

# Malaria Behavior Survey

## Benin 2021

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For questions about this report, please contact: Alain Koffi at [akoffi1@jhu.edu](mailto:akoffi1@jhu.edu) or visit [www.malariabehaviorsurvey.org](http://www.malariabehaviorsurvey.org).

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## Acronym List

ACT	Artemisinin-based combination therapy
ANC	Antenatal care
CCP	Johns Hopkins Center for Communication Programs
CDC	U.S. Centers for Disease Control and Prevention
CHW	Community health worker
DHS	Demographic and Health Survey
EA	Enumeration area
INStaD	Institut National de la Statistique et de la Démographie
IPTp	Intermittent preventive treatment of malaria in pregnancy
IRB	Institutional Review Board
IRS	Indoor residual spraying
ITN	Insecticide-treated net
LEADD	Leadership and Development research firm
MBS	Malaria Behavior Survey
MIS	Malaria Indicator Survey
MOH	Ministry of health
NMCP	National Malaria Control Program
NSP	National Strategic Plan
OR	Odds Ratio
PMI	U.S. President's Malaria Initiative
RDT	Rapid diagnostic test
SBC	Social and behavior change
SMC	Seasonal malaria chemoprevention
SP	Sulfadoxine-pyrimethamine
USAID	United States Agency for International Development
WHO	World Health Organization

## Preface

The Ministry of Health through the National Malaria Control Program (NMCP) has for several years, been implementing World Health Organization approved interventions to control and eliminate malaria in Benin. While significant progress has been made in reducing malaria mortality, it has been challenging to achieve the same for malaria incidence. Among the key factors contributing to slow progress in reducing Malaria incidence has been the lack of community ownership and participation with resultant lack of positive behavior change among most Beninois. Due to this, malaria has remained a huge public health problem in Benin, affecting a third of the population each year. In 2019, the Benin national health information system recorded 3, 224 deaths due to malaria, primarily among pregnant women and children under five years of age. Successful malaria prevention is dependent on quality implementation of effective interventions like mass net distribution, Indoor Residual Spraying (IRS), and intermittent presumptive treatment of malaria in pregnancy (IPTp). These interventions have been implemented in communities in Benin with little accompanying social and behavior change (SBC) interventions, leading to unsustainable preventive practices or reduction in malaria incidence.

The NMCP supports the use of evidence-based SBC to reduce malaria incidence in Benin. The MBS has been tested in multiple countries and it is designed to inform the development of messaging that could address the key issues affecting community adoption of positive malaria behaviors. The MBS Advisory Group in Benin reviewed and adapted the protocol to the Benin context and contributed to the preparation and planning for data collection. The research firm LEADD was contracted to carry out data collection through direct supervision by the NMCP and Breakthrough ACTION Benin. The NMCP and Breakthrough ACTION Benin were on hand to lead the data collectors' training and provide supervision in the field to ensure quality collection of data. The purpose of the MBS was to understand the socio-demographic and behavioral determinants associated with the uptake of malaria interventions in Benin in order to inform appropriate program activities.

The report presents contextual data that shed light on important behavioral determinants for malaria, both at community and facility levels, which will inform further analysis and research on issues to be addressed by the program and other partners implementing malaria control interventions. This includes providing data for standard malaria indicators used to understand and validate evidence-informed priorities for development of malaria control interventions, including health messages, and facilitating trend analyses of key behavioral outcomes. Key malaria interventions include distribution of insecticide-treated nets (ITNs), intermittent preventive treatment in pregnancy (IPTp), Seasonal Malaria Chemoprevention (SMC), and malaria case management for children under five. The MBS was conducted in all 12 departments of Benin, divided into Northern, Central, and Southern zones, providing a nationally and regionally representative picture.

The NMCP is grateful to PMI/USAID and the Global Fund for their financial support to the study, Breakthrough ACTION for their key role, John Hopkins Bloomberg School of Public Health, and all Beninois who participated in the successful implementation of the MBS. The result of this report will go a long way in supporting malaria SBC programming as well as future policy decisions.

Dr. Cyriaque Affoukou  
Director, National Malaria Control Program Benin  
Ministry of Health in Beni

## Executive Summary

Breakthrough ACTION worked with the Benin National Malaria Control Program (NMCP) to conduct the Malaria Behavior Survey (MBS) between November 22 and December 27, 2021, a period that coincides with the end of the rainy season. The MBS is a theory-based household survey that draws on the ideation model. The survey was conducted in all 12 of the departments in the country, grouped into 3 geographic regions (zones): North, Central, and South. The survey collected relevant information on malaria-related behaviors and their determinants from a representative sample of households in each zone, stratified by urban-rural residence. The sample was designed to provide representativeness at the zonal level. Data collectors used electronic questionnaires developed using Survey Solutions and loaded on Android tablets. The overall sample included 3,534 households, 4,535 women of reproductive age and 1,536 of their male spouses/partners. The study followed standard ethical procedures. During field work, trained data collectors took appropriate steps to minimize risks to participants, including obtaining informed consent prior to commencing interviews, emphasizing voluntary participation and the right of participants to decide not to participate in the survey or terminate the interview at any time, and stressing the right to refuse to answer any questions they did not feel comfortable with. No personal identifiers were retained in the electronic dataset. Approval for the survey was obtained from the Institutional Review Board of Johns Hopkins Bloomberg School of Public Health in Baltimore, USA (IRB # 17513), and the National Committee for Ethics and Health Research in Benin (Protocol# 6860). The data provide a basis on which to better identify, prioritize, and reach target audiences with tailored and effective social and behavior change (SBC) approaches. This section summarizes the key findings from the survey.

## Cross-cutting ideational variables

- The vast majority (more than 9 out of 10 respondents) knew that fever was the main symptom of malaria, and that malaria is transmitted through mosquito bites, with no difference between zones.
- Almost two in three respondents perceived susceptibility to malaria, that is, they believed that they were exposed to the risk of catching malaria, more in the North (76.6%) or Central (75.5%), than in the South (69.6%). Perceived susceptibility was more common among people who had no formal education (77.6%) compared to people with secondary (73.5%) or higher education (69.9%).
- Perceived severity of malaria was low, with less than half of respondents or fewer thinking malaria was a serious illness.

## Malaria Case Management

- Knowledge about recommended timing to seek care was very low with one-third or fewer respondents answering correctly, i.e., care should be sought immediately or on the same day as the onset of fever.
- Favorable attitudes toward care seeking and treatment for malaria were generally low, but highest in the South compared to other zones.
- Perceived self-efficacy to seek malaria testing and treatment was high across all three zones



- One third of respondents or fewer held favorable perceptions of community-based health workers or facility-based health workers.
- One in five children under 5 years old had a fever within the two weeks preceding the survey, according to their female care-taker's self-report. A lower proportion of children under 5 years old with fever were taken to a health facility for 'appropriate' care on the same or the next day after fever onset.
- Four in ten children under 5 years old tested for malaria yielded a positive result, confirming a malaria diagnosis. Yet, only about 40% of them received ACT. And among the latter, only a third received the medicine the same or the next day after the start of child's fever.

## Malaria in Pregnancy

- Knowledge about recommended ANC and IPTp practices was generally low, at 17.9%.
- Positive attitudes towards ANC and IPTp were only moderately common at 41.5% and less prevalent in the South compared to the other zones.
- The severity of malaria in pregnancy was generally widely perceived (80.0%) in the study population.
- Most of the respondents believed ANC and IPTp ensure positive pregnancy outcomes.
- About two-thirds of the respondents believed that attending at least four ANC visits was the norm in their community while slightly over half (57.6%) believed that obtaining at least three SP doses during pregnancy was the norm in their community.
- Almost all (94.0%) of the women who were pregnant during the last two years attended ANC at least once but only three quarters of them attended four ANC visits.
- Slightly more than nine out of every ten women received at least one dose of SP during pregnancy but only about half of them received three or more doses as recommended by the WHO.
- The ideational variables associated with intention for early ANC included self-efficacy to obtain IPTp, high perceived severity of malaria, favorable attitudes towards ANC/IPTp, having discussed malaria with a spouse, relative or friend, and having received at least 4 ANC consultations.

## Seasonal Malaria Chemoprophylaxis

- Knowledge of a medicine given to children 3 – 59 months old to prevent malaria during the rainy season was nearly universal (95.3%) among the eligible population.
- Reports of the recent distribution process were very positive as well. Almost all eligible households (96.6%) reported that an SMC distributor provided SMC doses for their child during the last household visit, and 9 of 10 said the distributor observed the child taking the first dose.
- Nearly all (95.7%) held favorable perceptions of the SMC distributors.

## Insecticide-Treated Nets

- Knowledge about bed nets as a way to prevent malaria is nearly universal in all the zones of the study
- In general, attitudes towards use of bed nets was positive, with, overall, about six out of every ten respondents demonstrating positive attitudes towards the use of bed nets

- Perceived response-efficacy of ITNs was mixed, with only about half of respondents overall demonstrating belief in the effectiveness of ITNs. This indicator was lower for people in the North, compared to other zones
- However, perceived self-efficacy for consistent use of bed nets was high in all zones
- Overall, about four out of five of households owned at least one ITN, whereas more than 85% owned one ITN for every two persons in the household.
- In households with at least one net, about 83% of household members slept under a net on the night preceding the survey.
- Overall, the use:access ratio was 0.89, indicating that almost all people with access to a bed net use it.

## Indoor Residual Spraying

- More than two in ten respondents were aware of the IRS campaign in intervention zones.
- Among those who were aware of IRS: Favorable attitudes towards IRS was high; Response efficacy and perceived self-efficacy regarding IRS were high.

## Media Consumption and Exposure

- Radio and television ownership in Benin was relatively low, with about half of households overall owning a radio and only a quarter owning a television
- In households with a radio, about 68% of people listened regularly, and generally, early morning, late morning, and late evenings were the most popular listening times and represent the optimum times to reach people with messaging.
- For those who watched television, by far, late evening was the most popular viewing time.
- More than half of respondents reported owning a personal telephone or tablet.
- Less than a third of respondents reported being exposed to malaria messages in the last year, especially in the North zone.
- Less than half of respondents correctly recalled the slogan for the NMCP malaria prevention campaign. Recall was higher in rural settings than in urban settings in each zone. Recall was highest in the Center than in either the North or the South.

## 1. Introduction

### 1.1 Recent Context of Malaria in Benin

#### Geography and Seasonality

Benin is made up of three climate zones. The subequatorial climate has two rainy seasons between April to July and October to November and is located in the South. The temperature varies between 24 and 32 degrees C in this zone with 1200mm of rain per year. The central region has a Sudano-Guinean climate that is tropical and semi-humid. The north has a tropical humid climate with a rainy season between May and October and a dry season between November and April. [1]

## Malaria burden

Malaria transmission is continuous throughout the year in Benin, with increases during the rainy seasons. Malaria is particularly dangerous for children under the age of five, who have increased chances of dying, and pregnant women who have increased risk of miscarriage and death. In 2020, Benin had 2.3 million recorded malaria cases, of which nearly 800,000 were in children under five years of age. Additionally, there were more than 180,000 confirmed cases of malaria in pregnant women and over 7,500 cases of severe malaria. Of all illnesses recorded during consultations and hospitalizations, malaria made up 42.5%, four times more than any other illness. It is also the largest cause of hospitalization for all Beninese (22.1%) as well as for children under five (39.0%). [2]

Benin attributed 2,440 deaths primarily to severe malaria in 2020, which is 15.1% of all deaths reported in health facilities for that year. Of this number, 1,966 or 80.5% were children. [2]

Fever is often the first indication that a child may have malaria. Diagnosis of malaria requires testing by a trained professional and timely treatment can prevent disease progression and mortality. It is therefore important for caregivers to seek care for febrile children promptly so that an accurate diagnosis can be made and correct treatment is started. According to the 2017-2018 DHS, among parents of children under five with fever 53% sought advice or treatment, but only 28% did so within 48 hours and 18% received biological confirmation. According to the same source, 41% of mothers or guardians of children under five consulted in public health facilities and 34% in private health facilities.

One in five (22%) sought advice and treatment from other private sector sources, of which traditional medical practitioners made up 2%. [3]

## ITN/LLIN ownership, use, access

According to 2018 data, 92% of Beninese households owns at least one insecticide-treated net (ITN). Access to an insecticide treated net is defined as the percent of the population able to sleep under an ITN if each ITN is used by a maximum of two people. In Benin, roughly 77% of the population has access and 71% of the population sleep under an ITN. Pregnant women and children under five are prioritized for use of ITNs due to their vulnerability to malaria, and this is reflected by increased usage by these groups in households with at least one ITN. Pregnant women slept under ITNs 85% of the time and children under five 82% [3].

The ITN use-to-access ratio, which compares those who use their ITNs with those who have access to ITNs, is high throughout most of Benin. In 2018, this ratio was .93 in urban settings and .91 in rural settings, suggesting that overall, the population of Benin sleeps under ITNs when they are available. This trend is similar among wealth quintiles, all groups falling between .91 and .93 use-to-access. However, the overall trend is not consistent throughout the country, as seen in Atacora (.83), Donga (.76), and Collines (.82) departments where this ratio is significantly lower. [4]

## 1.2 Malaria Interventions in Benin

### Vector Control

The NMCP's objective since 2014 is universal access to ITNs, defined as a target of 95% coverage (PSNIE 2020-2024). This is to be achieved through mass ITN distribution campaigns every three years, routine distribution of ITNs to pregnant women during ANC visits, and routine distribution to children under five years of age through EPI clinic services and at primary schools. [5] According to the most recent Demographic and Health Survey, 89% of insecticide treated nets found in households were obtained through a mass distribution campaign and 3% were through antenatal care visits. [3]

IRS has been a part of the vector control strategy in Benin from 2008 through 2021 and was implemented in various departments during this time period. The government of Benin decided to discontinue IRS for 2022 and shift these resources to the procurement and continuous distribution of ITNs and other activities. [6]

### Chemoprevention

Seasonal malaria chemoprevention for children from three to 59 months of age in specific health zones began in 2018-2019 in Benin. The MOH target is to reach 95% of eligible children in the SMC intervention areas in Alibori and Atacora with four rounds of three doses during high-transmission season [6].

Treatment of Intermittent Malaria in Pregnancy (IPTp) is with Sulfadoxine-Pyrimethamine (SP).

IPTp-SP is administered during antenatal care visits to pregnant women under supervision after their first trimester. [5] The MOH's goal is to administer one dose at each ANC visit at least one month apart, up to five times. About half (51%) of pregnant women attended one ANC consultation within the first trimester and 83% attended ANC at least once during their pregnancy, while only 28% attend ANC only two or three times and 52% attended ANC 4+. ANC attendance numbers follow an inverse curve, so the lower number for ANC2-3 is consistent with what is seen in other countries. These large declines in ANC 2, 3, and 4 rates reduces the opportunity for administering IPTp. IPTp coverage in Benin saw gains from 2012 to 2018, but remains relatively low. In 2018, 49% of pregnant women received IPTp1+, an increase from 37% in 2012, and 33% received IPTp2+ compared to 23% in 2012. According to the 2018 DHS, this number drops to 13% for IPTp3+ in 2018, up from 9% in 2012. [3]

### Testing and Treatment

Confirmation of suspected malaria cases is required in health facilities using rapid diagnostic tests (RDTs) and microscopy. In 2017, one of these methods was used in 88% of suspected malaria cases at health facilities. Treatment for malaria is free for pregnant women and for children under five years of age and treatment for malaria in Benin consists of artemisinin combination therapies (ACTs). [5] In 2018, antimalarial medication was supplied for free to only 3% of children. [3]

### 1.3 Rationale for MBS Study in Benin

Existing national and regional data, including the Benin 2013-2014 DHS, the Benin 2014 MICS and 2017-2018 DHS largely focus on the prevalence of relevant behavioral indicators and provide limited information on behavioral determinants. Research increasingly demonstrates the effective role of social and behavioral change communication (SBCC) programs in increasing the prevalence of positive health behaviors related to malaria prevention and treatment. SBCC program messages need to target the specific ideational variables that influence decisions related to malaria-related behaviors such as prompt care-seeking and use of ITNs.

The Benin MBS is designed to provide representative data at the zonal level (i.e., groups of departments) with a focus on ideational factors that are not included in large national surveys. Such data can be used to (i) estimate the prevalence of both behaviors and their ideational factors, (ii) estimate the independent and combined effects of ideational characteristics on behaviors, and (iii) identify ideational profiles based on underlying patterns across groups to examine how membership in ideational segments correlates to corresponding behaviors. These analyses will help malaria programs and policymakers create and prioritize audience segments and SBCC messaging.

The NMCP and partners are committed to using SBC-related activities in their public health interventions. The MBS will also provide feedback on the effectiveness and recall of such campaigns including tagline recognition and sources of information. Understanding these behaviors and perceptions is key to providing targeted interventions and informing future national strategies and enhancing political, private sector, and community-level engagement and a grassroots movement in which people are empowered to take ownership of malaria prevention and control efforts.

### 1.4 Goals and Objectives of the Benin MBS

The Benin MBS was implemented with two primary goals: 1) To provide a better understanding of the socio-demographic and ideational characteristics associated with malaria-related behavioral outcomes in Benin; and 2) To determine the appropriate focus of programmatic activities designed to improve malaria-related ideational and behavioral outcomes.

The specific objectives of the survey are the following:

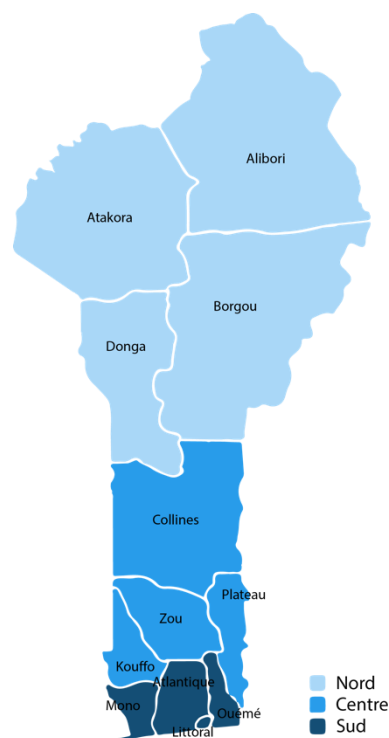
- Determine the ideational factors that are related to bed net use, care and repair;
- Identify the ideational factors related to the uptake of IPTp;
- Identify the ideational factors associated with prompt and appropriate treatment of malaria in children;
- Understand reasons for not adopting appropriate malaria prevention and treatment behaviors; and,
- Determine what should be the focus of future programs designed to promote appropriate malaria prevention and treatment behaviors in Benin.

## 2. Methodology

### 2.1. Survey Design

This study used a cross-sectional design with a randomly selected sample of women and men interviewed at one point in time using structured questionnaires. The respondents were selected through a multi-stage random process that will yield samples representative at the zonal (group of departments) level. The primary geo-political sub-division in Benin is the department. The country is divided into 12 departments, which are further divided into 77 communes. For the purpose of sample size determination for this study, we clustered the 12 departments into three geographic zones (North, Central, South) as shown on Figure 1.

- **North:** Alibori, Atakora, Borgou, Donga
- **Central:** Collines, Plateau, Zou, Kouffo
- **South:** Atlantique, Mono, Ouémé, Littoral



### 2.2. Sampling

#### 2.2.1 Required Sample Size and Justification

To determine the number of households required for this survey, we estimated the sample size needed to measure each of the relevant malaria-related outcomes, including the percentage of women of reproductive age sleeping under bed nets, the percentage of children with fever in the past 2 weeks, and the percentage of women of reproductive age with positive attitudes towards bed nets (assumed to be 0.50 for maximum variability). Estimates based on the indicator that produced the largest sample size with a design effect of 2.5 at the zonal level and using data from the 2017/2018 DHS are summarized in Table 2.2.1 below. The following formula was applied to estimate the required sample size:

$$n = d \times \frac{z_{1-\frac{\alpha}{2}}^2 * p(1 - p)}{\delta^2 \times R_h \times R_i \times CF}$$

Where:

- $n$  is the required sample of households.
- $Z$  is the  $Z$  value corresponding to the desired confidence level. In the analyses, we assume  $Z = 1.96$ , corresponding to the 95% confidence level.

- $d$  is the design effect due to departure from simple random sampling (we assumed this to be 2.5).
- $p$  is the estimated outcome indicator.
- $\delta$  is the desired margin of error. We derived the various sample sizes with  $\delta = 5\%$ ;
- $R_h$  is the response rate for households. We assume 90% for this parameter.
- $R_i$  is the response rate for women in selected households. We assume 95% for this parameter.
- $CF$  is the additional correction factor to account for household ownership of at least one net. It was assumed to be 91.5% based on data from the Benin 2017-2018 DHS.

Estimated sample sizes accounted for potential non-response at the household and individual levels to measure relevant malaria-related outcomes, including caregivers' bed net use, incidence of fever among under-5 children, and prevalence of positive attitudes towards consistent use of bed nets.

Table 2.2.1: Number of required households, women and men participants per study zone, 2021 Benin MBS				
Participants	North	Center	South	Overall
Enumeration areas (clusters)	49	63	68	180
Households	985	1,260	1,360	3,600
Women	1,359	1,358	1,358	4,075
Men	328	419	453	1,200

## 2.2.2 Participant Inclusion and Exclusion

The survey targeted men and women of reproductive age (15 - 49 for women and 18 - 59 for men). The inclusion criteria for sample selection included:

- Aged 15 to 49 years for women and 18 to 59 years for men
- Men must be the husband or partner of a recruited woman participant
- Usual resident of the selected household; and
- Ability to communicate in French, or local languages.

Eligible men and women with the following characteristics were excluded from the study:

- Not aged between 15 and 49 years for women and not aged between 18 and 59 years for men (husbands/partners)
- Not a regular resident of the selected household
- Unable to understand the questions or to respond intelligibly to questions
- Unable to communicate in French or local languages

### 2.2.3 Participant Selection Process

#### Selection of Clusters

Study participants were selected through a multi-stage process that involved successively and randomly selecting clusters, households and individuals. The study team obtained a comprehensive list and any available sketch maps of clusters (enumeration areas [EAs]) for selected study EAs with the help of NMCP and the National Institute for Statistics and Demography in Benin. This list served as the sampling frame for selecting a sample of clusters. For each region, EAs were selected with a probability proportional to the size of the population or the number of households and stratified by urban/rural distribution. In each selected EA, the study team first obtained the approval of community leaders and updated the sketch map with the help of these leaders.

A total of 180 clusters were selected for inclusion in the study as follows: 49 from North, 63 from Central, and 68 from South. Upon arriving in a selected EA and after obtaining the necessary permissions from community leaders, the study team walked around the EA to develop a sketch map, specifying roads and dwelling structures. The study team then conducted a census of the households in the EA using a household listing form. The household listing form included cluster number, EA number, building/compound number, the nickname of the head of household, the household address or location description, the number of women ages 15-49 and the number of men ages 18-59 years in the household. To obtain the information necessary to complete the household listing form, the study team approached a responsible adult in each building or compound, briefly introduced the study using a prepared introduction script, and asked if they were willing to provide the necessary information.

#### Selection of Households

Once household listing was complete, the study team selected 21 households from the list using a random number generator: Random UX. For the purpose of this survey, a household was defined as a group of people who live in the same dwelling, share meals, and recognize one individual as the head of the household. Eligible households were those with at least one woman of reproductive age. If a selected EA did not have the required number of households needed for the survey, the study team listed households from an adjoining EA to make up the number. A replacement list of six households was included in case some households refused to participate in the survey or remained unavailable despite several attempts to reach them. The household list was destroyed once data collection was completed in each cluster.

#### Selection of Individuals

Within each selected household, the interviewers determined the eligibility of the head of the household, obtained written informed consent, and then administered the household questionnaire. Following the completion of the household questionnaire, the interviewer used the household member listing to select all women ages 15-49 years for interviews using the individual women's questionnaire. The interviewer approached each eligible woman and used a screening tool to determine her eligibility. The screening tool included questions on age, whether or not the woman was a usual member of the selected household, and languages spoken. If the woman met eligibility criteria, the interviewer consented her and administered the individual women's questionnaire. For unmarried women under 18 years old, parental consent was obtained first. In one out of three households that agreed to participate in the survey, the interviewer also recruited, obtained written informed consent, and interviewed the spouse or partner of one of the eligible women. In cases where there were multiple eligible women in a



household, to select the male respondent, the interviewer selected one married or cohabiting female participant randomly. Of note, heads of household were either women of reproductive age or their male partners, depending on the composition of a household. Thus, an individual could have been interviewed more than once, with two questionnaires.

In all, our completed sample included 3,534 households, 4,535 women and 1,536 men.

## 2.3. Data Collection and Analysis

### 2.3.1. Data Collection Tools

This study was based on similar surveys carried out by CCP, which investigated the prevalence and ideational determinants of malaria-related behaviors, including ITN use and care, prompt care-seeking for fever in children, use of antenatal care and receipt of IPTp during pregnancy, acceptance of IRS and SMC in relevant zones. Three tools were used to collect information from the respondents: household, women, and men questionnaires. The tools were adapted from similar tools previously used in Côte d'Ivoire, Cameroon, Sierra Leone, and the Democratic Republic of Congo. The men and women questionnaires included questions to assess relevant constructs from the ideation model (**Figure 2**).

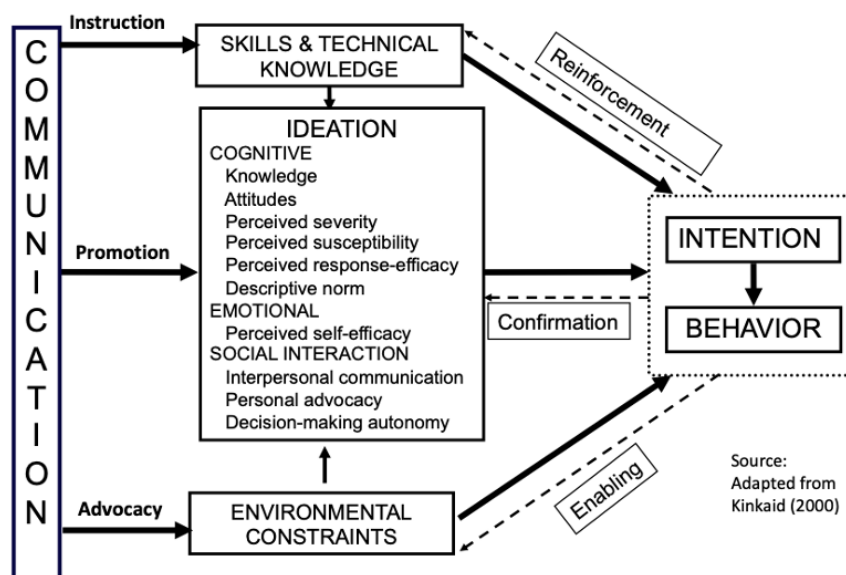


Figure 2: Ideation model of strategic communication and behavior change

The ideation model [7] posits that SBCC strategies can change intention to act and subsequently actual behaviors to the extent that they change people's ideation (or views and ideas that people hold about the behavior). The model recognizes three dimensions of ideation that are relevant for behavior change: cognitive, emotional, and social interaction. The variables under each dimension were borrowed from

leading theories of behavior change and have been found to be associated with various health behaviors. [8]

The household questionnaire was designed to collect basic socio-demographic information about each household, determine the relative wealth status of the household, estimate the distance of the household from various sources of health care, determine the age and sex of each person within a household, as well as to collect information about each net owned by the household. The women's and men's questionnaires were similar but had some significant differences. Both questionnaires collected basic sociodemographic information about the respondent and included questions about ITN use, repurposing, and disposal. Both questionnaires also included questions to measure ideational factors related to recommended malaria prevention and treatment behaviors as well as exposure to malaria-related messages. The ideational constructs were assessed using a battery of items that formed scales previously validated using data from pre-MBS studies conducted in Nigeria and Liberia. Only women were asked about any recent episodes of care-seeking for a child with fever and receipt of IPTp during their last pregnancy. By including questions on malaria-related behaviors and their sociodemographic and ideational determinants, the research team can examine correlations between exposure and ideational factors, as well as between ideational factors and key behaviors.

### 2.3.2. Data Collection Procedures and Treatment

Breakthrough ACTION hired a local research firm, LEADD, to implement data collection in the study sites. LEADD created digital versions of the questionnaires using Survey Solutions and loaded them on Android tablets. LEADD and Breakthrough ACTION staff co-facilitated a five-day training of trainers followed by three concurrent six-day trainings of more than 100 data collectors and team leaders. Each training was included one day of pretesting the data collection instruments and household listing procedures in selected non-survey EAs. From the group of trained data collectors, a number of them were selected based on a combination of the following criteria: prior experience in similar surveys; familiarity with relevant languages (French and the predominant language in the study zone); mastery of the digital questionnaires assessed during role plays in the trainings; performance during field practice to pretest the instrument; and scores on daily assessment tests. Sixteen teams of data collectors worked to collect data between November 22 and December 27, 2021. In addition, teams of data quality control agents visited about 10% of surveyed households and asked specific questions using a digital questionnaire designed to assess the accuracy of the original interview responses. During this time, Breakthrough ACTION and NMCP staff visited teams in the field to monitor their progress and provide needed support. At the end of data collection, LEADD submitted three clean data sets, one for households, one for women, and one for men to CCP, who then analyzed them using Stata 16.0.

### 2.3.3. Data Analysis Procedures

Measures of ideational variables (e.g., positive attitudes, perceived self-efficacy to take actions, perceived response-efficacy of malaria treatment) were derived based on relevant questions from the women's and men's questionnaires. Similar to the analytic procedure described in the Malaria SBCC Indicator Reference Guide [9], responses for each item were scored, scores for items measuring the same construct added together and the resulting sum collapsed into dichotomous measures. Most of the ideational variables were measured by asking respondents to indicate agreement or disagreement with Likert statements such as, "A blood test for malaria is the only way to know if someone really has malaria or not." Respondents were asked whether they agreed or disagreed with each statement. For these variables, each respondent received a score for that question based on their response and the wording of the question. For example, if agreement with the statement corresponded to a favorable response, the respondents were scored -1 for disagree, 0 for don't know/not sure, and 1 for agree. If disagreement with the statement corresponded to a favorable response, the scoring for that particular statement was reversed. An index score was calculated to reflect how each individual responded to the set of questions for the same ideational construct. The index score was the sum of the individual question scores across all the questions for a given ideational factor. A binary variable was then created by splitting the index score at 0 to distinguish between those with and without the favorable ideational characteristic.

Key outcomes were defined as follows:

- **ITN use:** whether the net was being used (from the roster) by a household member (from the household roster)
- **ITN access:** dividing the potential ITN users from the number of nets in the household by the number of de facto members for each household and determining the overall sample mean of that fraction
- **Prompt care-seeking:** the proportion of index children under five years old with fever in the past two weeks for whom treatment was sought the same day as fever onset or the next day
- **Appropriate care-seeking:** the proportion of index children under five years old with fever in the past two weeks who were taken to a facility or community health worker first.
- **ANC4 attendance:** the proportion of women with at least one child in the last two years who attended at least four ANC visits during their last pregnancy
- **Receipt of IPTp3:** the proportion of women with at least one child in the last 2 years who received three or more doses of IPTp during the last pregnancy

In addition to presenting the prevalence of recommended malaria behaviors and their psychosocial determinants, this report also presents the results of multivariable logistic regression to assess associations between outcomes and several background and ideational variables. The multivariate regression models are useful to identify the potentially modifiable variables that programs could focus on in attempts to change behavioral outcomes. In order to inform the multivariate models, the research team first conducted bivariate regression tests in all zones, and statistically relevant variables (wherein  $p \leq 0.2$ ) were retained and included.

The results presented in the tables show the relationship between the behavioral outcome and the predictor variables, expressed as adjusted odds ratios (AORs) with the associated standard error. Statistically significant associations are indicated by an AOR in bold followed by asterisks ( \*, \*\*, or \*\*\* corresponding to the significance levels of 5%, 1%, and 0.1% respectively).

#### 2.3.4. Research Ethics

Prior to implementation, the research team obtained ethical approval from the Johns Hopkins School of Public Health Institutional Review Board (IRB# 17513) as well as local approvals from the National Committee for Ethics and Health Research in Benin (Protocol# 6860) and a Visa from the National Institute of Statistics and Demography. Data collectors and supervisors underwent training on approved study protocols and on ethics guidelines to follow when collecting data on human research subjects. All study participants provided signed informed consent before they participated in interviews. To obtain informed consent from participants, trained data collectors explained the purpose of the survey, the types of questions that would be asked, the potential risks associated with taking part in the survey, and the actions the study team would take to protect the confidentiality of the participants. In addition, data collectors explained that participants did not have to participate in the study, that they could decide at any point to discontinue their interview, and that they did not need to answer any questions they did not want to. Data collectors obtained assent for research participants under the age of 18 years unless they were married and therefore considered legally emancipated. Minors were given the option, although not obliged, to participate in data collection if their parent or legal guardian agreed to their participation first.

## Results

The results of the MBS are presented in the following sections: sample description, cross-cutting ideational factors, malaria case management for fever in children under five, malaria in pregnancy, seasonal malaria chemoprophylaxis, ITNs, indoor residual spraying, and media consumption, and messages.

### 3.1 Sample Description

This section presents the characteristics of the households from which participants were interviewed. It includes a basic description of the household population, the physical characteristics of the household dwelling unit, and household possession of various assets. The basic sociodemographic characteristics of the men and women of reproductive age interviewed with the individual questionnaire, such as level of education and age category, are also presented in this section. In summary, information was collected on 3,534 households and from 4,535 women, and 1,536 men.

#### 3.1.1 Household characteristics

Housing characteristics differed across geographic zones ([Table 3.1.1](#)), but on average, households in Benin had about five residents, one sleeping room, and roughly four people sleeping in each room. The proportion of households with electricity was highest in the southern zone (60.1%), followed by the central zone (39.1%) and North (35.3%). Households in the central (76.1%) and northern (75.4%) zones lacked ceilings in higher proportions than in the South (61.9%). The proportion of households with finished floors (e.g., cement, ceramic tiles, polished wood, vinyl, carpet) was highest in the South (68.0%), followed by the North (57.9%) and Central Zone (54.2%). Households in the South (69.5%) also had finished walls made of cement, stone, covered adobe, bricks, or cement blocks in higher proportions than either the Central Zone (54.8%) or North (53.1%). Fewer houses were constructed with finished roofs (39.7% in the North; 30.8% in the South; 27.6% in the Central Zone). Finished roofs, as opposed to natural or rudimentary roofs, are made of zinc, metal, wood, calamine/fibrocement, ceramic tiles, concrete, cement, asbestos sheets or shingles.

Table 3.1.1: Percent of households with selected characteristics by zone

Table 3.1.1: Percent of households with selected characteristics by zone, 2021 Benin MBS				
Household Characteristic	North	Center	South	All Zones
Average household size	5.6	4.3	4.7	4.9
Average number of sleeping rooms	1.5	1.2	1.2	1.3
Average Number of people per sleeping room	4.0	3.8	4.2	4.0
Percentage of households with electricity	35.3	39.1	60.1	46.1
Percent of dwelling units without a ceiling	75.4	76.1	61.9	70.2
Percentage of households near <sup>1</sup> a public health facility	85.2	84.1	92.6	87.8
Percentage of households near <sup>1</sup> a private health facility	38.6	54.0	68.1	54.1
Percentage of households near <sup>1</sup> a pharmacy/chemist	66.7	69.8	83.3	74.1
Percentage of households with finished floors	57.9	54.2	68.0	61.0
Percentage of households with finished walls	53.1	54.8	69.5	60.0
Percentage of households with finished roofs	39.7	27.6	30.8	33.1
<b>Number of observations</b>	<b>960</b>	<b>1,238</b>	<b>1,336</b>	<b>3,534</b>
Notes: <sup>1</sup> Located 5 kilometers or less, less than 30 minutes on foot, or less than 10 minutes by car.				

Access to health facilities was defined as being located within five kilometers, less than 30 minutes by foot, or less than 10 minutes by car. The majority (87.8% overall) of households were located near a public health facility, ranging from 92.6% in the South to 84.1% in the Central Zone. Most (74.1%) households were within relatively easy access to a pharmacy, ranging from 83.3% in the South to 66.7% in the North. Proportionally fewer houses (54.1% overall) were located near a private health facility, ranging from 68.1% in the South to only 38.6% in the North.

### 3.1.2 Household ownership of selected assets

Data on ownership of selected assets are presented in [Table 3.1.2](#). Roughly half (49.2%) of all surveyed households had a radio, and about a quarter (26.1%) owned a television. Households in the South reported in higher proportions owning either a radio (56.4%) or television (37.4%), compared to only 39.9% and 17.7% of households in the Central Zone who owned either a radio or television, respectively. Again, households in the South (50.5%) reported ownership of a smartphone in the highest proportion, compared to households in the North (22.9%) and Central Zone (17.2%). Roughly four out of five (81.0%) households in all zones reported owning a simple phone (82.1% in the South; 81.8% in the North; 78.3% in the Central Zone). Far fewer (4.5%) of households in the South owned a bicycle, compared to 22.5% in

the North, and 10.5% in the Central Zone. Only 3.3% of households in the South reported owning a boat, compared to 2.0% in the North, and no households (0.0%) in the Central Zone. Land ownership in the South was lowest (21.7%) compared to 61.3% in the Central Zone and 69.9% in the North. There was a similar trend for livestock ownership, with the lowest proportion of households in the South (17.9%) and increasing in the Central Zone (27.4%) to the highest proportion in the North (36.7%). Overall, households were evenly distributed across the five wealth quintiles (roughly 20% per quintile overall). However, looking by zone it is apparent that slightly higher proportions of households in the North and Central Zones are in the two lowest wealth quintiles (21.5% and 22.6% in the North; 25.2% and 24.1% in the Center), whereas only 12.4% and 13.7%, respectively, were in the lowest two wealth quintiles in the South. By contrast, 34.6% of households in the South were in the highest wealth quintile, while only 9.2% and 11.6% of households in the Central Zone and North, respectively, were in the highest wealth quintile.

Table 3.1.2: Households selected assets by zone

Table 3.1.2: Households selected assets by zone, 2021 Benin MBS				
Indicators	North	Center	South	All Zones
Percentage of households with a radio	47.7	39.9	56.4	49.2
Percentage of households with a television	19.5	17.7	37.4	26.1
Percentage of households with Smart phones	22.9	17.2	50.5	32.4
Percentage of households with a simple mobile phone	81.8	78.3	82.1	81.0
Bicycle	22.5	10.5	4.5	12.3
Boat	2.0	0.0	3.3	2.0
Land	69.9	61.3	21.7	48.7
Livestock	36.7	27.4	17.9	26.9

Wealth quintiles				
Lowest	21.5	25.2	12.4	18.8
Second	22.6	24.1	13.7	19.4
Middle	25.3	21.1	19.9	22.1
Fourth	19.0	20.5	19.4	19.5
Highest	11.6	9.2	34.6	20.1
<b>Number of observations</b>	<b>960</b>	<b>1,238</b>	<b>1,336</b>	<b>3,534</b>

### 3.1.3 Sociodemographic characteristics of household population and survey respondents

The age and sex distribution of the study population (i.e., all members of a surveyed household), presented in the figure below, show a triangular population pyramid that reflects Benin's growing population and a high dependence of the younger population on working-age people. Slightly more household members in study areas in Benin ([Table 3.1.3](#)) were women (52.3%). A higher proportion of households members in the South (66.6%) were in an urban area, whereas only 30.6% of them in the North, and 30.2% in the Central zone were in an urban area.

