

**Monitoring and Evaluation of the Tanzanian
National Net Strategy**

Universal Coverage Campaign

Household Survey Report-Lake and Southern
zones

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Executive Summary

This report provides a summary of results from household surveys that were conducted in five districts, Nachingwea and Mtwara Urban (Southern zone), Sengerema, Rorya and Chato (Lake zone) following completion of universal distribution of free nets (LLINs) and hang-up campaign. The reported household surveys were conducted in March/April 2011 in the Southern zone and June 2011 in the Lake zone.

The surveys addressed four main objectives:

1. To assess coverage of the Universal Coverage Campaign (UCC) in the Lake and Southern zones
2. To assess household ownership of ITNs in the Lake and Southern zones
3. To assess use of ITNs for people in various age groups in the Lake and Southern zones
4. To assess the coverage of the hang-up campaign in the Lake and Southern zones

A total of 887 and 592 households were surveyed in the Lake and Southern zones respectively.

Process indicators for the Universal Coverage Campaign

Prior to distribution of the nets, various preparatory activities were carried out, among them was registration of households. In essence each household was to be visited and sleeping spaces that were not covered by a LLIN from the U5CC or through the upgraded fixed top-up voucher would be counted and the household would be given the number of coupons equivalent to such sleeping spaces.

In both the Lake and Southern zones, virtually every head of household who was interviewed reported that s/he had heard about the UCC (98.6% in the Lake zone and 99.7% in the Southern zone). Of the 887 surveyed households in the Lake zone, 90% were registered for free LLINs. In the Southern zone, 93% of the 592 surveyed households were registered for free LLINs. Most of the households were registered before the distribution date (99% in both zones). However, just few households were asked the purposed questions that would lead to the accurate number of nets required. Of the 795 registered households in the Lake zone and 548 in the Southern zone, only 2.3% and 1.6% respectively, were asked about the number of sleeping spaces by those who were doing registration. Contrarily, most of the households were asked about household members – 78% in the Lake zone and 71% in the Southern zone.

Success of the UCC as measured by percentage of sleeping spaces covered by LLIN was substantially high in the Southern zone but relatively lower in the Lake zone. **At the time of the survey, 76% and 86% of the reported sleeping spaces were covered by LLINs in the Lake and Southern zones respectively.** However, number of LLINs issued per household did not necessarily correspond to the number of sleeping spaces. While some households received more nets (LLINs) than required, others received less than the number of sleeping spaces that were not yet covered by LLINs.

Household ITN ownership

Estimates of household ownership of ITN (at least one) in the Lake zone was 95% and 96% in the Southern zone, this was substantially higher compared to estimates derived after the U5CC (82% in the

Lake zone and 61% in the Southern zone). Ownership of LLIN was also very high, in each zone, 94% of the surveyed households owned at least one LLIN.

Distribution of LLINs through the UCC achieved a high level of equity in both zones. In the Lake zone the households in the lowest wealth quintile had a coverage of 94% and 93% for the households in the highest wealth quintile. In the Southern zone that indicator was 95% for the households in the lowest wealth quintile and for those households in the highest wealth quintile. The LLINs from the UCC were 53% and 67% of all household owned nets in the Lake and Southern zones respectively.

ITN use among household members

Point estimates of personal ITN use were derived from the question about sleeping under ITN in the night preceding the survey. Distribution of free nets that targeted sleeping spaces (UCC) showed a huge contribution in the coverage of ITNs among all household members. While only 57% and 38% of the overall household members in the Lake and Southern zones respectively, reported to have slept under ITN in the night preceding the 2010 household survey, the coverage increased to 70% and 81% in 2011, after distribution of free LLINs.

Coverage indicators by household wealth quintiles - In the Lake zone, 66% of the members of households in the lowest wealth quintile and 70% of those in the highest economic quintiles, respectively, slept under ITN in the night preceding the survey. However, in the Southern zone use of ITNs was higher among the members of households in the lowest wealth quintile, 84% compared to 72% of those in the highest wealth quintile (equity ratio=1.2). The disparity was higher for LLINs, where those in the lowest wealth quintile had a coverage of 83% and the ones in the highest wealth quintile had a coverage of 61% (equity ratio=1.4).

Following the UCC, coverage of ITNs use among women of child bearing age (15-49) increased from 62% in 2010 to 76% in 2011 in the Lake zone and from 47% in 2010 to 82% in 2011 in the Southern zone. Most of the ITNs were LLINs as indicated by 73% of women who reported to have slept under LLIN in the Lake zone and 76% in the Southern zone.

ITN use in children

In both zones, ITN use by children under-five was very high compared to the previous two years including post U5CC coverage in 2009. While that indicator was 62% (estimated soon after completion of the U5CC in that zone) in the Lake zone and 71% in 2010, that indicator increased to 79% after the universal distribution of free LLINs (UCC). In the Southern zone, coverage of ITNs among children under-five was 48% in 2009 (estimated soon after completion of U5CC in that zone) and 56% in 2010, following UCC that indicator increased to 84%. Estimates for use of LLIN also indicated high gains compared to the post U5CC estimates (55% in 2009 and 77% in 2011 in the Lake zone and 34% in 2009 and 77% in 2011 in the Southern zone).

In the Lake zone use of ITNs among children in households of the lowest wealth quintiles compared closely with those in the highest wealth quintile households (78% and 81% in the households of lowest and highest wealth quintiles respectively). Thus, an equity ratio of approximately 1.

Contrary to the 2009 Southern zone estimates where children in households of the highest wealth quintile had much higher ITN coverage compared to their counterparts in households of the lowest wealth quintile (equity ratio=0.4), post UCC revealed a higher level of coverage for children in the households of the lowest wealth quintile (83%) compared to those in households of the highest wealth quintile where only 68% were reported to have slept under ITN in the night preceding the survey (equity ratio=1.2).

Comment

The phenomenon observed in the Southern zone of relatively lower use of nets by all household members and children in the households of the highest wealth quintile compared to those households of the lowest wealth quintile is somewhat contrary to expectation and no plausible explanation is available at the moment. Qualitative studies will establish the context of this observation.

Hang-up campaign

Distribution of the LLINs was followed by hang-up campaigns. Two thirds (66%) and nearly three quarters (74%) of the LLINs received from the UCC in the Lake and Southern zones respectively, had been hanged up by the time of the survey. Most of the LLINs were hanged up within a week of receipt (85% in the Lake zone and 68% in the Southern zone). Leading reasons for not hanging up the net were “using another net” (71% and 52% in the Lake and Southern zones respectively). The second most frequently mentioned reason for the Lake zone was “no mosquitoes” (7.6%) but in the Southern zone “gave the net to another household” ranked second (19%). The small size of nets was also mentioned for 14% of the nets that were not yet hanged in the Southern zone but very low proportion in the Lake zone (1.1%). Merging of nets (suggestive of small size) was reported in the Southern zone for about 6% of the nets that had not been hanged up by the time of interview.

Reports from the heads of households about household visitation as part of the hang-up campaign indicated a low coverage. Only 32% and 38% of the households in the Lake zone and Nachingwea district respectively, reported that someone visited the household to give instructions about hanging-up the net. However, **delivery of the campaign stickers indicated that at least 45% of the households were visited in the Lake zone and 44% in Nachingwea district.**

Note

While most of the previous surveys were conducted during dry season, evaluation of UCC in the Southern zone (reported here) was conducted in the middle of the rainy season. Therefore, this might have contributed to the observed high use of nets. However, two more factors might not be ignored 1) near saturation ownership of ITNs and 2) the aggressive BCC is also likely to have achieved (to some

extent) the intended result of behaviour change. In the Lake zone the survey happened soon after rains (June 2011) and results show lower usage of ITNs in all age groups compared to the Southern zone. However, appreciable improvement in coverage compared to previous years support the potential effect of the two factors hypothesized for the Southern zone.

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We highly appreciate the support of the DMOs, malaria/"Hati punguzo" focal persons and village/hamlet leaders in the surveyed districts. We are indebted to the respondents who offered their time and information.

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Background

With support from the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) and the United States “Presidents Malaria Initiative”, the National Malaria Control Programme (NMCP) defined a national ITN strategy (2004-2008) which provided subsidized nets targeted at vulnerable groups through discounted vouchers issued at antenatal clinics. The voucher could be used as part of the payment for ITN from appointed retailers.

In order to accelerate coverage and address the equity gap, in 2009 the NMCP diversified the strategy to include distribution of free long lasting insecticidal nets (LLINs) to children under -five (U5CC), delivery of high-value (fixed-top up) vouchers to pregnant women and infants and the Universal Coverage Campaign (UCC) that aims at distributing LLINs to households with sleeping spaces that were not covered by LLIN.

