2,10)	22	(14,33)	98	70
Yobe	15	(9,23)	15	(9,23)	1	(0,4)	0	(0,2)	7	(3,14)	180	253
North West												
Jigawa	9	(5,17)	10	(7,15)	2	(1,4)	1	(0,3)	12	(8,16)	266	337
Kaduna	43	(31,55)	43	(32,55)	11	(6,18)	7	(3,14)	23	(15,33)	194	376
Kano	22	(18,27)	24	(20,29)	6	(4,8)	4	(3,6)	20	(16,24)	530	554
Katsina	17	(12,24)	21	(15,29)	5	(3,9)	4	(2,8)	19	(13,26)	253	478
Kebbi	13	(8,19)	25	(18,34)	3	(1,6)	1	(0,4)	13	(8,20)	214	202
Sokoto	6	(3,12)	10	(6,16)	1	(0,3)	0	(0,1)	5	(3,9)	245	218
Zamfara	12	(8,19)	16	(11,24)	5	(2,10)	4	(2,10)	8	(5,14)	241	303
South East												
Abia	66	(57,74)	70	(62,78)	23	(16,32)	13	(7,23)	40	(32,48)	145	57
Anambra	76	(66,84)	75	(65,83)	29	(20,39)	11	(7,18)	45	(35,54)	115	74
Ebonyi	56	(44,68)	58	(45,69)	10	(5,18)	8	(4,16)	50	(38,62)	103	59
Enugu	74	(65,82)	81	(72,88)	45	(33,58)	22	(14,33)	53	(40,65)	115	73
Imo	72	(63,80)	75	(66,82)	25	(16,37)	13	(6,24)	47	(37,58)	129	91
South South												
Akwa Ibom	64	(53,74)	64	(52,74)	26	(19,36)	12	(8,19)	47	(37,57)	167	120
Bayelsa	46	(37,55)	52	(43,60)	27	(19,37)	19	(12,30)	37	(29,46)	146	41
Cross River	70	(59,78)	74	(63,82)	28	(20,37)	14	(8,24)	54	(44,64)	122	76
Delta	67	(58,76)	64	(54,72)	28	(20,37)	13	(8,19)	51	(40,62)	146	102
Edo	84	(76,89)	86	(79,91)	33	(24,44)	18	(12,27)	56	(44,67)	138	81
Rivers	69	(57,79)	71	(58,81)	42	(31,54)	17	(11,26)	60	(48,71)	100	82
South West												
Ekiti	70	(58,80)	80	(70,87)	9	(4,19)	6	(2,16)	65	(53,76)	84	30
Lagos	85	(76,91)	88	(79,93)	63	(54,72)	43	(34,52)	68	(58,76)	187	244
Ogun	57	(46,66)	59	(48,68)	36	(28,45)	19	(13,26)	45	(36,54)	132	72
Ondo	68	(57,78)	72	(61,81)	10	(6,16)	9	(5,15)	48	(38,57)	147	102
Osun	66	(51,78)	67	(54,78)	24	(14,36)	16	(8,30)	54	(43,64)	88	96
Oyo	49	(38,60)	53	(41,64)	35	(25,48)	17	(11,26)	54	(42,65)	152	155

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All percentages are weighted estimates of population characteristics, taking into account sampling design and probability of respondent selection

c. Evidence of vaccination is from either a date or tick mark on home-based record (vaccination card) or from caretaker's recall of the child's vaccination history

d. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record

None (not vaccinated)

Not vaccinated means that the child had no evidence of receiving ever receiving BCG, OPV1-3, Penta1-3, and measles. At the national level, 31 percent of eligible children age between 12 to 23 months did not receive any vaccination. Analysis by sex shows little difference between the gender, female recorded 31 percent against male 30 percent. Distribution by geopolitical zone shows that North West zone has the highest proportion (59 percent) of eligible children that did not receive any vaccination. North East and North Central recorded 41 percent and 29 percent of eligible children with no evidence of vaccination respectively. Yobe and Sokoto have the highest proportion of eligible children 80 percent and 78 percent respectively that were not vaccinated. About 48 percent of children in the rural were not vaccinated compare to 20 percent in urban. The reason provided by the mothers and caregivers for not vaccinating their children is captured under the heading on reason for non-vaccination.

Vitamin A

Vitamin A is essential for supporting rapid growth in children and to help combat infections. Inadequate intakes of vitamin A may lead to vitamin A deficiency which can cause visual impairment in the form of night blindness and may increase the risk of illness and death from childhood infections, including measles and those causing diarrhoea.¹⁶ It is recommended that by the time children are 12 to 23 months old, they should have received at least one dose of vitamin A given when the child is between 6 and 12 months.

At the national level, 13 percent of the eligible children received Vitamin A1 while only 10 percent of them received Vitamin A2. Disaggregation by geopolitical zone shows that less than 40 percent of all the eligible children in each zone received both Vitamin A1 and A2.

Availability of home-based vaccination records

Home-based vaccination records play an important role in documenting Immunisation services received by individuals and form part of a child's medical records aiding health professionals to make clinical decisions.¹⁷

In Nigeria, Immunisation card availability rate is 29 percent. Distribution by geographical zone shows that South West with 57 percent retention has the highest card availability rate while North West has the least at 16 percent. Card retention is higher in urban areas compared to rural areas, increases with household wealth from 12 percent in households in the poorest wealth quintile to 51 percent in households within the richest wealth quintile. Card retention also increases with the education level of the mother or primary caregiver.

¹⁶ http://www.who.int/elena/titles/vitamina_children/en/

¹⁷ <http://www.Immunisationcards.org>

V. Service quality and Immunisation system utilization (dropout rate)¹⁸

Vaccine quality indicators were only computed for children whose home-based records were available since they are dependent on the vaccination schedule and time when vaccines were administered. The card retention was 29 percent nationally, ranging between 5 % in Sokoto and 68% in Lagos. The indicators presented in this section therefore are not representative for all children aged 12 to 23 months, rather are representative for children 12 to 23 months whose cards were seen. The vaccination quality indicators presented in this section include vaccination dropout, valid coverage, timeliness of vaccination and missed opportunities for vaccination.

Vaccination Dropout

Vaccine dropout is the estimated percentage of children 12-23 months who received first dose in a multi-dose sequence but failed to receive subsequent or the final dose in the sequence. Measuring dropout rates is an important way of assessing continuity of Immunisation programmes. It gives an indication of the quality of the Immunisation service, communication between the child's care giver and the health worker, and strength of follow up activities. High dropout may be a pointer to health system barriers to re-attendance or weakness of tracking activities. Dropout rates greater than 10 percent indicate serious service quality problems.

TABLE IM. 11: ESTIMATED % OF CHILDREN 12-23 MONTHS WHO RECEIVED FIRST DOSE IN A MULTI-DOSE SEQUENCE BUT FAILED TO RECEIVE THE FINAL DOSE, NIGERIA COMBINED MICS/NICS, 2016

	OPV1 to OPV3		Penta1 to Penta3		Penta1 to MCV		BCG to MCV	
	%	N	%	N	%	N	%	N
NIGERIA	29	3,796	31	3,370	21	3,370	24	3,648
Sex								
Male	29	1,897	32	1,686	21	1,686	25	1,819
Female	29	1,899	29	1,684	20	1,684	24	1,829
Geopolitical Zone								
North Central	30	837	33	757	18	757	20	809
North East	36	448	42	376	30	376	35	420
North West	41	672	47	480	28	480	35	563
South East	24	527	26	511	20	511	21	539
South South	22	667	22	636	16	636	19	667
South West	21	645	21	610	18	610	21	650
Area								
Urban	24	1,403	27	1,313	15	1,313	18	1,403
Rural	32	2,393	33	2,057	24	2,057	28	2,245
Caretaker's Education								
Primary	31	653	31	587	25	587	27	645
Secondary/technical	26	1,674	28	1,577	19	1,577	21	1,677
Higher	20	525	18	517	7	517	9	532
Non-formal	36	309	51	182	29	182	36	224
Missing	39	635	44	507	33	507	39	570
Caretaker's Age								
15-19	39	142	36	112	24	112	29	136
20-29	30	1,679	30	1,481	22	1,481	25	1,604
30-39	27	1,535	30	1,381	18	1,381	22	1,486
40-49	30	362	35	325	24	325	27	338
50+	31	64	30	56	13	56	24	68
DNK ^e	(*)	14	(*)	15	(*)	15	(*)	16
Wealth index quintile								
Poorest	35	463	44	335	31	335	34	386
Second	36	667	39	531	30	531	34	591
Middle	30	767	31	692	23	692	27	758
Fourth	27	900	28	853	18	853	21	904
Richest	22	999	24	959	13	959	15	1,009

¹⁸ Vaccination quality indicators are computed only for those children whose cards were seen.

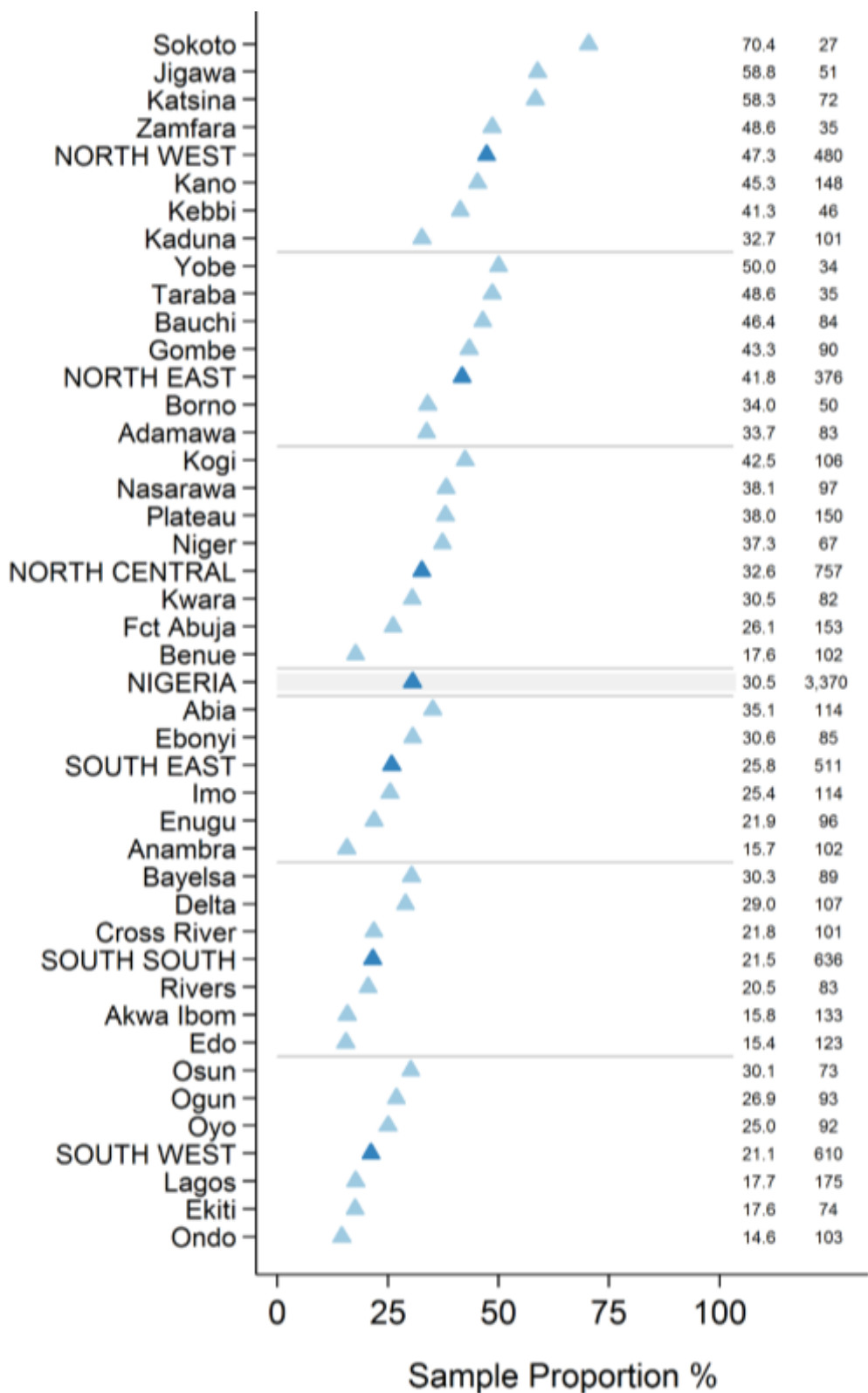
TABLE IM. 12: ESTIMATED % OF CHILDREN 12-23 MONTHS WHO RECEIVED FIRST DOSE IN A MULTI-DOSE SEQUENCE BUT FAILED TO RECEIVE THE FINAL DOSE, NIGERIA COMBINED MICS/NICS, 2016 (CONTINUED)

	OPV1 to OPV3		Penta1 to Penta3		Penta1 to MCV		BCG to MCV	
	%	N	%	N	%	N	%	N
NIGERIA	29	3,796	31	3,370	21	3,370	24	3,648
State								
North Central								
FCT-Abuja	28	155	26	153	15	153	15	153
Benue	18	105	18	102	23	102	23	101
Kogi	49	119	42	106	20	106	20	122
Kwara	21	89	30	82	7	82	7	84
Nasarawa	31	107	38	97	19	97	24	107
Niger	36	91	37	67	22	67	29	70
Plateau	25	171	38	150	19	150	22	172
North East								
Adamawa	32	96	34	83	20	83	28	95
Bauchi	31	100	46	84	42	84	49	95
Borno	44	57	34	50	24	50	29	55
Gombe	36	121	43	90	36	90	42	107
Taraba	(48)	40	(49)	35	(26)	35	(22)	37
Yobe	(35)	34	(50)	34	(24)	34	(13)	31
North West								
Jigawa	70	67	59	51	59	51	65	65
Kaduna	28	109	33	101	12	101	16	110
Kano	48	173	45	148	28	148	36	177
Katsina	40	102	58	72	32	72	35	72
Kebbi	43	69	(41)	46	(30)	46	24	54
Sokoto	(51)	47	(70)	27	(33)	27	(49)	39
Zamfara	19	105	(49)	35	(17)	35	(30)	46
South East								
Abia	23	120	35	114	18	114	21	123
Anambra	16	102	16	102	19	102	20	102
Ebonyi	29	86	31	85	29	85	29	87
Enugu	30	101	22	96	17	96	16	105
Imo	25	118	25	114	18	114	22	122
South South								
Akwa Ibom	17	136	16	133	20	133	22	136
Bayelsa	34	102	30	89	22	89	26	96
Cross River	19	105	22	101	14	101	19	107
Delta	28	112	29	107	20	107	21	113
Edo	16	126	15	123	8	123	11	132
Rivers	21	86	20	83	14	83	16	83
South West								
Ekiti	22	73	18	74	14	74	14	73
Lagos	14	178	18	175	11	175	12	178
Ogun	29	104	27	93	25	93	27	104
Ondo	21	117	15	103	13	103	17	116
Osun	21	75	30	73	25	73	28	76
Oyo	27	98	25	92	28	92	33	103

Notes:

- Estimates are from pooled MICS and NICS survey datasets
- All percentages are unweighted estimates
- N is the number of children who received the first dose in the sequence
- % is the proportion of N who did NOT receive the last dose in the sequence
- Results are omitted from the table in cases where N is < 25
- Results are placed in parentheses () in cases where N is at least 25 but less than 50
- These estimates combine information from home-based vaccination records (cards) and caretaker recall; see Annex table 1C for results reported separately by card vs. caretaker recall

In NICS 2016/17, information on vaccination dropout rates was obtained from home-based vaccination records and mother/caregiver recall. Survey results show generally high dropout rates. The national dropout estimate for OPV1 - OPV3 is 29 percent; Penta1 – Penta3, 31 percent; and Penta1 – MCV, 21 percent.



Text at right: Unweighted sample proportion (%) and N

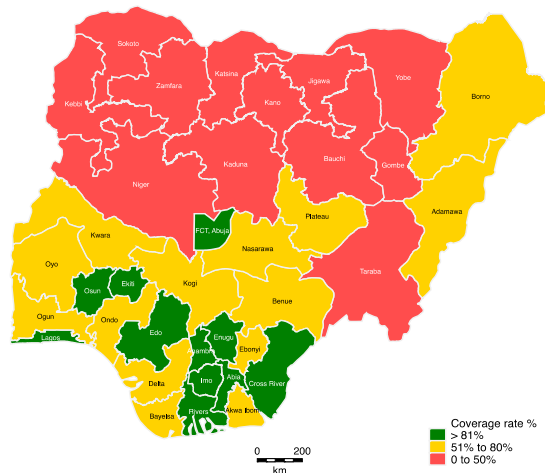
FIGURE 8: DROPOUT BETWEEN PENTAVALENT 1 AND PENTAVALENT 3

Pentavalent 1 – Pentavalent 3 dropout

Under the 4th strategic objective of GVAP Monitoring and Evaluation/Accountability Framework, measuring of the dropout rates between first dose (DTP1 and third dose (DPT3) of diphtheria- tetanus-pertussis-containing vaccines is a key component of tracking the functionality of the health system.

The difference in coverage between Penat1 and Penta3 varies from 47 percent in the North-West zone to 21 percent in the South West zone. Penta1 – Penta3 dropout rate is highest in Sokoto state (70 percent) and lowest in Anambra and Akwa Ibom states (both 16 percent). Dropout rates are lowest among urban dwellers, and mother/caregivers with higher education.

Nigeria - Penta 1 (crude coverage)



Nigeria - Penta 3 (crude coverage)

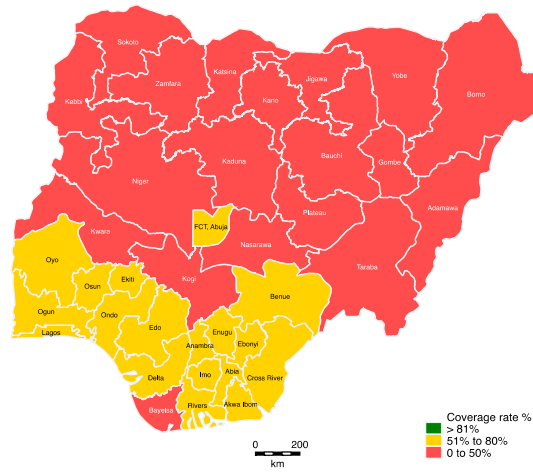
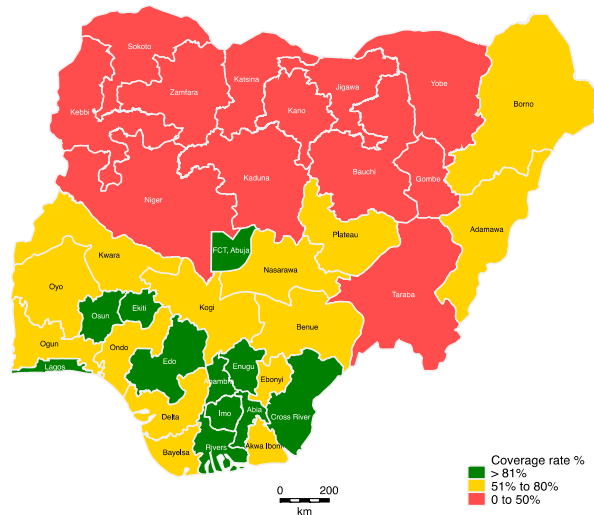


FIGURE 9: SHOWING DROPOUT BETWEEN PENTAVALENT 1 VACCINE AND PENTAVALENT 3 VACCINE

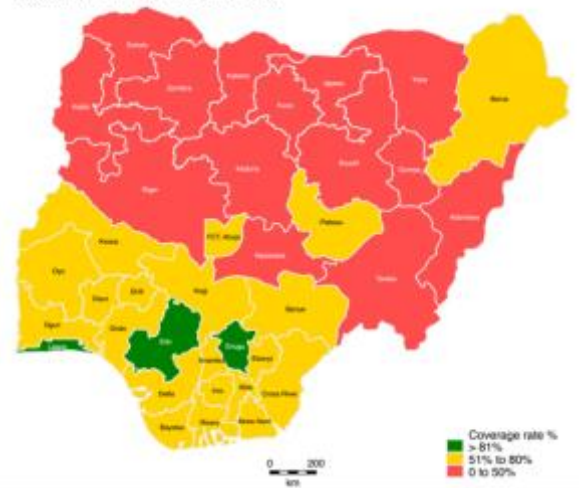
Pentavalent 1 – Measles dropout

Measuring the difference between Penta1 and measles gives an indication of Immunisation service continuity from the start of an infant’s Immunisation journey post-birth doses to the time it should be fully immunized. At 21 percent, the national Penta1 – MCV dropout rate is more than double the acceptable limit. The North-East zone has the highest dropout rate of all the zones with 30 per cent, whereas the South-South zone has the lowest with 16 percent. Only Kwara State with seven percent and Edo with eight percent had Penta1 – MCV rates lower than 10 percent. Jigawa State had the poorest dropout proportion at 59 percent. The dropout rate between pentavalent 1 and measles is less than the dropout rate between pentavalent 1 vaccine and pentavalent 3. This may be due to children who have not received pentavalent 3, receiving measles vaccine during a campaign.

Nigeria - Penta 1 (crude coverage)



Nigeria - Measles (crude coverage)

**FIGURE 10: SHOWING DROPOUT BETWEEN PENTAVALENT 1 VACCINE AND MEASLES**

In assessing dropout by background characteristics, urban dwellers (15 percent) fared better than rural dwellers (24 percent). Children whose mothers/caregivers have no formal education are four times more likely to dropout than children whose mother/caregivers have post-secondary education (seven percent and 29 percent, respectively).

Valid Coverage

The timing of administration of a vaccine is important in determining immune response and hence the efficacy of the vaccine in protecting from disease. It is therefore vital that vaccines are given when appropriate. To get a measure of how well vaccination programmes are targeting children of the appropriate ages we calculate valid coverage. For a vaccine dose to be considered valid, the child must have attained the minimum age to be eligible for the dose (single-dose vaccines and first-dose in sequence). The WHO vaccination coverage cluster survey reference manual (2015 Draft WHO Vaccination Coverage Cluster Survey: Reference Manual) outlines the following criteria for a vaccine dose to be considered valid:

- There is dated documentary evidence of vaccination (home-based vaccination record and/or health facility register).
- The child reached the minimum age and the previous dose was valid and the minimum acceptable interval had elapsed since the earlier valid dose (later doses in sequence). For the pentavalent vaccine and OPV there ought to be a minimum of 28 days between doses, and at a minimum age of six weeks for the first dose. For measles-containing vaccination, minimum age is 39 weeks.
- Vaccines administered after age 12 months are excluded.

For NICS 2016, we obtained data on valid coverage for all children age 12 – 23 months who had card seen. Going by the definition, only 8 percent of fully vaccinated children had evidence of receiving valid doses of BCG, OPV1-3, Penta1-3 and measles-containing vaccine. The South West zone recorded the highest valid coverage for fully vaccinated infants whereas North West zone recorded the lowest; 24 percent and three percent, respectively. Lagos state had the highest valid coverage with 31 percent while Kebbi, Jigawa and Yobe states all recorded zero valid coverage.

Examining valid coverage by background characteristics shows that fully vaccinated children in urban areas

are three times more likely to receive valid doses than those in rural areas (18 percent versus 6 percent). Improving mother/caregiver education has a positive correlation with valid coverage: children whose mother/caregivers had no formal education, primary education, secondary education and post-secondary education had valid coverage rates of 1 percent, 9 percent, 17 percent and 24 percent respectively.

For specific antigens, the national valid coverage is highest for BCG and Penta1 (26 and 25 percent respectively) and lowest for the birth dose of HepB vaccine (11 percent) and OPV0 (12 percent). This same picture which emerges when data from the states is examined and indicates a troubling trend of missed opportunities for administering the birth doses of OPV and HepB vaccine.

