



Benin

Malaria Indicator Trends

Outputs from a DHS Program Workshop on
Data Use



The fifth Demographic and Health Survey in Benin (EDSB-V) was implemented by the *Institut National de la Statistique et de l'Analyse Économique* (INSAE) under the supervision of the *Ministère du Plan et du Développement*, in collaboration with the technical services of the Ministry of Health, the *Programme National de Lutte contre le Paludisme* (PNLP), the *Secrétariat Permanent du Conseil de l'Alimentation et de la Nutrition* (SP-CAN) and the *Laboratoire de Parasitologie du Centre National Hospitalier Universitaire Hubert Koutoukou Maga* (CNHU-HKM). Funding for the EDSB-V was provided by the Government of Benin, the United States Agency for International Development (USAID), the United Nations Children's Fund (UNICEF), the United Nations Population Fund (UNFPA), the *Programme National de Lutte contre le Paludisme* (PNLP) through funding from the Global Fund and the World Bank through the *Projet Multisectoriel de l'Alimentation, de la Santé et de la Nutrition assuré par le Secrétariat Permanent du Conseil de l'Alimentation et de la Nutrition* (PMASN/SP-CAN). ICF provided technical assistance through The DHS Program, a USAID-funded project providing support and technical assistance in the implementation of population and health surveys in countries worldwide.

For information on the EDSB-V 2017-2018, please contact:

L'Institut National de la Statistique et de l'Analyse Economique, 01 BP 323, Cotonou, République du Bénin; telephone: (229) 21-308-244/21-308-245; fax: (229) 2130-8246; email: insae@insae-bj.org; internet: www.insae-bj.org.

For information on The DHS Program, contact:

ICF, 530 Gaither Road, Suite 500, Rockville, MD 20850, USA
telephone: 301-407-6500; fax: 301-407-6501;
e-mail: info@DHSprogram.com; Internet: www.DHSprogram.com.

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TABLE OF CONTENTS

Introduction.....	i
Household Ownership of Insecticide Treated Nets (ITNs).....	2
Ownership of at least 1 ITN.....	2
Ownership of at least 1 ITN for 2 people.....	4
ITN Access and Use among the Population.....	6
ITN access.....	6
ITN use by the population.....	8
ITN Use among Vulnerable Groups.....	10
ITN use among children under five.....	10
ITN use among pregnant women.....	12
Intermittent Preventive Treatment in Pregnancy (IPTp).....	14
Coverage of IPT 1+.....	14
Coverage of IPT 2+.....	16
Coverage of IPT 3+.....	18
Malaria Case Management in Children.....	20
Care-seeking behavior for children with fever.....	20
Diagnostic testing for children with fever.....	22
Use of Artemisinin-based Combination Therapy (ACT).....	24
Prevalence of Anemia and Malaria.....	26
Prevalence of anemia (hemoglobin level < 8.0g/dl).....	26
Prevalence of malaria.....	28
Appendix A: Estimates of sampling errors.....	30

2017-2018 BENIN DEMOGRAPHIC AND HEALTH SURVEY

The 2017-2018 Benin Demographic and Health Survey (EDSB-V) is designed to provide data for monitoring the population and health situation in Benin. The 2017-2018 EDSB-V is the fifth Demographic and Health Survey conducted in Benin since 1996. The EDSB-V provides reliable estimates of demographic and health indicators including fertility, sexual activity, fertility preferences, and knowledge and use of family planning methods. During the survey, data were collected on breastfeeding practices, nutritional status of women and children under five, infant mortality, adult mortality (including maternal mortality) and maternal and child health. The survey also provides information on knowledge, attitudes and behavior regarding HIV/AIDS and sexually transmitted infections (STIs) and the use of mosquito nets to prevent malaria. Tests for anemia, malaria and blood pressure were also conducted during the survey.

A nationally representative sample of 15,928 women age 15-49 in all selected households and 7,595 men age 15-64 in half of the selected households were successfully interviewed. The EDSB-V was conducted in the field from November 2017 to February 2018. The sample design for the EDSB-V provides estimates at the national level, for 12 departments, for the city of Cotonou and other cities, and for urban and rural areas.



**Atelier Des données de l'EDSB-V à l'action :
Santé maternelle et infantile
18-20 novembre ~ Lokossa, Bénin**



**5^{ème} Enquête Démographique et de
Santé au Bénin (EDSB-V) 2017-2018**

**Atelier Analyse des données de l'EDSB-V
12-20 décembre ~ Lokossa, Bénin**



**5^{ème} Enquête Démographique et de
Santé au Bénin (EDSB-V) 2017-2018**

**Atelier Indicateurs du paludisme :
Tendances des EDSB
11-15 novembre ~ Lokossa, Bénin**



**5^{ème} Enquête Démographique et de
Santé au Bénin (EDSB-V) 2017-2018**

Following the publication of the results of the EDSB-V 2017-2018, workshops were organized to facilitate the use of data for the management, monitoring, evaluation, and improvement of health and development programs and policies in Benin. This report presents a summary of the analyses conducted during the Malaria Indicator Trends Workshop held from November 11-15, 2019 in Lokossa, Benin. The objective of the workshop was to strengthen the capacity of participants to understand and interpret trends in EDSB indicators relevant to malaria program management. The workshop included a critical review of malaria data from the third (EDSB-III), fourth (EDSB-IV) and fifth Demographic and Health Surveys in Benin (EDSB-V), which collected data in 2006, 2011-2012 and 2017-2018. The workshop included training on understanding key malaria indicators including their numerators and denominators, the relationship between survey questionnaires and indicators, as well as assessing confidence intervals in order to interpret trends.

Eighteen participants and two facilitators came from five different organizations: the *Programme National de Lutte contre le Paludisme* (PNLP), the *Institut National de la Statistique et de l'Analyse Économique* (INSAE), the *Direction de la Programmation et la Prospective du Ministère de la Santé* (DPP/MS), Integrated Health Services Activity (IHSA) and African Collaborative for Health Financing Solutions Project (ACS Bénin), The DHS Program, and the *Institut de Santé et de Développement* (ISED). Participants worked in six thematic groups to review key indicators (see the list of participants and work groups on the next page). At the workshop, teams used estimates of sampling errors for key malaria indicators from the EDSB-III 2006, EDSB-IV 2011-2012 and EDSB-V 2017-2018 provided by The DHS Program. These estimates of sampling errors are available in the appendix of this report. The teams plotted the indicators with confidence intervals and examined variation in the indicators between urban and rural areas and between Benin's 12 departments. Each team produced graphs and bulleted indicator summaries. At the end of the workshop each team presented the key findings from their indicator analyses to the group.



Malaria Indicators: Trends from the EDSB Lokossa, Benin ~ November 11-15, 2019

Ownership of Insecticide Treated Nets (ITNs)

OUINSOU Leonard	PNLP
HOUNHOU Nonvignon Leandre	PNLP
KPANOU Sakariahou	PNLP

ITN Access and Use among the Population

HOUSSOU ASSABA Gisele	INSAE
SOGBOSSI Solété Lionel	PNLP
VODUNGBO A. Hildébaud G. Venance	DPP/MS

ITN Use among Vulnerable Groups

GLAGLADJI Charles	PNLP
BADIROU Mouhamad Hassani Akambi	PNLP
Chokpe Kolade	PNLP
GOUNDOTE Sènamè Aimé	PNLP

Intermittent Preventive Treatment in Pregnancy (IPTp)

BABADJIMBA SOUMANOU Ouzerou	PNLP
ZOUNTCHEME Serge Armand	IHSA
HOUEHA Baï Odette Jeannine	INSAE

Malaria Case Management in Children

HOUETOHOSSOU Bignon Camille	PNLP
BALOGOUN KOTCHOFFA Emalin	PNLP
Idjakotan Jacques	PNLP
SABI BAGUE Bio Modeste	PNLP

Prevalence of Anemia and Malaria

KOUNNOU Dotou Marcel	PNLP
SODANSOU Kougla Ulrich	PNLP
COUAO-ZOTTI K. K. Achille Rodrigue	PNLP

Facilitators

BALIAN Sarah	The DHS Program
GAYE Ibrahima	ISED

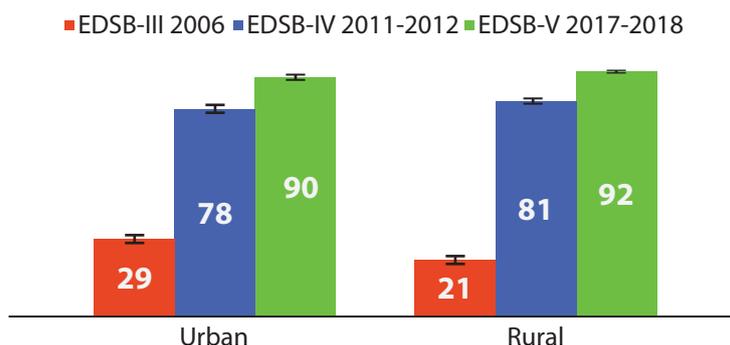
A Note on Interpretation of Malaria Indicator Trends

Every estimate from a sample survey, such as the Demographic and Health Surveys, is subject to a certain degree of uncertainty. The estimates shown in the EDSB-III 2006, EDSB-IV 2011-2012 and EDSB-V 2017-2018 are the middle of a range of possible values. This range of possible values reflects the level of uncertainty of the estimate and is called the confidence interval. Researchers are confident that the “truth”, or the value one would find if every single person in the population were surveyed (rather than using a sample) lies within this range. For example, according to the EDSB-V 2017-2018, 92% of households in Benin own at least one insecticide treated net (ITN). The 95% confidence interval for this indicator ranges from 92.1% to 93.5%. Researchers are confident that if the EDSB-V 2017-2018 were conducted 100 times with a different sample each time, the estimate of the percentage of households with at least one ITN would fall between 92.1% and 93.5% for 95 out of 100 samples.

How to Read and Understand Trend Graphs

The use of a standard methodology and questionnaires by the Demographic and Health Surveys allows comparisons between estimates of the same indicator over time. The sample design of a Demographic and Health Survey allows assessment of trends in indicators over time at the national level and at the residential level (urban and rural). The trend graphs in this document (both national-level and residential-level) use a uniform color scheme to facilitate reading and understanding. Data from the [EDSB-III of 2006](#) are always presented in **red**, data from the [EDSB-IV of 2011-2012](#) in **blue** and data from the [EDSB-VI of 2017-2018](#) are always in **green**. Each histogram includes the 95% confidence intervals in black at the top of each column. If the 95% confidence intervals for two estimates do not overlap, the difference between the estimates is considered significant. If the 95% confidence intervals do overlap, additional statistical tests were conducted to determine whether the change over the years is statistically significant. The text immediately following each graph describes the indicator’s key findings, including whether or not the changes are significant. In addition, the graphs that present data according to place of residence all use the same orientation (such as the graph below). In all residential-level graphs, data are presented separately for rural and urban areas. This layout makes it easier for the reader to see whether an indicator has changed over time in urban or rural areas. In the example below, we see that household ownership of at least one ITN in urban areas has increased from 29% in 2006 to 78% in 2011-2012 to 90% in 2017-2018. Looking at the 95% confidence intervals of these urban estimates, it is clear that they do not overlap and thus the increase observed in urban areas over time is significant. Similarly, household ownership of at least one ITN in rural areas significantly increased from 21% in 2006 to 81% in 2011-2012 and to 92% in 2017-2018.

Percent of households with at least one ITN

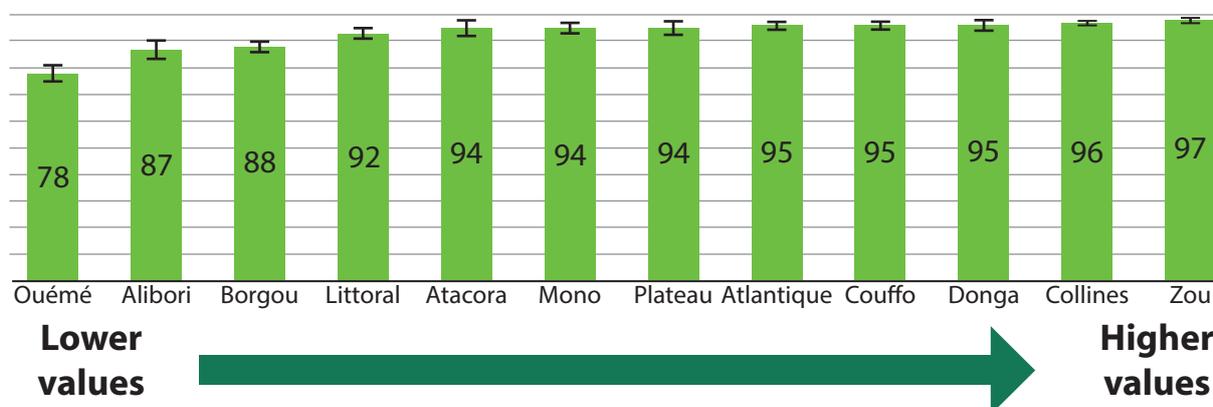


How to Read and Understand Departmental Charts

Using the 2017-2018 EDSB-V, it is possible to compare estimates of the same indicator across departments. This report presents two different charts to illustrate whether indicators vary between departments in Benin in a statistically significant way. The first graph (A, below) presents the data for the indicator in ascending order from left to right. Note that for some indicators, such as household ownership of at least one ITN, a high value represents a “good” result, but for other indicators, such as malaria prevalence by microscopy, a low value is synonymous with a “good” result. In addition, the graph also shows the 95% confidence intervals for each departmental estimate.

A

Percent of households with at least one ITN



How to Read and Understand Department Charts (continued)

The second visualization (B, below), is designed to allow users to quickly visualize whether differences between departmental indicator estimates are statistically significant. Each brick in the staircase graph shows whether the difference between the two departments is significant or not.



These bricks represent significant differences.



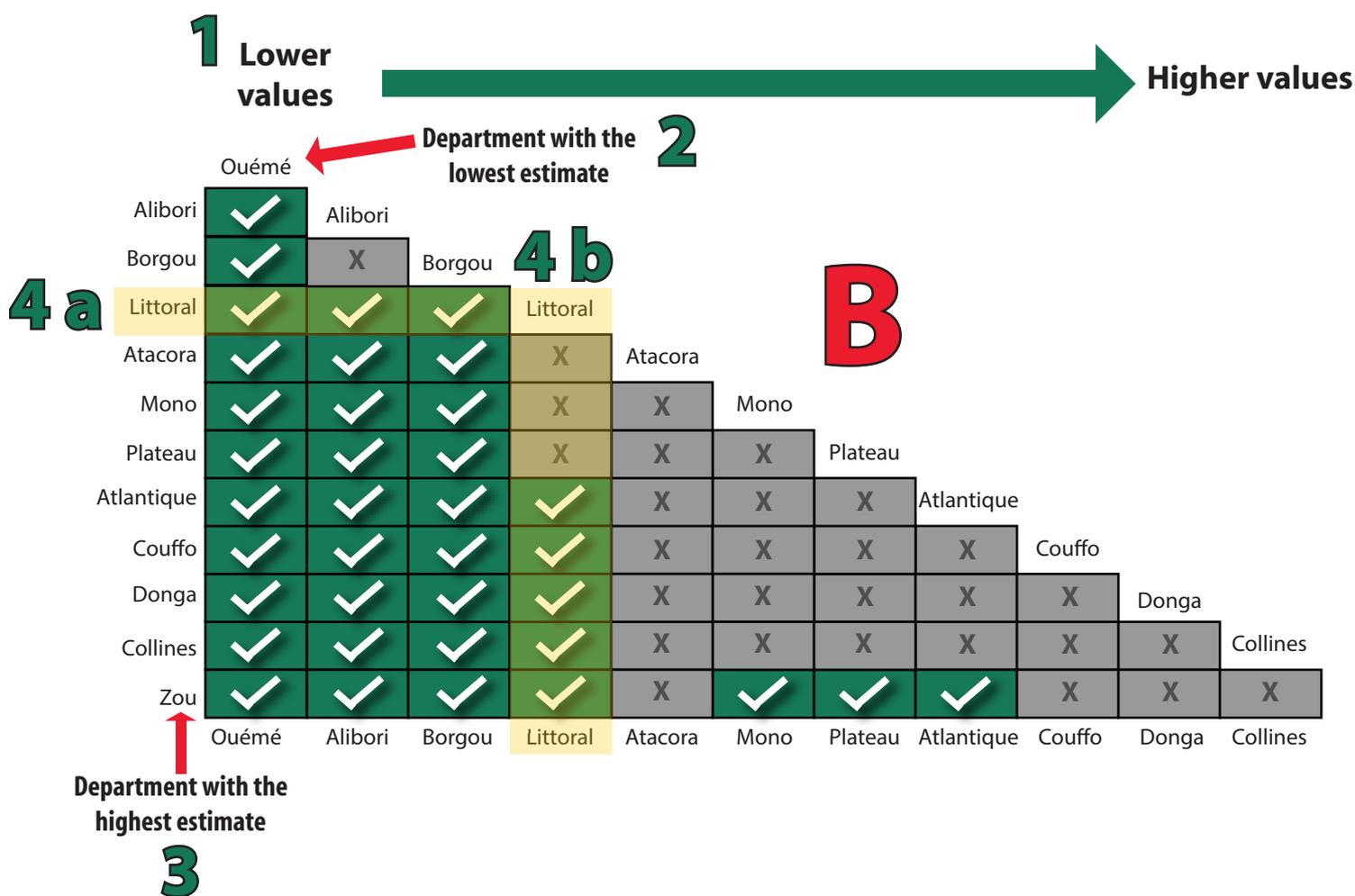
These bricks represent differences that are not significant.