Following revision of NMCP M&E framework as well as diversification of ITN strategies in 2009, IHI has been conducting a series of household surveys at sub-national level. Findings from each survey have been documented in reports that are compiled soon after completion of the field work and analysis of data. Fourth in the series of such surveys, is the evaluation of the UCC. This report presents findings from household surveys conducted in the Southern and Lake zones to assess the impact of UCC in ITN ownership and use. Where appropriate, results for key indicators from previous surveys are included to allow for trends.

The Universal Coverage and hang up campaigns

The UCC involved registration of households and sleeping spaces that were not covered by LLINs from the U5CC or through the upgraded fixed top-up voucher for pregnant women and infants. A coupon was given to the household for each sleeping space that was not covered by LLIN. Specific distribution points were set up in each community where a household member on the day of distribution, collected LLINs supposedly equivalent to the number of registered uncovered sleeping spaces. As a strategy to ensure that the free LLINs were used, a hang-up campaign that included a person visiting a household, followed soon after the distribution of the nets.

Objectives

- 1.** To assess coverage of the Universal Coverage Campaign (UCC) in the Lake and Southern zones.
- 2.** To assess household ownership of ITNs in the Lake and Southern zones
- 3.** To assess use of ITNs for people in various age groups in the Lake and Southern zones
- 4.** To assess the coverage of the hang-up campaign the Lake and Southern zones

Methodology

Study site

The currently reported survey was conducted in Nachingwea and Mtwara Urban (Southern zone), Sengerema, Rorya and Chato (Lake zone). These are two of the three zones selected for sub-national level household surveys.

Timing

The household survey to evaluate the impact of the UCC in the Southern zone was conducted between late March and early April 2011. Distribution of free LLINs was implemented in October 2010 in the two districts. Hang up campaign followed soon after the issuing of LLINs. Thus, the survey happened few months after the distribution of the LLINs. In the Lake zone, distribution of LLINs happened in April 2011 and hang-up campaign was completed on the 30th April 2011. The household survey was conducted in June 2011.

Sampling and sample size

Two zones (Southern and Lake) and partially the Coastal zone have been marked in NMCP M&E framework as zones that would be sampled for the sub-national NATNETS surveys. Similar to the U5CC and the combined surveys, two districts in the Southern zone and three in the Lake zone from those included in the 2008 household survey were included in the reported survey. Sampling scheme was adopted from the previous national TNVS household surveys where each household within the chosen district had an equal chance of being included in the sample. Sampling within the district started with selecting clusters (villages) with probability proportional to the size of the village. Within each chosen village, one sub-village (kitongoji) was selected using simple random sampling. Within each selected kitongoji, 30 households were chosen using a modified EPI-type sampling procedure. From each district, 10 clusters were chosen and from each cluster 30 households were chosen, thus 300 households were selected from each district. The sample size of 300 hundred households was set to estimate net use in the night before the survey in children under-five years with a standard error of 5% at district level¹.

The survey tool

Design of the questionnaire was primarily guided by the U5CC household survey tool. Additional questions were added to capture the process indicators specific to the UCC. In consultation with NATNETS partners and piloting, the final version of the tool was developed.

¹ For sampling details see the protocol –Monitoring and Evaluation of Tanzania ITN Strategy (2008-2012)

The UCC household survey questionnaire of 2011 consisted of 3 modules:

1. Household module (HH).

- Identifiers
- Household roster for all residents
- Household assets (markers of socioeconomic status)
- Education and occupation of the household residents
- Household net ownership
- Use of ITN by each household member
- Awareness of the importance of early attendance to ANC clinic
- Heard about malaria prevention campaign messages
- Location of the household using a GPS
- Knowledge and participation in the UCC
- Hang-up campaign issues

2. Women's module (W) for all women aged 15-49

- Awareness of the importance of early attendance to ANC clinic
- Current pregnancies
- Use of antenatal services
- Receipt of voucher during pregnancy

3. Mothers/care providers to children under-five

- Exposure to messages about malaria prevention campaign
- Awareness and experience with CCAs

Data collection was done using personal digital assistant (PDA).

Logistics

In each zone, the survey was carried out by 2 teams, each composed of 4 interviewers, 1 supervisor and a driver. The teams were also accompanied by 1 research officer (senior supervisor) and one data manager.

Quality control

The field team

The same team of interviewers and supervisors that conducted the previous sub-national level household surveys was recruited for this reported survey.

Training

The team was trained for a total of 8 days including 3 days of piloting the tool and household selection. Training included, the consent process, interview technique, probing for dates using local event calendars and household selection. Similar to the previous national surveys, a detailed interviewers'

guide was prepared, piloted during the training sessions and carried in the field by each interviewer. A refresher training was conducted before start of the Lake zone survey on the 30th and 31st May 2011.

Field supervision

Similar to the previous household surveys, supervisors accompanied some interviews and did re-interviews on key aspects of the questionnaire in some randomly selected households. Completeness check forms were completed for each cluster.

Checking and storing data

Procedures similar to those used in the previous household surveys were adopted. At the end of each day supervisors synchronized the PDAs to their Laptop computers and ran sets of checks using purpose-written MS Access programmes. The quality control check compared the original interview and re-interview and identified discrepancies. The reporting programme produced a summary of the data collected for each cluster, including specific problems. Interviewers completed data error forms whenever a data entry error was encountered. These were collected by the supervisors and provided to the data manager for subsequent data cleaning.

Data processing

Data management followed similar procedures used for the TNVS national and sub-national level household surveys. All survey data were entered into handheld computers at the point of data collection. Data cleaning was undertaken by the data manager using information from the data error forms, supervisor summary forms, daily Access-generated reports and standard range and consistency checks.

Informed consent

Information sheet about the campaigns and the study was drawn up in Swahili, providing in summary the UCC and hang-up campaigns along with explanation about why the study was being carried out, by whom, and what it involved. A copy of the information sheet was left with each household. Respondents were asked if they had any questions and whether they agreed to take part in the study. Written consent of all respondents was obtained before proceeding with interview. This consent was sought from the household heads (or appointed representative) and from each woman /mother interviewed.

Data analysis

Data were analyzed using STATA software according to an analytical plan. The “svy” commands were used to allow the confidence intervals of estimated parameters to be adjusted for the cluster structure of the survey. Estimates of ITN coverage and other indicators are all presented as percentages. Similar to the approach used in the national surveys, principal components analysis was used to construct a household wealth index based on household asset ownership in order to examine the relationship between ITN coverage indicators and household wealth quintiles. Equity ratio (coverage in the lowest

wealth quintile/coverage in the highest wealth quintile) was used to assess socio-economic equity in the ownership of and use of ITNs.

Definition

In this report ITN is defined as follows:

LLIN (ready to use pre-treated mosquito net) or an ordinary net treated with long lasting insecticide or an ordinary net treated within the previous 12 months with conventional insecticide. As such LLIN is a subset of ITN. Whenever, that is treated contrarily it is clearly stated as “ITN excluding LLIN”.

Results

Estimates of process indicators for the UCC, hang-up campaign and coverage of ITNs are presented. Where appropriate, trends of coverage indicators are presented. Consistent to the previous surveys, information provided by the head of household was used to calculate process and coverage indicators.

Study sample

Out of a sample of 900 households in the Lake zone, 887 (98.6%) were interviewed. In the Southern zone, 592 (98.7%) were interviewed out of a sample of 600 households. Of the interviewed households, information about net use was collected for a total of 4561 and 2037 household members that slept in the surveyed households in the night preceding the survey in the Lake and Southern zones respectively (Table 1).

Table1: Summary of the surveyed households

	Lake zone	Southern zone
Number of districts	3	2
Number of clusters	30	20
Number of households	887	592
Number of people in the households	4585	2173
Number of people who slept in the HH in the night preceding the survey	4561	2037
Mean household size	5.2	3.8
Children under-five	849	237
Children under-five who slept in the HH in the night preceding the survey	821	226
Number of women 15-49	701	521

Universal Coverage Campaign

Awareness, assessed by asking the head of household whether s/he ever heard about the UCC was very high. Over 98% and very close to 100% of the heads of household in the Lake and Southern zones respectively, reported that they had heard about that campaign (Table 2). Radio was the most frequently cited source of information (40% and 50% in the Lake and Southern zones respectively).

