# Evaluation of the distribution campaign of Long-Lasting Insecticidal Nets in August 2009, Anambra State, Nigeria

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#### Abbreviations

- BCC Behavioural Change Communication
- CI Confidence Interval
- DFID Department for International Development (UK)
- DHS Demographic and Health Survey
- DP Distribution Point
- HH Household
- IDP Immunization Days Plus
- IEC Information, Education, Communication
- ITN Insecticide Treated Nets
- LGA Local Government Area
- LLIN Long-Lasting Insecticidal Nets
- MICS Multi-Indicator Cluster Survey
- NGO Non-Governmental Organization
- NMCP National Malaria Control Program
  - OR Odds-Ratio
  - PCA Principle Component Analysis
  - PPS Probability Proportionate to Size
  - PW Pregnant Woman
  - RBM Roll Back Malaria
  - SST State Support Teams
- SuNMaP Support to the National Malaria Programme
  - U5 Child under five years
- UNICEF United Nations Children Fund
  - WB World Bank
  - WHO World Health Organization

#### **Executive Summary**

As part of the evaluation of the Nigerian efforts in rapid scale up of ITN ownership and use in the country, a population representative household survey was undertaken in Anambra State in November 2009, at the end of the rainy season and approximately four months following the LLIN distribution campaign. The survey used the standard two stage cluster sampling design and produced data for 1012 households or 99.2% of the target.

The major conclusions from this survey can be summarized as follows:

- The LLIN distribution was successful in that it dramatically increased the coverage compared to the pre-campaign status; from 2.0% to 64.3% for ITN ownership.
- Delivery of LLIN at the distribution points was very effective and equitable but there were some problems with the registration process that lead to only 80.0% of households being registered.
- Estimates of the number of LLIN actually distributed based on the census data and survey estimates suggest that no significant leakage of LLIN from the campaign has occurred.
- Net hanging was not very high with only 61.1% of campaign nets hanging but this was mainly due to motivational problems and nets not being needed rather than people not knowing how to hang the net as only 6.8% of households reported such difficulties in hanging.
- Once the decision was taken to hang the net, use was good and nets were used very frequently suggesting that addressing the general motivation to use nets (net culture) is the main problem in Anambra State.
- Achieved coverage with at least two LLIN per household the national indicator for universal coverage – was quite high with 68.2%, but short of the 80% target. However, if the "one net for every two people" criteria was used, universal coverage was only 42.9% and this is due to the limitation of two nets per household irrespective of household size.

While there is evidence that the BCC component was effective in supporting net hanging and use, it was obviously lacking in intensity.

The following summarizes key findings in more detail:

#### Registration for LLIN

Out of the 60 sampled clusters, all were visited by the registration team. In 5% of the settlements less than 50% of households were registered and all of them were in urban areas. Two thirds of the settlements achieved a registration rate of >80% and absence of the family was the main reason for non-registration. At household level 80.0% were registered and 79.1% actually went to the distribution point.

#### Distribution of LLIN

Once families got to the distribution points, 92.3% also received LLIN. Of the families that went to the distribution point and presenting a registration card, 94.0% got a net so that few households that were registered were not served by the campaign.

Among households that received any net, the average number of LLIN given out per household was 2.15 with 8.3% receiving only one net and 12.0% receiving three net or more. Those getting only one net were preferentially small households with not more than 3 persons.

Equity of distribution was good and in fact slightly pro-poor with a concentration index of -0.021 (0 being perfectly equitable and -1 totally in favour of the poorest). However, due to the lower than expected registration rate, the actual average number of LLIN delivered per household was 1.60.

#### Retention of campaign LLIN

Retention arte after 4 months was very high, 98.4% of the campaign nets were still present and 97.3% of households had retained all of their nets received from the campaign.

#### Resulting net and LLIN coverage

Estimated pre-campaign net coverage was 2.0% for any net with no difference between areas that were expected to have a higher coverage due to previous distributions. At the time of the survey, 64.3% owned any net and 57.3% any LLIN. The proportion of households with two or more LLIN (NMCP target: 80%) was 68.2%. When only households which had benefited from the LLIN distribution were considered,

the resulting ownership coverage with at least one LLIN was 84.9% and with two or more 76.6%. However, when criteria "one net for every two people" was applied, only 42.9% of sampled households had achieved this target.

#### Hanging of nets and use

Among households receiving any LLIN from the campaign, 77.0% reported to have hung their nets within at least one month of the distribution but at the time of the survey, only 46.9% of households had all their nets hanging and 61.1% of the campaign nets were found hanging. However, only 6.8% of household reported having had any difficulty in hanging the net.

Due to the low hanging rate only 55.5% of the campaign nets were used the previous night; 36.2% had never been used. Most commonly reported reasons for non-use were "net was not needed2 and "net was still stored". However, when the net was hung, 90.1% were used last night and 84.9% were used every or most nights the previous week.

Over the 4,362 usual (de-jure) household members who stayed in the house the previous night, 38.3% slept under a net. Use rates did not vary much between population sub-groups and were highest in children under five (44%) and lowest among children age 5-14 years (35%). However, in households that owned at least one net for every two people 68% of children under five had used a net.

#### Behavioural Change and Communication

Of all sampled households 67.2% reported to have received any messages on nets and net use at the time of the campaign and there was a clear correlation between the number of information sources exposed to and number of messages remembered for those that did. On average households mentioned 1.4 information sources. Main

sources of information were health workers (23.9%), family and friends (23.4%, campaign leaflets (22.2%) and radio (15.7%. Main messages recalled were "nets prevent malaria" (27.6%), "use your net" (26.9%), "hang the nets" (19.3%) and "wash and dry before use" (15.9%).

Those exposed to messages were significantly more likely to express intent to use nets every or most nights and to discuss net use within the family. And households that discussed net use within the family were 4.6 times more likely to use any net than the one that did not discuss it.

#### Introduction

Nigeria is currently engaging in a massive effort to scale up malaria prevention using mass distributions of long-lasting insecticidal nets (LLIN) in order to reach the 2010 RBM targets. While previous LLIN distributions have focused on biologically vulnerable groups, namely children under 5 and pregnant women, current efforts as outlined in the Nigeria National Malaria Control Strategic Plan 2009-2013 [1] are aimed at reaching universal access to LLIN for the general population with a specific target of 80% of households owning at least two ITN.

In close collaboration with States, development partners and stakeholders the National Malaria Control Program in 2009 developed a roll-out plan to cover all 36 States and the Federal Capital Territory with 63 million LLIN by the end of 2010. The principle approach to LLIN distributions is a state-wide stand-alone campaign providing two nets to every registered household. Anambra State was one of the first to implement the campaign in August 2009 with the support of the DFID, the SuNMaP project and World Bank.

The purpose of this survey was to evaluate the outcome of the campaign in Anambra State with respect to the achieved universal coverage with LLIN. It is part of a comprehensive evaluation which also looks at operational and cost issues and will compare results to those of an integrated campaign with the immunization provided through Child Health Days in the Northern State Sokoto as well as other stand-alone LLIN campaigns in other states (e.g. Kano, Niger and Ogun).

#### The specific survey objectives were:

Primary objectives

- 1. To capture the outcome of the universal ITN/LLIN access campaign in Niger State
- 2. To assess the level of net retention six month after the distribution
- 3. To assess the level of net use and reasons for non-compliance

Secondary objectives

- Measure the equity in access to campaign nets
- Obtain detailed information about net use and sleeping patterns in the family during the dry season
- Evaluate the success of the IEC and BCC activities associated with the campaign

#### **Expected Benefits and Value**

The results of the proposed study are expected to

- Provide the State and National Ministry of Health, Malaria Control Program and RBM partners with valuable information on the success of current guidelines for mass campaign distribution, whether they reached the intended targets for universal coverage or – if not – what should be changed.
- In addition, the study will give insight into behavioural aspects around ITN, namely retention and use that will inform the IEC/BCC component of future campaigns.

Methods

Study site

Anambra State has 21 Local Government Areas (LGA) and is located in the Southest zone of Nigeria bordering Delta State to the West, Imo State to the South, Enugu State to the East and Kogi State to the North (Figure 1). With a surface area of only 4,416 km<sup>2</sup>, an estimated population in 2006 of 4,106,605 and a 2.8% growth rate [4] the mean population density is very high with 1,010 persons/km<sup>2</sup>, one of the highest in Africa. Major ethnic groups are the Igbo and the majority of the population is Christian with a Muslim minority and some traditional religions [5].



Figure 1: Location of Anambra State and its 21 LGAs within Nigeria

Anambra State lies within the rain forest eco-geographical zone. Accordingly, overall rainfall is high varying between 1,690 mm per annum in the North and 2,148 mm in the Southern parts of the State. The rainy season is somewhat bimodal with a first peak April to July and a second peak in September/October but no real "dry" season in-between (Figure 2).

Figure 2: Rainfall intensity and pattern in Anambra State.





#### LLIN campaign

The LLIN distribution campaign in Anambra State was supported by DFID though the SuNMaP project as well as the WB Malaria Booster Project and implemented by a Task Force that included the State Malaria Control program, the State Support Team (SST) for LLIN distributions, representatives of State Government and donors as well as multi- and bilateral agencies. The Task Force had three sub-committees, namely technical, logistics and demand creation.

After a period of staff training and mobilization teams went out to the communities to register each household and provide a net card that could be redeemed for two LLIN at the distribution point in the following days. The objective was to distribute two LLIN for every household.

#### Sampling

This was a cross-sectional household interview survey with a stratified two stage cluster sampling design. The strata were areas with expected high and low pre-campaign net coverage respectively shown in Figure 3 below. Each stratum was considered as survey domain for which 30 clusters were used. No urban/rural stratification was done but clusters were defined as urban or rural based on their categorization in the 2006 census.

The sampling procedure was specifically designed to obtain a representative sample of the state population and allow the inclusion of any settlements or households that were not included in the campaign.



Figure 3: Levels of pre-campaign net coverage based on previous distributions

The following assumptions were underlying the calculations of sample size and precision using standard formulas:

- Confidence interval (alpha-error) 95%
- Power (beta-error) 80%
- Design effect of 1.75
- Non-response of 5%
- 4.6 persons per household (based on recent Kano results)
- 20% of population under 5 (based on recent Kano results)
- 3.0% of population currently pregnant (based on recent Kano results)

A sample of 30 clusters with 17 households each per stratum (510 households per stratum and 1020 overall) will give a precision of  $\pm 6.0\%$ -points per stratum if the estimate is around 50%,  $\pm 4.8\%$ -points if the estimate is around 80% and  $\pm 3.6.0\%$ -points if the estimate is around 90%. For the overall sample (N=1020) the precision will be  $\pm 4.3\%$ -points or better. The resulting number of children under five in the overall sample will be 1020, pregnant women 179 and urban 408 (assuming 40% urban population). The study is not powered to provide precise estimates on pregnant women but since the campaign is a universal access one this is considered acceptable.

#### Stage one: selection of clusters

For the selection of the 30 clusters of each of the strata a two-step procedure was applied. First, a list of the households registered for the campaign by ward was used to allocate clusters to wards using probability proportionate to size (PPS) sampling procedures. This resulted in all 21 LGA being included in the sample and each selected ward being allocated one cluster. Second, a list of all villages (settlements) was obtained from state authorities for all selected wards and one settlement was selected in each ward using simple random sampling and assuming equal size of all settlements.

#### Stage two: selection of households

Within each selected community 17 households were selected using the following methodology: if the community was small (less than 120 households) the field team mapped the whole village and from the compiled list of eligible households the supervisor randomly selected 17 households with equal probability for each household. The definition of a household was "all who prepare meals together" (eat from the same pot). If the community wass large, i.e. exceeding 120 households, the equal size section-approach was used. With the help of local chiefs the community was divided into sections of approximately equal size each with 40-60 households. One of these sections was randomly selected by the supervisor and within this section all households were mapped and households selected as above. The number of sections used in such clusters was recorded by the supervisor

#### Data collection

#### Questionnaires

For data collection a pre-tested questionnaire was used. The primary respondent was the head of household or his/her spouse and the person who went to the distribution point for net collection. The household module included questions regarding all existing mosquito nets and these were inspected by the survey team provided permission is given. The complete questionnaire used is presented in the Annex A.

#### Visual aids

In order to identify specific net brands and categorize them as LLIN the interviewers were provided visual aids showing all currently available LLIN brand labels and packages. In case access to the net was not granted to the interviewer the respondent was shown the visual aid and asked whether they could identify the brand of the net.

#### Teams and Training

Interviewers and supervisors were carefully selected to be culturally acceptable, to have good knowledge of the local language, and to have experience in household surveys. Each team had one supervisor and four to five interviewers. The week before the fieldwork, the field team was trained for four days. The training covered the purpose and exact procedures of the interviews following the interviewer's guide and involved role playing as well as some pilot interviews.

#### Community sensitization

This phase took place from November 3 to 10, 2009. Local authorities were contacted for approval to conduct the survey. Visits were made to the relevant heads of settlements, and the purpose and procedures of the survey were explained to them. In all cases, the heads of each settlement granted authorization and in turn either personally notified the relevant heads of

ward or referred the team to the heads of ward who were also informed of the survey objectives and procedures. The community mobilization specifically attempted to ensure that no further expectation of another distribution campaign after or during the survey was created.

#### Interviews

The interviews took place from November 12 to 25 2009. Each selected household was visited, and the head of household or one of his or her adult dependents was interviewed. If no appropriate respondent was found at the house, a new visit was scheduled later that day. At least three attempts were made to reach a respondent before dropping the household without replacing it.

#### Quality control

At the end of each day, the team supervisor reviewed all questionnaires for completeness and possible inconsistencies and ensured that missing information was corrected while still in the field. In addition, spot-checks were performed on 12% of interviews conducted by each fieldworker.

#### Data processing, entry and analysis

Data entry was done on-site in Niger using QPS software with double entry of all records. Both data sets were then compared, and any discrepant records were verified using the original questionnaires. After the first stage of cleaning, the data set was transferred to the STATA 11 statistical software package for further consistency checks and preparation of data files. The final data files (household, member and net) were sent to the evaluation team for further cleaning.

Final analysis was done using STATA 11 software based on the previously defined outcome indicators broken down by background characteristics, including place of residence (urban and rural) and socioeconomic status (wealth quintiles). Sampling weights were calculated based on the probability of cluster and household selection. All analysis was done adjusting for the cluster sampling by using the "svy" command family in STATA.

The wealth index was computed at the household level using principal component analysis (PCA) [6]. The variables for household amenities, assets, livestock, and other characteristics that are related to a household's socioeconomic status were used for the computation. All variables were dichotomized except those of animal ownership where the total number owned was used. The first component of the PCA was used as the wealth index. Households were then classified according to their index value into quintiles. However, quintiles were calculates separately for urban and rural strata in order to adjust for rural-urban differences in socio-economic status. For analysis of individual members of the household or nets the quintile allocation of the household was applied. Concentration index and concentration curve was used to analyze outcome differences by wealth. Standard errors and confidence intervals for the concentration indices were calculated using the formula suggested by Kakwani *et al* [7].

Responses related to questions on IEC/BCC (questions 47 to 52 and questions 53 to 58, see Annex A) were recorded by asking respondents to choose on a scale. For questions 47 to 52, response options were recoded to read 2 for "definitely could," 1 for "probably could," -1 for "probably could not," -2 for "definitely could not." For questions 53 to 58, the responses were recoded to read 2 for "strongly agree," 1 for "somewhat agree," -1 for "somewhat disagree," and -2 for "strongly disagree." The recoding prevents distortion when computing the mean

#### Anambra LLIN campaign evaluation

because, in general, for scaled responses people tend to choose the highest score ("definitely could" or "strongly agree"). After recoding all the questions, a mean score was computed to reflect the household ability/willingness to take action to prevent malaria infection or household knowledge about malaria. For questions on taking action, the households were then classified into two groups, the ones which are less likely to take action (score equal or less than 0) and those which are more likely to take action (score more than 0). For questions on knowledge, households were also classified into two groups (good knowledge for a score more than 0 and poor knowledge for a score equal or less than 0).

