Report of a Simple Spatial Surveying Method (S3M) survey in Sudan.

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List of acronyms

ARI	Acute respiratory infection
CDC	Centre for Disease Control
CMAM	Community Management of Acute Malnutrition
CSAS	Centric Systematic Area Sampling
CNS	Community Nutrition Surveillance
EBF	Exclusive breast feeding
ENA	Emergency Nutrition Assessment
EPI	Extended programme of immunization
FMOH	Federal Ministry of Health
GAM	Global acute malnutrition
GPS	Global Positioning System
HAZ	Height-for-age z-score
HDDS	Household Dietary Diversity Score
HH	Household
HHS	Household Hunger Score
ICFI	Infant and Child Feeding Index
ITN	Insecticide Treated Net
IYCF	Infant and Young Child Feeding
LCL	Lower Confidence Limit
MICS	Multi-Indicator Cluster Survey
MN	Malnutrition
MUAC	Mid upper arm circumference
NCHS	National Centre of Health Statistics
OTP	Out-patient therapeutic programme
ppm	parts per million
QTR	Quarter
S3M	Simple Spatial Surveying Method
SAM	Severe acute malnutrition
SHHS	Sudan Household health Survey
SMART	Standardized Monitoring and Assessment of Relief and Transitions
SMOH	State Ministry of Health
UCL	Upper Confidence Limit
UN	United Nations
VIP	Ventilated Improved Pit
WFH	Weight-for-height
WHO	World Health Organisation
WHZ	Weight for height z-score
WASH	Water, Sanitation and Hygiene

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1. Executive Summary

This is the report of a survey carried out in all 18 states of Sudan by the Federal Ministry of Health and UNICEF with technical support from Valid International and funding from DFID. Data collection took place during June / July 2013 for 14 states and in November 2013 for the remaining 4 states (Khartoum, Red Sea, South and West Kordofan).

The survey used the Simple Spatial Survey Method (S3M), an area based sampling methodology that uses maps for selection of sample points. This methodology was chosen in order to be able to map results and produce results for small areas. For this survey, the size of the area for which results are available is approximately 187km², and results are therefore available at locality and sub-locality level. The objective of the survey was to obtain data for basic health, WASH and nutrition indicators for small areas (at sub-locality level) to allow mapping of results to show geographical areas of highest need and 'hot-spots'. This will enable better targeting of existing interventions and will inform program expansion.

Data was collected in all states, however it should be noted that some areas were inaccessible due to insecurity. This affected parts of Central Darfur, South Darfur and East Darfur in the Darfur Region, as well as the southern-most parts of West Kordofan, South Kordofan and Blue Nile states. Areas not accessed for data collection are clearly shown on all maps as a grey shaded area and are all towards the south of the country. It should be noted that in some localities, some sample points were accessible when others were not. In this case results are presented for the locality with a note that it is only part of the locality. The area represented can be seen on the maps.

Results maps presented in this report are classified into three groups of low, medium and high for every indicator. Cut-offs used for each indicator are based on international public health recommendations or national program targets. Green colour on the maps indicates a 'good' situation (as determined by the cut-offs used), yellow indicates 'acceptable' and red indicates a 'poor' situation.

All results for every indicator have been mapped. Results clearly show the geographic areas in highest need for all indicators measured. A total of 59 indicators were measured. All national results maps are presented in this report, together with results for every indicator at locality level. Below is a table of results for 18 core indicators at locality level. Reports at state level will be produced containing more detailed state level maps.

Key results:

- The advantage of the Sudan S3M is that it measured a range of indicators (health, WASH and nutrition) over small geographical areas, giving results at locality level and lower. It has identified where the children who are most in need in Sudan are living ensuring evidence based equity programming in Sudan.
- More than two million children in Sudan are stunted and unlikely to ever reach their full growth and development potential. With the results of this survey we know where they are living.

- State-level estimates mask huge disparities in most indicators. 128 of the total 184 localities have a stunting rate classified [1] as high [1] (above 30%). There are pockets of very high stunting rates, found mostly in the eastern states of Red Sea, Kassala and Gedaref, with a high of 73% in Gedaref state.

- Sudan has a huge burden of acute malnutrition and the S3M showed that over half a million[2] children will suffer from life-threatening severe acute malnutrition during 2014.

- 52 of the 184 localities have a severe acute malnutrition rate (measured by MUAC) that is classified as very critical (above 3%). Highest SAM measured was above 20% in three localities in South Darfur and Red Sea.

- The number of children with SAM depends on the population number, highly populated states with a lower prevalence still carry a very high burden of children with SAM. Most of the children with SAM are found in North Darfur, South Darfur, Gezira, Kassala, Khartoum and then Red Sea states.

- Exclusive breastfeeding rates have improved across the country since the last survey and are above 70% in 89 of the 184 localities.

- Maternal under-nutrition is very high in Sudan and up to 62% of mothers in some locations are under-nourished, classified [2] as 'extreme'[3] (highest in the Eastern state of Red Sea).

- Household use of iodised salt has improved since the last national survey (SHHS 2010, where the national average was 9.5%). There are 42 localities where more than 50% of households are using iodised salt.

- There are areas of low Vitamin A supplementation. 52 localities recorded coverage of less than 75%, with a low of 2.3% in one locality in South Kordofan.

- At state level, age-appropriate vaccination coverage[4] is high and Gezira state localities has coverage that is either almost at 90% or higher. However, there are pockets of low coverage, and a total 65 localities have a vaccination coverage of less than 75% (age-appropriate fully vaccinated). Lowest coverage is 13% in one locality in Red Sea.

- Coverage with improved sanitation facilities and improved sources of drinking water is low in most locations, including towns and cities – use of improved sanitation facilities in 4 localities (out of 7) in Khartoum state is less than 50%.

[1] Stunting cut-offs: very high = >40%; high = 30-40%; medium = 20-29%; low = <20%.[1]
[2] S3M prevalence estimates, by MUAC or WHZ (whichever estimate is higher – MUAC in Red Sea, Kassala and South Kordofan; WHZ in all other states) and EPI 2013 population estimates of children 6-59 months. Burden calculated as prevalence + incidence, where incidence = prevalence x1.6.
[3] MUAC <23cm , >50% classified as extreme [2]
[4]Percentage of children 6-59 months who had received full appropriate vaccinations for their age as per national vaccination schedule.

Recommendations:

1. Implement revisions to the Maternal and Child Health Acceleration Plan based on the S3M results, targeting most needy localities.

2. Produce a phased, costed national CMAM scale-up plan using the S3M results to locate areas in highest need.

3. Provide national leadership to ensure that response based on the S3M results is multi-sectorial and includes coordinated action from different Ministry of Health departments as well as different Government Ministries.

4. Use results from the Sudan S3M as baseline coverage data for relevant national programs, including the expanded program of immunisation (EPI).

5. Ensure results are disseminated to all states and all Government Ministries for use for programing.

6. Resource mobilisation and advocacy using the S3M results and revised plans.

Table 1: Results for 18 core indicators, by locality *(Note: *=camp/town estimate also included in locality estimate)*

		Child information							Mothers of children 0 - 5 years							Household information			
State	Locality	Stunting GLOBAL (6-59mo)	Wasting GLOBAL (WHZ) (6-59mo)	Wasting SEVERE (MUAC) (6-59mo)	Child Vitamin A supplementation (6-59mo)	Age appropriate full vaccination coverage (6-59mo)	Penta valent drop-out rate: Children >= 4 months has PENTA-1 but not PENTA-3 (4-59mo)	Good diarrhoea treatment (6-59mo)	Mean number illness danger signs known by mothers	Exclusive Breast feeding	Mother under nourished (MUAC <230mm)	At least one ANC visit	Four or more ANC visits	Iron-folate for 6 months during last pregnancy	Delivery attended by trained personnel	Adequately iodized salt (>= 15 ppm)	Improved source of drinking water	Improved sanitation facility	Five critical hand washing points (mean)
	Key:	**>30%**	**>15%**	**>3%**	**<60%**	**<50%**		**<50%**		**>70%**	**>15%**		**<60%**			**>50%**	**<50%**	**>50%**	
Red Sea	Ageeg	61.3	22.7	16.4	88.0	82.1	3.6	41.8	1.5	62.1	47.5	90.7	42.3	1.2	61.6	25.3	75.3	7.3	2.6
	Alganeb Alolib	51.0	20.6	3.5	72.9	12.9	3.4	25.3	1.3	50.0	38.3	60.3	22.6	3.5	67.9	41.5	3.4	5.8	1.5
	Dordaib	43.1	13.6	1.9	90.5	72.5	6.9	7.6	0.8	40.0	31.4	72.5	14.0	0.6	51.3	44.9	17.5	0.5	1.2
	Haia	45.1	24.5	7.1	72.6	51.0	2.1	50.0	0.7	33.3	62.1	48.2	2.0	0.0	38.9	45.1	3.8	1.7	1.2
	Haliab	29.3	28.6	3.4	86.4	44.2	27.7	18.2	0.9	83.3	35.6	60.9	0.0	1.5	34.4	93.9	1.6	3.9	2.1
	Japitalmadin	61.5	10.2	0.0	86.6	73.4	2.8	65.6	1.6	4.8	26.5	91.8	18.4	0.0	94.1	34.4	4.2	0.0	3.3
	Sawaken	57.5	34.4	15.1	77.0	63.0	7.1	14.7	1.1	75.0	23.8	73.2	8.3	0.0	83.5	6.5	9.8	2.1	2.0
	Senkat	69.0	28.7	10.0	7.9	79.3	4.1	4.2	0.7	100.0	45.2	35.2	5.0	0.0	65.8	19.1	0.5	0.0	0.9
	Tokar	53.1	36.4	21.0	90.9	75.4	5.1	9.8	1.5	32.9	40.9	87.8	20.4	8.6	96.4	31.8	7.2	49.5	2.5
	Port Sudan	34.3	13.8	3.1	79.4	85.7	1.1	44.9	1.8	61.5	14.0	96.7	71.1	14.3	98.4	46.4	25.5	73.9	2.9
	All state	45.5	20.2	8.5	81.1	77.7	2.8	36.1	1.5	51.2	29.6	87.3	45.9	8.4	83.9	38.7	27.9	44.1	2.5
Kassala	Aroma	59.6	21.8	9.5	99.7	68.4	8.7	23.2	2.4	23.3	8.0	91.3	28.3	10.2	77.4	73.1	0.0	2.3	3.6
	Hamshkoreb	59.1	16.7	7.7	96.2	79.9	3.4	44.4	1.7	33.3	14.7	85.3	32.2	5.4	82.8	46.5	4.8	0.0	2.3
	Kshmalgirba	46.2	12.7	3.4	98.8	95.7	0.0	98.5	3.9	100.0	25.0	89.8	62.5	11.7	100.0	50.8	17.2	5.5	4.7
	Nahr Atbara	52.8	16.0	2.7	100.0	90.2	2.4	0.0	2.7	100.0	14.1	100.0	46.9	31.3	100.0	87.5	100.0	0.0	4.6
	North Delta	59.2	12.8	4.9	100.0	86.9	0.0	92.6	3.1	4.8	11.6	99.1	32.1	6.3	100.0	80.7	1.3	0.5	3.4
	Rify Kassala	51.7	19.1	2.8	99.2	93.2	3.1	100.0	1.8	43.3	6.3	91.3	38.1	0.6	96.9	71.9	2.5	0.6	2.9
	Rural Halfa	44.9	10.1	0.8	100.0	93.8	2.7	18.0	1.7	10.7	17.2	94.8	44.8	14.1	92.7	30.2	45.3	42.2	2.6
	Talkok	57.0	16.2	4.8	95.7	59.9	26.4	18.9	1.3	62.9	11.0	98.3	22.3	2.0	82.4	78.6	0.0	24.6	1.6
	Wadalhlew	56.5	8.5	1.9	100.0	88.7	0.0	55.3	2.2	81.5	20.0	93.8	67.0	11.3	79.1	96.9	0.0	2.6	3.6
	West Kassala	35.7	11.6	2.0	84.9	79.0	9.2	29.6	1.7	29.4	47.4	100.0	65.1	51.0	46.9	87.5	0.0	2.3	1.5
	All state except capital	54.6	15.2	4.3	97.8	79.0	10.2	45.5	2.2	46.4	13.4	95.8	34.3	8.3	88.8	73.0	13.1	13.0	2.8
	Kassala Town	33.9	15.2	1.2	98.2	85.3	2.2	46.4	2.7	42.4	5.7	97.6	61.7	25.7	93.7	66.7	58.4	52.1	3.8
	Hamoshkoreib Town*	58.8	16.7	7.6	96.6	80.1	3.3	45.2	1.8	30.8	15.3	86.1	33.8	5.2	84.8	46.7	4.9	0.0	2.3
Gedaref	Al Gadaref Wasat	58.1	14.1	2.3	96.3	80.8	5.5	19.0	1.4	75.0	8.6	87.3	43.4	2.1	61.9	62.0	10.6	8.9	2.0
	Al Mafaza	57.1	13.3	2.0	85.9	85.1	1.9	21.8	1.2	50.0	6.3	92.7	52.1	3.1	77.1	33.3	100.0	0.0	1.5
	Albutana	57.0	13.6	2.8	95.0	80.1	5.0	8.0	2.2	34.1	17.3	83.8	33.8	6.7	78.4	28.7	1.4	0.7	1.8
	Alfashaga	35.7	17.9	2.7	90.0	82.1	6.6	17.0	1.3	40.2	10.5	93.6	69.9	21.3	85.3	34.9	91.8	6.5	1.6
	Alfaw	62.2	6.8	0.0	89.9	80.2	5.2	4.5	1.0	35.0	23.7	93.3	49.1	0.0	93.8	14.9	77.2	0.0	1.5
	Algalabat Al Garbiya	41.9	19.5	6.7	94.2	89.5	3.5	7.0	1.8	80.0	7.3	76.0	34.4	0.0	87.5	51.0	33.3	2.1	1.8
	Algalabat Al Shargiya	73.2	3.5	0.0	99.3	92.6	1.7	19.1	1.5	100.0	2.3	82.8	18.0	2.3	90.6	79.7	0.0	0.0	1.7
	Algurisha	73.7	13.9	2.3	88.9	91.3	1.4	27.4	1.9	91.0	7.8	53.8	19.7	3.8	57.2	71.6	0.0	2.8	1.8
	Alrahad	49.2	5.2	0.0	89.2	80.0	9.0	9.4	1.3	37.9	5.2	94.8	51.0	0.0	34.4	20.8	84.4	0.0	1.5
	Basonda	51.9	16.2	4.7	92.9	81.8	6.8	9.7	1.6	79.7	1.8	80.5	25.8	0.5	88.0	66.7	1.3	2.1	1.7
	Gula Alnahal	52.5	14.7	1.2	93.2	90.8	2.7	5.8	2.8	11.1	15.5	91.4	21.1	3.9	67.6	74.2	12.9	1.2	2.3
	All state except capital	52.0	13.2	2.0	92.9	85.5	4.8	16.0	1.5	67.8	8.5	86.4	45.2	10.8	81.6	52.1	46.0	4.0	1.7
	Gedarif Town	30.8	13.2	3.5	82.1	75.9	5.1	8.7	1.1	0.0	4.7	92.2	137.3	11.3	94.6	63.7	64.2	22.6	2.4

		Child information							Mothers of children 0 - 5 years							Household information			
State	Locality	Stunting GLOBAL (6-59mo)	Wasting GLOBAL (WHZ) (6-59mo)	Wasting SEVERE (MUAC) (6-59mo)	Child Vitamin A supplementation (6-59mo)	Age appropriate full vaccination coverage (6-59mo)	Penta valent drop-out rate: Children >= 4 months has PENTA-1 but not PENTA-3 (4-59mo)	Good diarrhoea treatment (6-59mo)	Mean number illness danger signs known by mothers	Exclusive Breast feeding	Mother under nourished (MUAC <230mm)	At least one ANC visit	Four or more ANC visits	Iron-folate for 6 months during last pregnancy	Delivery attended by trained personnel	Adequately iodized salt (>= 15 ppm)	Improved source of drinking water	Improved sanitation facility	Five critical hand washing points (mean)
Blue Nile	Baw (part)	39.6	25.0	4.4	96.6	89.4	0.0	9.8	2.3	50.0	17.2	67.2	9.4	0.0	20.3	98.4	96.9	0.0	3.2
	Damazin	45.0	14.5	1.4	98.7	97.0	0.6	29.4	1.1	100.0	12.5	86.5	50.0	21.9	83.3	41.7	99.0	66.7	1.9
	Giessan (part)	48.8	16.0	6.1	93.8	77.2	5.6	7.4	2.3	55.0	27.6	55.6	39.4	2.0	58.0	51.0	97.6	90.6	2.8
	Kurmuk (part)	52.9	16.2	2.0	93.1	75.0	6.7	11.8	1.7	89.5	18.8	68.8	42.7	0.0	47.9	91.7	37.5	0.0	2.3
	Rosairs (part)	51.4	20.3	5.2	92.2	79.3	4.0	9.8	1.7	85.0	15.7	47.3	18.9	2.0	31.8	59.1	85.2	73.2	2.0
	Tadamon (part)	42.9	14.5	0.0	90.2	67.9	18.2	8.2	1.1	85.7	7.8	68.8	27.3	0.0	63.3	65.6	2.3	0.0	3.2
	All state except capital	49.8	18.5	4.8	92.9	78.4	5.1	9.3	1.9	78.8	19.1	52.8	28.3	2.4	45.5	57.1	84.9	73.3	2.4
	Damazin Town	37.9	12.7	2.7	97.9	92.9	1.3	10.9	1.2	87.7	1.3	61.5	14.7	1.4	69.3	63.5	88.8	19.5	1.8
	Roseris Town	37.0	10.6	2.0	100.0	90.7	2.1	13.1	1.8	77.2	13.2	82.3	52.0	20.0	81.1	77.7	86.3	16.0	2.2
South Kordofan	Abujebiha (part)	34.1	8.8	2.6	27.7	77.1	4.5	19.7	1.5	64.6	28.8	74.5	23.4	0.7	80.6	41.2	23.4	0.9	1.5
	Al Tadamoon (part)	46.2	15.3	3.6	69.0	68.7	4.3	61.7	1.5	71.0	41.2	59.3	22.1	1.1	26.8	72.5	60.5	1.1	1.8
	Alabaseya	39.1	17.2	3.1	72.4	44.5	9.7	59.2	1.8	65.7	15.6	66.7	33.3	0.0	19.8	30.2	72.9	47.9	2.1
	Algoz	36.9	2.5	2.0	63.2	77.5	3.4	47.9	1.5	72.5	12.7	83.7	51.3	2.6	64.5	35.2	98.5	13.3	1.8
	Allirri	40.0	7.8	2.6	43.8	62.3	7.1	42.4	2.1	57.6	16.2	87.9	55.2	0.0	94.0	47.9	65.1	0.0	2.0
	Alreif Alshargi	29.0	11.2	2.4	2.3	92.2	0.6	73.6	2.3	73.7	18.8	94.8	64.6	7.3	54.2	37.5	100.0	1.0	3.5
	Dilling (part)	39.6	7.6	1.9	0.0	85.0	0.0	16.7	1.7	100.0	6.3	56.3	9.4	3.1	40.6	78.1	100.0	0.0	2.3
	Gadeir (part)	32.2	4.7	4.7	21.7	67.2	10.3	38.8	2.5	87.2	25.3	92.3	38.6	1.0	76.4	32.8	64.9	0.0	2.6
	Habeila (part)	26.7	11.9	1.0	0.0	92.6	2.4	78.9	2.2	100.0	16.2	96.9	56.3	4.2	97.9	26.6	55.2	0.0	2.2
	Rashad (part)	32.3	5.8	0.0	0.0	90.4	5.5	25.7	1.8	19.2	20.8	91.0	56.4	2.6	65.6	11.5	79.5	0.0	1.8
	All state except capital	35.8	9.5	2.7	34.7	75.2	4.8	47.3	1.8	74.3	23.7	81.2	39.7	2.1	68.1	42.5	61.4	4.1	2.0
	Kadugli Town	26.0	7.7	3.6	54.2	84.2	2.7	49.7	2.0	45.5	15.7	91.2	71.7	11.1	89.7	52.8	61.0	26.8	3.0
	Talodi Town	35.0	8.5	1.7	46.2	85.1	2.8	62.6	2.4	61.8	12.5	92.8	52.9	2.1	91.3	37.1	95.9	6.9	2.6
West Kordofan	Abo Zabad	36.0	18.1	1.2	92.8	81.5	1.2	42.2	1.3	76.5	8.3	95.0	58.1	4.4	96.2	37.9	41.4	5.7	1.6
	Abyei (NOT AAA)	34.1	10.1	1.1	85.7	65.0	8.1	25.9	1.5	73.9	18.1	90.7	47.0	2.2	73.2	25.8	0.3	1.6	2.3
	Al Khowi	31.1	11.2	1.6	90.1	82.8	3.5	44.1	1.9	75.0	11.8	94.6	58.3	4.0	93.8	28.8	53.1	44.4	2.3
	Al Odaya	35.1	11.6	2.6	91.6	72.0	16.5	27.7	1.7	77.8	15.9	69.7	29.2	1.0	97.0	5.3	82.9	0.0	1.9
	Al Salam	32.4	7.9	1.9	63.4	64.0	8.9	14.2	2.5	95.6	14.5	87.5	30.8	1.9	68.6	32.4	5.4	4.6	3.3
	Aldebab	46.0	13.0	1.0	55.4	38.4	16.7	24.3	1.7	90.2	13.0	91.3	48.7	4.0	65.9	18.9	0.0	0.0	2.8
	Almearam	52.3	13.6	0.0	40.9	24.3	11.3	39.6	1.3	34.6	28.7	78.9	21.9	2.9	13.4	14.8	0.9	0.0	1.7
	Alsnout	40.0	11.3	0.2	74.9	71.7	2.8	40.4	1.7	99.0	14.0	87.5	47.7	3.1	78.3	26.2	0.0	0.0	1.5
	Babanusa	32.1	6.0	0.0	69.0	58.4	7.8	38.3	2.6	82.5	24.9	91.7	38.8	0.0	59.5	31.0	3.8	0.0	3.1
	En Nuhud	41.1	13.8	2.0	75.2	82.3	7.0	54.0	1.6	45.6	8.8	90.2	18.5	1.1	90.9	11.9	67.4	31.4	2.1
	Ghebeish	43.6	13.2	1.0	85.1	63.9	11.8	52.9	1.7	55.9	13.6	81.0	44.7	2.4	69.5	12.9	35.1	2.5	1.5
	Kailak (part)	34.3	7.1	1.2	67.7	65.2	7.2	22.2	1.2	89.1	34.3	93.1	77.2	3.5	55.6	38.7	1.5	0.4	1.1
	Lagawa (part)	26.6	9.0	1.2	88.6	80.1	2.0	68.9	1.5	96.4	16.4	88.5	57.7	5.0	81.3	9.7	39.5	0.2	1.8
	Wad Bandah	38.1	19.8	3.2	89.1	38.6	15.0	20.5	1.9	73.6	13.9	87.1	46.2	0.8	70.3	39.6	22.0	1.3	2.2
	All state except capital	36.7	12.7	1.8	81.4	63.9	9.0	37.5	1.7	77.4	15.7	88.2	47.9	2.7	74.9	25.2	28.6	8.7	2.0
	Fula Town	24.5	8.1	1.1	82.9	80.1	3.2	51.4	1.9	82.9	12.2	91.6	61.2	21.7	94.4	30.0	4.7	26.3	3.2

		Child information							Mothers of children 0 - 5 years							Household information			
State	Locality	Stunting GLOBAL (6-59mo)	Wasting GLOBAL (WHZ) (6-59mo)	Wasting SEVERE (MUAC) (6-59mo)	Child Vitamin A supplementation (6-59mo)	Age appropriate full vaccination coverage (6-59mo)	Penta valent drop-out rate: Children >= 4 months has PENTA-1 but not PENTA-3 (4-59mo)	Good diarrhoea treatment (6-59mo)	Mean number illness danger signs known by mothers	Exclusive Breast feeding	Mother under nourished (MUAC <230mm)	At least one ANC visit	Four or more ANC visits	Iron-folate for 6 months during last pregnancy	Delivery attended by trained personnel	Adequately iodized salt (>= 15 ppm)	Improved source of drinking water	Improved sanitation facility	Five critical hand washing points (mean)
North Kordofan	Bara	38.7	9.7	1.5	80.8	74.3	5.7	58.1	2.0	23.4	11.5	93.5	64.1	10.1	96.0	46.1	56.7	0.0	1.4
	El Rahad	53.0	2.5	5.7	65.0	85.7	1.7	60.0	1.4	80.0	3.8	100.0	22.8	2.5	100.0	0.0	76.0	3.1	2.0
	Jebrat El Sheikh	50.0	13.9	0.7	95.0	85.3	2.7	39.2	2.1	44.3	15.6	90.2	35.1	4.7	98.3	4.2	0.6	0.0	1.6
	Sheikan	40.0	12.1	1.0	85.5	84.7	5.4	63.8	1.4	56.2	12.2	93.0	54.0	20.5	96.7	47.9	65.0	8.6	2.0
	Sowdari	34.9	16.3	1.6	88.0	64.7	3.4	15.8	1.5	93.2	11.3	91.4	55.1	17.2	93.1	28.7	11.4	1.4	1.8
	Umm Daam	20.7	22.5	0.0	88.9	85.1	1.8	72.5	1.7	47.4	13.5	92.1	62.5	21.2	98.4	7.6	10.3	0.0	1.6
	Umm Rawaba	43.9	9.9	1.7	81.4	84.1	3.7	37.9	1.5	63.9	8.7	92.4	45.3	9.4	85.5	28.7	47.4	2.1	1.6
	West Bara	46.5	10.2	2.7	60.7	32.0	14.2	68.6	2.2	11.4	29.2	94.7	46.5	0.7	88.7	33.8	4.7	0.0	1.0
	All state except capital	41.6	12.1	1.5	84.8	78.5	4.0	39.9	1.7	60.2	11.3	92.1	49.8	11.9	92.4	30.0	35.8	2.0	1.7
	El Obeid Town	29.1	8.1	1.5	87.9	79.2	4.5	56.3	1.8	42.3	11.1	95.3	73.9	16.9	99.6	46.0	44.1	41.8	2.1
White Nile	Alsalam	44.1	7.1	2.5	53.2	51.7	11.1	13.4	1.9	44.8	24.1	71.9	20.5	3.6	69.1	36.6	18.3	1.0	1.9
	Ed Douiem	44.9	5.8	0.3	76.8	66.0	5.7	9.1	1.9	41.1	7.0	81.9	44.4	4.8	95.1	21.1	0.0	0.0	2.0
	El Gutaina	35.9	9.4	2.0	87.7	81.8	3.6	11.4	2.1	67.3	10.6	92.3	52.5	7.4	98.4	33.3	10.3	10.4	2.4
	El Jabalain	39.5	11.0	3.2	86.5	77.0	7.0	15.0	2.0	68.8	9.7	79.6	49.9	9.1	83.0	17.8	62.1	6.8	2.3
	Guli	40.6	7.6	1.2	92.0	87.0	1.9	15.7	1.8	36.1	14.7	92.0	51.3	21.9	100.0	63.0	44.8	3.1	2.0
	Kosti	40.4	12.9	1.5	97.8	89.8	2.1	8.5	1.8	76.5	11.5	85.1	39.9	0.0	66.2	41.7	85.4	0.6	1.7
	Rabak	42.0	8.5	0.0	93.3	90.7	2.3	2.9	1.6	33.3	17.7	80.4	28.3	0.0	100.0	11.8	0.0	0.0	1.8
	Tandalti	29.7	9.2	2.7	73.0	69.2	8.2	8.1	2.0	54.6	10.9	90.0	47.9	4.2	89.2	1.1	34.2	1.6	2.5
	Umm Remta	33.3	10.2	0.9	80.0	70.0	7.9	14.9	1.7	61.9	5.6	96.9	65.6	20.0	99.4	26.9	53.8	3.1	2.0
	All state except capital	39.1	8.6	1.5	81.0	73.2	5.8	12.8	1.9	53.2	9.9	87.4	50.1	11.1	93.0	30.7	31.8	3.3	2.1
	Kosti Town	25.5	10.1	0.7	93.9	90.8	2.3	8.3	2.0	46.3	8.2	90.5	69.5	20.2	93.9	50.4	40.4	31.9	2.5
	Rabak Town	31.0	10.0	0.5	93.0	86.2	2.4	9.4	2.0	62.5	6.9	89.2	59.0	16.0	96.9	35.8	51.7	29.6	2.4
Sennar	Abu Hijar	39.4	14.9	2.1	96.0	69.4	7.2	9.4	2.0	90.9	13.3	64.5	20.7	5.9	60.4	28.3	14.8	3.9	1.5
	Al Dindir	31.9	11.9	1.3	85.6	75.5	8.8	15.1	2.5	83.8	13.6	79.0	24.6	4.0	65.8	35.2	78.5	6.0	2.2
	Aldali And Almazmoum	32.5	13.3	1.2	88.9	84.0	3.9	3.1	1.6	84.8	10.4	94.5	46.4	15.6	86.2	14.6	25.5	13.5	2.6
	Alsooki	31.3	12.5	1.6	92.3	75.5	7.5	11.2	2.0	95.7	5.1	79.7	36.1	16.8	75.3	38.7	42.2	8.4	1.7
	Sennar	25.2	13.4	1.1	91.1	84.1	2.4	22.4	1.3	31.6	11.4	86.7	44.9	14.5	84.7	10.2	45.3	7.1	1.3
	Sharg Sennar	42.0	15.0	1.7	96.2	79.6	5.0	8.4	1.6	89.4	21.0	76.0	33.0	20.5	61.3	29.3	90.1	17.1	1.2
	Sinja	24.8	4.2	0.0	93.6	95.8	0.0	15.2	1.9	33.3	9.9	91.8	57.6	26.5	97.4	52.1	83.8	5.5	2.2
	All state except capital	32.6	12.8	1.4	91.0	80.4	5.0	10.9	1.8	75.3	11.8	83.9	39.2	14.7	77.3	24.9	46.4	9.5	1.9
	Sennar Town	11.4	8.8	0.3	93.0	89.6	1.0	23.6	2.2	75.6	4.5	92.6	68.3	30.9	96.0	31.4	84.4	59.6	2.2
	Sinja Town	13.4	9.0	1.1	93.9	88.5	1.6	24.8	2.0	67.5	5.4	93.7	76.0	35.1	98.0	53.9	93.3	44.3	2.1

		Child information							Mothers of children 0 - 5 years							Household information			
State	Locality	Stunting GLOBAL (6-59mo)	Wasting GLOBAL (WHZ) (6-59mo)	Wasting SEVERE (MUAC) (6-59mo)	Child Vitamin A supplementation (6-59mo)	Age appropriate full vaccination coverage (6-59mo)	Penta valent drop-out rate: Children >= 4 months has PENTA-1 but not PENTA-3 (4-59mo)	Good diarrhoea treatment (6-59mo)	Mean number illness danger signs known by mothers	Exclusive Breast feeding	Mother under nourished (MUAC <230mm)	At least one ANC visit	Four or more ANC visits	Iron-folate for 6 months during last pregnancy	Delivery attended by trained personnel	Adequately iodized salt (>= 15 ppm)	Improved source of drinking water	Improved sanitation facility	Five critical hand washing points (mean)
El Gezira	El Hasaheisa	65.8	3.8	2.9	100.0	94.5	0.0	5.0	1.1	100.0	0.0	100.0	72.3	0.0	100.0	20.8	100.0	14.7	1.3
	El Kamlin	24.6	9.5	1.6	100.0	96.0	0.0	4.2	1.4	100.0	2.7	94.5	78.9	21.5	100.0	47.3	87.6	7.6	1.3
	El Managil	45.2	9.6	3.8	93.4	92.9	1.1	5.8	1.2	77.5	2.4	27.5	10.7	2.1	99.0	5.2	90.9	8.6	2.0
	Janub El Gezira	22.7	10.1	1.0	94.3	89.6	3.5	13.3	2.2	50.0	6.3	95.4	47.2	12.2	96.3	40.7	83.4	24.0	2.5
	Madani Al Kobra	58.8	20.0	0.0	100.0	100.0	0.0	0.0	2.6	50.0	6.7	93.3	66.7	13.3	100.0	40.0	100.0	66.7	3.0
	Sharg El Gezira	29.6	11.0	1.4	98.6	92.3	0.8	14.9	2.5	39.3	0.5	97.5	82.3	30.9	100.0	23.8	85.2	58.6	3.0
	Umm El Gura	33.3	10.9	3.6	97.4	94.6	0.0	28.2	2.3	70.0	9.2	87.5	37.5	1.2	96.2	27.9	59.3	35.1	2.7
	All state except capital	36.4	9.6	2.6	95.8	92.7	1.5	10.5	1.5	66.2	3.0	51.5	31.4	8.6	98.3	17.2	86.9	16.2	2.1
	Madani Town	26.0	8.1	3.1	98.8	91.6	1.6	31.6	1.9	65.6	2.1	92.1	80.4	16.0	95.9	47.5	94.0	62.9	2.3
Khartoum	Bahari	17.0	11.0	0.4	93.3	92.6	1.0	11.0	0.8	43.1	9.3	97.6	83.8	49.9	100.0	25.3	95.9	89.8	1.6
	Gabel Awlia	17.8	6.4	0.3	70.4	88.8	3.7	30.4	1.5	36.7	5.4	91.6	82.8	42.7	92.3	14.6	91.3	52.7	2.1
	Karrarri	26.8	7.4	2.7	79.7	77.3	4.1	33.8	1.5	41.7	4.4	96.7	77.5	26.8	100.0	10.4	98.0	1.0	2.0
	Khartoum	11.6	7.7	1.2	75.0	96.1	0.0	26.5	1.3	70.3	3.2	93.4	89.4	53.5	91.4	22.7	88.4	82.0	2.6
	Shareg Elnile	23.1	8.0	1.5	76.4	94.4	1.1	16.5	2.4	72.2	4.1	97.4	89.9	52.1	95.3	24.7	77.4	41.8	2.5
	Umbada	20.7	5.1	1.9	87.3	86.1	4.1	11.3	1.2	71.4	10.3	95.1	84.8	19.6	93.6	21.3	96.0	25.1	2.2
	Umdrman	17.5	8.7	0.2	61.0	92.3	0.8	38.2	1.3	67.6	4.1	96.6	86.9	31.6	98.8	23.8	90.0	17.5	2.0
	All state	20.2	8.2	1.3	79.7	89.4	2.2	22.2	1.5	55.2	6.3	95.8	84.4	41.2	96.7	21.0	90.4	47.9	2.1
Northern	Alborgeg	50.0	0.0	0.0	100.0	75.0	0.0	0.0	1.0	100.0	0.0	100.0	83.3	16.7	100.0	33.3	100.0	50.0	1.7
	Aldabba	22.1	3.9	0.9	89.9	88.7	1.5	31.7	1.7	20.3	6.8	94.5	67.5	29.1	95.8	30.8	91.9	50.6	2.8
	Algoled	24.4	19.0	0.9	86.5	80.6	2.9	37.0	2.5	59.4	7.8	92.2	62.4	19.0	94.8	26.2	78.2	71.4	3.7
	Dalgo	38.4	12.6	0.0	90.1	92.6	0.4	7.5	1.2	57.1	4.4	100.0	68.3	23.2	100.0	8.5	92.3	37.2	1.8
	Dongola	27.1	11.8	0.3	90.4	87.7	2.8	50.5	1.7	47.1	8.8	97.1	77.8	35.5	98.8	18.8	99.0	50.0	2.6
	Halfa	31.7	3.0	0.0	74.9	88.7	2.2	35.1	1.0	76.0	15.6	97.1	87.2	61.2	93.8	12.7	94.0	53.4	1.7
	Merawi	27.8	8.7	3.2	86.7	83.9	0.6	22.5	3.0	73.6	1.8	97.5	47.1	6.2	98.8	13.7	76.0	51.0	4.0
	All state except capital	29.4	7.3	0.7	82.1	87.4	2.0	33.0	1.5	66.8	10.8	96.6	75.6	41.7	95.8	16.0	90.7	52.4	2.4
	Dongola Town	20.4	7.8	0.6	92.3	91.0	0.8	17.0	2.3	55.6	4.4	92.9	79.2	18.4	100.0	14.4	98.8	75.9	2.8
River Nile	Abu Hamad	25.9	11.9	1.6	83.4	83.5	1.8	17.4	2.7	67.2	2.4	86.9	58.5	34.3	93.0	32.9	79.0	46.0	3.3
	Albuhaira	33.0	26.1	1.5	82.3	89.5	0.4	7.1	1.7	90.0	9.5	86.1	17.3	5.6	97.8	27.1	3.7	11.8	3.2
	Atbara	28.9	21.4	0.0	91.4	78.4	3.3	49.7	2.4	21.1	5.4	95.6	52.0	23.6	97.8	47.4	58.2	31.0	3.6
	Barbar	29.5	9.3	2.8	98.1	87.0	0.4	17.9	3.1	90.6	0.0	92.4	66.7	31.3	96.0	65.4	83.9	50.8	3.7
	Ed Damer	28.5	15.1	2.7	91.2	69.1	1.4	48.1	2.2	68.1	4.6	87.8	43.1	3.7	86.6	44.1	73.3	35.1	3.2
	El Matammah	24.7	13.9	2.3	86.3	86.2	3.6	50.0	2.1	55.8	8.2	89.8	44.2	13.4	98.7	14.2	87.6	63.6	3.4
	Shendi	44.6	21.0	0.5	50.9	44.3	8.0	28.1	2.0	91.0	12.8	71.7	28.6	3.2	71.4	26.7	40.2	14.1	2.4
	All state except capital	28.4	15.2	2.0	86.3	78.3	2.0	29.9	2.4	68.3	4.8	87.9	48.0	18.5	91.3	36.2	68.8	39.9	3.3
	Atbara Town	22.2	10.2	0.0	89.0	82.9	2.0	41.0	2.4	77.4	4.8	94.4	74.6	18.9	96.6	44.4	92.5	66.8	3.9
	El Damar Town	22.9	10.5	0.0	85.1	77.3	1.5	29.2	2.6	67.5	3.3	93.8	64.3	9.2	99.2	41.4	90.7	68.3	3.9

		Child information							Mothers of children 0 - 5 years							Household information			
State	Locality	Stunting GLOBAL (6-59mo)	Wasting GLOBAL (WHZ) (6-59mo)	Wasting SEVERE (MUAC) (6-59mo)	Child Vitamin A supplementation (6-59mo)	Age appropriate full vaccination coverage (6-59mo)	Penta valent drop-out rate: Children >= 4 months has PENTA-1 but not PENTA-3 (4-59mo)	Good diarrhoea treatment (6-59mo)	Mean number illness danger signs known by mothers	Exclusive Breast feeding	Mother under nourished (MUAC <230mm)	At least one ANC visit	Four or more ANC visits	Iron-folate for 6 months during last pregnancy	Delivery attended by trained personnel	Adequately iodized salt (>= 15 ppm)	Improved source of drinking water	Improved sanitation facility	Five critical hand washing points (mean)
North Darfur	Al Fasher	44.0	16.8	4.9	71.7	80.5	3.8	NA	2.7	63.3	17.5	84.1	48.8	10.9	51.8	38.2	67.2	22.0	3.1
	Al Koma	29.6	27.3	9.6	92.1	86.7	8.7	NA	3.8	57.9	16.8	94.5	49.6	2.4	91.2	28.2	2.4	37.6	4.5
	Al Malha	31.4	33.0	3.7	62.2	46.6	12.2	NA	1.0	88.0	43.9	48.5	16.8	0.2	16.0	8.5	68.0	3.2	1.1
	Al Seref	47.6	21.9	7.3	85.6	54.1	6.9	NA	1.6	95.5	25.9	59.3	17.8	1.4	14.1	52.4	27.4	12.9	2.5
	Al Tina	43.3	14.2	0.0	44.4	89.3	0.0	NA	0.9	28.6	26.1	59.7	22.1	9.0	17.3	66.7	31.9	2.8	0.9
	Al Twasha	38.5	30.4	4.1	92.1	83.4	7.4	NA	1.9	90.0	25.3	83.1	23.8	3.8	70.9	16.0	94.0	12.7	2.4
	Allait	41.2	40.5	9.7	89.3	88.7	3.5	NA	1.7	72.2	19.5	82.5	21.1	0.8	87.4	15.8	100.0	23.6	2.4
	Ambaro	33.8	15.7	1.6	81.7	65.4	11.8	NA	1.9	69.2	18.7	64.4	11.6	1.9	9.8	4.9	24.9	0.3	3.4
	Dar Alsalam	34.1	16.7	8.3	91.5	82.7	6.1	NA	2.6	100.0	35.3	95.5	62.5	1.8	44.2	47.3	94.4	5.8	4.2
	Kabkabia	47.9	15.1	2.1	92.5	71.3	5.9	NA	2.2	68.6	17.1	81.4	26.6	1.0	11.8	45.1	28.3	3.1	2.8
	Karnoi	28.5	31.3	0.0	53.9	69.0	4.7	NA	2.3	36.4	24.5	87.0	32.7	1.2	48.2	27.1	51.7	0.0	2.1
	Kelemendo	46.7	21.0	8.9	85.5	84.8	4.0	NA	2.8	79.2	32.4	84.0	31.6	6.6	75.0	52.3	96.5	15.2	4.3
	Kutum	23.4	37.6	2.7	93.5	93.0	3.2	NA	1.5	30.8	23.6	98.4	55.3	4.6	48.0	58.5	8.7	11.4	2.8
	Mallit	29.5	33.5	3.9	77.8	60.8	3.0	NA	1.2	95.5	34.3	55.8	24.0	0.6	21.5	15.8	83.5	0.8	1.0
	Saraf Omra	53.9	12.4	0.0	94.4	59.8	7.6	NA	1.9	100.0	20.3	36.8	3.1	1.8	3.1	43.8	0.0	0.0	2.5
	Tawila	48.2	9.5	3.3	53.7	83.0	0.0	NA	2.2	51.7	9.9	84.3	56.1	7.6	28.1	38.3	46.2	3.6	2.8
	Umkadada	30.7	33.8	3.5	86.4	86.3	1.7	NA	2.0	87.9	19.5	94.8	52.7	3.4	92.4	9.8	67.6	10.7	3.0
	All state except capital	35.2	28.3	5.8	80.4	77.0	5.9	NA	2.1	75.9	26.2	78.8	36.3	3.7	54.7	28.3	60.4	12.9	2.8
	El Fashir Town	36.0	16.5	5.8	83.6	82.5	5.3	NA	2.9	59.3	12.8	92.5	56.5	14.2	86.7	28.6	59.2	48.1	3.9
	Zamzam Camp*	42.1	13.7	4.9	80.5	75.0	5.4	NA	3.0	65.8	18.5	85.8	51.6	8.6	52.6	33.3	67.7	31.3	3.7
	El Sireif Camp*	48.2	22.5	7.4	85.2	55.2	7.1	NA	1.6	93.8	26.2	60.1	18.0	1.4	14.0	51.7	26.5	12.2	2.5
South Darfur	Al Rudoom (part)	32.5	9.7	3.7	90.6	42.1	21.4	9.7	1.1	81.0	8.5	58.1	19.7	1.3	32.8	1.5	23.2	1.3	1.5
	Alwehda	16.9	19.8	2.1	92.7	84.3	4.9	13.6	1.5	100.0	9.4	79.7	44.5	0.0	22.7	62.5	93.8	1.8	2.1
	Belil	37.1	15.9	0.0	96.0	84.2	0.0	28.3	2.6	66.7	17.9	88.5	43.8	3.1	58.3	82.3	13.5	12.5	3.5
	Buram	26.7	14.7	1.1	70.6	24.9	13.9	7.9	1.6	46.2	25.3	48.6	14.9	0.8	7.3	1.9	0.0	1.0	1.4
	Dimso	46.0	23.1	20.8	82.6	80.4	0.0	37.0	1.2	75.0	13.5	86.5	47.9	0.0	37.5	3.0	37.5	19.8	1.7
	El Salam	47.2	29.1	4.4	74.3	70.1	0.0	3.9	2.5	94.4	11.8	78.4	38.9	9.8	26.1	95.5	27.8	2.3	2.6
	Gerieda	0.0	17.7	0.0	61.0	91.3	0.0	14.3	1.9	100.0	0.0	100.0	75.0	8.3	75.0	46.2	33.3	6.1	2.3
	Id Elfirsan	4.8	12.5	1.4	44.3	46.8	21.6	0.0	1.9	84.9	7.8	77.3	39.1	6.3	65.6	37.0	35.4	0.0	1.8
	Kass	38.1	14.5	3.8	78.6	48.9	6.7	34.2	2.2	82.9	8.6	80.9	40.6	5.9	32.9	49.2	47.3	3.1	2.6
	Katila	26.2	22.3	4.6	94.5	84.2	0.0	90.4	1.1	86.7	15.6	67.2	27.7	0.0	31.7	0.0	19.2	0.0	1.6
	Kubum	5.1	10.6	0.0	50.6	53.8	17.3	0.0	1.7	84.0	3.1	88.1	63.8	2.5	76.3	17.4	11.3	4.4	2.4
	Mershing	36.7	16.0	5.9	93.3	77.4	11.3	16.0	1.8	77.5	12.5	100.0	75.0	9.4	15.6	56.3	100.0	0.0	2.9
	Netiga	20.1	12.6	0.0	88.7	37.5	28.7	31.6	2.4	81.8	12.0	44.7	11.2	0.0	4.4	37.3	62.1	5.1	2.5
	Rahad Elberdi (part)	2.3	22.6	0.0	58.4	48.9	12.7	0.0	1.7	37.5	12.9	68.4	19.4	2.6	16.7	57.1	84.6	0.0	1.7
	Toluss	46.7	20.2	23.5	67.4	73.2	0.0	11.1	1.3	0.0	35.5	59.4	22.2	0.0	26.6	1.6	7.8	3.1	1.1
	Um Dafog (part)	6.7	0.0	0.0	48.3	50.0	11.8	0.0	1.3	66.7	0.0	58.3	16.7	0.0	20.0	40.0	10.0	0.0	1.5
	All state except capital	24.5	18.3	3.6	82.7	69.9	7.9	33.7	1.6	79.9	13.0	77.9	41.9	3.2	33.5	31.4	47.4	2.2	2.1
	Nyala Town	29.3	12.9	2.9	93.9	66.2	12.5	18.9	1.5	48.8	6.8	96.1	72.8	15.4	80.3	31.1	15.1	11.6	1.4
	Kalma Camp*	47.2	26.4	6.2	76.5	83.2	3.0	15.9	2.1	53.3	15.8	93.6	73.9	4.6	72.2	34.7	74.5	22.0	2.5

		Child information							Mothers of children 0 - 5 years							Household information			
State	Locality	Stunting GLOBAL (6-59mo)	Wasting GLOBAL (WHZ) (6-59mo)	Wasting SEVERE (MUAC) (6-59mo)	Child Vitamin A supplementation (6-59mo)	Age appropriate full vaccination coverage (6-59mo)	Penta valent drop-out rate: Children >= 4 months has PENTA-1 but not PENTA-3 (4-59mo)	Good diarrhoea treatment (6-59mo)	Mean number illness danger signs known by mothers	Exclusive Breast feeding	Mother under nourished (MUAC <230mm)	At least one ANC visit	Four or more ANC visits	Iron-folate for 6 months during last pregnancy	Delivery attended by trained personnel	Adequately iodized salt (>= 15 ppm)	Improved source of drinking water	Improved sanitation facility	Five critical hand washing points (mean)
East Darfur	Abukarinka	39.0	14.3	2.8	43.3	86.8	0.0	NA	1.9	88.9	9.2	64.6	45.8	35.9	54.7	51.0	4.2	0.0	2.1
	Adilla (part)	37.1	3.6	1.6	85.1	72.5	4.4	NA	1.0	94.6	10.2	97.7	75.0	0.0	100.0	1.6	0.0	28.1	0.8
	Al Deain	18.9	11.1	3.2	94.2	36.5	18.0	NA	2.1	100.0	21.7	73.3	29.7	0.0	35.0	35.9	0.9	0.0	2.3
	Alfirdos	50.4	21.9	4.7	54.1	22.4	0.0	NA	3.6	76.9	33.0	67.9	34.5	0.0	59.8	0.0	2.6	1.0	4.0
	Asslaya	41.1	27.0	5.7	9.5	97.7	0.0	NA	1.9	53.9	11.4	13.8	12.5	0.0	12.6	61.1	69.4	3.5	2.0
	Aubgabar	31.5	14.6	0.0	74.2	58.6	14.5	NA	1.0	60.0	14.6	70.8	39.6	0.0	34.4	0.0	20.8	0.0	0.7
	Aubmatarg	36.6	10.3	0.0	78.4	83.8	5.4	NA	1.3	46.2	14.8	70.5	31.2	0.0	57.4	13.1	4.9	0.0	1.1
	Sharia (part)	50.3	25.7	6.6	91.9	79.4	6.0	NA	1.9	94.4	11.5	75.0	58.3	0.0	69.8	4.2	52.1	2.1	2.6
	Yaseen (part)	42.6	22.6	5.7	5.8	89.6	0.0	NA	1.8	0.0	9.4	56.3	48.4	45.3	42.2	62.5	25.0	10.9	2.0
	All state except capital	39.9	14.9	3.2	48.2	78.7	2.8	NA	1.7	81.2	12.2	68.6	49.3	17.8	60.2	31.9	12.7	7.9	1.8
	Al Deain Town	32.6	13.3	3.9	78.1	81.9	4.1	NA	2.1	93.3	8.7	87.9	72.9	20.5	89.5	27.3	33.8	31.4	2.7
West Darfur	Algenea	19.5	9.2	0.0	87.5	80.9	1.1	NA	2.8	90.9	4.7	80.4	62.8	28.1	62.8	39.2	41.2	56.9	2.9
	Baida	36.6	9.1	1.2	98.5	80.8	1.8	NA	2.4	100.0	11.5	87.1	57.7	3.6	13.6	72.4	11.1	1.6	2.5
	Forbranga	37.7	14.2	2.3	85.8	58.3	15.1	NA	1.9	63.8	3.9	55.4	20.1	2.3	13.7	3.0	65.7	3.0	2.5
	Gabal Moon	29.9	10.5	0.9	90.9	73.5	9.6	NA	1.9	100.0	6.9	85.0	53.3	6.7	45.3	49.0	56.8	22.2	1.6
	Habilla	50.3	14.6	3.9	93.1	36.3	12.2	NA	1.7	79.5	4.2	72.9	32.4	1.0	7.0	13.7	60.1	1.2	2.4
	Kerenik	32.6	7.6	0.6	84.1	72.2	12.7	NA	2.5	46.6	4.1	86.3	39.2	2.8	47.5	23.9	50.1	15.1	3.1
	Kulbus	42.2	12.6	1.3	97.5	76.6	7.5	NA	2.6	95.4	9.3	19.5	7.0	0.0	3.1	58.6	21.4	0.9	3.1
	Serba	40.8	6.7	2.6	84.8	65.5	9.6	NA	1.8	85.7	3.3	86.5	66.2	16.7	70.3	38.0	19.8	5.6	1.3
	All state except capital	34.8	8.4	1.4	86.4	69.6	9.7	NA	2.1	80.7	4.8	79.5	42.8	5.4	39.0	24.1	34.5	5.1	2.4
	Algenea Town	31.7	7.6	1.2	96.7	80.0	4.4	NA	2.0	58.3	6.9	91.9	71.6	18.6	83.8	33.2	53.5	29.1	2.7
	Morne Camp*	49.1	11.9	2.1	97.0	57.2	18.8	NA	2.8	34.4	7.2	96.8	61.4	11.2	79.3	70.7	84.7	51.1	3.3
Central Darfur	Azoum	50.9	10.6	2.5	91.0	80.8	3.0	NA	2.1	100.0	18.3	72.0	45.2	61.6	22.6	23.5	63.4	3.2	2.9
	Bendsi (part)	39.4	21.8	2.9	85.0	74.2	13.6	NA	2.1	100.0	16.1	53.8	8.6	77.4	33.3	30.1	57.0	12.2	2.6
	Mukjar (part)	45.6	11.3	2.0	93.2	83.1	2.5	10.1	1.7	89.5	15.1	96.8	70.9	22.5	73.3	55.6	37.4	48.5	2.3
	Nertati	49.6	1.9	1.1	84.7	63.5	0.0	NA	1.7	0.0	8.7	27.2	6.5	82.4	6.7	62.9	16.3	29.4	1.6
	Rokiro	53.5	10.1	0.0	92.3	77.6	1.9	NA	1.5	10.0	11.9	88.1	64.4	52.5	57.6	40.7	72.9	67.8	1.9
	Um Dukhun (part)	39.5	11.1	3.3	60.7	74.1	0.7	2.3	1.2	100.0	17.1	73.2	35.4	50.0	37.5	47.5	77.0	9.1	2.0
	Wadi Salih (part)	42.8	10.5	3.5	70.6	60.7	2.0	0.0	1.3	71.9	11.3	81.7	43.4	58.3	37.8	43.3	46.2	7.8	1.8
	Zalingei	34.0	14.6	0.8	73.5	67.8	7.4	20.0	1.7	85.6	9.8	79.5	46.2	42.5	60.3	48.3	46.1	22.2	2.3
	All state except capital	44.9	12.7	2.6	83.7	73.2	5.3	9.6	1.9	94.7	15.5	70.5	38.3	61.6	33.5	32.0	55.9	9.6	2.6
	Zalingi Town	21.8	13.4	1.5	99.4	96.8	0.0	NA	4.6	100.0	2.8	94.6	85.2	20.6	45.1	87.2	68.0	58.0	4.9
	Mukjar Town*	45.1	11.1	1.8	93.3	83.6	2.6	9.6	1.7	89.3	15.2	96.9	71.4	23.2	73.2	54.3	36.9	48.4	2.3
	Um Dokhon Town*	41.1	11.1	3.4	60.9	73.1	0.7	2.0	1.2	100.0	18.0	73.8	35.4	49.3	38.6	47.7	76.9	9.0	2.0

2. Introduction

Figure 1: Location of Sudan [3]

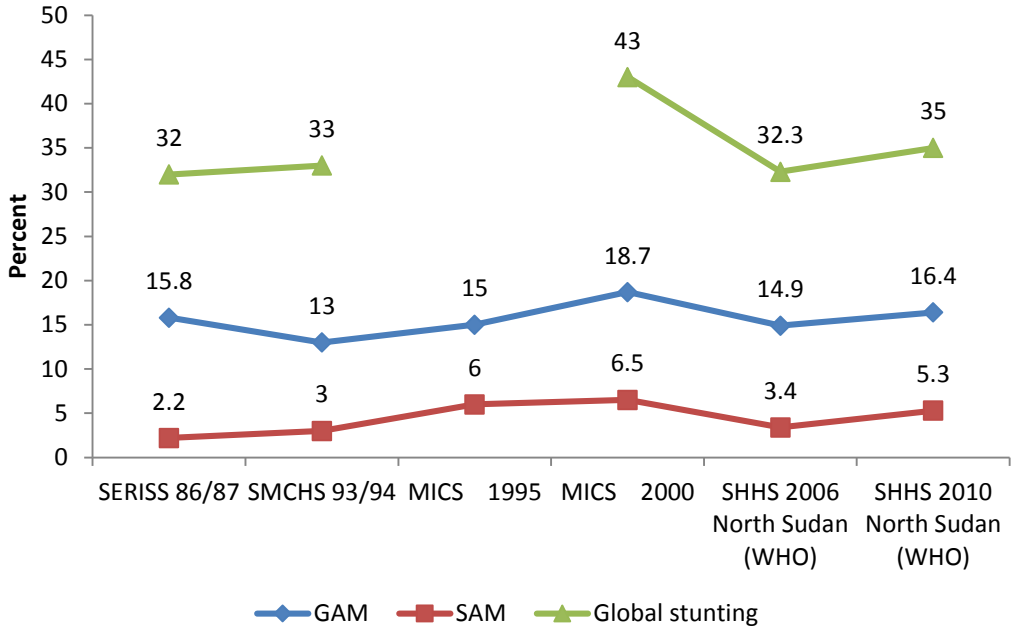
Sudan's borders include over 1.8 million square kilometers of land [3], including desert in the north, semi-arid areas, tropical and urban areas and an estimated population of approximately 31 million people [4]. Of this number, 32.7% live in urban areas, 67% in rural areas, and 8% are nomads. Almost 6.9% of the population is internally displaced. Sudan shares its borders with Southern Sudan, Central African Republic, Chad, Libya, Egypt, Eritrea and Ethiopia. The country is composed of 18 states and 184 localities (PHC mapping 2011). It has access to the Red Sea with a long coastline and the busy commercial port of Port Sudan.

Sudan is a country of farmers, agro-pastoralists and pastoralists, the majority of whom rely on the rains for both cultivation and pasture / grazing. As part of the Sahel belt, Sudan suffers from recurrent drought-years and poor harvests, and since the separation the country has experienced economic instability with a rising inflation and unstable foreign exchange rate. This has resulted in rising food prices across the country. The most recent information estimates that currently 46.5% of the population lives below the national poverty line (less than 1.5USD per person per day) [5]. There is on-going conflict along the new Border States and in the Darfur region that impacts livelihoods and coping strategies.

Despite some improvements in recent years, Sudan remains among the top 10 countries in the Eastern Mediterranean Region with highest child and maternal mortality rates. Despite the efforts of the authorities, Sudan is falling behind achievement of the Millennium Development Goals (MDGs) which the international community fixed for 2015.

Records show that for some years Sudan has suffered from a silent killer and major destroyer of its development and human resources in the form of a static acute and chronic malnutrition rate which affects children under five years of age; this is the most vulnerable age group within the population and at the same time the most promising future for the nation if given the right care during the vulnerable and formative early years of life. The first reports on the status of malnutrition in the country were in 1987 when 32% of children were reported to be stunted. This has not improved over the years to the most current estimate of 35% of children stunted [6]. Furthermore, the most recent national level survey, the Sudan Household Health Survey (SHHS-2) of 2010 estimated a global acute malnutrition (GAM) rate of 16.4% and a severe acute malnutrition (SAM) rate of 5.3%. It is estimated that more than 550,000 children aged less than 5 years suffer from severe acute malnutrition in the course of a year, while close to 2 million children are stunted and will suffer life-long consequences of under nutrition. The SHHS-2 results showed that Red Sea state recorded the worst nutrition-related indicators with 14.7% of children suffering from severe acute malnutrition and over half of all children stunted (54.1%).

Figure 2: Sudan trends in acute and chronic malnutrition



Looking at other child survival indicators, according to the SHHS-2 in terms of immunization half (49.4%) of Sudan's children age 12-23 months are fully immunized with Baccille Calmette Guérin (BCG) vaccine against tuberculosis, three doses of polio vaccine, measles, three doses of Pentavalent against DPT (Diptheria, Pertussis and Tetanus), Hepatitis B, and Haemophilus influenzae type B (HiB), leaving the rest of the children in this age group unprotected from life-threatening diseases. While success has been seen in polio, with no reported cases since 2009, occasional measles outbreaks continue to add to child deaths and immunization coverage for measles need to be increased further. Today, more children are surviving the first years of life than in 2006 (when the SHHS-1 was carried out). Between 2006 and 2010, under-five mortality has decreased from 102 to 78 deaths per 1,000 live births. Infant mortality has fallen from 71 to 57 deaths per 1,000 live births, and neonatal mortality from 36 to 33. However, these rates remain high, and the efforts toward the achievement of MDGs should continue.

Poor water, sanitation and hygiene (MDG8) collectively contribute to roughly 88 per cent of global deaths from diarrheal diseases among children under five.[7] In Sudan, the SHHS-2 showed that 60.5% of households use an improved drinking water source and just 27.1% of households have improved sanitation, and wealth is a major determinant of access to improved water and sanitation. In addition, only 11.8% of mothers use oral rehydration therapy to treat diarrhoea.

3. Rational and objective of the survey

Despite the high prevalence of malnutrition in Sudan, until 2013 the only existing national level data was the Sudan Household Health Survey (SHHS), which has been carried out twice across the country, in 2006 and in 2010. Malnutrition in Sudan can change rapidly between years and within years, influenced by widely varying underlying factors ranging from rainfall and harvest to conflict and displacement as well as season. For planning and advocacy purposes, it is beneficial to measure malnutrition more frequently in order to build up a fuller profile of the nutrition situation over time. Experience from other countries has shown that having reliable and current nutrition data available has helped to increase commitment to reducing malnutrition through increased awareness of the situation. Reliable and current data also helps to ensure greater possibilities for fundraising.

Following the two pilot S3M surveys conducted in Gedaref and Sennar states in 2012, it was observed that state level estimates for malnutrition mask great variations within the state. It was agreed that there was a need to obtain more detailed information at a sub-state and even a sub-locality level to enable efficient planning and targeting of interventions. Nineteen different livelihood zones have been identified across the 18 states of Sudan, and most states contain 3 or 4 distinct livelihood zones, which is likely to influence the nutrition situation. This highlighted the need for a methodology capable of estimating prevalence of malnutrition over small areas that are geographically identifiable to allow mapping of results.

The S3M methodology is designed to identify variation across space (the area surveyed) and the maps obtained for this survey clearly show which areas, at the sub-locality level, are in most need.

This survey was carried out to collect detailed and current data on nutrition status and variables that may affect nutrition status to ensure a strong evidence-base for expansion of multi-sectorial services to combat malnutrition. The Simple Spatial Surveying Methodology (S3M) was chosen because of its ability to give detailed information for small geographical areas – results are available at sub-locality level for this survey – and its ability to map results making targeting of interventions possible.

The objective of the Sudan S3M was to obtain data for basic health, WASH and nutrition indicators for small areas (at sub-locality level) to allow mapping of results to show geographical areas of highest need and 'hot-spots'. This will enable better targeting of existing interventions and will inform program expansion. It will also allow detailed monitoring of the nutrition situation and of program effectiveness over time. The survey inclusion of health and wash indicators was aimed at facilitating better integrated programing that is necessary for the reduction of child mortality and reduction of stunting. Over time, these indicators are key in measuring impact of child survival programs, such as tracking increases in improved sanitation coverage over time, or reduction in prevalence of diarrhoea.

4. Indicators measured

Table 2: Indicators measured with definitions

	Indicator	Definition
1	Wasting GLOBAL (MUAC)	Proportion of children 6-59 months with a MUAC <125mm and/or oedema
2	Wasting MODERATE (MUAC)	Proportion of children 6-59 months with a MUAC <125mm - =>115mm
3	Wasting SEVERE (MUAC)	Percentage of children 6-59 months with a MUAC <115mm and/or oedema
4	Wasting GLOBAL (WHZ)	Percentage of children 6-59 months <-2 z-scores weight for height and/or oedema
5	Wasting MODERATE (WHZ)	Percentage of children 6-59 months <-2 z-scores weight for height and =>-3 z-scores weight for height
6	Wasting SEVERE (WHZ)	Percentage of children 6-59 months <-3 z-scores weight for height and/or oedema
7	Underweight GLOBAL	Percentage of children 6-59 months <-2 z-scores weight for age
8	Underweight MODERATE	Percentage of children 6-59 months <-2 z-scores weight for age and =>-3 z-scores weight for age
9	Underweight SEVERE	Percentage of children 6-59 months <-3 z-scores weight for age
10	Stunting / stuntedness GLOBAL	Percentage of children 6-59 months <-2 z-scores height for age
11	Stunting / stuntedness MODERATE	Percentage of children 6-59 months <-2 z-scores height for age and =>-3 z-scores height for age
12	Stunting / stuntedness SEVERE	Percentage of children 6-59 months <-3 z-scores height for age
13	Child sleeps under an ITN	Percentage of children 0-59 months who slept under an ITN on the night before the survey
14	Vitamin A supplement received	Percentage of children 6-59 months who received Vitamin A supplementation in the 6 months prior to the survey
15	Child of any age has BCG by card or recall	Percentage of children 0-59 months vaccinated for BCG by card, recall or scar
16	Pentavalent drop-out rate	Percentage of children >= 4 months vaccinated for PENTA-1 but not PENTA-3
17	Age appropriate vaccination	Percentage of children 6-59 months who had received full appropriate vaccinations for their age[5] *(See footnote)*
18	Period prevalence of diarrhoea	Percentage of children 6-59 months who suffered from diarrhoea in the 2 weeks prior to the survey
19	Period prevalence of ARI	Percentage of children 6-59 months who suffered from cough and difficult breathing in the 2 weeks prior to the survey

[5]The vaccination schedule in Sudan was used to assess age-appropriate vaccination, as per table below. Rotavirus is included in the National vaccination schedule, however was not included in measurement of fully vaccinated as the vaccine has only been recently introduced (in 2011) and therefore could have biased results for fully vaccinated.

Age	Antigen
From birth	BCG
2 months	Pentavalent 1, Polio 1
3 months	Pentavalent 2, Polio 2
4 months	Pentavalent 3, Polio 3
9 months	Measles
9 months and above	All of the above to be fully vaccinated

	Indicator	Definition
20	Period prevalence of fever	Percentage of children 6-59 months who suffered from fever in the 2 weeks prior to the survey
21	Good diarrhoea treatment	Percentage of children who suffered from diarrhoea in previous 2 weeks who were treated with ORS +/- ORS & home fluids +/- home fluids
22	Heard about Shuffaa Al Soghar	Percentage of mothers who had heard the Shuffaa Al Soghar slogan *(Slogan is: aham mafee al dar…hayat alshuffa'a alsoghar)*
23	Seen Shuffaa Al Soghar picture	Percentage of mothers who recognised the Shuffaa Al Soghar picture when shown
24	Refuses food and drink	Percentage of mothers who reported refusing food and drink as a sign or symptom in their child that would lead them to take the child to a health centre
25	Convulsions	Percentage of mothers who reported convulsions as a sign or symptom in their child that would lead them to take the child to a health centre
26	Severe vomiting	Percentage of mothers who reported severe vomiting as a sign or symptom in their child that would lead them to take the child to a health centre
27	Blood in stools	Percentage of mothers who reported blood in stools as a sign or symptom in their child that would lead them to take the child to a health centre
28	Fever	Percentage of mothers who reported fever as a sign or symptom in their child that would lead them to take the child to a health centre
29	Drowsiness / loss of consciousness	Percentage of mothers who reported drowsiness or loss of consciousness as a sign or symptom in their child that would lead them to take the child to a health centre
30	Difficult / fast breathing	Percentage of mothers who reported difficult or fast breathing as a sign or symptom in their child that would lead them to take the child to a health centre
31	Number of signs mentioned (mean)	Average number of illness danger signs listed by mothers
32	No signs mentioned	Percentage of mothers who could not list any of the 7 IMCI illness danger signs
33	Recommended Infant and Young Child Feeding (IYCF)	Percentage of children aged 0–24 months receiving the recommended infant and young child feeding practices *with 'good infant and young child feeding' defined as exclusive breastfeeding in children aged under six months and as age appropriate feeding practices (defined in terms of continued breastfeeding and meal frequency) in older children. Age-appropriate feeding practice is measured using an infant and child feeding index (ICFI - see below)*
34	Exclusive Breastfeeding (EBF)	Percentage of children 0-6 months taking breast milk only
35	Infant and Young Child Feeding Index (mean)	Average child feeding score (for IYCF recommended practices) among children 6-24 months[6] *Based on an age-appropriate score for breastfeeding practices and meal frequency (see footnote). Maximum score for this survey = 4*

[6] Score for Infant and Young Child Feeding Index (ICFI), maximum score = 4. See Appendix 4 for details.

	Age group (months)					
	6-8		9-11		12-24	
	Value	Score	Value	Score	Value	Score
Breast fed (24 hours)	Yes	+2	Yes	+2	Yes	+1
Meal frequency (24 hours)	1 ≥ 2	+1 +2	1 or 2 ≥ 3	+1 +2	2 3 ≥4	+1 +2 +3

	Indicator	Definition
36	Continuing Breastfeeding (CBF)	Percentage of children 6-24 months currently breastfeeding
37	Meal frequency diagnostic	Percentage of children receiving meals the appropriate number of times for their age during the 24 hours before the survey* *(see footnote)*
38	Mother undernourished (MUAC < 230mm)	Percentage of mothers with a MUAC less than 230mm
39	Mothers dietary diversity score	The average number of food groups eaten by mothers during the 24 hours before the survey
40	Plant sources of vitamin A consumed	Percentage of mothers reporting consuming plant sources of Vitamin A during the 24 hours before the survey
41	Animal sources of vitamin A consumed	Percentage of mothers reporting consuming animal sources of Vitamin A during the 24 hours before the survey
42	Iron-rich foods consumed	Percentage of mothers reporting consuming iron-rich foods during the 24 hours before the survey *(Iron-rich foods defined as meat / chicken / offal / legumes / pulses)*
43	At least one ANC visit	Percentage of mothers reporting at least one ante-natal care visit during their last pregnancy
44	Four or more ANC visits	Percentage of mothers reporting four or more ante-natal care visits during their last pregnancy
45	ANC attended by trained personnel	Percentage of mothers reporting their ANC visit was attended by a trained health care professional *(Trained defined as: Doctor / Nurse / trained Midwife / Medical Assistant or Health Visitor)*
46	Iron-folate for 6 months	Percentage of mothers reporting receiving iron and folic acid tablets (tablets shown) for six months or more
47	Iron-folate for at least one month	Percentage of mothers reporting receiving iron and folic acid tablets (tablets shown) for one month or more
48	Delivery attended by trained personnel	Percentage of mothers reporting that their last birth was attended by a trained health care professional *(Trained defined as: Doctor / Nurse / trained Midwife / Medical Assistant or Health Visitor)*
49	Postpartum vitamin A received	Percentage of mothers reporting taking Vitamin A supplementation (capsule shown) during the 6 weeks after their last birth
50	Night blindness during last pregnancy	Percentage of mothers reporting difficulty seeing in the evening or night or suffering from night blindness
51	Adequately iodised salt	Percentage of households with a sample of salt tested as containing equal to or more than 15 parts per million of iodate
52	Household hunger score: Little to no hunger	Households scoring 0 - 1 on the hunger score[7]
53	Household hunger score: Moderate hunger	Households scoring 2 - 3 on the hunger score *(see footnote 9)*

[7] Details for Household Hunger Score:[8]

Household Hunger Score: Questions	Number of times reported for each question and score. Maximum score = 6.
1. How many times in the last 1 month is there no food in your house because of no access to food	0 time – score = 0
2. How many times in the last 1 month did you or anyone in this household sleep hungry because of no adequate food in your house?	<10 times – score = 1
3. How many times in the last 1 month did you spend a day and a night without eating or having any food at all, you or anyone in your household, because of no adequate food in your house	10 times or more – score = 2

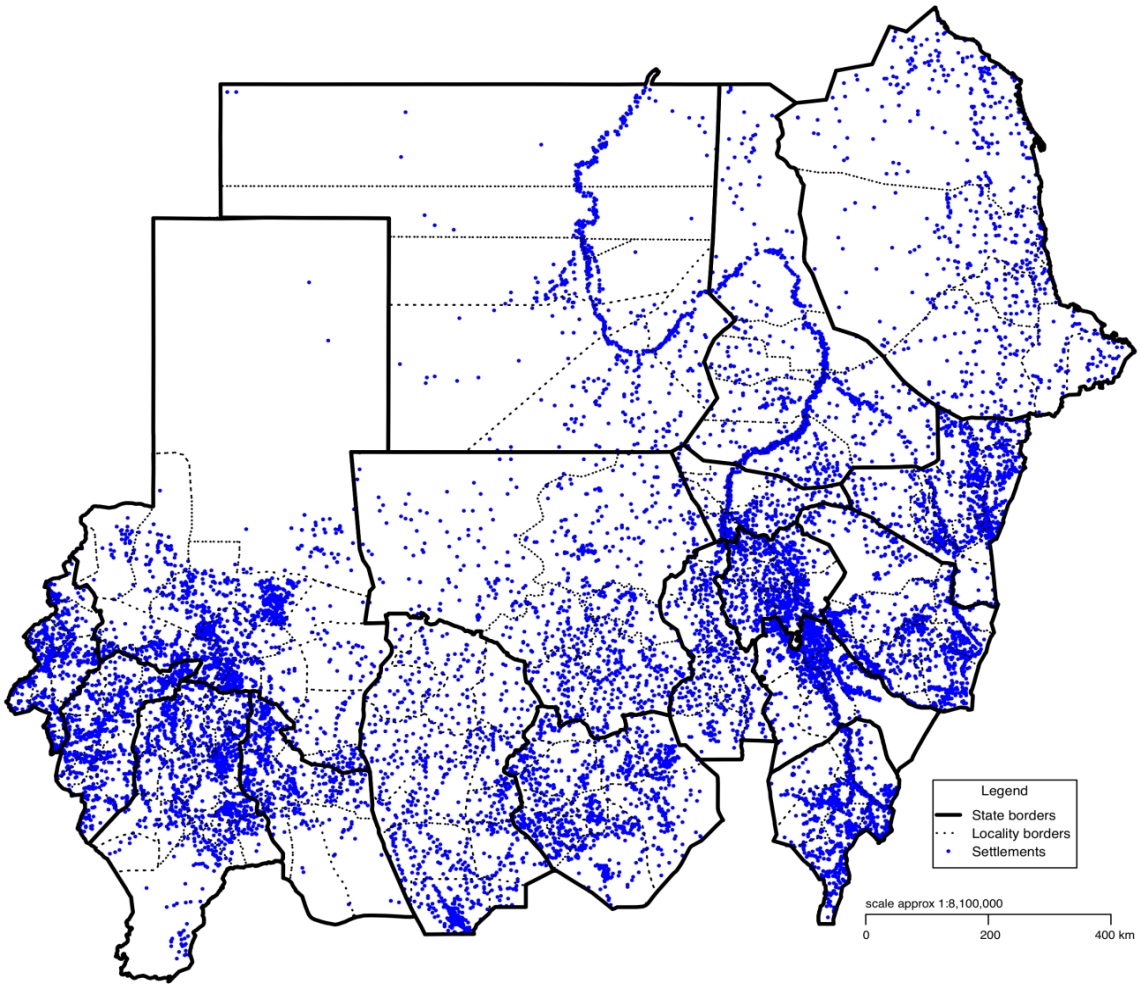
	Indicator	Definition
54	Household hunger score: Severe hunger	Households scoring 4 - 6 on the hunger score *(see footnote 9)*
55	Household hunger score (mean)	Average household hunger score *(maximum score = 6)* *(see footnote 9)*
56	Improved source of drinking water	Percentage of households reporting an improved source of drinking water *(Improved source defined as: Piped water to public tap, piped water into dwelling, water station, water tank, hand-pump, protected well, protected spring, bottled water)*
57	Improved sanitation facility	Percentage of households reporting an improved sanitation facility as most usually used *(Improved facility defined as: Toilet with drain; Toilet with septic tank; Toilet with drain to a hole; Toilet with drain to unknown place; Traditional latrine with cement cover)*
58	Sanitary disposal of children faeces	Percentage of mothers reporting sanitary disposal of child faeces *(Sanitary disposal defined as: Bathroom / latrine or buried)*
59	Five critical hand washing points (mean)	Average number of critical time points for hand washing reported by mothers *(Five critical time points are: after defecation; after cleaning child defecation; before eating; before feeding child; before cooking)*

5. Sample Design

In order to assess the various indicators shown in Table 2, we used a two-stage wide-area sampling design for the whole of Sudan, CSAS sampling design for 28 towns and camps and two-stage urban sampling design in two big cities.

For Sudan areas except capitals, a two-stage sampling approach was used with the spatially stratified design of ***S3M*** (Simple Spatial Surveying method) as the wide-area first stage sample and QTR + EPI3/EPI5 as the within-village second stage sample. For all state capital and major towns and 7 camps in Darfur, the first stage sample was a spatially stratified segmentation design to select blocks within each town from which to obtain our sample and a house-to-house complete enumeration for the within-block second stage sample.

Figure 3: Map of Sudan showing all settlements (blue dots are towns and villages)



4.1. First stage sampling for all Sudan except capital cities:

The spatially stratified design of ***S3M***was used as a wide-area first stage sampling method to select the villages in Sudan from which to get our sample. To do this, we used the following steps:

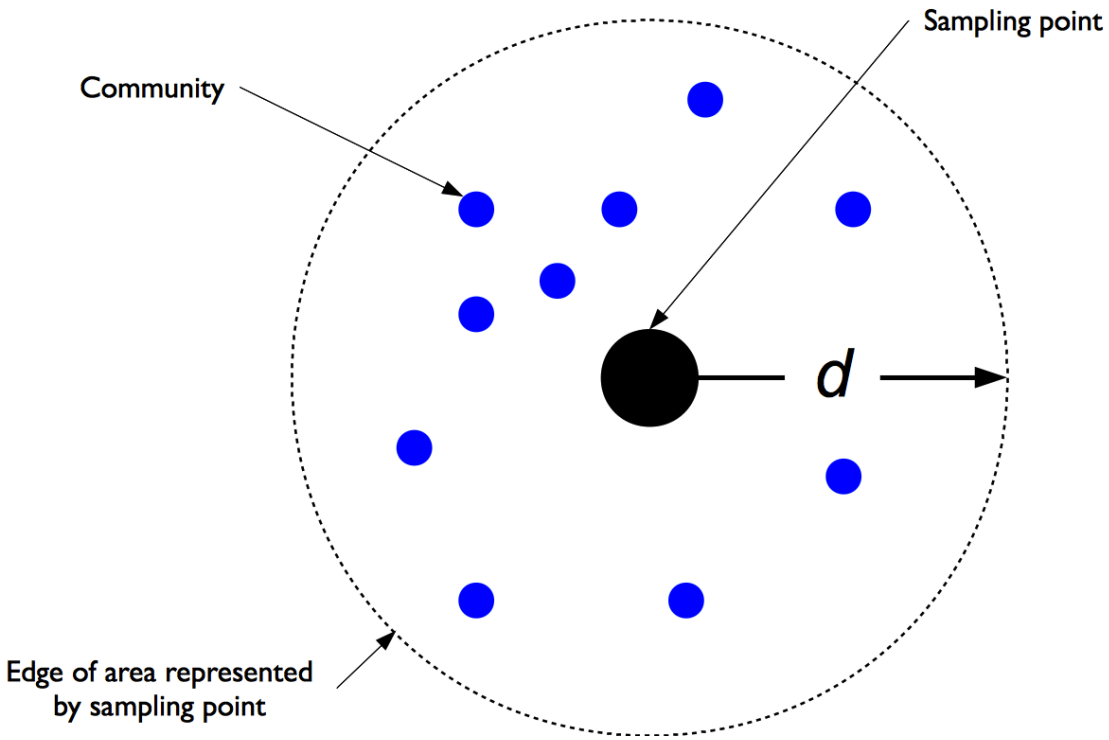
4.1.1. Step 1: Find a map

We produced a map of each state showing the locations of **all** settlements (see Figure 3) from GPS coordinates data from UNDP and UNOCHA which was then updated by consulting state Ministries of Health (SMOH) and finalised. This was then printed on A0 paper on which sampling was performed.

4.1.2. Step 2: Decide the area to be represented by each sampling point

We decided on the size of the area to be represented by each sampling point in which the various indicators are to be assessed. We approached this decision by thinking about the area as a function of the intended maximum distance (d) of any village from the nearest sampling point (see Figure 4).

Figure 4: Conceptual representation of the area represented by each sampling point



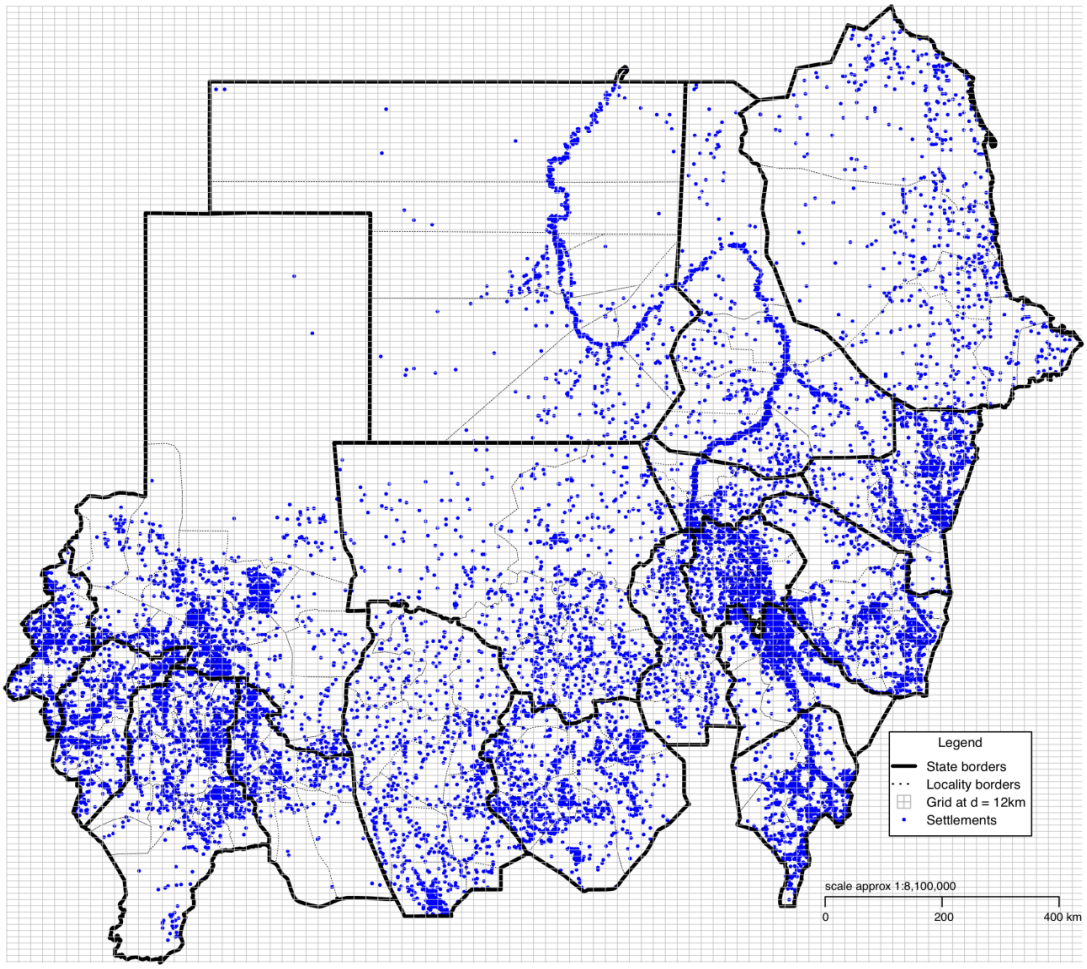
Given the various indicators to be assessed, we wanted to select a small value for *d* as doing so would create much smaller intended mapping areas (i.e. triangular tiles) for which results would be available. However, we also know that a small *d* can make the survey impractical producing a large number of sampling points that will take a long time to survey.

To guide us in determining the best value for *d*, we drew from previous experiences of implementing ***S3M*** and other similar sampling frameworks. In the two Sudan pilot *S3M*s carried

out in June and December 2012, we successfully used a d = 12 km, so for the national S3M we used the same value. This value for d was picked based on experience from the post-Nargis Joint Assessment which used a d = 6 nautical miles (11.1 km) which gave an intended mapping area of about 160 sq. km. In a more recent national coverage survey in Niger (2011), a d = 15 km was used which produced an intended mapping area of 299 sq. km. Based on these, an intended mapping area closer to 160 sq. km was deemed preferable compared to that used in Niger which was too big.

Hence, for the ***S3M*** in Sudan, we selected d = 12 km as it was small enough to assure area representativeness while maintaining a good number of sampling points that could all be surveyed in a reasonable amount of time. A d = 12 km creates an intended mapping area of 187 sq. km in size. This is equivalent in area to a square with sides 13.7 km in length.

Figure 5: Map of Sudan with rectangular grid of width = 18 km and height = 10.4 km



4.1.3. Step 3: Draw a grid over the map
We drew a grid over the map (see Figure 5). The dimensions of the grid were calculated using the following formula for width and height, respectively:

$$x = \frac{3d}{2} \quad \text{And} \quad y = \frac{d\sqrt{3}}{2}$$

And using the value of *d* decided in Step 2.

For Sudan with *d* = 12 km, the grid drawn in Figure 5 has dimensions of

$$x = \frac{3d}{2} = \frac{3\ x\ 12}{2} = 18\ km \quad \text{And} \quad y = \frac{d\sqrt{3}}{2} = \frac{12\sqrt{3}}{2} = 10.4\ km\ .$$

4.1.4. Step 4: Create an even spread of sampling points
We created an even spread of sampling points (Figure 6) by locating them at the intersections of the rectangular grid in a staggered fashion (Figure 7).

Figure 6: Sampling points located at alternating intersections of the grid

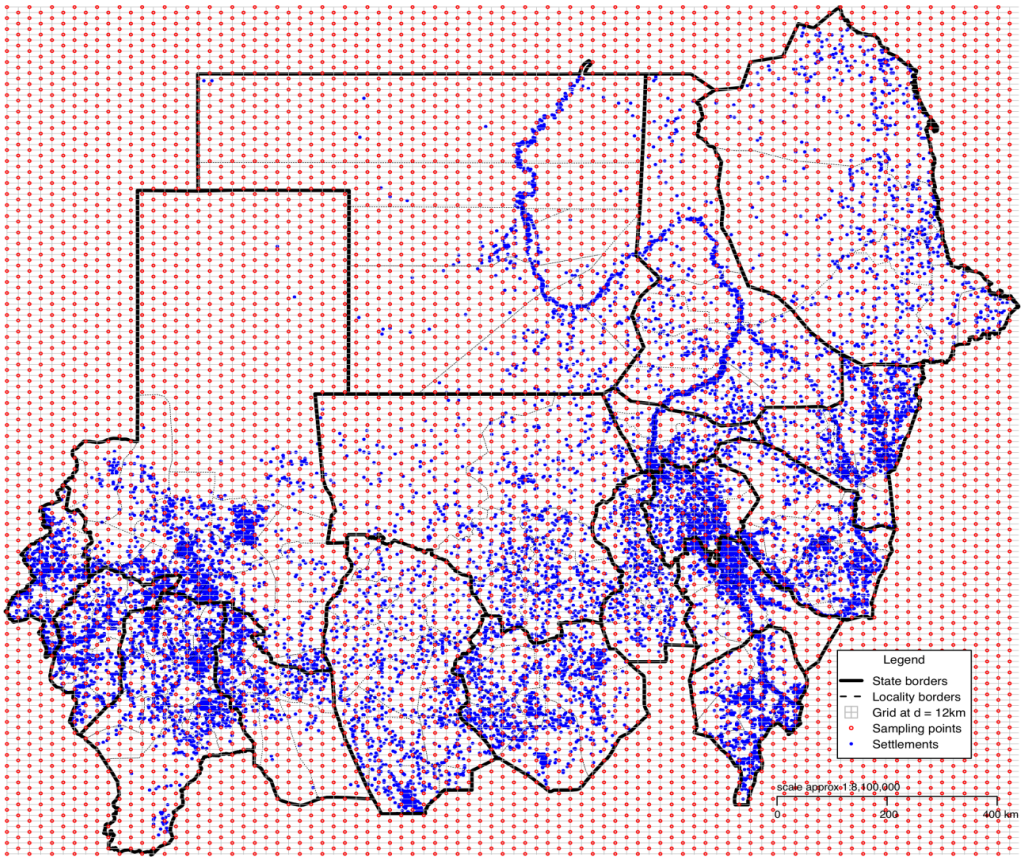
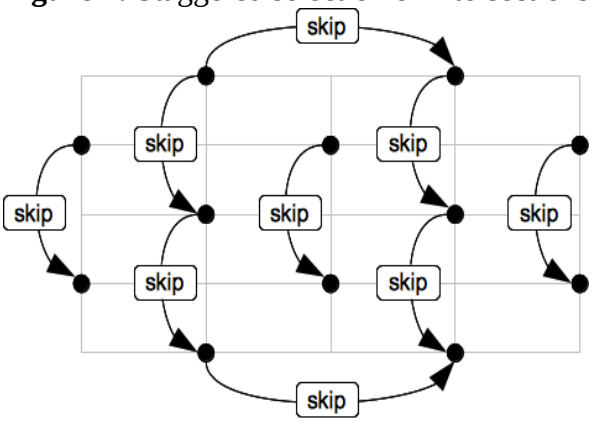


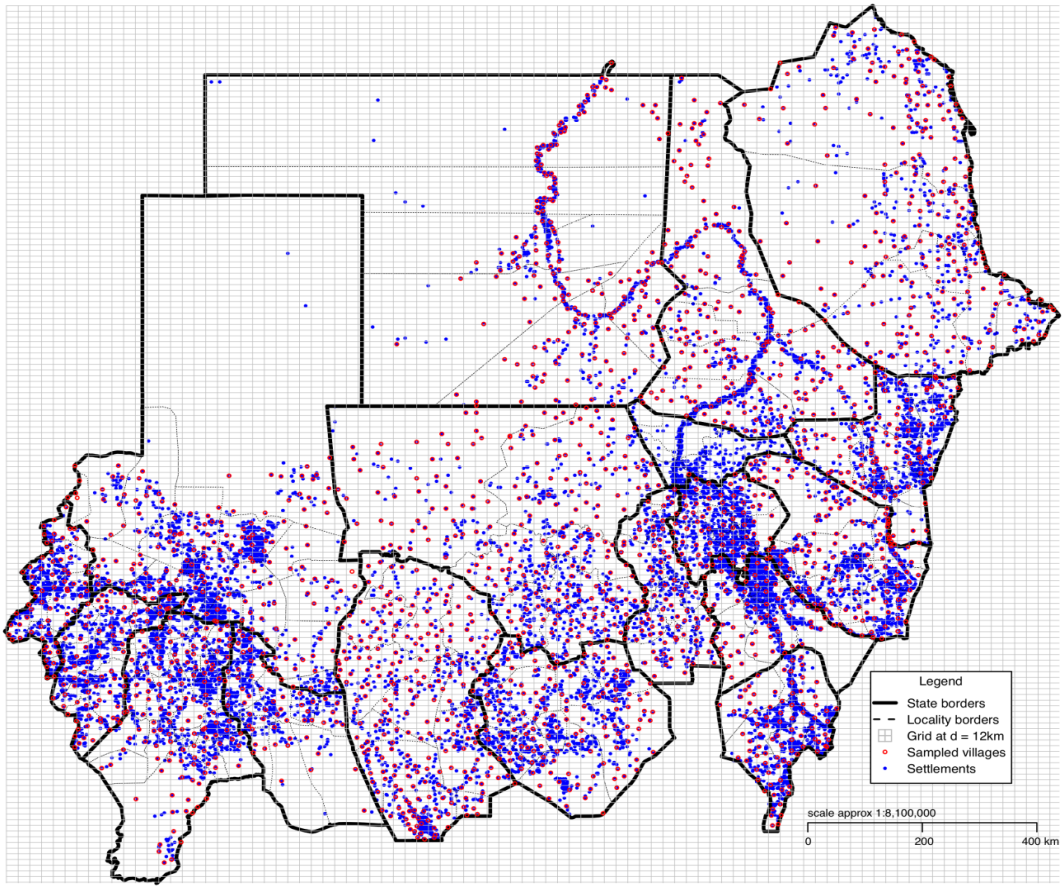
Figure 7: Staggered selection of intersections to identify sampling points



4.1.5. Step 5: Select and label the villages to sample

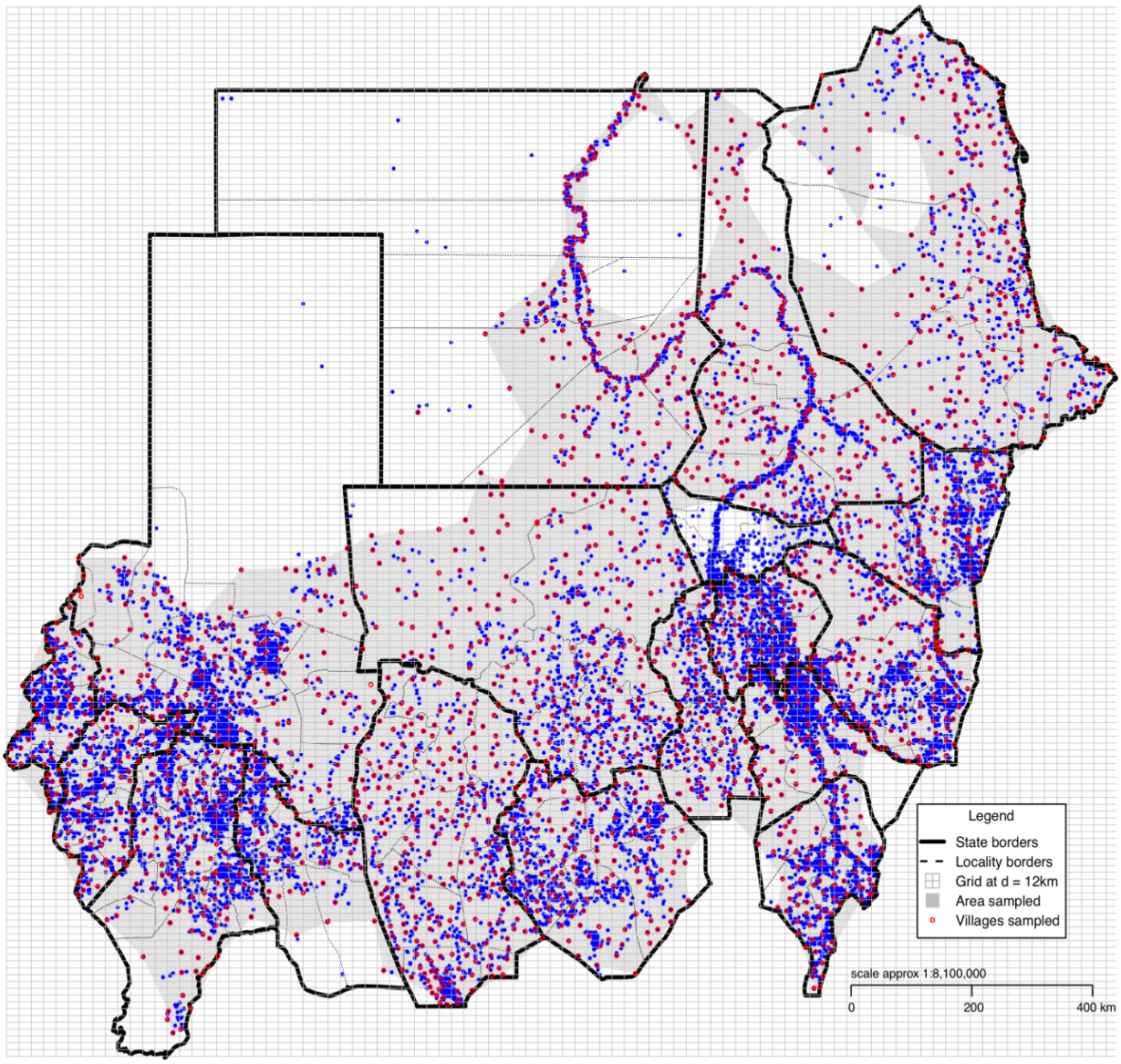
We selected the villages closest to the sampling points identified in Step 4. We chose one closest village per sampling point. We moved the sampling point to the position of the selected village as shown in Figure 8. We dropped some sampling points when they got clustered closely together. We added some sampling points as there were populated areas that did not have sampling points particularly where villages were heavily clustered. The main aim of this process was to create an even spread of sampling points over the majority of the survey area.

Figure 8: Moving the sampling points based on location of the closest villages



We gave a unique identifying number to each sampling point. We used this label to identify which village belonged to which sampling point. This label was used when collecting, organising, analysing and presenting data. Figure 9 shows the intended survey area covered by mapping for all indicators.

Figure 9: Intended area covered by the mapping



NB: The final area covered by mapping differs slightly from that planned as shown in Figure 5. This is because final mapping is done using actual sampling points collected. This differed from planned sampling points to be collected because of empty villages in some states (see limitations on p. 39 for full explanation)

4.2 Within-village (second stage) sampling method for Sudan areas except capitals

The survey collected information from a sample of 32 households (see Appendix 1 for discussion on sample size considerations) with children aged between 0-59 months in the villages selected in the first stage. This sample was collected using map-segment sample (MSS).

A household was defined as:
One person living alone, or a group of people (not necessarily related) living at the same address with common housekeeping (sharing either a living room or sitting room, or at least one meal a day)

4.2.1 Map-segment sampling

The structure of the village or community to be sampled was examined for presence of natural divisions such as big roads, wadis, mountains or empty spaces …etc. Based on the shape of the village, sampling was determined as follows:

1. In communities consisting of a single cluster of houses the cluster was divided into four quarters, with each quarter having a roughly equal density. The random walk method was used to select 32 households (see below).
2. In communities consisting of set of clusters of houses the intended number of households was divided by the number of clusters to give the number of households needed per cluster. The random walk method was used to select households in each cluster.
3. Ribbon communities that have houses arranged in a line were sampled using systematic sampling for a single ribbon and several ribbons after calculating the required number of households in each ribbon as in 2 above.
4. In communities which were a mixture of clusters and ribbons a mixture of the random walk method (in the clusters) and systematic sampling (along the ribbons) was used after calculating the households to be sampled per part.

All segments were sampled. If, for example, there were three segments in a community the survey team took a third of the community level sample from each segment. All segments were sampled even if a larger sample than was needed had to be taken.

4.2.2 Random walk sampling

The random walk method has been used to sample dwellings in cluster segments. Sampling proceeded as follows:

1. Survey team moved to the approximate centre of the cluster.
2. A random direction was selected by spinning a pen on the ground. The sharp end indicated the sampling direction. The team walked in the sampling direction counting the dwellings that were passed and the third dwelling was sampled. If there were no children aged between 0 and 59 months in the selected dwelling then the nearest dwelling with a child aged between 0 and 59 months was sampled. All children aged between 0 and 59 months in the selected dwelling were sampled and the survey questionnaire was applied to the children's mother in the selected dwelling.
3. The next dwelling to sample was selected by spinning a pen and walking in the indicated direction. Dwellings passed were counted and the third was selected and this was repeated until the required number of households was reached.

4. If the team reached the edge of the cluster before the required number of households was reached, they returned to the centre of the cluster and they repeated step (2) above.
5. If the team had sampled all segments, and they had not sampled the required number of children, they returned to the largest segment and finished sampling.
6. Every fifth household in steps 2 and 3 was selected in big villages i.e. approximately > 500 households.
7. All households were selected in small villages (approximately < 50 households).

4.2.3. Systematic sampling

The systematic sampling method has been used to sample houses in ribbon segments. Sampling proceeded as follows:

1. The survey team moved to one end of the ribbon segment.
2. The team walked to the other end of the segment counting the houses that they passed.
3. The step size was calculated by dividing the number of dwellings in the segment by the required sample size for the segment. The whole number part of the result was used without rounding up.
4. The first dwelling to sample was selected by walking along the segment counting the dwellings that the team passed. The dwelling indicated by the step size was sampled. If there were no children aged between0 and 59 months in the selected dwelling then the nearest dwelling with a child aged between 0 and 59 months was sampled.
5. All children aged between 0 and 59 months in the selected dwelling were sampled.
6. The next dwelling to sample was selected by walking along the ribbon segment. Dwellings that the teams passed were counted and the dwelling indicated by the step size was sampled.
7. Sampling in the segment was stopped when the end of the ribbon segment was reached this is why sometimes extra children were sampled.
8. If, when they had sampled all segments, the team had not sampled the required number of children, they returned to the largest segment and finished sampling.
9. All households were selected in small villages (approximately < 50 HHs)

4.3. State capitals first stage sampling

State capitals and other large cities were excluded from the initial sampling process. They were purposively selected and sampled separately because, in the state capital, outcomes under assessment were expected to differ from the rest of the state, which would have led to a very big design effect (variance) if simply joined to the results in the rest of the state.

Sample size calculation for capitals was performed using a standard formula:

$$n = \frac{t^2 \times p(1-p)}{m^2}$$

Where:

n= required sample size
t= confidence level at 95% (1.96 used)
p= estimated prevalence of malnutrition in the area (50% used)
m= margin of error (used 5%)

$$n = \frac{(1.96)^2 \times 0.5(1-0.5)}{(0.05)^2} \approx 384$$

Applying finite population correction:

$$n_c = \frac{n}{1 + \frac{n-1}{pop}}$$

Where:

n= required sample size (calculated above)
pop = estimated under 5 population (used 5000)
n_c = corrected sample size

$$n_c = \frac{384}{1 + \frac{384-1}{5000}} \approx 357 \approx 360$$

Accordingly we adopted a CSAS (centric systematic area sampling) approach to find 360 children 0 – 59 months of age in state capitals.

We used the following first stage sample:

4.3.1. Step 1:
We divided the town into 30 populated quarters equal in size (in terms of population) by laying a square grid on the town's map. This was done using satellite images from Google Earth program and Quantum GIS software.

4.3.2. Step 2:
We identified the city block of houses located at the centre of each square. This was the block that was sampled. This was done using Quantum GIS and Google earth.

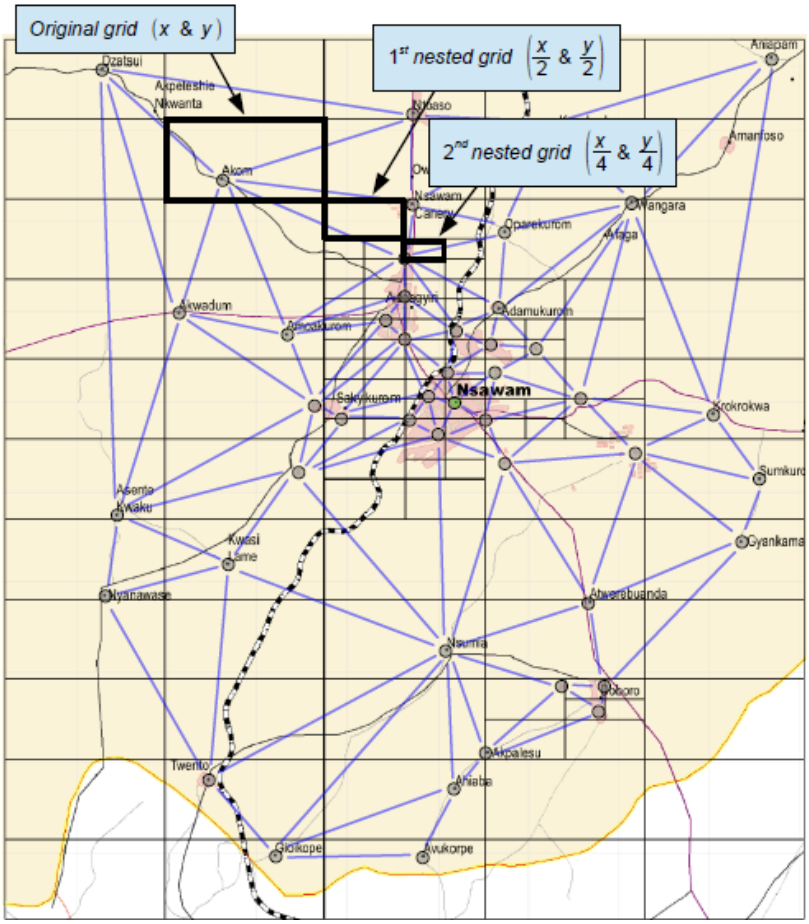
4.4. State capitals second stage sampling
We calculated the required number of children per block needed to get the minimum sample size of 360 children 0 – 59 months of age as follows:

$$n_s = \left\lceil \frac{Total\ sample\ size}{Number\ of\ blocks} \right\rceil = \left\lceil \frac{360}{30} \right\rceil = \lceil 12 \rceil = 12$$

In each block identified in step 2 above, all households with children aged between 0-59 months were sampled. Once the team started working in one block they finished it to the end, the team leader then counted the number of children found if the number was 12 or more, the sample was complete and the team moved to the second square. If the number was less than 12 children 0 – 59 months the team leader selected the next nearest block in the same square and sampled all households with children aged between 0-59 months. At the end of this second block the team leader again checked the number of children found in both and so on until at least 12 children were included. All households with children aged between 0-59 months were selected in each selected block even if the required sample (of 12 children) had already been reached.

4.5 Urban S3M

Figure 10: Nested grids for the Urban S3M approach



Khartoum city is the biggest city in Sudan with a population estimate at more than five million people. This high density of population required special attention during sampling to provide a representation of both area and population and to detect potential variation between different areas and sub-urbations of the city. The Urban S3M approach was trialled in Ghana in 2013 and used in Port Sudan city and Khartoum city in Sudan.