TABLE IM. 13: ESTIMATED % OF CHILDREN 12-23 MONTHS WITH EVIDENCE OF VALID DOSE VACCINATION, NIGERIA COMBINED MICS/NICS, 2016

	Percentage of children who received:															Children age	
	BCG	HepB at birth	Polio			Pentavalent			Yellow fever	Measles (MCV1)	Full ^d	Full by Age 1 ^d	None ^e	Card Seen ^f	12-23 months		
			At birth	1	2	3	1	2							3	N	Weighted N
NIGERIA	26	11	12	24	20	13	25	22	14	15	15	8	7	73	29	6,268	6,268
Sex																	
Male	25	11	12	24	20	13	25	22	14	15	15	8	7	73	29	3,111	3,121
Female	26	11	12	24	20	13	25	22	14	15	15	8	7	72	29	3,157	3,147
Geopolitical Zone																	
North Central	26	11	11	26	22	13	27	24	15	15	15	8	7	71	31	1,200	900
North East	22	6	9	18	15	8	20	16	9	10	10	5	4	77	24	909	1,346
North West	12	4	4	12	8	5	12	9	5	5	6	3	2	86	16	1,943	2,468
South East	44	23	24	43	39	25	45	41	29	28	28	16	15	54	47	607	353
South South	48	21	23	47	39	27	47	43	28	31	30	17	16	51	52	819	503
South West	53	30	33	51	48	35	54	52	37	39	39	24	22	44	57	790	698
Area																	
Urban	39	20	22	35	31	22	37	33	23	26	26	16	14	60	42	1,797	1,970
Rural	20	6	7	19	16	9	20	17	10	10	10	5	4	78	23	4,471	4,298
Caretaker's Education																	
Primary	28	9	11	28	23	14	28	25	15	15	15	8	6	70	32	1,014	896
Secondary/technical	43	19	22	40	35	23	42	38	25	27	28	15	14	55	47	2,037	1,735
Higher	49	34	36	49	44	31	51	49	33	40	39	22	21	49	52	562	490
Non-formal	8	1	1	7	5	3	7	5	3	2	2	1	1	90	11	1,073	1,355
Missing	14	4	5	13	10	5	14	11	6	6	7	3	3	83	18	1,582	1,792
Caretaker's Age																	
15-19	12	3	4	11	9	5	11	10	5	5	6	2	2	86	15	351	377
20-29	26	10	11	24	20	12	25	22	14	14	14	8	7	73	29	2,830	2,873
30-39	29	14	16	27	24	16	29	26	17	18	18	10	9	68	33	2,337	2,324
40-49	20	7	9	20	17	11	21	19	12	12	12	7	6	78	24	608	587
50+	15	7	7	15	13	11	15	14	11	9	10	10	8	85	21	122	93
DNK ^h	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	20	14
Wealth index quintile																	
Poorest	9	2	3	9	7	4	9	8	5	3	3	2	1	90	12	1,368	1,454
Second	15	4	4	15	11	5	16	12	7	7	7	3	2	82	19	1,354	1,370
Middle	28	9	12	25	21	11	27	22	13	13	14	6	5	70	31	1,241	1,205
Fourth	36	16	17	33	28	19	34	31	21	21	21	13	12	63	39	1,169	1,150
Richest	47	27	30	45	41	29	48	44	30	35	36	21	20	51	51	1,136	1,089
Ethnicity																	
Hausa	13	4	5	12	9	5	12	10	6	5	5	3	2	85	16	2,791	3,544
Igbo	45	24	25	42	37	26	45	41	28	31	31	17	15	53	49	801	523
Yoruba	51	28	33	50	47	33	52	50	35	38	38	24	22	47	56	737	612
Other	37	15	16	36	31	19	37	33	20	22	22	12	11	61	41	1,939	1,590

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All percentages are weighted estimates of population characteristics, considering sampling design and probability of respondent selection

c. Evidence of vaccination is a date on a home-based record (vaccination card); Valid dose means that the child had reached the minimum age to be eligible for the dose (single-dose vaccines and first-dose in sequence) or that the child reached the minimum age and the previous dose was valid and the minimum acceptable interval had elapsed since the earlier valid dose (later doses in sequence)

d. Fully vaccinated means that the child had evidence of receiving valid doses of BCG, OPV1-3, Penta1-3, and Measles

e. Not vaccinated means that the child had no evidence of receiving valid doses of BCG, OPV1-3, Penta1-3, or Measles

f. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record

g. Results are omitted from the table in rows where N is < 25

h. The denominator for this indicator includes all children 12-23m whether they had a home-based record or not; so, valid coverage can never be higher than the % of children with home-based records

TABLE IM. 14: ESTIMATED % OF CHILDREN 12-23 MONTHS WITH EVIDENCE OF VALID DOSE VACCINATION, NIGERIA COMBINED MICS/NICS, 2016 (CONTINUED)

	Percentage of children who received:														Children age 12-23 months		
	BCG	HepB at birth	At birth	Polio			Pentavalent			Yellow fever	Measles (MCV1)	Full ^d	Full by Age 1 ^d	None ^e	Card Seen ^f	N	Weighted N
				1	2	3	1	2	3								
NIGERIA	26	11	12	24	20	13	25	22	14	15	8	7	73	29	6,268	6,268	
North Central																	
FCT-Abuja	47	27	30	42	37	19	48	45	27	35	17	15	51	55	180	46	
Benue	30	11	11	35	26	16	36	29	21	18	12	10	64	38	152	132	
Kogi	34	13	12	34	28	19	36	29	20	22	13	11	63	41	168	89	
Kwara	13	4	5	12	10	7	12	11	8	8	5	5	86	20	119	66	
Nasarawa	25	12	12	26	20	7	26	22	11	9	4	3	74	26	167	127	
Niger	21	7	8	19	17	8	19	18	9	11	5	3	77	25	188	255	
Plateau	28	11	10	26	25	19	28	26	18	19	9	9	71	31	226	186	
North East																	
Adamawa	41	17	19	42	39	20	39	35	19	23	14	11	57	46	139	134	
Bauchi	17	4	7	15	13	7	15	13	9	8	3	2	81	20	221	345	
Borno	30	9	12	22	17	9	26	21	11	14	7	7	68	32	74	421	
Gombe	23	4	9	19	14	9	20	16	11	8	7	7	77	26	197	122	
Taraba	16	5	5	19	14	8	20	15	7	6	4	4	79	22	98	70	
Yobe	4	1	1	4	2	2	5	3	2	2	0	0	94	7	180	253	
North West																	
Jigawa	8	1	2	6	4	1	8	6	4	3	0	0	91	12	266	337	
Kaduna	22	11	12	21	19	11	21	18	11	16	9	9	77	23	194	376	
Kano	16	1	4	14	9	5	14	11	6	6	3	2	82	20	530	554	
Katsina	14	4	4	14	10	6	14	11	7	3	1	1	82	19	253	478	
Kebbi	8	2	3	7	4	2	9	5	2	1	0	0	90	13	214	202	
Sokoto	2	1	0	3	1	1	2	1	1	1	1	1	96	5	245	218	
Zamfara	6	2	3	6	4	3	6	4	2	2	1	0	93	8	241	303	
South East																	
Abia	37	16	17	36	35	22	39	35	21	23	14	13	60	40	145	57	
Anambra	42	26	23	41	39	25	44	41	27	28	18	14	55	45	115	74	
Ebonyi	46	15	19	46	40	23	45	42	30	22	11	11	52	50	103	59	
Enugu	48	31	34	47	44	31	48	46	37	32	23	21	49	53	115	73	
Imo	45	23	24	46	38	23	46	41	27	33	16	15	53	47	129	91	
South South																	
Akwa Ibom	44	22	24	46	42	33	44	42	33	28	20	20	54	47	167	120	
Bayelsa	35	9	10	33	29	18	34	32	22	23	14	10	65	37	146	41	
Cross River	50	12	19	48	42	24	47	40	24	25	16	16	49	54	122	76	

Delta	48	18	19	47	36	24	48	42	24	30	26	12	10	51	51	146	102
Edo	49	27	29	45	42	27	47	45	27	37	39	24	21	49	56	138	81
Rivers	58	31	32	56	41	27	57	50	33	39	39	17	14	41	60	100	82
South West																	
Ekiti	57	37	41	56	54	40	63	60	48	41	46	28	26	35	65	84	30
Lagos	63	42	43	60	57	42	65	64	43	55	55	31	30	34	68	187	244
Ogun	45	23	28	42	41	30	42	40	31	30	25	19	16	55	45	132	72
Ondo	41	17	23	43	40	31	43	40	30	30	33	21	19	56	48	147	102
Osun	51	21	26	44	42	31	49	45	36	36	35	21	18	48	54	88	96
Oyo	51	27	30	49	43	29	51	48	32	27	27	18	16	47	54	152	155

Notes:

- a. Estimates are from pooled MICS and NICS survey datasets
- b. All percentages are weighted estimates of population characteristics, considering sampling design and probability of respondent selection
- c. Evidence of vaccination is a date on a home-based record (vaccination card); Valid dose means that the child had reached the minimum age to be eligible for the dose (single-dose vaccines and first-dose in sequence) or that the child reached the minimum age and the previous dose was valid and the minimum acceptable interval had elapsed since the earlier valid dose (later doses in sequence)
- d. Fully vaccinated means that the child had evidence of receiving valid doses of BCG, OPV1-3, Penta1-3, and Measles
- e. Not vaccinated means that the child had no evidence of receiving valid doses of BCG, OPV1-3, Penta1-3, or Measles
- f. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record
- g. Results are omitted from the table in rows where N is < 25
- h. The denominator for this indicator includes all children 12-23m whether they had a home-based record or not; so, valid coverage can never be higher than the % of children with home-based records

Timeliness of vaccinations

For vaccines to confer optimal immunity on the child, the timing of administration is important. Table T7 shows the proportion of children who were given Penta1 before the recommended age of 6 weeks, measles vaccine before the recommended age nine months, and proportion of children whose interval for Penta administration was shorter than the recommended 28 days. Information on timeliness was obtained from home-based records only. Examining proportion of vaccines administered too early from vaccination cards shows the level of knowledge of the health workers who administered the vaccine. Gaps in training and practice are clear from this computation.

	Timeliness of Doses ^{a,b}						Source of Timeliness Data			
	Proportion of Penta1 doses given before six weeks of age ^c		Proportion of measles doses given before nine months of age ^d		Proportion of Penta intervals shorter than 28 days ^e		Card Seen		Children age 12-23 months	
	%	N	%	N	%	N	%	95% CI	N	Weighted N
NIGERIA	13	1,745	17	1,299	8	3,177	29	(27,31)	6,268	6,268
Sex										
Male	11	859	16	620	8	1,564	29	(26,31)	3,111	3,121
Female	15	886	19	679	7	1,613	29	(27,31)	3,157	3,147
Geopolitical Zone										
North Central	12	340	18	253	10	657	31	(27,35)	1,200	900
North East	17	191	25	127	9	333	24	(20,30)	909	1,346
North West	13	219	29	147	9	331	16	(13,18)	1,943	2,468
South East	15	256	16	189	6	472	47	(42,52)	607	353
South South	11	355	15	278	8	649	52	(47,56)	819	503
South West	11	384	10	305	5	735	57	(53,62)	790	698
Area										
Urban	12	705	13	584	7	1,333	42	(38,45)	1,797	1,970
Rural	13	1,040	21	715	8	1,844	23	(21,25)	4,471	4,298
Caretaker's Education										
Primary	13	298	19	194	9	548	32	(28,36)	1,014	896
Secondary/technical	12	867	15	673	7	1,603	47	(44,50)	2,037	1,735
Higher	12	283	13	254	7	554	52	(47,58)	562	490
Non-formal	7	68	(49)	41	13	102	11	(8,15)	1,073	1,355
Missing	17	229	22	137	8	370	18	(15,21)	1,582	1,792
Caretaker's Age										
15-19	15	53	(21)	33	13	94	15	(11,20)	351	377
20-29	14	811	18	587	7	1,451	29	(27,31)	2,830	2,873
30-39	11	711	16	560	8	1,321	33	(30,36)	2,337	2,324
40-49	12	147	21	100	8	265	24	(20,28)	608	587
50+ ^g	(*)	19	(*)	15	(11)	37	21	(14,31)	122	93
DNK ^g	(*)	4	(*)	4	(*)	9	(*)	(*)	20	14
Wealth index quintile										
Poorest	13	149	26	87	8	263	12	(10,14)	1,368	1,454
Second	13	248	25	155	11	409	19	(16,22)	1,354	1,370
Middle	13	378	21	269	8	659	31	(27,35)	1,241	1,205
Fourth	13	444	15	335	7	827	39	(34,44)	1,169	1,150
Richest	12	526	13	453	6	1,019	51	(47,56)	1,136	1,089
Ethnicity										
Hausa	13	365	30	239	9	588	16	(14,18)	2,791	3,544
Igbo	15	337	14	262	6	633	49	(44,53)	801	523
Yoruba	10	342	10	278	6	668	56	(51,60)	737	612
Other	13	701	17	520	9	1,288	41	(38,44)	1,939	1,590

Notes:

- Estimates are from pooled MICS and NICS survey datasets
- All timeliness percentages are unweighted estimates; all evidence of timely vaccination is from dates on home-based record (vaccination card)
- N is the number of children with a recorded date of birth and recorded date of Penta1 vaccination
- N is the number of children with a recorded date of birth and recorded date of Measles vaccination
- N is the number of Penta1-to-Penta2 pairs plus the number of Penta2-to-Penta3 pairs where the dates of vaccination are recorded on the card
- Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record
- Results are omitted from the table (*) in cases where N is < 25
- Results are placed in parentheses () in cases where N is at least 25 but less than 50

TABLE IM. 16: TIMELINESS OF VACCINATION FOR CHILDREN 12-23 MONTHS, NIGERIA COMBINED MICS/NICS, 2016 (CONTINUED)

	Timeliness of Doses ^{a,b}						Source of Timeliness Data			
	Proportion of Penta1 doses given before six weeks of age ^c		Proportion of measles doses given before nine months of age ^d		Proportion of Penta intervals shorter than 28 days ^e		Card Seen		Children age 12-23 months	
	%	N	%	N	%	N	%	95% CI	N	Weighted N
NIGERIA	13	1,745	17	1,299	8	3,177	29	(27,31)	6,268	6,268
State										
North Central										
FCT-Abuja	17	78	12	68	8	174	55	(46,64)	180	46
Benue	(4)	46	(17)	29	16	82	38	(30,47)	152	132
Kogi	9	57	(19)	43	8	98	41	(33,50)	168	89
Kwara	(*)	15	(*)	11	(0)	34	20	(13,29)	119	66
Nasarawa	(18)	45	(29)	28	18	77	26	(19,35)	167	127
Niger	(16)	38	(19)	26	7	73	25	(16,37)	188	255
Plateau	10	61	(19)	48	8	119	31	(24,39)	226	186
North East										
Adamawa	20	55	(25)	44	8	106	46	(36,56)	139	134
Bauchi	(10)	39	(32)	28	10	71	20	(13,28)	221	345
Borno	(*)	22	(*)	12	(12)	34	32	(21,46)	74	421
Gombe	(24)	45	(28)	25	5	76	26	(18,35)	197	122
Taraba	(*)	21	(*)	12	(13)	30	22	(14,33)	98	70
Yobe	(*)	9	(*)	6	(*)	16	7	(3,14)	180	253
North West										
Jigawa	(*)	23	(*)	10	(6)	36	12	(8,16)	266	337
Kaduna	(14)	49	(16)	44	11	87	23	(15,33)	194	376
Kano	13	76	41	51	8	112	20	(16,24)	530	554
Katsina	(12)	34	(*)	17	(4)	47	19	(13,26)	253	478
Kebbi	(*)	20	(*)	10	(*)	18	13	(8,20)	214	202
Sokoto	(*)	6	(*)	7	(*)	10	5	(3,9)	245	218
Zamfara	(*)	11	(*)	8	(*)	21	8	(5,14)	241	303
South East										
Abia	15	53	(17)	41	3	97	40	(32,48)	145	57
Anambra	18	51	(24)	34	14	94	45	(35,54)	115	74
Ebonyi	(21)	48	(24)	33	2	90	50	(38,62)	103	59
Enugu	12	50	(8)	38	2	92	53	(40,65)	115	73
Imo	11	54	(9)	43	6	99	47	(37,58)	129	91
South South										
Akwa Ibom	13	67	14	51	2	132	47	(37,57)	167	120
Bayelsa	(8)	48	(21)	39	4	82	37	(29,46)	146	41
Cross River	11	56	(30)	40	13	97	54	(44,64)	122	76
Delta	9	64	(16)	45	12	112	51	(40,62)	146	102
Edo	14	66	5	58	10	134	56	(44,67)	138	81
Rivers	9	54	(13)	45	10	92	60	(48,71)	100	82
South West										
Ekiti	8	51	(5)	40	2	97	65	(53,76)	84	30
Lagos	16	114	9	100	5	225	68	(58,76)	187	244
Ogun	14	58	(15)	40	5	105	45	(36,54)	132	72
Ondo	5	55	(8)	49	7	116	48	(38,57)	147	102
Osun	(9)	45	(9)	34	8	79	54	(43,64)	88	96
Oyo	7	61	(19)	42	7	113	54	(42,65)	152	155

Notes:

- a. Estimates are from pooled MICS and NICS survey datasets
b. All timeliness percentages are unweighted estimates; all evidence of timely vaccination is from dates on home-based record (vaccination card)
c. N is the number of children with a recorded date of birth and recorded date of Penta1 vaccination
d. N is the number of children with a recorded date of birth and recorded date of Measles vaccination
e. N is the number of Penta1-to-Penta2 pairs plus the number of Penta2-to-Penta3 pairs where the dates of vaccination are recorded on the card
f. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record
g. Results are omitted from the table (*) in cases where N is < 25
h. Results are placed in parentheses () in cases where N is at least 25 but less than 50

Pentavalent 1 doses given before six weeks of age

Nationally, 13 percent of children 12-23 months who had a date for pentavalent 1 on their home-based record received that dose before six weeks of age. Further disaggregation by geopolitical zone, the North East had the highest proportion of pentavalent 1 vaccine doses administered too early while the South-South zone and South West Zone have the least proportions at 11 percent respectively. Background characteristics like place of residence, mother/caregiver education or age have little correlation with the vaccine being administered too early: an indication that health knowledge is the most important factor.

Interval of Pentavalent Vaccines administration shorter than 28 days

Eight percent of consecutive pentavalent doses documented on home-based records were administered within a duration shorter than 28 days of each other nationally. The North Central zone has the highest proportion of pentavalent vaccines administered too soon at 10 percent whereas the South East and South West have six percent and five percent respectively. Except for mothers/caregivers with non-formal education whose children are more likely to get their doses at durations shorter than 28 days, background characteristics have little correlation with interval of pentavalent vaccine administration.

Measles doses given before nine months of age

Nationally, 17 percent of children age 12-23 months who had a date for measles on their home-based record received the dose before the age of nine months. The South West zone has the lowest proportion of measles vaccines administered before age nine months whereas the northwest has the highest proportion at 29 percent.

Missed opportunities for vaccination

A missed opportunity for vaccination (MOV) refers to any contact with health services by a child who is eligible for vaccination (e.g. unvaccinated or partially vaccinated and free of contraindications to vaccination), which does not result in the person receiving one or more of the vaccine doses for which he or she is eligible.¹⁹ A Corrected Missed Opportunity (CMO) is when a child missed a dose for which he/she is eligible, but received it on a later visit to a health facility before the survey was conducted.

Among the leading reasons cited for children missing vaccinations despite contact with health services include: ²⁰ Failure to administer simultaneously all vaccines for which a child was eligible, false contraindications to Immunisation, health worker practices including not opening a multi-dose vial for a small number of persons to avoid vaccine wastage and logistical problems, such as vaccine shortages, poor clinic organization, and inefficient clinic scheduling.

MOV are evaluated on children whose home-based vaccination records were seen during the survey. Out of the 6,268 children whose mothers or caregivers interviewed, only 29 percent presented their cards. Out of the number who presented cards 89 percent had experienced one or more missed opportunities for vaccination nationally. Generally, MOV was higher than 80 percent in all zones for children who presented their cards ranging from 84 percent in South East zone to 92 percent in North East zone. There is no variability in MOV by gender, maternal age, maternal education or household wealth index. Due to low card retention, it is not possible to disaggregate MOV across state for all states especially in states with critically low levels of card availability.

¹⁹ http://www.who.int/immunisation/programmes_systems/policies_strategies/MOV/en/

²⁰ Sridhar, Shruti, Nadira Maleq, Elise Guillermet, Anais Colombini, and Bradford D. Gessner. "A Systematic Literature Review of Missed Opportunities for Immunisation in Low- and Middle-Income Countries." *Vaccine* 32, no. 51 (December 5, 2014): 6870–79. doi:10.1016/j.vaccine.2014.10.063.

Of the children with one or more MOVs, 22 percent had all their MOV corrected at a later contact with health services. More males (24 percent) had all their MOVs corrected than female (21 percent). Children who had all their MOVs corrected range from 9 percent in North West zone to 28 percent in South-East zone and 29 percent in both South-South and South West zone.

An additional 50 percent of all children with MOVs, had some but not all their MOVs corrected. For this group of children, correction of some of the MOVs was 49 percent for male children and 51 percent for female children and ranged between 42 percent in South-West zone to 54 percent in the North-East zone.

Twenty eight percent of all children age between 12 and 23 months who had one or more MOVs, had no MOVs corrected by the time of the survey. There was no difference by gender for children with uncorrected MOVs. The North East and North West had the highest proportion of uncorrected MOVs at 37 percent and 40 percent respectively.

TABLE IM. 17: MISSED OPPORTUNITIES FOR SIMULTANEOUS VACCINATION (MOV), NIGERIA COMBINED MICS/NICS, 2016

	Children age 12-23m in survey	Children 12-23m who had card seen	Weighted percent of children 12-23m who had card seen	Children 12-23m with card seen and 1+ age-eligible vaccination visits	Children 12-23m who experienced 1+ documented MOVs	Percent of children with age-eligible visits who experienced 1+ MOVs	Among children 1 with 1+ MOVs, percent who had ALL MOVs later corrected	Among children 1 with 1+ MOVs, percent who had NO MOVs later corrected	Among children 1 with 1+ MOVs, percent who had SOME BUT NOT ALL MOVs later corrected
	N	N	%	N	N	%	%	%	%
NIGERIA^d	6,268	2,019	29	1,912	1,704	89	22	28	50
Sex									
Male	3,111	989	29	925	818	88	24	27	49
Female	3,157	1,030	29	987	886	90	21	28	51
Geopolitical Zone^d									
North Central	1,200	405	31	372	336	90	22	28	50
North East	909	230	24	216	199	92	10	37	54
North West	1,943	296	16	274	245	89	9	40	50
South East	607	277	47	271	228	84	28	21	50
South South	819	396	52	378	340	90	29	17	55
South West	790	415	57	401	356	89	29	29	42
Area									
Urban	1,797	799	42	759	670	88	27	25	48
Rural	4,471	1,220	23	1,153	1,034	90	20	30	51
Caretaker's Education									
Primary	1,014	350	32	326	296	91	16	28	56
Secondary/technical	2,037	975	47	928	824	89	25	23	51
Higher	562	302	52	294	258	88	36	23	41
Non-formal	1,073	104	11	96	88	92	7	51	42
Missing	1,582	288	18	268	238	89	10	40	50
Caretaker's Age									
15-19	351	67	15	61	56	92	20	21	59
20-29	2,830	934	29	884	780	88	21	29	51
30-39	2,337	815	33	779	697	89	25	27	48
40-49	608	173	24	162	149	92	19	30	50
50+	122	24	21	21	(*)	(*)	(*)	(*)	(*)
DNK	20	(*)	(*)	5	(*)	(*)	(*)	(*)	(*)
Wealth index quintile									
Poorest	1,368	188	12	168	154	92	9	38	53
Second	1,354	305	19	288	259	90	16	33	51
Middle	1,241	432	31	419	377	90	19	28	53
Fourth	1,169	507	39	482	433	90	24	24	52
Richest	1,136	587	51	555	481	87	31	25	44

Notes:

- Estimates are from pooled MICS and NICS survey datasets
- All percentages (except % of children with cards seen) are unweighted estimates
- Evidence of vaccination is from a date on home-based record (vaccination card)
- A MOV occurs when a child is vaccinated for one dose on a day when s/he is NOT vaccinated for another dose for which s/he was eligible
- A corrected MOV is one where the child missed a dose for which they were eligible, but received it on a later visit before the survey
- An uncorrected MOV is one where the child missed a dose for which they were eligible and had not yet received it by the time of the survey
- Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record
- Results are omitted from the table (*) in cases where N is < 25
- Results are placed in parentheses () in cases where N is at least 25 but less than 5

TABLE IM. 18: MISSED OPPORTUNITIES FOR SIMULTANEOUS VACCINATION (MOV), NIGERIA COMBINED MICS/NICS, 2016 (CONTINUED)

	Children age 12-23m in survey	Children 12-23m who had card seen	Weighted percent of children 12-23m who had card seen	Children 12-23m with card seen and 1+ age-eligible vaccination visits	Children 12-23m who experienced 1+ documented MOVs	Percent of children with age-eligible visits who experienced 1+ MOVs	Among children 1 with 1+ MOVs, percent who had ALL MOVs later corrected	Among children 1 with 1+ MOVs, percent who had NO MOVs later corrected	Among children 1 with 1+ MOVs, percent who had SOME BUT NOT ALL MOVs later corrected
	N	N	%	N	N	%	%	%	%
NIGERIA^d	6,268	2,019	29	1,912	1,704	89	22	28	50
State									
North Central									
FCT-Abuja	180	97	55	85	69	81	20	29	51
Benue	152	52	38	50	50	100	16	26	58
Kogi	168	68	41	62	59	95	29	29	42
Kwara	119	23	20	18	(*)	(*)	(*)	(*)	(*)
Nasarawa	167	47	26	46	(41)	(89)	(22)	(29)	(49)
Niger	188	49	25	46	(42)	(91)	(7)	(36)	(57)
Plateau	226	69	31	65	59	91	24	22	54
North East									
Adamawa	139	66	46	61	57	93	7	35	58
Bauchi	221	48	20	45	(42)	(93)	(5)	(40)	(55)
Borno	74	25	32	25	(23)	(92)	(9)	(26)	(65)
Gombe	197	54	26	50	46	92	13	33	54
Taraba	98	23	22	23	(*)	(*)	(*)	(*)	(*)
Yobe	180	14	7	12	(*)	(*)	(*)	(*)	(*)
North West									
Jigawa	266	33	12	27	(24)	(89)	(8)	(42)	(50)
Kaduna	194	55	23	54	43	80	26	21	53
Kano	530	103	20	98	93	95	6	44	49
Katsina	253	45	19	43	(39)	(91)	(5)	(49)	(46)
Kebbi	214	28	13	26	(23)	(88)	(4)	(43)	(52)
Sokoto	245	14	5	12	(*)	(*)	(*)	(*)	(*)
Zamfara	241	18	8	14	(*)	(*)	(*)	(*)	(*)
South East									
Abia	145	58	40	57	50	88	16	18	66
Anambra	115	51	45	51	37	73	41	22	38
Ebonyi	103	53	50	51	46	90	17	20	63
Enugu	115	55	53	53	41	77	34	22	44
Imo	129	60	47	59	54	92	35	26	39
South South									
Akwa Ibom	167	73	47	72	63	88	25	22	52
Bayelsa	146	52	37	50	47	94	38	23	38
Cross River	122	66	54	61	54	89	22	19	59
Delta	146	70	51	67	62	93	24	11	65
Edo	138	77	56	71	60	85	35	15	50
Rivers	100	58	60	57	54	95	28	11	61
South West									
Ekiti	84	54	65	53	53	100	2	30	68
Lagos	187	121	68	117	94	80	47	28	26
Ogun	132	61	45	60	54	90	43	17	41
Ondo	147	64	48	59	54	92	13	43	44
Osun	88	47	54	46	(41)	(89)	(32)	(24)	(44)
Oyo	152	68	54	66	60	91	28	32	40

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All percentages (except % of children with cards seen) are unweighted estimates

c. Evidence of vaccination is from a date on home-based record (vaccination card)

d. A MOV occurs when a child is vaccinated for one dose on a day when s/he is NOT vaccinated for another dose for which s/he was eligible

e. A corrected MOV is one where the child missed a dose for which they were eligible, but received it on a later visit before the survey

f. An uncorrected MOV is one where the child missed a dose for which they were eligible and had not yet received it by the time of the survey

g. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record

h. Results are omitted from the table (*) in cases where N is < 25

i. Results are placed in parentheses () in cases where N is at least 25 but less than 5

Reasons for non-vaccination

Reasons for non-vaccination were elicited from all mothers of caregivers of children 12 to 23 months old who had not been fully immunised. The reasons for non-vaccination were divided into five thematic areas. Within the thematic group on lack of information, the lack of information on vaccinations and thinking that the child had been fully immunised despite not receiving all the vaccines recommended by the EPI programme were the most common responses provided by 42 percent and 23 percent of all respondents respectively. Lack of time due to family issues was cited by 18 percent of all respondents. Mistrust and fears was cited by 22 percent of all respondents. Service delivery issues and place of vaccination too far was cited by 25 percent and 16 percent of all respondents respectively.