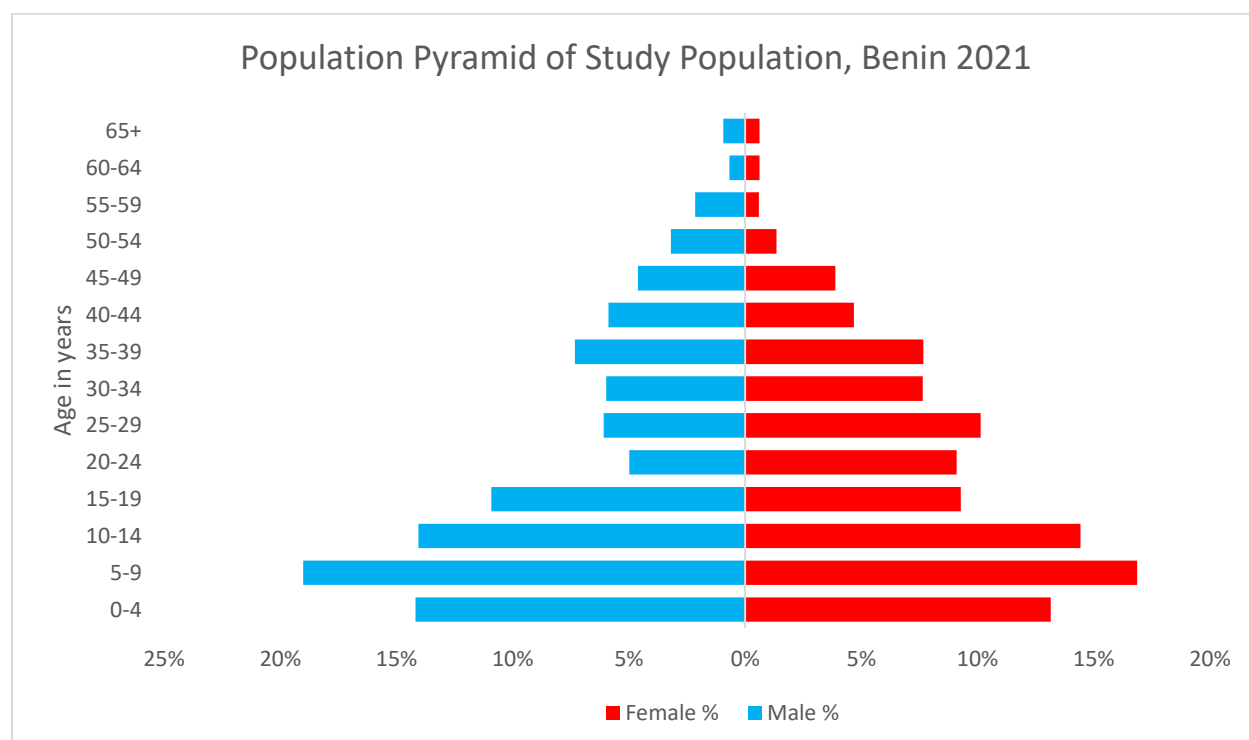


Table 3.1.3: Characteristics of members of surveyed household



**Table 3.1.3: Characteristics of members of surveyed household, 2021 Benin MBS**

<b>Socio demographic characteristics</b>	<b>North</b>	<b>Center</b>	<b>South</b>	<b>All Zones</b>
Percentage of females	50.8	53.2	53.2	52.3
Percentage residing in urban areas	30.6	30.2	66.6	44.1
Age Distribution				
% aged 0- 4 years	13.0	13.2	14.6	13.6
% aged 5-17 years	38.4	37.9	37.5	38.0
% aged 18 years and above	48.6	48.9	47.9	48.4
Average age (in years)	19.8	21.0	20.9	20.5
<b>Number of observations</b>	<b>5,293</b>	<b>5,447</b>	<b>6,522</b>	<b>17,262</b>

Among survey respondents ([Table 3.1.4](#)), 77.0% were women and aged 25 years or older (65.3%), and 23.0% were men and aged 25 years or older (95.7%). A higher proportion (68.1%) of female respondents in the South were in an urban location as compared to only 32.7% in the Central Zone and 31.5% in the North. Male respondents followed a similar trend in similar proportions. Christianity was more common in the South and Central Zones among male and female respondents (Women: 74.9% (South); 67.2% (Central). Men: 69.1% (South); 54.4% (Central)) whereas Islam was more common among men and women in the North (Women: 73.9%; Men: 77.0%). Overall, most female (54.5%) and male (57.6%) respondents had secondary or higher education, followed by no education (Women: 28.7%; Men: 23.9%). Looking by Zone, there are apparent differences. Men and women in the South (62.1% and 58.6%, respectively) had achieved higher education than men and women in either the North or Central Zones. Between 73.5% of women in the South and 77.4% of women in the North who participated in the surveys were married or cohabitating with a partner as if married, and between 94.5% of men in the North and 98.5% of men both the South and Central Zones were married or cohabitating at the time of the survey.

Table 3.1.4: Socio-demographic characteristics of men and women surveyed

Table 3.1.4: Socio-demographic characteristics of men and women surveyed, 2021 Benin MBS								
Socio demographic characteristics	Females				Males			
	North	Center	South	All Zones	North	Center	South	All Zones
Age group								
% aged 15-24 years	42.3	30.2	28.7	34.6	4.5	5.2	3.3	4.2
% aged 25-34 years	33.6	33.5	35.2	34.1	26.4	29.1	26.4	27.0
% aged 35-44 years	18.5	28.4	26.7	23.7	40.7	31.1	38.9	37.8
% 45 years and above	5.7	7.9	9.4	7.5	28.4	34.6	31.4	30.9
Average age (in years)	27.4	29.9	30.5	29.1	38.6	38.7	39.3	38.9
Urban residence	32.7	31.5	68.1	45.2	33.4	31.2	66.1	44.8
Religion								
None	1.6	5.9	5.7	4.0	1.2	13.6	7.4	6.3
Christian	21.3	67.2	74.9	51.0	18.7	54.4	69.1	45.4
Muslim	73.9	5.0	8.1	34.6	77.0	5.4	7.8	35.2
Traditional	3.2	20.4	8.6	9.1	3.1	25.7	13.5	12.1
Other	0.0	1.5	2.7	1.3	0.0	0.9	2.2	1.0
Level of education								
None	27.8	36.4	26.4	28.7	22.7	34.2	20.4	23.9
Primary	19.5	15.2	15.0	16.8	21.8	15.6	17.5	18.6
Secondary or more	52.7	48.4	58.6	54.5	55.5	50.1	62.1	57.6
Married / Cohabiting	73.2	77.4	73.5	74.3	94.5	98.5	98.0	96.7

<b>Number of observations</b>	<b>1,417</b>	<b>1,474</b>	<b>1,644</b>	<b>4,535</b>	<b>467</b>	<b>502</b>	<b>567</b>	<b>1,536</b>
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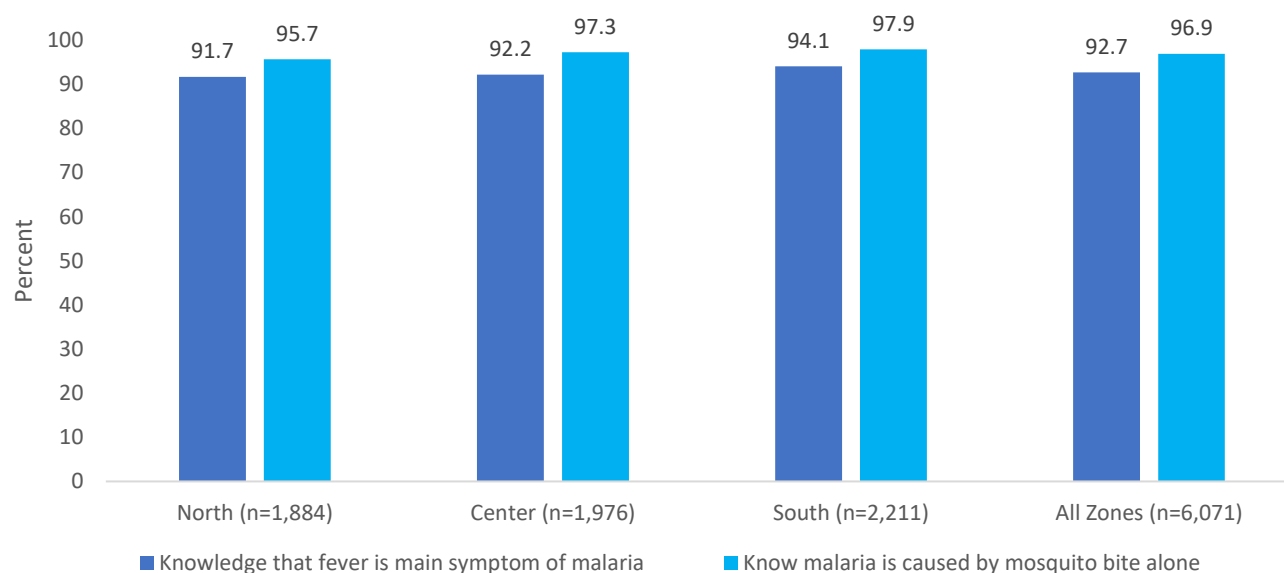
## 3.2 Cross-Cutting Ideational Determinants

This section describes data on cross-cutting ideational variables, including respondents' knowledge about malaria, their level of perceived threat (i.e., severity and susceptibility) related to malaria, interpersonal communication regarding malaria, and general perceptions toward health workers (community and facility-based) regarding malaria. These variables are included in regression models in several behavioral modules that follow. The following subsections will describe results in further detail. Questions used to comprise each indicator are available in [Table 3.2.1](#).

### Knowledge of Malaria

Knowledge about malaria was assessed in this survey through questions about the symptoms and causes of malaria ([Table 3.2.2](#)). Knowledge about the symptoms and the cause of malaria was high in all three zones (North: 89.0%; Central: 89.7%; South: 91.0%; [Table 3.2.1a](#)), whether rural or urban (89.2% and 90.7%, respectively). Similarly, all age groups, from 15-24 years (88.1%) to individuals older than 45 years (92.1%) who were surveyed, had high knowledge of symptoms, and causes of malaria. A lower proportion of people with only a primary level of education (83.5%) had correct knowledge of malaria symptoms and causes, as compared to no education (90.8%) or secondary or higher (90.8%). Knowledge did not vary greatly across wealth quintiles, ranging from the lowest (88.4%) to the highest (92.0%).

Figure 3.2.2 Knowledge of Malaria symptoms and cause, 2021 MBS Benin



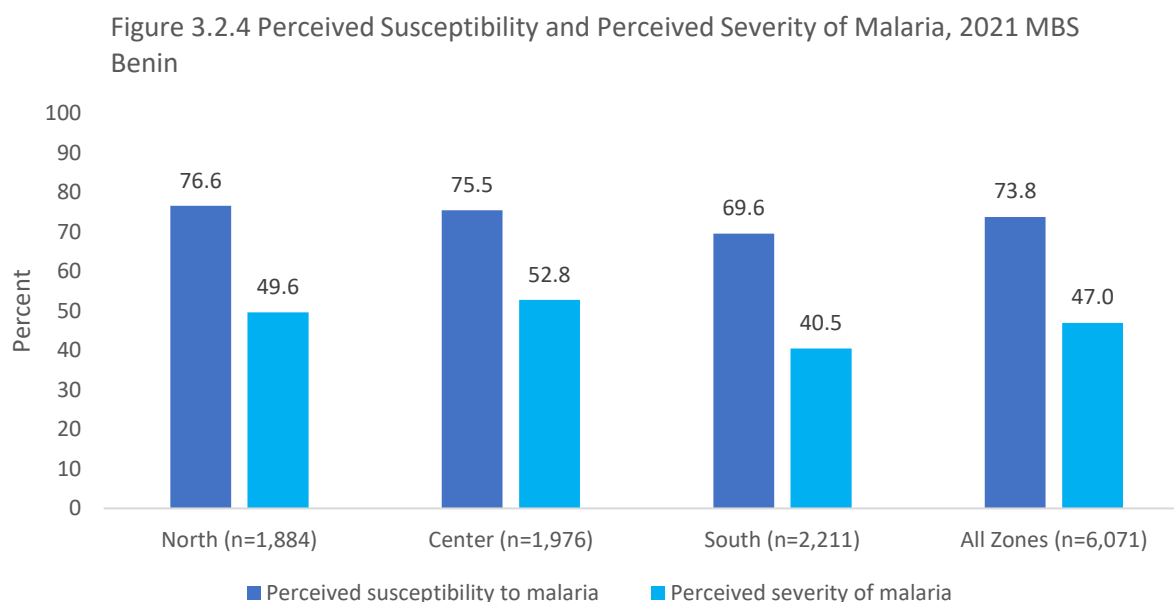
### Perceived Susceptibility to Malaria

Perceived susceptibility refers to one's perception of their risk of acquiring malaria, assessed by measuring a respondent's agreement with four related statements ([Table 3.2.3](#)). Most respondents in the North (76.6%), Central (75.5%), and South (69.6%) zones perceived that they were susceptible to malaria, whether in rural (74.3%) or urban (73.3%) settings ([Table 3.2.1a](#)). On average, lower

proportions of younger people aged 15-24 years (67.6%) expressed perceived susceptibility to malaria, whereas the highest proportion of individuals who expressed susceptibility to malaria were in the age range of 25-34 years (77.0%). With regards to level of education, the highest proportion of perceived susceptibility was among people who had no formal education (77.6%), compared to people with secondary or higher education (69.9%), who expressed their perceptibility to malaria in the lowest proportion. There did not appear to be a pattern to perceived susceptibility and wealth quintile, with the lowest proportion being the middle quintile (70.4%) and the highest proportion in the fourth highest quintile (78.7%). The lowest wealth quintile expressed perceived susceptibility comparably to the second quintile (74.6% and 75.0%, respectively).

### Perceived Severity

Perceived severity refers to one's perception that a disease or illness is serious. This cross-cutting ideational determinant was assessed by measuring respondents' agreement or disagreement with four statements related to perceived severity of malaria ([Table 3.2.4](#)). Perceived severity of malaria was low, with about half of respondents or fewer thinking malaria was a serious illness (North: 51.5%; Central: 37.6%; South: 36.7%; [Table 3.2.1a](#)). A lower proportion of people in urban (40.2%) settings, as opposed to rural (52.7%) thought malaria was a serious illness. By age group, younger people aged 15-24 years (43.0%) represented the lowest proportion of perceived severity, and people aged 25-34 years (50.0%) represented the highest proportion of thinking malaria was a serious illness. By wealth status, the highest wealth quintile reported in lowest proportion (35.2%) that malaria was a serious illness, compared to the two lowest wealth quintiles (55.1% and 52.9%, respectively), which were in the highest proportions of perceived severity.



### Interpersonal Communication about Malaria

Interpersonal communication about a health behavior has been found to be associated with one's likelihood of practicing that behavior. [10-12]. The specific items that make up the interpersonal communication indicator are found in [Table 3.2.5](#). Discussions about malaria were not very common among participants ([Table 3.2.1a](#)). Overall, half or fewer respondents reported having discussions in the six months prior to the survey in either the North (51.5%), Central (37.6%) or South (36.7%). Similarly, only 43.2% of people in rural settings and 42.5% in urban settings reported having discussed malaria in the six months preceding the survey. Younger people aged 15-24 years reported in the highest proportion (48.9%) having discussed malaria within six months of the survey, and the proportion of people decreased as age increased, with people aged 45 or older reporting in the lowest proportion (37.9%). Roughly half of people at each level of formal education (None: 46.7%; Primary: 51.6%; Secondary or higher: 47.9%) reported having discussed malaria in the preceding six months. Higher proportions of people in either the lowest (36.0%) or highest (51.2%) wealth quintiles had discussed malaria in the preceding six months, as compared to the second lowest wealth quintile (41.4%).

### Perceptions about Health Workers

Positive perception about health worker's general treatment of their patients was derived from agreement or disagreement with a statement that health workers in their community treat patients with respect ([Table 3.2.6](#)). In all three regions, very low proportions of respondents held favorable perceptions about health workers (North: 20.5%; Central: 12.8%; South: 14.1%; [Table 3.2.1a](#)). Rural and urban settings were similar in their low proportion of favorable perceptions toward health workers (17.0% and 15.8%, respectively). Among respondents, fewer young people aged 15-24 years (14.6%) had favorable perceptions of health workers, ranging up to 18.4% of people aged 25-34 years. People who had achieved only a primary level of education (14.6%) represented favorable perceptions of health providers in the lowest proportion, followed by 18.8% of people who had achieved secondary or higher formal education, and 20.7% of people with no formal education, who held favorable perceptions of health workers. Looking by wealth status, the range was between 14.3% of people in the second-lowest wealth quintile to 18.1% of people in the highest wealth quintile.

### Gender Norms related to Malaria

Four questions were used to assess equitable gender norms ([Table 3.2.7](#)). In general, gender equitable norms were high in Benin ([Table 3.2.1a](#)). Respondents in the North (74.4%) espoused gender equitable norms in the lowest proportion, followed by 82.3% of people in the Central zone, and 92.5% of people in the South. More people in urban settings (84.7%) than rural (81.1%) held gender equitable norms. The youngest and oldest age groups (15-24 years: 80.5%; 45 and older: 80.0%) had lower proportions of people with gender favorable norms, as compared to people in either the 25-34 years group (84.6%) or 35-44 years group (84.0%). More people with either no formal education (84.0%) or secondary or higher education (84.4%) espoused gender favorable norms, as compared to people with only primary education (76.7%). The proportions of people who agreed with the gender equitable statements in each wealth quintile was relatively similar, with the highest proportion in the lowest wealth quintile (86.2%) and the lowest proportion in the adjacent quintile (78.0%).

Table 3.2.1a: Summary of Cross-Cutting Ideational Determinants

Table 3.2.1a: Summary of Cross-Cutting Ideational Determinants- ALL						
Socio-demographic characteristics	Knowledge of Malaria	Perceived Susceptibility	Perceived Severity	Interpersonal Communication About Malaria	Perceptions About Health Workers	Gender Norms
Zones						
North	89.0	76.6	49.6	51.5	20.5	74.4
Center	89.7	75.5	52.8	37.6	12.8	82.3
South	91.0	69.6	40.5	36.7	14.1	92.5
Residence						
Rural	89.2	74.3	52.7	43.2	17.0	81.1
Urban	90.7	73.3	40.2	42.5	15.8	84.7
Age group						
% aged 15-24 years	88.1	67.6	43.0	48.9	14.6	80.5
% aged 25-34 years	90.5	77.0	50.0	45.2	18.4	84.6
% aged 35-44 years	89.7	76.7	48.2	39.3	15.6	84.0
% 45 years and above	92.1	72.8	45.5	37.9	17.2	80.0
Religion						
None	90.8	72.0	44.4	29.6	7.8	81.6
Christian	91.9	72.1	45.8	42.2	17.4	86.4
Muslim	88.3	76.3	47.3	49.0	16.9	76.1
Traditional	84.0	74.3	54.6	35.2	15.1	87.4
Other	93.3	77.7	36.9	17.9	10.6	89.2

Level of education						
None	90.8	77.6	50.6	46.7	20.7	84.0
Primary	83.5	73.5	34.6	51.6	14.6	76.7
Secondary or more	90.8	69.9	38.2	47.9	18.8	84.4
Married / Cohabiting	89.8	77.6	48.6	42.9	17.6	82.9
Wealth Quintiles						
Lowest	88.4	74.6	52.9	36.0	16.2	86.2
Second	89.7	75.0	55.1	41.4	14.3	78.0
Middle	88.2	70.4	42.8	43.4	17.2	79.0
Fourth	91.0	78.7	52.4	40.9	16.1	85.7
Highest	92.0	71.6	35.2	51.2	18.1	85.7
<b>All</b>	<b>89.9</b>	<b>73.8</b>	<b>47.0</b>	<b>42.9</b>	<b>16.5</b>	<b>82.7</b>



### 3.3 Malaria Case Management for Children Under Five Years Old

This section describes the ideational factors related to malaria case management for children under five, the prevalence of relevant behavior, and the associations between ideational factors and the behavior using logistic regression. Ideational factors related to malaria care-seeking and treatment explored in the MBS include knowledge, favorable attitudes, perceived response-efficacy, perceived self-efficacy, perceived supportive community norms, perceived equitable gender norms, favorable perceptions of health workers, involvement in decision-making, and interpersonal communication. The specific case management behaviors that were explored included any care-seeking and appropriate (in a health facility or from a CHW) and prompt (same or next day as the onset of fever) care-seeking. The assessed outcomes included malaria testing, confirmed cases of malaria, and the proportion of confirmed malaria cases given artemisinin combination therapy (ACT).

#### 3.3.1 Ideational Variables Linked with Care-Seeking

The ideational factors measured in the case management module include: knowledge of when to seek care for fever, attitudes toward prompt care-seeking for fever, perceived response-efficacy of diagnostic testing, perceived response-efficacy of malaria treatment, perceived self-efficacy for prompt care-seeking, descriptive and injunctive norm toward prompt care-seeking, perceptions of health facilities and health workers regarding treatment of malaria in children, and decision-making related to malaria case management. Tables [3.3.1](#) and [3.3.1a](#) summarizes the questions used to comprise each ideational indicator.

##### Knowledge

Overall, knowledge of malaria care seeking and treatment (i.e., when to seek care, where to seek care, medications, and services for treatment, etc.) was low, with one-third or fewer respondents answering correctly (North: 34.9%; Central: 17.8%; South: 27.0%; [Table 3.3.1a](#)). A higher proportion of respondents in urban settings (31.6%) as compared to rural settings (25.3%) reported correct knowledge of care seeking and treatment. A higher proportion of males (30.0%) reported correct knowledge of care seeking and treatment as compared to females (27.5%). There was not a substantial difference between age groups, ranging from 25.0% of respondents aged 45 or older, to 31.3% of respondents aged 15-24 years. As level of formal education increased, so did the proportion of people with correct care seeking and treatment knowledge (No formal education: 25.8%; Secondary or higher: 36.1%). Generally, level of knowledge also rose with wealth quintile, ranging from only 21.1% of respondents in the lowest wealth quintile reporting correct knowledge to 40.0% of respondents in the highest wealth quintile.

##### Attitudes toward care-seeking and treatment

Care-seeking and treatment attitudes were assessed through nine items in the questionnaire. Data for all Items are available in [Table 3.3.3](#) in the Annex. Favorable attitudes toward care seeking and treatment for malaria were generally low, but highest in the Southern zone (North: 27.7%; Central: 23.5%; South: 41.2%; [Table 3.3.1a](#)). There was no substantial difference between urban or rural settings (31.6% in the two zones) or male and female (31.2% and 31.8%, respectively). Individuals aged 35-44 represented the lowest proportion (30.4%) to express favorable attitudes toward care seeking and treatment, and individuals aged 25-34 years (34.9%) represented the highest proportion with favorable

attitudes. With regards to level of formal education, a higher proportion of those with no formal education (39.1%) expressed favorable attitudes as compared to respondents with a primary level of formal education (23.5%). There was no substantial difference by wealth quintile, ranging from 28.7% of respondents in the lowest quintile, to 35.1% of respondents in the second highest wealth quintile.

#### Perceived response efficacy of malaria testing and treatment

Perceived response-efficacy of malaria testing was assessed through three items: the belief that a blood test is the only way to properly diagnose malaria; a belief that malaria treatment medicine is not needed if blood test results are negative; and disagreement that parents can diagnose malaria as well as a blood test. Based on these questions, 26.3% of respondents reported perceived response efficacy toward malaria testing (Table 3.3.4). Overall, roughly a quarter of respondents in either of the three zones did not perceive malaria testing to be efficacious (North: 25.0%; Central: 21.3%; South: 31.0%; Table 3.3.1a). There was no substantial difference between urban or rural (25.6% and 26.9%, respectively) or male and female (26.9% and 24.6%, respectively). A lower proportion of respondents aged 35-44 years or older (21.7%) perceived malaria testing to be efficacious, whereas the highest proportions were found in the youngest age groups, respondents between 15-25 years (28.4%) and 25-34 (28.7%). Respondents with either no formal education (31.9%) or in the middle wealth quintile (29.6%) reported in the highest proportions for their category that malaria testing was efficacious, as compared to respondents with a primary level of formal education (20.0%) or in the second wealth quintile (23.6%), who represented the lowest proportions in their categories.

When considering malaria treatment, perceived response-efficacy was assessed through three items: perception that an injection to treat malaria is more effective than oral medication; belief that malaria drugs obtained from health facilities are effective treatment; and the perception that malaria medicines from the market are not the same quality as those distributed in health facilities. When considering malaria treatment, perceived response-efficacy was assessed through three items: perception that an injection to treat malaria is more effective than oral medication; belief that malaria drugs obtained from health facilities are effective treatment; and the perception that malaria medicines from the market are not the same quality as those distributed in health facilities. Perceived efficacy of treatment was higher across the three zones (North 55.3%; Central: 65.0%; South: 63.4%). There was no substantial difference between urban or rural settings (60.5% and 60.3%, respectively) or sex (Male: 59.3%; Female: 60.8%). Between 58.1% of people 45 years or older, at the lower end, and 63.4% of people aged 25-34, at the highest end, perceived malaria testing to be efficacious. Respondents with either no formal education or who were in the lowest wealth quintile perceived malaria treatment to be efficacious in the highest proportions (66.3% and 64.1%, respectively), as compared to people with primary education (48.1%) or who were in the highest wealth quintile (57.3%).

#### Perceived self-efficacy for malaria testing and treatment

Perceived self-efficacy refers to a person's confidence in their ability to take specific measures to protect themselves or their family against an unpleasant outcome. Within the case management module, this construct was measured using six items worded differently for men and women, which related to respondents' perceived self-efficacy to do or support several actions, including: find the money to take their sick child to the health facility; obtain/provide permission to their spouse or family member to take their febrile child to the health facility; take their child to the health facility the same or next day after s/he develops a fever; request a blood test for malaria when at the health facility with their child; and

find the money to pay for recommended malaria medication. Perceived self-efficacy for malaria testing and treatment was derived based on responses to each of the above items ([Table 3.3.5](#)).

Looking across the sample, results indicate near universal (89.6%) perceived-self efficacy for malaria testing and treatment ([Table 3.3.1a](#)). Perceived self-efficacy to seek malaria testing and treatment was high across all three zones (North: 89.2%; Central: 91.6%; South: 88.8%). A higher proportion of respondents in urban environments than rural (90.8% and 88.6%, respectively) reported high self-efficacy for testing and treatment, as with male respondents (93.4%) compared to female respondents (88.2%). On average, nine out of ten people aged 25 or older or between 15-24 years believed they could access testing and treatment options. While more than 90% of people with any level of formal education believed they could access testing and treatment for malaria, the highest proportion was among those with no formal education (93.5%). With regards to wealth, the lowest proportion was among those in the lowest wealth quintile (84.8%), and the highest among those in the highest wealth quintile (93.5%).

#### Descriptive and injunctive norms: care-seeking and treatment

There is literature supporting the notion that individuals are more likely to practice a malaria-related behavior if they perceive others in their community practice or approve of the behavior. Descriptive norms related to prompt care-seeking and malaria testing were defined as perceiving that at least half of the people in their community practice the behavior. Favorable injunctive norm was defined as perceiving that fewer than half of the people in their community would criticize them if they knew that they took their febrile child for care promptly. [Table 3.3.6](#) describes the prevalence of 1) the descriptive norm of prompt care-seeking in the community; 2) the descriptive norm that febrile children who are taken to a health facility get tested; and 3) the injunctive norm of prompt care seeking for children with fever.

The perception of supportive descriptive community norms regarding malaria testing and treatment varied across the three zones (North: 58.4%; Central: 44.6%; South: 32.6%; [Table 3.3.1a](#)). There was not a substantial difference between urban and rural (45.7% and 46.1%, respectively) or male (46.5%) and female (45.7%). The youngest and oldest age groups represented the lowest proportions of perceived norms for testing and treatment (15-24 years: 44.9%; 45 or older: 39.4%), whereas a higher proportion of people in the 35–44-year age group (48.6%) perceived higher normative behavior in their location. People with no formal education represented the lowest proportion (47.7%), as compared to people with primary education (55.3%) who represented the highest proportion. There was slight variation between wealth quintiles. The lowest proportion was among the second lowest and highest wealth quintiles (45.0% and 45.4%, respectively), and the highest proportion was among the fourth quintile (47.3%).

#### Perceived equitable gender norms for malaria care-seeking

Overall, perceived gender equitable norms related to malaria treatment were high in the three zones (North: 76.2%; Central: 82.5%; South: 92.0%; [Table 3.3.1a](#)), with only slight variations between urban and rural settings (84.6% and 82.3%, respectively) and male and female respondents (81.0% and 84.1%, respectively). A smaller proportion of respondents 45 years or older (78.8%) perceived gender equitable norms, with the highest proportion among 25-34 years old (85.2%). With regard to level of formal education attained, only 76.1% of those with a primary education perceived gender equitable norms,

whereas those with no formal education (85.0%) or secondary or higher (84.5%) were in higher proportions. Respondents in the middle to lowest wealth quintiles perceived gender equitable norms in lower proportions (80.8% to 80.1%) compared to respondents in either the lowest, fourth, or highest wealth quintile (85.6%, 85.8%, and 85.0%, respectively).

#### Perceptions toward health facilities and health workers: case management

Respondents were determined to hold favorable perceptions toward health facilities regarding malaria diagnosis and treatment if they agreed that health facilities in their community have a) the blood test kit to diagnose malaria; and b) the medication to treat malaria. Overall, 80.8% of respondents reported favorable perception toward health facilities in this regard ([Table 3.3.7a](#)). Perceptions toward health workers regarding malaria diagnosis and treatment were in two categories: perceptions toward health facility workers, and perceptions toward community health workers ([Table 3.3.7b](#)).

Positive perceptions were based on participant report that a) local health providers (based in a facility or the CHW) know how to treat malaria in children; b) the provider charges parents for malaria medication in children less than five years old; and c) the provider charges parents for malaria testing in children less than five years old. Per national policy, all malaria testing and medication at health facilities are free of charge when the case involves a child under five years old. Roughly one third of respondents or fewer in the three zones held favorable perceptions of community-based health workers (North: 39.2%; Central: 22.4%; South: 20.8%; [Table 3.3.1a](#)) or facility-based health workers (North: 32.3%; Central: 22.4%; South: 16.7%; [Table 3.3.1a](#)). Regarding favorable perceptions of community-based health workers, there was only a small variation between rural and urban (30.0% and 28.2%, respectively) and male and female (29.6% and 29.0%, respectively). By contrast, the proportions of respondents holding favorable attitudes toward facility-based health care works in urban and rural settings was lower (23.5% and 25.1%, respectively), as well as by sex (Male: 23.6%; Female: 24.7%). Looking by age, between 27.2% of individuals ages 35-44 years at the lower end, and 30.8% of individuals 15-24 years at the upper end had favorable perceptions of community-based health workers, compared to only 21.8% of individuals 35-44 years and 28.4% of individuals 15-24 years who had favorable perceptions of facility-based health workers. A higher proportion of people with no formal education (34.4%) than people with either primary (26.7%) or secondary or higher education (39.4%) held favorable perceptions of community-based health workers. Regarding facility-based health workers, only 23.9% of people with primary education held favorable perceptions, compared to no formal education (27.2%) or secondary or higher (28.7%). Favorable perceptions of community-based health workers ranged from 24.0% of people in the fourth wealth quintile to 30.8% of people in the highest quintile. With regards to facility-based health workers, only 22.5% of people in the second-lowest wealth quintile held favorable perceptions, ranging up to 26.3% of people in the highest wealth quintile.

#### Participation in decisions about malaria care-seeking and treatment

In the case management module, married respondents were asked who in their household/family makes the decision about a) whether to go to a health facility when they think their child has malaria; and b) whether to purchase medicine when the child is sick with fever. Response options included sole or joint decision between the husband and wife. Zone specific results can be found in tables [3.3.8a](#) and [3.3.8b](#) in the annex. At least half of respondents in each zone reported their involvement in decision-making to seek care if their child was sick (North: 42.2%; Central: 50.7%; South: 59.2%) or to purchase medicine for a sick child (North: 42.3%; Central: 53.0%; South: 52.6%). There were small differences

between urban (53.4%) and rural (47.9%) regarding whether to seek care for a sick child, and urban (50.5%) and rural (47.0%) regarding purchasing medicine. We see a vastly larger difference between men and women who report their involvement in decision making. When deciding to seek care at a health facility for a child sick with fever, 85.5% of men compared to only 34.2% of women were involved in the decision. When deciding to purchase medicine for a sick child, 87.6% of men and only 30.7% of women were involved in such decisions. When deciding to seek care, individuals 35-44 years (55.3%) or 45 or older (75.5%) were more likely than either 15-24 years (27.9%) or 25-34 years (45.9%) to be involved in the decision-making process. Similarly, 74.3% of people aged 45 or older were involved in decisions to purchase medicine for a sick child, followed by 55.8% of people 35-44 years, 42.2% of people 25-34 years, and only 25.4% of people 15-24 years. In both cases, whether deciding to take a sick child to seek care or to purchase medicine on their behalf, people with secondary or higher or no formal education were more often involved in decision making to seek care (63.2% and 50.4%, respectively) compared to people with only primary education (48.3%). and 56.4%, respectively). In terms of decision making to purchase medicine, people with higher education reported involvement in decision-making in higher proportions than people with no education (61.6% and 48.2%, respectively). There is slight variation in decision-making involvement that generally increases with wealth status. When deciding to seek care for a sick child, 45.3% of people in the lowest wealth quintile report their involvement, while 59.3% of people in the highest wealth quintile report their involvement. Similarly, when deciding to purchase medicines for a sick child, 44.1% of people in the lowest wealth quintile report their involvement, compared to 57.8% of people in the highest wealth quintile.

Table 3.3.1a: Summary of Ideational Variables Related to Case Management for Children Under Five

Table 3.3.1a: Summary of Ideational Variables Related to Case Management for Children Under Five											
Percentage of respondents who report cross-cutting ideational factors, by respondent sociodemographic characteristics, Benin 2021											
Characteristic	Knowledge of malaria care-seeking and treatment	Favorable attitudes toward care-seeking and treatment	Perceived response-efficacy of malaria testing	Perceived response-efficacy of malaria treatment	Perceived self-efficacy for malaria testing and treatment	Perceived supportive descriptive community norms regarding malaria testing and treatment	Perceive equitable gender norms related to malaria treatment	Favorable perceptions of community-based health workers regarding care-seeking and treatment	Favorable perceptions of facility-based health workers regarding care-seeking and treatment	Involved in decision to go to the health facility when child has malaria	Involved in decision to purchase medicine when child is sick with fever
<b>Zones</b>											
North	34.9	27.7	25.0	55.3	89.2	58.4	76.2	39.2	32.3	42.2	42.3
Center	17.8	23.5	21.3	65.0	91.6	44.6	82.5	24.5	22.4	50.7	53.0
South	27.0	41.2	31.0	63.4	88.8	32.6	92.0	20.8	16.7	59.2	52.6
<b>Residence</b>											
Rural	25.3	31.6	26.9	60.3	88.6	46.1	82.3	30.0	25.1	47.9	47.0
Urban	31.6	31.6	25.6	60.5	90.8	45.7	84.6	28.2	23.5	53.4	50.5
<b>Sex</b>											
Female	27.5	31.8	26.9	60.8	88.2	45.7	84.1	29.0	24.7	34.2	30.7
Male	30.0	31.2	24.6	59.3	93.4	46.5	81.0	29.6	23.6	85.5	87.6

**Table 3.3.1a:** Summary of Ideational Variables Related to Case Management for Children Under Five

Percentage of respondents who report cross-cutting ideational factors, by respondent sociodemographic characteristics, Benin 2021

Characteristic	Knowledge of malaria care-seeking and treatment	Favorable attitudes toward care-seeking and treatment	Perceived response-efficacy of malaria testing	Perceived response-efficacy of malaria treatment	Perceived self-efficacy for malaria testing and treatment	Perceived supportive descriptive community norms regarding malaria testing and treatment	Perceive equitable gender norms related to malaria treatment	Favorable perceptions of community-based health workers regarding care-seeking and treatment	Favorable perceptions of facility-based health workers regarding care-seeking and treatment	Involved in decision to go to the health facility when child has malaria	Involved in decision to purchase medicine when child is sick with fever
<b>Age</b>											
15–24	31.3	30.6	28.4	58.4	85.3	44.9	82.1	30.8	28.4	27.9	25.4
25–34	28.5	34.9	28.7	63.4	91.4	47.4	85.2	30.1	24.0	45.9	42.2
35–44	26.2	30.4	23.8	60.0	91.7	48.6	84.6	27.2	21.8	55.3	55.8
≥45	25.0	28.2	21.7	58.1	89.3	39.4	78.8	27.9	22.6	75.5	74.3
<b>Religion</b>											
None	19.2	26.0	18.5	53.7	92.4	45.5	83.5	13.7	9.9	61.4	62.1
Christian	26.0	35.8	28.3	64.6	90.0	38.8	86.2	28.2	22.9	55.2	51.6
Muslim	35.5	26.9	25.7	53.5	89.9	56.5	78.0	34.7	29.1	42.0	42.5
Traditional	17.3	29.3	23.1	66.7	87.5	41.8	86.7	23.3	23.0	51.6	49.5
Other	25.7	38.1	19.0	65.2	65.8	71.7	87.6	19.4	15.9	40.8	37.1

**Table 3.3.1a:** Summary of Ideational Variables Related to Case Management for Children Under Five

Percentage of respondents who report cross-cutting ideational factors, by respondent sociodemographic characteristics, Benin 2021

Characteristic	Knowledge of malaria care-seeking and treatment	Favorable attitudes toward care-seeking and treatment	Perceived response-efficacy of malaria testing	Perceived response-efficacy of malaria treatment	Perceived self-efficacy for malaria testing and treatment	Perceived supportive descriptive community norms regarding malaria testing and treatment	Perceive equitable gender norms related to malaria treatment	Favorable perceptions of community-based health workers regarding care-seeking and treatment	Favorable perceptions of facility-based health workers regarding care-seeking and treatment	Involved in decision to go to the health facility when child has malaria	Involved in decision to purchase medicine when child is sick with fever
<b>Education</b>											
None	25.8	39.1	31.9	66.3	93.5	47.7	85.0	34.4	27.2	50.4	48.4
Primary	32.4	23.5	20.0	48.1	91.4	55.3	76.1	26.7	23.9	48.3	52.0
≥ Secondary	36.1	34.6	28.0	59.9	91.0	45.9	84.5	29.4	28.7	63.2	61.6
<b>Wealth quintiles</b>											
Lowest	21.1	28.7	26.0	64.1	84.8	46.1	85.6	30.2	25.0	45.3	44.1
Second	23.4	29.6	23.6	60.6	89.5	45.0	80.1	28.1	22.5	44.7	45.9
Middle	28.7	30.9	29.6	58.6	88.2	46.0	80.8	32.2	24.1	52.0	49.0
Fourth	24.8	35.1	26.0	62.9	90.9	47.3	85.8	24.0	23.9	48.9	44.8
Highest	40.0	33.3	25.6	57.3	93.5	45.4	85.0	30.8	26.3	59.3	57.8
<b>Total (%)</b>	<b>28.1</b>	<b>31.6</b>	<b>26.3</b>	<b>60.4</b>	<b>89.6</b>	<b>46.0</b>	<b>83.3</b>	<b>29.2</b>	<b>24.4</b>	<b>50.3</b>	<b>48.5</b>

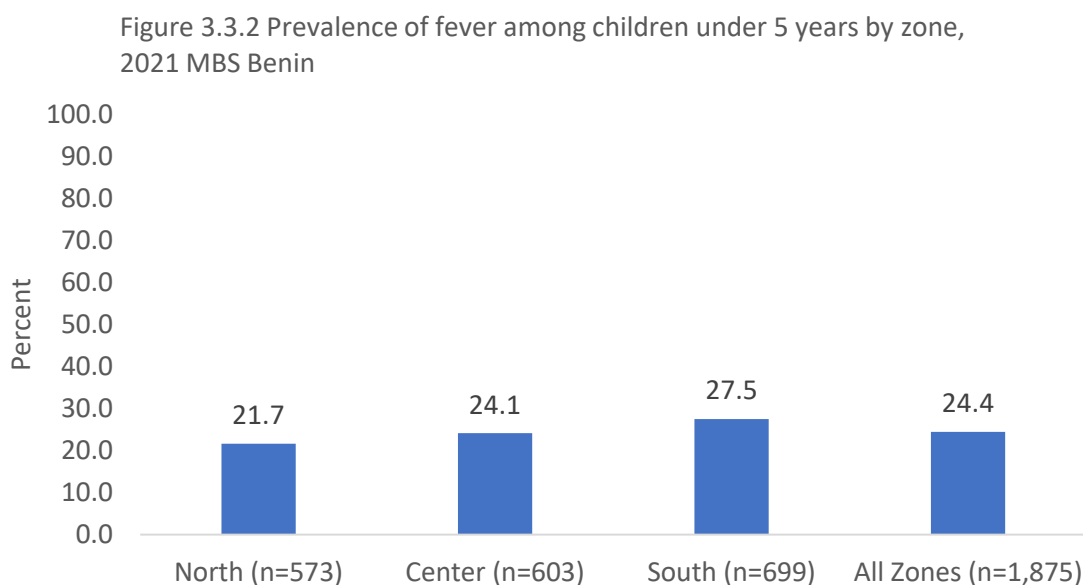


### 3.3.2 Case Management Behaviors

Mothers or caretakers were asked about care-seeking behaviors for children under five years old who experienced a fever within the prior two weeks. Behaviors included whether care was sought for the child; where care was sought for the child; and how much time elapsed between the onset of fever and when care was sought. For children who were taken to a health facility, caretakers were asked whether a malaria test was administered and if so, the results of the malaria test; whether they (the caretaker) requested an injection against malaria for their child; and whether the child was given medicine for malaria following the test.