4.5.1 Urban S3M

In this approach we started with the main S3M grid with d = 12 Km (see above) within which we nested smaller grids covering urban areas. The smaller grids are defined by recursive quartering as we approached the city centre as follows:

- Original grid: x & y
- 1st nested grid: x/2 & y/2
- 2st nested grid: x/4 & y/4 and so on (Figure 10)

Six layers of nesting were used. This resulted in smaller triangles to account for population density. At grid intersections sampling points were laid in skip fashion as for the rural sample, and the block of the city where the sampling point lay was selected using google earth. The intended sample size per sampling point was the same as for the rural S3M which was 32 households. All households within the selected block were included. If the number of households did not reach 32, the next nearest block was selected. Each time a block was selected, all households and children in that block were included.

6. Survey Implementation

The survey was carried out by the Ministry of Health and UNICEF with technical support from Valid International, with the following steps:

- Detailed maps were obtained for every state. Maps were obtained from publically available sources including UNITAR [9] and UNOCHA and were checked for completeness using satellite imagery from the Google Earth project. Appendix 3 contains a technical comment on the quality of maps used for the survey.

- Ethical clearance for the S3M survey was granted by the National Ethics Committee on 1 May 2013, following approval from the Primary Healthcare (PHC) Director in early April 2013.

- A Technical Committee was set up at Federal level to review and approve the indicators included, the survey questionnaire and all other technical aspects of the survey

- Valid International provided technical support throughout the survey process, from the preparation stages through to data collection and data analysis. Specifically, tasks supported by Valid International included:
    - Survey design and preparation including:
        - Development and finalization including field testing, and translation and back-translation of the survey questionnaire (see Appendix 5 for the questionnaire).
        - Conducting first stage sampling together with relevant Ministry of Health (MoH) and UNICEF teams.
        - Support for training of relevant MoH (both federal and state level) and UNICEF staff on the survey method.
        - Support for training of survey teams in conducting the second stage sampling and administration of questionnaires.
    - Support for data collection, data entry and data cleaning:
        - Provision of two consultants for the duration of data collection in-country.
        - Provision of ongoing technical support remotely.
    - Support for data analysis and mapping of results:
        - In-country training for Federal Ministry of Health data analysis team on R.

- Regional supervisors from both Federal Ministry of Health and UNICEF were appointed and state supervisors for every state were identified.

- A workshop was held in Khartoum (3-9 June 2013) for all Regional Supervisors and key members of the Technical Committee, facilitated by Valid International and UNICEF. First stage sampling (selection of villages to be surveyed) was carried out, and the survey questionnaire was tested, finalised and translated.

Photograph 1: Mark Myatt working with the Khartoum team at the Khartoum workshop on the sample selection in one state.

- First stage sampling for all states was carried out by the participants at the Khartoum workshop. For one state, participants carried out all sampling stages by hand, including determining the grid size, drawing the grid on the map and placing the sample points at the grid intersection. For the remaining states, the grid was overlaid by computer and sampling points were placed by computer, while moving the sampling point to the nearest village and creating triangles was carried out by hand. Each selected village was then identified (each village had previously been allocated a unique identifying number) and printed maps of each state were produced showing only the selected villages, to help state teams to locate their sample.

- Following the Khartoum workshop, a cascade approach to training was adopted. Two regional training of trainers (TOT) workshops were held, one in White Nile (11-20 June 2013) and one in North Darfur (12-17 June 2013) and all Regional and State Supervisors participated and learnt how to train their state enumerator teams for data collection (including second stage sampling, questionnaire administration and data entry). Following the regional TOT, all state Supervisors and their Regional Supervisors returned to their states and carried out training for the enumerator teams.

- All state enumerators were identified at state level by the Nutrition Director and the State Supervisor. The majority of enumerators were nutritionists; however, there were also extended program of immunization (EPI) staff as well as integrated management of childhood illness (IMCI) staff.

- There were a minimum of 7 survey teams per state, and the bigger states with more sample points had more teams. There were four people on every team. One was a team leader, responsible for filling in the questionnaire and 2 were for measurements (anthropometric as

well as salt testing). The fourth person on the team was allocated to data entry. Data entry clerks in most states remained in a central location (either the state capital or the locality capital) and entered data as it was collected.

- In the Darfur states, support was provided by international non-governmental organizations (NGOs) in terms of additional teams to assist with surveys in camp locations and support for vehicle hire and team transport. In South Darfur, three teams were added for the survey of Kalma camp and survey work was supported by Norwegian Church Aid and Merlin. In West and Central Darfur, the survey was supported by Care International Switzerland, International Medical Corps, World Vision, COSV and Tearfund. In North Darfur, support was given by Relief International (who provided the teams for the Zamzam camp survey) and GOAL. This support was coordinated by state Ministries of Health.

- White Nile was the first state to start data collection as training for the enumerator team was conducted alongside the TOT training by Federal Ministry of Health. Data collection started on the 19 June and finished on the 4 July, followed by North Darfur where data collection started on 22 June. Data collection in all other states started around the 29 June. States finished at differing times depending on the size of the state and the number of sample points. The last state to finish data collection was North Kordofan on the 4th August 2013. Data collection in Red Sea, Khartoum, South Kordofan and West Kordofan was carried out during October and November 2013 due to the urban S3M methodology used in Khartoum and Red Sea states for the capital cities that required extra training, and insecurity affecting South Kordofan earlier in the year. The state of West Kordofan was created just prior to data collection in November 2013.

7. Limitations

In some states there were many empty villages with no eligible replacements which meant that the number of sampling points was lower than intended. Because the sampling method is spatial, replacement villages were eligible if they were located within 6 km of the original sampling point. If there was no village within this radius then there was no possible replacement. This happened mainly in River Nile and Northern states and to a lesser extent in North Kordofan, Gedaref and Kassala. Village lists used for this survey proved to contain names of villages that have either moved or no longer exist (e.g. pastoral settlements), or included names of mountains or farms that are not villages in reality. All sample locations selected were visited during data collection process. All were replaced where there was a village within 6km of the originally selected sample point. If no village existed this meant that there was no population living in that area. As all locations were visited, we are sure that all populated areas were included in this survey (apart from those excluded due to insecurity). A technical brief of the impact of this on overall results is included in Appendix3.

An error in the layout of the questionnaire has meant that information collected for child diet diversity cannot be utilised – the information for this indicator was collected on a different part of the questionnaire from the child information and integrity cannot be guaranteed.

It was not possible to survey some areas in some states due to insecurity. Although teams tried all possible means to reach all selected sample points, this was not possible in some states. Sample points were dropped due to insecurity in Central Darfur, South Darfur, East Darfur, South Kordofan, West Kordofan and Blue Nile.

The layout of the questionnaire could have meant that there is a bias in the answer for hand washing practices as it follows the question of disposal of child faeces.

8. Data Management and Analysis

Data was entered using EpiData[8] v3.1. Data entry templates and check files were set by Mark Myatt and distributed to all states. Data entry was carried out in each state alongside data collection under the supervision of the state and the regional supervisors. Data entry files were sent by email to the S3M Data Manager in Khartoum on a weekly basis, and this served as a back-up. When all data was received for a state all .REC files were merged and the data cleaning process started. All data cleaning was carried out in Khartoum by the Data Manager who is a qualified statistician. All identified data entry errors were checked against the hard copy questionnaires and rectified accordingly.

Data processing and analysis was done using R[9] v2.15.2, Quantum GIS v1.8.0, and MS Excel. Anthropometric data were analysed using WHO 2006 Growth Standards.

Results maps presented in this report are classified into three groups of low, medium and high for every indicator. Cut-offs used for each indicator are based on international public health recommendations or national program targets. Green colour on the maps indicates a 'good' situation (as determined by the cut-offs used), yellow indicates 'acceptable' and red indicates a 'poor' situation.

State level reports show heat maps for every indicator as well as classification maps and results tables for every indicator by locality and urban areas. Heat maps show the actual results found across the area surveyed and mapped, with a scale of results ranging from lowest to highest value found.

[8]Lauritsen JM. (Ed.) *EpiData Data Entry, Data Management and basic Statistical Analysis System.* Odense Denmark, EpiData Association, 2000-2008. http://www.epidata.dk

[9]R Core Team (2012). *R: A language and environment for statistical computing.* R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL http://www.R-project.org/.

9. Results and discussion

The survey covered 1,590 rural sampling points in every state across the country. In addition, 38 towns or cities were surveyed separately from the rural sample, including all capital and major towns in each state and 14 new towns in Blue Nile State. The five Darfur state capitals were surveyed together with their adjacent internally displaced persons (IDP) camps. An additional seven IDP camps in Darfur were surveyed separately. In total 45,094 households were visited and 71,625 children were measured. Information was collected for a total 59 indicators.

9.1 Child Health

9.1.1 Nutrition status

Global acute malnutrition (Figures 4 and 5)

We assessed nutritional status by anthropometric measurement for children aged 6 – 59 months. Records flagged as unlikely values using the WHO criteria were excluded from analysis (WHZ -5 to +5; WAZ -6 to +5; HAZ -6 to +6 from reference mean).

Weight-for-height index values were calculated to give a prevalence of acute malnutrition, or wasting. Wasting reflects a deficit in weight relative to height due to a recent and severe process resulting in loss of tissue and fat mass. GAM based on WHZ score is defined as < -2 z-scores weight-for-height and/or oedema. GAM based on MUAC is defined as MUAC below 125 millimetres.

Prevalence of GAM in many areas across the country is classified as critical, which is above 15% as per the WHO[1] threshold for assessing severity of malnutrition, adopted in the national nutrition survey guidelines for Sudan 2012. These areas are shown with red colour in the classification map and poor to serious 5% - < 15% is shown in light yellow. The map shows that acute malnutrition is a wide-spread public health problem affecting every state. Even those states reported low prevalence in SHHS 2010 E.g. Northern state (12.9% GAM by WHZ) and Gezira (13.2% GAM by WHZ) found to have some localities with very high prevalence; namely Algolid(19.0% GAM by WHZ) and Madani ElKobra (20% GAM by WHZ). High GAM was also noted in the East (particularly Red Sea), Blue Nile, Central and North Darfur. Red Sea state recorded the highest prevalence's of malnutrition with all but one locality well above the 15% threshold for a critical situation. These findings are consistent with other survey results from the state (December 2012 SMART surveys in 2 localities, SHHS 2010). In addition prevalence of GAM is higher by MUAC than by weight for height which is unusual for the Sudan context and highlights the critical situation in the state in terms of the number of children at increased risk of mortality.

Distribution of GAM prevalence based on MUAC follows a similar pattern to WHZ, and areas with high GAM by MUAC include Red Sea, Kassala, North Darfur and South Kordofan as well as large pockets in South and East Darfur, Blue Nile and Gedaref states. Red Sea State recorded GAM by MUAC up to 47% and SAM up to 19% in Tokar locality. This is a clear indicator of the urgency of the situation in the state.

Figure 11: Classification map of GAM prevalence by WHZ and/or oedema

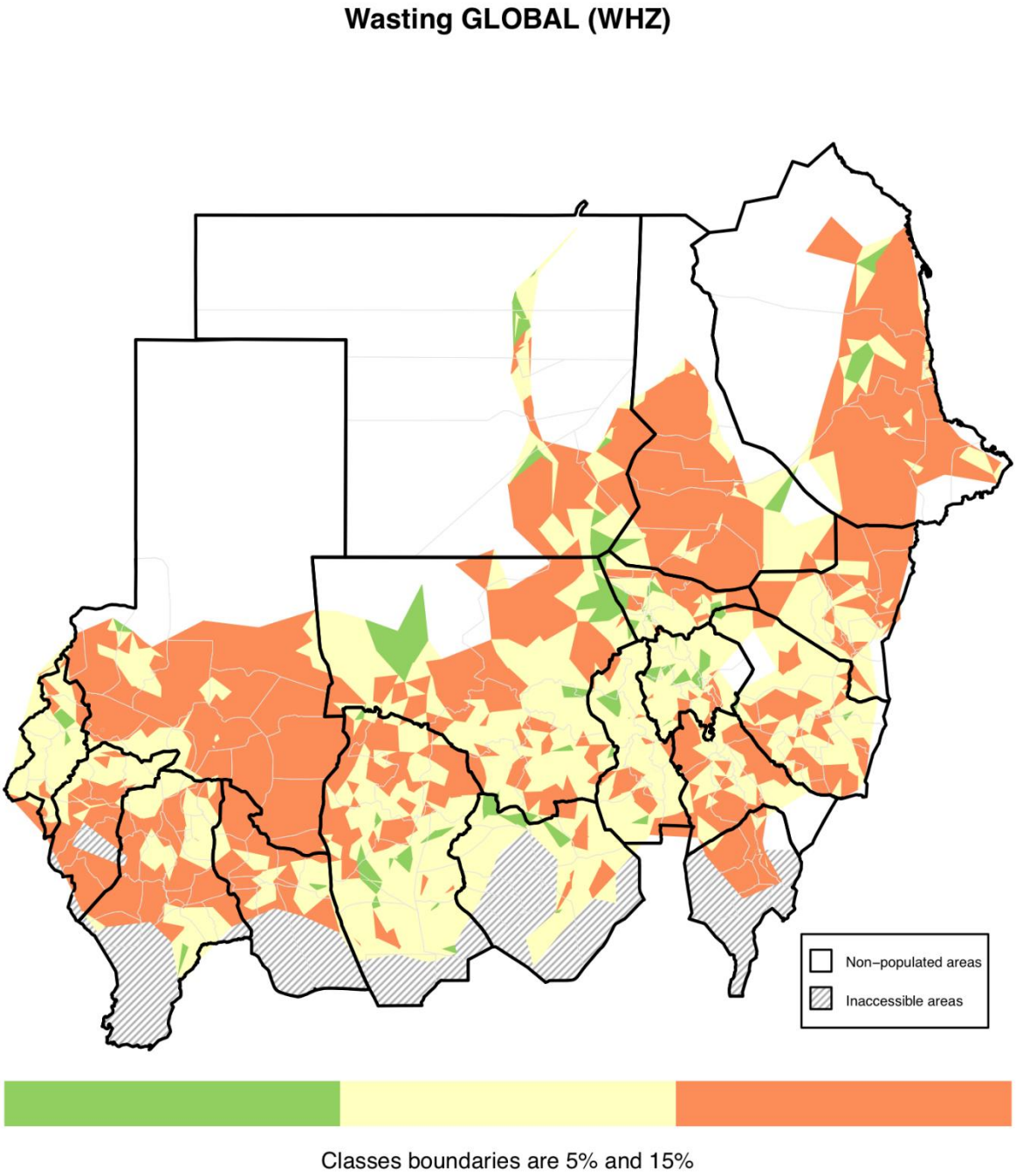


Figure 12: Classification map of GAM prevalence by MUAC

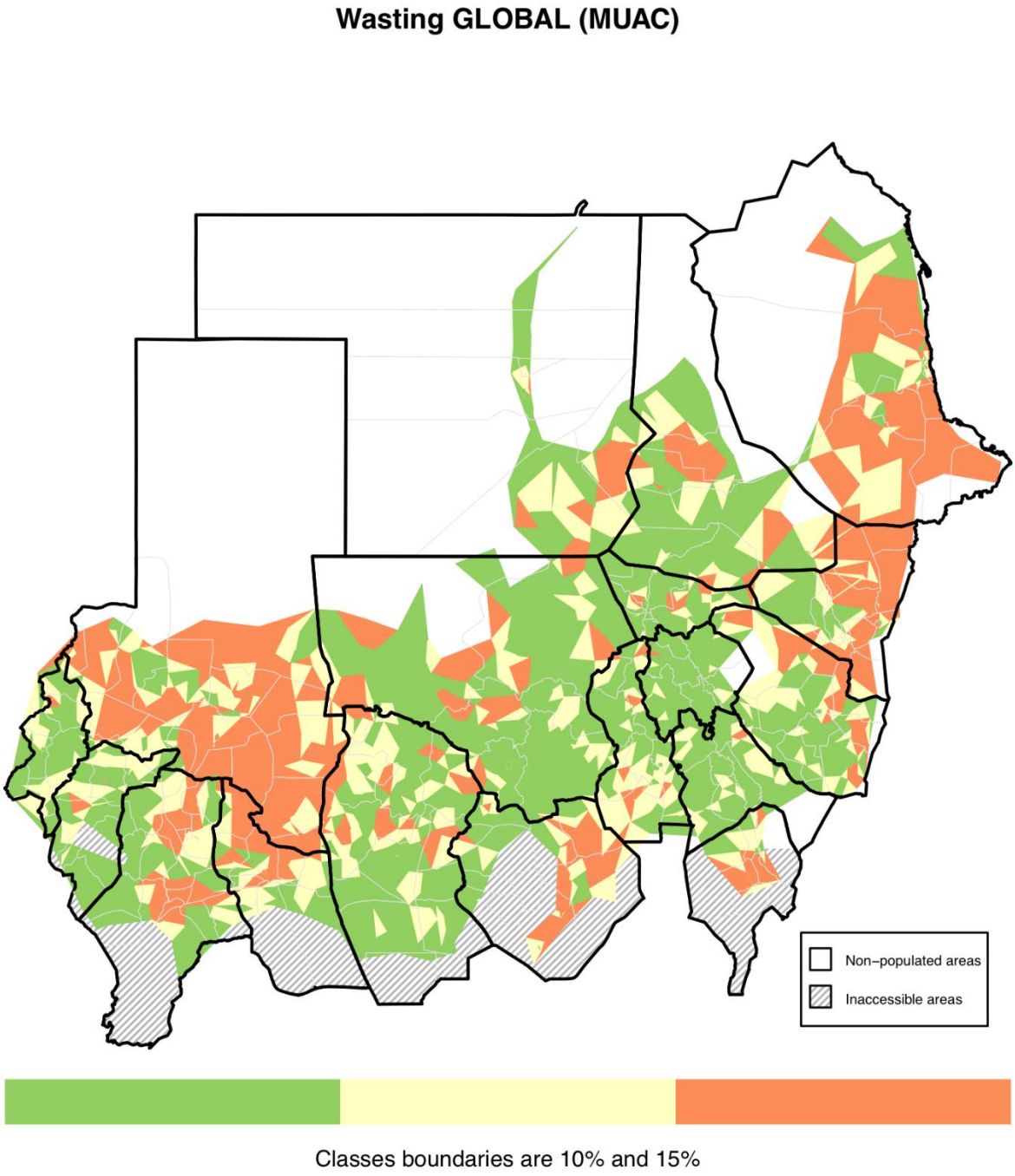


Table 3: Global acute malnutrition (wasting) results, weight for height and MUAC, by locality

State	Locality	Wasting GLOBAL (WHZ)			Wasting MODERATE (WHZ)			Wasting SEVERE (WHZ)			Wasting GLOBAL (MUAC)			Wasting MODERATE (MUAC)			Wasting SEVERE (MUAC)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Red Sea	Ageeg	**22.7**	15.1	30.6	**18.5**	12.5	24.4	**3.9**	0.8	8.4	**37.4**	27.7	46.9	**21.7**	15.2	27.0	**16.4**	10.1	22.5
	Alganeb Alolib	**20.6**	14.2	27.8	**17.1**	12.8	22.5	**3.2**	0.7	6.3	**14.4**	9.0	19.6	**11.1**	7.7	14.1	**3.5**	1.1	6.3
	Dordaib	**13.6**	7.9	23.8	**8.6**	3.7	18.2	**5.1**	2.0	9.4	**8.0**	4.6	14.4	**6.1**	3.0	10.7	**1.9**	0.0	5.1
	Haia	**24.5**	17.3	34.4	**14.9**	10.0	20.7	**9.9**	5.9	14.4	**20.6**	13.9	27.5	**13.4**	7.4	19.5	**7.1**	3.9	10.6
	Haliab	**28.6**	8.1	49.5	**12.5**	2.9	22.6	**18.8**	3.4	37.7	**13.5**	2.2	31.0	**11.7**	1.5	24.5	**3.4**	0.0	9.5
	Japitalmadin	**10.2**	6.7	15.9	**9.1**	5.6	13.8	**1.5**	0.0	5.7	**6.0**	3.0	10.2	**5.8**	2.9	10.2	**0.0**	0.0	2.0
	Sawaken	**34.4**	27.8	40.7	**11.9**	6.2	18.5	**21.9**	14.3	29.7	**28.8**	21.1	36.6	**14.0**	8.2	23.4	**15.1**	9.4	22.1
	Senkat	**28.7**	23.8	34.6	**23.7**	17.5	29.8	**5.4**	2.6	9.5	**30.9**	22.4	39.8	**21.1**	15.2	27.7	**10.0**	5.1	16.0
	Tokar	**36.4**	32.6	40.9	**16.1**	12.6	20.0	**20.3**	17.2	24.5	**46.7**	41.9	51.4	**25.9**	22.3	29.8	**21.0**	17.1	25.0
	Port Sudan	**13.8**	9.9	16.9	**8.9**	6.2	12.3	**4.9**	3.0	6.7	**9.5**	7.0	13.5	**6.6**	4.0	9.0	**3.1**	1.8	4.7
	All state	**20.2**	18.2	22.7	**12.8**	11.1	14.4	**7.5**	6.3	9.1	**22.0**	18.8	25.3	**13.1**	11.6	15.0	**8.5**	6.8	10.4
Kassala	Aroma	**21.8**	16.8	28.2	**17.6**	12.6	23.2	**4.2**	2.3	6.9	**26.5**	19.2	33.1	**16.7**	11.2	21.4	**9.5**	5.6	13.3
	Hamshkoreb	**16.7**	12.4	23.2	**12.4**	8.6	16.5	**4.2**	1.8	7.8	**23.5**	19.1	29.9	**15.9**	11.3	20.6	**7.7**	4.0	11.6
	Kshmalgrba	**12.7**	7.5	18.8	**7.8**	4.6	12.5	**4.9**	1.2	8.9	**13.6**	7.6	20.1	**9.8**	5.8	14.9	**3.4**	0.6	6.7
	Nahr Atbara	**16.0**	8.8	25.4	**16.4**	8.6	25.0	**0.0**	0.0	0.0	**10.3**	4.1	18.1	**8.3**	1.7	15.4	**2.7**	0.0	7.0
	North Delta	**12.8**	8.5	20.2	**10.3**	6.3	18.4	**2.2**	0.6	4.1	**16.0**	11.1	22.8	**11.2**	6.9	16.0	**4.9**	1.8	8.0
	Rify Kassala	**19.1**	8.9	29.6	**17.6**	8.9	26.4	**2.0**	0.0	4.5	**18.7**	6.6	29.3	**15.3**	5.7	27.1	**2.8**	0.0	6.5
	Rural Halfa	**10.1**	6.3	14.9	**7.6**	3.9	12.2	**2.4**	0.7	4.9	**4.4**	1.2	8.3	**3.5**	1.2	7.6	**0.8**	0.0	2.6
	Talkok	**16.2**	12.7	20.6	**13.3**	9.7	17.1	**2.5**	0.8	5.4	**19.7**	15.0	25.2	**14.4**	10.0	20.0	**4.8**	2.2	8.9
	Wadalhlew	**8.5**	4.1	14.5	**4.4**	1.2	8.1	**3.9**	1.2	8.5	**20.8**	14.4	27.3	**18.2**	10.8	26.2	**1.9**	0.0	6.0
	West Kassala	**11.6**	7.1	18.3	**9.2**	3.9	13.8	**2.2**	0.0	6.8	**10.0**	6.1	16.3	**8.1**	4.1	13.9	**2.0**	0.0	5.1
	All state except capital	**15.2**	13.2	17.1	**12.7**	10.5	15.1	**2.6**	1.7	3.5	**16.5**	13.9	19.4	**12.3**	10.1	14.7	**4.3**	3.2	5.7
	Kassala Town	**15.2**	9.8	21.0	**10.7**	6.7	15.0	**4.2**	1.8	7.5	**7.5**	4.1	11.8	**6.1**	3.1	9.5	**1.2**	0.0	3.4
	Hamoshkoreib Town*	**16.7**	11.4	22.3	**12.5**	7.7	17.1	**4.0**	1.2	7.2	**23.7**	17.9	29.4	**15.9**	10.8	21.6	**7.6**	4.0	12.7
Gedaref	Al Gadaref Wasat	**14.1**	9.7	20.1	**10.3**	6.3	17.8	**3.7**	1.3	7.2	**7.2**	4.3	11.3	**4.7**	2.6	7.4	**2.3**	0.6	4.6
	Al Mafaza	**13.3**	8.9	18.1	**9.6**	4.5	13.8	**3.8**	1.3	7.6	**7.1**	3.4	11.3	**5.4**	1.5	10.3	**2.0**	0.0	4.4
	Albutana	**13.6**	10.2	17.8	**9.2**	6.5	13.0	**4.4**	2.8	6.6	**13.0**	9.0	17.2	**9.4**	6.7	12.4	**2.8**	1.5	4.3
	Alfashaga	**17.9**	14.6	20.7	**13.0**	10.4	15.5	**4.9**	3.2	7.2	**18.3**	15.4	21.4	**15.3**	13.0	18.3	**2.7**	1.5	3.8
	Alfaw	**6.8**	4.0	12.9	**5.9**	2.9	11.6	**0.9**	0.0	2.4	**10.3**	6.6	14.5	**10.7**	7.3	14.1	**0.0**	0.0	0.0
	Algalabat Al Garbiya	**19.5**	11.2	29.6	**8.3**	3.9	16.8	**10.0**	4.0	18.0	**8.9**	3.1	14.5	**0.0**	0.0	8.5	**6.7**	0.7	13.9
	Algalabat Al Shargiya	**3.5**	0.7	8.1	**0.7**	0.0	7.8	**2.2**	0.0	5.8	**5.3**	2.0	9.6	**5.4**	2.6	10.0	**0.0**	0.0	0.0
	Algurisha	**13.9**	9.3	19.0	**8.5**	5.6	11.7	**5.3**	1.9	9.5	**16.6**	11.7	21.1	**14.4**	10.2	17.9	**2.3**	0.7	4.6
	Alrahad	**5.2**	1.6	10.2	**4.6**	1.6	9.0	**0.0**	0.0	2.4	**3.8**	0.8	7.9	**3.9**	0.8	8.3	**0.0**	0.0	0.0
	Basonda	**16.2**	11.3	20.9	**8.6**	5.9	12.1	**7.4**	4.1	11.6	**8.4**	5.0	13.0	**4.1**	1.7	6.5	**4.7**	1.8	7.5
	Gula Alnahal	**14.7**	9.2	21.9	**9.4**	5.3	14.4	**5.5**	2.2	9.8	**9.0**	5.4	12.1	**7.7**	5.3	10.9	**1.2**	0.0	2.7
	All state except capital	**13.2**	11.8	14.7	**8.7**	7.5	10.2	**4.4**	3.6	5.2	**12.4**	10.7	13.9	**10.2**	8.8	11.5	**2.0**	1.4	2.6
	Gedarif Town	**13.2**	8.1	18.7	**8.6**	4.2	13.0	**4.7**	1.8	8.2	**8.8**	5.5	12.9	**5.0**	2.6	8.9	**3.5**	1.4	6.4
Blue Nile	Baw (part)	**25.0**	15.1	34.8	**15.1**	5.8	24.5	**9.2**	3.4	15.6	**23.0**	14.4	31.8	**18.3**	11.2	25.9	**4.4**	1.1	9.0
	Damazin	**14.5**	9.3	20.7	**8.8**	4.6	13.2	**5.6**	2.6	9.9	**11.8**	6.4	18.9	**10.6**	5.7	17.3	**1.4**	0.0	4.0
	Giessan (part)	**16.0**	12.6	19.9	**11.0**	8.7	14.0	**4.6**	2.2	6.8	**20.3**	14.2	26.1	**14.4**	10.4	19.4	**6.1**	3.7	9.4
	Kurmuk (part)	**16.2**	9.0	22.4	**12.2**	6.7	18.2	**3.7**	0.7	8.9	**14.1**	5.0	24.1	**12.6**	5.7	21.1	**2.0**	0.0	6.2
	Rosairs (part)	**20.3**	16.8	24.3	**11.3**	9.1	14.3	**9.1**	6.8	10.6	**17.5**	14.5	20.9	**12.6**	10.0	15.1	**5.2**	3.6	6.9
	Tadamon (part)	**14.5**	5.2	28.3	**7.9**	3.3	16.1	**6.3**	0.7	18.8	**6.2**	2.2	12.4	**5.8**	2.2	12.2	**0.0**	0.0	1.8
	All state except capital	**18.5**	16.5	21.1	**11.0**	9.4	12.5	**7.7**	6.2	9.2	**17.5**	14.6	20.6	**12.5**	10.3	14.7	**4.8**	3.6	6.8
	Damazin Town	**12.7**	7.6	18.6	**7.5**	4.2	11.9	**5.3**	2.8	8.9	**11.6**	6.5	18.9	**8.9**	4.4	17.1	**2.7**	0.5	5.5
	Roseris Town	**10.6**	6.4	15.9	**7.7**	4.0	11.7	**2.4**	0.9	5.5	**9.3**	5.5	14.5	**7.2**	3.9	11.7	**2.0**	0.3	4.2

State	Locality	Wasting GLOBAL (WHZ)			Wasting MODERATE (WHZ)			Wasting SEVERE (WHZ)			Wasting GLOBAL (MUAC)			Wasting MODERATE (MUAC)			Wasting SEVERE (MUAC)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
South Kordofan	Abujebiha (part)	**8.8**	6.3	12.4	**7.2**	4.7	10.4	**1.7**	0.5	3.7	**8.7**	4.1	13.4	**6.2**	3.2	9.5	**2.6**	0.9	5.0
	Al Tadamoon (part)	**15.3**	7.8	22.9	**9.6**	4.8	15.5	**6.7**	2.1	10.4	**18.1**	13.0	23.7	**14.1**	9.0	18.8	**3.6**	1.6	6.3
	Alabaseya	**17.2**	9.6	24.9	**9.2**	3.7	14.6	**8.0**	3.9	12.8	**16.9**	10.3	23.6	**13.6**	6.9	20.3	**3.1**	0.6	5.8
	Algoz	**2.5**	0.8	5.1	**1.4**	0.2	3.3	**0.9**	0.0	2.2	**10.5**	6.4	16.1	**8.9**	4.5	13.7	**2.0**	0.6	3.6
	Allirri	**7.8**	3.2	13.5	**5.3**	2.0	10.8	**2.0**	0.0	5.0	**10.2**	5.5	16.9	**7.1**	2.9	11.1	**2.6**	0.8	5.6
	Alreif Alshargi	**11.2**	5.8	18.5	**8.8**	4.5	13.8	**2.3**	0.0	6.5	**6.3**	1.8	12.1	**3.5**	1.2	6.6	**2.4**	0.0	8.1
	Dilling (part)	**7.6**	1.9	15.7	**1.9**	0.0	7.2	**5.8**	0.0	11.8	**10.7**	3.6	19.7	**9.3**	3.6	17.0	**1.9**	0.0	6.2
	Gadeir (part)	**4.7**	2.4	7.8	**4.2**	1.8	6.8	**0.5**	0.0	1.8	**18.9**	14.4	23.9	**13.7**	9.6	19.5	**4.7**	2.6	7.1
	Habeila (part)	**11.9**	7.8	15.9	**9.7**	6.1	13.8	**2.3**	0.3	4.3	**10.7**	7.7	14.6	**9.4**	5.9	13.8	**1.0**	0.0	2.7
	Rashad (part)	**5.8**	2.4	10.5	**5.3**	2.0	9.5	**0.0**	0.0	2.7	**6.7**	1.2	17.1	**6.7**	1.3	16.7	**0.0**	0.0	3.1
	All state except capital	**9.5**	7.5	11.7	**6.7**	5.3	8.2	**2.7**	1.8	3.9	**12.4**	10.5	14.9	**9.8**	8.0	11.9	**2.7**	1.9	3.6
	Kadugli Town	**7.7**	4.8	11.5	**4.5**	2.2	7.5	**3.1**	1.4	6.3	**11.4**	6.8	16.4	**7.7**	4.0	11.8	**3.6**	1.5	6.3
	Talodi Town	**8.5**	5.2	12.9	**6.4**	2.6	10.0	**2.4**	0.6	5.2	**10.7**	6.2	15.3	**9.3**	5.2	13.9	**1.7**	0.3	3.5
West Kordofan	Abo Zabad	**18.1**	10.7	25.4	**13.8**	9.0	19.1	**5.1**	2.4	8.3	**8.5**	5.1	13.1	**7.6**	4.5	11.4	**1.2**	0.0	3.4
	Abyei (NOT AAA)	**10.1**	6.5	13.8	**5.7**	3.3	8.9	**4.6**	1.9	7.7	**7.3**	4.5	10.5	**6.4**	3.6	8.9	**1.1**	0.3	2.0
	Al Khowi	**11.2**	8.7	14.3	**8.8**	6.4	11.6	**2.2**	0.9	3.9	**7.5**	4.9	10.0	**5.7**	3.3	8.6	**1.6**	0.5	2.9
	Al Odaya	**11.6**	7.9	16.4	**7.4**	4.8	10.5	**4.2**	2.4	6.5	**12.6**	9.2	15.8	**10.0**	7.3	12.7	**2.6**	1.2	4.0
	Al Salam	**7.9**	5.5	10.5	**6.2**	4.3	8.3	**1.9**	0.8	3.3	**7.7**	5.4	10.2	**5.7**	3.6	8.2	**1.9**	0.8	3.3
	Aldebab	**13.0**	8.1	17.2	**9.5**	5.7	13.8	**2.5**	0.9	4.7	**5.1**	2.5	8.4	**3.7**	1.5	5.8	**1.0**	0.0	3.3
	Almearam	**13.6**	7.8	20.8	**13.8**	7.8	19.6	**0.0**	0.0	1.8	**4.0**	0.0	7.9	**3.4**	0.0	7.1	**0.0**	0.0	4.5
	Alsnout	**11.3**	8.0	14.5	**10.7**	7.6	14.2	**0.2**	0.0	1.6	**4.2**	1.5	9.5	**3.9**	1.8	7.0	**0.2**	0.0	1.8
	Babanusa	**6.0**	1.9	14.6	**4.5**	1.5	9.4	**1.6**	0.0	4.4	**2.7**	0.5	5.6	**2.6**	0.5	4.5	**0.0**	0.0	1.2
	En Nuhud	**13.8**	11.2	17.5	**8.3**	5.9	10.7	**5.6**	3.8	7.6	**9.9**	7.4	12.8	**7.7**	5.9	9.8	**2.0**	1.3	3.2
	Ghebeish	**13.2**	9.9	16.7	**9.9**	7.1	13.1	**3.3**	1.7	5.4	**10.9**	8.1	13.8	**9.7**	7.0	12.6	**1.0**	0.3	2.4
	Kailak (part)	**7.1**	3.8	10.7	**6.3**	3.4	9.2	**0.7**	0.0	2.3	**2.9**	0.5	6.0	**1.7**	0.2	4.0	**1.2**	0.0	3.3
	Lagawa (part)	**9.0**	5.6	12.3	**7.9**	5.5	10.7	**0.8**	0.0	2.9	**3.4**	1.1	7.0	**2.3**	0.6	5.1	**1.2**	0.3	2.5
	Wad Bandah	**19.8**	16.2	23.3	**15.0**	12.1	18.7	**4.4**	2.6	6.7	**10.5**	7.7	13.2	**7.0**	5.1	9.3	**3.2**	1.6	5.4
	All state except capital	**12.7**	11.8	14.1	**9.9**	8.9	10.6	**3.0**	2.6	3.7	**7.8**	7.0	8.7	**6.2**	5.2	6.8	**1.8**	1.3	2.2
	Fula Town	**8.1**	4.8	12.8	**6.7**	3.2	10.6	**1.3**	0.3	3.2	**3.4**	1.3	6.1	**2.2**	0.5	4.6	**1.1**	0.0	2.7
North Kordofan	Bara	**9.7**	7.6	11.7	**6.7**	4.7	9.0	**2.8**	1.8	4.1	**7.1**	4.8	9.0	**5.6**	3.9	7.4	**1.5**	0.6	2.5
	El Rahad	**2.5**	0.0	7.2	**2.5**	0.0	6.7	**0.0**	0.0	2.3	**7.7**	2.9	12.5	**2.1**	0.0	5.3	**5.7**	1.1	9.8
	Jebrat El Sheikh	**13.9**	12.0	15.8	**9.5**	7.6	10.9	**4.6**	3.5	5.5	**15.4**	13.5	17.6	**14.7**	12.7	16.5	**0.7**	0.1	1.5
	Sheikan	**12.1**	9.2	15.6	**10.6**	7.3	13.4	**1.5**	0.3	3.8	**7.7**	5.6	10.1	**6.4**	4.8	8.8	**1.0**	0.1	2.2
	Sowdari	**16.3**	13.4	18.6	**12.8**	10.5	15.4	**3.5**	2.1	5.0	**7.9**	6.0	9.5	**6.2**	4.7	7.6	**1.6**	0.9	2.5
	Umm Daam	**22.5**	10.5	39.0	**12.8**	4.0	22.2	**8.9**	2.7	17.3	**4.9**	0.0	14.3	**3.4**	0.0	10.7	**0.0**	0.0	4.7
	Umm Rawaba	**9.9**	7.4	13.2	**7.8**	6.1	9.8	**2.3**	1.2	4.0	**7.2**	5.7	9.1	**5.8**	4.3	7.7	**1.7**	0.8	2.8
	West Bara	**10.2**	5.3	15.4	**7.1**	1.9	13.0	**3.1**	0.9	6.0	**15.5**	9.2	20.9	**12.9**	7.7	18.4	**2.7**	0.0	5.8
	All state except capital	**12.1**	11.0	13.3	**9.2**	8.2	10.3	**2.8**	2.4	3.5	**8.7**	7.9	9.7	**7.2**	6.5	8.2	**1.5**	1.1	2.0
	El Obeid Town	**8.1**	5.1	11.4	**5.8**	3.3	8.9	**2.1**	0.3	4.3	**5.8**	2.9	8.7	**4.2**	1.8	6.9	**1.5**	0.3	3.4
White Nile	Alsalam	**7.1**	3.5	13.1	**4.7**	2.2	7.5	**2.3**	0.7	5.5	**9.1**	6.8	12.5	**6.3**	4.5	9.0	**2.5**	1.2	4.4
	Ed Douiem	**5.8**	3.2	9.5	**4.0**	1.7	6.5	**1.9**	0.3	3.8	**4.3**	2.2	7.4	**3.9**	1.9	6.3	**0.3**	0.0	1.2
	El Gutaina	**9.4**	6.3	12.8	**6.5**	3.8	9.7	**2.8**	1.3	4.5	**9.1**	4.5	14.9	**6.7**	2.9	11.6	**2.0**	0.8	3.6
	El Jabalain	**11.0**	7.9	14.6	**6.0**	3.7	9.2	**4.8**	2.8	8.0	**6.3**	2.7	11.5	**3.2**	0.7	7.7	**3.2**	1.8	5.2
	Guli	**7.6**	4.3	11.8	**5.3**	2.4	8.2	**2.5**	0.9	4.4	**7.5**	4.0	11.8	**6.4**	3.2	10.2	**1.2**	0.0	3.2
	Kosti	**12.9**	7.5	17.7	**9.3**	5.5	13.7	**3.2**	0.0	6.6	**12.5**	7.5	17.6	**11.5**	6.1	17.1	**1.5**	0.0	3.6
	Rabak	**8.5**	2.8	16.0	**8.5**	2.5	16.9	**0.0**	0.0	0.0	**7.7**	2.7	13.3	**6.1**	2.3	12.4	**0.0**	0.0	4.6
	Tandalti	**9.2**	4.9	17.9	**6.9**	3.1	11.7	**2.1**	0.3	7.1	**9.1**	4.7	13.5	**6.5**	2.6	10.0	**2.7**	0.4	5.6
	Umm Remta	**10.2**	5.9	15.1	**7.8**	3.7	11.7	**2.4**	0.5	5.4	**6.2**	3.0	9.9	**4.9**	2.6	8.3	**0.9**	0.0	3.0
	All state except capital	**8.6**	7.3	10.3	**6.0**	4.8	7.1	**2.7**	1.9	3.6	**6.8**	5.5	8.1	**5.3**	4.2	6.5	**1.5**	0.9	2.1
	Kosti Town	**10.1**	7.0	13.6	**8.4**	5.3	12.5	**1.8**	0.3	3.9	**3.9**	1.7	6.8	**3.0**	1.3	6.4	**0.7**	0.0	2.2
	Rabak Town	**10.0**	5.3	14.2	**7.8**	4.2	12.4	**1.9**	0.3	4.1	**5.9**	3.0	9.3	**5.4**	2.7	8.9	**0.5**	0.0	1.7

State	Locality	Wasting GLOBAL (WHZ)			Wasting MODERATE (WHZ)			Wasting SEVERE (WHZ)			Wasting GLOBAL (MUAC)			Wasting MODERATE (MUAC)			Wasting SEVERE (MUAC)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Sennar	Abu Hijar	**14.9**	10.4	19.5	**13.4**	8.1	19.1	**2.1**	0.2	4.4	**9.1**	6.3	12.4	**7.2**	5.0	9.9	**2.1**	0.3	4.5
	Al Dindir	**11.9**	8.4	17.0	**8.1**	5.3	11.0	**3.8**	2.1	6.1	**5.3**	2.6	9.4	**3.7**	2.0	7.0	**1.3**	0.2	3.2
	Aldali & Almazmoum	**13.3**	9.4	17.7	**11.6**	8.1	16.4	**1.7**	0.4	3.8	**6.8**	3.8	10.5	**5.5**	3.3	8.4	**1.2**	0.0	3.4
	Alsooki	**12.5**	6.6	19.1	**10.1**	6.3	14.1	**2.7**	0.2	6.4	**4.3**	2.0	7.4	**2.7**	1.0	5.0	**1.6**	0.0	4.0
	Sennar	**13.4**	7.6	19.4	**9.9**	5.2	14.4	**3.0**	0.5	6.5	**4.0**	1.1	7.7	**2.6**	0.6	6.5	**1.1**	0.0	4.0
	Sharg Sennar	**15.0**	8.9	21.8	**11.2**	7.0	17.4	**3.5**	1.6	5.9	**6.7**	3.0	11.5	**5.0**	2.3	8.5	**1.7**	0.6	3.5
	Sinja	**4.2**	1.7	9.2	**3.0**	0.9	7.6	**1.5**	0.3	3.3	**5.2**	2.7	8.7	**4.8**	2.4	7.6	**0.0**	0.0	1.4
	All state except capital	**12.8**	11.1	14.7	**10.2**	8.4	12.1	**2.5**	1.8	3.4	**6.2**	4.7	7.6	**4.8**	3.7	6.0	**1.4**	0.7	2.1
	Sennar Town	**8.8**	4.1	13.5	**7.4**	3.4	11.6	**1.3**	0.0	3.3	**2.5**	0.8	5.0	**1.8**	0.3	4.5	**0.3**	0.0	1.7
	Sinja Town	**9.0**	4.6	13.7	**7.1**	3.8	11.8	**2.0**	0.6	4.6	**3.5**	1.2	6.9	**2.6**	0.6	4.6	**1.1**	0.0	2.7
El Gezira	El Hasaheisa	**3.8**	0.0	11.5	**3.2**	0.0	9.5	**0.0**	0.0	2.9	**8.6**	1.6	17.7	**4.7**	0.0	13.3	**2.9**	0.0	11.7
	El Kamlin	**9.5**	2.7	17.7	**6.3**	1.0	13.2	**2.5**	0.0	6.3	**9.9**	1.8	19.1	**7.5**	2.7	15.4	**1.6**	0.0	6.1
	El Managil	**9.6**	5.4	14.8	**4.1**	2.2	7.1	**5.5**	2.5	9.8	**7.0**	4.0	12.0	**3.0**	1.3	5.2	**3.8**	1.4	7.4
	Janub El Gezira	**10.1**	5.3	17.4	**6.1**	2.9	11.0	**4.0**	1.2	7.7	**3.5**	1.0	8.3	**2.7**	0.5	6.0	**1.0**	0.0	3.6
	Madani Al Kobra	**20.0**	0.0	38.5	**0.0**	0.0	0.0	**20.0**	0.0	40.1	**13.3**	0.0	33.3	**13.3**	0.0	33.5	**0.0**	0.0	0.0
	Sharg El Gezira	**11.0**	6.9	16.3	**9.4**	5.5	13.6	**0.9**	0.0	3.8	**1.8**	0.0	4.9	**0.0**	0.0	1.3	**1.4**	0.0	4.3
	Umm El Gura	**10.9**	4.9	17.3	**8.9**	2.8	16.9	**2.0**	0.0	6.3	**9.1**	3.9	16.1	**5.3**	1.7	11.8	**3.6**	0.0	8.2
	All state except capital	**9.6**	7.4	12.2	**5.6**	4.0	7.5	**4.0**	2.3	5.7	**6.3**	4.3	8.0	**3.5**	2.3	4.9	**2.6**	1.3	4.3
	Madani Town	**8.1**	3.8	15.3	**5.3**	1.5	11.0	**2.7**	0.0	7.0	**5.4**	1.8	10.0	**2.2**	0.0	6.6	**3.1**	0.6	7.3
Khartoum	Bahari	**11.0**	8.1	14.5	**10.1**	6.8	13.4	**0.5**	0.0	2.0	**3.3**	1.5	5.7	**2.8**	1.3	4.9	**0.4**	0.0	1.9
	Gabel Awlia	**6.4**	3.1	10.6	**5.5**	2.7	9.2	**0.5**	0.0	2.7	**0.7**	0.0	3.3	**0.2**	0.0	2.0	**0.3**	0.0	1.8
	Karrarri	**7.4**	4.8	12.1	**2.8**	0.8	5.8	**4.6**	2.6	7.5	**5.2**	2.9	11.6	**3.1**	1.1	6.3	**2.7**	1.1	5.1
	Khartoum	**7.7**	4.4	11.5	**5.8**	2.8	9.7	**1.6**	0.0	3.3	**2.0**	0.4	4.1	**0.4**	0.0	2.5	**1.2**	0.0	3.0
	Shareg Elnile	**8.0**	5.4	11.8	**6.0**	3.8	8.8	**2.3**	1.2	3.7	**6.0**	4.5	7.9	**4.5**	2.8	6.5	**1.5**	0.7	2.6
	Umbada	**5.1**	3.0	7.4	**4.4**	2.4	7.0	**0.5**	0.0	1.8	**4.1**	1.2	8.5	**2.0**	0.2	4.5	**1.9**	0.0	4.3
	Umdrman	**8.7**	4.9	12.7	**7.2**	4.6	10.7	**1.4**	0.2	3.1	**6.2**	3.3	11.1	**5.7**	3.3	9.0	**0.2**	0.0	1.6
	All state	**8.2**	6.8	9.5	**6.4**	5.4	7.5	**1.8**	1.2	2.4	**4.3**	3.2	5.4	**2.9**	2.2	3.8	**1.3**	0.8	1.9
Northern	Alborgeg	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Aldabba	**3.9**	2.6	5.6	**2.3**	1.1	3.6	**1.6**	0.9	3.0	**2.9**	1.5	4.6	**2.1**	1.1	3.2	**0.9**	0.1	1.9
	Algoled	**19.0**	12.7	27.9	**16.5**	9.8	24.4	**2.7**	0.9	5.7	**2.6**	0.8	4.9	**1.6**	0.0	3.8	**0.9**	0.0	2.6
	Dalgo	**12.6**	8.6	17.4	**8.1**	5.0	11.6	**4.4**	2.3	6.7	**2.7**	1.0	4.9	**2.6**	1.0	4.8	**0.0**	0.0	0.0
	Dongola	**11.8**	7.6	15.0	**7.1**	4.3	9.9	**4.5**	2.4	7.0	**3.6**	0.5	8.7	**3.8**	1.0	7.4	**0.3**	0.0	1.5
	Halfa	**3.0**	1.7	5.3	**3.2**	1.6	4.9	**0.0**	0.0	0.7	**0.0**	0.0	1.5	**0.0**	0.0	1.5	**0.0**	0.0	0.0
	Merawi	**8.7**	6.5	11.4	**3.2**	1.2	5.4	**5.7**	3.7	7.7	**4.0**	2.7	6.0	**0.8**	0.0	2.0	**3.2**	1.9	5.0
	All state except capital	**7.3**	5.8	8.8	**5.1**	3.8	6.2	**2.2**	1.5	3.1	**1.9**	1.2	2.7	**1.3**	0.6	2.0	**0.7**	0.3	1.1
	Dongola Town	**7.8**	3.9	13.6	**6.7**	3.3	12.4	**1.4**	0.3	3.6	**2.7**	1.1	5.3	**1.7**	0.3	3.9	**0.6**	0.0	2.5
River Nile	Abu Hamad	**11.9**	8.8	15.3	**9.1**	6.1	12.3	**2.6**	1.1	4.5	**2.6**	1.0	4.5	**1.0**	0.0	3.1	**1.6**	0.7	2.9
	Albuhaira	**26.1**	16.0	39.8	**14.5**	8.8	21.4	**11.7**	6.1	18.8	**7.0**	4.6	9.4	**5.5**	3.1	7.7	**1.5**	0.4	3.2
	Atbara	**21.4**	16.7	26.5	**17.4**	13.3	21.3	**4.1**	1.9	7.9	**2.4**	0.4	4.9	**2.3**	0.4	5.0	**0.0**	0.0	0.9
	Barbar	**9.3**	4.9	15.5	**7.6**	4.3	11.3	**1.8**	0.0	5.2	**3.5**	1.2	6.2	**0.7**	0.0	3.2	**2.8**	0.7	5.5
	Ed Damer	**15.1**	12.5	17.5	**10.9**	8.3	13.0	**4.1**	2.4	6.2	**4.5**	2.7	7.4	**1.8**	0.7	3.6	**2.7**	1.7	4.1
	El Matammah	**13.9**	9.9	19.6	**7.5**	4.8	11.4	**6.5**	4.1	9.1	**5.4**	3.2	8.1	**3.2**	2.0	4.9	**2.3**	0.9	4.2
	Shendi	**21.0**	13.5	26.9	**15.0**	8.8	20.7	**5.4**	2.1	9.9	**9.2**	4.0	15.5	**8.3**	4.6	12.9	**0.5**	0.0	2.2
	All state except capital	**15.2**	13.3	17.2	**10.7**	9.3	12.1	**4.5**	3.2	5.7	**4.2**	3.2	5.3	**2.2**	1.5	3.1	**2.0**	1.4	2.7
	Atbara Town	**10.2**	6.1	13.9	**6.0**	3.3	9.9	**3.8**	1.4	7.2	**2.2**	0.3	4.8	**1.8**	0.3	4.3	**0.0**	0.0	1.2
	El Damar Town	**10.5**	6.1	15.4	**7.7**	4.1	11.8	**2.6**	0.5	4.7	**3.3**	1.1	7.0	**3.6**	1.4	6.7	**0.0**	0.0	0.0

State	Locality	Wasting GLOBAL (WHZ)			Wasting MODERATE (WHZ)			Wasting SEVERE (WHZ)			Wasting GLOBAL (MUAC)			Wasting MODERATE (MUAC)			Wasting SEVERE (MUAC)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
North Darfur	Al Fasher	**16.8**	12.4	21.8	**10.1**	6.1	13.7	**6.4**	4.3	9.4	**17.9**	12.3	23.6	**12.9**	9.1	17.5	**4.9**	2.2	7.1
	Al Koma	**27.3**	17.0	37.2	**22.3**	12.0	32.3	**5.0**	1.9	8.6	**18.6**	12.9	24.3	**8.7**	4.6	13.2	**9.6**	4.5	15.3
	Al Malha	**33.0**	26.8	38.1	**24.5**	20.2	29.3	**8.2**	5.0	11.9	**16.6**	12.8	20.6	**13.0**	8.9	17.0	**3.7**	1.8	6.6
	Al Seref	**21.9**	16.1	29.2	**15.9**	10.4	21.8	**6.1**	3.2	9.9	**28.3**	21.3	33.8	**20.8**	15.6	25.5	**7.3**	3.9	10.5
	Al Tina	**14.2**	4.7	23.9	**11.7**	4.2	22.0	**2.0**	0.0	4.9	**18.2**	10.6	27.3	**17.7**	10.8	25.8	**0.0**	0.0	0.0
	Al Twasha	**30.4**	25.8	36.4	**20.5**	16.2	25.8	**9.3**	6.4	14.0	**15.6**	9.7	21.6	**11.6**	7.1	17.5	**4.1**	2.4	6.6
	Allait	**40.5**	32.4	47.9	**21.9**	16.1	27.6	**18.9**	12.6	25.2	**25.3**	18.1	34.2	**15.4**	9.7	21.7	**9.7**	4.6	16.2
	Ambaro	**15.7**	9.7	21.5	**12.7**	7.9	17.7	**3.1**	1.3	5.5	**14.9**	9.9	19.4	**13.4**	9.4	18.3	**1.6**	0.4	3.2
	Dar Alsalam	**16.7**	12.4	20.7	**12.0**	8.4	16.5	**4.4**	2.5	7.1	**26.0**	21.1	31.0	**17.7**	12.8	21.8	**8.3**	5.5	11.5
	Kabkabia	**15.1**	10.9	19.1	**12.9**	8.9	17.8	**2.0**	0.5	4.4	**13.3**	8.5	18.4	**11.6**	6.7	16.6	**2.1**	0.8	3.7
	Karnoi	**31.3**	17.2	41.1	**27.0**	14.8	36.0	**4.6**	1.3	9.7	**15.8**	9.8	22.2	**16.1**	8.4	22.6	**0.0**	0.0	0.0
	Kelemendo	**21.0**	15.3	28.1	**15.7**	10.8	22.4	**5.3**	2.1	8.5	**26.0**	19.5	34.7	**17.4**	12.2	24.3	**8.9**	5.4	12.9
	Kutum	**37.6**	31.3	43.5	**25.8**	21.7	30.5	**11.1**	8.5	14.2	**23.8**	19.2	27.3	**20.7**	16.7	24.8	**2.7**	1.5	4.5
	Mallit	**33.5**	26.6	39.9	**22.9**	18.0	28.6	**10.0**	6.9	13.0	**19.3**	15.1	22.4	**15.6**	12.6	19.3	**3.9**	2.2	6.5
	Saraf Omra	**12.4**	6.0	22.5	**9.0**	3.5	15.0	**4.4**	0.0	9.1	**12.6**	6.6	19.6	**13.6**	7.2	20.5	**0.0**	0.0	0.0
	Tawila	**9.5**	3.5	16.0	**6.8**	2.9	11.3	**2.7**	0.6	5.4	**12.9**	7.7	19.2	**10.0**	5.7	14.7	**3.3**	0.6	7.3
	Umkadada	**33.8**	29.7	38.9	**25.6**	21.2	30.7	**8.7**	6.3	11.2	**14.2**	11.0	17.5	**10.6**	7.9	14.6	**3.5**	2.0	5.9
	All state except capital	**28.3**	26.5	30.0	**20.5**	18.9	21.9	**7.8**	6.8	8.7	**19.8**	18.3	21.6	**14.0**	12.7	15.3	**5.8**	5.0	6.7
	El Fashir Town	**16.5**	10.9	22.4	**9.9**	5.7	15.8	**6.3**	2.4	11.0	**17.9**	12.6	25.2	**12.2**	7.9	17.7	**5.8**	2.9	12.0
	Zamzam Camp*	**13.7**	8.9	20.7	**7.6**	3.9	12.4	**6.0**	3.2	9.7	**14.6**	10.4	19.2	**10.0**	5.8	14.8	**4.9**	1.8	8.2
	El Sireif Camp*	**22.5**	17.1	28.9	**15.9**	10.8	22.2	**5.7**	2.6	9.6	**28.2**	22.4	35.0	**20.4**	15.5	27.0	**7.4**	4.6	12.1
South Darfur	Al Rudoom (part)	**9.7**	5.7	14.8	**5.6**	2.8	9.6	**4.2**	1.7	7.1	**7.4**	4.1	11.1	**3.6**	1.9	5.6	**3.7**	1.2	6.6
	Alwehda	**19.8**	11.5	26.1	**15.9**	9.7	22.2	**3.8**	1.6	6.9	**11.2**	6.4	17.2	**9.1**	5.3	14.3	**2.1**	0.0	4.8
	Belil	**15.9**	9.2	22.5	**11.7**	7.3	18.7	**4.2**	0.7	7.2	**18.1**	10.7	24.7	**18.5**	11.8	26.0	**0.0**	0.0	0.0
	Buram	**14.7**	8.2	20.9	**13.0**	7.2	19.9	**0.0**	0.0	5.8	**10.0**	5.9	15.6	**8.3**	3.3	14.5	**1.1**	0.0	3.5
	Dimso	**23.1**	14.5	31.2	**10.5**	5.8	16.7	**11.8**	5.7	20.7	**33.1**	22.9	43.5	**12.5**	6.5	18.5	**20.8**	10.1	31.0
	El Salam	**29.1**	19.4	41.9	**18.9**	12.3	26.9	**10.4**	5.1	19.0	**17.6**	7.6	32.1	**12.3**	4.4	22.5	**4.4**	1.5	9.7
	Gerieda	**17.7**	6.1	38.0	**11.6**	2.2	32.2	**6.5**	0.0	17.3	**12.1**	0.0	25.6	**13.0**	2.4	26.4	**0.0**	0.0	0.0
	Id Elfirsan	**12.5**	8.5	16.3	**10.4**	6.6	13.6	**2.0**	0.7	3.9	**6.5**	3.0	12.0	**5.0**	1.7	9.8	**1.4**	0.0	3.7
	Kass	**14.5**	10.1	20.2	**10.5**	5.5	17.6	**3.5**	1.6	6.1	**13.1**	9.2	17.3	**9.4**	6.3	12.8	**3.8**	1.8	6.5
	Katila	**22.3**	16.3	27.5	**17.6**	12.4	23.4	**4.5**	2.2	7.0	**9.9**	6.4	14.0	**5.1**	2.6	9.0	**4.6**	1.8	7.0
	Kubum	**10.6**	6.6	16.1	**9.8**	6.2	13.5	**1.0**	0.0	3.4	**0.0**	0.0	4.2	**0.0**	0.0	4.5	**0.0**	0.0	1.4
	Mershing	**16.0**	7.7	27.5	**14.0**	6.0	25.5	**2.0**	0.0	6.7	**19.6**	8.7	33.3	**14.3**	7.8	25.5	**5.9**	0.0	12.2
	Netiga	**12.6**	4.4	25.4	**10.2**	3.0	22.5	**2.7**	0.5	6.3	**4.0**	1.0	13.1	**3.7**	0.5	9.4	**0.0**	0.0	2.4
	Rahad Elberdi (part)	**22.6**	17.5	28.9	**15.8**	10.8	20.3	**7.5**	4.2	10.8	**2.3**	0.8	5.2	**2.3**	0.4	4.6	**0.0**	0.0	0.0
	Toluss	**20.2**	12.1	27.2	**13.8**	6.6	23.7	**5.5**	1.2	11.8	**41.1**	29.3	50.5	**18.0**	10.2	27.9	**23.5**	7.9	34.7
	Um Dafog (part)	**0.0**	0.0	11.9	**0.0**	0.0	20.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	All state except capital	**18.3**	16.4	19.8	**14.5**	13.0	16.1	**4.0**	3.1	5.0	**11.4**	9.3	13.5	**7.9**	6.4	9.5	**3.6**	2.7	4.8
	Nyala Town	**12.9**	7.9	18.6	**10.7**	5.8	16.6	**2.1**	0.0	5.3	**9.8**	5.5	15.1	**6.9**	3.2	11.3	**2.9**	0.9	6.5
	Kalma Camp*	**26.4**	19.4	33.9	**14.8**	10.6	20.8	**10.6**	6.4	16.4	**19.0**	13.2	25.8	**12.3**	8.5	16.4	**6.2**	3.5	9.9
East Darfur	Abukarinka	**14.3**	9.4	21.2	**10.4**	6.5	14.2	**4.2**	1.7	8.4	**9.4**	5.7	13.6	**6.7**	3.8	10.3	**2.8**	0.7	5.0
	Adilla (part)	**3.6**	1.1	7.8	**2.8**	0.0	6.1	**0.6**	0.0	3.5	**14.7**	7.0	21.9	**12.9**	6.5	18.0	**1.6**	0.0	3.9
	Al Deain	**11.1**	6.6	17.3	**8.0**	4.2	11.8	**3.2**	0.6	6.7	**10.3**	4.7	17.6	**7.7**	2.4	14.0	**3.2**	0.5	6.7
	Alfirdos	**21.9**	14.6	29.6	**14.6**	9.3	21.7	**6.0**	2.2	11.3	**13.1**	6.7	19.6	**7.5**	3.0	13.8	**4.7**	1.2	9.2
	Asslaya	**27.0**	18.4	36.5	**18.6**	11.5	25.5	**8.3**	3.2	14.3	**13.7**	5.6	21.3	**7.1**	1.6	13.4	**5.7**	0.8	10.5
	Aubgabar	**14.6**	9.7	20.9	**8.2**	3.7	12.7	**7.3**	3.8	11.3	**5.2**	1.7	10.2	**3.9**	1.6	7.9	**0.0**	0.0	4.6
	Aubmatarg	**10.3**	0.0	21.4	**7.7**	1.2	14.4	**3.0**	0.0	8.1	**8.1**	2.5	16.0	**6.5**	2.4	13.0	**0.0**	0.0	4.8
	Sharia (part)	**25.7**	16.7	36.9	**10.5**	5.4	15.9	**15.7**	7.4	23.9	**11.5**	5.5	20.6	**5.1**	1.4	11.7	**6.6**	1.5	13.4
	Yaseen (part)	**22.6**	13.0	33.4	**15.3**	8.7	23.9	**7.8**	2.9	13.9	**19.4**	6.8	34.3	**14.4**	3.0	27.1	**5.7**	1.9	12.1
	All state except capital	**14.9**	11.7	17.7	**9.7**	7.6	11.8	**5.2**	3.4	6.9	**11.2**	9.2	13.8	**8.2**	6.4	10.2	**3.2**	2.1	4.3
	Al Deain Town	**13.3**	8.4	18.8	**9.3**	5.1	13.7	**3.8**	1.4	6.5	**16.3**	12.0	22.1	**13.0**	8.6	17.4	**3.9**	1.6	6.2

State	Locality	Wasting GLOBAL (WHZ)			Wasting MODERATE (WHZ)			Wasting SEVERE (WHZ)			Wasting GLOBAL (MUAC)			Wasting MODERATE (MUAC)			Wasting SEVERE (MUAC)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
West Darfur	Algenea	**9.2**	1.1	23.4	**8.5**	1.0	21.7	**0.0**	0.0	5.3	**8.4**	1.1	18.2	**7.8**	2.0	17.8	**0.0**	0.0	0.0
	Baida	**9.1**	5.1	13.7	**7.3**	2.7	12.7	**1.8**	0.3	3.7	**7.5**	4.9	10.2	**6.3**	3.2	9.4	**1.2**	0.0	2.7
	Forbranga	**14.2**	9.7	19.6	**9.8**	6.3	14.8	**5.0**	1.2	10.1	**7.8**	4.5	12.3	**5.7**	2.9	9.4	**2.3**	0.0	6.1
	Gabal Moon	**10.5**	6.7	14.8	**9.2**	5.4	13.1	**1.3**	0.2	2.4	**6.9**	2.9	13.1	**6.0**	2.1	10.9	**0.9**	0.0	2.1
	Habilla	**14.6**	10.8	18.2	**11.2**	8.1	14.8	**3.2**	1.2	5.8	**13.3**	9.1	16.3	**9.4**	6.0	13.1	**3.9**	2.1	6.1
	Kerenik	**7.6**	5.3	10.5	**6.0**	4.2	7.8	**1.8**	0.9	2.8	**4.9**	3.4	7.0	**4.5**	2.9	6.1	**0.6**	0.1	1.4
	Kulbus	**12.6**	8.8	17.1	**9.5**	5.9	15.2	**2.6**	0.7	5.7	**6.3**	3.8	9.8	**5.2**	2.3	8.5	**1.3**	0.0	3.4
	Serba	**6.7**	3.5	10.9	**4.0**	1.4	7.7	**2.5**	0.9	5.1	**8.3**	4.9	13.2	**5.8**	2.9	10.1	**2.6**	0.8	5.8
	All state except capital	**8.4**	6.8	10.1	**6.5**	4.9	7.7	**2.0**	1.3	2.8	**6.8**	5.6	8.3	**5.3**	4.2	6.6	**1.4**	0.8	2.1
	Algenea Town	**7.6**	3.1	13.5	**6.5**	2.8	11.3	**0.9**	0.0	3.0	**4.3**	1.8	8.4	**3.1**	0.3	6.3	**1.2**	0.0	3.7
	Morne Camp*	**11.9**	5.9	17.3	**8.6**	4.1	14.2	**3.0**	0.9	5.6	**9.9**	5.8	14.1	**7.7**	4.7	11.6	**2.1**	0.3	4.7
Central Darfur	Azoum	**10.6**	5.2	17.4	**9.4**	4.5	16.3	**0.0**	0.0	2.5	**12.6**	5.6	18.2	**9.7**	4.2	16.4	**2.5**	0.0	5.9
	Bendsi (part)	**21.8**	13.5	30.5	**15.1**	8.8	22.8	**5.7**	1.9	11.8	**5.8**	1.9	10.8	**2.8**	0.0	6.7	**2.9**	0.0	6.9
	Mukjar (part)	**11.3**	7.0	16.3	**9.8**	6.4	15.0	**1.4**	0.0	3.7	**11.6**	6.8	16.5	**9.7**	5.2	13.8	**2.0**	0.3	4.3
	Nertati	**1.9**	0.0	7.6	**1.8**	0.0	7.4	**0.0**	0.0	3.4	**8.6**	0.0	14.5	**7.3**	0.0	12.0	**1.1**	0.0	3.4
	Rokiro	**10.1**	3.9	16.1	**8.5**	3.1	16.2	**0.0**	0.0	4.1	**11.1**	0.9	24.2	**8.6**	0.0	25.8	**0.0**	0.0	4.0
	Um Dukhun (part)	**11.1**	5.9	17.7	**6.3**	3.1	11.3	**4.3**	2.1	7.9	**11.2**	6.4	16.5	**8.0**	4.4	12.6	**3.3**	0.7	6.1
	Wadi Salih (part)	**10.5**	6.8	14.9	**8.3**	5.2	11.7	**2.2**	0.6	4.9	**12.0**	7.6	16.4	**8.2**	5.1	11.8	**3.5**	2.0	5.3
	Zalingei	**14.6**	12.3	17.6	**7.3**	5.2	9.7	**7.3**	5.1	9.5	**9.0**	6.5	11.5	**8.4**	5.6	10.7	**0.8**	0.1	2.2
	All state except capital	**12.7**	10.7	15.1	**9.9**	7.7	12.0	**2.8**	1.6	4.1	**10.6**	9.0	12.5	**8.1**	6.3	9.8	**2.6**	1.7	3.5
	Zalingi Town	**13.4**	9.4	17.9	**10.2**	6.3	14.5	**3.0**	0.9	6.0	**18.3**	13.2	23.4	**16.7**	12.1	22.6	**1.5**	0.3	3.4
	Mukjar Town*	**11.1**	6.5	16.8	**9.8**	5.5	15.4	**1.4**	0.0	3.8	**11.6**	7.1	16.1	**9.3**	5.1	14.2	**1.8**	0.0	4.5
	Um Dokhon Town*	**11.1**	5.7	17.1	**6.5**	2.9	11.4	**4.7**	1.7	7.8	**11.6**	7.1	16.9	**7.8**	4.2	12.2	**3.4**	0.9	7.1

Moderate acute malnutrition (Figures 13, 14 and 15)

Moderate acute malnutrition is defined as the percentage of children 6-59 months <-2 and =>-3 z-scores weight for height (WHO Growth Standards 2005). Moderate malnutrition measured by MUAC is defined as percentage of children 6-59 months with a MUAC of <125mm and =>115mm. Moderate acute malnutrition shows a prevalence of well above 10% across large areas of the country. Overall prevalence of moderate acute malnutrition is lower when measured by MUAC. Some children will recover from moderate acute malnutrition without treatment, however some will progress to severe acute malnutrition at which point, if left untreated, up to 50% will die (WHO SAM case-fatality estimation 30-50%)[10]. This underlies the need for programs aimed to prevent malnutrition, and for coordinated programs that work together for early identification of children most at risk of death in order to treat them and to prevent them from slipping back to severe acute malnutrition after discharge.

Figure 13: Number of children with GAM by state

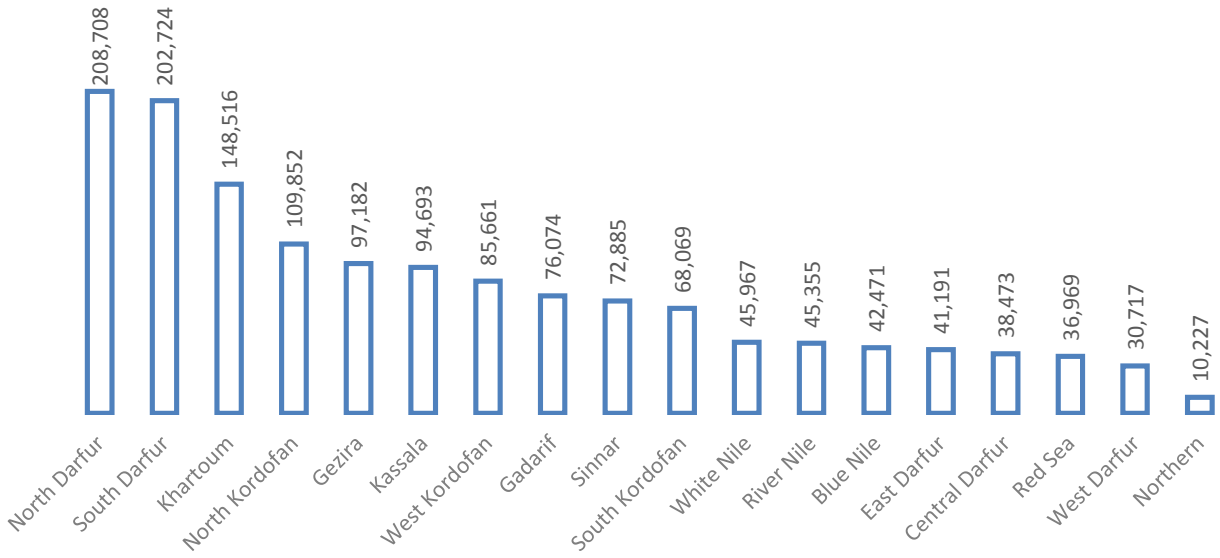


Figure 14: Classification map of moderate acute malnutrition by weight for height z-score

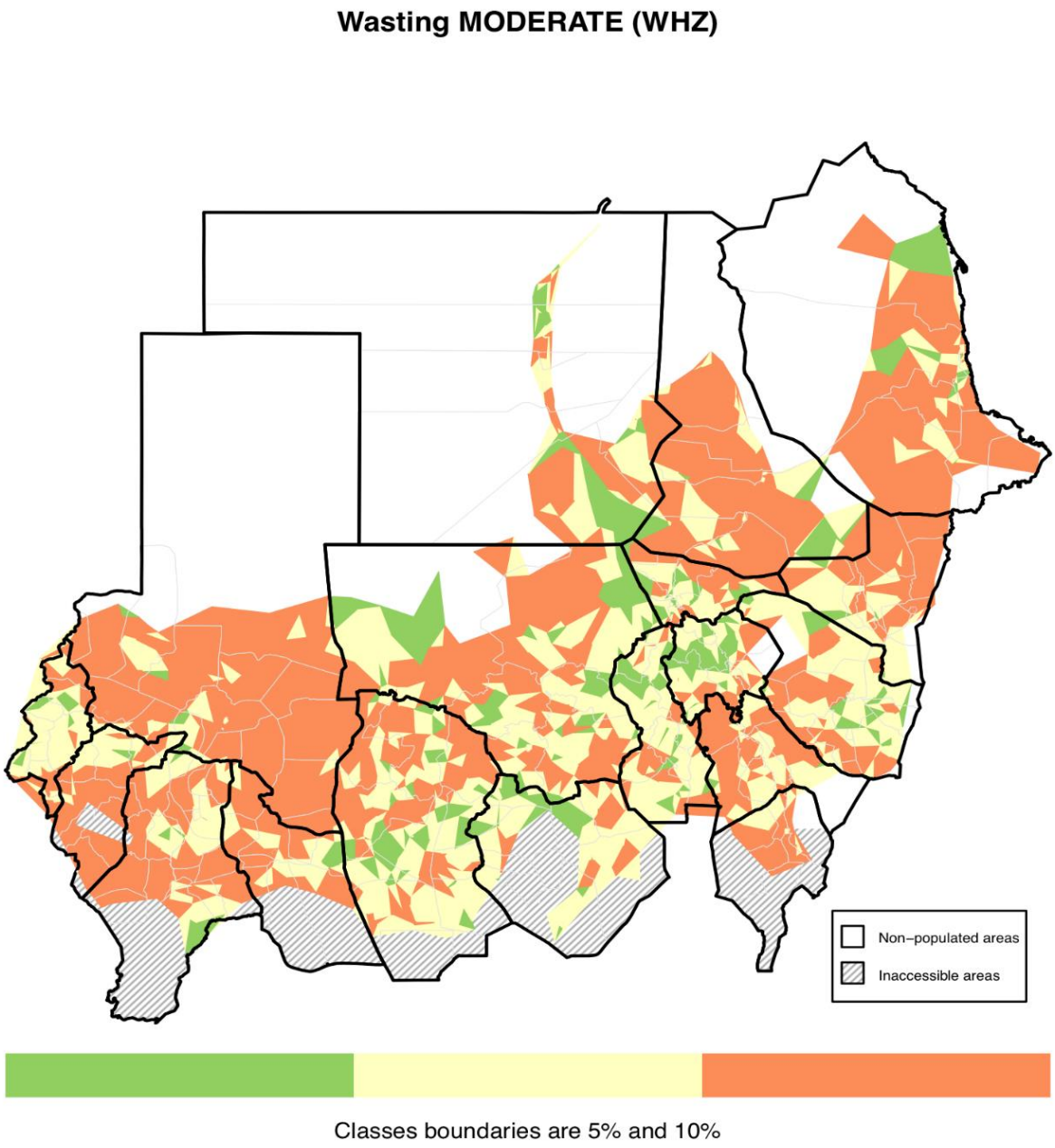
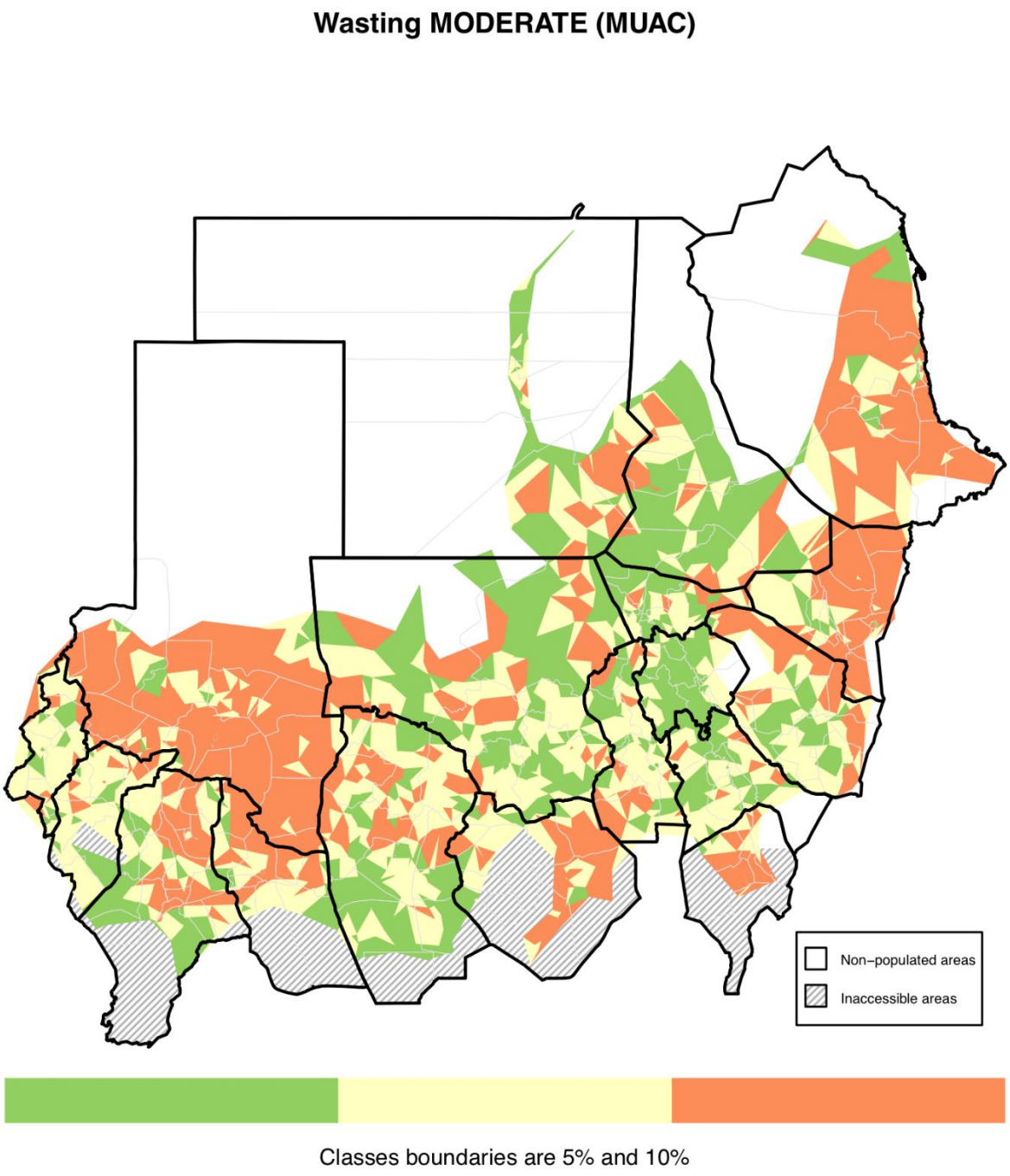


Figure 15: Classification map of moderate acute malnutrition by MUAC



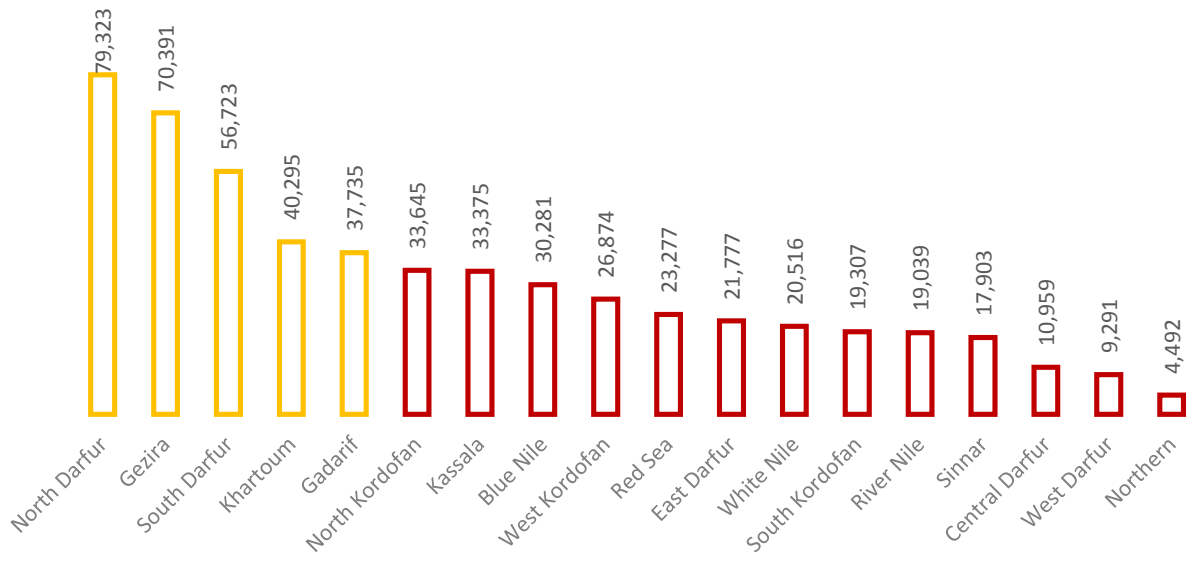
Severe acute malnutrition (Figures 16, 17 and 18)
Severe acute malnutrition (SAM) based on WHZ and / or oedema is defined as < -3 z-scores weight-for-height and / or oedema. SAM based on MUAC is defined as less than 115 millimetres. Map 14 shows that severe acute malnutrition measured by weight for height z-score is present in every state with a particular concentration in Red Sea, North Darfur and River Nile as well as large pockets in Kassala, Gedaref and Blue Nile. High SAM prevalence localities were found in South Darfur state which showed lowest SAM prevalence according to SHHS 2010 (2.3%) namely Dimso locality (11.8%) and El Salam (10.4%).

As with GAM, there is a miss-match between prevalence of malnutrition measured by weight-for-height and MUAC across the country. In most locations more children are classified as SAM using WHZ case definition compared to MUAC. This is likely due to body shapes that differ from the Growth Standard [11]. In Red Sea however, prevalence of severe acute malnutrition is higher in some localities when measured by MUAC meaning that more children than previously thought are at increased risk of mortality.

MUAC is used for the assessment of nutritional status. The major determinants of MUAC, arm muscle and sub-cutaneous fat, are both important determinants of survival in malnutrition and infection. MUAC is less affected than weight and height based indices (such as WHZ) by nutritional oedema and is a more sensitive index of tissue wasting than low body weight. It is also relatively independent of height and body-shape. Figure 16 shows the number of children expected to suffer from severe acute malnutrition during the course of one year. Gezira state is the second most populated state after Khartoum and therefore carries a high burden of children with SAM.

Severe acute malnutrition (SAM) by MUAC is defined as MUAC less than 115mm. Priority areas for intervention using this case definition are similar to those identified by WHZ and are many localities in Red Sea and North Darfur states as well as pockets in Kassala, Gedaref, Blue Nile, South Kordofan and River Nile. Highest prevalences of SAM were recorded in North Darfur (Saraf Omra, Kelemando, Tawilla, and El Sereif camp), South Darfur (Tulus and Dmso) and Red Sea (Tokkar) where SAM prevalence (by MUAC) was more than 19%. It is also important to consider absolute numbers while planning services so that the most children in need are reached. Figure 16 shows that Gezira and Khartoum states are also important areas for intervention.

Figure 16: Number of children with SAM per state (SAM burden).



The 5 states highlighted in orange (first 5 states) carry 51% of the total SAM burden in the country.

Figure 17: Classification map of severe acute malnutrition prevalence by WHZ

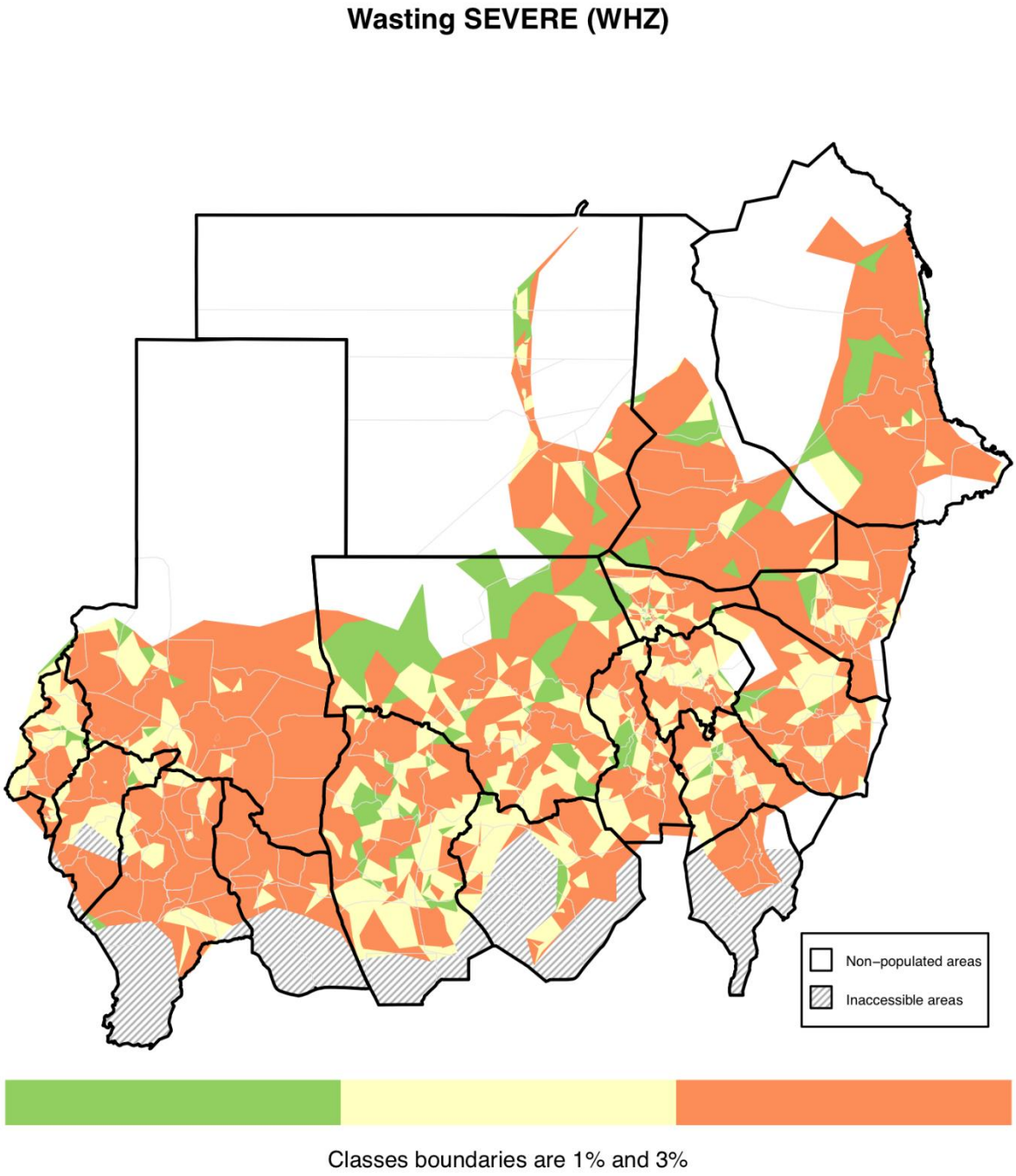
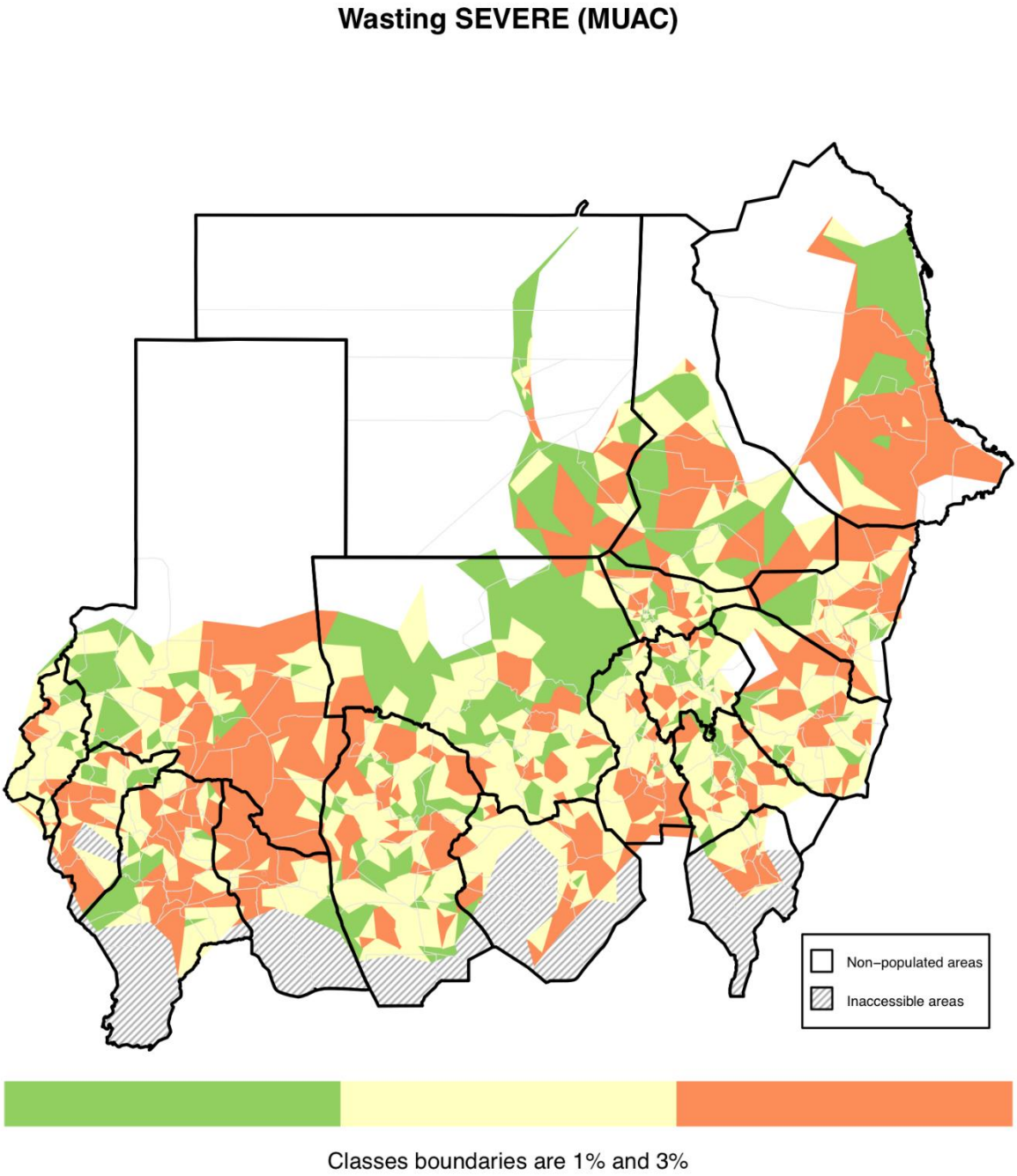


Figure 18: Classification map of SAM prevalence by MUAC



Underweight prevalence (weight for age)
Weight-for-age index values were also calculated to give an estimate of the prevalence of underweight, or lightness. Weight-for-age reflects body mass relative to chronological age, and is influenced by both the height and the weight of the child. Weight-for-age is a sum of the information given by weight-for-height and height-for-age, and its composite nature makes it difficult to interpret (i.e. underweight implies stunting and/or wasting). Again, calculation of this index is reliant on accurate estimation of the child's age. Weight-for-age is most often used for growth monitoring of individual children, and is calculated here because of its use in measuring MDG1[10].

Global underweight (Figure 19)
Prevalence of underweight is high across the country, reaching up to almost 80% in Senkat locality in Red Sea state.

Moderate underweight (Figure 20)

Severe underweight (Figure 21)
Severe underweight is highest across the Eastern Region and in Sennar and North Darfur.