FIGURE 11: REASONS FOR NON-VACCINATION - PERCENTAGE

Place of vaccination

Majority of the children in Nigeria receive their vaccinations from government facilities with 55 percent receiving vaccinations from health centres and 28 percent from government hospitals. Twenty three percent of children between 12 and 23 months have received their vaccinations during supplementary campaigns. This picture is maintained through the zones, states and through other socioeconomic divisions.

TABLE IM. 19: PLACES CHILDREN RECEIVE VACCINES, NIGERIA COMBINED MICS/NICS, 2016							
	Government hospital	Government health centre	Mobile / Outreach clinic by government services	Private facility (including NGO)	Campaigns / Supplementary Immunisation activities	Other	N
	%	%	%	%	%	%	
NIGERIA	28	55	8	5	23	1	4,203
Sex							
Male	29	54	9	5	21	1	2,105
Female	27	57	8	5	24	1	2,098
Geopolitical Zone							
North Central	36	52	12	5	25	0	905
North East	29	50	8	1	25	0	520
North West	40	24	9	1	34	5	843
South East	15	75	4	12	14	0	555
South South	26	67	8	6	21	1	697
South West	15	75	9	7	12	1	683
Area							
Urban	35	54	8	8	16	1	1,493
Rural	24	56	9	4	26	1	2,710
Caretaker's Education							
Primary	26	59	9	5	23	1	723
Secondary/technical	29	64	7	6	16	1	1,771
Higher	35	57	6	12	15	1	541
Non-formal	30	23	11	0	39	6	384
Missing	22	47	11	2	34	2	784
Caretaker's Age							
15-19	23	59	12	1	24	2	170
20-29	28	55	8	5	22	1	1,855
30-39	28	56	8	7	22	1	1,680
40-49	28	52	12	4	25	1	404
50+ ^g	32	55	8	4	22	0	78
DNK ^g	(*)	(*)	(*)	(*)	(*)	(*)	16
Wealth index quintile							
Poorest	20	42	11	1	40	3	586
Second	23	51	10	3	27	2	754
Middle	25	60	11	5	24	1	861
Fourth	32	61	6	6	16	1	957
Richest	36	57	7	8	14	1	1,045
Ethnicity							
Hausa	35	34	9	2	33	3	1,331
Igbo	22	70	4	12	14	0	738
Yoruba	21	71	10	6	13	1	655
Other	28	61	9	5	21	1	1,479

TABLE IM. 20: PLACES CHILDREN RECEIVE VACCINES, NIGERIA COMBINED MICS/NICS, 2016 (CONTINUED)							
	Government hospital	Government health centre	Mobile / Outreach clinic by government services	Private facility (including NGO)	Campaigns / Supplementary Immunisation activities	Other	N
	%	%	%	%	%	%	
NIGERIA	28	55	8	5	23	1	4,203
State							
North Central							
FCT-Abuja	47	62	13	6	35	0	159
Benue	27	60	18	5	11	1	110
Kogi	56	33	8	13	7	1	135
Kwara	31	58	13	3	17	0	90
Nasarawa	26	52	11	2	33	0	123
Niger	31	39	17	4	29	0	101
Plateau	32	55	6	3	34	1	187
North East							
Adamawa	27	63	6	2	6	0	103
Bauchi	21	46	7	1	36	0	138
Borno	47	32	24	0	23	0	62
Gombe	28	52	6	2	39	0	132
Taraba	(20)	(70)	(7)	(0)	(7)	(0)	44
Yobe	(44)	(34)	(2)	(0)	(20)	(0)	41
North West							
Jigawa	21	29	15	0	50	0	117
Kaduna	59	32	2	5	31	0	121
Kano	58	18	4	1	21	0	219
Katsina	21	30	10	2	45	0	119
Kebbi	35	32	1	0	55	0	88
Sokoto	42	12	6	2	45	3	66
Zamfara	27	13	23	0	10	31	113
South East							
Abia	19	79	5	5	13	0	127
Anambra	23	60	6	19	24	1	107
Ebonyi	14	80	2	10	8	0	88
Enugu	13	71	5	20	15	0	109
Imo	8	87	4	9	12	1	124
South South							
Akwa Ibom	27	74	7	4	36	1	140
Bayelsa	15	72	6	2	32	1	109
Cross River	14	83	8	1	31	2	108
Delta	24	67	3	7	8	0	118
Edo	48	36	7	15	4	1	134
Rivers	19	75	18	6	10	1	88
South West							
Ekiti	5	90	0	1	14	1	79
Lagos	12	74	3	14	3	0	180
Ogun	21	71	24	9	10	4	112
Ondo	12	85	10	0	15	0	124
Osun	24	67	14	6	27	3	79
Oyo	20	65	3	7	15	0	109

Appendix A. Sample Design - MICS

Sample size consideration for MICS

The major features of the sample design are described in this appendix. Sample design features include target sample size, sample allocation, sampling frame and listing, choice of domains, sampling stages, stratification, and the calculation of sample weights.

The primary objective of the sample design for the Nigeria MICS 2016/17 was to produce statistically reliable estimates of most indicators, at the national level, for urban and rural areas, and for the thirty-six states and the Federal Capital Territory. Urban and rural areas in each of the thirty-seven regions were defined as the sampling strata.

A multi-stage, stratified cluster sampling approach was used for the selection of the survey sample.

Sample Size and Sample Allocation

The sample size for the Nigeria MICS 2016/17 was calculated as 37,440 households. For the calculation of the sample size, the key indicator used was the underweight prevalence among children age 0-4 years. The following formula was used to estimate the required sample size for this indicator:

$$n = \frac{[4(r)(1-r)(deff)]}{[(0.12r)^2(pb)(AveSize)(RR)]}$$

where

- n is the required sample size, expressed as number of households
- 4 is a factor to achieve the 95 percent level of confidence
- r is the predicted or anticipated value of the indicator, expressed in the form of a proportion
- $deff$ is the design effect for the indicator, estimated from a previous survey or using a default value of 1.5
- $0.12r$ is the margin of error to be tolerated at the 95 percent level of confidence, defined as 12 percent of r (relative margin of error of r)
- pb is the proportion of the total population upon which the indicator, r , is based
- $AveSize$ is the average household size (number of persons per household)
- RR is the predicted response rate

For the calculation, r (underweight prevalence) was assumed to be 25 percent. The value of $deff$ (design effect) was taken as 1.5 based on estimates from previous surveys, pb (percentage of children age 0-4 years in the total population) was taken as 13 percent, $AveSize$ (average household size) was taken as 6.2 households, and the response rate was assumed to be 90 percent, based on experience from previous surveys.

The resulting number of households from this exercise was 1,723 households which is the sample size needed in each region – thus yielding 126,751 in total.

The number of households selected per cluster for the Nigeria MICS 2016/17 was determined as 16 households, based on several considerations, including the design effect, the budget available, and the time that would be needed per team to complete one cluster. Dividing the total number of households by the number of sample households per cluster, it was calculated that 60 sample clusters would need to be selected in each region.

Equal allocation of the total sample size to the thirty-seven states was used. Therefore, 60 clusters were allocated to each state, with the final sample size calculated as 35,520 households (60 clusters * 37 regions * 16 sample households per cluster). In each state, the enumeration areas (primary sampling units) were distributed to the urban and rural domains proportionally to the size of urban and rural populations in that region. The table below shows the allocation of clusters to the sampling strata. In addition to the sample selected, Kano and Lagos added 60 extra enumeration areas in each state so that they could be able to disaggregate the survey findings at the senatorial district level. The total sample size selected for Lagos and Kano were 1200 enumeration areas in each state.

Sampling Frame and Selection of Clusters

The 2006 census frame was used for the selection of clusters. Census enumeration areas were defined as primary sampling units (PSUs), and were selected from each of the sampling strata by using systematic pps (probability proportional to size) sampling procedures, based on the number of households in each enumeration area from the 2006 Population and Housing Census frame. The first stage of sampling was thus completed by selecting the required number of enumeration areas from each of the thirty-seven regions, separately for the urban and rural strata.

Listing Activities

Since the sampling frame (the 2006 census) was not up-to-date, a new listing of households was conducted in all the sample enumeration areas prior to the selection of households. For this purpose, listing teams were formed who visited all the selected enumeration areas and listed all households in the enumeration areas.

Selection of Households

Lists of households were prepared by the listing teams in the field for each enumeration area. The households were then sequentially numbered from 1 to n (the total number of households in each enumeration area) at the National Bureau of Statistics where the selection of 16 households in each enumeration area was carried out using random systematic selection procedures.

The survey also included a questionnaire for individual men that was to be administered in one-half of the sample of households, with every odd household number in each sample cluster selected for interviews with all eligible men.

Calculation of Sample Weights

The Nigeria 2016/17 MICS sample is not self-weighting. Essentially, by allocating equal numbers of households to each of the states, different sampling fractions were used in each region since the sizes of the regions varied. For this reason, sample weights were calculated and these were used in the subsequent analyses of the survey data.

The major component of the weight is the reciprocal of the sampling fraction employed in selecting the number of sample households in that sampling stratum (h) and PSU (i):

$$W_{hi} = \frac{1}{f_{hi}}$$

The term f_{hi} , the sampling fraction for the i -th sample PSU in the h -th stratum, is the product of probabilities of selection at every stage in each sampling stratum:

$$f_{hi} = p_{1hi} \times p_{2hi} \times p_{3hi}$$

where p_{shi} is the probability of selection of the sampling unit at stage s for the i -th sample PSU in the h -th sampling stratum. Based on the sample design, these probabilities were calculated as follows:

$$p_{1hi} = \frac{n_h \times M_{hi}}{M_h},$$

n_h = number of sample PSUs selected in stratum h

M_{hi} = number of households in the 2006 Census frame for the i -th sample PSU in stratum h

M_h = total number of households in the 2010 Census frame for stratum h

p_{2hi} = proportion of the PSU listed the i -th sample PSU stratum h (in the case of PSUs that were segmented); for non-segmented PSUs, $p_{2hi} = 1$

$$p_{3hi} = \frac{20}{M'_{hi}}$$

M'_{hi} = number of households listed in the i -th sample PSU in stratum h

Since the number of households in each enumeration area (PSU) from the 2010 Census frame used for the first stage selection and the updated number of households in the enumeration area from the listing are generally different, individual overall probabilities of selection for households in each sample enumeration area (cluster) were calculated.

A final component in the calculation of sample weights takes into account the level of non-response for the household and individual interviews. The adjustment for household non-response in each stratum is equal to:

$$\frac{1}{RR_h}$$

where RR_h is the response rate for the sample households in stratum h , defined as the proportion of the number of interviewed households in stratum h out of the number of selected households found to be occupied during the fieldwork in stratum h .

Similarly, adjustment for non-response at the individual level (women, men, and under-5 children) for each stratum is equal to:

$$\frac{1}{RR_h}$$

where RR_h is the response rate for the individual questionnaires in stratum h , defined as the proportion of eligible individuals (women, men, and under-5 children) in the sample households in stratum h who were successfully interviewed.

After the completion of fieldwork, response rates were calculated for each sampling stratum. These were used to adjust the sample weights calculated for each cluster. Response rates in the Nigeria 2016/17 MICS are shown in Table HH.1 in this report.

The non-response adjustment factors for the individual women, men, and under-5 questionnaires were applied to the adjusted household weights. Numbers of eligible women, men, and under-5 children were obtained from the roster of household members in the Household Questionnaire for households where interviews were completed.

The design weights for the households were calculated by multiplying the inverse of the probabilities of selection by the non-response adjustment factor for each enumeration area. These weights were then standardized (or normalized), one purpose of which is to make the weighted sum of the interviewed sample units equal to the total sample size at the national level. Normalization is achieved by dividing the full sample weights (adjusted for nonresponse) by the average of these weights across all households at the national level. This is performed by multiplying the sample weights by a constant factor equal to the unweighted number of households at the national level divided by the weighted total number of households (using the full sample weights adjusted for nonresponse). A similar standardization procedure was followed in obtaining standardized weights for the individual women, men, and under-5 questionnaires. Adjusted (normalized) weights varied between 0.086 and 12.604 in the 2810 sample enumeration areas (clusters).

Sample weights were appended to all data sets and analyses were performed by weighting households, women, men, or under-5s with these sample weights.

Since interviews with eligible men were conducted in one-half of the selected households, the sample weight for men includes an additional factor of 2, in addition to the nonresponse adjustment factor.

The second stage of sample design was to review whether the sample size provided by MICS was sufficient for state level estimation of Penta3 immunisation coverage in children 12 to 23 months within +/- 10 percentage point precision. It was found that in 20 states the estimated precision would be larger than the desired cut-off. The following annex section describes how supplemental sample was arrived at in the 20 states.

Appendix A.1: Sample Design- Supplemental Sampling & Poolability Testing

Sample for the Nigeria National Immunisation Coverage Survey (NICS)

The primary objective of the sample design to be used for the Nigeria National Immunisation Coverage Survey (NICS) is to provide estimates of vaccine coverage for the country, at the national, state and geo-political zone. Since the MICS covers the child Immunisation and other questions required for the NICS, it was decided to use the data from the entire MICS sample, and to select additional sample EAs and households for some states that required a larger sample for NICS. In the supplemental sample of households, a smaller NICS questionnaire was used that only included the household and child Immunisation questions required for the NICS analysis.

In the case of states without a supplemental sample for NICS, only the MICS data were used for NICS, so the sample design and weighting procedures are the same for both surveys. For states with a supplemental sample, additional sample EAs were selected for the NICS from the NISH2 master sample, excluding the replicates already selected for the MICS. A sample of 16 households was also selected in each of the supplemental sample of EAs for the NICS from the new listing in these EAs. Therefore, the sampling methodology for the NICS is consistent with that of the MICS described above.

The weighting procedures for the NICS data are similar to those described above for the MICS, although the higher total number of sample EAs selected for the NICS in some states is used in the formulas for calculating the household weights. An additional weight was calculated for the children age 12 to 23 months since the Immunisation rates were based on this subgroup of children. The procedures for adjusting these child weights for nonresponse were similar to those for calculating the weights for children under 5 years for the MICS, but in the case of the NICS weights the numerator and denominator of the adjustment factor were based on the data for the children 12 to 23 months.

The sample size for the Nigeria NICS was calculated as 44,960 households. However, the sample size for the Nigeria MICS 2016-17 was not sufficient to estimate state level vaccination coverage for children aged 12 to 23 months in twenty states, namely: Abia, Akwa Ibom, Anambra, Bayelsa, Benue, Cross River, Delta, Edo, Ekiti, Enugu, Imo, Kogi, Kwara, Ogun, Ondo, Osun, Oyo, Plateau, Rivers and FCT (Abuja). The determination of the number of sample households (denoted as n), was the same except the supplementary sample which was based on conservative projection of 95% confidence interval for Penta3. The intra-cluster correlation coefficient (ICC) was conservatively calculated to be $1/3$. The design effect was estimated as $DEFF \approx 1 + (\text{average respondents per cluster} - 1) \times ICC$.

For the twenty (20) supplementary states, the sample ranging from 10 to 30 EAs was selected per state and 16 households per EA, which gives a sample size ranging from 160 to 480 households in the states. One (1) or two (2) or three (3) replicates containing ten (10) EAs/clusters were selected from the NISH2 master sample in the states.

Listing exercise was conducted in March 2016. One (1) or two (2) or three (3) team(s) was constituted that carried out the listing exercise in each state. Each team comprises of 2 enumerators and one (1) supervisor. The listing exercise lasted for twelve (12) days.

Within each stratum for NICS with inclusion of MICS, enumeration areas (ranging from 60 to 120) were systematically sampled from the NISH2 master sample. After a household listing was carried out within the selected enumeration areas, a systematic sample of 16 households was also drawn in each sample

enumeration area. Out of 2810 enumeration areas selected for coverage, only 2,702 enumeration areas were listed and covered during the fieldwork period. A total of 108 EAs could not be enumerated because they were inaccessible due to insecurity during the fieldwork period.

DISTRIBUTION OF EAs AND HOUSEHOLDS BY STATE				
S/NO	State	EAs per state	HHs per EA	Total HHs per state
1	Abia	30	16	480
2	A/Ibom	20	16	320
3	Anambra	20	16	320
4	Bayelsa	20	16	320
5	Benue	20	16	320
6	C/River	20	16	320
7	Delta	20	16	320
8	Edo	30	16	480
9	Ekiti	20	16	320
10	Enugu	20	16	320
11	Imo	30	16	480
12	Kogi	30	16	480
13	Kwara	20	16	320
14	Ogun	20	16	320
15	Ondo	30	16	480
16	Osun	10	16	160
17	Oyo	30	16	480
18	Plateau	30	16	480
19	Rivers	30	16	480
20	FCT, Abuja	20	16	320
TOTAL		470		7,520

Method to determine the number of supplementary clusters per state

To identify which states should have supplementary clusters and how many they should have, three simultaneous goals were set:

- 1) The number of supplementary clusters should not exceed 30 in any state. MICS planned to visit 60 clusters in most states and it was decided that the planned supplement should never be larger than half of the planned MICS sample.
- 2) The number of supplementary clusters in each state with a supplement should be a multiple of 10: either 10 or 20 or 30, for the sake of simplicity.
- 3) A state should have a supplemental sample if it seemed likely by conservative projection that the 2016/17 95% confidence interval for Penta3 might be wider than +/- 10% using MICS data alone. The number of supplementary clusters (10 or 20 or 30) should be sufficient to narrow the anticipated CI to that width, if possible.

Statistically, the width of a confidence interval for a proportion in a complex sample is determined by a) the number of respondents, b) the design effect, and c) the value of the estimated proportion. The first two quantities may be used to calculate the effective sample size which may, in turn, be combined with the estimated proportion to calculate a CI width. To project estimates of 2016/17 Penta3 CI widths it was necessary to select likely or conservative values of sample size, design effect and Penta3 coverage. Projecting sample size: The MICS 2011 dataset was used to calculate likely number of respondents 12-23m per household (and per cluster) in each state.

Projecting design effect: The intra-cluster correlation coefficient (ICC) was conservatively assumed to be 1/3 and the average number of respondents per cluster was projected using MICS 2011 data. The design effect was estimated as $DEFF \approx 1 + (\text{average respondents per cluster} - 1) \times ICC$.

Projecting Penta3 coverage: The most conservative estimate would be 50% for each state, but some states are very unlikely to yield 50% coverage, so conservative Penta3 projections were made using the following rules applied to MICS 2011 and DHS 2013 data:

- a) If the ± 2 standard error CI for Penta3 for either MICS or DHS contained 50%, then 50% was selected as the conservative projection.
- b) If the CIs from both surveys excluded 50% then the conservative estimate was taken to be the value ± 2 standard error CI bound that fell closest to 50%. (i.e., If the MICS CI was 60-75% and the DHS CI was 55-70% then 55% was selected as the conservative projection.)

Therefore, states with DHS or MICS coverage near 50% had 50% as the projected value (N=15) and states with substantially lower (N=11) or higher (N=11) coverage had values that were lower or higher than 50%.

Results

- Four states were identified that might need 1-5 additional clusters to achieve Penta3 CIs no wider than $\pm 10\%$. Because the needs were small and some estimates had been quite conservative, these states were not allocated any supplemental clusters.
- One state (Osun) was identified that might need 8 additional clusters, so they were assigned 10.
- Eleven states (Akwa Ibom, Anambra, Bayelsa, Benue, Cross River, Delta, Ekiti, Enugu, FCT (Abuja), Kwara & Ogun) were identified as needing 11-20 additional clusters, to they were assigned 20.
- Four states (Abia, Oyo, Plateau & Rivers) needed 21-30 more additional clusters; they were assigned 30.
- Four states (Edo, Imo, Kogi & Ondo) were identified as needing more than 30 supplemental clusters to meet the Penta3 CI goal; they were assigned 30 each.

Methods to Assess Poolability of MICS & Supplemental Data

Before pooling data from two sources, it is helpful to assess whether the datasets are *exchangeable*, meaning that the data in each were generated by identical or very similar processes and are not influenced by substantially different biases. These biases might result from different interview protocols, data collected at different times of the year, differing lists of survey questions, or different data handling and cleaning procedures. The table below lists factors that were identical and those that differed between the 2016/17 MICS and supplemental data collection efforts.

Factor	Identical	Different
Eligibility criteria for mothers and children 12-23m old	X	
Period of field work	X	
Period over which caregivers had to recall vaccination history	X	
Survey questions	X	
Data collection hardware (tablet model)	X	
CSPPro software version	X	
Implementing agency	X	
Organizations who monitored field work	X	
Field teams		X
Time that field teams spent in each cluster		X (3 days vs. 1.5)
NBS & UNICEF data cleaning procedures	X	

Although there were very few differences in the processes that generated these datasets, they were assessed for poolability using a statistical *permutation test*.

Three survey data quantities were compared in each of the 20 states with supplemental samples:

- a) % of households with a child 12-23m
- b) % of children 12-23m who produced a home-based record (card) that had 1+ vaccination dates on it
- c) % of children 12-23m who had evidence (from card or caretaker recall) of receiving three doses of Penta

First the quantities above were calculated separately for the MICS and supplemental samples in each state and the observed differences were recorded. If MICS observed 10% households had a child 12-23m in state X and the supplemental sample observed 15% then the (MICS – Supplement) difference would be - 5%.

The first difference is the observed difference and then for each state, permuted differences were calculated by re-assigning the cluster IDs randomly and calculating a new (MICS – Supplement) difference. The permuted differences were calculated 500,000 times in each state. If the processes that generated the MICS and supplemental datasets were similar then the whether a cluster is labeled a MICS cluster or a supplemental cluster should not matter, so the observed difference should have the same magnitude as many of the permuted differences. On the other hand, if there were important biases in one process that are absent (or different) in the other, then there is something special in the data concerning whether the cluster is labeled a MICS or supplemental cluster. In that case, we might expect to see that the observed difference is much larger or much smaller than most of the permuted differences.

For each quantity (% of HH with children 12-23m; % of 12-23m with an informative card and % of children 12-23m who received Penta3) an unadjusted p-value was calculated by determining what proportion of the 500,000 permuted differences had an absolute value larger than that of the observed difference. (See Annex tables 4 & 5.) Note that 55 of the 60 of the unadjusted p-values were higher than 0.05 which is the traditional threshold for statistical significance.

But there are a total of 60 tests conducted in the pooling analysis: three tests in each of 20 states, and so even if the two methods of collecting data were identical, we could expect about three of the unadjusted p-values to be smaller than 0.05 by chance alone. To draw strong conclusions while adjusting for multiple comparisons, the Holm-Bonferroni correction was applied to the unadjusted p-values using a family-wise error rate of 1% (rather than the traditional 5%) to label a difference as being *statistically significant*. If any of the three differences in a state is significant then the data in that state will be declared *not poolable*. If the differences are not significant, the data are declared to be *poolable*.

To assess statistical significance of the (MICS - Supplement) differences in those states, the Holm-Bonferroni procedure was employed to preserve an overall family-wise probability of Type I error at 1% for the 60 comparisons. This supplement describes the Holm-Bonferroni calculations and provides supplemental tables that list the unadjusted p-values and list which Holm multipliers were relevant for which rows of the tables. (See Annex table 6.)

The Holm-Bonferroni procedure was conducted using these steps:

1. Calculate 60 unadjusted p -values from a permutation test. Put all p -values into a table and sort them from lowest to highest.
2. Calculate a Holm multiplier for each p -value. The multiplier for the smallest p -value is 60. That for the second-smallest is 59. The next is 58, then 57, and so on. The multiplier for the highest p -value in the list is 1.
3. Calculate adjusted p -values by multiplying each unadjusted p -value by its Holm multiplier.

4. Compare the adjusted p -values with the value 0.01. Starting at the top of the list, declare the difference to be statistically significant if the adjusted p -value is ≤ 0.01 . If the first p -value is significant, move to the second, and so on.
5. Upon reaching the first row where the adjusted p -value is > 0.01 , declare that difference to be not significant. Also declare all differences represented by rows lower in the table to be not significant.
6. Format the adjusted p -values, substituting the characters " $> = 1.0$ " where appropriate.

Note that all adjusted p -values are less than 0.01, so none of the differences are declared to be significant. Note also that only one adjusted p -value is smaller than 0.05. If this analysis had used a family-wise error rate of 5% instead of 1% then the data in FCT Abuja would not be considered poolable, because 18% of households in MICS clusters there had a child 12-23m versus only 8% in the supplemental clusters. But the pooling plan, which was set before the data were collected, calls for a family-wise error rate no greater than 1%, meaning that we want to declare the data to be poolable unless there is overwhelming evidence of differential bias.

Holm-Bonferroni References:

Aickin M, Gensler H. Adjusting for multiple testing when reporting research results: the Bonferroni vs Holm methods. *Am J Pub Health* 1996;86(5):726-728.

Holm S. A simple sequentially rejective multiple test procedure. *Scand J Stat* 1979;6(2):65–70. Available at: <http://www.jstor.org/stable/4615733>. Accessed June 20, 2017.