#### Prevalence of Fever

While the MBS is not designed to estimate fever prevalence at the population level, data on fever was collected to provide us with the necessary context for care-seeking and treatment for children. Women with children under five years old at their charge were asked whether any of those children had a fever within the two weeks prior to the survey. Across all zones, 24.4% of children under 5 years old had a fever within the two weeks preceding the survey, according to their female care-taker's self-report. Prevalence varied by zone (North: 21.7%; Central: 24.1%; South: 27.5%).



#### Care-Seeking for Fever

With regards to the timing of care seeking, more than half of respondents in each zone (North: 68.3%; Central: 55.9%; South: 57.9%) reported seeking any care for their febrile child on the same or the next day ([Table 3.3.9](#)). Looking by age, a lower proportion of caregivers of children ages 24-59 months (47.3%) reported taking their child for any care on the same or the following day as compared to caretakers of children aged 12-23 months (74.2%). Slightly higher proportions of children under 5 years old in the North (70.5%) and Center (62.7%) were brought to a health facility on the same day or the following day, whereas a lower proportion was seen in the South (54.8%), when compared to seeking

any care. By contrast, a lower proportion of children under 5 years old with fever were taken to a health facility for 'appropriate' care on the same or the next day after fever onset. Appropriate care is considered having taken the febrile child to a CHW or facility as first recourse on the same or following day as symptom onset. This behavior is referred to as appropriate care-seeking and is the primary behavioral outcome that we focus on in the rest of this section. Fewer than half of children in the South (45.0%) were taken to a facility, 51.9% of children under 5 in the Central Zone, and 62.5% of children under 5 in the North were taken to a facility on the same or the next day after fever onset. Parents of children between 24-59 months reported lower rates of appropriate care seeking (46.0%) than either parents or caretakers of children 0-11 months (50.9%) or 12-23 months (74.2%).

**Table 3.3.9: Care-seeking behaviors for children under age 5 with fever**

Table 3.3.9: Care-seeking behaviors for children under age 5 with fever, 2021 Benin MBS			
Characteristic	Care was sought for child under 5 with fever the same or next day after fever onset	Care was sought for child under 5 with fever at health facility at any time	Care was sought for child under 5 with fever at facility and the same or next day after fever onset (i.e., appropriate care) <sup>2</sup>
<b>Zone</b>			
North	68.3	70.5	62.5
Center	55.9	62.7	51.9
South	57.9	54.8	45.0
<b>Age of child</b>			
0-11 months	60.3	59.6	50.9
12-23 months	74.2	88.3	74.2
24-59 months	47.3	62.5	46.0
<b>Residence</b>			
Rural	61.1	62.1	52.7
Urban	60.9	61.8	52.5
<b>Mother's education</b>			
None	66.1	58.9	55.4
Primary	55.1	55.0	49.1
Secondary+	67.5	65.5	58.9
<b>Wealth quintiles</b>			
Lowest	57.0	63.8	50.5
Second	52.4	53.4	40.2
Middle	50.9	52.6	44.4
Fourth	66.6	68.7	62.4
Highest	74.4	69.6	61.7
<b>Total</b>	<b>61.0</b>	<b>62.0</b>	<b>52.6</b>

<b>Number of Observations</b>	<b>460</b>
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#### Testing, Diagnosis and Treatment of Fever in Children (Table 3.3.10)

A substantially lower proportion of children under 5 in the South (27.5%) as compared to either the North (65.4%) or Center (50.2%) who were taken to a health facility were then tested for malaria ([Table 3.3.10](#)). Children 0-11 months were tested in the lowest proportion (42.6%) compared to children 12-23 months (75.6%), who represented the highest proportion tested for malaria if brought to a clinic for fever. Fewer children in urban settings (34.6%) as compared to rural (54.8%) were tested for malaria when brought to a health facility. Higher proportions of people with no formal education (46.7%) and in the lowest wealth quintile (53.5%) reported that their children were tested for malaria, as compared to secondary or higher education (42.7%) and the highest wealth quintile (44.2%).

Overall, 40.1% of children tested for malaria yielded a positive result, confirming a malaria diagnosis. Of the 184 children in the sample who were diagnosed with malaria, only four-out-of-ten received ACT. Note that during the survey special efforts were made to ascertain the name of the medications received by the child, including asking the caretaker for the name of the medications that the child received and showing the caretaker pictures of ACTs commonly available in Benin to enable the respondent to choose the one that most closely resembled the medication taken by the child. The percentage of children with diagnosed malaria that reportedly received ACT was lowest in the South (33.0%) and highest in the North (46.9%). The youngest children, between 0-11 months reportedly received ACT in the highest proportion (40.3%) than the oldest children who were 24-59 months (21.8%). There was only slight variation between wealth classes, ranging from about 36% in the middle- and low-wealth quintiles to 47% in the highest quintile. Among children with confirmed malaria who received ACT, only 32.6% received the medicine the same or the next day after the start of the child's fever. Prompt receipt of ACT following a confirmed malaria test varied by zone: North=43.0%; Center=32.2%; South=24.6%. Similarly to receiving ACT at all, the youngest children 0-11 months received it promptly in higher proportions (33.9%) than older children 24-59 months (20.5%).

Results of the multivariable logistic regression models showing the factors associated with appropriate care for children under five with fever are presented on Table 3.3.11. The analysis found few statistically significant associations between ideational factors or socio-demographic factors with appropriate care-seeking of children with fever in the past two weeks. For example, knowledge that seeking care for a child with fever should be immediate or same day after onset, descriptive norm or perceived self-efficacy toward soliciting or seeking care for a sick child is positively and significantly associated with the outcome sought - seeking appropriate care. Similarly, the likelihood of seeking appropriate care is highly and significantly elevated among the wealthiest households compared to the poorest households (AOR: 2.03;  $p<0.01$ ).

Table 3.3.11: Results of the logistic regression of appropriate care-seeking of children with fever in the past 2 weeks<sup>1</sup>

Table 3.3.11: Results of the logistic regression of appropriate care-seeking of children with fever in the past 2 weeks <sup>1</sup>		
CORRELATES	ADJUSTED ODDS RATIO	Standard Errors
<b>IDEATIONAL DETERMINANTS</b>		
Knowledge that best time to seek care for a child sick with fever is immediately or same day after its onset	8.11***	3.500
Respondent knows that a blood test is the best way to diagnose malaria	1.49	0.348
Discussed malaria with spouse or relative/friend in the prior six months	2.13**	0.536
Perceived that health facility workers treat patients with respect	1.74	0.583
Perceived that health facility workers charge parents for malaria treatment for children under five	0.77	0.212
Perceived severity of malaria	0.83	0.186
Perceived susceptibility of malaria	0.68	0.218
Perceptions that the majority (all or most) of people in their community take their children to a health care provider the same day or the day after the onset of fever	2.40***	0.538
Perceived self-efficacy in seeking care and treatment with their sick child	1.92*	0.539
<b>SOCIODEMOGRAPHIC DETERMINANTS</b>		
Age of sick child (RC = 0-11 months)		
12-35 months	1.66	0.679
36-59 months	0.46	0.313
Urban residence (RC = rural)	0.86	0.214

Zone (RC=North)		
Center	0.97	0.283
South	0.63	0.182
Household Wealth Quintile (RC=Lowest)		
Richest	2.03**	0.497
Pseudo-R <sup>2</sup>	0.2083	
Number of observations	460	
Notes: ‡ p<0.1 * p<0.05; ** p<0.01; *** p<0.001. n/a: not applicable		
1 Defined as taking the child to a health facility or CHW as a first recourse the same or next day after onset of fever.		

## 3.4 Malaria in Pregnancy

In this section, we present survey findings related to prevention of malaria in pregnancy. Specifically, we start with findings on the ideational determinants of the use of antenatal care (ANC) and intermittent preventive treatment of malaria during pregnancy (IPTp) services. We then describe behaviors and intentions related to ANC and IPTp. Variations by sociodemographic characteristics and across zone are highlighted in the results.

### 3.4.1 Ideational Variables Linked with Antenatal Care Attendance and IPTp Use

This subsection presents information on ideational variables that may influence the use of ANC and IPTp. The survey measured the following ideational variables relevant to pregnancy and pregnancy care: knowledge, attitudes, perceived severity of malaria in pregnancy, perceived response-efficacy of IPTp, perceived self-efficacy, descriptive norms relating to IPTp, perceptions of health providers, as well as spousal communication and decision-making about ANC.

Knowledge: Knowledge about ANC and IPTp was assessed based on three questions that focused on the ideal timing of the first ANC visit, the number of times a pregnant woman should receive ANC, and the number of times a woman should receive the SP during pregnancy. The data revealed that comprehensive knowledge of ANC and IPTp was low across all regions with 17.9% of the population demonstrating knowledge of all three questions. We observed differences according to sociodemographic characteristics and geography as seen in [Table 3.4.1](#). Women are more likely to have comprehensive knowledge (19.1%) compared to men (14.6%). Age is also a factor in comprehensive knowledge with youth aged 15-24 having the lowest knowledge of all age groups at 12.2% followed by those 45 years and older at 16.0% and 34 – 44 years old at 18.7%. Those aged 25-35 were the most knowledgeable with 22.8% demonstrating knowledge of ANC and IPTp. Wealth groups had similar levels of knowledge, between 18.4-19.4% for the lowest, middle, fourth and highest quintiles, while the second wealth quintile somewhat below the others at 14.8%. Geography is important as well, with the most knowledgeable located in the South zone of the study (23.6%) compared to the North (14.7) and the Center (14.9%).

Attitudes towards ANC/IPTp: Attitudes towards ANC/IPTp were assessed through five items in the questionnaire. The items included belief about the safety of SP when taken on an empty stomach, belief about early debut of ANC, the perceived safety of SP for the woman and her unborn child, and the perceived importance of going for ANC multiple times during pregnancy. When these items were combined, the data showed that a majority of Beninese do not have a positive attitude towards ANC/IPTp. 41.5% of the overall population expressed favorable attitudes towards ANC/IPTp. Favorability is not greatly affected by gender or age, with these groupings roughly following the overall average, however there are greater differences in favorability according to wealth and education. Those in the fourth and highest wealth quintiles are least likely to have favorable views, 40.6% and 35.6% respectively, compared to the lower three quintiles which range from 43.1% to 44.3%. 47.6% of those with no formal education were favorable compared to 31.8% who had primary education and 39.9% for those who had secondary education or more. Opinions followed geography as well, with those in the South being least favorable (35.5%) followed by the Center (41.1%) and the North (47.0%). Further breakdown can be seen in [Table 3.4.2](#).

Perceived severity of malaria in pregnancy: This construct was assessed through two items: perception that the effects of malaria in pregnancy can be serious for the woman and her unborn child and the belief that pregnant women are more likely to die from malaria than women who are not pregnant. The indicator derived from these two items revealed that perceived threat of malaria in pregnancy is high with 83.8% of the overall population agreeing with the two statements. The breakdown by sociodemographic characteristics and geographic location in [Table 3.4.3](#) shows this is somewhat consistent across all groups with a few exceptions. Among age groups, perceived severity is lowest among the 15-24 years age bracket, with 77.9% agreeing, compared to older age groups agreeing more frequently. The second lowest wealth quintile and middle quintile also stood out as lower than others with 79.8% and 80.5% perceiving severity of malaria in pregnancy respectively compared to the lowest (85.7%), fourth quintile (87.6%), and highest (86.3%). Lastly, the North zone had the lowest perceived severity with 80.0% agreeing to both statements, while the Center and South had higher rates at 85.7% and 87% respectively.

Perceived response-efficacy of ANC/IPTp: As seen in [Table 3.4.4](#), ANC and IPTp are overwhelmingly viewed as ensuring positive pregnancy outcomes. Overall, perceived response-efficacy of ANC was 95.9% and IPTp was 89.5%. Perceptions for ANC vary little across sociodemographic characteristics, however there are some differences for IPTp. Geographic zone plays a role, with higher perceived response-efficacy in the Center (92.6%) and South (93.4%) versus the North (84.4%). Age also plays a role, with 84.8% aged 15-24 agreeing, compared to 93.1% aged 25-34, 90.3% aged 35-44, and 88.9% aged 45+. Finally, the second wealth quintile showed the lowest agreement at 83.6%, followed by 88.6% for the middle, 90.9% for the lowest and fourth quintiles, and 93.5% for the highest.

Perceived self-efficacy for ANC and IPTp: This construct was measured based on six items that were differently worded for men and women. These items focused on going (or supporting one's spouse to go) for early ANC and the recommended number of ANC visits, going for ANC with spouse, requesting (or supporting spouse to request) SP during ANC visit, and taking (or supporting spouse to take) SP at least three times during pregnancy. The indicator of perceived self-efficacy to take actions related to ANC and IPTp revealed a high level of perceived self-efficacy for men and women. Indeed, 93.7% of women and 73.9% of men perceived the self-efficacy to take relevant actions related to ANC and IPTp. Variations between zones, age, and wealth can be found in [Table 3.4.5](#).

Social norms: Questions to assess three types of social norms were included in the survey tools for men and women. The three social norms measures include: (1) descriptive norm about ANC (that is, the belief that at least half of the pregnant women in their community attend at least four ANC visits); (2) descriptive norm about IPTp; and (3) injunctive norm about IPTp (that is, the perception that more than half the people in their community would criticize them if they knew that they took IPTp to prevent malaria in pregnancy). The data pertaining to these three measures are presented on [Table 3.4.6](#). About two-thirds (62.3%) of the respondents believed that obtaining at least four ANC consultations was the norm in their community. This belief varied by zone (North: 69.1%; Center: 59.2%; South: 56.5%). Roughly equal men and women (63.1% and 62.0%, respectively) believed most women go to at least four ANC visits. Slightly higher proportions of people in urban settings (64.2%) as compared to rural (60.7%) thought the same. Respondents aged 15-24 represented the lowest proportion (58.8%) as compared to their older counterparts (65.7% of people aged 35-44 years were the highest), to think that most women went for four ANC visits. There was a roughly ten-percentage point difference between people in the lowest wealth quintile (57.4%) and the highest wealth quintile (66.6%) regarding the belief

that most women go for four ANC visits in their community. As for the descriptive norm about IPTp, slightly more than half (57.6%) of respondents believed that most women in their community take IPTp to prevent malaria when they are pregnant. This belief varied across zones (North: 67.1%; Center: 56.7%; South: 47.3%). This belief did not vary by sex or residence, and showed only small variation between age, ranging from 53.6% of people aged 45 and older, up to 61.3% of people aged 35-44 years. Belief that most women take IPTp during pregnancy seemed to follow wealth status, with the lowest quintile representing the lowest proportion (54.4%) and the highest quintile representing the highest quintile (61.5%). Finally, regarding the belief that most people in one's community approves of pregnant women taking IPTp during pregnancy to prevent malaria, only about one-in-ten respondents agreed (11.4%). Almost no one in the South agreed that people approve of women taking IPTp (3.2%), while the North (18.8%) and Center (11.0%) were only slightly higher. Whether male or female, or urban or rural, only about one-in-ten people believed their neighbors approved of women taking IPTp. People aged 25-34 years believed this in the lowest proportion (8.6%) as compared to their counterparts who were between 11.2% (among 45 or older) and 13.2% (among 35-44 years). People with primary education believed people in their community approved of women taking IPTp in higher proportion (17.9%) than either no formal education (7.3%) or secondary or higher education (13.5%). Belief varied by wealth status, with about 9.9% of the lowest quintile and 9.6% of the middle wealth quintiles believing most people approved of women taking IPTp, compared to the second lowest quintile (18.4%) and the highest quintile (11.6%).

Perceptions about health workers: Perceptions about health workers and their provision of IPTp services were assessed based on four items focusing on (1) the belief that health workers charge for IPTp; (2) the belief that health workers treat their pregnancy care clients with respect; (3) the belief that health workers always offer SP to their pregnant clients; and (4) the belief that health workers refuse to attend to pregnant women who come for service in the first two months of pregnancy. The percentage of people that agreed with each of these statements is presented on [Table 3.4.7](#). The four items were combined to assess the prevalence of positive perceptions about health care workers that provide pregnancy care; the results are also presented on Table 3.4.7. Roughly one-third or fewer respondents in each zone (North: 28.0%; Center: 21.3%; South: 34.7%) agreed that health workers make clients pay for SP. There was minimal difference between male (29.7%) and female (28.6%) respondents or by age, which varied from 23.1% among people 15-24 years to 32.3% among people 25-34 years, or by urban (28.8%) or rural (29.0%) settings. The middle wealth quintile reported in the highest proportion (34.2%) that health workers made clients pay for SP, as compared to either the lowest (24.3%) or highest (27.6%) wealth quintiles. Eight out of ten respondents (80.6%) believed that ANC providers treated pregnant women with respect. This did not vary substantially between zones, sex, residence, or wealth. Respondents aged 15-24 years were slightly less likely to agree (72.8%) than older respondents (between 81.1 – 84.4%). Regarding the perception that health workers always offered SP to ANC clients, fewer people in the South (55.3%) than either the North (78.3%) or Center (73.9%) agreed. Men (71.6%) agreed more than women (68.0%), and people aged 15-24 years agreed in lower proportions (60.8%) than their older counterparts (between 70.0 – 72.2%). Slightly fewer people in urban settings (67.7%) than rural (70.1%) agreed with the statement. The highest wealth quintile reported in the lowest proportion (64.9%) that they agree that SP is always offered during ANC visits, compared to the middle wealth quintile (70.1%), who was represented in the highest proportion. Most participants (80.3%) believed that health workers would not attend to a pregnant woman during the first two months of pregnancy. This perception was highest in the South (88.9%) and lowest in the Center (72.8%). There



were no appreciable differences between sexes (approximately 80%). People aged 25-34 years believed women would be turned away by health workers in the highest proportion (87.0%), while fewer people aged 15-24 years (72.6%) felt the same. Slightly more people in urban settings (82.1%) agreed with the statement than in rural settings (78.8%). The perception was also more common among people with no formal education (84.4%), and less common in people with only a primary level of education (71.1%). The perception varied slightly by wealth quintile, being lowest among the lower quintiles (between 75.2 – 78.9%) and more common among the highest quintile (84.2%).

#### Spousal communication about ANC:

Spousal communication was assessed through two related items: (1) ever discussed ANC with spouse measured among all in-union respondents and (2) discussed ANC within the last two years among women who gave birth within the last two years. Roughly one-third (37.0%) of respondents reported ever discussing ANC with their spouse ([Table 3.4.8](#)). This behavior did not vary greatly between zones (North: 39.0%; Center: 32.2%; South: 37.9%), sex (male: 35.4%; female: 37.7%) or residence (urban: 38.2%; rural: 36.0%). For respondents between 15 – 44 years, on average 38.5% reported having discussed ANC with their spouse, while respondents aged 45 or older reported the same in lower proportions (27.0%). Respondent's reports of this behavior increased slightly along with wealth status, from the lowest wealth quintile (33.1%) to the highest (45.3%). Among women who had a child in the last 2 years, about one-third (33.4%) reported that they discussed ANC with their spouse in the last two years. This did not vary greatly by zone, sex, or residence but was consistently around 33%. Fewer women aged 45 or older who had a child in the last two years (27.3%) reported discussing ANC with their spouse than their younger counterparts. There was no apparent trend related to wealth status, as the lower proportion was among the fourth-highest quintile (29.4%) and the highest proportion was among the highest quintile (40.4%).

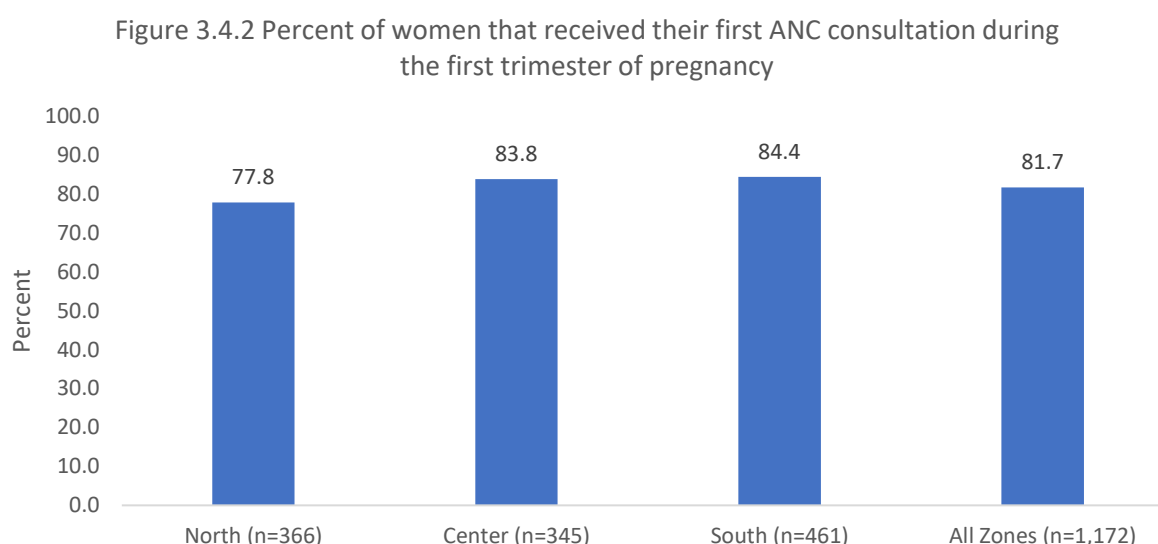
Participation in decisions about ANC: Men (82.6%) were twice as likely as women (41.3%) to report that they were typically involved in decisions about when to seek antenatal care ([Table 3.4.9](#)). For women, participation in ANC decisions less common in the North (29.1%) than either the Center (39.8%) or the South (56.2%). There were also slight differences by age group, level of education, wealth quintile, and place of residence between men and women.

### **3.4.2 ANC Attendance**

Among women who gave birth in the last two years, 94.0% made at least one ANC visit ([Table 3.4.10](#)). About three-quarters of the women (75.7%) had at least four ANC. The number of consultations varies slightly by geographic zone: 73.1% in the North, 81.8% in the Center and 86.9% in the South.

Having performed at least four ANC visits for a birth in the last two years does not vary significantly by age, although there is a difference between the 15-24 (78.7%) and 45+ (68.0%) age groups. On the other hand, the place of residence is a factor to be taken into account. Women living in urban areas (81.9%) reported having performed at least four ANC, compared to 70.6% of women living in rural areas. In addition, having performed at least four ANCs generally followed wealth quintiles, with women in the lowest quintile reporting the lowest proportion (62.0%) and women in the highest quintile the highest proportion (91.2%).

Among the women who had at least one child in last two years, 81.7% of them obtained their first ANC consultation early, that is, in the first trimester of pregnancy. There were slight variations by zone: 77.8% in the North; 83.4% in the Center and 84.4% in the South. (Figure 3.4.2). Early initiation of ANC was also more common in urban (85.6%) than in rural (78.4%) areas.



About 49.4% of the women who had a child in the last two years and went to at least one ANC visit reported that their spouse accompanied them to an antenatal care visit. This behavior was less common in the South zone (37.5%) compared to the other zones 49.4 in the North and 71.6 in the Center). Rural residents (50.8%) were more likely to report spousal presence during ANC compared to their urban peers (47.7%). This behavior was not significantly different by level of education: secondary education or higher (52.4%), primary (50.3%) or no education (53.8%).

### 3.4.3 Receipt of SP

Nine out of ten pregnant women (90.9%) received at least one dose of SP during pregnancy and little more than half (55.8%) received three or more doses as recommended by the WHO. The proportion that received three or more doses varied substantially by zone, with the highest proportion in the North (67.6%) and the lowest in the South (47.1%; [Table 3.4.11](#)). This outcome was higher among women who received at least four ANC consultations (61.6%) and who had received their first ANC during their first trimester (60.5%). Younger women aged 15-24 years reported the highest proportion of receiving three or more doses (57.0%) as compared to women aged 45 years or more (35.3%). Younger women aged 15-24 years were the most likely to have received three or more doses (57.0%) compared to women aged 45 years and older (35.3%). Women in the lowest (51.2%) and middle (52.0%) wealth quintiles were the least likely to have received three or more doses of SP, while all other wealth quintiles reported between 56.9% and 62.5%.

### 3.4.4 Intentions to Attend ANC and Receive SP

Among the women who desire a pregnancy in the next two years, 93.3% reported that they would go for ANC while 89.5% said that they would take SP to prevent malaria during pregnancy. The median timing for intended first ANC visit was 3 months of gestation. About 92% of the women reported the intention to obtain their first ANC consultation during the first trimester. This indicator did not vary between 93.4% in the North to 89.2% in the South or 94.0% in the Center.

Results of mixed effects (multilevel) logistic regression models showing the factors associated with the intention for prompt receipt of ANC are presented on [Table 3.4.12](#). The findings showed that overall, the ideational variables that were significantly and positively correlated with intention to start ANC in the first trimester were:

- self-efficacy to obtain IPTp,
- high perceived severity of malaria,
- favorable attitudes towards ANC/IPTp,
- having discussed malaria with a spouse, relative or friend, and
- having received at least 4 ANC consultations.

Specifically, having high perceived self-efficacy to obtain IPTp more than quadrupled (AOR: 4.54) the odds of intending to go for an ANC consultation during their first trimester. People who perceived malaria to be severe had 2.16-times higher odds of intending an early start to ANC than women who did not perceive malaria to be severe. People who held favorable attitudes toward ANC or having previously received at least 4 ANC consultations more than doubled (AOR: 2.41 and 2.85, respectively) the odds of intending an early start of ANC for a next pregnancy. Even having discussed malaria with a spouse nearly doubled the odds of intending an early start of ANC (AOR: 1.91). Neither age, wealth, or education was associated with intention to go for early ANC in Benin. Nor did we observe any significant difference by zone with the odds of intention for early ANC, or clustering at the community level.

Looking by zone, our models suggest limited associations between the factors of interest and the intention to start early ANC in a future pregnancy. Specifically, none of the factors in the Central zone showed statistically significant associations with intention to start early ANC. In the Northern zone, we see that among women who had high perceived susceptibility to malaria in pregnancy, they had 3.70-times higher odds than women who did not perceive themselves to be susceptible to malaria to intend to go for early ANC care. Otherwise neither age, wealth, education, perceived norms, or efficacy were associated with intention for early ANC in the North. When examining regression models for the Southern zone, we see more associations between various factors and the outcome of interest – intention for early ANC care. Specifically, having a comprehensive knowledge of ANC/IPTp was significantly associated with 4.93-times higher odds of intending to go for early ANC in a future pregnancy as compared to women who did not have a comprehensive knowledge of ANC/IPTp. Also, women who reported high perceived severity of malaria were associated with 3.36-times higher odds of intending to go for early ANC care in a future pregnancy, as compared to women with low perceived severity of malaria. Finally, women who regarded themselves as capable of obtaining IPTp (i.e., high self-efficacy) or who have previously received at least 4 ANC consultations for a previous pregnancy

demonstrated statistically significant associations with future early ANC intentions. Neither zone demonstrated significant clustering of early ANC intentions at the community level.

Table 3.4.12: Logistic regression results of Intention to obtain first ANC consultation during the first trimester of next pregnancy

Table 3.4.12: Mixed Effects Logistic regression results of Intention to obtain first ANC consultation during the first trimester of next pregnancy								
CORRELATES <i>AOR: Adjusted Odds Ratio</i> <i>SE: Standard Error</i>	ALL ZONES		NORTH		CENTER		SOUTH	
	AOR	SE	AOR	SE	AOR	SE	AOR	SE
Has comprehensive knowledge of ANC/IPTp	1.38	0.482	0.88	0.505	1.19	1.255	4.93**	3.457
Belief that a woman should feel comfortable discussing ANC with her spouse	0.86	0.294	0.48	0.297	0.82	0.780	1.49	0.945
Has high perceived self-efficacy to obtain IPTp	<b>4.54**</b>	2.005	2.67	1.781	1.00	(omitted)	<b>16.37**</b> *	12.924
Perceived response efficacy of ANC	0.77	0.505	0.40	0.540	1.54	2.845	1.23	1.501
Has perceived severity of malaria	<b>2.16*</b>	0.662	2.05	1.045	4.78	4.562	<b>3.36*</b>	2.026
Injunctive norm about pregnant women taking SP	<b>1.47</b>	0.580	2.68	2.010	0.42	0.448	1.61	1.248
Has favorable attitudes towards ANC/IPTp	<b>2.41**</b>	0.773	1.62	0.842	5.39	4.940	3.59	2.346
Perceived susceptibility to malaria in pregnancy	1.56	0.532	<b>3.70*</b>	2.316	1.72	1.788	0.57	0.335
Perceived severity to malaria in pregnancy	0.52	0.269	0.27	0.315	2.63	2.710	0.11	0.139
Descriptive norm supporting 4 ANC consultations	0.99	0.386	0.85	0.637	1.18	1.087	1.31	1.007

Has favorable attitudes toward health workers regarding IPTp services	1.50	0.456	2.22	1.295	1.24	1.015	1.54	0.847
Discussed malaria with spouse or relative/friend	<b>1.91*</b>	0.560	2.67	1.361	2.44	1.981	2.31	1.382
Received at least 4 ANC consultations	<b>2.85**</b>	0.928	0.76	0.430	7.51	6.302	<b>16.70**</b> *	10.347
Respondent age	0.97	0.024	0.97	0.038	0.97	0.073	1.01	0.050
Respondent has 3 or more children	0.74	0.241	0.62	0.341	0.61	0.500	0.42	0.266
Household in lowest or second lowest wealth quintile	1.08	0.350	0.59	0.319	2.10	1.851	1.71	1.120
Attained post-primary education	1.16	0.425	0.54	0.338	1.40	1.570	1.20	0.716
Lives in urban setting	0.72	0.257	1.04	0.613	0.22	0.253	0.53	0.318
Zone (reference=North)			NA		NA		NA	
CENTER	1.38	0.623						
SOUTH	1.39	0.611						
ICC	0.229		0.160		0.620		.	
Number of observations	837		300		248		285	
Notes: * p < .05; ** p < .01; *** p < .001								

### 3.5 Seasonal Malaria Chemoprophylaxis for Children Under Five Years Old

Seasonal malaria chemoprevention is a WHO-recommended malaria prevention tool used in countries with high seasonal transmission. Children between three and fifty months of age receive one dose of sulfadoxine-pyrimethamine/amodiaquine (SP-AQ) each month for three days by community health workers during the season of high malaria transmission. In general, the household is responsible for administering the doses on the second and third day of the three-dose cycle. In Benin, SPC is currently being implemented in six health zones in the departments of Atacora and Alibori. [Table 3.5.1](#) shows which departments in the Northern zone receive SMC. This section describes the behavioral outcomes related to SMC and relevant ideational variables.

Perceived Norms: Women with children under five years old and who lived in communities where SMC was active ([Table 3.5.1](#)) were asked about two descriptive norms. Overall, one in three (65.6%) of these respondents agreed that at least half of people in their community give their children all three of the recommended doses left by the SMC distributor, as opposed to only giving one or two of the doses ([Table 3.5.1a](#)). Women who were 45 years or older agreed in substantially higher proportions (84.7%) than did women in any other age group (ranging between 61.3% of women aged 35-44 years to 67.4% of women aged 25-34 years). A higher proportion of women in urban settings (77.1%) as compared to rural settings (61.7%) agreed that at least half of people in their communities give their children all the doses of the medicine the SMC distributor leaves with them. Surprisingly, a higher proportion of women with no formal education (79.6%) as compared to women with either primary level of education (45.1%) or secondary or higher (58.9%) to agree with the statement. Similarly, it was women in the lowest wealth quintile (76.8%) who agreed in higher proportions with the norm that more than half of people give their children all of the medicine left by the SMC distributor as compared to the middle wealth quintile (58.7%) or the highest wealth quintile (73.7%).

Regarding whether half or more of the people in their community give the medicine to prevent malaria during the rainy season to other children in the household over the age of five – which is not the established WHO-recommendation – higher agreement would represent less adherence to the recommendation. In this survey, less than half of female respondents (40.3%) agreed that the SMC medicine was given to children other than those recommended by WHO ([Table 3.5.1a](#)). A higher proportion of women aged 45 years or more (67.9%) agreed with the statement than any other age group (ranging from 35.2% of women aged 15-24 years to 67.4% of women aged 25-34 years). Half of women in urban settings (52.5%) compared to only 36.0% of women in rural settings. There did not appear to be substantial variation related to level of formal education (38.4% of women with secondary or higher formal education agreed). There was, however, substantial variation regarding wealth status. Women in the highest wealth quintile (60.8%) agreed that SMC medicine was given to children for whom it was not recommended as compared to proportionally fewer women in the middle wealth quintile (29.0%) who agreed.

Behaviors related to SMC: Among eligible respondents – female caregivers of a child under five – 96.6% reported that an SMC distributor provided SMC doses for their child during the last household visit ([Table 3.5.2](#)). Women aged 15 to 44 nearly universally reported that the SMC distributor provided SMC

doses, but only 78.7% of female caregivers aged 45 or higher said the same. There were no substantial differences between residence, education, or wealth. Regarding whether the SMC distributor observed the child taking the SMC medication, as is policy in Benin, nine of ten female caregivers said yes. There was minor variance depending on age, education, and wealth (Table 3.5.2). Similarly, 96.6% of women reported that during the last household visit by a SMC distributor, their child took the first dose of medication under observation by the distributor, or the medicine was left and given to the child later, by the caregiver. Again, a lower proportion of women aged 45 or older agreed with the statement, compared to younger age groups who nearly universally agreed. There was again no substantial difference regarding residence, education, or wealth.

Knowledge of SMC: Knowledge of a medicine given to children under five years old to prevent malaria during the rainy season was nearly universal (95.3%) among female caregivers of a child under five in the eligible zones where the SMC campaign was active (Table 3.5.3). Almost all (99.9%) of women aged 15-24 years had heard of this medicine, while only 86.1% of women aged 45 or more had heard of it. There were not substantial differences between residence, education, or wealth. For the next knowledge question (whether respondents knew how many days a month in the rainy season children must take the medication to prevent malaria) men were asked as well. Overall, 77.3% of respondents knew the correct number of days, but this varied by sex (male: 67.8%; female: 80.5%). A higher proportion of people aged 25-34 years (86.7%) knew the correct number of days, as compared to only 69.0% of people aged 15-24 years or 35-44 years (76.4%). A higher proportion of people with primary education (91.3%) compared to no education (65.8%) or secondary or higher education (72.8%) knew the correct number of days. Looking by wealth, respondents in the lowest wealth class (82.8%) were more likely to know the correct number of days than other wealth quintiles, including the fourth quintile, which was proportionally the lowest (68.1%).

Attitudes Related to SMC: Overall, the majority (96.8%) of respondents held favorable attitudes toward SMC (Table 3.5.4). Looking item by item, nine of ten respondents (89.3%) believed that their community leaders supported the distribution of the SMC drugs to prevent malaria in children aged 3-59 months during the rainy season. There did not appear to be substantial variation by sex, residence, or wealth. Proportionally fewer people with secondary or higher formal education (81.9%) believed this statement, compared to people with no formal education (93.3%) or primary education (97.0%). Only 14.1% of respondents agreed that it would no longer be necessary to sleep under a bed net during the rainy season after a child had received SMC. Regarding whether parents in the communities where SMC was offered felt compelled to accept medicines that were offered by SMC distributors, only 38.4% agreed. Proportionally more respondents in urban settings (50.5%) than in rural settings (34.1%) thought parents felt compelled to do so. The lowest and highest wealth quintiles were proportionally equal (lowest quintile: 50.4%; highest quintile: 49.9%), compared to the middle quintile that was proportionally the lowest to report that parents in their community feel compelled to accept the medicine (29.4%). Most respondents (92.3%) believed healthy children should always take the medicine to prevent malaria in the rainy season. There was little variation by sex, residence, education, or wealth. Roughly a quarter (26.6%) of respondents believed that the SMC medicines distributed to prevent malaria in children under five during the rainy season would make children sick. Younger people aged 15-24 years were less likely (21.7%) to believe this than their older counterparts (33.7% of people aged 45 or more). Respondents in urban settings were proportionally higher (39.1%) in this belief than in rural



settings (22.2%). Similarly, proportionally fewer respondents in the lowest wealth quintile (19.3%) as compared to 36.2% of respondents in the highest wealth quintile believed that the SMC medicine would make children sick. Only 9.4% of respondents believed that distributors of SMC medicine charged households for that medicine. Men (14.5%) more than women (7.6%) believed this to be true. Proportionally fewer younger people than older people believed that distributors would charge parents. Urban residents more likely (13.6%) than rural residents (7.9%) believed that distributors charged for the medicine. The belief that it is important to give children any doses of SMC medicines left over from the distributor was high (94.6%). Younger respondents were less likely (90.0%) than their oldest counterparts (98.0%) to believe this. There were no major differences between residence, education, or wealth.