[10] Eradicate extreme poverty and hunger (http://www.un.org/millenniumgoals/poverty.shtml)

Figure 19: Classification map of global underweight prevalence estimates

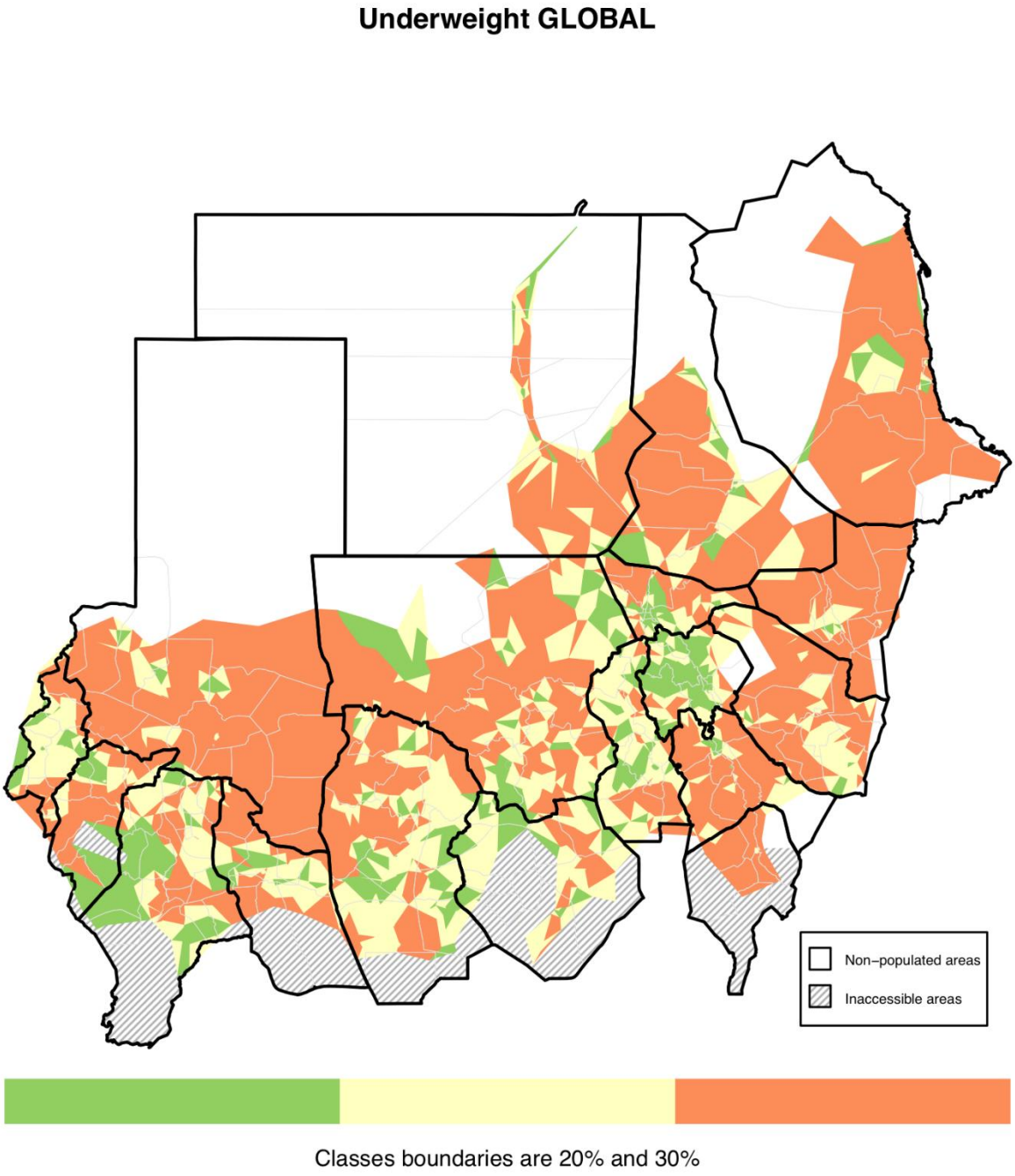


Figure 20: Classification map of moderate underweight prevalence estimates

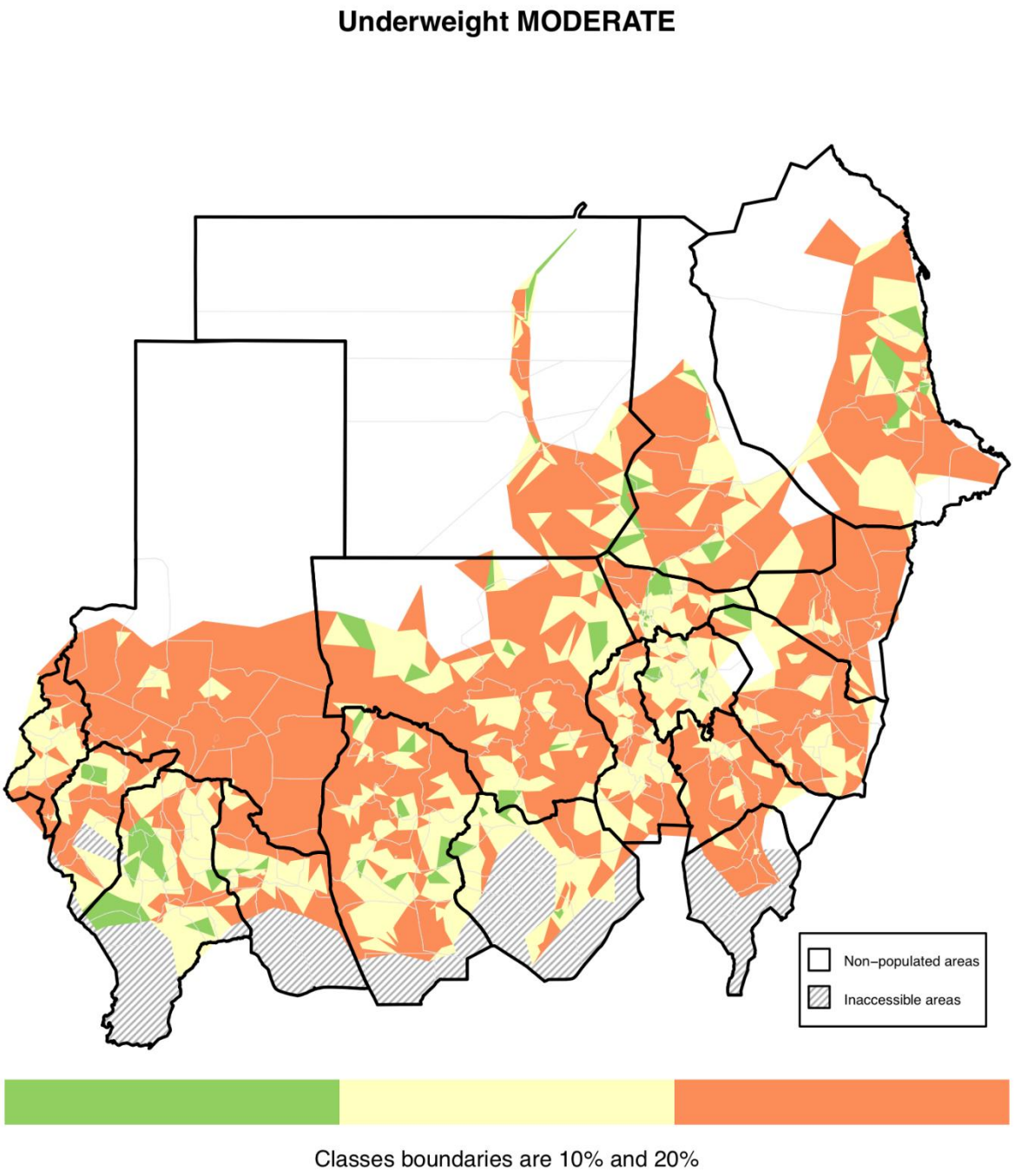


Figure 21: Classification map of severe underweight prevalence estimates

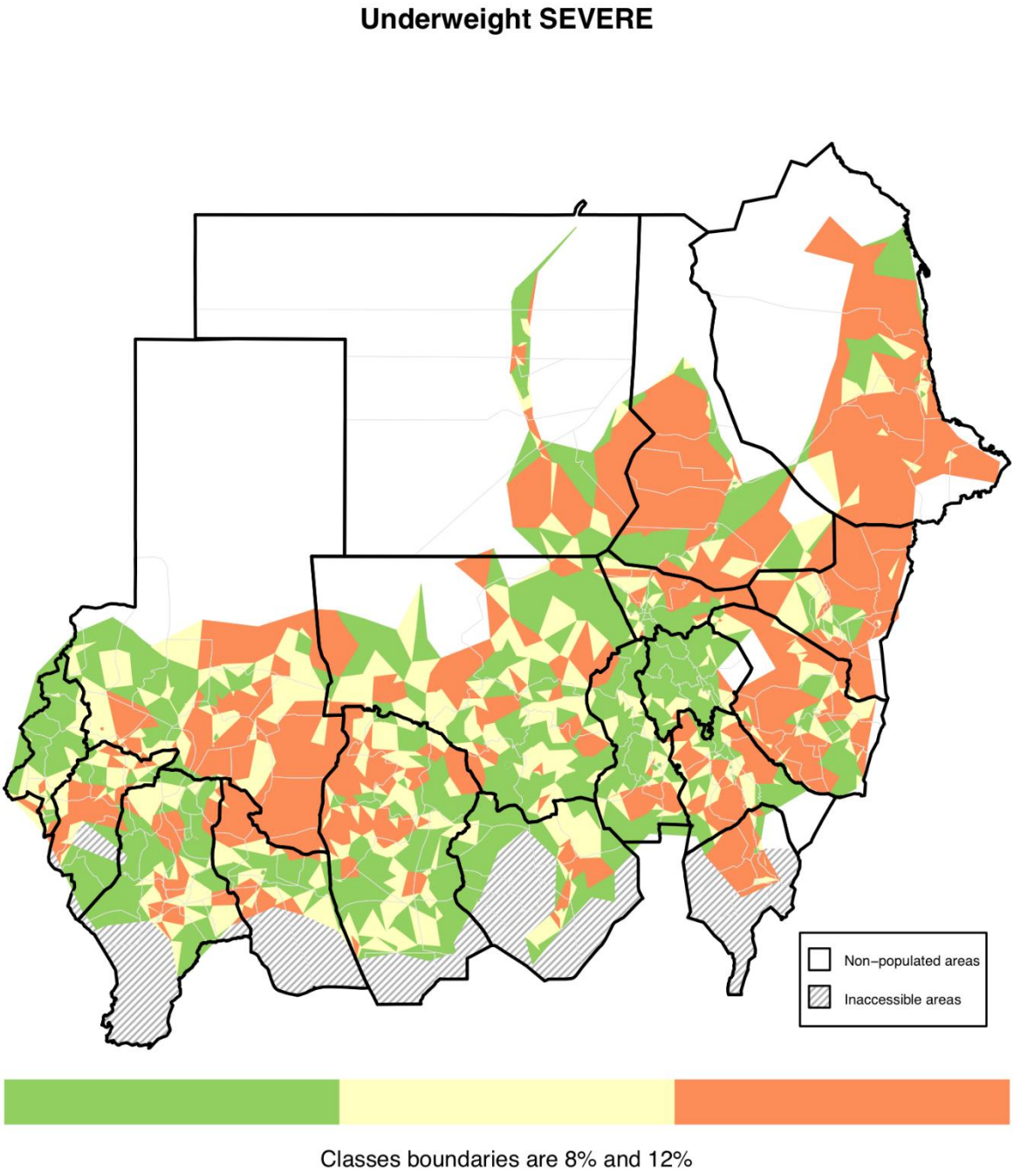


Table 4: Underweight (weight for age) results, by locality

State	Locality	Underweight GLOBAL			Underweight MODERATE			Underweight SEVERE		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Red Sea	Ageeg	**54.7**	39.3	66.3	**30.3**	22.7	38.0	**25.1**	15.5	32.0
	Alganeb Alolib	**41.8**	34.8	46.5	**24.0**	18.5	29.9	**17.6**	11.2	22.9
	Dordaib	**31.2**	19.7	45.4	**18.8**	10.3	33.0	**11.6**	6.4	19.7
	Haia	**48.6**	38.0	60.9	**29.0**	20.7	36.0	**19.9**	14.0	27.2
	Haliab	**41.3**	15.4	62.3	**24.2**	12.3	38.7	**14.5**	3.1	28.1
	Japitalmadin	**28.7**	21.5	39.6	**17.2**	13.2	23.2	**10.2**	5.8	16.2
	Sawaken	**54.6**	47.4	62.3	**26.1**	19.0	33.1	**28.6**	22.3	35.2
	Senkat	**63.3**	46.7	76.5	**17.9**	11.6	26.0	**43.3**	29.2	60.3
	Tokar	**67.3**	61.5	72.6	**36.1**	31.2	40.8	**31.1**	26.1	35.5
	Port Sudan	**27.2**	21.8	32.1	**17.2**	14.0	20.6	**9.9**	6.6	13.1
	All state	**41.3**	37.0	45.2	**23.8**	21.3	26.3	**17.7**	15.3	20.1
Kassala	Aroma	**55.6**	46.2	63.6	**27.9**	22.8	32.8	**28.6**	19.7	35.5
	Hamshkoreb	**53.0**	47.4	60.2	**31.2**	25.2	36.6	**21.7**	15.6	27.5
	Kshmalgrba	**43.8**	35.9	51.7	**29.9**	22.8	36.2	**12.8**	8.0	19.3
	Nahr Atbara	**36.5**	25.0	46.7	**25.0**	14.5	35.6	**10.0**	4.2	18.2
	North Delta	**61.9**	53.5	68.5	**36.1**	28.8	41.3	**25.7**	19.7	32.7
	Rify Kassala	**51.2**	31.6	67.7	**27.7**	17.5	38.0	**23.9**	11.0	36.4
	Rural Halfa	**26.5**	16.9	35.8	**19.7**	12.4	27.2	**6.4**	3.4	11.6
	Talkok	**49.2**	44.2	55.0	**35.7**	27.6	42.4	**14.3**	10.3	19.3
	Wadalhlew	**41.2**	33.6	48.5	**26.3**	20.6	34.5	**14.2**	8.6	21.0
	West Kassala	**26.3**	18.3	34.5	**22.1**	14.5	29.9	**3.2**	0.6	13.0
	All state except capital	**49.1**	44.6	53.8	**31.3**	28.4	34.6	**17.9**	14.6	21.8
	Kassala Town	**28.9**	20.8	37.3	**19.9**	13.3	25.8	**8.3**	3.2	13.6
	Hamoshkoreib Town*	**53.7**	46.6	60.4	**31.0**	24.1	37.4	**21.9**	15.5	28.7
Gedaref	Al Gadaref Wasat	**42.9**	34.4	50.9	**29.9**	25.6	35.1	**12.3**	7.7	18.4
	Al Mafaza	**55.1**	42.7	63.4	**24.8**	18.3	32.0	**30.3**	19.1	36.1
	Albutana	**40.3**	35.4	45.5	**24.4**	21.0	29.3	**16.1**	12.5	19.9
	Alfashaga	**35.3**	31.1	39.5	**28.6**	25.6	32.4	**6.0**	3.8	8.2
	Alfaw	**45.5**	36.2	54.3	**32.7**	23.0	42.7	**12.5**	8.9	16.7
	Algalabat Al Garbiya	**29.8**	19.2	40.5	**17.5**	10.7	25.6	**12.4**	6.2	19.4
	Algalabat Al Shargiya	**13.3**	7.0	22.6	**11.0**	4.7	21.0	**2.6**	0.0	5.4
	Algurisha	**44.2**	35.0	53.7	**30.2**	23.6	38.8	**13.8**	9.9	20.1
	Alrahad	**38.9**	29.2	48.1	**24.2**	14.2	32.1	**16.0**	8.6	22.6
	Basonda	**17.0**	12.1	23.1	**12.4**	7.9	17.7	**4.6**	2.7	7.4
	Gula Alnahal	**43.3**	38.8	49.9	**24.9**	19.4	30.1	**18.8**	14.3	24.1
	All state except capital	**30.9**	27.9	34.2	**23.4**	21.0	25.4	**7.8**	6.2	9.5
	Gedarif Town	**22.8**	15.1	29.8	**13.5**	9.3	18.5	**8.9**	4.6	13.4
Blue Nile	Baw (part)	**44.4**	34.9	57.0	**31.0**	20.0	44.4	**14.8**	6.1	23.4
	Damazin	**39.7**	18.8	58.5	**32.9**	13.2	47.7	**8.4**	2.8	17.1
	Giessan (part)	**33.3**	26.6	40.0	**21.7**	17.3	28.5	**11.2**	8.4	14.7
	Kurmuk (part)	**43.1**	29.9	56.1	**31.3**	15.1	42.5	**10.0**	3.9	18.8
	Rosairs (part)	**40.3**	35.9	44.0	**25.0**	22.2	27.7	**15.1**	12.5	17.7
	Tadamon (part)	**28.4**	16.2	45.1	**15.5**	6.9	26.5	**12.5**	6.1	22.2
	All state except capital	**37.7**	35.0	41.2	**24.1**	21.5	26.4	**13.7**	11.9	15.8
	Damazin Town	**25.8**	17.8	35.0	**19.8**	12.8	30.2	**6.0**	3.4	9.6
	Roseris Town	**22.3**	16.6	28.9	**17.0**	12.0	22.4	**6.2**	3.2	10.5

State	Locality	Underweight GLOBAL			Underweight MODERATE			Underweight SEVERE		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
South Kordofan	Abujebiha (part)	**22.5**	18.0	27.1	**16.3**	12.7	19.9	**6.0**	2.4	10.7
	Al Tadamoon (part)	**36.6**	29.4	42.9	**24.9**	18.3	30.2	**12.1**	7.4	17.1
	Alabaseya	**32.8**	23.8	41.8	**25.9**	17.5	34.1	**7.8**	3.7	13.3
	Algoz	**17.1**	11.1	25.9	**13.0**	9.0	17.8	**4.2**	1.5	8.0
	Allirri	**23.4**	13.1	34.0	**16.7**	8.8	24.9	**6.1**	2.5	10.8
	Alreif Alshargi	**21.2**	15.1	27.8	**14.7**	9.2	20.1	**7.1**	3.2	12.0
	Dilling (part)	**15.1**	7.0	25.1	**11.3**	3.8	20.0	**3.7**	0.0	9.1
	Gadeir (part)	**16.0**	11.5	22.5	**12.4**	8.8	17.3	**3.8**	1.7	6.3
	Habeila (part)	**24.3**	19.5	29.4	**20.1**	15.1	26.9	**4.6**	2.0	8.0
	Rashad (part)	**20.0**	10.8	33.1	**14.2**	8.6	21.2	**5.0**	1.4	13.5
	All state except capital	**23.6**	21.0	26.7	**17.3**	15.3	19.8	**6.4**	4.9	7.7
	Kadugli Town	**12.0**	7.7	16.5	**9.5**	6.0	13.9	**2.2**	0.5	4.8
	Talodi Town	**18.2**	12.7	23.8	**13.0**	8.3	18.6	**4.9**	2.2	8.2
West Kordofan	Abo Zabad	**26.4**	21.4	31.9	**18.2**	13.7	24.3	**8.4**	5.1	12.8
	Abyei (NOT AAA)	**21.3**	17.4	25.1	**12.7**	8.7	17.0	**8.5**	5.5	11.7
	Al Khowi	**25.7**	20.6	30.8	**19.9**	16.0	23.8	**5.7**	3.6	9.1
	Al Odaya	**28.7**	23.8	33.4	**18.7**	14.9	22.6	**10.3**	7.2	13.2
	Al Salam	**19.5**	16.0	23.2	**15.9**	12.9	20.3	**3.7**	1.5	6.0
	Aldebab	**26.8**	22.0	33.0	**16.4**	11.1	21.7	**10.1**	6.1	15.9
	Almearam	**36.9**	24.4	44.3	**23.6**	15.1	30.9	**13.6**	5.8	21.7
	Alsnout	**36.4**	30.8	42.0	**28.5**	22.2	33.5	**7.3**	5.1	9.9
	Babanusa	**23.3**	18.2	29.5	**15.7**	9.1	21.1	**7.2**	2.8	13.2
	En Nuhud	**27.5**	22.4	32.1	**15.0**	11.0	19.9	**12.2**	9.5	15.1
	Ghebeish	**37.3**	30.3	43.5	**26.8**	20.9	31.9	**10.1**	7.0	14.0
	Kailak (part)	**16.6**	12.2	21.1	**13.9**	10.2	18.6	**2.7**	0.9	4.9
	Lagawa (part)	**19.6**	14.5	24.7	**13.2**	9.8	18.0	**6.2**	4.2	8.9
	Wad Bandah	**35.7**	31.2	40.7	**24.2**	20.2	28.3	**11.9**	8.8	14.9
	All state except capital	**28.0**	26.0	29.8	**19.2**	18.0	20.7	**8.6**	7.5	9.6
	Fula Town	**15.1**	8.7	21.2	**11.9**	7.7	18.2	**2.5**	0.8	4.9
North Kordofan	Bara	**29.7**	26.3	33.2	**21.1**	18.4	24.3	**8.6**	6.8	10.4
	El Rahad	**36.6**	26.3	44.9	**30.6**	20.2	38.4	**6.4**	2.8	11.6
	Jebrat El Sheikh	**21.1**	18.3	24.6	**11.8**	9.2	14.5	**9.3**	7.8	11.1
	Sheikan	**25.9**	20.4	33.3	**19.5**	15.1	24.3	**6.1**	3.6	9.4
	Sowdari	**34.8**	31.4	38.1	**26.2**	24.0	28.6	**8.5**	6.0	10.9
	Umm Daam	**32.9**	20.4	46.4	**26.1**	11.7	40.0	**6.5**	0.0	14.8
	Umm Rawaba	**29.0**	25.6	32.5	**21.6**	18.5	24.6	**7.5**	5.9	9.4
	West Bara	**31.1**	20.8	40.1	**23.4**	17.1	30.6	**7.6**	2.5	13.0
	All state except capital	**28.9**	27.1	30.7	**21.1**	19.6	22.4	**8.0**	7.1	9.0
	El Obeid Town	**18.6**	13.8	26.0	**13.0**	8.5	17.3	**5.7**	2.4	9.8
White Nile	Alsalam	**29.0**	24.1	33.7	**21.7**	17.3	25.5	**7.8**	5.2	9.8
	Ed Douiem	**23.8**	17.4	29.9	**18.5**	13.6	24.0	**5.1**	2.8	7.6
	El Gutaina	**23.4**	17.5	30.2	**19.0**	12.8	26.0	**4.8**	2.6	7.5
	El Jabalain	**23.0**	15.3	31.4	**16.4**	11.4	21.9	**6.1**	3.1	11.1
	Guli	**19.2**	14.1	24.1	**14.2**	8.7	19.1	**5.4**	3.3	8.4
	Kosti	**30.9**	19.6	40.6	**21.4**	15.0	29.0	**9.4**	2.9	15.7
	Rabak	**27.4**	18.3	39.3	**22.6**	13.4	32.5	**4.7**	0.0	13.4
	Tandalti	**21.2**	15.9	27.9	**16.3**	11.5	23.3	**4.5**	1.4	7.6
	Umm Remta	**21.5**	11.7	29.8	**16.7**	9.9	25.0	**4.3**	1.7	8.5
	All state except capital	**22.9**	20.8	25.7	**17.4**	15.6	19.5	**5.4**	4.4	6.4
	Kosti Town	**17.0**	12.0	22.0	**12.4**	8.3	16.1	**5.1**	2.3	8.6
	Rabak Town	**21.6**	16.2	27.7	**16.3**	11.0	21.3	**5.3**	2.9	8.5

State	Locality	Underweight GLOBAL			Underweight MODERATE			Underweight SEVERE		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Sennar	Abu Hijar	**35.4**	30.7	40.0	**27.9**	23.4	33.0	**7.5**	4.4	12.9
	Al Dindir	**26.2**	20.4	32.5	**17.1**	12.6	23.0	**8.9**	5.7	13.7
	Aldali & Almazmoum	**27.5**	20.8	32.8	**23.2**	17.1	29.1	**4.9**	2.5	8.2
	Alsooki	**27.7**	20.3	34.1	**20.2**	14.9	26.4	**6.6**	4.1	9.4
	Sennar	**23.0**	13.6	35.4	**16.5**	10.2	22.3	**6.2**	1.1	13.3
	Sharg Sennar	**36.8**	27.5	44.8	**24.8**	19.1	30.1	**12.4**	6.6	18.9
	Sinja	**23.7**	18.4	32.4	**18.6**	14.2	23.9	**5.0**	2.0	8.9
	All state except capital	**28.1**	25.4	31.3	**21.3**	19.2	23.6	**6.9**	5.5	8.5
	Sennar Town	**12.7**	7.0	18.2	**10.0**	6.1	14.8	**2.2**	0.3	5.5
	Sinja Town	**12.9**	9.0	17.4	**10.3**	6.4	15.0	**2.4**	0.3	5.9
El Gezira	El Hasaheisa	**25.4**	16.0	39.1	**17.5**	8.7	26.4	**7.1**	1.2	16.5
	El Kamlin	**23.4**	6.4	39.2	**21.0**	7.1	33.7	**2.6**	0.0	8.0
	El Managil	**30.0**	17.8	41.0	**22.7**	12.7	32.2	**6.4**	4.0	9.2
	Janub El Gezira	**16.0**	9.6	23.8	**10.4**	5.1	16.9	**5.0**	1.2	9.9
	Madani Al Kobra	**45.5**	19.8	66.7	**21.4**	6.3	46.2	**21.4**	0.0	42.9
	Sharg El Gezira	**12.7**	8.4	19.3	**12.0**	7.5	17.4	**0.4**	0.0	3.0
	Umm El Gura	**18.9**	11.3	27.9	**15.7**	9.5	21.3	**3.9**	0.0	9.4
	All state except capital	**22.6**	16.4	27.8	**17.8**	13.0	22.7	**4.9**	3.6	6.3
	Madani Town	**13.8**	6.4	22.2	**9.7**	4.3	17.7	**3.9**	0.7	8.5
Khartoum	Bahari	**14.5**	9.8	19.6	**12.5**	8.8	16.4	**1.7**	0.5	4.1
	Gabel Awlia	**12.2**	9.2	17.8	**11.7**	7.9	15.1	**0.7**	0.0	4.5
	Karrarri	**22.3**	16.0	27.2	**20.9**	15.9	25.2	**1.6**	0.0	6.2
	Khartoum	**9.1**	5.2	13.3	**9.0**	5.7	13.4	**0.0**	0.0	1.3
	Shareg Elnile	**17.1**	13.1	21.1	**12.7**	9.6	16.5	**4.3**	2.7	6.8
	Umbada	**12.0**	6.3	20.3	**9.5**	5.2	14.6	**2.6**	0.6	5.7
	Umdrman	**15.2**	9.1	23.8	**11.4**	7.1	17.1	**4.3**	0.5	10.1
	All state	**15.6**	13.4	17.8	**13.3**	11.3	14.8	**2.4**	1.4	3.6
Northern	Alborgeg	**33.3**	0.0	66.9	**33.3**	0.0	71.6	**0.0**	0.0	0.0
	Aldabba	**17.1**	13.4	21.5	**15.7**	12.4	19.3	**1.3**	0.3	2.9
	Algoled	**17.5**	11.1	23.0	**12.6**	8.4	18.1	**4.7**	1.9	9.5
	Dalgo	**28.9**	24.0	33.3	**20.6**	17.0	24.3	**8.5**	6.1	11.4
	Dongola	**24.8**	14.4	41.2	**19.3**	10.6	29.3	**5.6**	1.6	11.3
	Halfa	**6.2**	3.8	9.1	**6.2**	4.0	8.9	**0.0**	0.0	1.1
	Merawi	**18.8**	14.6	23.7	**15.8**	12.2	20.0	**3.2**	1.8	5.1
	All state except capital	**14.9**	11.9	18.2	**12.3**	10.2	14.6	**2.5**	1.6	3.6
	Dongola Town	**14.0**	9.1	18.8	**11.4**	7.3	16.2	**2.6**	0.3	5.3
River Nile	Abu Hamad	**18.9**	13.5	25.3	**12.6**	8.3	17.9	**7.1**	5.1	9.8
	Albuhaira	**37.7**	25.6	50.2	**19.6**	13.0	25.3	**17.1**	10.8	27.6
	Atbara	**36.8**	28.5	47.1	**19.8**	14.3	24.8	**17.8**	10.5	24.5
	Barbar	**14.4**	8.8	20.4	**7.0**	2.9	14.5	**6.6**	3.4	9.7
	Ed Damer	**21.1**	15.2	27.4	**15.0**	10.2	20.5	**6.3**	4.3	8.8
	El Matammah	**21.4**	16.8	26.7	**13.9**	9.8	17.7	**7.5**	4.4	10.4
	Shendi	**41.0**	32.0	50.2	**26.9**	21.8	31.8	**13.7**	7.1	24.1
	All state except capital	**23.0**	20.6	26.1	**14.6**	12.7	16.6	**8.7**	7.1	10.1
	Atbara Town	**14.3**	9.6	19.8	**10.3**	6.2	15.0	**3.8**	1.5	6.8
	El Damar Town	**16.0**	10.0	21.6	**11.2**	6.4	17.6	**4.8**	2.0	7.2

State	Locality	Underweight GLOBAL			Underweight MODERATE			Underweight SEVERE		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
North Darfur	Al Fasher	**37.5**	31.1	43.9	**25.7**	21.2	31.4	**11.5**	7.7	15.2
	Al Koma	**36.1**	28.8	43.5	**26.2**	19.3	33.6	**10.2**	5.9	14.8
	Al Malha	**43.5**	37.4	49.3	**31.6**	25.7	37.6	**11.9**	9.0	15.3
	Al Seref	**46.2**	39.5	52.6	**28.8**	20.9	36.0	**17.3**	11.8	23.2
	Al Tina	**33.9**	21.9	43.8	**24.2**	14.3	33.3	**10.0**	3.4	17.0
	Al Twasha	**47.9**	41.7	53.9	**30.0**	23.8	35.1	**18.1**	12.6	26.2
	Allait	**62.3**	53.1	68.8	**33.7**	24.7	44.0	**27.8**	20.0	37.6
	Ambaro	**37.7**	31.4	43.5	**32.4**	27.3	37.4	**5.3**	2.6	8.3
	Dar Alsalam	**39.2**	33.0	46.1	**27.7**	21.5	34.5	**11.3**	8.2	14.8
	Kabkabia	**35.6**	30.6	40.1	**25.2**	20.0	30.9	**11.0**	7.7	15.1
	Karnoi	**40.8**	24.7	52.8	**29.3**	17.9	38.4	**12.7**	5.5	19.1
	Kelemendo	**43.3**	36.4	50.9	**29.4**	23.7	34.1	**14.0**	8.3	20.1
	Kutum	**46.4**	39.6	51.0	**36.7**	31.6	40.5	**9.3**	6.8	12.2
	Mallit	**38.7**	33.5	43.4	**27.0**	22.1	31.7	**12.0**	9.3	14.6
	Saraf Omra	**42.9**	32.9	54.6	**32.2**	22.6	41.4	**10.7**	4.8	18.2
	Tawila	**34.0**	24.4	44.8	**23.3**	16.9	31.4	**11.2**	6.1	16.5
	Umkadada	**38.9**	33.6	44.3	**25.7**	19.8	31.9	**12.7**	8.9	16.5
	All state except capital	**41.9**	40.0	43.6	**29.0**	27.5	30.4	**13.0**	11.9	14.4
	El Fashir Town	**28.9**	22.1	35.6	**21.5**	15.4	28.4	**7.4**	4.1	11.6
	Zamzam Camp*	**33.7**	27.3	42.6	**24.8**	19.5	30.6	**9.2**	5.7	13.1
	El Sireif Camp*	**46.2**	40.1	53.8	**28.3**	20.7	36.4	**17.5**	11.5	23.1
South Darfur	Al Rudoom (part)	**21.0**	15.8	26.1	**14.7**	11.3	19.0	**5.8**	3.4	9.3
	Alwehda	**29.0**	21.6	36.6	**23.8**	16.9	30.6	**4.3**	1.6	7.9
	Belil	**30.6**	23.4	38.9	**23.6**	15.6	30.2	**6.3**	2.8	11.8
	Buram	**22.9**	14.8	30.9	**15.7**	9.1	24.8	**7.2**	2.0	14.0
	Dimso	**40.2**	30.5	50.7	**26.6**	18.1	34.7	**13.9**	8.4	21.1
	El Salam	**60.8**	46.0	79.8	**28.9**	21.8	35.7	**28.8**	17.7	46.6
	Gerieda	**7.5**	0.0	24.1	**0.0**	0.0	15.1	**5.1**	0.0	12.9
	Id Elfirsan	**11.0**	6.9	15.9	**7.9**	4.7	13.7	**2.9**	1.0	5.0
	Kass	**30.1**	21.5	38.6	**18.3**	13.4	23.1	**11.5**	7.0	16.9
	Katila	**26.2**	20.9	31.8	**16.1**	12.3	20.5	**10.1**	6.8	14.2
	Kubum	**4.5**	0.8	10.5	**2.1**	0.0	8.1	**1.8**	0.0	5.2
	Mershing	**30.6**	16.7	43.2	**22.5**	11.7	34.8	**7.8**	2.0	16.0
	Netiga	**20.4**	12.5	28.9	**17.6**	10.1	27.5	**2.5**	0.0	5.9
	Rahad Elberdi (part)	**11.7**	8.2	16.9	**11.3**	8.1	15.3	**0.0**	0.0	2.0
	Toluss	**43.8**	33.3	53.1	**25.8**	15.8	35.4	**16.3**	9.3	24.1
	Um Dafog (part)	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	All state except capital	**23.8**	21.4	26.5	**17.0**	14.8	19.0	**7.1**	5.8	8.5
	Nyala Town	**25.1**	17.7	32.0	**17.2**	12.2	23.4	**6.9**	3.9	10.4
	Kalma Camp*	**45.8**	38.4	54.2	**28.0**	21.8	34.4	**17.8**	10.9	24.4

State	Locality	Underweight GLOBAL			Underweight MODERATE			Underweight SEVERE		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
East Darfur	Abukarinka	**32.8**	24.1	40.8	**25.0**	18.6	34.1	**7.1**	3.2	11.2
	Adilla (part)	**18.7**	12.6	26.2	**12.5**	3.3	21.0	**7.0**	2.3	11.8
	Al Deain	**10.8**	6.3	16.2	**7.0**	3.2	11.8	**3.3**	0.6	6.7
	Alfirdos	**43.2**	33.1	51.2	**25.3**	18.2	32.2	**16.3**	9.2	25.0
	Asslaya	**42.9**	31.7	53.2	**28.2**	20.7	36.5	**14.9**	6.8	22.1
	Aubgabar	**30.1**	24.4	36.7	**14.2**	8.5	24.0	**15.0**	7.5	21.5
	Aubmatarg	**31.2**	22.9	41.5	**20.8**	13.2	30.4	**10.1**	4.1	16.5
	Sharia (part)	**42.1**	34.2	52.0	**18.0**	11.7	27.2	**23.5**	16.4	31.1
	Yaseen (part)	**40.6**	29.7	51.5	**26.3**	18.5	35.0	**13.9**	6.1	23.7
	All state except capital	**31.9**	28.3	35.4	**21.2**	17.5	24.1	**10.5**	8.0	12.6
	Al Deain Town	**24.9**	19.6	31.0	**17.7**	13.8	23.1	**7.4**	4.4	11.3
West Darfur	Algenea	**15.6**	6.5	28.9	**13.0**	4.2	23.5	**2.4**	0.0	6.4
	Baida	**29.1**	19.5	39.2	**20.7**	14.9	27.3	**7.6**	3.8	12.0
	Forbranga	**30.6**	24.4	38.9	**22.9**	14.2	32.0	**7.7**	3.5	11.9
	Gabal Moon	**22.3**	16.7	29.1	**17.2**	11.4	25.8	**4.9**	3.1	7.1
	Habilla	**35.8**	28.8	42.5	**21.1**	15.7	26.7	**14.8**	10.0	19.4
	Kerenik	**21.9**	18.1	26.0	**18.6**	15.5	22.3	**3.8**	2.0	6.0
	Kulbus	**34.6**	29.1	40.4	**27.7**	21.7	34.4	**6.9**	4.0	10.9
	Serba	**18.6**	14.0	25.0	**9.7**	5.8	16.3	**8.8**	4.9	12.7
	All state except capital	**22.3**	19.8	25.1	**16.0**	14.0	18.3	**6.1**	4.4	7.5
	Algenea Town	**15.7**	10.7	21.8	**12.0**	7.5	16.6	**4.3**	1.6	7.9
	Morne Camp*	**36.4**	30.1	44.0	**27.2**	21.7	32.8	**9.1**	4.3	13.4
Central Darfur	Azoum	**32.5**	14.9	44.6	**18.5**	8.7	27.4	**15.5**	4.5	24.2
	Bendsi (part)	**29.5**	20.8	38.2	**15.2**	8.3	24.3	**14.2**	7.7	21.8
	Mukjar (part)	**31.8**	24.8	40.9	**23.3**	16.5	30.9	**8.9**	4.7	13.3
	Nertati	**24.5**	4.5	36.0	**16.4**	6.7	24.9	**8.5**	0.0	15.2
	Rokiro	**35.4**	20.5	52.1	**25.8**	16.0	36.2	**8.5**	2.0	17.9
	Um Dukhun (part)	**23.3**	17.2	31.5	**17.4**	10.5	24.2	**5.9**	2.7	10.3
	Wadi Salih (part)	**38.0**	30.7	45.5	**23.9**	20.2	28.8	**14.1**	9.1	20.4
	Zalingei	**22.1**	18.3	26.9	**13.4**	10.6	17.6	**9.1**	6.1	11.8
	All state except capital	**32.5**	28.5	36.8	**18.4**	15.7	20.8	**13.7**	11.3	16.2
	Zalingi Town	**24.1**	18.3	30.7	**18.2**	12.6	24.0	**5.4**	2.7	8.3
	Mukjar Town*	**32.6**	24.5	42.0	**23.0**	17.1	31.0	**9.0**	5.0	12.7
	Um Dokhon Town*	**23.7**	17.4	31.5	**17.2**	11.3	23.9	**6.3**	3.1	9.8

Stunting prevalence (height for age)

Height-for-age index values were calculated from the data to provide a prevalence of chronic malnutrition, or stunting. Calculation of indices for height-for-age, are dependent on accurate estimation of a child's age. Where health cards with ages were not available a child's age was determined using a detailed local events calendar. Stunting refers to a deficit in height relative to age due to a long-term process of linear growth retardation. It has long been proposed as a measure of chronic under nutrition or ill health, but may also be attributed to certain micronutrient deficiencies such as Vitamin A, zinc, calcium or folate [12]. A child who is stunted by the age of 2 years will not recover his/her lost growth in terms of physical stature as well as intellectual development resulting in life-long irreversible consequences that, on the scale seen in Sudan, will undermine national productivity and development.

Global stunting (Figure 23)

Figure 20 shows that stunting is widespread affecting children across the country. A prevalence of global stunting of 30% and above is classified as WHO as 'high' [1], shown in Figure 22 by the red colour. There are pockets of very high stunting rates, and highest prevalence's were recorded in Red Sea, Kassala and Gedaref states where up to 73% of children were found to be stunted (Sinkat locality in Red Sea State). State level aggregates are shown in Figure 21.

Moderate and Severe stunting (Figure 24 and 25)

Severe stunting affects the whole country and was found to be highest across the Eastern region of Red Sea, Kassala and Gedaref states.

The high prevalence of stunting recorded reflect the lack of integrated long-term programs aimed at tackling the root causes of malnutrition to contribute to reducing stunting and the long-term negative impacts of malnutrition.

Figure 22: Comparison of prevalence of global stunting by state, SHHS 2010 and S3M 2013

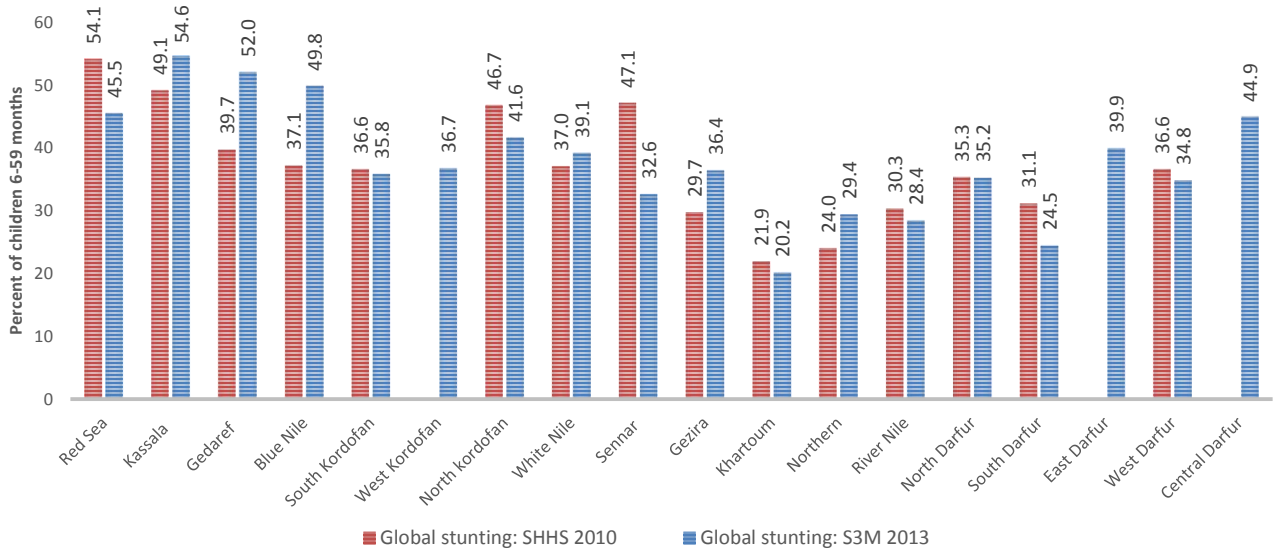


Figure 23: Classification map of global stunting

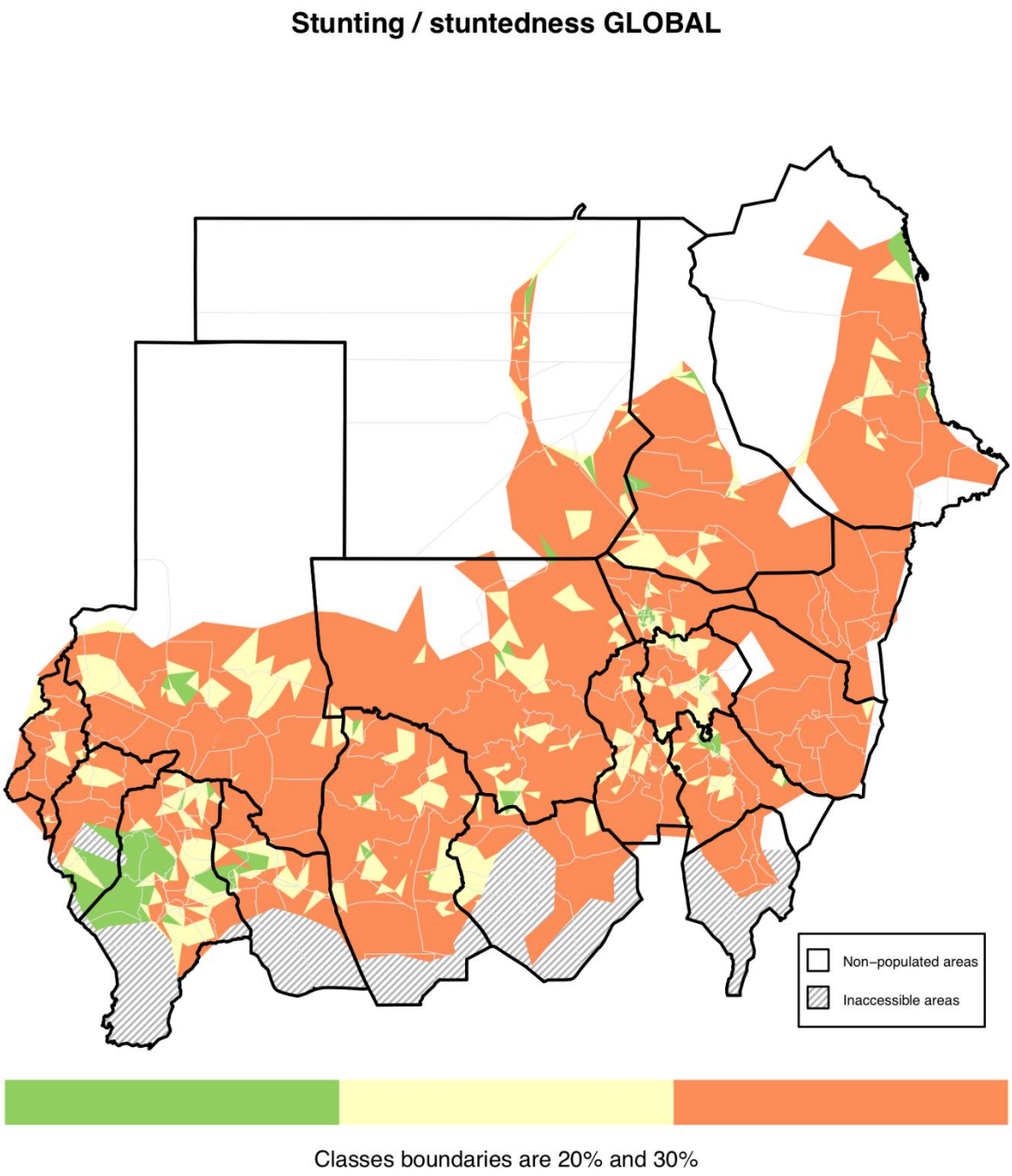


Figure 24: Classification map of global stunting

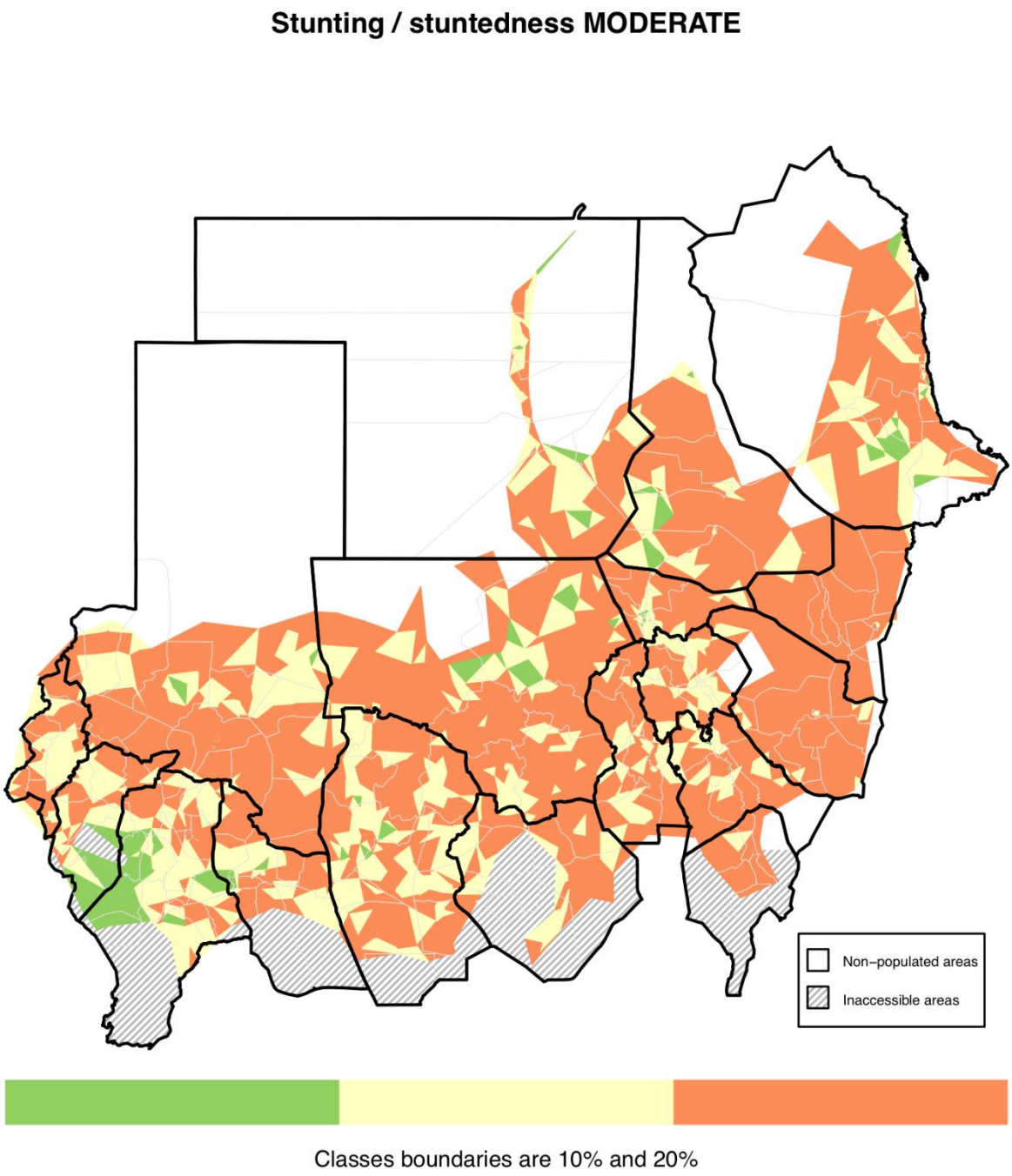


Figure 25: Classification map of severe stunting prevalence estimates

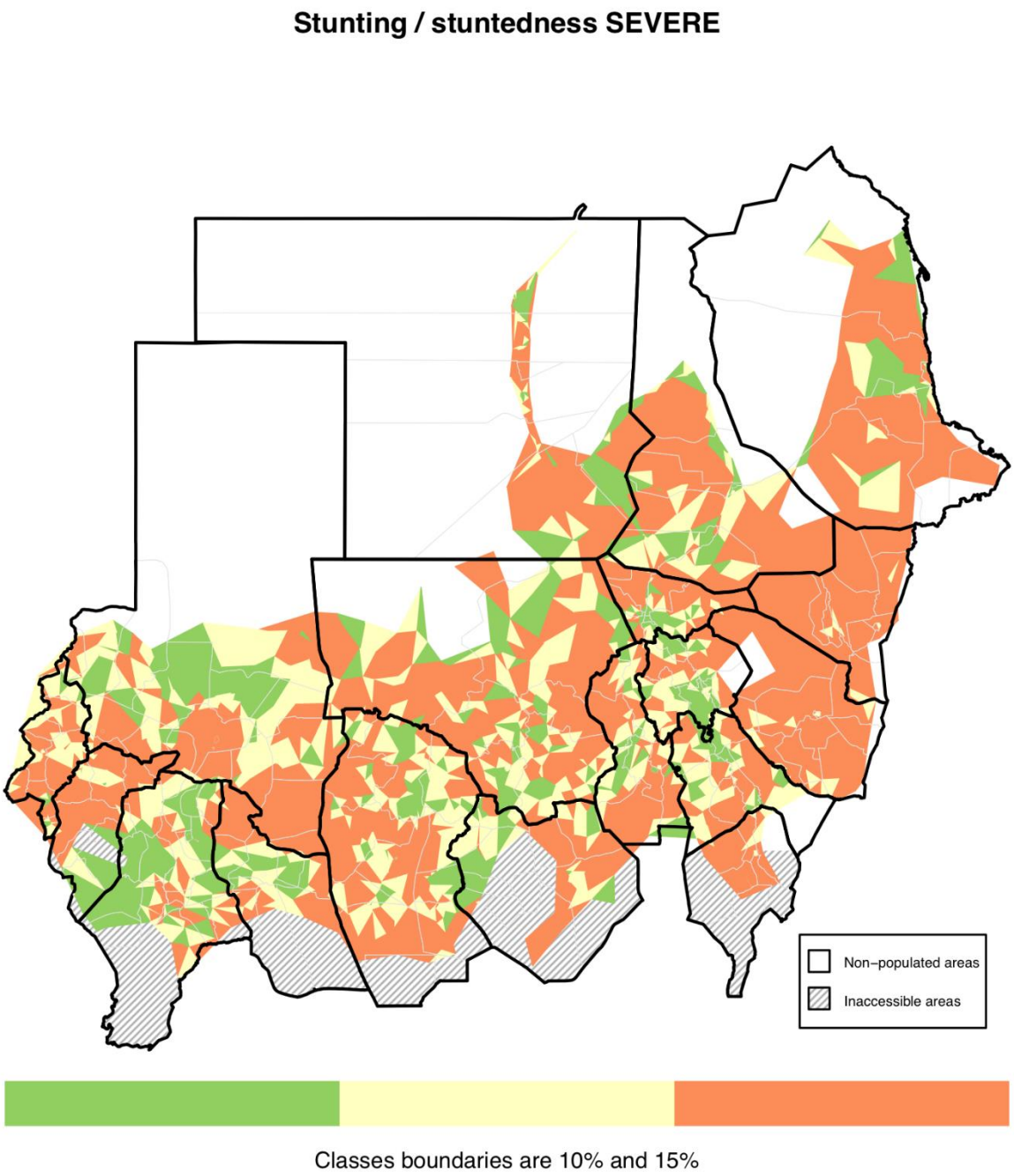


Table 5: Results for stunting, by locality

State	Locality	Stunting / stuntedness GLOBAL			Stunting / stuntedness MODERATE			Stunting / stuntedness SEVERE		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Red Sea	Ageeg	**61.3**	50.4	68.4	**26.3**	20.5	32.3	**33.7**	23.1	42.4
	Alganeb Alolib	**51.0**	43.6	58.2	**29.2**	22.5	35.7	**21.3**	15.0	27.0
	Dordaib	**43.1**	34.1	52.6	**28.0**	21.1	35.7	**14.9**	8.8	25.0
	Haia	**45.1**	36.2	54.1	**18.5**	12.5	25.9	**26.2**	19.4	36.1
	Haliab	**29.3**	18.5	42.4	**20.0**	11.1	29.1	**9.3**	1.2	21.3
	Japitalmadin	**61.5**	54.6	67.8	**42.1**	35.2	48.1	**19.5**	13.2	28.2
	Sawaken	**57.5**	51.7	64.2	**39.2**	29.8	49.5	**18.8**	12.3	26.0
	Senkat	**69.0**	58.5	85.1	**14.8**	9.6	20.9	**53.6**	42.6	67.5
	Tokar	**53.1**	48.6	58.1	**26.1**	21.6	30.4	**26.5**	22.1	31.1
	Port Sudan	**34.3**	26.5	42.2	**22.6**	18.0	26.8	**11.5**	8.0	15.7
	All state	**45.5**	42.6	48.6	**24.8**	22.8	26.9	**20.4**	17.6	23.3
Kassala	Aroma	**59.6**	54.0	64.1	**24.6**	19.8	29.7	**35.0**	27.9	41.0
	Hamshkoreb	**59.1**	53.5	63.9	**26.3**	21.0	33.4	**31.9**	25.5	37.4
	Kshmalgrba	**46.2**	35.6	54.6	**22.0**	16.1	30.3	**23.5**	14.9	31.3
	Nahr Atbara	**52.8**	39.2	63.3	**22.4**	13.8	32.9	**30.7**	20.5	42.2
	North Delta	**59.2**	50.3	66.5	**25.1**	18.4	30.4	**33.9**	27.8	40.2
	Rify Kassala	**51.7**	38.9	62.9	**22.2**	15.6	28.0	**28.9**	16.8	40.0
	Rural Halfa	**44.9**	32.5	56.0	**25.3**	17.3	31.7	**21.1**	13.8	28.9
	Talkok	**57.0**	51.5	62.3	**35.5**	29.1	41.2	**21.8**	17.5	25.9
	Wadalhlew	**56.5**	47.7	66.1	**32.0**	20.7	41.2	**25.0**	14.9	33.4
	West Kassala	**35.7**	27.8	51.0	**29.8**	22.4	37.5	**6.0**	1.9	17.5
	All state except capital	**54.6**	51.2	58.4	**28.0**	25.6	30.6	**26.6**	24.1	29.4
	Kassala Town	**33.9**	25.7	43.4	**19.7**	13.8	26.0	**14.4**	9.1	22.1
	Hamoshkoreib Town*	**58.8**	53.3	65.2	**26.6**	19.9	33.6	**31.4**	26.1	38.0
Gedaref	Al Gadaref Wasat	**58.1**	51.9	65.4	**33.0**	27.8	38.9	**25.3**	19.5	31.4
	Al Mafaza	**57.1**	48.4	65.0	**14.3**	8.9	23.2	**43.0**	31.6	50.3
	Albutana	**57.0**	53.0	61.7	**28.0**	24.5	33.2	**27.9**	23.3	33.2
	Alfashaga	**35.7**	31.2	41.2	**23.8**	20.4	27.4	**11.7**	8.9	15.4
	Alfaw	**62.2**	55.5	69.6	**35.9**	29.2	42.2	**26.6**	21.5	31.9
	Algalabat Al Garbiya	**41.9**	31.7	52.7	**23.6**	14.0	33.1	**18.2**	10.6	26.1
	Algalabat Al Shargiya	**73.2**	64.0	80.8	**45.5**	33.8	54.0	**28.4**	20.9	36.9
	Algurisha	**73.7**	68.5	79.6	**33.0**	27.1	39.9	**40.7**	33.0	48.9
	Alrahad	**49.2**	41.0	56.7	**11.9**	5.9	23.3	**36.8**	23.2	50.5
	Basonda	**51.9**	44.1	59.3	**32.0**	26.2	39.2	**19.2**	12.7	24.6
	Gula Alnahal	**52.5**	45.6	58.2	**24.8**	20.1	29.5	**27.9**	22.3	33.4
	All state except capital	**52.0**	48.5	55.0	**30.6**	28.3	32.7	**21.4**	18.8	23.9
	Gedarif Town	**30.8**	22.6	39.0	**18.4**	11.0	25.1	**12.6**	7.8	17.5
Blue Nile	Baw (part)	**39.6**	29.2	47.7	**26.3**	16.3	37.7	**14.1**	6.0	22.1
	Damazin	**45.0**	27.3	62.3	**19.0**	10.8	29.5	**23.4**	12.0	36.3
	Giessan (part)	**48.8**	43.4	58.5	**25.3**	21.1	28.5	**23.8**	18.9	29.1
	Kurmuk (part)	**52.9**	38.8	65.9	**29.6**	23.6	37.3	**22.8**	13.4	32.3
	Rosairs (part)	**51.4**	48.2	54.5	**27.4**	24.1	30.0	**24.0**	20.8	26.9
	Tadamon (part)	**42.9**	34.7	50.6	**20.6**	15.1	27.4	**21.8**	15.5	28.4
	All state except capital	**49.8**	47.1	52.7	**25.9**	23.9	28.0	**23.9**	21.6	26.1
	Damazin Town	**37.9**	31.0	46.9	**21.4**	15.5	28.8	**16.7**	11.2	20.5
	Roseris Town	**37.0**	31.0	47.1	**21.5**	15.7	29.0	**17.0**	11.2	23.7

State	Locality	Stunting / stuntedness GLOBAL			Stunting / stuntedness MODERATE			Stunting / stuntedness SEVERE		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
South Kordofan	Abujebiha (part)	**34.1**	29.5	39.5	**21.6**	17.7	25.2	**12.9**	9.2	16.5
	Al Tadamoon (part)	**46.2**	35.5	58.3	**28.7**	22.0	34.9	**18.4**	10.7	26.7
	Alabaseya	**39.1**	30.3	45.1	**22.7**	15.8	30.0	**15.7**	6.9	23.4
	Algoz	**36.9**	28.7	49.7	**17.9**	12.4	24.7	**18.7**	11.8	28.0
	Allirri	**40.0**	31.7	47.4	**24.2**	17.7	31.4	**16.0**	10.1	22.1
	Alreif Alshargi	**29.0**	20.6	36.3	**19.0**	13.3	28.2	**9.6**	4.6	14.6
	Dilling (part)	**39.6**	27.2	52.8	**21.6**	11.8	32.8	**16.7**	7.8	26.8
	Gadeir (part)	**32.2**	27.7	36.4	**21.0**	16.4	25.6	**11.6**	8.1	15.9
	Habeila (part)	**26.7**	21.2	33.9	**16.4**	12.0	22.5	**10.5**	6.3	14.4
	Rashad (part)	**32.3**	23.1	43.9	**16.6**	10.5	24.6	**15.5**	9.1	24.1
	All state except capital	**35.8**	32.1	39.1	**21.3**	19.3	23.3	**14.2**	12.1	16.7
	Kadugli Town	**26.0**	18.6	33.0	**15.3**	10.1	20.1	**10.4**	6.7	15.4
	Talodi Town	**35.0**	27.5	42.7	**25.2**	19.6	31.7	**9.8**	5.5	14.4
West Kordofan	Abo Zabad	**36.0**	29.0	42.0	**18.6**	13.1	25.4	**17.1**	10.1	23.3
	Abyei (NOT AAA)	**34.1**	29.0	40.1	**21.8**	17.3	27.5	**12.4**	9.2	15.7
	Al Khowi	**31.1**	26.9	35.4	**20.0**	15.8	23.6	**11.4**	8.7	13.6
	Al Odaya	**35.1**	30.3	39.9	**19.6**	15.8	24.2	**15.0**	11.1	19.8
	Al Salam	**32.4**	28.4	36.6	**23.6**	20.6	27.3	**9.0**	6.1	11.6
	Aldebab	**46.0**	38.3	54.6	**27.8**	20.3	33.5	**17.9**	13.1	22.7
	Almearam	**52.3**	43.4	61.6	**28.5**	20.4	37.4	**23.9**	16.9	30.9
	Alsnout	**40.0**	34.9	45.4	**21.6**	17.3	25.7	**17.8**	13.8	22.6
	Babanusa	**32.1**	26.7	39.8	**19.9**	15.7	25.4	**11.9**	8.0	16.2
	En Nuhud	**41.1**	35.3	45.1	**22.7**	18.7	26.8	**18.2**	14.4	22.3
	Ghebeish	**43.6**	37.7	48.3	**25.8**	22.9	29.0	**17.2**	13.0	21.4
	Kailak (part)	**34.3**	27.9	39.5	**23.8**	18.2	29.9	**10.3**	6.8	14.1
	Lagawa (part)	**26.6**	21.4	32.1	**17.0**	13.5	20.5	**9.7**	5.6	13.2
	Wad Bandah	**38.1**	33.0	43.2	**25.1**	21.3	28.8	**13.2**	9.6	18.1
	All state except capital	**36.7**	35.1	38.5	**22.8**	21.4	24.1	**14.0**	12.8	15.4
	Fula Town	**24.5**	18.4	29.4	**13.1**	9.0	18.5	**10.9**	5.9	15.2
North Kordofan	Bara	**38.7**	34.6	43.3	**24.7**	21.8	27.4	**13.8**	10.8	17.5
	El Rahad	**53.0**	37.2	61.6	**23.8**	16.1	33.6	**28.9**	17.4	39.4
	Jebrat El Sheikh	**50.0**	47.3	52.7	**33.4**	30.0	36.5	**16.5**	14.0	19.1
	Sheikan	**40.0**	34.6	45.1	**26.0**	22.7	30.3	**13.9**	10.6	18.3
	Sowdari	**34.9**	31.3	38.9	**19.2**	16.8	22.1	**15.7**	12.3	20.6
	Umm Daam	**20.7**	8.1	39.1	**10.8**	4.3	19.4	**10.0**	0.0	19.8
	Umm Rawaba	**43.9**	39.3	49.4	**25.4**	23.0	28.4	**18.7**	15.9	21.6
	West Bara	**46.5**	37.2	56.7	**29.1**	21.1	38.0	**17.8**	8.1	28.3
	All state except capital	**41.6**	39.2	43.6	**25.1**	23.6	26.5	**16.5**	15.0	18.1
	El Obeid Town	**29.1**	20.6	36.7	**15.7**	11.1	20.6	**12.8**	8.2	18.6
White Nile	Alsalam	**44.1**	37.9	51.2	**21.4**	17.5	25.7	**22.5**	17.2	28.3
	Ed Douiem	**44.9**	40.2	49.9	**26.1**	22.4	29.8	**19.2**	15.1	22.8
	El Gutaina	**35.9**	29.9	42.4	**22.6**	18.4	27.9	**13.3**	8.8	19.4
	El Jabalain	**39.5**	32.2	48.8	**20.8**	15.3	26.1	**18.7**	13.4	25.7
	Guli	**40.6**	27.0	50.3	**23.8**	17.0	28.8	**17.6**	9.3	24.1
	Kosti	**40.4**	34.9	48.5	**23.9**	18.3	31.4	**16.7**	10.2	23.7
	Rabak	**42.0**	26.7	59.3	**21.7**	13.6	31.7	**18.0**	9.1	32.5
	Tandalti	**29.7**	17.4	43.4	**18.9**	8.8	30.3	**11.0**	6.6	15.9
	Umm Remta	**33.3**	21.9	45.4	**19.8**	11.5	27.6	**12.5**	6.9	19.8
	All state except capital	**39.1**	36.4	41.9	**22.5**	20.7	24.8	**16.7**	14.7	18.6
	Kosti Town	**25.5**	18.4	32.8	**15.8**	11.5	20.6	**9.4**	5.9	13.4
	Rabak Town	**31.0**	24.4	37.7	**18.0**	12.9	24.0	**12.9**	7.8	18.2

State	Locality	Stunting / stuntedness GLOBAL			Stunting / stuntedness MODERATE			Stunting / stuntedness SEVERE		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Sennar	Abu Hijar	**39.4**	32.7	44.9	**25.6**	21.0	30.4	**13.6**	10.4	17.5
	Al Dindir	**31.9**	25.8	38.5	**21.1**	17.6	24.7	**11.1**	6.5	17.0
	Aldali & Almazmoum	**32.5**	27.7	38.7	**23.8**	19.8	28.3	**9.1**	5.6	13.5
	Alsooki	**31.3**	21.4	39.3	**23.3**	17.8	28.7	**7.9**	3.3	14.2
	Sennar	**25.2**	18.0	35.7	**16.7**	12.5	21.4	**9.1**	4.4	16.0
	Sharg Sennar	**42.0**	30.8	51.7	**28.1**	21.3	35.1	**12.5**	6.4	19.7
	Sinja	**24.8**	18.7	33.6	**13.2**	8.6	19.9	**11.2**	7.6	16.1
	All state except capital	**32.6**	29.2	35.1	**22.1**	20.2	24.5	**10.2**	8.6	12.1
	Sennar Town	**11.4**	6.0	17.8	**6.9**	3.4	11.1	**4.5**	1.8	8.2
	Sinja Town	**13.4**	8.1	17.8	**9.4**	5.0	14.4	**3.6**	1.6	6.7
El Gezira	El Hasaheisa	**65.8**	45.8	88.3	**48.7**	25.8	71.7	**18.4**	10.4	31.4
	El Kamlin	**24.6**	13.4	34.7	**21.3**	8.5	33.6	**2.6**	0.0	8.9
	El Managil	**45.2**	31.8	55.3	**26.2**	19.9	32.0	**19.8**	12.3	26.3
	Janub El Gezira	**22.7**	15.9	33.7	**15.0**	9.4	27.3	**7.1**	3.3	12.1
	Madani Al Kobra	**58.8**	33.3	85.7	**28.6**	6.7	53.9	**28.6**	6.7	57.1
	Sharg El Gezira	**29.6**	22.6	35.8	**13.8**	8.9	22.2	**15.6**	9.7	21.2
	Umm El Gura	**33.3**	21.4	49.2	**19.3**	9.7	30.3	**14.2**	6.5	22.6
	All state except capital	**36.4**	29.7	42.9	**22.1**	18.1	26.2	**14.0**	10.7	18.7
	Madani Town	**26.0**	17.2	35.6	**16.4**	9.3	23.4	**9.2**	5.0	16.2
Khartoum	Bahari	**17.0**	12.2	22.3	**12.2**	8.2	16.6	**5.0**	2.9	7.4
	Gabel Awlia	**17.8**	12.8	24.4	**11.8**	7.5	16.0	**6.0**	3.1	9.4
	Karrarri	**26.8**	22.2	33.1	**20.7**	17.1	24.8	**6.1**	3.2	12.6
	Khartoum	**11.6**	6.5	17.4	**7.3**	3.8	11.5	**4.4**	1.3	7.9
	Shareg Elnile	**23.1**	19.2	27.3	**16.6**	13.6	19.7	**6.2**	4.1	8.7
	Umbada	**20.7**	14.5	27.4	**14.8**	10.7	19.5	**6.0**	3.0	9.6
	Umdrman	**17.5**	9.4	29.1	**13.5**	7.9	20.2	**4.7**	0.5	10.4
	All state	**20.2**	17.8	22.9	**14.5**	12.9	16.3	**5.6**	4.6	6.9
Northern	Alborgeg	**50.0**	0.0	100.0	**16.7**	0.0	50.5	**33.3**	0.0	75.0
	Aldabba	**22.1**	17.3	27.3	**13.1**	9.6	16.7	**9.0**	5.9	12.6
	Algoled	**24.4**	17.2	31.9	**15.1**	9.5	20.2	**9.6**	4.4	15.9
	Dalgo	**38.4**	33.4	42.6	**25.0**	21.3	28.6	**12.9**	9.6	16.6
	Dongola	**27.1**	16.9	40.0	**16.7**	11.4	23.5	**9.8**	3.0	18.6
	Halfa	**31.7**	26.9	36.2	**17.5**	13.7	21.1	**14.3**	11.5	17.8
	Merawi	**27.8**	23.3	31.5	**23.5**	19.0	28.6	**4.5**	2.8	6.4
	All state except capital	**29.4**	26.8	32.3	**18.1**	16.3	19.8	**11.3**	9.9	13.0
	Dongola Town	**20.4**	14.6	26.6	**14.3**	9.2	20.0	**6.2**	2.6	10.6
River Nile	Abu Hamad	**25.9**	20.7	34.3	**17.8**	13.0	22.3	**8.3**	5.7	12.5
	Albuhaira	**33.0**	23.0	44.1	**22.9**	17.1	29.4	**10.6**	5.8	16.2
	Atbara	**28.9**	22.2	39.4	**18.1**	13.4	23.9	**10.3**	6.7	18.1
	Barbar	**29.5**	22.1	37.5	**21.6**	15.9	27.8	**7.3**	3.5	12.3
	Ed Damer	**28.5**	22.9	35.5	**15.9**	12.2	20.8	**12.4**	9.1	17.0
	El Matammah	**24.7**	20.7	29.3	**14.5**	11.7	17.0	**10.4**	7.3	13.9
	Shendi	**44.6**	37.3	51.0	**24.4**	20.2	29.6	**19.3**	13.0	26.3
	All state except capital	**28.4**	25.9	31.9	**17.6**	16.0	19.7	**10.6**	9.0	12.7
	Atbara Town	**22.2**	15.0	30.2	**14.5**	9.1	20.2	**7.6**	4.0	11.5
	El Damar Town	**22.9**	15.6	30.3	**12.6**	7.9	18.2	**9.9**	5.8	15.1

State	Locality	Stunting / stuntedness GLOBAL			Stunting / stuntedness MODERATE			Stunting / stuntedness SEVERE		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
North Darfur	Al Fasher	**44.0**	37.3	50.2	**25.3**	20.9	29.3	**18.9**	14.2	23.8
	Al Koma	**29.6**	22.9	42.7	**19.4**	13.1	28.6	**11.0**	5.7	16.4
	Al Malha	**31.4**	26.4	36.4	**21.0**	16.3	27.2	**9.8**	6.9	13.8
	Al Seref	**47.6**	41.4	55.0	**27.7**	21.0	33.4	**20.1**	14.9	27.2
	Al Tina	**43.3**	35.6	50.3	**27.5**	19.3	38.5	**16.4**	8.1	23.7
	Al Twasha	**38.5**	31.9	44.9	**22.3**	18.0	28.7	**15.4**	11.0	21.2
	Allait	**41.2**	33.7	49.2	**21.7**	15.8	28.1	**18.9**	13.5	25.3
	Ambaro	**33.8**	28.6	38.3	**22.1**	16.7	28.4	**11.2**	6.5	16.3
	Dar Alsalam	**34.1**	27.1	43.6	**18.1**	12.6	24.8	**16.2**	12.3	20.5
	Kabkabia	**47.9**	41.4	55.7	**32.6**	27.6	37.3	**15.3**	10.1	20.2
	Karnoi	**28.5**	19.0	38.5	**14.4**	9.2	20.9	**12.4**	3.5	21.3
	Kelemendo	**46.7**	40.8	53.3	**25.0**	20.2	30.0	**22.0**	16.2	28.6
	Kutum	**23.4**	18.8	28.3	**18.7**	14.9	22.6	**4.6**	2.4	7.5
	Mallit	**29.5**	24.8	34.5	**18.9**	15.8	22.2	**10.1**	7.5	13.2
	Saraf Omra	**53.9**	44.5	65.5	**31.7**	21.6	40.5	**22.9**	13.6	31.5
	Tawila	**48.2**	41.8	54.1	**25.2**	18.7	30.4	**23.3**	17.1	30.1
	Umkadada	**30.7**	25.7	35.7	**19.8**	14.6	26.0	**11.1**	7.7	16.0
	All state except capital	**35.2**	33.0	37.4	**21.6**	20.4	23.1	**13.8**	12.2	15.0
	El Fashir Town	**36.0**	29.5	42.3	**21.7**	16.3	26.6	**14.7**	10.5	20.4
	Zamzam Camp*	**42.1**	32.9	49.9	**23.3**	17.8	29.0	**18.7**	12.3	24.1
	El Sireif Camp*	**48.2**	40.7	56.4	**26.9**	20.9	34.9	**20.4**	15.5	25.2
South Darfur	Al Rudoom (part)	**32.5**	24.0	39.4	**18.5**	14.3	23.8	**13.0**	5.9	18.8
	Alwehda	**16.9**	10.0	24.9	**13.2**	8.1	21.6	**2.8**	0.5	5.8
	Belil	**37.1**	30.4	44.5	**28.8**	22.9	36.3	**8.5**	4.2	12.7
	Buram	**26.7**	16.2	39.1	**18.9**	13.0	26.1	**7.8**	1.1	16.7
	Dimso	**46.0**	33.7	55.5	**25.7**	12.3	35.3	**19.6**	12.2	26.8
	El Salam	**47.2**	36.2	63.0	**23.7**	15.8	30.2	**24.0**	16.5	37.4
	Gerieda	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Id Elfirsan	**4.8**	1.5	11.1	**2.6**	0.0	8.8	**2.0**	0.6	3.7
	Kass	**38.1**	30.2	46.2	**26.0**	19.1	34.4	**12.7**	7.7	16.6
	Katila	**26.2**	21.3	31.7	**7.6**	4.7	11.6	**18.1**	13.6	22.0
	Kubum	**5.1**	0.4	10.4	**4.1**	0.8	9.4	**0.8**	0.0	2.1
	Mershing	**36.7**	20.4	50.1	**29.2**	18.0	41.7	**7.8**	2.0	16.7
	Netiga	**20.1**	11.5	29.4	**16.6**	5.7	28.4	**3.6**	0.0	8.1
	Rahad Elberdi (part)	**2.3**	0.8	4.7	**2.3**	0.4	4.8	**0.0**	0.0	0.8
	Toluss	**46.7**	35.5	58.0	**26.7**	16.5	37.4	**21.5**	12.7	30.8
	Um Dafog (part)	**6.7**	0.0	18.8	**5.6**	0.0	16.7	**0.0**	0.0	0.0
	All state except capital	**24.5**	21.1	28.3	**14.4**	11.6	17.4	**9.8**	8.2	11.7
	Nyala Town	**29.3**	22.3	36.0	**23.0**	17.2	28.8	**6.1**	3.2	10.6
	Kalma Camp*	**47.2**	39.2	54.3	**23.2**	17.7	29.6	**24.3**	17.9	33.7

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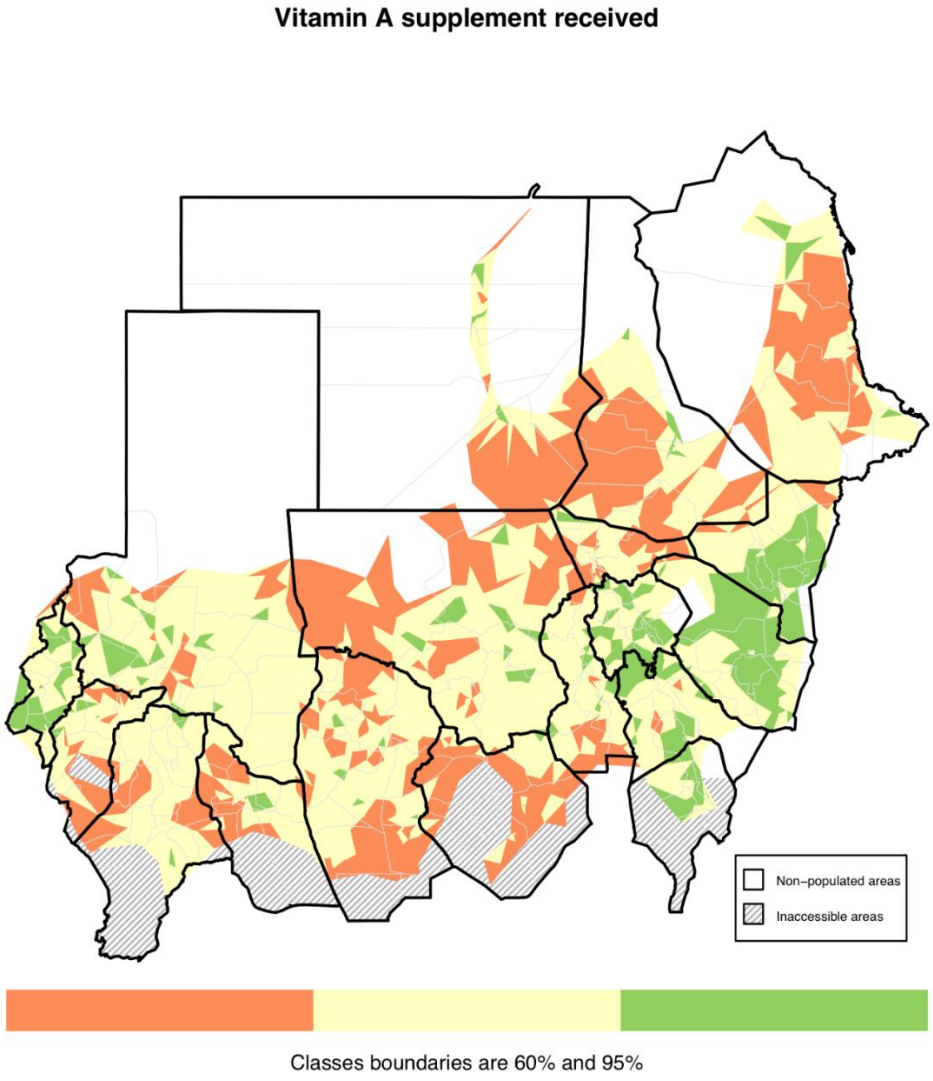
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
East Darfur	Abukarinka	**39.0**	30.8	45.3	**23.5**	18.8	29.8	**15.7**	9.5	21.1
	Adilla (part)	**37.1**	25.4	48.8	**19.2**	13.1	30.0	**16.7**	10.9	24.6
	Al Deain	**18.9**	6.6	30.0	**11.1**	4.5	18.7	**6.7**	1.0	14.4
	Alfirdos	**50.4**	42.0	58.0	**31.2**	22.0	40.6	**18.0**	11.5	25.1
	Asslaya	**41.1**	30.4	50.4	**31.9**	21.6	41.0	**9.3**	5.0	16.3
	Aubgabar	**31.5**	23.2	40.8	**12.6**	6.7	21.4	**18.7**	11.9	28.1
	Aubmatarg	**36.6**	27.2	47.1	**21.8**	14.5	30.5	**15.0**	7.7	23.2
	Sharia (part)	**50.3**	39.1	63.7	**18.6**	12.4	26.0	**32.0**	21.2	46.3
	Yaseen (part)	**42.6**	34.3	52.5	**24.5**	17.6	33.1	**17.9**	11.3	25.3
	All state except capital	**39.9**	35.4	43.2	**22.6**	20.2	25.9	**17.2**	14.5	20.4
	Al Deain Town	**32.6**	26.3	39.3	**18.1**	13.2	24.2	**14.3**	9.1	19.2
West Darfur	Algenea	**19.5**	8.4	33.3	**12.5**	3.9	24.6	**6.2**	1.6	12.2
	Baida	**36.6**	30.8	43.1	**19.8**	15.2	23.5	**16.9**	12.7	21.3
	Forbranga	**37.7**	31.4	44.5	**23.9**	17.3	30.3	**14.1**	8.6	19.1
	Gabal Moon	**29.9**	24.6	35.9	**20.0**	15.6	24.6	**10.8**	6.5	14.8
	Habilla	**50.3**	41.5	58.5	**33.5**	25.8	40.1	**16.6**	10.4	21.0
	Kerenik	**32.6**	28.5	36.8	**19.4**	16.9	23.6	**13.0**	10.9	15.5
	Kulbus	**42.2**	36.5	48.3	**31.0**	23.5	39.5	**10.1**	5.6	17.9
	Serba	**40.8**	30.9	49.4	**25.1**	17.5	32.4	**15.2**	10.0	22.3
	All state except capital	**34.8**	31.6	37.5	**21.8**	19.6	24.4	**12.9**	11.5	14.9
	Algenea Town	**31.7**	24.8	38.1	**21.9**	17.0	28.1	**9.4**	5.0	14.7
	Morne Camp*	**49.1**	41.2	56.5	**29.1**	22.3	36.4	**19.4**	14.4	25.3
Central Darfur	Azoum	**50.9**	35.4	60.2	**28.1**	14.1	36.9	**22.1**	13.6	31.2
	Bendsi (part)	**39.4**	31.3	51.0	**19.2**	11.8	29.1	**19.3**	12.1	27.4
	Mukjar (part)	**45.6**	35.7	54.8	**23.9**	17.2	30.6	**21.4**	14.8	28.4
	Nertati	**49.6**	25.2	66.0	**23.9**	12.3	34.1	**25.4**	9.8	35.7
	Rokiro	**53.5**	43.5	63.1	**29.5**	19.4	38.5	**23.6**	14.9	34.4
	Um Dukhun (part)	**39.5**	32.1	47.3	**24.1**	18.3	29.9	**14.9**	10.1	21.6
	Wadi Salih (part)	**42.8**	34.7	50.1	**18.8**	14.2	23.3	**24.0**	19.6	28.5
	Zalingei	**34.0**	27.9	39.3	**19.2**	14.5	22.6	**14.8**	11.8	18.9
	All state except capital	**44.9**	40.4	48.8	**23.7**	20.8	26.8	**21.4**	18.6	23.7
	Zalingi Town	**21.8**	15.7	28.2	**14.4**	10.0	19.1	**7.6**	4.3	12.5
	Mukjar Town*	**45.1**	37.6	53.9	**24.0**	17.6	30.9	**21.4**	15.3	27.9
	Um Dokhon Town*	**41.1**	33.0	50.3	**24.5**	17.4	30.0	**15.2**	9.5	22.4

Vitamin A supplementation coverage (Figure 26)

Mothers were shown Vitamin A capsules and asked if their child had received such medication either at home from a visiting health worker or at a health clinic. The map shows that there are large areas of the country where coverage of Vitamin A supplementation is very low. This is despite twice-annual Vitamin A supplementation carried out at national level during child health days (CHDs), indicating that implementation of the CHDs needs to be better monitored. Pockets of low coverage (red color indicates areas where less than 60% of children had received Vitamin A in the last 6 months) shown on this survey need to be targeted as priority areas in the next round of Vitamin A supplementation. There was a national Vitamin A campaign carried out at the beginning of May 2013 while data collection for this survey took place in June and July. The recall period for this indicator was therefore short.

See Table 6 for Vitamin A coverage estimates at locality level.

Figure 26: Classification map of Vitamin A supplementation, children 6-59 months, 6 months before the survey



9.1.2 Vaccination coverage

Age appropriate vaccination coverage 0 – 59 months based on card and/or recall[11] *(Figure 27)*
The map in Figure 27 shows the proportion of children aged between 0 and 59 months who are fully vaccinated for their age as per the table in footnote 20. Mothers were asked to show their EPI cards for all of the vaccination information, or in the case of no card mothers were asked to recall which vaccinations their child had received. Enumerators were trained on the different body-sites for different vaccinations as a way to minimise recall bias.

The map shows that there are areas where vaccination coverage reaches above 90% (green shaded areas) and that more than 50% of children are fully immunised for their age across much of the country. Geographic areas of low coverage are also clearly shown, principally in Red Sea, River Nile and North Kordofan states. In Table 6, many localities in Sudan have age-appropriate vaccination coverage[12] above 90% (Table 6), however, there are pockets of low coverage, and a total 65 localities have a vaccination coverage of less than 75% and lowest coverage was recorded as 12.5% in Algenob Alolib locality in Red Sea.

Pentavalent drop-out rate (Figure 28)
The pentavalent drop-out rate was generally found to be low – Figure 28, green areas show less than 10% drop-out, even in areas with a low overall coverage rate. This indicates that when children come for vaccination, follow-up and defaulter tracing services are well functioning with 84% of localities has dropout rate below 10% suggesting improvement compared to EPI official figures (65% of localities had dropout rate less than 10%).

BCG coverage rate (Figure 29)
Map 29 shows coverage of BCG vaccination across the country. BCG is the first vaccine that a child receives, from birth onwards, therefore this indicator shows the first contact of a child with EPI services. There are large consolidated areas where BCG coverage is below 50% including localities of Red Sea, River Nile, North and West Kordofan.

Looking at other child survival indicators, according to the SHHS-2 in terms of immunization, half (49.4%) of Sudan's children age 12-23 months are fully immunized with Baccille Calmette Guérin (BCG) vaccine against tuberculosis, three doses of polio vaccine, measles, three doses of Pentavalent against DPT (Diptheria, Pertussis and Tetanus), Hepatitis B, and Haemophilus influenzae type B (HiB), leaving the rest of the children in this age group unprotected from life-threatening diseases. While success has been seen in polio, with no reported cases since 2009, occasional measles outbreaks continue to add to child deaths and immunization coverage for

[11]The vaccination schedule in Sudan was used to assess age-appropriate vaccination, as per table below. Rotavirus is included in the National vaccination schedule, however was not included in measurement of fully vaccinated as the vaccine has only been recently introduced (in 2011) and therefore could have biased results for fully vaccinated.

Age	Antigen
From birth	BCG
2 months	Pentavalent 1, Polio 1
3 months	Pentavalant 2, Polio 2
4 months	Pentavalent 3, Polio 3
9 months	Measles
9 months and above	All of the above to be fully vaccinated

[12]Percentage of children 0 -59 months who had received full appropriate vaccinations for their age as per national vaccination schedule.

measles need to be increased further. Today, more children are surviving the first years of life than in 2006 (when the SHHS-1 was carried out). Between 2006 and 2010, under-five mortality has decreased from 102 to 78 deaths per 1,000 live births. Infant mortality has fallen from 71 to 57 deaths per 1,000 live births, and neonatal mortality from 36 to 33. However, these rates remain high, and the efforts toward the achievement of MDGs should continue.

Figure 27: Classification map of age appropriate full vaccination coverage

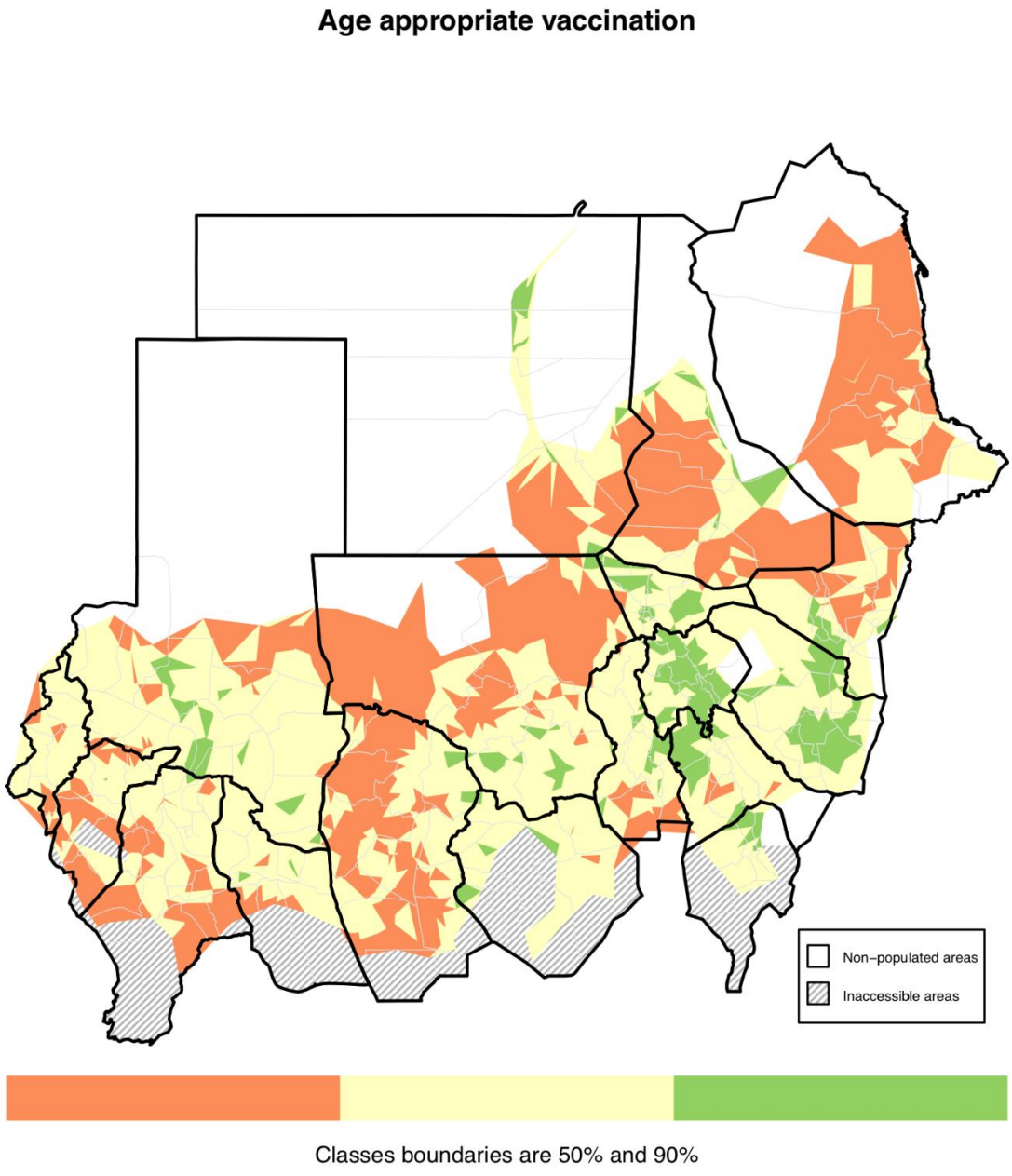


Figure 28: Classification map of proportion of children 4 months and above receiving pentavalent-1 but not pentavalent-3

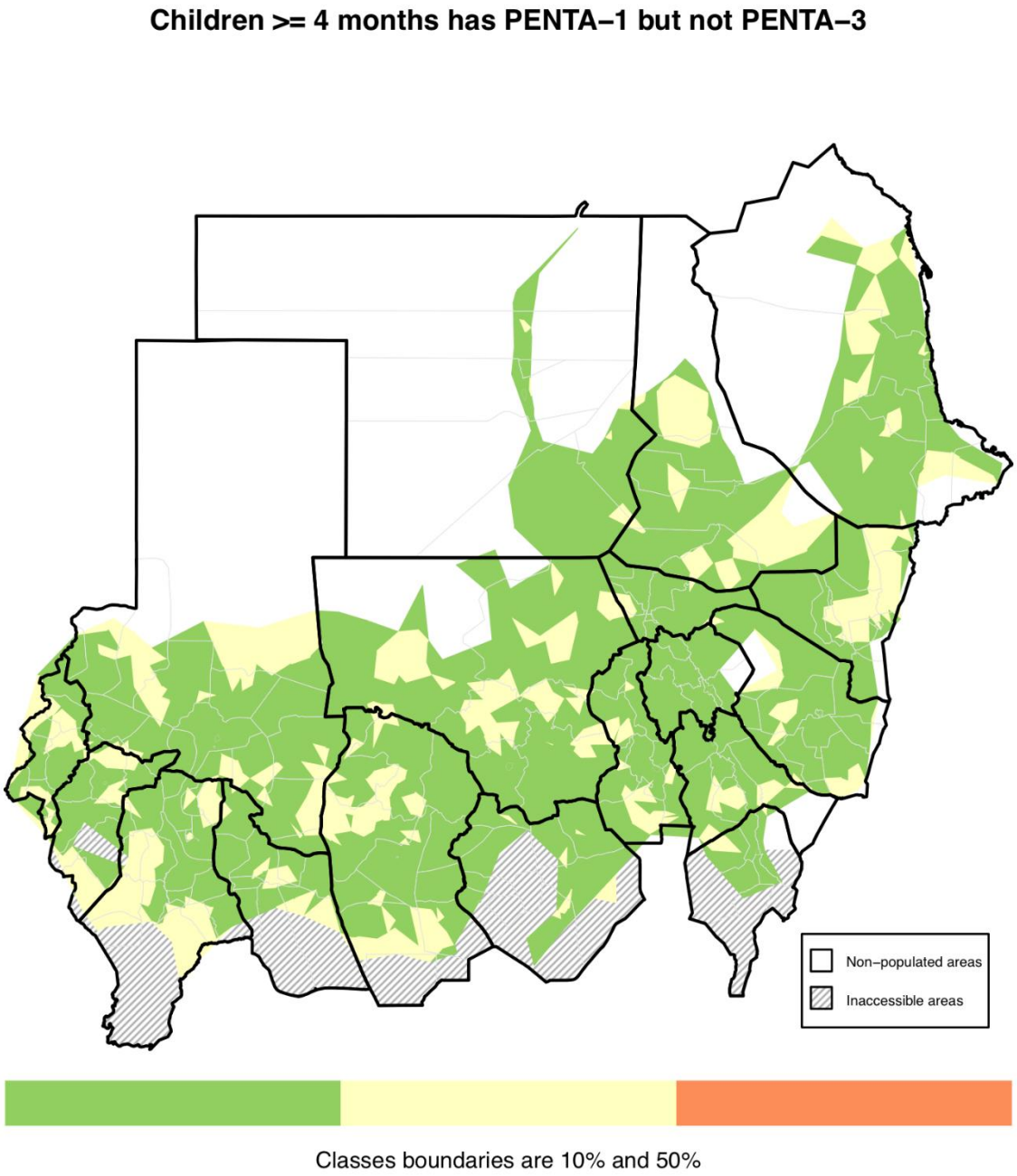


Figure 29: Classification map of BCG coverage

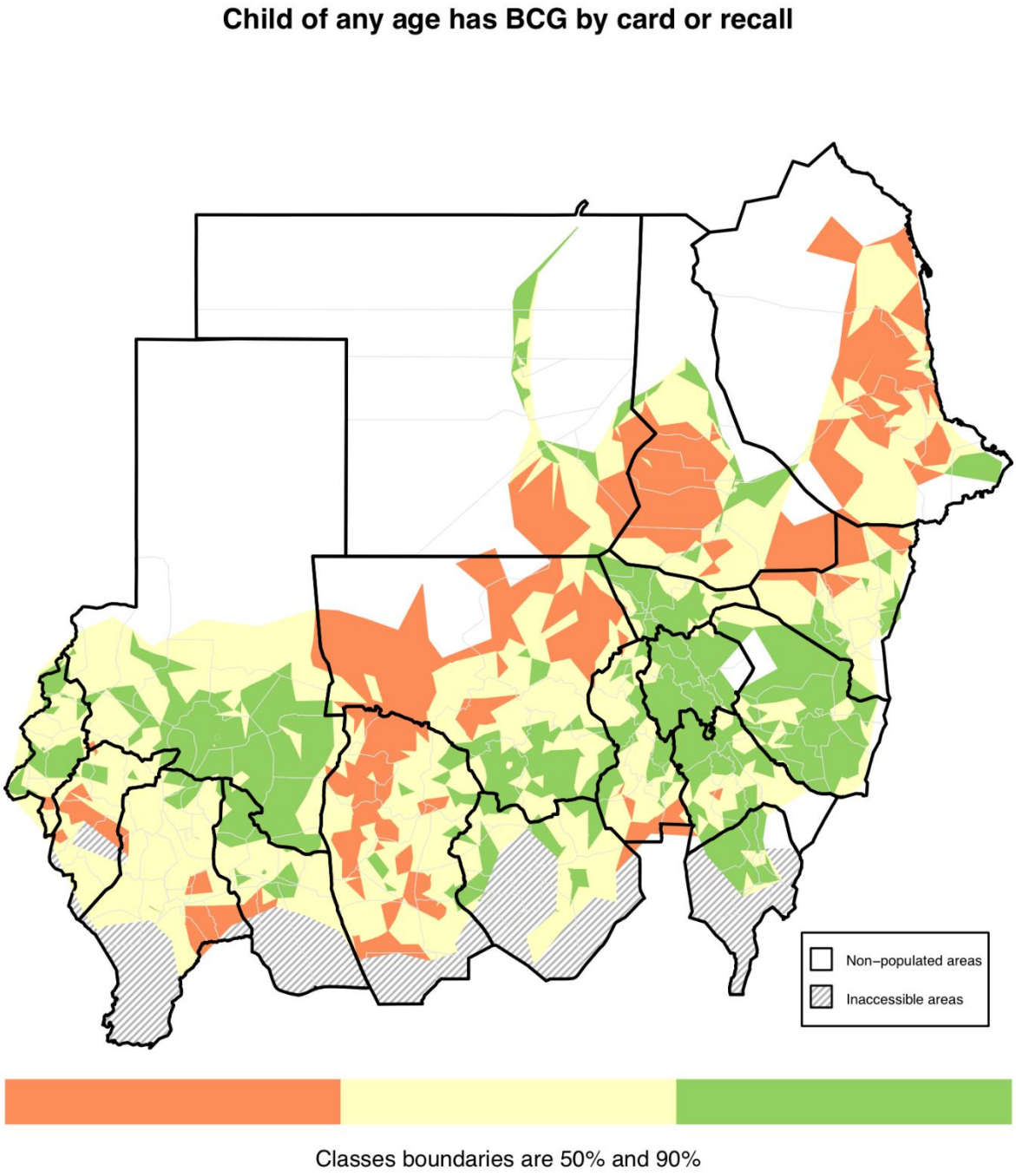


Table 6: Vitamin A supplementation and child vaccination coverage, results by locality

State	Locality	Vitamin A supplement received (6-59mo)			Age appropriate vaccination (6-59mo)			Pentavalent drop-out rate: Children >= 4 months has PENTA-1 but not PENTA-3			Child of any age has BCG by card or recall (6-59mo)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Red Sea	Ageeg	**88.0**	82.0	92.9	**82.1**	75.8	88.0	**3.6**	1.1	6.2	**93.0**	88.5	97.1
	Alganeb Alolib	**72.9**	63.2	81.2	**12.9**	8.1	20.6	**3.4**	1.1	6.3	**34.7**	19.6	47.4
	Dordaib	**90.5**	78.6	96.6	**72.5**	59.7	83.4	**6.9**	2.2	12.7	**84.0**	68.9	92.8
	Haia	**72.6**	63.0	80.3	**51.0**	36.5	62.3	**2.1**	0.3	4.3	**59.0**	46.7	70.5
	Haliab	**86.4**	73.2	96.0	**44.2**	16.4	70.5	**27.7**	5.7	50.7	**78.7**	62.0	88.0
	Japitalmadin	**86.6**	79.4	92.1	**73.4**	64.3	80.7	**2.8**	0.0	8.5	**94.0**	84.5	99.2
	Sawaken	**77.0**	65.4	84.4	**63.0**	55.5	70.5	**7.1**	2.9	11.3	**71.8**	62.8	78.1
	Senkat	**7.9**	3.7	14.3	**79.3**	71.5	85.6	**4.1**	1.9	7.9	**86.5**	79.1	90.8
	Tokar	**90.9**	86.3	93.8	**75.4**	70.0	80.1	**5.1**	3.1	7.5	**89.8**	84.1	92.6
	Port Sudan	**79.4**	69.9	88.3	**85.7**	81.3	90.1	**1.1**	0.5	2.3	**91.9**	88.8	95.2
	All state	**81.1**	77.9	84.5	**77.7**	74.7	80.7	**2.8**	2.1	3.6	**87.0**	84.3	89.1
Kassala	Aroma	**99.7**	97.5	100.0	**68.4**	43.2	85.6	**8.7**	0.0	21.0	**82.1**	68.5	92.2
	Hamshkoreb	**96.2**	88.5	99.1	**79.9**	71.5	86.0	**3.4**	1.4	5.9	**89.6**	82.7	94.1
	Kshmalgrba	**98.8**	95.8	100.0	**95.7**	91.1	98.4	**0.0**	0.0	1.1	**98.0**	95.5	99.5
	Nahr Atbara	**100.0**	100.0	100.0	**90.2**	82.9	96.3	**2.4**	0.0	7.3	**100.0**	98.5	100.0
	North Delta	**100.0**	100.0	100.0	**86.9**	77.4	91.2	**0.0**	0.0	0.0	**95.4**	87.0	98.1
	Rify Kassala	**99.2**	97.4	100.0	**93.2**	89.1	96.6	**3.1**	1.1	5.4	**98.2**	95.6	100.0
	Rural Halfa	**100.0**	94.2	100.0	**93.8**	88.3	98.2	**2.7**	0.7	5.2	**99.0**	93.8	100.0
	Talkok	**95.7**	92.5	98.3	**59.9**	50.2	69.4	**26.4**	20.2	32.7	**92.0**	86.3	96.3
	Wadalhlew	**100.0**	96.2	100.0	**88.7**	78.8	94.9	**0.0**	0.0	1.7	**95.1**	88.4	98.6
	West Kassala	**84.9**	77.9	95.2	**79.0**	71.7	84.4	**9.2**	5.0	14.6	**91.7**	85.5	95.6
	All state except capital	**97.8**	96.0	98.9	**79.0**	73.7	82.7	**10.2**	6.7	13.3	**94.2**	91.0	96.3
	Kassala Town	**98.2**	95.6	100.0	**85.3**	76.5	91.5	**2.2**	0.3	4.7	**92.9**	85.6	98.8
	Hamoshkoreib Town*	**96.6**	93.4	99.4	**80.1**	72.6	87.3	**3.3**	1.0	6.4	**90.3**	81.7	96.1
Gedaref	Al Gadaref Wasat	**96.3**	93.5	98.2	**80.8**	76.1	86.2	**5.5**	3.2	8.5	**91.7**	88.4	95.7
	Al Mafaza	**85.9**	79.3	91.1	**85.1**	76.5	89.9	**1.9**	0.0	5.4	**95.8**	90.4	98.8
	Albutana	**95.0**	92.6	96.6	**80.1**	74.5	85.4	**5.0**	2.8	7.6	**91.1**	88.3	94.2
	Alfashaga	**90.0**	87.5	92.2	**82.1**	78.6	86.1	**6.6**	4.5	8.3	**95.5**	93.9	96.7
	Alfaw	**89.9**	85.6	93.7	**80.2**	76.2	84.1	**5.2**	3.1	7.4	**89.5**	85.3	93.6
	Algalabat Al Garbiya	**94.2**	83.1	100.0	**89.5**	77.4	96.4	**3.5**	0.6	7.3	**99.4**	89.7	100.0
	Algalabat Al Shargiya	**99.3**	93.6	100.0	**92.6**	86.9	96.6	**1.7**	0.0	5.1	**97.7**	95.5	100.0
	Algurisha	**88.9**	82.3	95.1	**91.3**	85.3	96.1	**1.4**	0.4	3.0	**94.4**	87.4	98.6
	Alrahad	**89.2**	83.2	94.1	**80.0**	73.5	87.2	**9.0**	5.1	14.2	**93.6**	87.6	96.8
	Basonda	**92.9**	87.5	96.4	**81.8**	74.1	87.8	**6.8**	3.5	12.0	**94.9**	91.5	97.5
	Gula Alnahal	**93.2**	89.0	95.8	**90.8**	87.7	93.4	**2.7**	1.3	4.3	**99.0**	97.4	99.8
	All state except capital	**92.9**	91.6	94.0	**85.5**	83.6	87.5	**4.8**	4.0	5.7	**95.5**	94.5	96.4
	Gedarif Town	**82.1**	75.9	86.8	**75.9**	67.8	85.2	**5.1**	2.0	9.5	**94.4**	90.0	98.3
Blue Nile	Baw (part)	**96.6**	90.8	100.0	**89.4**	74.4	100.0	**0.0**	0.0	4.3	**94.7**	85.1	100.0
	Damazin	**98.7**	95.2	100.0	**97.0**	92.8	99.4	**0.6**	0.0	2.6	**98.8**	97.0	100.0
	Giessan (part)	**93.8**	91.2	96.1	**77.2**	70.3	83.9	**5.6**	3.3	7.7	**86.8**	80.3	92.8
	Kurmuk (part)	**93.1**	87.6	98.3	**75.0**	63.4	83.2	**6.7**	2.9	11.1	**86.1**	75.0	96.1
	Rosairs (part)	**92.2**	89.3	95.2	**79.3**	71.4	84.6	**4.0**	2.2	5.5	**91.0**	84.0	95.2
	Tadamon (part)	**90.2**	84.5	93.7	**67.9**	57.0	81.3	**18.2**	8.5	27.5	**94.6**	90.8	98.1
	All state except capital	**92.9**	90.9	94.5	**78.4**	73.5	82.1	**5.1**	3.8	6.6	**90.7**	86.6	93.6
	Damazin Town	**97.9**	95.1	99.6	**92.9**	87.6	97.4	**1.3**	0.0	4.4	**96.9**	93.3	99.6
	Roseris Town	**100.0**	98.5	100.0	**90.7**	85.8	95.1	**2.1**	0.5	4.7	**96.9**	94.3	98.7

State	Locality	Vitamin A supplement received (6-59mo)			Age appropriate vaccination (6-59mo)			Pentavalent drop-out rate: Children >= 4 months has PENTA-1 but not PENTA-3			Child of any age has BCG by card or recall (6-59mo)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
South Kordofan	Abujebiha (part)	**27.7**	11.5	50.2	**77.1**	67.4	84.4	**4.5**	2.6	6.5	**86.1**	77.0	92.1
	Al Tadamoon (part)	**69.0**	58.2	79.4	**68.7**	55.4	79.1	**4.3**	2.0	6.9	**78.5**	64.5	89.5
	Alabaseya	**72.4**	57.1	82.3	**44.5**	30.7	72.8	**9.7**	4.9	15.4	**57.6**	44.6	76.0
	Algoz	**63.2**	51.1	76.9	**77.5**	70.5	85.3	**3.4**	1.4	5.5	**92.1**	88.0	94.9
	Allirri	**43.8**	34.9	53.3	**62.3**	39.8	79.4	**7.1**	3.4	11.0	**74.8**	48.8	90.9
	Alreif Alshargi	**2.3**	0.0	7.0	**92.2**	87.0	95.3	**0.6**	0.0	2.8	**97.7**	92.7	100.0
	Dilling (part)	**0.0**	0.0	0.0	**85.0**	74.9	91.7	**0.0**	0.0	0.0	**88.3**	79.9	95.0
	Gadeir (part)	**21.7**	7.2	34.8	**67.2**	58.9	75.1	**10.3**	7.5	13.5	**87.9**	81.1	93.1
	Habeila (part)	**0.0**	0.0	0.0	**92.6**	84.4	96.2	**2.4**	0.6	5.0	**95.6**	90.3	98.5
	Rashad (part)	**0.0**	0.0	0.0	**90.4**	73.3	96.5	**5.5**	1.2	11.5	**96.4**	88.1	99.4
	All state except capital	**34.7**	25.7	44.1	**75.2**	70.4	79.6	**4.8**	3.6	6.1	**86.0**	81.6	90.0
	Kadugli Town	**54.2**	45.6	63.5	**84.2**	79.8	88.2	**2.7**	1.1	5.6	**93.9**	90.6	96.8
	Talodi Town	**46.2**	34.7	59.1	**85.1**	80.0	89.5	**2.8**	1.0	5.1	**91.3**	86.4	96.3
West Kordofan	Abo Zabad	**92.8**	86.6	96.4	**81.5**	71.3	87.1	**1.2**	0.0	4.4	**86.9**	79.6	91.2
	Abyei (NOT AAA)	**85.7**	79.8	90.4	**65.0**	54.9	72.1	**8.1**	5.8	10.6	**80.0**	70.5	86.5
	Al Khowi	**90.1**	85.1	93.2	**82.8**	75.0	88.7	**3.5**	1.5	5.5	**88.9**	82.8	92.3
	Al Odaya	**91.6**	85.3	94.4	**72.0**	66.2	77.6	**16.5**	11.6	21.7	**90.1**	83.5	94.1
	Al Salam	**63.4**	50.8	73.0	**64.0**	52.3	73.8	**8.9**	5.3	12.0	**78.0**	64.8	87.9
	Aldebab	**55.4**	40.1	68.7	**38.4**	23.2	55.2	**16.7**	10.2	22.6	**59.0**	40.5	82.0
	Almearam	**40.9**	31.2	50.0	**24.3**	18.1	32.6	**11.3**	6.8	21.2	**33.9**	26.4	41.1
	Alsnout	**74.9**	67.5	79.6	**71.7**	63.9	76.9	**2.8**	1.2	5.0	**77.4**	69.5	82.3
	Babanusa	**69.0**	54.4	85.8	**58.4**	51.0	67.2	**7.8**	4.2	11.2	**75.6**	69.7	81.7
	En Nuhud	**75.2**	68.4	82.6	**82.3**	73.3	88.3	**7.0**	4.8	11.1	**91.7**	84.9	95.7
	Ghebeish	**85.1**	79.9	89.4	**63.9**	54.3	72.6	**11.8**	7.8	17.6	**82.5**	74.5	88.7
	Kailak (part)	**67.7**	54.4	77.1	**65.2**	43.0	77.7	**7.2**	3.6	10.8	**74.5**	54.9	90.1
	Lagawa (part)	**88.6**	81.6	93.7	**80.1**	68.5	86.8	**2.0**	0.3	5.1	**87.8**	77.8	94.8
	Wad Bandah	**89.1**	82.0	94.9	**38.6**	31.0	47.3	**15.0**	11.5	18.4	**58.8**	48.9	65.7
	All state except capital	**81.4**	78.6	84.1	**63.9**	59.4	68.0	**9.0**	7.8	10.4	**77.1**	73.6	79.8
	Fula Town	**82.9**	75.9	88.2	**80.1**	74.7	85.3	**3.2**	1.2	5.7	**92.0**	87.3	95.1
North Kordofan	Bara	**80.8**	75.2	86.4	**74.3**	68.3	79.8	**5.7**	4.1	7.6	**86.7**	79.3	92.0
	El Rahad	**65.0**	53.5	77.0	**85.7**	79.6	91.8	**1.7**	0.0	4.1	**94.9**	90.4	98.0
	Jebrat El Sheikh	**95.0**	91.9	97.1	**85.3**	82.0	87.7	**2.7**	1.8	4.0	**90.4**	87.9	91.8
	Sheikan	**85.5**	79.7	89.6	**84.7**	79.4	89.9	**5.4**	2.3	8.7	**96.3**	93.7	97.9
	Sowdari	**88.0**	83.5	91.5	**64.7**	53.1	72.5	**3.4**	2.3	4.7	**69.9**	61.9	76.7
	Umm Daam	**88.9**	72.3	100.0	**85.1**	69.4	97.9	**1.8**	0.0	8.4	**90.4**	81.5	97.9
	Umm Rawaba	**81.4**	75.5	85.4	**84.1**	79.8	87.0	**3.7**	2.1	5.3	**93.0**	90.4	95.7
	West Bara	**60.7**	42.0	73.4	**32.0**	12.7	57.8	**14.2**	6.5	21.2	**42.0**	26.6	64.8
	All state except capital	**84.8**	82.4	87.1	**78.5**	75.2	80.9	**4.0**	3.2	5.0	**87.0**	84.7	89.5
	El Obeid Town	**87.9**	81.6	92.9	**79.2**	70.8	85.9	**4.5**	2.2	7.6	**87.5**	80.3	92.8
White Nile	Alsalam	**53.2**	36.0	68.5	**51.7**	28.9	73.5	**11.1**	6.1	16.0	**60.8**	43.5	79.8
	Ed Douiem	**76.8**	68.0	85.9	**66.0**	59.5	72.7	**5.7**	2.5	10.2	**77.9**	71.3	83.5
	El Gutaina	**87.7**	82.8	92.0	**81.8**	75.0	87.2	**3.6**	2.2	5.4	**91.5**	85.9	96.1
	El Jabalain	**86.5**	71.4	94.1	**77.0**	61.1	87.5	**7.0**	3.7	11.3	**89.4**	76.7	96.3
	Guli	**92.0**	82.3	97.7	**87.0**	72.1	92.1	**1.9**	0.3	7.0	**96.0**	85.0	98.7
	Kosti	**97.8**	95.3	99.6	**89.8**	81.4	95.2	**2.1**	0.0	6.1	**96.6**	89.5	100.0
	Rabak	**93.3**	85.7	97.6	**90.7**	82.4	96.7	**2.3**	0.0	5.9	**96.5**	91.9	100.0
	Tandalti	**73.0**	63.6	79.5	**69.2**	48.5	86.1	**8.2**	4.0	13.2	**81.7**	62.8	98.0
	Umm Remta	**80.0**	71.5	89.1	**70.0**	59.0	81.0	**7.9**	3.6	13.9	**84.1**	76.9	90.2
	All state except capital	**81.0**	76.8	85.4	**73.2**	68.3	77.1	**5.8**	4.6	7.5	**84.2**	80.2	88.3
	Kosti Town	**93.9**	88.5	97.6	**90.8**	85.4	94.6	**2.3**	0.5	5.4	**96.5**	93.1	98.9
	Rabak Town	**93.0**	86.4	97.4	**86.2**	81.1	90.6	**2.4**	0.9	4.6	**94.0**	90.0	96.9

