Malawi Coverage Survey 2014

Contents

Original data files and protocol locations:

S:\SCI - post 3 June 2011\Current programmes\DFID\ICOSA\COUNTRIES\Malawi\M&E\Performance\Coverage Survey 2014\Data\Results\Malawi Coverage Survey 2014 Results 2015-06-09

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1 Executive Summary

In April 2014 the third round of treatment for schistosomiasis (SCH) and soil transmitted helminths (STH) took place in Malawi. The preventive chemotherapy treatment (PCT) campaign was targeted, through schools and communities, at national scale across all 28 districts and 4.31 million individuals were reported to have received treatment for praziquantel, with an average coverage of 78% in school-aged children (SAC); and 2.26 for albendazole with an average reported coverage of 36% in SAC. In many cases, the districts did not provide data to support how coverage was calculated and thus there are concerns over the reliability of the reported data. Reported coverage in both non-attending SAC and adults was, in the majority, very low, but the average for both groups was higher than what was achieved during treatment in 2012.

Training for the validated coverage survey was carried out with 15 enumerators who were independent of the Ministry of Health (MoH) and who had previous survey experience. Each survey team consisted of five individuals who were present throughout the survey. Two pre-test surveys were conducted in two different villages close to Lilongwe. Data were collected, during the pre-test and the survey, on mobile phones by a questionnaire that was developed by SCI using the Epicollect app.

The coverage survey was conducted in August 2014, within 3 months of mass drug administration (MDA), in six districts in Malawi - Dedza, Salima, Rumphi, Nkhata Bay, Blantyre and Chikwawa. In each district 25 randomly selected clusters (villages) were selected pre MDA, as part of another survey, and were used for this survey post MDA. In each village, initially ten households were randomly selected for survey, this was increased to 12 later as there were some issues capturing the number of children required to fulfil the sample size. The interviewed households were either randomly selected from the village register where possible, or if this was unavailable via a random walk / transect of the village. Two eligible adults and two eligible children resident in the selected households were randomly selected to be interviewed about whether they had received PZQ and/or ALB in the last treatment round (2014).

Across the districts there were 149 villages surveyed, with 1554 households and 2100 adults and 1,696 SAC interviewed in total. There were no major differences between gender and across ages for SAC. However, the adults interviewed was skewed towards the younger age groups with a mean age range of 36 to 41 years of age with more females being interviewed than males. The 95% confidence intervals were used to categorise the data. The majority of the districts (5 out of 6) met or exceeded the target of 75% therapeutic coverage for 'any drug' received in SAC. When broken down by drug type Chikwawa and Rumphi did not meet the target for praziquantel (PZQ) treatment in SAC and for albendazole (ALB) only one district, Blantyre, may have met the target of 75% therapeutic coverage in SAC. There was no evidence that any district achieved 75% coverage for adults in any district for any drug.

There was also no evidence that coverage differed by gender for SAC for any drug in any district, which was also true for adults except in Dedza where all drugs showed higher coverage in females than in males. However, within SAC, coverage for both drugs was significantly lower in those who do not attend school.

Those interviewed reported that they did not take the tablets because they had not heard about the programme, there was no distribution or because they were absent from the school or village depending on whether they were SAC or adults, respectively. Limited sensitisation led to SAC and adults knowing where they should take treatment, but not when. For both children and adults the majority of the respondents heard about the treatments from either their schools, health workers, village head or friend or family member who may have hear it from one of the previous sources.

Although there has been an improvement in coverage in the non-attending SAC and adults in high-risk areas by adding community treatments to the existing school-based platform, more efforts need to be made in reaching these populations. The data from this survey and that gained through district reports and the national Annual Review, have enabled changes to be made to the 2015 treatment campaign and perhaps to the overall and specific targeted group coverage.

2   Background to the coverage survey

Malawi has undertaken MDA for SCH and STH using praziquantel (PZQ) and albendazole (ALB) respectively, with support from SCI since 2011. Figure 1 shows the numbers of individuals treated in each year.

Figure 1. Number of treatments for SCH and STH in Malawi (2009 – 2015)
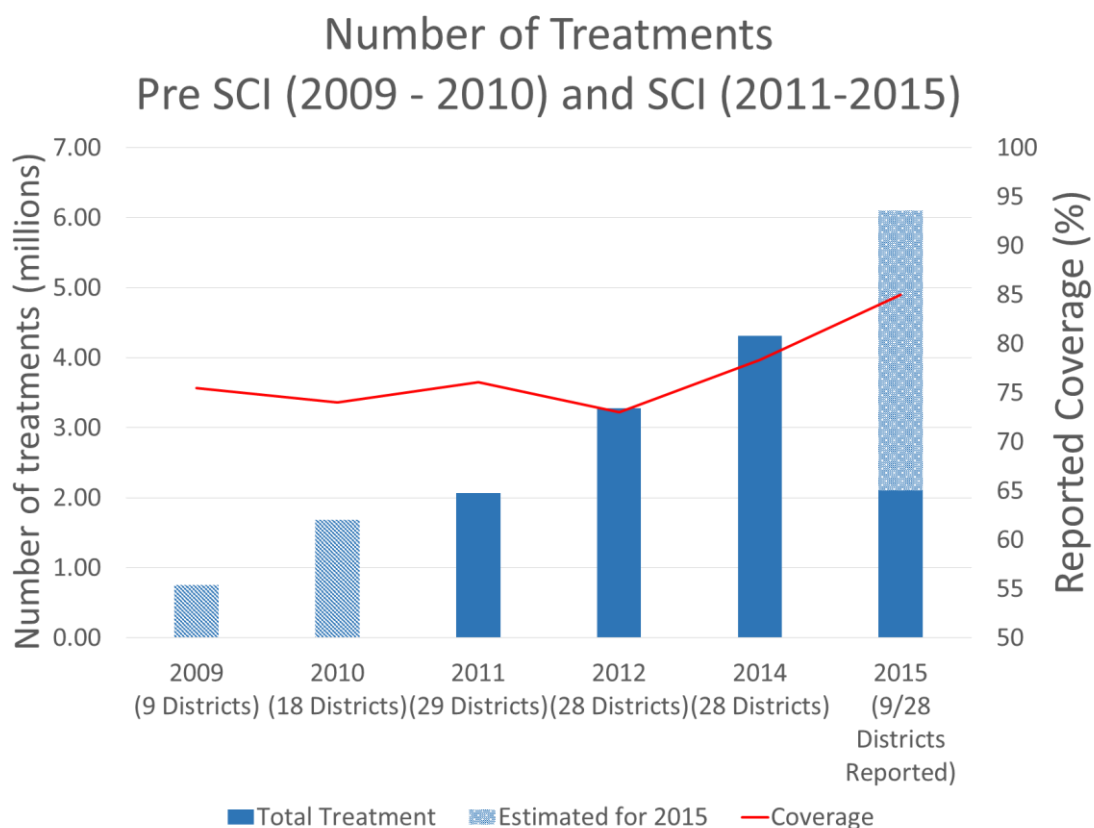
In 2014, MDA was undertaken in 28 districts and as a response to country needs identified through MoH district reports and monitoring and evaluation conducted by SCI, the intention of the campaign was to

treat in schools with additional outreach for community treatments to target non-attending SAC and adults in high-risk areas.

A validated coverage survey was conducted following the 2012 treatments in Mangochi and Mulanje. This results from this survey highlighted problems with reaching non-attending SAC and community treatments, as well as, the reliability of reported coverage and hence the need to conduct another coverage survey to assess the new strategy. The report from this survey can be found here *R:\Countries\Malawi\Performance\2012_ICOSA\Results\ Malawi ICOSA coverage survey report_FINAL*.

Potential issues which may have affected treatment coverage in 2014 were, (i) contractual issues between the main donor, SCI and the country, which meant funding arrived into the country later than expected and led to a delay in the MDA campaign. The financial issues resulted in the MDA campaigns being delivered across a few months rather than occurring nationwide over two weeks; (ii) Confusion with the availability of ALB, which was due to miscommunication between national Program Managers and District Health Officers, caused an issue with reaching targets. A number of districts believed that the ALB delivered was to be reserved for an upcoming lymphatic filariasis treatment rather than used for the schistosomiasis treatment.

2.1   Reported coverage from MDA

On completion of the PCT campaign each district was asked to compile a report on their treatment numbers, coverage, successes and issues that arose during the campaign along with raw data tables with treatment numbers and coverage by schools. The district reports were gathered by the central team and presentations were prepared for the Annual Review Meeting that took place in November 2014

2.1.1   Overall

There was wide variation in how treatment numbers and coverage rates were reported by each district. While some districts provided data by village or by school, other districts provided data at the district level only. Although most districts did breakdown data by drug type, age group, school enrolment and gender, this was not done uniformly across districts. Additionally when data was broken down into these groups, the definitions of the categories were either not explicitly stated or differed between districts. This was a particular problem for SAC, which is defined by the WHO as 5 – 14 year olds, but was not uniformly defined by districts (defined with different age brackets or defined as children attending primary school).

As the data was not reported in a systematic way and raw data were not provided, it was not possible to independently verify the reported coverage rates provided by districts. Reported coverage was therefore taken as the figures provided in district reports or, when these were not available, from the powerpoint presentations. Table 2 shows the coverage reported by each district. Where they were provided, coverage rates are shown broken down by drug and by gender. Where coverage was broken down by age group, the values given for SAC were put into the table.

There was a large variation in the coverage rates reported by districts. Reported coverage ranged from 48% in Balaka to as high as 95% in Mzimba South. Where data for ALB and PZQ coverage were reported separately, the values tended to be very similar, however only 16 of the 29 districts reported treatment with ALB due to the confusion of what treatment the ALB was to be used for.

It is important to note that the equation used to calculate coverage was not explicitly given in reports from most districts. It is clear that districts did not all use the same numerators or denominators to calculate their coverage. There was no single source of SAC population data i.e. from national schools records, which also raised issues when determining the eligible population.

Table 2: Reported coverage in SAC reported by each district and drug.
Coverage (%) for SAC are also given split by gender in parenthesis with M (male) and F (female) where available.

Reported Coverage			
Region	**District**	**Albendazole**	**Praziquantel**
Northern	Chitipa	89	89
	Karonga	-	50
	Nkhata Bay	84(M=82, F=84)	84(M=82, F=84)
	Rumphi	-	90
	Mzimba South	-	95
	Mzimba North	89	89
	Likoma	-	89
Central	Kasungu	71 (M=70, F=72)	71 (M=70, F=71)
	Nkhotakota	88	88
	Ntchisi	87.5	87.5
	Dowa	-	77
	Salima	-	74.8
	Lilongwe	78	78
	Mchinji	-	79
	Dedza	-	77 (M=78, F=77)
	Ntcheu	-	87
Southern	Mangochi	-	70 (M=69, F=70)
	Machinga	67 (M=67, F=66)	72 (M=71, F=71)
	Zomba	56 (M=55, F=56)	71 (M=71, F=72)-
	Chiradzulu	84	84
	Blantyre	82	82
	Mwanza	84	84
	Thyolo	79	79
	Mulanje	82	84 (M=83. F=85)
	Phalombe	82 (M=81, F=84)	82 (M=81, F=84)
	Chikwawa	36 (M=36, F=36)	77 (M=76, F=77)
	Nsanje	57	76
	Balaka	-	48
	Neno	-	78 (M=78, F=78)

The reported coverage for each target group is illustrated in Figure 1. These data were also taken from the district reports or summary treatment reports. It is evident that the districts either failed to report community treatments or they did not occur in the majority of the districts.

Figure 1. Reported coverage (%) by target group
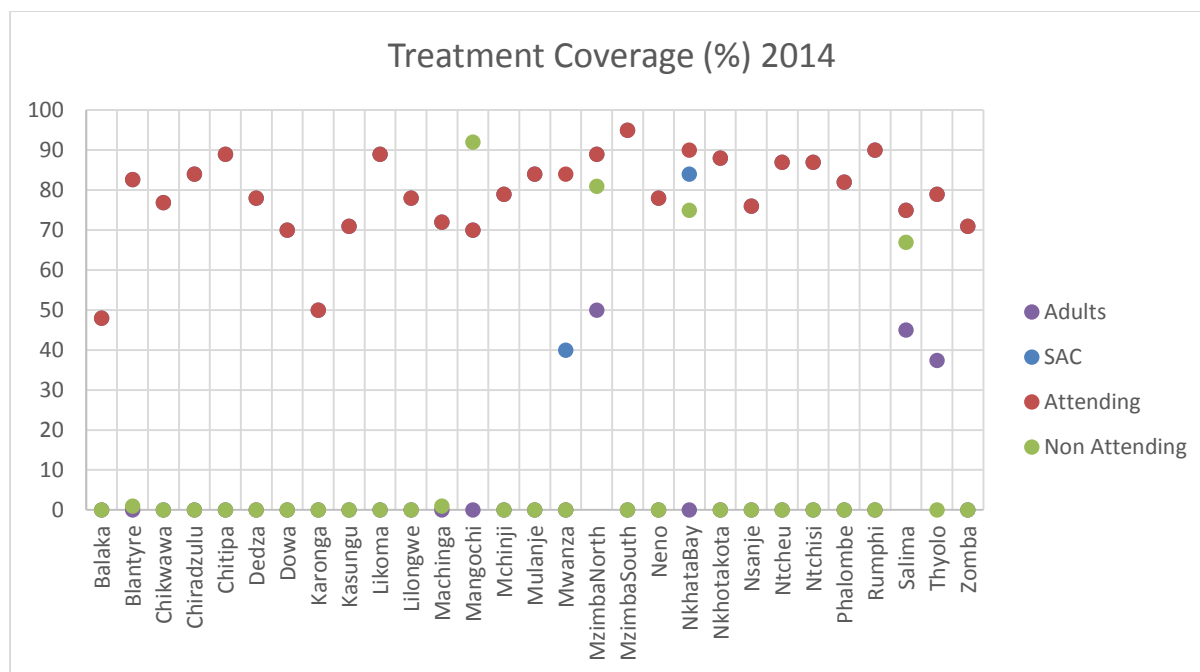
3 Coverage survey data collection methods

3.1 District selection and reported coverage in selected districts

The coverage survey was carried out in August 2014, during school holidays. Six districts were purposively selected and surveyed for a Knowledge, Attitudes and Practices (KAP) survey prior to the MDA in March 2014. These districts were selected for the KAP survey because they represented districts that reported either exceptionally high or low coverage, as well as two districts receiving support from Comic Relief and therefore required a coverage survey as part of the grant requirements. As these same areas were to be revisited post MDA for the KAP follow-up, it was agreed by the SCI team and national Malawi Programme Manager, for reasons of cost efficiency that these districts and villages would also be used for the coverage survey. Six districts Dedza, Salima, Rumphi, Nkhata Bay, Blantyre and Chikwawa were chosen as areas to examine in greater detail their reported versus actual coverage. A summary of findings from each districts MDA reports is discussed below with full details of treatment coverage found in the district reports located here.

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3.1.1 Overall reported coverage for survey districts

3.1.1.1 Dedza

Reported 80% coverage overall but this varied from 25 to 100% at each distribution point. The majority of schools reached over 75% coverage. There was no breakdown of coverage for non-attending or community treatment with a total number being provided. There was no substantial difference in coverage rates between males and females with 79% of males being treated and 77% of females.

3.1.1.2 Salima

Reported 66% for the attending SAC population, however, they did not distribute albendazole. They had great success with their non-attending SAC and adult treatments reaching 53% and 58% respectively. Salima did not differentiate by gender in their reported coverage, however the treatment numbers when broken down by gender show that there were slightly more females (n=82,526) treated in schools and the communities than the males (n=77,292)

3.1.1.3 Nkahta Bay

Reports a consistent 84% in the schools for both males and females with 75% coverage for ALB and PZQ in the non-attending SAC.