#### Ethical considerations

Individual verbal informed consent was sought from all respondents before interviews were conducted. Before each interviewee was asked to give consent, the interviewer gave a brief description of the study objectives, the data collection procedure, the potential harm to participants, the expected benefits, and the voluntary nature of participation at all stages of the interview. In addition, consent was also sought from community representatives (chiefs). Participants were informed of the possibility that a repeat interview may be conducted by a different person to ensure data quality. They were also ensured that data would be kept confidential and would not be shared with non-project staff. Participants in the final data set were rendered anonymous by removing the variable "name" and all other information within a particular cluster that could help to identify individuals or households, and replacing these with a new numerical identification number generated to uniquely identify the individuals and the households.

Ethical clearance for the survey was obtained from the Ethical Committee of the Nnamdi Azikiwe University teaching hospital (NAUTH), reference number NHREC/05/01/2008B.

#### Results

#### Sample characteristics

Out of the 1020 targeted households 1012 (99.2%) were visited and valid questionnaires obtained. This completion rate was similar in the two strata with 99.6% in the areas with estimated higher pre-campaign ITN ownership and 98.8% in the area with estimated lower coverage.

#### Basic household characteristics

Table 1 shows some basic characteristics of the sampled households. About three quarters of households were headed by a man, with a proportion of 76.1% versus 23.9% for female headed households. The mean age of the household heads was 51 years with no difference between men and women. There was no statistically significant variation detected across types of residence or wealth quintiles. The average household size was 4.4 (95% CI 4.3 to 4.6), and was ranging from 1 to 12 people. Mean household size was significantly lower than the 5.0 assumed for the quantification of LLIN before the campaign. The overall proportion of households with any child under 5 was rather low with 31.3% (95% CI 25.5 to 37.7%) and did not vary by background characteristic. A currently pregnant woman was living in 8.3% (95% CI 6.6 to 10.5%) of the households. Rural families were more likely to have any pregnant woman compared to urban ones but this difference was not statistically significant at the 5% level. It appeared that families in poorer quintile were less likely to have any pregnant woman and an increasing trend can be observed but this association was not statistically significant (p=0.12).

Background	Head of household		Mean	Proportion	Proportion	Number of	
characteristic	Male	Female	Mean	household	with any	with	households
			age	size	children	pregnant	
			years		<5yrs	woman	
Residence							
Urban	76.9%	23.2%	48.9	4.4	34.1%	7.0%	369
Rural	75.5%	24.5%	52.9	4.4	28.6%	9.6%	643
Pre-Campaign							
LLIN>15%	70.7%	29.3%	53.5	4.2	30.7%	7.4%	508
LLIN<15%	79.5%	20.5%	49.4	4.5	31.7%	8.9%	504
Wealth Index							
Lowest	65.0%	35.0%	56.2	3.8	26.6%	5.3%	201
Second	67.7%	32.3%	50.7	4.3	27.0%	5.8%	192
Third	77.4%	22.6%	50.4	4.4	30.7%	6.7%	207
Fourth	80.1%	19.9%	47.0	4.8	37.3%	8.7%	186
Highest	87.4%	12.6%	50.3	4.7	34.1%	13.4%	226
Total	76.1%	23.9%	50.9	4.4	31.3%	8.3%	1012

Table 1: Characteristics of sampled households	S
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Table 2 presents the educational level of household heads. Literacy levels were quite high with only 12.4% (95% CI 7.4 to 20.2%) of the household heads never attending school; 24.9% (95% CI 20.8 to 29.5%) went to primary school, 46.8% (95%CI 40.9 to 52.8%) had secondary education and 15.9% (95% CI 11.1 to 22.4%) reached a higher educational level. Overall, almost two third of heads of household had secondary or higher education, 62.6% (95%CI 53.4 to 71.1%). Not surprisingly, educational levels increased with increasing wealth quintile (p<0.00001) and was

also higher in urban areas (p<0.0005), but was the same in the two strata of pre-campaign LLIN coverage.

Background	Educational level of head of household							
characteristic	None	Primary	Secondary	Higher	Secondary			
					or higher			
Residence								
Urban	4.4%	19.7%	52.7%	23.2%	75.9%			
Rural	20.3%	29.8%	40.9%	8.7%	49.8%			
Pre-Campaign								
LLIN>15%	13.4%	22.9%	47.9%	15.7%	61.0%			
LLIN<15%	10.8%	28.1%	44.7%	16.1%	63.7%			
Wealth Index								
Lowest	29.2%	35.5%	30.2%	4.8%	35.1%			
Second	13.2%	30.9%	49.5%	6.0%	55.7%			
Third	10.9%	21.6%	48.3%	19.0\$	67.4%			
Fourth	6.5%	19.7%	60.2%	13.7%	73.9%			
Highest	4.7%	18.2%	45.7%	31.4%	77.1%			
Total	12.4%	24.8%	46.7%	15.9%	62.7%			

**Table 2:** Educational level of head of household

The average number of rooms used for sleeping, sleeping places and ratio of persons per sleeping place are presented in Table 3. There were on average 3.4 (95%Cl 3.2 to 3.7) sleeping places per family and with an average family size of 4.4, the resulting mean number of persons per sleeping place was 1.5 (95% Cl 1.3 to 1.6) which is significantly below the 2 persons assumed to share one net.

Background characteristic	Rooms for sleeping (mean)	Sleeping places (mean)	Persons / sleeping place (mean)	Tin roof	Radio	Any transport	Mobile phone
Residence			(mean)				
Urban Rural	2.5 2.7	3.4 3.5	1.5 1.4	99.8% 96.7%	94.3% 90.4%	49.9% 56.2%	96.1% 86.6%
Pre-Campaign							
LLIN>15%	2.8	3.5	1.3	97.1%	93.7%	50.0%	92.6%
LLIN<15%	2.4	3.4	1.6	100%	91.0%	58.1%	89.3%
Wealth Index							
Lowest	2.5	3.2	1.3	94.3%	70.8%	51.3%	57.5%
Second	2.5	3.3	1.5	97.7%	92.3%	37.5%	98.0%
Third	2.5	3.6	1.4	100%	98.4%	58.7%	99.1%
Fourth	2.6	3.5	1.5	100%	100%	28.1%	100%
Highest	2.8	3.6	1.5	99.0%	100%	81.5%	100%
Total	2.6	3.4	1.5	98.2%	92.6%	53.1%	91.3%

**Table 3:** House characteristics and selected assets

Table 3 also shows some of the household assets that were included in the wealth index. While corrugated iron (or similar) roofing was quite ubiquitous, ownership of radios and mobile phones – while overall very high – showed clearly increasing trends with increasing wealth (p<0.00001). Availability of any kind of transport, on the other hand, showed a non-linear relationship with lowest values found for the second and fourth quintile. The largest gradient

between poor and rich household's assets was seen for ownership of a fridge (from 3.0% to 100%), followed by television (from 19.4% to 100%).

Access to safe water sources was reported by 79.4% of households (95% CI 69.2 to 86.9%) but was significantly higher in urban areas (90.3% vs. 68.9%, p=0.007) and increased with wealth (from 63.0% to 89.8%, p<0.00005). Only 4.2% of households had no toilet facilities at all, 42.4% had a standard pit latrine and 53.4% an improved pit latrine or flush toilet. Again, access to good toilet facilities was better in urban areas and increased with wealth quintiles (p<(0.001).

Less than half of the sampled households reported ownership of any husbandry, 40.6% (95%CI 29.4 to 53.0%) and chicken were the most commonly owned animal (33.4%) followed by sheep (30.2%) while less than 1.0% of households owned cows or pigs. Land ownership of some kind was reported by 56.3% of households (95%CI 40.7 to 70.7%) with an average 3.3 acres but differed significantly between rural (76.1%) and urban households (35.8%) and significantly decreased with wealth quintile, from 86.8% among the poorest to 35.2% among the wealthiest (p<0.00001) indicating that wealth in Anambra is not primarily from agriculture. As would be expected, the average size of land among those who owned any increased with wealth from 2.6 to 6.3 acres.

#### Structure of sampled population

Among all sampled households 4,546 persons were registered of which 97.7% were usual residents and 98.0% had stayed in the house the preceding night so that 96.0% of the registered population were de-jure residents who slept in the household the previous night. Proportionate contribution of population groups of interest are shown in Table 4.

Background	% children	% children	% under 15	% of currently	Number of
characteristic	under 1	under 5	years	pregnant	people in
	year	years		women	sample
Residence					
Urban	2.3%	13.4%	31.0%	1.5%	1642
Rural	1.3%	9.6%	32.9%	2.2%	2904
Pre-Campaign					
LLIN>15%	1.8%	11.8%	32.9%	1.9%	2323
LLIN<15%	1.8%	11.0%	30.3%	1.7%	2223
Wealth Index					
Lowest	0.8%	9.2%	29.0%	1.4%	779
Second	1.5%	11.2%	30.7%	1.3%	888
Third	2.0%	10.5%	31.2%	1.5%	936
Fourth	3.1%	14.8%	37.0%	1.8%	882
Highest	1.5%	11.4%	31.4%	2.8%	1061
Total	1.8%	11.3%	32.0%	1.9%	4546

#### Table 4: Composition of the sampled population



**Figure 4:** Population distribution by gender and age

The population distribution by gender and age is compared in Figure 4 with that of the 2008 Demographic and Health Survey [2] showing that in the Anambra sample the base of the pyramid (persons <15 years) was much narrower compared to the DHS data while at the same time the proportion of older males and females was higher. This could indicate comparatively low mortality in the youngest age groups .

#### Outcome of LLIN distribution

#### Registration

Registration completeness for the campaign was first evaluated at the level of the settlements. Out of the 60 selected clusters there was not a single settlement in which none of the sampled households were registered, in other words, none had been missed completely. Only in three clusters was the registration rate below 50% and all were in urban areas ranging from 24% to 35% The complete data is presented in Table 5 and shows that generally, registration completeness was good with two thirds of the clusters showing registration rates above 80%. However, registration was better in the rural areas where 82% of clusters had registration rates above 80% compared to only 41% in urban clusters.

Registration	Resid	dence	Pre-campaign I	Total	
completeness	Urban	Rural	>15%	<15%	
None	0/22 ( 0%)	0/38 ( 0%)	0/30 ( 0%)	0/30 ( 0%)	0/60 ( 0%)
1-50%	3/22 (14%)	0/38 ( 0%)	2/30 ( 7%)	1/30 ( 3%)	3/60 ( 5%)
51-80%	10/22 (45%)	7/38 (18%)	10/30 (33%)	7/30 (23%)	17/60 (28%)
>80%	9/22 (41%)	31/42 (82%)	18/30 (60%)	22/30 (73%)	40/60 (67%)

**Table 5:** Registration of households by cluster

Figure 5 disaggregates the registration success at cluster level by the main reasons given by the respondents that were not registered (N=182). Absence of the family at the time of the registration clearly was the most common reason for non-registration overall with 69%. However, there was also a trend by the registration level of the cluster indicating that in those three clusters with low registration (<50%) households that were present were missed by the teams in 39%. This rate then declined with increasing registration completeness at cluster level and for clusters with >80% registration only 9% of households said they were there but the team did not come.



Figure 5: Reasons for non-registration by registration level of cluster

Details of the registration outcome at household level including all sampled households are presented in Table 6. Overall 80.0% (95% CI 73.4 to 85.4%) were registered to receive LLIN and even reached 88.4%(95%CI 82.3 to 92.6%) in rural areas (difference to urban p=0.001). Registration was very equitable and rates even showed a slightly pro-poor trend although this did not reach statistical significance level. Only 5.5% (95%CI 3.1 to 9.6%) of households said the teams had not come while 13.75 (95%CI 10.7 to 17.4%) had not been around on the day of registration. Refusal by the households was very low with only 0.7% and refusal by the registration team was not reported at all.

Background	Was		Reasons for non-registration						
characteristic	registered	Team did	We were	We	Team	Unknown	households		
		not come	not home	refused	refused	reasons			
Residence									
Urban	71.5%	8.5%	18.9%	1.3%	0%	0%	369		
Rural	88.4%	2.7%	8.8%	0.2%	0%	0.04%	643		
Pre-Campaign									
LLIN>15%	76.7%	6.1%	16.4%	0.7%	0%	0%	508		
LLIN<15%	85.4%	4.5%	9.3%	0.7%	0%	0.05%	504		
Wealth Index									
Lowest	83.6%	3.5%	11.6%	1.3%	0%	0%	201		
Second	82.1%	3.5%	14.3%	0.1%	0%	0%	192		
Third	83.3%	2.5%	14.3%	0%	0%	0%	207		
Fourth	79.4%	11.9%	6.3%	2.4%	0%	0%	186		
Highest	74.0%	5.9%	20.0%	0%	0%	0.1%	226		
Total	80.0%	5.5%	13.7%	0.7%	0%	0.02%	1012		

#### Table 6: Outcome of registration

#### Distribution

Out of all sampled households 79.9% (95% CI 71.6 to 85.0%) sent a family member to the LLIN distribution points (DP). This was largely determined by whether or not the household had been correctly registered, i.e. 95.3% of those who went to the distribution could also present a net card. Indeed, out of all sampled households 8.6% (95%CI 7.1 to 17.0%) went to the DP although they had not been registered. On the other hand 3.3% (95%CI 1.5 to 7.2%) of households were registered but chose not to or could not go. Among these, the most commonly stated reasons for not going was "we were not around/travelling" (7/20 responses), "we had no time or means to go" (4/20) and "we lost the net card" (3/20).

At the DP, giving out LLIN was very effective with 94.0% (95%CI 90.0 to 96.5%) of families attending also receiving at least one LLIN (Table 7). The majority of those not receiving any nets were those who either had not been registered or had no card so that 95.7% (95%CI 92.1 to 97.6%) of households with a card at the DP also got LLIN.

Overall, 74.4% of all sampled households (95%CI 66.0 to 81.3%) received any LLIN from the campaign. In rural areas this proportion was 83.1% (95%CI 74.4 to 89.3) and significantly higher than in the urban areas (p=0.009). Distribution of LLIN was also more successful in the areas with estimated lower LLIN coverage pre-campaign but this difference did not quite reach statistical significance level (p=0.1). As shown in Table 6 the poorest households had a slightly higher likelihood of being registered and this difference was further emphasized as poorer households were also slightly more likely to receive an LLIN at the DP so that the overall distribution of at least one LLIN was around 80% for the two poorest quintiles while only 67% in the two wealthiest quintiles (p=0.01).

A summary of the outcome of registration plus distribution is presented in Figure 6. It clearly shows that while slightly over a half of the sample benefited from the net distribution, two fifths of households was not registered either because of team reasons (21%), either because of their own reasons (21%).

Background characteristic	Did not go to DP	Went to DP	Received any LLIN	Received any LLIN	Received any LLIN	Number of households
			Among those	Among those	Among all	
			at DP	registered	sampled	
Residence						
Urban	29.7%	70.3%	93.0%	90.9%	65.4%	369
Rural	12.4%	87.6%	94.9%	93.5%	83.1%	643
Pre-Campaign						
LLIN>15%	25.0%	75.0%	92.4%	89.9%	69.3%	508
LLIN<15%	14.2%	85.8%	96.8%	95.8%	82.6%	504
Wealth Index						
Lowest	15.6%	84.4%	95.3%	95.0%	80.4%	201
Second	19.1%	80.9%	99.1%	96.5%	80.2%	192
Third	17.4%	82.6%	95.4%	94.0%	78.8%	207
Fourth	22.2%	77.8%	86.7%	84.9%	67.5%	186
Highest	27.9%	27.9%	93.4%	91.0%	67.4%	226
Total	20.9%	79.1%	94.0%	92.3%	74.4%	1012

**Table 7:** Households attending distributions and receiving nets

#### Figure 6: Overall outcome of distribution



#### Equity of distribution

Equity of access to LLIN from the campaign is determined by the equity of each of the steps towards obtaining a net: registration, receiving a net card, going to the DP and getting an LLIN. As shown in Tables 6 and 7 there were trends in favour of the poorer wealth quintiles. Accordingly, the distribution was statistically significantly pro-poor with a concentration curve above the equity line (Figure 7) and a concentration index of -0.021 (95% CI -0.040 to -0.002).