State	Locality	Vitamin A supplement received (6-59mo)			Age appropriate vaccination (6-59mo)			Pentavalent drop-out rate: Children >= 4 months has PENTA-1 but not PENTA-3			Child of any age has BCG by card or recall (6-59mo)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Sennar	Abu Hijar	**96.0**	92.7	99.2	**69.4**	56.3	79.6	**7.2**	3.5	11.9	**83.8**	72.3	92.2
	Al Dindir	**85.6**	79.8	90.6	**75.5**	65.3	83.6	**8.8**	5.9	12.6	**90.3**	83.5	95.6
	Aldali & Almazmoum	**88.9**	82.9	94.2	**84.0**	73.9	88.6	**3.9**	1.6	6.4	**89.9**	78.5	95.0
	Alsooki	**92.3**	86.8	96.0	**75.5**	59.5	83.4	**7.5**	4.0	10.9	**89.5**	75.1	94.5
	Sennar	**91.1**	84.1	96.0	**84.1**	78.9	90.1	**2.4**	0.9	4.7	**94.7**	91.0	97.0
	Sharg Sennar	**96.2**	86.7	98.6	**79.6**	65.1	90.7	**5.0**	2.1	8.7	**89.7**	80.1	96.3
	Sinja	**93.6**	87.6	96.4	**95.8**	90.7	98.0	**0.0**	0.0	1.5	**97.9**	95.4	99.2
	All state except capital	**91.0**	88.3	93.2	**80.4**	77.0	83.8	**5.0**	3.7	6.3	**90.1**	87.0	93.0
	Sennar Town	**93.0**	87.8	96.8	**89.6**	84.8	93.6	**1.0**	0.0	2.6	**95.2**	92.2	97.6
	Sinja Town	**93.9**	88.7	97.3	**88.5**	82.9	93.0	**1.6**	0.0	3.8	**95.0**	91.4	97.8
El Gezira	El Hasaheisa	**100.0**	91.8	100.0	**94.5**	88.3	100.0	**0.0**	0.0	0.0	**100.0**	96.9	100.0
	El Kamlin	**100.0**	99.0	100.0	**96.0**	91.0	100.0	**0.0**	0.0	3.1	**99.2**	93.5	100.0
	El Managil	**93.4**	80.7	98.5	**92.9**	89.1	96.0	**1.1**	0.0	2.8	**96.6**	93.7	98.5
	Janub El Gezira	**94.3**	90.3	97.7	**89.6**	84.3	94.9	**3.5**	0.5	7.8	**98.7**	96.3	100.0
	Madani Al Kobra	**100.0**	100.0	100.0	**100.0**	100.0	100.0	**0.0**	0.0	0.0	**100.0**	100.0	100.0
	Sharg El Gezira	**98.6**	94.8	100.0	**92.3**	87.4	96.0	**0.8**	0.0	2.9	**98.1**	94.9	100.0
	Umm El Gura	**97.4**	92.5	100.0	**94.6**	87.5	100.0	**0.0**	0.0	3.4	**100.0**	93.6	100.0
	All state except capital	**95.8**	92.6	98.0	**92.7**	90.4	94.7	**1.5**	0.6	2.4	**97.5**	96.3	98.6
	Madani Town	**98.8**	96.4	100.0	**91.6**	84.4	97.8	**1.6**	0.0	4.5	**95.9**	89.2	99.5
Khartoum	Bahari	**93.3**	88.2	96.7	**92.6**	88.3	95.8	**1.0**	0.2	2.3	**98.4**	96.9	99.6
	Gabel Awlia	**70.4**	50.3	89.2	**88.8**	83.9	92.9	**3.7**	1.3	6.7	**98.7**	96.0	100.0
	Karrarri	**79.7**	62.8	88.4	**77.3**	72.1	82.4	**4.1**	1.9	6.1	**94.1**	91.6	96.2
	Khartoum	**75.0**	52.4	84.9	**96.1**	92.5	98.8	**0.0**	0.0	0.0	**98.6**	96.8	99.7
	Shareg Elnile	**76.4**	69.6	82.0	**94.4**	91.8	96.5	**1.1**	0.4	2.3	**98.2**	96.5	99.2
	Umbada	**87.3**	78.8	92.8	**86.1**	81.3	90.3	**4.1**	1.8	7.2	**96.2**	93.6	98.2
	Umdrman	**61.0**	44.9	72.8	**92.3**	87.9	95.5	**0.8**	0.0	2.1	**97.7**	95.3	99.4
	All state	**79.7**	73.8	84.2	**89.4**	87.3	91.1	**2.2**	1.5	2.9	**97.3**	96.3	98.0
Northern	Alborgeg	**100.0**	100.0	100.0	**75.0**	49.4	100.0	**0.0**	0.0	0.0	**87.5**	62.5	100.0
	Aldabba	**89.9**	84.5	92.5	**88.7**	81.8	92.9	**1.5**	0.4	2.7	**94.4**	88.6	97.0
	Algoled	**86.5**	75.7	96.1	**80.6**	72.6	86.6	**2.9**	1.2	5.3	**86.3**	81.7	91.8
	Dalgo	**90.1**	85.1	93.3	**92.6**	89.8	95.2	**0.4**	0.0	1.2	**96.0**	93.7	97.7
	Dongola	**90.4**	79.7	95.7	**87.7**	79.3	92.5	**2.8**	0.7	6.0	**94.1**	85.8	97.3
	Halfa	**74.9**	70.8	80.3	**88.7**	86.2	91.4	**2.2**	1.0	3.8	**95.4**	93.4	97.1
	Merawi	**86.7**	80.9	90.2	**83.9**	77.5	89.0	**0.6**	0.0	1.6	**88.8**	85.1	91.8
	All state except capital	**82.1**	79.5	84.4	**87.4**	85.8	89.1	**2.0**	1.5	2.7	**93.3**	91.6	94.8
	Dongola Town	**92.3**	86.8	96.3	**91.0**	85.6	95.2	**0.8**	0.0	2.7	**94.7**	90.9	97.6
River Nile	Abu Hamad	**83.4**	79.7	87.3	**83.5**	78.8	87.6	**1.8**	0.7	3.3	**94.8**	92.6	96.9
	Albuhaira	**82.3**	76.6	86.2	**89.5**	78.4	96.3	**0.4**	0.0	1.8	**95.1**	83.5	99.4
	Atbara	**91.4**	76.4	98.1	**78.4**	65.2	87.8	**3.3**	1.3	5.9	**89.6**	75.8	97.0
	Barbar	**98.1**	79.3	100.0	**87.0**	70.1	95.0	**0.4**	0.0	2.3	**91.6**	77.7	98.5
	Ed Damer	**91.2**	83.5	95.0	**69.1**	56.5	78.0	**1.4**	0.3	3.2	**75.8**	63.4	84.9
	El Matammah	**86.3**	81.5	90.1	**86.2**	79.3	91.2	**3.6**	1.8	5.8	**92.4**	85.3	96.4
	Shendi	**50.9**	34.8	66.7	**44.3**	25.9	67.1	**8.0**	4.7	11.9	**61.3**	42.2	81.5
	All state except capital	**86.3**	82.6	88.7	**78.3**	74.0	82.7	**2.0**	1.3	2.7	**86.6**	82.5	90.3
	Atbara Town	**89.0**	83.3	93.9	**82.9**	75.7	88.7	**2.0**	0.5	4.5	**90.6**	85.1	94.4
	El Damar Town	**85.1**	76.9	91.5	**77.3**	67.7	86.2	**1.5**	0.3	3.8	**82.8**	74.4	90.1

State	Locality	Vitamin A supplement received (6-59mo)			Age appropriate vaccination (6-59mo)			Pentavalent drop-out rate: Children >= 4 months has PENTA-1 but not PENTA-3			Child of any age has BCG by card or recall (6-59mo)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
North Darfur	Al Fasher	**71.7**	60.8	82.6	**80.5**	74.5	86.0	**3.8**	1.6	6.6	**90.7**	86.8	95.0
	Al Koma	**92.1**	82.0	97.6	**86.7**	81.5	91.4	**8.7**	4.9	12.8	**98.4**	93.9	100.0
	Al Malha	**62.2**	53.0	71.3	**46.6**	36.0	61.0	**12.2**	8.7	16.6	**68.7**	56.9	78.4
	Al Seref	**85.6**	73.0	94.1	**54.1**	41.7	65.3	**6.9**	3.5	10.4	**72.8**	62.0	83.4
	Al Tina	**44.4**	33.9	54.7	**89.3**	78.7	96.0	**0.0**	0.0	0.0	**92.1**	82.8	98.3
	Al Twasha	**92.1**	86.6	96.3	**83.4**	76.3	89.5	**7.4**	4.0	10.9	**96.7**	94.6	98.4
	Allait	**89.3**	83.4	94.2	**88.7**	81.3	94.1	**3.5**	0.5	8.1	**99.5**	95.5	100.0
	Ambaro	**81.7**	72.2	87.7	**65.4**	53.8	72.0	**11.8**	7.0	17.9	**83.4**	74.4	89.5
	Dar Alsalam	**91.5**	85.2	95.8	**82.7**	77.5	87.5	**6.1**	3.2	9.2	**99.1**	95.3	100.0
	Kabkabia	**92.5**	84.0	97.8	**71.3**	60.7	79.9	**5.9**	2.9	9.8	**88.6**	75.3	96.5
	Karnoi	**53.9**	30.3	70.6	**69.0**	52.8	79.7	**4.7**	0.5	11.9	**79.3**	70.3	86.0
	Kelemendo	**85.5**	79.8	90.3	**84.8**	78.8	91.0	**4.0**	1.3	9.1	**96.2**	93.5	98.4
	Kutum	**93.5**	86.9	96.5	**93.0**	84.8	96.2	**3.2**	1.6	6.8	**98.9**	93.6	100.0
	Mallit	**77.8**	64.6	86.4	**60.8**	44.6	74.5	**3.0**	1.3	5.3	**70.3**	52.2	81.7
	Saraf Omra	**94.4**	80.2	98.9	**59.8**	35.0	71.8	**7.6**	2.4	15.2	**71.7**	39.6	81.6
	Tawila	**53.7**	40.5	66.0	**83.0**	74.0	89.9	**0.0**	0.0	0.0	**96.4**	91.8	99.7
	Umkadada	**86.4**	80.0	91.9	**86.3**	82.3	89.5	**1.7**	0.2	5.4	**95.8**	92.9	97.5
	All state except capital	**80.4**	77.6	83.5	**77.0**	73.5	80.6	**5.9**	5.0	6.8	**89.6**	86.8	92.2
	El Fashir Town	**83.6**	74.9	91.9	**82.5**	75.3	88.0	**5.3**	1.6	10.0	**95.3**	91.3	98.0
	Zamzam Camp*	**80.5**	69.8	88.4	**75.0**	66.2	83.7	**5.4**	2.0	9.3	**88.0**	81.0	92.7
	El Sireif Camp*	**85.2**	75.4	94.2	**55.2**	42.2	66.7	**7.1**	3.4	11.0	**71.9**	60.8	82.2
South Darfur	Al Rudoom (part)	**90.6**	84.9	95.5	**42.1**	27.2	55.5	**21.4**	13.0	30.0	**60.6**	42.0	73.1
	Alwehda	**92.7**	82.0	98.4	**84.3**	49.9	91.4	**4.9**	2.1	8.3	**95.2**	62.7	99.1
	Belil	**96.0**	83.6	98.7	**84.2**	73.3	90.9	**0.0**	0.0	0.0	**90.9**	79.5	94.6
	Buram	**70.6**	62.8	82.0	**24.9**	9.7	44.8	**13.9**	7.2	20.1	**32.0**	10.8	59.1
	Dimso	**82.6**	73.0	89.9	**80.4**	67.7	86.6	**0.0**	0.0	3.1	**87.0**	79.9	92.8
	El Salam	**74.3**	66.7	81.6	**70.1**	41.5	81.5	**0.0**	0.0	1.9	**78.6**	54.0	88.6
	Gerieda	**61.0**	33.3	82.4	**91.3**	44.5	100.0	**0.0**	0.0	0.0	**100.0**	56.3	100.0
	Id Elfirsan	**44.3**	34.7	53.8	**46.8**	37.3	54.1	**21.6**	17.0	27.2	**71.1**	62.8	77.8
	Kass	**78.6**	69.8	84.0	**48.9**	38.7	60.5	**6.7**	3.9	10.1	**69.6**	51.8	79.8
	Katila	**94.5**	88.2	97.0	**84.2**	79.8	87.9	**0.0**	0.0	0.0	**89.6**	85.6	92.7
	Kubum	**50.6**	41.2	58.5	**53.8**	36.9	70.4	**17.3**	4.0	27.7	**75.6**	65.2	85.7
	Mershing	**93.3**	85.7	100.0	**77.4**	66.0	86.8	**11.3**	3.8	22.6	**90.6**	83.0	98.1
	Netiga	**88.7**	79.4	95.6	**37.5**	17.0	58.0	**28.7**	18.2	39.2	**68.2**	49.6	88.7
	Rahad Elberdi (part)	**58.4**	51.0	67.5	**48.9**	42.9	54.6	**12.7**	8.0	23.7	**72.4**	66.9	79.1
	Toluss	**67.4**	53.7	78.4	**73.2**	65.4	82.4	**0.0**	0.0	0.0	**75.5**	65.4	82.5
	Um Dafog (part)	**48.3**	19.0	68.1	**50.0**	27.3	70.6	**11.8**	2.9	30.1	**73.5**	54.6	88.2
	All state except capital	**82.7**	78.7	87.1	**69.9**	65.8	74.5	**7.9**	5.6	10.7	**83.4**	80.3	86.4
	Nyala Town	**93.9**	89.0	97.9	**66.2**	59.0	74.3	**12.5**	7.3	16.8	**87.8**	81.6	92.0
	Kalma Camp*	**76.5**	67.2	83.9	**83.2**	73.7	90.5	**3.0**	1.0	5.7	**93.2**	87.6	96.9

State	Locality	Vitamin A supplement received (6-59mo)			Age appropriate vaccination (6-59mo)			Pentavalent drop-out rate: Children >= 4 months has PENTA-1 but not PENTA-3			Child of any age has BCG by card or recall (6-59mo)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
East Darfur	Abukarinka	**43.3**	13.3	75.7	**86.8**	79.2	91.6	**0.0**	0.0	2.3	**92.3**	85.1	97.8
	Adilla (part)	**85.1**	77.7	93.4	**72.5**	65.5	79.0	**4.4**	0.0	11.5	**87.9**	81.1	92.1
	Al Deain	**94.2**	88.1	98.3	**36.5**	25.9	46.7	**18.0**	9.1	29.9	**62.3**	47.2	81.7
	Alfirdos	**54.1**	33.9	73.5	**22.4**	13.1	31.9	**0.0**	0.0	2.1	**22.6**	13.8	34.2
	Asslaya	**9.5**	2.3	17.1	**97.7**	89.0	100.0	**0.0**	0.0	0.0	**100.0**	97.1	100.0
	Aubgabar	**74.2**	66.3	84.4	**58.6**	49.5	72.6	**14.5**	9.0	20.6	**60.2**	50.6	77.4
	Aubmatarg	**78.4**	60.7	90.4	**83.8**	74.0	91.8	**5.4**	1.8	9.0	**88.3**	81.0	94.6
	Sharia (part)	**91.9**	81.7	97.2	**79.4**	72.7	87.7	**6.0**	2.8	10.3	**87.6**	82.0	92.1
	Yaseen (part)	**5.8**	0.0	15.1	**89.6**	84.3	95.3	**0.0**	0.0	0.0	**98.1**	94.3	100.0
	All state except capital	**48.2**	35.4	63.2	**78.7**	72.3	83.1	**2.8**	1.2	5.2	**86.6**	79.7	91.4
	Al Deain Town	**78.1**	66.5	87.6	**81.9**	73.3	88.3	**4.1**	1.0	8.1	**91.3**	86.3	95.2
West Darfur	Algenea	**87.5**	68.4	97.9	**80.9**	57.1	94.4	**1.1**	0.0	6.7	**91.0**	77.1	100.0
	Baida	**98.5**	94.2	100.0	**80.8**	65.0	88.9	**1.8**	0.0	4.1	**94.3**	80.4	99.2
	Forbranga	**85.8**	76.2	94.3	**58.3**	52.2	64.5	**15.1**	8.1	22.6	**82.5**	74.1	90.2
	Gabal Moon	**90.9**	82.8	95.4	**73.5**	62.5	83.6	**9.6**	5.9	13.8	**90.1**	83.3	95.9
	Habilla	**93.1**	89.1	96.3	**36.3**	25.4	48.5	**12.2**	6.9	17.4	**61.0**	52.3	67.9
	Kerenik	**84.1**	79.0	89.9	**72.2**	68.3	75.4	**12.7**	10.1	15.6	**97.2**	96.0	98.2
	Kulbus	**97.5**	94.4	99.7	**76.6**	70.2	82.0	**7.5**	2.9	12.5	**88.6**	83.0	92.1
	Serba	**84.8**	77.0	90.2	**65.5**	50.8	76.3	**9.6**	2.2	22.5	**87.9**	78.1	95.2
	All state except capital	**86.4**	83.0	89.4	**69.6**	64.8	74.1	**9.7**	7.4	11.8	**89.3**	85.8	92.1
	Algenea Town	**96.7**	93.4	99.0	**80.0**	74.2	85.7	**4.4**	2.2	8.5	**92.9**	89.5	95.9
	Morne Camp*	**97.0**	93.1	99.4	**57.2**	50.0	63.9	**18.8**	13.5	24.7	**98.1**	95.1	99.5
Central Darfur	Azoum	**91.0**	81.5	95.5	**80.8**	68.1	87.1	**3.0**	0.0	6.8	**93.5**	88.5	97.7
	Bendsi (part)	**85.0**	73.7	92.3	**74.2**	57.1	82.6	**13.6**	8.3	19.0	**95.5**	80.7	98.5
	Mukjar (part)	**93.2**	88.8	97.1	**83.1**	74.8	89.2	**2.5**	0.6	6.2	**90.9**	84.9	95.4
	Nertati	**84.7**	57.3	96.5	**63.5**	51.7	72.5	**0.0**	0.0	2.4	**87.7**	69.8	97.3
	Rokiro	**92.3**	83.3	98.9	**77.6**	70.4	84.9	**1.9**	0.0	5.6	**89.7**	83.3	95.3
	Um Dukhun (part)	**60.7**	51.3	71.1	**74.1**	65.0	83.4	**0.7**	0.0	2.1	**75.7**	66.9	84.3
	Wadi Salih (part)	**70.6**	48.9	84.5	**60.7**	47.5	72.5	**2.0**	0.4	4.6	**68.9**	51.8	79.7
	Zalingei	**73.5**	54.3	89.6	**67.8**	50.2	80.2	**7.4**	3.0	14.1	**76.1**	62.7	90.3
	All state except capital	**83.7**	75.8	89.2	**73.2**	66.6	79.3	**5.3**	3.5	7.5	**86.8**	81.4	91.6
	Zalingi Town	**99.4**	97.2	100.0	**96.8**	93.3	98.9	**0.0**	0.0	0.6	**99.7**	96.7	100.0
	Mukjar Town*	**93.3**	87.4	97.2	**83.6**	74.6	90.0	**2.6**	0.6	6.0	**90.9**	84.7	95.6
	Um Dokhon Town*	**60.9**	51.3	71.5	**73.1**	64.9	80.2	**0.7**	0.0	2.1	**76.6**	69.4	84.2

9.1.3Child morbidity

Mothers were asked if their child had suffered from diarrhoea, fever or cough with difficult breathing in the 2 weeks prior to the survey.

Prevalence of Diarrhoea (Figure 30)

Lowest reported period prevalence of diarrhoea was reported in Nahr Atbara, Assalaya, El Rahad, Abumatarig, Al Tina, Kutum, and Abu Gabra localities see table 7 below. In some of those locations (namely Abumatarig, Al Tina, Kutum, and Abu Gabra) this is thought to be attributable to the extensive training[13] of the community health promoters leading to increased awareness and improved practices of mother in preventing and handling the sick child not only with diarrhoea but also with cough/ difficult breathing and fever. On the other hand Highest reported prevalence of diarrhoea was concentrated in the central region of the country spanning areas in the six states of Blue Nile, Sennar, Gedaref, Gezira, Khartoum and White Nile, this could be explained by the reported poor hand washing practices across the country (see figure 31).

Highest prevalence was recorded in accessible parts of Baw locality in Blue Nile (63.8%) followed by Bendisi locality in Central Darfur (59.1%), then Kosti, Nertiti and Alsereef localities. This high prevalence in Baw locality is also coupled with poor knowledge of management of diarrhoea, probably due to the quality of preventive services available in the state.

Presence of improved source of drinking water and improved sanitation facilities has not shown big effect in reducing diarrhoea period prevalence (Figures 32, and 33), however GAM by MUAC prevalence was higher where diarrhoea was high (Figures 34), SAM by MUAC followed the same pattern.

Prevalence of Fever (Figure 35)

Period prevalence of fever was highest in localities in Central Darfur (Nertiti locality reported 84% of children with fever in the previous two weeks, which correlates well with the fact that only 7.6% of children in Nertiti sleep under a mosquito net) and in South Darfur (Netiga, Mershing, Dimso, Buram, Alwehda and Al Rudoom localities), other localities with high period prevalence of fever includes accessible parts of Al Tadamoon, Rokiro and Al Dindir. It is worth noting that fever can be caused by conditions other than malaria, actually a considerable portion of fever cases is thought to be caused by acute respiratory infections (see figure 36). I addition mothers are well aware of fever and severe vomiting as danger signs needing care seeking, as compared to other care seeking signs.

GAM by MUAC was higher in areas with high period prevalence of fever (Figure 37) suggesting possible causal association between fever and acute malnutrition.

Prevalence of Acute Respiratory infection (Figure 32)

Prevalence of acute respiratory infection, as with diarrhoea, was clustered in localities around the central states of Gezira, White Nile and Sennar and including South Kordofan. Figures above 60% prevalence of ARI were reflected in each of Eldindir, Sharg Sinnar, and Abu Hijar localities in Sennar state, and in Altadamoon in South Kordofan. The security situation may could have affected access to health services leading to the increased period prevalence of ARIs in Rokiro in Central Darfur, localities in South Kordofan and Kurmuk locality of Blue Nile.

[13] Training has been organized by Emergency and Humanitarian Action (EHA) department in the FMoH.

Figure 30: Classification map for period prevalence of diarrhoea

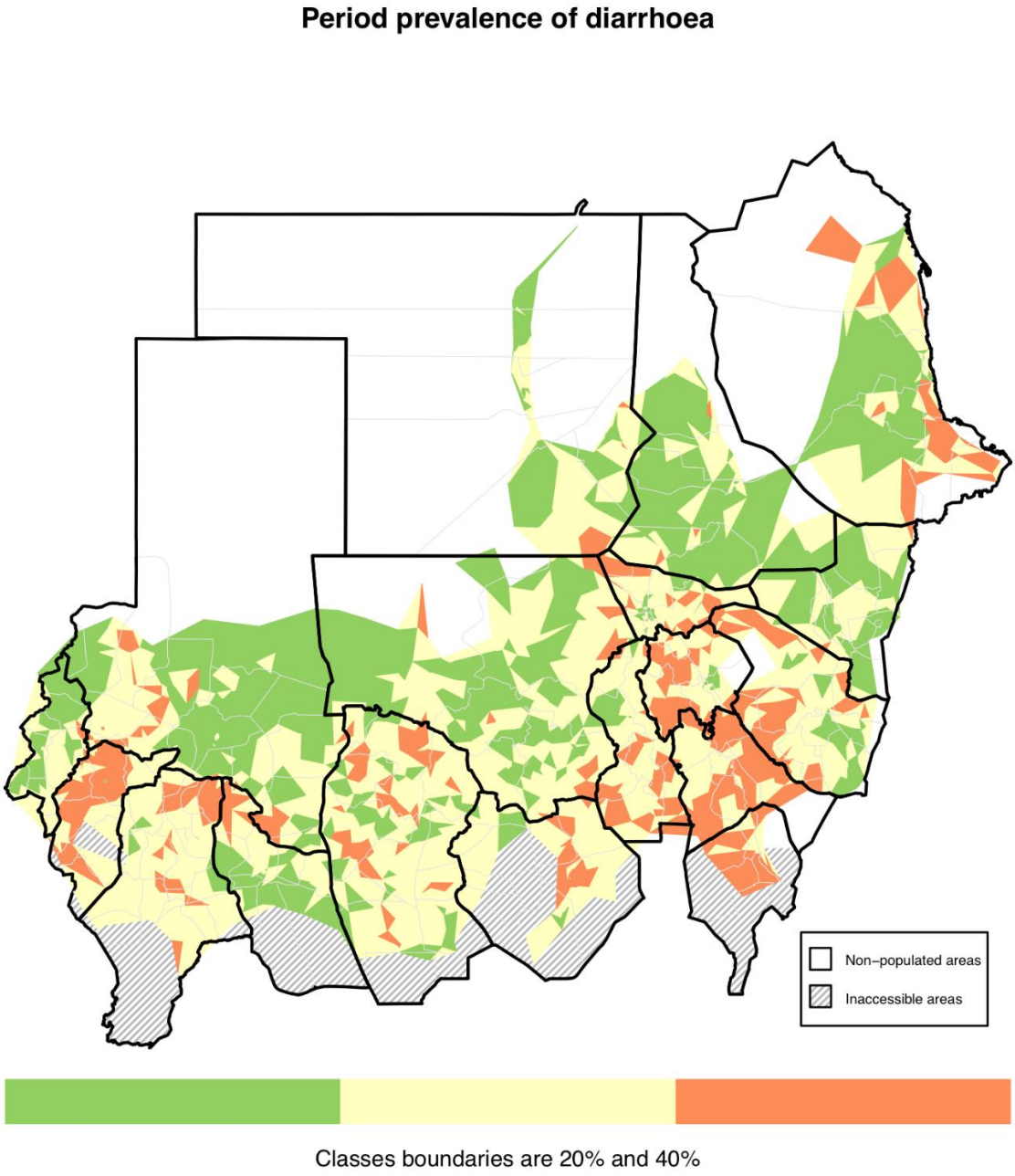


Figure 31: Diarrhoea prevalence and mean number of appropriate times when mother washes her hands

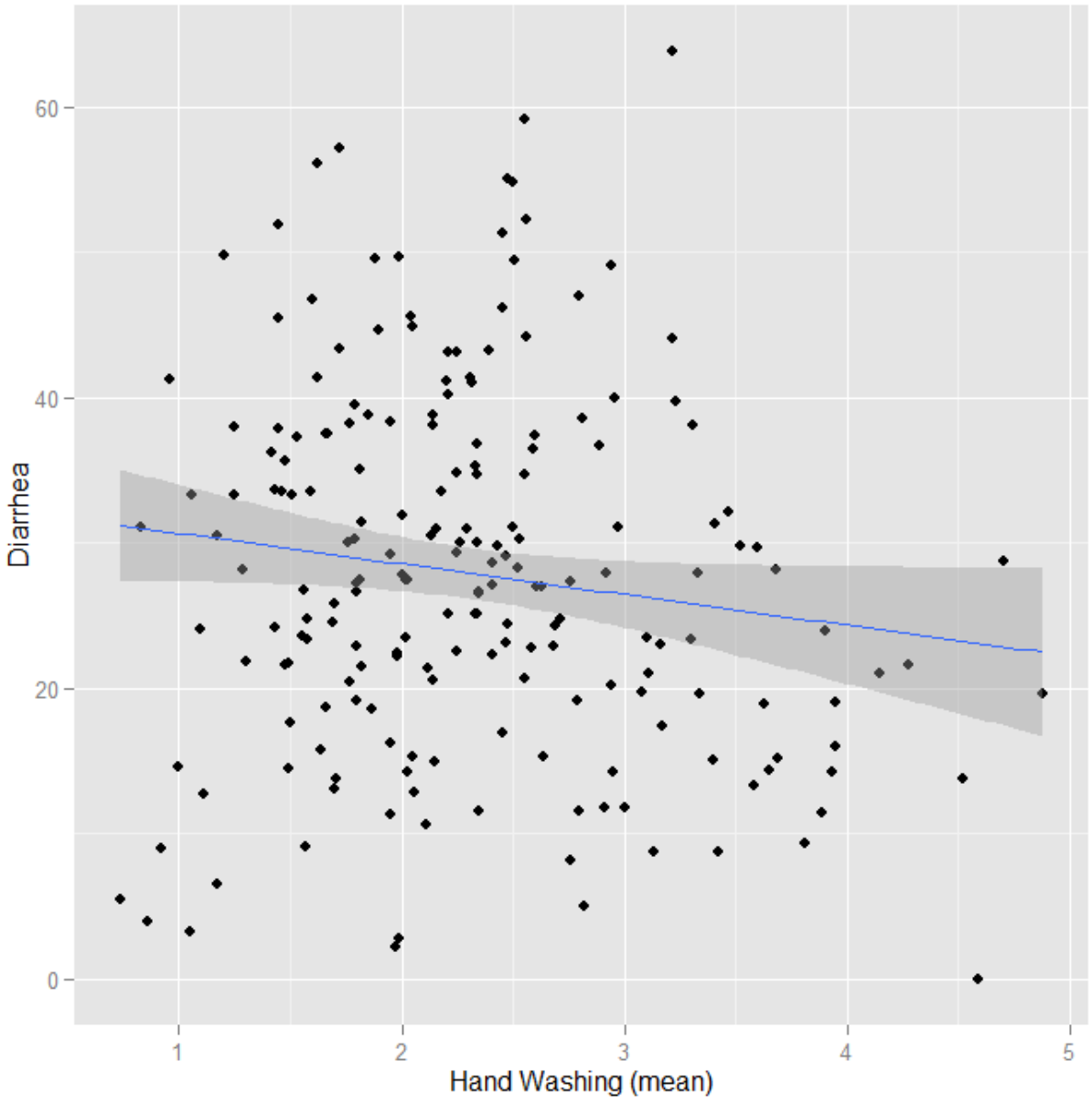


Figure 32: Diarrhoea prevalence and the use of improved source of drinking water

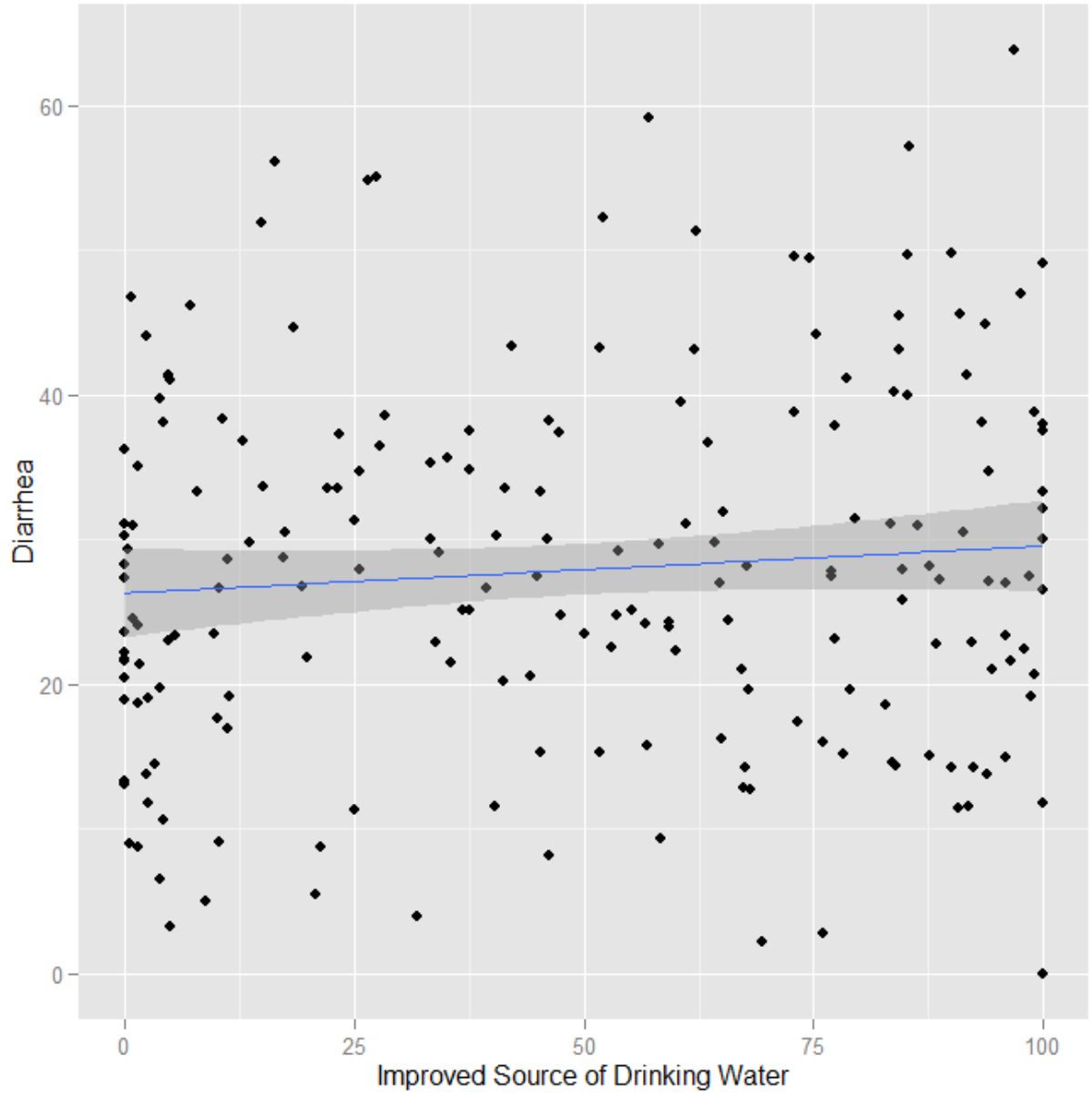


Figure 33: Diarrhoea prevalence and the use of improved sanitation facilities

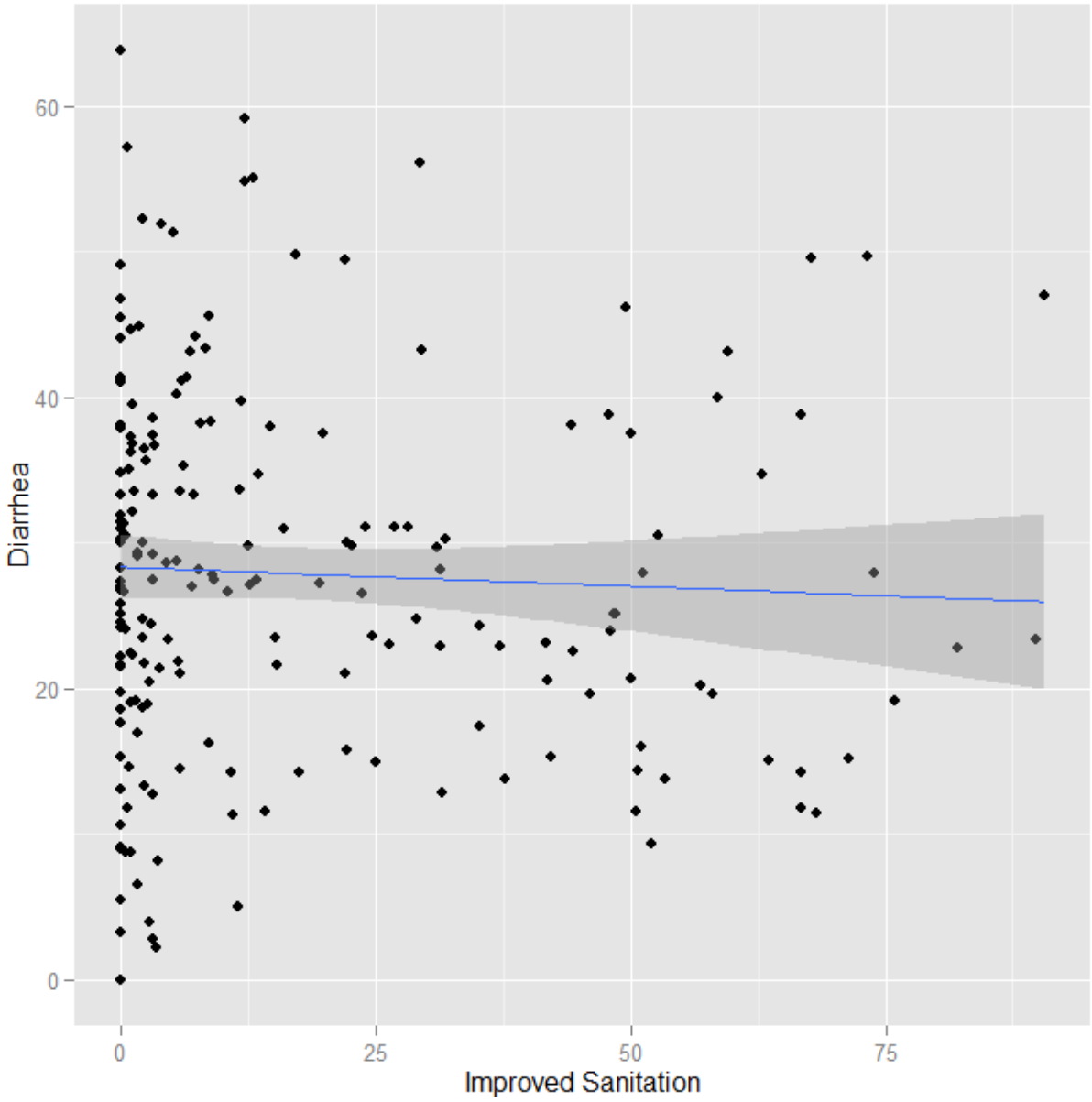


Figure 34: Diarrhoea prevalence and GAM by MUAC

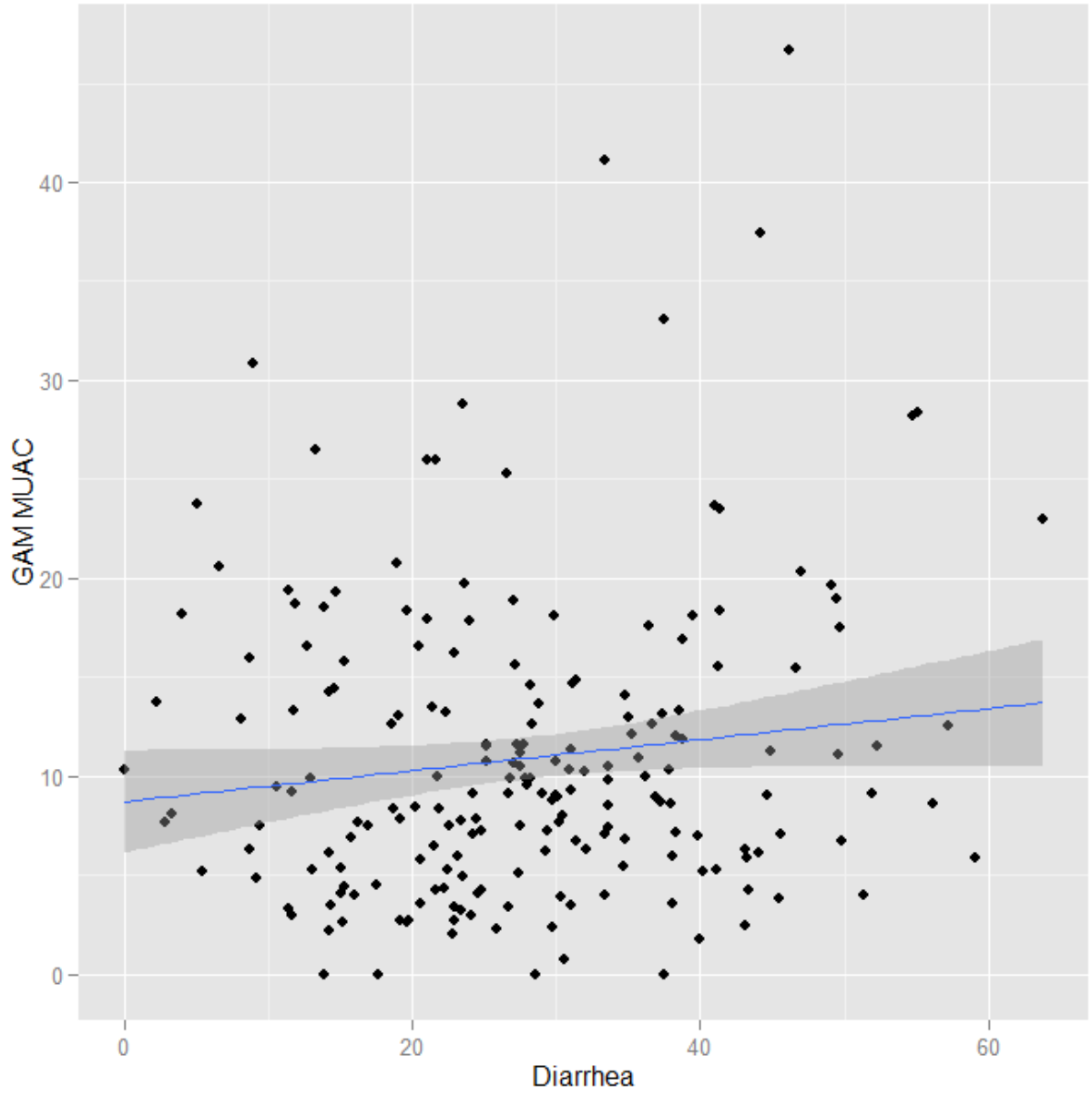


Figure 35: Classification map of period prevalence of fever

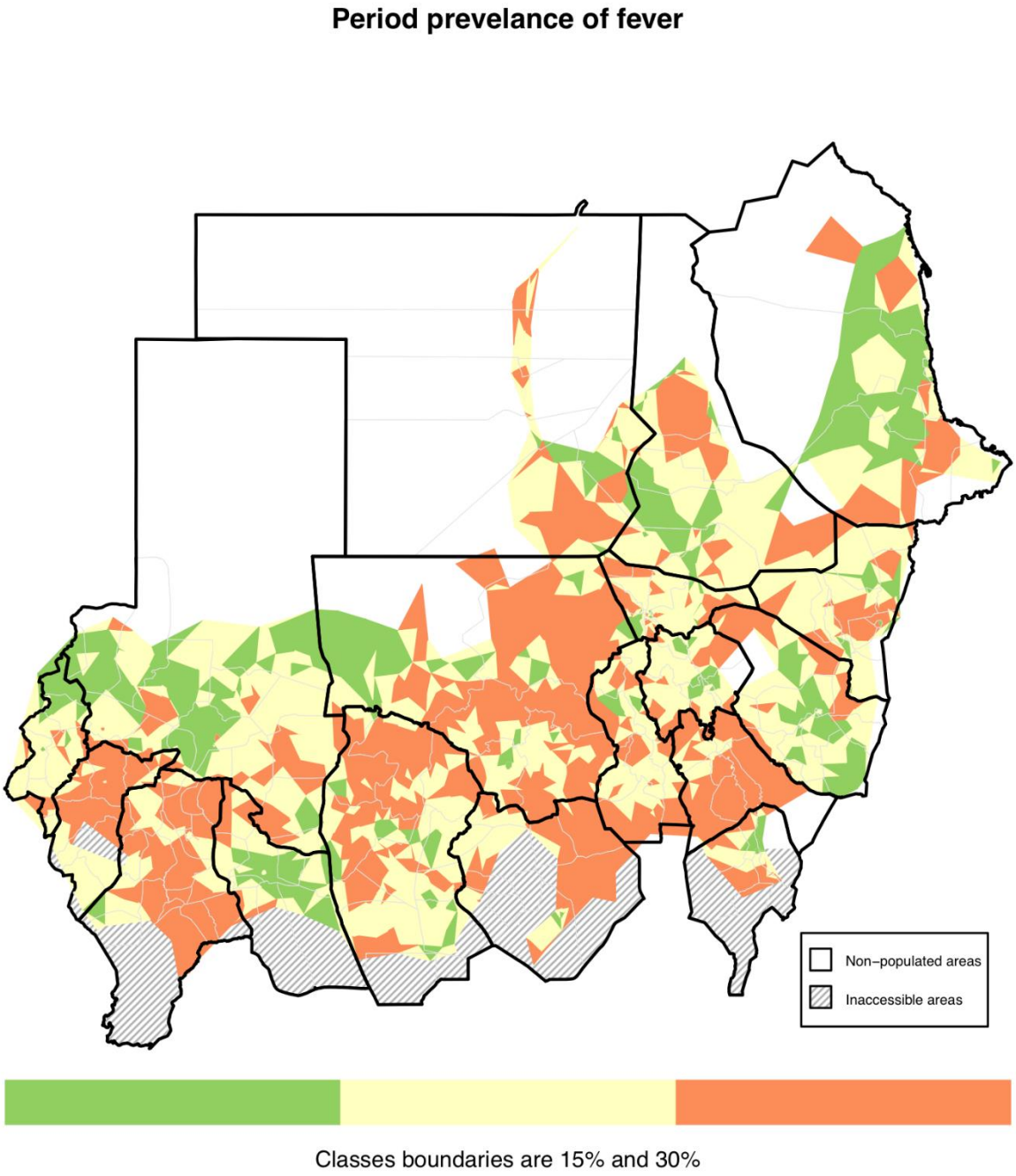


Figure 36: Period prevalence of fever and Period prevalence of cough/ difficult breathing (ARI)

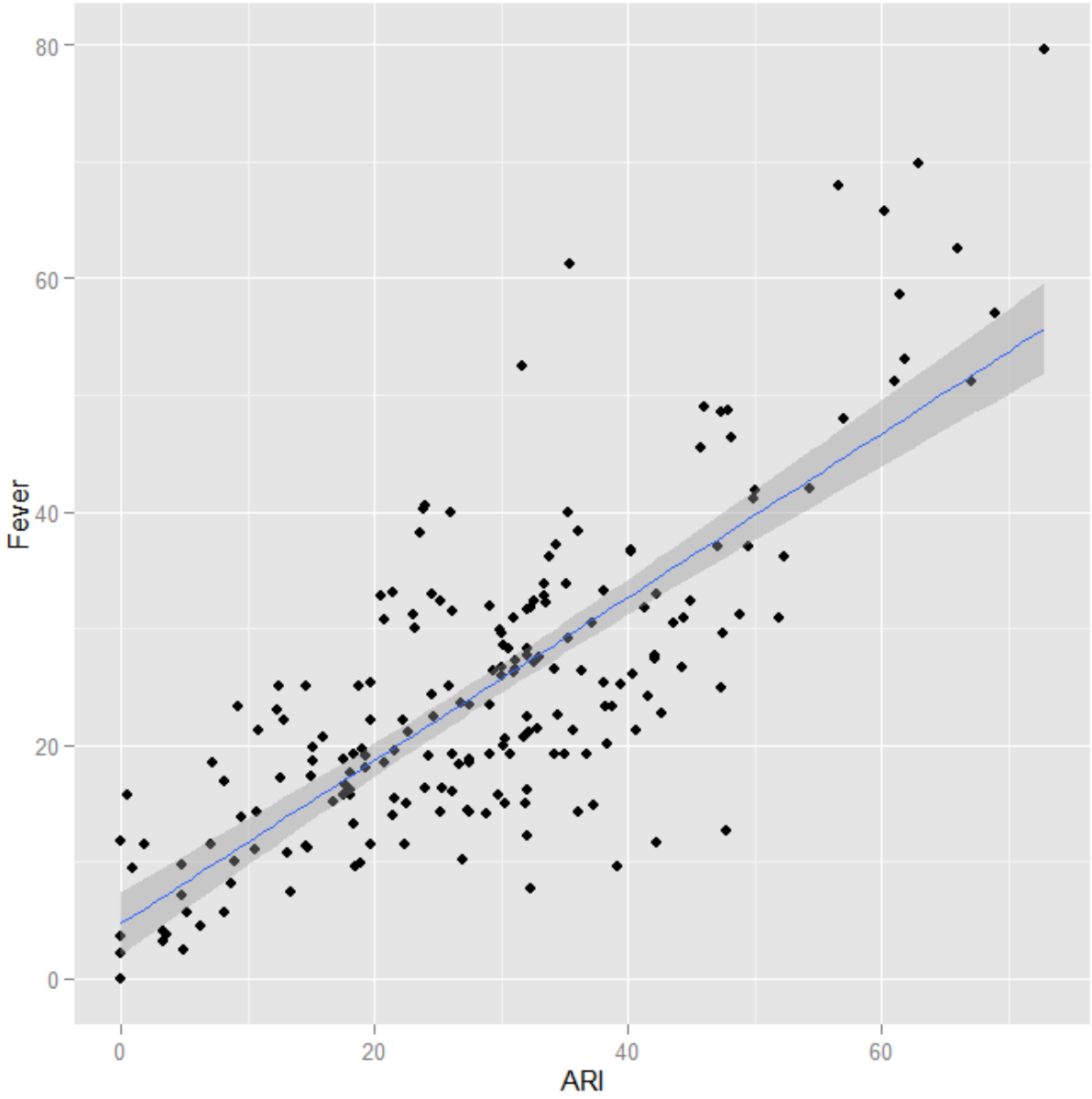


Figure 37: Period prevalence of fever and GAM by MUAC

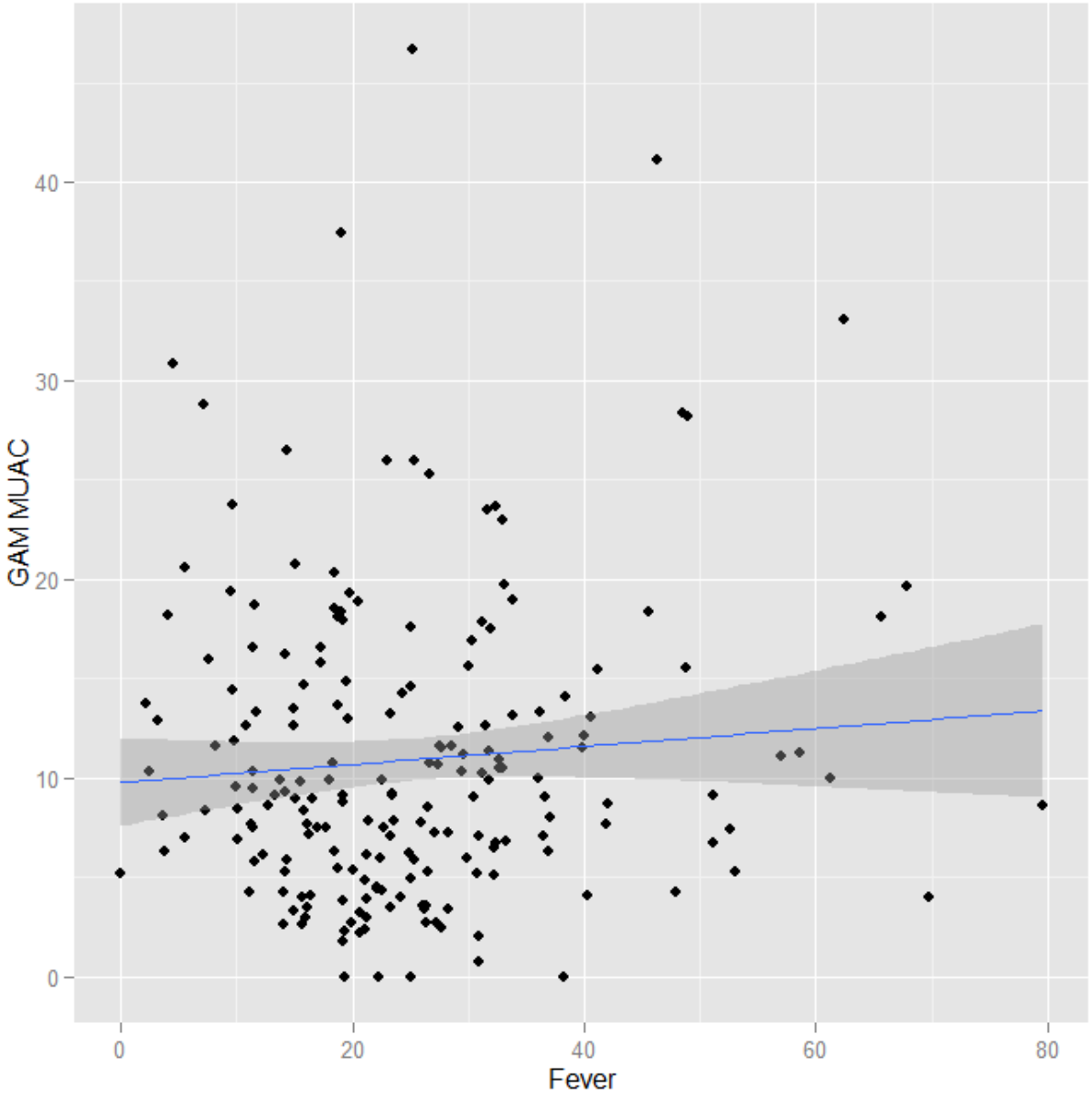


Figure 38: Classification map of period prevalence of cough/ difficult breathing

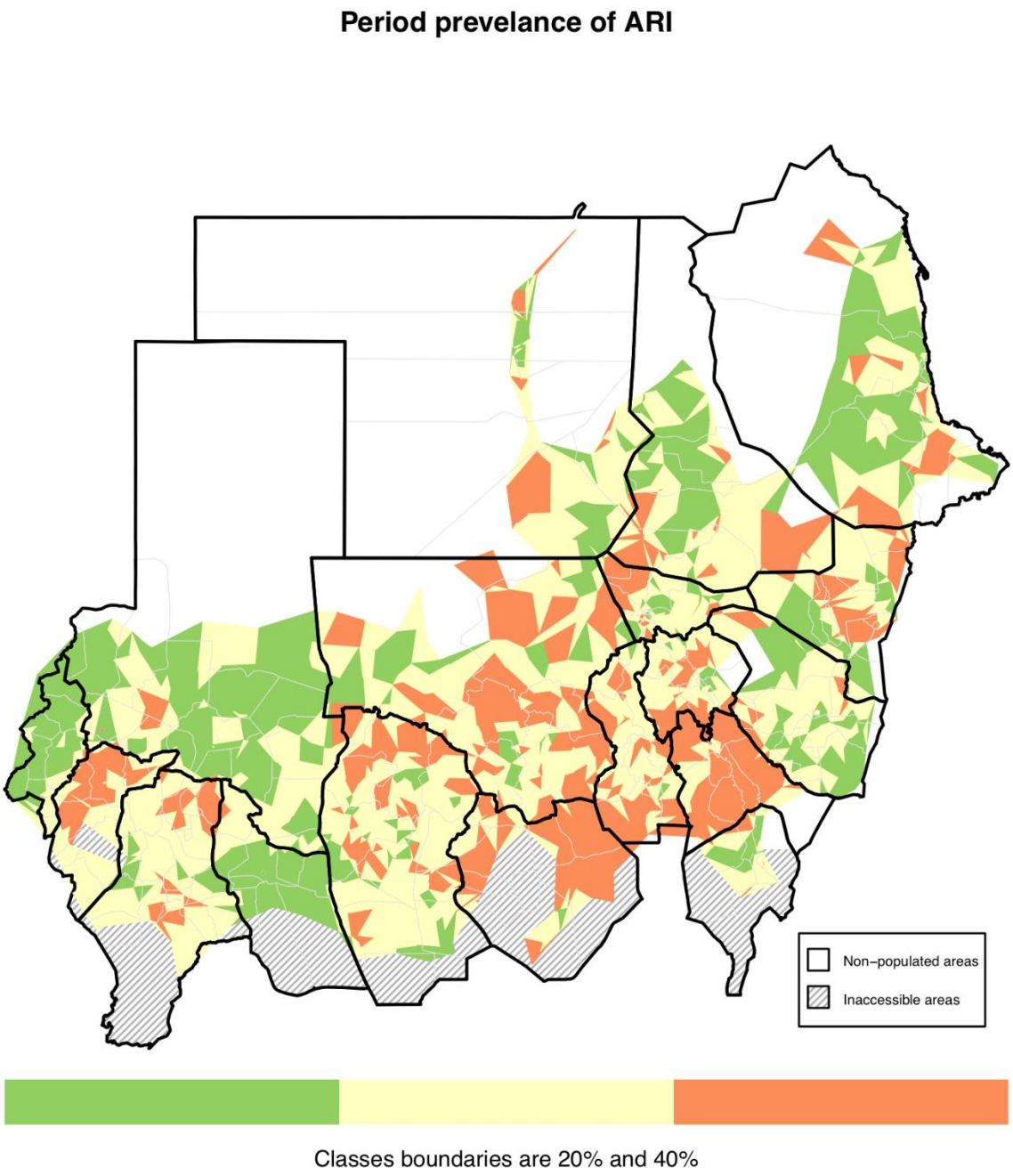


Table 7: Period prevalence (2 weeks before survey) of child illness (6-59 months) and treatment received for diarrhoea (reported by mothers), results by locality

State	Locality	Period prevalence of diarrhoea			Period prevalence of fever			Period prevalence of ARI			Children received good diarrhoea treatment		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Red Sea	Ageeg	**44.2**	38.2	52.3	**19.1**	11.4	30.4	**19.3**	11.7	28.9	**41.8**	28.4	55.5
	Alganeb Alolib	**14.5**	9.4	20.9	**9.6**	5.9	12.7	**18.5**	11.7	25.9	**25.3**	13.7	40.8
	Dordaib	**30.4**	24.1	38.2	**37.1**	29.9	43.4	**34.3**	27.8	44.2	**7.6**	2.9	15.4
	Haia	**6.5**	2.0	12.3	**5.6**	2.2	11.0	**5.2**	1.2	9.5	**50.0**	22.2	80.3
	Haliab	**21.3**	12.5	33.0	**14.9**	5.9	23.8	**37.2**	19.3	57.5	**18.2**	0.0	43.8
	Japitalmadin	**38.1**	31.9	44.6	**22.4**	17.0	26.5	**32.0**	26.2	37.9	**65.6**	56.2	76.0
	Sawaken	**23.5**	15.9	37.8	**7.1**	3.0	11.4	**4.9**	0.0	14.8	**14.7**	0.0	36.4
	Senkat	**8.9**	4.8	15.0	**4.5**	1.4	8.0	**6.3**	2.4	11.0	**4.2**	0.0	39.4
	Tokar	**46.2**	41.1	51.2	**25.2**	20.1	32.8	**39.4**	35.1	45.7	**9.8**	5.9	13.6
	Port Sudan	**27.9**	23.9	32.3	**9.9**	7.1	13.2	**18.9**	15.1	22.9	**44.9**	37.5	51.3
	All state	**31.7**	28.8	34.4	**14.7**	12.7	16.8	**21.2**	19.5	24.2	**36.1**	31.2	40.3
Kassala	Aroma	**13.3**	6.8	22.6	**14.3**	4.5	25.1	**36.0**	27.8	46.5	**23.2**	0.0	47.8
	Hamshkoreb	**41.3**	34.2	48.1	**31.6**	24.6	41.0	**32.1**	23.9	42.4	**44.4**	28.7	57.0
	Kshmalgrba	**28.7**	16.2	39.1	**18.7**	10.6	27.6	**15.1**	5.5	26.6	**98.5**	88.9	100.0
	Nahr Atbara	**0.0**	0.0	1.5	**2.4**	0.0	7.4	**4.9**	1.2	9.8	**0.0**	0.0	0.0
	North Delta	**8.7**	5.5	13.2	**7.6**	3.5	13.6	**32.3**	22.7	41.9	**92.6**	73.8	100.0
	Rify Kassala	**11.8**	7.3	17.8	**11.6**	5.7	21.8	**42.2**	29.6	57.1	**100.0**	85.0	100.0
	Rural Halfa	**15.2**	8.6	25.4	**22.2**	13.7	30.4	**12.8**	5.5	20.0	**18.0**	7.0	36.2
	Talkok	**23.6**	18.1	29.1	**33.1**	25.4	40.3	**21.4**	13.1	31.8	**18.9**	5.5	37.5
	Wadalhlew	**18.9**	13.4	26.0	**15.1**	8.5	24.5	**16.7**	8.2	24.0	**55.3**	37.9	69.2
	West Kassala	**21.7**	11.3	28.4	**36.1**	28.3	45.2	**52.3**	45.4	61.2	**29.6**	12.8	48.6
	All state except capital	**16.1**	13.4	18.9	**19.1**	15.5	23.1	**25.9**	21.5	30.4	**45.5**	32.7	60.3
	Kassala Town	**9.4**	5.6	13.9	**11.4**	6.5	16.8	**19.7**	13.2	29.9	**46.4**	25.9	68.6
	Hamoshkoreib Town*	**41.0**	33.3	50.8	**32.4**	23.2	42.2	**32.6**	24.7	42.7	**45.2**	29.8	60.6
Gedaref	Al Gadaref Wasat	**38.3**	32.0	45.8	**16.2**	12.6	20.9	**23.9**	19.9	27.9	**19.0**	12.4	26.6
	Al Mafaza	**33.3**	26.8	42.9	**31.0**	23.2	38.7	**31.0**	22.8	38.7	**21.8**	11.5	32.7
	Albutana	**35.0**	28.8	43.1	**19.6**	14.7	25.9	**19.0**	14.5	25.1	**8.0**	4.9	11.7
	Alfashaga	**41.3**	36.9	45.5	**45.5**	40.9	49.4	**45.7**	41.6	49.1	**17.0**	13.0	21.3
	Alfaw	**37.8**	29.3	46.2	**29.5**	24.9	33.7	**47.5**	42.5	52.8	**4.5**	1.8	9.7
	Algalabat Al Garbiya	**30.1**	21.0	42.3	**15.0**	7.1	26.1	**22.5**	12.4	36.3	**7.0**	0.0	17.7
	Algalabat Al Shargiya	**13.1**	7.4	24.5	**14.2**	6.9	22.2	**27.4**	19.9	34.1	**19.1**	6.9	38.9
	Algurisha	**20.4**	16.0	24.6	**17.3**	12.7	22.0	**15.0**	8.9	21.9	**27.4**	11.0	46.9
	Alrahad	**45.5**	31.9	53.9	**19.2**	12.1	27.9	**34.2**	26.9	41.3	**9.4**	3.1	21.3
	Basonda	**18.7**	13.4	23.8	**7.3**	4.5	10.7	**13.4**	8.4	19.5	**9.7**	2.5	18.1
	Gula Alnahal	**36.9**	31.1	42.7	**16.5**	12.0	21.2	**17.6**	13.7	23.9	**5.8**	2.4	10.6
	All state except capital	**31.3**	28.5	34.0	**28.5**	25.5	31.8	**33.5**	30.7	36.0	**16.0**	13.6	18.8
	Gedarif Town	**29.8**	24.2	35.5	**19.2**	12.7	28.0	**29.1**	21.5	36.2	**8.7**	2.4	19.1
Blue Nile	Baw (part)	**63.8**	53.2	73.4	**33.0**	23.4	41.5	**24.5**	14.9	33.0	**9.8**	3.1	19.7
	Damazin	**38.8**	31.3	47.3	**9.8**	5.5	14.9	**4.8**	1.2	11.5	**29.4**	18.5	40.6
	Giessan (part)	**47.0**	35.4	61.3	**18.4**	10.5	27.7	**20.8**	16.4	27.0	**7.4**	2.6	15.8
	Kurmuk (part)	**34.8**	27.6	40.9	**38.4**	29.9	45.8	**36.1**	28.3	45.7	**11.8**	5.4	21.6
	Rosairs (part)	**49.7**	44.6	53.4	**32.0**	25.0	37.3	**29.1**	22.7	35.3	**9.8**	5.6	15.2
	Tadamon (part)	**44.0**	33.2	54.2	**21.2**	14.3	27.7	**10.8**	5.9	16.3	**8.2**	3.3	15.7
	All state except capital	**48.2**	43.6	52.3	**27.0**	22.1	31.9	**25.5**	21.4	30.4	**9.3**	6.3	12.9
	Damazin Town	**27.2**	20.6	34.3	**8.2**	4.3	13.6	**8.7**	4.8	13.3	**10.9**	4.5	20.0
	Roseris Town	**31.0**	24.4	38.7	**14.2**	8.7	19.6	**25.2**	17.6	33.9	**13.1**	4.0	25.3

State	Locality	Period prevalence of diarrhoea			Period prevalence of fever			Period prevalence of ARI			Children received good diarrhoea treatment		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
South Kordofan	Abujebiha (part)	**37.3**	33.2	42.6	**42.0**	36.1	47.6	**54.4**	50.3	59.3	**19.7**	11.5	30.2
	Al Tadamoon (part)	**39.5**	32.2	46.3	**65.7**	54.2	77.5	**60.2**	53.2	66.0	**61.7**	40.8	82.2
	Alabaseya	**38.7**	31.9	47.1	**30.4**	23.6	39.6	**43.6**	35.3	51.0	**59.2**	42.6	75.0
	Algoz	**27.4**	23.0	31.7	**33.0**	27.0	38.1	**42.2**	36.5	47.9	**47.9**	36.5	60.6
	Allirri	**31.9**	25.7	40.1	**31.2**	20.3	49.9	**48.8**	36.8	60.1	**42.4**	23.1	60.6
	Alreif Alshargi	**32.1**	22.6	42.5	**37.0**	24.4	46.6	**49.5**	40.2	59.3	**73.6**	57.9	88.4
	Dilling (part)	**30.0**	20.0	43.3	**18.3**	10.0	30.0	**26.7**	15.0	36.7	**16.7**	0.0	37.5
	Gadeir (part)	**27.0**	21.6	31.2	**20.5**	11.9	28.0	**30.2**	19.0	39.6	**38.8**	29.7	48.7
	Habeila (part)	**25.2**	19.9	31.4	**26.7**	21.0	34.7	**44.3**	37.9	51.2	**78.9**	56.4	94.6
	Rashad (part)	**31.4**	18.7	43.7	**32.3**	20.9	44.9	**44.9**	36.5	52.7	**25.7**	13.4	44.7
	All state except capital	**32.4**	29.8	34.6	**37.0**	32.1	41.3	**46.7**	43.2	50.9	**47.3**	39.9	55.0
	Kadugli Town	**31.0**	24.9	36.4	**31.8**	24.5	38.9	**41.4**	35.7	49.1	**49.7**	34.7	66.2
	Talodi Town	**27.0**	20.9	33.3	**27.4**	20.1	35.4	**42.1**	33.2	50.7	**62.6**	46.9	74.5
West Kordofan	Abo Zabad	**33.6**	25.0	41.1	**26.5**	18.8	37.9	**31.1**	20.9	39.8	**42.2**	32.6	52.2
	Abyei (NOT AAA)	**29.3**	24.6	33.8	**28.2**	24.0	33.6	**30.5**	24.6	38.9	**25.9**	17.6	33.9
	Al Khowi	**22.6**	13.5	31.5	**17.7**	11.8	25.0	**18.1**	10.8	24.3	**44.1**	33.2	56.5
	Al Odaya	**18.5**	14.2	25.6	**10.8**	6.1	17.1	**13.1**	6.4	20.7	**27.7**	18.9	40.3
	Al Salam	**23.4**	18.5	29.3	**25.9**	22.1	29.2	**30.1**	25.0	34.8	**14.2**	5.7	26.7
	Aldebab	**27.4**	22.0	33.7	**32.2**	21.7	40.3	**33.5**	27.1	40.0	**24.3**	12.1	34.7
	Almearam	**24.6**	19.2	32.6	**40.3**	33.3	50.9	**23.8**	15.7	35.1	**39.6**	13.0	56.9
	Alsnout	**21.7**	18.4	25.7	**14.0**	11.1	17.8	**21.4**	18.0	25.6	**40.4**	31.6	50.0
	Babanusa	**19.7**	14.7	25.4	**26.4**	18.4	33.1	**29.4**	21.0	38.5	**38.3**	20.0	57.4
	En Nuhud	**12.9**	4.8	20.8	**18.0**	10.3	25.4	**19.3**	12.8	28.4	**54.0**	30.6	73.8
	Ghebeish	**35.7**	29.5	42.2	**32.7**	27.2	39.5	**20.4**	13.6	27.2	**52.9**	35.3	66.7
	Kailak (part)	**24.1**	18.6	29.9	**15.9**	10.9	22.2	**26.1**	15.1	36.2	**22.2**	12.5	31.3
	Lagawa (part)	**26.7**	22.8	30.8	**28.3**	23.6	33.6	**32.0**	25.1	38.8	**68.9**	52.4	82.3
	Wad Bandah	**33.6**	27.8	40.0	**32.7**	26.1	39.4	**33.3**	26.9	37.9	**20.5**	15.3	27.1
	All state except capital	**27.0**	24.7	29.0	**25.9**	23.8	28.4	**26.2**	24.1	28.8	**37.5**	32.5	42.2
	Fula Town	**23.0**	17.7	29.9	**26.3**	19.0	34.8	**30.9**	24.5	36.9	**51.4**	37.8	66.7
North Kordofan	Bara	**24.1**	19.9	28.1	**36.5**	30.7	41.8	**40.2**	35.6	45.6	**58.1**	45.7	69.2
	El Rahad	**2.8**	0.0	14.7	**11.2**	6.2	22.3	**14.7**	8.5	27.7	**60.0**	18.5	90.2
	Jebrat El Sheikh	**46.7**	42.1	49.9	**41.1**	38.0	43.8	**49.9**	45.7	53.7	**39.2**	35.3	42.5
	Sheikan	**16.2**	12.6	21.2	**16.2**	10.8	20.6	**18.1**	13.0	24.7	**63.8**	49.2	77.7
	Sowdari	**19.2**	13.7	22.9	**21.4**	15.8	28.0	**32.8**	25.5	40.7	**15.8**	10.5	21.1
	Umm Daam	**9.1**	0.0	23.5	**21.1**	8.3	30.7	**22.7**	8.5	40.4	**72.5**	21.5	100.0
	Umm Rawaba	**24.8**	19.7	30.0	**27.0**	20.4	33.6	**32.6**	26.6	39.0	**37.9**	26.2	50.5
	West Bara	**41.2**	25.5	50.5	**48.8**	27.2	62.7	**47.9**	32.2	60.5	**68.6**	56.7	83.0
	All state except capital	**25.1**	22.9	27.2	**27.8**	25.3	30.8	**34.0**	31.5	37.1	**39.9**	34.9	45.1
	El Obeid Town	**20.6**	15.0	26.6	**11.5**	6.9	16.5	**22.4**	16.1	30.5	**56.3**	41.1	72.1
White Nile	Alsalam	**44.6**	39.3	49.1	**36.7**	28.7	45.7	**40.3**	32.8	47.3	**13.4**	6.7	20.2
	Ed Douiem	**22.2**	17.4	27.7	**22.5**	16.9	30.1	**34.4**	28.5	41.4	**9.1**	3.9	16.8
	El Gutaina	**26.6**	22.2	32.4	**23.5**	16.9	31.1	**27.4**	20.7	34.4	**11.4**	4.6	20.1
	El Jabalain	**43.1**	36.1	51.0	**18.4**	10.3	29.5	**27.5**	20.1	36.5	**15.0**	8.9	22.7
	Guli	**27.5**	22.6	33.7	**22.8**	15.5	32.6	**42.6**	36.2	48.8	**15.7**	6.1	28.9
	Kosti	**57.2**	46.0	64.8	**29.1**	19.9	36.8	**35.2**	28.0	41.4	**8.5**	0.0	29.4
	Rabak	**30.2**	15.2	53.8	**41.9**	21.2	56.5	**50.0**	31.3	67.4	**2.9**	0.0	20.3
	Tandalti	**29.0**	20.0	38.0	**19.2**	12.4	26.4	**30.7**	23.1	40.2	**8.1**	2.7	18.1
	Umm Remta	**29.2**	23.1	35.9	**24.9**	14.6	38.0	**47.4**	31.8	62.9	**14.9**	6.7	24.7
	All state except capital	**30.2**	27.1	33.2	**24.0**	20.4	26.5	**37.4**	34.5	40.5	**12.8**	9.9	16.2
	Kosti Town	**30.3**	23.5	38.3	**21.2**	14.8	27.5	**35.7**	27.9	43.5	**8.3**	2.6	16.7
	Rabak Town	**43.2**	37.1	50.0	**25.4**	20.1	31.7	**38.1**	31.6	44.7	**9.4**	3.9	15.9

State	Locality	Period prevalence of diarrhoea			Period prevalence of fever			Period prevalence of ARI			Children received good diarrhoea treatment		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Sennar	Abu Hijar	**52.0**	44.0	58.6	**51.2**	45.2	56.0	**61.0**	52.5	69.7	**9.4**	5.4	14.8
	Al Dindir	**41.2**	35.8	46.7	**53.1**	41.6	63.5	**61.9**	52.5	68.7	**15.1**	7.2	24.8
	Aldali & Almazmoum	**34.7**	26.3	44.8	**33.3**	25.1	41.5	**38.1**	23.9	53.9	**3.1**	0.0	10.3
	Alsooki	**43.3**	37.4	49.8	**47.9**	35.7	58.3	**57.0**	46.7	68.4	**11.2**	1.3	23.1
	Sennar	**33.3**	26.5	39.6	**24.1**	15.7	33.3	**41.5**	26.2	55.9	**22.4**	11.9	35.7
	Sharg Sennar	**49.8**	44.2	55.4	**51.2**	39.4	60.9	**67.1**	58.7	76.4	**8.4**	5.1	12.5
	Sinja	**40.2**	32.2	45.8	**30.8**	24.4	36.9	**20.8**	14.4	33.9	**15.2**	9.4	29.7
	All state except capital	**40.3**	37.8	43.7	**39.6**	35.3	43.7	**47.5**	41.8	53.9	**10.9**	8.0	14.5
	Sennar Town	**43.1**	35.3	50.4	**27.6**	20.4	33.5	**42.2**	33.9	49.8	**23.6**	14.6	35.5
	Sinja Town	**38.1**	31.7	45.7	**26.1**	20.1	33.9	**40.3**	31.8	48.7	**24.8**	14.9	34.5
El Gezira	El Hasaheisa	**38.0**	22.9	51.5	**12.7**	4.8	21.0	**47.8**	34.1	59.2	**5.0**	0.0	15.7
	El Kamlin	**28.2**	15.2	38.5	**22.5**	14.2	31.1	**24.6**	16.0	32.6	**4.2**	0.0	32.7
	El Managil	**45.6**	38.1	52.2	**23.4**	17.0	32.4	**38.8**	32.5	44.6	**5.8**	2.2	13.1
	Janub El Gezira	**31.0**	21.1	42.4	**16.1**	9.4	24.4	**32.1**	20.8	42.9	**13.3**	2.4	31.3
	Madani Al Kobra	**11.8**	0.0	29.4	**11.8**	0.0	29.4	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Sharg El Gezira	**40.0**	31.8	50.9	**19.2**	12.6	27.2	**34.9**	28.2	43.2	**14.9**	8.7	25.0
	Umm El Gura	**24.2**	13.5	34.4	**13.3**	6.1	24.6	**18.3**	9.3	25.9	**28.2**	10.7	52.2
	All state except capital	**37.6**	32.7	42.6	**21.1**	17.7	25.0	**34.7**	31.0	39.2	**10.5**	6.9	15.9
	Madani Town	**34.7**	25.7	44.6	**18.7**	10.4	27.9	**27.5**	18.7	40.4	**31.6**	17.6	50.1
Khartoum	Bahari	**23.4**	18.8	28.5	**20.7**	16.1	25.6	**16.0**	6.9	27.2	**11.0**	5.6	19.6
	Gabel Awlia	**30.5**	22.7	38.6	**30.9**	21.7	39.9	**51.9**	40.1	61.3	**30.4**	21.9	41.0
	Karrarri	**22.4**	18.1	26.9	**26.5**	21.4	31.2	**34.1**	28.0	40.6	**33.8**	22.9	43.8
	Khartoum	**22.8**	11.5	32.3	**30.9**	18.9	43.8	**44.4**	22.9	54.8	**26.5**	11.4	38.5
	Shareg Elnile	**23.2**	17.3	29.2	**29.9**	26.0	34.1	**29.9**	25.7	34.0	**16.5**	10.0	24.1
	Umbada	**15.0**	9.0	21.3	**16.3**	9.4	25.2	**25.3**	19.8	31.4	**11.3**	3.1	26.8
	Umdrman	**14.2**	8.7	18.7	**12.2**	8.5	16.3	**32.0**	26.5	38.6	**38.2**	20.7	56.0
	All state	**22.3**	19.8	24.9	**24.6**	21.8	27.3	**30.4**	26.7	34.7	**22.2**	18.5	26.3
Northern	Alborgeg	**37.5**	12.5	75.0	**25.0**	0.0	50.0	**12.5**	0.0	37.5	**0.0**	0.0	0.0
	Aldabba	**11.6**	9.2	14.0	**21.3**	17.4	25.4	**40.7**	36.9	44.8	**31.7**	19.8	48.2
	Algoled	**15.2**	8.9	21.5	**14.1**	7.4	23.1	**28.8**	22.2	36.7	**37.0**	20.4	54.0
	Dalgo	**22.9**	17.4	28.2	**27.2**	22.8	31.2	**31.1**	24.9	38.4	**7.5**	2.6	14.8
	Dongola	**20.6**	14.5	26.9	**26.3**	20.7	32.4	**36.3**	30.0	41.3	**50.5**	39.5	63.6
	Halfa	**13.8**	11.3	17.0	**19.3**	15.5	22.6	**36.8**	32.9	40.9	**35.1**	23.3	46.3
	Merawi	**15.9**	12.6	19.3	**15.7**	12.8	18.8	**29.7**	25.5	33.9	**22.5**	12.7	35.3
	All state except capital	**15.7**	14.4	17.6	**20.2**	18.5	22.3	**35.1**	33.1	37.1	**33.0**	27.7	38.9
	Dongola Town	**19.1**	12.0	24.6	**20.0**	14.6	26.4	**30.2**	21.7	37.2	**17.0**	4.3	34.0
River Nile	Abu Hamad	**19.6**	16.1	23.7	**15.7**	12.3	19.1	**18.1**	13.7	24.1	**17.4**	4.0	32.2
	Albuhaira	**39.8**	28.5	53.0	**5.6**	1.8	11.3	**8.1**	4.7	12.2	**7.1**	3.4	13.2
	Atbara	**29.7**	23.9	34.7	**21.1**	16.8	26.6	**32.2**	22.3	41.7	**49.7**	40.1	58.5
	Barbar	**14.3**	8.7	21.6	**23.3**	15.5	32.8	**38.2**	32.0	46.5	**17.9**	0.0	39.5
	Ed Damer	**17.4**	15.2	19.8	**22.2**	18.6	26.2	**19.7**	14.3	25.0	**48.1**	39.0	57.7
	El Matammah	**15.0**	12.1	18.6	**20.1**	16.8	23.5	**38.3**	31.8	44.2	**50.0**	31.3	68.9
	Shendi	**11.6**	5.9	17.5	**23.5**	8.6	37.9	**29.1**	17.3	44.8	**28.1**	2.8	64.8
	All state except capital	**20.1**	18.3	22.7	**18.4**	16.6	20.5	**22.5**	19.4	25.1	**29.9**	24.3	36.3
	Atbara Town	**14.3**	9.3	20.7	**20.7**	14.5	26.6	**31.8**	24.6	40.2	**41.0**	21.9	60.5
	El Damar Town	**11.4**	6.1	16.7	**14.9**	10.1	21.1	**30.3**	21.4	38.5	**29.2**	6.4	55.2

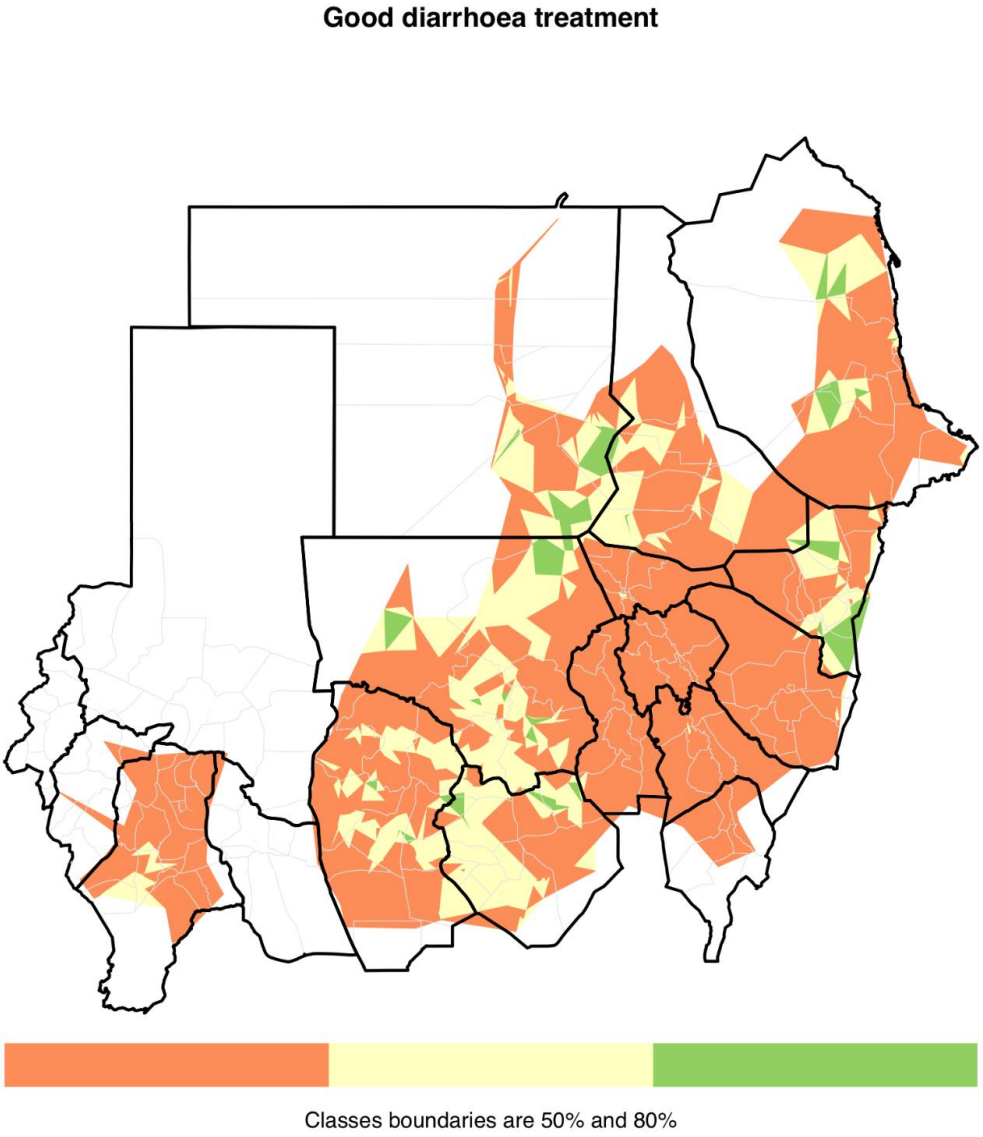
State	Locality	Period prevalence of diarrhoea			Period prevalence of fever			Period prevalence of ARI			Children received good diarrhoea treatment		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
North Darfur	Al Fasher	**21.0**	15.2	27.7	**19.2**	13.3	27.0	**18.4**	11.8	26.3	**NA**	NA	NA
	Al Koma	**13.8**	9.6	20.1	**18.5**	12.0	27.7	**7.1**	4.3	12.7	**NA**	NA	NA
	Al Malha	**12.7**	8.8	16.4	**11.4**	6.5	17.0	**14.6**	9.8	19.8	**NA**	NA	NA
	Al Seref	**55.1**	48.5	64.6	**48.5**	39.0	59.3	**47.3**	36.4	57.2	**NA**	NA	NA
	Al Tina	**3.9**	1.7	7.3	**4.1**	1.5	8.2	**3.3**	0.4	8.3	**NA**	NA	NA
	Al Twasha	**27.1**	20.2	38.7	**30.0**	25.9	35.8	**23.1**	16.8	30.5	**NA**	NA	NA
	Allait	**26.5**	9.6	45.1	**26.7**	14.7	44.7	**30.0**	21.2	39.6	**NA**	NA	NA
	Ambaro	**31.4**	22.5	39.6	**19.4**	13.8	25.8	**21.6**	13.6	28.7	**NA**	NA	NA
	Dar Alsalam	**21.0**	16.6	25.5	**23.0**	17.4	28.6	**12.2**	8.9	16.3	**NA**	NA	NA
	Kabkabia	**38.6**	30.7	45.0	**36.2**	22.7	46.6	**33.8**	25.5	45.4	**NA**	NA	NA
	Karnoi	**15.2**	5.6	23.5	**17.2**	10.4	26.3	**12.6**	6.5	19.2	**NA**	NA	NA
	Kelemendo	**21.6**	16.8	26.9	**25.4**	20.1	31.3	**19.6**	13.6	26.2	**NA**	NA	NA
	Kutum	**5.0**	0.1	15.4	**9.6**	6.1	16.5	**39.1**	29.1	46.4	**NA**	NA	NA
	Mallit	**14.6**	10.6	18.8	**19.8**	16.5	24.3	**15.1**	11.4	19.6	**NA**	NA	NA
	Saraf Omra	**28.3**	19.6	44.1	**31.5**	20.7	43.5	**26.1**	17.4	34.5	**NA**	NA	NA
	Tawila	**8.1**	4.2	12.3	**3.2**	1.1	7.0	**3.3**	0.8	6.3	**NA**	NA	NA
	Umkadada	**14.2**	8.0	21.0	**24.3**	18.3	31.5	**24.6**	19.1	30.1	**NA**	NA	NA
	All state except capital	**16.4**	14.2	18.4	**18.8**	16.9	21.1	**17.4**	15.6	19.7	**NA**	NA	NA
	El Fashir Town	**24.0**	17.3	30.8	**31.1**	23.5	39.9	**23.1**	16.7	30.1	**NA**	NA	NA
	Zamzam Camp*	**28.2**	20.7	34.7	**25.0**	17.9	33.9	**25.8**	16.7	33.6	**NA**	NA	NA
	El Sireif Camp*	**54.8**	48.2	62.6	**48.9**	40.7	58.7	**46.1**	37.0	55.6	**NA**	NA	NA
South Darfur	Al Rudoom (part)	**33.6**	28.0	39.3	**52.6**	40.8	65.1	**31.6**	23.2	39.2	**9.7**	3.3	16.4
	Alwehda	**44.9**	35.1	53.0	**58.6**	48.9	68.1	**61.5**	48.0	71.3	**13.6**	7.4	22.7
	Belil	**29.8**	22.7	37.0	**18.8**	13.3	28.5	**17.6**	11.5	31.7	**28.3**	17.0	43.0
	Buram	**36.2**	22.9	46.9	**61.2**	42.4	81.5	**35.4**	25.8	42.0	**7.9**	0.0	18.2
	Dimso	**37.5**	29.0	47.1	**62.5**	53.7	70.8	**65.9**	56.2	75.4	**37.0**	21.7	55.6
	El Salam	**36.4**	27.2	43.3	**25.0**	11.9	35.9	**14.7**	9.1	22.7	**3.9**	0.0	15.5
	Gerieda	**35.3**	9.8	50.1	**40.0**	19.4	57.8	**35.3**	15.0	53.4	**14.3**	0.0	35.8
	Id Elfirsan	**21.4**	15.8	29.1	**32.3**	23.8	42.3	**25.2**	21.1	30.8	**0.0**	0.0	0.0
	Kass	**37.4**	30.8	43.7	**33.8**	23.3	42.6	**35.1**	27.3	41.4	**34.2**	26.4	41.9
	Katila	**26.8**	21.0	32.2	**31.8**	26.5	40.2	**32.3**	26.8	37.8	**90.4**	79.4	96.3
	Kubum	**28.6**	22.9	34.8	**22.2**	9.2	35.9	**22.2**	15.2	28.1	**0.0**	0.0	0.0
	Mershing	**49.1**	35.8	62.3	**67.9**	56.6	77.5	**56.6**	43.3	69.9	**16.0**	3.3	33.3
	Netiga	**51.3**	40.5	61.1	**69.8**	62.1	80.6	**62.9**	52.6	72.2	**31.6**	22.6	42.3
	Rahad Elberdi (part)	**25.8**	20.7	31.1	**19.3**	13.8	28.6	**26.2**	18.9	32.8	**0.0**	0.0	4.4
	Toluss	**33.3**	2.7	47.2	**46.3**	8.9	60.2	**48.2**	15.1	62.1	**11.1**	0.0	50.0
	Um Dafog (part)	**17.7**	5.8	32.4	**38.2**	13.6	55.9	**23.5**	8.8	41.2	**0.0**	0.0	50.0
	All state except capital	**33.5**	30.8	35.9	**40.4**	34.7	45.3	**37.0**	33.5	40.3	**33.7**	27.0	41.6
	Nyala Town	**33.6**	28.3	39.5	**15.5**	10.1	20.5	**21.6**	15.3	28.6	**18.9**	11.1	26.0
	Kalma Camp*	**49.5**	43.2	57.0	**33.8**	25.2	42.7	**33.4**	27.5	42.3	**15.9**	8.6	25.9

State	Locality	Period prevalence of diarrhoea			Period prevalence of fever			Period prevalence of ARI			Children received good diarrhoea treatment		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
East Darfur	Abukarinka	**10.6**	6.1	17.5	**11.5**	5.0	18.3	**1.9**	0.6	5.1	**NA**	NA	NA
	Adilla (part)	**31.1**	25.2	36.6	**15.8**	10.9	21.5	**0.5**	0.0	2.9	**NA**	NA	NA
	Al Deain	**30.9**	25.0	37.5	**11.4**	3.3	20.1	**7.1**	1.5	12.0	**NA**	NA	NA
	Alfirdos	**19.1**	13.9	25.6	**40.5**	30.6	51.5	**23.9**	13.0	34.9	**NA**	NA	NA
	Asslaya	**2.2**	0.0	4.6	**2.1**	0.0	4.7	**0.0**	0.0	0.0	**NA**	NA	NA
	Aubgabar	**5.4**	1.4	9.7	**0.0**	0.0	2.7	**0.0**	0.0	0.0	**NA**	NA	NA
	Aubmatarg	**3.3**	0.0	9.1	**3.6**	0.8	7.0	**0.0**	0.0	0.0	**NA**	NA	NA
	Sharia (part)	**52.3**	42.4	62.6	**39.9**	28.7	59.5	**26.0**	17.9	37.9	**NA**	NA	NA
	Yaseen (part)	**11.3**	5.6	18.0	**9.4**	0.0	22.2	**0.9**	0.0	4.8	**NA**	NA	NA
	All state except capital	**17.7**	13.5	22.3	**14.6**	10.8	18.5	**3.9**	1.9	6.5	**NA**	NA	NA
	Al Deain Town	**22.9**	16.1	30.0	**14.2**	8.8	20.6	**10.8**	5.8	16.6	**NA**	NA	NA
West Darfur	Algenea	**20.2**	11.4	29.7	**10.1**	0.9	32.9	**27.0**	10.2	50.1	**NA**	NA	NA
	Baida	**16.9**	7.5	24.1	**16.9**	8.1	26.6	**8.1**	4.5	14.5	**NA**	NA	NA
	Forbranga	**24.4**	17.7	30.7	**23.6**	16.8	33.1	**26.8**	20.1	37.1	**NA**	NA	NA
	Gabal Moon	**15.7**	10.9	19.9	**10.0**	6.1	14.1	**8.9**	5.9	12.3	**NA**	NA	NA
	Habilla	**22.4**	14.1	35.4	**23.3**	18.3	29.9	**9.2**	0.0	19.1	**NA**	NA	NA
	Kerenik	**23.5**	20.3	26.8	**25.0**	20.3	29.3	**18.8**	14.4	24.4	**NA**	NA	NA
	Kulbus	**8.7**	5.4	13.0	**3.8**	1.6	7.4	**3.5**	0.5	10.1	**NA**	NA	NA
	Serba	**21.9**	14.8	34.2	**15.8**	8.9	23.1	**17.5**	11.5	24.9	**NA**	NA	NA
	All state except capital	**20.9**	18.3	23.7	**20.6**	17.2	23.4	**16.3**	13.3	19.6	**NA**	NA	NA
	Algenea Town	**24.8**	19.4	31.6	**11.1**	7.1	17.2	**10.5**	5.9	16.2	**NA**	NA	NA
	Morne Camp*	**27.9**	22.4	34.1	**13.8**	8.5	20.1	**9.6**	5.2	14.7	**NA**	NA	NA
Central Darfur	Azoum	**36.6**	23.9	52.8	**15.0**	7.9	21.8	**31.9**	18.4	58.4	**NA**	NA	NA
	Bendsi (part)	**59.1**	47.1	66.0	**14.4**	8.3	22.7	**27.3**	21.2	35.6	**NA**	NA	NA
	Mukjar (part)	**25.2**	18.1	31.4	**27.6**	20.0	37.6	**33.0**	24.1	43.7	**10.1**	3.6	22.5
	Nertati	**56.1**	25.0	67.7	**79.6**	52.7	90.9	**72.8**	57.0	82.2	**NA**	NA	NA
	Rokiro	**49.5**	41.1	59.8	**57.0**	46.2	67.7	**68.9**	58.9	76.7	**NA**	NA	NA
	Um Dukhun (part)	**27.5**	19.5	34.8	**29.6**	20.9	38.7	**30.1**	21.4	40.5	**2.3**	0.0	8.2
	Wadi Salih (part)	**38.3**	32.1	47.2	**37.0**	28.1	50.5	**47.0**	41.6	53.7	**0.0**	0.0	0.0
	Zalingei	**30.0**	22.0	44.4	**30.4**	22.7	42.2	**37.1**	30.2	46.5	**20.0**	11.5	28.8
	All state except capital	**40.1**	35.0	45.6	**21.5**	16.7	28.2	**34.7**	30.5	40.4	**9.6**	0.0	27.1
	Zalingi Town	**19.6**	13.0	26.0	**19.0**	10.9	27.9	**24.3**	17.5	34.2	**NA**	NA	NA
	Mukjar Town*	**25.1**	18.7	33.4	**27.7**	17.3	37.7	**32.1**	21.6	42.3	**9.6**	2.6	22.9
	Um Dokhon Town*	**27.8**	20.3	35.1	**28.6**	18.6	37.1	**30.2**	20.9	40.3	**2.0**	0.0	6.8

9.1.4 Mothers reported diarrhoea treatment practices (Figure 33)

For those children who had suffered from diarrhoea in the 2 previous weeks, Mothers were asked how they treated that child. Good treatment practices were defined as giving ORS, giving ORS plus home fluids or giving home fluids only. The map shows that diarrhoea treatment practices are generally poor across the country, especially in localities of Gedaref, White Nile, Sennar, Blue Nile and Gezira States, where prevalence of diarrhoea was also concentrated. Given the well-known synergistic relationship between diarrhoea and malnutrition, this is a clear area for intervention. See Table 7 for estiamtes of reported diarrhoea treatment practices by locality (above).

Figure 39: Classification map of mothers reported good diarrhoea treatment practices



NB: Data for this indicator was categorised differently at data collection in North, East, West and Central Darfur and could therefore not be analysed together with data from the rest of the country. It is shown as missing areas in the map above.

9.1.5 Mothers knowledge and health promotion

Knowledge of danger signs of child illness (Figure 34)
Mothers were asked to list the signs and symptoms that would lead her to take her child to the health center. The map in Figure 31 shows the mean number of danger signs known, with the red colour indicating 3 or less signs known and green indicating 5 or more signs known. Knowledge of danger signs is generally poor indicating that late treatment seeking practices are likely to be the norm.

The maps in Figures 35 to 41 show the breakdown of the different danger signs known by mothers, and Figure 39 shows the distribution of mothers who do not recognise any danger signs.

The highest proportions of mothers not knowing any danger signs of illness was found in the Darfur region (Central, East, North and South Darfur) - this is explained by the limited community level interventions, health promotion and education further hindered by the unstable security situation – as well as Red Sea and Gedaref. Details as to which danger signs are recognised are shown in Figures 34-40. Fever is the best recognised danger sign, followed by severe vomiting. Fast, difficult breathing and blood in stools are recognised in certain areas suggesting that these illnesses are a bigger problem in certain areas. Almost half of mothers in Al Malha and Tina localities in North Darfur and Rokero locality in Central Darfur could not mention any danger signs of illness.