3.1.1.4 Rumphi

Rumphi has reported 90% coverage, however they have not broken down these figures by gender, attending or adults.

3.1.1.5 Blantyre

Reported 82% coverage in the schools and only one area seems to have carried out community and adult treatment. They did however treat with both ALB and PZQ. There was no gender breakdown on coverage in the report however it appears that they reached slightly more females (n=127,765) than males (n=115,246) in the schools.

3.1.1.6 Chikwawa

Reached 77% coverage for the district in schools with zones (a sub-district administrative unit) ranging from 76 to 84% coverage. Coverage for ALB was much lower at 36% and there was no reporting of non-attending SAC or adult treatment in the district. Coverage in males and females once again was very similar with district reaching 76% of males and 775 of females.

3.2 Village selection

Dedza, Salima, Rumphi, Nkhata Bay, Blantyre and Chikwawa with 25 randomly selected clusters (villages) in each district were selected pre MDA, as part of the KAP, and were used for this survey post MDA. In each village, initially ten households were randomly selected for survey, however, this had to be increased to 12 later on as there were some issues capturing the number of children to fulfil the sample size. Adjustments during the analysis weighted the villages and households appropriately as this was not done during the selection stage. Two adults and two children resident in the selected households were randomly selected to be interviewed about whether they had received PZQ and/or ALB in the last treatment round. Eligible individuals included all SAC (aged 5 to 14) children and all adult females not in the first trimester of pregnancy during the PCT, and all adult males living in the house at the time of the PCT. The interviewed households were either randomly selected from the

village register where possible, or if this was unavailable via a random walk / transect of the village. Where household members were absent or unable to answer for themselves, senior household members were allowed to answer on their behalf. Not all answers on drug coverage were obtained in private.

Of the 150 villages that were planned for survey, 148 were finally visited, 2 villages in Rumphi were not able to be reached. For analysis purposes, it was assumed these villages were missing at random. All data was entered on phones which although saved time on data entry, meant that the data was susceptible to technical glitches and only single data entry at point of questionnaire.

3.3 Field methodology

Formal training of interviewers took place over three days (27/07/2014 to 30/07/2014) in a conference room equipped with projector at the Malawi Government Health Education Unit in Lilongwe. Training took place each day from 8am – 5pm; Two pilot studies were conducted in two different villages close to Lilongwe. The first was conducted on the afternoon of 28/07/2014, and the second on the afternoon of 29/07/2014.

Training was primarily run by Allon Gould and Narcis Kabatereine (SCI), with help for certain specific activities provided by Samuel Jemu and Andrew Nguluwe (both of the Malawi Ministry of Health). Training materials were largely provided and devised by Jane Whitton (SCI), but certain new training materials and procedures were developed specifically for this survey. Due to time restrictions, certain aspects of training had to be delivered after the end of the formal period of training, and ongoing supervision and reinforcement of training was delivered throughout the survey period. This was provided by Allon Gould.

Fifteen Malawian participants were recruited by Samuel Jemu for training. Participants were independent of the national schistosomiasis and STH programme and recruited with references from previous surveys they had participated in. Each had also previously participated in at least one public health survey, and a number had used smartphones for this purpose before. Seven were involved in conducting the baseline study – although not necessarily in the same districts to which they were allocated in this survey. Ministry of Health staff involved in the baseline study were not recruited for this survey in order to maintain an independent coverage survey. Below is a table of the participants.

The original training schedule can be seen in *"Interview training manual_KAP_Coverage.doc"*. For a full note-form diary of the training including detailed comments, see *"malawi training diary (unfinished notes).doc"*. Some training materials are included with this report.

Table 2: Details of interviewers trained in Lilongwe

Name	Team	Role	Present at baseline?	Phone	Email
Aubrey Zoya	North Region	Supervisor	Yes	0888122207	aubreyzoya@yahoo.com
Ruth Milner	North Region	Field interviewer	Yes	0888868938	ruthhkmilner@gmail.com
Smile Mbaula	North Region	Field interviewer	Yes	0884152820	smilembaula@gmail.com
Faith Zimba	North Region	Field interviewer	No	0994336710	faithzimba1@gmail.com
James Gulaya	North Region	Field interviewer	No	0882723113	-
Isaac Kwelepeta	Central Region	Supervisor	Yes	0993365675	isaackd@live.com
Jenala Mlelemba	Central Region	Field interviewer	No	0996887705	jmlelembah@gmail.com
Maria Chapola	Central Region	Field interviewer	No	0888931414	chapolamaria@gmail.com
Joana Seke	Central Region	Field interviewer	No	0882163906	emmagausi@gmail.com
Grace Mbendera	Central Region	Field interviewer	No	0999013900	gracembendera@gmail.com
Priscilla Ben	South Region	Supervisor	Yes	0999647841	shaba2609@gmail.com
Madalo Jemu	South Region	Field interviewer	Yes	0993974764	-
Mary Kaliati	South Region	Field interviewer	Yes	0992323117	marykaliati@gmail.com
Tumwitike Mtambo	South Region	Field interviewer	No	0882675984	-
Prince siyabu	South Region	Field interviewer	No	0991890014	isiyabu@gmail.com

Each team consisted of five individuals who were present throughout the survey. See Allon Goulds trip report for the duration of the survey outlining various aspects of the survey including but not limited to language, phone issues and sampling methods while in the villages/households. *S:\SCI - post 3 June 2011\Current programmes\DFID\ICOSA\COUNTRIES\Malawi\M&E\Performance\Coverage Survey 2014\Field Reports (Allon)*

Data were collected on mobile phones by a questionnaire that was developed by SCI using the Epicollect app. The survey was adapted throughout training to correct bugs within the program and then altered during the first few days of the survey to streamline the questionnaire. After a few days of intensive training the teams were competent with how to enter, edit and upload the data from the phones.

3.4   Ethical considerations

Ethical clearance was obtained by Samuel Jemu as it was noted that this survey did not come under the original clearance as it was being carried out independently of the MoH. Consent had to be provided at numerous stages. The District Health officer had to provide clearance to work in their district. Similarly, each village head and household head have to complete a written consent form along with verbal consent given by each individual interviewed.

4   Data cleaning

4.1   Data cleaning summary

Data cleaning and analysis were performed at SCI by the biostatistics team. The data were provided to us in a number of datasets from four forms – district, village, house and individual with unique keys to link the forms together. The reason for there being so many datasets was the need to upload data

each evening following data collection. The quality of the data was broadly good, primarily due to there being restricted fields for data entry on phones. However, there were a few instances where the village name was spelt differently in different phones and this was corrected after consultation with the program manager. There were also 17 households and 7 individuals were the household or individual key was duplicated, most likely due to the data being changed between back-ups. These duplicates did appear to be genuine duplicates as most of the information remained the same, and we took any non-missing information to be correct.

We created identifier variables as:
- VillageID = district_name/Village_name
- HouseID = VillageID/Reporter Initials/House number
- IndivID = HouseID / Individual number

Where house number was sequential, starting from one for each reporter in each village and individual number was sequential starting from one in each household. There were 17 households with duplicated HouseID's – in 7 of these instances the details were similar and we removed the record with the least information. The remaining 10 instances appeared to be different households, perhaps caused by the interviewer accidentally adding in the same household number twice and here we arbitrarily added a 'b' to the household number of one household. Full details of the decisions made can be seen in the file '*Malawi KAP post data cleaning notes.xlsx*'

When the data was compiled into a single dataset, we then removed all questions associated with the KAP survey. The data was further cleaned to replace all numeric codes in the multiple response answers with the long form of the answers. This was to ensure that the clean data can be easily understood in the future. For future surveys we suggest that the long form of the answers be directly entered into the phones so that this laborious step of data cleaning is not necessary.

4.2 Deviations from protocol

No deviations from the protocol were noticed during data cleaning.

5 Results

To be completed by the statistician.

Validated therapeutic coverage rates were calculated using the following formula:

$$\frac{Number\ of\ children\ that\ swallowed\ the\ drug}{Total\ number\ of\ children\ interviewed}$$

Note that children who were unsure of whether they took the drug, or where no answer was given, were classified as not having taken the drug for the purposes of assessing coverage rates.

See **Appendix II** for full details of the statistical methodology.

5.1 Data description and sample sizes

25 villages were surveyed in all districts except Rumphi, where 24 villages were surveyed. Between 238 and 288 households were interviewed per district, with between 329 and 367 adults and between 254 and 321 SAC interviewed per district. The number of SAC that did not attend school ranged from 4 to 70 children per district.

Table 3: Sample sizes for the coverage survey in two districts of Malawi, 2014

Number	Overall	Blantyre	Chikwawa	Dedza	Nkhata Bay	Rumphi	Salima
Villages	149	25	25	25	25	24	25
Households interviewed	1554	247	280	249	238	252	288
Adults interviewed	2100	341	371	343	329	349	367
Mean age adults	37.4	36.4	35.5	37.6	40.3	37.4	37.3
Children interviewed	1697	254	277	301	289	255	321
Mean age children	9.8	9.9	9.1	10.3	10.1	9.7	9.9
Children attending	1492	250	220	251	277	243	251
Children not attending	204	4	57	49	12	12	70
Number girls	867	117	156	160	160	112	162
Number boys	830	137	121	141	129	143	159

5.1.1 Age and gender distribution of interviewed children

There was a fairly equal distribution of ages and genders interviewed for children with only Blantyre and Rumphi interviewing slightly more males. The only other point to note is the number of non-attending SAC in Chikwawa and Salima was slightly higher especially in the 4-7 year age group.

Figure 2. Age and gender distribution of interviewed children

5.1.2 Age and gender distribution of SAC split by school attendance

There was a relatively even spread of ages across all of the districts for the attending children in addition to similar numbers of males and females interviewed. Conversely, there was a higher proportion of children aged between 5-7 years of age not attending school in all districts with girls making up the small majority.
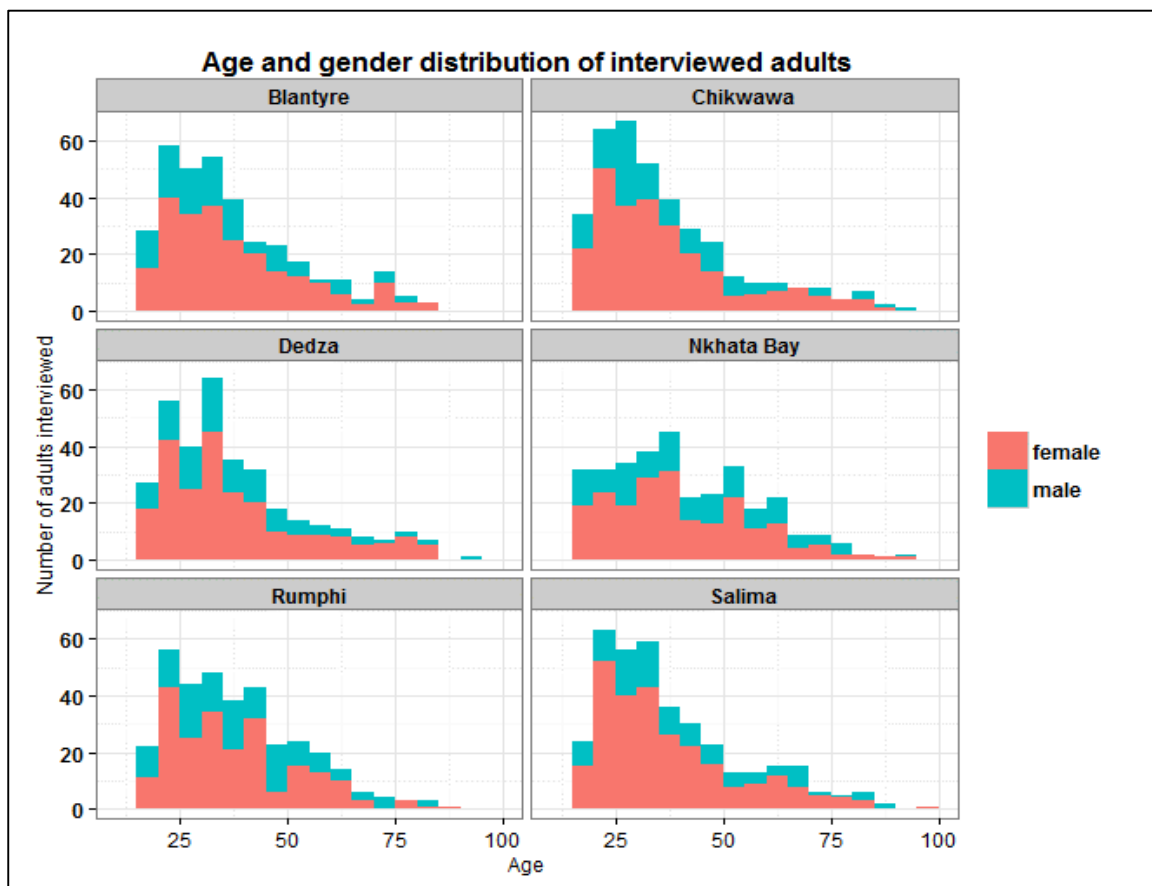
Figure 3. Age and gender distribution of SAC split by school attendance
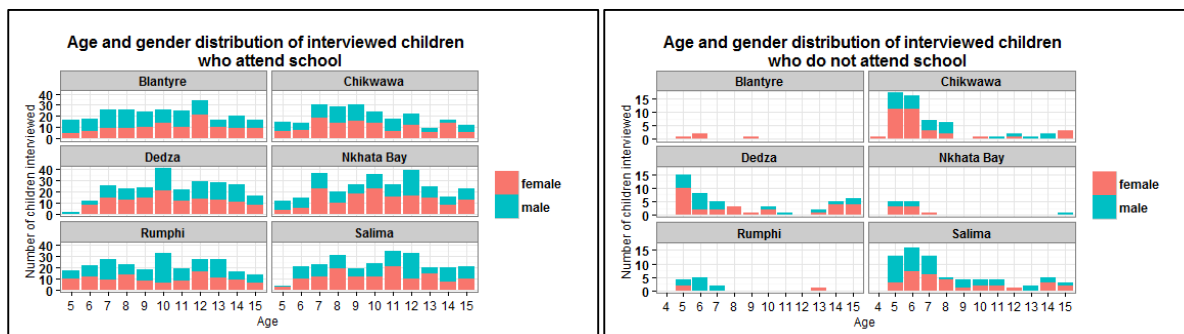
5.1.3 Age distribution of adults

The average age of adults interviewed was skewed towards the younger age groups mean age range from districts 35.5-40.7 with more females being interviewed than males.

Figure 4. Age distribution of adults

5.2 Validated coverage rates

The graphs below, Figures 5 and 6 show the validated survey coverage and associated 95% confidence intervals both before and after adjusting for population size. We used these confidence intervals to categorise the data - if the upper 95% confidence interval was below the 75% target then the district was categorised as not meeting the target; if the lower 95% confidence interval was above 75% then the district was categorised as exceeding targets; if the 95% confidence intervals included 75% then the district was categorised as maybe meeting targets. A summary of the unadjusted results is:

- For 'any drugs' results indicated that Nkhata Bay exceeded the 75% target and Salima and Dedza met the 75% target.
- For both Blantyre and Rumphi, the data suggested that the districts may have met the 75% target for 'any drugs'.
- The data suggested that Chikwawa did not meet the 75% target for 'any drugs',
- For PZQ, results indicated that Blantyre, Nkhata Bay, and Salima maybe met the target and Chikwawa and Rumphi did not meet the target.
- Results indicated that Dedza did not meet the target for PZQ.
- For ALB, results indicated that Blantyre may have met the target, while Chikwawa, Dedza, Nkhata Bay, Rumphi and Salima did not meet the target of 75%.
- There was no evidence that any district achieved 75% coverage for adults in any district for any drug.