#### Figure 7: Equity of LLIN distribution

#### Number of LLIN received

According to the national guidelines for LLIN distribution through campaigns in Nigeria each household is to receive two LLIN irrespective of household size. Table 8 shows that this was achieved for those households receiving any nets with on average 2.15 (95%CI 2.08 to 2.23) LLIN per household. Interestingly, households in areas with estimated lower ITN coverage precampaign received slightly more nets (2.24 vs. 2.09, p=0.04). Of the families who received any nets 79.7% (95%CI 75.4 to 83.3%) received the planned two LLIN, but 8.3% (95%CI 5.8 to 11.9%) received only one and 12.0% (95%CI 9.1 to 15.7%) reported to have received three or more LLIN. The maximum reported was six and eight LLIN and in both cases these were confirmed by the observation of the nets and the number of household members was 10 and 12 respectively. The variation from the recommended two LLIN per household did correlate with the size of the family: the proportion of households receiving only one LLIN was highest among small families and for those receiving three or more LLIN it was highest among the largest families (Table 8) and this relationship was statistically significant with p<0.0001.

The mean number of LLIN received in the whole sample was significantly lower than the expected 2 LLINs per families, with an average of 1.60 (95%CI 1.40 to 1.60), reflecting the attendance rate of 71.9% at the distribution point.

Background		Number o	Mean # of	Number			
characteristic		(among t	nets per hh	of hh			
	One	two	Three or	Mean # of	Number		
			more	nets / hh	of hh	All sampled	
					with any		
Residence							
Urban	7.6%	82.8%	9.5%	2.11	253	1.38	369
Rural	8.9%	77.2%	13.9%	2.19	531	1.82	643
Pre-Campaign							
LLIN>15%	7.8%	82.4%	9.9%	2.09	374	1.45	508
LLIN<15%	9.1%	76.0%	14.9%	2.24	410	1.85	504
Household size							
1-3	14.1%	78.2%	7.7%	2.00	260	1.40	378
4-6	5.7%	82.5%	11.8%	2.17	389	1.67	471
7-12	3.4%	75.5%	21.1%	2.43	135	1.91	163
Wealth Index							
Lowest	10.2%	76.6%	13.1%	2.13	158	1.71	201
Second	10.0%	78.1%	11.9%	2.11	157	1.69	192
Third	4.6%	86.4%	9.0%	2.17	166	1.71	207
Fourth	8.5%	72.8%	18.7%	2.32	140	1.57	186
Highest	8.0%	83.6%	8.5%	2.08	163	1.40	226
Total	8.3%	79.7%	12.0%	2.15	784	1.60	1012

**Table 8:** Number of nets received by households

#### Processes at distribution point

The person who went to the distribution point was in 97.7% (95% CI 95.4 to 98.8%) from the family that received the LLIN, in 2.2% (1.2 to 4.5%) somebody from outside the family. The family member going to the distribution point was female in 75.8% (95%CI 68.9 to 81.6%), was the households head in 35.4% (95%CI 29.7 to 41.5%), was the wife (or husband) of the head in 45.0% (95%CI 38.4 to 51.8%) and was a son or a daughter of the household head in 15.3% (95%CI 12.5 to 18.6%). The remaining 4.4% were mainly grandchildren and children in law.

The time needed to reach the DP was considered short by 67.3% (57.9 to 75.5%) of the households, medium by 20.0% (95%CI 14.4 to 27.1%) and long by 12.5% (95%CI 8.8 to 18.9%). No variation by background characteristic was observed. Only 10.7% (95%CI 6.6 to 17.1%) of the family members attending the DP spent any money on transport, median 100 Naira (range 40-400). The waiting time at the DP to reimburse the net card was considered less favourable compared to the transport: almost half, 47.5% (95%CI 39.1 to 55.7%), felt the waiting time was long, 24.5% (95%CI 20.2 to 29.5) medium and only 27.7% (95%CI20.3 to 36.7) thought it had been short.

About two thirds of the LLIN, 67.7% (95%CI 60.2 to 74.4%) of the LLIN were distributed without the original package, 18.6% (95%CI 13.6 to 24.8%) were given out with the bag opened and 13.5% (95%CI 9.2 to 19.5%) were distributed with the bag still sealed. Overall, 44.5% (95%CI 36.3 to 53.0%) of the nets were given out with a BCC leaflet informing on use and hanging. On the other hand, of the 784 household who attended the distribution and received any LLIN, 65.2% (95%CI 56.5 to 73.0%) attended a demonstration on net hanging and use; only 0.6% (95%CI 0.2 to 1.5%) did not remember if they attended any demonstration at the distribution point. When asked what was the main message about LLIN was, they remembered from the distribution

point, 49.1% (95%CI 40.8 to 57.5%) said "sleep under your net every night" and 28.8% (95%CI 22.3 to 36.3%) said "hang up your net", 7.4% remembered "wash/dry and air before use", 6.8% said no message was given, and 8.0% could not remember any message. None of these variable varied by background characteristic.

#### Net ownership coverage

Based on the time when nets in the households were obtained, 35 households were identified that had any net before the date of the campaign. Of the 43 pre-existing nets, 22 were LLIN, 20 untreated and one was a conventionally treated ITN. The majority of the LLIN (15) were obtained at a health facility, five from a previous campaign and three were bought from the commercial sector. Of the untreated nets most (16) were from the market, the remaining seven from a health facility. The pre-campaign net ownership coverage in Anambra is therefore estimated to be 3.9% (95% CI 2.7 to 5.7%) and the ITN coverage 2.0% (1.2 to 3.5%). As shown in Table 9 pre-campaign net ownership was higher in urban areas and in places that had been estimated to have increased coverage although the difference was small.

Net ownership at the time of the survey, four months after the campaign is shown in Table 9. As only 0.5% of all 1,781 nets in the sample were conventionally treated and 83.7% were LLIN, only the "any net" and LLIN coverage are shown. More than three quarter of all sampled households, 76.1% (95%CI 68.7 to 82.2%) owned at least one net and 64.3% (95%CI 56.9 to 71.2%) at least one LLIN. The proportion of households with two or more LLIN which is an important indicator for the NMCP strategic plan was 57.3% (95%CI 49.5 to 64.7%). Net ownership was very equitable after the campaign. Considering households that received any nets from the campaign, 84.9% (95%CI 77.4 to 90.2%) of them had at least one LLIN at the time of the survey and 76.6% (95%CI 68.6 to 83.0%) owned at least two LLIN. No significant variation was detected in relation to either the type of residence or wealth.

Background characteristic	All sampled	d household:		Among households that received any campaign net			
	Any net before	ny net Any ITN Any net Any LLIN Two or efore before more LLIN		Any LLIN	Two or more LLIN		
	campaign	campaign					
Residence							
Urban	5.7%	3.2%	68.7%	59.5%	52.9%	87.9%	79.8%
Rural	2.2%	0.9%	83.2%	69.1%	61.5%	82.6%	74.1%
Pre-Campaign							
LLIN>15%	4.5%	2.4%	71.4%	58.7%	52.1%	82.7%	74.9%
LLIN<15%	2.9%	1.4%	83.7%	73.6%	65.7%	87.9%	78.8%
Wealth Index							
Lowest	1.1%	1.1%	80.1%	65.9%	57.3%	81.8%	71.2%
Second	4.0%	1.4%	81.2%	66.5%	59.3%	81.7%	73.5%
Third	3.9%	3.1%	79.7%	67.3%	63.7%	84.1%	79.5%
Fourth	4.7%	1.2%	70.4%	57.7%	51.9%	84.8%	76.3%
Highest	5.4%	3.1%	70.8%	64.4%	55.3%	91.2%	82.0%
Total	3.9%	2.0%	76.1%	64.3%	57.3%	84.9%	76.6%

**Table 9:** Net and LLIN ownership before and after campaign

#### Anambra LLIN campaign evaluation

Intra-household coverage is an important determinant of whether or not all members of the family have the opportunity to use a net or LLIN and as such is an important factor of "universal coverage". Since there is as yet no internationally accepted definition of "universal coverage" or how it should be measured, the two currently discussed indicators, "proportion of households with at least one net per sleeping place" and "proportion of households with at least one net for every two people" are presented in Table 10. Due to the fact that the ratio between family members and sleeping places was rather low with 1.5 persons per sleeping place (Table 3) the sleeping place indicator was found to be significantly lower (p<0.001) in Anambra than the one relating net to people directly: while only 24.6% (95%CI 20.5 to 29.3%) of all sampled households had a net for every reported sleeping place, 42.9% (95%CI 35.7 to 50.3%) had a net for every two people.

With number of LLIN given during the campaign limited to two per household but 45.4% (95%CI 42.1 to 48.8%) having five or more family members, the proportion of households that received any campaign nets and had one net for every two people did only reach 57.3% (95%CI 51.2 to 62.7%). Interestingly, the previously described pro-poor trend in the outcome of the LLIN distribution (see Figure 3) was further emphasized by the fact that poorer households had lower numbers of family members (see Table 3), so that the pro-poor equity in "universal coverage" was even stronger with a concentration index of -0.060 (95%CI -0-099 to -0.021).

Background characteristic	Ar	nong all samp	led house	holds	Among household that received any campaign					
	Nets per sleeping place (mean)	Proportion with 1 net per s.place or better	Persons per net (mean)	Proportion with 1 net per two people or better	Nets per sleeping place (mean)	Proportion with 1 net per s.place or better	Persons per net (mean)	Proportion with 1 net per two people or better		
Residence										
Urban	0.49	20.1%	2.86	37.8%	0.73	29.7%	2.29	56.9%		
Rural	0.62	29.1%	2.54	47.8%	0.74	34.9%	2.26	57.2%		
Pre-Campaign										
LLIN>15%	0.65	21.8%	2.37	35.9%	0.77	31.3%	2.11	51.2%		
LLIN<15%	0.50	29.2%	2.90	54.2%	0.71	34.5%	2.39	65.1%		
Wealth Index										
Lowest	0.66	32.3%	2.27	60.1%	0.81	40.2%	1.90	74.7%		
Second	0.61	26.2%	2.45	44.2%	0.75	32.2%	2.23	53.8%		
Third	0.61	29.1%	2.54	46.5%	0.77	35.7%	2.17	58.9%		
Fourth	0.49	18.9%	3.12	32.8%	0.71	28.1%	2.45	48.7%		
Highest	0.44	18.7%	3.00	33.7%	0.63	27.3%	2.69	48.9%		
Total	0.55	24.6%	2.70	42.9%	0.73	32.7%	2.27	57.3%		

Table	10:	Intra-	housel	hlor	net	coverage	and	universal	access
Iable	<b>TO</b> .	iiiti a-	nousei	iuiu	net	COVELAGE	anu	universai	access

#### Net characteristics

Of the 1,781 nets in the sample the majority, 69.5% (95%CI 65.3 to 73.4%) were directly inspected by the interviewers and this did not vary by background characteristics of the household. Using the visual aid the interviewers identified, 24.4% (95%CI 17.5 to 32.9%) of the nets as PermaNet brand, 55.4% (95%CI 44.1 to 66.2%) as Olyset, 2.8% (95%CI 1.3 to 5.6%) as Duranet, 0.4% (95%CI 0.1 to 1.4%) as Interceptor, 0.7% (95%CI 0.3 to 1.7%) as Icon Life and

16.2% (95%Cl 10.6 to 23.9%) were unbranded nets. Almost all nets (99.9%) were of rectangular shape and 72.0% were white, 20.3% blue and 7.7% green.

Retention, hanging and use of nets

#### Retention of campaign nets

Out of the 1,012 households studied 74.4% (95%CI 66.0 to 81.3%) said they received any net from the campaign (see Table 7) and among them, the total number of nets reported received was 1,771. Forty-nine LLIN from the campaign were reported lost by 33 households (20 lost 1 net and 10 lost 2 nets and 3 lost 3 nets). During the interviews 1,721 LLIN were identified as campaign nets in the net roster, 1,208 campaign LLIN were directly observed in the households during the interview and 513 were reported to be campaign nets but no permission given for direct observation, which together with the nets reported lost comes to 1,770. This means that only one campaign net reported by the respondents was not accounted for and was either lost but not reported, error in recall by the respondent or misclassification of source of net in the net roster. The retention rate 4 months after the campaign is then estimated as 98.4% (95%CI 97.4 to 99.0%) based on reported campaign nets in the net roster and those reported lost, equivalent to an attrition rate of 1.6% (95%CI: 1.0 to 2.6%). As shown in the Table 11, nearly all households, 99.6% (95%CI 99.0 to 99.8%) retained any of the nets they received from the campaign and 97.3% (95%CI 95.6 to 98.3%) retained all. None of these variables varied significantly by background characteristic. Out of the lost nets 41 (88%) were given to relatives, another five given to other, non-related families and three were reported stolen. The main reasons stated for giving away the nets were "others needed the net" in 24 cases (52%) and "we did not need the net" (41%). Three nets (6%) were given away because the household did not like the net.

Background characteristic	Among house received any	holds that campaign net	Among all campaign nets distributed				
	Retained any net	Retained all nets	NetsMean time of netretainedsurvival for lostnets (weeks)		Number of nets		
Residence							
Urban	99.8%	98.4%	99.0%	6.7	549		
Rural	99.4%	96.4%	98.0%	4.1	1221		
Pre-Campaign							
LLIN>15%	99.4%	97.5%	98.4%	3.8	822		
LLIN<15%	99.7%	97.1%	98.4%	3.8	948		
Wealth Index							
Lowest	99.4%	97.6%	98.2%	3.2	357		
Second	100%	97.4%	98.7%	2.9	352		
Third	99.7%	97.1%	98.3%	8.5	378		
Fourth	99.3%	97.2%	98.9%	3.3	332		
Highest	99.6%	97.1%	97.9%	5.0	351		
Total	99.6%	97.3%	98.4%	4.8	1770		

Table 11: Retention of campaign nets since the distribution

#### Hanging of campaign nets

There were 1,781 nets found in the study households and at the time of the survey and 60.6% (95%CI 55.0 to 65.9%) of these were actually hanging over beds or sleeping spaces. The rate of hanging did not differ significantly between the campaign nets and those obtained before or after the campaign (p=0.16). Table 12, therefore focuses only on the campaign nets. Among the 784 households that received any net from the campaign, close to two thirds (61.6%) reported having hung their net within a week: 20.5% (95%CI 14.5 to 28.9%) stated "same or next day", 41.0% (95%CI 35.6 to 46.6%) "within a week" with additional 15.5% (95%CI 11.6 to 20.4%) "within a month" so that 77.0% said they hung the nets within one months and 23.0% (95%CI 17.0 to 30.5%) said they had not yet hung any of their campaign nets. No clear trend was detected across type of residence or wealth quintile.

Table 12 also presents the hanging of nets at the time of the survey, i.e. among households that did still possessed any campaign nets: close to half, 46.9% (95%CI 40.9 to 52.9%) of households with any campaign nets had all of them hanging; 23.7% (95%CI 17.7 to 31.1%) had none of them hanging and 29.4% (95%CI 22.9 to 36.8%) had some of them hanging. This suggests that few nets originally hung had been taken down again at the time of the survey and that the reports of the households were quite accurate. However, difficulties in hanging the net did not appear to be the main reason for the rather low hanging rates as only 6.8% (95%CI 4.5 to 10.2%) of households that had received campaign nets reported to have had any difficulties in hanging them. This rate was significantly higher among households that had not hung any nets (16.7%) compared to those with any hanging (3. 7%, p<0.00001), but still only one in six households with none of the campaign nets hanging stated this was due to problems in hanging. The problems in hanging were reported as "no room to hang the net" in 37.3% of those reporting any difficulties, "did not know how to hang" in 30.2%, "no material to hang" in 20.5%, and "size or shape did not fit" in 9.3%.