Perceived Response Efficacy of SMC: The response efficacy indicator was composed of two items: a belief that the medication given to children during the rainy season is effective in preventing malaria and that the medicine will not work well if unless children complete the full course as directed by the distributor (Table 3.5.5). Overall, 87.6% of respondents perceived SMC as effective in preventing malaria. Proportionally higher respondents (97.0%) believed that SMC is effective to prevent malaria, compared to only 86.5% of respondents who thought SMC was less effective if an incomplete course were followed. Differences between sex, age, education, or wealth were minimal (Table 3.5.5).

Perception of Health Workers related to SMC: The perception of health workers in relation to SMC distribution was composed of three variables (Table 3.5.7). Overall, 95.7% of respondents held favorable perceptions of the health workers responsible for distributing SMC medications in their community. There were no substantial differences by sex, age, or residence. People with a primary level of formal education (90.0%) were proportionally fewer than the other education categories to hold favorable attitudes. People in the highest wealth quintile were proportionally less likely (88.7%) to hold positive attitudes as compared to any other wealth quintile. Nine in ten respondents believed that staff would be available at health facilities for SMC if needed. Only 5.8% of respondents preferred not to access any health services during the rainy season. Finally, nine of ten respondents reported that community health workers come several times during the rainy season to give the medication that prevents malaria in children under five years old.

### 3.6 Insecticide-Treated Nets (ITN)

Results of the analyses of the ideational variables linked to ITN use are presented in Table 3.6.1a. The Table also presents how these variables vary across socio-demographic groups. Seven ideational variables are examined, including knowledge that bed nets help to prevent malaria, attitudes towards bed nets, belief that there are things a person could do to extend the life of one's bed nets, and perceived response-efficacy of bed nets. Other ideational variables examined include perceived self-efficacy to use bed nets consistently, the perception that the use of bed nets was a community norm, and the perception that people in their community would support their use of bed nets. The questions used to assess each variable are listed on Table 3.6.1b.

Knowledge that bed nets help to prevent malaria: Reported knowledge that bed nets are a method to prevent malaria was nearly universal (98.0%; [Table 3.6.1a](#)). There were no appreciable differences by zone, sex, age, residence, level of education or wealth.

Attitudes towards bed nets: This ideational variable was assessed through nine questions ([Table 3.6.1b](#)). Only about two-thirds (66.0%) of respondents held favorable attitudes toward bed nets, with little difference between men (64.6%) or women (66.5%), whether in urban (66.3%) or rural (65.8%) settings. However, looking by zone we do see some differences. Only about half (52.9%) of people in the North held favorable attitudes towards bed nets, compared to about three-quarters of people in either the South (74.9%) or Center (75.6%). We also see some differences in education, wherein people with no formal education (71.0%) held the highest favorability towards bed nets, as compared to their counterparts with either primary education (55.1%) or secondary or higher education (64.3%). We also see some minor differences in relation to wealth status. More people in the lowest wealth quintile (70.2%) held favorable attitudes towards bed nets than people in any other wealth quintile, including the highest wealth quintile (63.2%), which represented the lowest proportion of people with favorable attitudes towards bed nets.

Belief that there are things a person could do to extend the life of one's bed nets: Less than one-third of the study population (28.1%) believed that a person could extend the life of their bed nets by taking certain actions ([Table 3.6.1a](#)). The lowest proportion of people who believed they could extend the life of their nets were in the Central zone (17.7%), compared to 31.8% of people in the North. There were no substantial differences by sex, residence, education, or age. Only 23.8% of people in the fourth-highest wealth quintile believed they could extend the life of their net, compared to 30.4% (the highest proportion) of people in the lowest wealth quintile who believed that they could extend the life of their nets.

Perceived response-efficacy of bed nets: Three questions helped to operationalize the concept of perceived response-efficacy of bed nets (see [Table 3.6.1b](#)). Slightly more than half (58.9%) of the study population believed in the response-efficacy of bed nets ([Table 3.6.1a](#)). The lowest proportion was in the North (47.6%) and the highest in the South (69.4%). Neither sex (male: 60.8%; female: 58.3%) nor residence (urban: 59.2%; rural: 58.7%) varied substantially. Between 51.9% of youth aged 15-24 years and 63.7% of adults aged 45 years or more perceived bed nets to be effective. Less than half of people with only a primary level of formal education (45.1%) perceived bed nets to be effective against malaria, as compared to 68.9% of people with no formal education or 53.1% of people with secondary or higher education. There was no apparent trend in relation to wealth status, wherein the middle wealth quintile (54.7%) held the lowest proportion of perceived response-efficacy of bed nets and the next highest wealth quintile represented the highest proportion (63.4%).

Perceived self-efficacy to use bed nets consistently: This construct defined as confidence in one's ability to use bed nets) was derived based on four questions ([Table 3.6.1b](#)). The majority (93.2%) of the respondents were confident that they would be able to use bed nets consistently ([Table 3.6.1a](#)). The only substantial variations in this variable were by zone (North: 90.7%; Center: 94.6%; South: 95.2%) and wealth (lowest quintile: 91.4%; highest quintile: 96.0%).

Descriptive norm about bed nets: This construct refers to the perception that the use of bed nets is a community norm. Roughly seven of every ten people in the study population (69.0%) believed that the use of bed nets was a norm in their community ([Table 3.6.1a](#)). More people in the North (72.3%) than in

the Center (64.7%) or South (67.8%) believed bed net use to be a norm. There were not substantial differences between sexes. Respondents in urban (71.0%) believed bed net use was the community norm in a higher proportion than people in rural settings (67.3%). There were only slight differences by age (the lowest proportion being people 45 years and older (64.6%) and the highest proportion being people aged 35-44 years (73.4%)). People with secondary or higher education (69.1%) believed bed net use to be the community norm in the lowest proportion, as compared to people with primary level of formal education representing the highest proportion (73.2%). There were only minimal differences between wealth quintiles, wherein the lowest proportion of people who believed bed net use was a community norm were in the middle wealth quintile (66.7%) and the highest proportion were in the highest wealth quintile (71.0%).

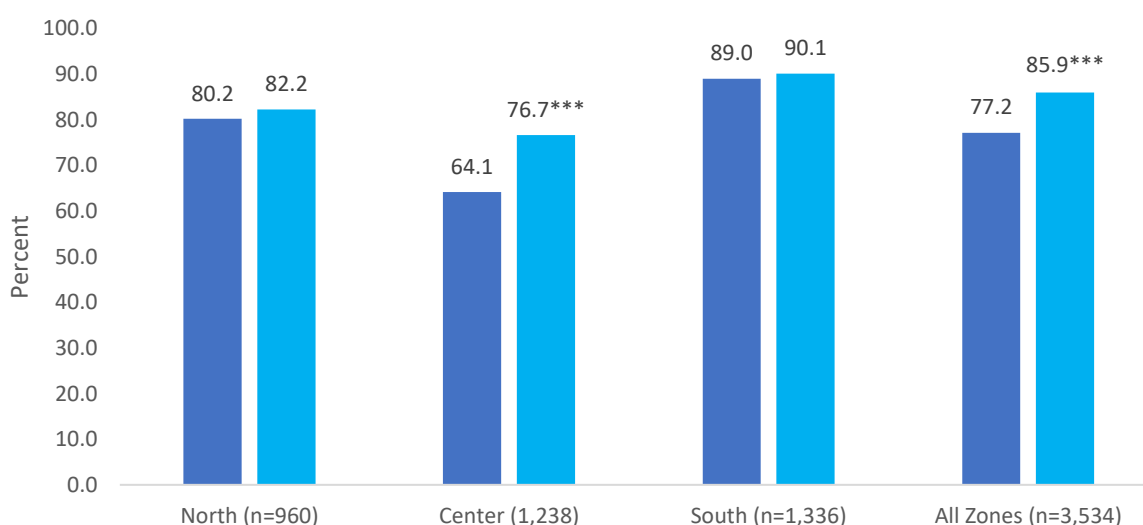
Injunctive norm about bed nets: This variable is defined as the perception that people in their community would criticize their use of bed nets. Almost no one (2.2%) believed that they would be criticized if they were to use a bed net. There were no substantial differences across any socio-demographic measure, such as sex, age, education or wealth.

### 3.6.2 ITN Access and Use

#### Household Possession of ITNs

Roughly four out of five households (81.1%) had at least one ITN (Table 3.6.2). Proportionally fewer households in the Center (67.9%) had an ITN compared to either the North (80.8%) or the South (89.7%). Proportionally more urban households (85.9%) than rural (77.2%) had an ITN and this trend followed wealth status, wherein a lower proportion of households in the lowest wealth quintile (75.4%) had an ITN compared to the highest wealth quintile (89.0%).

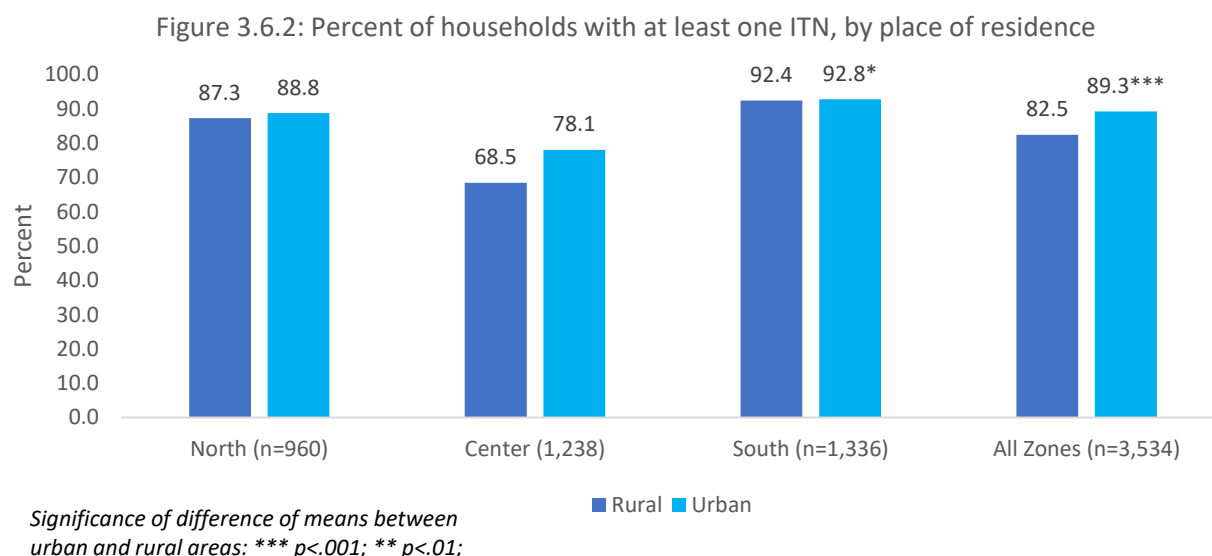
Figure 3.6.1: Percent of households with at least one ITN, by place of residence



Significance of difference of means between urban and rural areas: \*\*\*  $p < .001$

■ Rural ■ Urban

About nine out of ten households (85.6%) of the households had enough nets for their members, defined as possessing at least one ITN for every two persons in the household (household net coverage; figure 3.6.2 and Table 3.6.2). Proportionally fewer households in rural settings (82.5%) had at least one ITN for every two persons that spent the previous night in the household, compared to 89.3% of households in urban settings. A higher proportion of households in urban settings (47.5%) than rural (38.6%) had at least one ITN for every two persons. Houses in higher wealth quintiles reported having at least one ITN for every two persons in higher proportions than lower wealth quintiles (lowest quintile: 79.7%; highest quintile: 90.0%).



### Characteristics of available bed nets

Of the 6,608 nets enumerated in surveyed households, 92.1% were insecticide-treated nets (Table 3.6.3a). In the Center and South, the majority of nets (95.8% and 89.6%, respectively) were blue, while 66.1% of nets in the North were white. Overall, 80.2% of nets were received during a mass distribution campaign and 9.0% were received at an ANC visit. Overall, 64.9% of these nets were newer than 36 months. Nets enumerated in the Center were proportionally more likely to be older than 36 months (45.7%) than in the other zones (41.8% in the North; 24.7% in the South).

Almost all of the enumerated nets (92.9%) were reported to have been slept under the night before the survey, with no substantial difference between zones, whether urban or rural, or by wealth status. Proportionally fewer (82.2%) of the enumerated nets were reported to have been slept under every night in the past week, with the Southern zone reporting proportionally higher (88.0%) than either the Center (83.5%) or North (75.0%).

### Net care practices

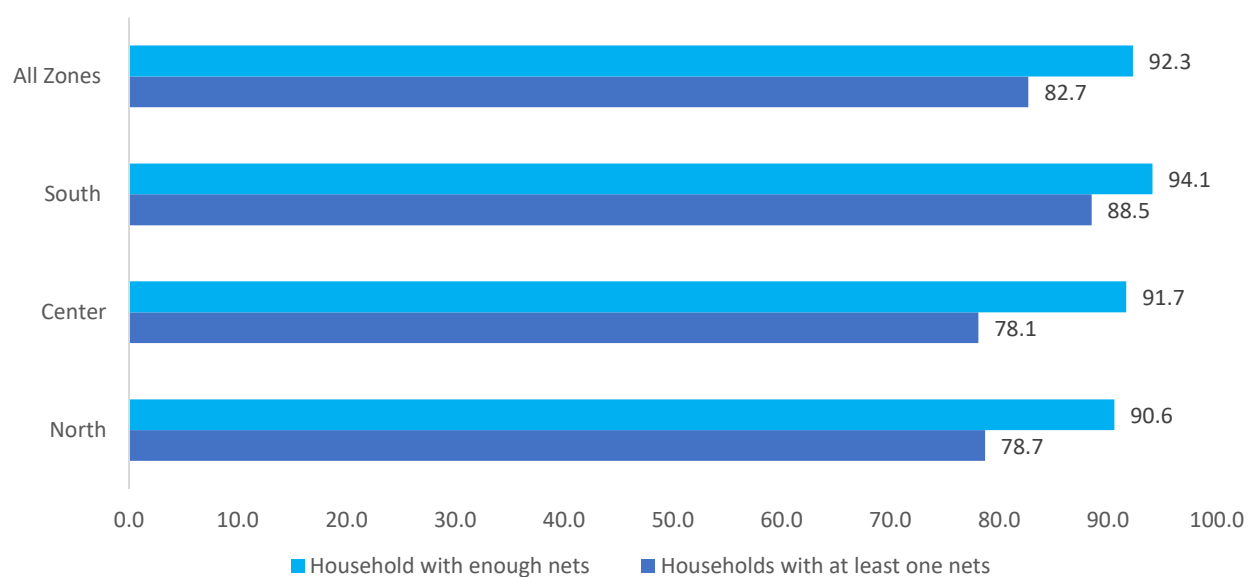
About four out of five (81.2%) of available bed nets had ever been washed (Table 3.6.4), with the lowest proportion being in the North (74.0%). The majority (69.4%) of nets were washed with bar soap, followed by proportionally fewer (26.7%) nets having been washed with detergent. Almost two-thirds (64.1%) of nets that had been washed were dried outside in the sun, compared to 34.2% that had been dried outside in the shade. These trends were the same across regions, with slight variations in proportions.

To extend the life bed nets, it is recommended that they should be rolled up or tied over the sleeping space when not in use. Among the nets that were used the previous night, the majority (67.8%) were found simply hanging over the sleeping space while only 17.5% were found rolled up or tied over the sleeping space. Some (7.5%) were found not hanging, but not stored either. The South was more likely (19.1%) than either the North (17.2%) or the Center (14.0%) to have folded or tied the net.

#### Use of bed nets among household members

In households with at least one bed net, less than half (40.5%) slept under a bed net on the night preceding the survey ([Table 3.6.5](#)). Proportionally more respondents in the South (88.5%) reported having slept under a net the preceding night than in the North (78.7%) or Center (78.1%). There were minimal differences across zones when looking at age, sex, residence and wealth.

Figure 3.6.3: Percent of household members that slept under a bed net on the night before the survey, by household net ownership and zone, 2021 MBS Benin



When the analysis is limited to households with enough nets for household members, the data showed that about nine out of ten (92.3%) of respondents reported having slept under a net the previous night, with no substantial difference between zones, sex, residence, or wealth quintile ([Table 3.6.6](#)).

#### Use-Access Ratio

The use-access ratio is the ratio of mosquito net utilization to bed net access in the population. The indicator is computed by dividing the net use indicator by the indicator for bed net access. The indicator typically varies between 0.00 and 1.00, which would indicate that everybody who has access (assuming that two people sleep under a net) to a bed net in a household uses the net to which they have access. ITN use:access is greater than 1.00 when there is a tendency in the population for more than two people to sleep under a net. Since the indicator is a ratio, it can be high either because both the use and the access indicators are high or because both indicators are low. It is pertinent to note that the relevant programmatic actions are not identical in both cases. The use:access ratio provides SBC programmers a

better measure of net use due to a behavioral problem or to an insufficient number of bed nets. The calculations presented in this report use the methodology proposed by Koenker & Killian, 2014. [13]

Overall, the use-access ratio was 0.89 ([Table 3.6.7](#)). This result, while high, suggests that not everyone who has access to a bed net is using a bed net, and therefore indicates much room to improve factors related to bed net use to positively influence individuals and households to sleep under the nets they have available. The indicator varied across zones, from 0.85 in the North to 0.93 in the South. There were not substantial differences between urban or rural, or between wealth classes in either zone. However, the Central zone had overall lower net use and lower net access, as compared to either the North or the South, but that the resultant use-access ratio was a little higher.

#### Consistent net use

In this section, consistent use of bed nets (defined as using bed nets every night in the last week) was examined among the women and men that were individually interviewed. This indicator was computed for households with at least one net and for households with enough nets for household members. In households with at least one net, the majority (84.4%) of caregivers reported consistent use of bed nets. The differences by zone were such that consistent use was more common in the South (91.9%) than in either the Center (85.0%) or North (75.8%; [Table 3.6.8](#)). There were no substantial differences by age, sex, or whether there was a child under five years old in the household. A higher proportion of caregivers in urban settings (87.4%) reported consistent use as compared to rural settings (81.5%). The second-lowest wealth quintile represented the lowest proportion (79.4%) while the highest wealth quintile represented the highest proportion (88.3%).

In households with enough nets (i.e., one net for every two persons in the household), 85.3% of caregivers reported consistent use of bed nets, mirroring closely the proportion of caregivers in households with at least one net. The socio-demographic trends also closely mirrored those from households with at least one net, in terms of sex, age, residence, and wealth.

[Table 3.6.9](#) presents results of a multilevel logistic regression model that assesses the associations between consistent use and sociodemographic, ideational, and household determinants. In addition, because we suspected that there may be unmeasured variables working at the community level that are associated with the use of bed nets, we also estimated random effects at the cluster level. Four models were estimated (one for all the zones combined and one for each of the three zones) and the analyses were limited to households with at least one bed net.

When looking at the three zones combined, there is a statistically significant association between consistent net use in the South zone, where the odds of using a net consistently were doubled, when compared to the North (AOR: 2.05;  $p < 0.01$ ). A significant relationship in the Center compared to the North was not observed. Women had 46% higher odds of reporting consistent net use, compared to men. Otherwise, most socio-demographic variables did not show statistically significant associations to consistent bed net use, such as age, place of residence, or education. Individuals in households in the lowest or second-lowest wealth quintile had statistically lower odds (AOR: 0.74;  $p < 0.05$ ) of reporting consistent net use as compared to individuals in households not in the lowest wealth quintiles. There was no significant association between media consumption (i.e., TV or radio) and consistent bed net use when looking at the combined three zones. However, people who reported general exposure to malaria messages, independent of channel, showed 32% higher odds of reporting consistent bed net use. Individuals living in households that had at least one net for every two members had 3.41-times increased

odds ( $p<0.001$ ) of reporting consistent bed net use, as compared to households that did not have enough nets in their household.

In terms of ideational factors, there were several statistically significant associations to consistent bed net use. One interesting example is that among people with knowledge that mosquito bites are the sole cause of malaria, they had 50% reduced odds of using a bed net consistently as compared to individuals who did not know that mosquito bites were the sole cause of malaria. Not surprisingly, individuals who hold favorable attitudes toward bed nets had significantly increased odds of consistent bed net use (AOR: 2.95;  $p<0.001$ ). Individuals who believe there are actions one can take to help mosquito nets last longer (such as washing or storing properly) have 42% higher odds of reporting consistent net use as compared to people who did not believe there were actions one could take to help mosquito nets last longer. Promisingly, when compared to individuals who did not know that bed nets help prevent malaria, individuals who did know that bed nets help prevent malaria had 2.23-times higher odds ( $p<0.05$ ) of reporting consistent net use. Perceived susceptibility to malaria increased the odds of consistent bed net use by 48% compared to people who did not think they were susceptible to malaria. Belief in the injunctive norm – that people would approve of one's use of bed nets – increased the odds of consistent bed net use by 78% as compared to people who did not think they would receive approval from members of their community for using a bed net. There were no significant community level effects in relation to consistent bed net that might indicate the presence of unmeasured factors affecting consistent net use when looking at all zones combined.

Zone-specific models, follow similar trends as the overall model, albeit with a few differences by zone in relation to which socio-demographic or ideational factors are significantly associated with consistent bed net use. In all three zones individually, favorable attitudes, a perception that others in their community will approve of bed net use, and households that possess at least one net for every two members were significantly associated with consistent net use, as they were in the overall model. Among other factors there is some nuance between the zones. For example, a belief that there are actions one can take to help the mosquito net last longer was significantly associated with consistent bed net use in the North (AOR: 2.15;  $p<0.01$ ) and the south (AOR: 1.93;  $p<0.05$ ), but it was not associated with the outcome in the Center. A high perception of malaria's severity significantly increased the odds of consistent bed net use in the Center (AOR: 1.54;  $p<0.01$ ) but not in either the North or South. By contrast, a high perception of one's susceptibility to malaria was significantly associated with consistent bed net use in the North (AOR: 1.60;  $p<0.05$ ) and the South (AOR: 1.82;  $p<0.01$ ) but not in the Center. As far as socio-demographics, every year of increased age was significantly associated with a 2% decreased odds of reporting consistent bed net use in the South (AOR: 0.98;  $p<0.05$ ), but there was no relationship in either the North or Center. Women had statistically significantly increased odds of reporting consistent bed net use compared to men in the Center (AOR: 1.80;  $p<0.05$ ) and South (AOR: 2.19;  $p<0.001$ ) but there was no such relationship in the North. Only in the North did wealth show a relationship to consistent bed net use; houses in the lowest or second-lowest wealth quintile had 50% decreased odds of reporting consistent use as compared to households in the North who were in higher wealth quintiles. Regarding media exposure and consistent bed net use, neither general exposure to malaria messages nor watching TV regularly were associated with the outcome in either zone. However, people who reported listening to the radio at least once a

week in the North had 71% increased odds of reporting consistent bed net use, but neither the Center nor the South had the same relationship.



Table 3.6.9: Logistic regression results of Intention to obtain first ANC consultation during the first trimester of next pregnancy

Table 3.6.9: Multilevel Logistic regression results of consistent ITN use <sup>1</sup> , 2021 Benin MBS								
CORRELATES <i>AOR: Adjusted Odds Ratio</i> <i>SE: Standard Error</i>	ALL ZONES		NORTH		CENTER		SOUTH	
	AOR	SE	AOR	SE	AOR	SE	AOR	SE
Hold favorable attitudes toward nets	<b>2.95***</b>	0.339	<b>3.94***</b>	0.843	<b>2.13**</b>	0.469	<b>3.54***</b>	0.674
Believes there are actions one can take to help the mosquito net last longer	<b>1.42**</b>	0.187	<b>2.15**</b>	0.543	0.70	0.173	<b>1.93**</b>	0.416
Knowledge that bed nets help prevent malaria	<b>2.23*</b>	0.839	0.66	0.590	2.62	2.116	2.35	1.217
Believe net care is norm in community	0.87	0.101	0.90	0.189	1.04	0.225	0.88	0.180
Discussed malaria with another person in past six months	0.84	0.099	1.24	0.291	0.69	0.145	0.84	0.162
Exposure to message about net use	<b>1.32*</b>	0.168	1.28	0.271	1.38	0.319	1.16	0.286
Perceived severity of malaria	0.99	0.109	0.81	0.163	1.54*	0.303	0.81	0.153
Knowledge that mosquito bite is sole cause of malaria	<b>0.50*</b>	0.169	<b>0.26*</b>	0.141	1.06	0.697	1.14	0.803
Perceived susceptibility to malaria	<b>1.48**</b>	0.180	<b>1.60*</b>	0.347	1.01	0.245	<b>1.82**</b>	0.359
Perceive others in community will approve of net use	<b>1.78***</b>	0.199	<b>1.85**</b>	0.386	<b>1.52*</b>	0.314	<b>2.20***</b>	0.423

Household possessed at least one net for every two members	<b>3.41***</b>	0.407	<b>1.87**</b>	0.382	<b>4.67***</b>	1.228	4.38***	0.826
Household has a child under five years old (RC=No)	1.11	0.173	0.96	0.287	1.56	0.463	1.02	0.254
Age in single years	0.99	0.006	0.99	0.011	1.02	0.012	0.98*	0.010
Zone (RC=North)								
Center	1.09	0.240						
South	<b>2.05**</b>	0.455						
Household in lowest or second lowest wealth quintile	<b>0.74*</b>	0.099	<b>0.50**</b>	0.117	0.87	0.195	1.16	0.327
Urban Residence (RC=No)	1.11	0.202	1.09	0.314	1.14	0.421	1.02	0.290
Formal Education (RC=None)								
Primary	0.84	0.138	0.77	0.221	0.60	0.177	1.32	0.379
Secondary or higher	0.80	0.106	0.70	0.161	0.63	0.149	1.26	0.290
Female (RC=No)	<b>1.46**</b>	0.193	0.78	0.199	<b>1.80*</b>	0.426	<b>2.19***</b>	0.476
Watches TV regularly (at least once a week)	1.18	0.158	0.92	0.233	1.12	0.277	1.20	0.260
Listens to the radio regularly (at least once a week)	1.17	0.141	<b>1.71*</b>	0.398	1.02	0.225	1.10	0.219
ICC	0.1820		0.1067		0.2632		0.1278	
Number of observations	3,119		849		847		1,423	

## 3.7 Indoor Residual Spraying

WHO recommends the use of indoor residual spraying (IRS) as a primary vector control tool. [14] Typically, spray is applied once or twice per year to the walls of housing units in targeted communities. Historically, IRS has been shown to be an effective method to reduce malaria transmission. Recent research has also introduced the need to measure post-IRS behaviors, as housing modifications such as wall painting after the application of insecticide can reduce its efficacy. If no post-IRS modifications are made, the insecticide typically remains effective for six months. Benin does not currently include IRS as part of its national malaria control strategy but does use IRS in three of the 12 departments included in the study (Alibori, Atacora, Donga), which include 44 communities.

### 3.7.1 Ideational Variables Linked with Acceptance of IRS

The MBS collected data on the following ideational variables: awareness of IRS; favorable attitudes towards IRS; perceived response-efficacy of IRS; and perceived self-efficacy to take actions related to IRS. These data may help prepare for the future implementation of IRS campaigns in the same communities or potential future communities.

#### IRS Awareness

Only 82.9% of participants in intervention areas in the North zone were aware of the IRS program ([Table 3.7.1](#)). People in rural settings (86.0%) knew of IRS more than in urban settings (76.7%). A large proportion of male respondents (88.2%) were aware of IRS compared to female respondents (81.3%). Awareness of IRS varied relatively by education level and age.

**Table 3.7.1: Percentage of respondents aware of IRS program awareness**

Table 3.7.1 Percentage of respondents aware of IRS program awareness, 2021 Benin MBS	
Characteristic	Aware of IRS program in their community
<b>Sex</b>	
Female	81.3
Male	88.2
<b>Age</b>	
15-24 years	80.2
25-34 years	84.2
35-44 years	82.1
45+ years	90.0

<b>Residence</b>	
Rural	86.0
Urban	76.7
<b>Level of education</b>	
None	82.4
Primary	80.1
Secondary or higher	86.5
<b>Total (%)</b>	82.9
<b>Number of Observations</b>	<b>400</b>

Attitudes toward IRS: Individual attitudes toward IRS were only collected from individuals with awareness of an IRS program (n=344). Attitude favorability was assessed through six items in the questionnaire. The items included a belief that people develop skin problems after the application of IRS; a belief that a person can safely touch the wall once the spray has dried; the attitude that people experience problems with bugs after the walls are sprayed; agreement that the benefits of IRS merit moving furniture out of the house during spraying, agreement that the respondent is not bothered to leave possessions out while the house is being sprayed; and agreement that spraying the walls does not cause any health problems for those living in the house. When these items were combined, the data showed that four out of five respondents held favorable attitudes towards IRS. Overall, male respondents held favorable attitudes toward IRS in higher proportions than female (male: 88.3%; female: 83.8%; [Table 3.7.2](#)). Attitudes toward IRS did not appear to vary by age, rural or urban residence, or education level.

Perceived Response-Efficacy of IRS: Perceived response-efficacy of IRS was assessed through three items among individuals with awareness of an IRS program. Items included the belief that IRS is an effective way to prevent malaria; the perception that people who live in sprayed houses are less likely than others to get infected with malaria; and the belief that IRS is an effective way to kill mosquitoes. A majority of respondents (80.8%) perceived IRS as efficacious ([Table 3.7.3](#)).

Perceived self-efficacy for IRS: Questions related to perceived self-efficacy of IRS were asked to individuals aware of IRS as a program. About four in five participants (83.3%) reported perceived self-efficacy to take actions related to IRS, which included moving furniture in preparation for spraying, and sleeping in the house the night after it was sprayed ([Table 3.7.4](#)).

### 3.7.2 Willingness to accept IRS

Willingness to accept IRS is considered a measure of intention to use IRS if available in their community. In this respect, all participants were asked whether they would be willing to accept IRS in their household. Those who were previously not aware of an IRS program were first provided a brief description of IRS, that is, that it is a program that sprays the inside walls of a house with insecticide to help protect households from malaria. Among all participants, there is widespread willingness (78.3%) to accept it in their community ([Table 3.7.5](#)). Looking specifically at respondents previously aware of IRS, their

willingness to accept IRS was proportionally higher (83.6%), while willingness to accept IRS if it came to their community was proportionally lower among those who were previously unaware of the program (46,1%). The proportions of men and women willing to accept IRS were almost identical across IRS intervention departments, regardless of whether they were already aware of IRS. Overall, a proportionally higher number of rural respondents (81.7%) were willing to accept the IRS program compared to their urban counterparts (68.0%). However, among those who were not already aware of IRS, those living in rural areas (36.6%) were less likely to express willingness to accept the program than those living in urban areas (57.9%).

**Table 3.7.5: Percent of respondents willing to accept IRS**

<b>Table 3.7.5 Percent of respondents willing to accept IRS, 2021 Benin MBS</b>			
	Among those aware of program	Willing to accept IRS among those unaware of program	Willing to accept IRS (Intention)
<b>Sex</b>			
Female	83.4	50.2	77.2
Male	84.2	25.9	77.3
<b>Age</b>			
15-24 years	84.9	59.6	79.9
25-34 years	79.6	44.1	74.0
35-44 years	90.1	38.3	80.8
45+ years	82.1	0.0	73.9
<b>Residence</b>			
Rural	89.0	36.6	81.7
Urban	71.0	57.9	68.0
<b>Level of education</b>			
None	84.4	58.4	79.8
Primary	95.4	23.5	81.1
Secondary or higher	81.0	47.0	76.4

<b>Total (%)</b>	<b>83.6</b>	<b>46.1</b>	<b>78.3</b>
<b>Number of Observations</b>	<b>344</b>	<b>56</b>	<b>400</b>

### 3.7.3 IRS Coverage

Figure 3.7.1 shows where IRS campaigns are active in Benin. In total, 235 households were located in active IRS zones. Only 57.5% of these households reported having been approached for IRS in the past 12 months ([Table 3.7.6](#)). More than half of rural households in IRS zones (63.0%) reported being approached for IRS as compared to only 46.0% of urban households. Among those households that were approached, 89.0% of them went on to be sprayed (rural: 92.4%; urban: 79.5%). The main reasons for households not being sprayed included reports that no household member was present at the house and thus the spraying could not happen (38.9%), and they thought the spraying was bad for their health (24.7%). Following spraying, 16.2% of the 130 sprayed households reported that their walls had been repainted, re-plastered, or washed. Such modifications may mitigate the efficacy of the insecticide on the walls.

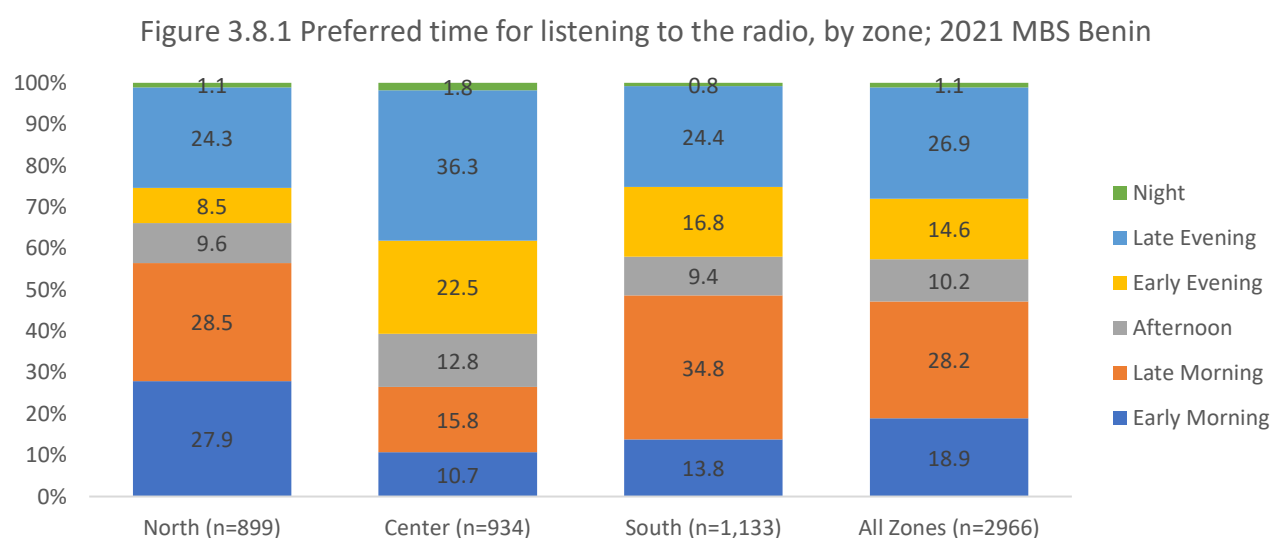
## 3.8 Media Consumption and Message Exposure

### 3.8.1 Radio Listening Habits

Ownership of radios was relatively low, with 68% of respondents in Benin having one in their household (Table 3.8.1). Likewise, listenership was relatively low among the overall population, where 45% of household members reported listening to the radio regularly, defined as listening at least once per week. Men were more likely to be regular listeners as well as more likely to have access to a radio in the household. 80% of men had a radio in their household compared to 64% of women and 57% of men reported being regular listeners, compared to 41% of women.

Urban and rural households had similar rates of radio ownership, 69% and 67% respectively, but urban residents were more likely to be regular listeners (51%), compared to rural residents (40%). Ownership was also similar across zones, 71% in the North, 67% in the Center, and 65% in the South, however regular listeners were lowest in the Center (39%) and higher in the North (48%) and South (45%).

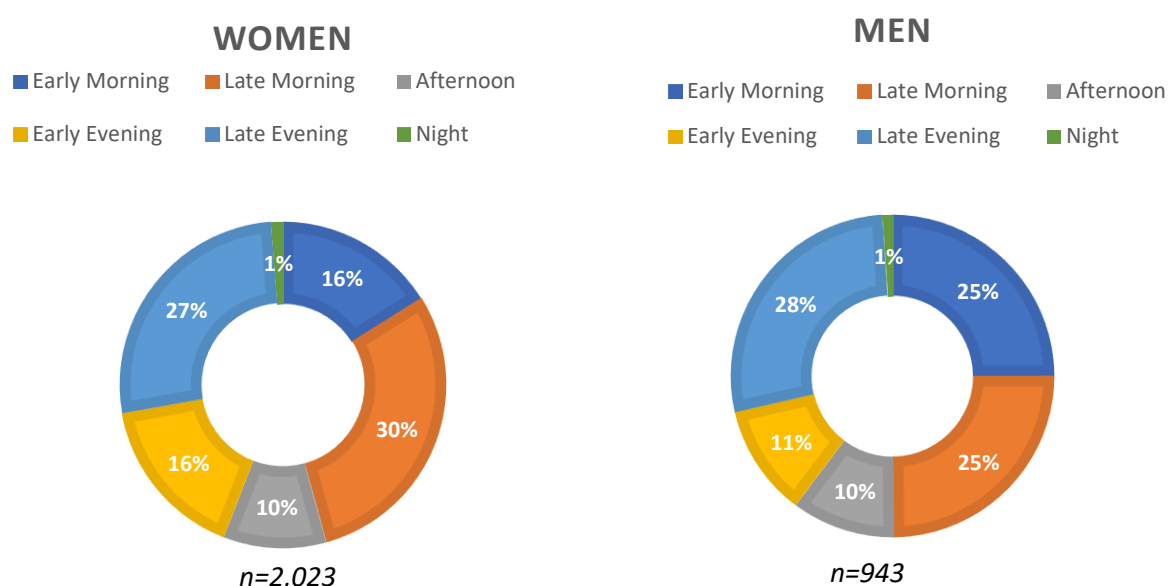
Age and education appear to play a role in both regular radio listening and ownership. Older people were more likely to report being regular radio listeners, though the difference is less pronounced than ownership. Those aged 35-44 and 45+ were regular listeners 49% and 51% of the time, compared to those aged 15-24 and 25-34 reporting being regular listeners 40% and 43% of the time. The older a person was, the more likely they were to have had a radio in the household, with those 45+ and older having a radio in the household 78% of the time. 73% of those aged 35-44 had access to a radio in the household, compared to 68% for those between the ages of 25 and 34, and 58% for those between the ages of 15 and 24. Those with no education and those with secondary or above had similar rates of ownership, 71% and 70% respectively, but those with secondary or more education were 15% more likely to be regular users. Those with primary education were most likely to have a radio in the household (79%) and be a regular listener (65%).



Radio listening times were assessed during the MBS survey among respondents. Respondents were asked to specify their preferred times for listening to the radio: early morning (i.e., between 4:00 and 8:00 a.m.);

late morning (between 8:00 and 12:00 a.m.); afternoon (between 12:00 and 4:00 p.m.); early evening or early night (between 4:00 and 8:00 p.m.); late evening or late night (between 8:00 p.m. and 12:00 a.m.); and nighttime. These times vary somewhat across Benin, although overall, the most popular times are early morning (19%), late morning (28%), and late evening (27%; [Table 3.8.2](#)). The least popular time to listen to the radio is at night, with only 1% reporting a preference for this time. The afternoon and early evening fall in between, with 10% and 15% preferring these times.