Figure 5. District (reported and validated) coverage split by age group, drugs taken and not adjusted for population size

Malawi District coverage & 95% CI not adjusted for population size
Split by adult or children
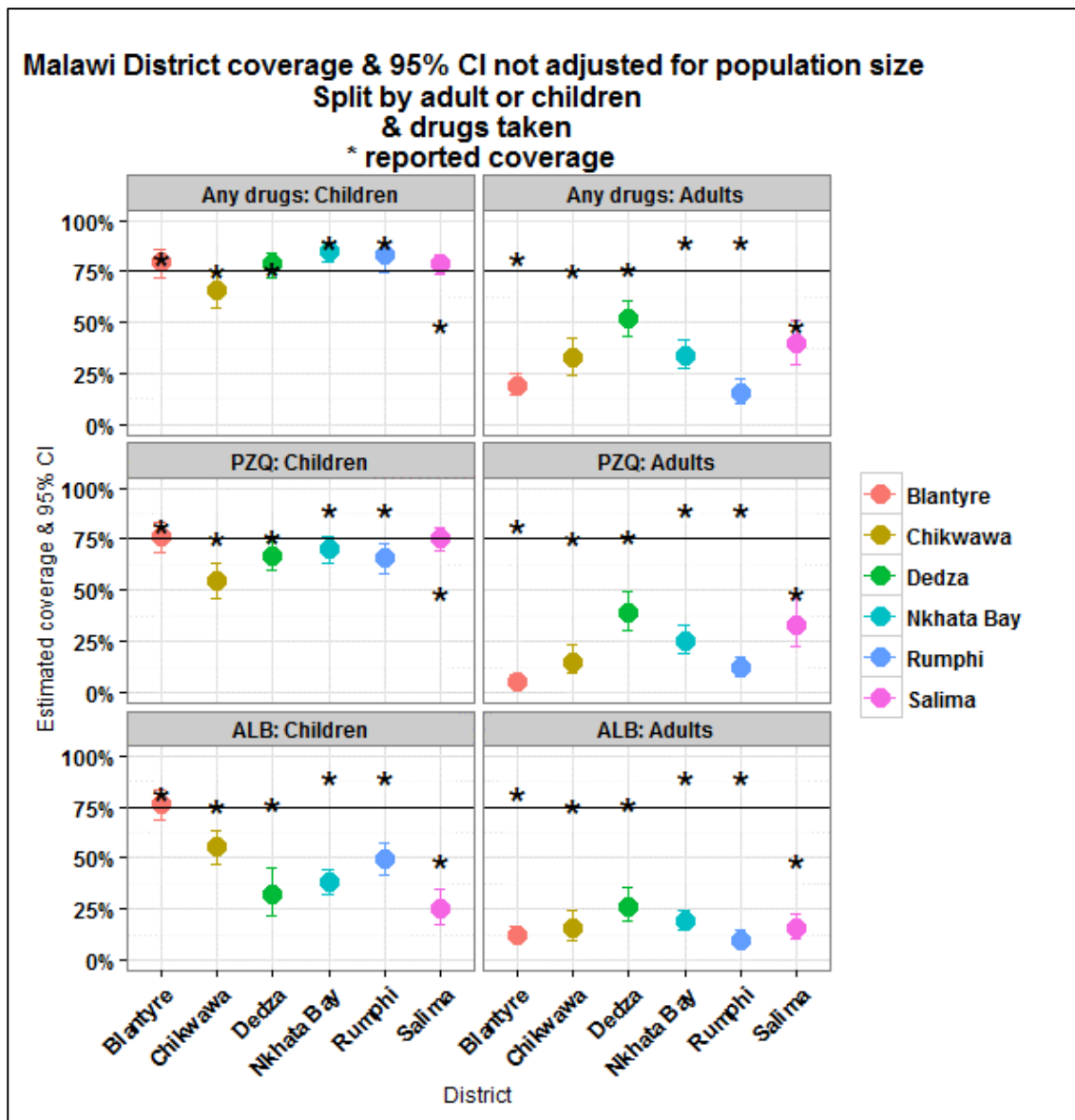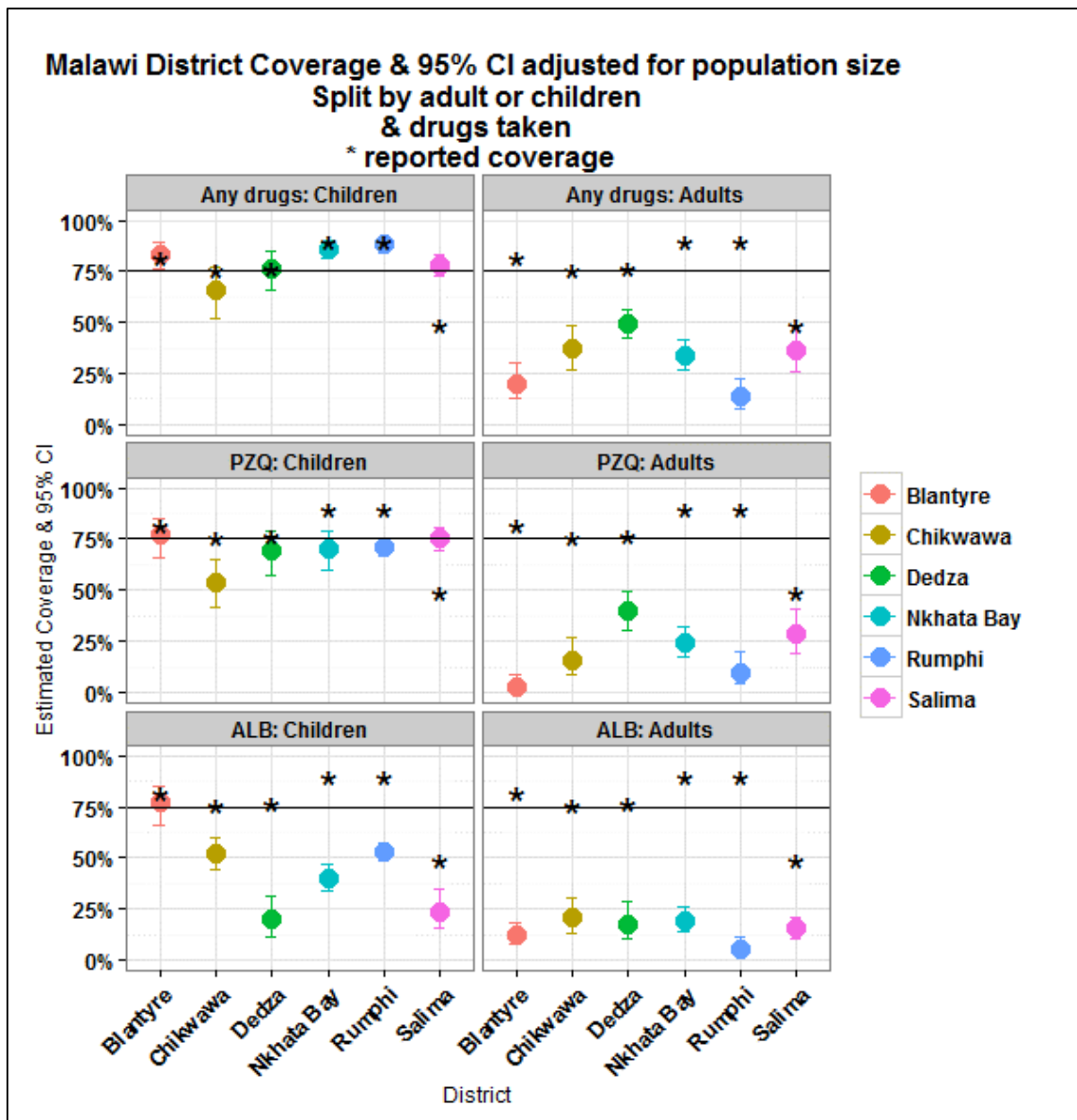& drugs taken
* reported coverage

Figure 6. District (reported and validated) coverage split by age group, drugs taken and adjusted for population size

5.2.1 Coverage and Gender

There was no evidence that coverage differed by gender for SAC for any drug in any district. See the results file for exact p-values. There was also no evidence of gender differences in adult coverage in all districts except Dedza where all drugs showed higher coverage in females than in males. See the results excel workbook for exact p-values.

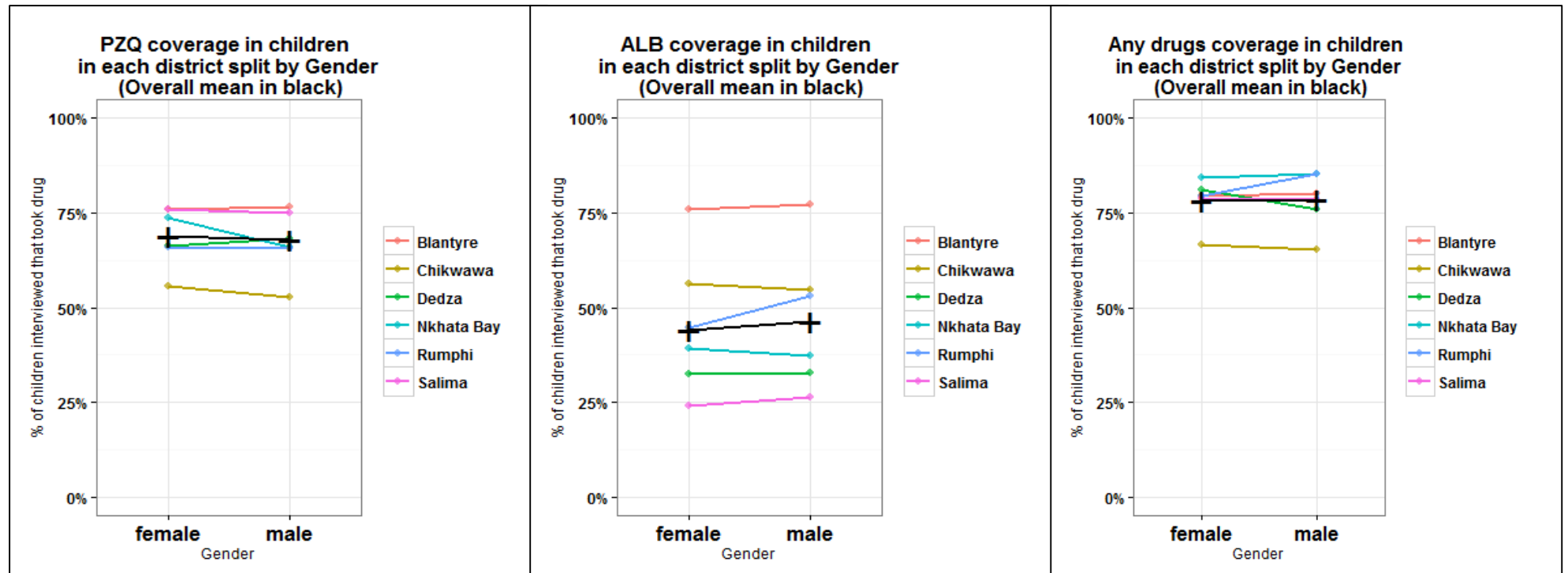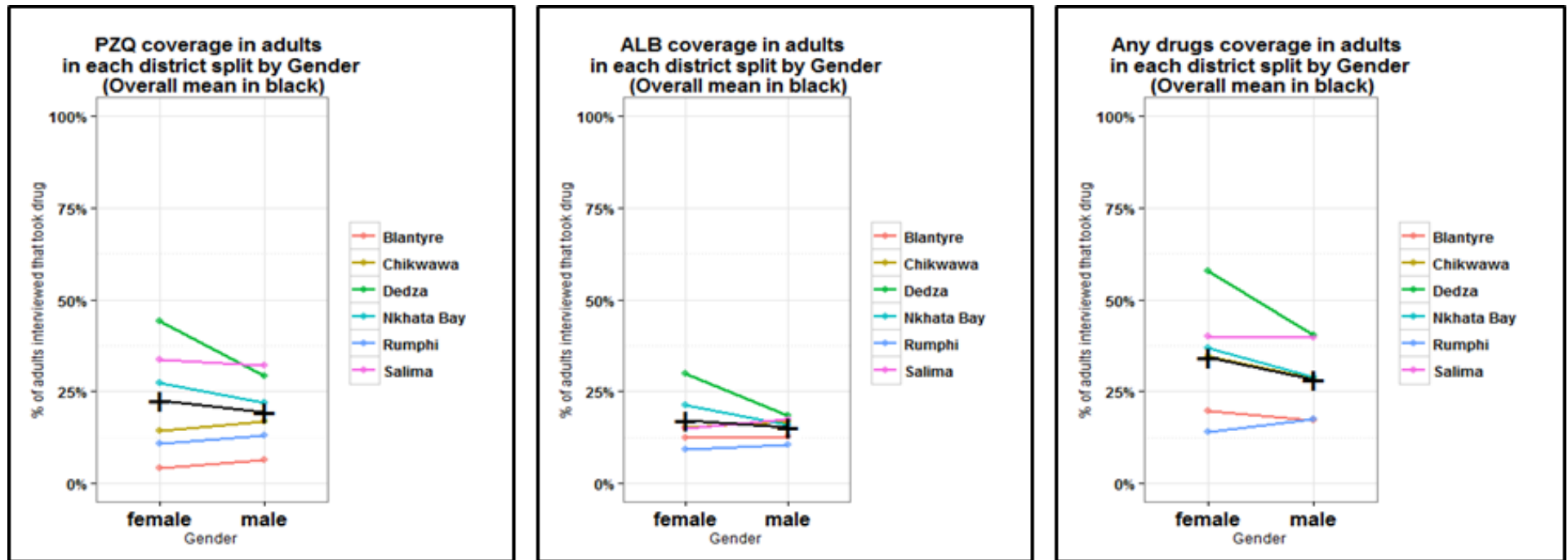**Figure 7 Children's coverage by gender for each district**

Figure 8. Adults coverage by gender in each district.

5.2.2 Coverage and School Attendance

The proportion of SAC interviewed in each district that did not attend school ranged from 2% in Blantyre to 22% in Salima (Figure 9). We restricted significance testing to those districts where at least 50 interviewed children did not attend school as the analysis had difficulties in the districts with high school attendance rates. Across all three drug types, coverage in school attending SAC was higher than non-school attending SAC apart from Salima where there was no significant difference in coverage of ALB between SAC that did and did not attend school (Figure 10).

5.2.3 Coverage and School Attendance by Gender

We investigated coverage split by gender for non-attending SAC using simple graphs only, due to the low numbers of non-attending SAC observed (Figure 11). Although the overall coverage among non-attending SAC was low, there was no clear and consistent differences observed between the genders in this group.