Each tip for readers in this list has a corresponding number in the graphic below.

1. Staircase charts are ordered in ascending order from left to right, just like graph A on the previous page.
2. The department with the lowest indicator estimate is always the first column on the left; in this example it is Ouémé department.
3. The department with the highest indicator estimate is always the last row at the bottom of the stairs; in this example it is Zou department.
4. Look for the name of your department of interest in the staircase. Let's use Littoral department as an example (highlighted in yellow below).

a. Start with the row that represents Littoral. Proceeding from left to right you can see that household ownership of at least one ITN in Littoral is significantly higher than in Ouémé, Alibori and Borgou. **A department's row compares it to departments with lower estimates for that indicator.**

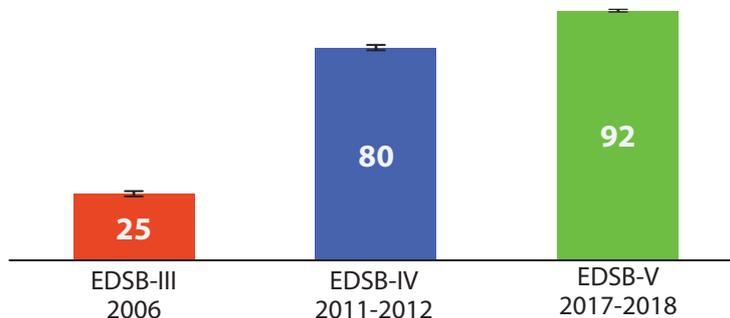
b. Now, look at the column that represents Littoral. Proceeding from top to bottom you can see that household ownership of at least one ITN in Littoral is not significantly different from the estimates of this indicator for Atacora, Mono and Plateau. However, household ownership of at least one ITN in Littoral is significantly lower than in the departments of Atlantique, Couffo, Donga, Collines and Zou. **A department's column compares it to departments with higher estimates for that indicator.**



HOUSEHOLD OWNERSHIP OF INSECTICIDE TREATED NETS (ITNs)

National-Level Trends in ITN Ownership

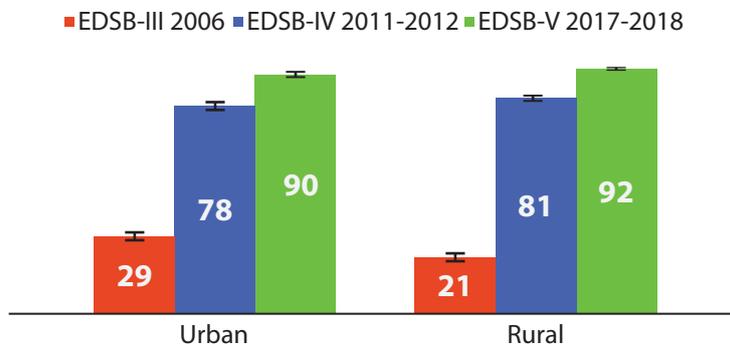
Percent of households with at least one ITN



- More than 9 in 10 households (92%) in Benin own at least one ITN.
- Household ownership of at least one ITN significantly increased from 25% in 2006 to 80% in 2011-2012 to 92% in 2017-2018.

ITN Ownership Trends by Residence

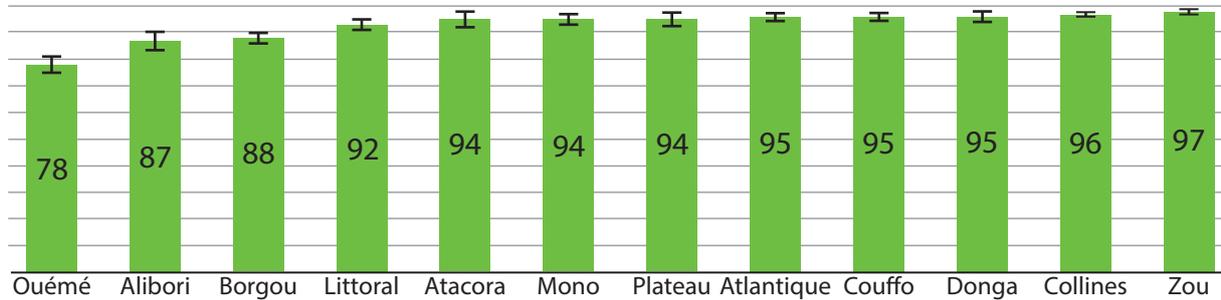
Percent of households with at least one ITN



- ITN ownership varies little by residence; 90% of urban households own at least one ITN, compared to 92% of rural households.
- In both urban and rural areas, ownership of at least one ITN increased significantly between 2006 and 2011-2012 and 2017-2018.

Does ITN ownership vary significantly across departments (EDSB-V 2017-2018)?

Percent of households with at least one ITN



- Household ownership of at least one ITN by department ranges from a minimum of 78% in Ouémé to a maximum of 97% in Zou.
- Household ownership of at least one ITN in Ouémé is significantly lower than in all other departments.
- In addition, household ownership of ITNs in Alibori and Borgou is significantly lower than in all other departments except Ouémé. However, the difference between Alibori (87%) and Borgou (88%) is not significant.

	Ouémé	Alibori	Borgou	Littoral	Atacora	Mono	Plateau	Atlantique	Couffo	Donga	Collines	Zou
Alibori	✓											
Borgou	✓	X										
Littoral	✓	✓	✓									
Atacora	✓	✓	✓	X								
Mono	✓	✓	✓	X	X							
Plateau	✓	✓	✓	X	X	X						
Atlantique	✓	✓	✓	✓	X	X	X					
Couffo	✓	✓	✓	✓	X	X	X	X				
Donga	✓	✓	✓	✓	X	X	X	X	X			
Collines	✓	✓	✓	✓	X	X	X	X	X	X		
Zou	✓	✓	✓	✓	X	✓	✓	✓	X	X	X	

HOUSEHOLD OWNERSHIP OF INSECTICIDE TREATED NETS (ITNs)

National-Level Trends in Full Household ITN Coverage

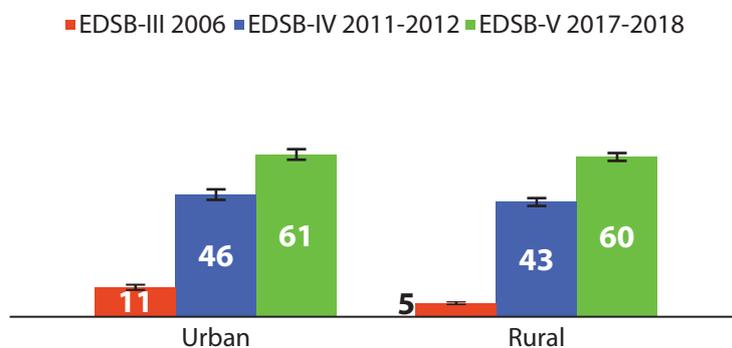
Percent of households that own at least one ITN for every two people who spent the night before the survey in the household



- More than 3 in 5 households have at least one ITN for every two people who spent the night before the survey in the household.
- Full household ITN coverage significantly increased from 7% in 2006 to 45% in 2011-2012 to 61% in 2017-2018.

Full Household ITN Coverage Trends by Residence

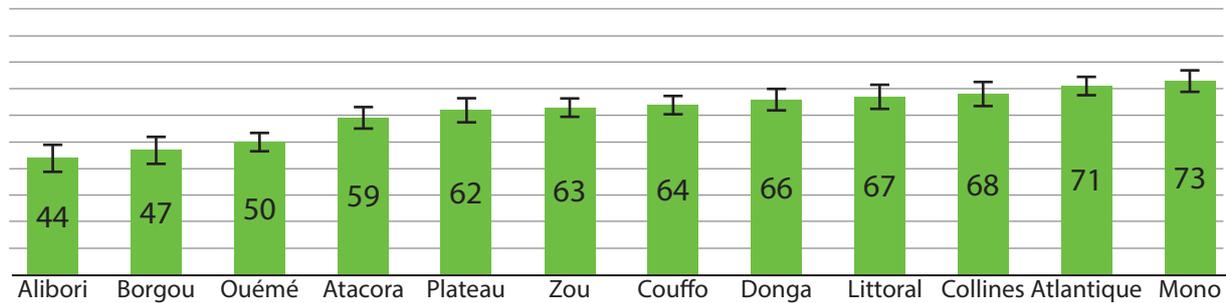
Percent of households that own at least one ITN for every two people who spent the night before the survey in the household



- There is virtually no difference between urban areas (61%) and rural areas (60%) in household ownership of at least one ITN for every two people.
- Irrespective of urban/rural residence, full household ITN coverage significantly increased between 2006 and 2011-2012 and 2017-2018.

Does full household ITN coverage vary significantly across departments (EDSB-V 2017-2018)?

Percent of households that own at least one ITN for every two people who spent the night before the survey in the household



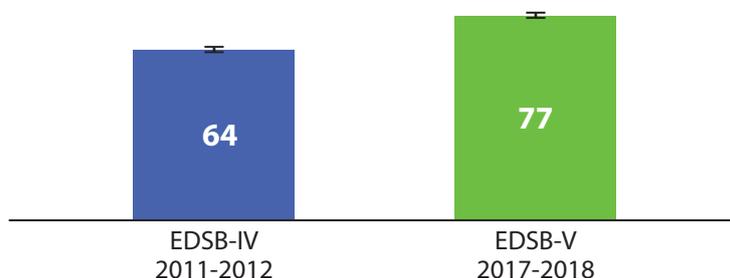
- Household ownership of at least one ITN for every two people varies by department, from 44% in Alibori to 73% in Mono.
- Household ownership of at least one ITN for every two people is significantly lower in Alibori, Borgou, and Ouémé than in all other departments. However, the differences between these three departments are not significant.
- On the other hand, full household ITN coverage is significantly higher in Mono and Atlantique than in most of the other departments. However, the difference between Atlantique (71%) and Mono (73%) is not significant.



ITN ACCESS AND USE

National-Level Trends in ITN Access

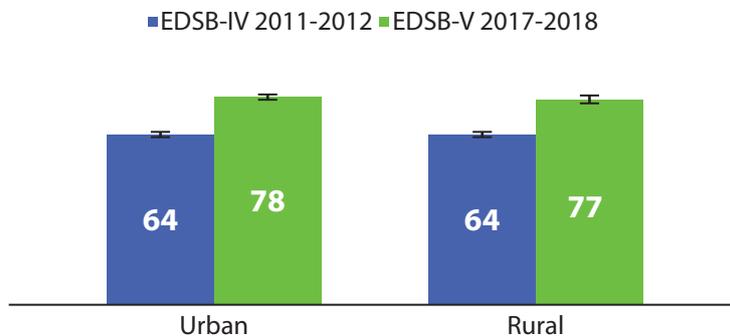
Percent of household population with access to an ITN



- More than three-quarters of the household population (77%) has access to an ITN, meaning that they could sleep under an ITN if each ITN in the household were used by up to two people.
- ITN access increased significantly from 64% in 2011-2012 to 77% in 2017-2018.

Trends in ITN Access by Residence

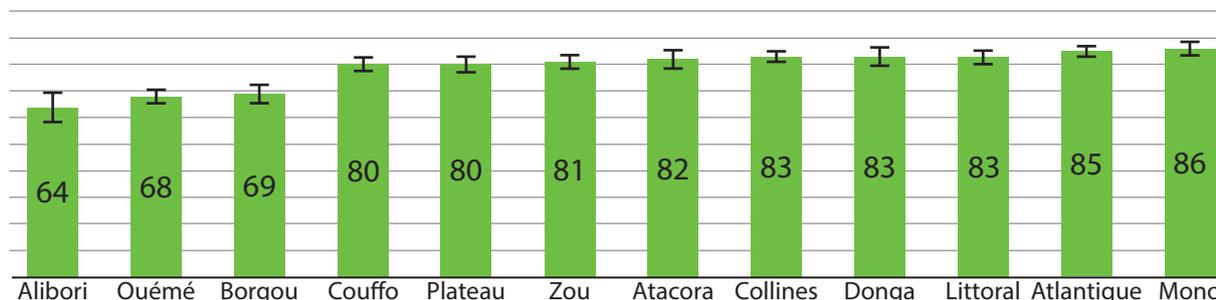
Percent of household population with access to an ITN



- ITN access varies little by residence (78% in urban areas compared to 77% in rural areas).
- In both urban and rural areas, access to an ITN significantly increased between 2011-2012 and 2017-2018.

Does ITN access vary significantly across departments (EDSB-V 2017-2018)?

Percent of household population with access to an ITN



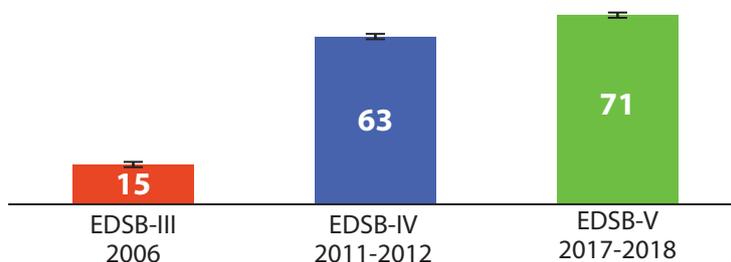
- By department, ITN access ranges from a minimum of 64% in Alibori to a maximum of 86% in Mono.
- ITN access is significantly lower in Alibori, Ouémé and Borgou than in all other departments. However, the differences between these three departments are not significant.
- In contrast, ITN access is significantly higher in Atlantique and Mono than in half of the other departments. However, the difference between Atlantique (85%) and Mono (86%) is not significant.

	Alibori	Ouémé	Borgou	Couffo	Plateau	Zou	Atacora	Collines	Donga	Littoral	Atlantique	Mono
Alibori	X											
Ouémé	X	X										
Borgou	X	X	X									
Couffo	✓	✓	✓	X								
Plateau	✓	✓	✓	X	X							
Zou	✓	✓	✓	X	X	X						
Atacora	✓	✓	✓	X	X	X	X					
Collines	✓	✓	✓	X	X	X	X	X				
Donga	✓	✓	✓	X	X	X	X	X	X			
Littoral	✓	✓	✓	X	X	X	X	X	X	X		
Atlantique	✓	✓	✓	✓	✓	✓	X	X	X	X	X	
Mono	✓	✓	✓	✓	✓	✓	X	X	X	X	X	X

ITN ACCESS AND USE

National-Level Trends in ITN Use

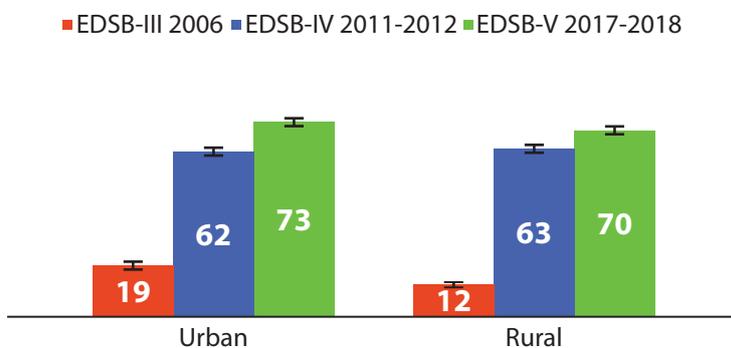
Percent of household population who slept under an ITN the night before the survey



- In 2017-2018, 71% of the household population slept under an ITN the night before the survey.
- ITN use by the household population is more than four times higher in 2017-2018 (71%) than it was in 2006 (15%) .
- The increases in ITN use by the household population between 2006 and 2011-2012 and 2017-2018 are statistically significant.

Trends in ITN Use by Residence

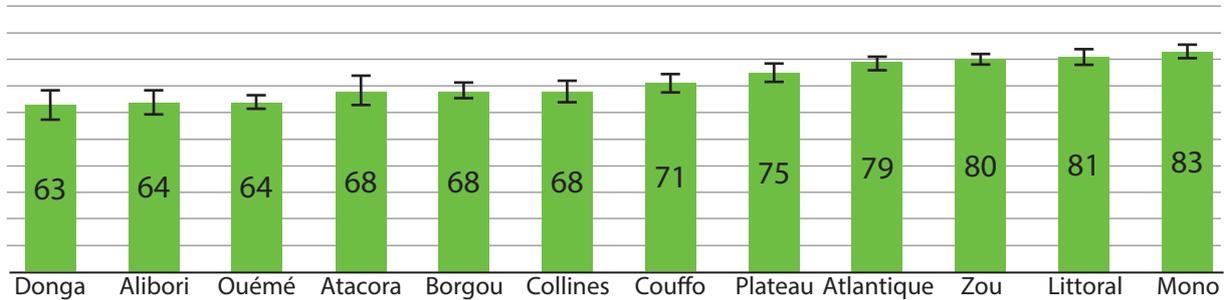
Percent of household population who slept under an ITN the night before the survey



- There is virtually no difference in ITN use by the household population between urban areas (73%) and rural areas (70%).
- Irrespective of urban/rural residence, ITN use by the household population increased significantly between 2006 and 2011-2012 and 2017-2018.