Table2: Awareness of UCC among heads of households

Information	Lake zone		Southern Zone	
	N	n (%)	N	n (%)
Heard about the campaign	887	875(98.6)	592	590 (99.7)
Main source of information				
Community worker	875	315 (36.0)	590	139 (23.6)
Neighbours/relatives/friend		176 (20.1)		140 (23.7)
Radio		350 (40.0)		297 (50.3)
Others		34 (3.9)		14 (2.4)

According to the responses from the heads of households in both zones, coverage of registration for free LLINs was encouragingly high. Of the surveyed households in the Lake zone, 90% were registered and 93% in the Southern zone. Most of the households were registered before the distribution day (99% in both zones). However, coverage of distribution using “receipt of at least one LLIN by a household” was slightly lower in the Lake zone (86%) compared to the Southern zone where 92% of the households received at least one LLIN (Table 3).

Table 3: Registration and issuing of nets (LLINs) at household level

	Lake zone		Southern zone	
	n/N	% (95%CI)	n/N	% (95%CI)
HH registered	795/887	89.6 (82.6-91.4)	548/592 ^a	92.6 (90.2-94.4)
Registration happened at home	728/794	91.7 (89.9-93.2)	525/548	95.8 (93.8-97.2)
HH registered before distribution day	786/795	98.9 (97.8-99.4)	542/548	98.9-(97.6-99.5)
Household received at least one LLIN	766/887	86.4 (84.1-88.4)	546/592	92.2 (89.8-94.1)

During registration of households for LLINs specific questions were supposed to be asked to establish the number of LLINs to be given to each household. Table 4 illustrates the questions that were asked by those who were doing household registration for the UCC. The question asked to most of the heads of households was about the number of household members (78% in the Lake zone and 71% in Southern zone). Only about 2% of all the registered households were asked about sleeping spaces and less than

20% of the households were requested by the person who was registering to enter into the house. About 1% of all the registered households were not given any coupon.

Table 4: Household registration

Registration process	Lake zone		Southern zone	
	N=795	% (95%CI)	N=548	% (95 % CI)
<u>Household asked about</u>				
Sleeping spaces	18	2.3(1.4-3.5)	9	1.6 (0.8-3.1)
Number of beds	14	1.8 (1.1-2.9)	42	7.7 (5.7-10.2)
Number of household members	618	77.7 (77.8-80.4)	388	70.8 (66.8-74.5)
Nothing	31	3.9 (2.8-5.4)	16	2.9 (1.8-4.7)
Other	8	1.0(0.5-2.0)	2	0.4 (0.1-1.5)
Do not know	105	13.2(11.0-15.8)	91	16.6 (13.7-19.5)
Requested to enter the house	142	17.9 (15.5-20.5)	109	19.9 (16.8-23.4)
Number of coupons				
0	9	1.1 (0.6-2.1)	5	0.9 (0.4-2.2)
1	315	39.6 (36.4-42.9)	178	32.5 (28.9-36.3)
2	374	47.0 (43.6-50.5)	151	27.6 (24.0-31.4)
3	64	8.1 (6.4-10.1)	122	22.3 (19.0-25.9)
4+	33	4.2 (3.0-5.8)	92	16.8 (13.9-20.1)

Sleeping spaces covered

Using information about the number of sleeping spaces and number of LLINs in the households received through U5CC, upgraded fixed top-up vouchers or UCC it was possible to estimate the percentage of sleeping spaces covered by LLINs and thus derive sleeping spaces that remained uncovered by LLIN after the UCC. In the Lake zone, a total of 2488 sleeping spaces were reported and LLINs received from any of the three sources were 1891. As such, households had LLINs enough to cover at **least 76% of the sleeping spaces and up to 24% of the sleeping spaces remained uncovered by LLIN. Southern zone had a higher percent of its sleeping spaces covered by LLINs. A total of 1539 sleeping spaces were reported and 1320 LLINs were in the households at the time of the survey. Therefore, the LLINs in those households would be enough to cover 86% of the sleeping spaces.**

As shown in Figure 1, the number of LLINs in the household at the time of the survey did not necessarily match the number of sleeping spaces; the irregularities were more pronounced in households with relatively higher number of sleeping spaces and were more distinct in the Lake zone. In some households the numbers of owned LLINs were lower than the number of sleeping spaces while other households had excess LLINs. While only 17% and 14% of the households with one sleeping space in the Lake and Southern zones respectively, had LLINs lower than target, 51% and 45% of the households with three sleeping spaces in Lake and Southern zone respectively had less than 3 LLINs. In the Lake zone,

59% of households with one sleeping space, 43% of those with two sleeping spaces and 29% of those with three sleeping spaces had LLINs that matched the target of the UCC (number of LLINs=number of sleeping spaces). A slightly higher consistency was observed in the Southern zone where 71% of households with one sleeping space had one LLIN, 52% of those with two sleeping spaces had two LLINs and 38% of those with three sleeping spaces had three LLINs (Figures 1a and 1b).

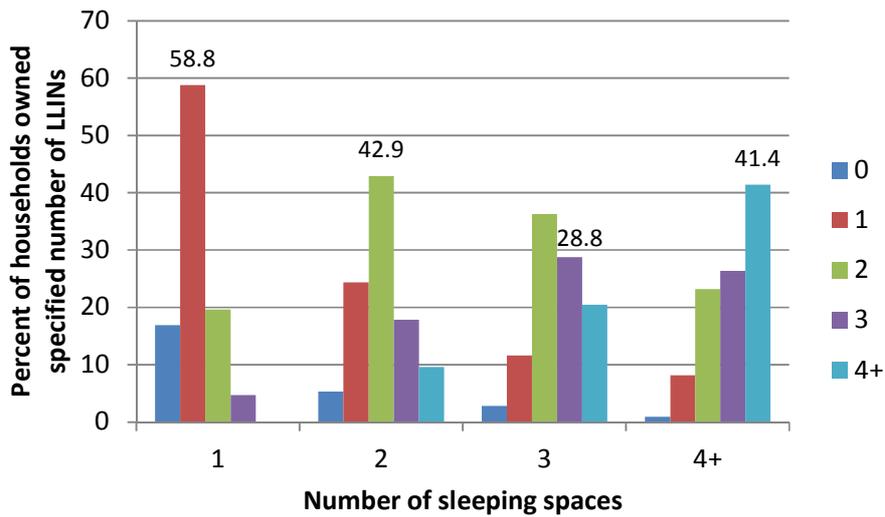


Figure 1a: Number of LLINs owned by households- Lake zone

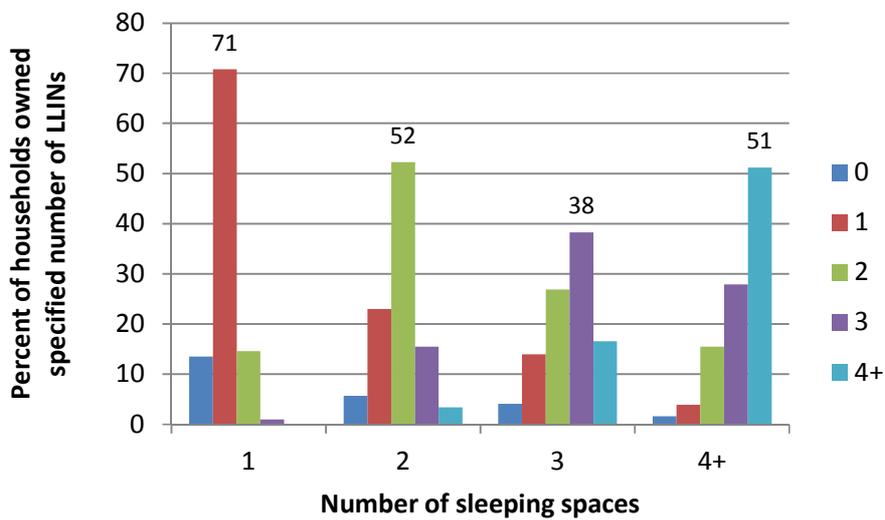


Figure 1b: Number of LLINs owned per household-Southern zone

Proximity of the distribution point to the household is an important factor in access. This was explored by asking the person who travelled to the distribution point about time spent in travelling. A total of 337 and 304 head of households in the Lake and Southern zones respectively, reported that they travelled to the distribution points². Reported travel time suggested that distribution points were located fairly close to the residences - 87% and 90% of the respondents in the Lake and Southern zones respectively, spent less than one hour to reach distribution points. The mean travel time for the Lake zone was 25 (24-27) minutes and 20(18-23) minutes for the Southern zone. Equally important is the time spent at the distribution point. About 76% and 61% of the respondents in the Lake and Southern zones, respectively spent less than one hour waiting to receive LLIN. 5% in the Lake zone and 16% in Southern Zone spent at least three hours at the distribution point. A relatively higher proportion of households in the Southern zone received larger number of LLINs- while only 14% of the households in the Lake zone received at least 3 LLINs, up to 41% of households in the Southern zone received that amount. In both zones, over 70% of the households that received at least one LLIN were informed that the net did not need treatment (Table 5).