Of the campaign nets, 61.1% (95%CI 55.4 to 66.4%) were observed or reported to be hanging: 41.3% (95%CI 34.5 to 48.4%) hanging loose over the mattress, 19.8% (95%CI 16.2 to 24.0%) hanging and folded up or tied. Not hanging but close by were 2.3% (95%CI 1.4 to 3.9%) while 30.8% (95%CI 26.1 to 35.9%) were stored away unpacked, 5.8% (95%CI 3.2 to 10.2%) were stored away still in the package and only 0.1% (95%CI 0.02 to 0.4%) were temporarily taken away.

Background characteristic	Among households receiving any campaign nets*			Among households having any campaign nets			Among all retained campaign nets		
	Same or	Within	Within	Not yet	None	Some	All	Proportion	Number
	next day	week	month					hanging	of nets
Residence									
Urban	21.6%	43.5%	13.2%	21.7%	22.7%	31.0%	46.3%	60.7%	537
Rural	19.6%	39.1%	17.2%	24.1%	24.5%	28.2%	47.3%	61.3%	1184
Pre-Campaign									
LLIN>15%	16.7%	42.8%	16.8%	23.7%	23.1%	27.9%	49.0%	62.3%	796
LLIN<15%	25.6%	38.5%	13.8%	22.1%	24.6%	31.4%	44.0%	59.5%	925
Wealth Index									
Lowest	25.9%	37.8%	16.7%	19.6%	19.4%	36.3%	44.3%	61.5%	345
Second	14.6%	45.2%	18.7%	21.5%	24.6%	31.6%	43.8%	59.4%	344
Third	20.9%	43.2%	9.4%	26.5%	29.0%	28.1%	42.9%	59.2%	369
Fourth	23.9%	40.9%	12.3%	22.9%	22.3%	28.8%	48.9%	61.7%	326
Highest	17.9%	38.3%	18.9%	24.9%	23.6%	22.6%	53.9%	63.2%	337
Total	20.5%	41.0%	15.5%	23.0%	23.7%	29.4%	46.9%	61.1%	1721

#### Table 12: Hanging of nets from the campaign

\* Categories not overlapping

#### Use of nets

The net use coverage is explored at three levels or units of observation: first at the level of the nets, i.e. how many of the nets were used last night and if not, why; second at the level of the individuals in the household, i.e. who used a net last night; and thirdly at the level of the household, i.e. what proportion of households had any or all usual (de-jure) members sleep under a net the previous night.

Table 13 presents the data on use of the campaign nets the night preceding the survey. Among households that retained any nets, 70.5% (95%CI 62.1 to 77.8%) used any of the campaign nets the previous night but only 41.9% (95%CI 36.4 to 47.6%) used all their nets. There was no clear trend across type of residence or wealth quintile. Considering all campaign nets retained, 55.5% (95%CI 49.8 to 61.0%) were reported being used the previous night, again with no differences between background characteristics and non-campaign nets were used at the same rate as campaign nets. Out of campaign nets that were hanging, 90.1% (95% CI 86.6% to 92.8%) had been used the previous night while only 1.1% (95%CI 0.4 to 3.5%) of those not hanging which is consistent with the observation described above (hanging of campaign nets) that very few nets were available for use but not hanging. The average number of net users if the net used at all was 1.87 (95%CI 1.76 to 1.99) which is below the ratio of 2 people per net assumed by the universal coverage indicator, but in line with the low ratio of people per sleeping place (Table 3).

Background characteristic	Among	household: campa	s that retai ign net	ned any	Among all campaign nets retained				
	Used	None	Some	All	Nets	Mean	Number		
	any net				used	number of	of nets		
						users if used			
Residence									
Urban	72.7%	27.3%	31.8%	41.0%	55.6%	1.88	537		
Rural	68.7%	32.2%	26.1%	42.6%	55.4%	1.86	1184		
Pre-Campaign									
LLIN>15%	70.7%	29.3%	26.6%	44.1%	56.2%	1.73	796		
LLIN<15%	70.1%	29.9%	31.3%	38.9%	54.5%	1.98	925		
Wealth Index									
Lowest	73.7%	26.3%	34.7%	38.9%	56.3%	1.78	345		
Second	67.8%	32.2%	30.5%	37.3%	52.4%	1.80	344		
Third	69.7%	30.3%	29.7%	40.0%	55.9%	1.79	369		
Fourth	69.3%	30.7%	24.8%	44.5%	54.2%	1.91	326		
Highest	71.4%	28.6%	23.1%	48.3%	58.4%	2.05	337		
Total	70.5%	29.5%	28.6%	41.9%	55.5%	1.87	1721		

#### Table 13: Use of campaign nets

Looking at the reported frequency of net use in the last week preceding the survey (Figure 8) confirms the high non-use rate of existing nets observed in the data from "previous night use" but also shows that those nets that are being used, are predominantly used every night.



Figure 8: Frequency of reported campaign net use the week before the survey

As shown in Figure 9, the main reasons stated for not using a net was "the net is still stored/not hung" with 58.1% (95%CI 47.8 to 67.7%), followed by "net not needed" with 28.1% (95%CI 20.6 to 37.0%) and "feels to hot, smelly or otherwise unpleasant" with 8.6% (95%CI 5.7 to 12.9%. The specific reasons were then grouped into three main categories, two of which are more subjective and could be directly influenced by BCC while the third is more objective and less – if at all – accessible by BCC. No need to use the net or unpleasant feelings associated with it were stated for 9.7% of the un-used campaign nets and for 59.1% there had been no motivation to even hang it. Objective reasons were stated for 29.5% of un-used campaign nets and comprised the "net is not needed" response as well as "the usual user was not around" and "the net was washed and not ready for use".



Figure 9: Reasons stated for not using the campaign nets

Table 14 below presents the use of nets before the night before the survey by various population groups of interest. Considering all usual members who stayed in the house the previous night, the group with the highest net use was the children under five with 42.0% (95%Cl 36.1 to 48.1%), followed by heads of household with 40.2% (95%Cl 34.4 to 46.4%), while

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net use among other age groups and pregnant women was around 35%. If only people living in households with any nets were considered, use rates increased up to 55.5% (children under five) and pregnant women now had the third highest use rate with 50.7%. Use rate for all household members was 38.3% (95%CI 32.9 to 43.9).

Background		All u	usual mem	bers		Usual members in households with any nets					
characteristic	V	who stayed in the house last night					who stayed in the house last night				
	Head	PW	0-4yrs	5-14yrs	15yrs+	Head	PW	0-4yrs	5-14yrs	15yrs+	
Residence											
Urban	38.2%	35.7%	36.4%	29.2%	31.1%	55.6%	53.7%	53.2%	38.5%	39.8%	
Rural	42.3%	35.3%	50.0%	40.1%	42.0%	50.9%	48.8%	57.8%	47.6%	48.4%	
Pre-											
Campaign	44.2%	41.5%	43.4%	38.9%	38.7%	52.8%	56.6%	50.6%	45.2%	44.4%	
LLIN>15%	37.9%	32.3%	41.3%	33.6%	34.9%	53.1%	47.4%	58.5%	43.2%	44.0%	
LLIN<15%											
Wealth Index											
Lowest	44.2%		57.4%	43.9%	40.1%	55.3%		71.2%	52.5%	50.2%	
Second	43.8%		34.2%	31.8%	37.2%	54.0%		40.3%	36.3%	43.2%	
Third	43.1%		41.9%	35.9%	37.6%	54.1%		59.7%	45.5%	44.3%	
Fourth	35.2%		37.7%	30.2%	37.5%	49.9%		59.8%	40.8%	45.2%	
Highest	36.4%		44.2%	36.6%	36.4%	51.6%		52.8%	45.4%	40.3%	
Total	40.3%	35.5%	42.0%	35.4%	36.3%	53.0%	50.7%	55.4%	43.9%	44.1%	

#### Table 14: Use of any nets by population groups

Looking at net use by age and gender (Figure 10) essentially confirms that children under 5 had one of the highest net use rates while older children, adolescents and young adults had the lowest rates, although the differences in this case are not very pronounced. Interestingly, girls under five years seemed to use a net more often, but this difference did not reach statistical significance level. A female dominance in use was also seen in young adults which most likely corresponds to the preference given to young mothers and their babies and pregnant women.



Figure 10: Net use the previous night by age and gender



Figure 11: Net use previous night by age and household coverage

Figure 11 presents net use of de-jure household members by age groups stratified whether or not the household had at least one net for every two people or not. It shows that, if there were enough nets in the household, two thirds of all children under five used a net and this was the highest rate among all age groups indicating a greater reluctance to use available nets among older persons. In contrast, if a household had less than one net for every two people (including no nets at all) the age group with the highest net use was 50-59 year olds with 48.8%.

Figure 12 then summarizes the net use and non-use of the 494 children under 5 in the sample who also stayed in their house last night. It shows that in addition to those 42% actually using a net last night, an additional 13.9% could easily have used a net as their family had at least one net hanging, but it was used by others (11.5%) or not at all (2.4%). Another 20.2% of the children could have used a net if the existing nets would have been hung so that in total 76.0% could potentially have used a net and only 24.0% could not as there were no nets available in the household.

Finally, Table 15 presents the net use at household level. Over the whole sample, more than half of them had at least one member using a net the previous night, with 53.5% (95%CI 45.8 to 61.0%) and 23.2% (95%CI 17.6 to 30.0%) had all their members using a net. There were no striking variations by residence type or socio economic group. Considering the 778 households that retained any net, the proportion with any members using a net increased to 70.5% (95%CI 62.1 to 77.7%) and for all members to 30.9% (95%CI 23.0 to 40.1%). A similar situation was observed for children under five although rates were generally slightly lower than those for all members: in 47.8% (95%CI 40.6 to 55.1%) of households with any children under five at least one was using a net and in 40.2% (95%CI 33.1 to 47.8%) all of them. The small difference between these two figures indicates that many families with children under five only had one child of that age, namely 50.7%. In households with any children under five and any nets use rate by any child was 61.2% (95%CI 52.6 to 69.7%) and by all 54.4% (95%CI 45.5 to 63.0%).



#### Figure 12: Status of children under 5 regarding actual and potential net use

Background	All hou	iseholds	Househo	lds with	Househol	ds with at	Household	ls with any
characteristic			any U5		least o	ne net	U5 and at le	east one net
	Any	All	Any U5	All U5	Any	All	Any U5	All U5
	member	members			member	member		
						S		
Residence								
Urban	49.7%	22.3%	41.3%	32.9%	72.3%	32.5%	58.4%	46.7%
Rural	57.2%	24.1%	55.4%	48.7%	68.7%	28.9%	63.7%	56.0%
Pre-Campaign								
LLIN>15%	50.3%	22.1%	46.4%	38.8%	70.4%	31.0%	62.6%	52.4%
LLIN<15%	58.7%	25.0%	50.3%	42.6%	70.2%	29.9%	59.1%	50.1%
Wealth Index								
Lowest	58.9%	26.0%	60.6%	58.4%	73.5%	32.5%	74.6%	71.9%
Second	55.4%	26.6%	43.0%	33.6%	68.2%	32.8%	49.6%	38.8%
Third	55.8%	23.6%	50.8%	43.0%	70.0%	29.7%	71.8%	60.7%
Fourth	49.4%	18.0%	44.4%	33.7%	70.2%	25.5%	63.7%	48.3%
Highest	49.4%	22.0%	44.1%	37.1%	69.7%	31.1%	53.3%	44.9%
Total	53.5%	23.2%	47.8%	40.2%	70.3%	30.5%	61.2%	51.5%

#### Use of other preventive measures at household level

Other than mosquito nets, households used a number of other approaches to prevent malaria or mosquito bites. Insecticide sprays (aerosols) were used by 62.8% (95%CI 54.5 to 70.4%), pyrethroid coils by 49.5% (95%CI 42.6 to 56.5%) and herbs and plants by 21.7% (95%CI 16.2 to 28.5%). The use pattern of sprays and coils did not differ between households that also used nets suggesting that it was not seen as a substitute but rather an additional component of preventive protection. As can be expected, sprays were significantly more often applied in

urban areas, 71.7% urban vs. 54.3% rural, p=0.01), herbs more often in rural households, (13.5% vs. 29.7%, p=0.007) while coil use showed no difference. In the same line spray use increased significantly with wealth quintiles (from 39.5% to 78.1%, p<0.0001), herbal measures decreased (from 41.8% to 11.0%, p<0.0001), and coil use showed a moderate increase only (from 36.9% to 51.3%, p=0.04).

When various combination of preventive measured were assessed, only 3.4% (95%CI 1.9 to 6.2%) of the households did not use any preventive measure at all and 12.4% (95%CI 9.1 to 16.5%) used only nets. The most common combination of prevention approaches other than nets were sprays & coils (25.1%) and sprays, coils and herbs (9.7%) while 25.9% of households used sprays alone, 11.5% coils alone and 6.6% only plants and herbs.

#### Behavioural change communication

Presentation of behavioural change communication is divided into three steps. First the level of exposure to messages is explored and what content could be remembered. Then the resulting knowledge, perceptions and intentions are presented and finally an attempt is made to link these two elements to the actual behaviour observed.

#### Exposure to messages

Approximately two thirds of all household respondents (62.7%; 95% CI 59.9 to 73.8%) said they had received some information on nets during the time of the campaign. Not surprisingly, such exposure was closely linked to a member of the household going to the LLIN distribution point with 80.4% of those being exposed to messages while only 17.3% of households that did not attend distribution said they had received any information (p<0.0001). Details shown in Table 16 suggest that access to information was slightly higher in rural areas and in those with no previous LLIN distributions, but these did not reach statistical significance level. No variation was seen with wealth quintiles. There were four main sources of information: health workers with 23.9% (95%CI 18.5 to 30.3%), family or friends 23.4% (95%CI 17.2 to 31.1%), leaflets 22.2% (95%CI 17.7 to 27.5%) and radio 15.7% (95%CI 12.8% to 19.2). Other not shown in the table and less than 1.0% were town announcer, drama, newspaper and radio song.

Background	Any	# of		Sources mentioned							
characteristic	info on hanging	sources if any	Leaflet	Radio	Health worker	Leader	Campaign team	Family or	Place of worship		
	& use	info						friends			
Residence											
Urban	63.5%	1.4	19.0%	14.1%	21.6%	2.1%	4.6%	23.2%	3.4%		
Rural	70.7%	1.5	25.3%	17.3%	26.2%	3.1%	3.7%	23.7%	2.9%		
Pre-Campaign											
LLIN>15%	65.1%	1.4	17.6%	13.7%	28.1%	1.8%	3.5%	21.0%	2.8%		
LLIN<15%	70.5%	1.6	29.7%	19.0%	17.2%	3.9%	5.2%	27.4%	3.7%		
Wealth Index											
Lowest	62.7%	1.5	23.6%	11.4%	24.5%	4.8%	1.6%	23.4%	2.6%		
Second	69.5%	1.3	22.7%	11.8%	28.5%	0.9%	8.4%	13.9%	2.0%		
Third	68.4%	1.5	19.9%	13.6%	22.9%	4.5%	4.2%	21.7%	4.4%		
Fourth	73.2%	1.5	25.4%	19.5%	24.0%	1.8%	4.0%	29.6%	2.6%		
Highest	63.4%	1.6	20.1%	20.8%	20.6%	1.5%	2.9%	27.4%	4.0%		
Total	67.2%	1.5	22.2%	15.7%	23.9%	2.6%	4.1%	23.4%	3.2%		

Table 16: Information on net use received by households and their sources

Only 1.2% (95%CI 0.6 to 2.3%) out of the 663 households that said they had received messages on nets could not recall any of them and there was a very close correlation between the number of sources mentioned and the number of messages remembered (Figure 12) indicating the need for multi-channel communication approaches in order to get information across.