Does ITN use vary significantly across departments (EDSB-V 2017-2018)?

Percent of household population who slept under an ITN the night before the survey



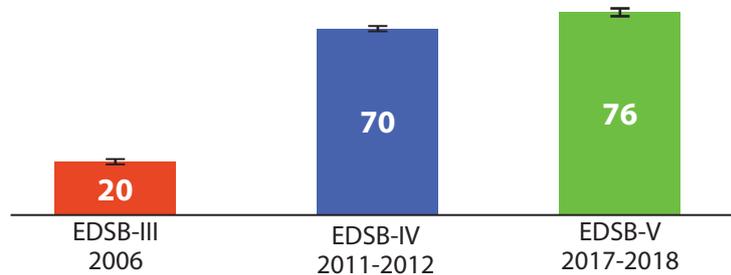
- ITN use by the household population ranges from 63% in Donga to 83% in Mono.
- ITN use by the household population in Zou, Littoral, and Mono is significantly higher than in most other departments. However, the differences between these three departments are not significant.

	Donga	Alibori	Ouémé	Atacora	Borgou	Collines	Couffo	Plateau	Atlantique	Zou	Littoral	Mono
Alibori	X											
Ouémé	X	X										
Atacora	X	X	X									
Borgou	X	X	X	X								
Collines	X	X	X	X	X							
Couffo	✓	✓	✓	X	X	X						
Plateau	✓	✓	✓	✓	✓	✓	X					
Atlantique	✓	✓	✓	✓	✓	✓	✓	X				
Zou	✓	✓	✓	✓	✓	✓	✓	✓	X			
Littoral	✓	✓	✓	✓	✓	✓	✓	✓	X	X		
Mono	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X	

ITN USE BY VULNERABLE GROUPS

National-Level Trends in Children's Use of ITNs

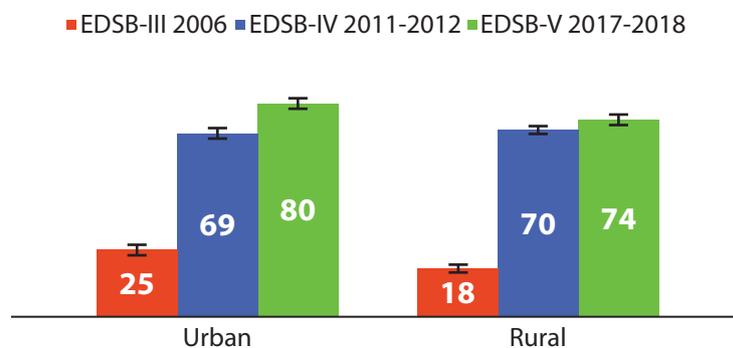
Percent of children under five who slept under an ITN the night before the survey



- Three-quarters of children under five (76%) slept under an ITN the night before the survey.
- Children's use of ITNs increased significantly from 20% in 2006 to 70% in 2011-2012 to 76% in 2017-2018.

Trends in Children's Use of ITNs by Residence

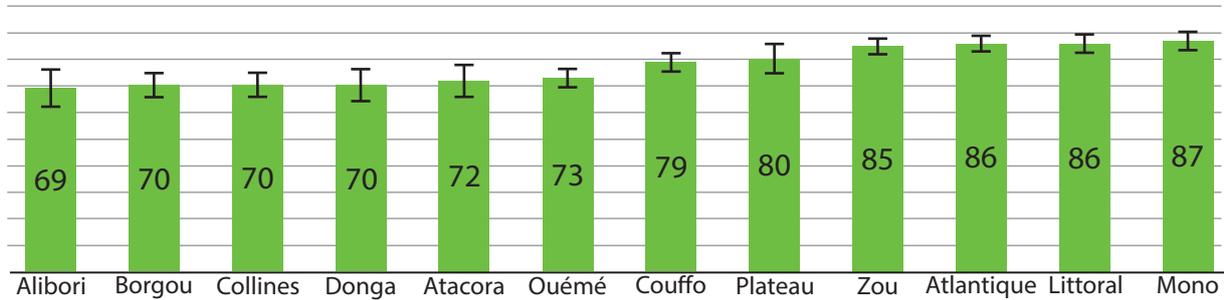
Percent of children under five who slept under an ITN the night before the survey



- Children's ITN use is slightly higher in urban areas (80%) than in rural areas (74%).
- In both urban and rural areas, ITN use by children under five significantly increased between 2006 and 2011-2012 and 2017-2018.

Does children's use of ITNs vary significantly across departments (EDSB-V 2017-2018)?

Percent of children under five who slept under an ITN the night before the survey



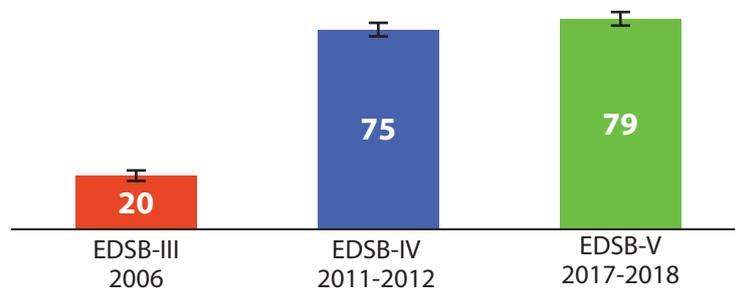
- By department, children's use of ITNs ranges from 69% in Alibori to 87% in Mono.
- Use of ITNs by children under five is significantly higher in Mono, Littoral, Atlantique and Zou than in half of the other departments. However, the differences between these four departments are not significant.

	Alibori	Borgou	Collines	Donga	Atacora	Ouémé	Couffo	Plateau	Zou	Atlantique	Littoral
Borgou	X										
Collines	X	X									
Donga	X	X	X								
Atacora	X	X	X	X							
Ouémé	X	X	X	X	X						
Couffo	✓	✓	✓	✓	X	X					
Plateau	✓	✓	✓	✓	X	✓	X				
Zou	✓	✓	✓	✓	✓	✓	✓	X			
Atlantique	✓	✓	✓	✓	✓	✓	✓	✓	X		
Littoral	✓	✓	✓	✓	✓	✓	✓	✓	X	X	
Mono	✓	✓	✓	✓	✓	✓	✓	✓	X	X	X

ITN USE BY VULNERABLE GROUPS

National-Level Trends in Pregnant Women's Use of ITNs

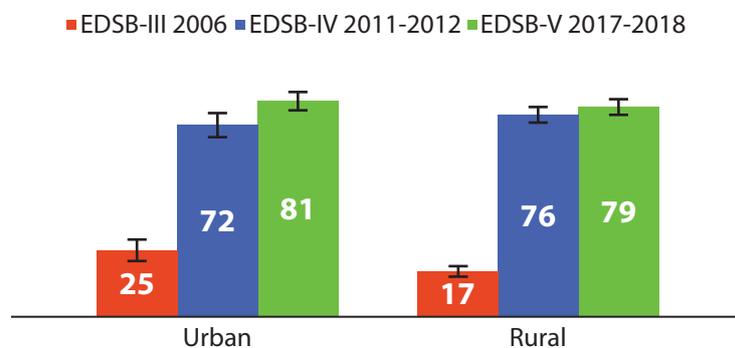
Percent of pregnant women age 15-49 who slept under an ITN the night before the survey



- Nearly 8 in 10 pregnant women age 15-49 (79%) slept under an ITN the night before the survey.
- ITN use by pregnant women increased significantly from 20% in 2006 to 75% in 2011-2012 to 79% in 2017-2018.

Trends in Pregnant Women's Use of ITNs by Residence

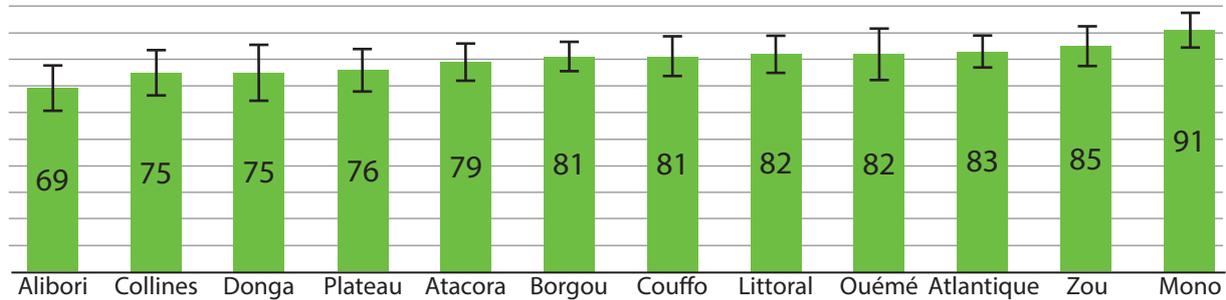
Percent of pregnant women age 15-49 who slept under an ITN the night before the survey



- Use of ITNs by pregnant women age 15-49 varies little by residence (81% in urban areas versus 79% in rural areas).
- In urban areas, pregnant women's use of ITNs increased significantly from 25% in 2006 to 72% in 2011-2012 and to 81% in 2017-2018.
- In rural areas, use of ITNs by pregnant women increased significantly from 17% in 2006 to 79% in 2017-2018. The difference between 2011-2012 and 2017-2018 in rural areas is not significant.

Does pregnant women’s use of ITNs vary significantly across departments (EDSB-V 2017-2018)?

Percent of pregnant women age 15-49 who slept under an ITN the night before the survey



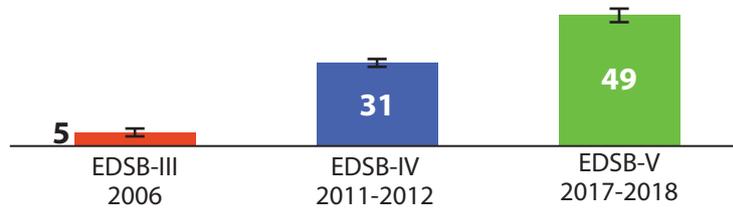
- Use of ITNs by pregnant women age 15-49 ranges from a minimum of 69% in Alibori to a maximum of 91% in Mono.
- Pregnant women’s use of ITNs is significantly lower in Alibori than in most other departments.
- In contrast, use of ITNs by pregnant women is significantly higher in Mono than in most other departments.

	Alibori	Collines	Donga	Plateau	Atacora	Borgou	Couffo	Littoral	Ouémé	Atlantique	Zou
Collines	X										
Donga	X	X									
Plateau	X	X	X								
Atacora	X	X	X	X							
Borgou	✓	X	X	X	X						
Couffo	✓	X	X	X	X	X					
Littoral	✓	X	X	X	X	X	X				
Ouémé	✓	X	X	X	X	X	X	X			
Atlantique	✓	X	X	X	X	X	X	X	X		
Zou	✓	X	X	X	X	X	X	X	X	X	
Mono	✓	✓	✓	✓	✓	✓	✓	✓	X	X	X

INTERMITTENT PREVENTIVE TREATMENT IN PREGNANCY (IPTp)

National-Level Trends in IPTp 1+

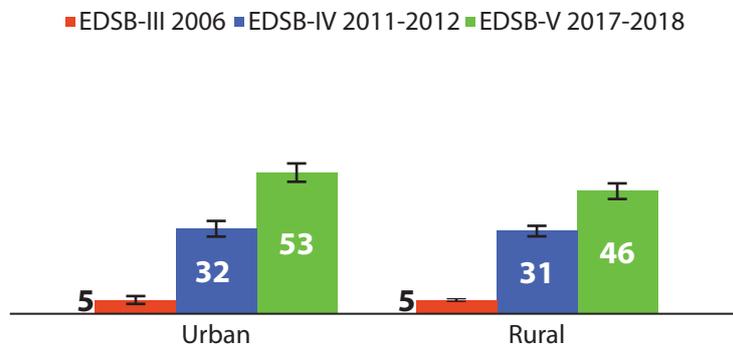
Percent of women age 15-49 with a live birth in the past two years who, during their last pregnancy, received at least 1 dose of SP/Fansidar during an antenatal care visit



- Nearly half of women age 15-49 who had a live birth in the two years before the survey (49%) received at least one dose of SP/Fansidar during an antenatal visit.
- Coverage of IPTp 1+ increased significantly from 5% in 2006 to 31% in 2011-2012 to 49% in 2017-2018.

IPTp 1+ Trends by Residence

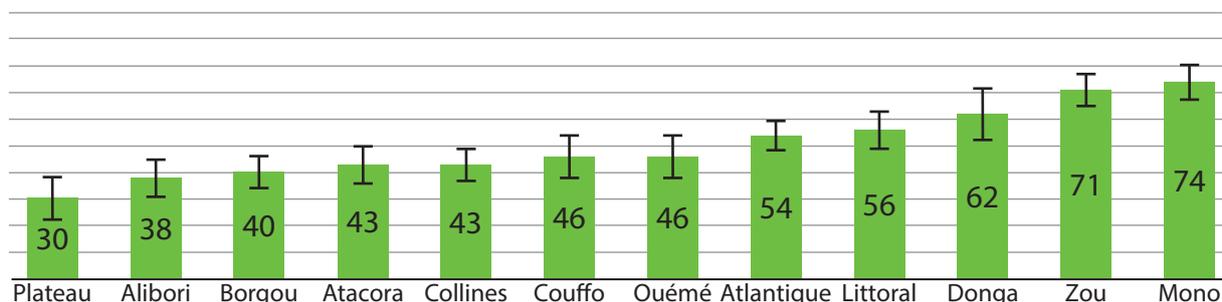
Percent of women age 15-49 with a live birth in the past two years who, during their last pregnancy, received at least 1 dose of SP/Fansidar during an antenatal care visit



- Coverage of IPTp 1+ is slightly higher in urban areas (53%) than in rural areas (46%).
- Irrespective of urban/rural residence, IPTp 1+ increased significantly between 2006 and 2011-2012 and 2017-2018.

Does IPTp 1+ vary significantly across departments (EDSB-V 2017-2018)?

Percent of women age 15-49 with a live birth in the past two years who, during their last pregnancy, received at least 1 dose of SP/Fansidar during an antenatal care visit



- IPTp 1+ ranges from 30% in Plateau to 74% in Mono.
- Coverage of IPTp 1+ is significantly higher in Mono than in all other departments except Zou.
- Similarly, IPTp 1+ is significantly higher in Zou (71%) than in all other departments except Mono (74%) and Donga (62%).
- Conversely, IPTp 1+ is significantly lower in Plateau (30%) than in all other departments except Alibori (38%) and Borgou (40%).

	Plateau	Alibori	Borgou	Atacora	Collines	Couffo	Ouémé	Atlantique	Littoral	Donga	Zou	Mono
Alibori	X											
Borgou	X	X										
Atacora	✓	X	X									
Collines	✓	X	X	X								
Couffo	✓	X	X	X	X							
Ouémé	✓	X	X	X	X	X						
Atlantique	✓	✓	✓	✓	✓	X	X					
Littoral	✓	✓	✓	✓	✓	✓	✓	X				
Donga	✓	✓	✓	✓	✓	✓	✓	X	X			
Zou	✓	✓	✓	✓	✓	✓	✓	✓	✓	X		
Mono	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	

INTERMITTENT PREVENTIVE TREATMENT IN PREGNANCY (IPTp)

National-Level Trends in IPTp 2+

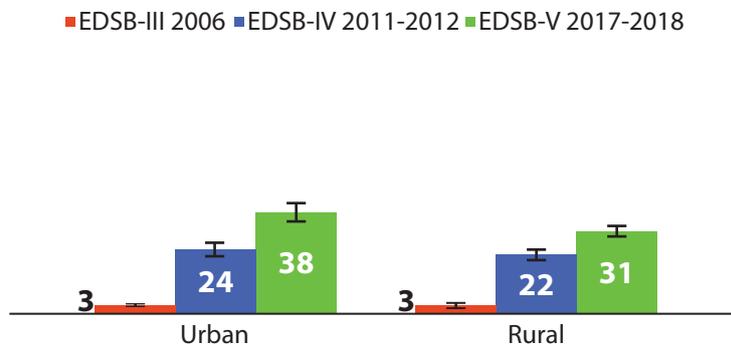
Percent of women age 15-49 with a live birth in the past two years who, during their last pregnancy, received 2 or more doses of SP/Fansidar who received at least one dose during an antenatal care visit



- One-third of women age 15-49 who had a live birth in the two years before the survey (33%) received two or more doses of SP/Fansidar, at least one during an antenatal visit.
- IPTp 2+ increased significantly from 3% in 2006 to 23% in 2011-2012 to 33% in 2017-2018.