Figure 40: Mean number of danger signs known

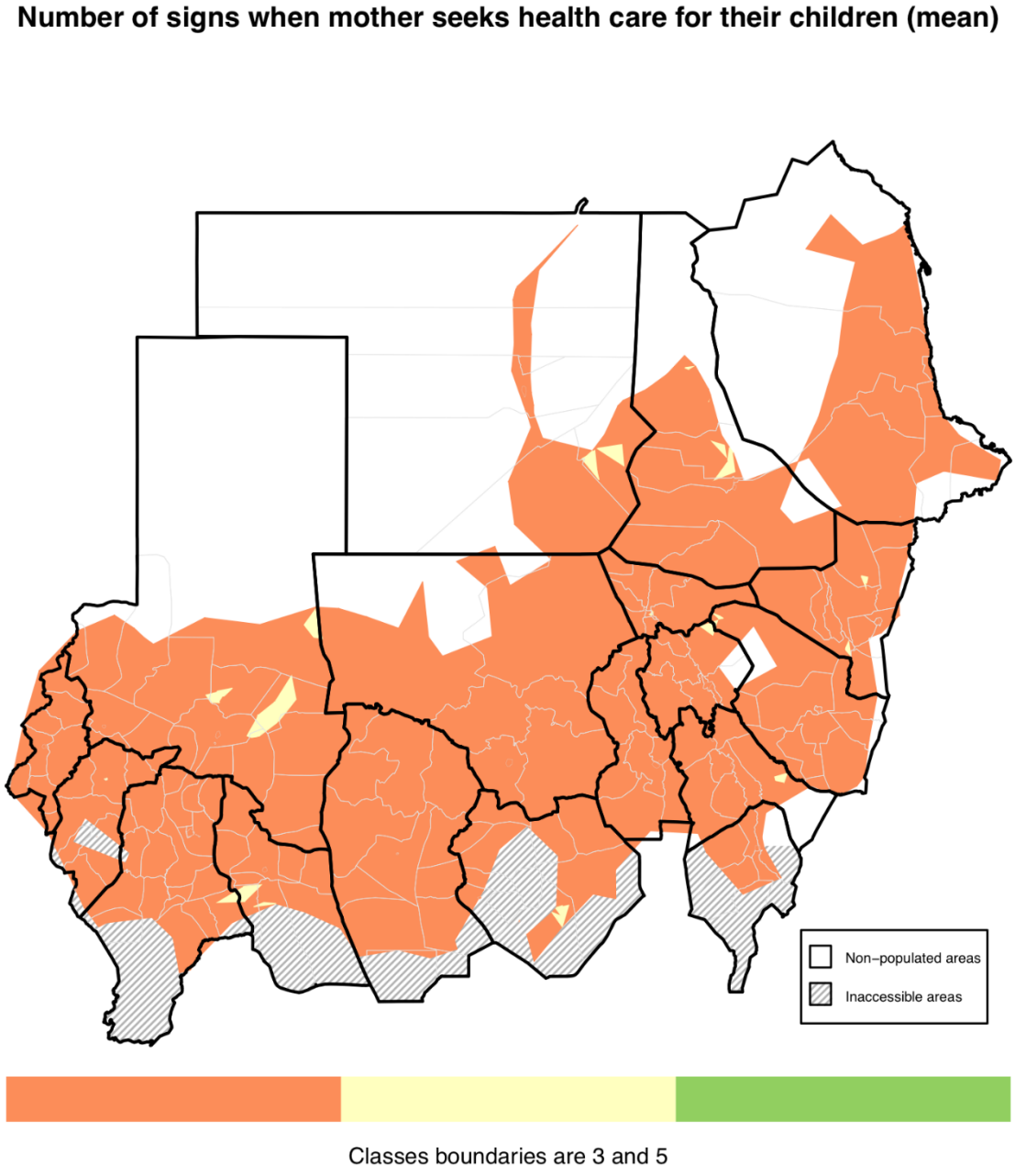


Figure 41: Classification map of mother's knowledge of danger sign 1 – child refuses food and drink

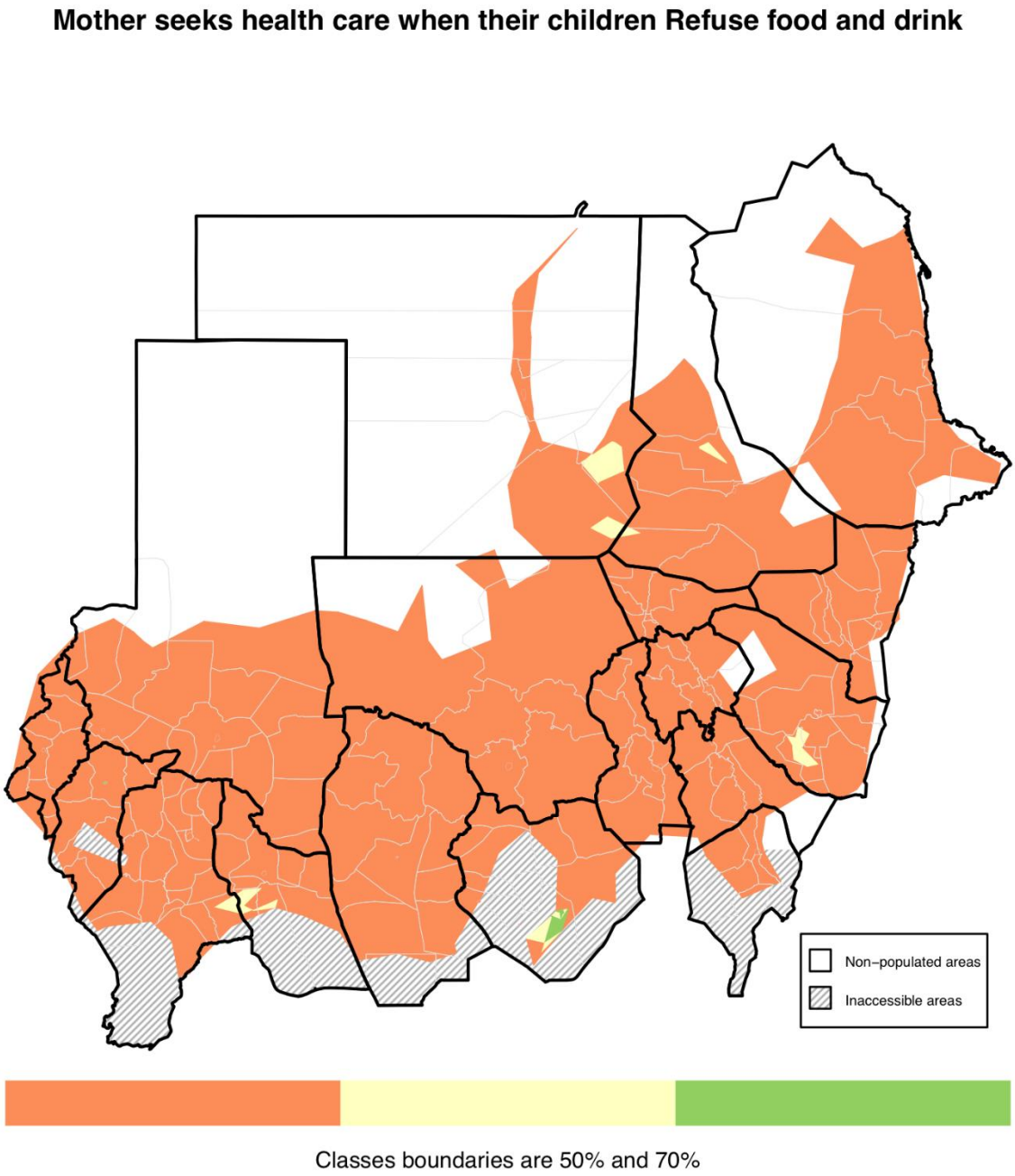


Figure 42: Classification map of mother's knowledge of danger sign 2 - convulsions

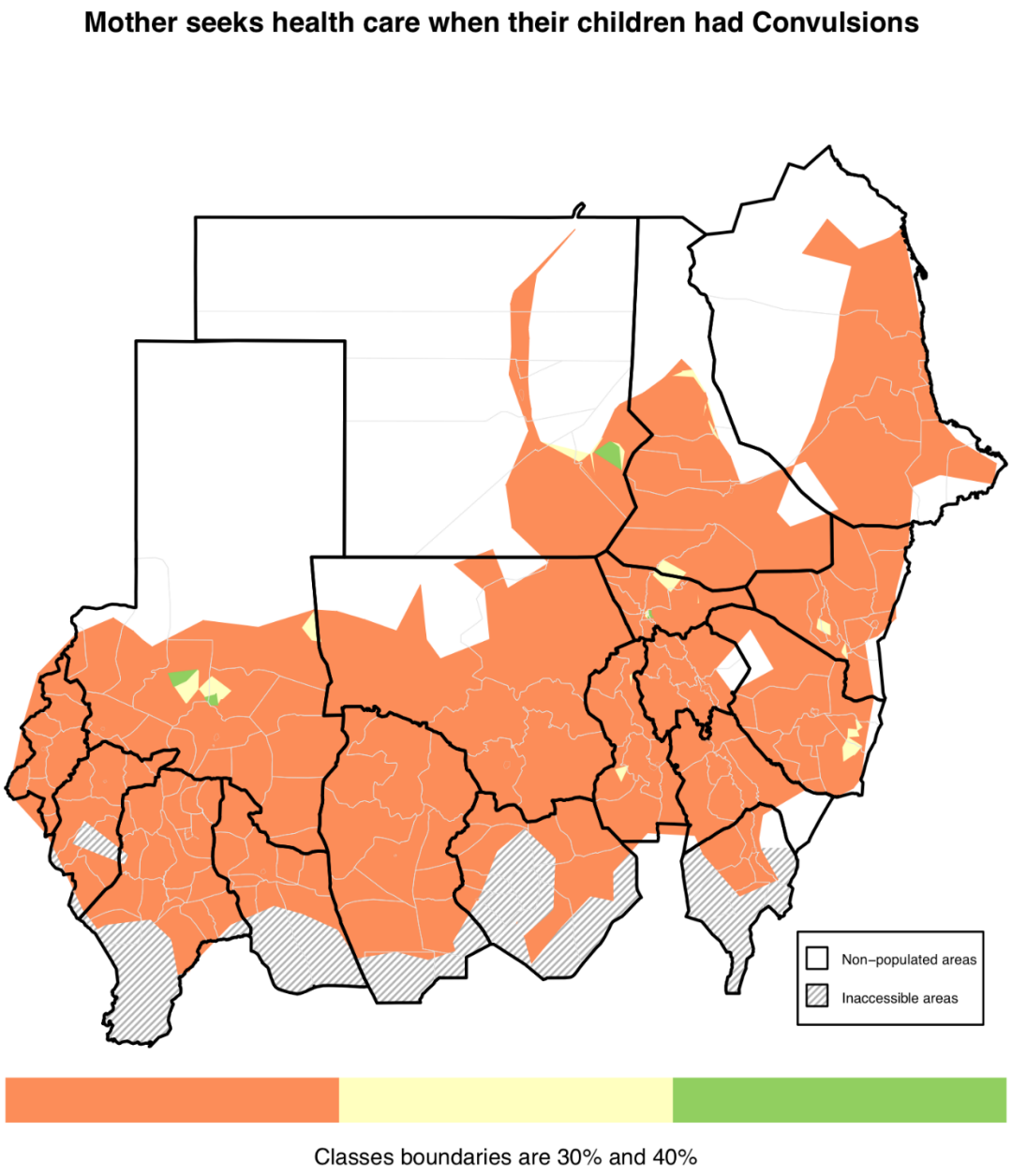


Figure 43: Classification map of mother's knowledge of danger sign 3 – severe vomiting

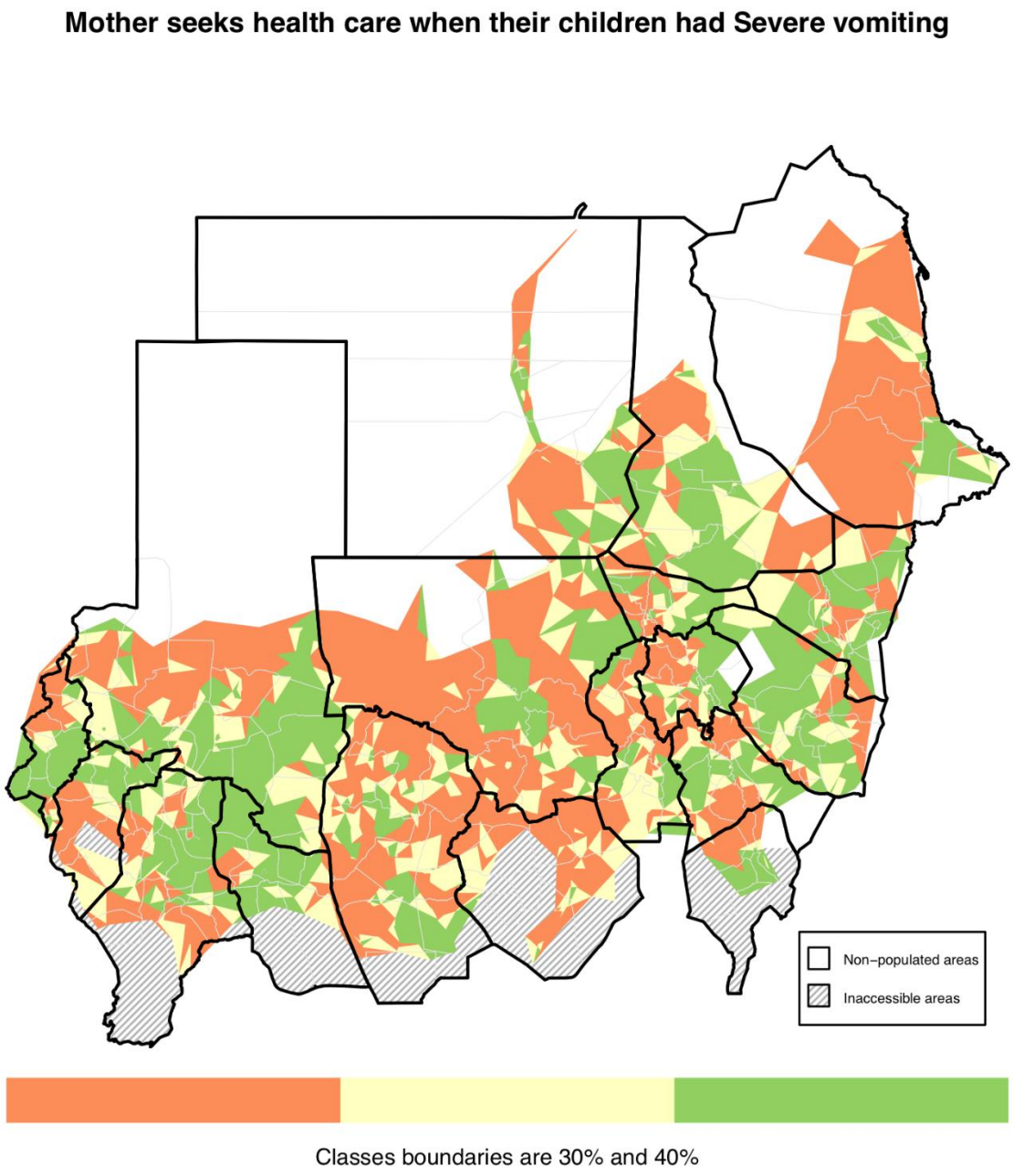


Figure 44: Classification map of mother's knowledge of danger sign 4 – blood in stools

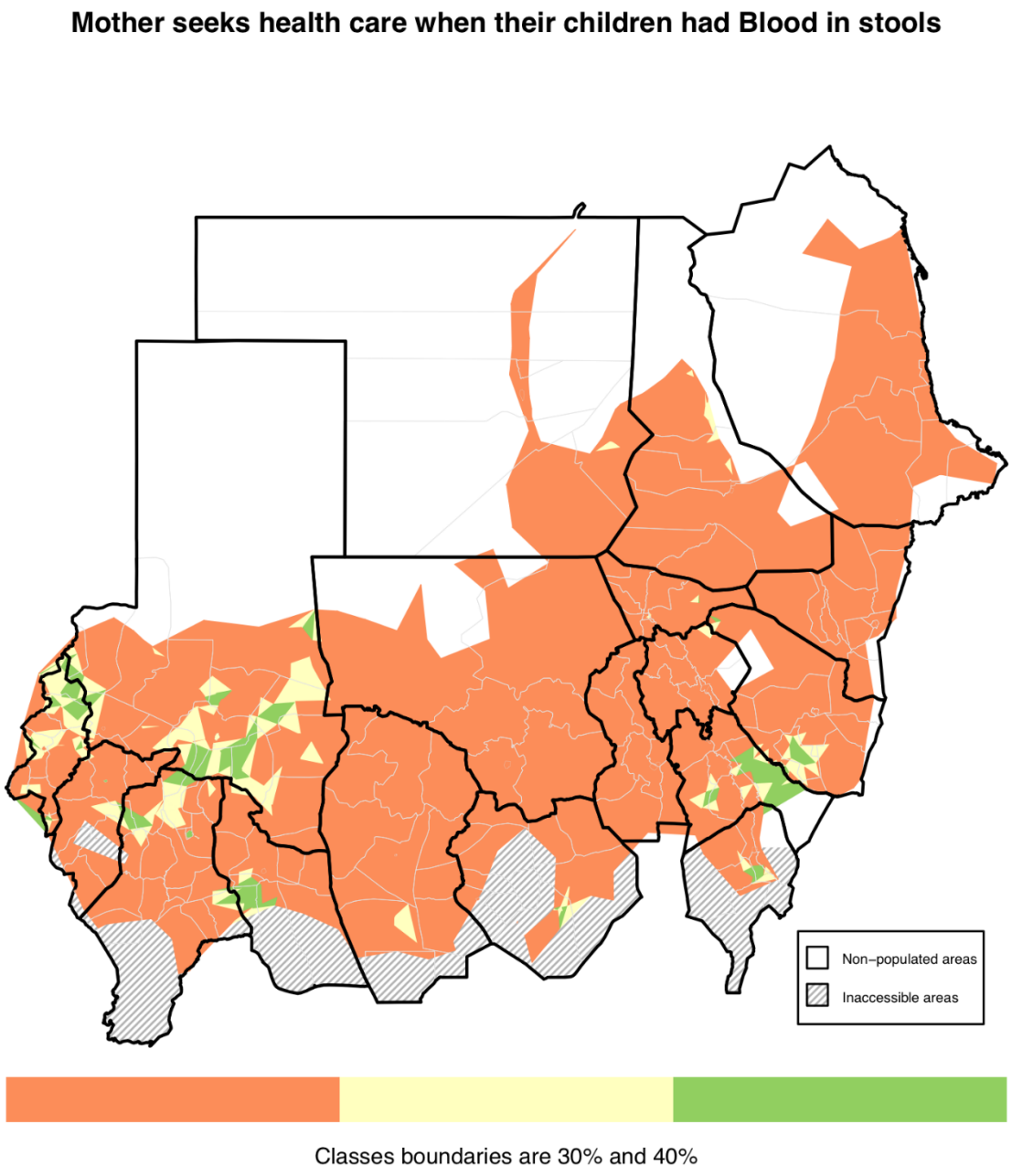


Figure 45: Classification map of mother's knowledge of danger sign 5 – fever

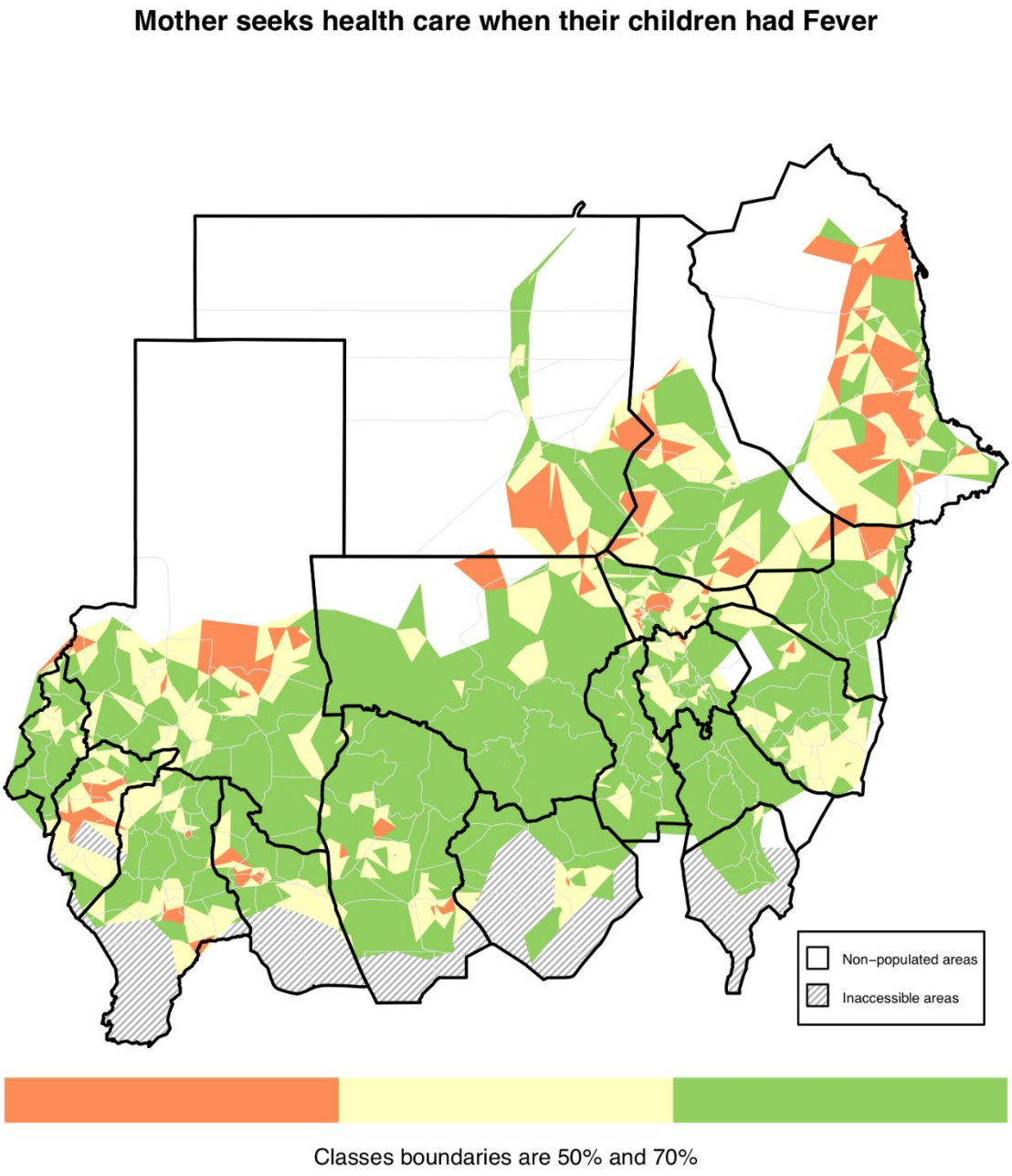


Figure 46: Classification map of mother's knowledge of danger sign 6 – unconsciousness

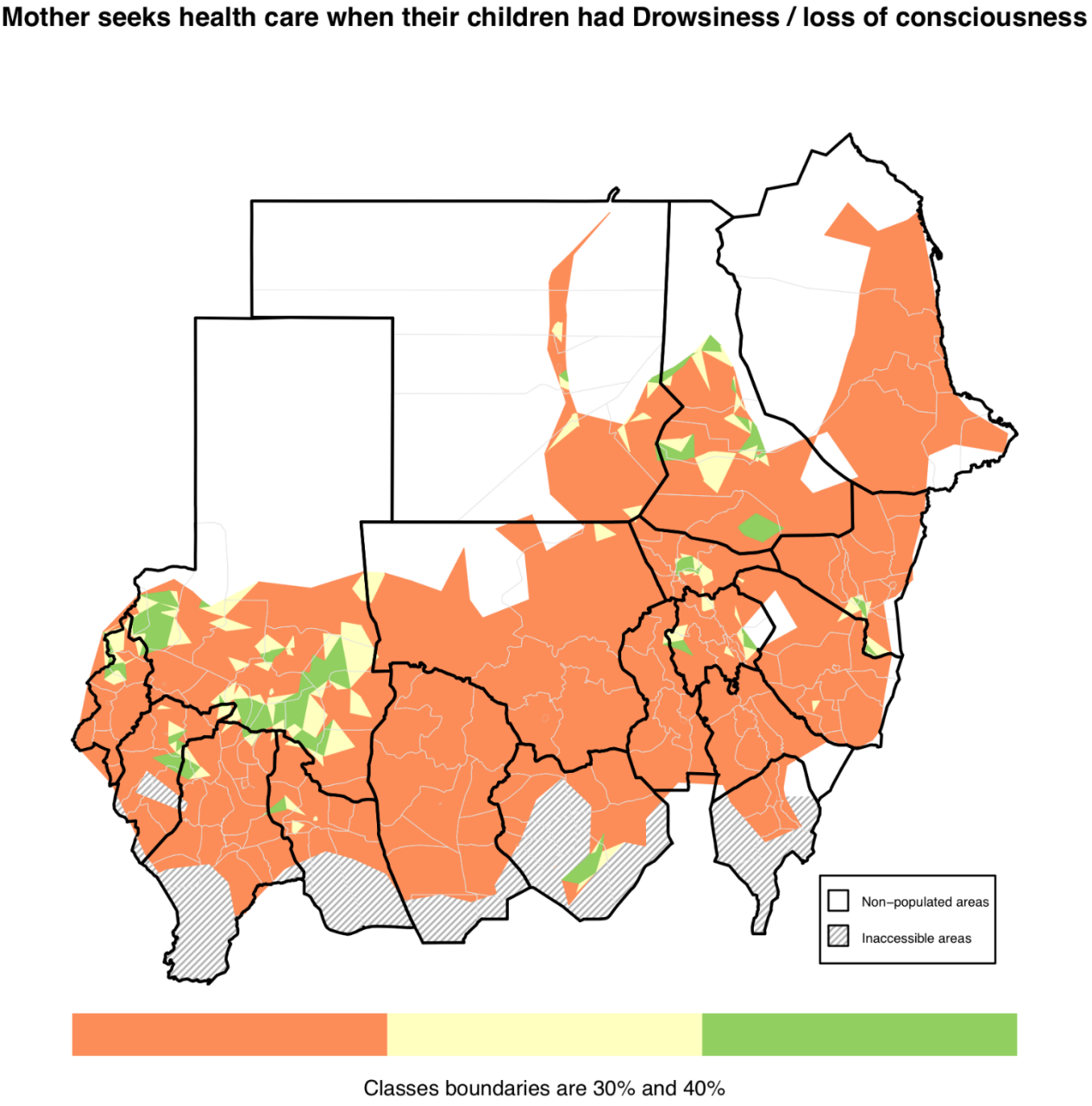


Figure 47: Classification map of mother's knowledge of danger sign 7 – difficult fast breathing

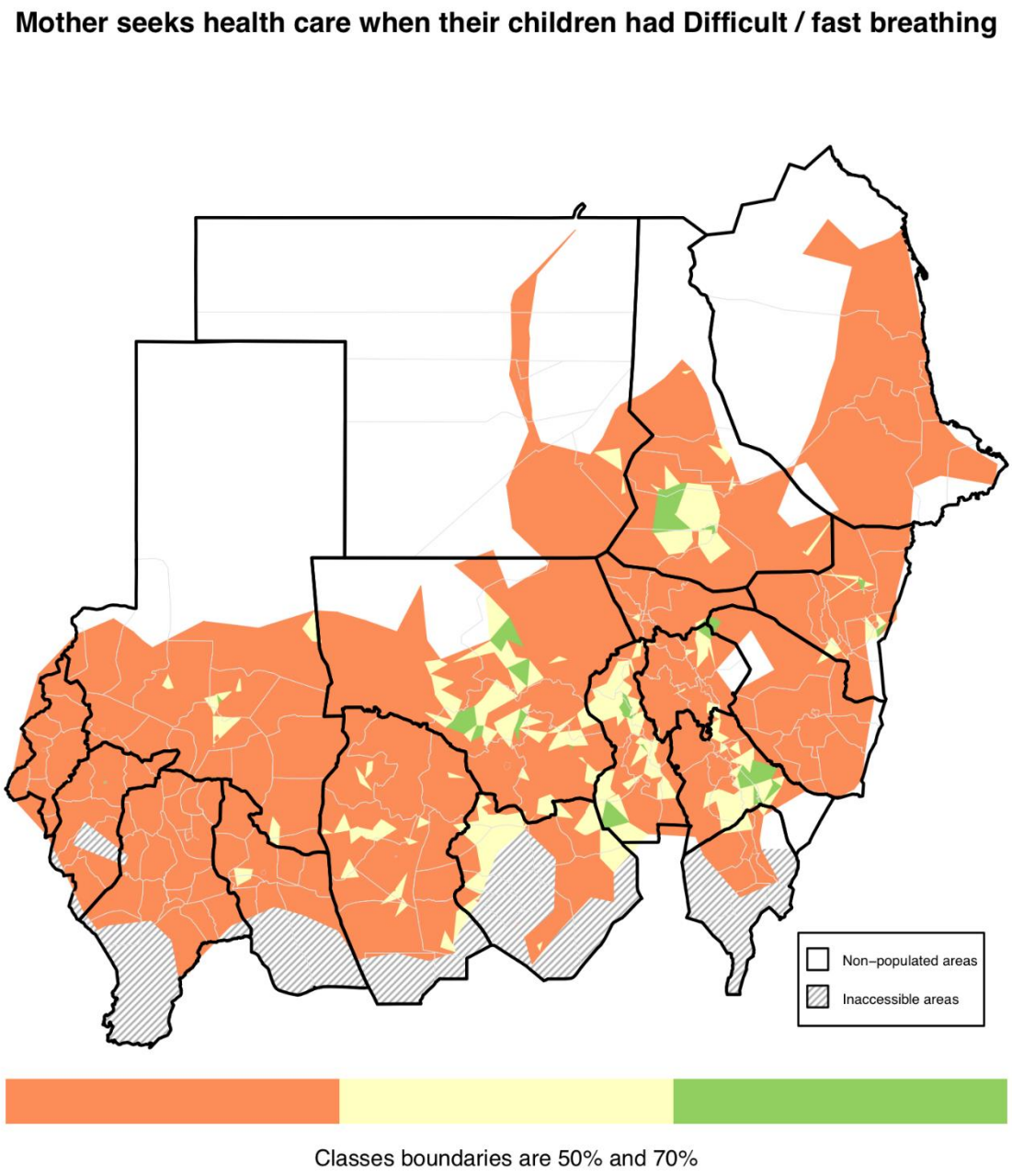


Figure 48: Classification map of mother's with no knowledge of any danger signs

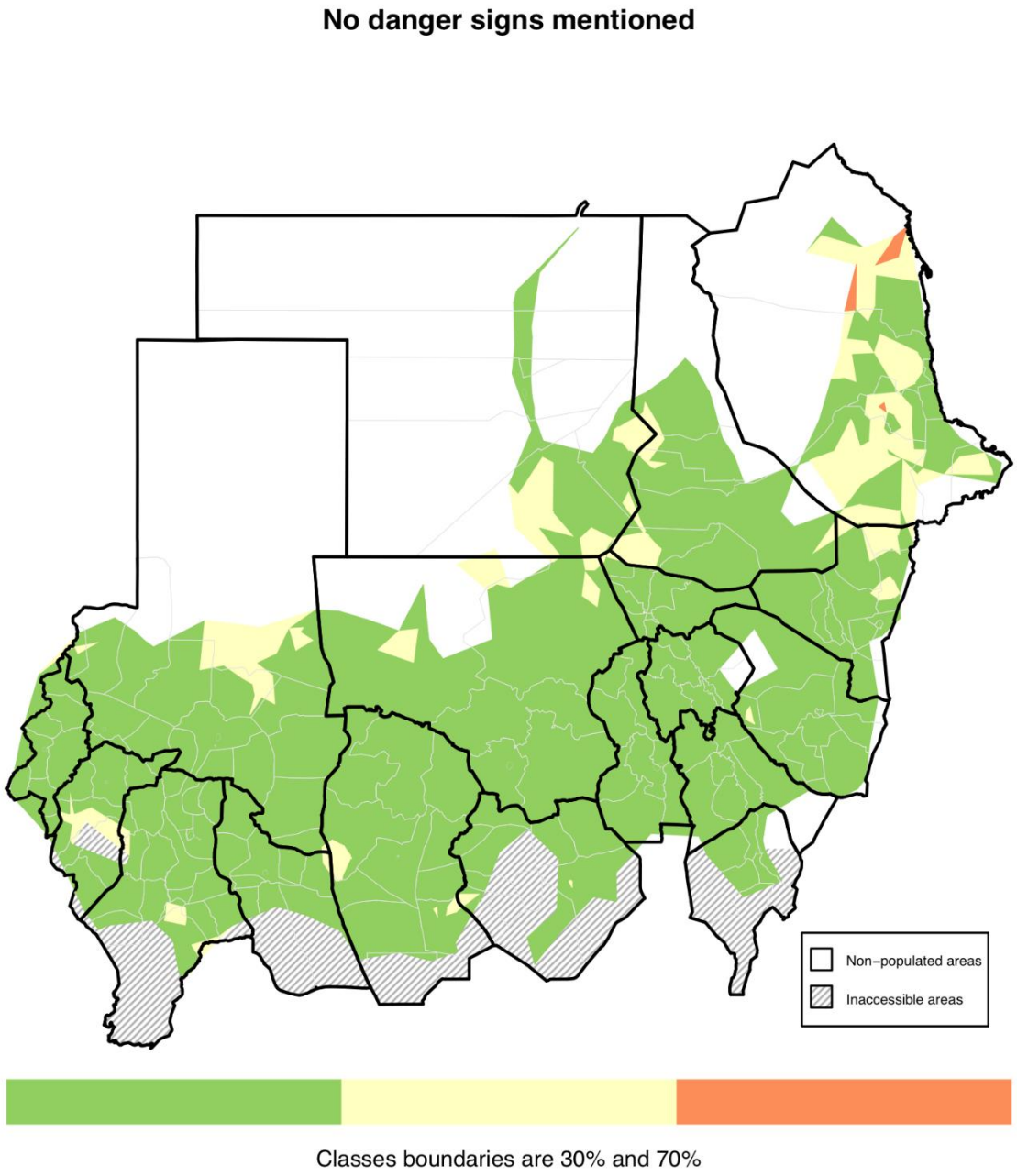


Table 8: Mothers knowledge of illness danger signs, results by locality

State	Locality	Mother Seeks health care when their children refuses food and drink			Mother Seeks health care when their children had Convulsions			Mother Seeks health care when their children had Severe vomiting			Mother Seeks health care when their children had Blood in stools		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Red Sea	Ageeg	**0.0**	0.0	1.7	**0.0**	0.0	1.7	**39.3**	26.6	51.8	**0.5**	0.0	2.8
	Alganeb Alolib	**0.0**	0.0	1.0	**0.9**	0.0	2.5	**33.5**	23.1	41.6	**1.5**	0.0	3.5
	Dordaib	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**12.7**	2.6	23.5	**0.0**	0.0	0.0
	Haia	**0.0**	0.0	0.4	**0.0**	0.0	0.0	**2.7**	0.0	7.2	**0.0**	0.0	1.4
	Haliab	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**1.6**	0.0	6.2
	Japitalmadin	**54.4**	44.5	60.2	**3.5**	1.4	6.1	**24.0**	18.4	28.6	**0.0**	0.0	0.0
	Sawaken	**3.6**	0.8	8.0	**0.0**	0.0	3.4	**14.2**	6.9	28.4	**1.5**	0.0	7.3
	Senkat	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**7.0**	3.5	11.5	**1.5**	0.0	4.6
	Tokar	**0.0**	0.0	1.1	**0.0**	0.0	0.0	**40.0**	34.1	50.2	**0.0**	0.0	3.2
	Port Sudan	**4.6**	2.5	9.0	**11.4**	5.3	18.7	**43.7**	36.4	52.7	**5.5**	3.1	8.5
	All state	**4.5**	2.7	6.7	**5.3**	3.5	8.0	**36.3**	32.5	40.1	**2.9**	2.0	4.1
Kassala	Aroma	**4.5**	1.9	7.9	**9.4**	4.1	14.2	**66.1**	48.4	83.8	**0.0**	0.0	1.3
	Hamshkoreb	**12.9**	5.1	23.0	**4.4**	0.8	11.6	**36.1**	25.6	49.0	**9.0**	3.7	15.9
	Kshmalgrba	**68.0**	40.6	89.9	**26.6**	18.8	36.7	**70.6**	49.2	96.1	**21.9**	14.0	31.3
	Nahr Atbara	**3.1**	0.0	9.4	**6.3**	1.6	13.0	**81.3**	72.2	89.1	**3.1**	0.0	7.8
	North Delta	**19.2**	12.9	29.0	**18.8**	10.3	28.1	**92.4**	83.4	98.2	**4.5**	1.8	10.7
	Rify Kassala	**4.4**	1.2	8.8	**0.6**	0.0	5.6	**35.0**	11.3	62.6	**7.5**	2.5	12.5
	Rural Halfa	**4.7**	0.5	10.9	**25.0**	7.8	46.5	**27.6**	18.7	36.5	**3.1**	0.5	7.3
	Talkok	**5.2**	1.9	9.3	**0.0**	0.0	0.0	**30.9**	21.2	46.3	**2.6**	0.7	6.0
	Wadalhlew	**12.2**	5.2	20.3	**14.1**	7.0	24.2	**31.3**	19.9	43.5	**19.5**	12.2	26.5
	West Kassala	**8.1**	1.0	15.1	**0.0**	0.0	0.0	**43.0**	24.9	55.2	**0.0**	0.0	0.0
	All state except capital	**11.8**	7.6	17.6	**10.1**	6.4	13.9	**54.9**	45.9	64.0	**4.9**	3.4	7.5
	Kassala Town	**15.5**	7.9	24.7	**23.4**	14.2	33.6	**46.3**	35.3	59.0	**20.9**	10.0	31.7
	Hamoshkoreib Town*	**12.9**	4.5	22.4	**4.7**	0.4	12.3	**36.2**	25.6	48.5	**9.2**	4.3	18.1
Gedaref	Al Gadaref Wasat	**8.7**	2.1	16.5	**2.6**	1.0	5.4	**38.8**	31.9	45.8	**3.7**	1.6	7.1
	Al Mafaza	**6.3**	2.1	11.5	**0.0**	0.0	1.3	**27.1**	17.7	40.3	**8.3**	3.1	14.6
	Albutana	**6.9**	4.6	10.3	**9.8**	4.9	15.8	**65.1**	55.1	74.0	**19.5**	9.2	33.4
	Alfashaga	**3.5**	1.8	6.3	**0.0**	0.0	0.6	**18.8**	15.4	23.5	**0.2**	0.0	1.5
	Alfaw	**4.5**	1.4	7.6	**0.0**	0.0	0.0	**20.1**	13.8	26.5	**0.0**	0.0	0.9
	Algalabat Al Garbiya	**38.5**	15.5	53.1	**2.1**	0.0	6.3	**59.4**	34.4	71.9	**10.4**	3.1	23.0
	Algalabat Al Shargiya	**9.4**	3.1	22.7	**14.1**	7.0	27.4	**29.7**	19.5	52.5	**4.7**	1.5	10.2
	Algurisha	**36.6**	25.9	46.0	**28.4**	16.3	43.1	**25.9**	19.0	33.5	**7.8**	3.4	14.1
	Alrahad	**2.1**	0.0	6.3	**0.0**	0.0	0.0	**12.5**	7.3	20.8	**31.3**	17.7	42.8
	Basonda	**13.0**	5.5	22.4	**11.5**	3.3	19.5	**42.6**	28.1	55.0	**2.1**	0.3	4.9
	Gula Alnahal	**62.9**	54.6	71.5	**19.9**	10.6	30.1	**50.4**	42.6	57.4	**41.8**	32.5	50.8
	All state except capital	**10.8**	7.9	13.6	**7.0**	5.0	9.4	**28.7**	25.4	32.4	**5.0**	3.1	7.2
	Gedarif Town	**2.3**	0.7	6.2	**1.1**	0.0	3.0	**12.3**	6.5	18.7	**2.9**	0.3	6.2
Blue Nile	Baw (part)	**10.9**	4.6	18.8	**3.1**	0.0	7.8	**65.6**	53.1	76.6	**39.1**	21.8	56.3
	Damazin	**0.0**	0.0	0.0	**2.1**	0.0	6.3	**21.9**	13.5	31.3	**27.1**	14.5	40.6
	Giessan (part)	**1.5**	0.5	3.5	**0.5**	0.1	1.7	**68.2**	54.7	89.4	**28.6**	6.6	73.7
	Kurmuk (part)	**0.0**	0.0	0.0	**1.0**	0.0	5.2	**44.8**	27.1	61.5	**17.7**	8.3	31.3
	Rosairs (part)	**2.7**	1.3	4.8	**2.3**	1.0	4.2	**41.2**	29.9	52.5	**11.8**	7.1	17.5
	Tadamon (part)	**4.7**	1.6	8.6	**0.0**	0.0	0.0	**29.7**	18.7	42.2	**0.8**	0.0	4.0
	All state except capital	**2.4**	1.5	4.0	**1.4**	0.6	2.4	**50.7**	41.4	57.3	**17.3**	8.6	28.9
	Damazin Town	**3.6**	1.0	32.7	**0.1**	0.0	1.3	**15.1**	8.8	64.2	**2.5**	0.6	23.5
	Roseris Town	**2.8**	0.4	6.4	**0.5**	0.0	2.9	**37.8**	26.1	51.5	**7.4**	0.8	17.1

State	Locality	Mother Seeks health care when their children refuses food and drink			Mother Seeks health care when their children had Convulsions			Mother Seeks health care when their children had Severe vomiting			Mother Seeks health care when their children had Blood in stools		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
South Kordofan	Abujebiha (part)	**2.3**	0.2	5.5	**1.9**	0.7	3.4	**24.5**	19.3	28.8	**2.7**	0.9	5.1
	Al Tadamoon (part)	**3.0**	0.7	7.2	**6.8**	2.8	13.2	**26.5**	19.0	35.0	**2.9**	0.0	6.5
	Alabaseya	**2.1**	0.0	6.0	**4.2**	0.0	9.4	**24.0**	9.3	36.9	**9.4**	0.0	18.8
	Algoz	**2.9**	0.3	7.1	**1.8**	0.0	5.7	**18.3**	11.4	27.3	**1.1**	0.0	3.0
	Allirri	**9.9**	2.6	24.6	**1.0**	0.0	3.3	**33.9**	23.5	44.3	**20.8**	12.9	29.7
	Alreif Alshargi	**8.3**	3.1	15.6	**15.6**	4.2	28.1	**41.7**	29.2	58.4	**1.0**	0.0	5.2
	Dilling (part)	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**18.8**	6.3	34.4	**28.1**	15.6	47.0
	Gadeir (part)	**44.1**	24.9	63.3	**13.3**	6.2	20.1	**35.8**	28.3	43.6	**23.5**	12.7	35.1
	Habeila (part)	**2.6**	0.0	8.9	**10.4**	5.7	15.1	**28.1**	20.3	36.0	**12.0**	6.8	17.5
	Rashad (part)	**7.7**	3.1	15.0	**6.3**	0.0	15.6	**33.3**	20.8	43.7	**5.2**	1.7	10.5
	All state except capital	**9.4**	5.3	16.0	**6.4**	4.5	8.3	**27.6**	23.6	30.4	**8.6**	6.3	11.8
	Kadugli Town	**15.5**	9.4	21.0	**17.1**	11.2	24.5	**33.2**	25.1	43.4	**10.1**	4.5	17.3
	Talodi Town	**34.3**	22.5	53.5	**8.1**	3.5	16.1	**31.4**	24.4	39.9	**12.7**	7.5	19.3
West Kordofan	Abo Zabad	**8.8**	2.9	15.1	**1.9**	0.0	5.0	**21.5**	16.3	29.3	**1.9**	0.0	5.1
	Abyei (NOT AAA)	**10.7**	6.1	16.3	**0.5**	0.0	1.7	**22.6**	13.4	30.3	**3.4**	1.4	6.0
	Al Khowi	**11.3**	6.3	17.2	**4.2**	1.9	6.9	**34.9**	28.4	41.6	**4.1**	2.1	6.3
	Al Odaya	**8.0**	4.1	12.0	**1.8**	0.6	3.9	**18.0**	13.9	22.2	**2.6**	0.7	7.8
	Al Salam	**23.3**	17.7	29.3	**6.0**	2.8	9.5	**59.0**	48.1	68.4	**21.5**	12.0	31.3
	Aldebab	**14.4**	10.3	18.6	**2.2**	0.5	4.8	**23.9**	8.5	46.9	**10.4**	0.5	21.8
	Almearam	**14.9**	8.9	22.3	**3.1**	0.0	7.4	**23.1**	14.0	36.5	**10.0**	3.6	17.8
	Alsnout	**0.8**	0.0	4.4	**0.0**	0.0	0.0	**25.7**	19.4	31.1	**0.0**	0.0	0.0
	Babanusa	**20.3**	8.5	33.2	**9.7**	4.4	15.8	**55.5**	35.2	70.7	**22.2**	10.2	32.7
	En Nuhud	**21.6**	16.8	26.3	**2.8**	1.5	4.8	**20.3**	12.0	31.8	**1.4**	0.0	3.2
	Ghebeish	**6.2**	2.5	10.6	**1.9**	0.8	3.5	**37.0**	29.8	45.8	**1.7**	0.7	3.3
	Kailak (part)	**5.0**	1.4	13.8	**1.0**	0.1	4.4	**15.8**	4.7	41.7	**2.0**	0.4	6.8
	Lagawa (part)	**13.8**	10.2	19.1	**2.1**	0.4	5.2	**25.7**	19.4	32.1	**0.2**	0.0	2.1
	Wad Bandah	**14.5**	9.9	19.5	**2.8**	1.3	4.5	**23.7**	19.2	28.8	**4.8**	1.4	9.4
	All state except capital	**12.2**	10.3	14.3	**2.6**	2.0	3.5	**28.1**	24.8	32.1	**4.5**	3.2	6.2
	Fula Town	**13.5**	7.6	19.5	**6.0**	1.3	11.3	**33.1**	22.4	42.4	**9.3**	3.6	16.5
North Kordofan	Bara	**5.1**	2.9	7.7	**0.9**	0.1	1.9	**25.1**	19.7	30.9	**0.7**	0.1	1.9
	El Rahad	**22.9**	12.9	31.3	**0.0**	0.0	0.0	**0.0**	0.0	29.0	**0.0**	0.0	4.8
	Jebrat El Sheikh	**17.9**	15.4	20.3	**0.2**	0.0	0.6	**48.1**	43.7	51.5	**15.9**	12.9	19.4
	Sheikan	**9.9**	5.9	14.8	**1.9**	0.2	6.0	**26.0**	20.4	32.3	**1.3**	0.2	3.1
	Sowdari	**4.2**	2.0	6.2	**0.5**	0.0	1.2	**19.4**	15.0	25.6	**0.3**	0.0	0.8
	Umm Daam	**9.1**	2.4	19.0	**0.0**	0.0	6.9	**23.3**	11.4	40.4	**4.2**	0.0	10.6
	Umm Rawaba	**4.9**	2.7	7.5	**3.2**	1.6	5.0	**32.0**	26.6	36.9	**3.4**	1.9	5.3
	West Bara	**10.0**	4.7	17.5	**0.0**	0.0	0.0	**61.0**	33.9	76.5	**0.0**	0.0	0.0
	All state except capital	**7.4**	6.3	8.7	**1.6**	1.1	2.3	**29.5**	27.1	32.3	**4.0**	3.1	5.0
	El Obeid Town	**10.2**	5.1	17.0	**2.3**	0.4	5.5	**33.1**	24.1	42.4	**1.3**	0.0	4.0
White Nile	Alsalam	**12.1**	5.3	20.5	**10.0**	2.1	20.9	**35.8**	27.5	42.7	**10.4**	3.1	17.5
	Ed Douiem	**6.4**	3.3	10.3	**1.5**	0.3	3.6	**22.9**	14.6	33.8	**9.2**	5.2	12.5
	El Gutaina	**13.7**	4.9	23.4	**12.0**	4.9	19.2	**26.7**	19.8	35.6	**9.8**	4.0	16.3
	El Jabalain	**11.3**	5.7	16.1	**3.8**	1.4	7.9	**40.7**	33.3	48.4	**9.4**	4.6	15.2
	Guli	**6.7**	3.1	13.5	**3.1**	0.0	17.6	**28.7**	20.5	36.3	**0.0**	0.0	3.6
	Kosti	**5.0**	2.0	8.6	**0.0**	0.0	3.6	**10.1**	3.8	22.5	**2.3**	0.0	5.1
	Rabak	**0.0**	0.0	0.0	**0.0**	0.0	7.1	**11.8**	3.9	19.6	**5.4**	0.0	12.6
	Tandalti	**6.8**	2.6	12.6	**6.8**	0.0	16.2	**40.7**	30.7	52.3	**9.4**	4.0	16.2
	Umm Remta	**0.6**	0.0	6.9	**2.5**	0.0	6.9	**22.5**	12.5	35.0	**1.3**	0.0	5.0
	All state except capital	**7.4**	5.3	9.9	**4.6**	2.6	7.3	**27.5**	24.1	31.3	**6.4**	4.4	8.6
	Kosti Town	**9.2**	3.6	16.1	**10.8**	5.3	17.1	**21.2**	14.1	28.2	**9.0**	4.0	16.0
	Rabak Town	**10.2**	5.3	17.2	**9.2**	4.1	15.1	**21.7**	14.4	28.8	**9.9**	4.6	16.4

State	Locality	Mother Seeks health care when their children refuses food and drink			Mother Seeks health care when their children had Convulsions			Mother Seeks health care when their children had Severe vomiting			Mother Seeks health care when their children had Blood in stools		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Sennar	Abu Hijar	**0.0**	0.0	0.8	**1.2**	0.0	3.5	**27.0**	16.4	37.1	**38.7**	28.5	45.9
	Al Dindir	**1.6**	0.0	5.0	**2.1**	0.5	4.5	**46.8**	36.0	58.2	**47.1**	32.0	63.0
	Aldali And Almazmoum	**1.0**	0.0	2.3	**6.8**	3.3	10.7	**41.2**	27.9	57.3	**4.2**	0.0	13.3
	Alsooki	**4.3**	0.8	9.4	**3.1**	0.0	8.2	**31.6**	24.3	39.5	**20.2**	9.3	32.1
	Sennar	**4.8**	2.8	8.3	**1.4**	0.3	3.4	**30.1**	24.4	36.9	**0.3**	0.0	2.0
	Sharg Sennar	**1.7**	0.3	3.2	**0.3**	0.0	1.5	**20.2**	14.0	25.2	**9.2**	3.1	20.1
	Sinja	**7.8**	3.3	12.5	**2.6**	0.6	5.2	**52.6**	44.0	58.9	**0.0**	0.0	0.0
	All state except capital	**2.7**	1.7	4.0	**3.5**	2.1	4.8	**35.6**	31.6	41.1	**14.4**	9.6	20.3
	Sennar Town	**6.4**	3.2	11.0	**3.1**	0.4	6.3	**44.7**	36.9	52.6	**24.7**	16.1	34.5
	Sinja Town	**5.1**	2.3	8.4	**6.4**	2.8	12.0	**38.4**	28.7	51.1	**17.3**	8.9	25.7
El Gezira	El Hasaheisa	**7.7**	1.5	15.0	**0.0**	0.0	0.0	**15.4**	5.5	28.1	**0.0**	0.0	5.7
	El Kamlin	**2.8**	0.0	6.9	**8.9**	2.5	19.2	**16.1**	8.9	25.7	**0.0**	0.0	3.3
	El Managil	**2.3**	1.0	8.1	**1.5**	0.3	6.7	**7.9**	4.1	28.6	**2.4**	1.1	7.6
	Janub El Gezira	**18.8**	10.8	27.8	**7.9**	2.7	15.1	**39.0**	29.3	52.5	**15.3**	9.3	24.1
	Madani Al Kobra	**20.0**	0.0	40.0	**13.3**	0.0	33.3	**66.7**	40.0	93.3	**13.3**	0.0	33.3
	Sharg El Gezira	**23.4**	14.2	31.9	**0.0**	0.0	3.1	**57.8**	47.4	66.5	**14.7**	9.2	20.6
	Umm El Gura	**20.3**	10.2	33.4	**17.7**	5.3	36.6	**57.8**	43.1	67.2	**2.1**	0.0	7.0
	All state except capital	**7.6**	4.3	12.3	**3.7**	1.9	6.8	**20.0**	12.3	35.8	**5.8**	2.9	10.0
	Madani Town	**20.2**	10.6	32.3	**6.3**	1.5	14.1	**31.3**	20.1	41.1	**0.0**	0.0	3.0
Khartoum	Bahari	**1.6**	0.3	4.1	**0.0**	0.0	0.9	**6.2**	3.2	10.7	**0.0**	0.0	0.8
	Gabel Awlia	**8.8**	3.7	16.0	**3.4**	0.6	10.0	**33.1**	24.1	40.6	**4.4**	1.9	10.6
	Karrarri	**11.6**	7.4	17.0	**5.4**	2.7	8.8	**21.6**	16.6	25.6	**0.3**	0.0	3.4
	Khartoum	**5.5**	1.5	33.9	**0.0**	0.0	30.1	**15.0**	6.0	40.4	**6.5**	2.5	28.6
	Shareg Elnile	**20.2**	13.2	27.7	**34.5**	23.8	46.6	**52.3**	43.8	61.8	**22.2**	15.9	29.8
	Umbada	**4.9**	1.7	10.5	**5.2**	2.4	8.5	**15.5**	8.7	24.5	**2.1**	0.6	4.2
	Umdrman	**4.7**	1.0	10.1	**0.0**	0.0	0.0	**5.9**	2.2	11.9	**1.3**	0.0	3.1
	All state	**9.5**	6.8	12.8	**9.2**	5.5	13.8	**22.9**	18.5	27.7	**6.2**	3.5	9.2
Northern	Alborgeg	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Aldabba	**5.1**	3.4	7.8	**2.1**	1.2	3.4	**31.1**	26.6	36.4	**4.9**	3.1	6.4
	Algoled	**25.5**	8.1	39.1	**22.9**	5.9	39.1	**52.6**	33.5	67.7	**18.4**	6.8	29.2
	Dalgo	**0.8**	0.0	3.0	**0.0**	0.0	0.5	**21.4**	15.3	27.6	**1.6**	0.2	3.8
	Dongola	**9.7**	2.5	17.0	**2.1**	0.3	5.0	**40.3**	26.7	61.2	**5.7**	1.5	11.9
	Halfa	**0.0**	0.0	2.3	**3.0**	1.7	4.8	**15.9**	12.5	20.2	**0.0**	0.0	0.5
	Merawi	**47.1**	40.8	51.9	**38.6**	32.8	43.3	**47.0**	42.6	51.9	**31.0**	26.0	34.8
	All state except capital	**10.1**	6.4	14.1	**8.8**	5.9	11.8	**28.1**	24.0	32.3	**7.0**	4.4	9.5
	Dongola Town	**24.7**	10.3	41.0	**20.0**	8.9	33.2	**39.1**	27.2	55.1	**17.8**	7.1	31.7
River Nile	Abu Hamad	**30.8**	21.7	39.0	**32.5**	23.7	40.6	**34.4**	27.1	41.7	**28.5**	20.6	35.2
	Albuhaira	**6.0**	3.6	10.1	**6.3**	1.4	11.1	**29.3**	23.5	33.6	**4.9**	2.7	8.5
	Atbara	**14.0**	8.6	18.8	**18.6**	12.6	24.0	**48.5**	36.9	58.0	**14.5**	5.0	23.0
	Barbar	**45.1**	35.9	55.8	**23.4**	14.0	32.6	**47.4**	37.0	62.1	**27.2**	15.0	37.1
	Ed Damer	**11.3**	7.7	15.5	**12.1**	8.1	16.1	**48.7**	41.8	55.6	**7.5**	4.7	11.0
	El Matammah	**1.6**	0.7	2.7	**4.7**	3.0	7.7	**45.1**	37.6	52.8	**3.2**	1.6	5.0
	Shendi	**1.8**	0.4	4.2	**4.2**	1.0	10.4	**61.7**	48.5	72.8	**4.7**	1.9	8.3
	All state except capital	**18.6**	15.2	22.0	**18.7**	15.5	22.0	**41.8**	38.4	45.3	**15.5**	12.4	18.5
	Atbara Town	**17.1**	9.9	27.4	**19.6**	12.4	28.3	**34.1**	25.5	45.1	**18.2**	10.4	28.1
	El Damar Town	**18.6**	10.9	26.8	**18.7**	11.6	28.2	**49.0**	34.1	61.9	**17.3**	9.1	26.7

State	Locality	Mother Seeks health care when their children refuses food and drink			Mother Seeks health care when their children had Convulsions			Mother Seeks health care when their children had Severe vomiting			Mother Seeks health care when their children had Blood in stools		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
North Darfur	Al Fasher	**25.5**	16.0	38.0	**19.3**	11.1	29.8	**52.8**	44.4	62.9	**33.4**	24.7	43.8
	Al Koma	**56.0**	39.7	68.0	**21.6**	12.6	31.8	**66.9**	54.3	78.2	**46.5**	37.9	55.2
	Al Malha	**4.9**	1.9	9.8	**4.3**	0.9	9.1	**21.5**	12.1	34.6	**8.8**	3.5	16.4
	Al Seref	**5.7**	2.0	10.2	**2.8**	0.5	6.1	**44.4**	34.2	58.7	**14.4**	7.1	22.9
	Al Tina	**0.0**	0.0	3.1	**3.4**	0.0	10.7	**15.3**	8.2	25.2	**23.7**	14.7	31.6
	Al Twasha	**0.3**	0.0	1.7	**0.6**	0.0	2.3	**71.2**	59.8	81.7	**7.7**	3.0	11.6
	Allait	**1.6**	0.0	7.2	**3.2**	0.0	7.2	**44.1**	23.4	72.7	**2.3**	0.0	6.4
	Ambaro	**18.7**	12.4	26.2	**7.4**	3.2	12.5	**33.5**	23.1	42.1	**13.7**	6.2	22.4
	Dar Alsalam	**7.1**	4.0	13.4	**0.0**	0.0	0.0	**34.8**	29.4	43.0	**35.0**	29.0	41.5
	Kabkabia	**11.7**	6.8	17.8	**11.6**	3.5	19.1	**61.2**	50.9	72.2	**23.1**	10.6	35.2
	Karnoi	**3.5**	0.8	9.5	**3.0**	0.0	7.6	**24.1**	14.6	38.1	**23.9**	15.9	33.9
	Kelemendo	**22.3**	16.0	29.0	**0.0**	0.0	1.6	**48.4**	39.8	57.0	**44.9**	38.7	52.8
	Kutum	**2.9**	0.3	6.2	**0.8**	0.0	3.3	**6.4**	3.4	13.8	**1.6**	0.0	5.2
	Mallit	**0.2**	0.0	1.7	**0.8**	0.0	2.2	**21.0**	16.0	27.5	**5.7**	2.2	10.3
	Saraf Omra	**7.8**	1.6	21.1	**3.1**	0.0	7.8	**60.9**	31.5	75.0	**21.1**	12.3	32.8
	Tawila	**8.6**	3.6	14.3	**13.9**	7.1	22.9	**44.6**	28.7	55.4	**36.8**	25.5	49.3
	Umkadada	**5.4**	1.1	10.9	**2.4**	1.0	4.5	**40.6**	30.6	50.7	**27.9**	17.9	36.9
	All state except capital	**14.5**	11.4	17.9	**5.9**	4.0	7.4	**41.1**	37.0	44.7	**23.9**	20.8	27.0
	El Fashir Town	**36.6**	25.3	46.7	**22.6**	11.8	33.9	**55.4**	46.9	64.9	**29.2**	16.1	43.9
	Zamzam Camp*	**35.3**	24.4	46.6	**27.8**	16.2	38.6	**59.1**	48.4	70.2	**36.6**	21.8	50.0
	El Sireif Camp*	**5.7**	1.9	9.8	**2.8**	0.0	5.7	**44.2**	34.8	56.1	**14.4**	8.1	22.7
South Darfur	Al Rudoom (part)	**6.1**	2.3	10.7	**2.3**	0.7	4.2	**26.6**	14.6	40.6	**1.9**	0.4	4.9
	Alwehda	**3.9**	0.7	8.6	**0.0**	0.0	0.8	**16.4**	8.6	25.3	**39.8**	27.9	50.4
	Belil	**9.4**	3.1	15.7	**11.5**	5.2	17.8	**93.8**	88.5	97.9	**9.4**	4.2	15.7
	Buram	**14.9**	5.9	29.3	**2.5**	0.0	6.2	**41.4**	19.6	60.5	**5.5**	0.9	10.4
	Dimso	**7.3**	1.5	15.6	**0.0**	0.0	0.0	**34.4**	23.9	42.4	**12.5**	6.1	19.7
	El Salam	**26.2**	17.4	37.5	**31.9**	17.0	49.6	**59.8**	37.0	74.5	**26.1**	16.0	35.2
	Gerieda	**0.0**	0.0	0.0	**6.1**	0.0	15.5	**63.6**	22.7	84.7	**6.1**	0.0	16.7
	Id Elfirsan	**8.3**	2.6	16.2	**0.0**	0.0	1.6	**47.4**	36.4	56.3	**2.6**	0.0	6.3
	Kass	**9.8**	4.3	15.1	**4.7**	2.0	7.8	**36.3**	29.3	43.0	**26.6**	19.5	34.8
	Katila	**12.3**	7.6	16.9	**0.0**	0.0	0.0	**10.3**	5.8	15.2	**12.1**	8.3	17.4
	Kubum	**12.5**	5.6	21.6	**0.8**	0.0	4.4	**25.3**	14.4	35.7	**2.8**	0.7	6.3
	Mershing	**9.4**	0.0	18.9	**12.5**	3.1	25.0	**37.5**	24.8	56.3	**6.3**	0.0	15.6
	Netiga	**12.7**	3.4	25.0	**11.5**	4.8	17.5	**57.3**	43.0	68.0	**27.6**	18.6	39.8
	Rahad Elberdi (part)	**0.0**	0.0	2.6	**0.0**	0.0	2.6	**41.9**	34.2	49.7	**0.0**	0.0	0.0
	Toluss	**4.7**	0.0	11.4	**1.6**	0.0	6.3	**48.4**	24.7	67.3	**12.7**	3.1	23.4
	Um Dafog (part)	**0.0**	0.0	16.7	**0.0**	0.0	0.0	**10.0**	0.0	25.0	**0.0**	0.0	0.0
	All state except capital	**9.2**	7.7	10.9	**3.8**	2.5	5.6	**31.6**	26.2	37.1	**10.8**	8.6	13.4
	Nyala Town	**0.9**	0.0	2.7	**2.7**	0.4	5.6	**13.9**	9.2	20.1	**41.7**	34.3	49.6
	Kalma Camp	**19.4**	11.5	29.2	**6.1**	1.8	10.7	**47.5**	36.8	59.9	**35.7**	24.5	49.4

State	Locality	Mother Seeks health care when their children refuses food and drink			Mother Seeks health care when their children had Convulsions			Mother Seeks health care when their children had Severe vomiting			Mother Seeks health care when their children had Blood in stools		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
East Darfur	Abukarinka	**30.3**	19.8	38.6	**17.2**	10.4	23.1	**34.9**	24.5	44.5	**7.8**	4.1	12.6
	Adilla (part)	**1.6**	0.0	4.7	**0.0**	0.0	0.0	**21.1**	11.7	31.3	**1.6**	0.0	5.5
	Al Deain	**11.7**	3.1	24.3	**3.1**	0.8	7.2	**50.0**	35.0	66.7	**8.6**	2.3	16.7
	Alfirdos	**67.2**	50.0	84.4	**3.2**	0.0	10.7	**91.4**	73.5	100.0	**71.2**	53.3	87.3
	Asslaya	**0.0**	0.0	5.8	**12.5**	6.3	27.3	**38.9**	26.4	54.2	**37.5**	26.3	51.4
	Aubgabar	**7.7**	2.1	15.4	**0.0**	0.0	0.0	**37.4**	27.1	51.7	**4.4**	0.0	10.5
	Aubmatarg	**13.1**	0.0	36.2	**0.0**	0.0	0.0	**32.8**	17.2	53.5	**1.7**	0.0	12.1
	Sharia (part)	**19.8**	9.3	36.5	**3.1**	0.0	12.5	**66.7**	53.0	76.0	**6.3**	1.0	17.8
	Yaseen (part)	**15.6**	1.6	34.4	**37.5**	14.1	64.1	**23.4**	14.1	34.4	**9.4**	3.1	17.2
	All state except capital	**19.4**	13.9	24.5	**11.3**	6.9	15.4	**34.9**	29.0	41.5	**12.2**	8.0	17.9
	Al Deain Town	**17.9**	8.3	30.6	**7.1**	2.3	13.3	**46.2**	34.8	58.5	**17.7**	8.9	26.2
West Darfur	Algenea	**13.7**	5.3	21.9	**7.8**	0.0	17.2	**68.6**	36.7	86.0	**49.0**	0.0	86.0
	Baida	**19.5**	8.3	33.2	**2.4**	0.5	6.8	**70.3**	56.7	81.8	**25.4**	6.8	42.4
	Forbranga	**14.3**	3.3	29.6	**4.0**	0.6	10.0	**41.6**	32.7	50.8	**40.8**	32.2	49.0
	Gabal Moon	**6.5**	3.7	10.0	**0.7**	0.0	2.6	**8.1**	4.4	14.7	**26.9**	21.9	32.5
	Habilla	**0.0**	0.0	0.0	**1.4**	0.0	4.3	**37.5**	25.0	50.6	**2.6**	0.4	5.7
	Kerenik	**43.4**	16.9	69.2	**5.8**	1.4	18.3	**67.9**	47.7	83.2	**17.3**	10.0	29.5
	Kulbus	**10.2**	6.2	15.2	**11.9**	0.9	27.3	**34.2**	18.7	52.4	**55.7**	48.0	63.2
	Serba	**5.2**	1.6	8.3	**6.8**	2.6	11.0	**9.9**	4.1	19.3	**20.3**	15.1	28.2
	All state except capital	**30.0**	13.0	49.4	**7.3**	3.2	15.2	**42.5**	30.9	56.2	**23.9**	17.1	30.9
	Algenea Town	**11.4**	6.5	17.5	**12.4**	7.8	19.3	**34.6**	25.0	43.2	**20.4**	11.0	30.6
	Morne Camp*	**7.3**	3.2	22.7	**0.6**	0.0	3.3	**89.1**	70.3	95.9	**2.1**	0.7	7.9
Central Darfur	Azoum	**0.0**	0.0	0.0	**12.9**	0.0	23.6	**53.2**	26.7	74.0	**20.7**	11.3	31.1
	Bendsi (part)	**0.0**	0.0	0.0	**3.2**	0.0	6.5	**26.9**	16.1	35.5	**23.7**	13.9	33.3
	Mukjar (part)	**10.3**	3.1	21.2	**3.2**	0.5	8.5	**36.2**	25.5	49.5	**8.9**	1.7	18.8
	Nertati	**2.6**	0.0	12.9	**0.0**	0.0	0.0	**56.2**	38.2	77.4	**6.5**	0.0	13.4
	Rokiro	**13.6**	0.0	32.3	**5.1**	0.0	14.5	**35.6**	0.0	75.8	**3.4**	0.0	11.3
	Um Dukhun (part)	**9.3**	4.8	14.9	**1.0**	0.0	3.9	**22.6**	15.3	31.9	**5.4**	2.0	9.7
	Wadi Salih (part)	**19.8**	12.0	26.0	**5.1**	2.2	8.9	**25.4**	16.9	35.3	**8.9**	4.8	13.4
	Zalingei	**16.9**	8.4	27.1	**4.7**	1.9	8.7	**29.9**	22.2	38.2	**7.9**	4.0	12.5
	All state except capital	**5.3**	2.2	10.3	**8.8**	5.7	11.6	**40.5**	33.8	47.7	**17.5**	14.2	20.6
	Zalingi Town	**68.3**	58.4	77.3	**11.1**	4.7	19.9	**94.6**	87.6	99.1	**76.1**	65.0	84.0
	Mukjar Town*	**11.1**	3.5	22.8	**2.8**	0.0	8.3	**37.0**	25.8	49.5	**9.4**	1.7	17.7
	Um Dokhon Town*	**8.9**	3.7	15.3	**1.1**	0.0	3.9	**23.2**	15.0	30.0	**5.3**	2.1	10.6

Table 9: Mothers knowledge of illness danger signs (continued), results by locality

State	Locality	Mother Seeks health care when their children had Fever			Mother Seeks health care when their children had Drowsiness / loss of consciousness			Mother Seeks health care when their children had Difficult / fast breathing		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Red Sea	Ageeg	**74.7**	60.5	85.9	**7.5**	2.7	15.1	**31.4**	22.3	41.5
	Alganeb Alolib	**60.2**	47.8	71.5	**8.7**	4.6	13.1	**26.7**	17.7	36.9
	Dordaib	**55.6**	42.6	66.2	**1.2**	0.0	3.7	**8.4**	2.9	13.9
	Haia	**61.0**	46.6	78.5	**3.1**	0.7	6.4	**0.0**	0.0	0.7
	Haliab	**77.8**	59.8	89.1	**12.5**	4.9	21.7	**0.0**	0.0	0.0
	Japitalmadin	**71.2**	64.5	77.9	**11.4**	7.4	15.4	**0.0**	0.0	0.0
	Sawaken	**70.1**	58.0	80.0	**9.9**	4.9	18.2	**5.6**	0.0	16.7
	Senkat	**31.4**	25.0	39.5	**12.2**	7.0	17.5	**13.7**	8.4	19.4
	Tokar	**99.7**	96.8	100.0	**0.0**	0.0	1.0	**9.0**	5.8	12.6
	Port Sudan	**74.2**	69.2	78.2	**10.2**	7.2	13.3	**29.0**	22.1	36.6
	All state	**75.6**	72.4	78.9	**7.4**	6.2	9.3	**21.8**	18.3	25.7
Kassala	Aroma	**92.9**	89.3	95.5	**5.0**	2.6	8.2	**67.6**	42.3	85.3
	Hamshkoreb	**88.0**	80.4	93.7	**11.4**	4.5	20.3	**10.2**	4.9	17.4
	Kshmalgrba	**82.0**	70.3	90.6	**36.7**	19.5	55.6	**75.0**	59.4	87.5
	Nahr Atbara	**100.0**	96.3	100.0	**3.1**	0.0	7.8	**67.2**	56.3	79.7
	North Delta	**97.3**	91.1	100.0	**5.4**	1.3	12.3	**76.3**	54.0	92.9
	Rify Kassala	**93.8**	88.1	98.1	**2.5**	0.0	6.9	**34.4**	13.7	61.9
	Rural Halfa	**83.9**	75.0	89.6	**12.5**	5.7	19.3	**18.8**	10.9	28.7
	Talkok	**80.9**	74.0	86.8	**6.0**	2.8	9.8	**7.9**	4.3	11.7
	Wadalhlew	**46.9**	38.3	59.4	**54.8**	43.5	64.7	**41.7**	21.1	60.1
	West Kassala	**97.7**	92.7	100.0	**2.3**	0.0	6.3	**18.8**	6.5	30.2
	All state except capital	**88.5**	84.8	91.7	**8.4**	5.5	11.8	**41.9**	30.8	50.7
	Kassala Town	**90.5**	84.2	95.4	**24.0**	13.8	38.4	**48.6**	38.2	57.8
	Hamoshkoreib Town*	**88.3**	82.1	93.9	**11.9**	4.3	20.8	**9.6**	4.0	16.2
Gedaref	Al Gadaref Wasat	**76.0**	68.6	81.9	**4.3**	2.4	7.2	**4.3**	1.6	7.8
	Al Mafaza	**76.0**	68.3	84.4	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Albutana	**77.6**	70.0	82.9	**17.9**	12.1	25.1	**23.6**	9.8	41.4
	Alfashaga	**93.0**	89.3	95.6	**0.9**	0.0	3.8	**15.4**	12.3	18.8
	Alfaw	**68.6**	59.7	75.9	**0.0**	0.0	1.3	**1.4**	0.0	3.6
	Algalabat Al Garbiya	**52.1**	42.7	63.5	**18.8**	8.3	30.2	**4.2**	0.0	12.5
	Algalabat Al Shargiya	**59.4**	49.2	68.0	**16.4**	10.2	23.4	**11.7**	7.0	18.1
	Algurisha	**58.4**	50.3	69.4	**15.6**	8.4	24.1	**13.4**	8.4	18.8
	Alrahad	**76.0**	65.6	85.5	**0.0**	0.0	1.1	**7.3**	2.1	14.6
	Basonda	**65.2**	57.0	72.7	**11.5**	6.8	18.5	**13.3**	7.5	18.4
	Gula Alnahal	**64.5**	59.0	70.7	**25.8**	19.5	32.4	**12.9**	8.6	17.6
	All state except capital	**76.3**	72.6	79.7	**7.7**	6.0	9.4	**12.8**	11.2	14.9
	Gedarif Town	**72.0**	63.4	80.0	**3.2**	1.1	6.2	**15.1**	9.3	22.1
Blue Nile	Baw (part)	**75.0**	64.0	84.4	**17.2**	9.3	26.6	**20.3**	7.8	36.0
	Damazin	**57.3**	43.7	68.8	**0.0**	0.0	0.0	**0.0**	0.0	3.1
	Giessan (part)	**94.0**	86.0	97.1	**5.2**	1.4	12.5	**29.3**	20.0	48.1
	Kurmuk (part)	**93.8**	88.5	98.0	**1.0**	0.0	5.2	**6.3**	1.0	13.5
	Rosairs (part)	**86.5**	82.9	90.6	**6.6**	4.4	8.8	**19.8**	14.0	26.4
	Tadamon (part)	**72.7**	63.2	80.5	**3.9**	0.7	9.4	**0.0**	0.0	2.3
	All state except capital	**87.6**	82.4	91.0	**5.8**	3.7	8.4	**21.1**	15.9	26.9
	Damazin Town	**91.3**	86.9	98.6	**0.3**	0.0	3.7	**5.2**	1.4	43.2
	Roseris Town	**83.5**	72.3	92.7	**7.6**	1.7	18.6	**36.6**	22.7	50.0
South Kordofan	Abujebiha (part)	**73.0**	62.1	81.0	**7.4**	5.2	10.9	**33.9**	28.1	40.2
	Al Tadamoon (part)	**69.9**	60.4	80.0	**6.1**	2.9	9.8	**36.6**	25.7	50.0
	Alabaseya	**77.1**	66.7	86.9	**21.9**	11.9	33.3	**36.9**	26.0	47.9
	Algoz	**77.0**	64.1	87.7	**7.1**	3.3	11.9	**45.7**	29.8	57.4
	Allirri	**88.0**	80.7	93.8	**8.7**	1.6	21.8	**48.4**	41.2	54.7
	Alreif Alshargi	**83.3**	72.8	92.7	**12.5**	6.2	20.8	**67.7**	54.2	79.2
	Dilling (part)	**75.0**	59.2	87.7	**3.1**	0.0	9.4	**37.5**	21.9	56.3
	Gadeir (part)	**64.6**	58.0	71.3	**36.8**	29.0	45.6	**28.9**	23.9	35.1
	Habeila (part)	**89.1**	79.9	97.9	**3.7**	0.5	8.0	**67.7**	54.1	75.0
	Rashad (part)	**87.2**	78.1	96.7	**9.4**	3.9	15.7	**33.3**	23.9	43.6
	All state except capital	**76.5**	72.7	80.2	**11.2**	8.6	15.2	**43.5**	38.0	48.0
	Kadugli Town	**76.9**	69.8	82.7	**20.6**	14.4	27.7	**26.2**	19.1	36.0
	Talodi Town	**81.6**	73.6	87.8	**24.4**	14.1	36.0	**46.3**	37.1	56.0

State	Locality	Mother Seeks health care when their children had Fever			Mother Seeks health care when their children had Drowsiness / loss of consciousness			Mother Seeks health care when their children had Difficult / fast breathing		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
West Kordofan	Abo Zabad	**83.5**	74.0	92.9	**5.7**	0.7	12.6	**10.0**	0.0	25.1
	Abyei	**79.6**	68.2	86.8	**9.5**	5.6	14.8	**20.4**	9.4	32.1
	Al Khowi	**83.6**	77.7	88.7	**5.8**	3.2	9.0	**46.0**	33.7	59.0
	Al Odaya	**87.0**	82.2	91.2	**2.0**	0.3	5.1	**49.9**	44.0	54.7
	Al Salam	**73.8**	65.2	80.2	**22.8**	17.2	27.8	**47.1**	40.3	52.6
	Aldebab	**85.1**	79.9	89.6	**10.9**	6.7	15.8	**26.6**	15.2	41.2
	Almearam	**70.2**	60.7	80.9	**4.2**	0.9	10.0	**5.4**	0.9	13.7
	Alsnout	**88.3**	83.0	92.6	**6.1**	3.4	9.4	**48.5**	38.6	56.3
	Babanusa	**87.5**	79.5	93.7	**11.1**	3.3	19.0	**46.0**	36.3	53.1
	En Nuhud	**93.1**	88.8	96.3	**9.5**	6.7	12.8	**7.2**	3.3	13.6
	Ghebeish	**78.0**	72.8	82.9	**6.3**	3.9	9.5	**37.0**	27.0	46.4
	Kailak (part)	**76.9**	42.1	89.9	**3.1**	1.4	7.5	**9.9**	3.6	27.2
	Lagawa (part)	**76.7**	65.7	84.7	**16.0**	12.1	19.4	**10.3**	5.8	15.3
	Wad Bandah	**81.1**	75.4	84.5	**13.8**	10.0	19.5	**47.0**	36.7	56.4
	All state except capital	**81.3**	78.7	84.3	**9.8**	8.1	11.5	**31.0**	27.4	35.2
	Fula Town	**79.1**	70.7	85.5	**16.7**	10.1	24.8	**31.1**	23.8	40.0
North Kordofan	Bara	**94.4**	91.8	97.0	**2.9**	1.1	5.2	**69.2**	58.4	80.0
	El Rahad	**97.9**	92.7	100.0	**6.3**	2.1	12.9	**0.0**	0.0	35.5
	Jebrat El Sheikh	**71.3**	68.1	75.2	**29.6**	26.1	34.0	**26.0**	22.4	30.3
	Sheikan	**87.1**	80.3	93.6	**2.7**	0.2	6.9	**13.6**	2.9	26.0
	Sowdari	**81.4**	77.5	85.1	**7.1**	5.3	9.1	**36.1**	22.3	48.2
	Umm Daam	**82.1**	72.9	91.4	**13.6**	4.3	29.4	**29.3**	10.2	57.7
	Umm Rawaba	**85.1**	81.0	88.4	**5.4**	3.4	7.7	**20.3**	12.0	28.0
	West Bara	**89.6**	81.8	95.9	**16.9**	10.0	26.7	**35.2**	28.5	44.0
	All state except capital	**84.1**	81.8	85.8	**8.8**	7.4	10.9	**31.1**	26.8	37.0
	El Obeid Town	**88.6**	82.1	94.7	**6.3**	2.2	11.5	**42.6**	29.9	54.3
White Nile	Alsalam	**74.1**	66.1	81.3	**15.2**	6.7	24.9	**30.8**	24.8	38.9
	Ed Douiem	**77.6**	66.9	86.1	**7.8**	3.8	12.1	**67.7**	57.2	75.9
	El Gutaina	**80.9**	74.8	86.4	**13.4**	6.2	21.3	**53.5**	42.2	64.0
	El Jabalain	**72.0**	67.3	77.2	**15.5**	9.9	20.9	**47.5**	37.1	57.5
	Guli	**87.5**	80.7	94.2	**2.2**	0.0	7.7	**53.1**	42.6	64.3
	Kosti	**82.1**	63.4	90.6	**3.4**	0.0	15.0	**72.3**	41.9	85.5
	Rabak	**52.9**	39.0	69.7	**3.9**	0.0	9.8	**78.4**	67.4	90.2
	Tandalti	**77.2**	66.4	84.0	**14.2**	8.2	20.1	**50.3**	40.9	59.1
	Umm Remta	**79.4**	69.9	86.9	**8.8**	0.0	21.3	**55.6**	41.8	70.0
	All state except capital	**78.7**	75.5	82.1	**9.6**	7.0	12.4	**56.3**	51.0	61.0
	Kosti Town	**76.3**	69.6	81.8	**15.6**	7.0	24.1	**59.3**	49.3	69.0
	Rabak Town	**77.8**	69.1	85.6	**11.7**	4.7	19.3	**59.4**	48.0	68.9
Sennar	Abu Hijar	**75.8**	69.1	81.7	**1.6**	0.4	4.7	**56.6**	44.5	63.7
	Al Dindir	**84.7**	79.0	90.4	**3.4**	0.0	7.6	**68.8**	59.9	76.8
	Aldali And Almazmoum	**87.5**	81.8	91.9	**5.8**	2.3	9.7	**9.6**	1.6	21.6
	Alsooki	**82.8**	75.7	88.3	**2.7**	0.4	6.3	**57.8**	45.6	72.3
	Sennar	**85.8**	81.0	90.0	**0.3**	0.0	1.8	**7.7**	3.4	13.1
	Sharg Sennar	**87.1**	81.8	90.8	**0.9**	0.0	3.4	**37.6**	28.1	48.6
	Sinja	**95.6**	91.1	98.5	**3.3**	1.0	7.9	**25.3**	17.0	33.9
	All state except capital	**85.2**	82.7	87.7	**3.3**	1.9	4.8	**30.6**	24.7	37.8
	Sennar Town	**85.5**	79.6	91.4	**7.3**	3.1	12.2	**43.5**	31.8	53.7
	Sinja Town	**88.7**	82.4	94.0	**3.2**	0.8	6.6	**37.2**	26.6	49.6
El Gezira	El Hasaheisa	**65.0**	50.7	78.6	**12.3**	4.3	23.3	**3.1**	0.0	13.3
	El Kamlin	**71.0**	52.8	84.6	**15.5**	2.6	33.3	**25.9**	17.1	38.8
	El Managil	**91.6**	70.0	96.4	**5.3**	1.9	16.3	**9.8**	4.1	35.5
	Janub El Gezira	**77.4**	66.0	88.1	**18.1**	7.5	29.9	**40.8**	26.4	52.2
	Madani Al Kobra	**100.0**	100.0	100.0	**13.3**	0.0	33.3	**40.0**	13.3	66.7
	Sharg El Gezira	**83.3**	75.5	90.5	**21.4**	13.8	27.5	**46.3**	34.5	55.8
	Umm El Gura	**63.2**	48.7	77.6	**40.3**	24.7	54.3	**25.0**	9.4	50.1
	All state except capital	**85.7**	75.9	92.0	**9.9**	5.7	17.5	**18.7**	11.6	33.6
	Madani Town	**67.5**	57.1	77.8	**25.0**	13.2	35.8	**35.8**	25.0	46.8

State	Locality	Mother Seeks health care when their children had Fever			Mother Seeks health care when their children had Drowsiness / loss of consciousness			Mother Seeks health care when their children had Difficult / fast breathing		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Khartoum	Bahari	**19.1**	13.2	26.1	**57.5**	49.0	65.1	**0.6**	0.0	2.2
	Gabel Awlia	**82.5**	74.7	88.4	**7.8**	3.4	14.2	**7.5**	4.0	11.8
	Karrarri	**88.9**	73.8	96.3	**11.2**	6.4	18.1	**9.5**	5.4	18.0
	Khartoum	**59.0**	46.5	74.1	**8.7**	3.1	25.0	**30.1**	20.4	41.4
	Shareg Elnile	**80.9**	72.8	85.6	**12.1**	7.4	17.4	**12.5**	7.8	18.9
	Umbada	**47.3**	39.7	58.1	**6.4**	1.8	13.3	**37.2**	25.0	49.9
	Umdrman	**59.4**	43.8	77.6	**8.8**	3.8	14.0	**48.1**	35.9	64.7
	All state	**60.2**	53.6	66.2	**22.1**	17.4	27.4	**15.4**	11.9	19.6
Northern	Alborgeg	**66.7**	33.3	100.0	**33.3**	0.0	66.7	**0.0**	0.0	0.0
	Aldabba	**76.0**	71.8	79.8	**10.2**	8.0	12.7	**42.0**	36.7	45.7
	Algoled	**71.2**	56.2	83.9	**26.3**	18.1	39.5	**27.1**	15.6	44.8
	Dalgo	**83.7**	76.7	90.3	**8.0**	2.4	16.7	**1.0**	0.0	3.8
	Dongola	**78.5**	71.8	84.1	**19.1**	12.2	25.4	**13.1**	5.3	22.2
	Halfa	**69.0**	64.9	73.6	**6.7**	4.3	10.3	**6.3**	4.0	8.3
	Merawi	**58.8**	53.1	64.3	**33.7**	27.9	37.8	**44.9**	36.9	50.8
	All state except capital	**70.9**	68.2	73.2	**14.0**	11.7	16.7	**16.3**	12.4	20.5
	Dongola Town	**75.6**	66.4	83.6	**20.6**	10.2	31.7	**31.1**	19.1	46.8
River Nile	Abu Hamad	**64.3**	55.0	73.8	**42.0**	33.3	50.0	**40.9**	34.8	48.1
	Albuhaira	**51.5**	42.6	61.7	**48.6**	39.2	57.9	**18.4**	10.8	26.2
	Atbara	**55.5**	45.3	70.1	**41.7**	25.2	62.6	**45.0**	28.8	61.0
	Barbar	**73.2**	65.0	82.1	**43.8**	31.7	55.8	**48.8**	39.8	58.0
	Ed Damer	**77.7**	72.4	81.4	**27.5**	21.7	33.9	**30.3**	24.8	35.6
	El Matammah	**80.2**	74.6	85.0	**15.8**	12.4	19.5	**62.8**	51.4	72.9
	Shendi	**66.3**	60.1	73.2	**22.0**	16.8	27.7	**37.2**	27.5	48.7
	All state except capital	**69.1**	65.4	72.2	**35.3**	32.1	38.3	**38.7**	35.1	42.5
	Atbara Town	**78.4**	72.1	85.7	**24.5**	15.8	35.1	**51.4**	43.1	60.2
	El Damar Town	**79.8**	71.9	88.0	**30.0**	19.8	41.3	**46.6**	35.4	59.3
North Darfur	Al Fasher	**78.6**	73.2	84.4	**33.0**	25.9	41.5	**26.3**	18.7	38.0
	Al Koma	**96.8**	91.4	99.2	**59.2**	49.5	68.0	**31.0**	23.0	40.0
	Al Malha	**37.3**	26.1	52.1	**11.0**	6.3	16.5	**13.4**	5.9	20.6
	Al Seref	**82.1**	74.3	90.7	**2.9**	0.9	7.1	**6.3**	3.3	10.9
	Al Tina	**30.7**	19.3	43.4	**15.4**	9.4	21.6	**2.7**	0.0	5.9
	Al Twasha	**79.4**	73.0	86.1	**5.2**	1.0	9.8	**28.0**	17.0	41.7
	Allait	**82.8**	75.8	88.3	**0.0**	0.0	1.6	**39.8**	31.2	48.5
	Ambaro	**76.6**	69.3	83.3	**22.9**	12.9	34.8	**19.0**	10.5	27.4
	Dar Alsalam	**96.8**	92.1	99.1	**50.5**	42.4	57.6	**32.6**	26.8	39.7
	Kabkabia	**77.0**	70.0	83.0	**20.5**	11.4	27.5	**17.8**	12.4	23.8
	Karnoi	**81.1**	73.8	89.3	**55.0**	41.0	65.9	**38.5**	28.0	50.9
	Kelemendo	**97.7**	94.9	99.2	**44.5**	35.6	52.6	**20.3**	15.6	26.3
	Kutum	**73.3**	65.5	78.4	**8.6**	3.9	17.6	**55.8**	43.7	65.7
	Mallit	**53.0**	45.1	63.5	**9.5**	6.6	12.9	**27.5**	19.8	38.5
	Saraf Omra	**92.2**	80.7	98.4	**0.0**	0.0	0.0	**3.1**	0.0	7.8
	Tawila	**72.7**	65.8	80.7	**35.3**	27.8	44.0	**12.1**	4.9	19.4
	Umkadada	**71.4**	61.8	78.8	**29.1**	19.8	38.7	**27.6**	20.3	35.5
	All state except capital	**73.4**	69.3	77.7	**27.5**	23.9	30.8	**26.1**	23.0	28.4
	El Fashir Town	**81.6**	74.6	87.5	**30.9**	21.7	44.8	**33.6**	23.7	46.7
	Zamzam Camp*	**82.8**	74.6	88.5	**32.7**	21.4	46.0	**33.0**	19.8	46.5
	El Sireif Camp*	**82.0**	73.2	89.6	**3.3**	1.0	7.0	**6.5**	2.8	11.0

State	Locality	Mother Seeks health care when their children had Fever			Mother Seeks health care when their children had Drowsiness / loss of consciousness			Mother Seeks health care when their children had Difficult / fast breathing		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
South Darfur	Al Rudoom (part)	**59.6**	48.6	71.2	**12.7**	7.2	18.5	**2.8**	0.0	6.6
	Alwehda	**58.8**	46.1	76.6	**23.4**	11.7	36.0	**13.3**	1.6	29.1
	Belil	**79.2**	69.8	88.5	**25.0**	15.6	34.4	**29.2**	19.8	39.6
	Buram	**77.9**	62.5	93.8	**9.4**	4.1	20.2	**6.9**	1.0	14.0
	Dimso	**52.1**	38.9	61.5	**12.1**	4.2	21.2	**6.1**	1.5	12.1
	El Salam	**86.2**	77.1	93.8	**8.5**	4.1	13.7	**12.9**	6.9	20.3
	Gerieda	**75.8**	53.9	100.0	**31.3**	0.0	52.8	**6.3**	0.0	36.7
	Id Elfirsan	**81.8**	72.4	89.1	**8.3**	3.7	12.6	**37.0**	27.3	47.9
	Kass	**71.5**	63.7	77.8	**23.4**	16.8	30.5	**42.2**	36.7	50.0
	Katila	**63.0**	55.4	69.1	**3.6**	1.3	7.6	**2.9**	0.9	6.1
	Kubum	**85.6**	80.5	91.9	**6.3**	2.1	10.4	**31.3**	22.5	40.0
	Mershing	**46.9**	28.1	65.6	**56.3**	37.5	71.9	**15.6**	6.3	28.3
	Netiga	**84.4**	76.7	93.6	**14.8**	7.4	24.2	**27.4**	17.2	37.9
	Rahad Elberdi (part)	**80.7**	74.5	87.2	**5.8**	2.6	10.3	**40.4**	32.1	48.8
	Toluss	**48.4**	36.5	62.0	**10.9**	3.1	24.3	**4.7**	0.0	13.0
	Um Dafog (part)	**90.0**	66.7	100.0	**0.0**	0.0	0.0	**30.0**	8.3	50.0
	All state except capital	**65.5**	61.6	69.2	**18.5**	14.2	23.2	**17.2**	13.7	21.0
	Nyala Town	**40.0**	29.6	48.9	**0.9**	0.0	3.4	**48.8**	38.7	58.7
	Kalma Camp	**78.6**	68.5	87.3	**4.6**	1.4	8.7	**17.0**	10.1	25.0
East Darfur	Abukarinka	**52.1**	33.9	70.4	**22.9**	12.1	32.8	**22.1**	12.0	30.8
	Adilla (part)	**67.2**	53.9	80.5	**5.5**	0.9	11.0	**0.0**	0.0	0.0
	Al Deain	**88.4**	75.0	96.1	**7.8**	3.3	12.5	**38.3**	28.6	50.0
	Alfirdos	**93.8**	80.7	100.0	**17.0**	9.3	24.0	**5.8**	1.7	11.5
	Asslaya	**13.9**	5.6	23.9	**44.4**	24.1	59.7	**40.9**	29.5	60.9
	Aubgabar	**47.9**	37.2	59.6	**0.0**	0.0	5.8	**0.0**	0.0	0.0
	Aubmatarg	**70.5**	36.0	95.3	**6.6**	1.6	12.5	**0.0**	0.0	0.0
	Sharia (part)	**81.3**	66.7	90.6	**7.3**	0.0	18.8	**4.2**	0.0	10.4
	Yaseen (part)	**21.9**	6.3	37.5	**53.1**	25.0	78.1	**18.8**	6.2	31.3
	All state except capital	**53.3**	45.1	62.0	**20.3**	13.9	26.4	**14.9**	10.1	20.6
	Al Deain Town	**66.8**	55.4	77.3	**35.5**	24.3	47.7	**16.1**	9.5	26.6
West Darfur	Algenea	**86.3**	60.5	100.0	**15.7**	6.2	31.6	**37.3**	25.4	51.1
	Baida	**91.3**	84.4	96.5	**18.2**	5.3	31.9	**8.5**	0.0	17.9
	Forbranga	**63.2**	51.3	71.6	**5.2**	1.7	9.8	**17.9**	10.2	25.6
	Gabal Moon	**67.9**	59.7	77.5	**40.0**	31.4	49.3	**35.6**	26.6	43.5
	Habilla	**89.6**	83.8	93.8	**8.6**	4.7	13.5	**26.6**	14.0	41.0
	Kerenik	**83.0**	69.8	91.8	**1.0**	0.4	2.6	**17.9**	7.4	47.2
	Kulbus	**93.8**	88.6	97.5	**27.6**	19.4	37.9	**25.9**	18.0	32.6
	Serba	**65.7**	58.3	75.0	**36.5**	26.6	43.8	**30.3**	20.8	40.1
	All state except capital	**75.7**	67.7	82.2	**15.3**	10.2	20.8	**14.4**	9.9	21.4
	Algenea Town	**79.1**	71.5	86.6	**12.0**	7.4	17.1	**30.0**	20.6	40.4
	Morne Camp*	**98.1**	93.5	99.4	**2.5**	1.0	7.5	**84.7**	61.8	94.1
Central Darfur	Azoum	**72.9**	59.3	84.7	**13.4**	5.1	27.5	**33.9**	14.6	56.5
	Bendsi (part)	**77.4**	63.4	86.1	**15.1**	8.6	25.7	**66.7**	47.6	77.5
	Mukjar (part)	**68.6**	58.6	79.4	**8.6**	2.5	17.2	**29.8**	20.1	39.3
	Nertati	**93.3**	82.4	98.6	**0.0**	0.0	0.0	**11.1**	4.6	22.9
	Rokiro	**61.0**	16.1	93.6	**13.6**	1.6	28.6	**22.0**	1.8	41.9
	Um Dukhun (part)	**67.0**	57.5	76.2	**3.8**	1.0	8.7	**5.1**	2.2	9.8
	Wadi Salih (part)	**50.1**	39.2	59.4	**11.6**	7.5	16.5	**7.3**	3.8	13.4
	Zalingei	**65.0**	56.4	73.1	**16.8**	10.1	23.7	**23.7**	17.5	29.1
	All state except capital	**69.3**	63.3	74.3	**14.3**	11.1	17.7	**34.4**	27.5	40.5
	Zalingi Town	**95.4**	89.1	99.0	**25.6**	18.8	34.8	**88.9**	80.8	95.0
	Mukjar Town*	**68.0**	57.1	77.5	**8.3**	1.6	15.5	**30.4**	19.7	40.4
	Um Dokhon Town*	**67.1**	56.8	75.4	**3.9**	1.0	8.3	**5.7**	2.1	9.8

Table 10: Mothers knowledge of illness danger signs and *Al Shuffa Al Soghar* health promotion initiative and ITN use, results by locality

State	Locality	Number of signs when mother seeks health care for their children (mean)			No danger signs mentioned			Heard about 'Shuffaa Al Soghar'			Seen 'Shuffaa Al Soghar' picture			Child sleeps under an ITN		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Red Sea	Ageeg	**1.5**	1.4	1.7	**3.1**	0.0	8.7	**0.5**	0.0	2.6	**0.0**	0.0	0.0	**3.4**	0.6	6.8
	Alganeb Alolib	**1.3**	1.1	1.6	**15.0**	5.4	25.7	**7.8**	2.6	14.2	**4.4**	0.9	8.6	**5.0**	2.0	8.8
	Dordaib	**0.8**	0.6	1.0	**31.3**	16.7	48.5	**1.1**	0.0	3.7	**1.1**	0.0	3.7	**14.6**	1.1	27.2
	Haia	**0.7**	0.5	0.8	**31.8**	20.8	46.1	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.3**	0.0	1.5
	Haliab	**0.9**	0.7	1.0	**9.8**	0.0	29.6	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Japitalmadin	**1.6**	1.5	1.8	**13.0**	7.4	22.3	**7.4**	4.2	11.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Sawaken	**1.1**	0.9	1.3	**14.4**	7.1	20.8	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**2.1**	0.5	4.9
	Senkat	**0.7**	0.6	0.8	**42.5**	34.8	52.1	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.7
	Tokar	**1.5**	1.4	1.6	**0.0**	0.0	2.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Port Sudan	**1.8**	1.6	2.0	**4.0**	2.3	6.2	**3.5**	1.5	5.7	**0.9**	0.2	2.0	**32.4**	25.7	41.0
	All state	**1.5**	1.5	1.6	**7.5**	5.3	10.2	**2.3**	1.4	3.3	**0.6**	0.2	1.1	**16.0**	12.7	19.7
Kassala	Aroma	**2.4**	1.9	2.9	**0.4**	0.0	2.6	**47.1**	32.6	56.7	**20.3**	12.0	28.4	**8.5**	4.9	15.0
	Hamshkoreb	**1.7**	1.4	2.1	**2.8**	0.4	8.6	**3.2**	0.4	9.0	**0.4**	0.0	1.6	**7.8**	2.9	13.7
	Kshmalgrba	**3.9**	3.2	4.4	**0.0**	0.0	0.0	**4.7**	1.6	10.9	**1.6**	0.0	4.8	**65.4**	47.8	79.5
	Nahr Atbara	**2.7**	2.4	3.0	**0.0**	0.0	3.7	**6.3**	1.6	12.5	**0.0**	0.0	0.0	**2.4**	0.0	6.1
	North Delta	**3.1**	2.8	3.4	**0.0**	0.0	0.0	**19.2**	4.5	39.3	**8.9**	1.8	20.4	**6.1**	2.7	10.0
	Rify Kassala	**1.8**	1.4	2.4	**0.0**	0.0	2.5	**0.6**	0.0	4.4	**0.0**	0.0	0.0	**12.6**	6.4	18.7
	Rural Halfa	**1.7**	1.6	2.0	**0.0**	0.0	1.6	**47.9**	31.3	63.6	**15.6**	8.3	28.2	**31.5**	18.8	40.7
	Talkok	**1.3**	1.2	1.5	**7.7**	2.3	15.1	**0.0**	0.0	0.0	**3.5**	0.3	8.1	**1.8**	0.2	4.3
	Wadalhlew	**2.2**	1.9	2.6	**2.6**	0.0	7.0	**13.3**	3.5	23.5	**3.9**	0.0	9.4	**40.7**	27.0	55.0
	West Kassala	**1.7**	1.4	1.9	**0.0**	0.0	0.0	**0.0**	0.0	11.8	**0.0**	0.0	0.0	**1.7**	0.0	4.0
	All state except capital	**2.2**	2.0	2.4	**2.6**	1.2	4.8	**12.9**	7.5	18.6	**6.3**	3.6	9.2	**11.1**	6.9	16.3
	Kassala Town	**2.7**	2.3	3.2	**1.9**	0.4	5.0	**16.9**	9.5	27.6	**5.7**	2.0	11.1	**33.9**	23.6	43.4
	Hamoshkoreib Town*	**1.8**	1.5	2.1	**2.6**	0.0	6.4	**3.2**	0.0	9.1	**0.4**	0.0	2.2	**8.0**	3.5	14.2
Gedaref	Al Gadaref Wasat	**1.4**	1.2	1.6	**13.3**	8.5	18.9	**1.4**	0.5	2.8	**0.9**	0.0	2.1	**38.9**	27.5	51.0
	Al Mafaza	**1.2**	1.0	1.3	**6.3**	2.1	11.5	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**17.3**	11.9	27.2
	Albutana	**2.2**	1.8	2.7	**3.8**	1.6	6.6	**2.6**	0.0	7.4	**1.1**	0.2	2.7	**3.9**	2.2	5.9
	Alfashaga	**1.3**	1.3	1.4	**3.2**	2.2	5.1	**6.1**	4.0	8.2	**0.0**	0.0	0.7	**52.4**	47.6	58.9
	Alfaw	**1.0**	0.9	1.0	**20.1**	14.3	25.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**8.6**	3.9	15.6
	Algalabat Al Garbiya	**1.8**	1.4	2.1	**15.6**	9.4	24.0	**0.0**	0.0	2.1	**0.0**	0.0	0.0	**17.0**	10.9	40.9
	Algalabat Al Shargiya	**1.5**	1.2	1.8	**7.8**	3.1	14.8	**0.0**	0.0	0.8	**0.0**	0.0	0.0	**14.2**	4.0	34.7
	Algurisha	**1.9**	1.7	2.1	**6.3**	2.8	10.6	**6.3**	1.6	13.4	**0.6**	0.0	2.2	**36.8**	25.7	49.5
	Alrahad	**1.3**	1.1	1.5	**13.5**	6.3	20.8	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**85.8**	73.4	91.7
	Basonda	**1.6**	1.3	1.9	**11.0**	4.9	17.9	**3.6**	0.8	7.8	**2.1**	0.0	6.8	**44.6**	36.4	51.6
	Gula Alnahal	**2.8**	2.4	3.1	**8.6**	4.7	12.1	**1.2**	0.0	3.5	**0.0**	0.0	0.0	**14.8**	8.1	28.2
	All state except capital	**1.5**	1.4	1.6	**6.9**	5.7	8.7	**3.5**	2.4	4.5	**0.3**	0.0	0.8	**36.0**	31.8	40.3
	Gedarif Town	**1.1**	1.0	1.2	**19.4**	12.7	27.4	**18.8**	10.8	27.8	**12.2**	5.9	20.4	**20.6**	14.2	29.8
Blue Nile	Baw (part)	**2.3**	2.0	2.6	**1.6**	0.0	6.3	**1.6**	0.0	6.3	**0.0**	0.0	0.0	**59.6**	47.8	72.3
	Damazin	**1.1**	0.9	1.2	**15.6**	6.3	22.9	**5.2**	0.0	11.5	**0.0**	0.0	5.2	**36.6**	29.3	51.4
	Giessan (part)	**2.3**	1.8	3.2	**1.8**	0.5	3.8	**0.1**	0.0	1.1	**0.0**	0.0	0.0	**80.7**	75.4	85.9
	Kurmuk (part)	**1.7**	1.5	1.9	**4.2**	0.0	11.5	**2.1**	0.0	6.3	**0.0**	0.0	0.0	**69.2**	58.3	84.2
	Rosairs (part)	**1.7**	1.5	1.9	**4.8**	2.5	8.3	**0.9**	0.2	2.5	**0.1**	0.0	0.7	**74.0**	63.7	82.4
	Tadamon (part)	**1.1**	1.0	1.3	**18.8**	12.5	25.0	**0.8**	0.0	6.3	**0.0**	0.0	0.0	**27.6**	19.5	36.0
	All state except capital	**1.9**	1.7	2.2	**4.9**	3.1	7.3	**0.9**	0.4	1.8	**0.1**	0.0	0.4	**71.1**	64.5	76.6
	Damazin Town	**1.2**	1.1	2.6	**7.6**	0.5	12.8	**0.8**	0.1	8.3	**0.1**	0.0	2.0	**69.7**	60.5	80.7
	Roseris Town	**1.8**	1.5	2.1	**4.3**	0.9	8.6	**0.4**	0.0	1.8	**0.0**	0.0	0.0	**67.7**	59.0	77.5

State	Locality	Number of signs when mother seeks health care for their children (mean)			No danger signs mentioned			Heard about 'Shuffaa Al Soghar'			Seen 'Shuffaa Al Soghar' picture			Child sleeps under an ITN		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
South Kordofan	Abujebiha (part)	**1.5**	1.3	1.6	**12.4**	5.9	21.3	**7.0**	3.7	10.1	**0.5**	0.0	1.4	**14.5**	10.4	18.6
	Al Tadamoon (part)	**1.5**	1.3	1.7	**15.3**	7.0	23.9	**1.5**	0.0	4.0	**0.4**	0.0	4.5	**10.3**	4.6	19.3
	Alabaseya	**1.8**	1.5	2.0	**8.3**	0.0	16.7	**10.4**	2.4	19.1	**9.4**	2.4	17.7	**32.5**	24.1	39.3
	Algoz	**1.5**	1.4	1.7	**5.0**	2.0	8.5	**20.7**	9.5	31.6	**6.0**	2.0	11.4	**20.8**	14.5	27.9
	Allirri	**2.1**	1.8	2.5	**5.5**	1.0	10.9	**29.5**	20.8	38.0	**10.4**	5.5	17.0	**38.6**	29.1	52.6
	Alreif Alshargi	**2.3**	2.1	2.5	**0.0**	0.0	4.2	**25.0**	11.5	37.6	**7.3**	0.0	17.7	**76.6**	64.9	88.5
	Dilling (part)	**1.7**	1.3	2.0	**15.6**	3.1	28.1	**9.4**	0.0	18.8	**3.1**	0.0	12.5	**40.0**	26.7	55.0
	Gadeir (part)	**2.5**	2.1	2.9	**2.3**	0.3	5.3	**18.1**	8.8	30.1	**13.3**	8.7	17.7	**16.2**	9.3	30.1
	Habeila (part)	**2.2**	2.0	2.3	**0.0**	0.0	2.6	**16.2**	4.7	28.0	**0.0**	0.0	1.1	**41.4**	29.3	50.7
	Rashad (part)	**1.8**	1.6	2.1	**3.1**	0.0	10.3	**18.0**	7.7	32.1	**5.1**	0.0	9.4	**27.5**	12.4	44.0
	All state except capital	**1.8**	1.7	2.0	**7.5**	5.0	10.0	**13.5**	9.7	17.4	**4.4**	2.8	5.9	**25.4**	20.1	30.6
	Kadugli Town	**2.0**	1.8	2.2	**1.3**	0.0	3.9	**38.3**	29.3	46.8	**11.7**	7.0	18.2	**67.8**	57.2	75.7
	Talodi Town	**2.4**	2.1	2.8	**3.5**	0.8	7.2	**19.5**	10.6	29.7	**8.2**	2.2	14.4	**44.8**	36.2	51.7
West Kordofan	Abo Zabad	**1.3**	1.2	1.5	**5.8**	2.5	12.6	**28.5**	20.8	39.2	**1.9**	0.0	8.6	**24.9**	16.3	36.4
	Abyei (NOT AAA)	**1.5**	1.3	1.6	**6.8**	1.5	15.7	**14.6**	8.8	21.0	**9.1**	4.1	13.6	**62.0**	52.4	68.4
	Al Khowi	**1.9**	1.6	2.2	**3.2**	0.6	7.1	**7.5**	3.5	13.3	**3.0**	0.9	5.4	**28.0**	18.5	40.0
	Al Odaya	**1.7**	1.6	1.8	**2.1**	0.3	4.1	**3.3**	1.1	7.7	**0.0**	0.0	1.2	**3.4**	1.5	6.6
	Al Salam	**2.5**	2.2	2.8	**3.0**	1.3	6.1	**32.8**	27.0	38.1	**10.2**	6.7	15.4	**46.9**	39.8	53.7
	Aldebab	**1.7**	1.4	2.2	**1.8**	0.0	4.5	**27.7**	20.8	35.3	**13.5**	5.8	23.0	**72.5**	58.1	83.1
	Almearam	**1.3**	1.2	1.6	**4.5**	0.0	9.0	**11.5**	6.2	18.9	**0.0**	0.0	2.3	**55.4**	45.6	70.2
	Alsnout	**1.7**	1.6	1.8	**5.0**	2.0	9.4	**19.9**	14.2	25.3	**8.3**	4.7	11.9	**5.4**	2.8	11.0
	Babanusa	**2.6**	1.9	3.0	**2.1**	0.0	5.6	**18.2**	8.8	28.6	**3.4**	0.0	7.4	**56.2**	33.2	69.4
	En Nuhud	**1.6**	1.5	1.7	**0.8**	0.0	2.0	**16.4**	12.3	22.0	**3.1**	1.6	5.2	**10.0**	7.7	12.2
	Ghebeish	**1.7**	1.6	1.8	**2.8**	0.8	5.9	**42.1**	27.4	59.3	**1.3**	0.5	2.6	**7.0**	4.2	10.1
	Kailak (part)	**1.2**	0.8	1.7	**16.2**	5.7	41.4	**34.6**	16.0	44.0	**28.8**	7.5	40.4	**63.1**	49.4	75.3
	Lagawa (part)	**1.5**	1.3	1.7	**11.1**	3.4	21.7	**42.1**	30.8	52.5	**26.9**	20.2	34.4	**48.9**	42.5	53.9
	Wad Bandah	**1.9**	1.8	2.0	**0.6**	0.0	1.7	**13.6**	8.0	21.1	**3.5**	2.1	5.5	**15.3**	8.8	22.2
	All state except capital	**1.7**	1.6	1.8	**4.7**	3.3	6.4	**24.5**	20.8	28.6	**9.3**	6.5	13.4	**30.6**	26.5	34.2
	Fula Town	**1.9**	1.7	2.2	**2.2**	0.4	5.3	**48.5**	37.6	57.7	**32.3**	23.4	41.9	**54.0**	42.5	63.6
North Kordofan	Bara	**2.0**	1.9	2.1	**0.6**	0.1	1.6	**51.0**	42.1	61.1	**8.3**	4.8	11.7	**19.9**	14.4	25.9
	El Rahad	**1.4**	1.2	1.8	**0.0**	0.0	0.0	**8.1**	2.1	21.6	**0.0**	0.0	11.4	**28.8**	21.2	37.9
	Jebrat El Sheikh	**2.1**	2.0	2.1	**0.2**	0.0	0.6	**6.7**	2.1	11.9	**0.3**	0.0	1.0	**0.8**	0.2	1.6
	Sheikan	**1.4**	1.3	1.6	**4.1**	1.5	7.2	**39.3**	28.4	52.7	**14.1**	7.2	20.9	**8.4**	5.3	11.9
	Sowdari	**1.5**	1.3	1.7	**8.3**	5.3	12.0	**11.9**	8.5	14.8	**3.8**	2.3	5.9	**34.8**	25.8	44.3
	Umm Daam	**1.7**	1.2	2.2	**6.3**	0.0	14.1	**9.7**	1.7	18.8	**7.1**	0.0	17.2	**21.9**	0.8	43.3
	Umm Rawaba	**1.5**	1.4	1.7	**3.1**	1.4	5.3	**21.5**	13.3	28.9	**6.1**	3.4	9.5	**13.4**	8.5	18.7
	West Bara	**2.2**	1.9	2.3	**0.0**	0.0	0.0	**3.6**	1.2	8.1	**1.8**	0.0	5.2	**8.3**	3.0	15.1
	All state except capital	**1.7**	1.6	1.7	**3.6**	2.7	4.7	**23.6**	20.3	27.7	**5.9**	4.6	7.3	**16.5**	13.6	19.7
	El Obeid Town	**1.8**	1.6	2.0	**3.3**	0.4	6.3	**26.9**	16.7	36.0	**4.5**	0.8	9.5	**14.0**	6.7	23.1
White Nile	Alsalam	**1.9**	1.6	2.3	**7.5**	3.9	11.5	**25.5**	12.5	38.2	**8.9**	3.1	15.3	**16.0**	10.2	27.5
	Ed Douiem	**1.9**	1.8	2.1	**0.3**	0.0	2.6	**10.8**	4.9	19.5	**1.3**	0.0	4.1	**6.6**	3.2	12.5
	El Gutaina	**2.1**	1.8	2.5	**2.9**	1.3	5.2	**29.8**	15.8	39.8	**7.7**	3.2	12.7	**5.4**	3.0	8.4
	El Jabalain	**2.0**	1.8	2.2	**2.7**	0.3	6.9	**29.3**	19.7	43.3	**14.9**	7.4	21.6	**46.4**	34.8	55.8
	Guli	**1.8**	1.7	2.1	**4.0**	1.5	6.8	**42.4**	32.7	51.7	**18.2**	11.7	23.2	**31.6**	20.1	40.1
	Kosti	**1.8**	1.5	1.9	**0.0**	0.0	7.4	**37.8**	17.5	52.9	**0.0**	0.0	12.6	**12.6**	4.8	19.8
	Rabak	**1.6**	1.4	1.7	**1.8**	0.0	7.1	**10.7**	0.0	25.0	**5.4**	0.0	14.4	**43.0**	27.2	62.6
	Tandalti	**2.0**	1.9	2.2	**0.6**	0.0	6.8	**3.6**	0.5	18.3	**0.0**	0.0	3.7	**18.1**	10.6	30.2
	Umm Remta	**1.7**	1.5	2.0	**1.3**	0.0	4.4	**11.3**	2.4	23.8	**3.8**	0.0	8.8	**6.2**	0.8	13.8
	All state except capital	**1.9**	1.8	2.0	**2.4**	1.5	3.8	**21.6**	16.6	26.2	**7.2**	5.2	10.2	**16.7**	12.8	20.1
	Kosti Town	**2.0**	1.8	2.2	**2.8**	0.4	6.3	**21.5**	13.2	29.1	**7.5**	3.5	13.4	**49.7**	36.7	62.9
	Rabak Town	**2.0**	1.7	2.3	**2.5**	0.4	5.7	**36.3**	27.1	46.8	**6.9**	2.6	11.7	**61.4**	51.2	70.8