Figure 13: Correlation between information sources and messages remembered

The content of the messages remembered is presented in Table 17. Interestingly, use of nets was not the main message even when "use the net" and "use the net every night" were combined (20.4%; 95%CI 16.8 to 24.5%), but most frequently remembered was that "nets prevent malaria" with 27.6% (95%CI 21.6 to 34.5%). Also relatively frequent was "hang the net" with 19.3% (95%CI 15.0 to 24.5%) and "wash and dry before use", 15.9% (95%CI 12.5% to 20.1%). No major variation by background was observed except a statistically significantly higher remembering of "hang the net" in rural areas (p=0.02).

Background	Any	# of		Messages mentioned							
characteristic	message	messages if any	Use net	Value net	Hang net	Use every night	Net prevents malaria	Air net before use	Wash and dry		
Residence											
Urban	62.5%	1.4	6.6%	7.4%	19.5%	9.3%	27.3%	0.4%	13.7%		
Rural	71.1%	1.4	7.5%	7.5%	19.1%	18.2%	27.9%	2.5%	18.1%		
Pre-Campaign											
LLIN>15%	65.2%	1.4	5.8%	5.6%	17.1%	13.0%	29.6%	1.8%	13.9%		
LLIN<15%	69.6%	1.5	9.2%	10.3%	22.8%	15.1%	24.4%	0.9%	19.2%		
Wealth Index											
Lowest	61.2%	1.4	8.0%	8.1%	15.0%	15.7%	21.5%	1.6%	18.1%		
Second	69.5%	1.3	1.9%	4.1%	21.7%	15.8%	31.5%	2.9%	8.6%		
Third	67.1%	1.4	4.0%	4.5%	20.0%	18.8%	28.7%	1.4%	12.9%		
Fourth	73.2%	1.4	11.8%	8.5%	24.7%	9.2%	30.6%	0.6%	19.7%		
Highest	64.2%	1.5	9.0%	10.9%	16.2%	10.8%	26.2%	1.0%	19.3%		
Total	66.9%	1.4	7.1%	7.5%	19.3%	13.8%	27.6%	1.4%	15.9%		

Table 17: Messages on net use remembered by respondents and their content

#### Knowledge, perceptions and intentions

Six questions were asked regarding the knowledge of the negative effects malaria can have on people's life and respondents were asked to state their level of agreement to these statements and results are shown in Table 18. All statements received very similar responses with about 90% expressing some form of agreement and around 60% strongly agreeing which resulted in a mean score of 1.4 to 1.5. Only the statement on "malaria is the most serious health problem in my community" reached higher levels of agreement with 81.3% strongly agreeing.

The situation differed somewhat for six statements that probed the confidence of the respondents to take certain actions (Table 19). Here the level of confidence was generally less the agreement to the previous statements but also differed between the actions presented. The greatest confidence to take action was expressed for protecting the family and especially the children from malaria with 93.8% saying they could definitely or probably take action while the least confidence occurred for the one action which involved spending money, "save enough money to buy nets for all children", with 78.4% expressing any positive intentions but 6.4% saying they definitely could not do that.

Question		Level of agreement						
	Strongly	Somewhat	Somewhat	Strongly	score*			
	agree	agree	disagree	disagree				
Malaria is the most serious health	01 20/	15.6%	2 00/	0.4%	10			
problem in my community	01.570	13.0%	2.070	0.4%	1.0			
People in this community only get	67 10/	27.0%	0.0%	1 0%	1 /			
malaria during the rainy season	02.1%	27.9%	9.0%	1.0%	1.4			
Each year, many children in this	61.7%	21.0%	1.6%	0.2%	1 5			
community get malaria	04.270	51.076	4.0%	0.270	1.5			
Malaria can prevent me from working	62 10/	27.6%	0.0%	1.0%	1 /			
and earning money	02.470	27.076	9.076	1.0%	1.4			
Malaria can prevent my children from	66.00/	26 59/	6 70/	0.04%	1 5			
attending school	00.8%	20.5%	0.7%	0.04%	1.5			
Treating malaria can be expensive	63.5%	26.1%	8.9%	1.4%	1.4			

Table 18: Knowledge of malaria – level of agreement to statements

\* agreement scored 1 and 2, disagreement -1 and -2

#### Table 19: Action taken for malaria prevention – level of confidence

Question		Level of agreement							
	Definitely	Probably	Probably	Definitely	score*				
	could	could	could not	could not					
Obtain enough bed nets for all your children.	56.0%	32.6%	8.7%	2.5%	1.3				
Hang a bed net above your children's sleeping places.	52.8%	36.2%	9.5%	1.4%	1.3				
Protect yourself and your children from getting malaria.	63.6%	30.2%	5.2%	1.0%	1.5				
Save enough money to obtain nets for all your children.	40.0%	38.4%	15.2%	6.4%	0.9				
Sleep under a net every night of the year.	47.8%	42.5%	8.2%	1.6%	1.3				
Get all of your children to sleep under a net every night of the year.	49.3%	38.1%	11.4%	1.2%	1.2				

\* action level scored 1 and 2 positive, -1 and -2 for negative

Table 20 then summarizes the knowledge and action questions into a single score and categorizes households as those with good (i.e. mean score >0) knowledge and action likelihood. The overall results show that 86.5% (95%CI 81.1 to 90.5%) of households had a good knowledge and 77.5% (95%CI 70.2 to 83.4%) were likely to take at least some positive action on using nets. There was no significant variation by urban/rural status or wealth but areas with previous LLIN distributions, i.e. some previous exposure, had a significantly higher knowledge level (p=0.03) and a marginally higher action confidence(p=0.14).

Background	Knowledge of households		Ability and willingness to take			
characteristics	about n	nalaria	action to pre	event malaria		
	Poor	Good	Less likely to	More likely to		
	knowledge	knowledge	take action	take action		
Residence						
Urban	15.9%	84.1%	23.1%	76.9%		
Rural	11.2%	88.8%	22.0%	78.0%		
Pre-Campaign						
LLIN>15%	9.3%	90.7%	18.9%	81.1%		
LLIN<15%	20.4%	79.6%	28.4%	71.6%		
Wealth Index						
Lowest	14.9%	85.1%	26.8%	73.2%		
Second	9.1%	90.9%	19.7%	80.3%		
Third	21.2%	78.8%	27.5%	72.5%		
Fourth	7.0%	93.0%	17.6%	82.4%		
Highest	15.4%	84.6%	21.8%	78.3%		
Total	13.5%	86.5%	22.5%	77.5%		

Table 20: Ability to take action to prevent malaria and knowledge about malaria

Respondents were asked whether they discussed the use of nets in their family and 61.8% confirmed this, but the rate was very different whether or not households owned any nets: 75.2% (95%CI 68.4 to 81.0%) of net owners discussed this issue but only 19.2% (95%CI 12.6 to 28.0%) of those without any nets (p<0.0001). As shown in Figure 13, there also was a dose response to the number of messages on nets remembered. For all households the proportion discussing net use increased sharply from zero message recalled to one and two messages and then flattened off a bit and the linear trend was statistically significant (p<0.001). For households with any net the trend was not linear as there was no difference between those not recalling any message and those recalling one, but recalling two or more messages was associated with a higher proportion discussing net use, 70.5% (95%CI 62.5 to 77.4%) vs. 89.0% (95%CI 82.6 to 93.2%, p<0.0001).

The question regarding the intended frequency of net use in their families showed that 55.8% (95%CI 50.3 to 61.2%) of households with any nets wanted to use them every night and another 19.8% (95%CI 16.1 to 24.2%) most nights while 15.6% (95%CI 12.1 to 19.7%) intended to use some nights and 6.9% (95%CI 4.4 to 10.7%) said that they had no intention to use them. The remaining 2.0% did not know. There was a very similar dose-response relationship between intention to use every or most nights and the number of messages on nets recalled as seen for discussion within the family with an increase from 60.9% if no message recalled to 88.4% for three or more (p<0.0001). Similarly, being more likely to take action on net use was associated with a higher proportion of respondents stating intent to use nets every or most nights with 71.1% (95%CI 64.6 to 76.8%) vs. 48.5% (95%CI 34.5 to 62.6%, p=0.001). In contrast, higher

knowledge levels showed a weaker association that was not statistically significant (67.4% vs 56.9%, p=0.14).





In an attempt to distinguish between perceived obligation to provide a positive answer and the actual intention, respondents were asked what they thought their neighbour's net use pattern was. Two thirds, 67.6% (95%CI 62.0 to 72.7%) did not feel confident to comment on that, but if the "don't know" responses were excluded, the response pattern was very similar to that given for their own family (Figure 14).



Figure 15: Reported intention to use nets and perceived neighbour's use

#### Impact on actual behaviour

The two variables "intention of household to use nets every or most nights" and "household discussed net use in family", both positively associated with exposure to messages on net use, were then used to explore the question whether these had impact on the actual behaviour of the household regarding hanging and use of nets. Using only households with any nets (N=792) multivariate regression analysis was applied adjusting for any potential confounder or effect modifier and resulting Odds-Ratios (OR) of the two variables of interest are shown in Figure 15.

Both, discussing net use and expressed intention to use were significantly associated with hanging or using the nets with little difference between any or all nets hung or used. The only difference was that for net use the intention had a somewhat stronger association than discussion although not statistically significantly. There was no interaction between discussion and intention, i.e. having discussed and intention did not increase the chances of hanging or using the nets. There also was a dose-response relationship with the number of net messages recalled for the hanging of nets suggesting that the odds of hanging any net increased by 39% with each additional message recalled (p=0.014). This was not the case for the use of nets, however, use was associated with recalling any message specifically referring to net use (OR 1.67; 95%CI 1.00 to 2.79, p=0.05). None of the background characteristics nor educational level of the head of household had any association with the outcome variables.



Figure 16: Association between BCC outcomes and net hanging and use Only households with any nets. Error bars represent 95% CI.

#### Comparison with other LLIN campaigns

Finally, a comparison was made between the results from the LLIN distribution during the campaign in Anambra and those in Kano, Ogun and Niger and an integrated campaign in Sokoto (Table 21). Surveys in these states were done using the exact same methodology but differed in timing in relation to the rains (Figure 15) with Kano and Anambra surveys being done end of rains in 2009 and Sokoto, Niger and Ogun during beginning of the rains in 2010.

Registration completeness was a problem in all states but Anambra had the best performance with 80.0% registration (95%CI 73.4 to 85.4%) which was 22.4%-points above the poorest performing state, Niger, where only 57.6% (95%CI 45.8 to 68.7%) of households were registered. It is noteworthy that in the South (Ogun and Anambra), the dominant reason for non-registration was mobility (Figure 14) while iIn the North a team not reaching the households due to remoteness and/or running out of cards was an equally important factor. Another important observation is that in the integrated campaign in Sokoto, there was a strong, statistically significant targeting of households with children under five which was not present in the stand-alone campaigns as in any of the states with stand-alone campaigns.

Due to the higher registration rates and the fact that once a household representative reached the DP almost all received LLIN, the performance of the Anambra campaign was excellent regarding LLIN delivery with the highest rates for households receiving at least 2 LLIN among the five states. However, since the campaigns were limited to two LLIN per household the proportion of households with "enough" nets, i.e. at least one net for every two people did not exceed 43% but was highest in Anambra

The major differences between states are found in the utilization of nets ranging from 80% in Niger, 68% in Kano and 54% in Anambra and Ogun to a low of 21% in Sokoto. Accordingly, the proportions of all household members using a net last night was not very high but in spite of the lower net use rate, the proportion was the second highest in Anambra with 30. 1%.

The positive aspects of the distributions should not be overlooked: once a household was registered between 89% and 93% of them received a LLIN and retention after about 6 months was above 90% throughout with no evidence that nets were sold at the household level. In addition, pre-campaign ITN coverage was essentially non-existent (except for Kano with 12% ITN ownership) so that an increase to 51% to 69% is a significant achievement.

Indicator	Sokoto	Kano	Niger	Ogun	Anambra
Sample size of survey	1008	987	1001	952	1012
Mean household size (as defined	4.4	4.6	6.2	4.2	4.4
during campaign)	(4.2, 4.6)	(4.4, 4.8)	(5.9, 6.6)	(4.0, 4.6)	(4.3, 4.6)
Campaign					
% of households registered	66.5%	70.6%	57.5%	61.8%	80.0%
	(57.3, 74.7)	(61.0, 78.6)	(45.7, 68.5)	(53.2, 69.8)	(73.4, 85.4)
Households with any U5	78.7%	71.3%	55.6%	57.5%	82.1%
	(69.3 <i>,</i> 85.3)	(60.0, 80.5)	(41.6, 68.8)	(49.4 <i>,</i> 65.2)	(73.6, 88.3)
Households without U5	49.3%	69.4%	60.0%	69.1%	79.1%
	(38.4, 60.2)	(61.0, 76.7)	(49.3, 69.8)	(57.1, 79.0)	(71.6, 85.1)
% of households receiving any	61.9%	63.5%	51.2%	54.4%	74.4%
LLIN (all hh)	(53.1, 70.0)	(53.8, 72.2)	(39.7, 62.6)	(43.9 <i>,</i> 64.4)	(66.0, 81.3)
% of hh receiving at least 2 LLIN	55.3%	45.6%	43.2%	40.3%	68.2%
(all hh)	(46.3, 63.9)	(37.9, 53.6)	(32.9, 54.0)	(32.6, 48.6)	(59.8, 75.5)
Mean number of LLIN received (if	1.89	1.74	2.25	1.79	2.15
any)	(1.83, 1.96)	(1.63, 1.84)	(2.07, 2.43)	(1.68, 1.90)	(2.08, 2.23)
% of hh receiving any LLIN if	91.8%	89.4%	89.0%	87.8%	92.3%
registered	(87.5, 94.8)	(82.2, 93.9)	(84.0, 93.9)	(79.9 <i>,</i> 92.9)	(87.4, 95.4)
% of hh receiving two LLIN if	82.2%	64.4%	75.0%	64.5%	84.3%
registered	(74.2, 88.1)	(56.5, 71.6)	(67.7, 81.2)	(55.9 <i>,</i> 72.3)	(78.3, 89.7)
% of campaign nets retained at	98.6%	91.7%	99.3%	93.7%	98.4%
time of survey	(97.1, 99.4)	(86.8, 94.9)	(98.0, 99.8)	(86.3, 97.2)	(97.4, 99.0)
Net coverage before campaign					
% of hh with any net	7.2%	13.2%	0.7%	4.6%	3.9%
	(4.5, 11.4)	(5.8, 27.1)	(0.3, 1.7)	(2.7, 7.7)	(2.7, 5.6)
% of hh with any ITN	3.7%	11.5%	0.5%	1.3%	2.0%
	(2.4, 5.7)	(4.4, 27.0)	(0.1, 1.6)	(0.6, 2.8)	(1.2, 3.5)
Resulting ITN coverage and use					
5-6 months after campaign					
% of hh with any LLIN	63.8%	69.3%	51.5%	52.5%	64.3%
	(55.0, 71.7)	(57.8, 78.9)	(40.0, 62.9)	(41.7, 63.0)	(56.9, 71.2)
% of hh with at least two LLIN	54.7%	41.1%	42.4%	34.1%	57.3%
	(45.9, 63.2)	(32.5, 50.2)	(32.2, 53.3)	(25.2, 44.3)	(49.5, 64.7)
% of LLIN owning hh with one	30.4%	30.1%	31.7%	40.2%	42.9%
LLIN for every 2 people	(24.3, 37.3)	(23.2, 38.0)	(26.2, 37.6)	(31.6, 49.5)	(35.7, 50.34)
% of existing LLIN being used last	21.0%	68.4%	79.5%	53.3%	53.8%
night	(15.7, 27.5)	(64.4, 72.1)	(74.0, 84.1)	(43.0, 56.9)	(48.9, 58.5)
% of all household members using	9.8%	36.2%	28.0%	17.1%	31.2%
LLIN last night	(7.0, 13.7)	(29.9, 42.9)	(20.8, 36.5)	(11.0, 25.6)	(27.1, 35.6)



Figure 17: Registration rate and reasons for non-registration as reported by respondent

Figure 18: Location of surveys and timing with respect to the rains



#### Discussion

#### Survey methodology and data validity

The intention of this data collection was to obtain information from households on the process and outcome of the Anambra LLIN campaign that would be statistically representative of the population of Anambra State. In order to achieve such representativeness, the sampling methodology was critical. In this survey, the classical two stage cluster sampling was applied as it is also used in standard national surveys such as MICS and DHS. The only difference was that instead of complete list of all census enumeration areas, a list of wards with the aggregated households registered for the campaign was used to allocate clusters to locations proportionate to population density and then a list of all villages (settlements) was obtained from the local authorities in order to select one at random. With respect to the statistical representativeness, this process is equivalent to the DHS procedure. At cluster level, the survey also followed standard DHS/MICS protocol by compiling a complete list of eligible households at the day of the survey from which the interviewed households were selected using random number lists. By applying sampling weights proportionate to the selection probabilities of clusters and households based on the actual response rate in the data analysis, the survey methodology used all the "state of the art" approaches and can be considered a truly representative sample.