IPTp 2+ Trends by Residence

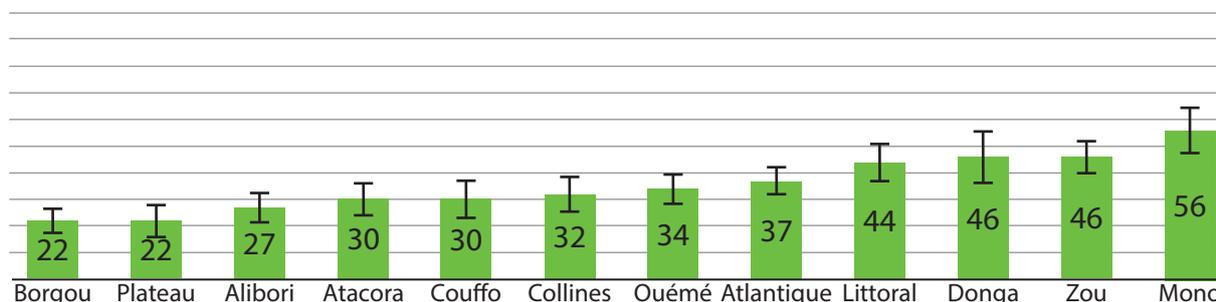
Percent of women age 15-49 with a live birth in the past two years who, during their last pregnancy, received 2 or more doses of SP/Fansidar who received at least one dose during an antenatal care visit



- IPTp 2+ is slightly higher in urban areas (38%) than in rural areas (31%).
- In both urban and rural areas, coverage of IPTp 2+ increased significantly between 2006 and 2011-2012 and 2017-2018.

Does IPTp 2+ vary significantly across departments (EDSB-V 2017-2018)?

Percent of women age 15-49 with a live birth in the past two years who, during their last pregnancy, received 2 or more doses of SP/Fansidar who received at least one dose during an antenatal care visit



- By department, IPTp 2+ ranges from a minimum of 22% in Borgou to a maximum of 56% in Mono.
- Coverage of IPTp 2+ is significantly higher in Mono (56%) and Zou (46%) than in most of the other departments. However, the difference between Mono and Zou is not significant.
- In contrast, IPTp 2+ is significantly lower in Plateau (22%) and Borgou (22%) than in most other departments. However, the difference between Plateau and Borgou is not significant.

	Borgou	Plateau	Alibori	Atacora	Couffo	Collines	Ouémé	Atlantique	Littoral	Donga	Zou	Mono
Borgou	X											
Plateau		X										
Alibori	✓		X									
Atacora	✓	✓		X								
Couffo	✓		X	X	X							
Collines	✓	✓	X	X	X	X						
Ouémé	✓	✓	X	X	X	X	X					
Atlantique	✓	✓	✓	X	X	X	X	X				
Littoral	✓	✓	✓	✓	✓	✓	✓	✓	X			
Donga	✓	✓	✓	✓	✓	✓	✓	✓	X	X		
Zou	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X	
Mono	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X	X

INTERMITTENT PREVENTIVE TREATMENT IN PREGNANCY (IPTp)

National-Level Trends in IPTp 3+

Percent of women age 15-49 with a live birth in the past two years who, during their last pregnancy, received 3 or more doses of SP/Fansidar who received at least one dose during an antenatal care visit

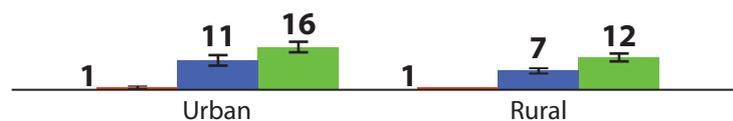


- Only 13% of women age 15-49 with a live birth in the two years before the survey received three or more doses of SP/Fansidar, at least one during an antenatal visit.
- Coverage of IPTp 3+ increased significantly from 1% in 2006 to 9% in 2011-2012 to 13% in 2017-2018.

IPTp 3+ Trends by Residence

Percent of women age 15-49 with a live birth in the past two years who, during their last pregnancy, received 3 or more doses of SP/Fansidar who received at least one dose during an antenatal care visit

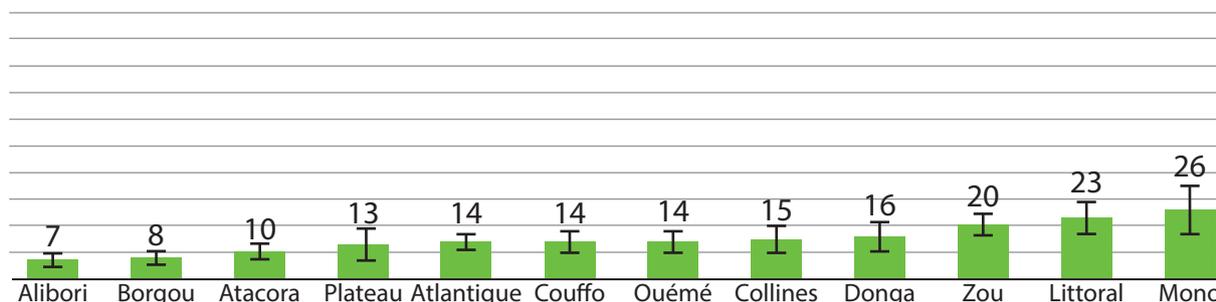
■ EDSB-III 2006 ■ EDSB-IV 2011-2012 ■ EDSB-V 2017-2018



- Coverage of IPTp 3+ is slightly higher in urban areas (16%) than in rural areas (12%).
- Irrespective of urban/rural residence, IPTp 3+ significantly increased between 2006 and 2011-2012 and 2017-2018.

Does IPTp 3+ vary significantly across departments (EDSB-V 2017-2018)?

Percent of women age 15-49 with a live birth in the past two years who, during their last pregnancy, received 3 or more doses of SP/Fansidar who received at least one dose during an antenatal care visit



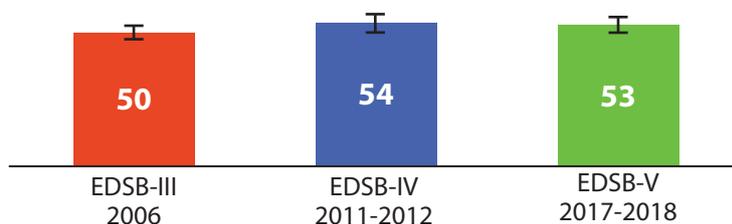
- Coverage of IPTp 3+ ranges from 7% in Alibori to 26% in Mono.
- IPTp 3+ is significantly higher in Mono (26%) and Littoral (23%) than in all the other departments except Zou (20%) and Donga (16%). However, the difference between Mono and Littoral is not significant.
- In contrast, IPTp 3+ is significantly lower in Alibori (7%) and Borgou (8%) than in all other departments except Atacora (10%) and Plateau (13%). However, the difference between Alibori and Borgou is not significant.

	Alibori	Borgou	Atacora	Plateau	Atlantique	Couffo	Ouémé	Collines	Donga	Zou	Littoral	Mono
Alibori	X											
Borgou	X	X										
Atacora	X	X	X									
Plateau	X	X	X	X								
Atlantique	✓	✓	X	X	X							
Couffo	✓	✓	X	X	X	X						
Ouémé	✓	✓	X	X	X	X	X					
Collines	✓	✓	X	X	X	X	X	X				
Donga	✓	✓	X	X	X	X	X	X	X			
Zou	✓	✓	✓	X	✓	X	✓	X	X	X		
Littoral	✓	✓	✓	✓	✓	✓	✓	✓	X	X	X	
Mono	✓	✓	✓	✓	✓	✓	✓	✓	X	X	X	X

MALARIA CASE MANAGEMENT IN CHILDREN

National-Level Trends in Care-Seeking Behavior

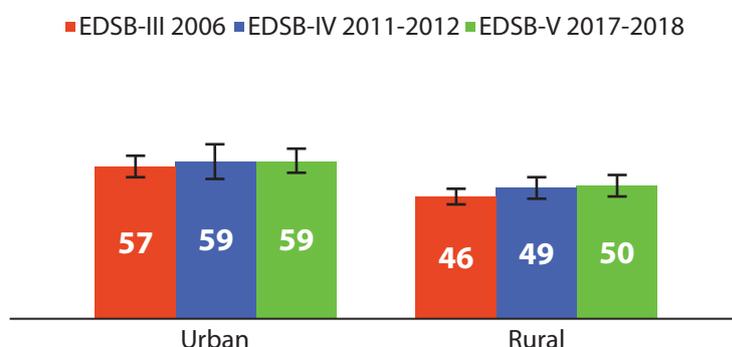
Among children under five with fever in the two weeks before the survey, percent who had advice or treatment sought



- Advice or treatment was sought for 53% of children under five with fever in the two weeks before the survey. Care-seeking for children with fever includes the following sources: the public sector, the private sector, shop, market and street vendor of medicine. In this definition, those who sought advice or treatment from a traditional practitioner are excluded.
- The proportion of children with fever for whom advice or treatment was sought has not changed between 2006 and 2017-2018.

Trends in Care-Seeking Behavior by Residence

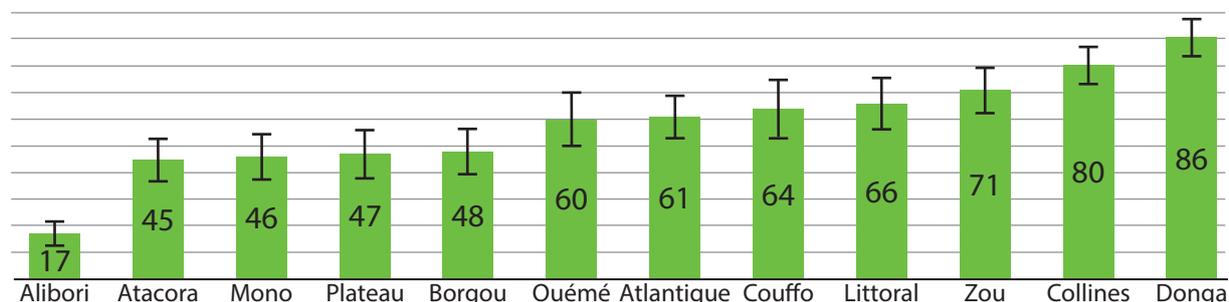
Among children under five with fever in the two weeks before the survey, percent who had advice or treatment sought



- Care-seeking for children under five with fever is higher in urban areas (59%) than in rural areas (50%).
- In both urban and rural areas, care-seeking for children with fever did not change between 2006 and 2011-2012 and 2017-2018.

Does care-seeking behavior vary significantly across departments (EDSB-V 2017-2018)?

Among children under five with fever in the two weeks before the survey, percent who had advice or treatment sought



- By department, care-seeking for children under five with fever ranges from 17% in Alibori to 86% in Donga.
- Care-seeking for children with fever is significantly higher in the departments of Donga (86%) and Collines (80%) than in most other departments. However, the difference between Donga and Collines is not statistically significant.
- Conversely, care-seeking for children with fever is statistically lower in Alibori (17%) than in all other departments.

	Alibori	Atacora	Mono	Plateau	Borgou	Ouémé	Atlantique	Couffo	Littoral	Zou	Collines	Donga
Alibori	✓											
Atacora	✓	X										
Mono	✓	X	X									
Plateau	✓	X	X	X								
Borgou	✓	X	X	X	X							
Ouémé	✓	✓	✓	X	X	X						
Atlantique	✓	✓	✓	✓	✓	X	X					
Couffo	✓	✓	✓	✓	✓	X	X	X				
Littoral	✓	✓	✓	✓	✓	X	X	X	X			
Zou	✓	✓	✓	✓	✓	X	X	X	X	X		
Collines	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X	
Donga	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X

MALARIA CASE MANAGEMENT IN CHILDREN

National-Level Trends in Diagnostic Testing

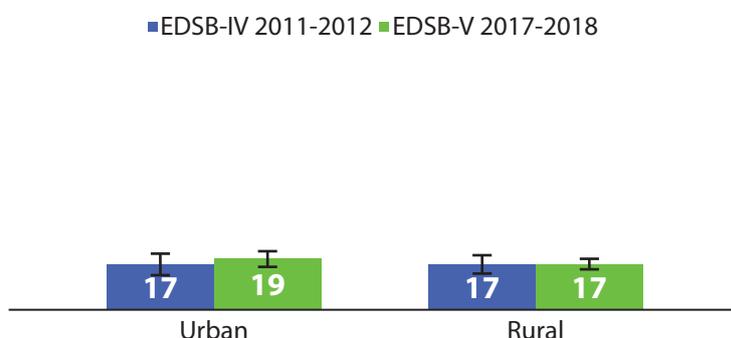
Among children under five with fever in the two weeks before the survey, percent who had blood taken from a finger or heel for testing



- Blood was taken from a finger or heel for testing for 18% of children under five who had fever in the two weeks before the survey.
- The proportion of febrile children who had blood taken for testing did not change between 2011-2012 and 2017-2018.

Trends in Diagnostic Testing by Residence

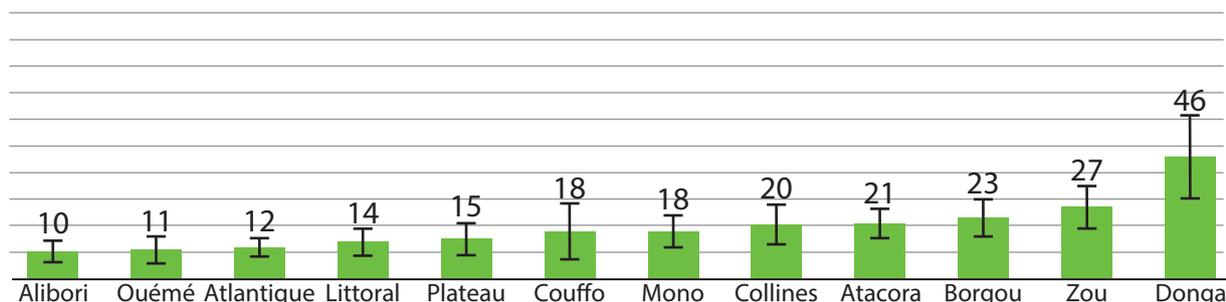
Among children under five with fever in the two weeks before the survey, percent who had blood taken from a finger or heel for testing



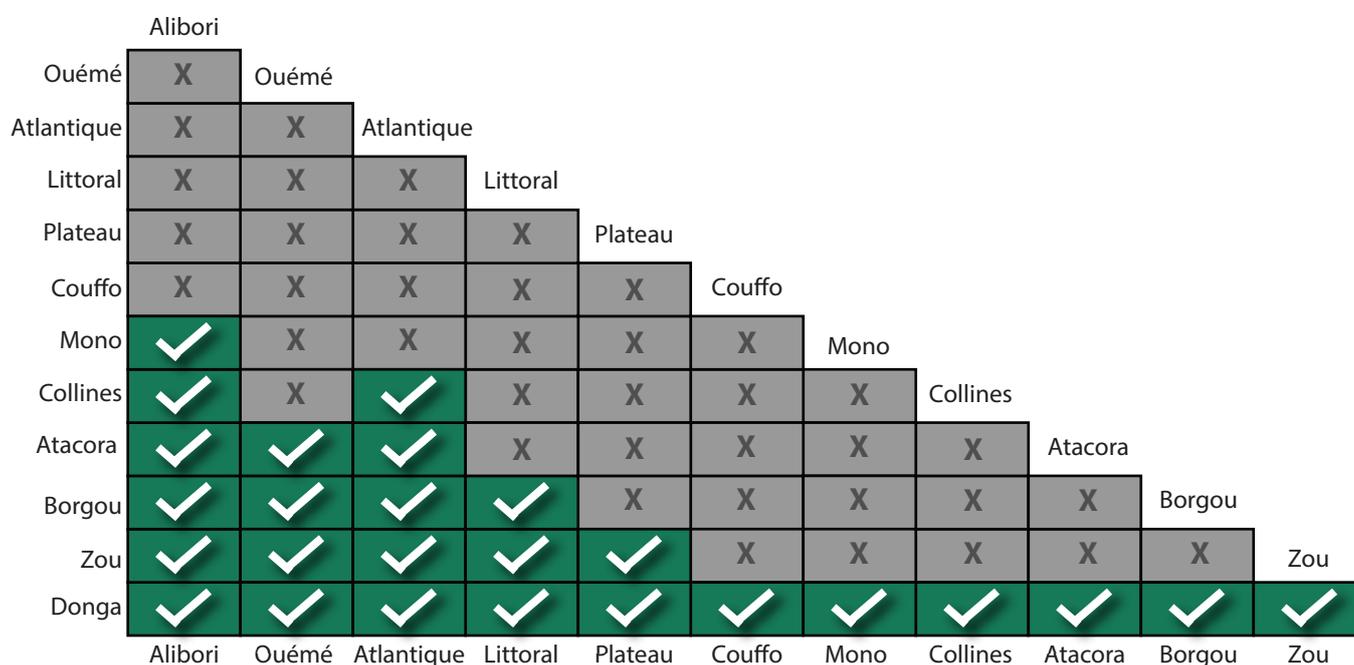
- Diagnostic testing for children with fever varies little by residence.
- Irrespective of urban/rural residence, diagnostic testing for children with fever did not change between 2011-2012 and 2017-2018.

Does diagnostic testing vary significantly across departments (EDSB-V 2017-2018)?

Among children under five with fever in the two weeks before the survey, percent who had blood taken from a finger or heel for testing



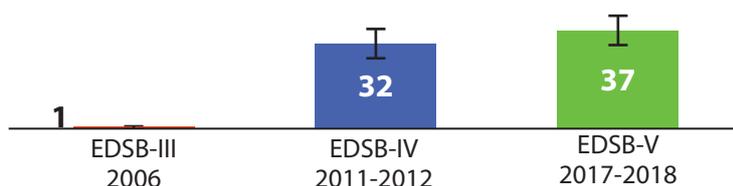
- Diagnostic testing for children with fever ranges from a minimum of 10% in Alibori to a maximum of 46% in Donga.
- Diagnostic testing for children with fever is significantly higher in Donga (46%) than in all other departments.
- In contrast, diagnostic testing for children with fever is significantly lower in Alibori (10%) than in half of the other departments.