Appendix B. Annex tables

Annex table 1A: Estimated % of children 12-23 months with evidence of vaccination, by source of evidence, Nigeria Combined MICS/NICS, 2016											
Percentage of children vaccinated according to: home-based record (1st number), caretaker's recall (2nd number), and either source of evidence (3rd number)											
	BCG ^d				HepB at birth			Card Seen ^h		Children age 12-23 months	
	%	%	%	%	%	%	%	N	%	N	weighted N
NIGERIA	28	25	3	53	20	10	30	2,019	29	6,268	6,268
Geopolitical Zone											
North Central	30	32	7	63	26	12	38	405	31	1,200	900
North East	23	30	0	53	13	6	19	230	24	909	1,346
North West	15	15	0	30	10	5	14	296	16	1,943	2,468
South East	46	44	10	90	39	26	65	277	47	607	353
South South	52	31	12	84	40	18	58	396	52	819	503
South West	56	29	8	86	43	18	60	415	57	790	698
Area											
Urban	42	33	5	75	32	15	47	799	42	1,797	1,970
Rural	22	22	3	44	15	7	22	1,220	23	4,471	4,298
Sex											
Male	28	26	3	54	20	10	30	989	29	3,111	3,121
Female	28	24	3	53	21	10	30	1,030	29	3,157	3,147
Caretaker's Education											
Primary	31	30	6	61	22	11	33	350	32	1,014	896
Secondary/technical	47	35	6	82	34	16	50	975	47	2,037	1,735
Higher	52	42	6	94	46	23	69	302	52	562	490
Non-formal	9	14	0	24	6	3	8	104	11	1,073	1,355
Missing	16	17	1	33	10	5	15	288	18	1,582	1,792
Caretaker's Age											
15-19	13	16	2	30	10	7	17	67	15	351	377
20-29	28	24	3	52	21	9	29	934	29	2,830	2,873
30-39	32	28	4	60	24	11	34	815	33	2,337	2,324
40-49	23	26	2	49	14	10	25	173	24	608	587
50+	[17]	36	7	53	[17]	16	33	24	21	122	93
DNK	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	20	14
Wealth index quintile											
Poorest	10	12	3	23	7	3	10	188	12	1,368	1,454
Second	18	21	2	39	12	6	17	305	19	1,354	1,370
Middle	30	25	3	55	20	10	30	432	31	1,241	1,205
Fourth	39	37	5	76	29	14	44	507	39	1,169	1,150
Richest	52	35	3	87	40	19	59	587	51	1,136	1,089
Ethnicity											
Hausa	15	20	0	35	10	5	15	472	16	2,791	3,544
Igbo	47	41	10	89	39	25	64	371	49	801	523
Yoruba	55	32	8	87	43	19	62	376	56	737	612
Other	40	30	6	71	30	11	41	800	41	1,939	1,590
Notes:											
a. Estimates are from pooled MICS and NICS survey datasets											
b. All percentages are weighted estimates of population characteristics, considering sampling design and probability of respondent selection											
c. Table cells with three numbers describe % of children vaccinated according to: card (1st number), recall (2nd number) and either source											
d. The BCG column shows coverage by 1) home-based record (card) 2) caretaker's recall, 3) confirmed arm scar and 4) any source of evidence; some respondents had evidence from card and scar or recall and scar, so the fourth number may be smaller than the sum of the first three numbers in the cell.											
e. Except for the BCG column, the third number in each table cell is the sum of the first and second numbers (small differences are possible due to rounding)											
f. Parentheses () around the estimate of coverage according to card mean that cards were only seen for 25-49 cards.											
g. Brackets [] around the estimate of coverage according to card means that fewer than 25 cards were seen.											
h. Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record											
i. Results are omitted from the table (*) in rows where N is < 25											

Annex table 1A: Estimated % of children 12-23 months with evidence of vaccination, by source of evidence, Nigeria Combined MICS/NICS, 2016 (continued)

	Percentage of children vaccinated according to: home-based record (1st number), caretaker's recall (2nd number), and either source of evidence (3rd number)										
	BCG ^d				HepB at birth			Card Seen ^h		Children age 12-23 months	
	%	%	%	%	%	%	%	N	%	N	weighted N
NIGERIA	28	25	3	53	20	10	30	2,019	29	6,268	6,268
State											
North Central											
FCT-Abuja	54	33	0	87	46	23	69	97	55	180	46
Benue	38	27	11	66	37	17	54	52	38	152	132
Kogi	41	32	9	73	37	10	47	68	41	168	89
Kwara	[20]	51	6	72	[17]	30	47	23	20	119	66
Nasarawa	(26)	38	0	64	(25)	8	34	47	26	167	127
Niger	(23)	15	0	38	(18)	3	21	49	25	188	255
Plateau	30	49	17	80	23	17	40	69	31	226	186
North East											
Adamawa	44	23	0	67	29	6	35	66	46	139	134
Bauchi	(18)	23	0	41	(8)	7	14	48	20	221	345
Borno	(30)	51	0	81	(19)	5	24	25	32	74	421
Gombe	27	28	0	54	17	13	30	54	26	197	122
Taraba	[19]	21	0	40	[13]	11	24	23	22	98	70
Yobe	[5]	12	0	16	[2]	1	3	14	7	180	253
North West											
Jigawa	(10)	15	0	26	(9)	3	11	33	12	266	337
Kaduna	28	24	0	51	21	6	27	55	23	194	376
Kano	18	15	0	34	6	5	11	103	20	530	554
Katsina	(15)	14	0	28	(11)	6	17	45	19	253	478
Kebbi	(9)	13	0	23	(6)	5	11	28	13	214	202
Sokoto	[4]	12	0	16	[2]	2	5	14	5	245	218
Zamfara	[9]	10	0	19	[7]	4	11	18	8	241	303
South East											
Abia	40	46	21	87	35	30	66	58	40	145	57
Anambra	42	47	5	88	41	34	75	51	45	115	74
Ebonyi	49	34	0	83	40	22	62	53	50	103	59
Enugu	50	43	11	93	41	28	69	55	53	115	73
Imo	47	48	11	96	38	18	55	60	47	129	91
South South											
Akwa Ibom	49	32	10	82	40	19	59	73	47	167	120
Bayelsa	37	29	12	66	27	7	34	52	37	146	41
Cross River	53	35	6	88	29	16	45	66	54	122	76
Delta	51	30	13	81	43	22	65	70	51	146	102
Edo	57	39	23	97	43	26	70	77	56	138	81
Rivers	59	23	10	82	50	12	62	58	60	100	82
South West											
Ekiti	58	29	18	86	43	13	56	54	65	84	30
Lagos	65	28	0	93	55	16	71	121	68	187	244
Ogun	45	35	12	80	37	20	57	61	45	132	72
Ondo	46	35	17	83	26	18	44	64	48	147	102
Osun	(53)	35	7	87	(36)	24	60	47	54	88	96
Oyo	53	23	10	77	40	17	57	68	54	152	155

Notes:

- Estimates are from pooled MICS and NICS survey datasets
- All percentages are weighted estimates of population characteristics, considering sampling design and probability of respondent selection
- Table cells with three numbers describe % of children vaccinated according to: card (1st number), recall (2nd number) and either source
- The BCG column shows coverage by 1) home-based record (card) 2) caretaker's recall, 3) confirmed arm scar and 4) any source of evidence; some respondents had evidence from card and scar or recall and scar, so the fourth number may be smaller than the sum of the first three numbers in the cell.
- Except for the BCG column, the third number in each table cell is the sum of the first and second numbers (small differences are possible due to rounding)
- Parentheses () around the estimate of coverage according to card mean that cards were only seen for 25-49 cards.
- Brackets [] around the estimate of coverage according to card means that fewer than 25 cards were seen.
- Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record
- Results are omitted from the table (*) in rows where N is < 25

Annex table 1B: Estimated % of children 12-23 months with evidence of vaccination, by source of evidence, Nigeria Combined MICS/NICS, 2016

	Polio												Children age 12-23 months	
	At birth			1			2			3			N	weighted N
	%	%	%	%	%	%	%	%	%	%	%	%		
NIGERIA	24	23	47	27	23	50	24	18	42	22	12	33	6,268	6,268
Geopolitical Zone														
North Central	27	29	56	30	30	59	28	26	53	24	14	37	1,200	900
North East	19	23	42	21	26	46	18	19	37	15	15	30	909	1,346
North West	13	16	29	14	15	29	11	13	24	9	10	19	1,943	2,468
South East	41	42	82	45	34	80	43	28	71	40	12	52	607	353
South South	43	29	72	51	27	78	47	22	69	44	9	53	819	503
South West	48	30	78	55	26	80	53	20	73	50	10	60	790	698
Area														
Urban	37	32	68	39	29	68	36	24	60	34	15	48	1,797	1,970
Rural	18	20	38	21	20	41	19	16	35	16	10	26	4,471	4,298
Sex														
Male	24	25	49	27	24	51	24	19	43	22	12	33	3,111	3,121
Female	24	22	46	27	21	48	24	17	42	22	12	33	3,157	3,147
Caretaker's Education														
Primary	27	25	52	31	23	54	29	18	47	24	11	35	1,014	896
Secondary/technical	40	33	73	45	29	74	41	23	64	38	14	52	2,037	1,735
Higher	50	41	90	52	31	82	50	25	75	48	13	61	562	490
Non-formal	7	15	22	8	19	27	6	16	21	5	12	17	1,073	1,355
Missing	13	15	28	15	17	32	12	14	26	9	9	18	1,582	1,792
Caretaker's Age														
15-19	12	14	26	15	13	28	13	9	22	10	5	15	351	377
20-29	24	23	47	27	22	49	24	17	41	22	11	33	2,830	2,873
30-39	27	26	53	30	26	55	28	21	48	25	13	37	2,337	2,324
40-49	18	21	39	22	24	46	20	21	41	18	13	31	608	587
50+	[19]	32	50	[17]	27	44	[16]	20	36	[15]	9	24	122	93
DNK	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	20	14
Wealth index quintile														
Poorest	8	11	19	10	16	26	9	13	22	7	10	16	1,368	1,454
Second	14	19	34	18	21	38	15	17	31	12	12	24	1,354	1,370
Middle	26	23	48	28	21	48	25	16	41	21	11	32	1,241	1,205
Fourth	34	34	68	36	31	67	33	25	58	30	15	45	1,169	1,150
Richest	45	35	80	50	28	78	48	22	70	45	11	57	1,136	1,089
Ethnicity														
Hausa	13	19	32	14	20	34	11	16	27	9	13	22	2,791	3,544
Igbo	42	41	83	47	33	79	43	28	70	40	12	52	801	523
Yoruba	48	32	80	54	28	82	53	22	74	50	10	61	737	612
Other	34	25	58	39	23	62	37	18	55	32	10	42	1,939	1,590

Notes:

- Estimates are from pooled MICS and NICS survey datasets
- All percentages are weighted estimates of population characteristics, considering sampling design and probability of respondent selection
- Table cells with three numbers describe % of children vaccinated according to: card (1st number), recall (2nd number) and either source
- The BCG column shows coverage by 1) home-based record (card) 2) caretaker's recall, 3) confirmed arm scar and 4) any source of evidence; some respondents had evidence from card and scar or recall and scar, so the fourth number may be smaller than the sum of the first three numbers in the cell.
- Except for the BCG column, the third number in each table cell is the sum of the first and second numbers (small differences are possible due to rounding)
- Parentheses () around the estimate of coverage according to card mean that cards were only seen for 25-49 cards.
- Brackets [] around the estimate of coverage according to card means that fewer than 25 cards were seen.
- Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record
- Results are omitted from the table (*) in rows where N is < 25

Annex table 1B: Estimated % of children 12-23 months with evidence of vaccination, by source of evidence, Nigeria Combined MICS/NICS, 2016 (continued)

	Polio												Children age 12-23 months	
	At birth			1			2			3			N	weighted N
	%	%	%	%	%	%	%	%	%	%	%	%		
NIGERIA	24	23	47	27	23	50	24	18	42	22	12	33	6,268	6,268
State														
North Central														
FCT-Abuja	51	34	84	50	30	72	50	17	66	46	10	56	180	46
Benue	35	28	63	43	24	66	40	23	63	36	10	45	152	132
Kogi	40	23	63	42	18	60	38	8	47	31	6	36	168	89
Kwara	[19]	43	62	[20]	51	70	[18]	47	64	[16]	25	41	119	66
Nasarawa	(25)	35	60	(26)	31	58	(23)	25	49	(18)	14	33	167	127
Niger	(19)	15	34	(20)	24	45	(20)	20	40	(14)	10	25	188	255
Plateau	25	43	68	27	40	68	26	38	64	26	21	47	226	186
North East														
Adamawa	34	21	54	45	15	60	43	8	51	38	3	41	139	134
Bauchi	(14)	14	29	(18)	19	38	(17)	17	33	(13)	14	27	221	345
Borno	(27)	39	66	(23)	46	69	(19)	31	51	(16)	26	42	74	421
Gombe	23	22	45	25	26	50	20	21	41	19	17	36	197	122
Taraba	[16]	19	34	[21]	10	31	[15]	7	21	[14]	4	18	98	70
Yobe	[2]	10	12	[5]	10	15	[4]	9	13	[3]	6	9	180	253
North West														
Jigawa	(8)	18	26	(9)	7	16	(6)	5	10	(3)	3	7	266	337
Kaduna	24	17	41	27	13	40	25	12	37	25	10	34	194	376
Kano	14	15	29	16	11	27	11	8	19	9	4	14	530	554
Katsina	(14)	18	33	(15)	18	33	(12)	16	28	(9)	12	21	253	478
Kebbi	(7)	16	23	(9)	17	26	(7)	11	18	(5)	7	12	214	202
Sokoto	[4]	9	13	[4]	11	15	[3]	7	10	[2]	5	7	245	218
Zamfara	[8]	15	23	[9]	34	43	[6]	32	38	[5]	30	35	241	303
South East														
Abia	37	44	81	40	37	77	39	31	69	37	7	43	145	57
Anambra	39	46	85	42	42	84	41	40	81	38	24	62	115	74
Ebonyi	45	33	78	48	21	70	47	14	61	43	4	47	103	59
Enugu	45	43	88	49	31	80	48	22	70	44	16	60	115	73
Imo	39	41	80	47	36	84	42	30	71	40	8	48	129	91
South South														
Akwa Ibom	43	28	71	50	26	76	49	22	71	46	13	59	167	120
Bayelsa	28	20	48	35	29	64	31	25	55	27	9	35	146	41
Cross River	36	33	69	53	30	83	50	27	77	44	14	59	122	76
Delta	42	29	71	49	23	72	43	15	58	40	8	48	146	102
Edo	51	39	89	54	33	87	52	26	78	50	3	53	138	81
Rivers	52	22	75	58	23	81	52	19	70	49	7	56	100	82
South West														
Ekiti	57	27	84	57	20	76	54	17	72	51	7	58	84	30
Lagos	58	31	88	65	26	91	64	22	86	62	13	75	187	244
Ogun	43	33	76	44	26	69	42	16	58	41	7	48	132	72
Ondo	35	32	66	48	29	77	47	24	71	45	9	53	147	102
Osun	(44)	35	79	(51)	26	77	(46)	22	68	(46)	9	54	88	96
Oyo	44	26	70	50	23	73	47	17	64	42	8	49	152	155

Notes:

- Estimates are from pooled MICS and NICS survey datasets
- All percentages are weighted estimates of population characteristics, considering sampling design and probability of respondent selection
- Table cells with three numbers describe % of children vaccinated according to: card (1st number), recall (2nd number) and either source
- The BCG column shows coverage by 1) home-based record (card) 2) caretaker's recall, 3) confirmed arm scar and 4) any source of evidence; some respondents had evidence from card and scar or recall and scar, so the fourth number may be smaller than the sum of the first three numbers in the cell.
- Except for the BCG column, the third number in each table cell is the sum of the first and second numbers (small differences are possible due to rounding)
- Parentheses () around the estimate of coverage according to card mean that cards were only seen for 25-49 cards.
- Brackets [] around the estimate of coverage according to card means that fewer than 25 cards were seen.
- Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record
- Results are omitted from the table (*) in rows where N is < 25

Annex table 1C: Estimated % of children 12-23 months with evidence of vaccination, by source of evidence, Nigeria Combined MICS/NICS, 2016

	Pentavalent									Children age 12-23 months	
	1			2			3			N	weighted N
	%	%	%	%	%	%	%	%	%		
NIGERIA	28	21	49	25	15	40	23	10	33	6,268	6,268
Geopolitical Zone											
North Central	31	28	59	29	19	48	26	14	39	1,200	900
North East	21	26	47	18	19	37	16	12	28	909	1,346
North West	14	11	25	12	6	17	10	3	14	1,943	2,468
South East	46	39	85	44	30	74	41	25	66	607	353
South South	51	29	80	49	24	72	45	19	65	819	503
South West	56	25	82	55	19	73	52	14	66	790	698
Area											
Urban	40	29	69	38	21	59	35	15	51	1,797	1,970
Rural	22	18	39	19	12	31	17	8	25	4,471	4,298
Sex											
Male	28	22	50	25	16	41	23	10	33	3,111	3,121
Female	28	20	48	26	14	39	23	11	34	3,157	3,147
Caretaker's Education											
Primary	32	24	55	30	16	46	26	12	38	1,014	896
Secondary/technical	46	30	76	43	22	66	40	17	57	2,037	1,735
Higher	53	39	92	52	29	81	51	23	74	562	490
Non-formal	8	11	19	6	7	13	5	4	9	1,073	1,355
Missing	15	14	29	13	8	21	10	5	15	1,582	1,792
Caretaker's Age											
15-19	14	9	23	13	6	18	10	4	15	351	377
20-29	28	19	47	25	13	38	23	10	32	2,830	2,873
30-39	31	25	56	29	18	47	27	12	39	2,337	2,324
40-49	24	23	47	21	15	36	19	12	31	608	587
50+	[18]	28	45	[18]	22	39	[17]	16	33	122	93
DNK	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	20	14
Wealth index quintile											
Poorest	11	9	20	10	4	14	7	3	10	1,368	1,454
Second	18	17	34	15	11	26	13	7	20	1,354	1,370
Middle	29	20	49	25	14	39	22	10	33	1,241	1,205
Fourth	37	34	71	34	27	61	32	19	51	1,169	1,150
Richest	52	30	82	50	21	71	48	15	63	1,136	1,089
Ethnicity											
Hausa	14	15	29	12	10	22	10	6	16	2,791	3,544
Igbo	48	38	85	45	28	74	42	24	66	801	523
Yoruba	56	28	84	54	21	75	52	15	67	737	612
Other	40	26	66	37	19	56	34	15	49	1,939	1,590

Notes:

- Estimates are from pooled MICS and NICS survey datasets
- All percentages are weighted estimates of population characteristics, considering sampling design and probability of respondent selection
- Table cells with three numbers describe % of children vaccinated according to: card (1st number), recall (2nd number) and either source
- The BCG column shows coverage by 1) home-based record (card) 2) caretaker's recall, 3) confirmed arm scar and 4) any source of evidence; some respondents had evidence from card and scar or recall and scar, so the fourth number may be smaller than the sum of the first three numbers in the cell.
- Except for the BCG column, the third number in each table cell is the sum of the first and second numbers (small differences are possible due to rounding)
- Parentheses () around the estimate of coverage according to card mean that cards were only seen for 25-49 cards.
- Brackets [] around the estimate of coverage according to card means that fewer than 25 cards were seen.
- Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record
- Results are omitted from the table (*) in rows where N is < 25

Annex table 1C: Estimated % of children 12-23 months with evidence of vaccination, by source of evidence, Nigeria Combined MICS/NICS, 2016 (continued)

	Pentavalent									Children age 12-23 months	
	1			2			3			N	weighted N
	%	%	%	%	%	%	%	%	%		
NIGERIA	28	21	49	25	15	40	23	10	33	6,268	6,268
State											
North Central											
FCT-Abuja	55	33	88	55	17	72	52	13	66	180	46
Benue	43	26	68	40	20	59	38	19	57	152	132
Kogi	42	21	64	38	9	48	31	7	38	168	89
Kwara	[20]	51	71	[20]	42	61	[17]	32	49	119	66
Nasarawa	(26)	30	56	(25)	20	45	(20)	15	35	167	127
Niger	(21)	15	36	(20)	11	31	(16)	4	20	188	255
Plateau	30	40	70	30	27	57	27	19	45	226	186
North East											
Adamawa	43	15	57	40	10	50	35	3	38	139	134
Bauchi	(18)	18	35	(16)	9	25	(14)	5	19	221	345
Borno	(26)	47	73	(21)	43	64	(19)	29	48	74	421
Gombe	25	20	45	22	7	29	19	6	25	197	122
Taraba	[21]	15	36	[16]	4	20	[14]	2	16	98	70
Yobe	[6]	12	18	[4]	7	11	[3]	5	9	180	253
North West											
Jigawa	(12)	8	19	(8)	1	9	(7)	0	7	266	337
Kaduna	27	17	44	25	7	33	24	5	30	194	376
Kano	16	12	28	13	8	21	11	5	16	530	554
Katsina	(15)	13	28	(12)	7	18	(9)	3	12	253	478
Kebbi	(11)	10	20	(8)	9	17	(6)	5	11	214	202
Sokoto	[3]	6	9	[3]	2	5	[2]	1	3	245	218
Zamfara	[8]	6	15	[7]	3	10	[7]	2	9	241	303
South East											
Abia	41	41	82	40	29	69	35	20	55	145	57
Anambra	45	45	90	43	40	82	40	36	76	115	74
Ebonyi	47	33	80	45	21	66	43	11	54	103	59
Enugu	50	35	85	49	29	79	47	27	74	115	73
Imo	48	41	88	44	28	72	41	25	66	129	91
South South											
Akwa Ibom	51	30	80	50	25	73	48	20	68	167	120
Bayelsa	36	25	61	34	17	50	30	12	43	146	41
Cross River	52	31	83	48	29	77	42	27	69	122	76
Delta	50	26	76	46	18	64	42	15	57	146	102
Edo	54	35	89	53	33	86	50	24	75	138	81
Rivers	59	23	82	54	19	73	51	15	66	100	82
South West											
Ekiti	64	25	87	62	18	80	59	13	72	84	30
Lagos	67	26	94	67	19	86	64	16	80	187	244
Ogun	44	27	71	42	17	59	41	11	52	132	72
Ondo	47	29	76	47	25	71	45	21	66	147	102
Osun	(52)	31	83	(47)	19	66	(46)	13	60	88	96
Oyo	52	17	69	49	16	65	46	8	54	152	155

Notes:

- Estimates are from pooled MICS and NICS survey datasets
- All percentages are weighted estimates of population characteristics, considering sampling design and probability of respondent selection
- Table cells with three numbers describe % of children vaccinated according to: card (1st number), recall (2nd number) and either source
- The BCG column shows coverage by 1) home-based record (card) 2) caretaker's recall, 3) confirmed arm scar and 4) any source of evidence; some respondents had evidence from card and scar or recall and scar, so the fourth number may be smaller than the sum of the first three numbers in the cell.
- Except for the BCG column, the third number in each table cell is the sum of the first and second numbers (small differences are possible due to rounding)
- Parentheses () around the estimate of coverage according to card mean that cards were only seen for 25-49 cards.
- Brackets [] around the estimate of coverage according to card means that fewer than 25 cards were seen.
- Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record
- Results are omitted from the table (*) in rows where N is < 25

Annex table 1D: Estimated % of children 12-23 months with evidence of vaccination, by source of evidence, Nigeria Combined MICS/NICS, 2016

	Yellow fever			Measles (MCV1)			Vitamin A						Children age 12-23 months	
							1			2			N	weighted N
	%	%	%	%	%	%	%	%	%	%	%	%		
NIGERIA	20	19	39	20	21	42	13	0	13	8	0	8	6,268	6,268
Geopolitical Zone														
North Central	22	28	50	23	30	52	12	0	12	8	0	8	1,200	900
North East	13	20	33	14	22	36	6	0	6	2	0	2	909	1,346
North West	9	11	19	9	13	22	5	0	5	4	0	4	1,943	2,468
South East	35	34	70	37	36	73	27	0	27	14	0	14	607	353
South South	39	29	68	41	28	69	30	0	30	15	0	15	819	503
South West	46	23	68	47	25	72	39	0	39	24	0	24	790	698
Area														
Urban	32	28	61	33	30	63	23	0	23	14	0	14	1,797	1,970
Rural	14	15	29	15	17	32	9	0	9	5	0	5	4,471	4,298
Sex														
Male	19	19	39	20	22	42	13	0	13	8	0	8	3,111	3,121
Female	20	19	39	21	21	42	13	0	13	7	0	7	3,157	3,147
Caretaker's Education														
Primary	20	22	42	21	25	46	12	0	12	6	0	6	1,014	896
Secondary/technical	35	28	63	36	30	66	23	0	23	14	0	14	2,037	1,735
Higher	47	39	87	49	39	89	40	0	40	25	0	25	562	490
Non-formal	4	11	14	4	13	17	2	0	2	1	0	1	1,073	1,355
Missing	9	10	19	9	12	22	5	0	5	3	0	3	1,582	1,792
Caretaker's Age														
15-19	8	11	19	8	12	21	5	0	5	4	0	4	351	377
20-29	19	18	38	20	20	40	12	0	12	7	0	7	2,830	2,873
30-39	23	21	44	25	24	48	16	0	16	10	0	10	2,337	2,324
40-49	16	20	36	17	21	38	10	0	10	6	0	6	608	587
50+	[16]	27	43	[16]	27	44	[14]	0	14	[12]	0	12	122	93
DNK	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	20	14
Wealth index quintile														
Poorest	6	8	14	6	10	16	3	0	3	2	0	2	1,368	1,454
Second	10	13	23	11	16	27	6	0	6	3	0	3	1,354	1,370
Middle	18	21	38	19	22	41	11	0	11	7	0	7	1,241	1,205
Fourth	27	29	56	28	32	59	18	0	18	10	0	10	1,169	1,150
Richest	44	31	74	45	31	76	33	0	33	20	0	20	1,136	1,089
Ethnicity														
Hausa	8	13	21	9	16	24	5	0	5	3	0	3	2,791	3,544
Igbo	38	35	72	39	36	75	29	0	29	16	0	16	801	523
Yoruba	45	26	71	47	28	75	37	0	37	24	0	24	737	612
Other	29	25	54	30	26	56	17	0	17	9	0	9	1,939	1,590

Notes:

- Estimates are from pooled MICS and NICS survey datasets
- All percentages are weighted estimates of population characteristics, considering sampling design and probability of respondent selection
- Table cells with three numbers describe % of children vaccinated according to: card (1st number), recall (2nd number) and either source
- The BCG column shows coverage by 1) home-based record (card) 2) caretaker's recall, 3) confirmed arm scar and 4) any source of evidence; some respondents had evidence from card and scar or recall and scar, so the fourth number may be smaller than the sum of the first three numbers in the cell.
- Except for the BCG column, the third number in each table cell is the sum of the first and second numbers (small differences are possible due to rounding)
- Parentheses () around the estimate of coverage according to card mean that cards were only seen for 25-49 cards.
- Brackets [] around the estimate of coverage according to card means that fewer than 25 cards were seen.
- Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record
- Results are omitted from the table (*) in rows where N is < 25

Annex table 1D: Estimated % of children 12-23 months with evidence of vaccination, by source of evidence, Nigeria Combined MICS/NICS, 2016 (continued)

	Yellow fever			Measles (MCV1)			Vitamin A						Children age 12-23 months	
	%	%	%	%	%	%	1			2			N	weighted N
NIGERIA	20	19	39	20	21	42	13	0	13	8	0	8	6,268	6,268
State														
North Central														
FCT-Abuja	44	29	74	46	30	76	24	0	24	16	0	16	180	46
Benue	29	22	51	30	24	54	20	0	20	15	0	15	152	132
Kogi	31	25	56	33	32	65	18	0	18	12	0	12	168	89
Kwara	[16]	51	68	[17]	50	67	[15]	0	15	[14]	0	14	119	66
Nasarawa	(14)	32	47	(16)	33	50	(10)	0	10	(8)	0	8	167	127
Niger	(14)	15	29	(14)	17	31	(3)	0	3	(3)	0	3	188	255
Plateau	24	41	66	24	42	65	11	0	11	7	0	7	226	186
North East														
Adamawa	30	14	44	33	15	49	7	0	7	2	0	2	139	134
Bauchi	(12)	10	22	(13)	9	22	(9)	0	9	(3)	0	3	221	345
Borno	(15)	36	51	(15)	43	58	(6)	0	6	(1)	0	1	74	421
Gombe	14	16	30	14	18	32	10	0	10	3	0	3	197	122
Taraba	[9]	16	25	[11]	18	29	[7]	0	7	[4]	0	4	98	70
Yobe	[4]	11	15	[4]	11	15	[1]	0	1	[0]	0	0	180	253
North West														
Jigawa	(4)	5	9	(5)	6	10	(2)	0	2	(1)	0	1	266	337
Kaduna	22	21	43	23	21	43	11	0	11	7	0	7	194	376
Kano	11	11	22	12	12	24	6	0	6	4	0	4	530	554
Katsina	(5)	12	17	(6)	15	21	(5)	0	5	(4)	0	4	253	478
Kebbi	(5)	8	13	(6)	20	25	(3)	0	3	(1)	0	1	214	202
Sokoto	[2]	5	6	[4]	6	10	[1]	0	1	[0]	0	0	245	218
Zamfara	[6]	6	12	[6]	11	16	[5]	0	5	[4]	0	4	241	303
South East														
Abia	32	35	66	33	37	70	23	0	23	13	0	13	145	57
Anambra	35	41	76	33	43	75	29	0	29	11	0	11	115	74
Ebonyi	30	27	56	34	24	58	10	0	10	8	0	8	103	59
Enugu	41	34	74	44	38	81	45	0	45	22	0	22	115	73
Imo	38	34	72	38	36	75	25	0	25	13	0	13	129	91
South South														
Akwa Ibom	34	30	64	36	28	64	26	0	26	12	0	12	167	120
Bayelsa	29	17	46	30	21	52	27	0	27	19	0	19	146	41
Cross River	39	31	70	42	32	74	28	0	28	14	0	14	122	76
Delta	37	30	67	36	27	64	28	0	28	13	0	13	146	102
Edo	46	37	84	49	37	86	33	0	33	18	0	18	138	81
Rivers	47	22	69	49	22	71	42	0	42	17	0	17	100	82
South West														
Ekiti	45	25	70	50	30	80	9	0	9	6	0	6	84	30
Lagos	60	25	85	61	27	88	63	0	63	43	0	43	187	244
Ogun	34	22	57	32	27	59	36	0	36	19	0	19	132	72
Ondo	40	29	68	42	30	72	10	0	10	9	0	9	147	102
Osun	(41)	25	66	(42)	25	67	(24)	0	24	(16)	0	16	88	96
Oyo	36	13	49	38	15	53	35	0	35	17	0	17	152	155

Notes:

- Estimates are from pooled MICS and NICS survey datasets
- All percentages are weighted estimates of population characteristics, considering sampling design and probability of respondent selection
- Table cells with three numbers describe % of children vaccinated according to: card (1st number), recall (2nd number) and either source
- The BCG column shows coverage by 1) home-based record (card) 2) caretaker's recall, 3) confirmed arm scar and 4) any source of evidence; some respondents had evidence from card and scar or recall and scar, so the fourth number may be smaller than the sum of the first three numbers in the cell.
- Except for the BCG column, the third number in each table cell is the sum of the first and second numbers (small differences are possible due to rounding)
- Parentheses () around the estimate of coverage according to card mean that cards were only seen for 25-49 cards.
- Brackets [] around the estimate of coverage according to card means that fewer than 25 cards were seen.
- Card seen means that the data collector recorded at least one date of vaccination from the child's home-based vaccination record
- Results are omitted from the table (*) in rows where N is < 25

Annex table 2: Dropout by card and by recall, Nigeria Combined MICS/NICS, 2016									
	OPV1 to OPV3					Penta1 to Penta3			
	Showed a card with 1+ vaccination dates	Dropout by card		Dropout by recall		Dropout by card		Dropout by recall	
		%	%	N	%	N	%	N	%
NIGERIA	29	18	1926	57	1468	16	1966	52	1415
Geopolitical Zone									
North Central	31	18	397	59	354	15	408	54	351
North East	24	24	216	42	171	23	217	68	162
North West	16	35	261	38	298	31	270	70	211
South East	47	12	267	70	209	12	273	43	240
South South	52	16	389	70	234	14	392	38	246
South West	57	10	396	67	202	9	406	47	205
Area									
Urban	42	14	771	60	504	11	785	50	531
Rural	23	21	1155	56	964	19	1181	54	884
Sex									
Male	29	17	944	58	753	17	969	54	720
Female	29	19	982	56	715	16	997	51	695
Caretaker's Education									
Primary	32	20	342	59	243	17	347	55	242
Secondary/technical	47	16	943	63	564	14	961	50	619
Higher	52	8	298	67	174	5	307	40	212
Non-formal	11	36	84	35	190	31	83	68	101
Missing	18	31	259	53	297	30	268	60	241
Caretaker's Age									
15-19	15	28	65	64	56	24	63	-51	49
20-29	29	19	898	55	595	17	910	53	573
30-39	33	17	770	58	620	13	789	52	598
40-49	24	19	165	57	158	22	175	51	151
50+	21	(*)	21	-71	34	(*)	22	-46	35
DNK	(*)	(*)	7	(*)	5	(*)	7	(*)	9
Wealth index quintile									
Poorest	12	28	169	42	243	28	178	64	158
Second	19	28	290	49	291	25	290	58	246
Middle	31	21	418	60	268	19	421	52	273
Fourth	39	15	481	64	327	13	491	48	365
Richest	51	11	568	66	339	9	586	48	373
Ethnicity									
Hausa	16	32	422	40	516	28	435	67	383
Igbo	49	11	359	69	270	12	369	41	315
Yoruba	56	9	364	64	214	8	374	50	220
Other	41	18	781	66	468	15	788	49	497

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All percentages are unweighted estimates

c. N is the number of children who received the first dose in the sequence

d. % is the proportion of N who did NOT receive the last dose in the sequence

e. Results are omitted from the table (*) in cases where N is < 25

f. Results are placed in parentheses () in cases where N is at least 25 but less than 50

g. These estimates combine information from home-based vaccination records (cards) and caretaker recall; see Annex table 1A for results reported separately by card vs. caretaker recall

Annex table 2: Dropout by card and by recall, Nigeria Combined MICS/NICS, 2016 (continued)

	OPV1 to OPV3					Penta1 to Penta3			
	Showed a card with 1+ vaccination dates	Dropout by card		Dropout by recall		Dropout by card		Dropout by recall	
		%	%	N	%	N	%	N	%
NIGERIA	29	18	1926	57	1468	16	1966	52	1415
State									
North Central									
FCT-Abuja	55	9	90	-72	47	5	97	65	57
Benue	38	19	59	-63	41	12	60	-30	43
Kogi	41	29	69	-77	31	28	69	-70	37
Kwara	20	(*)	24	51	59	(*)	24	36	58
Nasarawa	26	-30	47	53	53	-23	47	52	50
Niger	25	-21	42	-62	45	-16	43	(*)	24
Plateau	31	8	66	50	78	10	68	61	82
North East									
Adamawa	46	15	65	(*)	22	17	63	(*)	21
Bauchi	20	-29	45	-27	44	-22	45	-75	40
Borno	32	(*)	21	-48	29	(*)	22	-39	28
Gombe	26	21	52	-32	47	23	53	-74	38
Taraba	22	(*)	22	(*)	11	(*)	22	(*)	13
Yobe	7	(*)	11	(*)	18	(*)	12	(*)	22
North West									
Jigawa	12	-52	25	(*)	16	-39	33	(*)	18
Kaduna	23	8	62	-38	26	10	62	-72	39
Kano	20	41	86	63	59	35	86	61	62
Katsina	19	-42	38	-28	47	-41	37	-77	35
Kebbi	13	(*)	21	-52	42	(*)	24	(*)	23
Sokoto	5	(*)	11	-44	27	(*)	11	(*)	16
Zamfara	8	(*)	18	14	81	(*)	17	(*)	18
South East									
Abia	40	7	56	81	54	16	58	55	56
Anambra	45	-10	49	-47	47	12	51	20	51
Ebonyi	50	12	52	(*)	23	10	51	-62	34
Enugu	53	14	51	-66	38	11	53	-42	43
Imo	47	15	59	-79	47	13	60	41	56
South South									
Akwa Ibom	47	10	79	-55	47	6	80	35	55
Bayelsa	37	-29	49	-74	46	18	50	-54	39
Cross River	54	20	64	-56	34	25	63	-26	38
Delta	51	16	67	-70	33	15	68	-56	39
Edo	56	9	74	-91	47	7	74	-29	49
Rivers	60	18	56	-70	27	16	57	-31	26
South West									
Ekiti	65	-10	49	(*)	17	8	53	(*)	22
Lagos	68	8	116	60	55	7	120	45	55
Ogun	45	8	59	-70	30	8	59	-59	34
Ondo	48	8	64	-72	43	6	63	-28	40
Osun	54	-11	45	(*)	23	-13	46	-59	27
Oyo	54	19	63	-74	34	14	65	-52	27

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All percentages are unweighted estimates

c. N is the number of children who received the first dose in the sequence

d. % is the proportion of N who did NOT receive the last dose in the sequence

e. Results are omitted from the table (*) in cases where N is < 25

f. Results are placed in parentheses () in cases where N is at least 25 but less than 50

g. These estimates combine information from home-based vaccination records (cards) and caretaker recall; see Annex table 1B for results reported separately by card vs. caretaker recall

Annex table 3A: Design Effect and Intra-cluster Correlation Coefficient for Crude Coverage of Doses Commonly Used to Plan Surveys, Respondents 12-23m, Nigeria Combined MICS/NICS, 2016

	Total clusters selected	Total clusters with 1+ household interviews	Total Clusters with interviews for 1+ children age 12-23m	Completed vaccination respondents per cluster in clusters with 1+ children age 12-23m			Any evidence (card or recall) of OPV3		Any evidence (card or recall) of Penta3		Any evidence (card or recall) of MCV	
				Min	Avg	Max	DEFF	ICC	DEFF	ICC	DEFF	ICC
				NIGERIA^d	2,806	2,702	2,251	1	2.8	11	2.31	0.295432
Geopolitical Zone^d												
North Central	539	530	448	1	2.7	10	1.95	0.209428	2.89	0.329947	2.64	0.287081
North East	360	289	275	1	3.3	10	2.48	0.241836	4.64	0.283260	5.20	0.266495
North West	478	475	463	1	4.2	11	2.21	0.237594	1.89	0.243558	2.16	0.243585
South East	399	395	304	1	2.0	6	1.48	0.099188	1.62	0.209021	1.40	0.151499
South South	500	491	380	1	2.2	7	1.53	0.165838	1.82	0.249843	1.83	0.231111
South West	530	522	381	1	2.1	10	2.07	0.232966	2.17	0.260294	2.26	0.326652
Area												
Urban	929	914	719	1	2.5	9	2.38	0.188618	2.84	0.303566	3.78	0.272881
Rural	1877	1788	1,532	1	2.9	11	2.14	0.308260	2.90	0.435812	2.77	0.370169

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. Abbreviations: Min = minimum, Avg = average (mean), Max = maximum, DEFF = design effect, ICC = intracluster correlation coefficient (calculated with 1-way analysis of variance)

c. The number of respondents age 12-23m per cluster is small and highly variable, so these values of DEFF & ICC are provided for informational purposes, but should probably be accompanied by some conservative assumptions if they are to be used for planning future vaccination coverage surveys

d. For this table the cluster is counted as having 1+ household interviews if there is at least one household member listed in the 'hl' dataset

Annex table 3B: Design Effect and Intra-Cluster Correlation Coefficient for Crude Coverage of Doses Commonly Used to Plan Surveys, Respondents 12-23m, Nigeria Combined MICS/NICS, 2016

	Total clusters selected	Total clusters with 1+ household interviews	Total Clusters with interviews for 1+ children age 12-23m	Completed vaccination respondents per cluster in clusters with 1+ children age 12-23m			Any evidence (card or recall) of OPV3		Any evidence (card or recall) of Penta3		Any evidence (card or recall) of MCV	
				Min	Avg	Max	DEFF	ICC	DEFF	ICC	DEFF	ICC
NIGERIA^d	2,810	2,702	2,251	1	2.8	11	2.31	0.295432	2.82	0.425484	3.17	0.384383
State												
North Central												
FCT-Abuja	80	80	63	1	2.9	8	0.88	<0.000001	1.55	0.183490	1.79	0.211545
Benue	80	78	65	1	2.3	6	1.52	0.221677	1.49	0.159722	1.76	0.116691
Kogi	90	89	73	1	2.3	6	1.39	0.169370	1.47	0.235343	1.92	0.260980
Kwara	80	78	60	1	2.0	6	1.74	0.496983	1.71	0.455739	1.93	0.457729
Nasarawa	60	58	54	1	3.1	7	1.37	0.179404	2.01	0.212714	1.95	0.173237
Niger	60	60	55	1	3.4	8	1.88	0.354724	2.17	0.518272	2.02	0.332755
Plateau	90	87	78	1	2.9	10	0.90	0.102247	3.97	0.293447	2.37	0.193778
North East												
Adamawa	60	53	50	1	2.8	6	1.60	0.231041	1.94	0.246117	1.86	0.166324
Bauchi	60	60	60	1	3.7	8	1.83	0.266320	2.00	0.322782	1.87	0.343021
Borno	60	19	19	1	3.9	8	0.80	0.114445	1.18	0.157917	1.50	0.236758
Gombe	60	59	56	1	3.5	10	1.65	0.155390	1.98	0.192588	1.53	0.095327
Taraba	60	53	46	1	2.1	7	1.33	0.281167	1.37	0.369645	1.85	0.162055
Yobe	60	45	44	1	4.1	8	1.02	0.045611	1.31	0.106438	1.80	0.220631
North West												
Jigawa	60	60	58	1	4.6	9	1.19	0.014820	1.08	0.041340	1.11	<0.000001
Kaduna	60	59	57	1	3.4	9	3.14	0.412473	2.75	0.480800	2.98	0.351082
Kano	120	120	117	1	4.5	9	1.55	0.126476	1.60	0.113653	1.62	0.125658
Katsina	60	60	58	1	4.4	10	1.47	0.156056	0.91	0.082064	1.99	0.180209
Kebbi	60	59	57	1	3.8	9	1.21	0.151779	1.77	0.141340	1.86	0.239438
Sokoto	60	60	59	1	4.2	8	1.54	0.202074	1.81	0.220173	1.57	0.172503
Zamfara	60	57	57	1	4.2	11	1.37	0.132180	2.04	0.218751	1.97	0.246371
South East												
Abia	90	90	73	1	2.0	6	1.25	0.130620	1.50	0.315279	1.13	0.122920
Anambra	80	79	61	1	1.9	5	1.31	0.057873	1.47	0.217014	1.23	0.062233
Ebonyi	60	59	47	1	2.2	4	1.33	0.057699	1.48	0.104260	1.75	0.252885
Enugu	80	79	59	1	1.9	4	1.75	0.154733	1.48	0.099407	1.18	0.169405
Imo	90	88	64	1	2.0	5	1.29	0.053649	1.73	0.194833	1.21	0.116575
South South												
Akwa Ibom	80	80	68	1	2.5	7	1.39	0.102469	1.58	0.158503	2.46	0.391452
Bayelsa	80	79	62	1	2.4	6	1.25	<0.000001	1.49	0.124051	1.15	0.022989
Cross River	80	77	60	1	2.0	7	1.29	0.112829	1.61	0.254127	1.44	0.275526
Delta	80	77	66	1	2.2	5	1.32	0.216345	1.89	0.276129	1.45	0.218042
Edo	90	90	63	1	2.2	6	1.74	0.229460	2.71	0.307641	1.09	0.093158
Rivers	90	88	61	1	1.6	4	1.57	0.295277	1.60	0.238263	1.60	0.077339
South West												
Ekiti	80	79	48	1	1.8	4	1.58	0.118579	1.41	0.197011	1.06	<0.000001
Lagos	120	116	90	1	2.1	5	1.93	0.266534	2.00	0.127456	2.39	0.112174
Ogun	80	80	65	1	2.0	5	1.17	0.010606	1.21	0.084774	1.50	0.136392
Ondo	90	90	67	1	2.2	6	1.37	0.132253	1.82	0.228069	2.14	0.338603
Osun	70	68	45	1	2.0	4	1.40	0.167711	1.47	0.137036	1.66	0.308032
Oyo	90	89	66	1	2.3	10	2.07	0.411175	2.25	0.460577	2.21	0.476129

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. Abbreviations: Min = minimum, Avg = average (mean), Max = maximum, DEFF = design effect, ICC = intracluster correlation coefficient (calculated with 1-way analysis of variance)

c. The number of respondents age 12-23m per cluster is small and highly variable, so these values of DEFF & ICC are provided for informational purposes, but should probably be accompanied by some conservative assumptions if they are to be used for planning future vaccination coverage surveys

d. For this table the cluster is counted as having 1+ household interviews if there is at least one household member listed in the 'hl' dataset

Annex table 4: MICS / NICS Poolability Analysis, Nigeria Combined MICS/NICS, 2016

	Number of clusters		% HH with respondents 12-23m				Unweighted % 12-23m olds with cards with 1+ dates				Unweighted % of 12-23m olds with evidence of Penta3			
	MICS	NICS	MICS	NICS	Diff erence	Unadjus ted p-value	MIC S	NIC S	Diff erence	Unadjus ted p-value	MIC S	NIC S	Diff erence	Unadjus ted p-value
	N	N	%	%	%		%	%	%		%	%	%	
State														
North Central														
FCT-Abuja	60	20	18	8	10	0.00041	55	44	11	0.22907	62	69	-7	0.48421
Benue	58	20	13	12	1	0.62208	33	37	-4	0.72281	59	45	14	0.19976
Kogi	59	30	12	13	-1	0.72722	42	39	4	0.69212	34	40	-6	0.52371
Kwara	58	20	10	10	0	0.88689	12	39	-28	0.00293	50	42	8	0.59002
Plateau	58	29	17	17	0	0.92240	29	34	-5	0.55719	44	36	7	0.45637
South East														
Abia	60	30	11	10	0	0.81107	39	42	-2	0.77211	43	67	-23	0.03452
Anambra	60	19	10	10	0	0.83346	41	57	-15	0.19746	72	87	-15	0.18802
Enugu	59	20	9	10	0	0.92874	49	45	4	0.75658	62	77	-16	0.18846
Imo	59	29	11	7	4	0.02196	45	52	-7	0.50876	67	63	4	0.71128
South South														
Akwa Ibom	60	20	14	10	4	0.13376	46	31	15	0.16347	68	62	6	0.56117
Bayelsa	59	20	12	13	-1	0.72561	36	33	3	0.77762	42	45	-4	0.73774
Cross River	58	19	11	11	0	0.86140	55	50	5	0.67084	65	65	-1	0.95652
Delta	58	19	13	11	2	0.41423	54	32	22	0.07994	53	52	1	0.92309
Edo	60	30	8	12	-4	0.03950	51	63	-11	0.29740	76	75	1	0.94121
Rivers	58	30	8	8	0	0.97375	56	63	-7	0.57953	67	63	4	0.70458
South West														
Ekiti	59	20	7	8	0	0.81303	70	50	20	0.15489	70	79	-9	0.49297
Ogun	60	20	11	15	-4	0.12093	40	58	-18	0.11581	45	65	-20	0.05908
Ondo	60	30	10	13	-3	0.18310	45	42	3	0.74514	60	60	-1	0.95349
Osun	59	9	9	13	-4	0.18002	55	47	8	0.63168	55	73	-19	0.32545
Oyo	60	29	10	13	-3	0.26213	48	39	9	0.48758	49	39	10	0.45792

Notes:

- a. Estimates are from pooled MICS and NICS survey dataset
b. All proportions are unweighted in the poolability analysis

Annex table 5: MICS / NICS Poolability Analysis, Nigeria Combined MICS/NICS, 2016

	Number of clusters		% HH with respondents 12-23m				Unweighted % 12-23m olds with cards with 1+ dates				Unweighted % of 12-23m olds with evidence of Penta3			
	MICS	NICS	MICS	NICS	Differenc e	Unadjuste d p-value	MICS	NICS	Differenc e	Unadjuste d p-value	MICS	NICS	Differenc e	Unadjuste d p-value
	N	N	%	%	%		%	%	%		%	%	%	
State														
North														
Central														
FCT-														
Abuja	60	20	18	8	10	0.00041	55	44	11	0.22907	62	69	-7	0.48421
Benue	58	20	13	12	1	0.62208	33	37	-4	0.72281	59	45	14	0.19976
Kogi	59	30	12	13	-1	0.72722	42	39	4	0.69212	34	40	-6	0.52371
Kwara	58	20	10	10	0	0.88689	12	39	-28	0.00293	50	42	8	0.59002
Plateau	58	29	17	17	0	0.92240	29	34	-5	0.55719	44	36	7	0.45637
South East														
Abia	60	30	11	10	0	0.81107	39	42	-2	0.77211	43	67	-23	0.03452
Anambra	60	19	10	10	0	0.83346	41	57	-15	0.19746	72	87	-15	0.18802
Enugu	59	20	9	10	0	0.92874	49	45	4	0.75658	62	77	-16	0.18846
Imo	59	29	11	7	4	0.02196	45	52	-7	0.50876	67	63	4	0.71128
South South														
Akwa														
Ibom	60	20	14	10	4	0.13376	46	31	15	0.16347	68	62	6	0.56117
Bayelsa	59	20	12	13	-1	0.72561	36	33	3	0.77762	42	45	-4	0.73774
Cross														
River	58	19	11	11	0	0.86140	55	50	5	0.67084	65	65	-1	0.95652
Delta	58	19	13	11	2	0.41423	54	32	22	0.07994	53	52	1	0.92309
Edo	60	30	8	12	-4	0.03950	51	63	-11	0.29740	76	75	1	0.94121
Rivers	58	30	8	8	0	0.97375	56	63	-7	0.57953	67	63	4	0.70458
South West														
Ekiti	59	20	7	8	0	0.81303	70	50	20	0.15489	70	79	-9	0.49297
Ogun	60	20	11	15	-4	0.12093	40	58	-18	0.11581	45	65	-20	0.05908
Ondo	60	30	10	13	-3	0.18310	45	42	3	0.74514	60	60	-1	0.95349
Osun	59	9	9	13	-4	0.18002	55	47	8	0.63168	55	73	-19	0.32545
Oyo	60	29	10	13	-3	0.26213	48	39	9	0.48758	49	39	10	0.45792

Notes:

a. Estimates are from pooled MICS and NICS survey datasets

b. All proportions are unweighted in the poolability analysis

Annex table 6: Holm-Bonferroni Adjustment for MICS / NICS Poolability Analysis, Nigeria Combined MICS/NICS, 2016