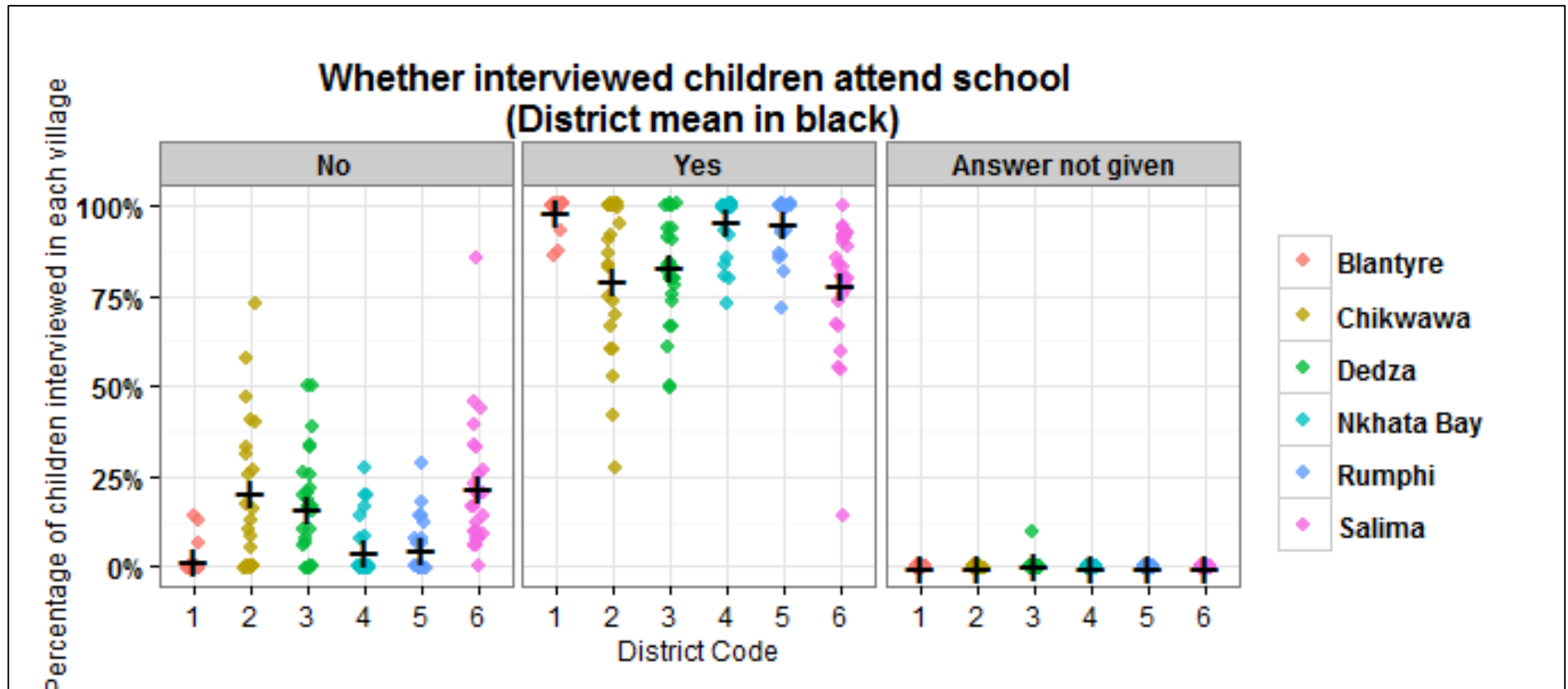**Figure 9. Proportion of children interviewed who attended school**

Figure 10. Coverage in attending and non-attending children by district.

Figure 11. Coverage & school attendance by gender

PZQ coverage in non-attending SAC in each district split by gender

ALB coverage in non-attending SAC in each district split by gender

Drug coverage in non-attending SAC in each district split by gender
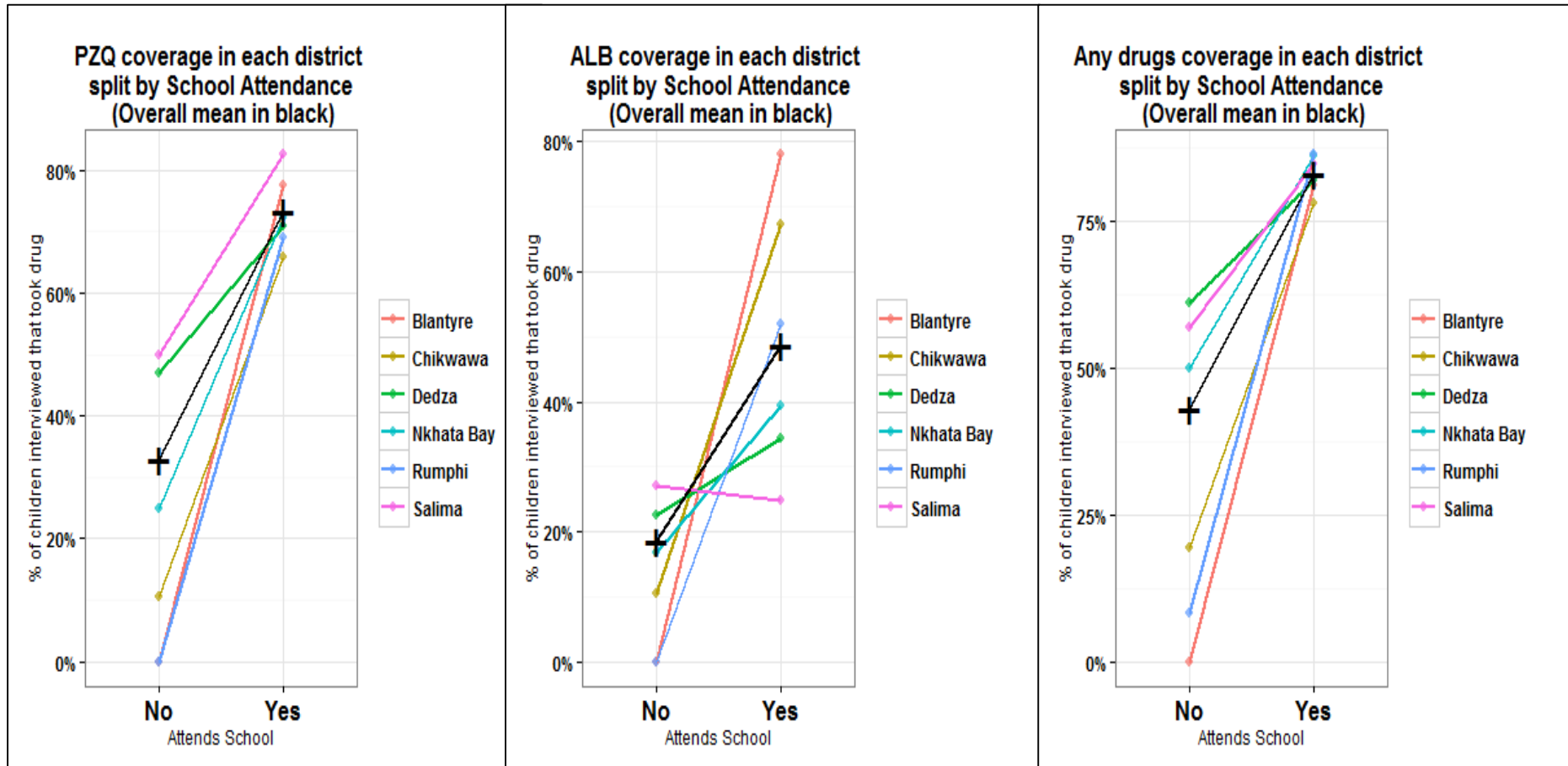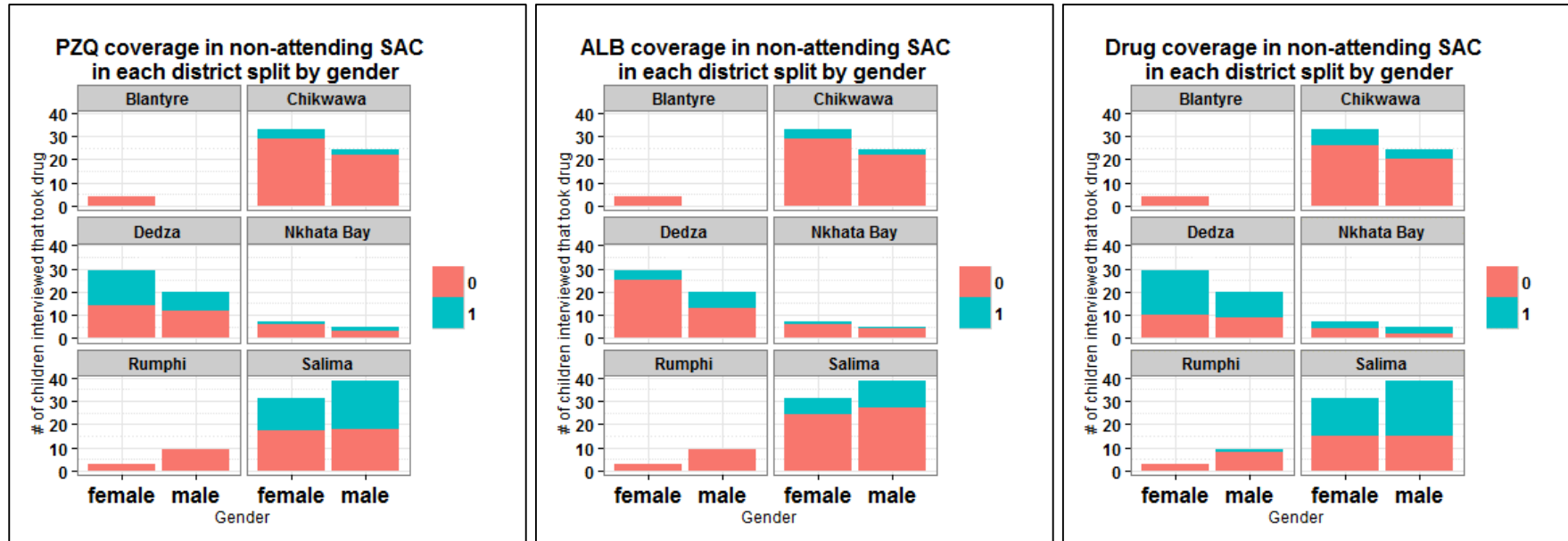
5.2.4 Coverage and District

The following two maps (Figures 12 and 13) show the validated point coverage for each village and help to visually illustrate where coverage targets are being and not being met.

Figure 12. Geographical coverage of albendazole treatment in children

Figure 13. Geographical coverage of praziquantel treatment in children

PZQ Coverage Children

- ● 0.76 - 1.00
- ● 0.51 - 0.75
- ● 0.26 - 0.50
- ● 0.01 - 0.25
- ● 0

Any Drugs Coverage Children

Kilometers

0 30 60   120   180   240

5.3   People who did not take the drugs

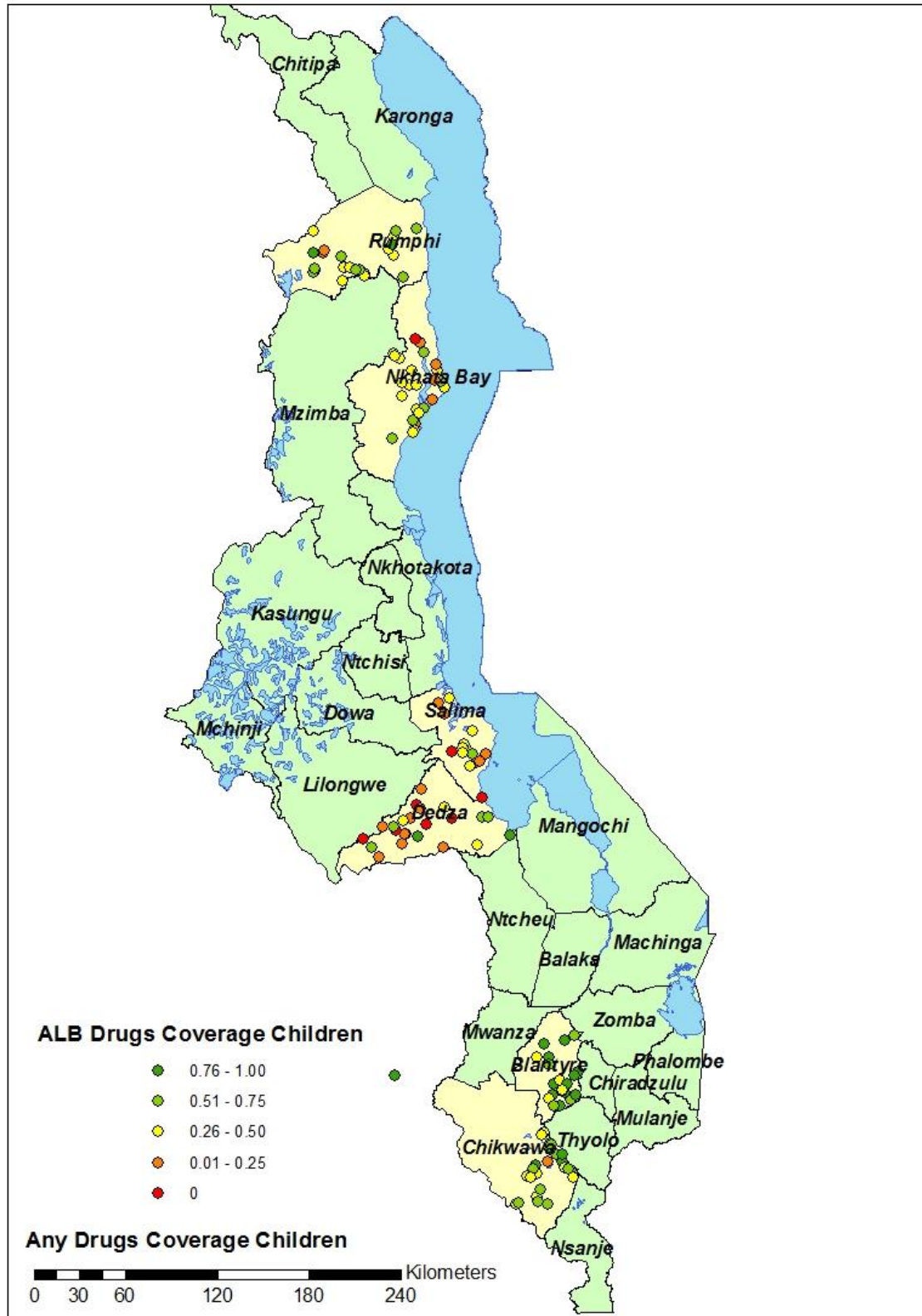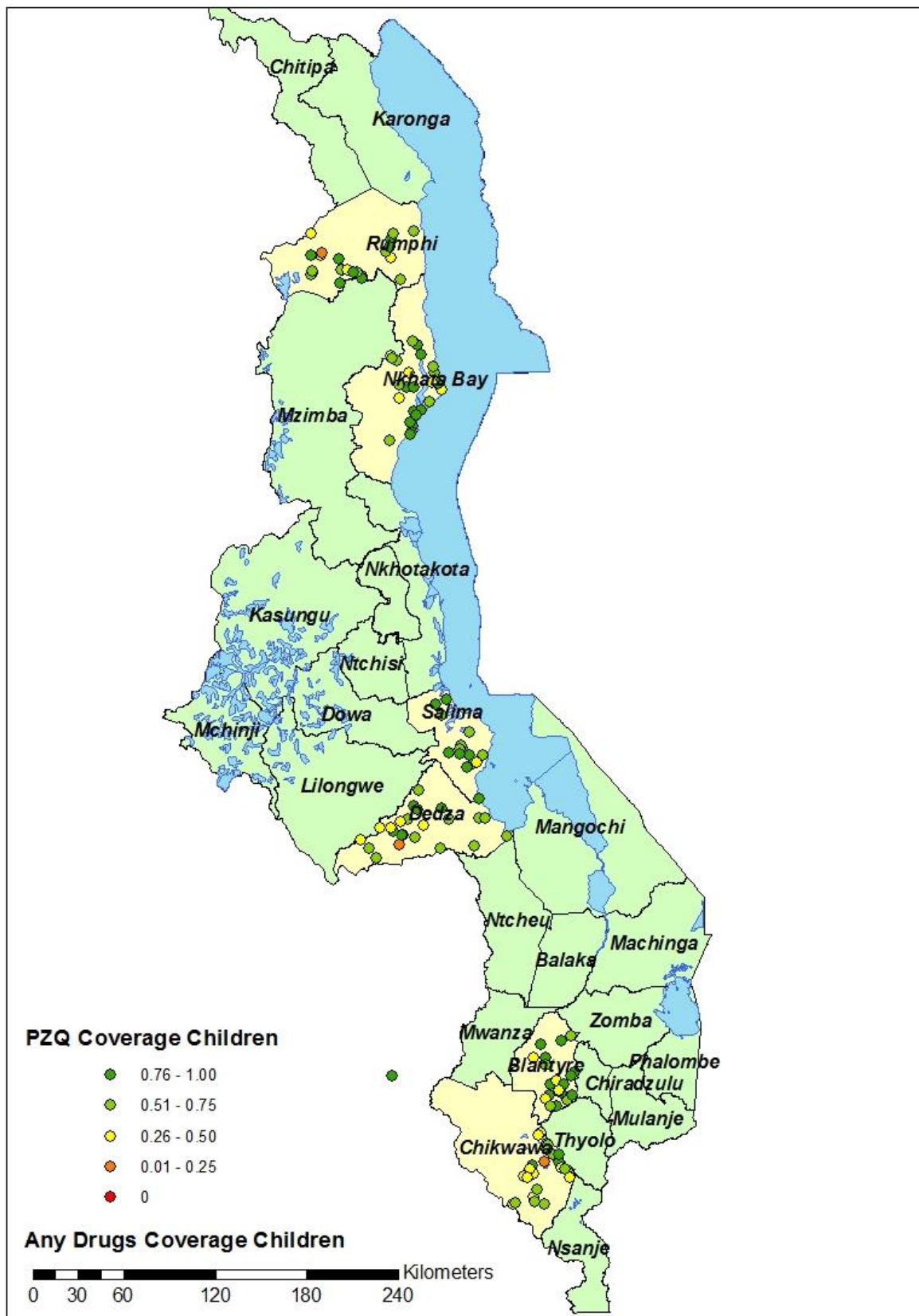### 5.3.1   Specified reasons for not taking the drugs