MALARIA CASE MANAGEMENT IN CHILDREN

National-Level Trends in Appropriate Antimalarial Treatment

Among children under five with fever in the two weeks before the survey who took any antimalarial drug, percent who took any artemisinin-based combination therapy (ACT)

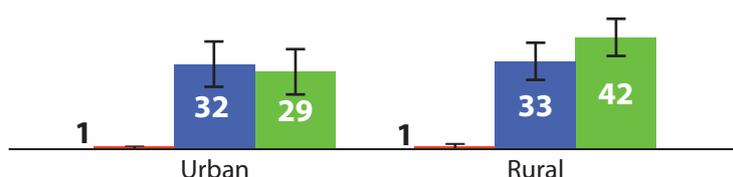


- Among children under five who had fever in the two weeks before the survey and had taken antimalarial drugs, 37% received artemisinin-based combination therapy (ACT), the preferred treatment in Benin.
- In October 2011, free malaria treatment for pregnant women and children under five including the introduction of ACTs was launched in Benin. The increase in appropriate antimalarial treatment between 2006 and 2011-2012 is significant, while the change between 2011-2012 and 2017-2018 is not significant.

Trends in Appropriate Antimalarial Treatment by Residence

Among children under five with fever in the two weeks before the survey who took any antimalarial drug, percent who took any artemisinin-based combination therapy (ACT)

■ EDSB-III 2006 ■ EDSB-IV 2011-2012 ■ EDSB-V 2017-2018



- Appropriate antimalarial treatment is significantly higher in rural areas (42%) than in urban areas (29%).
- As at the national level, the increase in the use of ACTs between 2006 and 2011-2012 is significant in both urban and rural areas, while the change between 2011-2012 and 2017-2018 is not significant in either urban or rural areas.

Does appropriate antimalarial treatment vary significantly by department (EDSB-V 2017-2018)?

There are too few cases per department (of children under five who had fever in the two weeks before the survey who took antimalarial drugs) for the results of this indicator to be reliable at the departmental level.



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PREVALENCE OF LOW HEMOGLOBIN

National-Level Trends in Anemia (Hemoglobin Level <8.0 g/dl)

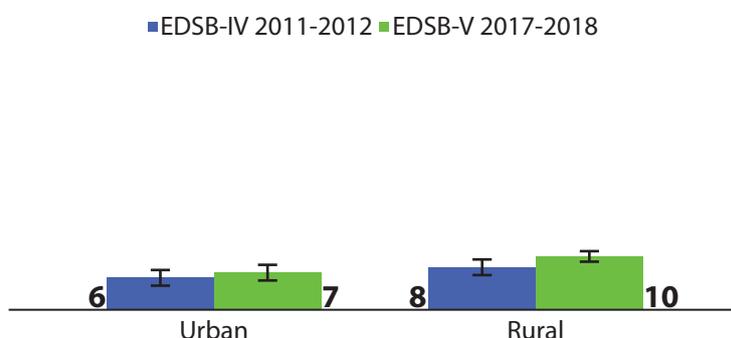
Percent of children age 6-59 months who had a hemoglobin measurement of less than 8 grams per deciliter (g/dl) of blood



- Anemia is a medical condition characterized by an abnormal drop in the level of hemoglobin in the blood. Although anemia is not specific to malaria, trends in the prevalence of anemia may reflect the morbidity caused by malaria.
- Nearly 1 in 10 children age 6-59 months (9%) have a hemoglobin level below 8.0 g/dl, a significant increase from 7% in 2011-2012.

Trends in Anemia (Hemoglobin Level <8.0 g/dl) by Residence

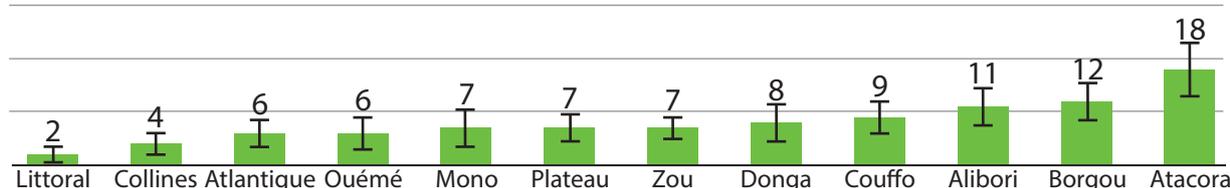
Percent of children age 6-59 months who had a hemoglobin measurement of less than 8 grams per deciliter (g/dl) of blood



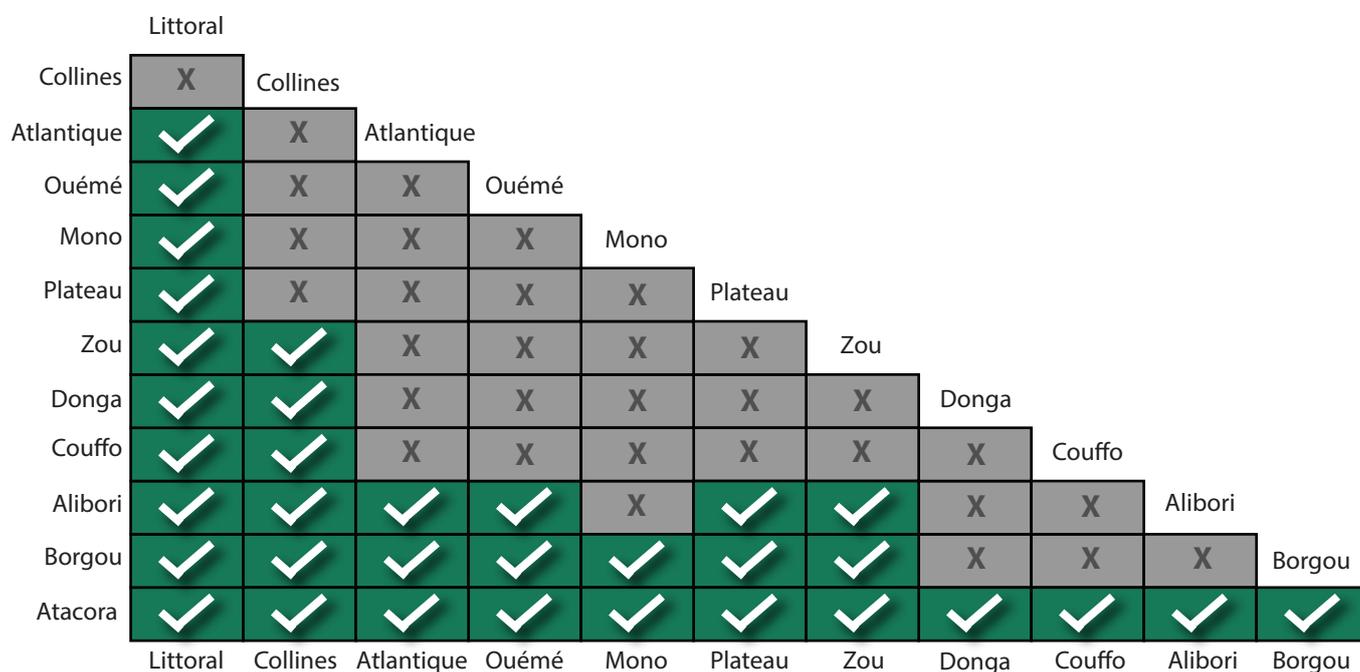
- The prevalence of low hemoglobin among children age 6-59 months is significantly higher in rural areas (10%) than in urban areas (7%).
- The prevalence of low hemoglobin in urban areas did not change between 2011-2012 and 2017-2018.
- In contrast, the prevalence of low hemoglobin in rural areas increased significantly between 2011-2012 (8%) and 2017-2018 (10%).

Does the prevalence of anemia (hemoglobin level <8.0 g/dl) vary significantly across departments (EDSB-V 2017-2018)?

Percent of children age 6-59 months who had a hemoglobin measurement of less than 8 grams per deciliter (g/dl) of blood



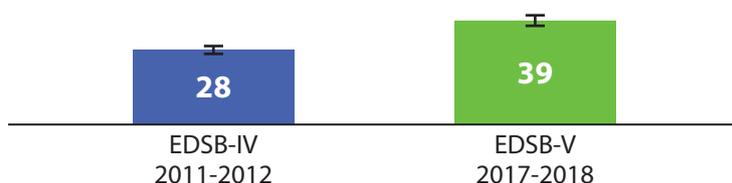
- By department, the prevalence of low hemoglobin among children age 6-59 months varies from 2% in Littoral to 18% in Atacora.
- The prevalence of low hemoglobin in Atacora (18%) is significantly higher than in all other departments.
- In contrast, the prevalence of low hemoglobin in Littoral (2%) is significantly lower than in all other departments except Collines (4%).



MALARIA PREVALENCE

National-Level Trends in Malaria Prevalence

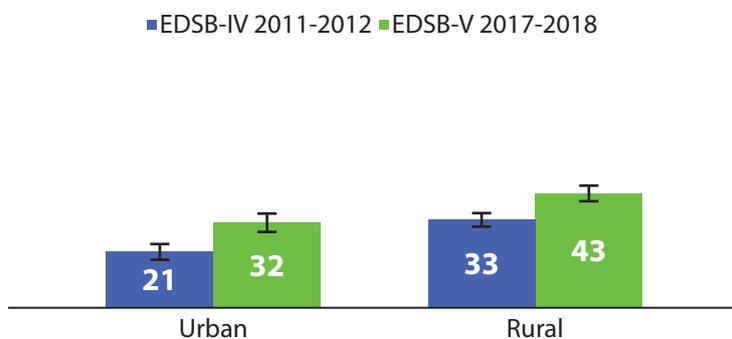
Percent of children age 6-59 months who tested positive for malaria by microscopy



- Nearly 2 in 5 children age 6-59 months (39%) tested positive for malaria by microscopy.
- The prevalence of malaria increased significantly from 28% in 2011-2012 to 39% in 2017-2018.

Trends in Malaria Prevalence by Residence

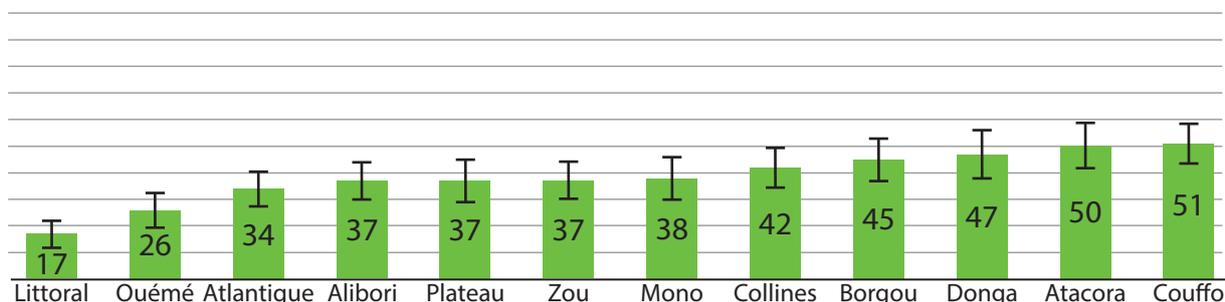
Percent of children age 6-59 months who tested positive for malaria by microscopy



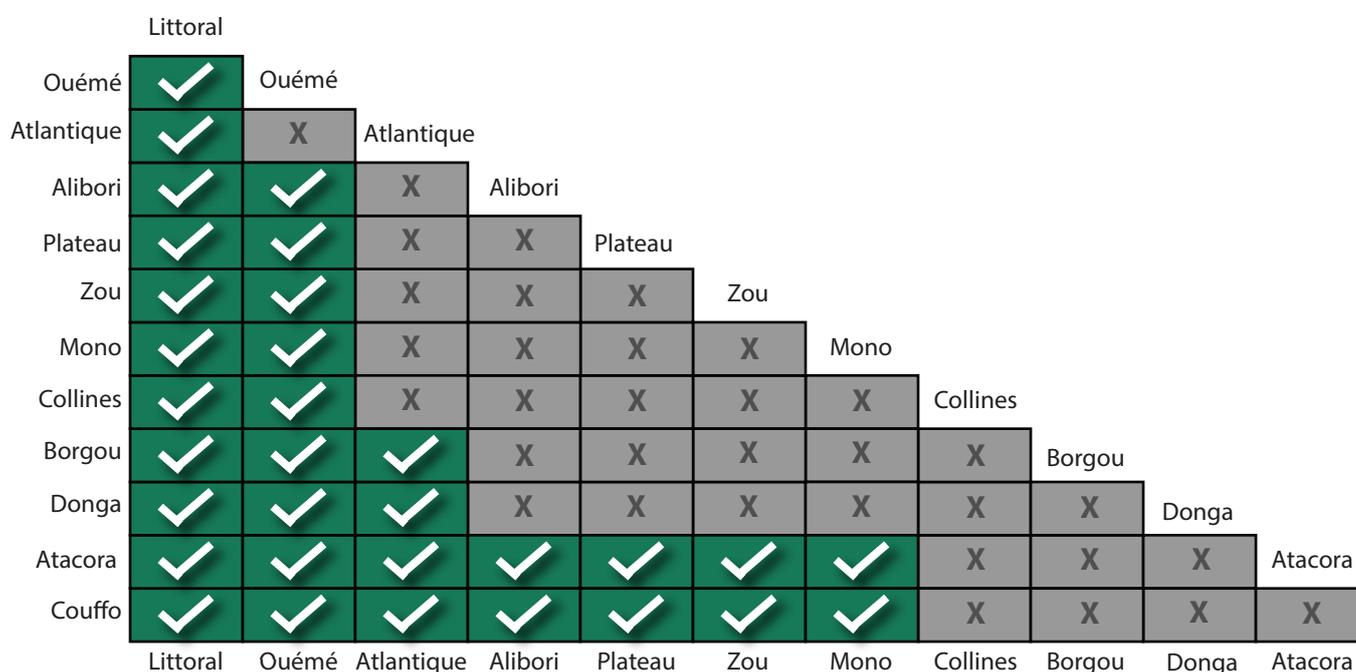
- The prevalence of malaria among children age 6-59 months is significantly higher in rural areas (43%) than in urban areas (32%).
- In both urban and rural areas, the prevalence of malaria increased significantly between 2011-2012 and 2017-2018.

Does malaria prevalence vary significantly across departments (EDSB-V 2017-2018)?

Percent of children age 6-59 months who tested positive for malaria by microscopy



- The prevalence of malaria among children age 6-59 months ranges from a minimum of 17% in Littoral to 51% in Couffo.
- The prevalence of malaria is significantly lower in Littoral (17%) than in all other departments.
- In contrast, the prevalence of malaria is significantly higher in Atacora (50%) and Couffo (51%) than in half of the other departments. However, the difference between Atacora and Couffo is not significant.



APPENDIX A

ESTIMATES OF SAMPLING ERRORS

The following pages provide information on the sampling errors from the EDSB-III 2006, EDSB-IV 2011-2012, and EDSB-V 2017-2018 surveys. This is the data used to produce the graphs and confidence intervals displayed throughout the document.

The estimates from a sample survey are affected by two types of errors: (1) nonsampling errors and (2) sampling errors. Nonsampling errors result from mistakes made in implementing data collection and data processing, such as the failure to locate and interview the selected households, misunderstanding of the questions by interviewers or respondents, and data entry errors. Although numerous efforts are made during the implementation of surveys to minimize nonsampling errors, they are impossible to avoid and difficult to evaluate statistically.

Sampling errors, on the other hand, can be evaluated statistically. The sample of respondents selected for each EDS is one of many samples that could have been selected from the same population, with the same design and identical size for each of these surveys. Each of these samples would yield results that differ somewhat from the results of the actual sample. Sampling error is a measure of the variability between all possible samples. The exact degree of variability is unknown, but can be estimated from the survey results.

A sampling error is usually measured in terms of the standard error for a particular statistic (such as the mean or percentage), which is the square root of the variance. The standard error can be used to calculate confidence intervals within which the true value for the population can reasonably be assumed to fall. For example, for any given statistic calculated from a sample survey, the value of that statistic will fall within a range of plus or minus two times the standard error of that statistic in 95% of all possible samples of identical size and design.

If the sample were selected as a simple random sample, it would have been possible to use straightforward formulas for calculating sampling errors. However, the samples for the EDSB-III, EDSB-IV et EDSB-V surveys are the result of a multi-stage, stratified design. Consequently, it was necessary to use more complex formulas. The computer software used to calculate sampling errors for the EDSB-III, EDSB-IV et EDSB-V surveys is a SAS program that used the Taylor linearization method for variance estimation for survey estimates that are means or proportions.

In addition to the standard error, the program computes the design effect (DEFT) for each estimate, which is defined as the ratio between the standard error that uses the given sample design and the standard error that would result if a simple random sample had been used. A DEFT value of 1.0 indicates that the sample design is as efficient as a simple random sample. A value greater than 1.0 indicates that the increase in the sampling error is due to the use of a more complex, less statistically efficient design, such as multistage and cluster selection. The program also computes the relative standard error and the confidence limits for the estimates.