P-value rank	State	Which Test?	Unadjusted p-value	Holm-Bonferroni Multiplier	Adjusted p-value	Difference significant? (Adjusted p-value \leq 0.01?)
1	FCT-Abuja	Child	0.00041	60	0.02472	No
2	Kwara	Card	0.00293	59	0.17311	No
3	Imo	Child	0.02196	58	\geq 1.0	No
4	Abia	Penta3	0.03452	57	\geq 1.0	No
5	Edo	Child	0.03950	56	\geq 1.0	No
6	Ogun	Penta3	0.05908	55	\geq 1.0	No
7	Delta	Card	0.07994	54	\geq 1.0	No
8	Ogun	Card	0.11581	53	\geq 1.0	No
9	Ogun	Child	0.12093	52	\geq 1.0	No
10	Akwa Ibom	Child	0.13376	51	\geq 1.0	No
11	Ekiti	Card	0.15489	50	\geq 1.0	No
12	Akwa Ibom	Card	0.16347	49	\geq 1.0	No
13	Osun	Child	0.18002	48	\geq 1.0	No
14	Ondo	Child	0.18310	47	\geq 1.0	No
15	Anambra	Penta3	0.18802	46	\geq 1.0	No
16	Enugu	Penta3	0.18846	45	\geq 1.0	No
17	Anambra	Card	0.19746	44	\geq 1.0	No
18	Benue	Penta3	0.19976	43	\geq 1.0	No
19	FCT-Abuja	Card	0.22907	42	\geq 1.0	No
20	Oyo	Child	0.26213	41	\geq 1.0	No
21	Edo	Card	0.29740	40	\geq 1.0	No
22	Osun	Penta3	0.32545	39	\geq 1.0	No
23	Delta	Child	0.41423	38	\geq 1.0	No
24	Plateau	Penta3	0.45637	37	\geq 1.0	No
25	Oyo	Penta3	0.45792	36	\geq 1.0	No
26	FCT-Abuja	Penta3	0.48421	35	\geq 1.0	No
27	Oyo	Card	0.48758	34	\geq 1.0	No
28	Ekiti	Penta3	0.49297	33	\geq 1.0	No
29	Imo	Card	0.50876	32	\geq 1.0	No
30	Kogi	Penta3	0.52371	31	\geq 1.0	No
31	Plateau	Card	0.55719	30	\geq 1.0	No
32	Akwa Ibom	Penta3	0.56117	29	\geq 1.0	No
33	Rivers	Card	0.57953	28	\geq 1.0	No
34	Kwara	Penta3	0.59002	27	\geq 1.0	No
35	Benue	Child	0.62208	26	\geq 1.0	No
36	Osun	Card	0.63168	25	\geq 1.0	No
37	Cross River	Card	0.67084	24	\geq 1.0	No
38	Kogi	Card	0.69212	23	\geq 1.0	No
39	Rivers	Penta3	0.70458	22	\geq 1.0	No
40	Imo	Penta3	0.71128	21	\geq 1.0	No
41	Benue	Card	0.72281	20	\geq 1.0	No
42	Bayelsa	Child	0.72561	19	\geq 1.0	No
43	Kogi	Child	0.72722	18	\geq 1.0	No
44	Bayelsa	Penta3	0.73774	17	\geq 1.0	No
45	Ondo	Card	0.74514	16	\geq 1.0	No
46	Enugu	Card	0.75658	15	\geq 1.0	No
47	Abia	Card	0.77211	14	\geq 1.0	No
48	Bayelsa	Card	0.77762	13	\geq 1.0	No
49	Abia	Child	0.81107	12	\geq 1.0	No
50	Ekiti	Child	0.81303	11	\geq 1.0	No
51	Anambra	Child	0.83346	10	\geq 1.0	No
52	Cross River	Child	0.86140	9	\geq 1.0	No
53	Kwara	Child	0.88689	8	\geq 1.0	No
54	Plateau	Child	0.92240	7	\geq 1.0	No
55	Delta	Penta3	0.92309	6	\geq 1.0	No
56	Enugu	Child	0.92874	5	\geq 1.0	No
57	Edo	Penta3	0.94121	4	\geq 1.0	No
58	Ondo	Penta3	0.95349	3	\geq 1.0	No
59	Cross River	Penta3	0.95652	2	\geq 1.0	No
60	Rivers	Child	0.97375	1	0.97375	No

Notes:

- a. Estimates are from pooled MICS and NICS survey datasets
b. Adjusted p-value = (unadjusted p-value) X (Holm-Bonferroni Multiplier)
c. Adjusted p-values \geq 1.0 are clearly not statistically significant

Appendix C. List of Personnel Involved in the Survey

Statistician-General; National Bureau of Statistics

Dr. Yemi Kale

Project Director

Isiaka Olarewaju - NBS

Project Coordinators

Adeniran S, Adeyemi - NBS

Dr. Eric Nwaze - NPHCDA

Dr. Urua UtibeAbasi - NPHCDA

WHO

Dr. John Wagai, NICS Consultant

Dr. Rachel Seruyange

Dr. Daniel Ali

UNICEF

Denis Businge

Binta Isah-Ismail

Denis Jobin

Adeniyi Olaleye

National Coordinator Sampling

Adebayo Adebisi

Field Services

Kola John Ogundiya

Bolakale Akeem

Victoria Abiola

Nkemakolam Hope Chioma

Data processing and analysis

Biyi Fafunmi

Salihu Isaac

Shamsuddeen Lawal

Dale Rhoda - Biostat Global Consulting

NPHCDA monitoring and training

Abubakar Bala

Analyst Dare Pandey

Aneratu Aliu

Binta Ismail

Chibuzo Ottih

Dr Basse Okpasen

Dr Charles Mamman

Dr Garba Bello Bakunawa

Dr Ismail Salihu

Dr Obasi Samuel

Dr Okpani Arnold

Dr Oteri Joseph
Dr Phyllis Ogo Ogah
Farida Yarew
Farida Yarew
Grace Suulola
Hadeezah Hussayn-Muhammed
Ismail Salihu
Jamila Umar
Joseph Oteri
Julius Nonswo
Kingsley Gaiya
Maimuna Babangida
Maureen Gopep
Mohammed Kabiru
Mr Osongo
Mrs Gopep Maureen
Mrs Ijeoma Onuoha
Mrs Usman Adejoke
Muhammed Dhahiru
Muhammed Idi Hussaini
Nnenna Ihebuzor
Ochepo Sani
Ottih Chibuzor
Susan Michael Olufemi
Tanko Philip

Report writing

Adeniran S, Adeyemi - NBS
Bala Abubakar - NPHCDA
Dr Nwaze Okorie Eric - NPHCDA
Dr. A. B. Garba - NPHCDA
Ebhodaghe Bridget - NBS
Hossana Susan Magaji - NPHCDA
John Wagai - NICS Consultant
Kabir Yusuf - NPHCDA
Mohammed Sabo Adamu - NPHCDA
Nkemakolam Hope Chioma - NBS
Nwakpa Victor Chidiebere - NPHCDA
Ogundiya Kola John - NBS
Okpani Arnold Ikedichi - NPHCDA
Onuoha Ijeoma - NPHCDA
Sani Ochepo - NPHCDA
Shamsuddeen Lawal - NBS
Usman B. Adejoke - NPHCDA

LIST OF FIELD PERSONNEL FOR MICS 2016-17 NIGERIA**SOUTH WEST**

Nemi Okujagu	Coordinator
Kareem B. Akeem	Lead Trainer
Abiola Arosanyin	Trainer
Olatunbosun Olutundun M.	Trainer
Akinbusoye Caroline	Trainer
Umunna N. Christiana	Trainer
Akhidenor Lawrence O.	Trainer
Mercy E Mosugu	Technical Rapporteur
Akindele Akinyemi	CAPI manager
Kareem Sikirulahi Tolani	CAPI manager
Babalola E. Ayodele	WQT Expert
Osude Olanrewaju	WQT Expert

SOUTH SOUTH

Fafunmi Elisha A.	Coordinator
Omole Mathew F.	Lead Trainer
Salihu S. Itopa	Trainer
Imeh Udoabah	Trainer
Origbo Clinton	Trainer
Bridget Ebhodaghe	Trainer
Felicia A. Obamedo	Trainer
Ajadi Abosede Bamidele	Technical Rapporteur
Olawale W. George	CAPI MANAGER
Egweni Uzoezi	CAPI MANAGER
Eneh Ogochukwu	WQT Expert
Isaacs O. Olufunke	WQT Expert

SOUTH EAST

Eweama Patricia. M	Coordinator
Ajibade Talabi Olatunji	Lead Trainer
Esho Olusegun	Trainer
Ejuma Rachael Akpa	Trainer
Udeh Surely	Trainer
Nkemakolam Hope Chioma	Trainer
Aroniyo Ajoke M.	Trainer
Oche Alice	Technical Rapporteur
Dio Emmanuel Asemayohol	CAPI MANAGER
Oriokpa Ijeoma V	CAPI MANAGER
Onen Sunday Dennis	WQT Expert
Kunehepon Peter W	WQT Expert

NORTH WEST

Samanja B. Maudo	Coordinator
Ogundiya Kola John	Lead Trainer
Kanu Christiana Ngozi	Trainer
Aimola Oluwanikemi Olusoji	Trainer

Shamsuddeen Lawal	Trainer
Simon Appolonia	Trainer
Lateef Olasunkanmi	Trainer
Oluyomi Samuel Olanrewaju	Technical Rapoteur
Omoniyi Ronke	CAPI MANAGER
Bakare Saheed	CAPI MANAGER
Amina Musa	WQT Expert
Samuel Daniel Laumu	WQT Expert
NORTH EAST	
Harry Simon B.	Coordinator
Ameh Godwin Ejeh	Lead Trainer
Oladokun Taiwo	Trainer
Agada Nnenna	Trainer
Ekele Azubike	Trainer
Ezekiel C. Bala	Trainer
Elutade Akinloye A.	Trainer
Ihemebiri Calistus	Technical Rapporteur
Samuel Adakole Augustine	CAPI MANAGER
Kibba Daniel Musa	CAPI MANAGER
Ishak Danasabe Isah	WQT Expert
Abdullahi Abubakar Sule	WQT Expert
NORTH CENTRAL	
Adebisi Adebayo Tunde	Coordinator
Olise Ofili Patrick	Lead Trainer
Ejah Moses Ode	Trainer
Uzoaga Glory A.	Trainer
Mbamo Peter E.	Trainer
Akor Geoffrey	Trainer
Solademi Abigail Abosede	Trainer
Awogbade Ezekiel	Technical Rapoteur
Ogidan Lucky Ayokunle	CAPI MANAGER
Rasheed Nasir Bukola	CAPI MANAGER
Abdulkadir Halimat J.	WQT Expert
Yusuf Salamatu	WQT Expert

NORTH CENTRAL**BENUE**

Yamekaa Simon Terlumun	M	State Officer
Terlumun Msughter Damian	M	Supervisor
Usombu Chris	M	Supervisor
Ogbenjuwa Rose	F	Measurer
Ameh Theresa	F	Measurer
Bulya Tivlumun J	M	Interviewer
Ladi Michael	F	Interviewer
Imoh Regina Ngongee	F	Interviewer
Olarewaju Jennifer	F	Interviewer

Oligo Chidi	M	Interviewer
Ann Ene Adikwu	F	Interviewer
Stella Akor	F	Interviewer
Ikye Dodo Victoria	F	Interviewer

FCT

Rakiya Onize Mohammed	F	State Officer
Omoifo Betty Wright	F	Supervisor
Ogundele K. Hannah	F	Supervisor
Okocha Nkem	F	Measurer
Achineke Precious O.	F	Measurer
Utuh Loveth Eloyi	F	Interviewer
Imevboreh Richard	M	Interviewer
Abioye Joshua O.	M	Interviewer
Momodou Rabiat K.	F	Interviewer
Ajimoti Rofiat M.	F	Interviewer
Orimiyeye Ruth Abiodun	F	Interviewer
Kakwagh Mnena Naomi	F	Interviewer
Daniel Kyauta Kate	F	Interviewer

KOGI

Jubelo Ayinke O.	F	State Officer
Ahmed Elizabeth Adeoro	F	Supervisor
Matthew Ojone	F	Supervisor
Adebayo Ife	F	Measurer
Adejo Roseline	F	Measurer
Yusufu Enyo-One Adija	F	Interviewer
Ibrahim Kantum	F	Interviewer
Jubelo Favour	F	Interviewer
Agbawn Mary	F	Interviewer
Seweje Yemisi Eunice	F	Interviewer
Ikawi Attah Godwin	M	Interviewer
Owolabi Comfort F.	F	Interviewer
Egah Samson Ojodomo	M	Interviewer

KWARA

Halilu Musa	M	State Officer
Williams Funmilola Elizabeth	F	Supervisor
Olaitan Fatai	M	Supervisor
Oyewale Oluwafunmike T.	F	Measurer
Akinade Suliyat Opeyemi	F	Measurer
Ogunkunle Gloria O.	F	Interviewer
Sanni Rukayat O.	F	Interviewer
Yemisi Amos	F	Interviewer
Adi Oluwatoyin M.	M	Interviewer
Kolawole Abigael F.	F	Interviewer
Oyedele Rebecca A.	F	Interviewer
Ayo Joshua	M	Interviewer
Lawal Tolulope Moyinoluwa	F	Interviewer

NASARAWA

Akor Samson Sunday	M	State Officer
Ekpenyong Iboru David	F	Supervisor

Siyaka Itopa	M	Supervisor
Yakubu Izzatu Akwe	F	Measurer
Mariam Peter	F	Measurer
Danjuma Bulus Lami	F	Interviewer
Kambasaya Ruth Samaila	F	Interviewer
Jacob Favour F. Amos	F	Interviewer
Ruth Garinwani	F	Interviewer
Babade Lolade	F	Interviewer
Aranilu E. Oloruntoba	M	Interviewer
Hassana Haruwa	F	Interviewer
Ibrahim Yusuf Alhassan	M	Interviewer

NIGER

Ejeh Zakari S.	M	State Officer
Ogunkunle Kayode G.	M	Supervisor
Maxwell Gambo	M	Supervisor
Olayemi E. Tobi	F	Measurer
Adenike Oyeniran	F	Measurer
Ajayi Taiwo Eunice	F	Interviewer
Ada Emmanuel	F	Interviewer
Mosadomi Bukola	F	Interviewer
Ajiboye O. Oluwatosin	F	Interviewer
Ojo Mayowa Tokunbo	M	Interviewer
Paulina Kasimi	F	Interviewer
Talatu Salihu	F	Interviewer
Ibrahim Mustapha Wakili	M	Interviewer

Plateau

Wakili Ibrahim N.	M	Zonal Controller
Danladi S. Adzento	M	State Officer
Onwuzulumba Livinus	M	Supervisor
Joseph Juwer	M	Supervisor
Jessica Kagher	F	Measurer
Mary Aniya	F	Measurer
Hannah Abeka	F	Interviewer
Abdulmalik Farouk	M	Interviewer
Yaksat Nanbam Bulus	F	Interviewer
Esther Dung Botson	F	Interviewer
Amboson Dorothy J.L.	F	Interviewer
Mercy Donatus	F	Interviewer
Temitope Lamidi	F	Interviewer
Janet Adewumi Adetutu	F	Interviewer

NORTH EAST**ADAMAWA**

John B Dawala	M	State Officer
Blessing Yaro	F	Supervisor
Augustine Elizabeth. K	F	Supervisor
Kefas Sarah	F	Measurer
Obida Piyana Yakubu	F	Measurer
Yaduma. B. Elva	F	Interviewer
Umar. H. Jada	M	Interviewer

Mohammed. U. Babaji	M	Interviewer
Janet John	F	Interviewer
Rahab Anthony	F	Interviewer
Maryam Mohammed	F	Interviewer
Rosemary Danladi	F	Interviewer
Halima Abubakar	F	Interviewer

BAUCHI

Martina J Saleh	F	State Officer
Yusuf Arkila Isty	M	Supervisor
Eunice Joel	F	Supervisor
Talatu Jonathan	F	Measurer
Felicia Ezekiel. D	F	Measurer
Usman Magaji	M	Interviewer
Sulismaya Rose	F	Interviewer
Talatu Abel	F	Interviewer
Simnom Fudack	F	Interviewer
Saleh Hauwa. Y.	F	Interviewer
Fatsuma Garba	F	Interviewer
Habiba Yusuf Jalingo	F	Interviewer
Abdul Salihu Isah	M	Interviewer

BORNO

James Abawu	M	State Officer
Ladi James	F	Supervisor
Rahila James Zoaka	F	Supervisor
Fatima Alkali	F	Measurer
Bintu Kwajaffa	F	Measurer
Rebecca Ishaku	F	Interviewer
Aisha Musa Bala	F	Interviewer
Yagana Babagoni	F	Interviewer
Prisca Pius Apagu	F	Interviewer
Ngwasal Dauda	F	Interviewer
Rahab Samuel	F	Interviewer
Maina J Gadzama	M	Interviewer
Abdumumini Ajiya	M	Interviewer

GOMBE

Muhammed Musa	M	Zonal Controller
Lawal Wabida Mary	F	State Officer
Tarpaya Jadi Lassa	M	Supervisor
Lenus Abner Wabida	M	Supervisor
Ramatu Philemon J.	F	Measurer
Rasheeda Nuhu	F	Measurer
Sule Uloko	M	Interviewer
Alisabatu A Fanusi	F	Interviewer
Binta Wabida	F	Interviewer
Piyadi Richard	F	Interviewer
Gidado Hauwa	F	Interviewer
Nafisa Dagaban Ali	F	Interviewer
Talatu Simon	F	Interviewer
Bridget Bakar	F	Interviewer

TARABA

Abdullahi Ibrahim	M	State Officer
Ikoti. G. Abishag	F	Supervisor
Jesse. I. Charity	F	Supervisor
Yakubu Felicia	F	Measurer
Bulus Japari	F	Measurer
Shaakaa M. Charity	F	Interviewer
Tanko Ibrahim	M	Interviewer
Lydia Dulla	F	Interviewer
Hassan Cassandra	F	Interviewer
Pius Taiku Rejoice	F	Interviewer
Adamu Tasiu	M	Interviewer
Jitap. Charity	F	Interviewer
Gayus Regina. A	F	Interviewer

YOBE

Musa D. Yusuf	M	State Officer
Ladi Abdullahi	F	Supervisor
Amina Ali	F	Supervisor
Alice Musa	F	Measurer
Musa Ruth	F	Measurer
Abatcha Aliyu	M	Interviewer
Hauwa Kaku Amshi	F	Interviewer
Victoria Nicodemus	F	Interviewer
Binta Sani Ahmed	F	Interviewer
Usman Musa Baran-lya	M	Interviewer
Hajara Modu Mbusube	F	Interviewer
Shehram Umar	F	Interviewer
Aisha Barma Kachalla	F	Interviewer

NORTH WEST**JIGAWA**

Abdul N. Danliman	M	State Officer
Ibrahim Danjuma Roni	M	Supervisor
Patricia Julius Bitiyong	F	Supervisor
Fatima Hamza	F	Measurer
Olatunde Olapeju	F	Measurer
Olarinde B. Catherne	F	Interviewer
Aishatu Dahiru Musa	F	Interviewer
Elsie Njeb Lawrence	F	Interviewer
Hauwa Aliyu Badala	F	Interviewer
Musa Suleiman	M	Interviewer
Cecilia Kwaghker	F	Interviewer
Fatima Iyami Idris	F	Interviewer
Hamza Abdullahi Nuhu	M	Interviewer

KADUNA

Ishaku Zom Maigida	M	Zonal Controller
Makoshi Bonat Joshua	M	State Officer
Waidi Ademola	M	Supervisor
Rose Tembe	F	Supervisor
Isaac Janet	F	Measurer
Christiana Bonat	M	Measurer
Abubakar Sadiq	M	Interviewer
Esther Andrem	F	Interviewer
Deborah David Amboson	F	Interviewer
Marylous Ado	F	Interviewer
Rahman Taibat	F	Interviewer
Sadiq Dauda Mandara	M	Interviewer
Jackson Elizabeth Rizga	F	Interviewer
Amina Maigida	F	Interviewer

KANO

Ayuba S. Ayuba	M	State Officer
Umar F. Mohammad	M	D KSBS
Abba Mustapha Dabatta	M	D KSBS
Ali Sani Fane	M	SG KSBS
Victoria Baita	F	Supervisor
Abubakar Jubril	M	Supervisor
Kubura Abdulkarim	F	Supervisor
Aisha Adamu	F	Supervisor
Rakiya Ahmed Daneji	F	Measurer
Safiyya Ahmed Moh'D	F	Measurer
Baraatu Zuberu	F	Measurer
Nana Hauwa Sule	F	Measurer
Habiba Umar Ismail	F	Interviewer
Maryam Umar Nuhu	F	Interviewer
Aisha Kabir Abdulaziz	F	Interviewer
Bilkis Odeyemi	F	Interviewer
Aisha Mustapha Hassan	F	Interviewer
Khadija Aliyu Abubakar	F	Interviewer
Sumayyah Aliyu Yahya	F	Interviewer
Rukayya Yakubu Ahmed	F	Interviewer
Eunice Abel	F	Interviewer
Anas Tukur Usman	M	Interviewer
Faizah Isah Sulaiman	F	Interviewer
Abubakar Saleem	M	Interviewer
Grace Kamain	F	Interviewer
Suleiman Suleiman Muh'D	M	Interviewer
Iyabo Rahinat Abdulganiyu	F	Interviewer
Emmanuel Umolo	M	Interviewer

KATSINA

Abdullahi Dahiru	M	State Officer
Suleman Yusuf	M	Supervisor
Hadizam Ochgbo	F	Supervisor

Josephine James	F	Measurer
Mani Fatima Rabe	F	Measurer
Zainab Sulaiman	F	Interviewer
Jummai `Suleiman	F	Interviewer
Hauwa Dahiru	F	Interviewer
Ummah Abdullahi	F	Interviewer
Hauwa Mati	F	Interviewer
Jummai Sani	F	Interviewer
Muhammad Aminu Mustapha	M	Interviewer
Ibrahim Yusuf Umar	M	Interviewer

KEBBI

Saidu Saleh	M	State Officer
Aliyu Abubakar	M	Supervisor
Balkisu Ibrahim Ahmed	F	Supervisor
Eunice G. Magari	F	Measurer
Aishatu Ibrahim Aliyu	F	Measurer
Zainab Saleh	F	Interviewer
Halima Musa Bazza	F	Interviewer
Usman Moh`D Altine	M	Interviewer
Binta Musa Aliyu	F	Interviewer
Aisha Hassan	F	Interviewer
Tijjani Alhassan.T	M	Interviewer
Habiba Adamu N.	F	Interviewer
Zaharadeen Inuwa	M	Interviewer

SOKOTO

Shehu Tambari	M	State Officer
Ahmad Dada Manga	F	Supervisor
Theresa Danjumma	F	Supervisor
Ojoawo Halima Oluwatoyin	F	Measurer
Mansurah Hamza	F	Measurer
Aisha Musa	F	Interviewer
Hannatu.A.Momoh	F	Interviewer
Zainab Abdullahi Ankah	F	Interviewer
Habiba Abdullahi	F	Interviewer
Suwaiba Inuwa	F	Interviewer
Samaila Muhammed	M	Interviewer
Mustapha Umar	M	Interviewer
Habiba Ahmed	F	Interviewer

ZAMFARA

Hassan Haruna	M	State Officer
Garba Inuwa	M	Supervisor
Muh'D Z. Ibrahim	M	Supervisor
Aisha Shuaibu	F	Measurer
Fatima Muazu	F	Measurer
Larai H. Tanko	F	Interviewer
Raymond Yohanna	M	Interviewer
Dayyiba Isah Adamu	F	Interviewer
Hafsat Tunau	F	Interviewer

Maryam Muhammed	F	Interviewer
Joshua Mariha Adamu	F	Interviewer
Bannabas Charity	F	Interviewer
Jameel Usman Muhammad	M	Interviewer

SOUTH EAST**ABIA**

Onwughalu Ngozi H.	F	State Officer
Isaac Precious Chika	F	Supervisor
Ndukwe Ifeanyi	F	Supervisor
Nnadede Christy C.	F	Measurer
Erondu Chinwe	F	Measurer
Onwughalu Ebube	F	Interviewer
Okoli Victoria	F	Interviewer
Uduma Chinyere U.	F	Interviewer
Madubuko Ijuolachi	F	Interviewer
John Taye	F	Interviewer
Chinyere Anuri	F	Interviewer
Chukwuka Paschal O.	F	Interviewer
Kalu Chukwuemeka	M	Interviewer

ANAMBRA

Okafor Maryrose N.	F	State Officer
Omeje Ifeoma E.	F	Supervisor
Edith O. Nwankwo	F	Supervisor
Ifeyinwa Ogechukwu	F	Measurer
Oragwam Onyinye	F	Measurer
Okafor Judith Chizoba	F	Interviewer
Mary Chizitere Eweama	F	Interviewer
Okonkwo Ifeyinwa	F	Interviewer
Ibebuike Chinenye Jecinta	F	Interviewer
Izuchukwu Julita	F	Interviewer
Enekwenchi Peace	F	Interviewer
Ajao Kayode	M	Interviewer
Ejike Hyginus N.	M	Interviewer

EBONYI

Onyekachi F. C.	M	State Officer
Okoh Kate U.	F	Supervisor
Onyekachi Dorathy N.	F	Supervisor
Sarah Uche E.	F	Measurer
Agness Mathew	F	Measurer
Ozioma Ejimaonu	F	Interviewer
Odiakpa Lovett	F	Interviewer
Ogbuzuru Maria N.	F	Interviewer
Jane Ajogbor N.	F	Interviewer
Asogwa Dorathy N	F	Interviewer
Nwahiri Modesta	F	Interviewer
Ekuma Ignatus Ogbonnia	M	Interviewer
Innocent Nduka Ike	M	Interviewer

ENUGU

Efidi Edwin. C.	M	Zonal Controller
-----------------	---	------------------

Umeh Reuben U.	M	State Officer
Ugoh Maureen C.	F	Supervisor
Nwobodo A. Nwakaego	F	Supervisor
Ojumu Timi Edith	F	Measurer
Chilaka Obiageri	F	Measurer
Patience Ngozi Agu	F	Interviewer
Onwuodionu Maureen	F	Interviewer
Ofor Amarachukwu	F	Interviewer
Uzoamaka Dimgba	F	Interviewer
Onyebuchi Charity	F	Interviewer
Umeh E. Chinyere	F	Interviewer
Anigbo Ikechukwu	M	Interviewer
Ekezie Chinemere Franklin I.	M	Interviewer

IMO

Madu Agatha N.	F	State Officer
Ugwo Sylvia N.	F	Supervisor
Unachukwu Perpetua C.	F	Supervisor
Okoronkwo Oluchi L.	F	Measurer
Madu Vivian C.	F	Measurer
Ohia Cynthia Chinenye	F	Interviewer
Eziefulu Akudo J.	F	Interviewer
Ekezie Patience C.	F	Interviewer
Onuoha Love C.	F	Interviewer
Nwokoro Beatrice C.	F	Interviewer
Uneze Juliana C.	F	Interviewer
Sunday Frank O.	M	Interviewer
Olisa Onochie Stephen	M	Interviewer

SOUTH SOUTH**AKWA IBOM**

Itat Ifiok Young	M	State Officer
Udo Moses Thomas	M	Supervisor
Umoh Ime Etim	F	Supervisor
Lalemi Mary Oluwatosin	F	Measurer
Mmeyene Ifiok Itat	F	Measurer
Job Emmah Archibong	F	Interviewer
Umoh Eno Ndarake	F	Interviewer
Eyoh Grace Bassey	F	Interviewer
Umoh Ukeme Etim	F	Interviewer
Udoabah Eunice	F	Interviewer
Imaobong Akpan Ekpo	F	Interviewer
Atat Ekpedeme Tim	M	Interviewer
Anietie Archibong	M	Interviewer