The main outcomes of why SAC (Figure 14) did not take the tablets were that they had not heard about the programme, there was no distribution, they were absent from the school or were too young to receive treatment. In Chikwawa there was a higher number of children who did not attend school and therefore believed they were not eligible for treatment.

For adults (Figure 15) the main reasons for not swallowing drugs were, not heard about the programme, not invited / there was no distribution and absent from village.
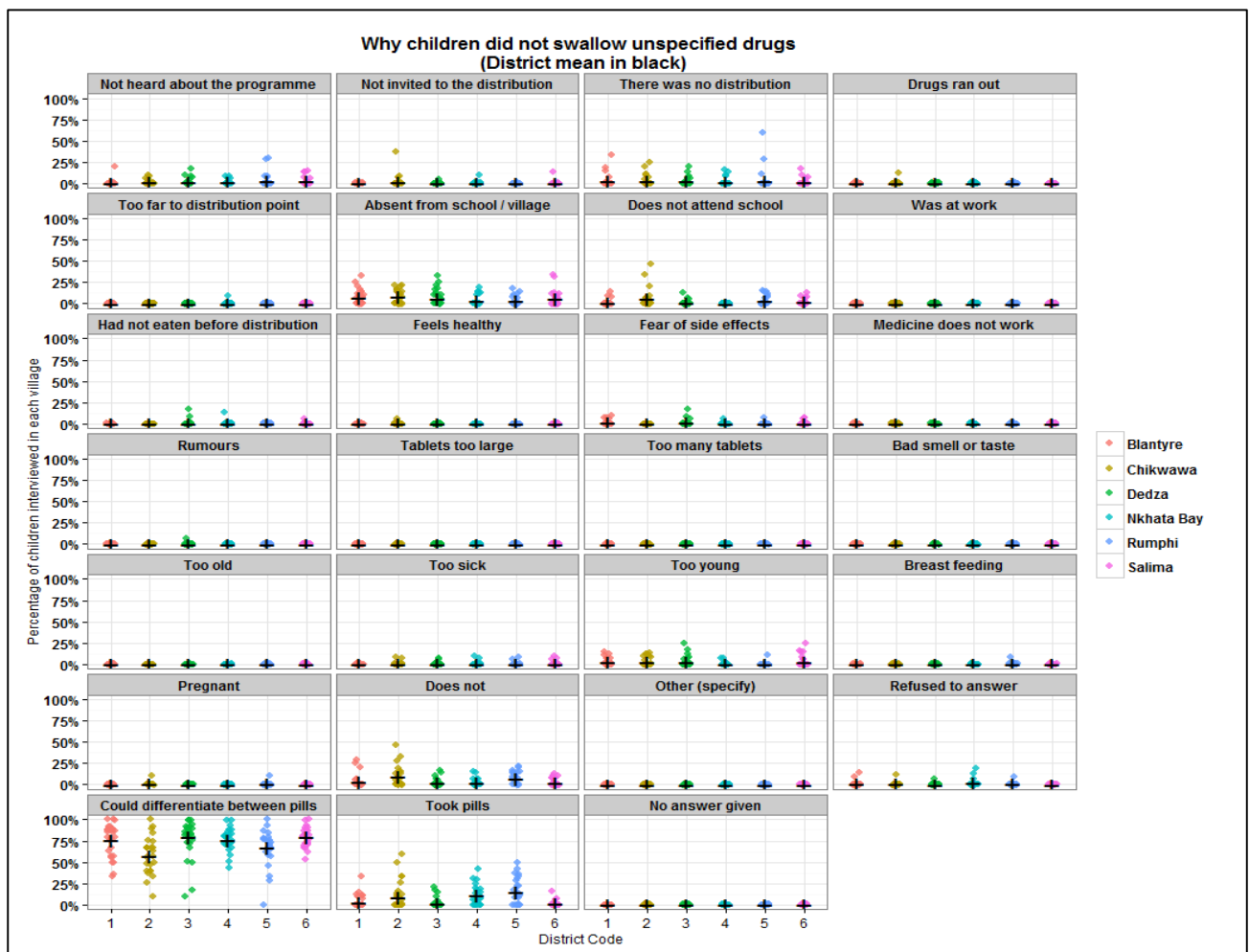
Figure 14. Reasons for SAC not taking the drugs

Figure 15. Reasons for adults not taking the drugs

Why adults did not swallow unspecified drugs
(District mean in black)
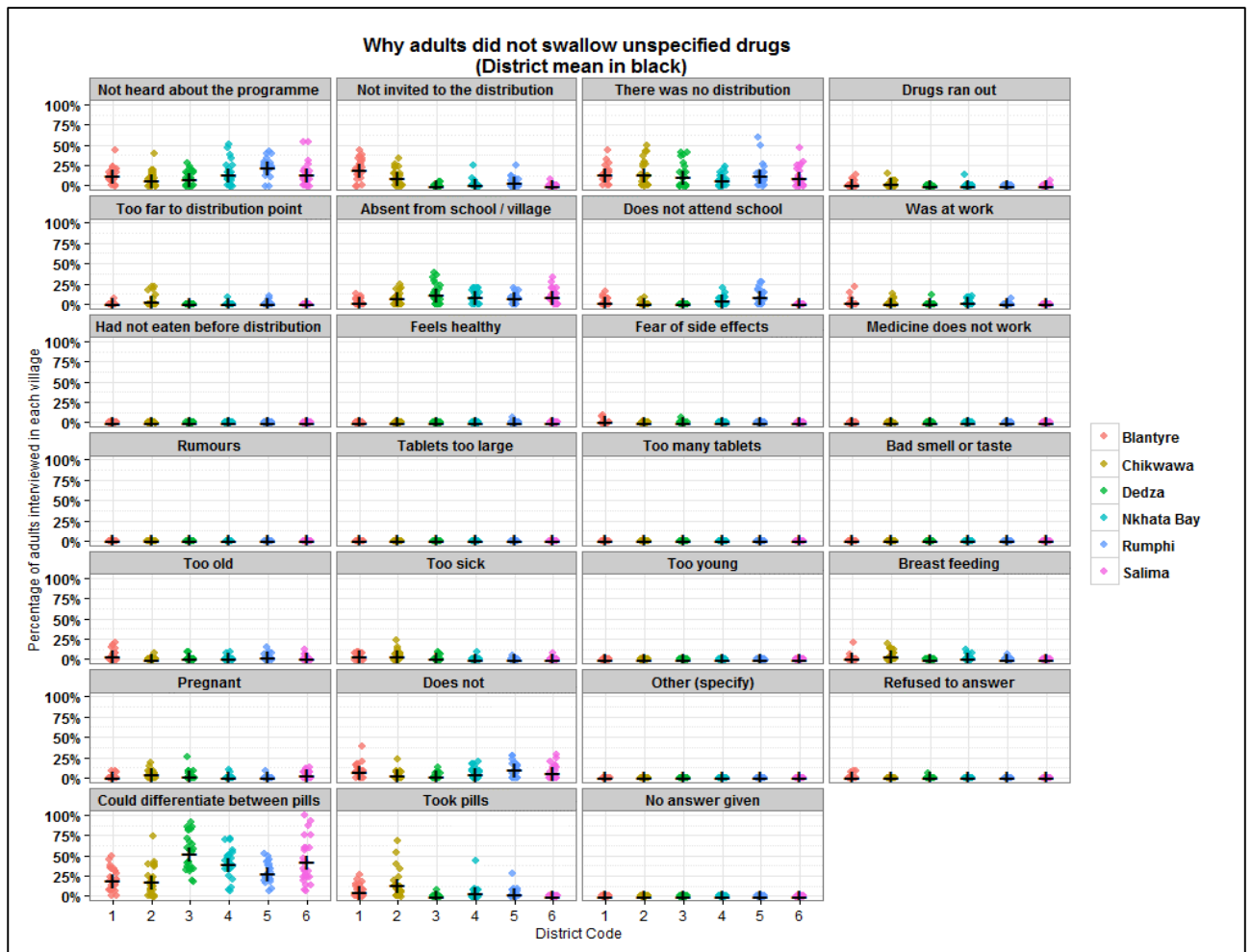
5.3.2   Other reasons for not taking the drugs

There were numerous other reasons given for not taking the drugs such as religious groups refusing as it is part of their belief. A number communities were not also no aware that the adults and non-attending children were eligible for treatment. Additionally from the results below it is clear that a number of people did not know when the distribution would be taking place. Sensitisation was performed informing the communities where they should receive treatment but not when. This could be down to the fact that there was not one set week for treatment throughout the country.

Figure 16. Other reasons for SAC not taking drugs
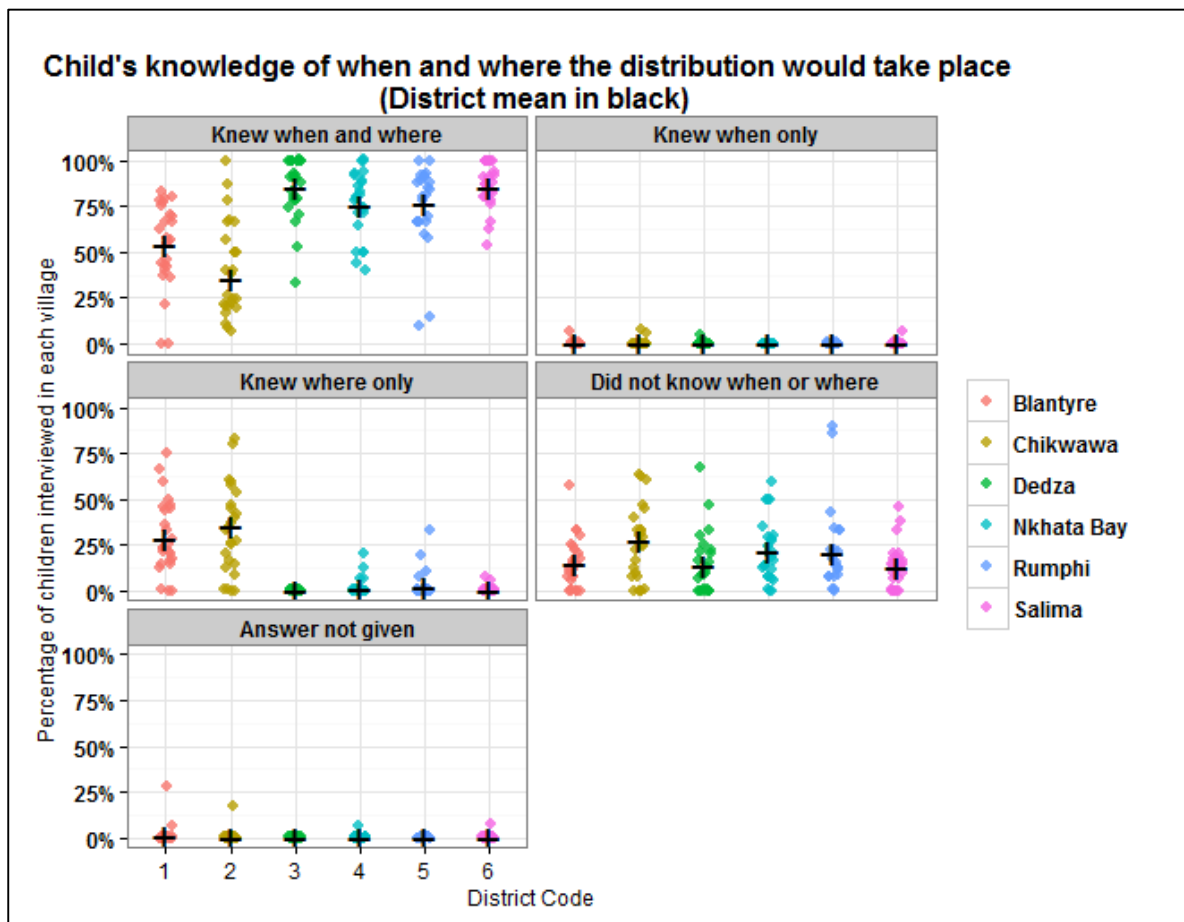
Figure 17. Other reasons for adults not taking drugs
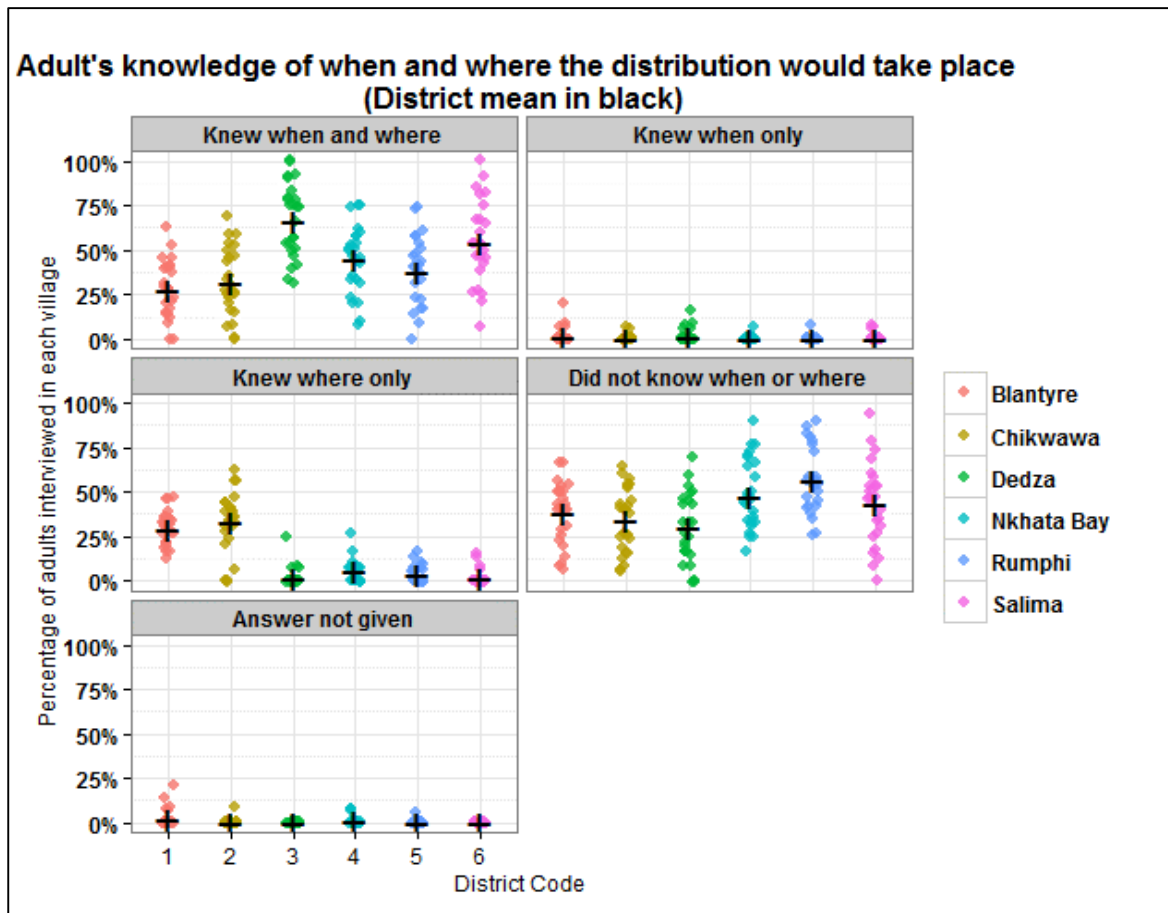
5.4 People who did take the drugs