Table 5: LLIN distribution

	Lake zone		Southern zone	
	n/N	%(95%CI)	n/N	%(95%CI)
Head of household travelled to the distribution point	337/795	48.7	304/548	55.5
Travelling time spent				
- Less than 1hr	337/387	87.1 (84.0-89.7)	153/163	90.1 (86.9- 92.6)
Mean	387	25.4 (23.5-27.4)	304	20.4 (18.0-23.0)
Waiting time spent at the distribution point				
- Less than 1hr	293/387	75.7 (71.3-79.6)	185/304	60.9 (55.9-65.6)
- Between 1 & 3hrs	75/387	19.4 (15.7-23.6)	70/304	23.0 (18.7-28.0)
- 3hrs and more	19/387	4.9 (3.3-7.3)	49/304	16.1 (12.8-20.0)
Number of LLINs received				
1	299/765	39.1 (35.8-42.4)	160/546	29.3 (25.9-33.0)
2	359/765	46.9 (43.4-50.3)	162/546	29.7 (26.0-33.6)
3	68/765	8.9 (7.1-11.1)	123/546	22.5 (19.3-26.2)
4+	39/765	5.1 (3.8-6.8)	101/546	18.5 (15.5-21.9)
Informed that the net did not need treatment	578/765	75.6 (71.9-77.0)	405/546	74.2 (70.4-77.6)

² For the remaining households, other members travelled to the distribution points

Household ownership and use of ITN

Net ownership

Similar to the previous NATNETS household surveys, information about each net in the household was gathered. For each net, source of the net was identified and treatment status of each was established. In that way, it was possible to categorize nets as untreated, ITN (including LLIN) or LLIN. Table 6 shows that 95% and 96 % of the surveyed households in the Lake and Southern zones respectively, had at least one ITN. The current level is nearly threefold of the 2008 estimates in the Lake zone (34%) and more than double the 2008 estimate in Southern zone (46%). Ownership of LLIN was equally high in both zones (94%).

Table 6: Household ownership of nets

	N	At least one net (any)	At least one ITN	At least one LLIN
		% (95% CI)	% (95% CI)	% (95% CI)
Lake zone				
2008	1176	61.5 (53.4-68.9)	34.1 (28.2-40.5)	
2009	891	91.6 (89.5-93.3)	82.0 (79.4-84.5)	75.5 (72.6-78.2)
2010	889	90.7 (88.6-92.4)	81.3 (78.7-83.7)	76.3 (73.4-78.9)
2011	887	97.8 (96.6-98.5)	95.2 (93.6-96.4)	94.4 (92.7-95.7)
Southern zone				
2008	875	68.7 (61.7-74.9)	46.3 (39.7-52.9)	n/a
2009	592	85.8 (82.9-88.3)	60.8 (56.8-64.6)	43.4 (39.5-47.4)
2010	591	73.8 (70.9-76.5)	60.2 (56.7-63.9)	45.4 (41.6-49.2)
2011	592	99.3 (92.3-96.0)	96.0 (94.3-97.4)	94.4 (92.3-96.0)
Tanzania (2008)	7200	69.8 (63.8-75.2)	45.7 (40.1-51.5)	n/a

Number of nets

Actual numbers of nets owned by each household were reported by the heads of households in each of the survey. Distribution of households by number of nets owned in 2010 and 2011 show a remarkable improvement in the numbers of nets in the surveyed households. While 30% of households owned only one net in 2010 following the distribution of free nets to the households, only 6% of households had one net in the Lake zone. Comparable gains were observed in the Southern zone where 51% of households owning only one net decreased from 51% in 2010 to 18% in 2011. Conversely, the percent of households owning at least three nets increased to over 70% in the Lake zone and over 50% in the Southern zone in 2011 (Figure 2).

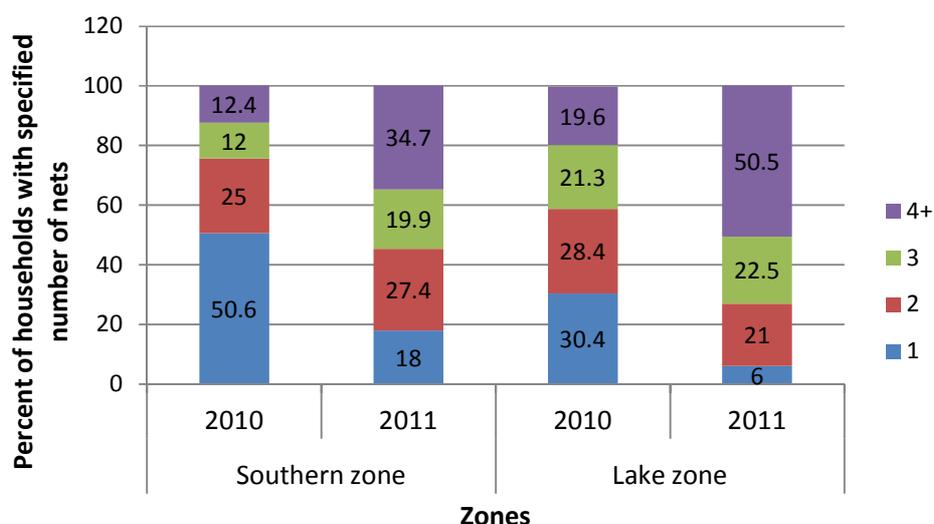


Figure 2: Net ownership by specific numbers

ITN ownership at district level

ITN ownership at district level is shown in Table 7. In all the five surveyed districts, ownership increased to over 90% in 2011 following distribution of free nets to the households. Most remarkable is the leap in Mtwara and Nachingwea districts where ownership was around 60% in 2010.

Table 7: ITN ownership by district

District	2010	2011
	% (95% CI)	% (95%)
Mtwara Urban	58.0 (53.0-62.4)	95.3 (92.2-97.1)
Nachingwea	62.5 (57.0-67.7)	97.0 (94.3-98.4)
Chato	84.9 (80.4-88.4)	92.6 (89.2-95.0)
Sengerema	83.6 (79.0-87.3)	94.9 (91.8-96.9)
Rorya	75.5 (70.3-80.0)	98.0 (95.6-99.1)

Source of net

Using the information about source of each net, contribution of UCC to the ownership of nets was assessed (Table 8). While in the 2010 survey, the U5CC and commercial were the main sources of nets in the households, the 2011 survey, established that the UCC was the main source of nets in both zones. In

the Lake zone 53% of the owned nets were from the UCC. The proportional contribution of the UCC was even higher in the Southern zone (67% of the owned nets)

Table 8: Source of nets

Source of net	Lake zone			Southern zone		
	2009 N=2412	2010 N=2109	2011 N=2554	2009 N=1250	2010 N=1022	2011 N=1792
HP infant	3.0	2.0	0.8	3.0	2.2	0.8
HP pregnant women	7.6	4.7	1.8	4.6	4.1	1.6
Upgraded voucher	n/a	4.7	4.0	n/a	3.6	1.6
U5CC	54.2	49.3	17.0	24.6	20.4	4.7
UCC	n/a	n/a	53.0	n/a	n/a	67.4
Purchased	33.0	34.0	16.8	57.1	56.2	20.1
Other	2.2	5.1	6.6	10.7	13.5	3.8

Net ownership and equity

Percent of households that owned at least one ITN in 2011 showed a consistently high coverage across wealth quintiles that resulted into a high achievement in equity in both zones (equity ratio=1.0). Gains in ownership were higher in the lower wealth quintiles and the persistently low coverage in the households of the lowest wealth quintiles in the Southern zone has now been resolved by the UCC (Figures 3a and 3b).