BAYELSA

Chukwu N Emmanuel	M	State Officer
Nanakumo T Timi	F	Supervisor
Forcebray Victoria K	F	Supervisor
Nkereuwem N Bassey	F	Interviewer
Braimah Suleiman Oboh	M	Measurer

Obi Charles	M	Measurer
Dienagha Ethel	F	Interviewer
Ibeawuchi Praisejah	F	Interviewer
Nina Menke-Ere S	F	Interviewer
Anioligbo Beatrice	F	Interviewer
Bozin Elizabeth	F	Interviewer
Weimo Ayaokpo	F	Interviewer
Nwofinya Wosu	F	Interviewer

CROSS RIVER

Oboh Ismaila Chicobey	M	Zonal Controller
Oko Patrick Odey	M	State Officer
Odu Glorita Nchong	F	Supervisor
Eniang Effefiong Okon	M	Supervisor
Odey Theresa Patrick	F	Measurer
Okpe Eunice Ibenre	F	Measurer
Benard E Effiong	M	Interviewer
Effiong Andem Okon	M	Interviewer
Ekiko Theresa Monday	F	Interviewer
Etuk Maeyen E	F	Interviewer
Henshaw Atim Okon	F	Interviewer
Ogar Anita Ntima	F	Interviewer
Agbor Martha	F	Interviewer
James Akedoh James	F	Interviewer

DELTA

Agbebaku Sunday	M	State Officer
Akpojaro E. Uyoyou	F	Supervisor
Emordi Judith N	F	Supervisor
Aziwe Obianuju Gloria	F	Measurer
Osadebe Ahthonia	F	Measurer
Okwonkwo R. Ngozi	F	Interviewer
Ejumedina E. Evelyn	F	Interviewer
Esimagboko Oghenegweke	M	Interviewer
Adigwe C. Juliet	F	Interviewer
Omili Furstina	F	Interviewer
Imafidon Omuekpen Grace	F	Interviewer
Agbache Velvet	F	Interviewer
Bello Adeyinka	M	Interviewer

EDO

Obaide Frank Ohikhena	M	State Officer
Robert Helen	F	Supervisor
Mercy Okugbe A	F	Supervisor
Atogbo Felicia O	F	Measurer
Adesotu Ann Adesuwa	F	Measurer
Origbo Onoriode	M	Interviewer
Osakwua Ruth	F	Interviewer
Ebhodaghe Clara	F	Interviewer
Maureen O. Okukulabe	F	Interviewer
Olanegan Temitope	M	Interviewer
Jegede Oluwatoyin Jeninifer	F	Interviewer

Idunoba Marian	F	Interviewer
Gimba Fatima Onatana	F	Interviewer

RIVERS

Onwubiko Emmanuel	M	State Officer
IBOYI ITIVE JOYCE	F	Supervisor
Nkechinyere Omodu	F	Supervisor
Ogu Faith Iworima	F	Measurer
Abu Penuel Osemudiamhe	F	Measurer
Jumbo Rhoda	F	Interviewer
Eli Queen Ngozi	F	Interviewer
Emenogu Pauline	F	Interviewer
Onyia Anthonia O	F	Interviewer
Somba Stella Nyema	F	Interviewer
Nwaboku Ikechuwu	M	Interviewer
Daniels Blessing	F	Interviewer
Wonah Sylvester Odeh	F	Interviewer

SOUTH WEST**EKITI**

Otunuga O. Adebayo	M	State Officer
Olagbemi Bosede T	F	Supervisor
Omotola Eunice F.	F	Supervisor
Ogidan Abisola Christanah	F	Measurer
Babalola Bukola Mercy	F	Measurer
Obafemi Felicia F	F	Interviewer
Faleye Oluwatomilola	F	Interviewer
Adetayo Funmilola E.	F	Interviewer
Aladeloye Oluwaseyi	F	Interviewer
Modupe Adebayo	F	Interviewer
Lisemo Olusola Oriyomi	M	Interviewer
Mojibola Sakirat O.	F	Interviewer
ORIMOLOYE OLAWALE O.	F	Interviewer

LAGOS

Phillip Samuel Ademola	M	State Officer
Lawal Rasheed Olusegun	M	SSA
Olowu Peter Kehinde	M	SSA
Bakare Yekeen A.	M	SSA
Idowu D. Oluayinka	F	Supervisor
Omokehinde Oluyemi E.	F	Supervisor
Fajingbesi Olatunbosun Olaitan	M	Supervisor
Dike Martin	M	Supervisor
Bamidele-Alao Aramide	F	Interviewer
Hassan Amirat Oriyomi	F	Interviewer
Ogundeyi Adekemi Adeola	F	Interviewer
Oyeneye Oluronke I.	F	Interviewer
Abudu Mulikat A.	F	Interviewer
Adeyemo Titilola	F	Interviewer
Ayodele Mosunmola Abisola	F	Interviewer
Ayeni Opeyemi Aina	F	Interviewer
Umah Taiwo	F	Interviewer

Olateju Simisola M.	F	Interviewer
Akinbusoye Tolulope R.	M	Interviewer
Ifedapo Awoyele D	F	Interviewer
Odeyemi Olufunmilayo Aderonke	F	Interviewer
Okonji Oluyemisi Olusola	F	Interviewer
Biliqis Y. Mustapha	F	Interviewer
Mojeed Kehinde	M	Interviewer
Lawal Farouk O.	M	Interviewer
Kudevi David F.	M	Interviewer
Emiowei Vivian C	F	Interviewer
Adeniran Barakat	F	Interviewer

OGUN

Osemene Augusta	F	State Officer
Awodokun Comfort Bisi	F	Supervisor
Akinola Olubunmi Omolara	F	Supervisor
Lasisi Motunrayo R	F	Measurer
Michael Stella Naomi	F	Measurer
Maliki Symbiat Mary	F	Interviewer
Akingbesote J. Aderonke	F	Interviewer
Olusesi Oluremi Khadijat	F	Interviewer
Paul Ibukunoluwa Abayomi	M	Interviewer
Jafar Bilikis Ayannike	F	Interviewer
Olukoga Funmiola Christiah	F	Interviewer
Adepeju Oderanti	F	Interviewer
Odunlami Ayodeji O.	F	Interviewer

ONDO

Olowoyeye Gbenga M	M	State Officer
Owolewa Nike	F	Supervisor
Ali Waheed Abiodun	M	Supervisor
Arowomo Idowu	F	Measurer
Ogundairo Folasade	F	Interviewer
Abiodu Cecilia	F	Interviewer
Nenuwa Oluwatosin Morayo	F	Interviewer
Adenawoola Mercy	F	Interviewer
Funmilola Adewoye	M	Interviewer
Aderibigbe Abeebe Adetunji	M	Interviewer
Oladeji Kehinde Oreoluwa	F	Measurer
Daramola Omolara	F	Interviewer
Ayomide Kolade	F	Interviewer
Adejumo Kehinde Onaolapo	F	REPLACEMENT

OSUN

Olujimi Risikat Odeseje	M	State Officer
Moriliat A. Adewoye	F	Supervisor
Kareem Tajudeen	M	Interviewer
Olubiyi olaitan Olaide	F	Interviewer
Agbowuro Wuraola oladunni	F	Supervisor
Ajibola Imoleayomide Mercy	F	Interviewer
Adeyanju Adeola Mercy	F	Interviewer
Oyegbile Victoria Wumi	F	Interviewer

Adewoye Omolade Yewande	F	Interviewer
Olarewaju Abolaji Benjamin	M	Interviewer
Oladele Temitope Esther	F	Interviewer
Olarewaju Elizabeth	F	Interviewer
Solademi Opeyemi Comfort	F	Interviewer

OYO

Odunlami Ebenezer Oluwanbe	M	Zonal Controller
Olugbode Morufu Adeoye	M	State Officer
Adejumo Elizabeth Temilade	F	Supervisor
Onawale Mojisola .O.	F	Supervisor
Osidele Adesola	F	Interviewer
Adeniji Folasade	F	Interviewer
Adeniran Afeez .A.	M	Interviewer
Taiwo Elizabeth .I.	F	Interviewer
Buhari Kemi	F	Interviewer
Yekeem Nurudeen A.	M	Interviewer
Yusuf Taibat Oyeronke	F	Interviewer
Adigun Abiodun Nohimot	F	Interviewer
Adeniran Shifau Adebukola	F	Interviewer
Olasupo Taiwo Ibidunni	F	Interviewer

Appendix D. Nigeria 2016/17 NICS Questionnaires



NATIONAL PRIMARY HEALTH CARE DEVELOPMENT AGENCY *National Immunisation Coverage Survey (NICS), Nigeria 2016*

HOUSEHOLD INFORMATION PANEL		HH
HOUSE HOLD GPS LOCATION:	DEGREES	DECIMAL DEGREES
HGP1. LATITUDE:	___ ___ . ___	___
HGP2. LONGITUDE:	___ ___ . ___	___
HH1. Cluster number: _____	HH2. Household number: _____	
HH3. Interviewer's name and number: Name _____	HH4. Supervisor's name and number: Name _____	
HH5. Day / Month / Year of interview: ___ ___ / ___ ___ / 2016	HH6. AREA: Urban 1 Rural..... 2	
HH7. STATE NAME: _____ CODE _____	HH8A. Name of Head of Household _____ _____ TEL.: _____	
<p>WE ARE FROM NATIONAL BUREAU OF STATISTICS. WE ARE CONDUCTING A SURVEY ABOUT THE SITUATION OF CHILDREN, FAMILIES AND HOUSEHOLDS. I WOULD LIKE TO TALK TO YOU ABOUT THESE SUBJECTS. THE INTERVIEW WILL TAKE ABOUT 45 MINUTES. ALL THE INFORMATION WE OBTAIN WILL REMAIN STRICTLY CONFIDENTIAL AND ANONYMOUS. MAY I START NOW?</p> <p><input type="checkbox"/> Yes, permission is given ⇒ Go to HH18 to record the time and then begin the interview.</p> <p><input type="checkbox"/> No, permission is not given ⇒ Circle 04 in HH9. Discuss this result with your supervisor.</p>		
HH9. Result of interview: Completed 01 No household member or no competent respondent at home at time of visit 02 Entire household absent for extended period of time 03 Refused 04 Dwelling vacant / Address not a dwelling 05 Dwelling destroyed 06 Dwelling not found 07 Other (<i>specify</i>) _____ 96		
<i>After the household questionnaire has been completed, fill in the following information:</i>		
HH10. Respondent to Household Questionnaire: Name _____ Line No. _____		
HH11. Total number of household members: _____		<i>After all questionnaires for the household have been completed, fill in the following information:</i>

HH12. Number of women age 15-49 years: ___ ___	HH15A. Number of children age 12 – 23 months questionnaires completed: ___ ___
HH14A. Number of children under aged 12 – 23 months: ___ ___	

HH18. Record the start time	LIST OF HOUSEHOLD MEMBERS HL
HOUR MINUTES	FIRST, PLEASE TELL ME THE NAME OF EACH PERSON WHO USUALLY LIVES HERE, STARTING WITH THE HEAD OF THE HOUSEHOLD. List the head of the household in line 01. List all household members (HL2), their relationship to the household head (HL3), and their sex (HL4) Then ask: ARE THERE ANY OTHERS WHO LIVE HERE, EVEN IF THEY ARE NOT AT HOME NOW? If yes, complete listing for questions HL2-HL4. Then, ask questions starting with HL5 for each person at a time. Use an additional questionnaire if all rows in the List of Household Members have been used.

							For women age 15-49	For men age 15-49	For children 12 - 23 Months	For children age 0-17 years						For Children age 0-14	
HL1. Line no.	HL2. Name	HL3. WHAT IS THE RELATIONSHIP OF (name) TO THE HEAD OF HOUSEHOLD?	HL4. Is (name) MALE OR FEMALE?	HL5. WHAT IS (name)'S DATE OF BIRTH?		HL6. HOW OLD IS (name)?	HL6A. DID (name) STAY HERE LAST NIGHT?	HL7.	HL7A.	HL7B.	HL11. Is (name)'S NATURAL MOTHER ALIVE?	HL12. DOES (name)'S NATURAL MOTHER LIVE IN THIS HOUSEHOLD?	HL12A. WHERE DOES (name)'S NATURAL MOTHER LIVE?	HL13. Is (name)'S NATURAL FATHER ALIVE?	HL14. DOES (name)'S NATURAL FATHER LIVE IN THIS HOUSEHOLD?	HL14A. WHERE DOES (name)'S NATURAL FATHER LIVE?	HL15. Record line no. of mother from HL12 if indicated. If HL12 is blank or '00' ask: WHO IS THE PRIMARY CAREGIVER OF (NAME)?
			1 Male 2 Female	98 DK	9998 DK	Record in completed years. If age is 95 or above, record '95'.	1 Yes 2 No	Circle line no. if woman age 15-49.	Circle line no. if man age 15-49.	Circle line no. if age 12 - 23 Months.	1 Yes 2 No 8 DK	If "Yes", record line no. of mother and go to HL13. If "No", record 00.	1 In another household in this country 2 Institution in this country 3 Abroad 8 DK	1 Yes 2 No 8 DK	If "Yes", record line no. of father and go to HL15. If "No", record 00.	1 In another household in this country 2 Institution in this country 3 Abroad 8 DK	
Line	Name	Relation*	M F	Month	Year	Age	Y N	15-49	15-49	12 - 23	Y N DK	Mother		Y N DK	Father		Mother
01		01	1 2	___	_____	___	1 2	01	01	01	1 2 8	___	1 2 3 8	1 2 8	___	1 2 3 8	___
02		___	1 2	___	_____	___	1 2	02	02	02	1 2 8	___	1 2 3 8	1 2 8	___	1 2 3 8	___
03		___	1 2	___	_____	___	1 2	03	03	03	1 2 8	___	1 2 3 8	1 2 8	___	1 2 3 8	___
04		___	1 2	___	_____	___	1 2	04	04	04	1 2 8	___	1 2 3 8	1 2 8	___	1 2 3 8	___
05		___	1 2	___	_____	___	1 2	05	05	05	1 2 8	___	1 2 3 8	1 2 8	___	1 2 3 8	___
06		___	1 2	___	_____	___	1 2	06	06	06	1 2 8	___	1 2 3 8	1 2 8	___	1 2 3 8	___
07		___	1 2	___	_____	___	1 2	07	07	07	1 2 8	___	1 2 3 8	1 2 8	___	1 2 3 8	___
08		___	1 2	___	_____	___	1 2	08	08	08	1 2 8	___	1 2 3 8	1 2 8	___	1 2 3 8	___
9		___	1 2	___	_____	___	1 2	10	10	10	1 2 8	___	1 2 3 8	1 2 8	___	1 2 3 8	___
10		___	1 2	___	_____	___	1 2	11	11	11	1 2 8	___	1 2 3 8	1 2 8	___	1 2 3 8	___
11		___	1 2	___	_____	___	1 2	12	12	12	1 2 8	___	1 2 3 8	1 2 8	___	1 2 3 8	___
12		___	1 2	___	_____	___	1 2	13	13	13	1 2 8	___	1 2 3 8	1 2 8	___	1 2 3 8	___

							For women age 15-49	For men age 15-49	For children 12 - 23 Months	For children age 0-17 years						For Children age 0-14	
HL1. Line no.	HL2. Name	HL3. WHAT IS THE RELATIONSHIP OF (name) TO THE HEAD OF HOUSEHOLD?	HL4. IS (name) MALE OR FEMALE? 1 Male 2 Female	HL5. WHAT IS (name)'S DATE OF BIRTH? 98 DK 9998 DK		HL6. HOW OLD IS (name)? <i>Record in completed years. If age is 95 or above, record '95'.</i>	HL6A. DID (name) STAY HERE LAST NIGHT? 1 Yes 2 No	HL7. <i>Circle line no. if woman age 15-49.</i>	HL7A. <i>Circle line no. if man age 15-49.</i>	HL7B. <i>Circle line no. if age 12 - 23 Months.</i>	HL11. IS (name)'S NATURAL MOTHER ALIVE? 1 Yes 2 No ^{HL13} 8 DK ^{HL13}	HL12. DOES (name)'S NATURAL MOTHER LIVE IN THIS HOUSEHOLD? <i>If "Yes", record line no. of mother and go to HL13. If "No", record 00.</i>	HL12A. WHERE DOES (name)'S NATURAL MOTHER LIVE? 1 In another household in this country 2 Institution in this country 3 Abroad 8 DK	HL13. IS (name)'S NATURAL FATHER ALIVE? 1 Yes 2 No ^{HL15} 8 DK ^{HL15}	HL14. DOES (name)'S NATURAL FATHER LIVE IN THIS HOUSEHOLD? <i>If "Yes", record line no. of father and go to HL15. If "No", record 00.</i>	HL14A. WHERE DOES (name)'S NATURAL FATHER LIVE? 1 In another household in this country 2 Institution in this country 3 Abroad 8 DK	HL15. <i>Record line no. of mother from HL12 if indicated. If HL12 is blank or '00' ask:</i> WHO IS THE PRIMARY CAREGIVER OF (NAME)?
13		___	1 2	___	_____	___	1 2	14	14	14	1 2 8	___	1 2 3 8	1 2 8	___	1 2 3 8	___
14		___	1 2	___	_____	___	1 2	15	15	15	1 2 8	___	1 2 3 8	1 2 8	___	1 2 3 8	___

Tick here if additional questionnaire used

Probe for additional household members.
 Probe especially for any infants or small children not listed, and others who may not be members of the family (such as servants, friends) but who usually live in the household.
 Insert names of additional members in the household list and complete form accordingly.
 For each child age 12 – 23 months, write his/her name and line number AND the line number of his/her mother or caretaker in the information panel of a separate NICS 12 – 23 months Questionnaire.
 You should now have a separate questionnaire for each child 12 – 23 months in the household.

* Codes for HL3: Relationship of household:	01 Head 02 Spouse / Partner 03 Son / Daughter	04 Son-In-Law / Daughter-In-Law 05 Grandchild 06 Parent	07 Parent-In-Law 08 Brother / Sister 09 Brother-In-Law / Sister-In-Law	10 Uncle / Aunt 11 Niece / Nephew 12 Other relative	13 Adopted / Foster/ Stepchild 14 Servant (Live-in)	96 Other (Not related) 98 DK
---	---	---	--	---	--	---------------------------------

EDUCATION			ED			
			<i>For household members age 5 and above</i>			
ED1. <i>Line number</i>	ED2. <i>Name and age</i> <i>Copy from HL2 and HL6.</i>	ED3. HAS (<i>name</i>) EVER ATTENDED SCHOOL, PRE-SCHOOL, OR NON-FORMAL EDUCATION? 1 Yes 2 No ↵			ED4A. WHAT IS THE HIGHEST LEVEL OF SCHOOL (<i>name</i>) HAS ATTENDED? Level: 0 Preschool 1 Primary 2 Secondary 3 Higher 4 Non-formal 8 DK	ED4B. WHAT IS THE HIGHEST GRADE (<i>name</i>) COMPLETED AT THIS LEVEL? Grade: See footnote for Grade codes 98 DK
Line	Name	Age	Yes	No	Level	Grade
01		___	1	2	0 1 2 3 4 8	___
02		___	1	2	0 1 2 3 4 8	___
03		___	1	2	0 1 2 3 4 8	___
04		___	1	2	0 1 2 3 4 8	___
05		___	1	2	0 1 2 3 4 8	___
06		___	1	2	0 1 2 3 4 8	___
07		___	1	2	0 1 2 3 4 8	___
08		___	1	2	0 1 2 3 4 8	___
09		___	1	2	0 1 2 3 4 8	___
10		___	1	2	0 1 2 3 4 8	___
11		___	1	2	0 1 2 3 4 8	___
12		___	1	2	0 1 2 3 4 8	___
13		___	1	2	0 1 2 3 4 8	___
14		___	1	2	0 1 2 3 4 8	___
15		___	1	2	0 1 2 3 4 8	___

Codes for Grades in ED4B	
Preschool	
Never completed Nursery 1	00
Nursery 1	01
Nursery 2	02
Nursery 3	03
Primary	
Never completed Primary 1	10
Primary 1	11
Primary 2	12
Primary 3	13
Primary 4	14
Primary 5	15
Primary 6	16
Secondary / or Secondary Technical	
Never Completed JSS 1 (only if ED4B)	20
JSS 1	21
JSS 2	22
JSS 3	23
SS 1 / T1	24
SS 2 / T2	25
SS 3 / T3	26
Higher	
Never completed NCE, AL, OND, Higher Technical HND, BSc. 30	33
Higher Technical/TTC	34
HND	34
NCE	35
BSc	35
AL/OND	36
Post Graduate	36

HOUSEHOLD CHARACTERISTICS		HC
HC1A. WHAT IS THE RELIGION OF THE HEAD OF THIS HOUSEHOLD?	Christianity1 Islam2 Traditional3 Other religion (<i>specify</i>) 6 No religion7	
HC1B. WHAT IS THE MOTHER TONGUE/NATIVE LANGUAGE OF THE HEAD OF THIS HOUSEHOLD?	Language.....__ __ __ Other group (<i>specify</i>)..... 996	
HC1C. TO WHAT ETHNIC GROUP DOES THE HEAD OF THIS HOUSEHOLD BELONG?	Hausa1 Igbo2 Yoruba3 Other ethnic group (<i>specify</i>)..... 996	
HC2. HOW MANY ROOMS IN THIS HOUSEHOLD ARE USED FOR SLEEPING?	Number of rooms.....__ __	
HC3. <i>Main material of the dwelling floor.</i> <i>Record observation.</i>	Natural floor Earth / Sand11 Dung.....12 Rudimentary floor Wood planks21 Palm / Bamboo22 Finished floor Parquet or polished wood.....31 Vinyl tiles36 Vinyl carpet32 Ceramic tiles33 Cement.....34 Rug (wall to wall)35 Other (<i>specify</i>) 96	
HC4. <i>Main material of the roof.</i> <i>Record observation.</i>	Natural roofing No Roof11 Thatch / Palm leaf / Sod12 Rudimentary roofing Rustic mat21 Palm / Bamboo22 Wood planks23 Cardboard / Plastic sheeting24 Finished roofing Metal / Tin / Zinc / Iron sheets31 Wood.....32 Calamine / Cement fibre33 Ceramic tiles34 Cement.....35 Roofing shingles36	

	Other (<i>specify</i>) _____ 96	
<p>HC5. Main material of the exterior walls.</p> <p><i>Record observation.</i></p>	<p>Natural walls</p> <p>No walls.....11</p> <p>Cane / Palm / Trunks / Thatch.....12</p> <p>Dirt / Earth.....13</p> <p>Rudimentary walls</p> <p>Bamboo with mud.....21</p> <p>Stone with mud.....22</p> <p>Uncovered adobe.....23</p> <p>Plywood.....24</p> <p>Cardboard.....25</p> <p>Reused wood.....26</p> <p>Finished walls</p> <p>Cement.....31</p> <p>Stone with lime / cement.....32</p> <p>Bricks.....33</p> <p>Cement blocks.....34</p> <p>Covered adobe.....35</p> <p>Wood planks / shingles.....36</p> <p>Other (<i>specify</i>).....96</p>	
<p>HC6. WHAT TYPE OF FUEL DOES YOUR HOUSEHOLD <u>MAINLY</u> USE FOR COOKING?</p>	<p>Electricity.....01</p> <p>Liquefied Petroleum Gas (LPG).....02</p> <p>Biogas.....04</p> <p>Kerosene.....05</p> <p>Coal / Lignite.....06</p> <p>Charcoal.....07</p> <p>Wood.....08</p> <p>Straw / Shrubs / Grass.....09</p> <p>Animal dung.....10</p> <p>Agricultural crop residue.....11</p> <p>No food cooked in household.....95</p> <p>Other (<i>specify</i>) _____ 96</p>	<p>01⇒HC 8</p> <p>02⇒HC 8</p> <p>04⇒HC 8</p> <p>05⇒HC 8</p> <p>95⇒HC 8</p>
<p>HC7. IS THE COOKING USUALLY DONE IN THE HOUSE, IN A SEPARATE BUILDING, OR OUTDOORS?</p> <p><i>If 'In the house', probe: IS IT DONE IN A SEPARATE ROOM USED AS A KITCHEN?</i></p>	<p>In the house</p> <p>In a separate room used as kitchen..1</p> <p>Elsewhere in the house.....2</p> <p>In a separate building.....3</p> <p>Outdoors.....4</p> <p>Other (<i>specify</i>) _____ 6</p>	

HC8. DOES YOUR HOUSEHOLD HAVE:		Yes	No
[A] ELECTRICITY?	Electricity.....	1	2
[B] A RADIO?	Radio.....	1	2
[C] A TELEVISION?	Television.....	1	2
[D] A NON-MOBILE TELEPHONE?	Non-mobile telephone	1	2
[E] A REFRIGERATOR?	Refrigerator	1	2
[F] A VCR, VCD, DVD?	VCR, VCD, DVD.....	1	2
[G] A SEWING MACHINE?	Sewing machine	1	2
[H] A CLOCK?	Clock.....	1	2
[I] A GENERATOR?	Generator	1	2
[J] A COMPUTER?	Computer	1	2
[K] A WATER HEATER?	Water heater	1	2
[L] A FAN?	Fan.....	1	2
[M] AN AIR CONDITIONER?	Air conditioner.....	1	2
[N] A BLENDER/MIXER/FOOD PROCESSOR?	Blender/mixer/food processor	1	2
[O] A MANUFACTURED BED?	Manufactured bed.....	1	2
[P] A CUSHIONED CHAIR?	Cushioned chair.....	1	2