5.4.1 Where people heard about the drug distribution

For both children and adults the majority of the respondents heard about the treatments from either their schools, health workers, village head or friend or family member who may have hear it from one of the previous sources. The only slight difference were the number of adults who heard from a village meeting or religious establishment. As part of a multi-country analysis, further work will be carried out to determine any correlations between mode of sensitisation and coverage.

Figure 18. How did SAC hear about treatment
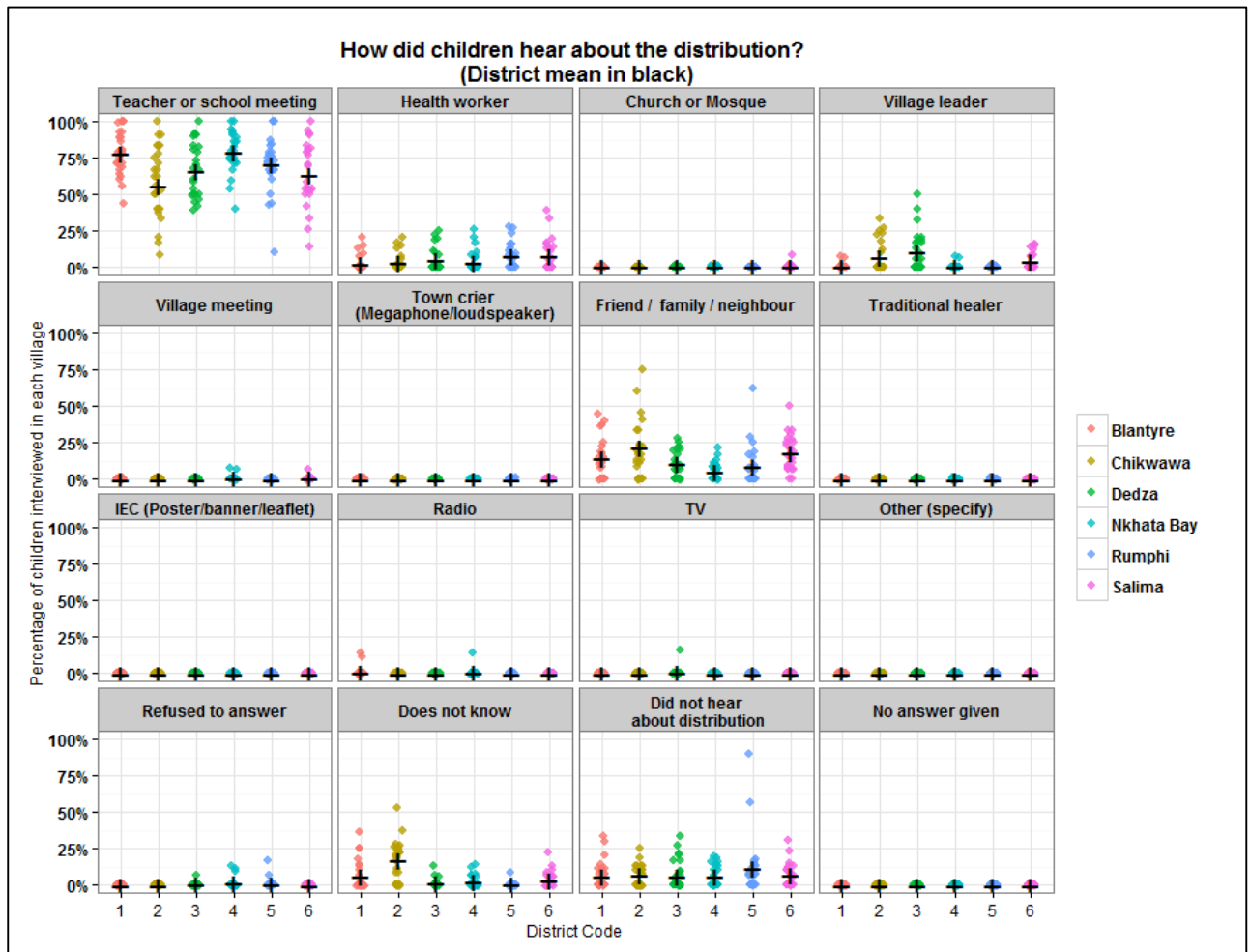
Figure 19. How did adults hear about treatment?

How did adults hear about the distribution?
(District mean in black)
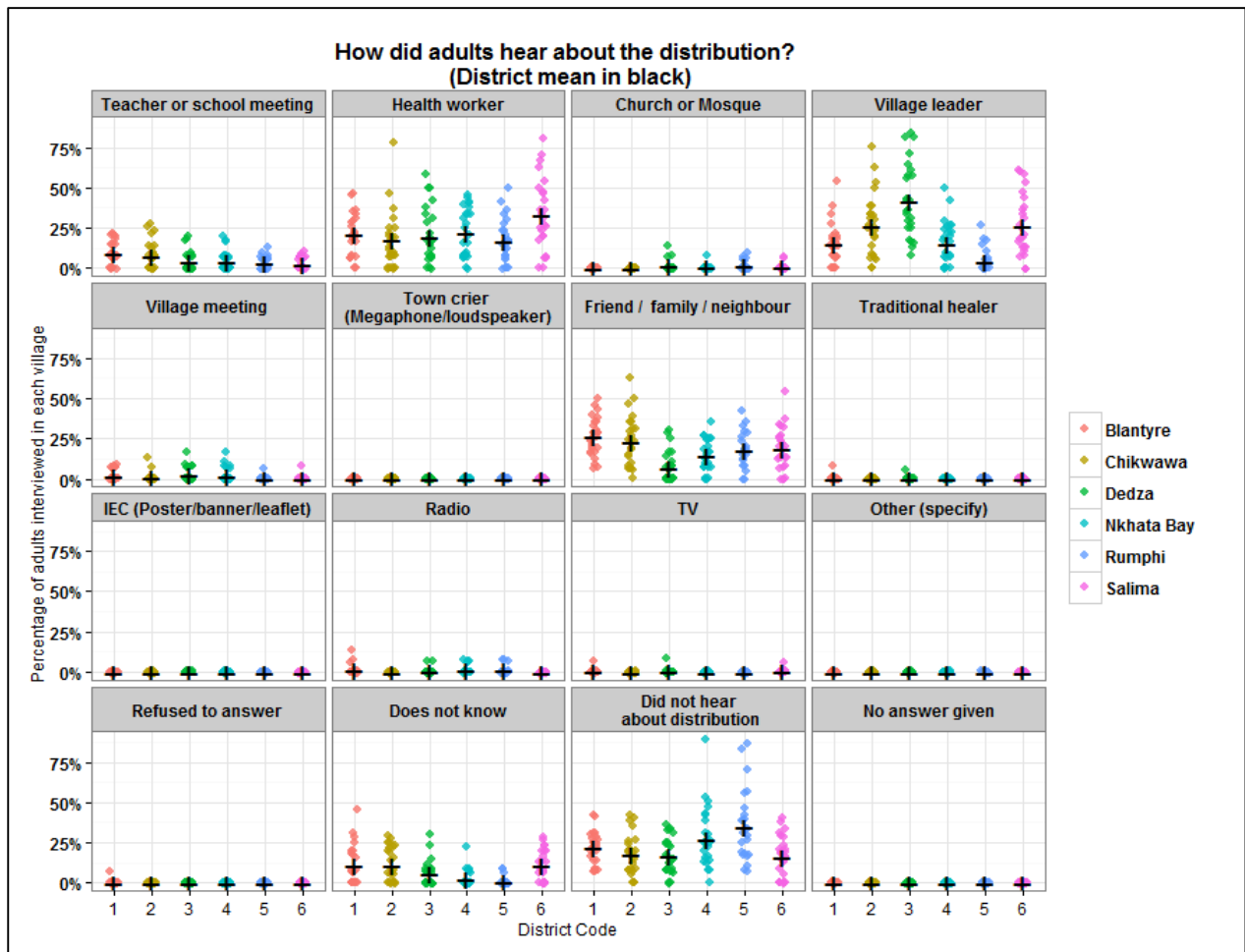
5.4.2   Mode of delivery of drug distribution

The majority of children took the tablets where expected, which was at the schools with a fewer number receiving them at the local health post (Figure 20). Chikwawa was the only district known to have carried out an intensive mop up treatment door to door and as a result reported the highest number of children who received treatments in their homes.

As expected the majority of adults received their treatments at the local health post or at their house during the community treatments (Figure 21).

Figure 20. Where SAC received drugs
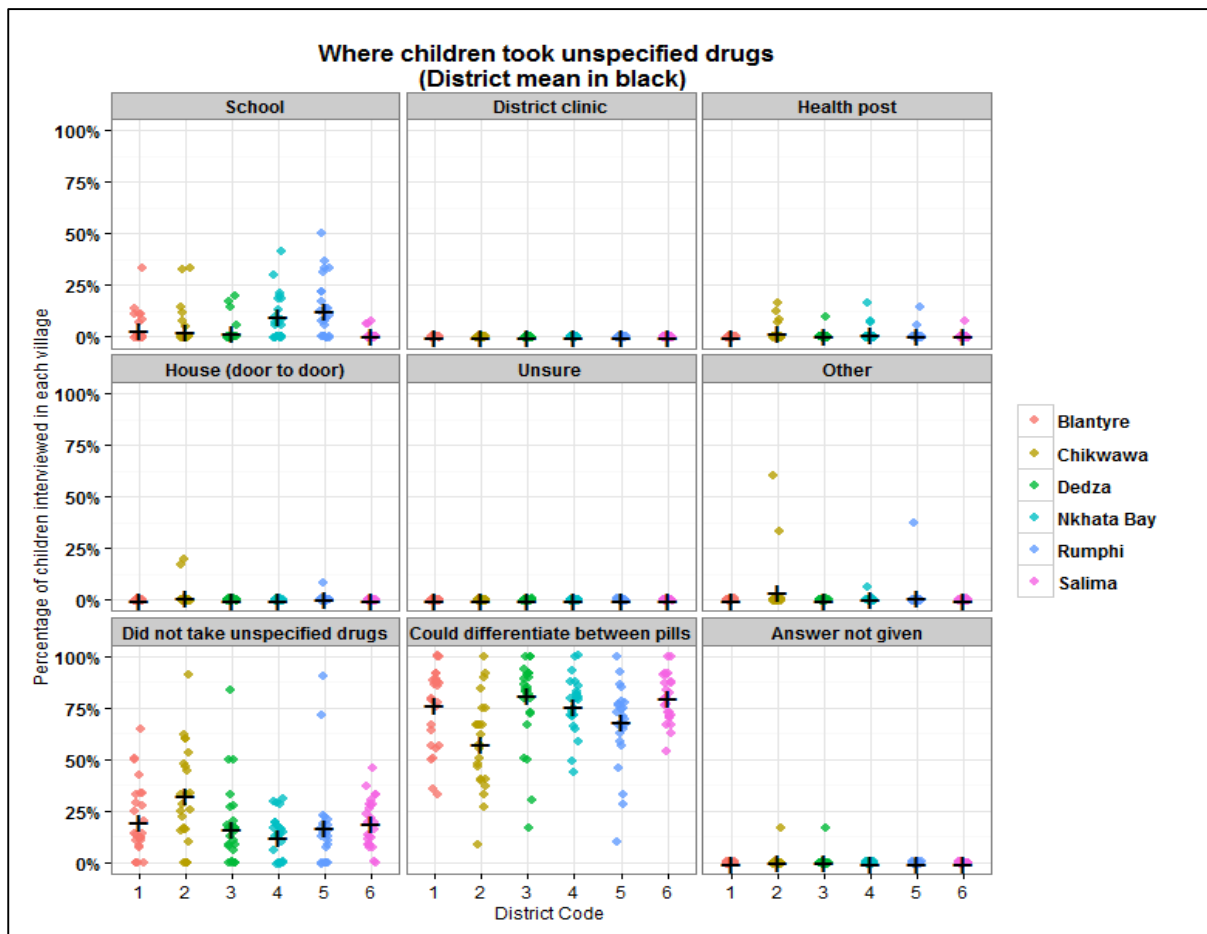
Figure 21. **Where adults received drugs**