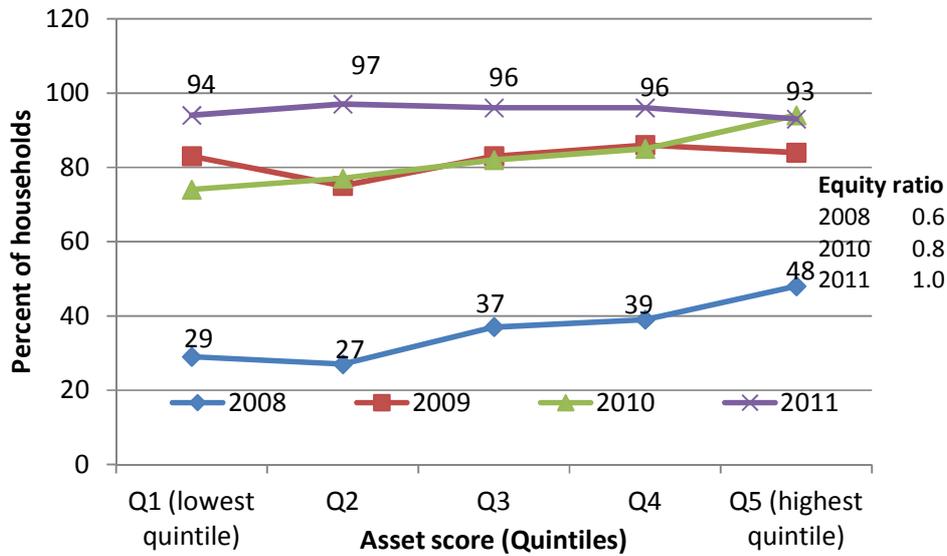


Figure 3a: Households owning at least one ITN by wealth quintiles -Lake zone

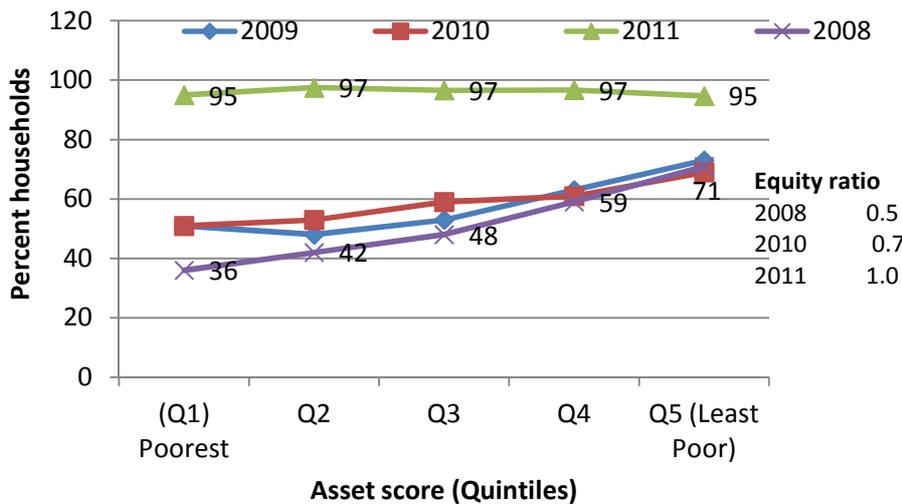


Figure 3b: Households owning at least one ITN by wealth quintiles - Southern zone

Ownership of LLINs was also very high. Since the main source of nets in the households was the UCC it is logical to find high and equitable coverage (equity ratio=1.0). For the 2009 surveys such analysis was restricted to the households with children under five because the main source of LLINs was from the U5CC which targeted that group and insignificant numbers of other households had LLINs (Figure 4). LLIN coverage across the wealth quintiles was above 90% in each quintile for 2009 and 2011 for the Lake zone and 2011 for the Southern zone.

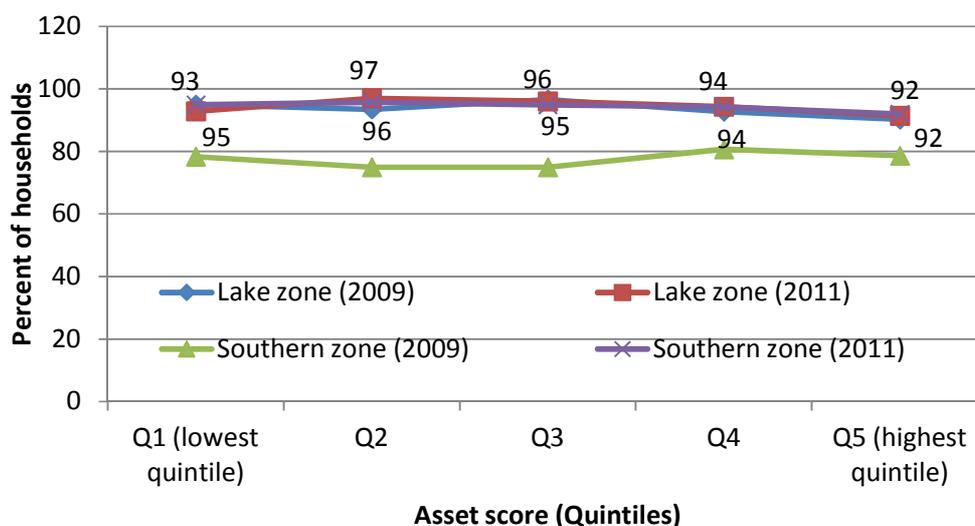


Figure 4: Households owning at least one LLIN by wealth quintiles both zones

Net use

A total of 2554 and 1792 nets were reported in the surveyed households in the Lake and Southern zones respectively. However, only 65% and 66% of the nets in the Lake and Southern zones respectively, were reported to have been used in the night preceding the survey.

For each of the net that was reported as not used in the night preceding the survey, respondents were asked to state reasons for not using that net. **Results indicated that the most frequently mentioned reason for not using the net was “the net is not hanged”, 618/895 (69.1%) in the Lake zone and 407/612 (66.5%) in the Southern zone.** While “no mosquitoes around” was mentioned only for three nets (0.5%) in the Southern zone, the proportion of nets associated with that reason was higher in the Lake zone, 60/895 (6.7%). Other reasons were “person travelled” 60/895 (6.7%) in the Lake zone and 83/612 (14%) in Southern zone. **“Net being used for other purposes” was unique to the Lake zone where such a response was given for 78 (8.7%) nets.** Information about “the other purposes” was not collected.

Sleep under a net in the night preceding the survey is a coverage indicator of use of net. The TNVS national household surveys monitored coverage by producing estimates of sleeping under any net and sleeping under ITN. The sub-national level household surveys added another coverage indicator - sleeping under LLIN. Here we report use of ITN (including LLIN) and LLIN.

Considering that the UCC did not target any specific population group, assessment of coverage of ITNs among all people in the surveyed household is an appropriate indicator for assessing success of the UCC. About 70 % and 81% of all people in the surveyed households in the Lake and Southern zones respectively, slept under ITN (including LLINs). 43% and 64% of the household members in the Lake and

Southern zones respectively, slept under LLIN distributed through the UCC. In both zones, coverage levels for women age 15-49 were very closely comparable to the estimates for the general population (Table 9).

Table 9: Use of nets by household members

	N	ITN	LLIN	LLIN from UCC
Lake zone				
All household members	4561	69.6 (67.4-71.8)	67.2 (64.9-69.5)	43.0 (40.6-45.4)
Women 15-49	695	75.8 (72.5-78.9)	73.2 (69.9-76.4)	43.9 (40.2-47.6)
Southern zone				
All household members	2037	80.9 (78.5-83.0)	75.0 (72.6-77.2)	63.9 (61.3-66.4)
Women 15-49	514	82.1 (78.5-85.2)	75.7 (71.8-79.2)-	64.4 (60.1-68.4)

The trends of use of ITN by all household members and women of reproductive age (15-49) reveal huge gains achieved through the UCC (Figure 5).

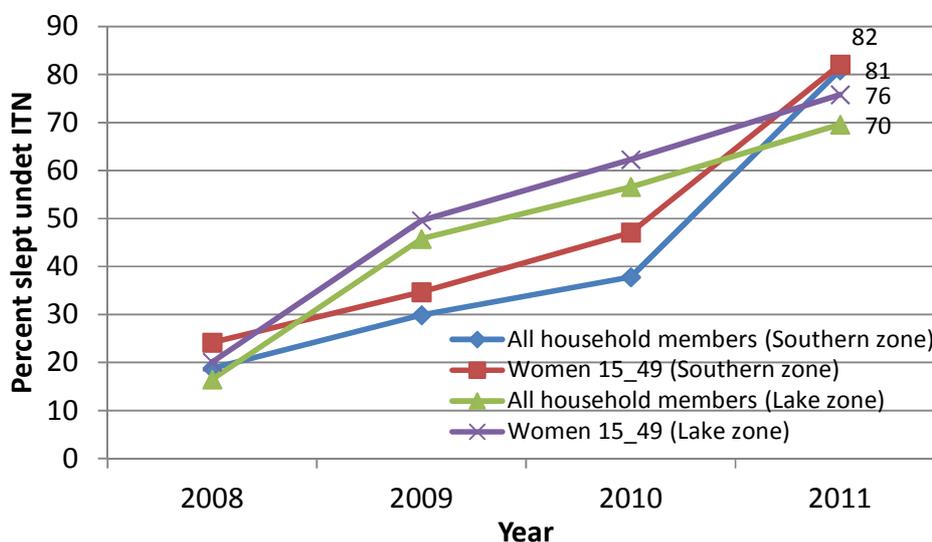


Figure 5: ITN use among household members and women (15-49)

Coverage can be high overall, but disparities in subgroups are worthy exploring (Figure 6). Coverage in the use of ITNs among household members in the Lake zone was 66% in households of lowest wealth quintile and 70% in the highest wealth quintile with equity ratio of 0.9. In the Southern zone, ITN

coverage among the household members for both indicators was comparatively higher in the households of the lowest wealth quintile. While 83% of the people in households of the lowest wealth quintile slept under LLIN, only 61% of those in households of the highest wealth quintile slept under such a net (equity ratio=1.4).