Sampling errors for the EDSB-III, EDSB-IV et EDSB-V surveys are calculated for selected variables of primary interest to PNLP in Benin. The sampling errors in this annex are shown for Benin as a whole, for urban and rural areas separately, and for the EDSB-V 2017-2018, for each of the 12 administrative departments. The subsequent tables present the value of the statistic (R), its standard error (SE), the number of unweighted (N-UNWE) and weighted (N-WEIG) cases, the design effect (DEFT), the relative standard error (SE/R), and the 95% confidence limits ($R \pm 2SE$) for each variable. The DEFT is considered undefined when the standard error for the simple random sample is zero (when the estimate is close to 0 or 1).

The confidence interval (as calculated for households with at least one insecticide treated net (ITN) in the EDSB-V 2017-2018 survey) can be interpreted as the overall average from the total sample at 91.5%, with its standard error at 0.004. Therefore, to obtain the 95% confidence limits, twice the standard error is added or subtracted to the sample estimate, i.e., $0.915 \pm 2 \times 0.004$. There is a high probability (95%) that the true average number of mosquito nets per household falls between 0.908 and 0.922.

BENIN DHS 2006

Table B.1 Sampling errors: Total sample, Benin DHS 2006

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.564	0.008	17,511	17,511	2.136	0.014	0.548	0.580
Number of any mosquito nets	1.000	0.018	17,511	17,511	2.071	0.018	0.965	1.035
Ownership of at least one ITN	0.245	0.005	17,511	17,511	1.605	0.021	0.235	0.255
Number of ITNs	0.397	0.010	17,511	17,511	1.617	0.025	0.377	0.417
Ownership of at least one ITN for two persons	0.074	0.003	17,457	17,458	1.456	0.039	0.068	0.080
Household population that slept under an ITN last night	0.147	0.004	87,396	86,515	3.228	0.026	0.139	0.155
Proportion of de facto population with access to an ITN	0.147	0.004	87,396	86,515	3.879	0.025	0.140	0.154
CHILDREN								
Slept under an ITN last night	0.203	0.006	16,035	15,941	1.807	0.028	0.192	0.214
Slept under an ITN last night in household with at least 1 ITN	0.688	0.010	4,732	4,702	1.481	0.014	0.668	0.708
Had fever in last 2 weeks	0.286	0.007	14,682	14,563	1.865	0.024	0.272	0.300
Advice or treatment for fever sought	0.495	0.011	4,204	4,162	1.436	0.022	0.473	0.517
Received ACT treatment for fever	0.007	0.002	2,243	2,247	1.340	0.346	0.002	0.012
Had blood taken from finger or heel stick for fever								
Had a hemoglobin level less than 8 g/dl								
Has malaria (based on rapid test)								
Has malaria (based on microscopy test)								
PREGNANT WOMEN								
Slept under any mosquito net last night	0.461	0.014	1,956	1,962	1.263	0.031	0.433	0.489
Slept under an ITN last night	0.196	0.010	1,956	1,962	1.119	0.051	0.176	0.216
Slept under an ITN last night in household with at least one ITN	0.692	0.020	555	555	1.028	0.029	0.652	0.732
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.049	0.003	6,432	6,380	1.291	0.071	0.042	0.056
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.030	0.003	6,432	6,380	1.279	0.091	0.025	0.035
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.012	0.002	6,432	6,380	1.281	0.144	0.009	0.015

Table B.2 Sampling errors: Urban sample, Benin DHS 2006

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.658	0.011	7,228	7,067	1.905	0.016	0.637	0.679
Number of any mosquito nets	1.224	0.026	7,228	7,067	1.815	0.021	1.173	1.275
Ownership of at least one ITN	0.292	0.008	7,228	7,067	1.577	0.029	0.275	0.309
Number of ITNs	0.499	0.017	7,228	7,067	1.582	0.035	0.465	0.533
Ownership of at least one ITN for two persons	0.109	0.006	7,199	7,040	1.502	0.051	0.098	0.120
Household population that slept under an ITN last night	0.185	0.007	33,994	32,524	3.126	0.036	0.172	0.198
Proportion of de facto population with access to an ITN	0.147	0.004	87,396	86,515	3.879	0.025	0.140	0.154
CHILDREN								
Slept under any mosquito net last night	0.560	0.014	5,809	5,518	2.186	0.025	0.532	0.588
Slept under an ITN last night	0.251	0.010	5,809	5,518	1.701	0.039	0.232	0.270
Slept under an ITN last night in household with at least 1 ITN	0.712	0.015	2,001	1,942	1.507	0.021	0.681	0.743
Had fever in last 2 weeks	0.259	0.010	5,289	5,054	1.643	0.038	0.239	0.279
Advice or treatment for fever sought	0.569	0.019	1,381	1,307	1.417	0.033	0.531	0.607
Received ACT treatment for fever	0.007	0.003	772	741	0.940	0.397	0.001	0.013
Had blood taken from finger or heel stick for fever								
Had a hemoglobin level less than 8 g/dl								
Has malaria (based on rapid test)								
Has malaria (based on microscopy test)								
PREGNANT WOMEN								
Slept under any mosquito net last night	0.548	0.023	701	664	1.212	0.042	0.502	0.594
Slept under an ITN last night	0.254	0.020	701	664	1.209	0.078	0.214	0.294
Slept under an ITN last night in household with at least one ITN	0.751	0.032	227	224	1.128	0.043	0.686	0.816
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.054	0.006	2,314	2,214	1.199	0.105	0.043	0.065
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.034	0.004	2,314	2,214	1.131	0.125	0.026	0.042
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.014	0.003	2,314	2,214	1.100	0.195	0.009	0.019

Table B.3 Sampling errors: Rural sample, Benin DHS 2006

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.501	0.011	10,283	10,444	2.189	0.022	0.479	0.523
Number of any mosquito nets	0.849	0.023	10,283	10,444	2.217	0.027	0.803	0.895
Ownership of at least one ITN	0.214	0.006	10,283	10,444	1.598	0.030	0.201	0.227
Number of ITNs	0.328	0.012	10,283	10,444	1.640	0.036	0.304	0.352
Ownership of at least one ITN for two persons	0.051	0.003	10,258	10,418	1.348	0.057	0.045	0.057
Household population that slept under an ITN last night	0.123	0.005	53,402	53,991	3.248	0.038	0.114	0.132
Proportion of de facto population with access to an ITN	0.147	0.004	87,396	86,515	3.879	0.025	0.140	0.154
CHILDREN								
Slept under any mosquito net last night	0.424	0.012	10,226	10,423	2.443	0.028	0.400	0.448
Slept under an ITN last night	0.178	0.007	10,226	10,423	1.845	0.039	0.164	0.192
Slept under an ITN last night in household with at least 1 ITN	0.672	0.013	2,731	2,760	1.456	0.019	0.646	0.698
Had fever in last 2 weeks	0.300	0.009	9,393	9,510	1.948	0.031	0.282	0.318
Advice or treatment for fever sought	0.461	0.014	2,823	2,854	1.447	0.029	0.434	0.488
Received ACT treatment for fever	0.008	0.003	1,471	1,507	1.470	0.419	0.001	0.015
Had blood taken from finger or heel stick for fever								
Had a hemoglobin level less than 8 g/dl								
Has malaria (based on rapid test)								
Has malaria (based on microscopy test)								
PREGNANT WOMEN								
Slept under any mosquito net last night	0.417	0.018	1,255	1,298	1.287	0.043	0.381	0.453
Slept under an ITN last night	0.167	0.011	1,255	1,298	1.047	0.066	0.145	0.189
Slept under an ITN last night in household with at least one ITN	0.653	0.025	328	331	0.963	0.039	0.602	0.704
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.045	0.004	4,118	4,166	1.345	0.097	0.036	0.054
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.028	0.004	4,118	4,166	1.363	0.125	0.021	0.035
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.010	0.002	4,118	4,166	1.401	0.221	0.006	0.014

BENIN DHS 2011-2012

Table B.4 Sampling errors: Total sample, Benin DHS 2012

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.855	0.004	17,422	17,422	1.436	0.004	0.847	0.863
Number of any mosquito nets	1.982	0.015	17,422	17,422	1.417	0.008	1.951	2.013
Ownership of at least one ITN	0.798	0.005	17,422	17,422	1.531	0.006	0.789	0.807
Number of ITNs	1.825	0.016	17,422	17,422	1.471	0.009	1.792	1.858
Ownership of at least one ITN for two persons	0.446	0.005	17,395	17,393	1.427	0.012	0.435	0.457
Household population that slept under an ITN last night	0.627	0.005	85,898	84,504	2.976	0.008	0.617	0.637
Proportion of de facto population with access to an ITN	0.640	0.005	85,898	84,504	3.797	0.007	0.630	0.650
CHILDREN								
Slept under any mosquito net last night	0.749	0.006	14,198	13,960	1.629	0.008	0.737	0.761
Slept under an ITN last night	0.697	0.006	14,198	13,960	1.602	0.009	0.685	0.709
Slept under an ITN last night in household with at least 1 ITN	0.827	0.005	12,019	11,764	1.501	0.006	0.817	0.837
Had fever in last 2 weeks	0.091	0.003	12,679	12,497	1.370	0.038	0.084	0.098
Advice or treatment for fever sought	0.537	0.018	1,141	1,133	1.206	0.033	0.501	0.573
Received ACT treatment for fever.	0.320	0.027	430	435	1.215	0.086	0.265	0.375
Had blood taken from finger or heel stick for fever	0.173	0.013	1,141	1,133	1.129	0.073	0.148	0.198
Had a hemoglobin level less than 8 g/dl.	0.071	0.005	3,721	3,686	1.244	0.074	0.061	0.081
Has malaria (based on rapid test)	0.248	0.009	3,745	3,707	1.228	0.035	0.231	0.265
Has malaria (based on microscopy test)	0.284	0.010	3,720	3,678	1.296	0.034	0.265	0.303
PREGNANT WOMEN								
Slept under any mosquito net last night	0.799	0.011	1,595	1,559	1.095	0.014	0.777	0.821
Slept under an ITN last night	0.746	0.012	1,595	1,559	1.079	0.016	0.722	0.770
Slept under an ITN last night in household with at least one ITN	0.879	0.009	1,364	1,323	1.049	0.011	0.860	0.898
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.313	0.008	5,178	5,130	1.280	0.026	0.297	0.329
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.228	0.008	5,178	5,130	1.322	0.034	0.213	0.243
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.088	0.005	5,178	5,130	1.270	0.057	0.078	0.098

Table B.5 Sampling errors: Urban sample, Benin DHS 2012

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.866	0.006	7,108	7,698	1.410	0.007	0.855	0.877
Number of any mosquito nets	1.973	0.022	7,108	7,698	1.352	0.011	1.928	2.018
Ownership of at least one ITN	0.782	0.008	7,108	7,698	1.577	0.010	0.767	0.797
Number of ITNs	1.743	0.025	7,108	7,698	1.475	0.014	1.693	1.793
Ownership of at least one ITN for two persons	0.460	0.009	7,091	7,678	1.461	0.019	0.443	0.477
Household population that slept under an ITN last night	0.620	0.008	33,364	35,100	2.873	0.012	0.605	0.635
Proportion of de facto population with access to an ITN	0.640	0.005	85,898	84,504	3.797	0.007	0.630	0.650
CHILDREN								
Slept under any mosquito net last night	0.765	0.009	5,233	5,476	1.604	0.012	0.746	0.784
Slept under an ITN last night	0.688	0.010	5,233	5,476	1.540	0.014	0.668	0.708
Slept under an ITN last night in household with at least 1 ITN	0.831	0.009	4,391	4,536	1.519	0.010	0.814	0.848
Had fever in last 2 weeks	0.104	0.007	4,693	5,011	1.593	0.068	0.090	0.118
Advice or treatment for fever sought	0.593	0.032	474	523	1.398	0.053	0.530	0.656
Received ACT treatment for fever.	0.315	0.042	201	224	1.272	0.133	0.231	0.399
Had blood taken from finger or heel stick for fever	0.172	0.020	474	523	1.147	0.116	0.132	0.212
Had a hemoglobin level less than 8 g/dl.	0.061	0.007	1,336	1,432	1.079	0.116	0.047	0.075
Has malaria (based on rapid test)	0.123	0.011	1,335	1,430	1.174	0.086	0.102	0.144
Has malaria (based on microscopy test)	0.208	0.013	1,326	1,416	1.206	0.065	0.181	0.235
PREGNANT WOMEN								
Slept under any mosquito net last night	0.800	0.020	528	558	1.159	0.025	0.760	0.840
Slept under an ITN last night	0.721	0.022	528	558	1.132	0.031	0.677	0.765
Slept under an ITN last night in household with at least one ITN	0.875	0.018	451	460	1.134	0.020	0.840	0.910
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.319	0.014	1,983	2,117	1.337	0.044	0.291	0.347
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.242	0.013	1,983	2,117	1.378	0.055	0.215	0.269
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.112	0.010	1,983	2,117	1.391	0.088	0.092	0.132

Table B.6 Sampling errors: Rural sample, Benin DHS 2012

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.846	0.005	10,314	9,724	1.458	0.006	0.836	0.856
Number of any mosquito nets	1.989	0.021	10,314	9,724	1.466	0.011	1.947	2.031
Ownership of at least one ITN	0.810	0.006	10,314	9,724	1.467	0.007	0.799	0.821
Number of ITNs	1.889	0.021	10,314	9,724	1.461	0.011	1.846	1.932
Ownership of at least one ITN for two persons	0.434	0.007	10,304	9,716	1.387	0.016	0.420	0.448
Household population that slept under an ITN last night	0.632	0.006	52,534	49,404	3.048	0.010	0.619	0.645
Proportion of de facto population with access to an ITN	0.640	0.005	85,898	84,504	3.797	0.007	0.630	0.650
CHILDREN								
Slept under any mosquito net last night	0.739	0.008	8,965	8,484	1.643	0.010	0.724	0.754
Slept under an ITN last night	0.703	0.008	8,965	8,484	1.641	0.011	0.687	0.719
Slept under an ITN last night in household with at least 1 ITN	0.825	0.006	7,628	7,228	1.486	0.008	0.812	0.838
Had fever in last 2 weeks	0.082	0.003	7,986	7,486	1.075	0.040	0.075	0.089
Advice or treatment for fever sought	0.489	0.020	667	610	1.021	0.040	0.449	0.529
Received ACT treatment for fever.	0.326	0.035	229	210	1.124	0.107	0.256	0.396
Had blood taken from finger or heel stick for fever	0.174	0.016	667	610	1.100	0.093	0.142	0.206
Had a hemoglobin level less than 8 g/dl.	0.077	0.007	2,385	2,255	1.322	0.094	0.063	0.091
Has malaria (based on rapid test)	0.327	0.012	2,410	2,277	1.222	0.036	0.304	0.350
Has malaria (based on microscopy test)	0.332	0.013	2,394	2,262	1.348	0.039	0.306	0.358
PREGNANT WOMEN								
Slept under any mosquito net last night	0.799	0.013	1,067	1,000	1.050	0.016	0.773	0.825
Slept under an ITN last night	0.760	0.014	1,067	1,000	1.037	0.018	0.733	0.787
Slept under an ITN last night in household with at least one ITN	0.882	0.011	913	862	0.992	0.012	0.861	0.903
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.309	0.010	3,195	3,013	1.226	0.032	0.289	0.329
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.218	0.009	3,195	3,013	1.256	0.042	0.200	0.236
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.072	0.005	3,195	3,013	1.058	0.067	0.062	0.082

BENIN DHS 2017-2018

Table B.7 Sampling errors: Total sample, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.928	0.003	14,156	14,156	1.554	0.004	0.921	0.935
Number of any mosquito nets	2.596	0.021	14,156	14,156	1.579	0.008	2.553	2.639
Ownership of at least one ITN	0.915	0.004	14,156	14,156	1.513	0.004	0.908	0.922
Number of ITNs	2.539	0.022	14,156	14,156	1.595	0.009	2.496	2.582
Ownership of at least one ITN for two persons	0.605	0.006	14,110	14,114	1.507	0.010	0.593	0.617
Household population that slept under an ITN last night	0.711	0.006	73,336	73,098	3.507	0.008	0.699	0.723
Proportion of de facto population with access to an ITN	0.772	0.006	73,336	73,098	5.035	0.007	0.761	0.783
CHILDREN								
Slept under any mosquito net last night	0.777	0.008	13,550	13,551	2.192	0.010	0.761	0.793
Slept under an ITN last night	0.763	0.008	13,550	13,551	2.163	0.010	0.747	0.779
Slept under an ITN last night in household with at least 1 ITN	0.822	0.006	12,631	12,582	1.812	0.008	0.810	0.834
Had fever in last 2 weeks	0.194	0.006	12,651	12,686	1.642	0.030	0.182	0.206
Advice or treatment for fever sought	0.531	0.016	2,429	2,466	1.574	0.030	0.499	0.563
Received ACT treatment for fever	0.372	0.028	424	429	1.175	0.074	0.317	0.427
Had blood taken from finger or heel stick for fever	0.177	0.010	2,429	2,466	1.251	0.055	0.158	0.196
Had a hemoglobin level less than 8 g/dl	0.086	0.005	6,207	6,171	1.402	0.058	0.076	0.096
Has malaria (based on rapid test)	0.363	0.011	6,203	6,167	1.881	0.032	0.340	0.386
Has malaria (based on microscopy test)	0.391	0.011	5,916	5,879	1.808	0.029	0.368	0.414
PREGNANT WOMEN								
Slept under any mosquito net last night	0.804	0.011	1,709	1,709	1.183	0.014	0.781	0.827
Slept under an ITN last night	0.793	0.012	1,709	1,709	1.186	0.015	0.770	0.816
Slept under an ITN last night in household with at least one ITN	0.848	0.010	1,606	1,597	1.165	0.012	0.827	0.869
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.485	0.011	5,486	5,502	1.639	0.023	0.463	0.507
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.334	0.009	5,486	5,502	1.461	0.028	0.315	0.353
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.133	0.006	5,486	5,502	1.302	0.045	0.121	0.145