State	Locality	Number of signs when mother seeks health care for their children (mean)			No danger signs mentioned			Heard about 'Shuffaa Al Soghar'			Seen 'Shuffaa Al Soghar' picture			Child sleeps under an ITN		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Sennar	Abu Hijar	**2.0**	1.9	2.1	**5.9**	3.1	9.0	**11.7**	3.5	20.7	**6.6**	1.6	14.1	**8.8**	6.3	12.9
	Al Dindir	**2.5**	2.2	3.0	**0.7**	0.0	2.3	**15.6**	8.8	23.0	**12.2**	7.1	17.5	**45.4**	35.2	55.7
	Aldali & Almazmoum	**1.6**	1.4	1.8	**2.1**	0.5	4.2	**43.8**	33.3	52.1	**8.9**	5.2	12.5	**19.4**	11.5	31.1
	Alsooki	**2.0**	1.8	2.2	**1.9**	0.0	5.9	**31.2**	21.8	37.7	**15.2**	6.8	25.5	**23.8**	14.6	34.6
	Sennar	**1.3**	1.2	1.4	**7.0**	4.0	10.8	**6.0**	2.6	11.0	**3.1**	1.1	6.1	**16.7**	7.8	30.4
	Sharg Sennar	**1.6**	1.4	1.8	**2.3**	0.6	4.9	**28.7**	14.7	43.5	**13.4**	7.2	23.0	**12.0**	6.9	21.7
	Sinja	**1.9**	1.7	2.0	**0.5**	0.0	4.4	**18.8**	13.2	24.5	**2.6**	0.5	5.7	**20.2**	15.1	25.3
	All state except capital	**1.8**	1.7	1.9	**3.2**	2.2	4.4	**25.9**	21.5	30.8	**8.8**	6.5	11.3	**20.6**	16.5	24.5
	Sennar Town	**2.2**	1.9	2.4	**3.2**	0.7	6.5	**33.8**	25.7	42.8	**16.3**	8.8	26.2	**37.8**	29.8	44.9
	Sinja Town	**2.0**	1.7	2.3	**2.4**	0.4	5.0	**29.9**	20.4	39.1	**8.7**	3.1	15.4	**53.8**	45.0	62.1
El Gezira	El Hasaheisa	**1.1**	0.9	1.2	**6.9**	0.0	24.1	**5.5**	0.0	15.0	**0.0**	0.0	0.0	**33.8**	18.7	53.3
	El Kamlin	**1.4**	1.2	1.6	**9.3**	3.7	15.9	**19.6**	12.9	27.6	**15.3**	3.6	26.9	**13.0**	5.4	21.7
	El Managil	**1.2**	1.1	1.7	**1.9**	1.1	4.8	**5.7**	2.4	16.7	**1.4**	0.3	5.5	**10.5**	5.1	16.1
	Janub El Gezira	**2.2**	2.0	2.3	**2.0**	0.0	5.2	**34.0**	21.7	44.5	**11.5**	5.6	19.9	**26.7**	18.8	34.7
	Madani Al Kobra	**2.6**	2.1	3.3	**0.0**	0.0	0.0	**26.7**	6.7	46.7	**13.3**	0.0	33.3	**52.9**	29.4	76.5
	Sharg El Gezira	**2.5**	2.1	2.8	**5.3**	2.7	9.1	**20.3**	14.3	26.1	**20.2**	12.4	28.1	**19.6**	13.4	26.6
	Umm El Gura	**2.3**	1.9	2.8	**0.0**	0.0	5.2	**7.0**	0.0	16.8	**0.0**	0.0	9.0	**4.4**	0.0	11.5
	All state except capital	**1.5**	1.3	1.9	**3.1**	2.0	5.6	**11.7**	6.9	20.6	**5.9**	3.2	10.7	**15.6**	12.5	20.0
	Madani Town	**1.9**	1.6	2.1	**2.9**	0.0	7.4	**11.4**	5.4	19.1	**7.5**	2.6	14.5	**31.3**	19.7	42.2
Khartoum	Bahari	**0.8**	0.8	0.9	**21.3**	15.8	25.4	**2.5**	0.9	5.4	**2.5**	0.8	5.2	**44.2**	33.5	51.8
	Gabel Awlia	**1.5**	1.3	1.8	**7.2**	3.7	10.6	**23.8**	15.0	30.9	**14.4**	6.9	20.7	**33.8**	21.7	47.6
	Karrarri	**1.5**	1.4	1.6	**1.4**	0.0	5.5	**21.9**	15.6	28.1	**15.6**	9.9	20.5	**7.6**	4.2	13.1
	Khartoum	**1.3**	0.8	2.7	**19.7**	5.2	36.1	**13.5**	4.2	21.5	**11.4**	5.4	18.8	**11.1**	5.6	17.7
	Shareg Elnile	**2.4**	2.1	2.7	**3.5**	1.4	7.0	**13.0**	6.6	19.5	**6.0**	3.1	9.7	**15.6**	12.0	20.0
	Umbada	**1.2**	1.0	1.4	**23.4**	16.1	31.5	**3.7**	1.4	7.3	**2.7**	0.3	5.6	**3.2**	1.6	5.4
	Umdrman	**1.3**	1.1	1.4	**10.9**	5.0	19.4	**11.3**	5.6	17.2	**8.4**	4.7	12.2	**15.4**	8.8	22.5
	All state	**1.5**	1.3	1.6	**11.8**	9.6	14.7	**12.2**	9.1	15.1	**8.1**	6.3	9.8	**21.5**	18.1	26.3
Northern	Alborgeg	**1.0**	1.0	1.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**87.5**	62.5	100.0
	Aldabba	**1.7**	1.6	1.8	**11.6**	8.5	15.3	**8.3**	5.8	10.8	**1.7**	0.8	3.2	**10.3**	6.2	13.9
	Algoled	**2.5**	1.9	3.0	**6.5**	2.1	11.6	**5.2**	1.3	9.9	**3.4**	1.0	6.8	**5.7**	2.2	9.7
	Dalgo	**1.2**	1.1	1.3	**7.5**	4.2	10.7	**26.2**	15.0	36.8	**14.5**	9.2	23.4	**12.3**	8.3	16.5
	Dongola	**1.7**	1.4	2.0	**5.1**	2.8	7.8	**33.6**	13.9	52.7	**21.2**	12.5	32.2	**10.9**	5.6	17.2
	Halfa	**1.0**	0.9	1.1	**18.3**	13.7	21.9	**1.3**	0.0	9.1	**4.0**	1.7	7.7	**2.8**	1.3	5.6
	Merawi	**3.0**	2.8	3.2	**8.2**	5.2	11.7	**10.4**	7.3	13.4	**4.4**	1.9	8.2	**4.5**	1.9	7.6
	All state except capital	**1.5**	1.4	1.7	**12.9**	11.2	14.8	**9.9**	6.4	14.6	**7.1**	5.2	9.8	**5.9**	4.4	7.6
	Dongola Town	**2.3**	1.8	3.0	**9.4**	3.9	14.9	**6.2**	2.3	12.1	**5.4**	0.7	12.2	**19.5**	11.8	27.8
River Nile	Abu Hamad	**2.7**	2.3	3.2	**12.3**	8.5	16.3	**13.5**	8.5	21.7	**15.2**	8.8	20.4	**31.5**	21.1	38.5
	Albuhaira	**1.7**	1.5	1.8	**0.9**	0.0	10.3	**8.0**	5.3	11.2	**2.2**	0.3	5.1	**4.8**	0.0	11.6
	Atbara	**2.4**	2.1	2.7	**4.1**	0.6	14.2	**15.1**	10.7	20.9	**9.4**	5.5	13.1	**17.8**	9.1	25.7
	Barbar	**3.1**	2.5	3.7	**13.3**	6.7	20.9	**13.8**	6.4	22.8	**19.4**	11.1	26.4	**54.4**	37.5	67.2
	Ed Damer	**2.2**	1.9	2.4	**4.8**	2.2	9.0	**15.3**	11.2	20.0	**16.5**	12.2	22.4	**8.4**	4.6	12.3
	El Matammah	**2.1**	1.9	2.3	**2.4**	0.7	4.9	**8.5**	3.8	13.7	**5.1**	1.9	9.0	**19.2**	10.6	31.9
	Shendi	**2.0**	1.8	2.2	**3.2**	1.2	5.4	**31.0**	23.5	38.0	**9.7**	3.1	20.1	**4.7**	2.3	7.7
	All state except capital	**2.4**	2.2	2.5	**7.6**	5.9	9.6	**13.7**	11.2	15.9	**13.3**	11.0	15.8	**20.1**	16.6	24.2
	Atbara Town	**2.4**	2.1	2.9	**6.2**	2.3	11.2	**19.5**	11.8	29.0	**8.6**	5.3	12.9	**13.2**	6.9	20.3
	El Damar Town	**2.6**	2.2	3.1	**2.6**	0.4	5.9	**18.8**	8.1	30.9	**3.6**	0.8	7.5	**15.3**	8.1	22.1

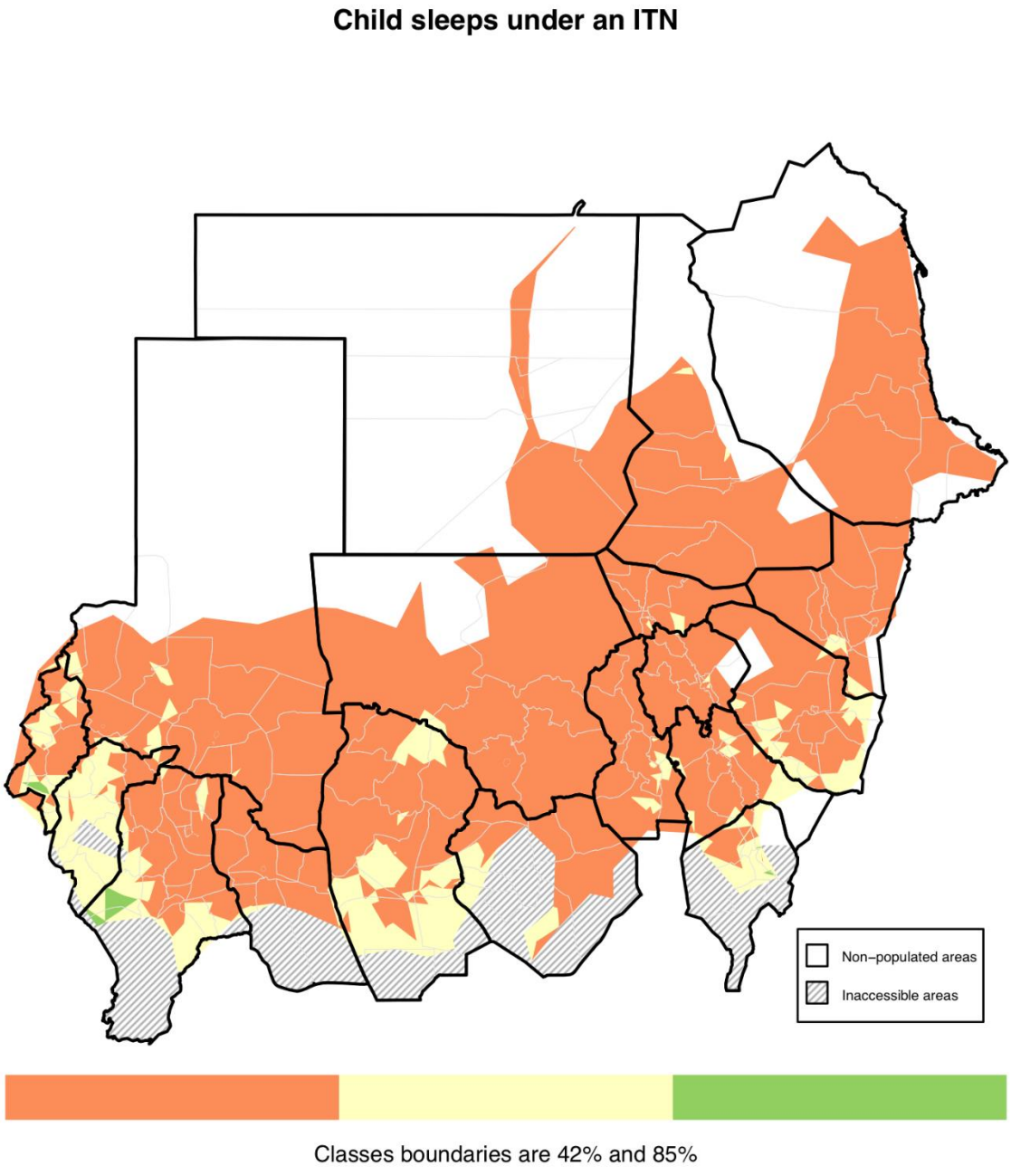
State	Locality	Number of signs when mother seeks health care for their children (mean)			No danger signs mentioned			Heard about 'Shuffaa Al Soghar'			Seen 'Shuffaa Al Soghar' picture			Child sleeps under an ITN		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
North Darfur	Al Fasher	**2.7**	2.3	3.2	**6.5**	3.4	10.9	**19.5**	12.2	31.7	**13.7**	5.8	25.5	**22.3**	15.7	30.3
	Al Koma	**3.8**	3.4	4.1	**0.0**	0.0	0.0	**14.5**	7.0	23.4	**11.0**	5.5	16.9	**13.0**	6.1	19.8
	Al Malha	**1.0**	0.6	1.5	**46.2**	34.3	54.5	**0.2**	0.0	1.0	**0.0**	0.0	0.0	**3.9**	1.8	7.1
	Al Seref	**1.6**	1.4	1.8	**10.5**	4.7	17.9	**12.4**	6.2	19.4	**6.5**	1.9	14.4	**9.2**	5.4	14.6
	Al Tina	**0.9**	0.8	1.1	**45.2**	36.9	52.8	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**10.9**	6.4	17.8
	Al Twasha	**1.9**	1.8	2.1	**2.3**	0.3	6.0	**34.7**	27.5	42.4	**5.9**	3.4	8.7	**17.8**	11.9	23.9
	Allait	**1.7**	1.6	2.0	**3.9**	0.8	8.6	**30.5**	18.4	41.4	**0.8**	0.0	4.7	**20.9**	10.7	31.7
	Ambaro	**1.9**	1.6	2.2	**7.4**	2.2	12.8	**0.3**	0.0	1.6	**1.5**	0.0	3.7	**9.2**	5.8	13.8
	Dar Alsalam	**2.6**	2.4	2.8	**0.0**	0.0	1.3	**16.8**	12.1	22.5	**15.6**	10.7	21.0	**16.6**	11.5	26.5
	Kabkabia	**2.2**	1.9	2.6	**2.6**	0.6	4.9	**11.6**	5.5	22.4	**7.4**	2.4	14.1	**25.1**	17.0	39.2
	Karnoi	**2.3**	2.1	2.5	**1.7**	0.0	7.2	**0.0**	0.0	2.8	**0.0**	0.0	0.0	**9.5**	2.0	19.1
	Kelemendo	**2.8**	2.6	3.0	**0.0**	0.0	0.0	**30.1**	21.5	39.1	**12.1**	7.4	17.6	**25.6**	17.0	35.5
	Kutum	**1.5**	1.4	1.6	**5.8**	3.0	9.6	**0.2**	0.0	1.5	**0.0**	0.0	0.0	**32.8**	27.2	37.2
	Mallit	**1.2**	1.0	1.5	**19.8**	14.6	25.6	**15.4**	8.6	23.7	**7.7**	3.4	13.3	**14.1**	9.0	20.3
	Saraf Omra	**1.9**	1.5	2.1	**0.0**	0.0	10.1	**7.8**	1.6	15.6	**0.0**	0.0	0.0	**46.7**	20.6	58.8
	Tawila	**2.2**	1.8	2.6	**12.1**	7.2	18.4	**1.8**	0.0	4.5	**0.9**	0.0	3.6	**11.4**	6.5	17.0
	Umkadada	**2.0**	1.9	2.2	**1.3**	0.3	3.0	**29.0**	22.7	34.4	**7.9**	2.9	14.9	**20.0**	12.5	30.5
	All state except capital	**2.1**	2.0	2.3	**11.8**	8.2	15.1	**15.1**	12.6	17.0	**6.2**	4.8	7.5	**16.4**	14.3	18.7
	El Fashir Town	**2.9**	2.4	3.4	**3.3**	0.8	6.4	**49.0**	37.4	58.7	**34.0**	23.2	48.6	**30.3**	19.0	40.8
	Zamzam Camp*	**3.0**	2.5	3.7	**4.4**	1.4	8.7	**29.7**	17.0	43.9	**21.4**	11.5	36.6	**26.7**	16.7	38.8
	El Sireif Camp*	**1.6**	1.5	1.8	**11.0**	4.9	19.3	**12.2**	5.3	19.9	**6.3**	1.4	12.8	**8.8**	4.5	14.4
South Darfur	Al Rudoom (part)	**1.1**	0.9	1.4	**24.1**	11.2	33.9	**40.6**	31.4	49.2	**2.1**	0.3	4.5	**68.8**	60.1	79.0
	Alwehda	**1.5**	1.4	1.8	**3.9**	0.8	8.2	**25.2**	14.5	39.1	**12.6**	7.6	18.8	**22.6**	15.6	31.0
	Belil	**2.6**	2.4	2.8	**0.0**	0.0	0.0	**60.4**	51.0	76.0	**40.6**	28.1	56.3	**20.6**	13.9	32.9
	Buram	**1.6**	1.0	2.1	**9.2**	0.0	24.6	**44.6**	27.7	64.5	**0.0**	0.0	3.2	**50.3**	33.8	62.2
	Dimso	**1.2**	1.1	1.4	**16.7**	8.3	28.2	**33.3**	22.9	43.8	**3.1**	0.0	13.7	**29.2**	11.7	39.2
	El Salam	**2.5**	2.3	2.7	**3.4**	0.0	8.6	**24.3**	10.1	41.1	**30.6**	13.6	47.9	**4.4**	0.0	10.1
	Gerieda	**1.9**	1.6	2.1	**0.0**	0.0	0.0	**42.3**	17.2	63.9	**33.3**	0.0	55.7	**16.7**	4.4	35.9
	Id Elfirsan	**1.9**	1.7	2.0	**1.1**	0.0	3.7	**25.0**	17.5	32.3	**8.3**	3.1	13.1	**36.7**	15.6	53.6
	Kass	**2.2**	2.0	2.3	**5.5**	2.3	11.1	**46.5**	38.3	55.5	**35.3**	26.1	45.7	**32.6**	24.4	40.1
	Katila	**1.1**	1.0	1.2	**17.9**	12.5	23.7	**8.5**	4.9	12.8	**2.7**	0.9	4.9	**0.0**	0.0	0.9
	Kubum	**1.7**	1.5	1.8	**4.9**	1.9	8.5	**35.0**	26.4	42.6	**13.8**	7.8	20.6	**38.7**	32.7	46.1
	Mershing	**1.8**	1.6	2.2	**3.1**	0.0	9.4	**9.4**	0.0	18.8	**12.5**	3.0	25.0	**52.8**	39.6	62.4
	Netiga	**2.4**	2.1	2.6	**0.0**	0.0	0.0	**58.5**	46.9	74.2	**3.9**	0.0	14.9	**42.3**	18.8	61.8
	Rahad Elberdi (part)	**1.7**	1.6	1.8	**0.0**	0.0	3.9	**16.8**	10.3	23.2	**3.9**	0.7	7.7	**86.4**	77.7	91.1
	Toluss	**1.3**	1.1	1.5	**6.4**	1.6	14.2	**29.7**	3.2	47.0	**6.4**	0.0	15.6	**0.0**	0.0	0.0
	Um Dafog (part)	**1.3**	1.0	1.5	**0.0**	0.0	0.0	**20.0**	5.0	50.0	**30.0**	0.0	50.0	**100.0**	100.0	100.0
	All state except capital	**1.6**	1.5	1.7	**8.6**	6.6	11.2	**21.1**	17.2	25.1	**10.4**	8.1	13.7	**32.2**	25.8	39.4
	Nyala Town	**1.5**	1.4	1.7	**4.8**	2.2	9.4	**27.9**	19.1	37.7	**7.6**	3.5	13.7	**19.9**	14.0	27.7
	Kalma Camp*	**2.1**	1.7	2.4	**10.8**	5.0	19.5	**9.7**	4.5	18.3	**10.6**	4.1	21.0	**27.9**	20.5	36.0

State	Locality	Number of signs when mother seeks health care for their children (mean)			No danger signs mentioned			Heard about 'Shuffaa Al Soghar'			Seen 'Shuffaa Al Soghar' picture			Child sleeps under an ITN		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
East Darfur	Abukarinka	**1.9**	1.7	2.1	**1.0**	0.0	4.1	**0.0**	0.0	3.0	**0.0**	0.0	1.6	**0.3**	0.0	2.7
	Adilla (part)	**1.0**	0.8	1.1	**19.5**	12.5	27.4	**39.1**	27.3	51.6	**11.7**	6.5	18.0	**10.4**	6.0	15.3
	Al Deain	**2.1**	1.9	2.3	**1.7**	0.0	6.3	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**9.1**	4.8	13.9
	Alfirdos	**3.6**	2.7	4.0	**2.9**	0.0	14.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**40.3**	30.0	54.6
	Asslaya	**1.9**	1.9	2.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	2.5	**0.0**	0.0	0.0
	Aubgabar	**1.0**	0.8	1.2	**28.6**	16.2	38.5	**2.2**	0.0	6.3	**0.0**	0.0	0.0	**11.3**	4.1	17.2
	Aubmatarg	**1.3**	1.1	1.5	**11.5**	1.6	25.9	**0.0**	0.0	6.6	**0.0**	0.0	5.2	**19.7**	12.3	27.6
	Sharia (part)	**1.9**	1.7	2.2	**2.1**	0.0	5.2	**4.2**	0.0	11.5	**3.1**	0.0	9.4	**15.7**	7.4	22.9
	Yaseen (part)	**1.8**	1.6	1.9	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.9**	0.0	3.8
	All state except capital	**1.7**	1.5	1.8	**7.6**	4.3	11.7	**9.9**	4.8	18.0	**3.3**	1.7	5.8	**7.1**	4.1	10.6
	Al Deain Town	**2.1**	1.7	2.5	**3.3**	0.9	6.9	**33.8**	23.0	45.6	**22.3**	13.8	33.7	**10.4**	5.2	17.9
West Darfur	Algenea	**2.8**	1.7	3.5	**2.0**	0.0	10.5	**7.8**	0.0	29.1	**2.0**	0.0	10.5	**43.8**	5.7	71.3
	Baida	**2.4**	2.1	2.6	**1.3**	0.0	5.7	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**39.5**	14.9	66.1
	Forbranga	**1.9**	1.5	2.2	**15.9**	8.5	26.4	**2.4**	0.0	6.4	**1.1**	0.0	3.7	**76.0**	56.1	88.5
	Gabal Moon	**1.9**	1.8	2.0	**2.7**	0.7	5.3	**2.2**	0.7	4.4	**1.3**	0.0	3.3	**42.7**	29.1	57.4
	Habilla	**1.7**	1.4	1.9	**0.9**	0.0	2.8	**0.0**	0.0	0.4	**0.0**	0.0	0.0	**86.4**	79.0	91.1
	Kerenik	**2.5**	2.1	2.7	**0.6**	0.0	2.3	**1.8**	0.7	3.9	**2.6**	1.0	5.6	**31.6**	24.8	39.8
	Kulbus	**2.6**	2.4	2.9	**1.0**	0.0	3.9	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**50.3**	35.7	71.0
	Serba	**1.8**	1.6	1.9	**3.7**	1.0	8.3	**2.3**	0.0	5.2	**2.6**	0.5	5.2	**43.9**	32.4	51.7
	All state except capital	**2.1**	1.9	2.3	**2.0**	1.1	3.3	**1.2**	0.6	1.9	**1.0**	0.5	1.7	**42.6**	35.5	49.4
	Algenea Town	**2.0**	1.7	2.3	**3.7**	0.9	9.1	**11.4**	4.9	17.6	**4.1**	0.9	8.4	**37.5**	27.3	50.6
	Morne Camp*	**2.8**	2.6	3.0	**0.1**	0.0	1.4	**5.0**	1.5	13.2	**8.8**	2.3	24.6	**42.9**	33.0	53.7
Central Darfur	Azoum	**2.1**	1.8	2.4	**1.3**	0.0	5.2	**17.7**	0.0	31.7	**3.1**	0.0	9.7	**49.2**	37.4	62.9
	Bendsi (part)	**2.1**	1.7	2.4	**3.2**	0.0	12.3	**6.5**	1.1	11.9	**0.0**	0.0	1.1	**50.0**	40.3	60.1
	Mukjar (part)	**1.7**	1.4	2.2	**9.6**	4.6	15.5	**8.2**	3.2	13.1	**3.9**	1.0	7.9	**79.1**	70.8	88.2
	Nertati	**1.7**	1.4	2.0	**5.6**	0.0	12.0	**3.4**	0.0	11.9	**0.0**	0.0	0.0	**7.6**	0.0	39.7
	Rokiro	**1.5**	0.4	2.7	**25.4**	3.2	55.5	**8.1**	0.0	17.7	**5.1**	0.0	11.9	**51.4**	34.0	70.4
	Um Dukhun (part)	**1.2**	1.0	1.3	**24.6**	17.0	33.3	**1.0**	0.0	3.8	**0.0**	0.0	0.0	**78.4**	68.2	86.8
	Wadi Salih (part)	**1.3**	1.0	1.5	**25.5**	13.9	41.6	**10.8**	5.8	16.8	**3.5**	1.3	6.5	**70.3**	55.3	77.5
	Zalingei	**1.7**	1.3	1.9	**15.8**	8.8	25.9	**7.6**	3.6	12.4	**0.4**	0.0	3.9	**57.9**	47.9	66.0
	All state except capital	**1.9**	1.7	2.0	**8.0**	4.1	13.5	**13.1**	10.0	17.0	**2.5**	1.2	3.8	**53.4**	47.6	58.4
	Zalingi Town	**4.6**	4.2	4.9	**0.0**	0.0	2.4	**15.2**	6.3	23.9	**1.5**	0.0	6.1	**76.3**	67.1	84.6
	Mukjar Town*	**1.7**	1.3	2.2	**9.3**	4.4	14.8	**8.0**	3.1	14.4	**3.7**	0.6	7.8	**79.1**	67.9	87.1
	Um Dokhon Town*	**1.2**	1.0	1.3	**24.3**	16.7	34.2	**0.6**	0.0	2.8	**0.0**	0.0	0.0	**78.1**	66.2	86.0

9.1.6 Use of insecticide treated bed-nets on the night before the survey (Figure 43)

Insecticide treated bed-net use was poor across the country. Malaria incidence varies across the country and the ITN program does not cover all states. Coverage was highest among the southern-most states including areas in South, West and central Darfur, Blue Nile, South and West Kordofan. Generally this is a positive finding as these are the states that experience heaviest rainfall and therefore where malaria is higher.

Figure 49: Classification map of children sleeping under ITN on the night before the survey



9.1.7 Mothers knowledge of Al Shuffa Al Soghar health promotion initiative (Figures 45 and 46)

UNICEF C4D supports a long-term multi-sectorial, multi-channel communication initiative initially focused exclusively on Essential Family Practices (EFPs) – exclusive breastfeeding, hand washing with soap, ORS and use of ITNs. The initiative, named *Al-Shuffa'a Al-Soghar* (roughly translates to'the little child'), is aiming to positively impact the survival and development of infants and young children.

The initiative has a specific Shuffa'a logo and Shuffa'a slogan and a set of radio material was developed and aired in 2012 to introduce the initiative in 3 pilot states (Kassala, South Darfur and Khartoum).

S3M was used to set the baseline and gauge community awareness of the Shuffa'a concept - recognition of the Shuffa'a logo and slogan. Mothers were shown a picture of the Shuffa'a logo and asked if they recognized it, and they were also asked if they had heard of the Shuffa'a slogan – '*aham mafee al dar…hayat alshuffa'a alsoghar*' (roughly translates as 'most important in the house are the lives of the little children').

As expected, knowledge of the initiative is still low. More mothers had heard of Shuffa'a than had seen the logo suggesting that the radio program has reached the target audience.

Full-fledged launch and implementation of the Al-Shuffa'a Al-Soghar initiative is set for 2014. The data collected through S3M (2013) will serve not only as baseline to monitor and compare awareness of initiative in the targeted areas but also to gauge awareness of initiative in the areas where the change in the EFPs results is recorded by future surveys.

See Table 10, above, for estimates of these two indicators by locality.

Figure 50: Al Shuffaa Al Soghar logo

Figure 51: Classification map of Mothers who reported hearing the shuffaa slogan

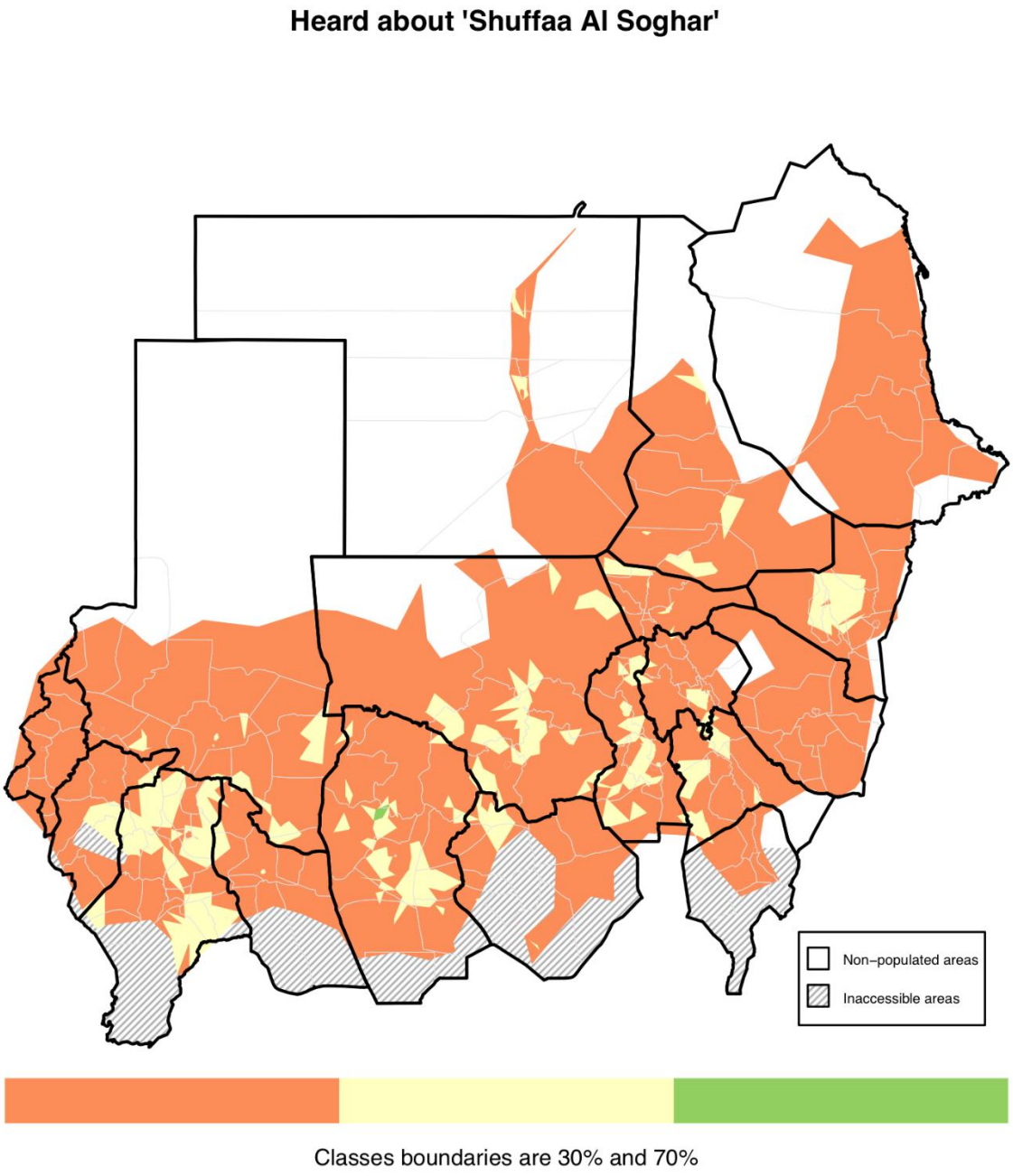
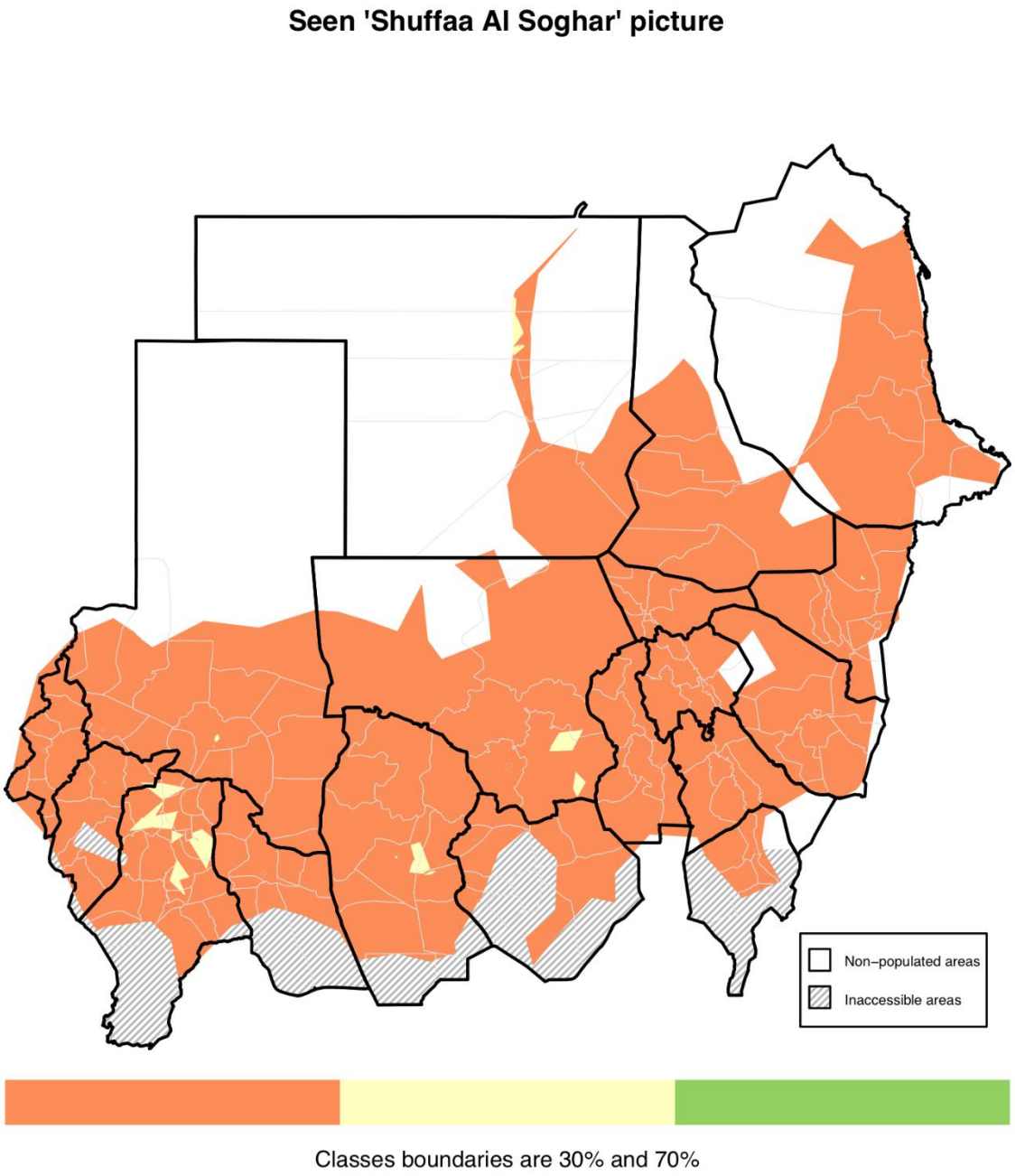


Figure 52: Classification map of mothers who had seen the Shuffaa logo



9.1.8 Infant and young child feeding (IYCF) practices

The approach used in this survey is to produce a single indicator for IYCF:

Percentage of children aged 0 – 24 months receiving good infant and young child feeding
With 'good infant and young child feeding' defined as exclusive breastfeeding in children aged under six months and as age appropriate feeding practices (defined in terms of continued breastfeeding and meal frequency) in older children. Age-appropriate feeding practice is measured using an *infant and child feeding index* (ICFI) that is based on an index devised by Mary Arimond and Marie Ruel of the International Food Policy Research Institute for the 2000 DHS survey of Ethiopia and developed by FANTA as a KPC2000+ indicator:

	Age group (months)					
	6-8		9-11		12-24	
	Value	Score	Value	Score	Value	Score
Breast fed (24 hours)	Yes	+2	Yes	+2	Yes	+1
Meal frequency (24 hours)	1 ≥ 2	+1 +2	1 or 2 ≥ 3	+1 +2	2 3 ≥4	+1 +2 +3

The ICFI score is a measure of appropriate child feeding practices:

ICFI = Breastfeeding + Dietary Diversity + Meal Frequency

Using age-specific weighting for each item. Children receive a score between zero and six. Children receiving a score of six are classified a receiving good infant and young child feeding.

The indicator can be calculated from the counts of children found in the cells of a 2-by-2 table:

		Classification	
		Good	Not good
Age	< 6 months	Exclusively breast fed	Not exclusively breast fed
	6-24 months	ICFI = 4	ICFI = <4

As:

$$\%\ Good = \frac{Number\ classified\ as\ good}{Total\ number\ of\ records} X\ 100$$

A set of diagnostic indicators were also calculated. These indicators show the contribution of breastfeeding and meal frequency to the calculated value of the primary indicator. Note that diet diversity has not been included in this indicator at this survey due to a concern over data validity.

Good infant and young child feeding (IYCF) practices (Figure 47)
This indicator is measured for children from 0 to 24 months, and is a measure of appropriate child feeding practices assessed through breast feeding (including exclusive breast feeding) and meal frequency using age-specific weighting for each item. Note that diet diversity data did not contribute to this indicator at this survey due to concerns of data validity for the indicator. Children receive a score between zero and six. Children receiving a score of six are classified as receiving good infant and young child feeding. IYCF practices are generally poor across the country, with the biggest pocket of good IYCF practices in North Kordofan. Generally good IYCF practices were lowest in most localities in Red Sea state and highest in Gezira state.

Infant and Child Feeding Index (ICFI) (Figure 48)
This is a composite score for assessing infant and young child feeding practices based on the child's age, breastfeeding status and meal frequency for children aged 6-24 months (see explanation above). The optimum score for this survey was 4 and a score of 4 means that children are breast fed appropriately for their age and ate an age-appropriate number of meals on the day before the survey. Highest scores were recorded in localities in Northern State, Sennar and Blue Nile States.

Exclusive breastfeeding (Figure 49)
Mothers were asked if their child had ever eaten any food or drink other than breast milk. This information was analysed against the age of the child to obtain an estimate for exclusive breastfeeding for children aged 0-6 months. The SHHS 2010 found the National average proportion of infants exclusively breast fed to be 41%. The map shows there has been an improvement in rates of exclusive breast feeding, with the green colour indicating areas where more than 70% of infants were exclusively breast fed. The map also highlights pockets of lowest EBF rates, principally in localities in Red Sea, Kassala and North Kordofan where a noticeably lower proportion of children were exclusively breast fed. This suggests that cultural factors in these areas are likely to be influencing infant feeding practices.

Continued breast feeding (Figure 50)
This map shows the proportion of children aged between 6 and 24 months who were still breast feeding at the time of the survey. Breast feeding appears to stop earliest in North Darfur.

Infant and young child's meal frequency (Figure 51)
The green shaded areas in the map show areas where more than 60% of children aged 6-24 months were eating sufficient meals according to their age. Pockets of lowest meal frequency are clearly seen in Red Sea, north part of Kassala and North Darfur.

Figure 53: Classification map of proportion of children age 0 – 24 months practising good IYCF

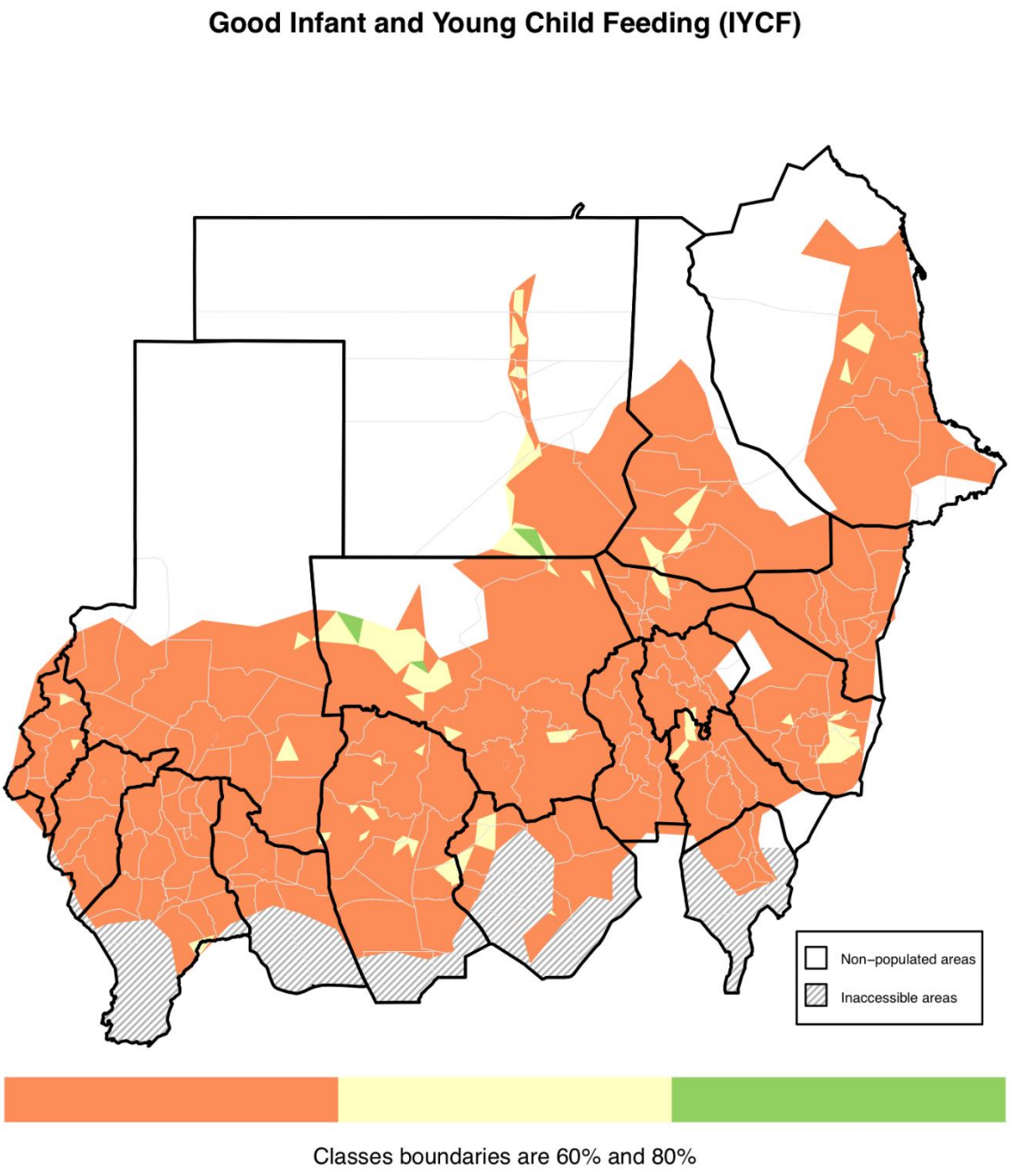
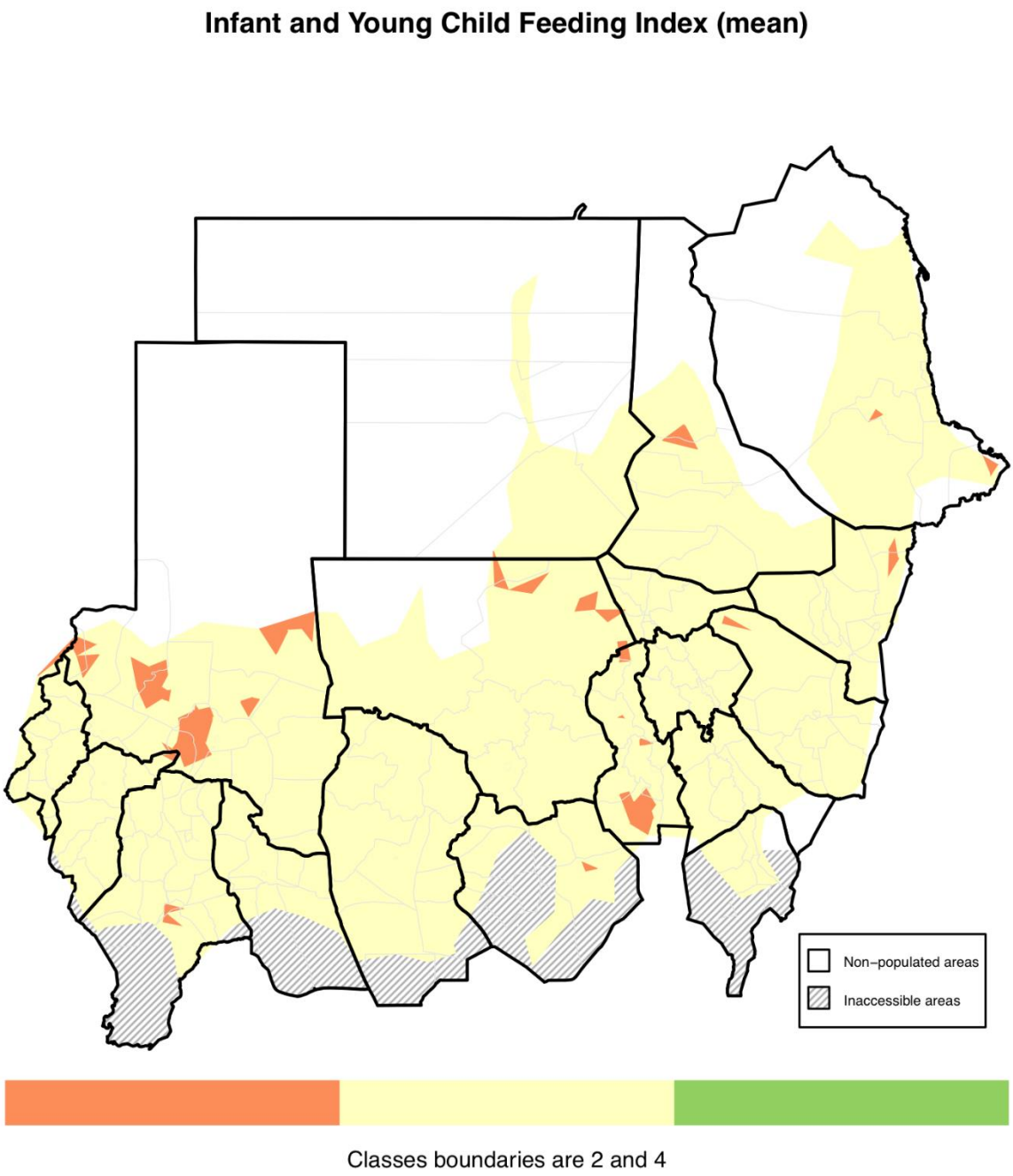


Figure 54: Classification map of mean ICFI score for children 6-24 months (good=score of 6)



Map55: Classification map of proportion of children age 0 – 6 months exclusively breastfed

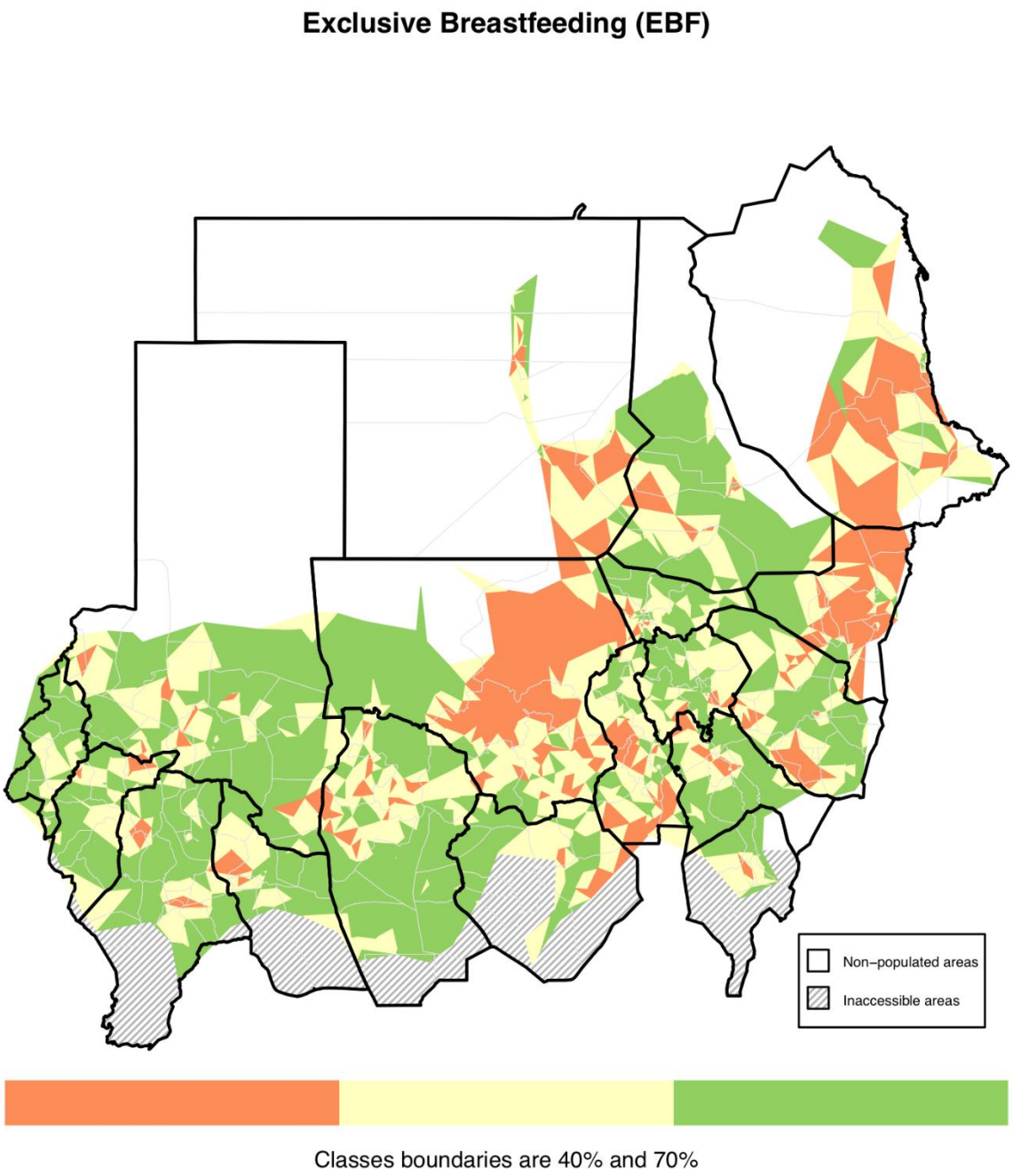


Figure 56: Classification map showing continued breastfeeding, children aged between 6 and 24 months

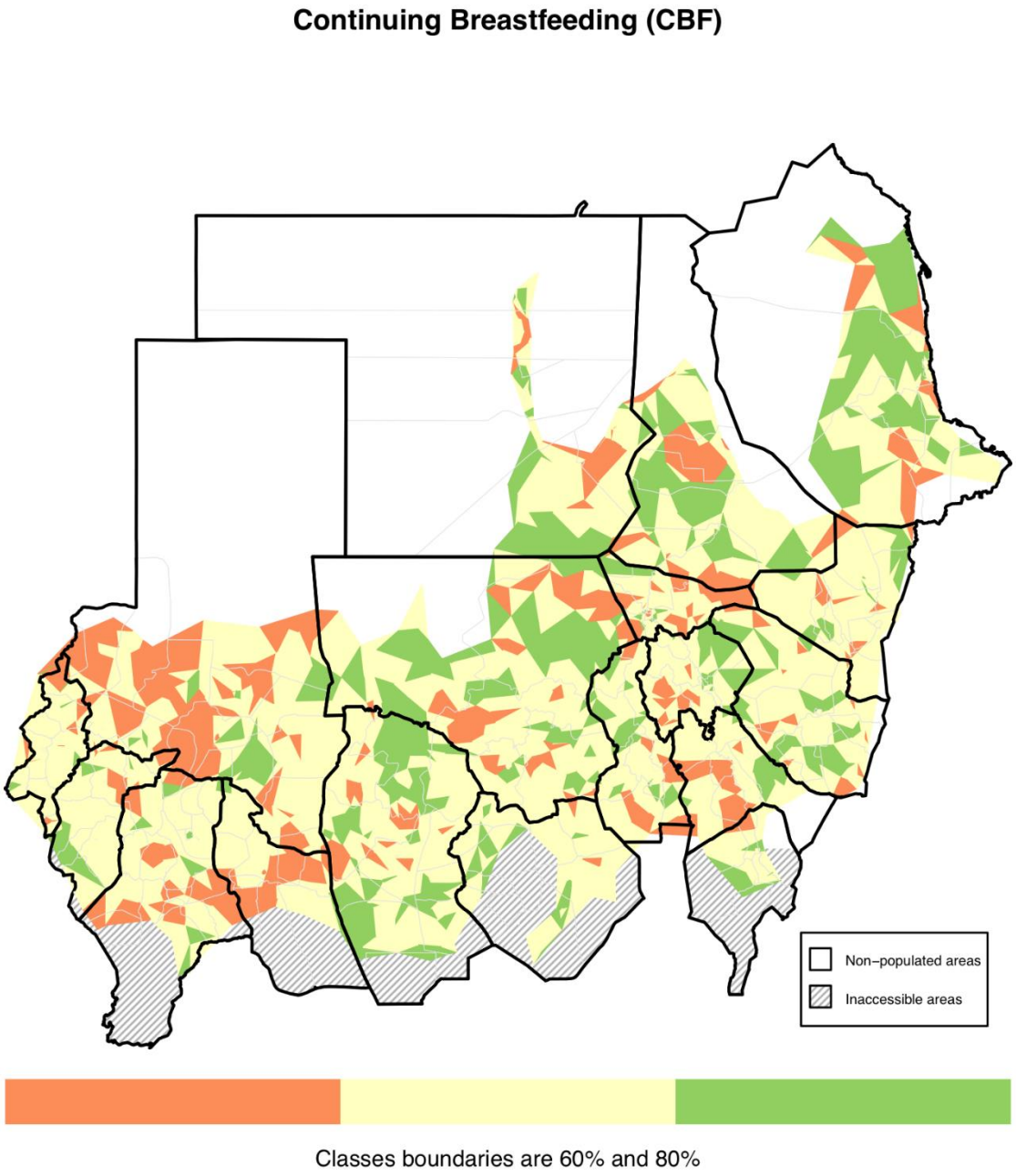


Figure 57: Classification map of proportion of children age 6 – 24 months with age-appropriate meal frequency

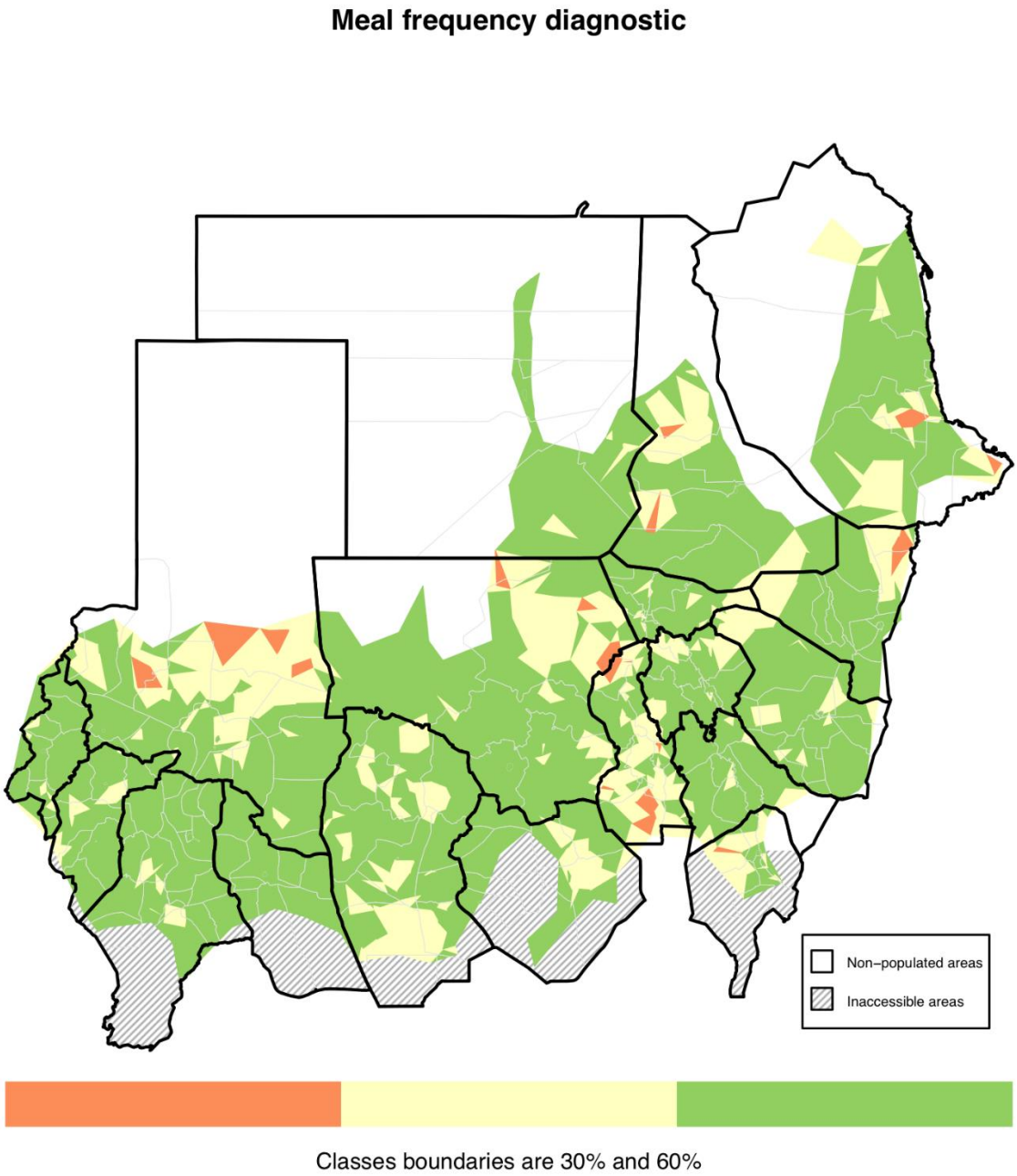


Table 11: Infant and young child feeding practices, results by locality

State	Locality	Exclusive Breastfeeding (EBF)			Continuing Breastfeeding (CBF)			Age appropriate meal frequency			Mean Infant and Young Child Feeding Index			Good Infant and Young Child Feeding (IYCF)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Red Sea	Ageeg	**62.1**	33.3	100.0	**85.7**	75.6	93.7	**30.6**	17.1	41.5	**2.3**	1.9	2.6	**21.4**	13.0	30.2
	Alganeb Alolib	**50.0**	20.8	77.1	**73.0**	63.0	80.2	**88.9**	81.9	93.7	**3.1**	3.0	3.3	**37.2**	27.6	46.9
	Dordaib	**40.0**	13.2	70.6	**72.1**	61.0	81.3	**76.8**	61.5	91.3	**2.7**	2.5	2.9	**21.8**	11.5	32.1
	Haia	**33.3**	17.1	55.0	**75.2**	65.6	83.2	**93.3**	85.1	98.9	**3.0**	2.7	3.1	**25.1**	16.5	35.1
	Haliab	**83.3**	50.0	100.0	**79.3**	63.2	92.9	**93.8**	79.9	100.0	**2.9**	2.7	3.2	**32.4**	16.1	48.8
	Japitalmadin	**4.8**	0.0	22.0	**69.0**	61.1	75.9	**96.5**	89.5	99.5	**2.9**	2.8	3.0	**15.3**	9.7	21.4
	Sawaken	**75.0**	49.8	91.4	**84.1**	75.0	92.8	**63.5**	48.2	77.1	**2.7**	2.5	3.0	**37.6**	22.8	47.4
	Senkat	**100.0**	100.0	100.0	**73.5**	56.9	85.9	**29.9**	19.0	41.9	**2.1**	1.8	2.4	**14.3**	8.3	22.7
	Tokar	**32.9**	21.9	44.0	**78.1**	72.4	83.5	**84.4**	80.4	89.6	**3.1**	3.0	3.2	**35.5**	29.4	42.2
	Port Sudan	**61.5**	42.4	78.0	**72.1**	65.7	78.3	**83.5**	77.3	88.8	**3.0**	2.9	3.1	**38.2**	32.4	43.0
	All state	**51.2**	43.4	59.0	**75.6**	72.9	78.1	**74.2**	69.0	78.9	**2.9**	2.8	2.9	**32.3**	29.9	35.0
Kassala	Aroma	**23.3**	5.6	44.9	**73.8**	63.4	81.1	**84.7**	79.0	91.1	**2.9**	2.8	3.1	**24.0**	17.4	34.1
	Hamshkoreb	**33.3**	9.6	61.1	**65.2**	54.0	74.1	**75.3**	59.3	86.5	**2.8**	2.6	3.0	**32.0**	23.6	40.8
	Kshmalgrba	**100.0**	80.0	100.0	**70.9**	60.2	81.0	**94.5**	89.0	98.9	**3.5**	3.3	3.6	**65.2**	55.3	75.0
	Nahr Atbara	**100.0**	100.0	100.0	**87.2**	76.2	95.6	**96.1**	88.2	100.0	**3.6**	3.3	3.8	**74.6**	63.3	87.1
	North Delta	**4.8**	0.0	31.2	**79.0**	70.7	86.6	**79.7**	73.7	86.4	**2.9**	2.7	3.0	**21.0**	14.3	28.9
	Rify Kassala	**43.3**	15.0	67.8	**77.3**	66.3	87.9	**94.8**	80.6	100.0	**3.1**	2.9	3.3	**33.9**	18.9	47.6
	Rural Halfa	**10.7**	0.0	38.2	**74.7**	61.7	85.5	**81.8**	70.0	90.7	**3.0**	2.8	3.4	**25.2**	14.4	37.9
	Talkok	**62.9**	45.8	84.4	**69.0**	57.5	80.8	**74.2**	60.7	83.2	**2.7**	2.5	2.8	**28.8**	20.8	36.2
	Wadalhlew	**81.5**	52.8	100.0	**55.9**	42.0	72.0	**92.7**	85.5	97.7	**3.4**	3.2	3.6	**54.6**	40.6	69.2
	West Kassala	**29.4**	8.7	54.6	**56.8**	43.7	69.6	**71.1**	57.4	83.9	**2.6**	2.3	3.0	**26.3**	17.1	38.6
	All state except capital	**46.4**	34.7	59.3	**75.0**	70.0	78.7	**81.4**	76.4	85.5	**2.9**	2.8	3.1	**33.3**	28.5	39.9
	Kassala Town	**42.4**	21.9	68.9	**75.0**	65.3	85.1	**94.3**	88.5	98.7	**3.3**	3.1	3.5	**45.5**	34.5	55.1
	Hamoshkoreib Town*	**30.8**	5.9	57.7	**64.5**	54.0	74.8	**76.6**	62.8	88.2	**2.8**	2.5	3.0	**33.3**	21.7	45.0
Gedaref	Al Gadaref Wasat	**75.0**	57.1	87.7	**68.5**	57.7	77.6	**77.2**	69.3	85.8	**2.9**	2.8	3.0	**40.7**	32.5	50.9
	Al Mafaza	**50.0**	18.2	83.3	**85.3**	68.6	95.5	**53.5**	30.6	71.5	**2.4**	2.1	2.8	**22.6**	12.9	34.0
	Albutana	**34.1**	21.4	51.3	**69.8**	61.9	77.7	**75.0**	63.1	83.7	**2.7**	2.6	2.9	**21.8**	17.1	27.5
	Alfashaga	**40.2**	31.0	51.9	**61.4**	55.5	67.0	**87.4**	83.2	91.8	**2.9**	2.8	3.0	**34.3**	28.4	38.6
	Alfaw	**35.0**	16.9	60.1	**85.7**	79.7	91.8	**53.2**	43.7	62.1	**2.6**	2.4	2.8	**22.7**	16.1	28.8
	Algalabat Al Garbiya	**80.0**	42.7	100.0	**74.6**	61.5	88.3	**77.2**	64.5	89.8	**2.7**	2.3	3.3	**32.8**	18.8	50.0
	Algalabat Al Shargiya	**100.0**	93.7	100.0	**82.1**	61.0	95.7	**84.9**	68.0	96.7	**3.4**	2.9	3.6	**68.8**	55.6	80.0
	Algurisha	**91.0**	74.9	100.0	**75.2**	64.3	85.9	**83.5**	70.7	93.0	**3.1**	2.8	3.4	**58.7**	49.7	68.4
	Alrahad	**37.9**	17.7	61.6	**54.3**	38.2	74.5	**76.9**	63.6	87.9	**2.7**	2.4	3.0	**26.8**	16.4	40.4
	Basonda	**79.7**	60.0	95.1	**77.0**	61.7	87.2	**83.8**	71.2	91.5	**3.2**	3.0	3.4	**52.1**	41.1	62.4
	Gula Alnahal	**11.1**	0.0	60.0	**80.0**	72.8	86.3	**71.3**	52.0	90.9	**2.9**	2.5	3.3	**36.4**	23.7	48.3
	All state except capital	**67.8**	60.4	74.6	**68.5**	65.4	71.7	**82.2**	79.0	85.5	**2.9**	2.9	3.0	**42.1**	38.7	46.2
	Gedarif Town	**0.0**	0.0	0.0	**66.9**	58.5	78.8	**64.9**	53.2	75.2	**2.8**	2.5	3.0	**23.4**	14.6	34.4
Blue Nile	Baw (part)	**50.0**	0.0	100.0	**78.6**	65.9	90.9	**68.3**	50.0	81.4	**2.8**	2.5	3.0	**23.9**	10.8	39.2
	Damazin	**100.0**	100.0	100.0	**71.0**	59.9	84.4	**44.1**	26.5	62.0	**2.4**	2.2	2.7	**26.4**	17.5	36.2
	Giessan (part)	**55.0**	26.8	72.3	**76.7**	70.5	84.0	**85.7**	80.3	90.0	**3.3**	3.1	3.4	**49.0**	38.9	57.5
	Kurmuk (part)	**89.5**	68.1	100.0	**90.9**	78.9	98.0	**61.4**	45.1	80.0	**2.8**	2.5	3.2	**39.2**	21.1	58.8
	Rosairs (part)	**85.0**	77.7	91.4	**71.0**	65.9	76.4	**53.3**	44.0	61.9	**2.5**	2.3	2.6	**32.3**	28.7	36.7
	Tadamon (part)	**85.7**	69.6	100.0	**82.7**	72.5	91.7	**21.7**	12.3	33.8	**2.2**	2.0	2.5	**24.7**	16.0	35.8
	All state except capital	**78.8**	71.0	85.5	**73.4**	70.2	77.8	**59.7**	50.4	70.3	**2.7**	2.5	2.8	**36.3**	32.5	41.2
	Damazin Town	**87.7**	42.8	100.0	**67.4**	53.3	80.4	**75.5**	58.9	85.3	**2.8**	2.5	3.0	**36.2**	24.7	44.5
	Roseris Town	**77.2**	59.5	89.2	**74.7**	64.2	83.7	**61.1**	45.9	75.6	**2.8**	2.5	3.0	**39.7**	29.4	50.6

State	Locality	Exclusive Breastfeeding (EBF)			Continuing Breastfeeding (CBF)			Age appropriate meal frequency			Mean Infant and Young Child Feeding Index			Good Infant and Young Child Feeding (IYCF)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
South Kordofan	Abujebiha (part)	**64.6**	51.1	76.1	**66.1**	60.5	72.3	**45.4**	34.6	56.7	**2.4**	2.2	2.6	**25.0**	19.8	30.3
	Al Tadamoon (part)	**71.0**	56.4	85.7	**72.0**	63.8	79.7	**55.5**	43.7	68.0	**2.6**	2.3	2.9	**37.1**	27.7	47.0
	Alabaseya	**65.7**	41.8	92.0	**60.0**	49.4	72.2	**77.7**	67.1	87.0	**3.0**	2.7	3.2	**45.6**	35.0	63.2
	Algoz	**72.5**	56.0	85.1	**77.1**	70.6	82.7	**77.7**	68.6	88.6	**3.1**	2.9	3.3	**46.0**	38.7	53.8
	Allirri	**57.6**	41.8	71.4	**67.5**	57.5	76.3	**82.4**	72.4	90.1	**3.0**	2.8	3.2	**44.9**	37.5	52.8
	Alreif Alshargi	**73.7**	49.9	91.0	**79.1**	65.3	90.8	**97.9**	90.7	100.0	**3.4**	3.2	3.6	**56.3**	44.6	68.1
	Dilling (part)	**100.0**	100.0	100.0	**82.4**	66.7	95.2	**91.7**	78.9	100.0	**3.2**	2.9	3.5	**55.0**	36.7	74.1
	Gadeir (part)	**87.2**	72.6	97.7	**76.2**	69.2	82.8	**78.7**	69.2	87.2	**2.9**	2.7	3.2	**50.0**	41.9	58.9
	Habeila (part)	**100.0**	88.1	100.0	**78.6**	70.2	85.9	**85.3**	77.6	92.1	**3.2**	3.0	3.3	**53.7**	44.6	62.4
	Rashad (part)	**19.2**	0.0	45.7	**65.7**	46.7	79.2	**73.5**	57.4	96.2	**2.7**	2.3	3.3	**25.0**	11.2	42.7
	All state except capital	**74.3**	68.3	80.7	**72.6**	69.0	75.7	**69.7**	63.5	74.3	**2.9**	2.8	3.0	**42.6**	38.3	46.7
	Kadugli Town	**45.5**	23.1	68.9	**74.1**	65.4	81.8	**74.7**	60.1	84.9	**3.1**	2.8	3.3	**42.6**	32.7	51.6
	Talodi Town	**61.8**	39.9	77.9	**75.0**	61.3	86.0	**84.6**	75.6	93.2	**3.1**	2.9	3.4	**49.3**	36.7	61.7
West Kordofan	Abo Zabad	**76.5**	33.3	100.0	**61.4**	52.2	71.5	**75.0**	65.1	82.3	**2.8**	2.7	3.0	**34.8**	25.7	45.7
	Abyei (NOT AAA)	**73.9**	57.8	89.4	**76.0**	69.5	83.6	**70.4**	59.3	78.1	**3.0**	2.8	3.1	**40.5**	32.0	47.8
	Al Khowi	**75.0**	54.9	93.5	**72.6**	63.3	79.9	**80.2**	73.5	85.4	**2.9**	2.8	3.1	**43.2**	34.5	53.5
	Al Odaya	**77.8**	50.9	94.4	**84.9**	74.4	92.5	**89.0**	82.5	94.1	**3.3**	3.1	3.6	**63.0**	49.0	73.7
	Al Salam	**95.6**	90.6	100.0	**75.7**	67.4	82.5	**63.8**	54.4	73.2	**2.8**	2.6	2.9	**49.1**	44.0	54.5
	Aldebab	**90.2**	77.0	100.0	**66.1**	54.5	80.6	**65.4**	52.4	75.4	**2.8**	2.6	3.1	**42.9**	34.9	51.1
	Almearam	**34.6**	10.5	60.0	**78.6**	66.5	92.0	**52.4**	36.2	69.6	**2.7**	2.3	3.1	**29.6**	17.1	48.5
	Alsnout	**99.0**	93.6	100.0	**82.9**	72.6	92.5	**79.4**	68.1	88.0	**3.2**	3.0	3.5	**73.2**	57.5	82.6
	Babanusa	**82.5**	54.9	100.0	**79.1**	70.8	87.0	**56.8**	45.4	69.8	**2.7**	2.4	2.9	**40.2**	27.5	55.5
	En Nuhud	**45.6**	29.4	63.9	**76.4**	70.3	80.6	**87.3**	77.0	95.4	**3.2**	3.0	3.4	**46.3**	36.6	55.5
	Ghebeish	**55.9**	37.0	74.9	**69.5**	61.8	76.4	**73.0**	65.1	81.0	**2.9**	2.7	3.1	**40.2**	30.5	51.3
	Kailak (part)	**89.1**	72.3	99.0	**80.9**	75.3	87.7	**71.1**	59.3	83.2	**2.8**	2.5	3.1	**44.9**	35.9	53.4
	Lagawa (part)	**96.4**	84.7	100.0	**76.2**	70.2	81.8	**79.1**	71.7	85.7	**3.1**	2.9	3.2	**48.5**	42.4	56.2
	Wad Bandah	**73.6**	63.4	83.1	**57.8**	49.4	67.4	**60.1**	50.1	69.1	**2.5**	2.3	2.8	**34.4**	25.9	41.8
	All state except capital	**77.4**	71.6	82.4	**70.5**	67.6	73.1	**72.5**	69.6	75.3	**2.9**	2.8	3.0	**43.4**	40.3	46.5
	Fula Town	**82.9**	65.5	96.9	**70.5**	59.0	80.2	**79.0**	70.2	86.2	**3.2**	3.0	3.3	**48.1**	39.2	58.4
North Kordofan	Bara	**23.4**	15.2	31.9	**65.5**	59.2	71.5	**79.6**	74.5	84.2	**3.0**	2.8	3.1	**32.0**	26.3	37.7
	El Rahad	**80.0**	49.9	96.7	**64.9**	46.1	78.9	**92.7**	73.3	100.0	**2.9**	2.6	3.2	**42.1**	24.7	54.1
	Jebrat El Sheikh	**44.3**	37.5	52.3	**82.9**	79.2	85.7	**74.8**	70.0	78.3	**3.0**	2.9	3.0	**35.8**	31.2	38.6
	Sheikan	**56.2**	45.1	74.0	**76.1**	68.8	84.5	**80.9**	74.0	86.4	**3.0**	2.9	3.2	**42.3**	35.1	49.1
	Sowdari	**93.2**	87.6	98.6	**74.7**	69.7	79.1	**84.5**	79.5	89.6	**3.1**	3.0	3.2	**57.1**	52.5	61.4
	Umm Daam	**47.4**	12.4	82.1	**83.3**	64.0	100.0	**82.9**	63.3	96.3	**3.3**	2.9	3.8	**50.0**	27.0	80.0
	Umm Rawaba	**63.9**	49.9	74.5	**68.1**	63.0	73.5	**76.0**	68.8	82.4	**2.9**	2.7	3.0	**41.1**	35.2	47.1
	West Bara	**11.4**	0.0	36.2	**58.5**	43.5	74.0	**75.0**	64.4	87.2	**2.9**	2.6	3.1	**27.0**	20.1	35.3
	All state except capital	**60.2**	54.4	66.2	**72.6**	70.1	74.9	**78.9**	76.3	81.8	**3.0**	2.9	3.0	**42.2**	39.7	45.0
	El Obeid Town	**42.3**	20.4	67.2	**74.3**	61.5	85.2	**83.6**	75.8	90.6	**3.1**	2.9	3.3	**38.0**	25.4	50.9
White Nile	Alsalam	**44.8**	23.6	68.5	**68.9**	62.3	80.2	**27.8**	17.2	38.5	**2.1**	1.9	2.3	**17.9**	10.5	26.5
	Ed Douiem	**41.1**	21.9	63.4	**71.4**	63.2	80.2	**53.4**	34.0	70.9	**2.5**	2.1	2.9	**22.5**	17.3	28.8
	El Gutaina	**67.3**	50.0	84.6	**71.7**	66.9	80.0	**59.7**	44.6	73.0	**2.7**	2.5	3.0	**38.6**	30.9	46.9
	El Jabalain	**68.8**	45.5	86.8	**71.4**	62.0	79.0	**47.6**	33.0	62.5	**2.5**	2.3	2.7	**36.1**	26.7	43.8
	Guli	**36.1**	19.3	58.1	**65.3**	55.3	75.7	**73.6**	58.6	84.5	**2.8**	2.6	3.0	**23.4**	15.3	30.9
	Kosti	**76.5**	50.0	96.5	**69.6**	54.4	81.0	**75.8**	57.1	90.2	**2.8**	2.3	3.2	**39.8**	30.3	50.0
	Rabak	**33.3**	0.0	100.0	**78.3**	61.7	95.3	**5.7**	0.0	15.7	**2.0**	1.7	2.3	**7.9**	0.0	19.6
	Tandalti	**54.6**	29.0	78.6	**72.6**	61.5	81.5	**60.0**	48.2	69.6	**2.6**	2.4	2.9	**28.8**	18.8	38.6
	Umm Remta	**61.9**	31.4	92.4	**78.4**	61.2	89.5	**63.3**	47.0	81.2	**2.8**	2.4	3.2	**30.5**	19.2	41.2
	All state except capital	**53.2**	45.3	61.8	**71.8**	68.0	75.1	**58.3**	51.8	63.4	**2.6**	2.5	2.7	**27.8**	24.3	31.2
	Kosti Town	**46.3**	25.0	72.8	**74.1**	65.7	82.1	**55.8**	44.3	65.6	**2.7**	2.5	2.9	**29.1**	21.9	38.6
	Rabak Town	**62.5**	41.2	80.7	**74.8**	63.1	85.1	**68.2**	57.3	78.8	**2.7**	2.5	2.9	**34.6**	25.7	42.1

State	Locality	Exclusive Breastfeeding (EBF)			Continuing Breastfeeding (CBF)			Age appropriate meal frequency			Mean Infant and Young Child Feeding Index			Good Infant and Young Child Feeding (IYCF)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Sennar	Abu Hijar	**90.9**	79.6	97.8	**60.6**	46.2	69.8	**90.3**	81.7	98.0	**3.1**	2.8	3.3	**48.0**	39.0	55.5
	Al Dindir	**83.8**	65.0	96.9	**64.7**	55.7	74.1	**81.1**	70.4	90.2	**2.8**	2.6	2.9	**37.3**	30.4	45.3
	Aldali & Almazmoum	**84.8**	71.4	96.4	**68.6**	58.4	77.2	**75.9**	68.4	82.8	**3.0**	2.8	3.2	**45.9**	37.2	54.2
	Alsooki	**95.7**	84.7	100.0	**73.3**	64.8	81.2	**88.4**	79.0	95.4	**2.9**	2.8	3.1	**40.8**	32.0	49.2
	Sennar	**31.6**	17.6	53.6	**70.0**	63.2	77.9	**85.5**	75.1	94.4	**3.2**	3.0	3.5	**40.2**	21.5	57.8
	Sharg Sennar	**89.4**	77.1	100.0	**71.0**	63.6	78.4	**68.1**	58.7	77.9	**2.7**	2.5	3.0	**35.7**	27.6	43.7
	Sinja	**33.3**	15.0	56.3	**60.0**	50.7	68.8	**56.9**	48.6	67.7	**2.5**	2.3	2.6	**6.3**	1.3	14.0
	All state except capital	**75.3**	64.7	82.7	**67.1**	63.3	70.7	**79.1**	74.8	83.6	**2.9**	2.8	3.0	**39.1**	34.9	42.9
	Sennar Town	**75.6**	52.5	92.3	**69.1**	56.0	80.7	**78.1**	66.4	87.5	**3.0**	2.8	3.2	**40.3**	31.5	48.9
	Sinja Town	**67.5**	38.6	88.0	**67.8**	54.6	80.2	**76.2**	64.0	86.9	**3.0**	2.8	3.2	**36.5**	26.8	45.6
El Gezira	El Hasaheisa	**100.0**	100.0	100.0	**68.0**	50.0	84.4	**59.5**	32.0	87.2	**2.7**	2.4	3.1	**26.1**	10.3	42.9
	El Kamlin	**100.0**	80.0	100.0	**52.6**	27.1	78.8	**43.5**	28.5	65.6	**2.1**	1.8	2.5	**34.4**	18.7	46.8
	El Managil	**77.5**	59.4	93.8	**64.2**	54.0	72.0	**58.9**	47.0	75.7	**2.7**	2.5	2.9	**28.7**	21.3	37.3
	Janub El Gezira	**50.0**	11.1	88.9	**60.6**	46.6	75.7	**78.0**	65.4	87.8	**2.8**	2.6	3.1	**31.3**	18.3	46.8
	Madani Al Kobra	**50.0**	0.0	100.0	**100.0**	100.0	100.0	**50.0**	0.0	100.0	**2.5**	2.0	3.0	**15.5**	0.0	50.0
	Sharg El Gezira	**39.3**	3.8	64.0	**69.2**	61.1	79.3	**65.3**	54.5	74.8	**2.6**	2.4	2.8	**22.2**	15.2	31.5
	Umm El Gura	**70.0**	0.0	100.0	**82.1**	65.9	94.5	**74.4**	61.4	91.7	**3.2**	2.9	3.6	**46.8**	27.8	66.7
	All state except capital	**66.2**	49.3	78.9	**61.7**	54.8	68.5	**63.4**	56.2	70.3	**2.6**	2.5	2.8	**28.3**	23.9	32.9
	Madani Town	**65.6**	33.2	88.7	**58.2**	41.9	69.4	**77.6**	60.0	89.3	**2.8**	2.5	3.1	**38.6**	21.7	53.4
Khartoum	Bahari	**43.1**	28.8	57.6	**86.2**	78.9	91.5	**82.0**	72.7	91.7	**3.4**	3.3	3.5	**48.8**	42.7	56.2
	Gabel Awlia	**36.7**	19.0	56.5	**71.6**	62.9	80.6	**81.4**	67.9	89.3	**2.9**	2.8	3.2	**32.1**	23.6	40.9
	Karrarri	**41.7**	24.9	58.9	**60.0**	48.5	70.6	**52.3**	40.1	66.1	**2.4**	2.1	2.7	**30.7**	22.7	41.0
	Khartoum	**70.3**	49.9	93.3	**61.1**	46.3	78.7	**64.0**	44.0	88.7	**2.5**	2.1	3.1	**34.7**	25.2	45.8
	Shareg Elnile	**72.2**	57.9	81.3	**70.6**	64.3	78.1	**86.7**	79.9	93.0	**3.0**	2.8	3.1	**43.5**	35.8	49.7
	Umbada	**71.4**	51.3	90.1	**69.3**	61.6	76.7	**55.7**	37.3	73.9	**2.5**	2.3	2.6	**29.9**	24.0	36.2
	Umdrman	**67.6**	47.0	85.1	**78.6**	69.4	85.4	**52.1**	44.2	61.8	**2.6**	2.5	2.7	**29.4**	21.1	36.6
	All state	**55.2**	48.4	62.0	**73.6**	69.2	77.7	**72.4**	66.8	77.2	**2.9**	2.8	3.0	**37.8**	34.6	41.9
Northern	Alborgeg	**100.0**	100.0	100.0	**100.0**	100.0	100.0	**100.0**	100.0	100.0	**3.7**	3.0	4.0	**83.3**	33.3	100.0
	Aldabba	**20.3**	7.3	33.8	**72.7**	67.6	78.4	**78.7**	73.4	83.5	**3.2**	3.1	3.3	**42.9**	37.0	48.4
	Algoled	**59.4**	39.9	77.4	**61.3**	46.5	72.4	**90.1**	82.7	96.5	**3.2**	3.1	3.4	**48.7**	38.2	56.9
	Dalgo	**57.1**	38.6	72.7	**49.8**	41.6	57.3	**84.5**	72.8	92.0	**3.0**	2.8	3.1	**40.3**	35.6	47.2
	Dongola	**47.1**	21.4	71.5	**77.2**	68.9	84.2	**94.0**	87.8	98.5	**3.5**	3.4	3.6	**60.0**	50.6	67.0
	Halfa	**76.0**	66.0	82.7	**82.0**	76.4	87.6	**82.0**	75.7	86.9	**3.1**	2.9	3.2	**43.0**	37.8	48.4
	Merawi	**73.6**	63.7	85.1	**62.1**	57.6	67.1	**85.8**	79.9	90.0	**3.1**	3.0	3.2	**43.9**	38.7	48.2
	All state except capital	**66.8**	61.3	71.7	**73.9**	70.7	76.8	**84.8**	82.2	87.3	**3.2**	3.1	3.2	**45.8**	43.5	48.8
	Dongola Town	**55.6**	30.0	77.5	**77.2**	64.4	86.0	**85.1**	72.5	94.1	**3.3**	3.1	3.5	**54.8**	43.6	65.0
River Nile	Abu Hamad	**67.2**	55.1	76.7	**76.3**	70.0	82.7	**82.2**	76.3	88.0	**2.9**	2.7	3.0	**38.0**	32.7	44.5
	Albuhaira	**90.0**	73.8	100.0	**65.2**	58.4	72.0	**92.7**	88.2	96.3	**3.1**	3.0	3.2	**40.2**	34.6	45.4
	Atbara	**21.1**	3.2	42.9	**70.5**	62.3	77.9	**77.3**	67.9	83.6	**3.0**	2.9	3.2	**30.9**	22.1	37.2
	Barbar	**90.6**	72.5	100.0	**80.4**	68.0	90.8	**75.3**	65.1	83.7	**3.0**	2.7	3.3	**47.8**	32.8	62.7
	Ed Damer	**68.1**	53.2	80.7	**67.3**	60.5	74.7	**85.0**	76.1	92.9	**3.0**	2.8	3.1	**34.6**	28.5	41.0
	El Matammah	**55.8**	40.0	72.8	**75.5**	71.0	79.3	**78.3**	72.3	84.6	**3.1**	2.9	3.2	**44.3**	35.4	52.3
	Shendi	**91.0**	77.8	100.0	**59.8**	51.4	67.3	**72.8**	64.1	81.9	**2.4**	2.3	2.6	**31.9**	25.1	38.1
	All state except capital	**68.3**	60.7	75.0	**71.9**	69.5	75.0	**82.6**	79.6	85.4	**3.0**	2.9	3.0	**38.5**	35.4	41.4
	Atbara Town	**77.4**	57.7	92.1	**69.9**	55.5	80.3	**87.0**	78.5	94.8	**3.0**	2.9	3.2	**40.4**	29.8	50.3
	El Damar Town	**67.5**	39.1	88.6	**67.6**	56.8	77.2	**80.0**	69.1	88.7	**2.9**	2.7	3.2	**36.8**	27.7	48.1

State	Locality	Exclusive Breastfeeding (EBF)			Continuing Breastfeeding (CBF)			Age appropriate meal frequency			Mean Infant and Young Child Feeding Index			Good Infant and Young Child Feeding (IYCF)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
North Darfur	Al Fasher	**63.3**	44.9	82.0	**27.2**	16.5	43.9	**65.0**	55.2	74.3	**2.1**	1.8	2.4	**25.1**	18.0	37.2
	Al Koma	**57.9**	35.3	85.9	**79.4**	65.0	87.7	**86.8**	70.7	95.2	**3.4**	2.9	3.7	**55.7**	35.6	66.0
	Al Malha	**88.0**	71.7	100.0	**63.7**	56.4	71.6	**30.4**	23.9	38.5	**2.2**	2.0	2.4	**26.4**	19.9	33.8
	Al Seref	**95.5**	78.9	100.0	**76.2**	66.6	85.2	**71.3**	59.6	82.6	**3.0**	2.8	3.2	**50.0**	39.6	60.1
	Al Tina	**28.6**	10.5	50.0	**0.0**	0.0	6.9	**52.5**	35.7	70.9	**1.4**	1.2	1.7	**6.9**	1.4	14.3
	Al Twasha	**90.0**	79.5	100.0	**63.4**	52.1	72.5	**75.9**	62.7	84.9	**2.8**	2.6	3.0	**49.7**	40.5	60.8
	Allait	**72.2**	41.0	92.3	**71.3**	61.2	80.3	**69.9**	57.3	86.3	**2.7**	2.4	3.0	**36.1**	19.4	52.3
	Ambaro	**69.2**	52.8	85.2	**68.0**	57.4	79.6	**57.8**	48.2	67.8	**2.5**	2.3	2.7	**32.9**	25.7	40.6
	Dar Alsalam	**100.0**	82.7	100.0	**68.7**	59.5	77.2	**68.9**	58.1	75.6	**2.8**	2.7	3.0	**47.7**	37.6	57.7
	Kabkabia	**68.6**	53.8	85.1	**71.6**	63.9	78.5	**54.5**	41.0	69.4	**2.5**	2.2	2.7	**30.3**	23.4	37.5
	Karnoi	**36.4**	0.0	75.0	**58.7**	43.5	73.2	**77.6**	52.9	93.9	**2.7**	2.4	3.0	**26.8**	12.7	41.6
	Kelemendo	**79.2**	50.0	96.2	**72.9**	55.6	86.9	**68.6**	58.1	77.3	**2.8**	2.5	3.0	**37.1**	25.5	48.2
	Kutum	**30.8**	0.0	62.9	**69.5**	64.3	75.9	**74.7**	65.6	81.8	**2.6**	2.5	2.7	**12.4**	7.7	19.1
	Mallit	**95.5**	82.1	100.0	**62.6**	53.0	70.9	**45.6**	32.8	61.5	**2.4**	2.1	2.6	**36.4**	30.1	41.0
	Saraf Omra	**100.0**	100.0	100.0	**65.8**	48.5	81.0	**93.3**	71.4	100.0	**3.0**	2.7	3.2	**39.0**	21.7	56.3
	Tawila	**51.7**	28.8	79.0	**0.7**	0.0	3.5	**62.0**	53.0	76.6	**1.6**	1.5	1.8	**9.6**	3.7	17.6
	Umkadada	**87.9**	76.4	96.5	**68.8**	58.7	78.6	**85.6**	77.4	92.7	**2.8**	2.7	3.0	**44.7**	36.6	56.7
	All state except capital	**75.9**	70.5	81.5	**62.3**	57.3	66.8	**65.2**	60.9	69.4	**2.6**	2.5	2.7	**35.9**	32.4	39.2
	El Fashir Town	**59.3**	31.9	78.7	**51.3**	39.2	63.4	**59.0**	45.5	72.1	**2.3**	1.8	2.7	**27.2**	18.0	35.5
	Zamzam Camp*	**65.8**	42.0	85.3	**43.6**	29.1	61.3	**64.3**	51.1	78.7	**2.3**	1.8	2.7	**34.6**	22.0	46.9
	El Sireif Camp*	**93.8**	80.5	100.0	**76.4**	67.2	83.8	**71.3**	59.5	82.7	**3.0**	2.8	3.2	**50.6**	40.6	61.6
South Darfur	Al Rudoom (part)	**81.0**	62.0	91.9	**74.8**	64.9	83.7	**80.8**	71.1	89.6	**3.2**	2.9	3.4	**51.3**	39.1	62.5
	Alwehda	**100.0**	79.9	100.0	**74.6**	63.6	83.1	**77.1**	61.5	86.6	**2.9**	2.6	3.1	**44.2**	29.7	53.5
	Belil	**66.7**	45.5	87.6	**55.2**	40.6	73.7	**95.0**	85.9	100.0	**3.2**	3.0	3.5	**45.2**	34.3	60.0
	Buram	**46.2**	18.7	100.0	**70.3**	50.7	88.2	**82.7**	72.6	90.1	**3.0**	2.6	3.2	**33.3**	21.8	47.5
	Dimso	**75.0**	42.5	100.0	**53.9**	39.7	69.5	**58.3**	41.6	72.6	**2.6**	2.3	2.9	**28.2**	17.0	38.4
	El Salam	**94.4**	76.4	100.0	**71.3**	59.4	83.3	**70.0**	58.1	78.6	**2.7**	2.5	2.9	**32.7**	22.7	42.2
	Gerieda	**100.0**	100.0	100.0	**73.1**	38.4	88.3	**79.0**	53.8	95.7	**2.8**	2.4	3.1	**29.4**	0.0	48.0
	Id Elfirsan	**84.9**	69.4	96.9	**64.0**	55.1	71.8	**61.7**	50.0	70.9	**2.7**	2.4	3.0	**37.0**	29.4	44.5
	Kass	**82.9**	60.6	97.2	**76.0**	64.2	84.9	**78.9**	69.8	87.1	**2.9**	2.8	3.1	**40.8**	32.0	48.6
	Katila	**86.7**	74.3	95.7	**71.2**	63.8	78.0	**65.8**	55.7	74.2	**2.7**	2.5	2.8	**39.2**	31.6	47.2
	Kubum	**84.0**	65.9	100.0	**56.0**	43.9	66.4	**94.9**	87.2	100.0	**3.3**	3.1	3.4	**52.1**	42.1	61.4
	Mershing	**77.5**	30.3	100.0	**70.6**	52.4	90.0	**80.0**	64.9	95.3	**3.1**	2.7	3.5	**48.0**	25.0	68.0
	Netiga	**81.8**	57.0	100.0	**65.6**	51.7	77.8	**66.7**	49.3	80.9	**2.8**	2.4	3.0	**33.8**	17.6	49.6
	Rahad Elberdi (part)	**37.5**	14.2	74.1	**68.8**	57.8	77.9	**74.8**	67.2	83.1	**3.2**	3.0	3.4	**39.2**	29.2	49.4
	Toluss	**0.0**	0.0	87.6	**47.2**	27.6	65.7	**65.4**	51.4	80.0	**2.2**	1.9	2.7	**16.3**	2.2	46.3
	Um Dafog (part)	**66.7**	19.3	100.0	**80.0**	42.9	100.0	**83.3**	46.0	100.0	**3.4**	3.0	3.7	**50.0**	22.1	73.4
	All state except capital	**79.9**	74.1	85.3	**68.1**	65.1	70.7	**75.3**	71.5	78.3	**2.9**	2.9	3.0	**41.9**	39.1	44.6
	Nyala Town	**48.8**	27.6	70.4	**78.8**	67.2	88.5	**73.0**	61.3	84.0	**3.0**	2.8	3.2	**38.7**	29.1	46.0
	Kalma Camp*	**53.3**	26.6	82.9	**68.0**	58.7	76.4	**80.0**	67.8	88.3	**3.1**	2.8	3.3	**46.5**	38.1	58.4

State	Locality	Exclusive Breastfeeding (EBF)			Continuing Breastfeeding (CBF)			Age appropriate meal frequency			Mean Infant and Young Child Feeding Index			Good Infant and Young Child Feeding (IYCF)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
East Darfur	Abukarinka	**88.9**	28.3	100.0	**52.8**	40.1	63.9	**90.7**	81.9	96.3	**2.8**	2.6	3.0	**37.0**	28.0	46.8
	Adilla (part)	**94.6**	81.2	100.0	**71.0**	57.9	83.2	**92.9**	79.5	98.6	**3.1**	2.8	3.3	**49.4**	34.6	65.7
	Al Deain	**100.0**	74.9	100.0	**66.3**	51.6	78.9	**89.0**	81.9	94.4	**3.0**	2.8	3.2	**37.5**	27.3	47.9
	Alfirdos	**76.9**	57.9	92.9	**53.0**	36.9	64.8	**89.7**	80.3	96.4	**2.9**	2.6	3.1	**37.5**	28.3	48.4
	Asslaya	**53.9**	22.2	100.0	**75.0**	62.2	87.5	**100.0**	95.6	100.0	**3.1**	2.8	3.4	**40.9**	25.7	55.1
	Aubgabar	**60.0**	20.0	100.0	**64.8**	50.0	80.0	**100.0**	93.3	100.0	**3.1**	2.8	3.4	**42.1**	29.5	64.2
	Aubmatarg	**46.2**	0.0	82.0	**54.3**	38.7	68.1	**92.9**	82.1	100.0	**3.0**	2.7	3.3	**39.3**	21.0	54.8
	Sharia (part)	**94.4**	84.4	100.0	**69.2**	47.5	83.9	**73.8**	62.9	86.0	**3.0**	2.7	3.2	**48.2**	38.6	58.2
	Yaseen (part)	**0.0**	0.0	0.0	**58.7**	46.4	70.4	**86.0**	69.2	100.0	**2.8**	2.5	3.2	**28.3**	15.0	41.7
	All state except capital	**81.2**	68.2	88.8	**60.9**	56.6	65.9	**92.1**	89.0	94.9	**3.0**	2.9	3.1	**40.3**	35.9	46.5
	Al Deain Town	**93.3**	73.9	100.0	**57.6**	43.9	72.0	**82.8**	73.2	91.1	**2.9**	2.7	3.1	**40.9**	32.1	50.0
West Darfur	Algenea	**90.9**	33.3	100.0	**61.3**	41.2	83.4	**50.0**	4.2	96.9	**2.6**	1.8	3.4	**41.5**	9.3	73.8
	Baida	**100.0**	82.5	100.0	**79.8**	71.2	87.8	**93.4**	87.1	98.4	**3.1**	3.0	3.3	**41.4**	27.2	55.2
	Forbranga	**63.8**	40.0	84.8	**66.1**	54.6	78.9	**65.6**	46.0	82.5	**2.6**	2.4	2.9	**33.3**	23.3	43.7
	Gabal Moon	**100.0**	100.0	100.0	**65.6**	57.3	73.6	**71.7**	62.7	81.0	**2.8**	2.7	3.0	**43.6**	36.4	52.4
	Habilla	**79.5**	60.0	95.1	**67.6**	55.4	81.1	**53.2**	42.9	66.3	**2.4**	2.0	2.9	**29.3**	18.0	43.8
	Kerenik	**46.6**	29.3	66.4	**66.0**	60.7	71.1	**83.5**	79.2	87.4	**3.2**	3.1	3.3	**47.6**	42.5	52.0
	Kulbus	**95.4**	77.2	100.0	**78.4**	71.5	85.9	**89.9**	82.4	96.3	**3.3**	3.1	3.5	**55.7**	43.7	64.6
	Serba	**85.7**	72.4	96.3	**83.3**	68.3	92.1	**51.4**	41.7	63.3	**2.7**	2.5	2.9	**38.4**	30.3	47.9
	All state except capital	**80.7**	73.3	87.3	**70.9**	66.7	74.7	**72.7**	67.9	77.7	**3.0**	2.9	3.1	**43.9**	39.7	47.8
	Algenea Town	**58.3**	34.4	78.6	**67.6**	55.1	78.8	**73.5**	60.1	83.9	**2.9**	2.7	3.1	**36.8**	27.9	48.3
	Morne Camp*	**34.4**	14.6	63.4	**73.6**	59.9	86.7	**67.6**	53.6	79.9	**3.0**	2.6	3.2	**36.5**	27.4	47.7
Central Darfur	Azoum	**100.0**	100.0	100.0	**69.4**	52.2	89.3	**63.3**	48.4	77.4	**2.7**	2.4	2.9	**39.1**	29.3	53.2
	Bendsi (part)	**100.0**	90.9	100.0	**67.4**	53.8	82.2	**54.6**	41.4	69.4	**2.6**	2.2	2.9	**43.6**	29.7	58.1
	Mukjar (part)	**89.5**	71.4	100.0	**70.6**	58.4	81.0	**88.8**	81.2	97.0	**3.1**	2.9	3.3	**44.4**	34.4	53.2
	Nertati	**0.0**	0.0	0.0	**88.9**	76.5	97.9	**95.7**	87.3	100.0	**3.6**	3.3	3.8	**60.0**	44.2	72.2
	Rokiro	**10.0**	0.0	100.0	**72.2**	54.5	88.5	**76.7**	42.1	100.0	**3.0**	2.3	3.8	**41.0**	16.6	62.5
	Um Dukhun (part)	**100.0**	100.0	100.0	**66.7**	56.1	77.5	**83.5**	73.6	92.3	**2.9**	2.7	3.2	**34.7**	23.5	44.0
	Wadi Salih (part)	**71.9**	53.5	86.7	**72.1**	65.4	78.3	**75.2**	65.8	83.4	**3.0**	2.7	3.1	**33.7**	27.8	40.9
	Zalingei	**85.6**	74.4	94.5	**63.6**	57.3	69.9	**80.9**	72.2	88.5	**2.8**	2.6	3.0	**42.4**	31.9	49.6
	All state except capital	**94.7**	88.2	98.9	**68.8**	64.3	72.9	**66.1**	61.8	71.2	**2.7**	2.6	2.8	**39.9**	35.0	43.9
	Zalingi Town	**100.0**	82.3	100.0	**78.1**	67.0	87.8	**83.5**	72.3	91.1	**3.3**	3.1	3.5	**55.4**	42.5	66.9
	Mukjar Town*	**89.3**	72.2	100.0	**70.9**	60.0	81.0	**88.4**	79.3	95.0	**3.1**	2.9	3.3	**44.1**	34.3	55.3
	Um Dokhon Town*	**100.0**	100.0	100.0	**66.4**	54.9	78.4	**83.8**	73.8	91.4	**2.9**	2.7	3.1	**35.1**	25.6	45.0

9.2 Maternal Health

9.2.1 Mothers Nutrition

Mothers MUAC (Figure 52)
For the first time in Sudan, Mothers MUAC was measured at this survey. Mothers were classified as undernourished with a MUAC of less than 230mm. Red Sea state had the highest prevalence of underweight mothers, with over 50% of mothers with a MUAC of less than 230mm (excluding Port Sudan city). Red Sea was followed by North Darfur, Blue Nile and South Kordofan. This highlights the necessity for long-term integrated programing aimed at the first 1000 days of life (conception to two years of age) capable of breaking the inter-generational effects of malnutrition.

Iron-rich foods (Figure 53), Plant sources of Vitamin A (Figure 54), Animal sources of Vitamin A (Figure 55)
A detailed list of food groups was read to Mothers and they were asked, group by group, if they had eaten from that group on the day before the survey. Consumption of iron-rich foods was low across Red Sea state and North Darfur, the 2 states with the highest prevalence of Mothers under-nutrition. Consumption of plant sources of Vitamin A–rich foods was low across the country and best along the River Nile. Consumption of animal sources of Vitamin A was higher and generally lowest across the Darfur region. Overall, far more animal source vitamin A food groups were eaten than plant-source.

Mothers dietary diversity score (Figure 56)
Diet diversity was lowest across North Darfur, Red Sea, Northern Kassala and the Eastern part of River Nile state bordering Kassala and Red Sea. Mothers in very few areas reported eating from more than 6 food groups. Distribution of Mothers under nutrition follows closely with Mothers diet diversity.