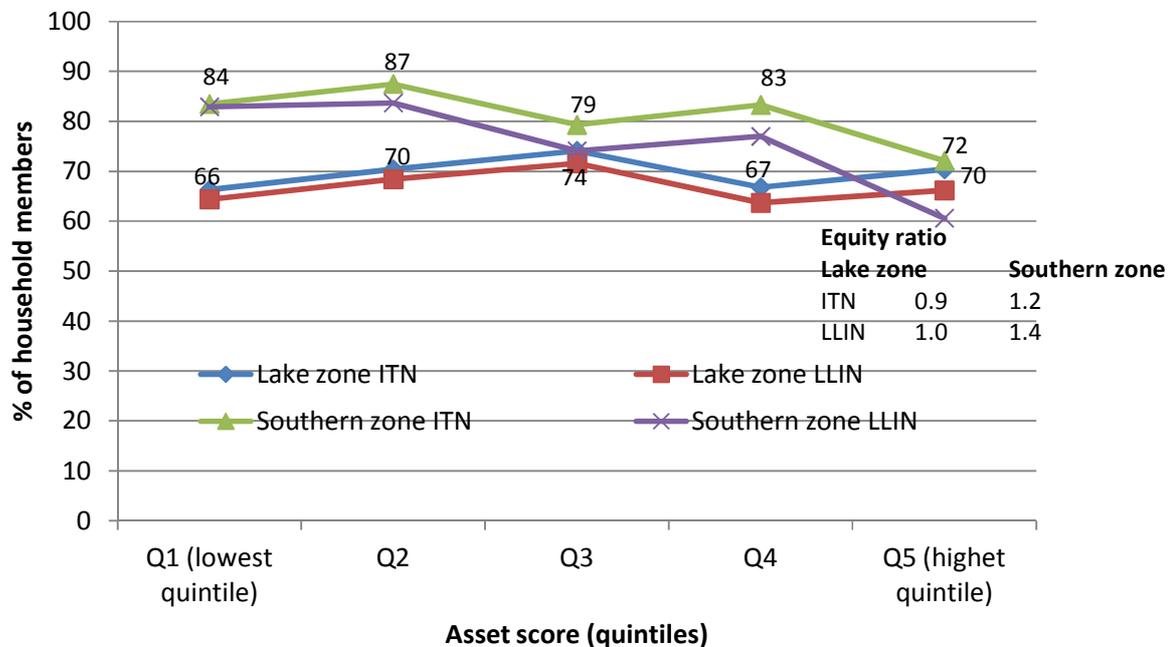


Figure 6: ITN/LLIN coverage among household members by wealth quintiles – both zones

In the Lake zone use of the LLINs from the UCC by specific age groups of the household members indicated a higher coverage (52%) among individuals aged 50+ (Figure 7). A clearer pattern was observed in the Southern zone where higher coverage was in the groups that did not have other discounted sources of such nets. Children under five years of age (59%) and people aged 15-49 (61%), had the lowest coverage of the LLLINs from the UCC. This is logical considering that such children had nets from the U5CC and the fixed top-up voucher. Likewise, people aged 15-49 includes women who might have benefited from ITN/LLIN vouchers for pregnant women. Those aged 50+ had the highest coverage (70%).

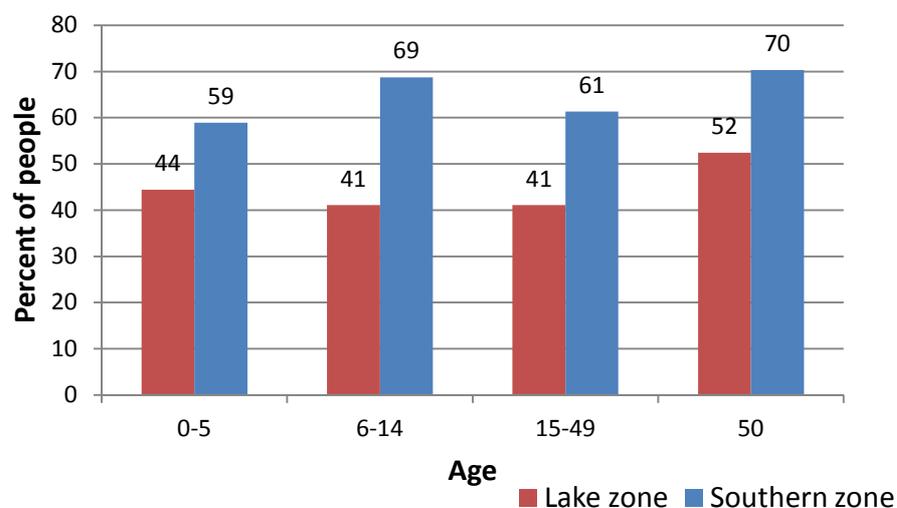


Figure 7: Use of LLINs from the UCC by age groups

Children under five

Children below the age of five years have been targeted for ITNs for several years and surveys have shown a consistent increase in the coverage for this group. Children are also beneficiaries of the universal distribution of LLINs. Proportion of children under-five reported to have slept under LLIN in the night preceding the survey was 77% in both the Lake and Southern zones. Compared to estimates produced for previous years, there has been a huge improvement particularly in the Southern zone where LLIN coverage for children under-five was 34% in 2009 and 41% in 2010. Children who slept under LLINs from the UCC were 45% in the Lake zone and 61% in Southern zone (Table 10).

Table 10: Net use – children under-five

	N	ITN	LLIN	LLIN from UCC
Lake zone				
2008	1408	23.9 (19.1-29.4)	n/a	n/a
2009	1184	62.2 (58.8-65.5)	55.4 (51.9-58.8)	n/a
2010	1047	71.3 (67.8-74.7)	62.2 (58.5-65.7)	n/a
2011	821	79.2 (75.8-82.2)	76.7 (73.3-79.9)	44.5 (40.6-48.3)
Southern zone				
2008	638	25.9 (21.0-31.4)	n/a	n/a
2009	304	48.0 (42.3-53.8)	33.9 (28.6-39.6)	n/a
2010	261	55.9 (50.1-61.6)	40.6 (34.8-46.7)	n/a
2011	226	84.1 (77.9-88.7)	77.4 (70.8-83.0)	60.6 (54.1-66.8)
Tanzania (2008)	5701	28.8 (22.3-36.3)	n/a-	n/a

Net use and equity (Children Under five)

Estimates of use of ITN (including LLIN) and LLIN by children under-five years of age across wealth quintiles provide an insight into equity (Figure 8a, 8b, 9a and 9b). Following universal distribution of free LLINs, coverage of ITN among children under-five in the households of the lowest wealth quintile increased from 67% in 2009 soon (after U5CC) to 78% in 2011 in the Lake zone and from 24% to 83% in the Southern zone. While the equity pattern in the Lake zone was not clearly consistent with norms, in the Southern zone, children in households of the highest wealth quintile experienced minimal gains in that period, from 60% in 2009 to 68% in 2011. Generally, in the Southern zone, children in households of the lowest wealth quintile benefited most in terms of gains with reference to the U5CC coverage estimates. Notable is the observed stability of coverage in households of the highest wealth quintile, across the four years in the Southern zone 60% in 2008 and 68% in 2011. That phenomenon translated into closing the remaining equity gap between the lowest and highest wealth quintiles (equity ratio of 0.7 in 2010 to 1.2 in 2011).