<p>HC9. DOES ANY MEMBER OF YOUR HOUSEHOLD OWN:</p> <p>[A] A WATCH?</p> <p>[B] A MOBILE TELEPHONE?</p> <p>[C] A BICYCLE?</p> <p>[D] A MOTORCYCLE OR SCOOTER?</p> <p>[E] AN ANIMAL-DRAWN CART?</p> <p>[F] A CAR OR TRUCK?</p> <p>[G] A BOAT WITH A MOTOR?</p> <p>[H] TRICYCLE (KEKE NAPEP)</p>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="width: 10%; text-align: center;">Yes</th> <th style="width: 10%; text-align: center;">No</th> </tr> </thead> <tbody> <tr> <td>Watch.....</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Mobile telephone</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Bicycle.....</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Motorcycle / Scooter</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Animal-drawn cart.....</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Car / Truck</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Boat with motor.....</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Tricycle (Keke Napep)</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>		Yes	No	Watch.....	1	2	Mobile telephone	1	2	Bicycle.....	1	2	Motorcycle / Scooter	1	2	Animal-drawn cart.....	1	2	Car / Truck	1	2	Boat with motor.....	1	2	Tricycle (Keke Napep)	1	2	
	Yes	No																											
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Car / Truck	1	2																											
Boat with motor.....	1	2																											
Tricycle (Keke Napep)	1	2																											
<p>HC10. DO YOU OR SOMEONE LIVING IN THIS HOUSEHOLD OWN THIS DWELLING?</p> <p><i>If “No”, then ask: DO YOU RENT THIS DWELLING FROM SOMEONE NOT LIVING IN THIS HOUSEHOLD?</i></p> <p><i>If “Rented from someone else”, circle “2”.</i></p> <p><i>For other responses, circle “6”.</i></p>	<table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>Own.....</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Rent</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Other (<i>specify</i>) _____</td> <td style="text-align: center;">6</td> </tr> </tbody> </table>	Own.....	1	Rent	2	Other (<i>specify</i>) _____	6																						
Own.....	1																												
Rent	2																												
Other (<i>specify</i>) _____	6																												
<p>HC11. DOES ANY MEMBER OF THIS HOUSEHOLD OWN ANY LAND THAT CAN BE USED FOR AGRICULTURE?</p>	<table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>Yes</td> <td style="text-align: center;">1</td> </tr> <tr> <td>No.....</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>	Yes	1	No.....	2	2⇒HC1 3																							
Yes	1																												
No.....	2																												
<p>HC12. HOW MANY PLOTS, ACRES OR HECTARES OF AGRICULTURAL LAND DO MEMBERS OF THIS HOUSEHOLD OWN?</p> <p><i>If less than 1, record “00”. If 95 or more, record “95”. If unknown, record “98”.</i></p>	<table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>Plots</td> <td style="text-align: center;">___</td> <td style="text-align: center;">___</td> </tr> <tr> <td>Acres</td> <td style="text-align: center;">___</td> <td style="text-align: center;">___</td> </tr> <tr> <td>Hectares.....</td> <td style="text-align: center;">___</td> <td style="text-align: center;">___</td> </tr> </tbody> </table>	Plots	___	___	Acres	___	___	Hectares.....	___	___																			
Plots	___	___																											
Acres	___	___																											
Hectares.....	___	___																											
<p>HC13. DOES THIS HOUSEHOLD OWN ANY LIVESTOCK, HERDS, OTHER FARM ANIMALS, OR POULTRY?</p>	<table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>Yes</td> <td style="text-align: center;">1</td> </tr> <tr> <td>No.....</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>	Yes	1	No.....	2	2⇒HC1 5																							
Yes	1																												
No.....	2																												
<p>HC14. HOW MANY OF THE FOLLOWING ANIMALS DOES THIS HOUSEHOLD HAVE?</p> <p>[A] CATTLE, MILK COWS, OXEN OR BULLS?</p> <p>[B] HORSES, DONKEYS, OR MULES?</p> <p>[C] GOATS?</p> <p>[D] SHEEP?</p> <p>[E] CHICKEN?</p>	<table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>Cattle, milk cows, or bulls.....</td> <td style="text-align: center;">___</td> <td style="text-align: center;">___</td> </tr> <tr> <td>Horses, donkeys, or mules.....</td> <td style="text-align: center;">___</td> <td style="text-align: center;">___</td> </tr> <tr> <td>Goats</td> <td style="text-align: center;">___</td> <td style="text-align: center;">___</td> </tr> <tr> <td>Sheep.....</td> <td style="text-align: center;">___</td> <td style="text-align: center;">___</td> </tr> <tr> <td>Chicken</td> <td style="text-align: center;">___</td> <td style="text-align: center;">___</td> </tr> </tbody> </table>	Cattle, milk cows, or bulls.....	___	___	Horses, donkeys, or mules.....	___	___	Goats	___	___	Sheep.....	___	___	Chicken	___	___													
Cattle, milk cows, or bulls.....	___	___																											
Horses, donkeys, or mules.....	___	___																											
Goats	___	___																											
Sheep.....	___	___																											
Chicken	___	___																											

[F] PIGS?	Pigs..... ____ ____	
[G] CAMELS?	Camels..... ____ ____	
[H] DUCKS?	Ducks..... ____ ____	
[I] PIGS?	____	
[J] QUAIL?	Geese ____ ____	
[K] CULTURED FISH?	Quail ____ ____	

	Cultured fish..... ____ ____	
<i>If none, record "00". If 95 or more, record "95". If unknown, record "98".</i>		
HC15. DOES ANY MEMBER OF THIS HOUSEHOLD HAVE A BANK ACCOUNT?	Yes1 No.....2	

WATER AND SANITATION		WS
WS1. WHAT IS THE <u>MAIN</u> SOURCE OF DRINKING WATER FOR MEMBERS OF YOUR HOUSEHOLD?	Piped water	
	Piped into dwelling.....11	11⇒WS6
	Piped into compound, yard or plot..12	12⇒WS6
	Piped to neighbour.....13	13⇒WS6
	Public tap / standpipe14	14⇒WS3
	Tube Well, Borehole.....21	21⇒WS3
	Dug well	
	Protected well31	31⇒WS3
	Unprotected well32	32⇒WS3
	Water from spring	
	Protected spring.....41	41⇒WS3
	Unprotected spring42	42⇒WS3
	Rainwater collection51	51⇒WS3
	Tanker-truck61	61⇒WS3
	Cart with small tank / drum.....71	71⇒WS3
Surface water (river, stream, dam, lake, pond, canal, irrigation channel)81	81⇒WS3	
Bottled water.....91		
Sachet (pure) water92		
Other (<i>specify</i>) 96	96⇒WS3	

<p>WS2. WHAT IS THE <u>MAIN</u> SOURCE OF WATER USED BY YOUR HOUSEHOLD FOR OTHER PURPOSES SUCH AS COOKING AND HAND WASHING?</p>	<p>Piped water Piped into dwelling.....11 Piped into compound, yard or plot..12 Piped to neighbour.....13 Public tap / standpipe14 Tube Well, Borehole.....21 Dug well Protected well31 Unprotected well32 Water from spring Protected spring.....41 Unprotected spring42 Rainwater collection51 Tanker-truck61 Cart with small tank / drum.....71 Surface water (river, stream, dam, lake, pond, canal, irrigation channel)81 Other (<i>specify</i>) _____ 96</p>	<p>11⇒WS6 12⇒WS6 13⇒WS6</p>
<p>WS3. WHERE IS THAT WATER SOURCE LOCATED?</p>	<p>In own dwelling.....1 In own yard / plot2 Elsewhere3</p>	<p>1⇒WS5A 2⇒WS5A</p>
<p>S4A. HOW LONG DOES IT TAKE TO GO THERE, GET WATER, AND COME BACK?</p>	<p>Number of minutes _ _ _ DK.....998</p>	
<p>WS4B. WHAT IS THE DISTANCE TO THE NEAREST WATER SOURCE?</p>	<p>Less than 100 meters.....1 More than 100 but less than 1 km.....2 More than 1 km but less than 2 km.....3 More than 2 km but less than 4 km.....4 More than 4 km.....5 DK.....8</p>	
<p>WS5. WHO USUALLY GOES TO COLLECT THE WATER FOR YOUR HOUSEHOLD?</p> <p><i>Probe:</i> IS THIS PERSON UNDER AGE 15? WHAT SEX?</p>	<p>Adult woman (age 15+ years)1 Adult man (age 15+ years).....2 Female child (under 15)3 Male child (under 15).....4 DK.....8</p>	
<p>WS5A. IN THE PAST TWO WEEKS, WAS THE WATER FROM THIS SOURCE NOT AVAILABLE FOR AT LEAST ONE FULL DAY?</p>	<p>Yes.....1 No2 DK.....8</p>	

WS6. DO YOU DO ANYTHING TO THE WATER TO MAKE IT SAFER TO DRINK?	Yes.....1 No2 DK.....8	2⇒WS7A 8⇒WS7A
WS7. WHAT DO YOU USUALLY DO TO MAKE THE WATER SAFER TO DRINK? <i>Probe:</i> ANYTHING ELSE? <i>Record all items mentioned.</i>	Boil..... A Add bleach / chlorine/Water guard..... B Strain it through a cloth C Use water filter (ceramic, sand, composite, etc.)..... D Solar disinfection E Let it stand and settle F Add alum..... G Add water tablet/liquid H Other (<i>specify</i>) X DK..... Z	
WS7A. DO YOU USE A DIFFERENT SOURCE OF DRINKING WATER DURING THE DRY AND RAINY SEASONS?	Yes.....1 No2 DK.....8	
WS7B HOW LONG DOES IT TAKE TO GO THERE, GET WATER AND COME BACK? [A] DURING THE RAINY SEASON? [B] DURING THE DRY SEASON?	Number of minutes- rainy season ___ ___ — DK.....998 Number of minutes- dry season....___ ___ — DK.....998	

WS8. WHAT KIND OF TOILET FACILITY DO MEMBERS OF YOUR HOUSEHOLD USUALLY USE? <i>If “flush” or “pour flush”, probe:</i> WHERE DOES IT FLUSH TO? <i>If not possible to determine, ask permission to observe the facility.</i>	Flush / Pour flush Flush to piped sewer system.....11 Flush to septic tank12 Flush to pit (latrine).....13 Flush to somewhere else14 Flush to unknown place / Not sure / DK where15 Pit latrine Ventilated Improved Pit latrine (VIP)21 Pit latrine with slab22 Pit latrine without slab / Open pit .23 Composting toilet31 Bucket41 Hanging toilet, Hanging latrine.....51	95⇒NEXT
--	---	---------

	No facility, Bush, Field95 Other (<i>specify</i>) _____ 96	MODULE
WS9. DO YOU SHARE THIS FACILITY WITH OTHERS WHO ARE NOT MEMBERS OF YOUR HOUSEHOLD?	Yes1 No2	2⇒NEXT MODULE
WS10. DO YOU SHARE THIS FACILITY ONLY WITH MEMBERS OF OTHER HOUSEHOLDS THAT YOU KNOW, OR IS THE FACILITY OPEN TO THE USE OF THE GENERAL PUBLIC?	Other households only (not public)....1 Public facility2	2⇒NEXT MODULE
WS11. HOW MANY HOUSEHOLDS IN TOTAL USE THIS TOILET FACILITY, INCLUDING YOUR OWN HOUSEHOLD?	Number of households (<i>if less than 10</i>). 0 ____ Ten or more households10 DK.....98	

F11. Record the end time.	Hour and minutes ____: ____	
<p>HH20. Thank the respondent for his/her cooperation and check the List of Household Members:</p> <p><input type="checkbox"/> A separate <i>QUESTIONNAIRE FOR CHILDREN 12 – 23 MONTHS</i> has been issued for each child 12 – 23 months in the List of Household Members (HL7B).</p> <p>Return to the cover page and make sure that the result of the household interview (HH9), the name and line number of the respondent to the household questionnaire (HH10), and the number of eligible child 12 – 23 months (HH14) are entered.</p> <p>Make arrangements for the administration of the remaining questionnaire(s) in this household.</p>		

Interviewer's Observations

Supervisor's Observations



NATIONAL PRIMARY HEALTH CARE DEVELOPMENT AGENCY *National Immunisation Coverage Survey (NICS), Nigeria 2016*

CHILDREN 12 – 23 MONTHS INFORMATION PANEL		UF
<p><i>This questionnaire is to be administered to all mothers or caregivers (see List of Household Member) who care for a child that lives with them and is within the age of 12 – 23 months (see List of Household Members).</i></p> <p><i>A separate questionnaire should be used for each eligible child.</i></p>		
UF1. Cluster number: ___ ___ ___ ___	UF2. Household number: ___ ___	
UF3. Child's name Name _____	UF4. Child's line number: ___ ___	
UF5. Mother's/Caregiver's name: Name _____	UF6. Mother's/Caregiver's line number. ___ ___	
UF7. Interviewer's name and number: Name _____	UF8. Day/Month/Year of interview: / / 2016	
<p><i>Repeat greeting if not already read to this respondent:</i></p> <p>WE ARE FROM NATIONAL BUREAU OF STATISTICS. WE ARE CONDUCTING A SURVEY ABOUT THE SITUATION OF CHILDREN, FAMILIES AND HOUSEHOLDS. I WOULD LIKE TO TALK TO YOU ABOUT (<i>child's name from UF3</i>)'s. THE INTERVIEW WILL TAKE ABOUT 30 MINUTES. ALL THE INFORMATION WE OBTAIN WILL REMAIN STRICTLY CONFIDENTIAL AND ANONYMOUS. MAY I START NOW?</p>	<p><i>If greeting at the beginning of the household questionnaire has already been read to this person, then read the following:</i></p> <p>NOW I WOULD LIKE TO TALK TO YOU MORE ABOUT (<i>child's name from UF3</i>)'S HEALTH AND OTHER TOPICS. THIS INTERVIEW WILL TAKE ABOUT 30 MINUTES. AGAIN, ALL THE INFORMATION WE OBTAIN WILL REMAIN STRICTLY CONFIDENTIAL AND ANONYMOUS.</p>	
MAY I START NOW? <input type="checkbox"/> <i>Yes, permission is given ⇒ Go to UF12 to record the time and then begin the interview.</i> <input type="checkbox"/> <i>No, permission is not given ⇒ Circle '03' in UF9. Discuss this result with your supervisor.</i>		
UF9. Result of interview for children 12 – 23 Months Codes refer to mother/caretaker.	Completed01 Not at home02 Refused03 Partly completed04 Incapacitated05 Other (<i>specify</i>)96	
UG10. Field Supervisor's name and number: Name _____ _____		

UF12. Record the start time.

Hour and minutes __: __

AGE OF CHILD		AG
<p>AG1. NOW I WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT THE DEVELOPMENT AND HEALTH OF <i>(name)</i>.</p> <p>ON WHAT DAY, MONTH AND YEAR WAS <i>(name)</i> BORN?</p> <p><i>Probe:</i> WHAT IS HIS/HER BIRTHDAY?</p> <p><i>If the mother/caretaker knows the exact birth date, also enter the day; otherwise, circle 98 for day.</i></p> <p><i>Month and year must be recorded.</i></p>	<p>Date of birth</p> <p>Day __ __</p> <p>DK day..... 98</p> <p>Month __ __</p> <p>Year 201 __</p>	
<p>AG2. HOW OLD IS <i>(name)</i>?</p> <p><i>Probe:</i> HOW OLD WAS <i>(name)</i> AT HIS/HER LAST BIRTHDAY?</p> <p><i>Record age in completed months.</i></p> <p><i>Record '0' if less than 1 month.</i></p> <p><i>Compare and correct AG1 and/or AG2 if inconsistent.</i></p>	<p>Age (in completed months) ____</p> <p><i>If age is < 12 months or ≥ 24 months go to next child, otherwise end interview</i></p>	

BIRTH REGISTRATION		BR
BR1. DOES (name) HAVE A BIRTH CERTIFICATE? <i>If yes, ask:</i> MAY I SEE IT?	Yes, seen 1	1⇒BR3A
	Yes, not seen 2	2⇒BR3A
	No 3	
	DK 8	
BR2. HAS (name)'S BIRTH BEEN REGISTERED?	Yes 1	1⇒BR3A
	No 2	
	DK 8	
BR3. DO YOU KNOW HOW TO REGISTER (name)'S BIRTH?	Yes 1	1⇒BR4
	No 2	2⇒BR4
BR3A. DID YOU REGISTER (name)'S BIRTH WITH THE NATIONAL POPULATION COMMISSION?	Yes 1	1⇒ IM0A
	No 2	
BR3B. WITH WHICH OTHER AUTHORITY WAS (name)'S BIRTH FIRST REGISTERED?	LGA 1	1⇒ IM0A
	Hospital/Private Clinic 2	2⇒ IM0A
	Church/Mosque 3	3⇒ IM0A
	Other (<i>specify</i>) _____ 4	4⇒ IM0A
BR4. WHAT IS THE MAIN REASON WHY (name) BIRTH WAS NOT REGISTERED?	Cost too much 1	
	Must travel too far 2	
	Did not know he/she should be registered 3	
	Did not consider it important 4	
	Does not know where to register 5	
	Other (<i>specify</i>) _____ 6	
	DK 8	

IMMUNISATION		IM
<p><i>If an Immunisation card is available, copy the dates in IM3 for each type of Immunisation and Vitamin A recorded on the card. IM7-IM17 will only be asked if a card is not available.</i></p>		
<p>IM0A. HAS (<i>name</i>) EVER RECEIVED ANY VACCINATIONS TO PREVENT HIM/HER FROM GETTING DISEASES, INCLUDING VACCINATIONS RECEIVED IN A CAMPAIGN OR IMMUNISATION DAY OR CHILD HEALTH DAY?</p> <p><i>If no, probe:</i> DO YOU HAVE, OR DID YOU EVER HAVE, AN IMMUNISATION CARD FOR (<i>name</i>)'S?</p>	<p>Yes 1</p> <p>No 2</p>	<p>2⇒IM22</p>
<p>IM0B. WHERE WAS (<i>name</i>) GIVEN IMMUNISATION?</p> <p><i>Probe:</i> ANY OTHER PLACE?</p> <p><i>Keep asking for more places until the mother/caretaker cannot recall any additional place.</i></p>	<p>Government hospital A</p> <p>Government health centre B</p> <p>Mobile / Outreach clinic by government services C</p> <p>Private facility (including NGO) D</p> <p>Campaigns / Supplementary Immunisation activities E</p> <p>Other (<i>specify</i>) X</p> <p>DK Z</p>	
<p>IM0C. PLEASE TELL ME IF (<i>name</i>) HAS PARTICIPATED IN ANY OF THE FOLLOWING IMMUNISATION CAMPAIGNS:</p> <p>[A] NOVEMBER 2015 CAMPAIGN</p> <p>[B] OCTOBER 2015 CAMPAIGN</p> <p>[C] MARCH 2015 CAMPAIGN</p> <p>[D] FEBRUARY 2015 CAMPAIGN</p>	<p style="text-align: right;">Y N DK</p> <p>Mar 2016 campaign..... 1 2 8</p> <p>Feb 2016 campaign..... 1 2 8</p> <p>Nov 2015 campaign 1 2 8</p> <p>Oct 2015 campaign 1 2 8</p>	
<p>IM1. DO YOU HAVE CARDS WHERE (<i>name</i>)'S VACCINATIONS ARE WRITTEN DOWN?</p> <p><i>If yes: MAY I SEE THE CARD(S) PLEASE?</i></p>	<p>Yes, seen 1</p> <p>Yes, not seen 2</p> <p>No card..... 3</p>	<p>1⇒IM3</p> <p>2⇒IM7</p> <p>3⇒IM7</p>

IM3. (a) Copy dates for each vaccination from the card. (b) Write '44' in day column if card shows that vaccination was given but no date recorded.	Date of Immunisation						
	Day		Month		Year		
HEPB AT BIRTH HEP0							
POLIO AT BIRTH OPV0							
BCG BCG							
POLIO 1 OPV1							
PENTA 1 / DPT 1 PENTA1							
PCV 1 PCV1							
POLIO 2 OPV2							
PENTA 2 / DPT 2 PENTA2							
PCV 2 PCV2							
POLIO 3 OPV3							
PENTA 3 / DPT 3 PENTA3							
PCV 3 PCV3							
IPV IPV							
MEASLES MEASLES							
YELLOW FEVER YF							
VITAMIN A (FIRST DOSE) VIT A1							
VITAMIN A (SECOND DOSE) VIT A2							
<p>IM5. IN ADDITION TO WHAT IS RECORDED ON THIS CARD, DID (<i>name</i>) RECEIVE ANY OTHER VACCINATIONS – INCLUDING VACCINATIONS RECEIVED IN CAMPAIGNS OR IMMUNISATION DAYS OR CHILD HEALTH DAYS?</p> <p><input type="checkbox"/> Yes ⇒ Go back to IM3 and probe for these vaccinations and write '66' in the corresponding day column for each vaccine mentioned. When finished, skip to IM21.</p> <p><input type="checkbox"/> No/DK ⇒ Go to IM21.</p>							
IM7. HAS (<i>name</i>) EVER RECEIVED A BCG VACCINATION AGAINST TUBERCULOSIS – THAT IS, AN INJECTION IN THE LEFT ARM OR SHOULDER THAT USUALLY CAUSES A SCAR?		Yes1		No.....2		DK8	
IM8. HAS (<i>name</i>) EVER RECEIVED ANY VACCINATION DROPS IN THE MOUTH TO PROTECT HIM/HER FROM POLIO?		Yes1		No.....2		DK8	
IM9. WAS THE FIRST POLIO VACCINE RECEIVED IN THE FIRST TWO WEEKS AFTER BIRTH?		Yes1		No.....2		2⇒IM10A 8⇒IM10A	

IM10. HOW MANY TIMES WAS THE POLIO VACCINE RECEIVED?	Number of times	
IM10A. HAS (<i>name</i>) EVER RECEIVED AN IPV VACCINATION – THAT IS, AN INJECTION IN THE RIGHT THIGH TO PROTECT HIM/HER FROM POLIO? <i>Probe by indicating that IPV vaccination is sometimes given at the same time as the 3rd dose of oral Polio.</i>	Yes1 No.....2 DK8	
IM12A. HAS (<i>name</i>) EVER RECEIVED A PENTAVALENT VACCINATION – THAT IS, AN INJECTION IN THE LEFT THIGH TO PREVENT HIM/HER FROM GETTING DIPHTHERIA, PERTUSSIS (WHOOPING COUGH), TETANUS, HEPATITIS B DISEASE, AND HAEMOPHILUS INFLUENZA TYPE B? <i>Probe by indicating that pentavalent vaccination is sometimes given at the same time as oral Polio.</i>	Yes1 No.....2 DK8	2⇒IM14 8⇒IM14
IM12B. HOW MANY TIMES WAS THE PENTAVALENT VACCINE RECEIVED?	Number of times	
IM14. DID (<i>name</i>) RECEIVE A HEPATITIS B VACCINATION – THAT IS AN INJECTION IN THE RIGHT THIGH TO PREVENT HEPATITIS B DISEASE – WITHIN THE FIRST 24 HOURS AFTER BIRTH?	Yes, within 24 hours1 Yes, but not within 24 hours2 No.....3 DK8	
IM15A. HAS (<i>name</i>) EVER RECEIVED A PCV VACCINATION – THAT IS, AN INJECTION IN THE RIGHT THIGH TO PREVENT HIM/HER FROM GETTING PNEUMONIA?	Yes1 No.....2 DK8	2⇒IM16 8⇒IM16
IM15B. HOW MANY TIMES WAS THE PCV VACCINE RECEIVED?	Number of times	
IM16. HAS (<i>name</i>) EVER RECEIVED A MEASLES INJECTION – THAT IS, AN INJECTION IN THE LEFT ARM AT THE AGE OF 9 MONTHS OR OLDER - TO PREVENT HIM/HER FROM GETTING MEASLES?	Yes1 No.....2 DK8	
IM17. HAS (<i>name</i>) EVER RECEIVED THE YELLOW FEVER VACCINATION – THAT IS, AN INJECTION IN THE RIGHT ARM AT THE AGE OF 9 MONTHS OR OLDER - TO PREVENT HIM/HER FROM GETTING YELLOW FEVER? <i>Probe by indicating that the Yellow Fever vaccine is sometimes given at the same time as the measles vaccine.</i>	Yes1 No.....2 DK8	
IM21. <i>If the child has an Immunisation card check IM3, otherwise check IM7to IM17. Are any vaccine doses, from BCG to Yellow fever, missing?</i>		
<input type="checkbox"/> <i>Yes, some vaccines doses are missing ⇒ Continue with IM22.</i> <input type="checkbox"/> <i>No vaccine doses are missing ⇒ Go to IM23.</i>		

<p>IM22. WHAT ARE THE REASONS FOR (name) NOT RECEIVING (ALL OR SOME) VACCINES?</p> <p><i>Probe:</i> ANY OTHER REASON?</p> <p><i>Keep asking for more reasons until the mother/caretaker cannot recall any additional reason. <u>Do not prompt with any suggestions.</u></i></p>	<p>Lack of knowledge or lack of information Thought the child was fully immunized.....A Unaware of need for ImmunisationB Unaware of need to return for 2nd or 3rd doseC Place and / or time of Immunisation unknownD</p> <p>Lack of time or other family issues Postponed until another time.....E Mother / caretaker too busy.....F Family problem, including illness of motherG</p> <p>Mistrust or fears No faith in Immunisation.....H Fear of side reactionsI Myths / RumoursJ Believes there were contraindicationsK</p> <p>Service delivery issues Place of Immunisation too farL Time of Immunisation inconvenient.....M Vaccinator absent.....N Vaccine not availableO Long waiting timeP</p> <p>Illness of the child Child ill – not brought.....Q Child ill – brought but not given ImmunisationR</p> <p>Other (<i>specify</i>) _____ X</p>	
<p>IM23. Check if (name) has a scar on the left arm or shoulder due to BCG vaccine</p>	<p>Has a BCG scar..... 1 Does not have a BCG scar..... 2 Not sure/ could not verify 8</p>	
<p>IMC13. Record the end time.</p>	<p>HOUR AND MINUTES..... : ____</p>	

IMC14. Check list of household members, columns HL7B and HL15

Is the respondent the mother or caretaker of another child age 12 to 23 months living in this household?

Yes ⇒ Go to the next IMMUNISATION Questionnaire to be administered to the same respondent.

No ⇒ End the interview with this respondent by thanking him/her for his/her cooperation

Interviewer's Observations

Supervisor's Observations

NATIONAL IMMUNISATION COVERAGE SURVEY
2016/17 Final Report. July 2017

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