Where adults took unspecified drugs
(District mean in black)
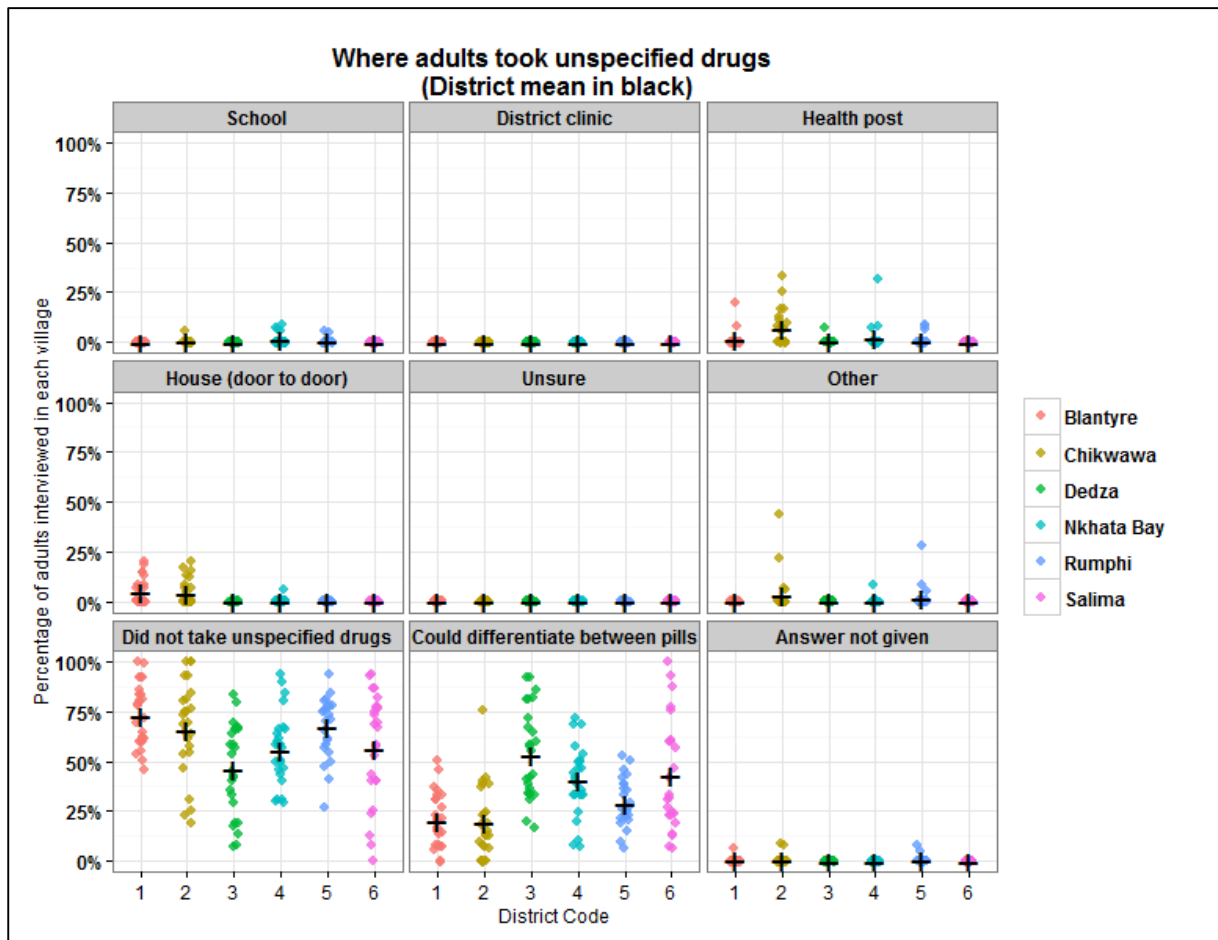
5.5 Additional country-specific analyses

Only two districts, Salima and Nkhata Bay, reported high levels of community treatment and they are represented here. Chikwawa as previously mentioned carried out a mop up after the initial treatments which may explain their adult treatment answers, however according to treatment reports only 13,000 community treatments were carried out. Figures 22, 23 and 24 show village information on treatment and sensitisation.

Figure 22. Was sensitisation carried out in the village?

Figure 23. How was sensitisation performed?

Figure 24. Were adults treated in the village?

6 Discussion

6.1 Coverage survey results

This survey took place over four weeks in August 2014, within 3 months of MDA treatments being carried out. In total, 2100 adults, 1492 attending children and 204 non attending children were interviewed throughout the six districts.

Findings from this survey show that all but one district managed to reach the 75% coverage target for SAC. This is reflected in the reported coverage which was received from the districts, with Chikwawa iden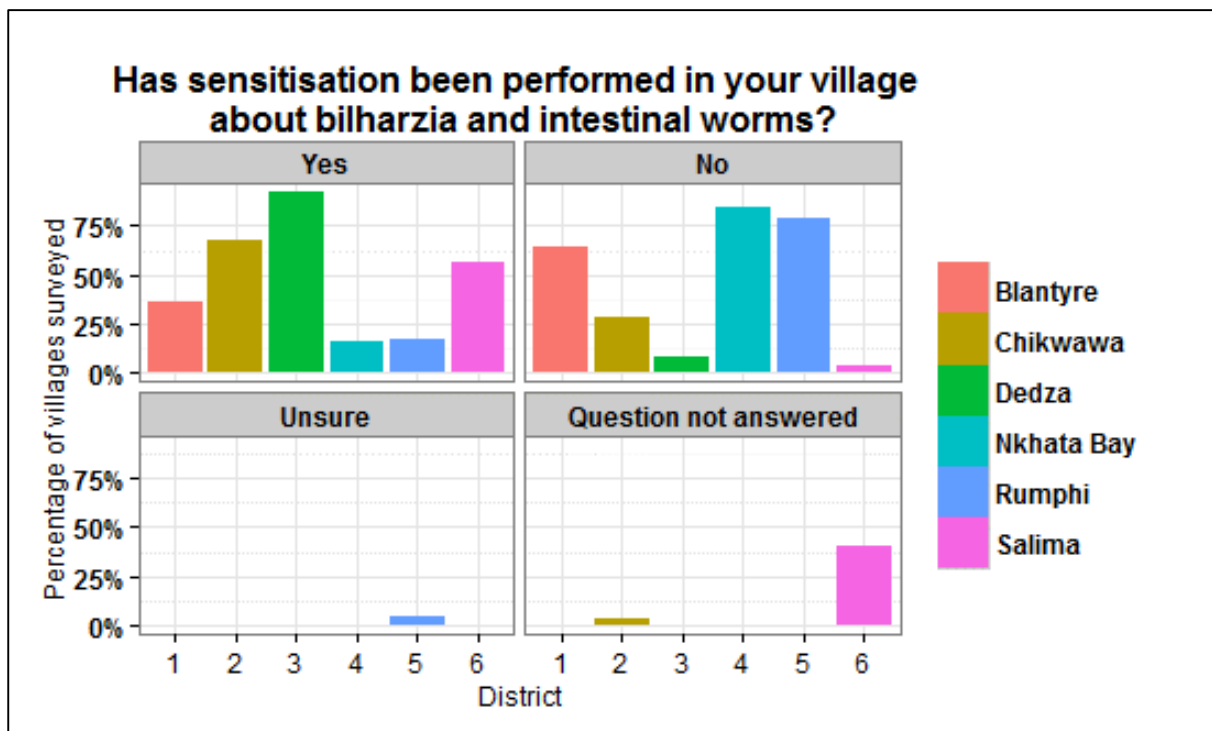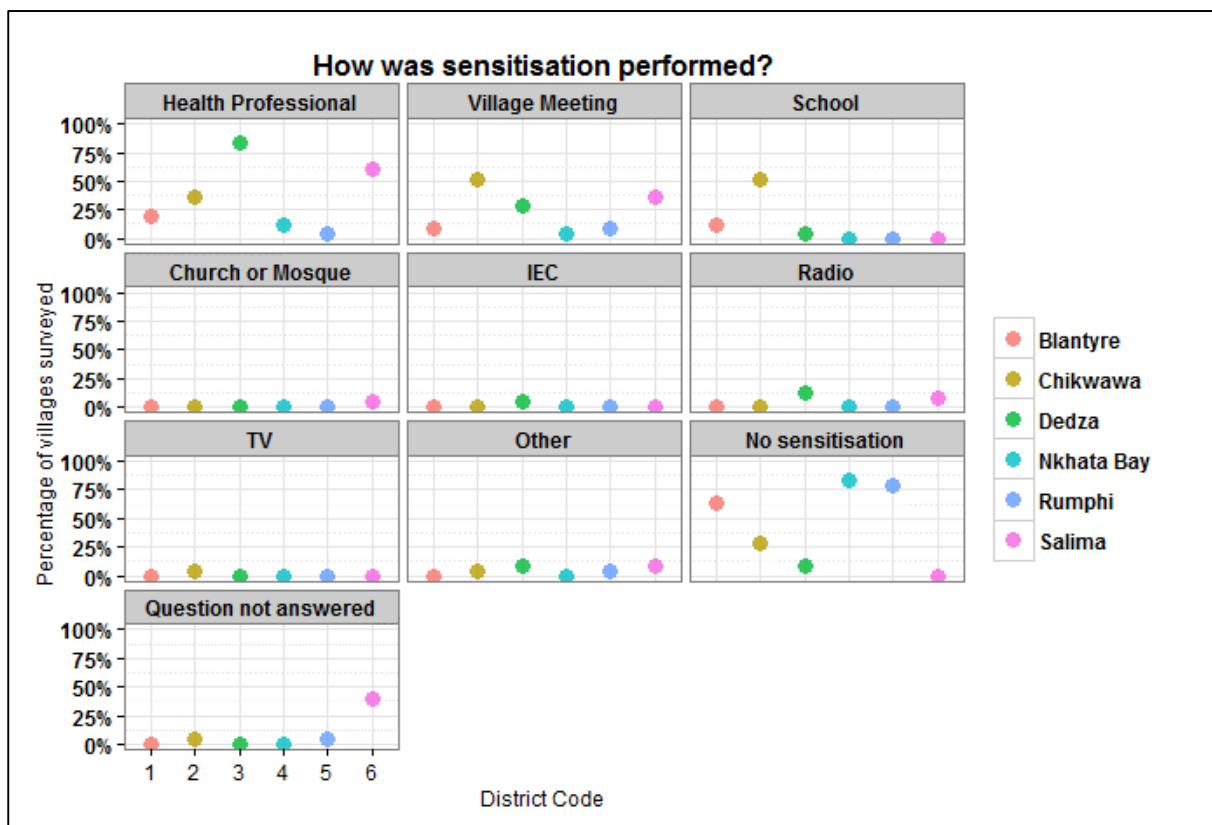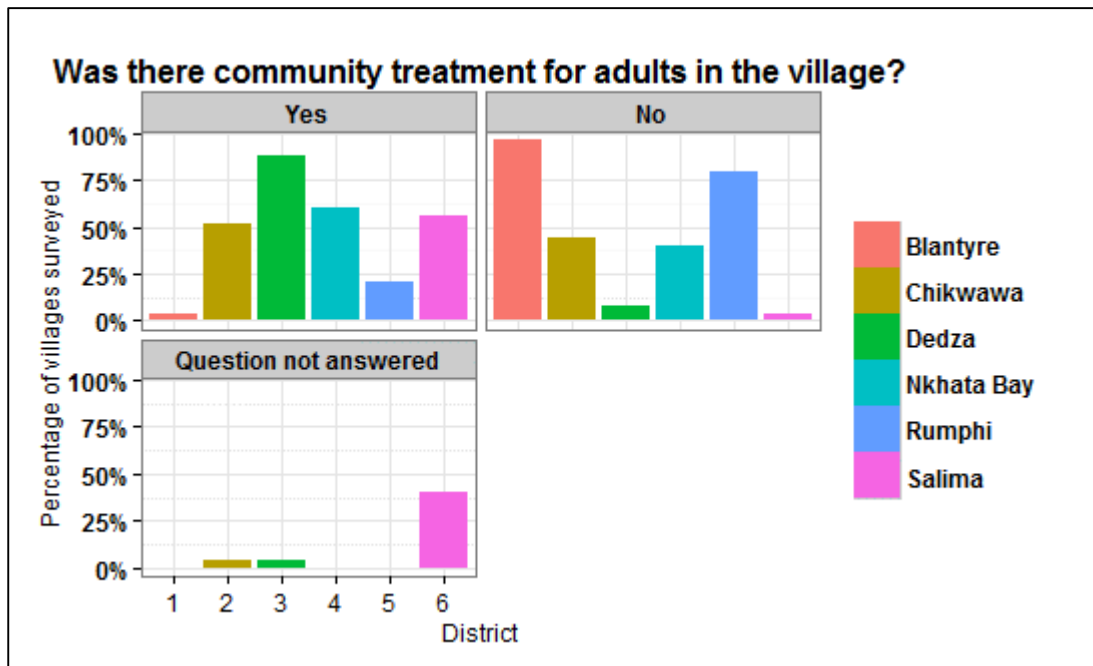tified to have particularly low coverage during the MDA. They were asked to carry out an extensive mop up, however, it appears that additional efforts need to be made in future rounds of MDA.

There were very low numbers of non-attending school children which made it difficult to analyse whether they were significantly less likely to receive treatment. Following on from the 2012 coverage survey where very few non-attending SAC received treatment it appears that Malawi has improved in reaching these children through from adding the community treatments to the school-based approach. However much more needs to be done to reach adults in high risk areas, as well as all non-attending SAC.

6.1.1 Reliability of reported coverage

The way in which coverage was reported by different districts varied widely. From the results of the survey conducted in six districts, it seems that the quality of the reported coverage also varied.

1. Reported coverage does not vary greatly from the validated in each district, apart from Salima, when asking about either of the drugs (PZQ or ALB). Salima's reported coverage is much lower than what was found in the validated survey.
2. There are greater differences between reported and validated coverage when the drugs are split by type, particularly with ALB.
3. Adult reported coverage is very different to validated for all drug combinations.
4. Overall validated coverage in each district, except Chikwawa, has reached the 75% threshold. This was expected to be the case as they initially reported very low coverage before being asked to carry out mop up which may not have been as successful as initially thought.
5. Many villages reported that community treatment happened but there was low adult coverage identified through the validated coverage survey.

Without raw data, details of how calculations were performed and variability in the format of reports it is difficult to generalise about the quality of reported coverage rates for districts. Due to the inconsistencies in reporting format and figures used we cannot at this stage in the programme rely on the districts reported coverage as an accurate reflection of therapeutic coverage in the country, and, after a consultative process, further efforts for standardisation in reporting coverage at the district level are underway.

Where districts have provided detailed raw data to back up their coverage rates, it is likely these rates are more reliable, since we are able to compare the rates.

Registers were used for the first time during this treatment. Training was provided on how to complete the register, however until a full data quality assessment (DQA) is carried out (scheduled Nov 2015) we will not know if the summary results for 2015 which are sent to the district and then central level are correctly summed.

Particular problems arise when calculating the coverage rates for specific groups such as non-attending children. Great attention will need to put into this for future MDA's.

It is clear from the report that there are many discrepancies between the reported coverage from districts and what is true for those areas. Individual reports clarify some situations but there are many that are still unexplained. It is hoped that the DQA exercise will help to identify potential barriers to good reporting.

6.1.2   Factors contributing to low coverage
Major factors that have contributed to a lower coverage than was targeted.

Partly due to financial and contract issues, the MDA was delayed in some areas until after the general elections, which also caused some issues for the community treatments. Lack of finances limited the sensitisation in districts, as well as, the number of days the community treatments were due to occur.

Miscommunication between the national Program Managers for lymphatic filariasis and schistosomiasis led many districts to believe that the ALB which they received should have been made available for the MDA but was not used.

There was not a specific MDA week or weeks, where the majority of treatments occurred. This caused a great deal of confusion among the districts and they all ended up treating as and when they wished to.

6.1.2.1   School-attendance effect
Although the HSA's and teachers were asked to carry out treatment in the schools and subsequently in the communities over the course of 5 days, it is not clear if this was done in every district. In certain districts where prevalence is very high, Salima, Mulanje, Mangochi and Ntchisi there were extraordinary efforts to carry out community treatments. However, it is much more time-consuming to reach the non-attending SAC.

There was also some confusion with the registers and therefore even with the children were treated they may not have been recorded correctly.

6.1.2.2   District differences in coverage
Each district present a number of challenges and successes throughout the treatment campaign which may have contributed to the varying results reported.

During the election there were riots in Blantyre which caused a number of schools to close during the timing of the MDA. Unfortunately this violence carried on into the schools where a number of registers were burnt in protest to the elections.

Despite the fact that all districts were asked to target communities, due to available funding not all districts were able to implement this in the manner expected.

Timing of the treatments also varied in the districts, this resulted in Salima not treating until the standard eight children had written their exams which meant capturing them at schools would have been difficult.