Figure 58: Classification map of proportion of mothers with a MUAC <230mm

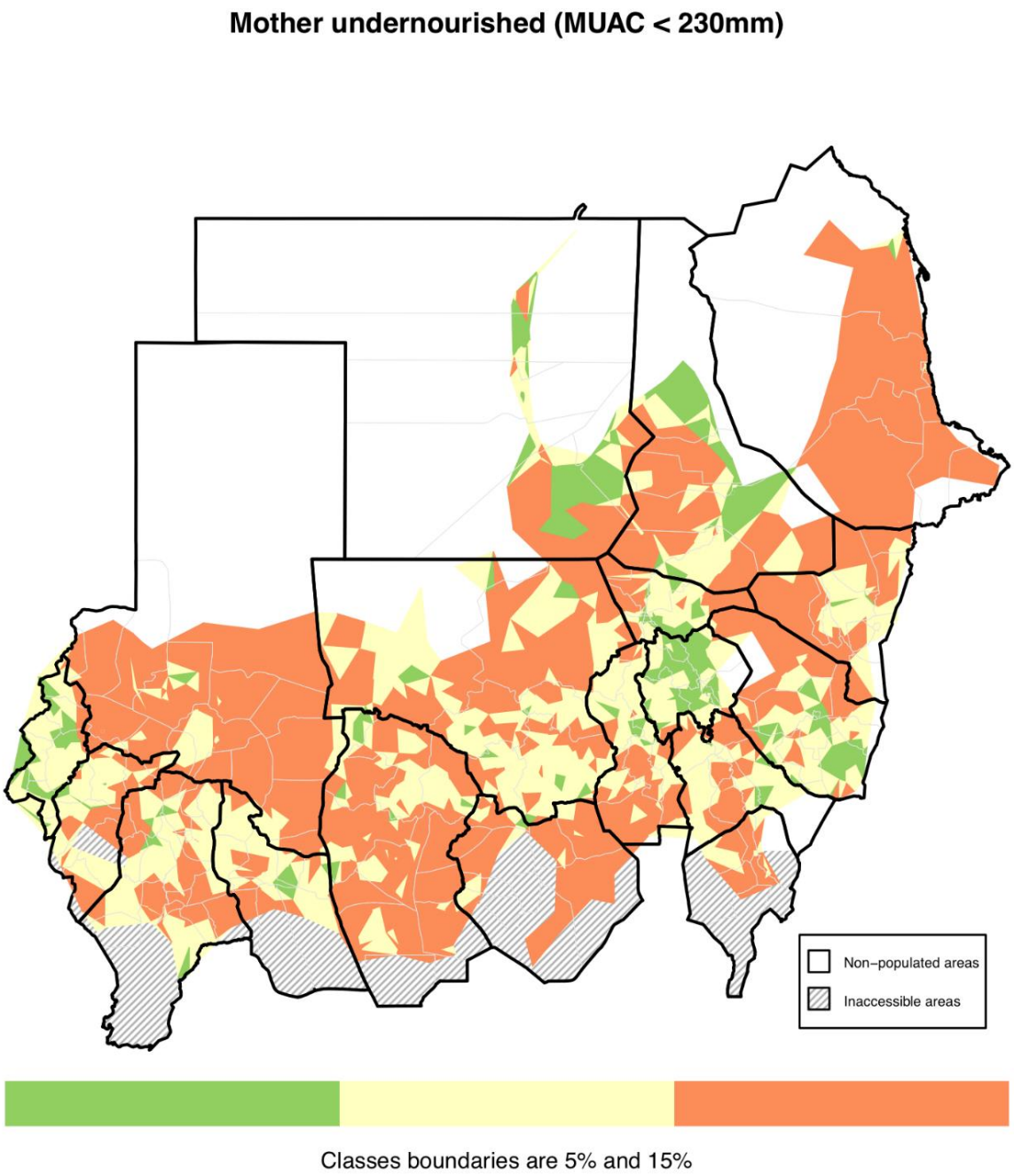


Figure 59: Classification map of proportion of mothers consuming iron-rich foods, 24 hours before the survey

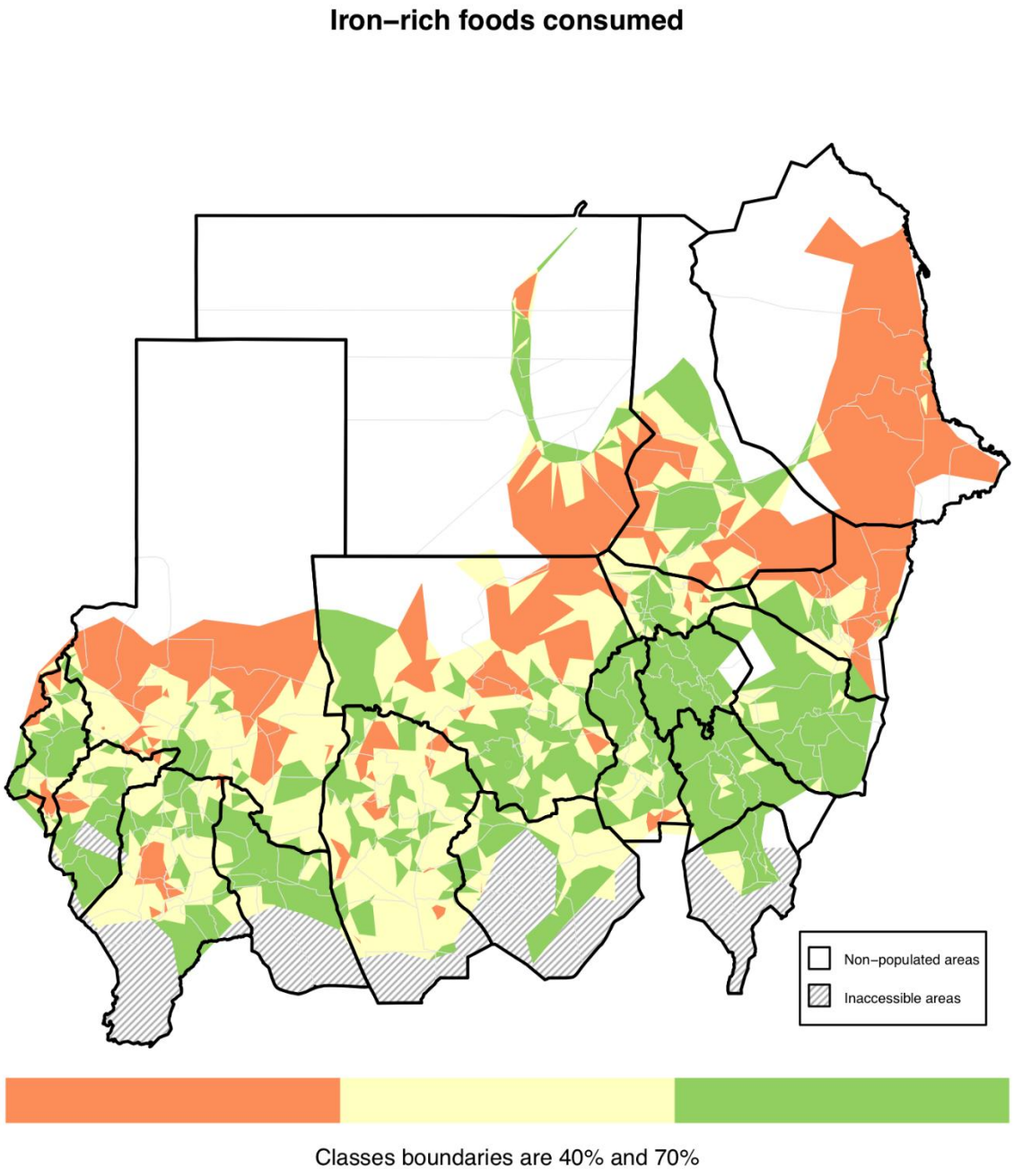


Figure 60: Classification map of proportion of mothers consuming plant-based sources of Vitamin A, 24 hours before the survey

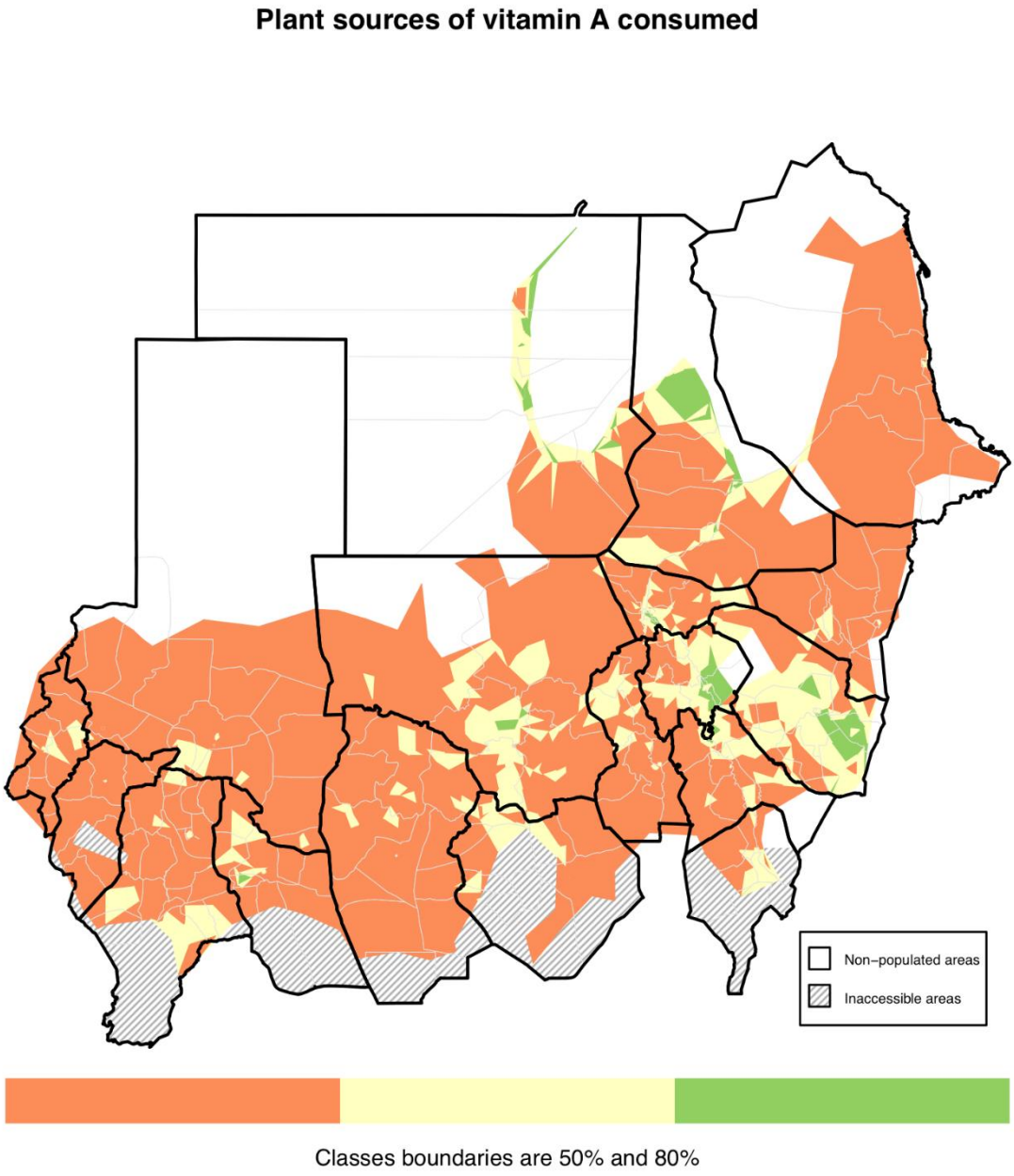


Figure 61: Classification map of proportion of mothers consuming animal-based sources of Vitamin A, 24 hours before the survey

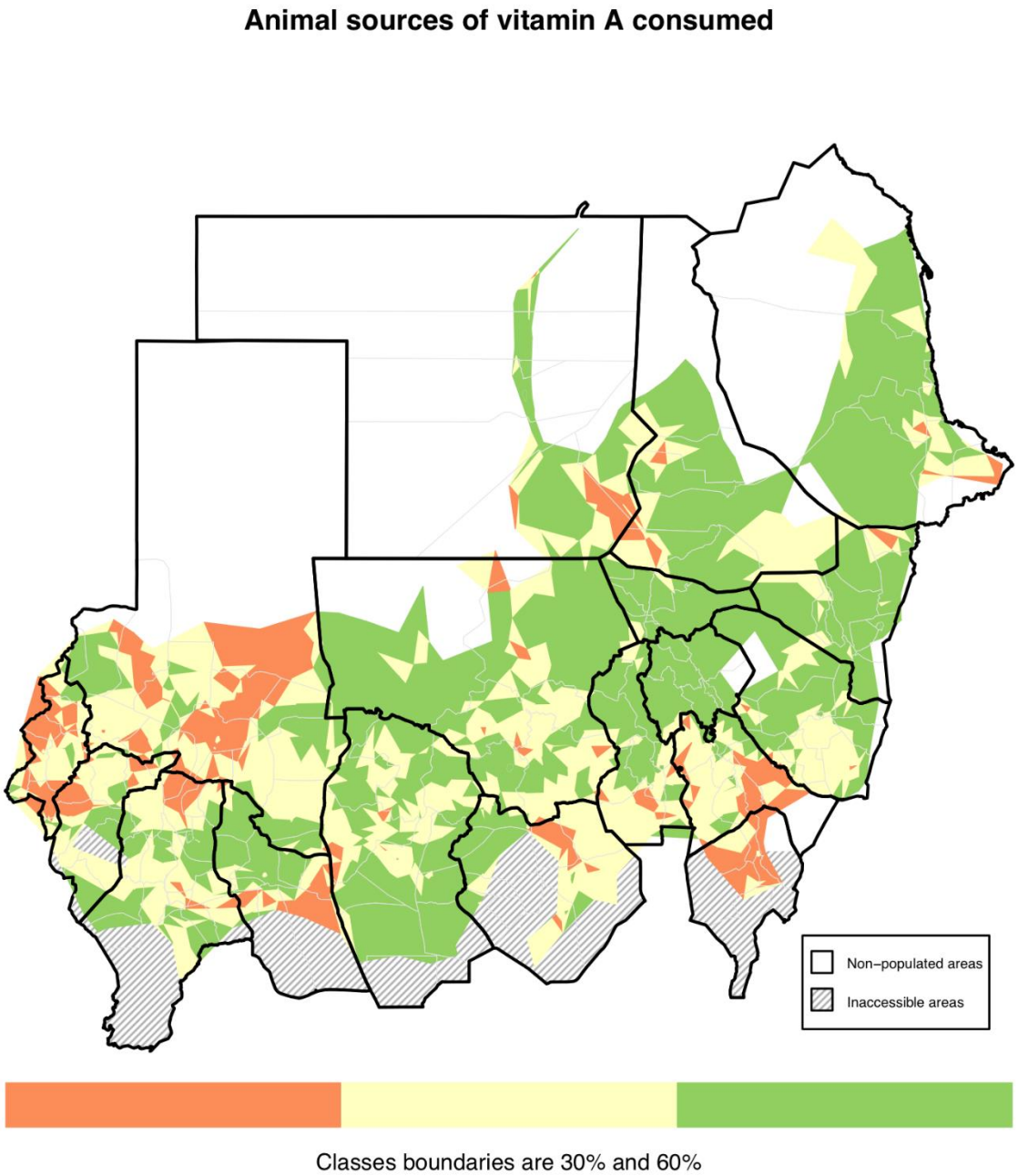


Figure 62: Classification map of Mothers diet diversity score – number of food groups eaten

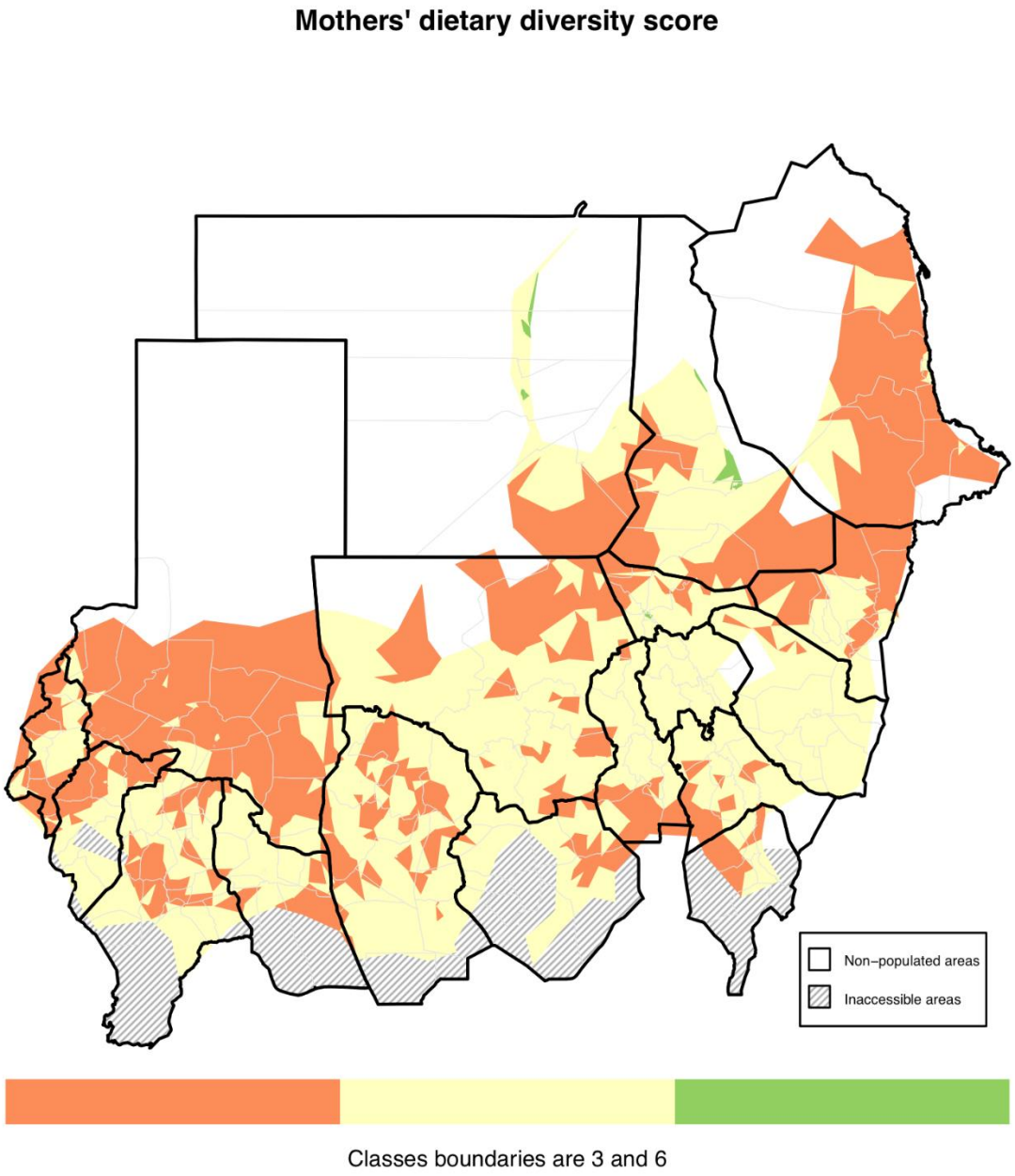


Table 12: Mothers nutrition, results by locality

State	Locality	Mother undernourished (MUAC <230mm)			Mothers' dietary diversity score			Plant sources of vitamin A consumed (Mothers)			Animal sources of vitamin A consumed (Mothers)			Iron rich foods consumed (Mothers)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Red Sea	Ageeg	**47.5**	37.1	58.8	**2.7**	2.1	3.1	**23.6**	9.6	35.1	**38.1**	17.6	57.8	**22.2**	6.9	35.2
	Alganeb Alolib	**38.3**	30.8	44.5	**3.1**	2.7	3.4	**12.4**	5.3	19.9	**81.3**	73.7	90.8	**32.6**	13.9	50.9
	Dordaib	**31.4**	14.0	52.3	**2.7**	1.9	3.6	**15.6**	0.6	32.3	**85.5**	58.4	94.4	**24.0**	3.6	42.2
	Haia	**62.1**	51.8	71.5	**2.6**	2.3	3.0	**5.5**	0.8	10.3	**98.3**	95.7	100.0	**14.0**	3.2	28.4
	Haliab	**35.6**	20.3	49.2	**2.4**	2.1	2.8	**7.8**	0.0	23.2	**37.5**	7.6	73.0	**9.5**	0.0	28.4
	Japitalmadin	**26.5**	21.6	32.8	**4.1**	3.8	4.3	**29.9**	22.3	36.0	**59.5**	52.2	65.1	**51.4**	42.0	58.6
	Sawaken	**23.8**	16.8	31.4	**2.8**	2.6	2.9	**12.7**	6.4	22.1	**78.2**	62.3	88.3	**20.3**	13.1	27.5
	Senkat	**45.2**	37.6	55.4	**1.5**	1.4	1.6	**8.0**	3.2	14.3	**28.3**	19.4	40.9	**8.2**	3.5	14.4
	Tokar	**40.9**	35.4	46.2	**3.8**	3.5	4.0	**20.2**	16.1	24.3	**82.3**	77.4	87.0	**26.4**	21.4	30.8
	Port Sudan	**14.0**	9.4	18.6	**4.3**	3.9	4.6	**52.7**	42.5	62.2	**69.9**	63.9	74.7	**64.0**	54.4	73.1
	All state	**29.6**	26.0	33.7	**3.7**	3.5	3.8	**34.9**	30.4	39.4	**68.0**	64.1	72.0	**43.4**	38.0	48.5
Kassala	Aroma	**8.0**	5.2	10.1	**3.7**	3.4	4.0	**32.8**	24.6	38.8	**97.2**	91.2	100.0	**48.8**	34.9	57.0
	Hamshkoreb	**14.7**	12.7	14.9	**3.4**	3.0	3.9	**26.6**	16.4	40.0	**68.0**	54.2	78.5	**55.2**	43.0	66.0
	Kshmalgrba	**25.0**	22.0	25.7	**3.1**	2.9	3.3	**42.2**	29.7	52.3	**71.1**	60.1	79.0	**69.5**	54.7	82.8
	Nahr Atbara	**14.1**	11.1	15.6	**6.1**	5.2	6.4	**62.5**	48.4	73.4	**96.9**	92.2	100.0	**100.0**	100.0	100.0
	North Delta	**11.6**	7.4	11.8	**3.5**	3.1	3.8	**20.1**	9.8	28.6	**100.0**	100.0	100.0	**47.8**	29.4	59.0
	Rify Kassala	**6.3**	5.7	7.4	**4.3**	4.0	4.6	**43.8**	31.2	55.6	**98.8**	96.3	100.0	**76.9**	55.6	93.2
	Rural Halfa	**17.2**	15.4	26.1	**4.2**	3.3	5.5	**58.3**	31.3	76.6	**61.5**	45.8	80.8	**79.7**	65.1	89.1
	Talkok	**11.0**	10.4	11.6	**2.3**	1.9	2.6	**4.8**	2.3	7.7	**69.6**	52.5	89.6	**13.5**	8.4	18.7
	Wadalhlew	**20.0**	14.4	22.4	**3.2**	2.9	3.4	**44.5**	23.4	63.3	**65.6**	52.9	77.4	**69.5**	52.9	80.9
	West Kassala	**47.4**	45.9	54.8	**2.9**	2.7	3.2	**22.9**	14.6	36.1	**74.4**	63.5	86.4	**39.6**	27.9	52.1
	All state except capital	**13.4**	11.8	15.3	**3.4**	3.1	3.8	**25.4**	20.4	32.1	**83.3**	76.7	90.0	**46.4**	38.3	55.3
	Kassala Town	**5.7**	4.5	8.3	**4.8**	4.4	5.4	**66.3**	56.0	75.3	**79.0**	70.3	85.8	**84.0**	75.1	90.8
	Hamoshkoreib Town*	**15.3**	11.0	17.4	**3.4**	3.0	3.9	**28.9**	17.4	43.2	**66.7**	52.9	79.1	**55.3**	42.1	69.8
Gedaref	Al Gadaref Wasat	**8.6**	4.7	13.6	**4.4**	4.1	4.6	**75.6**	68.5	83.0	**59.9**	51.7	69.8	**88.4**	84.0	92.0
	Al Mafaza	**6.3**	2.1	17.4	**3.4**	2.7	3.7	**45.8**	28.5	56.3	**46.9**	35.9	56.3	**87.5**	57.6	93.8
	Albutana	**17.3**	12.1	22.6	**3.5**	3.2	3.8	**39.7**	31.0	47.8	**61.1**	52.3	72.1	**73.7**	64.1	82.9
	Alfashaga	**10.5**	7.3	14.2	**4.6**	4.4	4.7	**52.4**	47.4	57.5	**61.4**	55.7	66.7	**92.1**	88.1	95.0
	Alfaw	**23.7**	16.5	30.9	**3.6**	3.0	4.1	**32.1**	17.9	45.7	**76.3**	68.5	83.5	**72.8**	55.3	87.9
	Algalabat Al Garbiya	**7.3**	2.1	16.0	**3.8**	3.3	4.2	**50.0**	27.0	64.6	**52.1**	38.5	62.6	**83.3**	67.7	91.7
	Algalabat Al Shargiya	**2.3**	0.0	5.5	**4.9**	4.6	5.1	**93.8**	82.8	97.7	**39.1**	26.5	57.1	**100.0**	94.5	100.0
	Algurisha	**7.8**	3.5	13.8	**4.8**	4.4	5.2	**84.4**	74.9	90.9	**71.3**	60.3	82.2	**85.3**	79.4	90.6
	Alrahad	**5.2**	1.0	10.4	**3.7**	3.5	4.0	**56.5**	47.8	67.6	**54.2**	43.7	64.6	**84.4**	77.0	90.7
	Basonda	**1.8**	0.3	3.9	**4.4**	4.1	4.7	**73.8**	64.3	84.9	**43.6**	31.7	56.0	**95.7**	93.5	97.7
	Gula Alnahal	**15.5**	9.9	20.9	**4.2**	3.8	4.8	**46.4**	35.2	57.6	**60.2**	51.2	69.1	**80.1**	70.7	87.5
	All state except capital	**8.5**	6.8	10.2	**4.5**	4.4	4.6	**65.6**	61.7	70.3	**55.2**	52.0	58.6	**91.4**	89.5	93.3
	Gedarif Town	**4.7**	2.0	8.1	**4.9**	4.5	5.4	**70.5**	62.3	78.3	**64.3**	54.2	73.5	**91.1**	85.0	96.1
Blue Nile	Baw (part)	**17.2**	7.8	26.6	**2.9**	1.9	3.8	**39.1**	9.4	68.8	**37.5**	20.2	53.2	**68.8**	46.8	84.5
	Damazin	**12.5**	7.3	20.8	**2.8**	2.5	3.0	**38.5**	18.6	50.0	**7.3**	3.1	12.6	**79.2**	67.7	90.6
	Giessan (part)	**27.6**	12.4	36.4	**4.2**	3.5	4.9	**65.7**	44.9	82.9	**11.7**	7.9	18.6	**90.7**	78.2	96.1
	Kurmuk (part)	**18.8**	9.4	31.3	**3.7**	3.4	4.0	**71.9**	58.3	83.4	**53.1**	42.7	64.6	**89.6**	81.3	97.9
	Rosairs (part)	**15.7**	11.3	19.8	**3.3**	3.1	3.5	**62.1**	51.2	69.8	**13.6**	10.3	18.4	**76.6**	68.3	81.9
	Tadamon (part)	**7.8**	2.3	16.8	**2.4**	2.2	2.7	**24.2**	13.2	38.3	**10.2**	4.7	17.2	**68.0**	57.8	79.0
	All state except capital	**19.1**	12.9	25.1	**3.6**	3.2	4.1	**59.2**	50.5	66.0	**13.0**	10.7	16.0	**81.3**	73.8	87.6
	Damazin Town	**1.3**	0.4	12.4	**2.4**	2.2	4.7	**58.2**	45.9	71.6	**6.5**	2.2	49.6	**61.8**	55.0	91.1
	Roseris Town	**13.2**	7.8	20.9	**4.2**	3.8	4.5	**69.9**	58.3	80.8	**16.7**	9.8	25.9	**92.6**	85.4	96.7

State	Locality	Mother undernourished (MUAC <230mm)			Mothers' dietary diversity score			Plant sources of vitamin A consumed (Mothers)			Animal sources of vitamin A consumed (Mothers)			Iron rich foods consumed (Mothers)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
South Kordofan	Abujebiha (part)	**28.8**	20.5	38.2	**3.3**	2.9	3.8	**39.6**	28.1	51.5	**43.6**	34.9	50.9	**75.9**	67.6	82.9
	Al Tadamoon (part)	**41.2**	30.9	49.5	**2.7**	2.4	3.0	**17.0**	10.3	26.1	**44.2**	34.7	55.7	**44.2**	30.2	59.0
	Alabaseya	**15.6**	7.1	25.0	**3.7**	3.2	4.1	**44.1**	30.2	58.3	**37.5**	25.0	51.0	**82.1**	70.8	89.6
	Algoz	**12.7**	6.0	18.5	**4.7**	4.4	5.1	**54.6**	45.1	63.1	**51.9**	42.1	62.0	**85.1**	78.3	90.1
	Allirri	**16.2**	10.2	21.9	**3.6**	3.3	3.8	**33.9**	21.8	44.3	**49.0**	38.5	57.9	**78.1**	69.2	86.5
	Alreif Alshargi	**18.8**	8.3	34.4	**4.0**	3.4	4.8	**47.9**	26.0	75.1	**50.0**	39.6	59.4	**53.1**	25.0	88.5
	Dilling (part)	**6.3**	0.0	15.6	**5.1**	4.7	5.5	**78.1**	68.8	87.5	**40.6**	28.0	56.4	**90.6**	78.1	100.0
	Gadeir (part)	**25.3**	19.5	31.6	**4.0**	3.5	4.5	**51.5**	38.5	60.8	**49.8**	38.4	62.8	**88.9**	82.2	94.8
	Habeila (part)	**16.2**	9.9	22.4	**4.2**	3.7	4.7	**36.5**	21.9	57.4	**74.5**	64.0	83.3	**80.2**	64.6	89.1
	Rashad (part)	**20.8**	10.2	34.4	**4.2**	3.5	4.7	**66.7**	53.3	76.0	**33.3**	16.6	49.0	**74.0**	51.7	90.7
	All state except capital	**23.7**	20.2	27.9	**3.8**	3.5	4.0	**41.5**	35.0	47.6	**50.7**	45.7	54.7	**73.7**	68.3	78.1
	Kadugli Town	**15.7**	10.1	21.4	**4.6**	4.2	4.9	**64.6**	55.9	73.2	**55.5**	47.4	65.4	**85.8**	79.0	91.6
	Talodi Town	**12.5**	7.5	18.5	**3.5**	3.2	3.9	**33.6**	25.0	43.5	**36.2**	28.1	45.3	**75.6**	65.8	85.2
West Kordofan	Abo Zabad	**8.3**	4.4	14.8	**3.8**	3.1	4.3	**36.9**	21.7	49.4	**50.3**	40.7	61.0	**88.8**	71.3	98.1
	Abyei (NOT AAA)	**18.1**	11.9	24.3	**3.7**	3.5	3.9	**15.8**	11.0	21.0	**83.9**	77.9	89.2	**72.2**	64.5	80.6
	Al Khowi	**11.8**	7.3	16.1	**4.2**	3.8	4.7	**56.6**	41.0	68.8	**81.4**	73.9	88.9	**78.1**	67.6	89.4
	Al Odaya	**15.9**	12.5	19.5	**3.0**	2.8	3.2	**15.8**	11.5	21.0	**56.7**	50.1	64.1	**76.4**	70.4	81.9
	Al Salam	**14.5**	10.6	20.2	**3.7**	3.5	3.9	**23.9**	17.4	30.3	**74.1**	63.1	81.5	**64.8**	57.4	72.7
	Aldebab	**13.0**	8.5	19.3	**3.4**	3.1	3.6	**20.4**	12.1	26.8	**56.9**	43.7	71.8	**70.1**	60.4	78.3
	Almearam	**28.7**	16.7	36.5	**3.2**	3.1	3.5	**14.2**	8.5	22.2	**77.3**	66.3	87.7	**27.9**	19.8	36.8
	Alsnout	**14.0**	10.4	19.1	**3.2**	3.0	3.3	**18.6**	12.8	24.2	**48.4**	40.7	56.4	**86.7**	76.8	91.8
	Babanusa	**24.9**	17.1	32.0	**3.0**	2.8	3.2	**14.1**	9.5	20.8	**53.5**	44.3	62.9	**46.0**	33.9	59.7
	En Nuhud	**8.8**	6.2	12.2	**5.6**	4.7	6.4	**71.5**	53.9	89.0	**86.1**	76.5	95.6	**86.8**	73.2	95.7
	Ghebeish	**13.6**	8.8	18.7	**2.8**	2.4	3.1	**13.8**	7.3	25.4	**41.6**	32.7	51.1	**59.0**	48.8	66.3
	Kailak (part)	**34.3**	16.7	43.1	**3.3**	2.8	4.4	**26.3**	15.9	35.6	**70.7**	59.4	95.3	**81.1**	52.3	92.6
	Lagawa (part)	**16.4**	12.2	20.8	**3.8**	3.6	4.1	**22.0**	15.5	28.8	**78.5**	70.6	85.5	**80.3**	70.1	88.0
	Wad Bandah	**13.9**	9.8	19.6	**3.8**	3.5	4.1	**47.0**	35.6	58.5	**55.0**	48.7	63.4	**72.8**	64.7	81.0
	All state except capital	**15.7**	13.2	19.0	**3.7**	3.5	3.9	**34.4**	30.3	38.4	**64.9**	61.8	68.4	**74.4**	70.1	78.1
	Fula Town	**12.2**	7.2	19.2	**4.7**	4.2	5.2	**59.5**	51.3	70.1	**66.1**	55.2	75.8	**92.2**	86.6	96.9
North Kordofan	Bara	**11.5**	8.6	14.6	**4.6**	4.2	5.0	**60.7**	49.4	69.9	**58.4**	51.7	64.6	**82.2**	74.3	89.3
	El Rahad	**3.8**	0.0	11.3	**5.5**	4.1	5.7	**94.8**	51.6	99.0	**91.9**	70.9	97.5	**100.0**	75.8	100.0
	Jebrat El Sheikh	**15.6**	13.3	17.5	**4.3**	4.2	4.5	**57.7**	51.6	62.1	**87.8**	84.6	90.7	**73.9**	69.5	77.7
	Sheikan	**12.2**	8.7	16.8	**4.2**	3.7	4.8	**63.9**	48.3	74.8	**56.6**	41.9	70.8	**90.5**	83.2	94.9
	Sowdari	**11.3**	8.5	14.5	**4.4**	4.3	4.6	**59.6**	51.9	66.5	**75.1**	70.6	78.9	**82.2**	77.7	86.0
	Umm Daam	**13.5**	5.8	27.3	**3.7**	3.0	4.5	**40.0**	13.5	74.6	**55.0**	36.7	71.2	**84.7**	70.5	96.2
	Umm Rawaba	**8.7**	5.8	11.2	**3.5**	3.2	3.9	**37.7**	27.7	47.8	**53.1**	45.7	59.9	**72.4**	65.3	79.2
	West Bara	**29.2**	14.8	42.3	**3.5**	2.6	4.4	**40.2**	23.8	56.1	**44.8**	28.0	71.3	**54.4**	37.0	78.6
	All state except capital	**11.3**	10.0	12.8	**4.1**	3.9	4.3	**53.0**	48.9	57.2	**64.9**	61.2	67.7	**78.8**	75.4	81.4
	El Obeid Town	**11.1**	6.0	18.4	**5.1**	4.7	5.5	**73.7**	63.9	81.3	**71.2**	60.0	79.9	**84.9**	78.9	90.6
White Nile	Alsalam	**24.1**	17.5	30.2	**2.5**	2.2	2.7	**7.7**	3.1	13.2	**35.4**	23.7	45.1	**44.4**	31.2	56.4
	Ed Douiem	**7.0**	2.8	13.0	**3.9**	3.5	4.2	**46.0**	28.3	64.1	**83.8**	76.0	88.7	**85.7**	77.9	92.8
	El Gutaina	**10.6**	6.7	15.3	**3.4**	3.2	3.6	**36.4**	26.9	48.4	**67.0**	57.4	77.0	**75.7**	67.4	82.8
	El Jabalain	**9.7**	4.5	17.8	**3.4**	3.2	3.6	**36.3**	27.1	43.7	**56.3**	46.8	64.6	**81.9**	71.1	86.7
	Guli	**14.7**	10.3	19.8	**4.1**	3.8	4.3	**46.0**	31.2	55.4	**84.8**	77.1	90.7	**79.5**	69.0	88.0
	Kosti	**11.5**	6.3	19.5	**2.6**	1.9	3.0	**3.8**	0.0	14.8	**39.2**	12.3	62.0	**73.8**	44.5	91.7
	Rabak	**17.7**	0.0	42.9	**3.1**	3.0	3.3	**17.7**	8.8	28.3	**78.4**	60.6	95.7	**80.4**	60.7	95.7
	Tandalti	**10.9**	5.7	16.8	**3.2**	2.8	3.6	**22.8**	10.9	39.5	**54.4**	37.3	70.0	**69.2**	51.0	87.7
	Umm Remta	**5.6**	1.3	11.3	**4.5**	4.2	5.1	**62.5**	50.6	77.5	**88.1**	80.0	95.6	**95.6**	91.2	98.8
	All state except capital	**9.9**	8.1	12.3	**3.8**	3.6	4.0	**42.9**	36.8	49.2	**74.3**	69.5	78.5	**81.8**	77.5	85.1
	Kosti Town	**8.2**	4.1	13.9	**4.1**	3.7	4.3	**51.5**	42.1	60.4	**69.9**	61.7	77.7	**83.8**	78.4	89.4
	Rabak Town	**6.9**	3.6	11.8	**4.0**	3.7	4.3	**54.0**	43.5	63.8	**61.8**	52.1	71.1	**90.0**	85.1	94.7

State	Locality	Mother undernourished (MUAC <230mm)			Mothers' dietary diversity score			Plant sources of vitamin A consumed (Mothers)			Animal sources of vitamin A consumed (Mothers)			Iron rich foods consumed (Mothers)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Sennar	Abu Hijar	**13.3**	8.6	20.4	**3.9**	3.4	4.3	**54.6**	31.6	77.4	**39.5**	23.4	53.6	**91.8**	86.9	94.6
	Al Dindir	**13.6**	5.3	28.6	**3.5**	3.2	3.7	**50.0**	40.1	60.2	**27.9**	21.6	38.3	**81.3**	72.8	88.5
	Aldali & Almazmoum	**10.4**	6.2	18.8	**2.7**	2.5	3.0	**22.7**	14.6	31.5	**38.0**	27.6	50.6	**81.0**	73.7	85.9
	Alsooki	**5.1**	2.0	10.7	**3.7**	3.3	4.1	**53.1**	44.1	59.8	**38.4**	22.6	60.2	**82.8**	77.0	88.5
	Sennar	**11.4**	7.9	15.7	**3.7**	3.4	4.0	**36.1**	25.8	46.9	**44.3**	33.5	55.7	**82.7**	73.8	90.9
	Sharg Sennar	**21.0**	14.2	29.5	**4.3**	3.6	4.9	**57.0**	34.8	77.7	**68.3**	56.4	78.4	**89.5**	83.3	94.9
	Sinja	**9.9**	5.7	14.1	**4.0**	3.7	4.3	**41.2**	31.8	55.3	**65.6**	55.2	74.5	**82.8**	76.0	90.1
	All state except capital	**11.8**	9.3	14.5	**3.5**	3.3	3.7	**39.8**	32.4	45.9	**42.8**	36.6	48.0	**83.4**	80.9	85.8
	Sennar Town	**4.5**	1.7	8.2	**4.8**	4.5	5.1	**81.2**	74.8	88.1	**56.4**	46.6	67.1	**96.3**	93.0	98.6
	Sinja Town	**5.4**	2.4	9.7	**4.8**	4.4	5.1	**72.8**	59.8	83.8	**58.8**	49.5	69.5	**92.4**	86.6	97.0
El Gezira	El Hasaheisa	**0.0**	0.0	3.1	**3.9**	3.6	4.2	**55.2**	43.2	65.7	**71.6**	58.4	84.7	**83.6**	72.8	91.7
	El Kamlin	**2.7**	0.0	6.9	**3.7**	3.5	4.0	**46.0**	36.4	58.3	**73.7**	60.9	85.4	**84.0**	73.7	92.3
	El Managil	**2.4**	0.9	9.1	**3.4**	3.2	4.2	**44.9**	32.3	59.4	**94.5**	80.2	97.3	**97.4**	92.1	98.9
	Janub El Gezira	**6.3**	1.3	13.9	**4.6**	4.1	5.0	**72.9**	61.8	83.0	**79.5**	69.7	86.4	**93.3**	88.7	96.9
	Madani Al Kobra	**6.7**	0.0	20.3	**5.9**	5.3	6.3	**87.5**	75.0	96.9	**93.3**	80.0	100.0	**100.0**	100.0	100.0
	Sharg El Gezira	**0.5**	0.0	2.4	**5.4**	5.1	5.8	**84.1**	74.5	90.6	**82.9**	76.6	88.8	**93.4**	88.8	96.7
	Umm El Gura	**9.2**	2.5	17.3	**5.3**	4.8	5.7	**83.9**	77.6	91.2	**88.1**	78.4	95.1	**100.0**	96.5	100.0
	All state except capital	**3.0**	1.5	5.6	**3.8**	3.5	4.5	**59.7**	52.5	66.6	**88.6**	79.8	92.9	**94.7**	91.0	96.6
	Madani Town	**2.1**	0.0	5.9	**5.1**	4.5	5.5	**69.7**	60.2	78.2	**79.8**	71.4	87.4	**95.5**	89.9	99.2
Khartoum	Bahari	**9.3**	6.6	13.2	**3.9**	3.7	4.0	**45.1**	36.6	54.4	**61.2**	55.0	67.4	**88.1**	83.1	92.7
	Gabel Awlia	**5.4**	2.6	8.6	**4.9**	4.3	5.4	**66.9**	55.9	78.8	**83.8**	73.9	89.7	**91.6**	83.1	97.2
	Karrarri	**4.4**	1.7	9.2	**4.5**	4.2	4.8	**59.0**	48.3	68.6	**78.0**	71.4	84.3	**77.0**	70.0	85.1
	Khartoum	**3.2**	1.1	5.6	**6.2**	5.7	6.8	**86.0**	79.1	91.9	**98.0**	95.0	100.0	**94.5**	90.1	98.5
	Shareg Elnile	**4.1**	2.6	6.5	**5.0**	4.7	5.4	**71.2**	62.7	77.3	**87.3**	82.4	91.8	**85.4**	78.2	90.1
	Umbada	**10.3**	5.5	16.9	**4.8**	4.3	5.4	**55.3**	39.1	66.4	**73.0**	61.5	83.3	**80.5**	71.4	91.7
	Umdrman	**4.1**	1.6	7.2	**4.9**	4.4	5.4	**48.4**	33.8	62.5	**87.8**	80.3	93.1	**85.0**	74.6	91.6
	All state	**6.3**	5.0	7.7	**4.7**	4.5	4.9	**59.7**	55.3	64.1	**78.0**	74.7	81.3	**85.6**	82.2	88.6
Northern	Alborgeg	**0.0**	0.0	0.0	**4.5**	3.5	5.7	**50.0**	16.7	83.3	**83.3**	50.0	100.0	**83.3**	50.0	100.0
	Aldabba	**6.8**	4.7	9.4	**5.6**	5.2	5.9	**82.6**	76.5	87.6	**79.7**	75.7	83.1	**87.8**	82.2	92.4
	Algoled	**7.8**	3.1	13.8	**5.6**	5.1	6.0	**76.7**	68.6	83.4	**82.8**	73.5	90.1	**79.7**	68.4	87.0
	Dalgo	**4.4**	2.4	6.5	**5.0**	4.7	5.3	**75.7**	68.7	81.7	**77.4**	66.5	88.6	**51.2**	42.8	57.8
	Dongola	**8.8**	4.2	14.0	**5.7**	5.2	6.1	**83.6**	75.0	90.1	**74.1**	62.2	83.9	**87.5**	79.0	95.1
	Halfa	**15.6**	12.2	20.0	**5.8**	5.6	6.0	**86.6**	82.0	89.6	**87.1**	80.6	90.7	**76.5**	70.3	81.2
	Merawi	**1.8**	0.3	5.2	**5.7**	5.4	5.8	**90.9**	85.9	94.7	**84.9**	78.5	91.3	**85.6**	80.2	89.7
	All state except capital	**10.8**	9.2	12.5	**5.7**	5.6	5.8	**84.7**	82.1	87.0	**83.0**	80.6	85.3	**78.6**	75.8	81.6
	Dongola Town	**4.4**	1.3	8.5	**6.0**	5.6	6.3	**92.0**	86.3	96.1	**74.9**	65.5	83.1	**93.3**	88.9	97.3
River Nile	Abu Hamad	**2.4**	0.6	5.1	**5.5**	4.7	5.9	**78.5**	71.0	84.2	**78.5**	71.7	85.4	**83.8**	79.0	88.6
	Albuhaira	**9.5**	5.0	15.5	**4.0**	3.6	4.5	**66.2**	57.1	72.7	**68.4**	52.2	80.6	**77.6**	69.6	85.2
	Atbara	**5.4**	0.9	13.1	**5.7**	4.8	6.3	**80.2**	58.8	89.6	**82.2**	71.5	87.9	**86.2**	63.8	97.8
	Barbar	**0.0**	0.0	3.8	**6.2**	5.6	6.7	**89.8**	79.4	96.1	**85.7**	76.6	91.5	**86.9**	77.6	95.1
	Ed Damer	**4.6**	1.3	9.5	**5.4**	4.5	6.2	**66.3**	53.4	77.4	**79.8**	68.6	90.7	**76.3**	64.6	87.6
	El Matammah	**8.2**	5.7	11.4	**5.4**	4.9	5.7	**79.1**	72.8	84.7	**84.4**	77.8	90.4	**79.8**	73.6	85.1
	Shendi	**12.8**	6.6	23.0	**2.3**	2.1	2.7	**19.2**	10.6	28.3	**72.2**	61.6	80.4	**25.8**	16.9	36.7
	All state except capital	**4.8**	3.2	6.6	**5.3**	5.0	5.6	**72.5**	67.8	77.2	**79.0**	75.8	83.1	**79.0**	75.0	83.4
	Atbara Town	**4.8**	1.5	8.8	**5.6**	5.2	6.0	**76.2**	69.1	84.8	**85.4**	78.1	90.8	**82.2**	74.4	89.9
	El Damar Town	**3.3**	0.8	6.4	**5.2**	4.8	5.7	**76.8**	68.4	83.9	**82.4**	73.6	89.2	**82.8**	75.2	89.7

State	Locality	Mother undernourished (MUAC <230mm)			Mothers' dietary diversity score			Plant sources of vitamin A consumed (Mothers)			Animal sources of vitamin A consumed (Mothers)			Iron rich foods consumed (Mothers)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
North Darfur	Al Fasher	**17.5**	11.2	24.8	**2.8**	2.4	3.1	**32.0**	23.8	39.4	**44.3**	36.0	53.5	**59.2**	46.6	68.5
	Al Koma	**16.8**	5.7	30.2	**3.4**	2.6	3.9	**35.2**	18.1	50.8	**71.2**	58.7	80.8	**56.8**	40.5	67.8
	Al Malha	**43.9**	36.0	51.3	**1.3**	1.2	1.4	**0.0**	0.0	0.8	**16.7**	11.9	23.5	**9.9**	5.4	15.9
	Al Seref	**25.9**	19.0	34.5	**1.6**	1.4	1.8	**7.1**	2.4	13.8	**7.7**	2.9	13.8	**32.7**	22.6	44.3
	Al Tina	**26.1**	16.3	38.0	**2.2**	1.9	2.6	**9.7**	1.4	17.8	**63.5**	53.5	72.3	**17.8**	12.3	24.1
	Al Twasha	**25.3**	17.5	34.7	**3.1**	2.9	3.3	**34.9**	23.7	45.6	**63.3**	54.4	70.4	**70.1**	62.2	76.1
	Allait	**19.5**	10.1	29.6	**3.3**	3.0	3.6	**39.4**	21.1	55.5	**59.8**	50.8	69.1	**66.4**	58.6	74.1
	Ambaro	**18.7**	12.9	25.8	**1.6**	1.3	1.8	**5.2**	2.3	9.2	**33.0**	11.2	54.1	**15.5**	9.4	21.9
	Dar Alsalam	**35.3**	28.1	42.0	**1.8**	1.7	2.0	**7.1**	4.0	11.2	**17.4**	11.6	27.0	**49.6**	41.9	56.7
	Kabkabia	**17.1**	10.2	25.0	**1.7**	1.5	1.9	**6.0**	1.9	13.5	**35.9**	21.0	52.6	**21.3**	12.3	34.7
	Karnoi	**24.5**	16.1	33.9	**2.1**	2.0	2.3	**2.0**	0.0	7.5	**70.7**	59.4	80.8	**27.8**	18.2	40.0
	Kelemendo	**32.4**	22.7	42.6	**3.0**	2.8	3.4	**44.5**	34.0	54.0	**46.1**	34.4	59.0	**66.5**	54.2	74.2
	Kutum	**23.6**	19.6	28.9	**2.4**	2.2	2.5	**12.4**	7.9	17.2	**43.8**	33.4	54.0	**61.6**	54.1	70.1
	Mallit	**34.3**	24.7	42.4	**1.5**	1.3	1.7	**3.4**	0.0	9.2	**9.8**	5.8	14.3	**27.3**	17.2	40.2
	Saraf Omra	**20.3**	9.4	44.0	**2.5**	1.8	2.8	**34.4**	19.2	48.4	**20.3**	9.4	35.1	**70.2**	47.2	81.3
	Tawila	**9.9**	5.8	14.0	**3.4**	2.8	4.0	**48.9**	33.0	64.4	**38.8**	28.7	50.0	**91.9**	83.7	97.8
	Umkadada	**19.5**	14.8	26.3	**3.0**	2.7	3.2	**32.4**	24.5	39.7	**57.6**	51.6	62.8	**63.3**	54.2	71.8
	All state except capital	**26.2**	23.9	29.0	**2.5**	2.4	2.7	**23.7**	20.1	26.5	**42.2**	38.7	46.4	**49.5**	43.8	53.5
	El Fashir Town	**12.8**	6.3	18.7	**3.4**	2.8	4.2	**51.9**	38.8	63.7	**46.7**	35.9	58.7	**62.2**	48.3	76.3
	Zamzam Camp*	**18.5**	11.1	26.8	**2.6**	2.2	3.1	**28.6**	20.8	38.5	**45.9**	31.7	56.4	**49.5**	38.7	63.0
	El Sireif Camp*	**26.2**	19.3	32.2	**1.6**	1.4	1.8	**7.5**	2.8	12.6	**7.9**	2.4	14.7	**32.4**	21.8	41.7
South Darfur	Al Rudoom (part)	**8.5**	4.6	12.3	**4.0**	3.7	4.3	**53.2**	45.4	61.3	**56.8**	41.2	68.9	**81.7**	71.4	88.8
	Alwehda	**9.4**	3.9	17.2	**2.1**	1.8	2.6	**20.2**	12.5	30.0	**7.8**	2.3	22.8	**62.8**	47.7	81.5
	Belil	**17.9**	10.4	26.0	**3.8**	3.5	4.1	**39.6**	25.0	50.0	**81.3**	71.8	88.6	**87.5**	74.0	92.7
	Buram	**25.3**	15.9	33.9	**4.2**	3.5	4.6	**72.5**	54.8	90.8	**63.9**	39.3	80.2	**91.8**	81.8	98.3
	Dimso	**13.5**	6.3	24.0	**2.0**	1.8	2.8	**28.8**	19.8	39.6	**34.4**	22.9	54.2	**27.3**	14.6	40.7
	El Salam	**11.8**	4.5	20.5	**3.9**	3.5	4.2	**29.3**	13.3	49.1	**61.3**	30.9	83.4	**91.6**	83.0	97.3
	Gerieda	**0.0**	0.0	33.3	**3.8**	3.3	4.3	**31.3**	7.7	48.5	**36.1**	15.2	75.0	**75.8**	57.7	92.3
	Id Elfirsan	**7.8**	4.7	12.0	**2.6**	2.4	2.8	**15.6**	7.3	25.0	**65.6**	57.6	72.9	**25.5**	19.2	34.4
	Kass	**8.6**	3.9	15.6	**3.6**	3.3	3.9	**46.4**	39.5	54.7	**37.7**	30.9	43.7	**77.7**	67.4	86.3
	Katila	**15.6**	11.6	21.0	**2.7**	2.5	2.8	**27.9**	21.9	34.8	**38.0**	31.4	44.2	**53.6**	43.6	60.7
	Kubum	**3.1**	0.6	7.5	**3.3**	2.8	3.9	**46.3**	25.9	66.9	**51.6**	44.4	59.4	**57.6**	39.6	75.8
	Mershing	**12.5**	3.1	25.0	**2.1**	1.8	2.5	**25.0**	12.5	40.6	**6.3**	0.0	15.6	**59.4**	40.5	78.1
	Netiga	**12.0**	6.2	19.5	**2.8**	2.2	3.4	**29.7**	16.8	41.7	**44.3**	20.3	69.4	**46.9**	28.1	67.1
	Rahad Elberdi (part)	**12.9**	8.4	20.5	**3.4**	3.2	3.6	**49.0**	40.0	58.2	**73.7**	63.9	81.9	**73.6**	64.6	80.7
	Toluss	**35.5**	23.8	48.4	**1.7**	1.4	2.9	**23.4**	12.4	32.8	**21.9**	7.8	67.7	**25.0**	12.5	40.3
	Um Dafog (part)	**0.0**	0.0	0.0	**3.2**	2.7	3.7	**40.0**	19.8	67.1	**45.0**	20.0	83.3	**60.0**	40.0	83.3
	All state except capital	**13.0**	11.2	14.4	**2.8**	2.7	3.0	**32.3**	28.3	36.2	**39.8**	33.5	45.8	**60.2**	55.1	63.8
	Nyala Town	**6.8**	2.6	11.4	**4.5**	4.2	4.8	**53.9**	44.8	64.1	**71.4**	62.4	78.6	**91.5**	85.3	96.2
	Kalma Camp*	**15.8**	10.2	22.0	**3.7**	3.3	4.0	**59.0**	49.3	69.7	**50.2**	41.5	59.8	**73.5**	64.2	82.7

State	Locality	Mother undernourished (MUAC <230mm)			Mothers' dietary diversity score			Plant sources of vitamin A consumed (Mothers)			Animal sources of vitamin A consumed (Mothers)			Iron rich foods consumed (Mothers)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
East Darfur	Abukarinka	**9.2**	3.6	15.1	**4.4**	4.0	4.7	**19.3**	10.9	34.4	**79.2**	69.1	86.7	**83.9**	77.6	89.9
	Adilla (part)	**10.2**	5.5	15.6	**3.6**	3.3	3.9	**46.1**	36.7	59.4	**22.7**	12.7	32.0	**94.5**	88.2	98.4
	Al Deain	**21.7**	10.7	33.5	**4.4**	4.0	4.8	**21.7**	5.3	39.2	**97.5**	93.0	100.0	**94.6**	90.0	98.3
	Alfirdos	**33.0**	25.3	42.3	**3.7**	3.3	4.0	**24.1**	15.0	34.7	**49.6**	34.3	70.7	**75.8**	55.6	94.9
	Asslaya	**11.4**	5.3	19.0	**5.8**	5.4	6.0	**97.2**	91.7	100.0	**100.0**	95.0	100.0	**100.0**	97.5	100.0
	Aubgabar	**14.6**	8.7	23.1	**2.3**	2.1	2.7	**0.0**	0.0	0.0	**8.8**	1.1	24.5	**87.2**	76.5	93.0
	Aubmatarg	**14.8**	5.1	28.1	**2.9**	2.7	3.0	**0.0**	0.0	5.2	**15.6**	6.3	26.3	**70.7**	57.4	82.8
	Sharia (part)	**11.5**	4.1	18.8	**4.2**	3.9	4.5	**33.3**	9.3	53.2	**81.3**	70.8	90.6	**91.7**	81.2	96.9
	Yaseen (part)	**9.4**	1.6	17.3	**4.6**	4.3	4.9	**89.1**	74.9	100.0	**75.0**	59.3	87.6	**87.5**	76.5	95.3
	All state except capital	**12.2**	10.1	14.8	**4.1**	3.8	4.4	**37.4**	27.3	46.3	**59.4**	47.8	68.2	**88.0**	84.3	91.0
	Al Deain Town	**8.7**	4.0	14.3	**4.2**	3.8	4.6	**53.7**	43.0	64.6	**56.0**	42.1	71.6	**88.1**	80.7	93.3
West Darfur	Algenea	**4.7**	0.0	14.1	**3.1**	0.0	5.2	**43.1**	0.0	78.2	**43.1**	0.0	76.6	**62.8**	0.0	100.0
	Baida	**11.5**	4.8	19.2	**3.2**	2.7	3.7	**21.0**	4.4	39.4	**37.0**	22.0	62.3	**98.6**	93.0	100.0
	Forbranga	**3.9**	1.2	7.4	**3.1**	2.7	3.3	**25.0**	10.1	45.2	**40.3**	19.7	68.7	**74.2**	54.4	91.4
	Gabal Moon	**6.9**	3.1	11.5	**2.3**	1.9	2.6	**9.8**	6.1	13.8	**16.7**	10.6	23.8	**58.2**	38.3	75.9
	Habilla	**4.2**	0.8	8.5	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Kerenik	**4.1**	2.5	7.5	**4.0**	3.8	4.2	**65.5**	58.7	72.6	**40.1**	22.5	55.8	**84.6**	70.3	93.2
	Kulbus	**9.3**	5.6	14.4	**3.7**	3.4	4.0	**17.1**	11.6	26.2	**63.7**	47.1	80.9	**92.4**	85.3	98.6
	Serba	**3.3**	1.1	7.7	**2.5**	2.0	2.7	**14.6**	9.4	21.9	**11.5**	5.2	17.2	**56.8**	40.1	67.4
	All state except capital	**4.8**	3.1	6.5	**3.1**	2.8	3.4	**31.0**	24.6	37.3	**26.7**	18.6	39.2	**66.8**	59.0	76.4
	Algenea Town	**6.9**	2.8	12.6	**4.1**	3.3	4.7	**56.0**	41.6	68.3	**55.2**	43.6	66.3	**79.5**	67.7	90.3
	Morne Camp*	**7.2**	2.1	18.9	**4.1**	4.0	4.5	**77.8**	69.4	86.5	**49.3**	39.8	56.0	**98.7**	95.1	100.0
Central Darfur	Azoum	**18.3**	0.0	35.4	**2.1**	1.7	2.5	**19.5**	6.5	33.0	**33.3**	16.9	46.9	**53.2**	28.8	65.9
	Bendsi (part)	**16.1**	9.6	23.7	**3.4**	3.1	3.8	**22.0**	15.1	31.2	**54.8**	44.1	64.5	**80.7**	72.0	89.1
	Mukjar (part)	**15.1**	10.3	21.6	**3.3**	2.9	3.6	**50.0**	33.1	63.7	**36.7**	26.0	49.2	**92.4**	84.9	98.1
	Nertati	**8.7**	3.3	19.5	**1.8**	1.6	2.1	**18.5**	10.1	27.2	**8.3**	0.0	38.6	**58.9**	47.8	73.7
	Rokiro	**11.9**	3.6	21.0	**2.5**	2.1	2.9	**27.4**	18.6	40.3	**8.5**	0.0	19.4	**78.6**	67.9	88.7
	Um Dukhun (part)	**17.1**	11.1	24.9	**3.6**	3.3	3.9	**40.7**	29.5	54.7	**52.9**	40.1	64.0	**90.0**	81.4	97.0
	Wadi Salih (part)	**11.3**	7.1	16.7	**3.5**	3.2	3.7	**36.1**	28.8	45.4	**50.5**	39.1	61.3	**80.8**	71.2	89.0
	Zalingei	**9.8**	4.8	16.7	**3.2**	2.8	3.6	**43.9**	31.6	52.6	**47.3**	39.9	55.6	**72.4**	58.0	85.3
	All state except capital	**15.5**	11.1	19.6	**2.7**	2.5	3.0	**26.0**	20.9	31.2	**41.6**	35.2	46.6	**65.6**	58.7	72.1
	Zalingi Town	**2.8**	0.0	7.1	**4.1**	3.8	4.4	**59.3**	52.6	66.5	**58.2**	47.6	69.2	**94.4**	90.2	98.1
	Mukjar Town*	**15.2**	8.9	21.2	**3.3**	3.0	3.6	**50.0**	37.1	64.2	**36.8**	24.4	47.8	**92.5**	86.8	97.4
	Um Dokhon Town*	**18.0**	10.4	24.7	**3.6**	3.3	3.9	**40.9**	30.0	54.2	**52.2**	41.9	64.4	**89.9**	82.1	95.8

9.2.2 Reproductive health

ANC visits (Figures 57 and 58)
Coverage of one ante-natal visit (during the Mother's last pregnancy) was generally high across the country at locality and state level, although there are pockets of low coverage principally in Red Sea and North Kordofan. A major reason for an initial visit is to confirm a pregnancy, this is an opportunity of first contact with Mothers that at present is not being maximized. Ante natal care visits more than halved in most localities when looking at the number of mothers who attended four or more visits. This in part could be attributed to the lack of services at both community and facility level, for instance the 2014 up-dated Health Mapping showed that in Red Sea State just 38.3% of all health facilities provide ante-natal care services, while coverage of villages with community midwives is 31.2%. Although this shows an improvement in coverage since the Health Mapping in 2011, more efforts need to be made in expansion of services. Traditions and wrong believes in some localities e.g. in Kassala state is thought to contribute to the low ANC four or more visits coverage. Return visits were highest in localities in Khartoum and Northern states. Overall return visits were lowest in Red Sea state localities. The low coverage of return ante-natal care visits needs further investigation to establish the reasons in order to take appropriate action. It should be noted that this survey did not ask the month of pregnancy of the first visit.

ANC attendance by trained personnel (Figure 59)
The availability of trained personnel for ANC was overall good across the country, however there are particular localities of low coverage that are bringing down the overall state coverage estimates. Coverage was particularly low in El Managil in Gezira state, Assalyia in East Darfur, Kulbus in West Darfur and Saraf Omera in North Darfur. Results for this indicator affect the low coverage of ANC services (due to lack of availability of service providers) and therefore the results for one ANC visit. Areas of low coverage of ANC one visit match areas of lack of trained personnel (Figures 57 and 59). The midwifery mapping (2012) shows that at population level coverage of trained midwives per capita is 79%, however geographical distribution shows a village coverage of just 36%. It also shows that just 25% of trained village midwives are employed, and the majority of them in the urban centers. This is because there is a lack of salaried positions in rural localities and more opportunities for employment in public and private clinics in the urban centers. This could explain why maps show a higher coverage around urban centers.

Iron and folic acid supplementation for one month and six months (Figure 60 and 61)
Mothers were shown ferrous sulphate and folic acid (Fefol) tablets and asked if they had received them during their last pregnancy. Coverage of iron and folic acid supplementation was generally lower than coverage of antenatal care visits across the country, suggesting that supply of Fefol is an issue, particularly (but not limited to) El Hasahisa in Gezira state, Umbada in Khartoum state and West Bara in North Kordofan state. National Nutrition Program records show that just 24% of Fefol needs were procured during 2013. Fefol coverage for one month was strongest around Khartoum state, in southern parts of Kassala and in parts of Central Darfur. Fefol for 6 months during pregnancy was also low, as low as 2% in some states (Red Sea, excluding Port Sudan city). This is in line with the low ANC up-take rate.

Figure 63: proportion of Mothers who attended at least one ante-natal visit during their last pregnancy

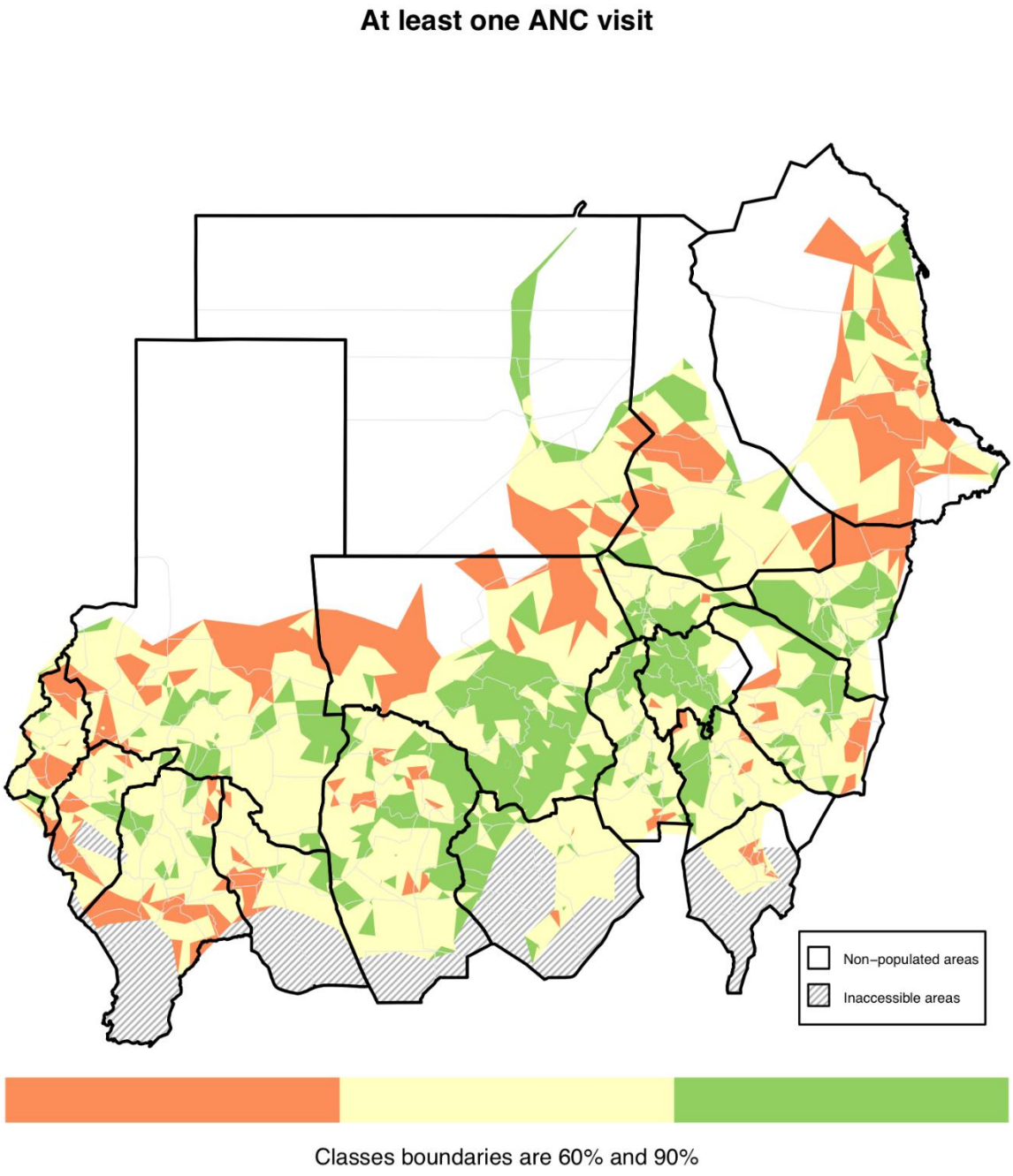


Figure 64: Proportion of Mothers who attended ANC four or more times during their last pregnancy

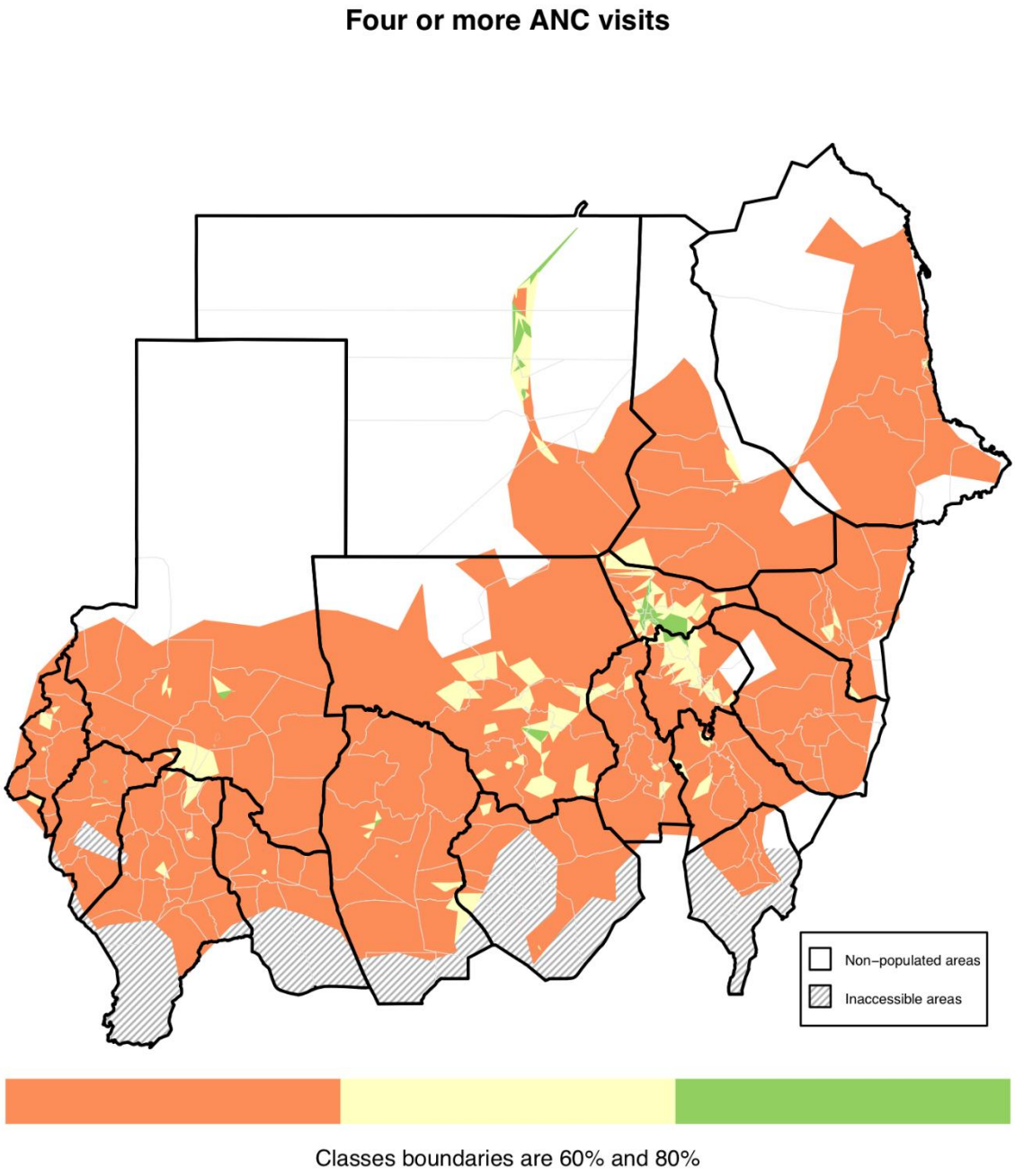


Figure 65: Classification map showing proportion of ANC visits attended by trained personnel

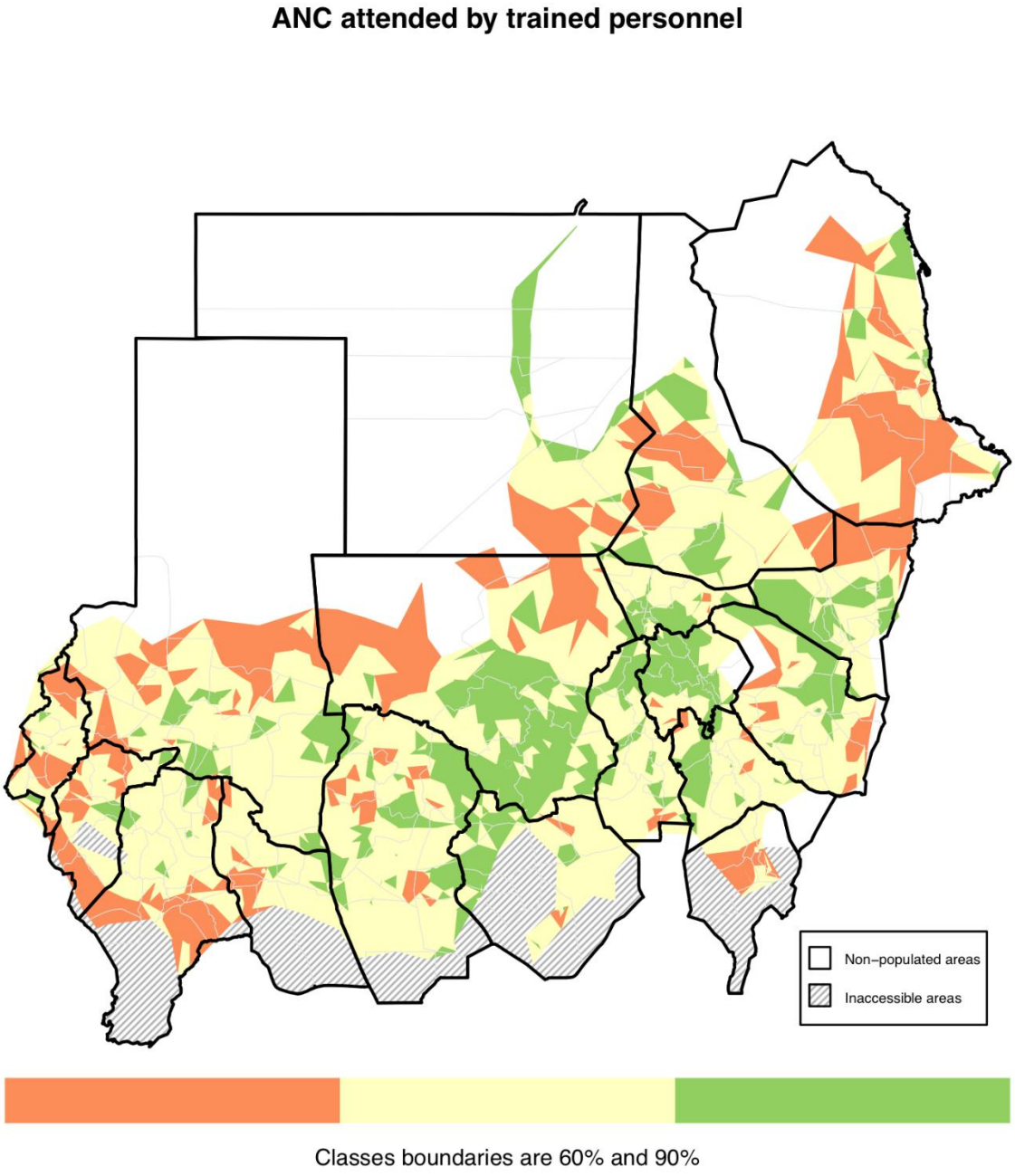


Figure 66: Classification map of proportion of mothers receiving iron & folate for minimum one month

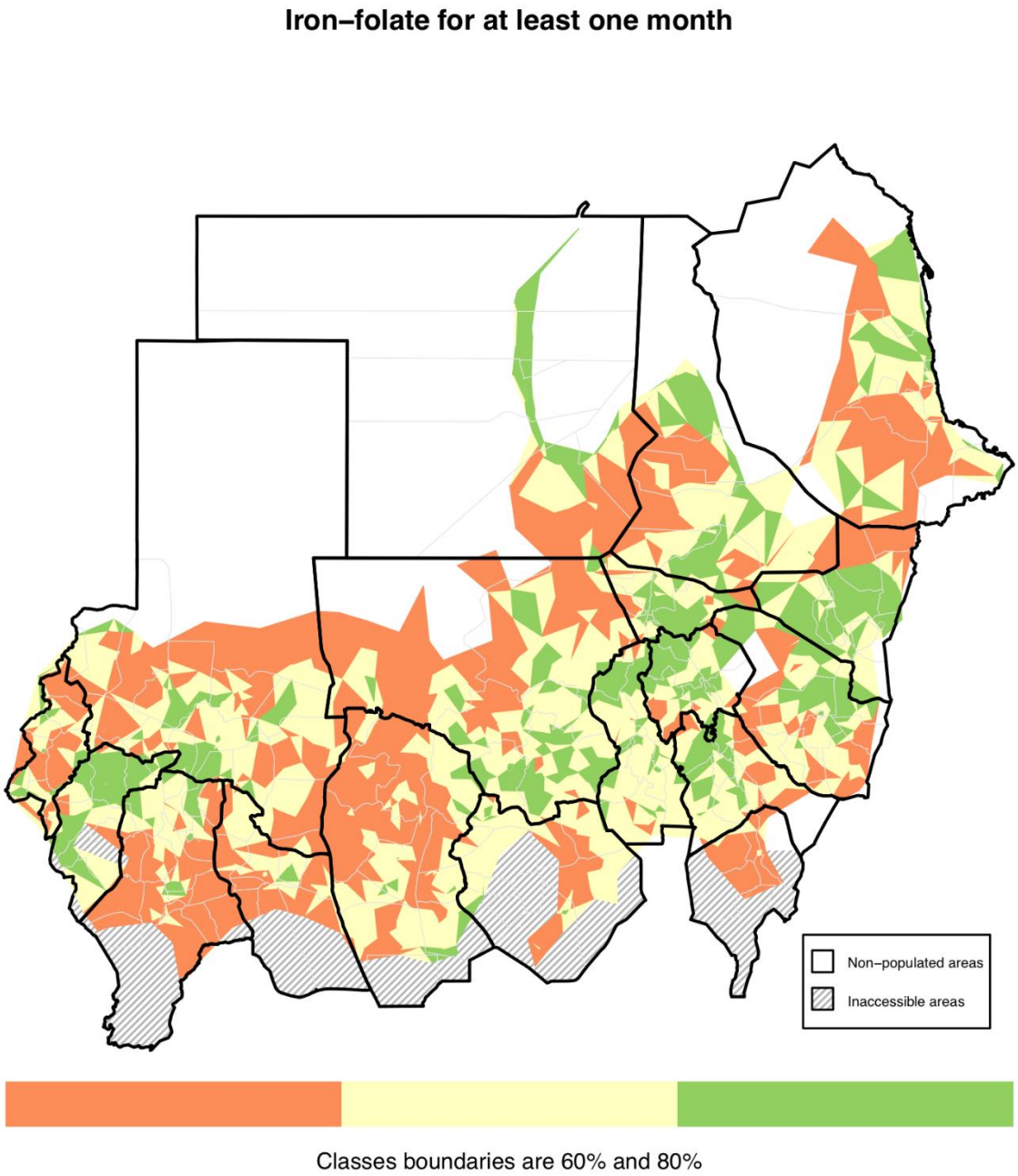


Figure 67: Classification map showing proportion of mothers receiving iron-folate for minimum 6 months

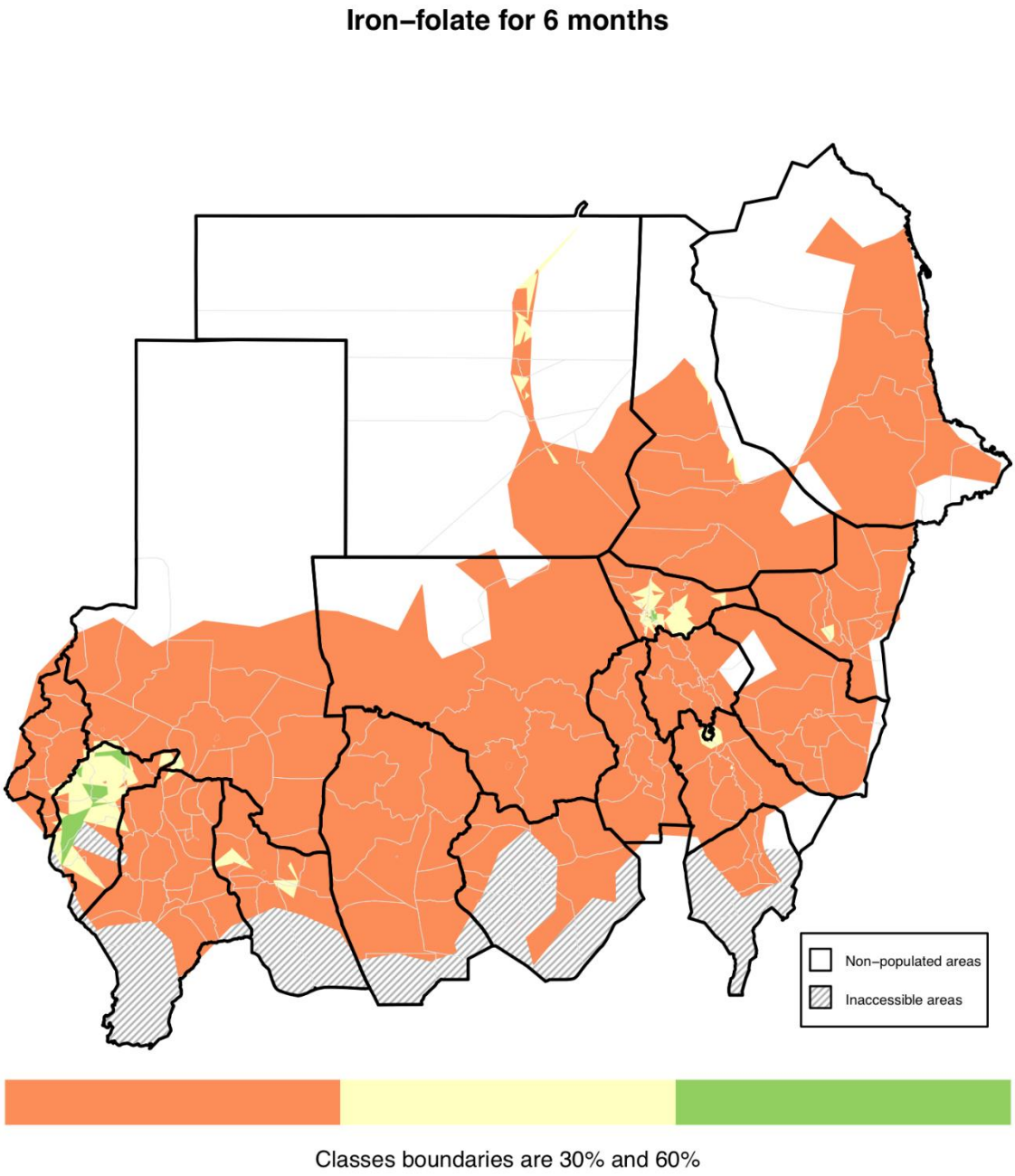


Table 13: Ante-natal care, results by locality

State	Locality	At least one ANC visit			Four or more ANC visits			ANC attended by trained personnel			Iron-folate for 6 months or more			Iron-folate for at least one month		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Red Sea	Ageeg	**90.7**	76.1	98.2	**42.3**	22.5	59.4	**85.9**	65.0	96.9	**1.2**	0.0	4.2	**82.5**	68.9	91.1
	Alganeb Alolib	**60.3**	45.7	76.7	**22.6**	12.2	33.4	**59.6**	44.6	74.5	**3.5**	1.1	6.8	**62.0**	44.9	76.3
	Dordaib	**72.5**	47.1	92.2	**14.0**	6.1	22.4	**60.9**	36.5	85.8	**0.6**	0.0	3.1	**68.8**	46.4	86.5
	Haia	**48.2**	31.1	64.9	**2.0**	0.0	4.5	**45.7**	22.7	62.0	**0.0**	0.0	0.0	**45.9**	30.5	58.3
	Haliab	**60.9**	36.9	84.2	**0.0**	0.0	5.4	**61.6**	33.9	88.9	**1.5**	0.0	8.0	**73.7**	60.3	87.0
	Japitalmadin	**91.8**	78.6	100.0	**18.4**	13.5	23.4	**91.5**	77.1	98.5	**0.0**	0.0	0.0	**81.7**	68.7	87.6
	Sawaken	**73.2**	65.5	79.9	**8.3**	2.4	17.9	**72.3**	65.7	79.9	**0.0**	0.0	0.0	**60.1**	49.3	68.8
	Senkat	**35.2**	21.9	49.8	**5.0**	0.0	12.5	**35.5**	22.5	51.2	**0.0**	0.0	0.0	**25.7**	8.4	49.0
	Tokar	**87.8**	79.5	92.5	**20.4**	15.0	24.7	**87.6**	77.0	92.6	**8.6**	5.8	12.2	**87.9**	80.7	92.2
	Port Sudan	**96.7**	93.7	98.6	**71.1**	59.8	77.9	**96.7**	93.0	98.7	**14.3**	9.7	19.7	**91.5**	88.3	94.0
	All state	**87.3**	84.3	90.2	**45.9**	40.4	51.1	**85.8**	82.0	89.1	**8.4**	6.4	10.6	**82.4**	79.1	85.5
Kassala	Aroma	**91.3**	84.4	95.3	**28.3**	21.1	35.3	**88.7**	82.8	93.2	**10.2**	6.5	14.3	**92.1**	86.4	97.0
	Hamshkoreb	**85.3**	77.1	91.8	**32.2**	24.3	42.4	**86.5**	76.1	93.3	**5.4**	2.0	8.7	**83.3**	73.7	91.3
	Kshmalgrba	**89.8**	82.0	96.1	**62.5**	47.7	73.5	**90.6**	83.6	96.9	**11.7**	5.5	20.4	**89.1**	82.0	96.9
	Nahr Atbara	**100.0**	96.3	100.0	**46.9**	35.9	59.4	**100.0**	100.0	100.0	**31.3**	23.4	40.6	**100.0**	98.0	100.0
	North Delta	**99.1**	92.0	100.0	**32.1**	24.6	39.8	**97.3**	84.7	100.0	**6.3**	2.2	11.3	**98.2**	91.5	100.0
	Rify Kassala	**91.3**	78.1	100.0	**38.1**	22.5	51.9	**91.3**	81.2	100.0	**0.6**	0.0	5.6	**90.6**	78.7	98.8
	Rural Halfa	**94.8**	90.6	98.4	**44.8**	27.1	63.5	**94.3**	89.6	98.5	**14.1**	5.7	32.4	**89.6**	81.7	95.3
	Talkok	**98.3**	95.2	100.0	**22.3**	16.9	29.6	**97.9**	94.6	100.0	**2.0**	0.6	4.5	**98.3**	95.9	100.0
	Wadalhlew	**93.8**	87.8	97.7	**67.0**	50.4	77.4	**91.2**	80.3	96.9	**11.3**	5.2	17.2	**92.2**	84.4	98.0
	West Kassala	**100.0**	98.7	100.0	**65.1**	48.6	76.0	**100.0**	90.9	100.0	**51.0**	27.6	66.7	**100.0**	88.0	100.0
	All state except capital	**95.8**	92.6	97.5	**34.3**	29.9	39.7	**94.9**	91.6	97.3	**8.3**	5.6	12.1	**94.9**	91.9	97.0
	Kassala Town	**97.6**	93.7	99.6	**61.7**	52.3	71.9	**96.7**	93.3	98.9	**25.7**	17.6	35.8	**94.5**	89.6	97.9
	Hamoshkoreib Town*	**86.1**	78.3	93.0	**33.8**	25.8	42.5	**87.6**	78.3	93.8	**5.2**	1.9	10.4	**84.0**	75.3	91.3
Gedaref	Al Gadaref Wasat	**87.3**	81.0	92.4	**43.4**	33.7	52.8	**84.9**	78.6	89.8	**2.1**	0.7	3.8	**71.9**	65.4	79.6
	Al Mafaza	**92.7**	65.3	97.9	**52.1**	24.9	61.5	**92.7**	67.3	96.9	**3.1**	0.0	6.3	**55.2**	35.7	65.7
	Albutana	**83.8**	76.9	88.9	**33.8**	23.6	41.4	**82.5**	75.7	89.2	**6.7**	3.7	10.6	**62.7**	51.8	75.4
	Alfashaga	**93.6**	91.0	95.6	**69.9**	63.4	75.0	**93.2**	90.1	95.6	**21.3**	17.1	24.5	**92.7**	89.7	95.2
	Alfaw	**93.3**	89.6	96.4	**49.1**	42.0	56.7	**93.2**	89.0	96.4	**0.0**	0.0	1.3	**52.2**	45.0	59.3
	Algalabat Al Garbiya	**76.0**	61.5	83.3	**34.4**	21.8	45.8	**74.0**	59.4	84.4	**0.0**	0.0	5.2	**53.1**	42.7	65.6
	Algalabat Al Shargiya	**82.8**	60.9	92.2	**18.0**	10.2	25.0	**83.6**	64.0	92.3	**2.3**	0.0	6.3	**79.7**	59.3	89.8
	Algurisha	**53.8**	39.0	67.8	**19.7**	11.2	31.3	**49.4**	28.4	65.7	**3.8**	0.6	8.1	**35.9**	18.1	50.0
	Alrahad	**94.8**	85.4	100.0	**51.0**	40.6	59.4	**94.8**	83.3	99.0	**0.0**	0.0	7.3	**65.6**	56.2	81.3
	Basonda	**80.5**	69.5	89.8	**25.8**	17.5	35.7	**76.0**	64.3	86.2	**0.5**	0.0	1.6	**59.9**	51.8	67.9
	Gula Alnahal	**91.4**	86.7	96.1	**21.1**	12.5	32.1	**79.7**	68.3	88.7	**3.9**	1.2	7.5	**76.2**	66.2	83.6
	All state except capital	**86.4**	84.0	88.9	**45.2**	40.7	50.2	**85.4**	82.4	88.4	**10.8**	8.4	12.5	**78.3**	74.1	83.0
	Gedarif Town	**92.2**	86.0	96.3	**137.3**	89.5	185.1	**90.6**	84.6	96.1	**11.3**	6.9	16.9	**84.5**	75.4	92.0
Blue Nile	Baw (part)	**67.2**	53.1	81.3	**9.4**	1.5	18.8	**39.1**	9.4	70.3	**0.0**	0.0	0.0	**31.3**	3.1	60.9
	Damazin	**86.5**	74.0	94.8	**50.0**	29.2	75.1	**86.5**	71.8	95.8	**21.9**	11.4	32.3	**70.8**	54.2	83.4
	Giessan (part)	**55.6**	44.9	74.6	**39.4**	35.9	44.2	**55.5**	44.0	71.1	**2.0**	0.5	6.4	**34.9**	13.5	64.3
	Kurmuk (part)	**68.8**	59.3	82.3	**42.7**	29.1	54.2	**68.8**	55.1	84.4	**0.0**	0.0	4.2	**57.3**	44.8	72.9
	Rosairs (part)	**47.3**	34.1	60.3	**18.9**	13.6	25.1	**45.8**	35.9	60.0	**2.0**	1.0	3.3	**30.5**	21.4	39.5
	Tadamon (part)	**68.8**	57.8	78.1	**27.3**	13.3	40.7	**68.0**	58.6	77.3	**0.0**	0.0	2.3	**32.0**	23.4	39.1
	All state except capital	**52.8**	45.9	59.9	**28.3**	21.6	33.4	**51.5**	44.4	60.3	**2.4**	1.3	3.7	**33.1**	22.7	42.0
	Damazin Town	**61.5**	54.1	86.0	**14.7**	7.6	61.8	**53.3**	31.6	84.5	**1.4**	0.4	12.2	**36.9**	27.8	67.8
	Roseris Town	**82.3**	71.9	90.0	**52.0**	40.0	62.1	**81.4**	70.4	89.6	**20.0**	11.4	30.1	**77.1**	64.5	87.3

State	Locality	At least one ANC visit			Four or more ANC visits			ANC attended by trained personnel			Iron-folate for 6 months or more			Iron-folate for at least one month		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
South Kordofan	Abujebiha (part)	**74.5**	67.3	81.2	**23.4**	16.5	33.7	**74.8**	67.5	81.9	**0.7**	0.0	2.3	**46.8**	37.9	57.1
	Al Tadamoon (part)	**59.3**	39.8	73.7	**22.1**	14.3	29.3	**56.2**	35.7	75.1	**1.1**	0.0	3.3	**44.9**	33.6	57.2
	Alabaseya	**66.7**	53.1	78.1	**33.3**	22.9	42.9	**66.7**	55.1	79.2	**0.0**	0.0	2.4	**65.6**	55.2	75.0
	Algoz	**83.7**	73.0	92.6	**51.3**	43.6	64.2	**82.7**	71.9	91.8	**2.6**	0.6	6.5	**71.3**	64.4	79.1
	Allirri	**87.9**	81.3	94.3	**55.2**	46.3	64.1	**88.5**	82.0	93.8	**0.0**	0.0	0.0	**55.2**	45.3	63.6
	Alreif Alshargi	**94.8**	90.6	100.0	**64.6**	54.2	72.9	**94.8**	84.4	100.0	**7.3**	2.1	14.6	**87.5**	74.9	95.8
	Dilling (part)	**56.3**	40.5	71.9	**9.4**	0.0	18.8	**56.3**	37.5	71.9	**3.1**	0.0	9.4	**43.8**	28.0	59.4
	Gadeir (part)	**92.3**	85.1	96.8	**38.6**	23.3	57.1	**92.3**	84.2	97.7	**1.0**	0.0	2.8	**80.8**	73.4	86.2
	Habeila (part)	**96.9**	90.4	100.0	**56.3**	44.8	63.6	**96.9**	89.6	100.0	**4.2**	1.0	7.6	**78.7**	57.8	91.7
	Rashad (part)	**91.0**	83.3	96.9	**56.4**	39.7	69.8	**91.7**	84.3	98.7	**2.6**	0.0	6.5	**52.6**	38.3	70.5
	All state except capital	**81.2**	75.6	84.8	**39.7**	33.5	45.0	**79.4**	73.5	84.7	**2.1**	1.2	3.1	**62.7**	55.9	67.6
	Kadugli Town	**91.2**	85.9	96.2	**71.7**	62.1	78.7	**89.6**	83.0	94.6	**11.1**	6.0	17.4	**83.0**	74.9	90.1
	Talodi Town	**92.8**	88.1	97.3	**52.9**	42.3	64.9	**91.7**	86.4	96.5	**2.1**	0.0	5.1	**76.3**	67.7	83.5
West Kordofan	Abo Zabad	**95.0**	88.4	98.1	**58.1**	48.1	67.3	**94.3**	88.7	98.1	**4.4**	1.3	8.8	**62.9**	51.3	75.8
	Abyei (NOT AAA)	**90.7**	83.9	96.5	**47.0**	35.4	56.5	**89.9**	83.1	94.9	**2.2**	0.7	4.2	**59.0**	50.5	68.2
	Al Khowi	**94.6**	91.2	97.3	**58.3**	48.5	65.8	**94.7**	91.2	97.4	**4.0**	1.9	7.3	**74.1**	66.5	81.5
	Al Odaya	**69.7**	60.7	79.3	**29.2**	18.0	44.2	**69.0**	59.4	79.9	**1.0**	0.0	2.6	**32.4**	20.0	43.1
	Al Salam	**87.5**	80.8	93.0	**30.8**	25.0	36.7	**85.5**	79.7	92.0	**1.9**	0.4	3.8	**76.4**	70.4	81.1
	Aldebab	**91.3**	83.7	97.8	**48.7**	40.2	58.0	**87.9**	79.0	95.1	**4.0**	1.4	7.2	**75.3**	67.1	83.2
	Almearam	**78.9**	70.5	86.7	**21.9**	10.1	29.8	**78.6**	70.3	85.4	**2.9**	0.0	7.5	**71.6**	63.2	81.3
	Alsnout	**87.5**	81.0	92.4	**47.7**	38.8	53.4	**87.2**	80.6	92.1	**3.1**	1.2	5.4	**65.7**	58.4	71.6
	Babanusa	**91.7**	85.9	96.1	**38.8**	31.5	46.2	**91.2**	84.2	95.4	**0.0**	0.0	0.0	**70.8**	61.5	79.6
	En Nuhud	**90.2**	84.0	93.9	**18.5**	13.1	25.8	**89.5**	84.4	93.7	**1.1**	0.0	2.9	**75.5**	64.0	82.8
	Ghebeish	**81.0**	72.9	88.4	**44.7**	32.1	59.6	**81.2**	70.1	89.1	**2.4**	0.7	5.3	**53.2**	43.6	63.5
	Kailak (part)	**93.1**	82.0	97.6	**77.2**	51.1	90.2	**91.6**	76.5	96.5	**3.5**	1.5	9.5	**62.1**	54.9	78.0
	Lagawa (part)	**88.5**	81.7	92.9	**57.7**	48.5	67.2	**86.7**	79.7	92.7	**5.0**	2.5	8.1	**58.0**	48.5	67.7
	Wad Bandah	**87.1**	79.7	92.3	**46.2**	35.5	53.2	**85.8**	78.7	90.2	**0.8**	0.1	2.0	**58.8**	51.7	65.2
	All state except capital	**88.2**	86.1	90.4	**47.9**	42.0	54.3	**86.7**	84.0	89.4	**2.7**	2.1	3.4	**63.4**	60.3	66.8
	Fula Town	**91.6**	86.1	96.1	**61.2**	51.5	69.2	**91.5**	85.4	96.0	**21.7**	11.5	31.6	**78.7**	70.6	86.2
North Kordofan	Bara	**93.5**	90.5	96.5	**64.1**	55.8	73.3	**92.7**	89.6	95.4	**10.1**	7.2	13.5	**82.0**	77.6	86.3
	El Rahad	**100.0**	96.8	100.0	**22.8**	12.5	45.2	**100.0**	95.2	100.0	**2.5**	0.0	6.3	**100.0**	61.2	100.0
	Jebrat El Sheikh	**90.2**	88.6	91.9	**35.1**	31.4	39.5	**90.2**	88.3	92.1	**4.7**	3.0	6.5	**82.0**	78.8	84.6
	Sheikan	**93.0**	89.2	96.1	**54.0**	44.2	63.7	**91.3**	86.7	94.5	**20.5**	11.5	29.5	**85.9**	79.9	91.7
	Sowdari	**91.4**	88.3	93.6	**55.1**	46.6	64.7	**91.7**	87.8	93.7	**17.2**	12.2	24.1	**73.3**	67.3	78.9
	Umm Daam	**92.1**	82.7	97.2	**62.5**	31.5	93.2	**92.2**	83.8	97.3	**21.2**	1.6	43.8	**80.3**	69.3	92.2
	Umm Rawaba	**92.4**	88.1	95.2	**45.3**	39.5	52.5	**91.0**	86.2	94.3	**9.4**	6.6	13.5	**81.1**	75.0	87.0
	West Bara	**94.7**	87.6	99.3	**46.5**	33.8	54.3	**93.8**	88.3	97.8	**0.7**	0.0	4.6	**50.0**	35.3	67.2
	All state except capital	**92.1**	90.7	93.3	**49.8**	46.3	53.6	**91.2**	89.8	92.4	**11.9**	9.6	14.0	**80.1**	77.6	83.0
	El Obeid Town	**95.3**	90.5	98.5	**73.9**	62.3	85.3	**94.1**	89.6	98.0	**16.9**	9.0	26.7	**81.9**	72.6	89.7
White Nile	Alsalam	**71.9**	59.9	83.3	**20.5**	13.6	26.2	**71.3**	58.1	83.0	**3.6**	1.4	6.3	**58.1**	48.0	67.6
	Ed Douiem	**81.9**	76.7	86.1	**44.4**	34.3	55.5	**81.0**	76.1	85.9	**4.8**	2.0	9.0	**72.1**	65.2	78.1
	El Gutaina	**92.3**	87.6	95.4	**52.5**	40.9	62.5	**91.5**	87.6	95.3	**7.4**	3.1	11.8	**83.7**	78.1	89.7
	El Jabalain	**79.6**	72.8	86.2	**49.9**	40.7	56.7	**80.3**	72.9	86.6	**9.1**	4.7	13.9	**75.1**	66.8	81.6
	Guli	**92.0**	78.0	96.4	**51.3**	35.4	62.5	**91.5**	80.1	96.5	**21.9**	13.0	32.5	**80.4**	69.5	88.8
	Kosti	**85.1**	78.0	91.1	**39.9**	32.3	47.7	**86.4**	76.3	91.8	**0.0**	0.0	2.1	**76.5**	68.4	85.9
	Rabak	**80.4**	69.6	91.4	**28.3**	15.1	39.2	**82.1**	68.6	91.4	**0.0**	0.0	0.0	**68.6**	55.4	82.6
	Tandalti	**90.0**	81.1	96.4	**47.9**	33.3	67.4	**88.5**	80.4	95.9	**4.2**	1.0	10.7	**79.8**	65.3	91.7
	Umm Remta	**96.9**	90.6	100.0	**65.6**	48.7	80.6	**96.9**	90.0	100.0	**20.0**	10.6	27.5	**86.9**	80.0	94.4
	All state except capital	**87.4**	83.9	90.2	**50.1**	44.9	54.4	**87.2**	83.3	89.8	**11.1**	8.6	14.2	**78.4**	74.6	81.2
	Kosti Town	**90.5**	84.1	95.7	**69.5**	60.1	79.2	**89.8**	82.8	94.6	**20.2**	11.0	32.2	**81.4**	72.9	89.1
	Rabak Town	**89.2**	82.8	94.2	**59.0**	50.3	65.9	**89.2**	83.5	94.3	**16.0**	8.2	24.1	**75.2**	66.8	82.2

State	Locality	At least one ANC visit			Four or more ANC visits			ANC attended by trained personnel			Iron-folate for 6 months or more			Iron-folate for at least one month		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Sennar	Abu Hijar	**64.5**	57.4	71.1	**20.7**	14.8	28.6	**64.8**	59.0	70.7	**5.9**	2.3	10.6	**64.8**	55.1	71.1
	Al Dindir	**79.0**	69.2	86.0	**24.6**	19.4	31.2	**78.0**	69.0	85.4	**4.0**	1.6	6.3	**67.6**	58.3	75.0
	Aldali & Almazmoum	**94.5**	87.0	98.7	**46.4**	36.9	57.8	**94.3**	88.3	98.4	**15.6**	5.7	27.9	**78.7**	68.2	87.8
	Alsooki	**79.7**	66.0	89.1	**36.1**	17.6	54.7	**77.2**	66.4	86.7	**16.8**	3.9	30.1	**73.0**	63.5	83.3
	Sennar	**86.7**	79.3	92.4	**44.9**	33.0	55.4	**85.2**	76.9	91.2	**14.5**	9.4	20.2	**76.4**	67.3	85.0
	Sharg Sennar	**76.0**	56.1	88.8	**33.0**	16.8	44.1	**74.7**	55.4	87.9	**20.5**	6.0	38.5	**68.8**	52.2	84.4
	Sinja	**91.8**	84.1	95.9	**57.6**	44.8	66.7	**92.2**	83.7	96.4	**26.5**	15.4	35.4	**87.5**	76.8	93.2
	All state except capital	**83.9**	79.5	87.4	**39.2**	33.3	44.4	**83.0**	78.9	86.6	**14.7**	10.1	18.1	**74.0**	70.1	78.1
	Sennar Town	**92.6**	86.7	97.0	**68.3**	59.8	76.9	**92.7**	87.5	97.0	**30.9**	21.3	41.6	**86.5**	79.5	93.3
	Sinja Town	**93.7**	88.8	97.5	**76.0**	67.9	83.2	**93.6**	88.0	97.1	**35.1**	24.3	44.7	**89.1**	83.5	94.4
El Gezira	El Hasaheisa	**100.0**	100.0	100.0	**72.3**	58.0	86.7	**100.0**	100.0	100.0	**0.0**	0.0	3.0	**78.3**	66.2	90.0
	El Kamlin	**94.5**	87.7	100.0	**78.9**	68.8	88.1	**94.1**	87.3	99.1	**21.5**	12.5	30.9	**84.7**	73.9	92.4
	El Managil	**27.5**	11.8	85.5	**10.7**	4.5	38.3	**24.9**	12.9	78.1	**2.1**	0.5	8.8	**21.7**	10.8	73.0
	Janub El Gezira	**95.4**	87.7	99.4	**47.2**	34.2	58.6	**92.4**	84.5	96.8	**12.2**	5.4	20.6	**82.6**	72.1	92.5
	Madani Al Kobra	**93.3**	80.0	100.0	**66.7**	40.0	86.7	**93.3**	80.0	100.0	**13.3**	0.0	33.3	**66.7**	40.0	86.7
	Sharg El Gezira	**97.5**	90.8	100.0	**82.3**	70.4	92.4	**96.7**	89.8	100.0	**30.9**	21.3	41.0	**79.5**	71.8	86.2
	Umm El Gura	**87.5**	77.3	96.6	**37.5**	25.0	58.9	**86.5**	76.5	95.5	**1.2**	0.0	8.6	**78.3**	67.0	91.1
	All state except capital	**51.5**	34.6	90.8	**31.4**	18.6	56.1	**50.6**	33.8	73.7	**8.6**	4.5	16.5	**43.2**	28.0	76.1
	Madani Town	**92.1**	85.4	97.4	**80.4**	71.5	89.3	**92.2**	84.3	97.3	**16.0**	9.4	25.0	**85.6**	77.0	92.9
Khartoum	Bahari	**97.6**	94.6	99.2	**83.8**	76.8	89.5	**97.5**	94.9	99.2	**49.9**	42.7	58.2	**91.8**	87.9	94.9
	Gabel Awlia	**91.6**	85.7	95.6	**82.8**	71.3	90.0	**91.6**	84.7	95.6	**42.7**	35.3	53.2	**80.8**	75.9	85.6
	Karrarri	**96.7**	94.6	98.6	**77.5**	72.2	82.7	**96.6**	93.9	98.6	**26.8**	18.9	39.6	**85.8**	81.1	90.8
	Khartoum	**93.4**	88.0	98.0	**89.4**	81.2	96.9	**93.4**	88.1	98.5	**53.5**	43.0	63.3	**84.5**	73.7	94.7
	Shareg Elnile	**97.4**	94.5	98.9	**89.9**	83.1	94.3	**96.9**	93.9	98.9	**52.1**	42.7	61.7	**94.2**	90.2	97.0
	Umbada	**95.1**	89.9	98.1	**84.8**	73.7	90.4	**95.1**	90.8	98.1	**19.6**	13.7	25.3	**73.5**	55.1	85.4
	Umdrman	**96.6**	92.1	98.8	**86.9**	76.2	95.3	**95.0**	90.0	98.1	**31.6**	22.7	38.8	**84.4**	76.9	91.3
	All state	**95.8**	94.4	97.1	**84.4**	81.9	87.2	**95.5**	94.1	96.7	**41.2**	36.9	45.8	**86.8**	83.6	89.5
Northern	Alborgeg	**100.0**	100.0	100.0	**83.3**	50.0	100.0	**100.0**	100.0	100.0	**16.7**	0.0	50.0	**100.0**	100.0	100.0
	Aldabba	**94.5**	89.9	97.1	**67.5**	60.8	72.9	**94.4**	90.2	97.0	**29.1**	22.4	35.0	**91.4**	86.6	95.4
	Algoled	**92.2**	87.9	96.7	**62.4**	50.5	70.6	**92.4**	87.9	96.1	**19.0**	11.4	25.3	**80.8**	75.0	86.9
	Dalgo	**100.0**	99.0	100.0	**68.3**	62.6	74.5	**98.7**	97.3	99.8	**23.2**	17.2	29.1	**94.5**	91.1	97.1
	Dongola	**97.1**	94.0	99.3	**77.8**	67.3	88.5	**97.2**	93.0	99.1	**35.5**	24.8	44.9	**85.5**	79.1	92.4
	Halfa	**97.1**	95.5	98.7	**87.2**	83.5	90.4	**97.0**	95.2	98.4	**61.2**	55.8	66.6	**90.4**	87.6	93.2
	Merawi	**97.5**	94.2	99.5	**47.1**	42.2	53.0	**97.1**	91.7	99.3	**6.2**	4.3	8.4	**93.1**	86.9	96.9
	All state except capital	**96.6**	95.5	97.6	**75.6**	72.4	78.6	**96.4**	95.3	97.4	**41.7**	36.7	46.2	**89.8**	87.5	91.4
	Dongola Town	**92.9**	86.0	98.0	**79.2**	70.7	86.7	**92.5**	85.8	97.2	**18.4**	10.6	28.3	**86.5**	79.7	92.5
River Nile	Abu Hamad	**86.9**	83.2	90.4	**58.5**	49.0	65.0	**86.5**	81.7	89.0	**34.3**	25.6	43.4	**80.4**	75.7	84.6
	Albuhaira	**86.1**	76.1	91.3	**17.3**	8.9	26.2	**86.1**	77.9	92.2	**5.6**	3.2	8.1	**69.3**	59.9	77.2
	Atbara	**95.6**	89.5	98.9	**52.0**	41.0	61.7	**95.0**	89.8	98.8	**23.6**	16.6	29.0	**85.7**	80.5	90.6
	Barbar	**92.4**	84.6	97.3	**66.7**	50.2	77.7	**92.7**	85.3	96.9	**31.3**	20.1	40.2	**90.2**	80.3	96.4
	Ed Damer	**87.8**	82.1	91.9	**43.1**	36.0	49.1	**85.9**	79.1	89.9	**3.7**	0.7	8.2	**86.2**	79.2	91.6
	El Matammah	**89.8**	86.3	92.6	**44.2**	37.9	53.0	**89.7**	85.9	93.1	**13.4**	8.6	19.1	**86.7**	82.8	90.4
	Shendi	**71.7**	50.4	90.2	**28.6**	17.2	39.8	**72.6**	49.7	88.9	**3.2**	0.7	6.0	**75.9**	57.4	90.0
	All state except capital	**87.9**	86.1	90.1	**48.0**	44.1	52.2	**86.9**	84.5	89.4	**18.5**	14.9	22.5	**82.6**	79.9	85.7
	Atbara Town	**94.4**	90.0	98.2	**74.6**	64.2	82.6	**93.4**	88.6	98.1	**18.9**	10.9	26.4	**85.6**	79.3	90.7
	El Damar Town	**93.8**	88.9	97.2	**64.3**	53.0	74.5	**94.0**	88.8	97.6	**9.2**	4.5	15.4	**86.4**	78.6	92.7