Figure 3.8.2 Preferred time for listening to the radio, by sex, 2021 MBS Benin



### 3.8.2 Television Viewing Habits

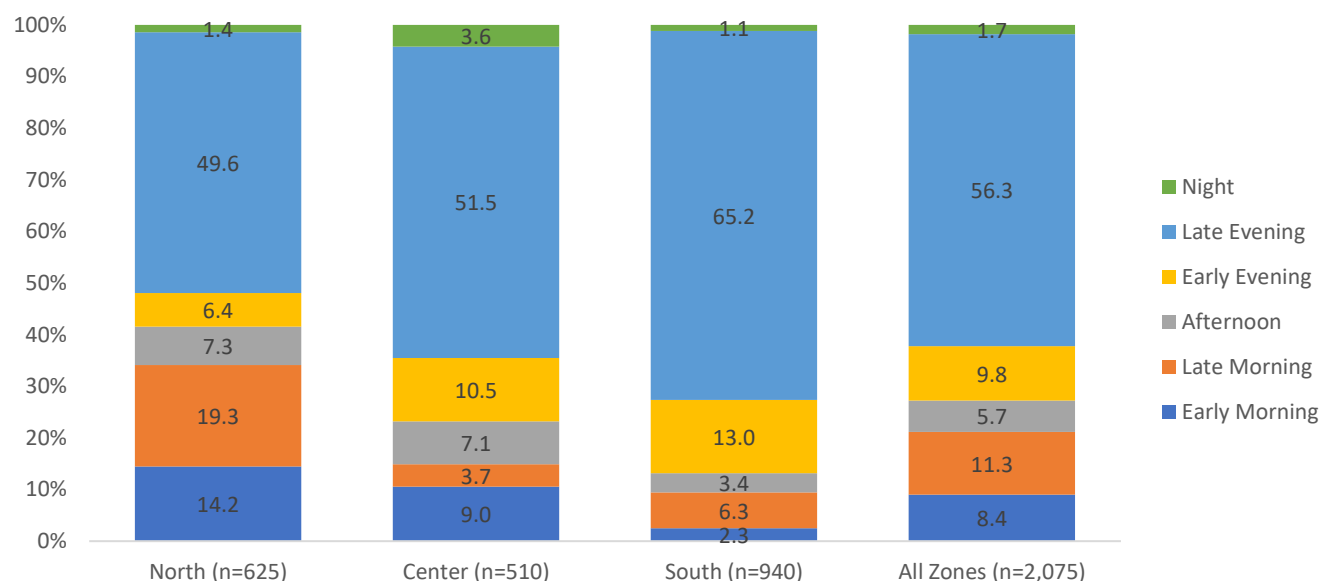
Television ownership is higher than radio ownership across Benin, where 79% of respondents lived in households with a television, but only 31% reported being regular viewers of television ([Table 3.8.3](#)). Men and women had similar rates of household access to and viewership of television.

Regional differences in access and viewership are important to note. First, urban residents are a tenth more likely to have a television in their house (82%) compared to rural residents (72%). Following similar trends of other categories, urban viewers with higher access to televisions in the household are more likely to be regular viewers (44%) compared to rural residents (21%). Those in the North zone were most likely to have one in their home (87%), followed by the South (77%), and the Center (70%). The North and South zones had similar viewership (35%), while the Center was significantly lower (18%).



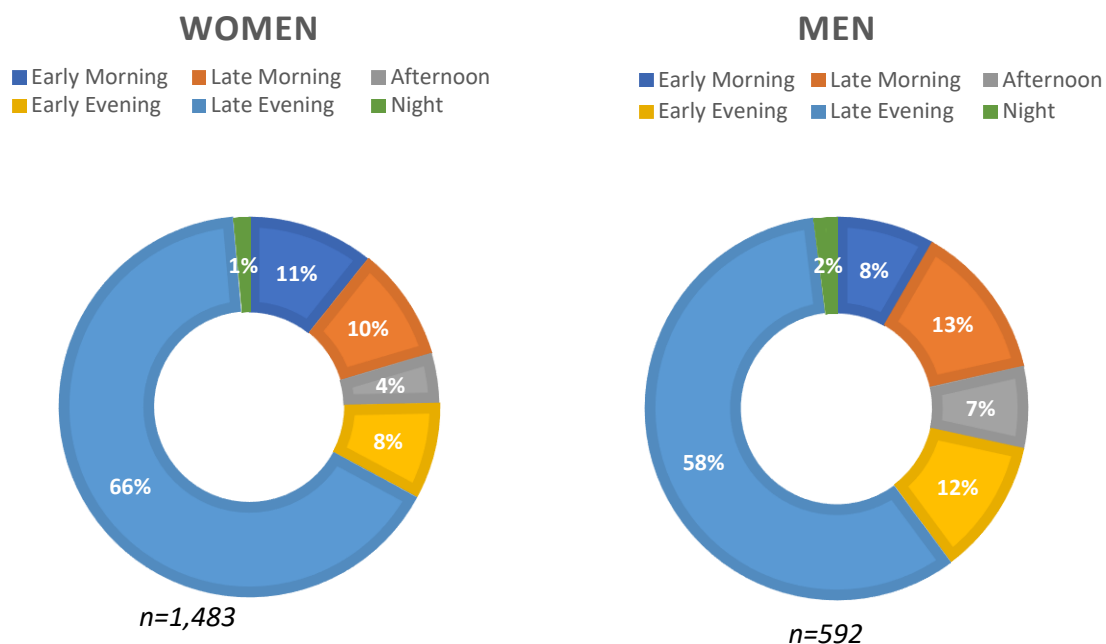
Similar rates of household ownership and viewership were seen across age brackets, however rates vary greatly when examining education levels. Those with no or primary only education have lower rates of ownership, with 72% and 74% of residents having had a television in their household respectively. 88% of those with secondary or more education had a television in their household. Regular viewership is also lowest among those with no education (24%), compared to 45% for those with primary only, and 58% for those with secondary or greater.

Figure 3.8.3 Preferred time for watching television, by zone; 2021 MBS Benin



The majority of television viewers in Benin watch television in the late evening, with 56% saying they watch at this time. This was followed by late morning (11%), early evening (10%), early morning (8%), and afternoon (6%) in descending order of popularity ([Table 3.8.4](#)). Only 2% of viewers stated they preferred nighttime television viewing.

Figure 3.8.4 Preferred time for watching television, by sex, 2021 MBS Benin



### 3.8.3 Ownership of Mobile Phone and Access to Specific Media

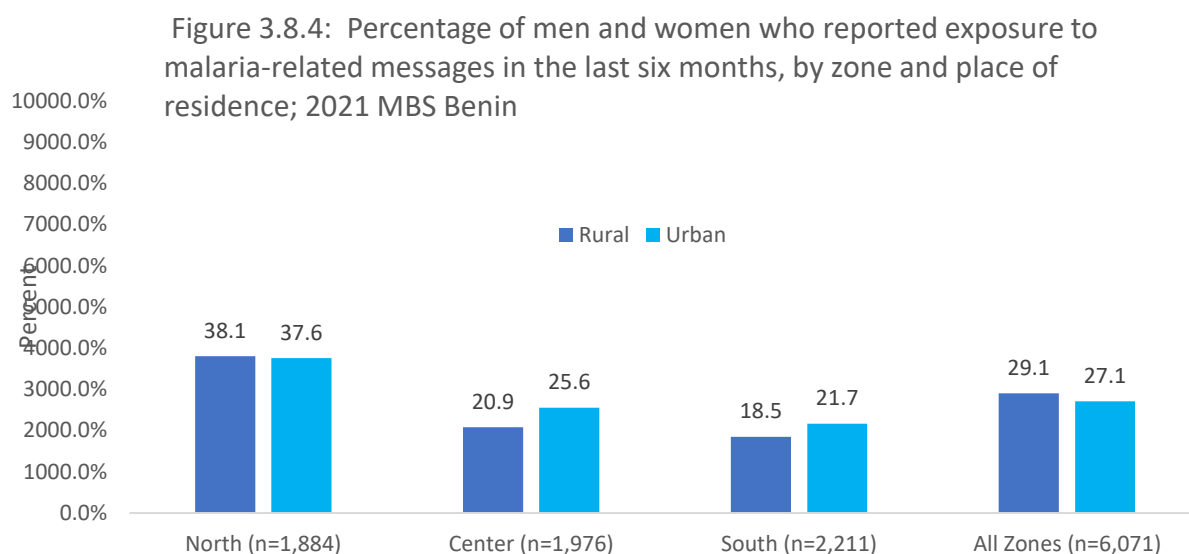
Telephone or tablet ownership was highly dependent on the zone in which a resident lived. Overall, 59% of the population of Benin owned either a telephone or tablet, however those in the South were much more likely to own one or the other ([Table 3.8.5](#)). 72% of those in the South zone reported owning a telephone or tablet, while only 55% and 48% reported owning one in the North and Center respectively. In all zones, men were more likely to own a telephone or tablet, with the South showing the least disparity.

For those who do own a telephone, 83% were able to receive SMS, 60% could receive photos, 59% could receive videos, and 57% could receive audio files ([Table 3.8.5b](#)). Only 34% were able to receive a link to a website and 27% could receive an email. The South had the highest rates for each of these categories, but overall, this suggests that the population of Benin has a low level of mobile internet and smartphone access.

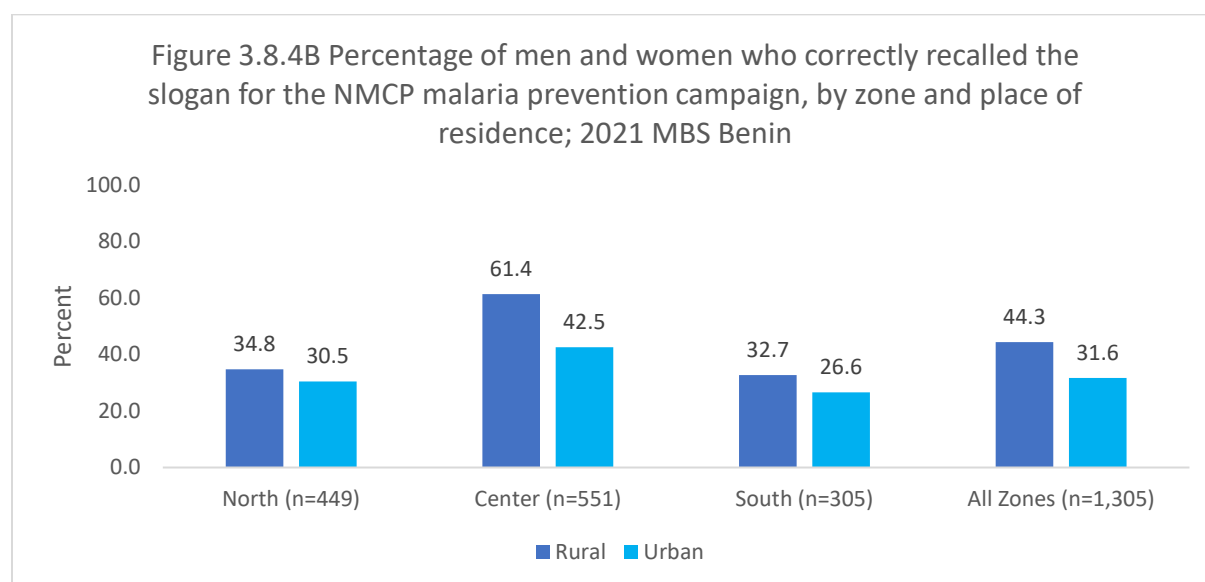
### 3.8.4 Exposure to Messages on Malaria

Less than a third (28.2%) of the survey respondents reported being exposed to malaria-related messages from any source in the past six months ([Table 3.8.6](#)). Looking by zone we see some differences. Proportionally more respondents in the North (38.0%) than in either the Center (22.3%) or the South (20.7%) had been exposed to malaria-related messages in the previous six months. Across the three zones roughly equal proportions of men and women reported having seen or heard malaria-related messages. In the Center and South, exposure was slightly higher in urban areas (25.6% and 21.7%, respectively) as compared to rural settings (20.9% and 18.5%, respectively). By contrast, respondents in rural settings in

the North (38.2%) reported exposure in a higher proportion than respondents in urban settings in the North (37.6%). There was no apparent trend in relation to education, and the proportions varied differently in each zone from the other.



About 39.0% of the men and women correctly recalled the slogan of the recent NMCP campaign. Recall of the slogan varied by zone and by place of residence (Figure 3.7.8). Recall appeared to be lower in the South zone compared to the Center zone. Rural residents were slightly more likely than their rural peers to recall the slogan.



## 4. Conclusions & Recommendations

### 4.1 Cross-Cutting Ideational Determinants

#### 4.1.1 Summary of Findings

- The vast majority (more than 9 out of 10 respondents) knew that fever was the main symptom of malaria, and that malaria is transmitted through mosquito bites, with no difference between zones.
- Almost two in three respondents perceived susceptibility to malaria, that is, they believed that they were exposed to the risk of catching malaria, more in the North (76.6%) or Central (75.5%), than in the South (69.6%). Perceived susceptibility was more common among people who had no formal education compared to people with secondary or higher education.
- Perceived severity of malaria was low, with about half of respondents or fewer thinking malaria was a serious illness. A lower proportion of people in urban (40.2%) settings, as opposed to rural (52.7%) thought malaria was a serious illness. This construct was lower in the South and Center than in the North.
- Spousal communication about malaria in the past six months is moderate, at about 43 percent. This construct was less prevalent in the South or Center compared to the North.
- In all three regions, very low proportions of respondents held favorable perceptions about health workers.
- Finally, the data revealed high support for egalitarian gender norms regarding the treatment and prevention of malaria in children.

#### 4.1.2 SBC Program & Policy Recommendations

- Promote the perception that malaria can have severe consequences.
- Work with health workers to improve their interpersonal communication skills and promote the perception of health workers as welcoming and friendly.
- For recommendations regarding spousal communication and gender norms, see below.

### 4.2 Case Management

#### 4.2.1 Summary of Findings

MBS results suggest that there is substantial room for improvement in several behaviors and perceptions related to malaria case management.

- Knowledge about recommended timing to seek care was very low with one-third or fewer respondents answering correctly, i.e., care should be sought immediately or on the same day as the onset of fever. A higher proportion of respondents in urban settings (31.6%) as compared to rural settings (25.3%) reported correct knowledge of care seeking and treatment. Knowledge about recommended timing to seek care also increased as education level increased. Similarly, level of

knowledge also rose with wealth quintile, ranging from only 21.1% of respondents in the lowest wealth quintile reporting correct knowledge to 40.0% of respondents in the highest wealth quintile.

- Overall favorable attitudes toward care seeking and treatment for malaria were generally low, but highest in the Southern zone (41.2%) compared to other zones.
- Just about the quarter of the respondents (26.3%) knew that drawing blood for a malaria test was the best way to know if someone had malaria but a higher proportion of them (72%) indicated they knew ACT as an effective treatment for malaria. Both knowledge indicators did not vary by zone, by gender or education levels. Perceived efficacy of treatment was higher across the three zones.
- Perceived self-efficacy refers to a person's confidence in their ability to take specific measures to protect themselves or their family against an unpleasant outcome. The study revealed that perceived self-efficacy to seek malaria testing and treatment was high across all three zones (North: 89.2%; Central: 91.6%; South: 88.8%).
- The perception of supportive descriptive community norms regarding malaria testing and treatment varied across the three zones (North: 58.4%; Central: 44.6%; South: 32.6%). Descriptive norms related to prompt care-seeking and malaria testing were defined as perceiving that at least half of the people in their community practice the behavior.
- Per national policy in Benin, all malaria testing and medication at health facilities are free of charge when the case involves a child under five years old. Roughly one third of respondents or fewer in the three zones held favorable perceptions of community-based health workers or facility-based health workers.
- One in five children under 5 years old had a fever within the two weeks preceding the survey, according to their female care-taker's self report, with slight variation by zone, ranging from 21.7% in the North and 27.5% in the South. With regards to the timing of care seeking, more than half of respondents in each zone reported seeking any care for their febrile child on the same or the next day. By contrast, a lower proportion of children under 5 years old with fever were taken to a health facility for 'appropriate' care on the same or the next day after fever onset. A substantially lower proportion of children under 5 in the South (27.5%) as compared to either the North (65.4%) or Center (50.2%) who were taken to a health facility were then tested for malaria. Fewer children in urban settings (34.6%) as compared to rural (54.8%) were tested for malaria when brought to a health facility.
- Four out of ten children under 5 years old tested for malaria yielded a positive result, confirming a malaria diagnosis. Yet, only about 40% of them received ACT. And among the latter, only a third received the medicine the same or the next day after the start of child's fever. Factors associated with appropriate care seeking include knowledge that the best time to see a child with fever is either immediately or the same day after the onset of fever; interpersonal communication about malaria; descriptive norm about malaria; and perceived self-efficacy in seeking care and treatment with one's sick child. As another factor, wealthier households were more likely to seek care with their sick children than poorer ones.

- Up to 41% of women agreed that if their child has a fever it is best to administer any malaria medicine they may have at home, and 48% said they prefer to buy medicine at a location other than a health facility.
- Almost two-thirds (63%) of female respondents agreed that it is appropriate to stop administering medicine once the child no longer appears sick, rather than completing the prescribed course.

#### 4.2.2 SBC Program & Policy Recommendations

- Continue to promote prompt (same/next day) care seeking from qualified providers, including CHWs, for children with fever. There is room for improvement on this behavior, especially in the South zone (at 45%). To be effective, activities can:
  - Position immediate care seeking as a community norm. Among respondents who did believe that early care seeking was the norm, the odds of practicing that behavior increased more than two-fold (AOR: 2.40;  $p < 0.001$ ).
  - Improve knowledge of early care seeking. Knowledge of appropriate care increased odds of practicing the behavior eight times, compared to people without knowledge of appropriate care (AOR: 8.11;  $p < 0.001$ ).
  - Promote couple communication about malaria. Respondents who said they discussed malaria with their spouse or partner in the preceding six months had two times increased odds (AOR: 2.13;  $p < 0.01$ ) of practicing appropriate care seeking, compared to people who had not discussed malaria.
  - SBC activities can use positive messaging showing that peers, partners and opinion leaders model and provide social, emotional and practical support for prompt and appropriate care-seeking.
  - Ideally, SBC programs should try segmenting their messaging to each group (men, women, older, and younger adults) to model joint and timely discussion around care-seeking. These discussions could model the caregivers and relevant decision-makers as jointly participating in preparedness or scenario-planning, such as what symptoms would trigger the decision to seek care at a facility, where the funding would come from, where other practical/in-kind support would come from, the need for a test, and importantly, the need to discuss and act on the same day as illness onset.
- Reinforce knowledge about malaria testing. Information in need of strengthening includes the perception that a blood draw is the best method to test for malaria in children with fever.
- Promote the value of test-based treatment. A large proportion of respondents feel that it is better to take malaria medicine first, and few believe malaria testing is the best (much less, only) way to diagnose malaria. SBC efforts should discuss the harms associated with these beliefs. For example, caregivers who assume clients have malaria may overlook illnesses with similar symptoms, like pneumonia, that are among the leading causes of child mortality. There are also social impacts; obtaining antimalarials for patients without malaria can result in fewer medicines being available to

patients who could truly benefit from their use. Also relevant are messages about the benefits and accuracy of testing.

- Reinforce knowledge about adherence to ACT dosage. Two in three respondents did not see the harm in discontinuing treatment early if they feel better. This belief can contribute to the practice of saving malaria medicine and initiating treatment at home rather than promptly seeking care at a facility. SBC programs should consider discussing the risks associated with discontinuing treatment early and strengthen the population's understanding of what a "complete" recovery means. Providers should be asked to prioritize discussing this topic with clients, and they should be provided with the necessary training and materials to do so.

## 4.3 Malaria in Pregnancy

### 4.3.1 Summary of Findings

- Knowledge about recommended ANC and IPTp practices was generally low: only 17.9% of the respondents knew that a woman should start ANC in the first trimester of pregnancy or as soon as she suspects she might be pregnant, the number of times a pregnant woman should receive ANC, and the number of times a woman should receive the SP during pregnancy. Knowledge about ANC and IPTp varied significantly across zones and was lower in North or Center, and higher in South. There were also differences by sex, age, and place of residence.
- Positive attitudes towards ANC and IPTp were only moderately common at 41.5% and less prevalent in the South compared to the other zones.
- The severity of malaria in pregnancy was generally widely perceived in the study population although less so in the North (80.0%) compared other zones.
- Most of the respondents believed ANC and IPTp are overwhelmingly viewed as ensuring positive pregnancy outcomes.
- About two thirds of the respondents believed that attending at least four ANC visits was the norm in their community while slightly over half (57.6%) believed that obtaining at least three SP doses during pregnancy was the norm in their community. The injunctive norm about SP (the belief that people in their community would support their decision to obtain SP during pregnancy) was reported by just 11.4% of the respondents.
- Whereas the majority of the respondents agreed that health service providers usually treat pregnant women with respect, roughly one-third or fewer in each zone believed that providers made pregnant women pay for SP. The belief that pregnant women are charged for SP was more common in the South than elsewhere.
- Roughly one-third (37.0%) of respondents reported ever discussed ANC attendance with their spouse. This indicator not vary greatly between zones.
- Participation in decisions about ANC attendance was significantly more likely to be reported by men compared to women. The data showed that women from the Nord zones were more likely to be

marginalized in decisions regarding ANC attendance compared to their peers from the Center and the South zones.

- Almost all of the women (94.0%) who were pregnant during the last two years attended ANC at least once but only three-quarters (75.7%) of them attended four ANC visits. Women in the North zones were less likely than those from South and Center zones to have received four ANC visits. Receiving the recommended number of ANC visits was also more common in urban (81.9%) than in rural (70.6%) areas and among women of the highest compared to those in the lowest wealth quintile. Furthermore, the first ANC visit took place in the first trimester for 8-out-of 10 (81.7%) women. Receiving the first ANC in the first trimester of pregnancy was less common in the Nord zone and higher in South zone.
- Slightly more than nine out of every ten women received at least one dose of SP during pregnancy but slightly more than half (55.8%) of them received three or more doses as recommended by the WHO. The proportion that received three or more doses varied substantially by zone, with the highest proportion in the North (67.6%) and the lowest in the South (47.1%). This outcome was higher among women who received at least four ANC consultations (61.6%) and who had received their first ANC during their first trimester (60.5%).
- Practically all women (92.0%) who desire another child in the next two years intended to attend ANC, and almost all of them indicated that they would attend their first ANC during the first trimester of pregnancy.
- Results of the multilevel logistic regression model reveal that overall, the ideational variables associated with intention for early ANC included self-efficacy to obtain IPTp, high perceived severity of malaria, favorable attitudes towards ANC/IPTp, having discussed malaria with a spouse, relative or friend, and having received at least 4 ANC consultations. The results further revealed the significant ideational variables varied by zone.
  - In the North zone, high perceived susceptibility to malaria in pregnancy variable positively associated with intention for early ANC attendance.
  - In the South zone, comprehensive knowledge about ANC and IPTp, high perception of malaria severity, women who regarded themselves as capable of obtaining IPTp(i.e., high self-efficacy) or have previously received at least 4 ANC consultations for a previous pregnancy positively linked with early ANC attendance intention.
  - In the Center zone, most of the ideational factors (comprehensive knowledge about ANC and IPTp, high perception of malaria severity, i.e., high self-efficacy or have previously received at least 4 ANC consultations for a previous pregnancy, etc.) positively associated with intention for early ANC attendance, albeit not significantly.

#### 4.3.2 SBC Program & Policy Recommendations

- Actively model and encourage spousal communication about ANC, as well as women's participation in decisions related to ANC.



- SBC efforts should frame providers as welcoming towards ANC clients who seek care early in pregnancy. They should also work with health providers to promote early ANC.
- Promote free cost of SP. SBC programs should advertise that IPTp is available for free at public health facilities, and local health authorities should ensure that this policy is indeed followed by providers.
- Strengthen the population's knowledge with respect to malaria in pregnancy, including their understanding of ANC timing, the number of visits, and the number of times a women should receive SP. Although knowledge is not currently the main driver of IPTp and ANC uptake, having this information will make it easier for individuals to discuss malaria in pregnancy with their spouses, friends and relatives, which is a predictive factor.
- SBC programs should seek to boost the perception of IPTp as a normative and positive practice. Favorable attitudes toward ANC/IPTp were associated with 2.4 ( $p<0.01$ ) times higher odds of intending to obtain early ANC.

## 4.4 Seasonal Malaria Chemoprophylaxis for Children Under Five

### 4.4.1 Summary of Findings

- SMC results were largely positive among intervention zones. Knowledge of a medicine given to children under five years old to prevent malaria during the rainy season was nearly universal (95.3%), the majority (96.8%) of respondents held favorable attitudes toward SMC, and nearly 9 in 10 (87.6%) perceived SMC as effective in preventing malaria.
- Reports of the recent distribution process were very positive as well. Almost all eligible households (96.6%) reported that an SMC distributor provided SMC doses for their child during the last household visit, and 9 of 10 said the distributor observed the child taking the first dose. Nearly all (95.7%) held favorable perceptions of the distributors. Nine in ten respondents believed that staff would be available at health facilities for SMC if needed, and a similar proportion believed that their community leaders supported the distribution.
- Finally, the belief that it is important to give children any doses of SMC medicines left over from the distributor was high (94.6%).

### 4.4.2 SBC Program & Policy Recommendations

- While perceptions about the recent campaign are largely positive, there are small but important opportunities for improving SBC efforts. For example, a quarter (26.6%) of respondents believed that the medication would make children sick. Future campaigns should promote the fact that the medication is very safe, that side effects are rare, and that any side effects that occur are usually very minor. It may be helpful to assure caregivers that SMC has been rigorously studied and that the

decision to implement it was the result of a strict review process by the World Health Organization and by the Ministry of Health.

- It will also be helpful to reinforce messaging that SMC medication is for children under 5 since about 40% of households perceived families in their community to give SMC meds to other children in the household over 5-years of age.
- About a third (38.4%) of responses said they felt compelled to accept medicines that were offered by SMC distributors. This can be concerning because it may indicate a social desirability bias in other data related to the SMC campaign. Interviewing distributors and observing their work may shed light on how this aspect of the SMC program could be improved. Pressure to meet high targets, for example, may result in rushed interactions that do not allow caregivers to voice their concerns. Strengthening the interpersonal communication skills of distributors may alleviate caregivers' perceptions of coercion.

## 4.5 ITN

### 4.5.1 Summary of Findings

- Knowledge about bed nets as a way to prevent malaria is nearly universal in all the zones of the study, with minimal variations by zone, sex, education, place of residence and wealth quintile.
- In general, attitudes towards use of bed nets was positive, with, overall, about six out of every ten respondents demonstrating positive attitudes towards the use of bed nets. However, positive attitudes were less prevalent in the North compared to either the Center or South, and among people with only a primary level of formal education.
- Perceived response-efficacy of ITNs was mixed, with only about half of respondents overall demonstrating belief in the effectiveness of ITNs. This indicator was lower for people in the North, or who were younger, and among people with either primary or higher education.
- Perceived self-efficacy for consistent use of bed nets was high in all zones, with little variation between sexes, residence, education, or wealth. However, about 20% fewer people believed consistent use of ITNs to be the norm in their community. The belief was slightly higher in the North, with minimal other differences.
- Almost no respondents believed they would be criticized for using a bed net, indicating that injunctive norms do not play a large role.
- Overall, about four out of five of households (81.1%) owned at least one ITN, and more than 85% owned one ITN for every two persons in the household. Ownership of at least one ITN was lowest in the Center and in rural settings. Households in lower wealth quintiles were less likely to own at least one net than households in higher wealth quintiles. These same trends are also observed for households with a sufficient number of nets.

- Almost all the 6,608 bed nets enumerated in the study zones were ITNs from mass distribution campaigns. About two-thirds of these nets were newer than 3-years and were blue. Looking by zone, about half of nets in the Center zone were older than 3-years, whereas only a quarter of nets in the South were older than three years. In both the Center and South, nets were almost exclusively blue colored, but in the North two-thirds were white.
- Overall, nine out of ten nets were reported to have been slept under the night before the survey, and eight out of ten were reported to have been slept under every night in the past week. Lower proportions of nets were slept under every night in the North, with more in the Center, and the highest proportion in the South.
- Across zones, at least three-quarters of ITNs were reported to have been washed, and among those nets, they were washed with mild soap, as recommended. The majority of nets were left out to dry in the sun instead of the shade, which is recommended. The majority of nets that were used for sleeping the previous night were found simply hanging loosely over the bed during the survey; not rolled up or tied up as recommended.
- In households with at least one net, about 83% of household members slept under a net on the night preceding the survey. In households with enough nets for all members, more than 92% report having slept under one the preceding night.
- Overall, the use:access ratio was 0.89, indicating that most people with access to a bed net also use it. There were minor differences by zone. The ratio masks the fact that ITN use was lowest in the Center and North, while access was also lowest in the Center.
- The data indicate that consistent use of bed nets is common among men and equal, where about four out of five people reported having consistently using a bed net, whether households had only one net or enough nets. Consistent use was lowest in the North and in rural settings but did not appear to follow wealth status.
- The variables associated with consistent use of bed nets was relatively consistent across zones:
  - Altogether, living in the South zone, being a woman, holding favorable attitudes toward ITN use, believing there are actions one can take to prolong the life of a bed net, knowledge that bed nets prevent malaria, exposure to messages of net use, high perceived susceptibility to malaria, a perception that that others in the community will approve of net use, and having enough nets in a household were all positively associated with consistent net use. By contrast, knowledge that mosquito bites being the sole cause of malaria and whether households in the lowest wealth quintiles were negatively associated with consistent bed net use.
  - In the North zone, many of the same variables were associated with consistent bed net use but not all. Holding favorable attitudes, believing there are actions one can take to help the net last longer, high perceived susceptibility to malaria, a perception that others in the community will approve of net use, possessing enough nets for members in the household,

and listening regularly to the radio were positively associated with consistent net use. there was a negative association regarding knowledge that mosquito bites cause malaria and being in a household in the lowest wealth quintiles.

- In the Center zone, only favorable attitudes toward nets, perceived susceptibility to malaria, having enough nets, and being a woman were positively associated with consistent bed net use.
- In the South zone, holding favorable attitudes, believing there are actions one can take to help the net last longer, high perceived susceptibility to malaria, a perception that others in the community will approve of net use, possessing enough nets for members in the household, and being a woman were associated with consistent net use. Older respondents were less likely to use a net consistently.

#### 4.5.2 SBC Program & Policy Recommendations

- Continue to promote consistent net use every night and throughout the year to maintain current users and encourage others with access to use ITNs every night. With only 82% of nets in the household being used every night, there is room for improvement. To be effective, in addition to increasing access to ITNs in households, activities can:
  - Promote a positive attitude toward ITN use. Those who reported a positive attitude toward the use of ITNs were 2.9 times ( $p<0.001$ ) more likely to sleep under a net every night than those who did not, across all zones. One way to support a positive attitude is to promote a good night's sleep under an ITN.
  - Promote the efficacy of bed nets to prevent malaria. Overall, only 59% of respondents believed that bed nets were effective in preventing malaria, with the lowest proportion in the North (48%).
  - Position ITN use every night as a community norm. Only 69% of respondents believed that others in their community consistently use bed nets. However, believing that others in one's community will approve of sleeping under an ITN was associated with 78% ( $p<0.001$ ) higher odds of sleeping under a net every night compared to those who did not believe that others would approve.
  - Continue using mass media to communicate the risk of malaria. Exposure to messages about net use were associated with 32% ( $p<0.05$ ) higher odds of sleeping under a net every night as compared to people who were not exposed, and people who perceived themselves to be susceptible to malaria had 48% ( $p<0.05$ ) higher odds of sleeping under a net every night as compared to those who did not perceive themselves to be susceptible to malaria.
  - Promote actions to prolong the life of a bed net. Those who reported a belief that there are actions one can take to help the mosquito net last longer were 1.4 ( $p<0.01$ ) times more likely to sleep under a net every night than those who did not, across all zones.

- Net care behaviors have been found to be effective in prolonging the useful life of nets, with nets having usable lifespans of 1.6 to 5 years depending on net care practices [15], and SBC investments in this arena can improve the duration of protection households receive as well as reduce costs associated with mass campaigns/ITN replacement. Rolling or tying up a net after use, or drying a net in the shade rather than in the sun are small do-able actions for most individuals, yet observed rates in Benin MBS suggested substantial room for improvement. SBC efforts should increase the population's awareness of these net care behaviors and how easy they are to practice.

## 4.6 IRS

### 4.6.1 Summary of Findings

- More than eight in ten respondents were aware of the IRS campaign in the intervention zones in the North. Rural households were more aware than urban.
- Among those who were aware of IRS:
  - Favorable attitudes towards IRS was high in all zones, where more than four out of five respondents (84.9%) had favorable attitudes. In general, more men than women had favorable attitudes, as did older people.
  - Most people believed IRS to be efficacious (87.8%) and that if one lived in a house that was sprayed you were less likely to get malaria (74.6%). However, only a quarter of respondents believed that IRS was an effective way to kill mosquitoes.
  - Overall, perceived self-efficacy regarding IRS was high, with four in five respondents (83.3%) having high self-efficacy to either move furniture in preparation for IRS or to sleep in a house the night it was sprayed. There were few differences between sexes or age. However, people in the urban settings, on average, were less likely to have high perceived self-efficacy regarding IRS than in rural settings.
  - Willingness to accept IRS in their community was nearly universal with little differences between sex, age or education. Among respondents who were unaware of the program, about four in five (83.6%) respondents were willing to accept it.

### 4.6.2 SBC Program & Policy Recommendations

- To maintain and increase IRS acceptance rates, create more diverse SBC messaging. While 88% of respondents thought IRS could prevent malaria, only 25% believed IRS would kill mosquitos.
- When introducing IRS to new areas, SBC programs should draw testimonies from opinion leaders and other influencers from areas with IRS experience since respondents from these areas tended to have positive perceptions toward IRS.

## 4.7 Media Consumption and Message Exposure

### 4.7.1. Summary of Findings

- Radio and television ownership in Benin was relatively low, with about half of households overall owning a radio and only a quarter owning a television, with substantial differences between zones. Among all respondents (i.e., households with or without a radio), less than half regularly listen to the radio. In households with a radio, about 68% of people listened regularly. More women than men listened regularly to the radio and fewer people with higher education listened regularly. Among all households, only one-third of respondents reported watching television regularly; whereas among only households that owned a television, four in five respondents reported watching regularly.
- For those who listened to the radio, generally, early morning, late morning, and late evenings were the most popular listening times and represent the optimum times to reach people with messaging. In the North, roughly two-thirds of people are listening to the radio in early and late morning. In the Center, about half of people are listening in the early and late evening. In the South, most people are listening either in the late morning or in the evening.
- For those who watched television, by far, late evening was the most popular viewing time across zones. Between half and two-thirds of people could be reached by television in the late evening. Very few respondents in any zone watched television in the afternoon or night.
- More than half of respondents reported owning a personal telephone or tablet. Substantially more men than women owned a personal telephone or tablet in all three zones. Higher proportions of older respondents tended to own a phone or tablet as compared to younger, and urban residences consistently owned a phone or tablet compared to rural.
- Most of the available telephones were capable of receiving SMS messages, and more than half could receive photos, videos, and audio files across zones, with minimal variance. Only about a third of telephones could receive a link to a website and fewer could receive emails. The most technologically advanced telephones were found in the South.
- Less than a third of respondents reported being exposed to malaria messages in the last year. A higher proportion of respondents who were exposed to malaria messages were in the North, and the lowest proportion in the South. Roughly equal proportions of men and women were exposed, while that proportion was low. There did not appear to be substantial difference between urban or rural settings, between ages, or by level of education.
- Less than half of respondents correctly recalled the slogan for the NMCP malaria prevention campaign. Recall was higher in rural settings than in urban settings in each zone. Recall was highest in the Center than in either the North or the South.

#### 4.7.2 SBC Program and Policy Recommendations

- Increase the broadcasting frequency of malaria messages at key times throughout the day, across multiple channels.
  - Nearly 90% of people in the North could be reached by radio if radio broadcasts were concentrated in early morning, late morning, and late evening, whereas early evening and late evening would have the biggest audiences (about 60% of listeners) in the Center, and late morning and late evening have the most listeners in the South – 60% of listeners.
  - At least half (between 49% - 65%) of audiences across zones could be reached by television with broadcasts in late evening. Neither early morning, late morning, afternoon nor night were preferred viewing times in the Center or South, but late morning has potential to reach 19% of the viewing audience in the North.
- Interpersonal communication is needed; those who regularly used TV and radio are still only a minority, and even mobile phone ownership in rural (range 44.7-55.9%) and urban areas (range: 56.3-79.2%), while higher, is far from universal. It is particularly important for younger groups (age 15-24), residents of the Central zone, and women in all zones, as they have lower access to radio, TV and mobile phones.
- Health workers and community health workers have fairly good reach at 40% and 48%, respectively and should continue to be used as a major channel for messaging.

## 5. References

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## Annex A: Data Tables

This annex provides all data tables for the 2021 Benin MBS that were not included in the main body of the report. A brief description of the purpose of each table is provided. Data presented in these tables are often disaggregated by study zone and/or respondent or household sociodemographic characteristics.

Data tables pertaining to the specific subsections can be found by utilizing the table of contents at the beginning of this report or the links below:

[A.3.1 Sample Characteristics](#)

[A.3.2 Cross-Cutting Ideational Determinants](#)

[A.3.3 Malaria Case Management for Children Under Five Years Old](#)

[A.3.4 Malaria in Pregnancy](#)

[A.3.5 Seasonal Malaria Chemoprevention](#)

[A.3.6 Insecticide-Treated Net Use](#)

[A.3.7 Indoor Residual Spraying](#)

[A.3.8 Media Consumption and Message Exposure](#)

### A.3.1 Sample Characteristics

This subsection of the Annex provides all data tables related to sample characteristics that are not included in the main body of the report. The following tables have been referenced in the main body of the report, and readers will find a description of results relevant to the table in the corresponding section of the report.

**Table 3.1.2: Ownership of assets and wealth quintile**

**Table 3.1.2** describes the distribution of household ownership of assets. This table also presents the proportion of wealth quintiles, disaggregated by zone.

<b>Table 3.1.2: Ownership of assets and wealth quintile, 2021 Benin MBS</b>				
	<b>North</b>	<b>Center</b>	<b>South</b>	<b>Total</b>
<b>Percent of households with...</b>	47.7	39.9	56.4	49.2
Radio	19.5	17.7	37.4	26.1
Television	2.0	1.6	9.3	4.8
Refrigerator	19.9	20.6	41.6	28.7
Internet Access	37.0	31	44.9	38.6
Watch	22.9	17.2	50.5	32.4
Simple mobile phone	22.9	17.2	50.5	32.4
Smart Phone	22.5	10.5	4.5	12.3
Bicycle	70.8	53.9	53.4	59.6
Motorcycle	5.3	2.6	7.7	5.6
Car	4.5	1.6	7.6	5.0
Computer				
<b>Wealth Quintile</b>				
Lowest	21.5	25.2	12.4	18.8
Second	22.6	24.1	13.7	19.4
Third	25.3	21.1	19.9	22.1
Fourth	19.0	20.5	19.4	19.5
Highest	11.6	9.2	34.6	20.1
<b>Number of Observations</b>	<b>960</b>	<b>1,238</b>	<b>1,336</b>	<b>3,534</b>

**Table 3.1.3: Characteristics of household members**

**Table 3.1.3** describes the sociodemographic characteristics of household members in each zone. These include member sex, residence, age distribution and distribution of household ownership of assets. This table lists the distribution of these characteristics for all household members listed during the household questionnaire and does not necessarily reflect only the characteristics of individuals interviewed. The data presented in this table is disaggregated by zone.