6.1.2.3   Most effective method of advertising campaign

From the reports it appears that the majority of people who heard about the campaign did so through the community meetings and sensitisation sessions held at the schools. This highlights the importance of adequate training and time to be able to carry out exceptional sensitisation as well as having distributors who are motivated.

6.2   Learnings for the future

More details found in Allon Gould's field notes: *S:\SCI - post 3 June 2011\Current programmes\DFID\ICOSA\COUNTRIES\Malawi\M&E\Performance\Coverage Survey 2014\Field Reports (Allon)*

The coverage section requires the ability to detect whether the person had swallowed the correct drug at the correct distribution, without leading the interviewer into an answer e.g. by asking first and then showing drugs for confirmation.

The coverage section should ideally have been fully independent of the post-MDA KAP survey as it meant questionnaires and interviews were very long.

Phones - Although they were a major challenge for the interviewers to master, I would recommend using phones if enough time for training is available. In the field they generally worked smoothly.

Language - This was an issue as there was no translation of the questionnaire into Chichewa. In addition, the team did not have enough people who could speak local dialects: only the supervisor in the North team spoke Tonga and Tumbuka (the principle languages in Nkhata Bay and Rumphi respectively). Equally, only one person in the South team spoke Sena (the principle language in Chikwawa). This was more of an issue for young children and the very old and the interviewers had to make do with basic communication and by enlisting the help of family members or village guides to translate (told to note down if interpreter used).

Conducting the questionnaire - Although long and complex, interviewers were able to get through it relatively efficiently. Respondents were generally very patient and happy to cooperate.

It was also clear that conducting the questionnaire in confidentiality is very important (otherwise people share answers, get bored and make each other feel uncomfortable) – this was relatively easy to achieve with proper explanation to household members.

Sampling individuals - There was a general lack of adult males and SAC throughout the survey. Many men were out of the village working, and many children were visiting relatives outside the village. The

interviewers made a significant effort to go looking for any individuals not at home. Funerals, initiation ceremonies and community development work occasionally made a whole village relatively unavailable – it is not clear if this would be any better at a different time of year.

Also, members of the Zion church (popular in Salima), refuse all Western medicine and refuse to take part in surveys. These are a potentially important group the think about for transmission.

Household sampling

Household list method:
- The key problem here was authenticating the reliability of lists given to us. These were often lists scribbled on pieces of paper by HSAs some time in the last year or two. We need a better definition of a "satisfactory" list (reliable source, when last updated, externally verified?). If a minimum standard cannot be met, other sampling methods should be employed. We did this based on judgement calls of when a list given to us would introduce systematic bias, but a thorough protocol is needed.
- When we calculated h, we rounded down to ensure we did not go over the total number of houses in the village when selecting. However, this meant that households at the end of the list are less likely to get picked overall.
- Occasionally a household randomly chosen that no village guide recognised.

Random transect method
- When using this method, we often did two transects and divided people between them. This caused a risk of sampling the same houses more than once near the centre of the village – especially if a central house was empty and had to be replaced.
- This is a good method but problems encountered included: large/sparse villages, clustered villages, villages with several chiefs *("this house does not belong to this village – it has a different chief")*, villages with no well-defined boundary.

7 Appendix I: Associated documentation

Mentioned throughout.

8 Appendix II: Statistical Methodology

Validated coverage rate in each district was calculated using the 'survey' package in R. Each district was analysed separately using the 'logit' method to account for the binary structure of the data, and a term for village and household to account for clustering at these levels.

We approached the calculation of validated coverage in two ways:

1. Firstly, we made no adjustment for the proportion of villages sampled in each district, the proportion of households sampled in each village or the proportion of children sampled in each household.
2. We then re-ran the analysis adjusting for these three factors and both methods are presented above. The adjustments are expected to change both the validated coverage estimate (primarily because large villages will contribute more towards the calculation than smaller villages) and the confidence intervals associated with the validated coverage estimate.

The association of coverage with gender, school attendance and implementer was assessed using a binomial mixed model for each district separately, with random effects of village and households and fixed effects of either gender or whether or not the interviewed child attended school. The significance of the specific effect was determined by using log-likelihood ratio tests on models with and without the specific effect term.
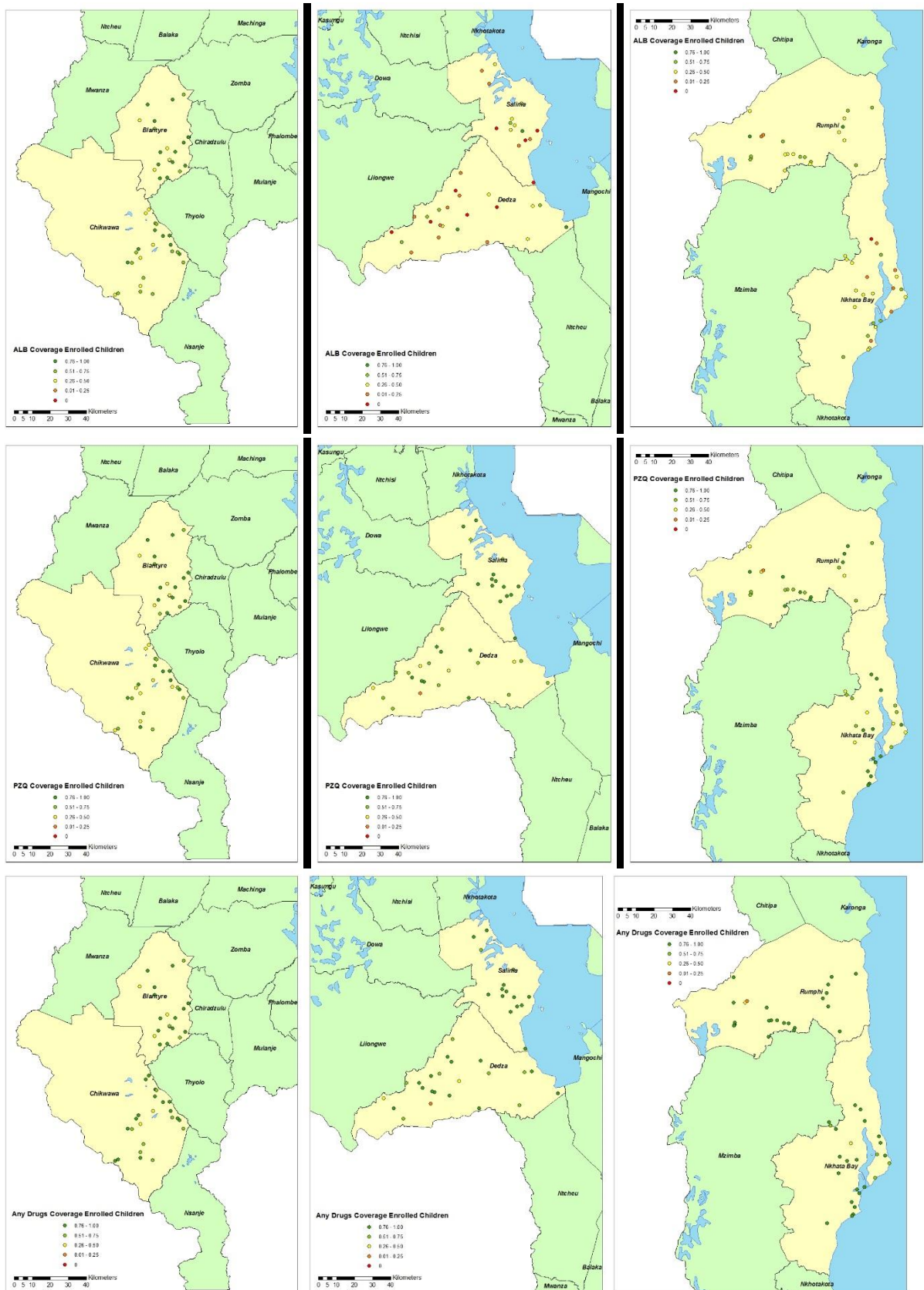
9 Appendix III. Maps for each area and breakdown of population and drug coverage
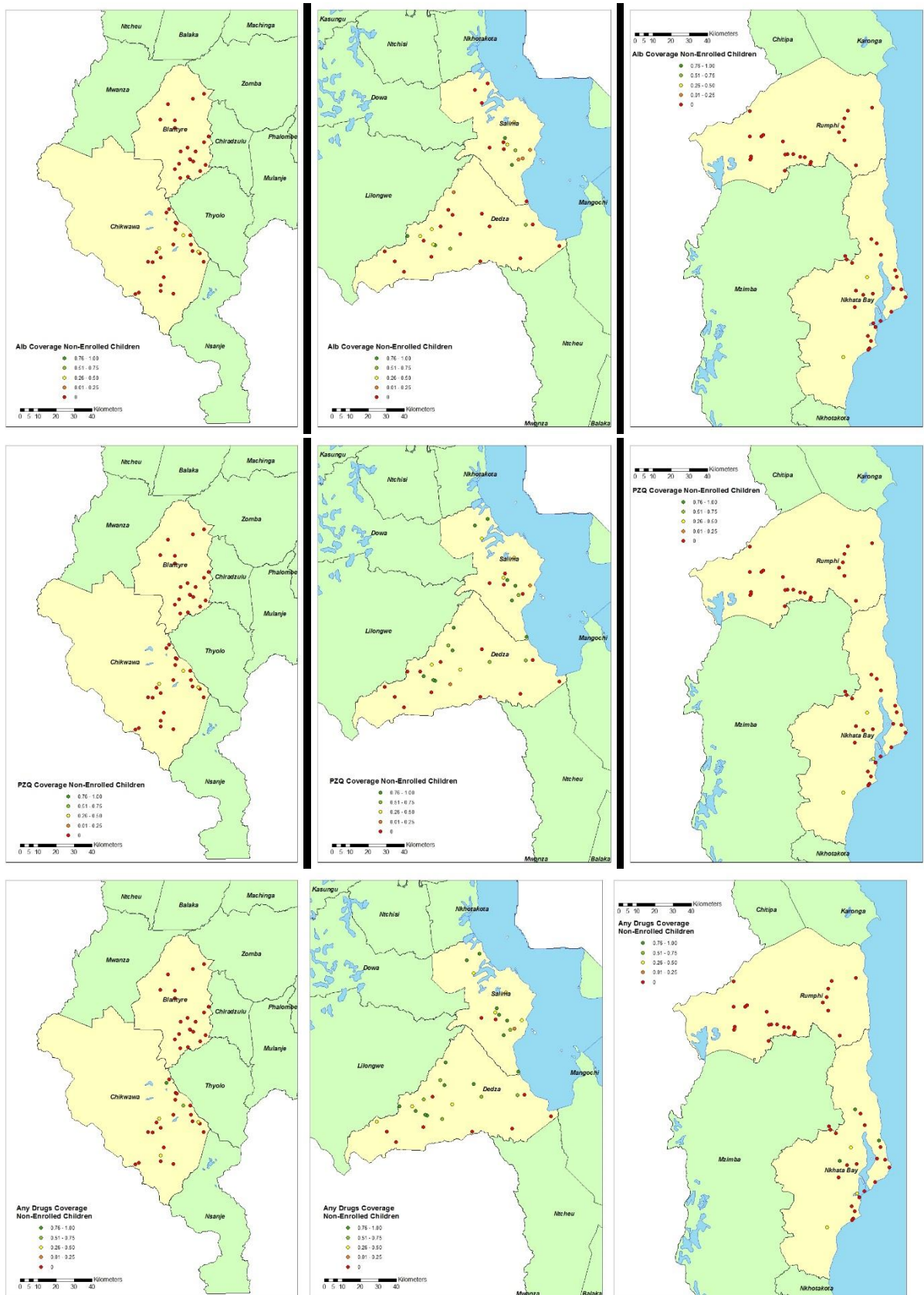
1. Coverage of all SAC
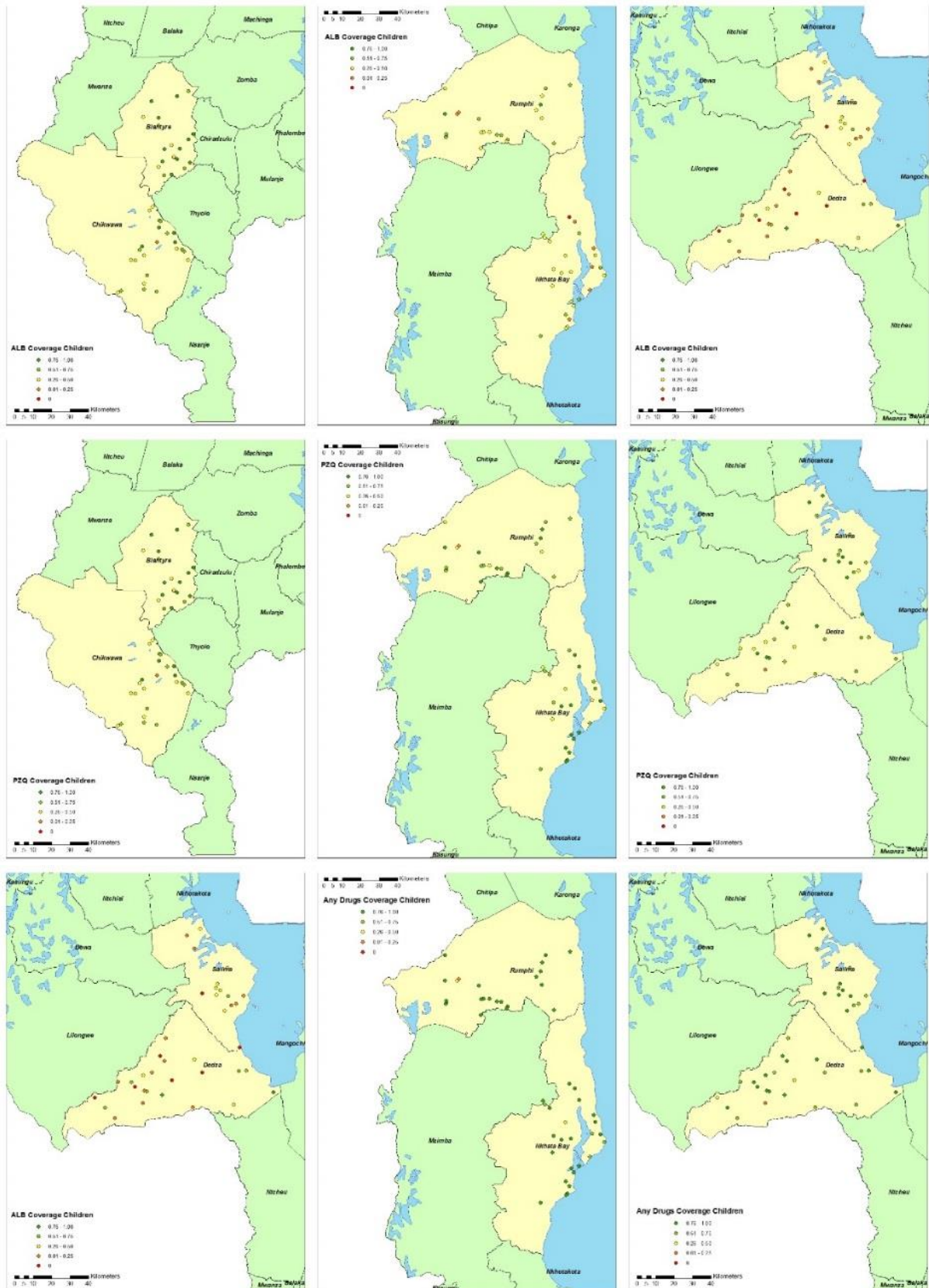
2. Coverage of School attending children

3. Coverage of non-attending children

4. Coverage of adults