The survey consciously did not use any data or listing from the LLIN campaign for selection of respondents in order to ensure that any village or household that did not participate in the campaign but was eligible at the time would be included in the sampling frame. The only caveat of this procedure is that a family that had only moved to the location after the campaign would also be included in the survey. However, if this family moved within Anambra State, they would have been equally eligible to participate in the campaign and the proportion of out-of-state immigration in a predominantly rural population is very unlikely to be of a magnitude that would have distorted the results.

Like any survey that relies on interviews with household respondents, this survey was prone to potential recall and misclassification biases. Age heaping and misclassification were likely to be present to a certain degree in a number of responses. Nonetheless, many aspects of demography such as proportion of children under five, currently pregnant women and socio-economic characteristics regarding education and household assets were found to be as one would expect from other data sources suggesting a high level of consistency. Furthermore, results were consistent in many ways within the dataset regarding trends with age and/or wealth quintiles as well as previously known net ownership so that in total the results can be considered as valid within the limits of the described range of precision.

#### LLIN distribution and universal coverage

The declared objective of malaria prevention with ITN/LLIN in Nigeria is universal coverage, i.e. access to nets by all population groups with the target of reaching at least 80% of households with two or more ITN. This target was almost reached through the LLIN distribution campaign in Anambra: 74.4% received any LLIN through the campaign and 68.2% at least two and statistically 2.15 nets were delivered on average to each of those who received any resulting in an overall household ownership with any LLIN at the time of the survey of 64.3% and 57.3% owning two or more LLIN. While this is short of the target, this is also a tremendous improvement from the precampaign situation where ITN ownership was estimated to be only 2.0%.

The registration process was not optimal with 80.0% of households registered but the main problem in the case of Anambra was the mobility of the people, especially in the urban areas.

Once a household was registered, the delivery of LLIN was highly effective and very equitable. Of those registered, 92.3% also received any LLIN; among those that actually went to the distribution point, 94.0% received any LLIN and 86.2% received at least 2 LLIN, as they were entitled to. This provides strong evidence that the organization of the LLIN distribution beyond the registration process was very successful and equitable as supported by a concentration index slightly below 0, i.e. with evidence for a pro-poor distribution.

Coverage with "one net for every two people" remained moderate (42.9%) which was due to two main reasons: the sub-optimal registration levels mentioned before and the fact the distribution was limited to two nets per household which meant that any household with more than four members would not fulfil the criteria even if they received the two LLIN from the campaign. However, this target for universal coverage was not the explicit target of the campaign and is still under debate within the international community so that this can hardly be seen as decisive criteria for the assessment of campaign success.

According to NMCP information 1,784,523 LLIN were allocated to Anambra State based on 892,262 households and two nets per household. This figure builds on the projected 2009 population of 4,461,308 [2] applying an average household size of 5.0 based on the general household definition of "people eating from the same pot". Of the calculated number of LLIN 1,613,141 were reported to have been distributed in August 2009 (90.4%). Using the survey data on average household size and mean number of LLIN received per household with the respective uncertainties in combination with the 2010 population estimate from the census the estimated number of LLIN distributed from the survey varies between 1,411,146 and 1,933,303 or an "excess" of 320,162 LLIN and a "deficit" of 201,995 and (-20% to 13% of the LLIN reported as distributed). If an average household size of 5.0 persons/household is assumed then the estimated difference to the LLIN reported distributed by NMCP ranges between -37,900 to 328,998 LLIN (-2% to 20%). These estimates have to be interpreted very cautiously as inaccuracies in the census estimates and growth rate projection could significantly have influenced the results. However, they suggest that the distribution figures match the survey data quite well and that no major leakage of LLIN occurred in Anambra State.

#### Retention, hanging and use of nets

Retention of campaign nets observed in Anambra State was 98.4% or a loss/attrition rate of 1.6% after 4 months. This is very much in keeping with attrition rates observed in the other postcampaign surveys undertaken in Nigeria (see Table 21) and very similar to findings in Adjumani District in Northern Uganda with a loss rate of 1.7% seven months after distribution, Togo with 2.8% after nine months and Niger (the country) with 2.3% also after nine months. In addition, the evidence suggests that nets were lost mainly by giving them to family and friends because they were perceived as not needed at the time. This allows the inference that selling of the received campaign LLIN into the commercial market did certainly not occur at household level and if any leakage occurred (see previous paragraph), this was at higher levels of the distribution chain.

Hanging of at least one of the LLIN from the campaign within one month was reported by 77.0% of households that received any campaign nets and at the time of the survey, 61.1% of the

campaign nets were found hanging over the beds. While these rates are rather low, it appears from the data that they main reasons for not hanging the nets were not because people did not know how to but mainly because they either did not think they needed them or lacked general motivation to use them. Only 6.8% households receiving any campaign nets reported having had any difficulty in hanging the net, providing evidence that most household know how to hang their net in Anambra State. Such low rates of difficulties in hanging have also been seen in the other post-campaign surveys in Nigeria as well as in Uganda. Once a net was hung, use was very high and frequent as 90.1% of the hanging campaign nets were used last night and 84.9% were reported to be used every (68.0%) or most nights (16.9%) in the past week.

Of all people who usually live in the sampled households and stayed in the house the previous night, 38.3% had used a net the previous night. Use rates by sub-groups varied less than has been seen in other surveys and was 35.5% for pregnant women, 42.0% for children under five and 40.2% for heads of household while between 35% and 36% for the other age-groups. Among children under five an additional 13.9% could easily have used a net as at least one was used or hanging in the household and another 20.2% could have slept under a net if the nets existing in the household would have been hung, i.e. 76% could potentially have used an net. This correlates well with the finding that 68% of children under five used a net last night in households that had at least one net for every two people and hence "enough" nets according to the current tentative definition of "universal coverage".

#### Behavioural Change Communication

Of all households, 67.2% were exposed to any information on net hanging or use and 66.9% could recall at least one of them. Information from health workers(23.9%), family and friends (23.4% and leaflets given out at the distribution point (22.2%) were the most common information sources. Messages from radio also had some importance (15.7%) but direct communication from the campaign team or community/faith leaders did not play a measurable role. There was a clear connection between the number of information sources exposed to and the number of messages remembered (see Figure 11). This implies that the often suggested multi-channel approach in BCC is indeed working and very important not only to achieve high recall levels of messages. The intention to use nets and whether the household discussed using the nets among the family were found to be strong predictors for net hanging and use. However, the survey design requires some caution in the interpretation of these estimates as it might be prone to courtesy bias, therefore overestimating the impact of such factors.

#### Conclusions

The major conclusions from this survey can be summarized as follows:

- The LLIN distribution was successful in that it dramatically increased the coverage compared to the pre-campaign status; from 2.0% to 64.3% for ITN ownership.
- Delivery of LLIN at the distribution points was very effective and equitable but there were some problems with the registration process that lead to only 80.0% of households being registered.
- Estimates of the number of LLIN actually distributed based on the census data and survey estimates suggest that no significant leakage of LLIN from the campaign has occurred.

- Net hanging was not very high with only 61.1% of campaign nets hanging but this was mainly due to motivational problems and nets not being needed rather than people not knowing how to hang the net as only 6.8% of households reported such difficulties in hanging.
- Once the decision was taken to hang the net, use was good and nets were used very frequently suggesting that addressing the general motivation to use nets (net culture) is the main problem in Anambra State.
- Achieved coverage with at least two LLIN per household the national indicator for universal coverage – was quite high with 68.2%, but short of the 80% target. However, if the "one net for every two people" criteria was used, universal coverage was only 42.9% and this is due to the limitation of two nets per household irrespective of household size.
- While there is evidence that the BCC component was effective in supporting net hanging and use, it was obviously lacking in intensity.

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#### Annex: Questionnaire

# **Anambra State**

# Post-Campaign Net Tracking Survey –Questionnaire

## **IDENTIFICATION**

	LGA			
	Ward			
C N	Cluster umber			Household Number
ID N	umber	Cluster nu Hous	Imber followed by ehold number	Enter this number at the top of each page
HOU	SEHOL	D VISIT		
B1	Househ	old visit details		Visit 1 Visit 2 Visit 3
	0 = reci 1 = reci 2 = reci	pient not home pient home and o pient home but r	consented to interview efuse	
B2	Date of	interview	dd/mm/yyyy	
B3	Intervie	wer Name		Code
B4	Supervi	sor	Questionnaire check after completi	tion

# INTRODUCTION AND CONSENT

Hello. My name is \_\_\_\_\_\_ and I am working with (Research & Marketing Services).

On behalf of the Federal and State Malaria Control Programme we are carrying out a survey to capture the results of the recent campaign to distribute mosquito nets for malaria prevention to all households in Anambra State.

As part of the survey we would first like to ask some questions about your household. All of the answers you give will be confidential and will not be shown to anyone. Participation in the survey is completely voluntary. If we should come to any question you don't want to answer, just let me know and I will go on to the next question; or you can stop the interview at any time. However, we hope you will participate in the survey since your views are important. The survey usually takes between 30 and 45 minutes to complete.

At this time, do you want to ask me anything about the survey? May I begin the interview now?

Signature of interviewer: Date	: III / I_	_1_1/1_1_1_1_1
Respondent agrees to be interviewed	1	Go to Q01
Respondent does not agree to be interviewed	0	End

Note: In the field version this section needs to be presented in XXX translation



#### SECTION 1: People living in the household

Line No.	Usual residents and visitors	Relationship to head of household	Se	X		Resid	ence		A	ge	Preg wor	nant nen								
	Please give me the <b>names</b> of the persons who usually live in your household and guests of the household who stayed here last night, starting with the head of the household.	What is the relationship of (NAME) to the head of the household?*	Is (NAME) male or female?		Does Did (NAME) (NAM usually live stay here? last nigh		Does (NAME) usually live here?		Does (NAME) usually live here?		Does (NAME) usually live here?		Does (NAME) usually live here?		Did (NAME) stay here last night?		How old is If less than write 0 in t give numb <b>months</b> in column. If <b>know writ</b>	ow old is (NAME)? ess than 1 year ite 0 in the box and re number of <b>onths</b> in next lumn. <b>If don't</b> ow write 'NK'		AME) ently nant? ip if ale
Q01	Q02	Q03	Q	)4	Q	05	Q	6	Q	07	Q	08								
			М	F	Yes	No	Yes	No			Yes	No								
01			1	2	1	0	1	0	Years	Months	1	0								
02			1	2	1	0	1	0	Years	Months	1	0								
03			1	2	1	0	1	0	Years	Months	1	0								
04			1	2	1	0	1	0	Years	Months	1	0								
05			1	2	1	0	1	0	Years	Months	1	0								
06			1	2	1	0	1	0	Years	Months	1	0								
07			1	2	1	0	1	0	Years	Months	1	0								
08			1	2	1	0	1	0	Years	Months	1	0								
09			1	2	1	0	1	0	Years	Months	1	0								
10			1	2	1	0	1	0	Years	Months	1	0								
11			1	2	1	0	1	0	Years	Months	1	0								
12			1	2	1	0	1	0	Years	Months	1	0								
13			1	2	1	0	1	0	Years	Months	1	0								
14			1	2	1	0	1	0	Years	Months	1	0								

Codes for Q3: Relationship to household head 01=head 02=wife/husband/partner 03=son/daughter

04=son/daughter in law 05=grandchild 06=parent

07=parent in law 08=brother/sister/in law 09=other relative

10=adopted/foster/stepchild 11=not related 98=don't know



#### **SECTION 1:** People living in the household (CONTINUED)

Line no.	Usual residents and visitors	Relationship to head of household	Se	ex	Residence		Age		Pregnant women							
	Please give me the <b>names</b> of the persons who usually live in your household and guests of the household who stayed here last night, starting with the head of the household.	What is the relationship of (NAME) to the head of the household?*	ls (NAI male fema	ME) e or ale?	Does (NAM usuall here?	E) y live	Did (NAM stay h last night?	IE) here ?	How old is (NAME)? If less than 1 year write 0 in the box and give number of <b>months</b> in next column. If <b>don't</b> <b>know write 'NK'</b>		ls (N curr preg <b>Sk</b> i m	AME) ently nant? ip if ale				
Q01	Q02	Q03	Q	)4	Q	05	Q	)6	Q07		Q07		Q07		Q	08
15			M 1	F 2	Yes 1	No 0	Yes 1	No 0	Years	Months	Yes 1	No 0				
16			1	2	1	0	1	0	Years	Months	1	0				
17			1	2	1	0	1	0	Years	Months	1	0				
18			1	2	1	0	1	0	Years	Months	1	0				
19			1	2	1	0	1	0	Years	Months	1	0				
20			1	2	1	0	1	0	Years	Months	1	0				
21			1	2	1	0	1	0	Years	Months	1	0				
22			1	2	1	0	1	0	Years	Months	1	0				
23			1	2	1	0	1	0	Years	Months	1	0				
24			1	2	1	0	1	0	Years	Months	1	0				
25			1	2	1	0	1	0	Years	Months	1	0				
26			1	2	1	0	1	0	Years	Months	1	0				
27			1	2	1	0	1	0	Years	Months	1	0				
28			1	2	1	0	1	0	Years	Months	1	0				

Only to make sure that I have a complete list:

Are there any other persons such as small children or infants that we have not listed?

IF YES, INTRODUCE EACH ONE IN THE TABLE IF YES, INTRODUCE EACH ONE IN THE TABLE

Are there any other people such as domestic servants, lodgers or friends who usually live here?