<b>Table 3.1.3: Characteristics of household members, 2021 Benin MBS</b>				
<b>Characteristic</b>	<b>North</b>	<b>Center</b>	<b>South</b>	<b>All zones</b>
<b>Sex</b>				
Female	50.8	53.2	53.2	52.3
Male	49.2	46.8	46.8	47.7
<b>Residence</b>				
Rural	69.4	69.8	33.4	55.9
Urban	30.6	30.2	66.6	44.1
<b>Age Distribution</b>				
0-4 years	13.0	13.2	14.6	13.6
5-17 years	38.4	37.9	37.5	38.0
18+ years	48.6	48.9	47.9	48.4
Average age in years	19.8	20.9	20.8	20.5
<b>Number of Observations</b>	<b>5,293</b>	<b>5,447</b>	<b>6,522</b>	<b>17,262</b>

**Table 3.1.4: Sociodemographic characteristics of respondents**

**Table 3.1.4** describes the distribution of respondents by sociodemographic characteristics, including participant sex, age group, and level of education.

<b>Table 3.1.4: Percent distribution of respondents by selected sociodemographic characteristics, sex and zone, 2021 Benin MBS</b>				
<b>Characteristic</b>	<b>North</b>	<b>Center</b>	<b>South</b>	<b>All Zones</b>
<b>Women</b>				
<b>Age</b>				
15-24 years	42.3	30.2	28.7	34.6
25-34 years	33.6	33.5	35.2	34.1
35-44 years	18.5	28.4	26.7	23.7
45+ years	5.7	7.9	9.4	7.5
<b>Level of education</b>				
None	27.8	36.4	26.4	28.7
Primary	19.5	15.2	15.0	16.8
Secondary	52.7	48.4	58.6	54.5
Fourth than secondary				
<b>Number of observations</b>	<b>1,417</b>	<b>1,474</b>	<b>1,644</b>	<b>4,535</b>
<b>Men</b>				
<b>Age</b>				
15-24 years	4.5	5.2	3.3	4.2
25-34 years	26.4	29.1	26.4	27.0
35-44 years	40.7	31.1	38.9	37.8
45+ years	28.4	34.6	31.4	30.9

<b>Level of education</b>				
None				
Primary	22.7	34.2	20.4	23.9
Secondary	21.8	15.6	17.5	18.6
Fourth than secondary	55.5	50.1	62.1	57.6
<b>Number of observations</b>	<b>467</b>	<b>502</b>	<b>567</b>	<b>1,536</b>

### A.3.2 Cross-Cutting Ideational Determinants

This subsection of the Annex provides all data tables related to cross-cutting ideational determinants. These include knowledge of malaria, perceived susceptibility and severity of malaria, gender norms related to malaria, perceptions regarding health workers and malaria, and interpersonal communication related to malaria. The tables herein summarize the prevalence of ideational determinants and may be duplicative of tables in the main body of the report.

Table 3.2.1: Questions to assess cross-cutting ideational variables

Table 3.2.1 Questions used to assess cross-cutting ideational variables, 2021 Benin MBS

Indicator	Question(s) used to measure indicator	Notes
Knowledge that the main symptom of malaria is fever	What signs or symptoms would lead you to think that a person has malaria?	Multiple responses were possible in this question. “Knowledge” was determined if the response indicated sleeping fever as a symptom of malaria.
Knowledge that mosquitoes are the sole cause of malaria	What causes malaria?	Multiple responses were possible in this question. “Knowledge” was determined if the response indicated only mosquito bites as the cause of malaria.
Knowledge of at least one malaria prevention method	What are the things that people can do to stop them from getting malaria?	Multiple responses were possible in this question. “Knowledge” was determined if the response indicated sleeping under an ITN, taking preventive medication, or having their house sprayed..
Perceived susceptibility to malaria	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. People in this community only catch malaria during the rainy season.</li> <li>B. Almost every year, a person in this community catches severe malaria.</li> <li>C. When your child has a fever, you're almost always afraid it's malaria.</li> <li>D. During the rainy season, you are afraid almost every day that a member of your family will suffer from malaria.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of perceived susceptibility for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Disagree</li> <li>B. Agree</li> <li>C. Agree</li> <li>D. Agree</li> </ul>



Perceived severity of malaria	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. You are not afraid of malaria, because you believe it can be treated easily.</li> <li>B. Only weak children can die of malaria.</li> <li>C. Each case of malaria can potentially lead to death.</li> <li>D. When someone you know has malaria, you usually expect them to recover completely within a few days.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of perceived severity for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Disagree</li> <li>B. Disagree</li> <li>C. Agree</li> <li>D. Disagree</li> </ul>
Interpersonal communication about malaria	<ul style="list-style-type: none"> <li>A. In the last six months, did you talk about malaria with your spouse or partner?</li> <li>B. In the last six months, did you talk about malaria with your friends or relations?</li> </ul>	<p>A “yes” response to each question indicates interpersonal communication</p>
Gender norms related to malaria	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. When there are not have enough nets, it is more important that female children sleep under the available nets rather than male children.</li> <li>B. When there are not have enough nets, it is more important that male children sleep under the available nets rather than female children.</li> <li>C. When there is not enough money, it is more important that male children with fever get medicine rather than female children.</li> <li>D. When there is not enough money, it is more important that female children with fever get medicine rather than male children.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of egalitarian gender norms for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Disagree</li> <li>B. Disagree</li> <li>C. Disagree</li> <li>D. Disagree</li> </ul>

### Table 3.2.2: Correct Knowledge of malaria

**Table 3.2.2** (next page) summarizes respondents' level of knowledge of malaria. This includes the proportion of respondents who identified fever as the main symptom of malaria, who reported that malaria is caused by a mosquito bite; and who reported at least one major malaria prevention measure such as sleeping under a treated bed net every night. These data are presented according to respondent background characteristics and are disaggregated by zone.

Table 3.2.2 Knowledge of malaria cause, prevention and symptoms, 2021 Benin MBS

Characteristic	North			Center			South			All Zones		
	Know fever is a symptom of malaria	Know malaria is caused by mosquito bite alone	Know at least one malaria major prevention measure	Know fever is a symptom of malaria	Know malaria is caused by mosquito bite alone	Know at least one malaria major prevention measure	Know fever is a symptom of malaria	Know malaria is caused by mosquito bite alone	Know at least one malaria major prevention measure	Know fever is a symptom of malaria	Know malaria is caused by mosquito bite alone	Know at least one malaria major prevention measure
<b>Sex</b>												
Female	90.9	96.0	98.6	91.3	97.4	99.2	93.8	97.9	98.4	92.0	97.0	98.7
Male	94.3	94.8	98.8	94.7	96.9	98.4	95.0	97.9	98.3	94.6	96.4	98.5
<b>Age</b>												
15-24 years	90.5	95.8	98.8	88.4	96.9	99.8	93.5	97.6	97.6	91.0	96.5	98.6
25-34 years	91.2	95.5	98.7	91.9	98.1	99.0	95.0	99.0	98.5	92.7	97.4	98.7
25-44 years	92.2	94.9	98.3	93.8	97.4	98.6	94.5	96.0	98.6	93.5	96.0	98.5
45+ years	95.8	97.9	98.8	95.6	95.7	98.5	92.1	99.7	99.1	94.3	98.1	98.9
<b>Residence</b>												
Rural	92.2	96.7	98.3	91.2	96.9	99.3	91.2	99.1	96.7	91.7	97.3	98.3
Urban	90.8	93.7	99.3	94.2	97.9	98.3	95.5	97.4	99.2	93.9	96.4	99.1
<b>Education</b>												
None	94.7	99.0	99.0	89.6	98.2	100.0	92.5	99.7	98.2	92.5	99.1	98.9
Primary	84.8	89.1	98.0	87.9	97.3	100.0	93.0	96.1	97.4	88.6	93.3	98.0
Secondary+	89.7	94.1	99.8	94.4	97.8	99.0	96.5	97.1	99.1	93.7	96.2	99.4

<b>Wealth</b>												
Lowest	94.8	97.8	98.5	88.8	97.5	98.7	86.0	99.2	97.4	90.6	98.1	98.3
Second	93.2	98.1	97.5	91.7	98.0	99.5	92.9	97.2	95.0	92.7	97.9	97.5
Middle	88.4	94.0	99.5	91.6	95.0	98.9	92.6	99.1	99.1	90.4	95.8	99.2
Fourth	93.9	95.6	98.6	95.6	97.7	98.6	92.7	98.5	98.6	93.9	97.2	98.6
Highest	89.4	93.0	99.2	95.8	98.7	99.2	98.6	96.8	99.4	95.7	95.9	99.3
<b>All (%)</b>	<b>91.7</b>	<b>95.7</b>	<b>98.6</b>	<b>92.2</b>	<b>97.3</b>	<b>99.0</b>	<b>94.1</b>	<b>97.9</b>	<b>98.4</b>	<b>92.7</b>	<b>96.9</b>	<b>98.6</b>
<b>Number of Observations</b>	<b>1,884</b>			<b>1,976</b>			<b>2,211</b>			<b>6,071</b>		

**Table 3.2.3: Perceived susceptibility to malaria**

**Table 3.2.3** summarizes the distribution of perceived susceptibility to malaria, based on composite scores from responses to specific statements. Results are presented by participant sociodemographic characteristics and are disaggregated by study zone.

Table 3.2.3: Percent of respondents with perceived susceptibility to malaria, 2021 Benin MBS				
Sociodemographic Characteristic	North	Center	South	All Zones
<b>Sex</b>				
Female	77.0	74.6	68.4	73.3
Male	75.3	78.3	73.2	75.2
<b>Age</b>				
15-24 years	75.4	65.2	56.2	67.6
25-34 years	81.7	78.9	70.7	77.0
25-44 years	76.6	80.6	74.4	76.7
45+ years	66.0	74.8	77.3	72.8
<b>Residence</b>				
Rural	75.7	75.1	69.7	74.3
Urban	78.4	76.4	69.6	73.3
<b>Education</b>				
None	79.5	75.7	77.1	77.6
Primary	76.6	80.8	67.4	73.5
Secondary+	74.9	66.6	67.3	69.9
<b>Wealth</b>				
Lowest	76.7	82.6	60.4	74.6
Second	77.6	74.7	70.1	75.0
Middle	70.8	76.4	65.7	70.4
Fourth	82.8	72.0	78.5	78.7
Highest	77.7	66.2	69.7	71.6
<b>Total (%)</b>	76.6	75.5	69.6	73.8
<b>Number of Observations</b>	1,884	1,976	2,211	6,071

**Table 3.2.4: Perceived severity of malaria**

**Table 3.2.4** presents the distribution of participants' perceived severity of malaria. One's level of perceived severity is based on a composite score generated from four attitudinal questions (see Table 3.2.1).

Table 3.2.4: Perceived severity of malaria				
<b>Sociodemographic Characteristics</b>	North	Center	South	All Zones
<b>Sex</b>				
Female	49.0	52.7	40.7	46.8
Male	51.3	53.1	39.9	47.6
<b>Age</b>				
15-24 years	43.4	48.8	38.3	43.0
25-34 years	53.8	53.3	43.8	50.0
25-44 years	53.9	54.3	39.2	48.2
45+ years	46.2	55.1	39.1	45.5
<b>Residence</b>				
Rural	51.9	54.1	52.5	52.7
Urban	44.9	49.9	34.7	40.2
<b>Education</b>				
None	54.8	58.5	42.3	50.6
Primary	28.7	46.9	35.9	34.6
Secondary+	41.6	42.5	34.2	38.2
<b>Wealth</b>				
Lowest	60.4	52.2	41.3	52.9
Second	54.9	49.7	62.2	55.1
Middle	39.7	56.3	38.6	42.8
Fourth	57.8	50.8	47.5	52.4
Highest	37.3	58.5	30.3	35.2
<b>Total (%)</b>	49.6	52.8	40.5	47
<b>Number of Observations</b>	<b>1,884</b>	<b>1,976</b>	<b>2,211</b>	<b>6,071</b>

#### Table 3.2.5: Interpersonal communication regarding malaria

**Table 3.2.5** (next page) presents data regarding participants' reporting of interpersonal communication regarding malaria in the six months prior to data collection. This includes reports of talking about malaria with one's spouse or one's friend/family member. Results are presented by participant sociodemographic characteristics and are disaggregated by study zone.

Table 3.2.5: Percent of respondents who reported interpersonal communication regarding malaria, 2021 Benin MBS

Characteristic	North		Center		South		All Zones	
	Talked about malaria with spouse in the previous six months	Talked about malaria with friend/family member in the previous six months	Talked about malaria with spouse in the previous six months	Talked about malaria with friend/family member in the previous six months	Talked about malaria with spouse in the previous six months	Talked about malaria with friend/family member in the previous six months	Talked about malaria with spouse in the previous six months	Talked about malaria with friend/family member in the previous six months
<b>Sex</b>								
Female	51.7	50.0	37.3	31.7	37.7	27.1	43.3	37.6
Male	51.0	54.9	38.3	32.9	34.6	27.6	41.9	39.8
<b>Age</b>								
15-24 years	61.2	52.2	37.0	28.4	33.7	20.7	48.9	38.0
25-34 years	51.6	50.1	41.0	34.6	40.9	30.2	45.2	39.2
25-44 years	46.0	48.7	36.2	32.9	34.9	30.4	39.3	37.6
45+ years	46.9	57.5	33.2	30.7	33.4	24.1	37.9	37.3
<b>Residence</b>								
Rural	51.6	49.9	37.6	32.6	31.7	24.2	43.2	39.5
Urban	51.1	54.1	37.6	30.9	39.3	28.7	42.5	36.7



<b>Education</b>								
None	59.6	53.5	37.9	24.3	40.5	32.5	46.7	38.0
Primary	71.6	67.7	43.0	34.5	37.4	27.5	51.6	45.9
Secondary+	58.2	52.5	41.3	35.4	43.4	29.9	47.9	38.9
<b>Wealth</b>								
Lowest	49.3	44.8	32.1	28.8	18.6	18.0	36.0	32.8
Second	50.1	53.4	37.3	36.0	29.2	22.7	41.4	41.3
Middle	59.8	58.5	35.8	26.7	23.4	19.1	43.4	39.4
Fourth	39.4	37.4	42.7	36.5	41.3	30.3	40.9	34.6
Highest	57.8	59.5	44.4	32.7	49.9	34.6	51.2	41.4
<b>Total (%)</b>	<b>51.5</b>	<b>51.3</b>	<b>37.6</b>	<b>32.0</b>	<b>36.7</b>	<b>27.3</b>	<b>42.9</b>	<b>38.2</b>
<b>Number of Observations</b>	<b>1,497</b>	<b>1,884</b>	<b>1,622</b>	<b>1,976</b>	<b>1,737</b>	<b>2,211</b>	<b>4,856</b>	<b>6,071</b>

**Table 3.2.6: Perceptions regarding health workers**

**Table 3.2.6** presents distribution of participants' perceptions of facility-based and community-based health workers.

Table 3.2.6: Percent of respondents with favorable perceptions toward health workers, 2021 Benin MBS				
Characteristic	North	Center	South	All Zones
<b>Sex</b>				
Female	20.0	11.9	14.6	16.2
Male	21.9	15.5	12.9	17.1
<b>Age</b>				
15-24 years	16.6	14.4	11.3	14.6
25-34 years	24.7	14.8	13.8	18.4
25-44 years	17.6	9.5	17.4	15.6
45+ years	25.8	12.7	12.5	17.2
<b>Residence</b>				
Rural	20.6	15.4	10.5	17.0
Urban	20.2	7.2	15.9	15.8
<b>Education</b>				
None	29.5	20.5	13.1	20.7
Primary	19.3	9.5	11.8	14.6
Secondary+	25.0	11.2	16.8	18.8
<b>Wealth</b>				
Lowest	24.1	13.8	6.3	16.2
Second	15.1	14.3	12.7	14.3
Middle	22.2	13.3	12.1	17.2
Fourth	19.0	12.4	15.3	16.1
Highest	23.5	6.6	17.5	18.1
<b>Favorable perceptions of health workers (%)</b>	20.5	12.8	14.1	16.5
<b>Number of Observations</b>	<b>1,884</b>	<b>1,976</b>	<b>2,211</b>	<b>6,071</b>

Table 3.2.7: Gender norms related to malaria

**Table 3.2.7** presents distribution of participants' perceived gender norms related to malaria. One's reported gender norms are based on their agreement to several statements. Results are presented by participant characteristics and are disaggregated by study zone.

Table 3.2.7: Gender norms related to malaria, 2021 Benin MBS						
	Hold gender equitable attitudes related to malaria	Agree that when there are not enough nets, it is <b>more important that female</b> children sleep under the available nets rather than male children.	Agree that when there are not enough nets, it is <b>more important that male</b> children sleep under the available nets rather than female children.	Agree that when there is not enough money, it is <b>more important that male</b> children with fever get medicine rather than female children.	Agree that when there is not enough money, it is <b>more important that female</b> children with fever get medicine rather than male children.	Agree that a pregnant woman should feel comfortable asking her husband/spouse to go to the health facility for a prenatal consultation.
<b>Zone</b>						
North	74.4	22.9	14.9	83.2	80.2	73.0
Center	82.3	8.6	6.5	84.5	82.4	84.3
South	92.5	9.0	5.8	93.4	93.1	80.5
<b>Sex</b>						
Female	83.3	14.8	9.8	87.4	85.6	78.2
Male	81.2	14.0	9.2	86.5	84.6	78.7
<b>Age</b>						
15-24 years	80.5	16.7	12.5	85.9	85.2	74.9
25-34 years	84.6	14.2	8.0	89.3	85.9	79.9
25-44 years	84.0	12.6	8.1	86.9	87.2	79.7
45+ years	80.0	15.4	11.1	85.4	80.6	78.3

<b>Residence</b>						
Rural	81.1	15.7	10.1	86.6	84.4	74.7
Urban	84.7	13.3	9.2	87.9	86.5	82.7
<b>Education</b>						
None	84.0	14.9	9.1	89.4	86.5	82.1
Primary	76.7	18.6	14.6	80.2	85.3	75.7
Secondary+	84.4	11.9	9.3	87.4	86.7	80.4
<b>All respondents (%)</b>	82.7	14.6	9.7	9.7	85.4	78.3
<b>Number of Observations</b>	6,071					

### A.3.3 Malaria Case Management for Children Under Five Years Old

This subsection of the Annex provides all data tables related to malaria care seeking and treatment, particularly for children under 5 years old. The following tables include data related to care seeking and treatment behavior as well as several ideational factors including knowledge, attitudes, perceived response efficacy, perceived self-efficacy, gender norms and perceived community norms. The tables may have been duplicated in the main body of the report.

Table 3.3.1: Questions used to assess case management ideational variables

Table 3.3.1 Questions used to assess case management ideational variables, 2021 Benin MBS

Indicator	Question(s) used to measure indicator	Notes
Knowledge that ACT is an effective treatment for malaria	What medicines can be used to effectively treat malaria?	Questions has multiple possible responses. Knowledge is determined if the response includes ACT.
Knowledge that care seeking for children with fever should begin the same day or next day after fever onset.	How soon after a child develops fever should you take a child under five years old to get advice or treatment for the fever? Should you do it as soon as the child's fever is detected, the same or next day as the child's fever begins, or two or more days after the fever begins?	Knowledge is determined if the response is immediately or the same or next day.
Knowledge that a blood test is the best way to learn if someone has malaria	What is the best way to know if someone has malaria?	Knowledge is determined if the response includes a blood test for malaria.
Knowledge that the best source of malaria treatment is a health facility.	In your community, where is the best place to go if you think you have malaria?	Knowledge is determined if the response is a health facility
Comprehensive knowledge of malaria care-seeking and treatment		This is a composite score based on responses to the four previous knowledge questions. If the respondents has correct knowledge in all four questions (i.e. that ACT is effective; that care-seeking should begin same or next day; that blood test is best way to diagnose malaria; and that health facility is the best first recourse), then knowledge is considered comprehensive.

Favorable attitude toward care-seeking for children for fever and treatment of malaria	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. The health provider is always the best person to talk to when you think your child may have malaria</li> <li>B. One does not need to continue taking all the medicine doses against malaria if they no longer feel sick</li> <li>C. if they think his/her child has malaria, a parent should first ask for an injection from the health provider or community health worker</li> <li>D. I prefer that my child receive the medicine to treat malaria by injection rather than swallow it</li> <li>E. A person should only take malaria medicine if a health provider says that his/her fever really is caused by malaria</li> <li>F. If a health provider says a person does not have malaria, the patient should ask for a malaria medication just in case s/he needs it</li> <li>G. When my child has a fever, it is better to start by giving him any malaria medicine I have at home.</li> <li>H. It is important to take all the antimalaria pills prescribed to ensure a complete recovery</li> <li>I. When my child has a fever, I do not go directly to the health facility, I first go elsewhere to buy him/her medicine</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of favorable attitudes for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Agree</li> <li>B. Disagree</li> <li>C. Disagree</li> <li>D. Agree</li> <li>E. Agree</li> <li>F. Disagree</li> <li>G. Disagree</li> <li>H. Agree</li> <li>I. Disagree</li> </ul>
Perceived response-efficacy of malaria testing	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>E. A blood test for malaria is the only way to know if someone really has malaria or not</li> <li>F. A person should still take malaria medicine even if the malaria test result says that the fever is not due to malaria</li> <li>G. Parents can diagnose malaria by a person’s symptoms just as well as a blood test for malaria</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of perceived response efficacy (testing) for each question is listed below:</p> <ul style="list-style-type: none"> <li>E. Agree</li> <li>F. Disagree</li> <li>G. Disagree</li> </ul>

Perceived response-efficacy of malaria treatment	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>E. An injection to treat malaria is more effective than the malaria medicine taken by mouth</li> <li>F. The malaria drugs obtained from the health facility are effective in treating malaria</li> <li>G. The malaria medicines that you buy in the market are as good as the ones distributed at the health facility</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of perceived response efficacy (treatment) for each question is listed below:</p> <ul style="list-style-type: none"> <li>E. Agree</li> <li>F. Agree</li> <li>G. Disagree</li> </ul>
Perceived self-efficacy to seek care and treatment for their child with fever/malaria at a health facility.	<p>I am going to read a series of statements to you and I would like you to tell me if you <b>could or could not</b> do the action described:</p> <ul style="list-style-type: none"> <li>A. Find the money to take your child to the health facility at the first sign of malaria.</li> <li>B. Get permission from your husband or other family member to take your child to the health facility/health provider when your child has fever.</li> <li>C. Take your child to the health facility the same day or next day s/he develops a fever</li> <li>D. Request a blood test at the health facility when you think your child might have malaria</li> <li>E. Make sure your child takes the full dose of medicine that s/he is prescribed for malaria</li> <li>F. Find the money to pay for the medication the health provider recommends to treat malaria</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of perceived self-efficacy for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Could</li> <li>B. Could</li> <li>C. Could</li> <li>D. Could</li> <li>E. Could</li> <li>F. Could</li> </ul>
Descriptive norm that caregivers in community take their children to a health provider promptly	<p>Generally, how many people in your community take their children to a health provider on the same day or day after they develop a fever? Would you say...</p> <ul style="list-style-type: none"> <li>A. All caregivers</li> <li>B. Most caregivers</li> <li>C. Half of the caregivers</li> <li>D. Fewer than half of the caregivers</li> <li>E. Nobody</li> </ul>	<p>A descriptive norm supporting care seeking was concluded if the response was either A, B, or C.</p>



Descriptive norm that children with fever in community are tested for malaria	<p>Generally, how many children in your community (entourage) taken to a health facility with fever get tested for malaria? Would you say...</p> <ul style="list-style-type: none"> <li>A. All children</li> <li>B. Most children</li> <li>C. Half of the children</li> <li>D. Fewer than half of the children</li> <li>E. Nobody</li> </ul>	A descriptive norm supporting testing of children was concluded if the response was either A, B, or C.
Injunctive norm that caregivers in community take their children to a health provider promptly	<p>Generally, among all the people in your community, how many people would call you names if they know that you take your children to a health provider on the same day or day after they develop a fever? Would you say...</p> <ul style="list-style-type: none"> <li>A. All people</li> <li>B. Most people</li> <li>C. Half of the people</li> <li>D. Fewer than half of the people</li> <li>E. Nobody</li> </ul>	An injunctive norm approving of care seeking was concluded if the response was either D or E. All other responses yielded an unsupportive injunctive norm of care seeking.
Decision-making about going to the health facility when their child has a fever	<p>In your household, who usually makes decisions to go to the health facility when your child has malaria? Would you say ...</p> <ul style="list-style-type: none"> <li>A. You</li> <li>B. Your spouse</li> <li>C. You and your spouse</li> <li>D. Your mother</li> <li>E. Your grandmother</li> <li>F. Someone else</li> </ul>	
Decision-making about purchasing medicine when their child has a fever.	<p>In your household, who usually makes decisions to purchase medicine when your child is sick with fever? Would you say ...</p> <ul style="list-style-type: none"> <li>A. You</li> <li>B. Your spouse</li> <li>C. You and your spouse</li> <li>D. Your mother</li> <li>E. Your grandmother</li> <li>F. Someone else</li> </ul>	

Positive perceptions towards health facilities in relation to malaria case management	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. Health facilities always have the medication to treat malaria.</li> <li>B. Health facilities in this community always have the blood test kit to tell if a person has malaria.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of positive perceptions for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Agree</li> <li>B. Agree</li> </ul>
Positive perceptions towards community-based health workers’ provision of malaria case management	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. Community health workers always have the medication to treat malaria.</li> <li>B. Community health workers in this community always have the blood test kit to tell if a person has malaria.</li> <li>C. Community health workers in this community know how to treat malaria in children.</li> <li>D. Community health workers in your community make parents pay for the medication to treat malaria in children less than five years old.</li> <li>E. Community health workers in your community make parents of children less than five years old pay for the blood test to see if the child has malaria.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of positive perceptions for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Agree</li> <li>B. Agree</li> <li>C. Agree</li> <li>D. Disagree</li> <li>E. Disagree</li> </ul>
Positive perceptions towards facility-based health workers’ provision of malaria case management	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. Health providers at the health facilities in this community know about how to treat malaria in children.</li> <li>B. Health providers at the health facility in your community make parents pay for the medication to treat malaria in children less than five years old.</li> <li>C. Health facility providers in your community make parents of children less than five years old pay for the blood test to see if the child has malaria.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of positive perceptions for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Agree</li> <li>B. Disagree</li> <li>C. Disagree</li> </ul>

**Table 3.3.2: Knowledge of malaria care seeking and treatment**

**Table 3.3.2** presents respondent knowledge regarding malaria care-seeking and treatment.

Table 3.3.2 Knowledge of malaria care seeking and treatment, 2021 Benin MBS				
<b>Sociodemographic Characteristic</b>	Knowledge that ACT is an effective treatment for malaria	Knowledge that care should be sought next day or earlier after onset of fever	Knowledge that drawing blood for a malaria test is the best way to know if someone has malaria	Knowledge that a facility is the best place to treat malaria
<b>Sex</b>				
Female	71.7	83.7	39.4	98.8
Male	73.1	85.2	42.0	99.3
<b>Age</b>				
15-24 years	71.9	86.3	41.6	98.9
25-34 years	73.5	84.9	40.4	99.0
35-44 years	72.0	83.6	38.0	99.0
45+ years	69.1	79.0	41.0	98.5
<b>Residence</b>				
Rural	69.6	84.8	37.0	99.3
Urban	75.0	83.3	43.9	98.5
<b>Zone</b>				
North	66.7	90.3	44.1	99.3
Center	73.0	88.1	26.1	98.9
South	77.5	74.6	44.4	98.6
<b>Level of education</b>				
None	76.4	82.8	34.8	99.2
Primary	74.4	85.3	44.8	99.2
Secondary or higher	75.4	88.3	48.5	98.7
<b>Wealth quintile</b>				
Lowest	67.7	79.8	35.9	98.7
Second	66.7	85.0	37.6	99.3
Middle	76.1	85.2	37.2	99.5
Fourth	71.0	83.0	36.7	98.4
Highest	76.7	86.5	51.7	98.6
<b>Total (%)</b>	<b>72.1</b>	<b>84.1</b>	<b>40.1</b>	<b>98.9</b>
<b>Number of Observations</b>	<b>6,071</b>	<b>6,071</b>	<b>6,071</b>	<b>6,071</b>

**Table 3.3.3: Attitudes towards malaria care-seeking and treatment**

**Table 3.3.3** presents the distribution of favorable attitudes toward malaria care-seeking and treatment. Attitude favorability is calculated based on a participant's agreement or disagreement to several statements related to care-seeking and treatment.

Table 3.3.3: Attitudes towards malaria care-seeking and treatment, 2021 Benin MBS					
Sociodemographic Characteristics	Have favorable attitudes toward malaria care-seeking and treatment <sup>2</sup>	Percent who agree with each statement			
		The health provider is always the best person to talk to when you think your child may have malaria	One does not need to continue taking all the medicine doses against malaria if they no longer feel sick	if they think his/her child has malaria, a parent should first ask for an injection from the health provider or community health worker	I prefer that my child receive the medicine to treat malaria by injection rather than swallow it
<b>Sex</b>					
Female	31.8	91.1	62.9	44.5	31.3
Male	31.2	92.6	62.1	46.1	35.3
<b>Age</b>					
15-24 years	30.6	89.2	58.0	42.0	27.5
25-34 years	34.9	92.9	66.5	47.7	34.0
35-44 years	30.4	91.6	63.4	45.0	35.7
45+ years	28.2	92.6	61.2	43.6	30.9
<b>Zone</b>					
North	27.7	89.3	56.3	43.2	31.3
Center	23.5	92.5	55.3	34.6	24.1
South	41.2	93.4	74.6	53.3	38.6
<b>Residence</b>					
Rural	31.6	90.8	60.5	46.8	35.2
Urban	31.6	92.4	65.4	42.6	28.7

<b>Level of Education</b>					
None	39.1	95.5	71.9	51.1	31.8
Primary	23.5	92.1	51.5	37.5	33.6
Secondary or higher	34.6	93.3	63.6	45.0	28.9
<b>Wealth Quintile</b>					
Lowest	28.7	86.2	64.2	45.3	29.6
Second	29.6	89.1	55.5	43.9	35.2
Middle	30.9	92.5	61.5	45.3	31.8
Fourth	35.1	93.1	65.6	47.1	36.5
Highest	33.3	95.1	66.6	43.1	28.5
<b>Total (%)</b>	<b>31.6</b>	<b>91.5</b>	<b>62.7</b>	<b>44.9</b>	<b>32.3</b>
2 Represents composite variable that was created based on scoring responses to each statement in other columns.					

Table 3.3.3 (cont): Attitudes towards malaria care-seeking and treatment (continued), 2021 Benin MBS

Sociodemographic Characteristic	Percent who agree with each statement				
	A person should only take malaria medicine if a health provider says that his/her fever really is caused by malaria	If a health provider says a person does not have malaria, the patient should ask for a malaria medication just in case s/he needs it	When my child has a fever, it is better to start by giving him any malaria medicine I have at home.	It is important to take all the antimalaria pills prescribed to ensure a complete recovery	When my child has a fever, I do not go directly to the health facility, I first go elsewhere to buy him/her medicine
<b>Sex</b>					
Female	82.5	45.6	41.3	93.0	47.6
Male	80.9	45.4	42.0	93.2	48.0
<b>Age</b>					
15-24 years	82.3	44.9	41.4	92.1	46.8
25-34 years	83.9	48.7	42.4	94.5	52.9
35-44 years	81.8	44.3	42.0	92.6	45.7
45+ years	78.3	41.7	38.6	92.4	41.7
<b>Zone</b>					
North	79.9	49.0	40.7	92.0	51.4
Center	86.1	28.5	29.9	95.9	42.1
South	82.1	52.3	49.8	92.4	47.1
<b>Residence</b>					
Rural	80.7	46.2	39.8	92.9	47.7
Urban	83.8	44.7	43.6	93.3	47.8
<b>Level of Education</b>					
None	77.9	56.6	43.3	95.5	52.2
	78.3	36.3	31.0	93.3	43.3

Primary	83.4	43.1	47.1	92.2	47.9
Secondary or higher					
<b>Wealth Quintile</b>					
Lowest	80.1	45.7	35.2	93.5	45.1
Second	81.1	45.4	39.3	90.7	46.7
Middle	82.3	44.8	41.3	93.5	48.7
Fourth					
Highest	81.8	48.9	42.0	95.3	50.7
	84.6	43.2	48.0	92.4	46.9
<b>Total (%)</b>	<b>82.1</b>	<b>45.5</b>	<b>41.5</b>	<b>93.1</b>	<b>47.7</b>

Table 3.3.4: Perceived response efficacy of malaria testing and treatment

Table 3.3.4: Percent of respondents with response-efficacy of malaria testing and treatment, 2021 Benin MBS								
Sociodemographic Characteristic	High perceived response efficacy of malaria testing				High perceived response efficacy of malaria treatment			
	North	Center	South	All zones	North	Center	South	All zones
<b>Sex</b>								
Female	26.3	22.5	30.4	26.9	55.8	64.3	64.4	60.8
Male	21.2	18.2	32.5	24.6	53.9	66.8	60.7	59.3
<b>Age</b>								
15-24 years	26.7	25.0	33.7	28.4	52.7	64.1	64.1	58.4
25-34 years	27.2	23.0	33.8	28.7	62.7	66.0	62.6	63.4
35-44 years	24.4	19.1	26.1	23.8	53.4	65.9	62.5	60.0
45 + years	15.4	16.2	30.6	21.7	46.2	62.2	65.8	58.1
<b>Residence</b>								
Rural	26.7	20.7	35.7	26.9	57.1	64.1	62.8	60.3
Urban	21.6	22.8	28.7	25.6	51.5	66.8	63.7	60.5
<b>Level of education</b>								
None	29.9	31.8	33.7	31.9	63.0	75.4	63.7	66.3
Primary	20.1	18.9	20.5	20.0	40.0	49.5	56.0	48.1
Secondary or higher	27.9	18.0	31.5	28.0	49.8	61.0	66.9	59.9
<b>Wealth quintile</b>								
Lowest	27.2	16.2	37.2	26.0	61.8	65.8	65.4	64.1
Second	18.9	24.0	33.2	23.6	59.3	64.2	58.8	60.6
Middle	30.3	23.0	33.0	29.6	53.5	64.3	62.5	58.6
Fourth	26.0	21.6	28.8	26.0	60.3	63.7	65.3	62.9
Highest	20.6	23.1	28.4	25.6	38.9	68.8	63.8	57.3
<b>Total (%)</b>	<b>25.0</b>	<b>21.3</b>	<b>31.0</b>	<b>26.3</b>	<b>55.3</b>	<b>65.0</b>	<b>63.4</b>	<b>60.4</b>
<b>Number of Observations</b>	<b>1,884</b>	<b>1,976</b>	<b>2,211</b>	<b>6,071</b>	<b>1,884</b>	<b>1,976</b>	<b>2,211</b>	<b>6,071</b>



<sup>1</sup>Calculated based on composite scores of several statements.

**Table 3.3.5: Perceived self-efficacy for malaria testing and treatment**

**Table 3.3.5** presents the distribution of perceived self-efficacy regarding malaria testing. Perceived self-efficacy is calculated based on a participant's agreement or disagreement to several statements related to testing and treatment (See Table 3.3.1).

Table 3.3.5: Percent of respondents with perceived self-efficacy for malaria testing and treatment by zone, 2021 Benin MBS				
Sociodemographic Characteristic	North	Center	South	All Zones
<b>Sex</b>				
Female	87.4	90.0	86.6	87.6
Male	91.3	94.9	94.9	93.4
<b>Age</b>				
15-24 years	87.8	87.6	74.0	84.2
25-34 years	89.4	92.4	91.3	90.7
35-44 years	89.3	93.9	94.7	92.3
45 + years	88.1	92.0	91.1	90.2
<b>Residence</b>				
Rural	89.2	96.0	90.2	90.9
Urban	88.6	89.5	89.1	88.9
<b>Level of education</b>				
None	97.1	94.1	96.2	96.1
Primary	89.3	98.1	91.5	91.5
Secondary or higher	87.5	94.6	92.2	90.9
<b>Wealth quintile</b>				
Lowest	83.8	89.6	82.9	85.3
Second	87.4	91.5	89.3	88.9
Middle	90.0	87.9	85.7	88.2
Fourth	91.5	95.2	88.4	91.3
Highest	92.1	100.0	95.0	94.7
<b>Total (%)</b>	<b>88.8</b>	<b>92.1</b>	<b>89.9</b>	<b>89.9</b>
<b>Number of Observations</b>	<b>1,884</b>	<b>1,976</b>	<b>2,211</b>	<b>6,071</b>

**Table 3.3.6: Perceived community norms regarding malaria testing and treatment**

**Table 3.3.6** presents the perceived community norms regarding malaria testing and treatment. Perceived community norms were assessed based on responses to questions asking about the proportion of community members who promptly take their own children to a health provider and/or approve of the respondent taking this action.

<b>Table 3.3.6: Percent of respondents with perceived community norms regarding malaria testing and treatment by zone, 2021 Benin MBS</b>			
<b>Sociodemographic Characteristic</b>	Most people in the community take their children to a health provider on the same day or day after they develop a fever	Most children in the community taken to a health facility with fever get tested for malaria	Most people in the community would not critique respondent for taking their child to a health provider on the same day or day after they develop a fever
<b>Zone</b>			
North	67.7	69.5	3.6
Center	51.0	50.6	3.2
South	46.1	48.2	1.1
<b>Sex</b>			
Female	55.9	58.2	3.1
Male	58.3	58.4	2.0
<b>Age</b>			
15-24 years	54.1	52.6	3.8
25-34 years	55.7	59.6	2.4
35-44 years	59.8	61.8	2.5
45 + years	56.1	55.5	2.2
<b>Residence</b>			
Rural	55.7	55.0	1.7
Urban	57.8	61.3	3.6
<b>Level of education</b>			
None	59.2	61.0	2.5
Primary	60.6	65.2	3.7
Secondary+	58.8	56.6	2.7

<b>Wealth quintile</b>			
Lowest	53.9	57.9	3.2
Second	55.4	63.1	4.0
Middle	52.2	55.3	3.0
Fourth	63.3	62.1	2.3
Highest	59.5	54.3	1.1
<b>Total (%)</b>	<b>56.8</b>	<b>58.3</b>	<b>2.7</b>
<b>Number of Observations</b>	<b>6,071</b>	<b>6,071</b>	<b>6,071</b>

**Table 3.3.7a: Perceptions of health facilities regarding malaria care-seeking and treatment**

**Table 3.3.7a** describes respondents' perceptions of health facilities, particularly considering malaria care-seeking and treatment. Favorable perceptions were assessed based on participants' responses to a series of questions (See Table 3.3.1).