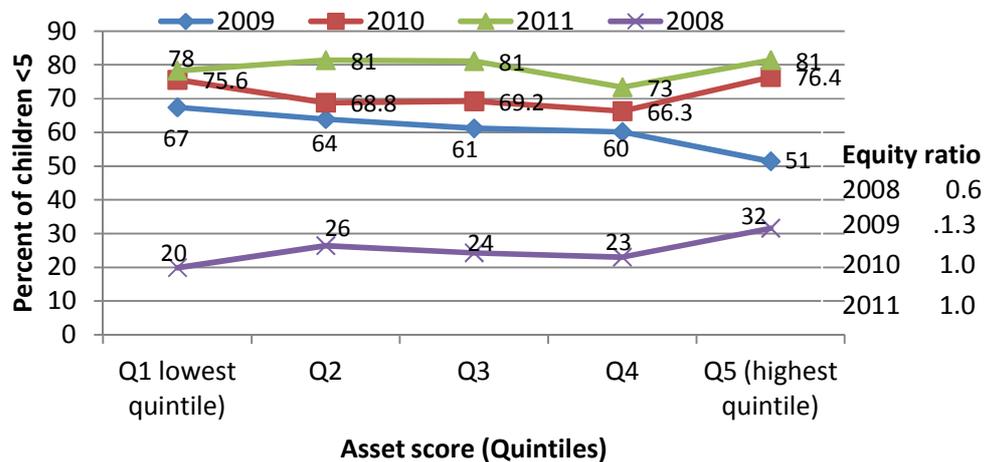


Figure 8a ITN use among children under five years by wealth quintiles -Lake zone

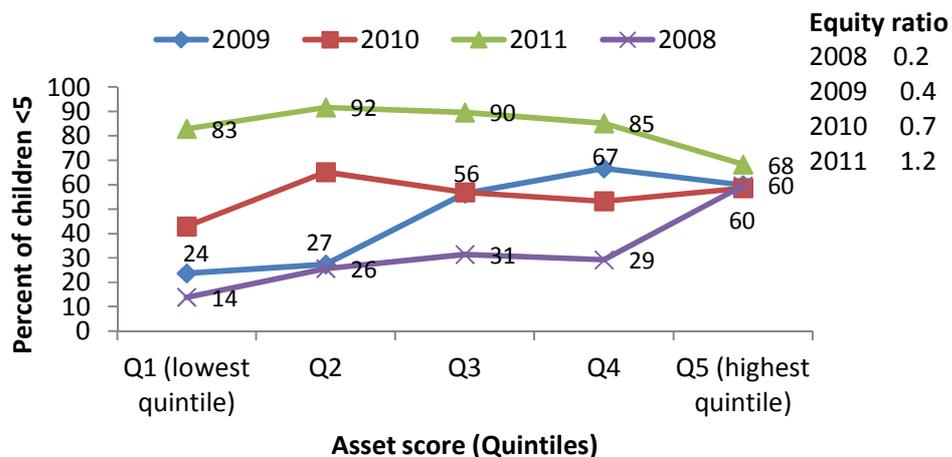


Figure 8b: ITN use among children under five years by wealth quintiles –Southern zone

LLIN coverage across wealth quintiles in 2011 depicted a pattern similar to the ITN estimates (but with slightly lower coverage); this would be expected since most of the ITNs were the LLINs from the UCC and few from the U5CC (Figures 9a and 9b). While in the Southern zone, children in households of the lowest wealth quintile experienced highest gain, that was not observed for the Lake zone. In the Southern zone, LLIN coverage was 80% in the households of the lowest wealth quintile in 2011 and was only 19% in 2009, households of the highest wealth quintile moved from 35% to 63% between those years. That experience resulted into notable improvement in equity- from 0.5 in 2009 to 1.3 in 2011. In the Lake zone coverage among children in the households of the lowest wealth quintile was 62% in 2009 and increased to 76% in 2011. For households of the highest wealth quintile the coverage was 37% in 2009 and 75% in 2011.

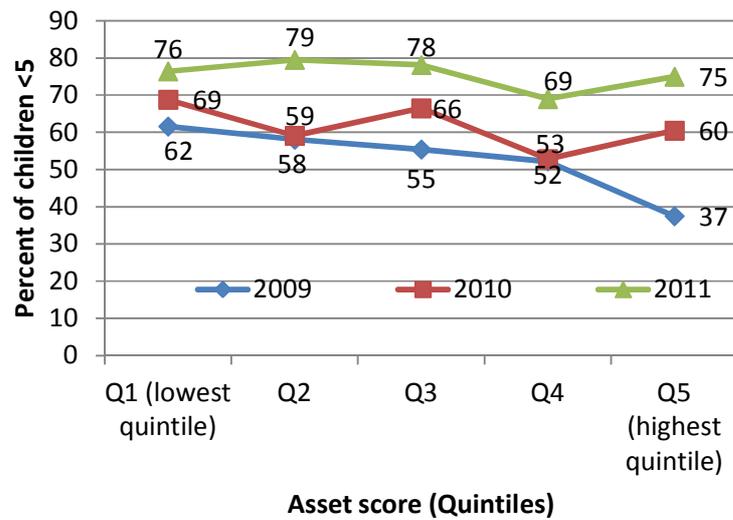


Figure 9a: Use of LLINs among children under five year by socio-economic status–Lake zone

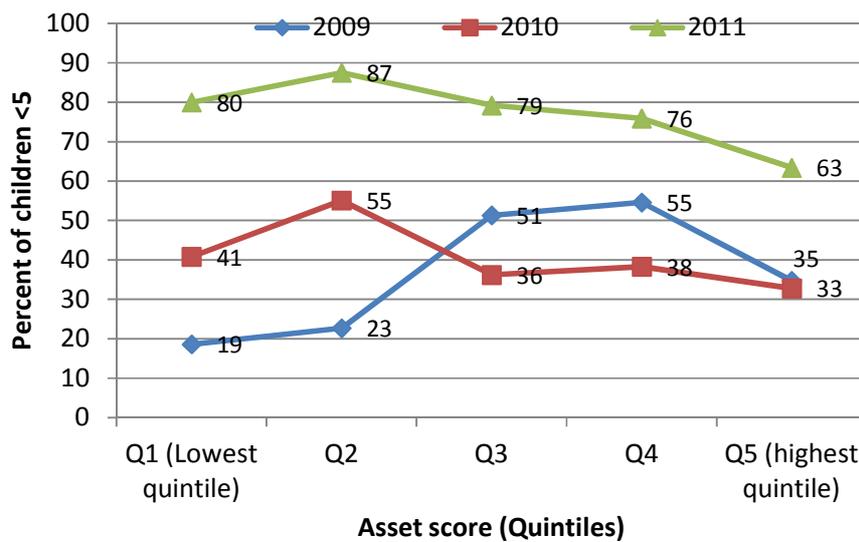


Figure 9b: LLIN use among children under five years by socio-economic status - Southern Zone

District level ITN use estimates

District estimates for ITN use by various groups of people indicated that Nachingwea had the highest coverage in all the groups (Table 11). While children Under-five had a substantially higher coverage in Nachingwea, Chato and Sengerema, women (15-49) in Mtwara had a slightly higher coverage than children.

Table 11: ITN use by district

District	All household members % (95%CI)	Women 15-49 % (95%CI)	Children <5 % (95% CI)
Mtwara Urban	77.8 (74.2-80.9)	78.9 (73.8-83.2)	77.5 (67.8-84.9)
Nachingwea	84.5 (81.2-87.3)	86.6 (81.3-90.6)	91.5 (83.2-95.9)
Chato	67.9 (64.0-71.6)	73.9 (68.0-79.0)	78.1 (72.1-83.2)
Sengerema	70.3 (66.3-73.7)	77.1 (71.4-82.0)	82.1 (76.4-86.6)
Rorya	71.0 (66.9-74.9)	76.7 (70.4-82.0)	76.4 (69.6-82.1)

Hang-up campaign

Among the LLINs received by the surveyed households in the Lake and Southern zones, 66% and 74% respectively, had already been hanged. Most of such LLINs were hanged within a week of receipt (85% in the Lake zone and 68% in Southern zone). The most frequently stated reason for not having hanged up the net was “using another net”, this was mentioned by 71% heads of households in the Lake zone and 52% in the Southern zone. Perceived absence of mosquitoes came up in few households (8% in the Lake zone and 5% in the Southern zone). Small size of the net was stated more frequently in the Southern zone (14%) and in the same zone, 6% reported that they joined two nets into one. Giving a net to another household was also common in the Southern zone (19%) but with lower frequency in the Lake zone (6%). Heads of the households that received LLIN were asked whether they received any instructions about hanging up the net; of those 56% in the Lake zone and 39% in Southern zone said “yes”. Of those, 78% in the Lake zone and 80% in Southern zone received the instructions at the distribution points.

Of all the households that received at least one LLIN, 32% in the Lake zone and 38% in Nachingwea district were reported by the heads of households to have been visited for instructions about hanging up the net. However, the leaflet/sticker that was to be delivered to the households by the hang-up volunteers were reported to have been received by 45% of the households in the Lake zone and 44% of the districts in Nachingwea district. This is indicative that at least 45% of the households in the Lake zone and 44% in Nachingwea district were visited (Table 12).