# **SECTION 2: Household characteristics**

No	No Question Categories									
Wew	ould first like to ask some questions about the he	ad of household, characteristics of th	ne house	e and						
posse	ssions of the household.									
		· · · · · ·								
Q09	Who is responding to this questionnaire?	Line number of respondent								
010	Line the band of the boundhold over ettended	Yes	1							
QIU	Has the head of the household ever attended	No	0	NO⇔Q12						
		Don't know	9							
011	What was the highest level of school the head	Primary	1							
QII	of the household attended? (Primary,	Secondary	2							
	Secondary, Higher)	Higher	3							
		Don't know	9							
	How many rooms are there in this household?									
Q12	>>Include all structures (huts etc)									
	How many of these rooms are used for									
Q13	sleeping?									
014	How many sleeping places are there in this									
Q14	Nousehold (beds, mallresses, mals of rugs)?									
	>>ASK TOF DOUT INSIDE THE HUT AND OUTSIDE									
		Grass/Panyrus/Banana leaves	1							
Q15	What is the main material of the roof?	Thatch	2							
		Zinc/Iron sheets	3							
		Tiles	4							
010	What is the main material of the walle?	Grass	1							
Q16	what is the main material of the walls?	Niu0 Plastered	2							
		Brick/Concrete	4							
		Earth or sand	1							
017	What is the main material of the floor?	Clay	2							
QII		Wood, bamboo or palm	3							
			4							
		liles or cement	5							
		Surface water (stream_river_lake	1							
		pond, irrigation channel etc)	•							
		Rain water, gutter pipe	2							
018	What is the main source of drinking water?	Protected well (public or private)	3							
QIU	What is the main source of drinking waters	Public tube well or borehole	4							
		Public tap or standpipe	5							
		Piped Into dwelling Other	7							
		Specify:	<i>'</i>							
		No facility, bush or field	1							
	What time of tailet facility is a well-blacks the	Shared pit latrine	2							
Q19		Uwn pit latrine	<u>ა</u>							
		Own improved pit latrine	5							
		Shared flush toilet	6							
		Own flush toilet	7							
		Firewood	1							
Q20	What is the main energy source for cooking?	Charcoal	2							
		Kerosene	3 4							
		Electricity	5							

No	Question	Categories		Skip
		Y	es	0
	Does the household (any member) have any	Radio	1	0
Q21	of the following	l elevision Pofrigorator	1	0
	J.	Electric fan	1	
		Flectric iron	1	0
		Telephone (fix)	1	0
		Mobile phone	1	0
		Y	es	N
	Does the household (any member) have any	Bicycle	1	
Q22	means of transport?	Motorbike	1	0
		Car or truck	1	0
		Animal or animal cart	1	0
		Canoe, boat or ship	1	0
		Chicken		
		Ducks and turkeys		
	Number of livestock animals the household			
	owns?			
Q23	>> write 000 if none >> do not read out list	Pigs		
		Cows		
		Donkeys		
		Other:	7	
Q24	Does the household own land used for	Yes	1	
		No	0	NO⇔Q26
Q25	If yes, indicate approximate size in acres			
	Describe household "			
Q26	Does the household own any mosquito nets	Yes	1	
		Don't know	9	⇒Q28
	If ves, how many mosquito nets does the		Ū	
Q27	household have?			
	>> probe for any nets currently not in use			
	- <b>- -</b>			
028	Was the household registered during the	Yes	1	Yes⇔Q30
Q20	recent campaign in (MONTH)?	No	0	
		Don't know	9	DNK⇔Q30
		Mobilization toom did not come	1	
		We were not at home at that time	2	
		We refused	<u>-</u> 3	
Q29	If not, what was the reason?	We moved here after the campaign	4	
		Other	5	
		Specify:		
Q30	Did the household receive a card (coupon) for	Yes	1	Yes⇔Q32
		No	0	

		ID number				
No	Question	Categories			Sk	cip
	two free mosquito nets? >> show sample	Don't kn	ow	9	DNK⇔	•Q32
Q31	If not, what was the reason?	There were no cards (coupons) Don't kn Ott Specify:	left ow ner	1 2 3		
Q32	Did a member of the household or somebody else go to the distribution point to collect the nets?	Y Don't kn	Yes 1 No 0 Don't know 9			
Q33	If no, what was the reason?	We had no time or means to We were not interest We forgot/missed the da We lost the coupon/ca Ott Specify:	go ted ate ard ner	1 2 3 4 5		
Q34	Did the household receive any nets from the campaign at the distribution point?	Y Don't kn	′es No ow	1 0 9	Yes⇔ DNK⇔	Q36 •Q36
Q35	If no, why not?	No nets available at the ti Lost the coupon/ca They refused to give n Don't kn Oth	me ard ets ow ner	1 2 3 4 5		
Q36	How many nets did the household receive from the campaign? >> enter 0 if no nets received >> crosscheck the response with Q34	Don't kn	] ow	9		
Pleas Check	e make sure that all questions Q26 – Q36 are c Q34 ⇔ if No (0) or DNK (9)  ⇔ go to Q41 ⇔ if Yes (1) ⇔ continue with Q37 below	filled				
Q37	After receiving the nets from the campaign when did you hang the nets in your house?	Same of Next of Next of Next of Next of Next of Within the first we Within the first more Have not hung the net the Next Next Next Next Next Next Next Nex	lay lay ek nth vet	1 2 3 4 5		
Q38	How many nets from the campaign did you hang up?					
Q39	Did you have any problems in hanging them in your house?	Υ	′es No	1 0		
Q40	If yes, what was the main problem?	No place to ha No materials to ha Did not know how to ha Shape did no	ing ing ing t fit	1 2 3 4		

1	- · · ·						-	
No	Question		Categories	5		Ski	р	
			Size d	d not fit	5			
		<u> </u>		Other	6			
		Specify:						
041	During the period of the pet compaign, did you			Yes	1			
Q41	receive any information on hanging or use of			No	0		и	
	the note from any accuracy				•		-	
	the nets from any source?							
			oaflat from as	mnaian	1			
			Radio m	npaign	2			
			Song on th	ne radio	3			
			Drama perfo	rmance	4			
			Health	worker	5			
	What were the sources of that information?		Community	/ leader	6			
Q42			Town and	nouncer	7			
	>> multiple answers possible	Home visi	t of mobilization	on team	8			
			Family or	friends	9			
			Church or I	Mosque	10			
			Nev	vspaper	11			
				Other	12			
		Specify:						
			Use v	/our net	1			
			Value	/our net	2			
			Hang up	/our net	3			
0.40	What was the content of the messages you	Sleep unde	r vour net eve	rv niaht	4			
Q43	heard/saw?		Nets prevent	malaria	5			
			Don't rer	nember	6			
				Other	7			
		Specify:						
						-		
044	Did you discuss sleeping under the net with			V				
Q44	your family?			Yes	1			
	, , , , , , , , , , , , , , , , , , ,			INO	0			
			Ever	v niaht	1			
	Do you intend to make sure your family sleeps			t nighte	2			
Q45	under the nets every night, most nights, some		Som	e nights	3			
	nights?		ntend to	4				
			Dor	5				
					-			
			Ever	y night	1			
	Generally, do you think your neighbors use		Mos	t nights	2			
Q46	their net(s) every night, most nights, some		Som	e nights	3			
	nights, or not at all?	ot at all? Not at all 4						
			Dor	n't know	5			
I am g	oing to ask you about a series of actions you cou	Id take and I v	vould like yo	u to tell m	how	confiden	it	
you ar	e that you could actually do that action successful	uiiy. ⊢or each	action, pleas	e tell me	IT YOU	tnink you		
uerinit	ery could, probably could, probably could not or d		Drobably	action SU		iuliy.		
			Probably		y D	ennitely		
		could	could		<u>л С</u>			
Q47	Obtain enough bed nets for all your children.	1	2	3		4		
	Hang a hed net above your children's							
Q48		1	2	3		4		
	District yourself and your children from acting							
Q49	moleci yoursell and your children from getting	1	2	3		4		
-								
Q50	Save enough money to obtain bed nets for all	1	2	3		4		
	your children.			-				
Q51	Sleep under a bed net every night of the year.	1	2	3		4		
				-				
Q52	Get all of your children to sleep under a bed	1	2	3		4		
	net every night of the year.			-				

		I	D number			
No	Question		Categories	S	Ski	р
I am g them. strong	oing to read a series of statements to you and I v For each statement, please tell me if you strong ly disagree with it.	would like you ly agree, some	to tell me ho what agree,	w much you somewhat d	agree with lisagree, or	1
		Strongly	Somewhat	Somewhat	Strongly	
Q53	Malaria is the most serious health problem in my community.	agree 1	2 agree	aisagree 3	uisagree 4	
Q54	People in this community only get malaria during the rainy season.	1	2	3	4	
Q55	Each year, many children in this community get malaria.	1	2	3	4	
Q56	Malaria can prevent me from working and earning money.	1	2	3	4	
Q57	Malaria can prevent my children from attending school.	1	2	3	4	
Q58	Treating malaria can be expensive.	1	2	3	4	
Q59	Does the household ever use any of the following against mosquitoes / to protect against malaria?	Yes       Nc         Aerosol can (Baygon, Mobil, Raid etc)       1       0         Coils       0       0         Herbs or plants (burnt or not)       1       0				



# **SECTION 3: Distribution of campaign nets**

## Before you continue:

## Check Q32 $\Rightarrow$ if No (0) or DNK (9) $\Rightarrow$ go section 4, page 10

#### $\Rightarrow$ if Yes (1) $\Rightarrow$ continue with Q60 below

No	Question	Categories		Sł	cip
We we campa	ould now like to talk to the person who went to th aign	e distribution point to collect the n	ets during	) the re	cent
>> If t	he person is not around, ask when he will be	back and come back to intervie	w him.		
		Somebody from this household	1		
0.00	Who went to collect the nets from the	Other person not from this household	3		
Q60	distribution point for this household?	Don't know	4	3 or D ⇒ sec	NK tion 4
		Line number of person if from this household			
	How long did it take you to reach the				
001	distribution point where the nets were	Short time	1		
Qol	distributed the nets? (short time, Medium	Long time	3	1	
	>> read out options	Don't remember	4	1	
062	Did you have to spend any money for	or Yes 1			
Q02	transport to get to the distribution point?	No Don't remember	0	∣ No or ∣ ⇔Q64	DNK
Q63	If yes, how much did you spend to get to the distribution point? (Naira)				
	Once you reached the distribution site, how	Short time	1		
Q64	long did you have to wait before you could	Medium time	2		
	collect the nets?	Long time	3	j	
		Don't remember	4		
	When you received the nets, how were they	Without the package (bag)	Net 1	Net 2	Net 3
065	given to you?	With the package (bag) cut open	2	1 2	2
000	>> read out ontions select appropriate	With the package (bag) still sealed	3	3	3
	option for each net received	Don't remember		4	4
	Did you receive any information leaflet		Net 1	Net 2	Net 3
066	together with the nets?		1	1	1
200	>> Select appropriate option for each net received	Don't remember	9	9	9
		Llong up the pote	1		
	What is the <b>main</b> message about mosquito	Sleep under net every night	2	1	
067	nets you remember from the distribution site?	No messages were given	3		
Q67	>> do not probe and record first answer	Don't remember any	4	j	
	given (if any)	Other	5		
		Specify:			
Q68	Did you observe a demonstration of how to	Yes	1	-	
	nang the het at the site?	N0 Don't remember	U Q	-	
1		Don tromolibu		1	

# **SECTION 4: Nets received from campaign**

Before you continue:

Check Q34  $\Rightarrow$  if No (0) or DNK (9)  $\Rightarrow$  go to section 5, page 11

 $\Rightarrow$  if Yes (1)  $\Rightarrow$  enter result from Q36 here

and continue with Q69 below

# Return to the original respondent if not identical with the one for section 3

No	Question			Categories		Skip
We wo	uld now like to ask some ques	tions about the mo	osquito nets th	e household re	eceived from the	ne recent
campa	ign					
	Let me check if I have this co	d received from				
	the comparison was					
Q69	the campaign was					
	>> abaak with hav abaya a	nd correct 026				
	>> Check with box above an					
	II necessary					
070	Are all these nets still in the p	ossession of the				
010	household?				No 0	103-7021-
071	If not, how many of the nets a	are still in the				
Gri	possession of the household	?				
	Calculate the number of miss	ing note (O60				
	minus (71) record the numb	only liels (203				
	to $O72 O73$ for each net lost	ei allu piùceeu				
Please	enter the following information	for each net "lost"	3			
No	Question	Catego	ries	Net 1	Net 2	Net 3
Q72a	How long did you have this	>> enter 00 for	below 1 week			
	net?	>> enter 98 for "	do not know"	Weeks	Weeks	Weeks
			Net was stolen	1	1	1
		Net was destroy	ed accidentally	2	2	2
			Net was sold	3	3	3
		Net was given av	vay to relatives	4	4	4
	Can you tall ma what	Net was given	away to others	5	5	5
Q72b	bappened to the net?	Net wa Matorial usod for	s thrown away	0 7	7	0 7
	happened to the het?	Material used for	Other	/ 8	<u> </u>	/ 8
			Don't know	9	9	9
				Ŭ		<u> </u>
			Specify other			
				1 to 2 <b>⇒Q</b> 74	1 to 2 <b>⇔Q</b> 74	1 to 2 <b>⊳</b> Q74
				3 to 7 ⇔Q73	3 to 7 ⇔Q73	3 to 7 ⇔Q73
		Nature for the f				
			ou many noies	 	<u>ا</u>	ا م
	Why did you not keep this	Net was not noo	ded at the time	∠ 2	<u>ک</u>	<u>ک</u> ۲
	net?	We did	not like this net	З Д	ی ک	ے ل
Q73		Nee	ded the money	5	5	5
	>> enter first reason	11001	Other	6	6	6
	mentioned		Don't know	9	9	9
			Specify other			





# **SECTION 5: Nets owned by the household**

Before you continue:

Check Q26  $\Rightarrow$  if No (0) or DNK (9)  $\Rightarrow$  go to section 6, page 17

 $\Rightarrow$  if Yes (1)  $\Rightarrow$  Copy result from Q27 here

continue with Q74 below

Complete all questions about each net (Q74 to Q92) before going to the next net. Check number above to make sure you have all nets entered For net 4-6 see below (page 14). Use additional sheet if more than 6 nets

No	Question	Mosquito net	1	Mosquito net	2	Mosquito net	3
Wew	ould now like to ask some	questions about all th	ne mos	quito nets the house	hold o	wns and take at look	at
thom	beginning with the ones fro	m the campaign (if a	nnlica				
	beginning with the ones no	in the campaign ( <i>II</i> a	ippiica	DIE)			
	Could you show me the						
Q74	note in the household?	Observed	1	Observed	1	Observed	1
	nets in the nousehold?	Not observed	0	Not observed	0	Not observed	0
	Observe the net and	PermaNet	1	PermaNet	1	PermaNet	1
	net label (if anv) and	Olvset	2	Olvset	2	Olvset	2
	identify the brand of	Duranet	3	Duranet	3	Duranet	3
		Interceptor	4	Interceptor	4	Interceptor	4
075	the net	Icon Life	5	Icon Life	5	Icon Life	5
Gro	>> if net is not	Taylor made	6	Taylor made	e e	Taylor made	ě 8
	observed show net	Linbrandod (no labol)	7	Linbrandod (no labol)	7		7
	nicturos to	Official ded (no label)	, 0	Offbranded (no laber)	, 0		/ 0
		Specify	0	Cillei	0	Specify	0
	respondent and probe	Specify		Specify		Specify	
						l	
	>> Ubserve or ask the	De ata a sul	4	De etere en d'	4	Deeteeeudee	4
	shape of net	Rectangular	1	Rectangular	1	Rectangular	1
Q76	-						
<b>.</b>	What is the shape of	Conical	2	Conical	2	Conical	2
	the met						_
	the net?						
	>> Observe or ask the						
	>> Observe of ask life	White	1	White	1	White	1
	colour of net	Green	2	Green	2	Green	2
Q77		Blue	3	Blue	3	Blue	3
	What is the colour of	Other	4	Other	4	Other	4
	the not?	Specify		Specify		Specify	
	When you got this net						
	was it already treated at						
	was it alleauy treated at						
078	the factory with an						
Gro	insecticide (chemical)	Yes	1	Yes	1	Yes	1
	to kill or repel	No	0	No	0	No	0
	mosquitoos2	Don't know	a	Don't know	à	Don't know	à
	mosquiloes	DOITTRIOW	3	DOITTRIOW	3	DOITTRIIOW	3
	When you got the net						
	was there a packet of						
Q79	was mere a packet of						
	insecticide in the	Yes	1	Yes	1	Yes	1
	packaging?	N0	<u> </u>	N0	U	NO	U
		Don't know	9	Don't know	9	Don't know	9
	Since you get the net						
	was it ever soaked or	Yes	1	Yes	1	Yes	1
Q80	dipped in a chemical to	No	0	No	0	No	0
	kill or renel	Don't know	9	Don't know	9	Don't know	9
	mosquitoos?						
	mosquiloes?	No or DNK⇒Q82		No or DNK⇔Q82		No or DNK⇔Q82	
		Monthe if loss than 1	voar	Monthe if lose than 1	voar	Monthe if lose than 1	voar
			усаі		ycai		ycai
	it yes, now long ago						
Q81	was the last time it was						
	dipped or soaked?						
		Moro than 1 years	1	Moro than 1 year	4	Moro than 1 year	4
		Nore than I year	<u> </u>	Nore than 1 year	1		1
		Don tremember	Э		Э		Э
1							