Table 3.3.7a: Percent of respondents with favorable perceptions towards health facilities regarding case management, 2021 Benin MBS				
Sociodemographic Characteristic	North	Center	South	All Zones
<b>Sex</b>				
Female	74.6	79.9	87.9	80.6
Male	74.8	82.4	87.9	81.3
<b>Age</b>				
15-24 years	74.8	74.0	84.8	77.6
25-34 years	79.8	81.1	88.7	83.4
35-44 years	69.9	86.0	89.1	81.4
45 + years	69.7	79.0	88.1	79.5
<b>Residence</b>				
Rural	74.4	82.2	91.3	80.2
Urban	75.1	77.0	86.3	81.4
<b>Level of education</b>				
None	83.4	79.0	90.1	85.0
Primary	71.0	68.8	90.0	78.4
Secondary+	77.9	78.5	85.2	81.5

<b>Wealth quintile</b>				
Lowest	75.5	79.2	88.4	79.9
Second	64.7	76.5	94.7	75.0
Middle	80.6	85.5	87.0	83.6
Fourth	76.3	82.0	88.7	82.1
Highest	75.8	80.1	85.5	82.2
<b>Total (%)</b>	<b>74.6</b>	<b>80.5</b>	<b>87.9</b>	<b>80.8</b>
<b>Number of Observations</b>	<b>1,884</b>	<b>1,976</b>	<b>2,211</b>	<b>6,071</b>

Table 3.3.7b: Perceptions of health workers regarding malaria care-seeking and treatment

Table 3.3.7b Perceptions towards health workers regarding malaria care-seeking and treatment, 2021 Benin MBS								
Sociodemographic Characteristic	Health Facility Workers				Community Health Workers			
	North	Center	South	All Zones	North	Center	South	All Zones
<b>Sex</b>								
Female	38.7	29.1	19.1	29.4	39.1	23.8	20.8	29.0
Male	33.0	30.7	15.2	26.0	39.3	26.4	21.0	29.6
<b>Age</b>								
15-24 years	40.7	36.2	20.5	33.7	37.4	29.3	20.7	30.8
25-34 years	36.1	31.3	15.7	27.5	43.5	23.5	19.5	30.1
35-44 years	33.4	24.0	19.9	25.8	34.4	22.6	23.4	27.2
45 + years	38.6	26.2	16.1	26.4	42.3	22.7	18.8	27.9
<b>Residence</b>								
Rural	35.5	31.2	12.7	29.4	38.0	26.6	15.6	30.0
Urban	40.7	26.0	20.6	27.5	41.5	19.7	23.3	28.2
<b>Level of education</b>								
None	41.3	47.5	14.7	32.1	53.3	30.5	19.9	34.4
Primary	42.0	26.6	16.0	28.9	37.3	25.2	16.1	26.7
Secondary+	45.4	30.7	23.4	32.4	36.2	27.0	25.2	29.4
<b>Wealth quintile</b>								
Lowest	39.7	32.5	7.5	29.3	50.0	21.2	9.2	30.2
Second	30.8	31.8	13.1	27.0	34.4	26.1	17.2	28.1
Middle	36.2	29.5	13.9	27.8	44.2	25.6	18.4	32.2
Fourth	38.6	25.0	18.9	28.2	30.1	22.6	18.2	24.0
Highest	44.3	26.4	24.9	30.5	36.6	29.4	28.3	30.8
<b>Total (%)</b>	<b>37.2</b>	<b>29.6</b>	<b>18.1</b>	<b>28.5</b>	<b>39.2</b>	<b>24.5</b>	<b>20.8</b>	<b>29.2</b>
<b>Number of Observations</b>	<b>1,884</b>	<b>1,976</b>	<b>2,211</b>	<b>6,071</b>	<b>1,884</b>	<b>1,976</b>	<b>2,211</b>	<b>6,071</b>

**Table 3.3.8a: Decision-making for malaria care and treatment**

**Table 3.3.8a** presents the distribution of decision-making regarding malaria care and treatment. **Table 3.3.8b (next page)** presents decision-making results in each study zone.

Table 3.3.8a: Decision-making for malaria care and treatment, 2021 Benin MBS		
Percent of respondents involved in decision	Decision to go to health facility when child is sick with fever	Decision to purchase medicine when child is sick with fever
<b>Zone</b>		
North	42.2	42.3
Center	50.7	53.0
South	59.2	52.6
<b>Sex</b>		
Female	34.2	30.7
Male	85.5	87.6
<b>Age</b>		
15-24 years	27.9	25.4
25-34 years	45.9	42.2
35-44 years	55.3	55.8
45 + years	75.5	74.3
<b>Residence</b>		
Rural	47.9	47.0
Urban	53.4	50.5
<b>Level of education</b>		
None	50.4	48.4
Primary	48.3	52.0
Secondary+	63.2	61.6
<b>Wealth quintile</b>		
Lowest	45.3	44.1
Second	44.7	45.9
Middle	52.0	49.0
Fourth	48.9	44.8
Highest	59.3	57.8
<b>Total (%)</b>	<b>50.3</b>	<b>48.5</b>
<b>Number of observations</b>	<b>4,856</b>	<b>4,856</b>

Table 3.3.8b: Decision-making for malaria care and treatment by zone

Table 3.3.8b: Decision-making for malaria care and treatment by zone, 2021 Benin MBS						
Percent of respondents involved in decision making regarding malaria care-seeking and treatment	North		Center		South	
	Decision to go to health facility when child is sick with fever	Decision to purchase medicine when child is sick with fever	Decision to go to health facility when child is sick with fever	Decision to purchase medicine when child is sick with fever	Decision to go to health facility when child is sick with fever	Decision to purchase medicine when child is sick with fever
<b>Sex</b>						
Female	24.0	22.0	33.5	35.4	46.4	37.5
Male	83.1	88.0	88.6	91.6	86.0	84.5
<b>Age</b>						
15-24 years	22.3	21.4	31.8	33.5	36.1	26.9
25-34 years	39.2	36.0	42.3	44.9	55.9	47.5
35-44 years	47.5	51.6	57.0	58.8	61.5	58.0
45 + years	72.7	75.0	74.7	77.7	78.4	71.5
<b>Residence</b>						
Rural	41.5	42.6	50.4	53.3	58.9	48.5
Urban	43.6	41.5	51.4	52.2	59.4	54.8
<b>Level of education</b>						
None	39.6	39.8	45.9	48.4	62.4	56.0
Primary	35.8	49.1	49.1	56.7	58.9	52.8
Secondary+	56.1	56.1	61.2	62.0	68.4	64.9
<b>Wealth quintile</b>						
Lowest	35.3	34.6	52.2	56.4	53.1	43.8
Second	36.8	41.7	51.1	54.6	52.5	43.7
Middle	43.9	41.6	52.7	55.4	63.9	55.8
Fourth	44.9	44.5	45.4	42.6	55.7	46.6
Highest	53.5	51.9	52.3	56.6	62.8	60.2
<b>Total (%)</b>	<b>42.2</b>	<b>42.3</b>	<b>50.7</b>	<b>53.0</b>	<b>59.2</b>	<b>52.6</b>
<b>Number of Observations</b>	<b>1,497</b>		<b>1,622</b>		<b>1,737</b>	



**Table 3.3.10: Testing, diagnosis and treatment of children under five years with fever**

**Table 3.3.10** presents the percentage of children under 5 who had confirmed cases of malaria in the 2 weeks preceding the survey. This table also describes the percentage of these children receiving ACT and promptly (same or next day) receiving ACT.

Table 3.3.10: Diagnosis and treatment of children under 5 years with fever, 2021 Benin MBS				
	Percent tested for malaria	Percent with confirmed malaria by test	Percent with confirmed malaria who received ACT	Percent with confirmed malaria who received ACT promptly
<b>Zone</b>				
North	65.4	58.9	46.9	43.0
Center	50.2	43.3	38.8	32.2
South	27.5	23.3	33.0	24.6
<b>Age of child</b>				
0-11 months	42.6	38.3	40.3	33.9
12-23 months	75.6	66.9	31.8	23.0
24-59 months	58.6	23.9	21.8	20.5
<b>Residence</b>				
Rural	54.8	47.9	40.8	34.9
Urban	34.6	30.5	37.0	29.9
<b>Mother's education</b>				
None	46.7	41.1	42.8	40.7
Primary	39.9	33.3	34.2	32.2
Secondary+	42.7	39.3	41.3	33.3
<b>Wealth quintile</b>				
Lowest	53.5	44.1	37.8	35.8
Second	42.4	35.2	36.1	29.5
Middle	40.5	36.5	35.4	30.9
Fourth	49.9	44.6	36.9	30.4
Highest	44.2	40.3	47.3	36.4
<b>Total</b>	<b>45.7</b>	<b>40.1</b>	<b>39.1</b>	<b>32.6</b>
<b>Number of Observations</b>	<b>460</b>	<b>460</b>	<b>460</b>	<b>460</b>

### A.3.4 Malaria in Pregnancy

This subsection of the Annex provides all data tables related to media consumption and exposure to malaria messages. The following tables may have been duplicated or referenced in the main body of the report.

**Table 3.4.1: Knowledge of Intermittent Presumptive Treatment in Pregnancy (IPTp)**

**Table 3.4.1** presents the percent of respondents with comprehensive knowledge about ANC/IPTp. Comprehensive knowledge is defined as those who are aware and have specific knowledge of IPTp. Participants reported knowledge related to the appropriate time to first seek prenatal care, the number of recommended check-ups during one pregnancy, and the number of times during pregnancy a woman should receive medicine to keep her from getting malaria.

Table 3.4.1: Percent of respondents with comprehensive knowledge about ANC/IPTp, by zone and by sociodemographic characteristics, 2021 Benin MBS				
Sociodemographic characteristics	North	Center	South	All Zones
<b>Sex</b>				
Female	15.2	17.5	24.6	19.1
Male	13.2	7.6	20.6	14.6
<b>Age</b>				
15 – 24 years	11.4	11.6	14.1	12.2
25 – 35 years	21.0	21.2	25.8	22.8
35 – 44 years	12.3	14.2	27.3	18.7
45 years and older	11.4	7.9	24.9	16.0
<b>Residence</b>				
Rural	15.1	14.5	27.0	17.5
Urban	13.7	15.7	21.9	18.5
<b>Level of education</b>				
None	21.7	22.5	26.4	23.8
Primary	13.3	7.5	18.1	14.3
Secondary or more	13.2	10.4	20.2	16.1
<b>Wealth quintile</b>				
Lowest	17.9	18.2	23.6	19.4
Second	10.5	14.4	24.1	14.8
Middle	17.7	13.3	23.1	18.5
Fourth	12.5	14.7	28.1	18.7
Highest	14.7	12.3	21.2	18.4
<b>All Respondents</b>	<b>14.7</b>	<b>14.9</b>	<b>23.6</b>	<b>17.9</b>
<b>Number of observations</b>	<b>1,884</b>	<b>1,976</b>	<b>2,211</b>	<b>6,071</b>

**Table 3.4.2: Attitudes towards IPTp**

**Table 3.4.2** presents the distribution of favorable attitudes toward IPTp. Attitude favorability is calculated based on a participant's agreement or disagreement to several statements related to IPTp. The data is presented according to respondent and household sociodemographic characteristics in each zone.

Table 3.4.2: Attitudes <sup>1</sup> towards IPTp				
Percent of respondents with favorable attitudes towards IPTp by zone and by sociodemographic variables, Benin 2021				
Sociodemographic Characteristics	North	Center	South	All Zones
Sex				
Female	46.3	41.0	36.5	41.6
Male	48.9	41.3	32.6	41.2
Age				
15 – 24 years	42.2	41.5	35.3	40.0
25 – 35 years	54.0	41.5	35.2	44.3
35 – 44 years	46.0	39.3	37.5	41.0
45 years and older	43.3	43.1	32.1	38.7
Residence				
Rural	49.4	42.4	38.4	45.1
Urban	42.0	38.3	34.1	37.1
Level of education				
None	62.5	45.5	35.5	47.6
Primary	31.7	34.4	30.8	31.8
Secondary or more	43.7	43.0	36.0	39.9
Wealth quintile				
Lowest	50.8	43.9	34.2	44.3
Second	44.7	41.1	42.1	43.1
Middle	50.3	41.6	37.1	44.3
Fourth	50.3	36.6	32.5	40.6
Highest	35.7	42.6	34.3	35.6
<b>All Respondents</b>	<b>47.0</b>	<b>41.1</b>	<b>35.5</b>	<b>41.5</b>
<b>Number of observations</b>	<b>1,884</b>	<b>1,976</b>	<b>2,211</b>	<b>6,071</b>
<sup>1</sup> Derived from five items in the questionnaire: belief about the safety of SP when taken on an empty stomach, belief about starting ANC early, the perceived safety of SP for the woman, perceived safety of SP for the unborn child, and the perceived importance of going for ANC multiple times during pregnancy				

**Table 3.4.3: Perceived severity of malaria in pregnancy**

**Table 3.4.3** describes the percent of respondents who hold perceptions that malaria during pregnancy is severe. Perceived severity is calculated based on the respondents' agreement or disagreement with certain statements. Data are presented by study zone and disaggregated by participant age, sex, and level of education, as well as household residence type and wealth.

Table 3.4.3: Percent of respondents with perceived severity <sup>1</sup> of malaria in pregnancy, 2021 Benin MBS				
Sociodemographic Characteristic	North	Center	South	All Zones
<b>Sex</b>				
Female	80.2	85.5	86.2	83.6
Male	79.2	86.4	89.4	84.6
<b>Age</b>				
15-24 years	74.7	80.1	81.8	77.9
25-34 years	84.9	88.1	88.0	86.8
35-44 years	79.0	86.1	87.6	84.1
45+ years	83.3	88.5	91.3	87.8
<b>Residence</b>				
Rural	80.6	86.5	86.8	83.6
Urban	78.7	84.0	87.1	84.1
<b>Level of education</b>				
None	85.5	86.0	86.7	86.1
Primary	79.4	80.9	85.3	82.1
Secondary or more	80.3	83.5	86.7	83.9
<b>Wealth quintile</b>				
Lowest	83.6	88.9	84.9	85.7
Second	70.7	86.9	89.8	79.8
Middle	79.1	83.7	80.4	80.5
Fourth	84.1	86.2	92.4	87.6
Highest	86.6	78.2	87.6	86.3
<b>All respondents (%)</b>	<b>80.0</b>	<b>85.7</b>	<b>87.0</b>	<b>83.8</b>
<b>Number of Observations</b>	<b>1,884</b>	<b>1,976</b>	<b>2,211</b>	<b>6,071</b>
<sup>1</sup> Assessed through two items: perception that the effects of malaria in pregnancy can be serious for the woman and her unborn child and the belief that pregnant women are more likely to die from malaria than women who are not pregnant.				

Table 3.4.4: Perceived response efficacy of ANC/IPTp

**Table 3.4.4** presents the distribution of perceived response-efficacy regarding ANC and IPTp. Perceived response-efficacy is calculated based on a participant's agreement or disagreement to several statements related to ANC and IPTp.

Table 3.4.4: Perceived response efficacy of ANC and IPTp, 2021 Benin MBS		
	Perceived response efficacy of ANC	Perceived response efficacy of IPTp
<b>Zone</b>		
North	93.9	84.4
Center	96.9	92.6
South	97.5	93.4
<b>Sex</b>		
Female	95.3	89.4
Male	97.5	89.9
<b>Age</b>		
15-24 years	93.4	84.8
25-34 years	96.8	93.1
35-44 years	96.5	90.3
45+ years	97.3	88.9
<b>Residence</b>		
Urban	95.4	87.5
Rural	96.5	92.0
<b>Level of education</b>		
None	96.8	93.7
Primary	97.4	85.1
Secondary or more	95.3	89.0
<b>Wealth quintile</b>		
Lowest	95.3	90.9
Second	94.1	83.6
Middle	95.7	88.6
Fourth	96.5	90.9
Highest	97.5	93.5
<b>All respondents (%)</b>	<b>95.9</b>	<b>89.5</b>
<b>Number of Observations</b>	<b>6,071</b>	<b>6,071</b>

Table 3.4.5: Perceived self-efficacy for IPTp

**Table 3.4.5** presents the distribution of perceived self-efficacy to take actions related to ANC and IPTp. Perceived self-efficacy is calculated based on a participant's agreement to several statements related to IPTp care seeking and treatment, which were worded differently for men and women.

Table 3.4.5: Percentage of men and women reporting perceived self-efficacy to take actions related to ANC/IPTp, 2021 Benin MBS		
	Women	Men
<b>Zone</b>		
North	90.9	69.2
Center	98.0	85.0
South	94.2	72.2
<b>Age</b>		
15-24 years	95.2	74.5
25-34 years	93.4	75.1
35-44 years	93.1	73.5
45+ years	89.7	73.3
<b>Residence</b>		
Rural	92.0	72.3
Urban	95.7	75.9
<b>Level of education</b>		
None	95.8	76.2
Primary	93.6	67.3
Secondary or more	97.1	80.5
<b>Wealth quintile</b>		
Lowest	89.5	78.1
Second	91.2	69.8
Middle	93.0	73.5
Fourth	96.3	72.5
Highest	97.8	76.8
<b>All respondents (%)</b>	<b>93.7</b>	<b>73.9</b>
<b>Number of Observations</b>	<b>4,535</b>	<b>1,536</b>
<sup>1</sup> This construct was measured based on six items that were differently worded for men and women: level of confidence in one's capability to go (or support one's spouse to go) for early ANC, obtain the recommended number of ANC visits, go for ANC with spouse, request (or support spouse to request) SP during ANC visit, and take (or support spouse to take) SP at least three times during pregnancy.		

**Table 3.4.6: Perceived community norms regarding ANC/IPTp**

**Table 3.4.6** presents perceived community norms regarding ANC/IPTp, which were assessed based on participants' responses about the proportion of pregnant women in their community who 1) go to antenatal care at least four times; and 2) take medicine to prevent malaria. Participants also reported whether they believe others in the community approve of women taking these actions.

Table 3.4.6: Percent of respondents with perceived community norms regarding ANC/IPTp, 2021 Benin MBS			
<b>Sociodemographic Characteristic</b>	Believe most women in community go to antenatal care at least four times when they are pregnant (Descriptive Norm)	Believe most women in community take medicine to prevent malaria when they are pregnant (Descriptive Norm)	Believe most people in community approve of pregnant women taking the medicine to prevent malaria (Injunctive Norm)
<b>Zone</b>			
North	69.1	67.1	18.8
Center	59.2	56.7	11.0
South	56.5	47.3	3.2
<b>Sex</b>			
Female	62.0	58.1	11.2
Male	63.1	56.2	11.9
<b>Age</b>			
15-24 years	58.8	55.0	13.1
25-34 years	62.7	58.3	8.6
35-44 years	65.7	61.3	13.2
45+ years	61.3	53.6	11.2
<b>Residence</b>			
Rural	60.7	57.3	12.5
Urban	64.2	57.9	10.1
<b>Level of education</b>			
None	64.8	59.0	7.3
Primary	71.9	65.7	17.9
Secondary or more	62.7	58.1	13.5
<b>Wealth quintile</b>			
Lowest	57.4	54.4	9.9
Second	61.7	57.2	18.4
Middle	59.2	56.5	9.6
Fourth	65.9	57.6	7.7
Highest	66.6	61.5	11.6

Total (%)	62.3	57.6	11.4
Number of Observations	6,071		



Table 3.4.7: Perceptions of health workers regarding ANC/IPTp services

**Table 3.4.7** summarizes the percent of respondents who hold favorable perceptions of community health workers regarding malaria in pregnancy, based on respondents' agreement with several statements.

Table 3.4.7: Perceptions of health workers regarding IPTp services, 2021 Benin MBS					
Sociodemographic Characteristics	Positive perceptions of health workers with regards to the provision of ANC/IPTp services	Perception that health workers make their clients pay for SP	Perception that prenatal health providers in community generally treat pregnant women with respect	Perception that health facility workers in community always offer medicine to prevent malaria to pregnant women	Perception that if a woman goes to the health facility during the first two months of her pregnancy, the providers will send her away
<b>Zone</b>					
North	70.2	28.0	79.3	78.3	77.0
Center	68.6	21.3	87.4	73.9	72.8
South	77.9	34.7	77.7	55.3	88.9
<b>Sex</b>					
Female	73.4	28.6	80.3	68.0	80.6
Male	70.3	29.7	81.3	71.6	79.6
<b>Age</b>					
15-24 years	66.9	23.1	72.8	60.8	72.6
25-34 years	78.8	32.3	84.4	72.2	87.0
35-44 years	72.8	31.8	83.3	72.6	80.6
45+ years	68.7	26.5	81.1	70.0	79.0

<b>Residence</b>					
Rural	70.5	29.0	82.4	70.1	78.8
Urban	75.1	28.8	78.4	67.7	82.1
<b>Level of education</b>					
None	79.6	33.4	86.3	73.3	84.8
Primary	64.4	21.9	80.8	72.3	71.1
Secondary or more	71.2	29.4	77.2	65.3	78.4
<b>Wealth quintile</b>					
Lowest	73.0	24.3	83.0	67.7	78.9
Second	62.9	29.3	80.6	68.3	75.2
Middle	74.1	34.2	81.4	73.2	80.4
Fourth	76.5	27.6	80.2	70.1	82.2
Highest	75.9	27.6	78.1	64.9	84.2
<b>Total (%)</b>	<b>72.6</b>	<b>28.9</b>	<b>80.6</b>	<b>69.0</b>	<b>80.3</b>
<b>Number of Observations</b>	<b>6,071</b>	6,071	6,071	6,071	6,071

**Table 3.4.8: Spousal communication regarding antenatal care**

**Table 3.4.8** describes spousal communication regarding antenatal care. Specifically, this table summarizes the distribution of respondents who reported ever discussing ANC with their spouse/partner, as well as communication among women who had a child in the past 2 years.

Table 3.4.8: Spousal communication regarding antenatal care, 2021 Benin MBS		
	Ever discussed ANC with spouse	Ever discussed ANC with spouse in prior 2 years among women who had a child in last 2 years
<b>Zone</b>		
North	39.0	31.0
Center	32.2	35.3
South	37.9	34.8
<b>Sex</b>		
Female	37.7	33.4
Male	35.4	33.4
<b>Age</b>		
15-24 years	38.1	32.0
25-34 years	40.0	34.7
35-44 years	37.6	32.4
45+ years	27.0	27.3
<b>Residence</b>		
Rural	36.0	33.9
Urban	38.2	32.9
<b>Level of education</b>		
None	40.9	30.9
Primary	38.4	38.6
Secondary or more	43.3	37.9
<b>Wealth quintile</b>		
Lowest	33.1	34.1
Second	33.7	35.4
Middle	36.2	30.0
Fourth	36.0	29.4
Highest	45.3	40.4
<b>Total (%)</b>	<b>37.0</b>	<b>33.4</b>
<b>Number of Observations</b>	<b>4,856</b>	<b>1,166</b>

**Table 3.4.9: Decision-making regarding antenatal care**

**Table 3.4.9** summarizes the distribution of respondents involved in decision-making concerning antenatal care. Results are presented by zone and disaggregated by respondent sex, age, level of education, household residence type, and household wealth quintile.

Table 3.4.9: Percent of respondents who report participation in decision to obtain ANC, 2021 Benin MBS		
Men and women who reported participation in decision to obtain ANC		
	Women	Men
<b>Zone</b>		
North	29.1	81.8
Center	39.8	85.2
South	56.2	81.8
<b>Age</b>		
15-24 years	32.1	72.4
25-34 years	41.0	84.3
35-44 years	44.7	82.1
45+ years	56.7	82.9
<b>Residence</b>		
Rural	37.4	82.6
Urban	46.4	82.5
<b>Level of education</b>		
None	43.4	81.2
Primary	45.0	79.3
Secondary/Fourth	46.5	85.0
<b>Wealth quintile</b>		
Lowest	40.5	81.2
Second	40.0	85.4
Middle	37.9	77.1
Fourth	37.4	83.0
Highest	51.2	86.8
<b>All respondents (%)</b>	<b>41.3</b>	<b>82.6</b>
<b>Number of Observations</b>	<b>3,370</b>	<b>1,486</b>

**Table 3.4.10: Antenatal care consultation**

**Table 3.4.10** describes ANC care consultation among women. All respondents for this table were women with a live birth in the past two years. Data presented includes the percentage of women who reported attending at least one ANC visit and attending at least four ANC visits.

Table 3.4.10: Percent of respondents who report receipt of ANC consultation, 2021 Benin MBS		
	Received at least one ANC consultation	Received at least four ANC consultations
<b>Zone</b>		
North	89.9	65.7
Center	96.7	79.7
South	96.8	84.1
<b>Age</b>		
15-24 years	96.3	78.7
25-34 years	93.5	74.9
35-44 years	91.4	73.3
45+ years	92.1	68.0
<b>Residence</b>		
Rural	92.6	70.6
Urban	95.6	81.9
<b>Level of education</b>		
None	96.0	85.6
Primary	95.0	81.4
Secondary/Fourth	96.9	86.6
<b>Wealth quintile</b>		
Lowest	89.7	62.0
Second	90.7	69.1
Middle	94.3	76.9
Fourth	96.7	76.6
Highest	97.2	91.2
<b>All respondents (%)</b>	<b>94.0</b>	<b>75.7</b>
<b>Number of Observations</b>	<b>1,243</b>	

Table 3.4.11: Receipt of intermittent preventive treatment (SP) by women during pregnancy

Table 3.4.11 Receipt of SP by women during pregnancy, who gave birth in the 2 years preceding the survey 2021 Benin MBS		
	Received at least one dose of SP	Received at least 3 doses of SP
<b>Zone</b>		
North	92.4	67.6
Center	91.6	48.9
South	88.9	47.1
<b>Residence</b>		
Rural	91.5	57.1
Urban	90.1	54.2
<b>Received at least 4 ANC</b>		
No	89.8	38.4
Yes	93.3	61.6
<b>Received first ANC during first trimester</b>		
No	93.1	39.5
Yes	92.6	60.5
<b>Age</b>		
15-24 years	89.7	57.0
25-34 years	90.4	53.9
35-44 years	94.6	61.6
45+ years	94.1	35.3
<b>Level of education</b>		
None	94.5	62.0
Primary	87.5	50.5
Secondary/Fourth	93.8	66.0
<b>Wealth quintile</b>		
Lowest	87.6	51.2
Second	95.0	57.4
Middle	87.8	52.0
Fourth	90.5	56.9
Highest	94.5	62.5
<b>All respondents (%)</b>	<b>90.9</b>	<b>55.8</b>
<b>Number of Observations</b>	<b>1,152</b>	<b>1,152</b>

### A.3.5 Seasonal Malaria Chemoprevention

This subsection of the Annex provides all data tables related to seasonal malaria chemoprevention.

**Table 3.5.1a: Perceived norms related to Seasonal Malaria Chemoprophylaxis**

Table 3.5.1a: Perceived norms related to seasonal malaria chemoprophylaxis, 2021 Benin MBS		
Characteristic	Half or more people in my community give their children all the doses of the medicine left by the SMC distributor	Half or more of the people in my community give the medicine to prevent malaria during the rainy season to other children in the household over the age of 5.
<b>Age of the women</b>		
15-24 years	64.4	35.2
25-34 years	67.4	39.2
35-44 years	61.3	43.3
45+ years	84.7	67.9
<b>Residence</b>		
Rural	61.7	36.0
Urban	77.1	52.5
<b>Mother's education</b>		
None	79.6	35.7
Primary	45.1	37.1
Secondary+	58.9	38.4
<b>Wealth quintile</b>		
Lowest	76.8	50.5
Second	66.1	37.8
Middle	58.7	29.0
Fourth	52.6	36.4
Highest	73.7	60.8
<b>Total</b>	<b>65.6</b>	<b>40.3</b>
<b>Number of Observations</b>	<b>546</b>	<b>546</b>

**Table 3.5.2: Behaviors Related To Seasonal Malaria Chemoprophylaxis Door-To-Door Distribution As Reported By Female Caregivers**

Table 3.5.2: Behaviors related to seasonal malaria chemoprophylaxis door-to-door distribution as reported by female caregivers, 2021 Benin MBS			
Characteristic	During the last household visit, SMC distributor provided SMC doses for child	During the last household visit, SMC distributor observed child take medication	During the last household visit, child took the first dose of medication either directly observed by distributor or given later by caregiver
<b>Age of the women</b>			
15-24 years	96.3	94.8	96.3
25-34 years	98.1	90.4	98.1
35-44 years	95.2	91.1	95.2
45+ years	78.7	78.7	78.7
<b>Residence</b>			
Rural	97.4	91.1	97.4
Urban	93.6	93.6	93.6
<b>Mother's education</b>			
None	95.9	95.9	95.9
Primary	100.0	100.0	100.0
Secondary+	93.3	87.7	93.3
<b>Wealth quintile</b>			
Lowest	97.8	96.0	97.8
Second	98.3	94.3	98.3
Middle	96.5	86.0	96.5
Fourth	91.4	88.7	91.4
Highest	92.8	92.8	92.8
<b>Total</b>	<b>96.6</b>	<b>91.6</b>	<b>96.6</b>
<b>Number of Observations</b>	<b>222</b>	<b>222</b>	<b>222</b>
<sup>2</sup> Defined as taking the child to a health facility or CHW as a first recourse the same or next day after onset of fever.			



**Table 3.5.3: Knowledge of Seasonal Malaria Chemoprevention program**

**Table 3.5.3** summarizes knowledge of a seasonal malaria chemoprevention program among female respondents in zones where the SMC campaign was active.

Table A.3.5.3: Knowledge of a seasonal malaria chemoprevention program, 2021 Benin MBS		
Sociodemographic Characteristics	Percentage of respondents that:	
	Have heard of a medicine given to children under 5 years old to prevent malaria during the rainy season	Knew how many days a month in the rainy season children must take the medication to prevent malaria
<b>Sex</b>		
Female	95.3	80.5
Male	NA	67.8
<b>Age</b>		
15-24 years	99.2	69.0
25-34 years	96.5	86.3
35-44 years	87.7	76.4
45+ years	86.1	73.1
<b>Residence</b>		
Rural	96.1	77.1
Urban	92.8	77.7
<b>Level of Education</b>		
None	100.0	65.8
Primary	100.0	91.3
Secondary or higher	92.4	72.8
<b>Wealth Quintile</b>		
Lowest	95.6	82.8
Second	98.3	79.1
Middle	93.1	75.3
Fourth	92.4	68.1
Highest	96.3	78.1
<b>Total (%)</b>	<b>95.3</b>	<b>77.3</b>
<b>Number of observation</b>	<b>272</b>	<b>729</b>

Table 3.5.4: Attitudes toward Seasonal Malaria Chemoprevention Program

Table 3.5.4 summarizes attitudes toward the SMC program among female respondents in zones where the SMC campaign was active.

Table A.3.5.4: Attitudes toward the seasonal malaria chemoprevention program 2021 Benin MBS								
Sociodemographic Characteristics	PERCENTAGE OF RESPONDENTS THAT AGREED WITH THE FOLLOWING STATEMENTS							
	My community leaders support the distribution of the drug that prevents malaria in children aged 3 to 59 months during the rainy season.	When children take medication to prevent malaria during the rainy season, it is no longer necessary to sleep under ITNs to prevent malaria.	Parents in my community feel compelled to accept medicines that prevent malaria in children during the rainy season and that are offered by distributors or community health workers.	Healthy children should always take the medicine to prevent malaria in children during the rainy season.	Medicines given to prevent malaria during the rainy season can make a child sick.	Distributors of the drug that prevents malaria in children during the rainy season charge parents for the drug.	It is important to give my child any doses of malaria prevention medicine left over from the distributors during the rainy season.	Percent of respondents with favorable attitudes toward SMC <sup>2</sup>
<b>Sex</b>								
Female	89.9	14.3	38.7	91.6	23.6	7.6	93.7	96.9
Male	87.6	13.6	37.6	93.8	35.2	14.5	97.4	96.6
<b>Age</b>								
15-24 years	88.9	13.2	36.4	90.9	21.7	7.8	90.0	94.9

25-34 years	89.7	12.6	39.7	94.4	31.3	5.1	96.3	98.9
35-44 years	88.8	18.0	41.3	90.0	22.5	12.8	95.7	97.2
45+ years	90.3	11.7	32.8	93.7	33.7	17.0	98.0	94.6
<b>Residence</b>								
Rural	87.3	11.4	34.1	92.2	22.2	7.9	95.0	98.0
Urban	95.0	21.8	50.5	91.9	39.1	13.6	93.6	93.4
<b>Level of Education</b>								
None	93.3			95.0	32.9	6.7	96.2	98.2
Primary	97.0	13.1	38.2	96.2	42.7	11.5	91.7	97.1
Secondary or higher	81.6	25.4	49.6	89.8	26.5	8.1	92.2	98.7
		11.0	39.3					
<b>Wealth Quintile</b>								
Lowest	92.1	17.2	50.4	90.2	19.3	11.3	92.6	97.4
Second	91.7	11.9	36.5	90.7	29.5	7.9	93.4	95.2
Middle	89.6	12.1	29.4	96.2	23.0	6.5	97.1	98.7
Fourth	80.8	12.4	31.2	93.6	35.4	11.9	97.4	95.0
Highest	87.9	22.9	49.9	87.1	36.2	13.0	91.6	97.8
<b>Total (%)</b>	<b>89.3</b>	<b>14.1</b>	<b>38.4</b>	<b>92.3</b>	<b>26.6</b>	<b>9.4</b>	<b>94.6</b>	<b>96.8</b>
<b>Number of observations</b>	<b>729</b>							

<sup>2</sup> Represents composite variable that was created based on scoring responses to each statement in other columns.

**Table 3.5.5: Perceived response efficacy related to Seasonal Malaria Chemoprevention program**

**Table 3.5.5** summarizes perceived response efficacy of a seasonal malaria chemoprevention program among female respondents where the SMC campaign was active.

Table A.3.5.5: Perceived response efficacy of a seasonal malaria chemoprevention, 2021 Benin MBS			
Sociodemographic Characteristics	Percentage of respondents that:		
	The medication given to children to prevent malaria during the rainy season is effective in preventing malaria.	The medicine to prevent malaria during the rainy season will not work well if my child does not take all the doses.	Percentage of respondents who perceived SMC as effective in preventing malaria <sup>2</sup> response efficacy of SMC
<b>Sex</b>			
Female	96.9	85.7	86.5
Male	97.6	89.0	90.7
<b>Age</b>			
15-24 years	94.9	85.8	88.2
25-34 years	97.2	89.3	89.8
35-44 years	98.0	82.4	82.9
45+ years	99.3	89.9	90.5
<b>Residence</b>			
Urban	97.0	85.9	86.7
Rural	97.1	88.3	90.2
<b>Level of Education</b>			
None	97.5	80.6	83.6
Primary	96.1	97.2	93.3
Secondary or higher	95.2	87.9	90.3
<b>Wealth Quintile</b>			
Lowest	97.7	82.4	82.8
Second	95.8	88.4	88.6
Middle	97.3	90.2	92.9
Fourth	98.5	83.2	85.3
Highest	94.5	89.0	87.4
<b>Total (%)</b>	<b>97.0</b>	<b>86.5</b>	<b>87.6</b>

<sup>2</sup> Represents composite variable that was created based on scoring responses to each statement in other columns.

**Table 3.5.7: Perceptions of health workers related to Seasonal Malaria Chemoprevention program**

**Table 3.5.7** summarizes perceptions of health workers related to seasonal malaria chemoprevention program among female respondents where the SMC campaign was active.

Table A.3.5.7: Perceptions of health workers related to seasonal malaria chemoprevention, 2021 Benin MBS				
Sociodemographic Characteristics	Percentage of respondents who agree that:			
	Community health workers in your community come several times during the rainy season to give the medication that prevents malaria in children less than five years old	During the distribution of the medication that prevents malaria in children in the rainy season, the staff are not available at the health facility.	During the distribution of SMC, I prefer not to go to the health facility for any type of service.	Percentage of respondents with positive perceptions of health workers involved in SMC distribution <sup>2</sup>
<b>Sex</b>				
Female	92.0	8.5	6.2	95.5
Male	89.2	8.3	4.6	96.6
<b>Age</b>				
15-24 years	88.4	8.4	5.4	93.3
25-34 years	94.3	8.3	4.3	97.8
35-44 years	93.0	7.1	5.8	96.6
45+ years	85.6	12.0	10.6	93.7
<b>Residence</b>				
Rural	91.9	7.8	4.5	96.5
Urban	89.6	10.4	9.6	93.5
<b>Level of Education</b>				
None	90.0	5.5	3.7	95.2
Primary	91.9	5.7	8.6	90.0
Secondary or higher	85.5	12.5	6.5	93.7
<b>Wealth Quintile</b>				
Lowest	93.0	8.9	4.0	96.1
Second	95.8	7.3	6.8	96.7
Middle	91.2	8.2	6.9	94.7

Fourth	86.1	7.0	4.6	98.4
Highest	78.9	15.6	7.4	88.7
Total (%)	91.3	8.5	5.8	95.7
Number of observations	729			
2 Represents composite variable that was created based on scoring responses to each statement in other columns.				

### A.3.6 Insecticide-Treated Net Use

This subsection of the Annex provides all data tables related to ITN use. This includes data related to respondent knowledge of malaria prevention using ITNs; attitudes toward ITNs in general; attitudes toward ITN care and repair; perceived response efficacy and perceived self-efficacy of ITNs; respondents' perceived community norms and gender norms regarding ITNs; household possession, access, and use of ITNs; ITN characteristics; ITN care and repurposing behavior; and sleep patterns, including seasonality of outdoor sleeping. The following tables or figures may have been duplicated or referenced in the main body of the report.

#### Table 3.6.1a: Summary of Ideational Variables Linked with ITN use

**Table 3.6.1a** presents results of the analyses of the ideational variables linked to ITN use. The Table also presents how these variables vary across socio-demographic groups. Seven ideational variables are examined, including knowledge that bed nets help to prevent malaria, attitudes towards bed nets, belief that there are things a person could do to extend the life of one's bed nets, and perceived response-efficacy of bed nets. Other examined variables include perceived self-efficacy to use bed nets consistently, the descriptive norm and injunctive norm of net use.



Table 3.6.1a: Percent of respondents with specific ideational variable, by sociodemographic characteristics, 2021 Benin MBS

Characteristic	Knowledge that bed nets help prevent malaria	Favorable attitudes towards bed net use	Believe that there are things one can do to prolong bed net life	Has perceived response-efficacy of ITNs	Reported perceived self-efficacy to consistently use ITNs	Perceived norm that others consistently use bed nets – descriptive norm	Perceived norm that others approve of use of bed nets – injunctive norm
<b>Zone</b>							
North	97.7	52.9	31.8	47.6	90.7	72.3	2.7
Center	98.3	75.6	17.7	62.6	94.6	64.7	3.8
South	98.0	74.9	30.5	69.4	95.2	67.8	0.6
<b>Sex</b>							
Female	98.0	66.5	28.0	58.3	93.5	69.0	2.4
Male	98.0	64.6	28.3	60.8	92.5	68.9	1.5
<b>Age</b>							
15-24 years	97.8	61.0	28.0	51.9	92.6	67.3	2.0
25-34 years	98.3	69.2	26.6	63.1	94.3	68.4	2.5
35-44 years	97.5	65.8	29.0	58.5	92.8	73.4	1.7
45+ years	98.2	68.6	30.1	63.7	92.8	64.6	2.6
<b>Residence</b>							
Rural	97.6	65.8	26.7	58.7	91.7	67.3	3.2
Urban	98.4	66.3	29.8	59.2	95.0	71.0	0.9
<b>Level of education</b>							
None	97.9	71.0	28.3	68.9	96.0	70.5	1.1
Primary	97.3	55.1	29.5	45.1	93.9	73.2	3.3
Secondary/Fourth	98.8	64.3	28.4	53.1	95.0	69.1	1.8
<b>Wealth quintile</b>							
Lowest	97.5	70.2	30.4	62.5	91.4	67.4	2.8
Second	96.3	65.2	29.0	59.1	92.1	68.6	3.4
Middle	99.0	65.1	27.9	54.7	92.7	66.7	2.4
Fourth	98.1	67.4	23.8	63.4	93.4	70.9	1.8
Highest	98.5	63.2	29.7	56.7	96.0	71.0	0.7
<b>Total (%)</b>	<b>98.0</b>	<b>66.0</b>	<b>28.1</b>	<b>58.9</b>	<b>93.2</b>	<b>69.0</b>	<b>2.2</b>
<b>N</b>	<b>6,071</b>						

### Table 3.6.1b: Questions Used to Assess Ideational Variables within ITN Module

**Table 3.6.1b (next page)** lists the survey questions used to assess multiple ideational variables included in Table 3.5.1a. These include knowledge that bed nets help to prevent malaria; attitudes towards bed nets; the perception that there are things a person could do to extend the life of one's bed nets; perceived response efficacy of bed nets; perceived self-efficacy to consistently use bed nets; the descriptive community norm of bed net use; and the injunctive community norm of bed net use.