Table 12: Hang-up campaign indicators for the UCC

	Lake zone		Southern zone	
	n/N	% (95%CI)	n/N	%(95%CI)
Household received at least one net	766/887	86.4 (84.1-88.4)	546/592	92.2 (89.8-94.1)
The new net already hanged	928/1402	66.2 (63.2-69.1)	955/1296	73.7(70.8-76.4)
Time lapse between receipt of LLIN and hang-up				
Within a week	787/928	84.8 (81.6-87.5)	647/955	67.7 (63.9-71.9)
Within a month	110/928	11.8 (9.4-4.8)	169/955	17.7 (11.7-18.7)
Over a month	31/928	3.3 (2.2-5.0)	139/955	14.6 (13.6-20.8)
Reasons for not hanging				
No mosquito	36/474	7.6 (5.1-11.3)	17/341	5.0 (2.9-8.5)
Using other net	334/474	70.5 (64.8-75.6)	176/341	51.6 (44.8-58.3)
Didn't get around to it yet	16/474	3.4 (1.8-6.2)	4/341	1.2 (0.4-3.1)
Jointed two nets into one	1/474	0.2 (0.03-1.5)	19/341	5.6 (3.3-9.2)
Gave to another household	28/474	5.9 (3.7-9.2)	64/341	18.8 (14.3-24.3)
Net too small	5/474	1.1 (0.3-3.8)	47/341	13.8 (9.6-19.5)
Cannot hang it	8/474	1.7 (0.9-3.1)	5/341	1.5 (0.6-3.5)
Other	46/474	9.7 (6.6-13.5)	17/341	5.0 (2.9-8.5)
Received instructions about hanging the net	430/766	56.1 (52.2-59.1)	215/546	39.4 (35.5-43.4)
Household visited for instructions on how to hang up the net	244/766	31.9 (26.4-34.2)	113/280*	38.3 (33.2-43.6)
Received the sticker	344/766	44.9 (41.7-48.1)	123/280*	43.9 (38.8-49.2)

* Nachingwea district

Discussion

This report has summarized process and coverage indicators of the UCC and hang-up campaign in the Lake and Southern zones. Values of both ownership and use of ITN indicators showed much improvement as compared to estimates from previous years.

UCC

Virtually all interviewed heads of households stated that they had heard about the UCC (99% in the Lake zone and over 99% in Southern zone). This high coverage of awareness is an indication that the surveyed communities was well reached with the information.

Results are indicative that the registration process in the Lake and Southern zones was successful in terms of coverage of households. Of the surveyed households 90% were registered in the Lake zone and 93% in the Southern zone. However, instructions on how to determine the number of LLINs per household were not observed. Apparently, most households were asked about the number of its members (78% in the Lake zone and 71% in the Southern zone), rather than the number of sleeping spaces where only 2.3% and 1.6% of the households were asked that question in the Lake and Southern zones respectively.

Geographical access to the distribution points, assessed by the time it took the head of household to reach the point, suggested that they were fairly close to their households. 87% in the Lake zone and 90% of the heads of households who travelled to the distribution points reported that they spent less than one hour to get there. However, waiting time in the Southern zone was substantially high, while 61% of the LLIN recipients spent less than one hour at the distribution point up to 16% waited for more than three hours to get the net. In the Lake zone, 76% waited for less than one hour and only 5% spent more than three hours to receive the net. Encouragingly, 86% and 92% of the surveyed households in the Lake and Southern zones respectively, received at least one LLIN from the UCC.

Net ownership

Net ownership was assessed by “at least one ITN/ LLIN” and number of nets owned per household. At the time of the survey, 95% and 96% of the households in the Lake and Southern zones respectively, owned at least one ITN (including LLIN) and in both zones, 94% owned at least one LLIN. These estimates were much higher than those derived from the 2009 survey (82% ITN and 76% LLIN in the Lake zone; 61% ITN and 43% LLIN in Southern zone). The main source of the nets in the households was from the UCC (53% of all nets in the Lake zone and 67% of all the nets in the Southern zone). Contribution of the UCC in the numbers of nets in the household was also observed in the increase of proportion of households owning 4+ nets, from 20% in 2010 to 51% in 2011 in the Lake zone and from 12% to 35% in the Southern zone.

Disaggregation of ITN ownership by wealth quintiles showed that the households of the lowest wealth quintile had essentially the same coverage as households of the highest wealth quintile (94% Vs 93% in the Lake zone and 95% in each of the two quintiles in the Southern zone).

Use of ITN

Unlike previous surveys where use of ITN remained low over years, universal distribution of LLINs has translated into a high use of nets. Overall, 70% and 67% % of people in the Lake zone slept under ITN and LLIN respectively, in the night preceding the survey. Corresponding figures for the Southern zone were 81% (ITN) and 75% (LLIN).

Use of ITNs among household members across wealth quintiles was fairly equitable in the Lake zone. Coverage of ITN use among those in the lowest wealth quintile was 66% and 70% for those in the highest wealth quintile (equity ratio=0.9)

In the Southern zone, coverage indicators by household wealth quintiles revealed a higher use of ITNs among the members of households of the lowest wealth quintile of 84% compared to 72% of those households of the highest wealth quintile (equity ratio=1.2). The disparity was higher for LLINs, where the lowest wealth quintile had a coverage of 83% and the highest wealth quintile 61% (equity ratio=1.4)

Coverage of ITNs among children under-five in the Lake zone was 62% in 2009 and increased to 79% in 2011 (post UCC). The 2009 estimates showed that 67% and 51% of the children under-five in the lowest and highest wealth quintiles respectively, slept under ITN (equity ratio=1.3). Children in both wealth quintiles benefited from the UCC with ITN coverage of 78% in the lowest quintile and 81% in the highest quintile (equity ratio=1.0).

In the Southern zone, coverage of ITNs among children under-five increased from 48% post U5CC (2009) to 84% in 2011 (post UCC). Within the same period, LLIN coverage for children under-five increased from 34% in 2009 to 77% in 2011. The observed **high ITN and LLIN use among children under-five compared to the estimates after the U5CC, suggest that children benefited substantially from the UCC.** Likewise, women of child bearing age experienced a high ITN coverage (82%).

Contrary to the 2009 estimates in the Southern zone where children in households of the highest wealth quintile had much higher ITN coverage compared to their counterparts in the households of the lowest wealth quintile (equity ratio=0.4), post UCC revealed a higher level of coverage for children in households of the lowest wealth quintile (83%) compared to those in households of the highest wealth quintile where only 68% were reported to have slept under ITN in the night preceding the survey (equity ratio=1.2).

Proportionally, groups of people (50+ in the Lake zone; 6-14 and 50+ years in the Southern zone) that were not targeted by any of the earlier ITN delivery mechanisms had a higher coverage by the LLINs distributed through the UCC.

The observed phenomenon in the Southern zone of relatively lower use of nets by all household members and children in households of the highest wealth quintile compared to those households of the lowest wealth quintile is somewhat contrary to expectation and no plausible explanation is available at the moment. Qualitative studies will establish the context of this observation.

Hang-up

Responses to the question of whether the LLINs received from the universal distribution had been hanged indicated that two thirds (66%) and nearly three quarters (74%) of those nets in the Lake and Southern zones respectively, were already hanged-up. Equally importantly, most of those LLINs were hanged within a week of receipt (85% in the Lake zone and 68% in the Southern zone). Using another net was the most commonly stated reason for not hanging-up the net, this was stated for 70% and 52% of the nets that were not yet hanged up in the Lake and Southern zones respectively. This finding is an indication of excess nets in some households (but not necessarily ITNs) and a potential limitation of use of LLINs. Findings in the Southern zone are suggestive that the size of the LLINs was smaller than requirement for some households where merging of two nets into one (6%) and small size (14%) were reported.

Reported household visitation by a volunteer for instructions on how to hang-up the net was very low, only 32% and 38% of the heads of households in the Lake zone and Nachingwea district respectively, reported that they were visited for that purpose. However, a higher number of households reported having received or found stickers on their doors (45% in the Lake zone and 44% in Nachingwea district).

Comment

The Southern zone

While most of the previous surveys were conducted during dry season, for the Southern zone it was conducted in the middle of the rainy season. Therefore, this might have contributed to the observed high use of nets. However, two more factors might not be ignored 1) near saturation ownership of ITNs and 2) the aggressive BCC is also likely to have achieved to a large extent the intended result of behavior change.

The Lake zone

The survey was conducted at the beginning of dry season (June 2011). While ownership of ITNs compared very closely in the two zones, use in the Lake zone was comparatively low in all age groups. However, appreciable improvement in coverage compared to previous years support the potential effect of the two factors hypothesized for the Southern zone.