Table B.8 Sampling errors: Urban sample, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.925	0.005	6,364	6,104	1.470	0.005	0.915	0.935
Number of any mosquito nets	2.506	0.029	6,364	6,104	1.518	0.012	2.448	2.564
Ownership of at least one ITN	0.902	0.005	6,364	6,104	1.426	0.006	0.891	0.913
Number of ITNs	2.423	0.030	6,364	6,104	1.555	0.012	2.363	2.483
Ownership of at least one ITN for two persons	0.608	0.010	6,346	6,088	1.559	0.016	0.589	0.627
Household population that slept under an ITN last night	0.725	0.008	30,728	29,376	3.137	0.011	0.709	0.741
Proportion of de facto population with access to an ITN	0.779	0.007	30,728	29,376	4.122	0.009	0.765	0.793
CHILDREN								
Slept under any mosquito net last night	0.815	0.010	5,411	5,220	1.887	0.012	0.795	0.835
Slept under an ITN last night	0.797	0.010	5,411	5,220	1.861	0.013	0.777	0.817
Slept under an ITN last night in household with at least 1 ITN	0.853	0.009	5,067	4,876	1.794	0.010	0.835	0.871
Had fever in last 2 weeks	0.173	0.008	5,089	4,940	1.582	0.048	0.156	0.190
Advice or treatment for fever sought	0.588	0.023	862	855	1.377	0.039	0.542	0.634
Received ACT treatment for fever	0.293	0.043	159	163	1.198	0.148	0.206	0.380
Had blood taken from finger or heel stick for fever	0.192	0.016	862	855	1.201	0.084	0.160	0.224
Had a hemoglobin level less than 8 g/dl	0.065	0.007	2,457	2,325	1.459	0.112	0.050	0.080
Has malaria (based on rapid test)	0.246	0.019	2,453	2,321	2.176	0.077	0.208	0.284
Has malaria (based on microscopy test)	0.322	0.017	2,347	2,220	1.746	0.052	0.288	0.356
PREGNANT WOMEN								
Slept under any mosquito net last night	0.821	0.016	649	630	1.085	0.020	0.788	0.854
Slept under an ITN last night	0.805	0.017	649	630	1.102	0.021	0.771	0.839
Slept under an ITN last night in household with at least one ITN	0.853	0.016	615	594	1.105	0.019	0.821	0.885
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.527	0.018	2,180	2,105	1.698	0.034	0.491	0.563
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.376	0.016	2,180	2,105	1.579	0.044	0.343	0.409
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.155	0.010	2,180	2,105	1.298	0.065	0.135	0.175

Table B.9 Sampling errors: Rural sample, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.930	0.005	7,792	8,052	1.613	0.005	0.921	0.939
Number of any mosquito nets	2.664	0.030	7,792	8,052	1.608	0.011	2.604	2.724
Ownership of at least one ITN	0.924	0.005	7,792	8,052	1.578	0.005	0.915	0.933
Number of ITNs	2.627	0.030	7,792	8,052	1.613	0.012	2.567	2.687
Ownership of at least one ITN for two persons	0.603	0.008	7,764	8,026	1.471	0.014	0.587	0.619
Household population that slept under an ITN last night	0.702	0.008	42,608	43,722	3.672	0.012	0.686	0.718
Proportion of de facto population with access to an ITN	0.767	0.008	42,608	43,722	5.487	0.010	0.751	0.783
CHILDREN								
Slept under any mosquito net last night	0.753	0.011	8,139	8,331	2.259	0.014	0.731	0.775
Slept under an ITN last night	0.742	0.011	8,139	8,331	2.233	0.015	0.720	0.764
Slept under an ITN last night in household with at least 1 ITN	0.802	0.008	7,564	7,706	1.783	0.010	0.786	0.818
Had fever in last 2 weeks	0.208	0.008	7,562	7,746	1.661	0.037	0.192	0.224
Advice or treatment for fever sought	0.501	0.021	1,567	1,611	1.629	0.041	0.460	0.542
Received ACT treatment for fever	0.420	0.035	265	266	1.168	0.084	0.349	0.491
Had blood taken from finger or heel stick for fever	0.169	0.012	1,567	1,611	1.278	0.072	0.145	0.193
Had a hemoglobin level less than 8 g/dl	0.099	0.007	3,750	3,846	1.376	0.068	0.086	0.112
Has malaria (based on rapid test)	0.434	0.014	3,750	3,845	1.760	0.033	0.406	0.462
Has malaria (based on microscopy test)	0.433	0.015	3,569	3,659	1.846	0.035	0.402	0.464
PREGNANT WOMEN								
Slept under any mosquito net last night	0.794	0.015	1,060	1,080	1.224	0.019	0.764	0.824
Slept under an ITN last night	0.786	0.015	1,060	1,080	1.224	0.020	0.755	0.817
Slept under an ITN last night in household with at least one ITN	0.846	0.014	991	1,003	1.194	0.016	0.819	0.873
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.460	0.014	3,306	3,397	1.591	0.030	0.432	0.488
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.309	0.011	3,306	3,397	1.372	0.036	0.287	0.331
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.120	0.007	3,306	3,397	1.308	0.062	0.105	0.135

Table B.10 Sampling errors: Alibori, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.877	0.017	1,089	1,192	1.753	0.020	0.842	0.912
Number of any mosquito nets	2.760	0.063	1,089	1,192	1.110	0.023	2.634	2.886
Ownership of at least one ITN	0.871	0.017	1,089	1,192	1.677	0.020	0.837	0.905
Number of ITNs	2.742	0.066	1,089	1,192	1.152	0.024	2.611	2.873
Ownership of at least one ITN for two persons	0.440	0.027	1,079	1,183	1.797	0.062	0.386	0.494
Household population that slept under an ITN last night	0.637	0.023	8,195	9,013	4.272	0.036	0.592	0.682
Proportion of de facto population with access to an ITN	0.644	0.026	8,195	9,013	6.589	0.040	0.593	0.695
CHILDREN								
Slept under any mosquito net last night	0.695	0.034	1,599	1,779	2.961	0.049	0.627	0.763
Slept under an ITN last night	0.691	0.034	1,599	1,779	2.906	0.049	0.624	0.758
Slept under an ITN last night in household with at least 1 ITN	0.815	0.023	1,368	1,508	2.157	0.028	0.770	0.860
Had fever in last 2 weeks	0.225	0.021	1,534	1,718	2.001	0.095	0.182	0.268
Advice or treatment for fever sought	0.165	0.023	351	387	1.157	0.139	0.119	0.211
Received ACT treatment for fever	0.680	0.077	43	46	1.072	0.113	0.526	0.834
Had blood taken from finger or heel stick for fever	0.098	0.019	351	387	1.183	0.192	0.060	0.136
Had a hemoglobin level less than 8 g/dl	0.112	0.017	709	787	1.438	0.152	0.078	0.146
Has malaria (based on rapid test)	0.359	0.039	708	786	2.147	0.108	0.282	0.436
Has malaria (based on microscopy test)	0.370	0.036	661	737	1.918	0.097	0.298	0.442
PREGNANT WOMEN								
Slept under any mosquito net last night	0.691	0.042	194	211	1.271	0.061	0.606	0.776
Slept under an ITN last night	0.691	0.042	194	211	1.271	0.061	0.606	0.776
Slept under an ITN last night in household with at least one ITN	0.837	0.040	163	175	1.369	0.048	0.757	0.917
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.382	0.036	679	766	1.923	0.094	0.310	0.454
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.265	0.027	679	766	1.567	0.100	0.212	0.318
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.074	0.014	679	766	1.349	0.184	0.047	0.101

Table B.11 Sampling errors: Atacora, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.942	0.016	993	923	2.146	0.017	0.910	0.974
Number of any mosquito nets	3.372	0.126	993	923	2.135	0.037	3.119	3.625
Ownership of at least one ITN	0.940	0.017	993	923	2.226	0.018	0.906	0.974
Number of ITNs	3.364	0.128	993	923	2.158	0.038	3.108	3.620
Ownership of at least one ITN for two persons	0.591	0.020	991	922	1.249	0.033	0.552	0.630
Household population that slept under an ITN last night	0.676	0.027	6,883	6,371	4.792	0.040	0.622	0.730
Proportion of de facto population with access to an ITN	0.817	0.019	6,883	6,371	6.052	0.023	0.780	0.854
CHILDREN								
Slept under any mosquito net last night	0.724	0.029	1,307	1,205	2.351	0.040	0.666	0.782
Slept under an ITN last night	0.722	0.029	1,307	1,205	2.373	0.041	0.663	0.781
Slept under an ITN last night in household with at least 1 ITN	0.758	0.023	1,251	1,149	1.932	0.031	0.711	0.805
Had fever in last 2 weeks	0.162	0.019	1,227	1,127	1.819	0.118	0.124	0.200
Advice or treatment for fever sought	0.452	0.040	198	182	1.129	0.089	0.372	0.532
Received ACT treatment for fever	0.336	0.109	28	26	1.203	0.325	0.117	0.555
Had blood taken from finger or heel stick for fever	0.212	0.027	198	182	0.944	0.130	0.157	0.267
Had a hemoglobin level less than 8 g/dl	0.181	0.026	596	555	1.649	0.144	0.129	0.233
Has malaria (based on rapid test)	0.539	0.043	596	555	2.120	0.080	0.452	0.626
Has malaria (based on microscopy test)	0.497	0.042	570	534	2.022	0.085	0.412	0.582
PREGNANT WOMEN								
Slept under any mosquito net last night	0.791	0.036	155	138	1.083	0.045	0.720	0.862
Slept under an ITN last night	0.791	0.036	155	138	1.083	0.045	0.720	0.862
Slept under an ITN last night in household with at least one ITN	0.838	0.032	148	131	1.053	0.038	0.774	0.902
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.432	0.035	540	499	1.620	0.080	0.363	0.501
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.303	0.030	540	499	1.502	0.098	0.244	0.362
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.101	0.016	540	499	1.253	0.161	0.068	0.134

Table B.12 Sampling errors: Atlantique, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.956	0.005	1,636	1,969	1.055	0.006	0.945	0.967
Number of any mosquito nets	2.701	0.064	1,636	1,969	1.706	0.024	2.574	2.828
Ownership of at least one ITN	0.946	0.007	1,636	1,969	1.189	0.007	0.933	0.959
Number of ITNs	2.609	0.066	1,636	1,969	1.775	0.025	2.478	2.740
Ownership of at least one ITN for two persons	0.712	0.017	1,631	1,962	1.541	0.024	0.677	0.747
Household population that slept under an ITN last night	0.787	0.013	7,282	8,655	2.799	0.017	0.760	0.814
Proportion of de facto population with access to an ITN	0.851	0.009	7,282	8,655	3.121	0.011	0.833	0.869
CHILDREN								
Slept under any mosquito net last night	0.886	0.011	1,252	1,500	1.271	0.013	0.863	0.909
Slept under an ITN last night	0.857	0.015	1,252	1,500	1.497	0.017	0.827	0.887
Slept under an ITN last night in household with at least 1 ITN	0.887	0.013	1,212	1,450	1.374	0.014	0.862	0.912
Had fever in last 2 weeks	0.274	0.017	1,198	1,448	1.305	0.061	0.240	0.308
Advice or treatment for fever sought	0.610	0.042	309	397	1.495	0.068	0.527	0.693
Received ACT treatment for fever	0.253	0.065	52	67	1.074	0.258	0.122	0.384
Had blood taken from finger or heel stick for fever	0.118	0.017	309	397	0.933	0.145	0.084	0.152
Had a hemoglobin level less than 8 g/dl	0.056	0.013	565	675	1.364	0.237	0.029	0.083
Has malaria (based on rapid test)	0.237	0.031	565	675	1.738	0.131	0.175	0.299
Has malaria (based on microscopy test)	0.342	0.033	530	625	1.616	0.097	0.275	0.409
PREGNANT WOMEN								
Slept under any mosquito net last night	0.865	0.026	166	195	0.982	0.030	0.813	0.917
Slept under an ITN last night	0.830	0.030	166	195	1.030	0.036	0.770	0.890
Slept under an ITN last night in household with at least one ITN	0.883	0.026	158	184	1.031	0.030	0.830	0.936
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.542	0.028	498	595	1.248	0.051	0.486	0.598
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.372	0.025	498	595	1.142	0.067	0.322	0.422
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.136	0.015	498	595	0.966	0.109	0.106	0.166

Table B.13 Sampling errors: Borgou, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.883	0.012	1,435	1,498	1.409	0.014	0.859	0.907
Number of any mosquito nets	2.480	0.071	1,435	1,498	1.588	0.029	2.337	2.623
Ownership of at least one ITN	0.880	0.012	1,435	1,498	1.393	0.014	0.856	0.904
Number of ITNs	2.461	0.071	1,435	1,498	1.592	0.029	2.318	2.604
Ownership of at least one ITN for two persons	0.470	0.024	1,429	1,491	1.825	0.051	0.422	0.518
Household population that slept under an ITN last night	0.677	0.015	8,862	9,195	3.043	0.022	0.647	0.707
Proportion of de facto population with access to an ITN	0.685	0.016	8,862	9,195	4.551	0.023	0.653	0.717
CHILDREN								
Slept under any mosquito net last night	0.706	0.022	1,786	1,831	2.068	0.032	0.661	0.751
Slept under an ITN last night	0.703	0.023	1,786	1,831	2.083	0.032	0.658	0.748
Slept under an ITN last night in household with at least 1 ITN	0.795	0.019	1,574	1,618	1.906	0.024	0.756	0.834
Had fever in last 2 weeks	0.128	0.014	1,643	1,678	1.725	0.111	0.100	0.156
Advice or treatment for fever sought	0.476	0.042	208	214	1.212	0.088	0.392	0.560
Received ACT treatment for fever	0.589	0.102	33	33	1.168	0.172	0.386	0.792
Had blood taken from finger or heel stick for fever	0.232	0.034	208	214	1.156	0.146	0.164	0.300
Had a hemoglobin level less than 8 g/dl	0.118	0.017	803	818	1.516	0.146	0.083	0.153
Has malaria (based on rapid test)	0.512	0.037	804	819	2.081	0.072	0.439	0.585
Has malaria (based on microscopy test)	0.449	0.039	771	785	2.196	0.088	0.370	0.528
PREGNANT WOMEN								
Slept under any mosquito net last night	0.813	0.027	238	247	1.051	0.033	0.760	0.866
Slept under an ITN last night	0.813	0.027	238	247	1.051	0.033	0.760	0.866
Slept under an ITN last night in household with at least one ITN	0.889	0.019	216	226	0.868	0.021	0.852	0.926
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.398	0.030	720	730	1.657	0.076	0.338	0.458
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.217	0.021	720	730	1.383	0.098	0.174	0.260
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.076	0.011	720	730	1.123	0.146	0.054	0.098

Table B.14 Sampling errors: Collines, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.969	0.005	1,183	981	0.958	0.005	0.959	0.979
Number of any mosquito nets	2.871	0.080	1,183	981	1.687	0.028	2.712	3.030
Ownership of at least one ITN	0.963	0.005	1,183	981	0.941	0.005	0.953	0.973
Number of ITNs	2.838	0.079	1,183	981	1.680	0.028	2.679	2.997
Ownership of at least one ITN for two persons	0.684	0.022	1,177	976	1.602	0.032	0.641	0.727
Household population that slept under an ITN last night	0.681	0.020	5,793	4,758	3.303	0.030	0.641	0.721
Proportion of de facto population with access to an ITN	0.830	0.011	5,793	4,758	3.451	0.014	0.807	0.853
CHILDREN								
Slept under any mosquito net last night	0.713	0.022	1,042	859	1.555	0.031	0.669	0.757
Slept under an ITN last night	0.704	0.022	1,042	859	1.554	0.031	0.660	0.748
Slept under an ITN last night in household with at least 1 ITN	0.723	0.021	1,017	836	1.523	0.030	0.680	0.766
Had fever in last 2 weeks	0.166	0.019	993	814	1.604	0.114	0.128	0.204
Advice or treatment for fever sought	0.801	0.034	159	135	1.073	0.043	0.733	0.869
Received ACT treatment for fever	0.337	0.084	53	47	1.277	0.248	0.170	0.504
Had blood taken from finger or heel stick for fever	0.202	0.038	159	135	1.181	0.187	0.127	0.277
Had a hemoglobin level less than 8 g/dl	0.037	0.009	472	385	1.078	0.253	0.018	0.056
Has malaria (based on rapid test)	0.414	0.033	471	384	1.464	0.080	0.347	0.481
Has malaria (based on microscopy test)	0.423	0.037	450	366	1.606	0.089	0.348	0.498
PREGNANT WOMEN								
Slept under any mosquito net last night	0.764	0.042	157	133	1.233	0.055	0.680	0.848
Slept under an ITN last night	0.747	0.042	157	133	1.212	0.056	0.663	0.831
Slept under an ITN last night in household with at least one ITN	0.770	0.043	153	129	1.250	0.055	0.685	0.855
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.433	0.031	428	353	1.280	0.071	0.372	0.494
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.315	0.032	428	353	1.429	0.102	0.251	0.379
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.146	0.025	428	353	1.455	0.170	0.096	0.196