				ID number			
No	Question	Mosquito net	1	Mosquito net	2	Mosquito net	3
		Months if less than 2	years	Months if less than 2	/ears	Months if less than 2	years
	How long ago did you obtain this net?						
Q82	>> enter "00" for	Years if more than 2 y	/ears	Years if more than 2 y	/ears	Years if more than 2	years
	months if less than one month						
		Don't remember	98	Don't remember	98	Don't remember	98
		Recent campaign Previous campaign Health Facility	1 2 3	Recent campaign Previous campaign Health Facility	1 2 3	Recent campaign Previous campaign Health Facility	1 2 3
Q83	Where did you obtain this net?	Mosque or church Family or friends Private clinic Pharmacy	5 6 7 8	Mosque or church Family or friends Private clinic Pharmacy	5 6 7 8	Mosque or church Family or friends Private clinic	5 6 7 8
		Shop or supermarket Market Hawker	9 10 11 12	Shop or supermarket Market Hawker	9 10 11 12	Shop or supermarket Market Hawker	9 10 11 12
		Specify	12	Specify	12	Specify	
	Did you pay any money	Yes	1	Yes	1	Yes	1
Q84	for this net?	No Don't know	0 9	No Don't know	0 9	No Don't know	0 9
		No or DNK⇔Q86		No or DNK <b>⇔Q86</b>		No or DNK <b>⇔Q86</b>	
Q85	If yes, how much did you pay (Naira)						
	>> Observe or ask	Hanging loose over bed/mattress	1	Hanging loose over bed/mattress	1	Hanging loose over bed/mattress	1
	where the net is located within the	Hanging and folded up or tied	2	Hanging and folded up or tied	2	Hanging and folded up or tied	2
	house at the time of	Not hanging but not stored	3	Not hanging but not stored	3	Not hanging but not stored	3
Q86	Interview	Stored away unpacked	4	Stored away unpacked	4	Stored away unpacked	4
	Where is the net	Stored away still in package	5	Stored away still in package	5	Stored away still in package	5
		Temporarily taken away	6	Temporarily taken away	6	Temporarily taken away	6
	Was this net slept	Yes	1	Yes	1	Yes	1
Q87	under by any person	No Don't know	0 9	No Don't know	0 9	No Don't know	0 9
	last night?	Yes⇔Q89		Yes⇔Q89		Yes⇔Q89	
		No mosquitoes	1	No mosquitoes	1	No mosquitoes	1
		There is no malaria	2	There is no malaria	2	There is no malaria	2
		Don't like smell	4	Don't like smell	4	Don't like smell	4
		Feel "closed in" or afraid	5	Feel "closed in" or afraid	5	Feel "closed in" or afraid	5
		Net too old or torn	6	Net too old or torn	6	Net too old or torn	6
000	If no why not?	Net too dirty Net not available last	7	Net too dirty Net not available last	7	Net too dirty Net not available last	7
489	II NO, WNY NOL?	night (washing) Usual user(s) did not	ð Q	night (washing) Usual user(s) did not	ð Q	night (washing) Usual user(s) did not	ð Q
		sleep here last night Net was not needed	- 10	sleep here last night Net was not needed	ں 10	sleep here last night Net was not needed	10
		last night Other	11	iast night Other	11	last night Other	11
		Don't know	98	Don't know	98	Don't know	98
					-		
		All⇔Q90		All⇔Q90		All⇔Q90	

No	Question	Mosquito net	1	Mosquito net	2	Mosquito net :	3		
		Line number of users	(Q01)	Line number of users	(Q01)	Line number of users (	Q01)		
			1		1		1		
	If yes, who used this net		2		2		2		
Q89	>> probe for any additional person		3		3		3		
	using this net last night and enter line		4		4		4		
	number from Q01		5		5		5		
			6		6		6		
Q90	How many nights has this net been used in the last week? >> Crosscheck the response with Q87 and Q86	Every night (7 nights) Most nights (5-6) Some nights (1-4) Not used last week Net is not used at all Don't know	1 2 3 4 5 9	Every night (7 nights) Most nights (5-6) Some nights (1-4) Not used last week Net is not used at all Don't know	1 2 3 4 5 9	Every night (7 nights) Most nights (5-6) Some nights (1-4) Not used last week Net is not used at all Don't know	1 2 3 4 5 9		
Q91	Has this net ever been washed?	Yes No Don't know	1 0 9	Yes No Don't know	1 0 9	Yes No Don't know	1 0 9		
Q92	How many times has it been washed in the last 3 months or since it was obtained (if shorter)? >> enter "00" if none								

Probe for any additional nets that may not be in use at the moment, out for drying after washing or temporarily taken to another location (e.g. to the field).

If more nets exist use section below, if not go to SECTION 6

#### Use this section for net 4-6 and additional sheet if more than 6 nets Complete all questions about each net (Q74 to Q92) before going to the next net.

No	Question	Mosquito net	4	Mosquito net	5	Mosquito net	6
0-1	Could you show me	Observed	1	Observed	1	Observed	1
Q/4	the nets in the	Not observed	۰ ۱	Not observed	۱ ۵	Not observed	0
	nousenoia?	Not observed	0	Not observed	0	1401 00301700	0
	Observe the net and	PermaNet	1	PermaNet	1	PermaNet	1
	not labol (if any) and	Olyset	2	Olyset	2	Olyset	2
	identify the brand of	Duranet	3	Duranet	3	Duranet	3
075	the net		4	Icon Life	4 5	Icon Life	4 5
Gro	>> if net is not	Taylor made	6	Taylor made	6	Taylor made	6
	observed show net	Unbranded (no label)	7	Unbranded (no label)	7	Unbranded (no label)	7
	pictures and probe	Other	8	Other	8	Other	8
		Specily		Specily		Specity	
	>>Observe or ask						
	the shape of net	Rectangular	1	Rectangular	1	Rectangular	1
Q76			_				
	What is the shape of	Conical	2	Conical	2	Conical	2
	the net?						
	>>Observe or ask	White	1	White	1	White	1
	the colour of net	Green	2	Green	2	Green	2
Q77		Blue	3	Blue	3	Blue	3
	What is the colour of	Other	4	Other	4	Other	4
	the net?	Specily		Specily		Specily	
	When you got this net						
	was it already treated						
078	at the factory with an						
010	insecticide (chemical)	Yes	1	Yes	1	Yes	1
	to kill or repel	No	0	No	0	No	0
	mosquitoes?	Don't know	9	Don't know	9	Don't know	9
	When you got the net						
070	was there a packet of						
Q/9	insecticide in the	Yes	1	Yes	1	Yes	1
	packaging?	No Dop't know	0	No Dop't know	0	No Don't know	0
		DOITT KHOW	9	DOILT KHOW	9	DOILT KHOW	9
	Since you got the net						
	was it ever soaked or	Yes	1	Yes	1	Yes	1
Q80	dipped in a chemical	N0 Don't know	0 9	N0 Don't know	0 Q	N0 Don't know	0 9
	to kill or repei	Boint kinow		Don't know		Don't know	
	mosquitoes?	No or DNK⇔Q82		No or DNK⇔Q82		No or DNK⇔Q82	
		Monthe if loss than 1		Monthe if less than 1	voor	Montha if loss than 1	l
	If yes, how long ago		ycai		ycai		ycai
Q81	was the last time it						
	was dipped or						
	soaked?	More than 1 year	1	More than 1 year	1	More than 1 year	1
		Don't remember	9	Don't remember	9	Don't remember	9
		Months if less than 2 y	loare	Months if less than 2 y	/oare	Monthe if less than 2 y	loare
	How long ago did you		6013		10013		75013
	obtain this net?						
Q82	>> enter "00" for	Years if more than 2 y	ears	Years if more than 2 y	ears	Years if more than 2 y	/ears
	months if less than						,
	one month						
		Don't remember	98	Don't remember	98	Don't remember	98



No	Question	Mosquito net	4	Mosquito net	5	Mosquito net	6
		Recent campaign	1	Recent campaign	1	Recent campaign	1
		Previous campaign	2	Previous campaign	2	Previous campaign	2
			3		3 1		 ⊿
		Mosque or church	5	Mosque or church	5	Mosque or church	5
	M/hara did you abtain	Family or friends	6	Family or friends	6	Family or friends	6
Q83		Private clinic	7	Private clinic	7	Private clinic	7
	this net?	Pharmacy	8	Pharmacy	8	Pharmacy	8
		Shop or supermarket	9	Shop or supermarket	9	Shop or supermarket	9
		Market	10	Market	10	Market	10
		Hawker	11	Hawker	11	Hawker	11
		Other	12	Other	12	Other	12
		Specity		эреспу		эреспу	
	Did you nay any	Yes	1	Yes	1	Yes	1
Q84	monov for this not?	No	0	No	0	No	0
	money for this net?	Don't know	9	Don't know	9	Don't know	9
		No or DNK⇔Q86		No or DNK⇔Q86		No or DNK⇔Q86	
Q85	If yes, how much did you pay (Naira)						
		Hanging loose over	1	Hanging loose over	1	Hanging loose over	1
	>> Observe or ask	bed/mattress		bed/mattress		bed/mattress	
	where the net is	Hanging and folded	2	Hanging and folded	2	Hanging and folded	2
		Not hanging but not	~	Not hanging but not	~	Not hanging but not	~
	interview	stored	3	stored	3	stored	3
Q86	Interview	Stored away	4	Stored away	4	Stored away	4
	Where is the net	Unpacked		Unpacked		Unpacked Stored owey still in	
		Stored away Still In	5	Stored away Still III	5	Stored away Still III	5
	located now?	Temporarily taken		Temporarily taken	_	Temporarily taken	
		away	6	away	6	away	6
	Was this net slept	Yes	1	Yes	1	Yes	1
Q87	under by any person	No Den't know	0	No Dep't know	0	No Dep't know	0
	last night?	DOILT KNOW	9	DOILT KHOW	9	DOLLKHOW	9
		Yes⇒Q89		Yes⇒Q89		Yes⇒Q89	
		No mosquitoes	1	No mosquitoes	1	No mosquitoes	1
		There is no malaria	2	There is no malaria	2	There is no malaria	2
		Too hot	3	Too hot	3	Too hot	3
		Don't like smell	4	Don't like smell	4	Don't like smell	4
		Feel "closed in" or	5	Feel "closed in" or afraid	5	Feel "closed in" or afraid	5
		Net too old or torn	6	Net too old or torn	6	Net too old or torn	6
		Net too dirty	7	Net too dirty	7	Net too dirty	7
088	If no why not?	Net not available last	Q	Net not available last	ß	Net not available last	R
000		night (washing)		night (washing)	U	night (washing)	
		Usual user(s) did not	9	Usual user(s) did not	9	Usual user(s) did not	9
		Net was not needed		Net was not needed		Net was not needed	
		last night	10	last night	10	last night	10
		Other	11	Other	11	Other	11
		Don't know	98	Don't know	98	Don't know	98
		Specify other		Specify other		Specify other	
		All⇔Q90		All⇔Q90		All⇔Q90	



No	Question	Mosquito net 4		Mosquito net	5	Mosquito net 6	;
		Line number of users (C	201)	Line number of users (	Q01)	Line number of users (C	Q01)
			1		1		1
	If yes, who used this net >> probe for any additional person using this net last night and enter line number from Q01		2		2		2
Q89			3		3		3
			4		4		4
			5		5		5
			6		6		6
Q90	How many nights has this net been used in the last week? >> Crosscheck the response with Q87 and Q86	Every night (7 nights) Most nights (5-6) Some nights (1-4) Not used last week Net is not used at all	1 2 3 4 5 9	Every night (7 nights) Most nights (5-6) Some nights (1-4) Not used last week Net is not used at all Don't know	1 2 3 4 5 9	Every night (7 nights) Most nights (5-6) Some nights (1-4) Not used last week Net is not used at all	1 2 3 4 5 9
Q91	Has this net ever been washed?	Yes No Don't know	1 0 9	Yes No Don't know	1 0 9	Yes No Don't know	1 0 9
Q92	How many times has it been washed in the last 3 months or since it was obtained (if shorter)? > enter "00" if none						

Probe for any additional nets that may not be in use at the moment, out for drying after washing or temporarily taken to another location (e.g. to the field)

If more nets exist use additional sheets for SECTION 5, if not go to SECTION 6

# SECTION 6: Previously owned mosquito nets

# This section must be filled for all households

No	Questio	n	Categories Skip				
Finally	, we would like to ask some	questions about nets	s the househo	old has owned ir	n the recent pa	ast but which	
are not	t present any more						
Q93	(MONTH) did you own an	ampaign in v mosquito nets			Yes 1 No 0	NO. 3 or 9	
000	which you do not have any	/ more now?	Did not	participate in cam	paign 3	⇒Q98	
	How mony note did you di			Don't reme	mber 9		
	otherwise loose since the	campaign					
Q94	>> excluding the campai	gn nets (see Q36					
	and Q69)						
Please	enter the following informati	ion for each net "lost'	,				
No	Question	Categorie	es	Net 1	Net 3		
		Ne	et was stolen	1	1		
		Net was destroyed	accidentally	2	2	2	
		]	Net was sold	3	3	3	
		Net was given away	y to relatives	4	4	4	
	Can you tall manufact	Net was given av	vay to others	5	5	5	
Q95	Can you tell me what	Net was thrown away		6	6	6	
	happened to the het?		Other	/ 8	/ 8	/ 8	
			Don't know	9	9	9	
		5	Specify other				
			3 to 7 ⇔096	3 to 7 ⇔096	3 to 7 ⇔096		
				else ⇔ Q97	else ⇔ Q97	else ⇔ Q97	
		Not was too torp, too	many halaa	1	1	1	
		Net was too torn, too	many noies	2	2	2	
	Why did you not keep	Net was not neede	d at the time	3	3	3	
006	this net?	We did no	t like this net	4	4	4	
Q90	>> ontor first rosson	Neede	d the money	5	5	5	
	mentioned		Other	6	6	6	
	mentioned		Don't know	9	9	9	
		Specity other					
	How old was the net	Age in months if less	s then 1 year				
097	when you discarded,						
QUI	gave away or otherwise	Age in years if a	above 1 year				
		Don	i't remember	98	98	98	
No	Questio	n		Categories		Skin	
	In the 12 months before th	e recent campaign		Outegones		ОКІр	
	in (MONTH), did vou own	any mosquito nets			Yes 1		
Q98	which you did not have an	ny more at the time			No 0		
	of the campaign?	•		Don't reme	mber 9		
	How many nets did you dis	scard, give away or					
Q99	otherwise loose in the 12 r	nonths before the					
	campaign?						
			1		<u> </u>	·	

No	Question	Categories	Net 1	Net 2	Net 3
		Net was stolen	1	1	1
		Net was destroyed accidentally	2	2	2
		Net was sold	3	3	3
		Net was given away to relatives	4	4	4
		Net was given away to others	5	5	5
Q100	Can you tell me what	Net was thrown away	6	6	6
GIUU	happened to the net?	Material used for other purpose	7	7	7
		Other	8	8	8
		Don't know	9	9	9
		Specify other			
			3 to 7 ⊨\0101	3 to7⊨ 0101	3 to 7 ⊨\0101
			else ⇒ Q102	else ⇒ Q102	else ⇒ Q102
	Why did you not keep	Net was too torn, too many holes	1	1	1
		Net was too dirty	2	2	2
	this not?	Net was not needed at the time	3	3	3
0101		We did not like this net	4	4	4
QIUI	>> ontor first record	Needed the money	5	5	5
	>> enter mist reason	Other	6	6	6
	mentionea	Don't know	9	9	9
		Specify other			
		Age in months if less then 1 year			
	How old was the net				
Q102	gave away or otherwise lost it?	Age in years if above 1 year			
		Don't remember	98	98	98

Probe if there were any more "lost nets", if so use additional sheet for SECTION 6

Thank the respondents for their time and cooperation.

<b>INTERVIEWER NOTES:</b> Please note any problems you had with completing the interview for this household.

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