Table 3.6.1b Questions used to assess ideational variables within the ITN module, 2021 Benin MBS

Indicator	Question(s) used to measure indicator	Notes
Knowledge that bed nets help prevent malaria	What are the things that people can do to stop them from getting malaria?	Multiple responses were possible in this question. “Knowledge” was determined if the response indicated sleeping under an ITN.
Favorable attitudes toward bed nets	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. It is easier to get a good night’s sleep when I sleep under a mosquito net.</li> <li>B. It is not easy to sleep under a net because every night you have to unfold it and cover the sleeping space.</li> <li>C. I do not like sleeping under a mosquito net when the weather is too warm.</li> <li>D. Sleeping under a net is an inconvenience for a couple that wants to make children.</li> <li>E. The smell of the insecticide makes it uncomfortable. for me to sleep under a mosquito net.</li> <li>F. Mosquito nets are generally easy to use for sleeping.</li> <li>G. Insecticide-treated nets do not pose a risk to one’s health.</li> <li>H. Mosquito nets are very useful.</li> <li>I. More expensive mosquito nets are more effective. than cheaper or free mosquito nets.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of positive attitudes for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Agree</li> <li>B. Disagree</li> <li>C. Disagree</li> <li>D. Disagree</li> <li>E. Disagree</li> <li>F. Agree</li> <li>G. Agree</li> <li>H. Agree</li> <li>I. Disagree</li> <li>J. Agree</li> </ul>
Perception that there are things a person could do to extend the life of a net	<p>Do you agree or disagree with the following statement?</p> <ul style="list-style-type: none"> <li>A. There are actions I can take to help my mosquito net last long</li> </ul>	If response is “agree”, then respondent holds perception.

Perceived response- efficacy of bed nets	<p>I am going to read a series of statements or questions to you and I would like you to tell me if you <b>agree or disagree</b> with the statement:</p> <ul style="list-style-type: none"> <li>A. Mosquito nets prevent mosquito bites only when used on a bed instead of over a mat or the floor.</li> <li>B. The chances of getting malaria are the same whether or not one sleeps under a mosquito net.</li> <li>C. Sleeping under a mosquito net every night is a good way to avoid getting malaria.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of perceived response- efficacy for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Disagree</li> <li>B. Disagree</li> <li>C. Agree</li> </ul>
Perceived self-efficacy to consistently sleep under bed nets	<p>I am going to ask you about a series of actions you could take and I would like you to tell me if you think you <b>could or could not</b> do each action successfully.</p> <ul style="list-style-type: none"> <li>A. Sleep under a mosquito net for the entire night when there are lots of mosquitoes.</li> <li>B. Sleep under a mosquito net for the entire night when there are few mosquitoes.</li> <li>C. Sleep under a mosquito net every night of the year.</li> <li>D. Get all of your children to sleep under a mosquito net every night of the year.</li> </ul>	<p>This is a composite score based on responses. The “correct” response in terms of perceived self-efficacy for each question is listed below:</p> <ul style="list-style-type: none"> <li>A. Could</li> <li>B. Could</li> <li>C. Could</li> <li>D. Could</li> </ul>
Descriptive community norm of bed net use	<p>Generally, among the people in your community who have nets, how many sleep under them every night? Would you say...</p> <ul style="list-style-type: none"> <li>F. All people</li> <li>G. Most people</li> <li>H. Half of the people</li> <li>I. Fewer than half of the people</li> <li>J. Nobody</li> <li>K. Don't Know</li> </ul>	<p>A descriptive norm supporting net use was concluded if the response was either A, B, or C.</p>

Injunctive community  
norm of bed net use

Generally, among all the people in your community, how many people criticize you if they know that you sleep under a net every night? Would you say ...

- A. All people
- B. Most people
- C. Half of the people
- D. Fewer than half of the people
- E. Nobody
- F. Don't Know

An injunctive norm approving of net use was concluded if the response was either D or E. All other responses yielded an unsupportive injunctive norm of net use.

**Table 3.6.2: Household Possession of ITNs**

**Table 3.6.2** presents distribution of household possession of ITNs. This includes the proportion of households with at least one ITN as well as households with adequate access to ITNs, which refers to 1 ITN per every 2 household members.

Table 3.6.2 Household possession of ITNs, 2021 Benin MBS		
Characteristic	Household has at least 1 ITN	Household has at least 1 ITN for every two persons that spent previous night in household
<b>Zone</b>		
North	80.8	87.7
Center	67.9	71.4
South	89.7	92.7
<b>Residence</b>		
Rural	77.2	82.5
Urban	85.9	89.3
<b>Wealth quintile</b>		
Lowest	75.4	79.7
Second	76.9	80.6
Middle	80.2	85.1
Fourth	83.6	89.1
Highest	89.0	93.0
<b>Household has 7+ members</b>		
No	80.4	85.1
Yes	84.0	89.9
<b>Total (%)</b>	<b>81.1</b>	<b>85.6</b>
<b>Number of Observations</b>	<b>3,534</b>	<b>3,534</b>

**Table 3.6.3a: Characteristics of bed nets within households**

**Table 3.6.3a** summarizes bed net characteristics, including the proportion of nets that are ITNs, as well as the source, age and color of nets. Results are presented in each study zone.

Table 3.6.3a Characteristics of Household Mosquito Nets, 2021 Benin MBS (n=6,608)				
Net Characteristic	North (N=2,148)	Center (N=1,592)	South (N=2,868)	All Zones (N=6,608)
<b>Net is an ITN</b>				
No	12.5	6.1	4.1	7.9
Yes	87.5	93.9	95.9	92.1
<b>Source of Net</b>				
Mass distribution	87.3	82.1	72.7	80.2
ANC visit	9.1	10.8	8.4	9.0
Birth/Immunization visit	1.3	3.3	3.2	2.5
Other	2.3	3.8	15.7	8.3
<b>Net is 36 months old or older</b>				
No	58.2	54.3	75.3	64.9
Yes	41.8	45.7	24.7	35.1
<b>Net Color</b>				
White	66.1	2.7	8.0	31.2
Blue	31.7	95.8	89.6	66.6
Other Color	2.2	1.5	2.5	2.2

Table 3.6.3b: Net Use Patterns

**Table 3.6.3b** describes use patterns of available ITNs in households. This includes the proportion of ITNs that were slept under the night preceding the survey, as well as the proportion of available nets that were consistently slept under (i.e., every night in the past week). Results are disaggregated by urbanicity and household wealth quintile in each zone.

Table 3.6.3b Insecticide-Treated Net Use Patterns, 2021 Benin MBS								
Characteristic	Percent of ITNs that were slept under the night before the survey				Percent of ITNs that were slept under every night in the past week			
	North	Center	South	All zones	North	Center	South	All zones
<b>Residence</b>								
Rural	92.5	92.7	92.6	92.6	75.1	81.9	88.0	80.0
Urban	95.8	95.5	91.7	93.2	74.8	85.9	88.0	84.4
<b>Wealth Quintile</b>								
Lowest	90.1	95.3	91.6	91.5	79.6	88.6	86.6	83.4
Second	93.8	93.5	91.3	93.0	72.3	81.0	84.2	77.7
Middle	95.3	95.8	94.0	94.9	74.4	83.8	90.4	82.1
Fourth	93.4	91.8	92.6	92.7	77.7	78.7	87.6	82.1
Highest	95.0	92.0	91.0	91.9	69.5	89.2	88.6	84.6
<b>Total (%)</b>	<b>93.5</b>	<b>93.7</b>	<b>92.0</b>	<b>92.9</b>	<b>75.0</b>	<b>83.5</b>	<b>88.0</b>	<b>82.2</b>
<b>Number of Observations</b>	<b>1,904</b>	<b>1,492</b>	<b>2,749</b>	<b>6,145</b>	<b>1,904</b>	<b>1,492</b>	<b>2,749</b>	<b>6,145</b>



**Table 3.6.4: Net Care Practices**

**Table 3.6.4** describes net care practices in the Benin MBS. This includes the percent of used nets that have ever been washed, the product used for washing the net; the location of where the net was dried and where the net was observed during the household observation. Results are presented for each zone.

<b>Table 3.6.4 Net care practices, 2021 Benin MBS</b>				
<b>Characteristic</b>	North	Center	South	All Zones
<b>Net has been washed</b>				
No	26.0	12.2	14.2	18.8
Yes	74.0	87.8	85.8	81.2
<b>Product that was used to wash net</b>				
Bar soap	67.3	78.2	67.8	69.4
Detergent	28.7	18.7	28.1	26.7
Bleach	0.5	0.5	2.4	1.3
Mixture of products	3.2	1.2	1.4	2.1
Nothing (water only)	0.2	1.3	0.4	0.5
<b>Location where net was dried</b>				
Outside in the shade	35.6	41.7	30.2	34.2
Outside in the sun	60.8	57.3	69.4	64.1
Inside	3.2	0.9	0.4	1.5
Other location	0.4	0.1	0.1	0.2
<b>Location where net was observed</b>				
Hanging above sleeping area	75.9	71.1	58.6	67.8
Hanging, folded, and tied	17.2	14	19.1	17.5
Not hanging but not stored	2.4	5.5	13.3	7.5
Stored without packaging	2.7	7.6	5.8	4.8
Stored, still in packaging	1.9	1.8	3.2	2.4
<b>Number of observations</b>	<b>2,148</b>	<b>1,592</b>	<b>2,868</b>	<b>6,608</b>

**Table 3.6.5: Net Use Practices in Households with at least 1 ITN**

**Table 3.6.5** presents data on use of ITNs by household members in each study zone. The table includes the percent of household members that used an ITN when at least one ITN was available in the household, disaggregated by sociodemographic characteristics in each zone.

Table 3.6.5 Percent of household members that slept under a net the previous night, among households with at least one ITN, 2021 Benin MBS			
	North	Center	South
<b>Age</b>			
0-4 years old	87.0	87.0	93.5
5-17 years old	71.3	73.0	88.9
18+ years old	82.5	79.3	86.6
<b>Sex</b>			
Female	82.0	82.5	91.3
Male	75.4	73.1	85.1
<b>Residence</b>			
Rural	77.9	76.2	89.6
Urban	80.5	81.8	87.9
<b>Wealth Quintile</b>			
Lowest	81.6	75.1	86.9
Second	80.9	76.9	87.8
Middle	76.3	79.9	87.6
Fourth	78.0	77.7	86.4
Highest	76.9	84.2	90.7
<b>Total (%)</b>	<b>78.7</b>	<b>78.1</b>	<b>88.5</b>
<b>Number of Observations</b>	<b>4 279</b>	<b>3 838</b>	<b>5 741</b>
<b>Total (%) All Zones (n=13,858)</b>	<b>82.7</b>		

**Table 3.6.6: Net Use Practices in Households with Adequate Number of Nets**

**Table 3.6.6** summarizes data on use of ITNs by household members in each study zone. The table includes the percent of household members that slept under an ITN the previous when at least one ITN was available in the household per every two members. Data is disaggregated by sociodemographic characteristics in each zone.

Table 3.6.6 Percent of household members that slept under a net the previous night, among households with access to one ITN per 2 household members, 2021 Benin MBS			
	North	Center	South
<b>Age</b>			
0-4 years old	95.3	91.6	94.4
5-17 years old	87.9	92.7	95.6
18+ years old	91.4	91.2	93.2
<b>Sex</b>			
Female	91.8	93.5	95.2
Male	89.4	89.5	92.8
<b>Residence</b>			
Rural	90.3	89.8	94.8
Urban	91.3	95.2	93.8
<b>Wealth Quintile</b>			
Lowest	92.5	92.8	92.2
Second	89.3	90.3	94.7
Middle	93.0	92.9	95.3
Fourth	90.4	89.7	92.2
Highest	86.3	95.1	94.8
<b>Total (%)</b>	90.6	91.7	94.1
<b>Number of Observations</b>	2 326	1 274	3 126
<b>Total (%) All Zones (n= 6,154)</b>	<b>92.3</b>		

Table 3.6.7: ITN Use:Access Ratio

**Table 3.6.7** presents the ITN Use:Access Ratio in each zone, according to household characteristics. The Use:Access Ratio is calculated by dividing the total proportion of household members who slept under an ITN by the percent of household members who had adequate access to nets (1 ITN per 2 sleepers).

Table 3.6.7 ITN Use:Access Ratio, 2021 Benin MBS			
	North	Center	South
Rate of ITN Use <sup>1</sup>			
Residence			
Rural	0.68	0.52	0.81
Urban	0.81	0.59	0.86
Wealth Quintile			
Lowest	0.71	0.49	0.72
Second	0.65	0.57	0.81
Middle	0.68	0.58	0.82
Fourth	0.75	0.62	0.79
Highest	0.76	0.64	0.84
Total (%)	0.69	0.56	0.80
Total - All Zones (%)	0.70		
Rate of ITN Access <sup>2</sup>			
Residence			
Rural	0.73	0.66	0.79
Urban	0.84	0.71	0.87
Wealth Quintile			
Lowest	0.84	0.55	0.77
Second	0.75	0.65	0.85
Middle	0.81	0.64	0.87
Fourth	0.87	0.71	0.87
Highest	0.91	0.70	0.92
Total (%)	0.82	0.63	0.86
Total - All Zones (%)	0.79		
ITN Use:Access Ratio <sup>3</sup>			
Residence			
Rural	0.84	0.87	0.95
Urban	0.87	0.93	0.92

Wealth Quintile			
Lowest	0.84	0.89	93.1
Second	0.86	0.88	94.8
Middle	0.85	0.91	94.0
Fourth	0.86	0.87	91.3
Highest	0.83	0.91	91.9
Total (%)	0.85	0.89	0.93
Total - All Zones (%)	0.89		

<sup>1</sup> Calculated by assessing whether household members used a net among all households, regardless of net possession.

<sup>2</sup> Defined as a household having at least one ITN for every two de facto household members.

<sup>3</sup> Percentage of de facto household population who could sleep under an ITN if each ITN in the household were used by up to two people.

**Table 3.6.8: Use of mosquito nets by persons in the household**

**Table 3.6.8** describes the percentage of de facto population in each zone who slept under an ITN in the household every night in the past week.

Table 3.6.8 Consistent Use of ITNs de facto population who slept under an ITN in the household every night in the past week , 2021 Benin MBS		
Characteristic	Percent of study population that reported using a net consistently in households with at least one net	Percent of study population that reported using a net consistently in households with at least one net for every two members
<b>Zone</b>		
North	75.8	77.7
Center	85.0	84.0
South	91.9	91.7
<b>Age</b>		
0-4 years old	86.6	85.9
5-17 years old	85.8	86.7
18+ years old	83.7	84.7
<b>Sex</b>		
Female	84.3	85.2
Male	84.4	85.4
<b>Residence</b>		
Rural	81.5	82.1
Urban	87.4	88.3
<b>Household has child under five years old</b>		
No		
Yes	84.3	85.2
	86.6	85.9
<b>Wealth Quintile</b>		
Lowest	86.4	85.6
Second	79.4	80.0
Middle	82.6	85.4
Fourth	84.2	84.4
Highest	88.3	88.6
<b>Total (%)</b>	<b>84.4</b>	<b>85.3</b>
<b>Number of Observations</b>	<b>5,742</b>	<b>3,373</b>

### A.3.7 Indoor Residual Spraying

This subsection of the Annex provides all data tables related to indoor residual spraying. The section includes data related to respondent knowledge and awareness of IRS; attitudes toward IRS; perceived response efficacy and perceived self-efficacy of IRS; respondents' willingness to accept IRS in their community; and IRS coverage. The following tables or and figures may have been duplicated or referenced in the main body of the report.

**Table 3.7.1: Awareness of Indoor Residual Spraying**

**Table 3.7.1** presents the distribution of awareness of IRS programs by study zone. Data is disaggregated by respondent sex, age group, level of education, zone, and household residence type.

Table 3.7.1 Percentage of respondents aware of IRS program, 2021 Benin MBS	
Characteristic	Aware of IRS program in their community
<b>Sex</b>	
Female	81.3
Male	88.2
<b>Age</b>	
15-24 years	80.2
25-34 years	84.2
35-44 years	82.1
45+ years	90.0
<b>Residence</b>	
Rural	86.0
Urban	76.7
<b>Level of education</b>	
None	82.4
Primary	80.1
Secondary or higher	86.5
<b>Total (%)</b>	<b>82.9</b>
<b>Number of Observations</b>	<b>400</b>

**Table 3.7.2: Attitudes towards Indoor Residual Spraying**

**Table 3.7.2** presents the distribution of favorable attitudes towards IRS. Attitude favorability is calculated based on a participant's agreement or disagreement to several statements related to IRS. The data is presented according to respondent characteristics (among those who are aware of IRS)

Table 3.7.2: Attitudes towards IRS, 2021 Benin MBS	
Percent of respondents with favorable attitudes towards IRS by zone and by sociodemographic variables, Benin 2021	
Sociodemographic Characteristics	North
Sex	
Female	83.8
Male	88.3
Age	
15 – 24 years	85.1
25 – 35 years	82.9
35 – 44 years	87.9
45 years and older	87.4
Residence	
Rural	84.2
Urban	86.6
Level of education	
None	87.9
Primary	95.4
Secondary or higher	86.7
<b>All Respondents</b>	<b>84.9</b>
<b>Number of observations</b>	<b>344</b>



**Table 3.7.3: Perceived response efficacy of Indoor Residual Spraying**

**Table 3.7.3** presents the distribution of perceived response-efficacy of IRS. Perceived response-efficacy is calculated based on a participant's agreement or disagreement to several statements related to IRS. The data is presented according to respondent sociodemographic characteristics (among those who are aware of IRS)

Table 3.7.3: Percent of respondents with perceived response efficacy to IRS, 2021 Benin MBS				
Characteristic	Believes that IRS is effective way to prevent malaria	Believes people who lived in sprayed houses are less likely to get malaria	Believes that IRS is an effective way to kill mosquitoes	Has perceived response efficacy
<b>Sex</b>				
Female	88.1	77.7	0.0	77.6
Male	87.0	72.7	95.2	89.9
<b>Age</b>				
15-24 years	93.1	82.3	6.7	82.3
25-34 years	85.6	73.6	20.3	77.5
35-44 years	88.0	77.7	36.3	84.3
45+ years	79.7	66.9	81.9	83.9
<b>Residence</b>				
Rural	87.8	78.0	23.4	81.5
Urban	87.9	72.9	27.4	79.3
<b>Level of education</b>				
None	90.9	88.2	18.1	88.2
Primary	75.3	74.8	20.7	74.8
Secondary or higher	90.9	76.4	29.1	83.6
<b>Total (%)</b>	<b>87.8</b>	<b>76.4</b>	<b>24.6</b>	<b>80.8</b>
<b>Number of Observations</b>	<b>344</b>			

**Table 3.7.4: Perceived self-efficacy regarding Indoor Residual Spraying**

**Table 3.7.4** presents the distribution of perceived self-efficacy regarding IRS. Perceived self-efficacy is calculated based on a participant's report that they could or could not do several actions related to IRS. The data is presented according to respondent sociodemographic characteristics (among those who are aware of IRS).

Table 3.7.4: Percent of respondents with perceived self-efficacy: IRS, 2021 Benin MBS			
Characteristic	Self-efficacy to move furniture in preparation for spraying	Self-efficacy to sleep in house the night it is sprayed	Has perceived self-efficacy
<b>Sex</b>			
Female	85.9	86.0	83.9
Male	83.6	85.5	81.5
<b>Age</b>			
15-24 years	88.3	87.3	86.6
25-34 years	82.7	83.1	80.4
35-44 years	87.0	90.4	85.8
45+ years	83.9	83.2	80.2
<b>Residence</b>			
Rural	89.0	89.8	87.1
Urban	76.8	76.8	74.6
<b>Level of education</b>			
None	87.7	90.9	90.9
Primary	100.0	95.4	95.4
Secondary or higher	83.2	81.7	81.7
<b>Total (%)</b>	<b>85.3</b>	<b>85.9</b>	<b>83.3</b>
<b>Number of Observations</b>	<b>344</b>		

**Table 3.7.6: Indoor Residual Spraying coverage**

**Table 3.7.6** summarizes household IRS coverage in each study zone. Data are disaggregated by household residence type and wealth (in Zones where IRS program exists).

Table 3.6.6 IRS coverage, acceptance, and wall modification, 2021 Benin MBS			
	Household was approached for spraying IRS in the past 12 months	Among those approached, household walls were sprayed in the past 12 months	Since spraying, walls have been repainted, re-plastered, or washed
<b>Residence</b>			
Rural	63.0	92.4	8.8
Urban	46.0	79.5	40.5
<b>Wealth</b>			
Lowest	40.0	100.0	8.4
Second	47.3	89.2	6.7
Middle	55.8	100.0	14.1
Fourth	73.5	88.5	18.3
Highest	62.4	60.1	47.2
<b>Total (%)</b>	<b>57.5</b>	<b>89.0</b>	<b>16.2</b>
<b>Number of Observations</b>	<b>235</b>	<b>130</b>	<b>117</b>

### A.3.8 Media Consumption and Message Exposure

This subsection of the Annex provides all data tables related to media consumption and exposure to malaria messages. Some tables may have been duplicated or referenced in the main body of the report.

**Table 3.8.1: Radio listenership at least once a week**

**Table 3.8.1** (next page) describes the distribution of radio listenership. It includes data from all respondents as well as respondents in households that own a radio. The data presented in this table is disaggregated by zone.

Table 3.8.1 Percent of household members that regularly listen to the radio, 2021 Benin MBS								
Characteristic	All respondents				Respondents in a household with a radio			
	North	Center	South	All Zones	North	Center	South	All Zones
<b>Sex</b>								
Male	58.6	47.3	60.0	56.5	82.7	70.4	81.0	79.8
Female	44.7	35.7	39.6	40.8	66.2	66.2	59.5	63.5
<b>Age</b>								
15-24 years	47.3	34.3	31.8	40.1	64.2	56.9	47.1	57.7
25-34 years	41.9	42.1	45.3	43.2	70.0	71.4	64.0	67.8
35-44 years	51.6	39.1	51.3	48.5	74.3	72.9	71.9	73.0
45+ years	61.2	37.7	50.9	51.2	82.2	63.2	80.6	78.3
<b>Residence</b>								
Rural	43.8	36.9	36.0	40.2	68.4	64.7	65.8	66.9
Urban	57.3	42.8	49.3	50.7	74.0	72.0	65.3	68.8
<b>Level of education</b>								
None	41.3	42.7	42.9	42.3	65.2	74.3	73.2	70.5

Primary	79.9	54.2	54.3	65.3	91.9	71.0	66.4	78.6
Secondary or higher	62.4	60.3	52.6	57.3	73.1	76.4	64.7	69.3
<b>Total (%)</b>	<b>48.3</b>	<b>38.7</b>	<b>45.0</b>	<b>44.9</b>	<b>70.7</b>	<b>67.4</b>	<b>65.4</b>	<b>67.9</b>
<b>Number of Observations</b>	1,884	1,976	2,211	6,071	957	868	1,354	3,179

**Table 3.8.2: Preferred time to listen to radio**

**Table 3.8.2** summarizes respondents' preferred time to listen to the radio. It includes data across all study zones, respondent sex, respondent age, respondent level of education, and household wealth quintile. The data presented in this table is disaggregated by certain times at which one listens to the radio.

Table 3.8.2 Preferred radio listening times, 2021 Benin MBS						
	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
<b>Zone</b>						
North	27.9	28.5	9.6	8.5	24.3	1.1
Center	10.7	15.8	12.8	22.5	36.3	1.8
South	13.8	34.8	9.4	16.8	24.4	0.8
<b>Sex</b>						
Male	25.0	24.9	10.4	11.2	27.6	1.0
Female	16.1	29.6	10.2	16.3	26.6	1.2
<b>Age</b>						
15-24 years	16.1	28.4	8.9	15.8	30.0	0.8
25-34 years	17.6	28.9	11.5	16.5	23.5	1.9
35-44 years	17.1	29.8	10.1	14.0	28.4	0.6
45+ years	29.6	23.0	10.1	10.0	26.4	1.0
<b>Residence</b>						
Rural	18.9	23.1	10.1	15.2	31.7	1.1
Urban	19.0	33.1	10.4	14.1	22.3	1.1
<b>Level of education</b>						
None	15.2	26.4	11.2	17.5	28.6	1.0
Primary	19.6	32.0	12.3	11.0	23.7	1.5
Secondary or higher	23.7	29.5	10.4	11.6	23.8	1.0
<b>Total (%)</b>	<b>18.9</b>	<b>28.2</b>	<b>10.2</b>	<b>14.6</b>	<b>26.9</b>	<b>1.1</b>
<b>Number of Observations</b>	<b>2966</b>					

### Table 3.8.2A – 3.8.2D: Preferred time to listen to radio in each zone

**Table 3.8.2A** summarizes respondents' preferred time to listen to the radio in the North Zone.

**Table 3.8.2B** summarizes respondents' preferred time to listen to the radio in the Center Zone.

**Table 3.8.2C** summarizes respondents' preferred time to listen to the radio in the South Zone.

Table 3.8.2A Preferred radio listening times in North zone, 2021 Benin MBS						
Characteristic	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
<b>Sex</b>						
Male	32.8	26.3	12.0	6.7	21.2	0.9
Female	25.7	29.5	8.6	9.4	25.7	1.2
<b>Age</b>						
15-24 years	22.5	31.3	6.4	10.6	28.5	0.6
25-34 years	25.9	29.7	10.0	7.5	23.8	3.2
35-44 years	26.3	31.6	14.6	7.7	19.8	0.0
45+ years	46.8	14.6	7.2	7.4	24.1	0.0
<b>Residence</b>						
Rural	27.0	26.4	8.1	10.1	27.3	1.1
Urban	29.2	32.1	12.0	6.0	19.5	1.1
<b>Level of education</b>						
None	32.5	25.4	13.3	8.1	19.9	0.8
Primary	26.3	33.3	13.2	2.7	21.5	2.9
Secondary or higher	34.0	26.7	11.8	6.4	20.2	0.9
<b>Total (%)</b>	<b>27.9</b>	<b>28.5</b>	<b>9.6</b>	<b>8.5</b>	<b>24.3</b>	<b>1.1</b>
<b>Number of Observations</b>	<b>899</b>					

Table 3.8.2B Preferred radio listening times in Center zone, 2021 Benin MBS						
Characteristic	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
<b>Sex</b>						
Male	15.0	14.9	9.5	18.1	40.4	2.1
Female	8.8	16.2	14.3	24.4	34.5	1.7
<b>Age</b>						
15-24 years	10.0	16.3	15.5	22.6	34.6	1.0
25-34 years	11.0	13.0	14.0	23.4	35.9	2.7
35-44 years	7.0	17.4	7.6	24.6	41.6	1.8
45+ years	19.1	18.5	16.6	15.4	29.5	0.9
<b>Residence</b>						
Rural	10.9	14.9	11.9	23.2	38.1	1.1
Urban	10.3	17.8	14.9	21.0	32.8	3.3
<b>Level of education</b>						
None	9.4	16.5	8.4	20.9	43.8	1.0
Primary	13.0	17.7	9.7	24.0	35.6	0.0
Secondary or higher	12.6	16.9	16.9	18.4	32.8	2.4
<b>Total (%)</b>	<b>10.7</b>	<b>15.8</b>	<b>12.8</b>	<b>22.5</b>	<b>36.3</b>	<b>1.8</b>
<b>Number of Observations</b>	<b>934</b>					



Table 3.8.2C Preferred radio listening times in South zone, 2021 Benin MBS						
Characteristic	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
<b>Sex</b>						
Male	22.4	28.9	9.2	12.0	27.1	0.4
Female	9.5	37.8	9.6	19.3	23.0	0.9
<b>Age</b>						
15-24 years	6.2	31.9	9.1	22.2	29.5	1.1
25-34 years	13.9	37.3	11.4	20.8	16.3	0.3
35-44 years	14.6	34.5	7.6	14.0	28.8	0.5
45+ years	18.8	32.9	9.6	9.9	27.0	1.9
<b>Residence</b>						
Rural	9.0	26.7	12.4	16.9	33.7	1.2
Urban	15.4	37.5	8.4	16.8	21.2	0.6
<b>Level of education</b>						
None	5.5	33.2	11.3	22.7	26.1	1.1
Primary	12.5	35.4	12.0	17.9	22.2	0.0
Secondary or higher	19.7	36.5	6.8	13.2	23.2	0.6
<b>Total (%)</b>	<b>13.8</b>	<b>34.8</b>	<b>9.4</b>	<b>16.8</b>	<b>24.4</b>	<b>0.8</b>
<b>Number of Observations</b>	<b>1,133</b>					

**Table 3.8.3: Television viewership at least once a week**

**Table 3.8.3** (next page) describes the distribution of television listenership. It includes data from all respondents as well as respondents in households that own a radio. The data presented in this table is disaggregated by zone.

Table 3.8.3 Percent of respondents who watch TV at least once per week, 2021 Benin MBS								
Characteristic	All respondents				Respondents in a household with a television			
	North	Center	South	All Zones	North	Center	South	All Zones
<b>Sex</b>								
Female	34.2	17.0	34.0	30.2	84.5	66.5	78.4	78.7
Male	37.6	19.7	38.2	33.7	94.3	78.1	74.9	81.1
<b>Age</b>								
15-24 years	39.5	17.3	32.4	32.9	88.7	57.7	75.8	78.9
25-34 years	29.1	18.8	37.1	29.7	82.7	71.1	76.8	77.8
35-44 years	36.7	18.3	36.8	32.3	89.6	77.2	78.4	80.9
45+ years	35.8	14.5	31.3	28.7	87.6	72.8	79.0	81.0
<b>Residence</b>								
Rural	27.8	13.7	12.7	20.6	78.4	65.3	68.8	72.0
Urban	49.9	26.4	45.8	44.0	91.2	73.8	78.7	81.9
<b>Level of education</b>								
None	32.3	13.5	23.4	24.2	85.1	59.9	66.6	72.2
Primary	65.3	28.3	29.4	44.6	87.1	73.7	62.1	73.6
Secondary or higher	63.7	37.8	60.0	57.7	94.6	73.6	87.0	87.6
<b>All respondents</b>	<b>35.1</b>	<b>17.7</b>	<b>35.1</b>	<b>31.1</b>	<b>86.8</b>	<b>69.5</b>	<b>77.4</b>	<b>79.3</b>
<b>Number of Observations</b>	1,884	1,976	2,211	6,071	443	397	903	1,743

Table 3.8.4: Preferred time to watch television

**Table 3.8.4** summarizes respondents' preferred time to watch television. It includes data by study zone, respondent sex, respondent age, respondent level of education, and household wealth quintile. The data presented in this table is disaggregated by certain times at which one can watch television.

Table 3.8.4 Preferred time to watch television, 2021 Benin MBS						
	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
<b>Zone</b>						
North	14.2	19.3	7.3	6.4	49.6	1.4
Center	9.0	3.7	7.1	10.5	51.5	3.6
South	2.3	6.3	3.4	13.0	65.2	1.1
<b>Sex</b>						
Female	7.7	12.2	6.4	10.6	53.9	1.8
Male	10.2	9.2	4.0	7.8	62.4	1.3
<b>Age</b>						
15-24 years	8.5	15.1	4.7	10.0	49.2	2.4
25-34 years	5.0	9.3	6.2	11.0	60.6	1.5
35-44 years	9.2	10.7	6.2	8.0	60.1	1.6
45+ years	15.1	9.2	5.4	10.1	53.5	0.9
<b>Residence</b>						
Urban	12.2	13.8	8.5	9.6	47.2	2.3
Rural	6.2	9.9	4.1	9.9	61.7	1.3
<b>Level of education</b>						
None	5.1	10.6	7.0	8.1	60.7	1.0
Primary	13.1	14.7	6.5	8.7	50.4	1.2
Secondary or higher	7.7	10.5	5.9	10.4	58.4	1.3
<b>Total (%)</b>	8.4	11.3	5.7	9.8	56.3	1.7
<b>Number of Observations</b>	2,075					

Table 3.8.4A-3.8.4D: Preferred time to watch television in each zone

**Table 3.8.4A** summarizes respondents 'preferred time to watch television in the North Zone.

**Table 3.8.4B** summarizes respondents 'preferred time to watch television in the Center Zone.

**Table 3.8.4C** summarizes respondents 'preferred time to watch television in the South Zone.

Table 3.8.4A Preferred television watching times in North zone, 2021 Benin MBS						
Characteristic	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
<b>Sex</b>						
Female	13.4	20.8	7.8	7.9	45.7	1.9
Male	16.2	15.0	6.1	2.3	60.2	0.3
<b>Age</b>						
15-24 years	13.8	21.8	4.8	7.5	45.5	2.6
25-34 years	7.0	17.9	8.2	7.0	57.5	1.6
35-44 years	17.7	19.7	8.5	3.5	50.3	0.3
45+ years	23.5	13.6	10.2	8.1	43.1	0.0
<b>Residence</b>						
Rural	13.5	19.8	9.3	7.1	45.4	1.7
Urban	15.0	18.6	5.1	5.6	54.4	1.1
<b>Level of education</b>						
None	11.8	18.1	2.5	2.7	63.2	1.1
Primary	21.8	20.2	8.6	5.0	43.4	0.0
Secondary or higher	14.9	18.3	9.4	6.0	48.8	1.0
<b>Total (%)</b>	14.2	19.3	7.3	6.4	49.6	1.4
<b>Number of Observations</b>	625					

Table 3.8.4B Preferred television watching times in Center zone, 2021 Benin MBS

Characteristic	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
<b>Sex</b>						
Female	8.0	4.0	7.9	9.1	50.7	4.3
Male	11.5	2.9	5.3	13.6	53.4	2.2
<b>Age</b>						
15-24 years	6.5	7.5	5.7	6.7	45.4	4.5
25-34 years	7.1	2.4	7.6	14.5	51.7	3.1
35-44 years	7.0	0.6	8.0	8.0	61.6	3.6
45+ years	24.2	5.8	6.7	12.7	42.1	3.5
<b>Residence</b>						
Rural	12.7	3.6	8.6	11.3	42.2	4.1
Urban	4.4	3.8	5.3	9.5	63.3	3.1
<b>Level of education</b>						
None	0.0	1.7	4.2	12.0	56.8	0.7
Primary	0.0	5.3	7.9	14.2	58.0	1.8
Secondary or higher	8.4	5.8	10.1	13.9	48.4	4.7
<b>Total (%)</b>	9.0	3.7	7.1	10.5	51.5	3.6
<b>Number of Observations</b>	510					

Table 3.8.4C Preferred television watching times in South zone, 2021 Benin MBS

Characteristic	Early Morning	Late Morning	Afternoon	Early Evening	Late Evening	Night
<b>Sex</b>						
Female	1.4	6.2	4.2	14	63.9	0.9
Male	4.2	6.4	1.6	10.6	68.1	1.8
<b>Age</b>						
15-24 years	0.0	7.0	4.1	16.3	57.7	0.8
25-34 years	2.5	5.4	4.0	12.8	66.6	0.7
35-44 years	2.8	6.6	3.6	11.9	67.8	2.0
45+ years	4.2	6.6	0.6	10.9	67.1	0.8
<b>Residence</b>						
Rural	5.5	5.2	4.5	17.8	64.5	1.5
Urban	1.8	6.4	3.3	12.3	65.3	1.1
<b>Level of education</b>						
None	0.2	6.8	13.4	12.1	60.0	1.1
Primary	2.9	8.6	2.4	13.1	59.7	3.1
Secondary or higher	2.3	6.1	2.2	12.6	67.9	0.7
<b>Total (%)</b>	2.3	6.3	3.4	13	65.2	1.1
<b>Number of Observations</b>	940					

**Table 3.8.5: Telephone or Tablet Ownership**

**Table 3.8.5** summarizes the percent of respondents who own a telephone or tablet. Data is presented in each zone by respondent sociodemographic characteristics.

Table 3.8.5 Percent of respondents who report owning a personal telephone or tablet, 2021 Benin MBS			
Characteristic	North	Center	South
<b>Sex</b>			
Female	46.3	41.5	67.7
Male	78.7	67.5	82.8
<b>Age</b>			
15-24 years	42.6	37.6	56.5
25-34 years	57.0	52.6	80.0
35-44 years	61.6	52.6	73.0
45+ years	67.2	47.7	73.0
<b>Residence</b>			
Rural	52.4	44.7	55.9
Urban	59.1	56.3	79.2
<b>Level of education</b>			
None	63.7	58.2	75.1
Primary	59.8	58.1	70.2
Secondary or higher	60.1	67.7	82.7
<b>Total</b>	<b>54.6</b>	<b>48.3</b>	<b>71.7</b>
<b>Number of Observations</b>	<b>1,884</b>	<b>1,976</b>	<b>2,211</b>
<b>Total - All Zones (n=6,071)</b>	<b>59.3</b>		

**Table 3.8.5B: Telephone Capabilities**

**Table 3.8.5B** summarizes the percent of telephones owned by respondents that are capable of receiving content via various media, including SMS texts, photos, videos, audios, a link to the internet, email, and other types of media. Data is presented for each study zone.

Table 3.8.5B Percent of owned phones capable of receiving media, by media type, 2021 Benin MBS				
Characteristic	North	Center	South	All Zones
<b>Phone is capable to receive</b>				
SMS	72.5	81.6	93.2	83.2
Photos	58.0	54.0	64.9	60.3
Videos	59.4	52.0	62.7	59.4
Audio files	56.4	51.0	60.8	57.3
A link to a website	24.1	25.8	46.5	34.2
Email	17.3	20.4	37.9	26.9
Other media	3.9	2.6	1.4	2.6
<b>Number of Observations</b>	<b>981</b>	<b>1,021</b>	<b>1,582</b>	<b>3,584</b>



**Table 3.8.6: Exposure to Malaria Messages**

**Table 3.8.6** presents the percent of respondents who were exposed to a malaria message in the 12 months preceding the survey. Data is presented for each zone by respondent sociodemographic characteristics.

Table 3.8.6 Percent of respondents exposed to malaria messages in past 6 months, 2021 Benin MBS			
Characteristic	North	Center	South
<b>Sex</b>			
Female	37.3	22.3	20.8
Male	40.0	22.6	20.3
<b>Age</b>			
15-24 years	39.2	21.0	17.0
25-34 years	35.1	25.2	25.2
35-44 years	41.1	23.1	17.7
45+ years	36.3	16.7	22.2
<b>Residence</b>			
Rural	38.2	20.9	18.5
Urban	37.6	25.6	21.7
<b>Level of education</b>			
None	33.5	14.4	25.5
Primary	46.2	30.4	27.8
Secondary or higher	41.8	37.3	20.9
<b>Total</b>	<b>38.0</b>	<b>22.3</b>	<b>20.7</b>
<b>Number of Observations</b>	<b>1,884</b>	<b>1,976</b>	<b>2,211</b>
<b>Total – All Zones (n=6,071)</b>	<b>28.2</b>		