Table B.15 Sampling errors: Couffo, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.956	0.009	1,070	1,108	1.445	0.009	0.938	0.974
Number of any mosquito nets	2.387	0.060	1,070	1,108	1.406	0.025	2.266	2.508
Ownership of at least one ITN	0.954	0.009	1,070	1,108	1.433	0.010	0.936	0.972
Number of ITNs	2.375	0.060	1,070	1,108	1.407	0.025	2.255	2.495
Ownership of at least one ITN for two persons	0.643	0.016	1,070	1,108	1.083	0.025	0.611	0.675
Household population that slept under an ITN last night	0.708	0.017	4,970	5,071	2.712	0.025	0.673	0.743
Proportion of de facto population with access to an ITN	0.804	0.013	4,970	5,071	3.520	0.017	0.777	0.831
CHILDREN								
Slept under any mosquito net last night	0.788	0.019	942	960	1.394	0.024	0.751	0.825
Slept under an ITN last night	0.785	0.019	942	960	1.444	0.025	0.746	0.824
Slept under an ITN last night in household with at least 1 ITN	0.815	0.018	908	926	1.376	0.022	0.780	0.850
Had fever in last 2 weeks	0.167	0.016	831	844	1.231	0.095	0.135	0.199
Advice or treatment for fever sought	0.639	0.054	148	141	1.361	0.084	0.531	0.747
Received ACT treatment for fever	0.147	0.110	16	16	1.209	0.751	-0.074	0.368
Had blood taken from finger or heel stick for fever	0.184	0.054	148	141	1.681	0.292	0.077	0.291
Had a hemoglobin level less than 8 g/dl	0.088	0.015	441	445	1.125	0.173	0.058	0.118
Has malaria (based on rapid test)	0.543	0.036	441	445	1.527	0.067	0.470	0.616
Has malaria (based on microscopy test)	0.513	0.039	420	425	1.577	0.075	0.436	0.590
PREGNANT WOMEN								
Slept under any mosquito net last night	0.807	0.038	117	122	1.034	0.047	0.731	0.883
Slept under an ITN last night	0.807	0.038	117	122	1.034	0.047	0.731	0.883
Slept under an ITN last night in household with at least one ITN	0.823	0.036	115	119	1.019	0.044	0.750	0.896
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.456	0.040	365	375	1.513	0.087	0.377	0.535
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.300	0.036	365	375	1.518	0.122	0.227	0.373
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.140	0.022	365	375	1.198	0.155	0.096	0.184

Table B.16 Sampling errors: Donga, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.951	0.009	816	740	1.163	0.009	0.933	0.969
Number of any mosquito nets	3.337	0.088	816	740	1.340	0.026	3.161	3.513
Ownership of at least one ITN	0.949	0.009	816	740	1.187	0.010	0.931	0.967
Number of ITNs	3.305	0.087	816	740	1.317	0.026	3.131	3.479
Ownership of at least one ITN for two persons	0.657	0.021	816	740	1.268	0.032	0.615	0.699
Household population that slept under an ITN last night	0.633	0.026	5,314	4,840	3.951	0.041	0.581	0.685
Proportion of de facto population with access to an ITN	0.827	0.017	5,314	4,840	4.741	0.020	0.794	0.860
CHILDREN								
Slept under any mosquito net last night	0.717	0.028	1,011	911	2.006	0.040	0.660	0.774
Slept under an ITN last night	0.701	0.029	1,011	911	2.022	0.042	0.643	0.759
Slept under an ITN last night in household with at least 1 ITN	0.726	0.029	978	880	2.003	0.039	0.669	0.783
Had fever in last 2 weeks	0.163	0.017	917	831	1.412	0.106	0.129	0.197
Advice or treatment for fever sought	0.858	0.035	150	136	1.223	0.041	0.788	0.928
Received ACT treatment for fever	0.497	0.084	38	35	1.021	0.169	0.329	0.665
Had blood taken from finger or heel stick for fever	0.456	0.077	150	136	1.883	0.168	0.302	0.610
Had a hemoglobin level less than 8 g/dl	0.078	0.018	452	403	1.398	0.226	0.043	0.113
Has malaria (based on rapid test)	0.402	0.052	452	403	2.236	0.128	0.299	0.505
Has malaria (based on microscopy test)	0.469	0.047	431	383	1.960	0.101	0.375	0.563
PREGNANT WOMEN								
Slept under any mosquito net last night	0.751	0.052	134	121	1.379	0.069	0.648	0.854
Slept under an ITN last night	0.746	0.052	134	121	1.370	0.069	0.643	0.849
Slept under an ITN last night in household with at least one ITN	0.784	0.048	127	115	1.317	0.062	0.688	0.880
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.618	0.047	426	391	2.005	0.076	0.524	0.712
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.461	0.047	426	391	1.962	0.103	0.366	0.556
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.156	0.027	426	391	1.515	0.171	0.103	0.209

Table B.17 Sampling errors: Littoral, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.946	0.008	1,294	852	1.300	0.009	0.930	0.962
Number of any mosquito nets	2.601	0.051	1,294	852	1.255	0.020	2.499	2.703
Ownership of at least one ITN	0.917	0.011	1,294	852	1.378	0.012	0.896	0.938
Number of ITNs	2.460	0.056	1,294	852	1.354	0.023	2.349	2.571
Ownership of at least one ITN for two persons	0.674	0.022	1,292	851	1.666	0.032	0.631	0.717
Household population that slept under an ITN last night	0.807	0.014	5,596	3,687	2.744	0.018	0.778	0.836
Proportion of de facto population with access to an ITN	0.833	0.014	5,596	3,687	3.955	0.017	0.805	0.861
CHILDREN								
Slept under any mosquito net last night	0.894	0.015	873	585	1.396	0.016	0.865	0.923
Slept under an ITN last night	0.864	0.018	873	585	1.510	0.020	0.829	0.899
Slept under an ITN last night in household with at least 1 ITN	0.895	0.015	842	564	1.434	0.017	0.865	0.925
Had fever in last 2 weeks	0.191	0.017	813	558	1.231	0.089	0.157	0.225
Advice or treatment for fever sought	0.658	0.047	151	107	1.214	0.071	0.564	0.752
Received ACT treatment for fever	0.347	0.116	31	23	1.340	0.336	0.114	0.580
Had blood taken from finger or heel stick for fever	0.140	0.026	151	107	0.908	0.184	0.089	0.191
Had a hemoglobin level less than 8 g/dl	0.017	0.007	433	275	1.057	0.383	0.004	0.030
Has malaria (based on rapid test)	0.042	0.012	432	274	1.220	0.281	0.018	0.066
Has malaria (based on microscopy test)	0.167	0.025	413	263	1.351	0.149	0.117	0.217
PREGNANT WOMEN								
Slept under any mosquito net last night	0.849	0.036	97	63	0.971	0.042	0.778	0.920
Slept under an ITN last night	0.817	0.036	97	63	0.914	0.044	0.745	0.889
Slept under an ITN last night in household with at least one ITN	0.845	0.038	93	61	1.004	0.045	0.769	0.921
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.563	0.036	358	242	1.354	0.063	0.492	0.634
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.439	0.036	358	242	1.375	0.082	0.367	0.511
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.228	0.032	358	242	1.425	0.139	0.165	0.291

Table B.18 Sampling errors: Mono, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.940	0.011	952	879	1.416	0.012	0.918	0.962
Number of any mosquito nets	2.383	0.081	952	879	1.739	0.034	2.221	2.545
Ownership of at least one ITN	0.936	0.011	952	879	1.346	0.011	0.915	0.957
Number of ITNs	2.338	0.072	952	879	1.560	0.031	2.195	2.481
Ownership of at least one ITN for two persons	0.729	0.021	947	874	1.423	0.028	0.688	0.770
Household population that slept under an ITN last night	0.833	0.013	3,792	3,468	2.204	0.016	0.806	0.860
Proportion of de facto population with access to an ITN	0.857	0.013	3,792	3,468	3.074	0.015	0.831	0.883
CHILDREN								
Slept under any mosquito net last night	0.893	0.016	680	611	1.369	0.018	0.860	0.926
Slept under an ITN last night	0.874	0.016	680	611	1.249	0.018	0.842	0.906
Slept under an ITN last night in household with at least 1 ITN	0.913	0.014	652	586	1.230	0.015	0.886	0.940
Had fever in last 2 weeks	0.209	0.020	622	565	1.229	0.096	0.169	0.249
Advice or treatment for fever sought	0.456	0.043	130	118	0.980	0.094	0.370	0.542
Received ACT treatment for fever	0.397	0.142	14	13	1.045	0.357	0.113	0.681
Had blood taken from finger or heel stick for fever	0.183	0.029	130	118	0.864	0.161	0.124	0.242
Had a hemoglobin level less than 8 g/dl	0.066	0.017	325	293	1.213	0.253	0.033	0.099
Has malaria (based on rapid test)	0.259	0.033	324	292	1.355	0.128	0.193	0.325
Has malaria (based on microscopy test)	0.380	0.042	302	274	1.509	0.111	0.296	0.464
PREGNANT WOMEN								
Slept under any mosquito net last night	0.914	0.031	79	73	0.981	0.034	0.852	0.976
Slept under an ITN last night	0.914	0.031	79	73	0.981	0.034	0.852	0.976
Slept under an ITN last night in household with at least one ITN	0.955	0.027	76	70	1.122	0.028	0.901	1.009
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.741	0.032	246	225	1.145	0.043	0.677	0.805
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.556	0.042	246	225	1.330	0.076	0.472	0.640
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.256	0.046	246	225	1.638	0.178	0.165	0.347

Table B.19 Sampling errors: Ouémé, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.842	0.015	1,381	1,633	1.537	0.018	0.812	0.872
Number of any mosquito nets	1.994	0.041	1,381	1,633	1.116	0.021	1.912	2.076
Ownership of at least one ITN	0.780	0.015	1,381	1,633	1.350	0.019	0.750	0.810
Number of ITNs	1.827	0.045	1,381	1,633	1.186	0.024	1.738	1.916
Ownership of at least one ITN for two persons	0.496	0.016	1,375	1,627	1.185	0.032	0.464	0.528
Household population that slept under an ITN last night	0.644	0.010	5,702	6,744	1.628	0.016	0.623	0.665
Proportion of de facto population with access to an ITN	0.684	0.012	5,702	6,744	2.463	0.018	0.660	0.708
CHILDREN								
Slept under any mosquito net last night	0.780	0.018	1,043	1,215	1.372	0.023	0.745	0.815
Slept under an ITN last night	0.734	0.018	1,043	1,215	1.344	0.025	0.697	0.771
Slept under an ITN last night in household with at least 1 ITN	0.863	0.018	875	1,033	1.549	0.021	0.827	0.899
Had fever in last 2 weeks	0.189	0.017	968	1,131	1.337	0.089	0.155	0.223
Advice or treatment for fever sought	0.597	0.051	189	213	1.425	0.085	0.495	0.699
Received ACT treatment for fever	0.232	0.084	35	40	1.159	0.361	0.064	0.400
Had blood taken from finger or heel stick for fever	0.112	0.026	189	213	1.123	0.230	0.060	0.164
Had a hemoglobin level less than 8 g/dl	0.062	0.014	472	552	1.257	0.226	0.034	0.090
Has malaria (based on rapid test)	0.145	0.024	472	552	1.502	0.168	0.096	0.194
Has malaria (based on microscopy test)	0.262	0.033	459	533	1.605	0.126	0.196	0.328
PREGNANT WOMEN								
Slept under any mosquito net last night	0.863	0.039	91	109	1.087	0.046	0.784	0.942
Slept under an ITN last night	0.817	0.047	91	109	1.149	0.057	0.723	0.911
Slept under an ITN last night in household with at least one ITN	0.871	0.042	84	102	1.155	0.049	0.786	0.956
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.458	0.039	410	479	1.564	0.084	0.381	0.535
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.335	0.027	410	479	1.161	0.081	0.281	0.389
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.141	0.018	410	479	1.063	0.130	0.104	0.178

Table B.20 Sampling errors: Plateau, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.947	0.012	966	984	1.646	0.013	0.923	0.971
Number of any mosquito nets	2.387	0.061	966	984	1.374	0.025	2.266	2.508
Ownership of at least one ITN	0.942	0.013	966	984	1.766	0.014	0.915	0.969
Number of ITNs	2.368	0.063	966	984	1.422	0.027	2.242	2.494
Ownership of at least one ITN for two persons	0.618	0.023	964	983	1.468	0.037	0.572	0.664
Household population that slept under an ITN last night	0.745	0.020	4,475	4,521	3.001	0.026	0.706	0.784
Proportion of de facto population with access to an ITN	0.798	0.016	4,475	4,521	3.886	0.020	0.767	0.829
CHILDREN								
Slept under any mosquito net last night	0.805	0.025	786	799	1.779	0.031	0.755	0.855
Slept under an ITN last night	0.797	0.026	786	799	1.834	0.033	0.744	0.850
Slept under an ITN last night in household with at least 1 ITN	0.835	0.023	747	762	1.688	0.027	0.789	0.881
Had fever in last 2 weeks	0.308	0.017	746	766	0.984	0.054	0.275	0.341
Advice or treatment for fever sought	0.469	0.043	246	236	1.356	0.092	0.383	0.555
Received ACT treatment for fever	0.120	0.059	41	41	1.143	0.490	0.002	0.238
Had blood taken from finger or heel stick for fever	0.147	0.029	246	236	1.298	0.200	0.088	0.206
Had a hemoglobin level less than 8 g/dl	0.066	0.013	331	338	0.965	0.199	0.040	0.092
Has malaria (based on rapid test)	0.339	0.052	331	338	1.995	0.153	0.235	0.443
Has malaria (based on microscopy test)	0.372	0.040	320	330	1.493	0.109	0.291	0.453
PREGNANT WOMEN								
Slept under any mosquito net last night	0.775	0.037	118	123	0.952	0.047	0.701	0.849
Slept under an ITN last night	0.763	0.041	118	123	1.033	0.053	0.682	0.844
Slept under an ITN last night in household with at least one ITN	0.804	0.036	113	117	0.968	0.045	0.731	0.877
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.300	0.042	326	340	1.637	0.139	0.217	0.383
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.219	0.030	326	340	1.306	0.137	0.159	0.279
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.130	0.028	326	340	1.494	0.214	0.074	0.186

Table B.21 Sampling errors: Zou, Benin DHS 2017

Variable	Value (R)	Standard error (SE)	Number of cases		Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (N')			R-2SE	R+2SE
HOUSEHOLD / POPULATION								
Ownership of at least one mosquito net of any type	0.974	0.005	1,341	1,399	1.090	0.005	0.964	0.984
Number of any mosquito nets	2.480	0.055	1,341	1,399	1.522	0.022	2.370	2.590
Ownership of at least one ITN	0.970	0.005	1,341	1,399	1.110	0.005	0.960	0.980
Number of ITNs	2.449	0.054	1,341	1,399	1.501	0.022	2.340	2.558
Ownership of at least one ITN for two persons	0.634	0.019	1,339	1,397	1.421	0.030	0.597	0.671
Household population that slept under an ITN last night	0.800	0.011	6,472	6,776	2.257	0.014	0.778	0.822
Proportion of de facto population with access to an ITN	0.806	0.011	6,472	6,776	3.607	0.014	0.784	0.828
CHILDREN								
Slept under any mosquito net last night	0.861	0.015	1,229	1,296	1.505	0.017	0.831	0.891
Slept under an ITN last night	0.852	0.015	1,229	1,296	1.452	0.017	0.823	0.881
Slept under an ITN last night in household with at least 1 ITN	0.869	0.015	1,207	1,271	1.557	0.017	0.839	0.899
Had fever in last 2 weeks	0.166	0.020	1,159	1,206	1.794	0.118	0.127	0.205
Advice or treatment for fever sought	0.714	0.042	190	200	1.278	0.059	0.630	0.798
Received ACT treatment for fever	0.479	0.095	40	43	1.189	0.199	0.289	0.669
Had blood taken from finger or heel stick for fever	0.270	0.038	190	200	1.174	0.140	0.194	0.346
Had a hemoglobin level less than 8 g/dl	0.069	0.012	608	645	1.163	0.174	0.045	0.093
Has malaria (based on rapid test)	0.365	0.029	607	644	1.506	0.081	0.306	0.424
Has malaria (based on microscopy test)	0.369	0.033	589	625	1.652	0.089	0.303	0.435
PREGNANT WOMEN								
Slept under any mosquito net last night	0.859	0.037	163	172	1.361	0.043	0.784	0.934
Slept under an ITN last night	0.851	0.037	163	172	1.334	0.044	0.776	0.926
Slept under an ITN last night in household with at least one ITN	0.869	0.036	160	168	1.362	0.042	0.796	0.942
Received one or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.707	0.030	490	508	1.481	0.043	0.646	0.768
Received 2 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.463	0.030	490	508	1.334	0.065	0.403	0.523
Received 3 or more doses of SP/Fansidar during pregnancy of most recent live birth, at least one dose received during ANC	0.198	0.021	490	508	1.175	0.107	0.156	0.240