State	Locality	At least one ANC visit			Four or more ANC visits			ANC attended by trained personnel			Iron-folate for 6 months or more			Iron-folate for at least one month		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
North Darfur	Al Fasher	**84.1**	78.5	91.0	**48.8**	37.9	58.7	**77.8**	71.1	84.4	**10.9**	6.2	16.6	**78.9**	69.9	85.0
	Al Koma	**94.5**	86.6	99.2	**49.6**	22.8	70.2	**93.7**	83.5	99.2	**2.4**	0.0	9.5	**84.9**	76.0	92.1
	Al Malha	**48.5**	35.5	61.2	**16.8**	9.6	27.1	**47.5**	34.9	60.8	**0.2**	0.0	1.4	**39.4**	27.8	48.7
	Al Seref	**59.3**	47.7	72.0	**17.8**	10.3	25.3	**59.4**	46.9	72.0	**1.4**	0.0	3.8	**46.6**	35.2	55.3
	Al Tina	**59.7**	46.7	70.7	**22.1**	7.6	35.3	**55.2**	44.6	65.0	**9.0**	2.1	18.3	**55.8**	44.8	65.7
	Al Twasha	**83.1**	76.5	90.0	**23.8**	17.0	30.2	**77.7**	67.0	85.4	**3.8**	0.6	8.3	**56.2**	49.1	62.4
	Allait	**82.5**	66.9	93.7	**21.1**	13.5	29.7	**82.0**	64.8	94.5	**0.8**	0.0	3.9	**56.3**	34.3	70.4
	Ambaro	**64.4**	54.3	73.6	**11.6**	6.5	17.3	**63.5**	52.2	73.8	**1.9**	0.0	4.3	**35.8**	28.0	46.7
	Dar Alsalam	**95.5**	90.3	98.7	**62.5**	50.4	73.7	**95.4**	88.4	98.2	**1.8**	0.0	6.0	**86.2**	79.3	91.1
	Kabkabia	**81.4**	64.9	90.6	**26.6**	16.2	36.9	**80.2**	65.7	88.8	**1.0**	0.0	3.0	**72.3**	59.7	83.1
	Karnoi	**87.0**	78.8	93.4	**32.7**	19.5	44.6	**82.5**	73.3	89.3	**1.2**	0.0	5.3	**73.8**	62.3	86.2
	Kelemendo	**84.0**	79.3	88.3	**31.6**	22.6	41.1	**84.4**	78.5	89.1	**6.6**	3.1	10.6	**71.1**	59.8	80.1
	Kutum	**98.4**	91.8	100.0	**55.3**	43.6	64.1	**98.5**	89.5	100.0	**4.6**	2.6	8.6	**98.0**	89.0	100.0
	Mallit	**55.8**	45.0	66.5	**24.0**	14.5	34.2	**53.7**	44.0	64.8	**0.6**	0.0	1.8	**51.2**	41.4	63.2
	Saraf Omra	**36.8**	24.9	54.0	**3.1**	0.0	10.5	**35.9**	24.9	54.4	**1.8**	0.0	7.8	**28.1**	15.6	49.3
	Tawila	**84.3**	69.5	95.5	**56.1**	34.9	78.1	**83.0**	69.4	96.5	**7.6**	2.7	14.0	**80.4**	65.4	94.6
	Umkadada	**94.8**	87.1	98.4	**52.7**	39.9	66.5	**94.2**	88.1	98.5	**3.4**	1.1	6.8	**61.6**	53.4	68.7
	All state except capital	**78.8**	75.2	82.7	**36.3**	32.4	40.4	**77.5**	73.2	81.5	**3.7**	2.6	4.7	**66.5**	62.4	70.4
	El Fashir Town	**92.5**	86.5	96.7	**56.5**	45.8	66.9	**86.1**	75.7	93.9	**14.2**	7.2	22.7	**85.8**	80.0	91.9
	Zamzam Camp*	**85.8**	76.3	92.2	**51.6**	40.1	61.7	**77.3**	66.2	85.7	**8.6**	4.6	15.3	**77.5**	69.5	87.1
	El Sireif Camp*	**60.1**	48.3	70.0	**18.0**	10.6	26.4	**59.2**	46.9	70.2	**1.4**	0.0	3.7	**45.1**	33.6	56.5
South Darfur	Al Rudoom (part)	**58.1**	45.8	70.0	**19.7**	11.9	34.1	**52.9**	41.7	66.2	**1.3**	0.0	3.0	**31.8**	24.4	39.4
	Alwehda	**79.7**	69.1	89.1	**44.5**	32.7	53.9	**78.9**	68.0	87.5	**0.0**	0.0	2.5	**54.7**	43.0	68.3
	Belil	**88.5**	79.1	93.8	**43.8**	31.1	52.2	**87.5**	78.1	92.8	**3.1**	1.0	7.3	**74.0**	66.7	82.3
	Buram	**48.6**	37.8	66.4	**14.9**	7.7	25.3	**42.1**	28.2	60.0	**0.8**	0.0	3.9	**23.6**	14.9	31.8
	Dimso	**86.5**	78.8	92.7	**47.9**	37.8	57.7	**78.1**	67.7	85.4	**0.0**	0.0	2.1	**90.6**	84.3	97.0
	El Salam	**78.4**	66.1	87.3	**38.9**	27.6	50.0	**74.0**	62.0	84.5	**9.8**	3.4	17.1	**62.0**	49.1	76.0
	Gerieda	**100.0**	73.3	100.0	**75.0**	0.0	100.0	**100.0**	70.4	100.0	**8.3**	0.0	18.8	**77.8**	47.8	94.4
	Id Elfirsan	**77.3**	71.3	83.3	**39.1**	30.2	50.0	**77.1**	71.5	83.4	**6.3**	2.6	10.9	**50.0**	41.4	58.9
	Kass	**80.9**	72.6	89.1	**40.6**	26.2	59.0	**72.3**	60.1	86.3	**5.9**	2.0	11.0	**69.5**	60.2	80.5
	Katila	**67.2**	60.3	73.7	**27.7**	21.0	34.9	**66.5**	60.2	72.8	**0.0**	0.0	1.3	**42.0**	35.3	52.2
	Kubum	**88.1**	81.1	92.5	**63.8**	50.8	70.9	**83.1**	72.2	89.4	**2.5**	0.6	5.6	**40.6**	24.3	55.6
	Mershing	**100.0**	100.0	100.0	**75.0**	59.2	87.5	**96.9**	90.6	100.0	**9.4**	3.1	18.9	**96.9**	90.6	100.0
	Netiga	**44.7**	31.8	55.4	**11.2**	3.0	23.7	**41.8**	27.1	56.2	**0.0**	0.0	0.0	**28.0**	16.8	40.8
	Rahad Elberdi (part)	**68.4**	60.0	76.8	**19.4**	13.4	28.2	**56.1**	48.4	66.7	**2.6**	0.6	5.8	**42.3**	34.8	53.5
	Toluss	**59.4**	41.9	73.4	**22.2**	9.5	34.4	**42.2**	29.6	53.1	**0.0**	0.0	0.0	**90.6**	11.3	98.4
	Um Dafog (part)	**58.3**	32.9	80.0	**16.7**	0.0	35.3	**50.0**	15.8	75.0	**0.0**	0.0	0.0	**20.0**	5.0	41.7
	All state except capital	**77.9**	74.0	81.6	**41.9**	36.6	47.0	**74.8**	71.3	78.7	**3.2**	2.2	4.4	**57.9**	51.4	63.7
	Nyala Town	**96.1**	91.1	98.7	**72.8**	64.2	81.0	**96.0**	92.0	99.2	**15.4**	8.9	23.5	**91.7**	86.6	95.6
	Kalma Camp*	**93.6**	88.6	97.3	**73.9**	65.1	80.1	**91.8**	86.8	96.0	**4.6**	1.4	8.8	**88.4**	83.4	93.2

State	Locality	At least one ANC visit			Four or more ANC visits			ANC attended by trained personnel			Iron-folate for 6 months or more			Iron-folate for at least one month		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
East Darfur	Abukarinka	**64.6**	52.1	78.0	**45.8**	34.7	56.4	**66.2**	53.1	78.6	**35.9**	25.1	46.0	**65.1**	53.6	75.6
	Adilla (part)	**97.7**	92.9	100.0	**75.0**	63.2	85.2	**100.0**	95.4	100.0	**0.0**	0.0	0.0	**82.8**	70.8	91.5
	Al Deain	**73.3**	58.6	88.3	**29.7**	13.4	50.0	**77.3**	62.5	89.2	**0.0**	0.0	0.0	**65.0**	54.7	73.4
	Alfirdos	**67.9**	53.3	82.4	**34.5**	17.8	51.1	**73.3**	55.7	88.5	**0.0**	0.0	0.0	**50.4**	34.0	66.4
	Asslaya	**13.8**	5.0	27.9	**12.5**	4.2	23.3	**15.3**	6.9	23.7	**0.0**	0.0	11.5	**0.0**	0.0	16.3
	Aubgabar	**70.8**	59.3	78.1	**39.6**	28.5	51.1	**68.1**	58.2	78.8	**0.0**	0.0	4.5	**44.8**	35.8	56.2
	Aubmatarg	**70.5**	44.8	90.6	**31.2**	5.2	56.3	**75.4**	48.3	96.9	**0.0**	0.0	0.0	**26.2**	12.4	39.7
	Sharia (part)	**75.0**	44.6	95.8	**58.3**	23.9	82.3	**76.0**	43.6	96.9	**0.0**	0.0	0.0	**75.0**	40.5	96.9
	Yaseen (part)	**56.3**	42.2	67.2	**48.4**	35.9	60.9	**48.4**	32.8	60.9	**45.3**	32.8	57.9	**56.3**	45.2	68.8
	All state except capital	**68.6**	59.0	75.1	**49.3**	43.6	55.8	**68.5**	60.2	77.1	**17.8**	10.2	24.5	**59.3**	52.7	67.5
	Al Deain Town	**87.9**	79.6	94.2	**72.9**	60.1	92.2	**88.8**	79.5	95.5	**20.5**	9.9	31.2	**77.7**	68.1	84.8
West Darfur	Algenea	**80.4**	44.7	100.0	**62.8**	13.2	95.3	**78.4**	36.8	98.5	**28.1**	15.7	39.5	**80.4**	52.6	96.9
	Baida	**87.1**	78.3	93.3	**57.7**	41.5	69.7	**86.1**	74.9	93.3	**3.6**	0.0	20.0	**84.2**	73.3	91.5
	Forbranga	**55.4**	37.7	73.2	**20.1**	8.3	36.2	**53.8**	35.6	70.1	**2.3**	0.0	5.3	**56.0**	33.5	71.4
	Gabal Moon	**85.0**	74.9	92.4	**53.3**	38.1	67.8	**84.5**	75.2	92.6	**6.7**	3.7	10.2	**72.5**	55.9	85.5
	Habilla	**72.9**	60.5	86.2	**32.4**	17.0	51.6	**73.0**	61.3	88.7	**1.0**	0.0	3.1	**59.2**	51.6	67.7
	Kerenik	**86.3**	62.2	95.3	**39.2**	23.0	50.7	**83.0**	60.5	92.9	**2.8**	1.2	6.7	**60.2**	48.6	72.2
	Kulbus	**19.5**	5.3	39.3	**7.0**	1.4	15.5	**19.4**	6.9	39.8	**0.0**	0.0	0.0	**17.8**	4.7	35.3
	Serba	**86.5**	61.4	97.9	**66.2**	41.0	87.5	**84.9**	63.0	97.4	**16.7**	8.8	23.5	**76.0**	50.4	92.7
	All state except capital	**79.5**	67.2	87.6	**42.8**	31.7	52.7	**77.9**	64.4	85.0	**5.4**	3.3	8.0	**64.1**	55.8	71.0
	Algenea Town	**91.9**	85.5	95.9	**71.6**	62.5	80.2	**91.4**	85.5	95.0	**18.6**	9.4	28.9	**84.3**	77.0	90.4
	Morne Camp*	**96.8**	91.1	99.0	**61.4**	53.2	77.8	**97.0**	91.0	98.9	**11.2**	4.2	27.6	**69.4**	58.4	94.5
Central Darfur	Azoum	**72.0**	59.7	82.3	**45.2**	26.6	70.6	**58.2**	48.0	71.8	**61.6**	49.9	70.9	**100.0**	100.0	100.0
	Bendsi (part)	**53.8**	39.0	63.4	**8.6**	4.3	15.1	**54.8**	41.5	62.4	**77.4**	68.8	85.0	**100.0**	100.0	100.0
	Mukjar (part)	**96.8**	93.2	99.5	**70.9**	61.3	80.3	**97.0**	93.0	100.0	**22.5**	13.9	33.0	**100.0**	98.0	100.0
	Nertati	**27.2**	12.0	54.4	**6.5**	0.0	23.8	**28.6**	11.1	58.0	**82.4**	58.8	92.1	**100.0**	100.0	100.0
	Rokiro	**88.1**	72.5	100.0	**64.4**	33.9	92.9	**89.8**	77.3	100.0	**52.5**	22.4	78.6	**100.0**	100.0	100.0
	Um Dukhun (part)	**73.2**	63.9	83.3	**35.4**	25.2	46.4	**76.7**	67.1	86.6	**50.0**	38.9	60.7	**100.0**	100.0	100.0
	Wadi Salih (part)	**81.7**	69.4	89.4	**43.4**	32.6	55.1	**75.9**	66.5	83.1	**58.3**	50.0	68.0	**100.0**	100.0	100.0
	Zalingei	**79.5**	65.5	91.7	**46.2**	27.3	61.4	**75.3**	56.9	89.5	**42.5**	30.3	55.8	**99.4**	97.6	100.0
	All state except capital	**70.5**	64.8	76.8	**38.3**	30.5	46.2	**63.0**	57.6	67.8	**61.6**	55.4	66.5	**100.0**	99.4	100.0
	Zalingi Town	**94.6**	89.7	98.1	**85.2**	79.4	90.3	**94.8**	89.5	98.2	**20.6**	13.9	30.2	**100.0**	100.0	100.0
	Mukjar Town*	**96.9**	92.5	99.5	**71.4**	61.0	79.6	**97.2**	92.8	99.5	**23.2**	14.2	34.7	**100.0**	97.7	100.0
	Um Dokhon Town*	**73.8**	64.2	83.1	**35.4**	23.5	47.8	**75.3**	67.0	84.8	**49.3**	37.6	61.8	**100.0**	100.0	100.0

Trained birth attendants at last delivery (Figure 62)

Mothers were asked who helped during the delivery of their last child. Doctors, Nurses, trained midwives, Medical Assistants and Health visitors were considered as trained personnel. Coverage with trained birth attendance was clearly higher in localities in Northern, River Nile, Khartoum, and Gezira states. Lowest coverage was found across Darfur region, this could be explained by results from Health Mapping (2014) that showed coverage with trained midwives in Darfur as ranging from 14.2% in West Darfur to 56.8% in Central Darfur, although the mapping does not give results of availability of trained doctors, nurses or health visitors. Furthermore, The SHHS 2010 showed that 76% of all deliveries across the country were home deliveries which are attended by midwives, meaning that coverage of skilled birth attendance is dependent upon availability of trained midwives.

Coverage of post-partum Vitamin A supplementation (Figure 63)

Mothers were shown a Vitamin A capsule and asked if they had taken such a capsule in the six weeks after their last delivery. Post-partum Vitamin A supplementation was found to be consistently low across the country, with two pockets of higher coverage in Khartoum and Kassala states' localities. National Nutrition Program data for 2013 shows 16% coverage of post-partum women with Vitamin A.

Night blindness during Mothers' last pregnancy (Figure 64)

Mothers were asked if they had experienced any problems seeing in the night or evening during their last pregnancy. Mershing and Alwehda localities in South Darfur recorded the highest locality-level prevalence at 90.6% and 78.9% respectively[14]. Overall, rates of reported night blindness were high across the country with the majority of localities having a prevalence of above 10%. WHO classifies a prevalence of more than or equal to 5% of mothers reporting night blindness in their last pregnancy as critical[14]. There were 79 localities across the country that recorded a high prevalence of undernourished mothers (more than 10%) as well as mothers reporting night blindness. Vitamin A deficiency in women appears to be a public health issue affecting almost every locality, calling the need for further investigation to confirm and establish possible causes of the problem. However, the situation also requires a quick large scale response such as food fortification or targeted and improved multiple micro-nutrient supplementation (including Vitamin A) for pregnant women.

[14] In Mershing locality the result was derived from a relatively small sample size (32 mothers), however the 95% confidence interval around the estimate (81.3% – 97.0%) does not show problems with accuracy of the result. In Alwohda locality the sample size was fairly big enough (120 mothers) to provide accurate estimate.

Figure 68: Proportion of mothers reporting skilled attendant at last birth

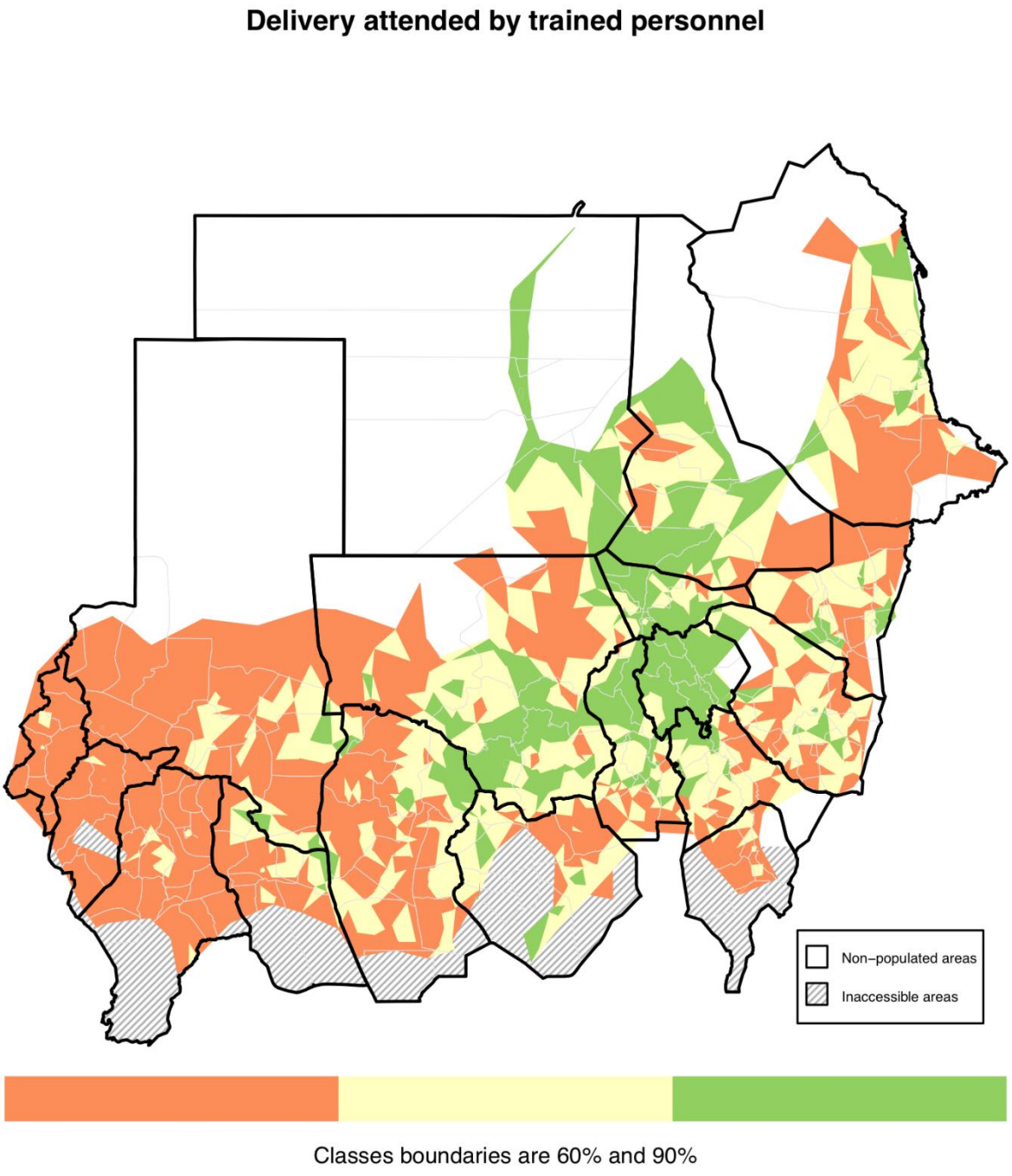


Figure 69: Classification map showing proportion of mothers who received post-partum Vitamin A supplementation after their last birth

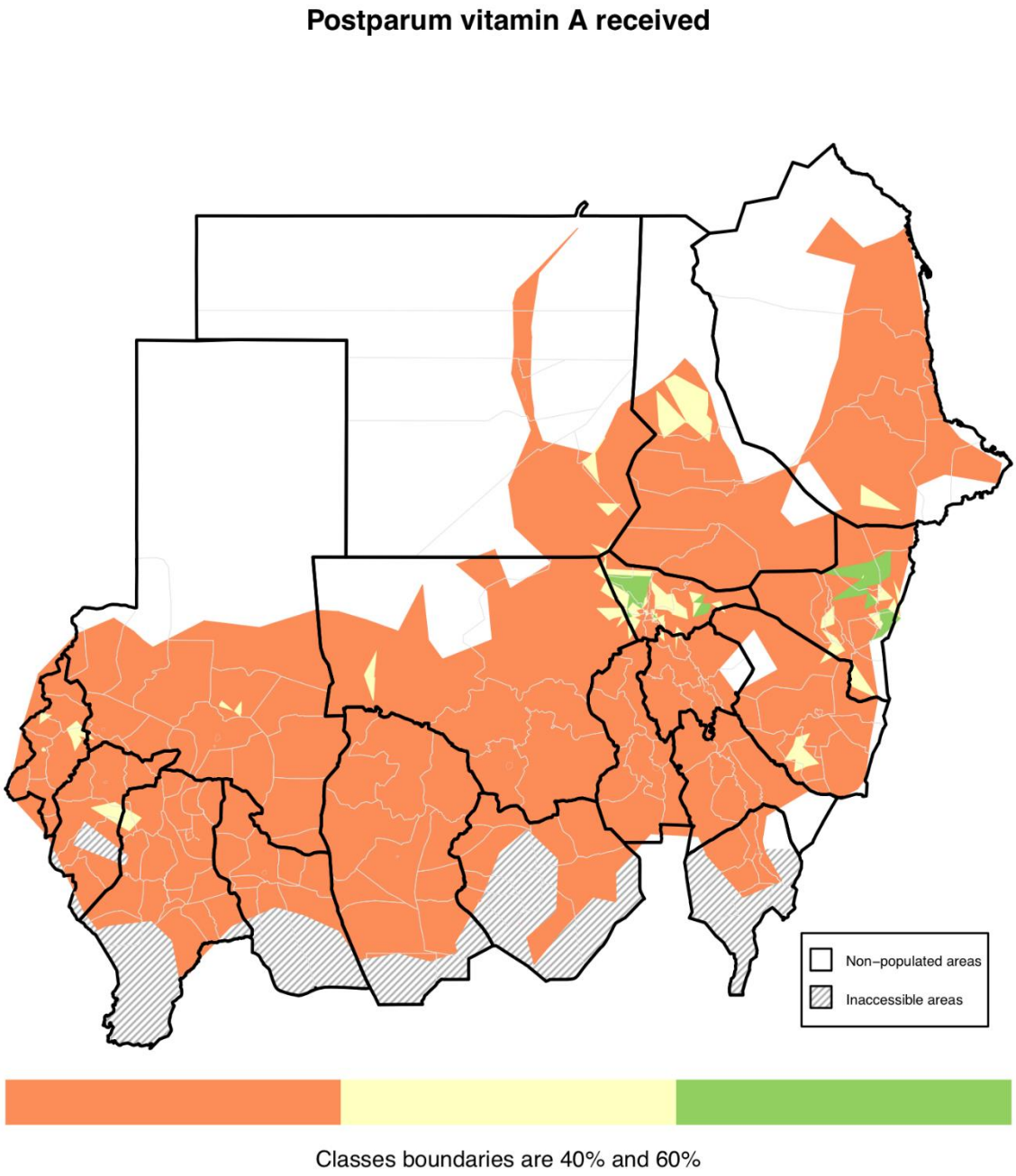


Figure 70: Classification map of proportion of mothers reporting night blindness during their last pregnancy

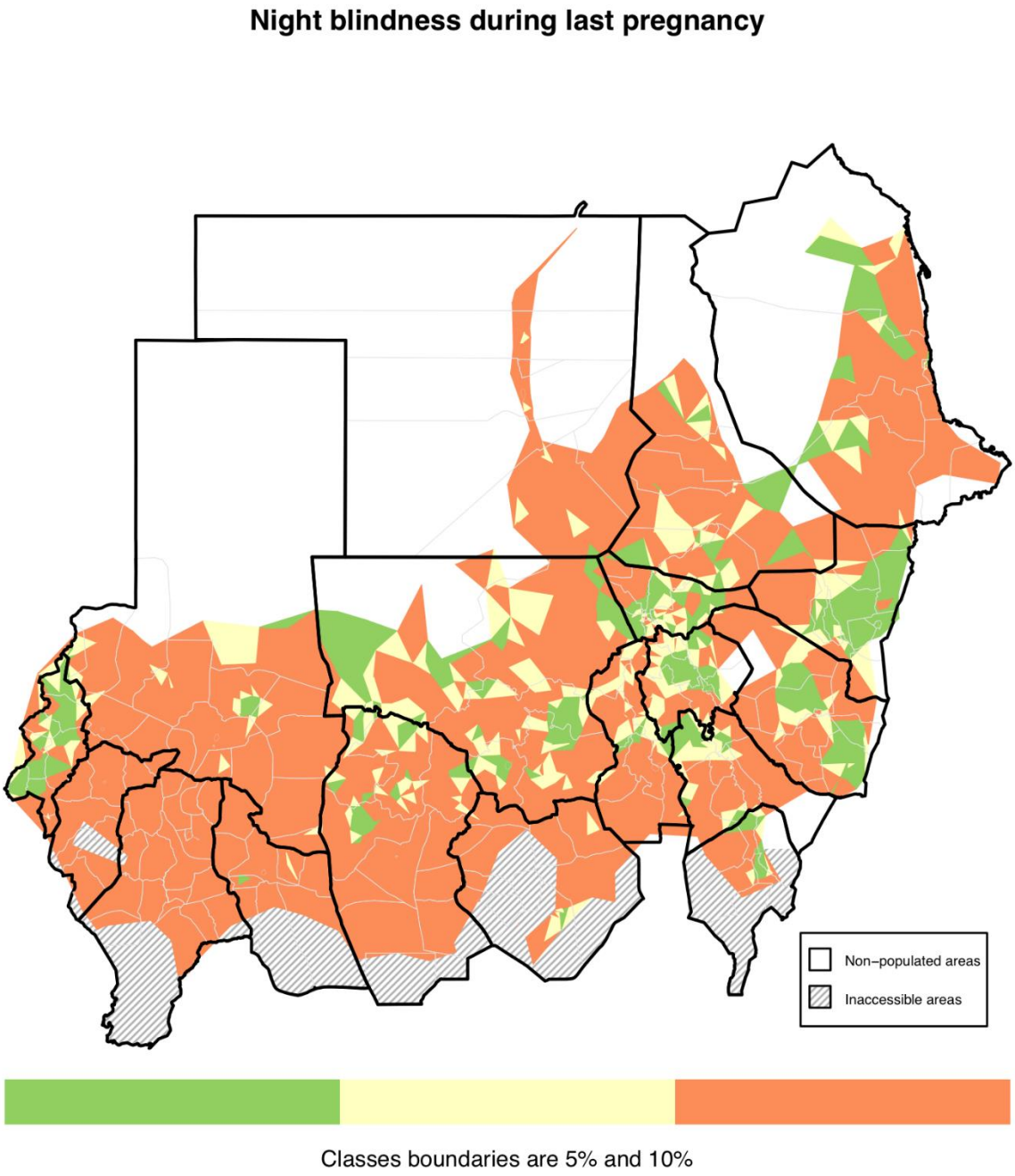


Table 14: Mothers delivery and post-partum Vitamin A supplementation, results by locality

State	Locality	Delivery attended by trained personnel			Postpartum vitamin A received			Night blindness during last pregnancy		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Red Sea	Ageeg	**61.6**	39.0	80.6	**18.6**	9.9	27.7	**28.6**	20.0	39.3
	Alganeb Alolib	**67.9**	47.6	85.1	**24.3**	15.9	33.3	**17.3**	9.3	27.3
	Dordaib	**51.3**	17.7	82.7	**35.4**	20.5	50.3	**29.5**	20.9	39.3
	Haia	**38.9**	12.3	66.2	**2.3**	0.0	7.7	**5.6**	2.3	9.7
	Haliab	**34.4**	0.0	76.6	**10.3**	3.5	22.0	**18.6**	10.9	30.9
	Japitalmadin	**94.1**	82.8	100.0	**10.9**	6.7	15.3	**4.0**	2.2	7.0
	Sawaken	**83.5**	72.7	93.6	**22.1**	10.5	32.6	**20.3**	12.2	26.2
	Senkat	**65.8**	49.9	81.1	**15.0**	2.0	33.4	**39.4**	29.2	48.1
	Tokar	**96.4**	83.2	100.0	**23.7**	17.9	28.7	**26.9**	22.7	32.6
	Port Sudan	**98.4**	96.6	99.5	**18.3**	14.1	22.5	**10.3**	6.4	14.1
	All state	**83.9**	79.3	88.5	**18.4**	16.3	20.6	**16.6**	14.2	19.2
Kassala	Aroma	**77.4**	59.7	89.8	**69.7**	35.1	87.9	**2.4**	0.8	5.3
	Hamshkoreb	**82.8**	71.2	91.8	**40.3**	29.6	50.4	**1.6**	0.0	4.1
	Kshmalgrba	**100.0**	89.6	100.0	**73.8**	42.2	98.4	**7.8**	3.1	13.3
	Nahr Atbara	**100.0**	64.6	100.0	**84.4**	50.0	92.2	**0.0**	0.0	0.0
	North Delta	**100.0**	90.5	100.0	**98.7**	90.1	100.0	**0.9**	0.0	3.6
	Rify Kassala	**96.9**	90.6	100.0	**73.1**	51.2	92.5	**0.0**	0.0	0.0
	Rural Halfa	**92.7**	81.2	100.0	**13.5**	1.5	31.3	**5.2**	1.6	10.4
	Talkok	**82.4**	71.0	91.9	**59.7**	40.0	75.4	**0.0**	0.0	0.7
	Wadalhlew	**79.1**	57.3	93.1	**27.8**	15.7	39.1	**21.7**	10.8	30.5
	West Kassala	**46.9**	37.5	61.8	**18.8**	5.3	32.3	**3.1**	0.0	8.2
	All state except capital	**88.8**	83.9	93.6	**67.7**	57.5	75.4	**1.7**	0.8	2.9
	Kassala Town	**93.7**	84.4	98.9	**45.9**	36.6	59.3	**2.8**	0.4	6.6
	Hamoshkoreib Town*	**84.8**	73.9	93.0	**41.2**	30.2	50.9	**1.8**	0.0	4.3
Gedaref	Al Gadaref Wasat	**61.9**	49.6	73.6	**13.6**	8.8	20.1	**7.8**	4.3	13.7
	Al Mafaza	**77.1**	48.5	86.5	**3.1**	1.0	6.5	**15.6**	9.4	30.5
	Albutana	**78.4**	71.8	84.1	**13.8**	8.2	20.1	**19.0**	10.9	29.6
	Alfashaga	**85.3**	77.7	89.5	**27.0**	22.4	32.9	**20.0**	16.9	25.4
	Alfaw	**93.8**	90.6	97.3	**15.2**	5.8	27.3	**17.9**	10.2	27.2
	Algalabat Al Garbiya	**87.5**	65.6	96.9	**38.5**	25.9	52.1	**18.8**	8.3	28.2
	Algalabat Al Shargiya	**90.6**	81.3	96.1	**3.1**	0.0	11.0	**0.0**	0.0	1.6
	Algurisha	**57.2**	37.8	78.5	**2.5**	0.0	7.5	**3.1**	0.9	6.3
	Alrahad	**34.4**	22.9	50.0	**15.6**	8.3	22.9	**16.7**	10.4	24.0
	Basonda	**88.0**	81.3	93.0	**20.3**	11.2	29.1	**3.9**	1.1	8.1
	Gula Alnahal	**67.6**	53.5	84.0	**46.9**	39.8	54.3	**32.4**	25.0	39.5
	All state except capital	**81.6**	78.7	85.3	**18.0**	15.4	21.2	**12.7**	10.7	14.9
	Gedarif Town	**94.6**	89.2	98.4	**24.5**	17.8	32.4	**11.6**	6.4	16.0
Blue Nile	Baw (part)	**20.3**	9.4	31.3	**4.7**	0.0	10.9	**7.8**	1.6	15.6
	Damazin	**83.3**	61.4	95.9	**2.1**	0.0	7.3	**0.0**	0.0	4.2
	Giessan (part)	**58.0**	46.0	76.4	**4.2**	1.4	10.6	**0.6**	0.0	1.8
	Kurmuk (part)	**47.9**	31.2	70.8	**4.2**	1.0	8.3	**18.8**	12.5	28.2
	Rosairs (part)	**31.8**	23.0	43.7	**6.3**	4.4	8.5	**8.0**	4.3	14.1
	Tadamon (part)	**63.3**	46.8	72.0	**20.3**	11.7	29.7	**21.1**	12.5	34.4
	All state except capital	**45.5**	37.9	54.1	**6.1**	4.2	8.7	**6.2**	3.6	10.2
	Damazin Town	**69.3**	54.4	91.7	**11.1**	4.1	31.6	**0.4**	0.0	4.2
	Roseris Town	**81.1**	66.1	92.1	**15.5**	8.5	23.0	**4.2**	1.3	9.2

State	Locality	Delivery attended by trained personnel			Postpartum vitamin A received			Night blindness during last pregnancy		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
South Kordofan	Abujebiha (part)	**80.6**	64.9	90.2	**4.0**	2.0	6.6	**34.5**	26.1	42.3
	Al Tadamoon (part)	**26.8**	10.6	46.5	**4.8**	1.7	8.6	**25.0**	17.6	33.4
	Alabaseya	**19.8**	11.5	40.5	**6.0**	2.1	13.6	**34.5**	19.7	49.0
	Algoz	**64.5**	43.2	81.3	**13.6**	4.9	23.0	**19.0**	11.1	28.1
	Allirri	**94.0**	85.2	99.5	**2.6**	0.0	5.7	**15.3**	8.3	21.9
	Alreif Alshargi	**54.2**	36.5	81.3	**12.5**	6.3	21.9	**8.3**	0.0	21.9
	Dilling (part)	**40.6**	25.0	62.5	**0.0**	0.0	0.0	**18.8**	6.3	31.3
	Gadeir (part)	**76.4**	58.0	89.2	**8.2**	5.4	11.1	**11.8**	5.5	20.1
	Habeila (part)	**97.9**	92.5	100.0	**6.4**	2.6	12.0	**20.3**	14.3	27.1
	Rashad (part)	**65.6**	25.0	91.7	**14.1**	5.0	22.0	**32.3**	19.2	43.6
	All state except capital	**68.1**	59.2	75.5	**7.3**	5.2	9.6	**22.3**	18.7	26.8
	Kadugli Town	**89.7**	83.5	94.9	**11.2**	5.8	18.1	**19.5**	13.9	25.6
	Talodi Town	**91.3**	83.9	97.5	**9.5**	5.6	14.7	**12.8**	8.0	19.9
West Kordofan	Abo Zabad	**96.2**	89.9	99.4	**9.4**	4.4	15.0	**13.8**	8.6	20.0
	Abyei (NOT AAA)	**73.2**	62.8	82.9	**8.8**	4.7	13.5	**38.8**	32.7	45.7
	Al Khowi	**93.8**	83.3	99.6	**20.5**	14.1	28.6	**7.2**	3.2	13.4
	Al Odaya	**97.0**	91.4	99.7	**6.4**	3.6	9.8	**7.1**	4.3	9.9
	Al Salam	**68.6**	57.3	76.3	**15.1**	11.5	18.9	**31.0**	25.1	37.7
	Aldebab	**65.9**	54.1	77.0	**5.4**	1.4	10.6	**45.1**	36.2	53.2
	Almearam	**13.4**	4.7	28.4	**3.9**	0.8	9.5	**33.6**	23.2	42.2
	Alsnout	**78.3**	64.4	86.4	**10.4**	7.1	14.1	**18.1**	12.9	22.8
	Babanusa	**59.5**	46.2	70.5	**5.9**	2.6	9.4	**47.4**	40.6	55.9
	En Nuhud	**90.9**	81.9	97.7	**1.6**	0.0	5.1	**5.5**	1.0	11.2
	Ghebeish	**69.5**	49.4	85.6	**2.3**	0.4	5.5	**34.9**	25.7	44.9
	Kailak (part)	**55.6**	48.4	68.3	**30.6**	10.7	41.6	**21.2**	10.3	46.8
	Lagawa (part)	**81.3**	67.3	91.4	**11.3**	6.5	15.2	**42.9**	37.9	49.8
	Wad Bandah	**70.3**	58.1	80.7	**9.0**	6.3	12.3	**5.6**	2.4	10.5
	All state except capital	**74.9**	70.4	79.5	**11.2**	8.2	16.4	**21.9**	18.4	26.0
	Fula Town	**94.4**	90.5	98.2	**10.8**	5.0	16.9	**25.0**	17.4	33.4
North Kordofan	Bara	**96.0**	89.9	99.3	**9.0**	6.3	12.4	**15.8**	11.6	20.7
	El Rahad	**100.0**	78.8	100.0	**3.8**	0.0	13.0	**0.0**	0.0	6.5
	Jebrat El Sheikh	**98.3**	95.9	99.6	**15.0**	12.9	17.3	**21.7**	19.1	24.4
	Sheikan	**96.7**	94.2	98.3	**6.5**	2.3	13.3	**12.2**	7.7	17.7
	Sowdari	**93.1**	87.9	95.5	**9.5**	6.3	13.8	**8.1**	5.4	10.8
	Umm Daam	**98.4**	92.2	100.0	**5.7**	0.0	16.7	**3.9**	0.0	9.4
	Umm Rawaba	**85.5**	76.2	92.8	**6.5**	4.0	9.9	**17.7**	12.8	23.7
	West Bara	**88.7**	69.8	96.1	**4.4**	1.0	11.1	**22.3**	8.9	33.1
	All state except capital	**92.4**	89.7	94.8	**8.8**	7.4	10.3	**14.9**	13.1	16.9
	El Obeid Town	**99.6**	97.6	100.0	**10.2**	5.1	15.5	**2.9**	0.7	6.1
White Nile	Alsalam	**69.1**	49.4	84.1	**12.9**	6.4	22.0	**26.3**	18.2	39.8
	Ed Douiem	**95.1**	91.5	98.7	**7.6**	3.6	13.0	**13.3**	8.5	19.2
	El Gutaina	**98.4**	96.1	100.0	**10.6**	4.7	18.3	**9.8**	6.2	14.9
	El Jabalain	**83.0**	68.9	93.5	**22.8**	12.4	33.1	**16.1**	9.3	24.7
	Guli	**100.0**	86.5	100.0	**16.5**	11.2	22.8	**9.4**	4.9	17.1
	Kosti	**66.2**	45.8	93.0	**7.4**	2.8	12.9	**19.0**	13.1	27.5
	Rabak	**100.0**	100.0	100.0	**23.5**	11.7	41.3	**3.9**	0.0	10.9
	Tandalti	**89.2**	62.6	97.9	**4.2**	0.6	9.2	**25.8**	12.5	43.1
	Umm Remta	**99.4**	96.3	100.0	**15.0**	8.8	21.9	**9.4**	4.3	15.0
	All state except capital	**93.0**	89.5	96.3	**13.0**	10.3	15.4	**13.5**	11.1	16.4
	Kosti Town	**93.9**	85.4	99.7	**19.5**	12.8	24.8	**13.9**	7.6	21.2
	Rabak Town	**96.9**	92.0	99.6	**26.2**	18.5	33.2	**16.9**	10.5	24.0

State	Locality	Delivery attended by trained personnel			Postpartum vitamin A received			Night blindness during last pregnancy		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Sennar	Abu Hijar	**60.4**	43.3	76.2	**18.0**	8.6	29.0	**11.3**	6.2	16.3
	Al Dindir	**65.8**	45.6	79.2	**16.6**	9.9	22.3	**17.4**	8.5	27.2
	Aldali & Almazmoum	**86.2**	66.1	97.7	**21.9**	13.3	30.0	**18.8**	8.8	32.6
	Alsooki	**75.3**	60.2	86.7	**21.1**	12.5	29.7	**12.5**	7.4	18.8
	Sennar	**84.7**	72.0	94.6	**12.5**	6.2	18.5	**5.0**	2.1	8.8
	Sharg Sennar	**61.3**	36.9	80.5	**13.7**	5.7	22.4	**14.8**	8.6	20.8
	Sinja	**97.4**	85.2	100.0	**10.9**	6.7	18.3	**12.5**	7.8	18.2
	All state except capital	**77.3**	69.6	84.5	**17.5**	14.1	20.9	**13.5**	10.0	17.1
	Sennar Town	**96.0**	88.0	100.0	**36.3**	29.0	43.0	**6.0**	2.6	10.2
	Sinja Town	**98.0**	95.0	100.0	**36.2**	26.3	44.7	**8.3**	3.7	13.3
El Gezira	El Hasaheisa	**100.0**	100.0	100.0	**14.7**	3.3	31.7	**0.0**	0.0	0.0
	El Kamlin	**100.0**	100.0	100.0	**24.3**	14.0	39.9	**7.7**	2.6	14.1
	El Managil	**99.0**	95.5	99.8	**2.5**	0.9	10.7	**5.1**	2.9	14.8
	Janub El Gezira	**96.3**	91.2	100.0	**16.6**	8.7	26.4	**15.3**	8.0	23.2
	Madani Al Kobra	**100.0**	100.0	100.0	**6.7**	0.0	20.0	**0.0**	0.0	0.0
	Sharg El Gezira	**100.0**	98.4	100.0	**17.0**	11.8	22.8	**1.9**	0.0	5.4
	Umm El Gura	**96.2**	88.0	100.0	**13.8**	6.8	22.7	**7.1**	1.1	19.7
	All state except capital	**98.3**	96.3	99.5	**8.8**	4.8	16.5	**6.6**	4.2	11.2
	Madani Town	**95.9**	89.8	100.0	**26.8**	17.1	37.8	**4.2**	0.7	9.5
Khartoum	Bahari	**100.0**	99.4	100.0	**31.8**	26.6	37.9	**1.4**	0.3	3.0
	Gabel Awlia	**92.3**	86.6	96.3	**20.6**	10.9	28.1	**10.0**	4.4	16.9
	Karrarri	**100.0**	99.0	100.0	**33.6**	23.6	46.3	**0.0**	0.0	1.0
	Khartoum	**91.4**	85.6	98.5	**34.7**	20.9	51.0	**11.0**	3.1	18.5
	Shareg Elnile	**95.3**	90.8	97.4	**52.2**	41.9	62.1	**3.0**	1.2	5.3
	Umbada	**93.6**	87.9	98.3	**34.6**	27.9	41.0	**5.3**	2.1	10.8
	Umdrman	**98.8**	95.9	100.0	**30.0**	24.4	36.6	**0.6**	0.0	3.8
	All state	**96.7**	95.0	98.0	**35.3**	30.9	39.3	**3.7**	2.4	5.4
Northern	Alborgeg	**100.0**	100.0	100.0	**16.7**	0.0	50.0	**16.7**	0.0	50.0
	Aldabba	**95.8**	91.9	97.7	**18.9**	13.6	23.7	**8.8**	6.4	12.0
	Algoled	**94.8**	89.5	98.5	**27.6**	13.5	40.1	**9.9**	5.2	16.2
	Dalgo	**100.0**	100.0	100.0	**10.3**	6.5	14.3	**36.1**	28.7	44.3
	Dongola	**98.8**	96.4	100.0	**23.6**	17.6	28.7	**19.6**	11.9	27.5
	Halfa	**93.8**	91.5	96.1	**18.7**	14.6	23.3	**15.9**	12.5	20.1
	Merawi	**98.8**	95.8	100.0	**48.9**	41.8	56.0	**15.8**	12.3	19.4
	All state except capital	**95.8**	94.7	96.8	**23.2**	20.5	26.3	**17.0**	14.7	19.7
	Dongola Town	**100.0**	98.4	100.0	**32.4**	23.0	41.7	**11.5**	6.5	18.4
River Nile	Abu Hamad	**93.0**	88.3	96.7	**16.0**	12.7	20.4	**13.8**	10.2	17.7
	Albuhaira	**97.8**	87.3	99.7	**8.2**	4.0	12.8	**16.7**	12.5	22.8
	Atbara	**97.8**	92.5	100.0	**19.3**	12.5	25.5	**12.5**	8.2	20.8
	Barbar	**96.0**	91.5	99.0	**12.4**	8.1	16.6	**12.6**	6.2	19.7
	Ed Damer	**86.6**	78.2	93.5	**31.2**	24.5	37.2	**21.6**	17.9	26.7
	El Matammah	**98.7**	97.5	99.5	**26.0**	19.8	31.4	**20.9**	15.0	26.6
	Shendi	**71.4**	50.1	89.4	**14.5**	8.4	22.7	**14.1**	8.7	19.3
	All state except capital	**91.3**	88.3	93.8	**21.2**	18.4	24.0	**17.1**	15.1	19.1
	Atbara Town	**96.6**	90.8	99.3	**31.1**	23.4	40.3	**8.7**	4.6	14.3
	El Damar Town	**99.2**	97.8	100.0	**20.8**	10.6	29.0	**6.5**	2.9	11.7

State	Locality	Delivery attended by trained personnel			Postpartum vitamin A received			Night blindness during last pregnancy		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
North Darfur	Al Fasher	**51.8**	39.4	64.9	**12.9**	8.2	18.9	**28.6**	19.9	36.1
	Al Koma	**91.2**	71.4	100.0	**20.2**	13.6	28.0	**8.8**	1.6	19.7
	Al Malha	**16.0**	7.9	25.4	**3.6**	0.9	7.4	**13.2**	8.0	19.3
	Al Seref	**14.1**	7.1	22.6	**5.2**	1.9	9.1	**42.7**	34.1	50.7
	Al Tina	**17.3**	4.4	35.4	**1.5**	0.0	4.8	**7.2**	2.4	12.4
	Al Twasha	**70.9**	59.7	82.4	**6.3**	2.3	11.8	**28.4**	21.0	35.7
	Allait	**87.4**	78.7	93.8	**7.8**	0.0	18.0	**29.1**	21.0	41.0
	Ambaro	**9.8**	5.4	15.2	**8.5**	3.8	14.2	**50.6**	38.9	62.8
	Dar Alsalam	**44.2**	32.7	50.9	**18.3**	12.8	24.1	**20.5**	14.7	25.9
	Kabkabia	**11.8**	5.7	20.6	**4.0**	1.5	8.8	**41.3**	29.1	52.0
	Karnoi	**48.2**	27.5	59.5	**23.3**	13.7	32.4	**21.8**	12.6	29.7
	Kelemendo	**75.0**	55.8	88.5	**19.9**	10.9	29.7	**17.2**	9.4	26.2
	Kutum	**48.0**	36.0	58.7	**21.8**	14.1	28.3	**22.1**	15.3	29.8
	Mallit	**21.5**	12.8	33.2	**25.8**	18.0	36.5	**17.7**	13.0	21.6
	Saraf Omra	**3.1**	0.0	6.3	**10.9**	0.0	20.3	**26.6**	17.2	38.6
	Tawila	**28.1**	15.7	39.8	**7.1**	3.1	13.0	**29.1**	18.3	39.0
	Umkadada	**92.4**	79.3	98.4	**6.8**	3.8	10.5	**15.5**	11.2	22.0
	All state except capital	**54.7**	48.3	60.3	**13.3**	11.3	15.7	**19.7**	17.1	22.0
	El Fashir Town	**86.7**	79.7	92.9	**23.2**	14.9	35.0	**15.1**	9.7	23.2
	Zamzam Camp*	**52.6**	41.6	65.4	**17.3**	11.5	27.0	**22.2**	12.6	32.0
	El Sireif Camp*	**14.0**	5.7	22.6	**5.2**	1.8	9.4	**41.9**	34.1	51.0
South Darfur	Al Rudoom (part)	**32.8**	12.2	55.5	**2.2**	0.4	4.4	**32.8**	19.7	48.6
	Alwehda	**22.7**	8.4	39.1	**5.5**	1.7	10.9	**79.1**	64.5	87.5
	Belil	**58.3**	44.8	68.8	**3.1**	0.0	6.3	**10.4**	3.1	25.0
	Buram	**7.3**	2.0	15.3	**2.6**	0.0	11.8	**41.0**	26.2	53.1
	Dimso	**37.5**	27.8	50.1	**12.5**	5.6	18.8	**33.3**	22.8	41.7
	El Salam	**26.1**	17.6	33.6	**20.0**	12.9	28.7	**24.2**	4.0	37.6
	Gerieda	**75.0**	22.9	92.3	**19.4**	0.0	36.2	**47.8**	29.9	66.8
	Id Elfirsan	**65.6**	46.3	77.5	**0.0**	0.0	3.1	**46.9**	36.5	55.7
	Kass	**32.9**	18.7	46.9	**8.2**	1.9	15.9	**27.7**	21.1	34.8
	Katila	**31.7**	25.9	39.7	**6.4**	2.7	10.4	**19.1**	13.2	25.0
	Kubum	**76.3**	63.1	85.6	**5.6**	2.8	9.7	**47.5**	38.8	56.3
	Mershing	**15.6**	3.1	28.3	**3.1**	0.0	9.4	**90.6**	81.3	97.0
	Netiga	**4.4**	0.7	11.8	**0.0**	0.0	0.0	**70.9**	61.1	81.6
	Rahad Elberdi (part)	**16.7**	9.5	26.6	**3.9**	0.7	7.6	**56.4**	50.3	65.2
	Toluss	**26.6**	8.1	42.2	**14.1**	0.0	28.1	**46.9**	12.8	64.1
	Um Dafog (part)	**20.0**	0.0	40.0	**20.0**	0.0	35.0	**60.0**	34.9	80.0
	All state except capital	**33.5**	29.1	38.5	**5.0**	3.9	6.1	**45.6**	38.7	53.0
	Nyala Town	**80.3**	70.7	88.0	**5.6**	2.1	9.5	**13.5**	7.7	21.3
	Kalma Camp*	**72.2**	61.7	80.9	**44.7**	33.4	56.5	**45.4**	35.9	56.0

State	Locality	Delivery attended by trained personnel			Postpartum vitamin A received			Night blindness during last pregnancy		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
East Darfur	Abukarinka	**54.7**	44.8	66.7	**4.6**	0.0	10.3	**5.7**	0.0	14.6
	Adilla (part)	**100.0**	92.7	100.0	**33.6**	22.6	45.3	**14.8**	7.8	23.7
	Al Deain	**35.0**	18.2	53.2	**11.7**	5.4	21.2	**47.7**	35.2	60.8
	Alfirdos	**59.8**	29.1	94.8	**17.5**	5.3	30.3	**36.6**	20.8	52.3
	Asslaya	**12.6**	5.7	26.6	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Aubgabar	**34.4**	18.6	50.0	**7.7**	1.2	15.6	**25.3**	12.4	40.6
	Aubmatarg	**57.4**	13.7	93.8	**11.5**	1.7	25.0	**13.1**	4.7	23.5
	Sharia (part)	**69.8**	40.6	94.8	**16.7**	8.3	26.0	**50.0**	36.5	64.7
	Yaseen (part)	**42.2**	26.6	59.5	**0.0**	0.0	0.0	**4.7**	0.0	18.8
	All state except capital	**60.2**	51.9	69.7	**11.6**	7.9	18.7	**12.8**	8.0	18.9
	Al Deain Town	**89.5**	82.5	95.0	**15.2**	7.7	22.6	**29.3**	20.2	39.4
West Darfur	Algenea	**62.8**	7.9	96.9	**27.5**	0.0	50.0	**17.7**	1.5	47.5
	Baida	**13.6**	5.0	30.7	**2.4**	0.0	17.8	**1.9**	0.0	7.8
	Forbranga	**13.7**	3.5	23.1	**7.2**	0.0	17.8	**14.7**	7.9	22.1
	Gabal Moon	**45.3**	25.4	59.1	**32.6**	18.0	46.4	**2.6**	0.0	7.1
	Habilla	**7.0**	2.4	12.8	**5.1**	1.5	12.4	**6.6**	2.5	15.2
	Kerenik	**47.5**	22.6	72.8	**44.2**	26.8	62.6	**7.5**	4.1	12.9
	Kulbus	**3.1**	0.0	10.5	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Serba	**70.3**	45.8	92.2	**37.0**	22.4	50.6	**9.9**	6.2	16.2
	All state except capital	**39.0**	25.0	55.5	**29.2**	21.3	36.7	**8.1**	5.4	11.1
	Algenea Town	**83.8**	74.0	92.0	**40.3**	28.8	51.1	**11.5**	6.0	18.8
	Morne Camp*	**79.3**	51.6	90.9	**75.8**	42.1	89.5	**4.1**	1.3	10.2
Central Darfur	Azoum	**22.6**	10.4	41.6	**14.5**	6.2	29.5	**74.7**	59.6	84.6
	Bendsi (part)	**33.3**	20.4	44.1	**5.4**	1.4	11.8	**41.9**	32.2	51.6
	Mukjar (part)	**73.3**	62.8	84.6	**42.0**	31.5	51.5	**13.6**	7.0	20.9
	Nertati	**6.7**	2.2	14.7	**2.6**	0.0	15.1	**48.4**	31.2	61.7
	Rokiro	**57.6**	37.1	80.5	**37.3**	27.1	53.6	**41.9**	29.0	59.0
	Um Dukhun (part)	**37.5**	26.7	50.0	**24.2**	17.8	34.1	**38.7**	27.4	50.3
	Wadi Salih (part)	**37.8**	26.6	51.5	**27.8**	20.0	35.3	**29.6**	23.7	37.8
	Zalingei	**60.3**	42.1	78.1	**20.0**	13.1	25.3	**21.1**	13.9	29.4
	All state except capital	**33.5**	24.7	39.9	**16.4**	12.1	19.9	**53.1**	44.0	60.3
	Zalingi Town	**45.1**	34.4	59.0	**35.9**	26.1	46.3	**45.2**	37.0	53.2
	Mukjar Town*	**73.2**	59.6	83.8	**41.7**	31.0	50.3	**13.6**	7.6	20.3
	Um Dokhon Town*	**38.6**	28.9	50.5	**25.3**	17.1	34.1	**38.1**	24.6	50.0

9.3 Household Data

9.3.1 Water and Sanitation

Improved drinking water source use (Figure 65)
Mothers were asked where they usually get their drinking water from, and safe sources were classified as piped water to public tap, piped water into dwelling, water station, water tank, hand-pump, protected well, protected spring and bottled water.

Blue Nile, Gezira and North Darfur states recorded the highest prevalence of safe water source use, up to 100% in some localities. However generally safe water source use is low across the country and lowest in Kassala, Red Sea and West Kordofan – as low as 0% in some localities. Compared to the WES strategic plan survey conducted in 2010, there is a slight progress in improved source of drinking water coverage in more than 50% of the localities. An example is Zalengi locality in Central Darfur and Ageeg in red Sea state probably due to the implementation of drinking water facilities by Public Water Corporation (PWC) and States water corporations (SWC) and their partners. Improved source of drinking water is showing consistency with diarrhea prevalence only in some areas in the center of Gezira state, Khartoum and parts of River Nile and Northern states that lie along the river Nile course.
Comparison between the patterns of some WASH and nutrition indicators may also indicate some correlation between the malnutrition, namely wasting (by MUAC) and WAH indicators (improved source of drinking water, improved sanitation facilities and sanitary disposal of children's faeces). This was noted only in some parts of Khartoum, Gezira, Northern and River Nile states close to the river Nile.

Sanitation facilities (Figure 66)
Mothers were asked what type of toilet facilities the household used. Improved sanitation facilities were defined as a toilet with a drain, a toilet with a septic tank, a toilet with a drain to a hole, a toilet with a drain to an unknown place and a traditional latrine with a cement cover. Non-improved facilities were defined as a drain to another place, a traditional latrine with no cover – open, a hanging latrine, a bucket, no latrine or any other type mentioned.
With these definitions coverage of improved sanitation facilities was found to be very low at less than 10% across most localities, excluding urban areas, and only reaching 51% in Khartoum city. Safe sanitation coverage was highest in Northern state, reaching up to 75% in Algolid locality and Dongola town. General speaking, coverage of improved sanitation facilities is better in cities and urban areas than the rural areas. However it's still poor and critical in most of localities as it was in previous surveys (SHHS 2010, GLAAS and JMP). This could be referred to some challenges:

- Continuation of conflict in most of Darfur, BN and Kordofan states
- Flood emergency situation in other states
- The sanitation is not of the government priorities at national and state level, and the contribution to sanitation projects is very low.

Sanitary disposal of child faeces (Figure 67)
Mothers were asked how they usually dispose of their child's faeces. Sanitary means of disposal was classified as in a toilet or latrine or buried. Non sanitary means of disposal was classified as in

an open drain, in the rubbish, left on the ground or other practices. Sanitary disposal practices are clustered together in an area in the north of West Kordofan and in areas in Gezira state.

Hand washing practices (Figure 68)

Five critical times for hand washing were considered as necessary namely after defecation, after cleaning child faeces, before eating, before feeding child and before cooking. Figure 68 shows the mean number of these hand washing times that were mentioned by mothers.

Hand washing practice in the country ranges between very low to moderate, with red-shaded areas showing 2 or less critical time-points. This coupled with the low levels of good sanitation facilities, low use of safe drinking water sources and poor diarrhea treatment practices, is cause for concern. The good situation in some areas in North Darfur state could be explained by the existence of IDP camps, which are usually associated with intensive hygiene promotion activities supported and implemented by INGOs and NGOs. Findings from this survey do not suggest a clear relationship between Hand Washing practices and presence of improved drinking water coverage. Maps show low percentage of hand washing practices in areas where the coverage of drinking water is fair. That implies improving hand washing practices require mainly effective hygiene promotion interventions and awareness campaigns.

Figure 71: Map of use of improved water sources

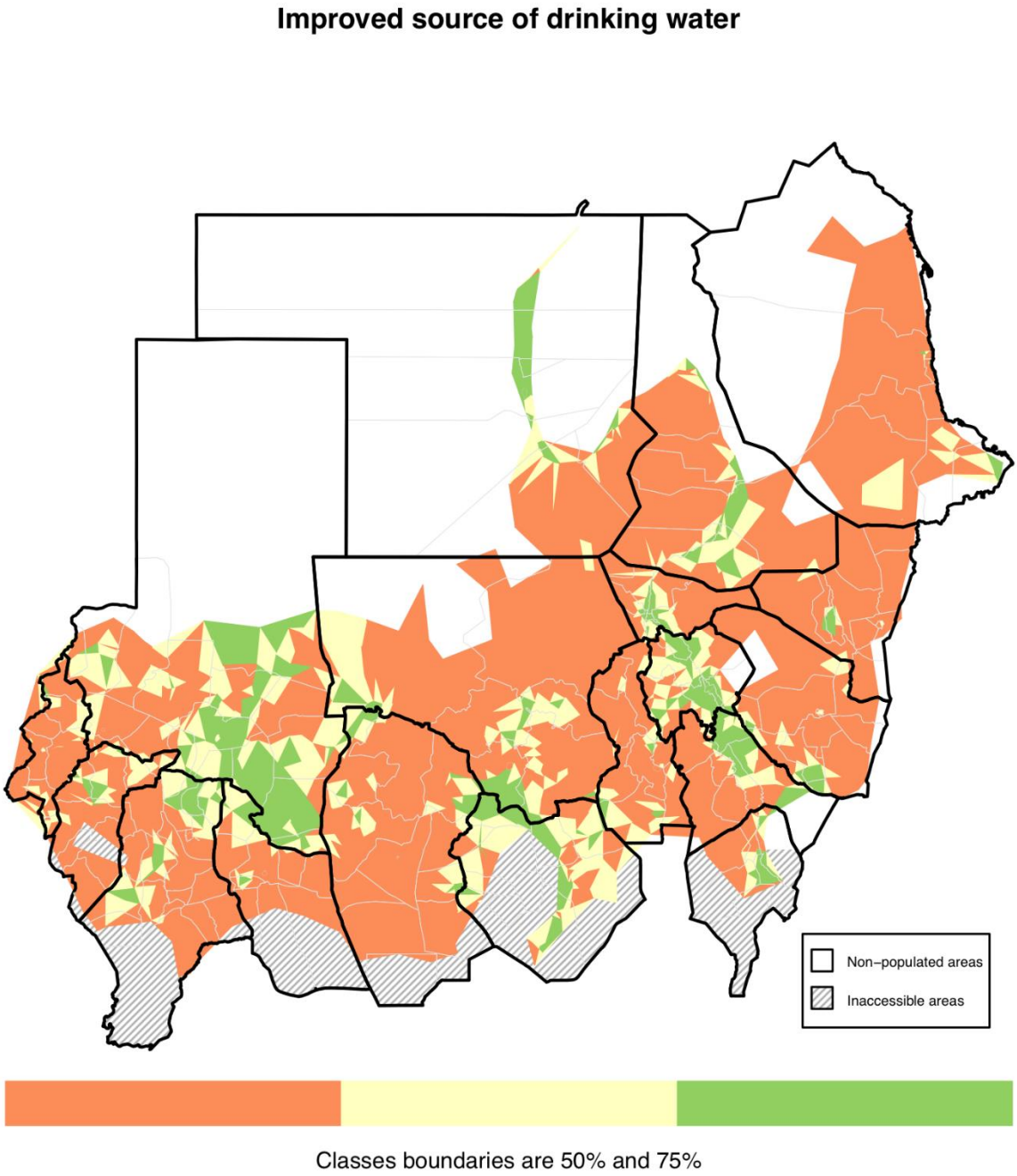


Figure 72: Map of use of improved sanitation facilities

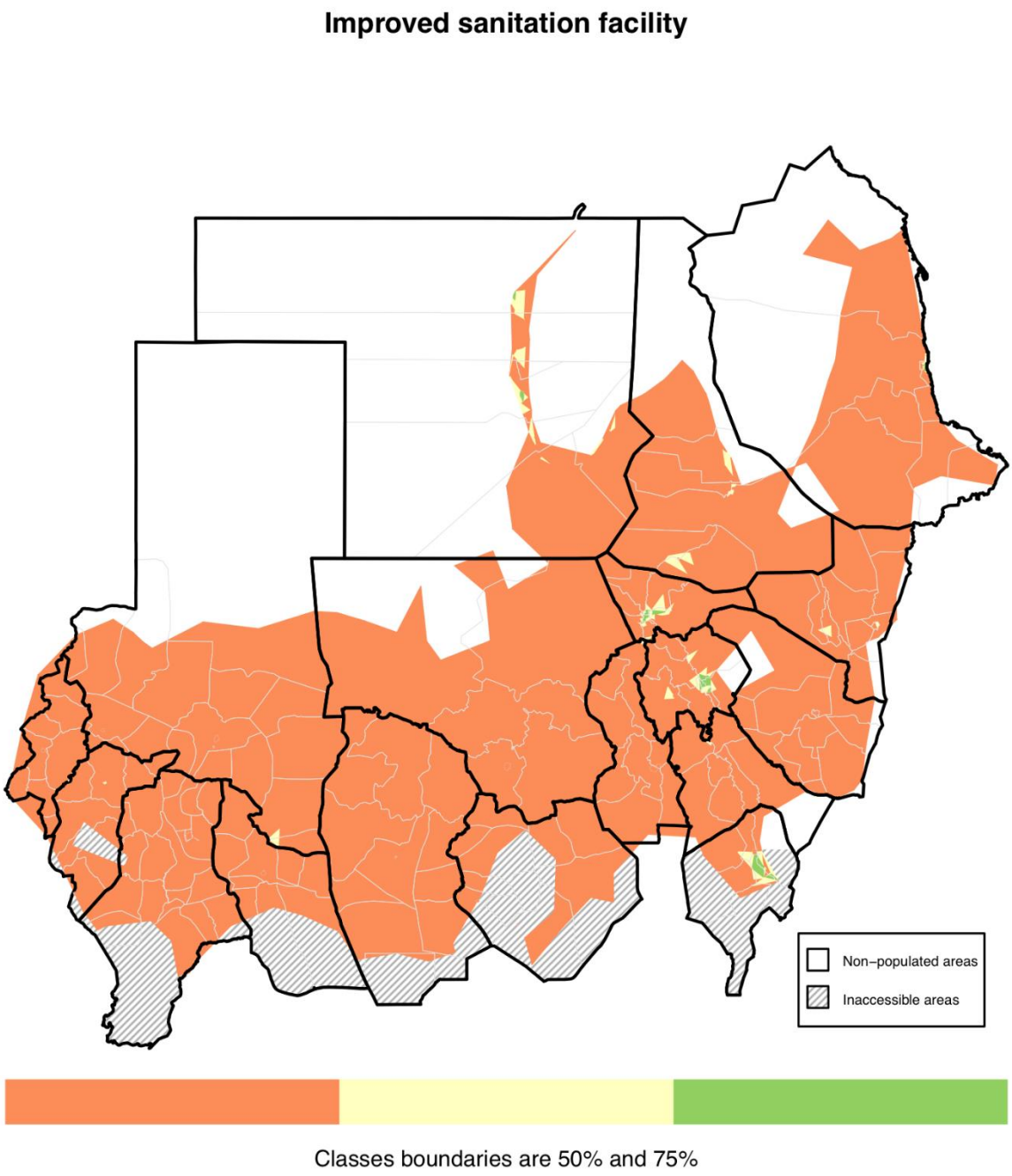


Figure 73: Classification map of sanitary disposal of child faeces

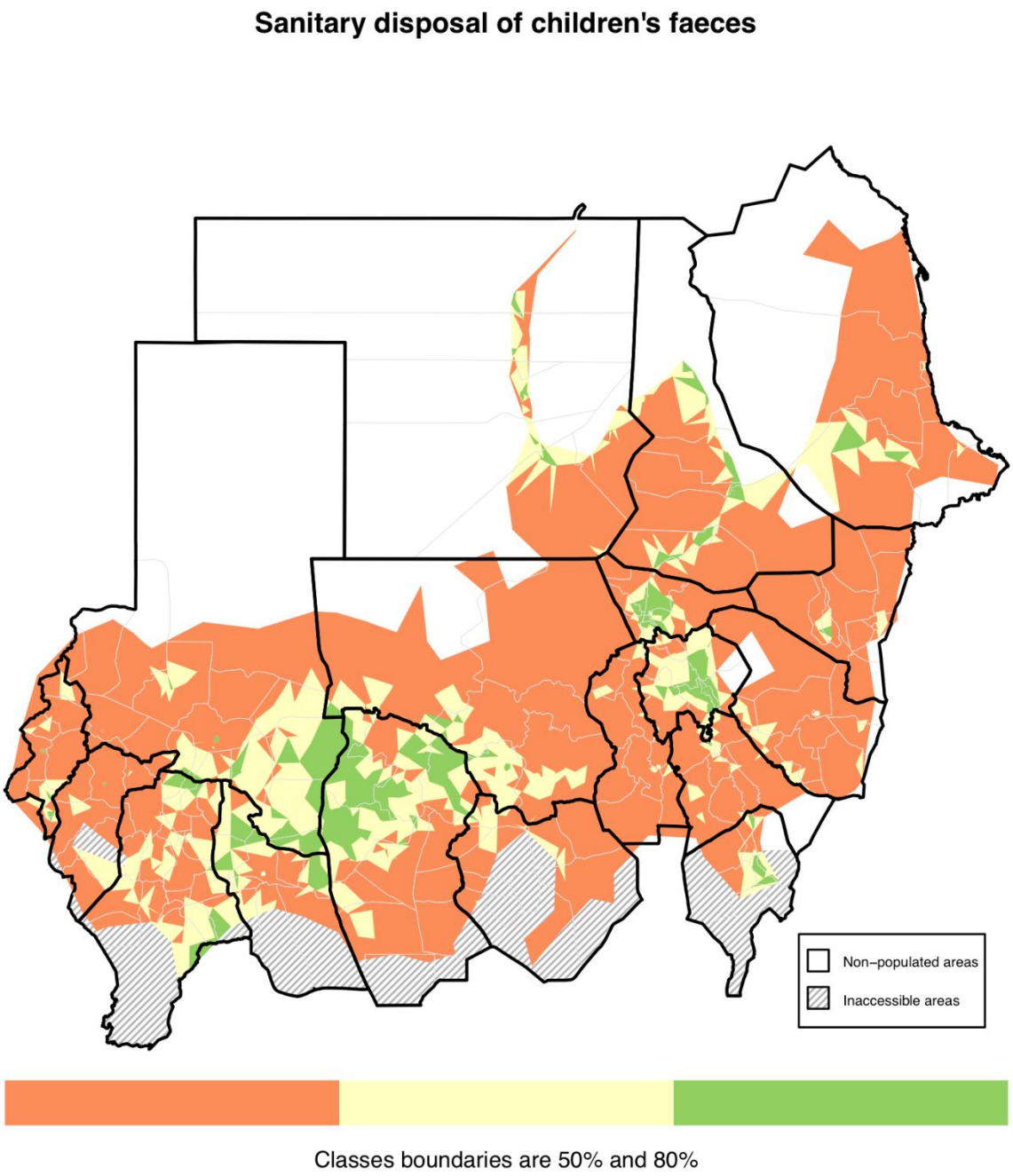


Figure 74: Map of good hand washing practices

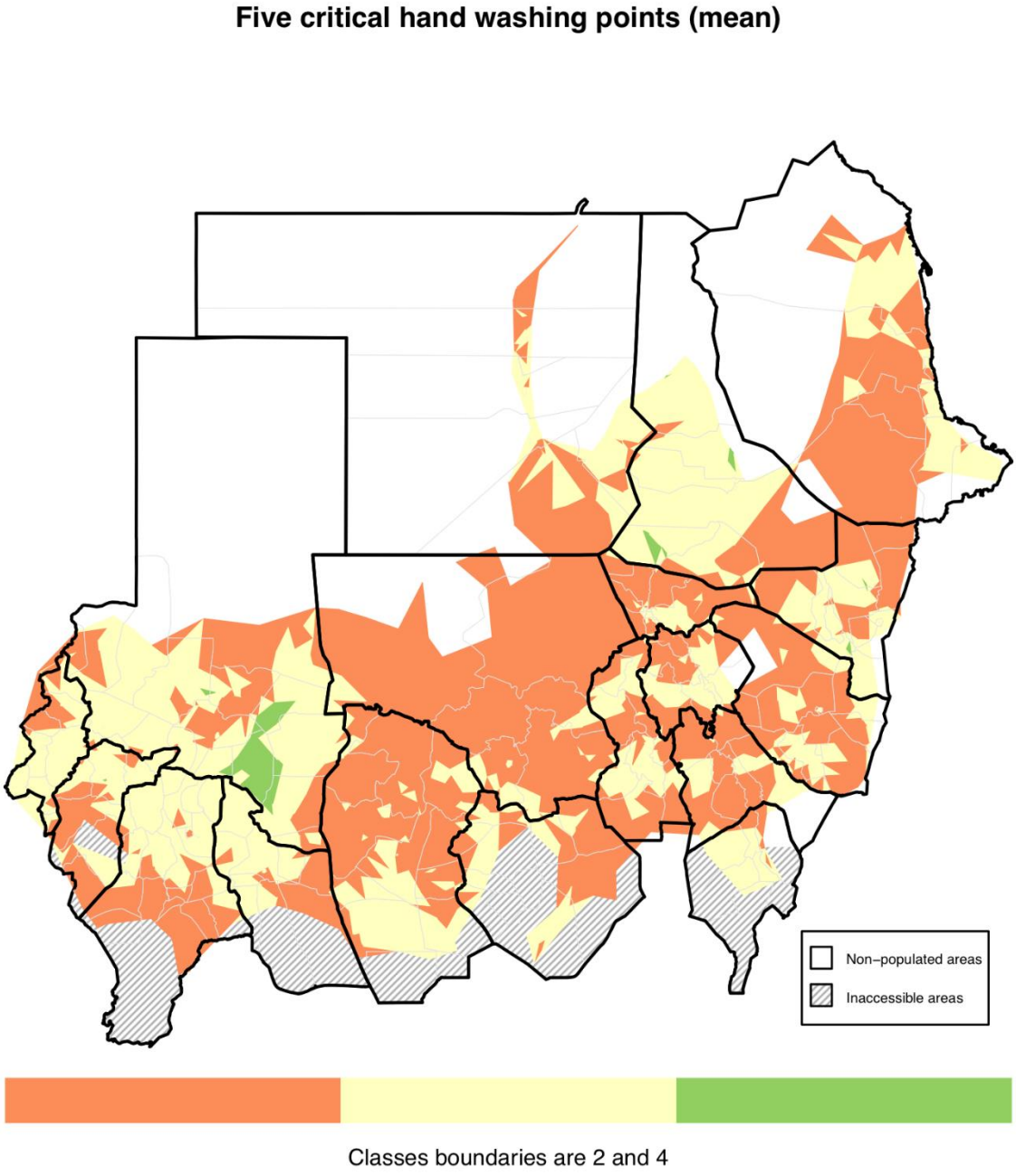


Table 15: Water, sanitation and hygiene indicators, results by locality

State	Locality	Improved source of drinking water			Improved sanitation facility			Sanitary disposal of children's faeces			Five critical hand washing points (mean)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Red Sea	Ageeg	**75.3**	40.4	95.7	**7.3**	0.0	15.0	**32.4**	15.3	52.1	**2.6**	2.4	2.7
	Alganeb Alolib	**3.4**	0.0	10.5	**5.8**	1.9	9.4	**13.9**	6.1	23.2	**1.5**	1.3	1.7
	Dordaib	**17.5**	1.6	46.6	**0.5**	0.0	3.7	**0.0**	0.0	1.8	**1.2**	1.0	1.4
	Haia	**3.8**	1.1	7.9	**1.7**	0.0	4.1	**89.0**	77.8	96.8	**1.2**	1.1	1.3
	Haliab	**1.6**	0.0	8.4	**3.9**	0.0	11.0	**0.0**	0.0	0.0	**2.1**	1.8	2.4
	Japitalmadin	**4.2**	0.0	15.8	**0.0**	0.0	0.0	**8.2**	4.7	12.2	**3.3**	3.0	3.5
	Sawaken	**9.8**	0.0	35.0	**2.1**	0.0	10.5	**4.9**	0.0	16.7	**2.0**	1.9	2.2
	Senkat	**0.5**	0.0	6.5	**0.0**	0.0	1.3	**0.6**	0.0	2.6	**0.9**	0.7	1.1
	Tokar	**7.2**	4.2	21.0	**49.5**	38.8	56.0	**55.7**	42.4	62.8	**2.5**	2.4	2.6
	Port Sudan	**25.5**	15.5	36.8	**73.9**	63.2	82.7	**71.4**	61.6	82.5	**2.9**	2.6	3.2
	All state	**27.9**	21.8	33.4	**44.1**	38.2	50.9	**55.3**	49.6	61.2	**2.5**	2.4	2.7
Kassala	Aroma	**0.0**	0.0	22.8	**2.3**	0.7	4.1	**33.5**	21.2	44.1	**3.6**	2.8	4.2
	Hamshkoreb	**4.8**	1.2	10.7	**0.0**	0.0	0.4	**21.1**	11.6	33.0	**2.3**	1.9	2.7
	Kshmalgrba	**17.2**	0.0	51.7	**5.5**	0.0	17.2	**41.3**	21.9	54.7	**4.7**	4.4	4.9
	Nahr Atbara	**100.0**	59.3	100.0	**0.0**	0.0	0.0	**56.3**	40.6	68.8	**4.6**	4.4	4.8
	North Delta	**1.3**	0.0	4.9	**0.5**	0.0	3.1	**20.1**	8.5	37.2	**3.4**	3.1	3.8
	Rify Kassala	**2.5**	0.0	9.4	**0.6**	0.0	3.8	**38.1**	12.5	67.5	**2.9**	2.3	3.6
	Rural Halfa	**45.3**	15.6	73.5	**42.2**	20.7	70.4	**67.2**	52.1	85.4	**2.6**	2.2	3.2
	Talkok	**0.0**	0.0	0.3	**24.6**	10.3	42.9	**34.6**	18.2	50.5	**1.6**	1.3	1.8
	Wadalhlew	**0.0**	0.0	2.6	**2.6**	0.0	7.1	**11.7**	0.0	24.2	**3.6**	3.2	4.0
	West Kassala	**0.0**	0.0	0.1	**2.3**	0.0	7.0	**13.5**	5.3	21.9	**1.5**	1.3	1.8
	All state except capital	**13.1**	5.0	23.3	**13.0**	7.3	19.5	**35.7**	29.0	42.6	**2.8**	2.4	3.1
	Kassala Town	**58.4**	42.2	72.7	**52.1**	37.6	62.3	**60.0**	48.9	70.2	**3.8**	3.4	4.2
	Hamoshkoreib Town*	**4.9**	0.9	10.1	**0.0**	0.0	0.0	**22.2**	10.8	34.7	**2.3**	1.9	2.8
Gedaref	Al Gadaref Wasat	**10.6**	0.7	23.9	**8.9**	2.6	15.1	**34.7**	19.8	52.3	**2.0**	1.8	2.1
	Al Mafaza	**100.0**	42.7	100.0	**0.0**	0.0	0.0	**80.2**	52.1	88.5	**1.5**	1.3	1.6
	Albutana	**1.4**	0.5	2.8	**0.7**	0.0	1.9	**4.6**	2.0	7.2	**1.8**	1.5	2.2
	Alfashaga	**91.8**	79.8	97.8	**6.5**	4.4	11.4	**77.9**	67.1	83.7	**1.6**	1.5	1.7
	Alfaw	**77.2**	64.7	86.6	**0.0**	0.0	0.0	**29.9**	23.2	37.1	**1.5**	1.4	1.6
	Algalabat Al Garbiya	**33.3**	1.0	72.1	**2.1**	0.0	6.3	**10.8**	4.3	32.3	**1.8**	1.5	2.1
	Algalabat Al Shargiya	**0.0**	0.0	0.0	**0.0**	0.0	2.3	**21.1**	12.5	28.2	**1.7**	1.5	1.9
	Algurisha	**0.0**	0.0	0.0	**2.8**	0.3	6.6	**17.8**	6.8	33.9	**1.8**	1.7	1.9
	Alrahad	**84.4**	51.0	95.8	**0.0**	0.0	0.0	**56.3**	40.6	84.4	**1.5**	1.3	1.6
	Basonda	**1.3**	0.0	6.5	**2.1**	0.5	4.4	**25.2**	8.8	46.1	**1.7**	1.5	1.9
	Gula Alnahal	**12.9**	0.4	37.5	**1.2**	0.0	3.5	**3.9**	1.6	6.7	**2.3**	2.1	2.6
	All state except capital	**46.0**	38.2	54.8	**4.0**	2.9	5.8	**46.6**	40.6	52.3	**1.7**	1.6	1.8
	Gedarif Town	**64.2**	53.7	75.8	**22.6**	12.4	34.7	**64.9**	51.8	74.8	**2.4**	2.1	2.7
Blue Nile	Baw (part)	**96.9**	89.1	100.0	**0.0**	0.0	0.0	**45.3**	32.8	57.8	**3.2**	3.0	3.5
	Damazin	**99.0**	95.8	100.0	**66.7**	42.7	80.2	**96.9**	70.8	100.0	**1.9**	1.7	2.1
	Giessan (part)	**97.6**	94.3	99.6	**90.6**	84.0	94.3	**97.0**	91.4	98.9	**2.8**	2.4	3.4
	Kurmuk (part)	**37.5**	24.9	50.1	**0.0**	0.0	0.0	**80.2**	65.6	90.7	**2.3**	2.1	2.5
	Rosairs (part)	**85.2**	73.5	92.5	**73.2**	52.4	88.9	**81.7**	70.8	88.7	**2.0**	1.8	2.2
	Tadamon (part)	**2.3**	0.7	7.0	**0.0**	0.0	3.2	**21.9**	13.3	32.1	**3.2**	2.9	3.6
	All state except capital	**84.9**	75.5	90.4	**73.3**	57.3	82.2	**83.4**	73.3	89.7	**2.4**	2.1	2.6
	Damazin Town	**88.8**	64.7	95.9	**19.5**	2.2	48.3	**82.7**	73.6	97.8	**1.8**	1.6	3.3
	Roseris Town	**86.3**	77.5	92.5	**16.0**	7.4	26.2	**83.6**	75.1	90.2	**2.2**	1.8	2.5

State	Locality	Improved source of drinking water			Improved sanitation facility			Sanitary disposal of children's faeces			Five critical hand washing points (mean)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
South Kordofan	Abujebiha (part)	**23.4**	4.5	51.1	**0.9**	0.0	2.0	**23.3**	14.1	35.2	**1.5**	1.4	1.7
	Al Tadamoon (part)	**60.5**	30.3	85.5	**1.1**	0.0	3.9	**3.2**	0.7	6.7	**1.8**	1.6	2.0
	Alabaseya	**72.9**	38.5	100.0	**47.9**	20.8	71.9	**57.1**	28.1	74.0	**2.1**	1.9	2.4
	Algoz	**98.5**	96.3	100.0	**13.3**	7.8	21.0	**72.9**	54.4	84.7	**1.8**	1.5	2.1
	Allirri	**65.1**	41.5	83.9	**0.0**	0.0	1.6	**6.3**	0.5	14.1	**2.0**	1.8	2.3
	Alreif Alshargi	**100.0**	100.0	100.0	**1.0**	0.0	4.2	**51.0**	39.6	61.5	**3.5**	3.2	3.7
	Dilling (part)	**100.0**	100.0	100.0	**0.0**	0.0	0.0	**81.3**	65.6	93.8	**2.3**	2.0	2.7
	Gadeir (part)	**64.9**	45.5	83.4	**0.0**	0.0	1.2	**7.7**	3.2	12.0	**2.6**	2.3	2.9
	Habeila (part)	**55.2**	22.9	86.0	**0.0**	0.0	0.0	**39.6**	28.7	52.4	**2.2**	2.1	2.4
	Rashad (part)	**79.5**	51.6	98.0	**0.0**	0.0	0.0	**35.0**	10.0	62.6	**1.8**	1.6	2.0
	All state except capital	**61.4**	51.3	71.5	**4.1**	1.7	7.8	**29.5**	23.5	38.1	**2.0**	1.9	2.2
	Kadugli Town	**61.0**	45.5	76.4	**26.8**	16.5	39.6	**71.4**	59.8	81.7	**3.0**	2.8	3.2
	Talodi Town	**95.9**	89.8	99.6	**6.9**	2.1	14.2	**27.4**	18.3	41.8	**2.6**	2.4	2.9
West Kordofan	Abo Zabad	**41.4**	22.6	67.6	**5.7**	0.7	11.4	**91.8**	83.8	96.8	**1.6**	1.4	1.8
	Abyei (NOT AAA)	**0.3**	0.0	1.6	**1.6**	0.5	3.5	**40.4**	24.2	53.7	**2.3**	1.9	2.6
	Al Khowi	**53.1**	29.7	71.7	**44.4**	26.9	59.2	**93.6**	89.4	96.5	**2.3**	1.7	2.8
	Al Odaya	**82.9**	70.6	92.8	**0.0**	0.0	1.1	**70.9**	64.8	76.5	**1.9**	1.6	2.2
	Al Salam	**5.4**	1.2	12.2	**4.6**	2.0	6.9	**23.7**	14.7	37.8	**3.3**	3.0	3.5
	Aldebab	**0.0**	0.0	0.0	**0.0**	0.0	2.3	**15.3**	5.3	24.8	**2.8**	2.4	3.2
	Almearam	**0.9**	0.0	5.0	**0.0**	0.0	5.5	**3.9**	0.0	9.4	**1.7**	1.5	1.9
	Alsnout	**0.0**	0.0	7.9	**0.0**	0.0	0.0	**66.8**	49.8	80.7	**1.5**	1.3	1.6
	Babanusa	**3.8**	0.0	8.7	**0.0**	0.0	3.6	**25.3**	11.7	44.0	**3.1**	2.0	3.8
	En Nuhud	**67.4**	47.5	85.6	**31.4**	18.8	42.8	**91.3**	86.4	94.7	**2.1**	1.9	2.2
	Ghebeish	**35.1**	19.4	49.0	**2.5**	0.5	6.3	**86.4**	78.8	91.2	**1.5**	1.2	1.8
	Kailak (part)	**1.5**	0.2	6.3	**0.4**	0.0	1.6	**35.1**	16.0	44.5	**1.1**	0.6	1.9
	Lagawa (part)	**39.5**	18.5	64.3	**0.2**	0.0	1.2	**19.4**	13.2	25.0	**1.8**	1.5	2.1
	Wad Bandah	**22.0**	9.8	37.0	**1.3**	0.0	4.2	**86.2**	81.6	90.6	**2.2**	1.9	2.4
	All state except capital	**28.6**	22.4	34.6	**8.7**	6.0	12.5	**63.4**	57.5	69.1	**2.0**	1.8	2.2
	Fula Town	**4.7**	0.0	12.3	**26.3**	16.2	36.8	**91.7**	86.2	97.0	**3.2**	2.7	3.6
North Kordofan	Bara	**56.7**	44.7	68.7	**0.0**	0.0	0.4	**65.5**	51.7	78.0	**1.4**	1.3	1.6
	El Rahad	**76.0**	43.6	94.8	**3.1**	0.0	8.1	**83.5**	54.8	94.8	**2.0**	1.6	2.1
	Jebrat El Sheikh	**0.6**	0.1	1.8	**0.0**	0.0	0.0	**67.8**	64.9	72.0	**1.6**	1.5	1.7
	Sheikan	**65.0**	47.1	77.3	**8.6**	2.5	15.1	**76.9**	62.1	89.0	**2.0**	1.7	2.1
	Sowdari	**11.4**	1.6	22.7	**1.4**	0.6	2.4	**66.2**	57.9	73.8	**1.8**	1.5	2.1
	Umm Daam	**10.3**	3.2	21.2	**0.0**	0.0	6.1	**11.7**	4.8	18.8	**1.6**	1.0	2.3
	Umm Rawaba	**47.4**	37.6	59.6	**2.1**	0.8	3.5	**37.5**	29.3	48.5	**1.6**	1.5	1.8
	West Bara	**4.7**	0.5	11.8	**0.0**	0.0	0.0	**23.4**	14.0	31.9	**1.0**	0.8	1.2
	All state except capital	**35.8**	29.9	40.9	**2.0**	1.3	2.9	**57.6**	52.2	63.0	**1.7**	1.6	1.8
	El Obeid Town	**44.1**	29.6	58.3	**41.8**	28.8	54.6	**87.2**	77.7	93.3	**2.1**	1.8	2.4
White Nile	Alsalam	**18.3**	1.3	38.3	**1.0**	0.0	2.6	**1.0**	0.2	2.4	**1.9**	1.5	2.3
	Ed Douiem	**0.0**	0.0	0.8	**0.0**	0.0	0.8	**29.2**	11.7	47.5	**2.0**	1.7	2.3
	El Gutaina	**10.3**	0.0	29.3	**10.4**	3.2	19.9	**38.3**	19.6	56.0	**2.4**	2.1	2.6
	El Jabalain	**62.1**	42.7	80.1	**6.8**	3.5	11.4	**45.4**	27.7	61.1	**2.3**	2.0	2.5
	Guli	**44.8**	23.3	66.1	**3.1**	0.0	8.9	**29.2**	14.5	44.6	**2.0**	1.9	2.3
	Kosti	**85.4**	48.6	97.8	**0.6**	0.0	3.4	**19.6**	8.8	28.6	**1.7**	1.5	1.9
	Rabak	**0.0**	0.0	0.0	**0.0**	0.0	0.0	**5.4**	0.0	11.8	**1.8**	1.6	2.0
	Tandalti	**34.2**	0.6	68.2	**1.6**	0.0	5.2	**4.7**	1.1	10.4	**2.5**	2.3	2.6
	Umm Remta	**53.8**	25.6	88.8	**3.1**	0.6	7.5	**33.8**	9.9	65.2	**2.0**	1.6	2.2
	All state except capital	**31.8**	22.3	42.7	**3.3**	2.0	5.5	**29.1**	22.1	37.1	**2.1**	2.0	2.2
	Kosti Town	**40.4**	25.9	56.4	**31.9**	19.6	45.5	**71.8**	59.4	84.5	**2.5**	2.2	2.9
	Rabak Town	**51.7**	35.0	66.2	**29.6**	19.5	42.2	**75.6**	65.0	84.1	**2.4**	2.1	2.7

State	Locality	Improved source of drinking water			Improved sanitation facility			Sanitary disposal of children's faeces			Five critical hand washing points (mean)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Sennar	Abu Hijar	**14.8**	8.7	22.3	**3.9**	1.2	7.8	**34.8**	8.2	59.0	**1.5**	1.3	1.6
	Al Dindir	**78.5**	64.6	90.5	**6.0**	2.2	11.4	**12.8**	3.9	22.4	**2.2**	1.6	2.8
	Aldali & Almazmoum	**25.5**	8.1	56.0	**13.5**	6.2	21.9	**62.0**	46.8	75.0	**2.6**	1.9	3.3
	Alsooki	**42.2**	12.0	70.1	**8.4**	1.8	18.0	**40.7**	18.0	61.8	**1.7**	1.5	2.0
	Sennar	**45.3**	18.2	78.7	**7.1**	2.7	10.9	**46.6**	25.4	65.4	**1.3**	1.0	1.5
	Sharg Sennar	**90.1**	76.1	99.4	**17.1**	2.6	33.7	**31.6**	9.9	56.3	**1.2**	1.0	1.5
	Sinja	**83.8**	50.0	100.0	**5.5**	2.8	9.3	**77.5**	52.2	91.2	**2.2**	1.9	2.4
	All state except capital	**46.4**	35.2	57.2	**9.5**	6.5	12.9	**46.9**	39.0	54.6	**1.9**	1.7	2.1
	Sennar Town	**84.4**	67.9	95.4	**59.6**	47.1	73.1	**84.7**	72.4	92.1	**2.2**	2.0	2.5
	Sinja Town	**93.3**	83.7	98.8	**44.3**	31.4	56.4	**80.0**	70.1	89.6	**2.1**	1.9	2.4
El Gezira	El Hasaheisa	**100.0**	76.6	100.0	**14.7**	2.6	35.7	**70.0**	53.4	84.3	**1.3**	1.1	1.5
	El Kamlin	**87.6**	68.4	100.0	**7.6**	1.9	19.0	**33.0**	23.3	43.4	**1.3**	1.1	1.4
	El Managil	**90.9**	76.8	96.1	**8.6**	3.6	28.8	**16.5**	7.1	50.2	**2.0**	2.0	2.2
	Janub El Gezira	**83.4**	66.3	96.2	**24.0**	10.2	42.3	**91.8**	76.6	98.1	**2.5**	2.1	2.9
	Madani Al Kobra	**100.0**	100.0	100.0	**66.7**	40.0	93.3	**93.3**	80.0	100.0	**3.0**	2.4	3.7
	Sharg El Gezira	**85.2**	69.0	96.2	**58.6**	41.4	74.1	**84.5**	69.7	93.6	**3.0**	2.5	3.3
	Umm El Gura	**59.3**	18.1	93.6	**35.1**	15.4	59.7	**58.9**	32.4	83.6	**2.7**	2.5	2.9
	All state except capital	**86.9**	75.7	92.4	**16.2**	10.1	27.5	**35.8**	23.2	66.7	**2.1**	2.0	2.3
	Madani Town	**94.0**	86.7	99.2	**62.9**	46.9	73.2	**81.8**	72.5	89.7	**2.3**	1.9	2.8
Khartoum	Bahari	**95.9**	89.2	98.1	**89.8**	79.9	94.6	**98.0**	93.7	99.7	**1.6**	1.2	1.9
	Gabel Awlia	**91.3**	76.3	96.3	**52.7**	32.8	73.5	**92.5**	85.3	96.9	**2.1**	1.9	2.4
	Karrarri	**98.0**	93.2	100.0	**1.0**	0.0	5.8	**91.9**	87.8	95.3	**2.0**	1.6	2.1
	Khartoum	**88.4**	81.8	93.3	**82.0**	71.0	91.9	**89.8**	83.8	95.4	**2.6**	2.3	3.1
	Shareg Elnile	**77.4**	59.8	89.6	**41.8**	30.2	53.3	**67.9**	57.6	77.8	**2.5**	2.3	2.7
	Umbada	**96.0**	79.9	99.7	**25.1**	14.5	34.2	**87.5**	78.3	92.5	**2.2**	1.8	2.5
	Umdrman	**90.0**	60.6	100.0	**17.5**	10.2	25.3	**87.8**	72.8	96.9	**2.0**	1.8	2.2
	All state	**90.4**	83.9	94.4	**47.9**	39.1	55.2	**87.5**	82.9	91.1	**2.1**	1.9	2.2
Northern	Alborgeg	**100.0**	100.0	100.0	**50.0**	15.8	84.2	**83.3**	50.0	100.0	**1.7**	1.0	2.0
	Aldabba	**91.9**	85.8	95.2	**50.6**	42.4	58.2	**88.0**	81.1	93.8	**2.8**	2.6	3.0
	Algoled	**78.2**	58.3	91.4	**71.4**	51.4	85.9	**91.3**	79.3	99.5	**3.7**	2.8	4.4
	Dalgo	**92.3**	88.7	96.3	**37.2**	27.4	47.2	**51.8**	41.5	60.0	**1.8**	1.7	1.9
	Dongola	**99.0**	93.8	100.0	**50.0**	25.6	77.0	**60.1**	35.4	84.2	**2.6**	2.1	3.1
	Halfa	**94.0**	91.6	96.1	**53.4**	47.6	59.4	**34.6**	29.2	41.2	**1.7**	1.6	1.8
	Merawi	**76.0**	71.4	79.7	**51.0**	44.6	56.3	**71.6**	65.5	75.6	**4.0**	3.7	4.1
	All state except capital	**90.7**	88.2	93.1	**52.4**	47.8	58.2	**53.5**	48.8	59.2	**2.4**	2.2	2.6
	Dongola Town	**98.8**	95.9	100.0	**75.9**	68.7	85.6	**86.3**	76.7	94.4	**2.8**	2.3	3.2
River Nile	Abu Hamad	**79.0**	60.0	93.4	**46.0**	37.0	54.0	**76.9**	69.2	83.6	**3.3**	3.1	3.6
	Albuhaira	**3.7**	0.9	7.4	**11.8**	7.8	16.4	**79.8**	66.6	90.0	**3.2**	2.8	3.6
	Atbara	**58.2**	39.4	75.5	**31.0**	20.5	40.1	**88.2**	68.1	98.3	**3.6**	3.3	3.9
	Barbar	**83.9**	66.1	93.8	**50.8**	37.8	63.0	**70.4**	55.6	86.4	**3.7**	3.0	4.2
	Ed Damer	**73.3**	58.5	85.0	**35.1**	26.7	43.2	**73.8**	54.9	88.0	**3.2**	2.8	3.5
	El Matammah	**87.6**	74.5	96.8	**63.6**	51.6	75.6	**86.0**	78.8	93.4	**3.4**	3.3	3.5
	Shendi	**40.2**	19.6	66.0	**14.1**	6.5	25.6	**21.0**	7.7	40.7	**2.4**	2.1	2.6
	All state except capital	**68.8**	61.9	75.3	**39.9**	35.4	44.8	**76.1**	69.6	81.1	**3.3**	3.2	3.4
	Atbara Town	**92.5**	87.4	96.6	**66.8**	57.1	76.3	**88.2**	80.8	94.8	**3.9**	3.6	4.3
	El Damar Town	**90.7**	82.3	96.4	**68.3**	59.4	78.1	**92.3**	85.3	97.4	**3.9**	3.5	4.3

State	Locality	Improved source of drinking water			Improved sanitation facility			Sanitary disposal of children's faeces			Five critical hand washing points (mean)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
North Darfur	Al Fasher	**67.2**	53.4	79.8	**22.0**	15.3	31.0	**59.6**	46.6	72.1	**3.1**	2.6	3.6
	Al Koma	**2.4**	0.8	6.4	**37.6**	11.8	54.8	**84.8**	66.9	93.6	**4.5**	4.3	4.7
	Al Malha	**68.0**	48.0	84.0	**3.2**	0.9	7.4	**13.7**	7.3	21.3	**1.1**	0.7	1.7
	Al Seref	**27.4**	14.1	40.5	**12.9**	5.2	21.3	**50.2**	34.4	62.7	**2.5**	2.3	2.7
	Al Tina	**31.9**	2.9	60.1	**2.8**	0.0	7.3	**0.7**	0.0	4.0	**0.9**	0.7	1.1
	Al Twasha	**94.0**	88.0	98.1	**12.7**	1.7	26.9	**89.6**	81.5	96.9	**2.4**	2.0	2.9
	Allait	**100.0**	100.0	100.0	**23.6**	0.0	49.2	**95.3**	88.1	100.0	**2.4**	1.6	3.2
	Ambaro	**24.9**	10.3	41.5	**0.3**	0.0	1.4	**1.2**	0.0	3.0	**3.4**	3.1	3.7
	Dar Alsalam	**94.4**	91.1	97.3	**5.8**	2.7	9.8	**89.9**	68.2	100.0	**4.2**	3.8	4.3
	Kabkabia	**28.3**	10.3	47.1	**3.1**	0.6	7.4	**21.1**	2.3	40.1	**2.8**	2.6	3.0
	Karnoi	**51.7**	26.1	73.4	**0.0**	0.0	0.0	**12.5**	4.9	25.2	**2.1**	1.7	2.3
	Kelemendo	**96.5**	85.2	99.6	**15.2**	7.4	27.0	**87.5**	75.8	93.0	**4.3**	4.1	4.4
	Kutum	**8.7**	3.0	22.3	**11.4**	6.3	17.8	**76.5**	59.7	89.2	**2.8**	2.6	3.1
	Mallit	**83.5**	69.2	95.2	**0.8**	0.0	2.6	**11.8**	7.0	17.2	**1.0**	0.7	1.4
	Saraf Omra	**0.0**	0.0	0.0	**0.0**	0.0	4.0	**3.1**	0.0	7.0	**2.5**	2.2	2.8
	Tawila	**46.2**	18.4	72.1	**3.6**	0.5	8.1	**58.3**	33.9	77.6	**2.8**	2.4	3.1
	Umkadada	**67.6**	55.7	79.4	**10.7**	6.6	15.3	**93.8**	81.7	97.7	**3.0**	2.6	3.2
	All state except capital	**60.4**	54.1	68.0	**12.9**	10.7	15.6	**60.5**	54.4	66.4	**2.8**	2.6	3.0
	El Fashir Town	**59.2**	44.9	70.9	**48.1**	36.7	59.8	**88.8**	82.1	93.7	**3.9**	3.6	4.2
	Zamzam Camp*	**67.7**	53.8	79.2	**31.3**	19.4	42.3	**69.2**	57.6	82.0	**3.7**	3.2	4.2
	El Sireif Camp*	**26.5**	13.5	38.0	**12.2**	5.2	21.4	**50.2**	35.2	66.0	**2.5**	2.3	2.7
South Darfur	Al Rudoom (part)	**23.2**	2.3	49.0	**1.3**	0.0	3.4	**77.3**	64.6	85.9	**1.5**	1.3	1.6
	Alwehda	**93.8**	53.6	99.2	**1.8**	0.0	5.5	**68.8**	45.8	86.8	**2.1**	1.8	2.3
	Belil	**13.5**	6.3	40.6	**12.5**	6.2	19.8	**63.5**	38.5	71.9	**3.5**	3.3	3.7
	Buram	**0.0**	0.0	6.3	**1.0**	0.0	4.8	**75.0**	62.1	87.7	**1.4**	1.2	1.8
	Dimso	**37.5**	27.1	47.3	**19.8**	13.5	30.6	**37.9**	28.8	51.1	**1.7**	1.4	1.8
	El Salam	**27.8**	3.0	55.3	**2.3**	0.0	7.0	**34.5**	21.5	54.6	**2.6**	1.9	3.2
	Gerieda	**33.3**	8.7	52.8	**6.1**	0.0	16.8	**60.6**	24.9	87.5	**2.3**	1.8	2.6
	Id Elfirsan	**35.4**	15.6	56.3	**0.0**	0.0	0.0	**55.2**	45.8	62.5	**1.8**	1.7	2.0
	Kass	**47.3**	19.3	71.5	**3.1**	0.0	7.4	**30.5**	21.9	39.9	**2.6**	2.4	2.7
	Katila	**19.2**	14.2	25.6	**0.0**	0.0	1.6	**38.7**	28.9	45.5	**1.6**	1.4	1.7
	Kubum	**11.3**	4.3	27.5	**4.4**	0.0	9.4	**81.9**	66.7	93.2	**2.4**	2.2	2.7
	Mershing	**100.0**	100.0	100.0	**0.0**	0.0	0.0	**78.1**	62.5	87.7	**2.9**	2.7	3.3
	Netiga	**62.1**	33.6	87.0	**5.1**	1.0	10.2	**43.8**	17.3	64.1	**2.5**	2.2	2.7
	Rahad Elberdi (part)	**84.6**	63.3	92.9	**0.0**	0.0	1.3	**53.9**	42.2	62.6	**1.7**	1.5	1.9
	Toluss	**7.8**	0.0	15.7	**3.1**	0.0	11.1	**17.2**	4.8	29.7	**1.1**	0.9	1.3
	Um Dafog (part)	**10.0**	0.0	20.3	**0.0**	0.0	0.0	**40.0**	15.0	60.3	**1.5**	1.2	1.7
	All state except capital	**47.4**	37.7	54.8	**2.2**	0.9	3.5	**56.1**	50.4	61.5	**2.1**	2.0	2.3
	Nyala Town	**15.1**	5.8	25.5	**11.6**	6.2	18.5	**71.9**	59.6	83.1	**1.4**	1.2	1.6
	Kalma Camp*	**74.5**	66.2	83.2	**22.0**	14.6	29.8	**71.8**	59.2	78.1	**2.5**	2.1	2.9

State	Locality	Improved source of drinking water			Improved sanitation facility			Sanitary disposal of children's faeces			Five critical hand washing points (mean)		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
East Darfur	Abukarinka	**4.2**	1.0	8.3	**0.0**	0.0	7.3	**50.8**	15.9	83.4	**2.1**	2.0	2.4
	Adilla (part)	**0.0**	0.0	0.0	**28.1**	10.9	46.9	**97.7**	94.5	100.0	**0.8**	0.5	1.1
	Al Deain	**0.9**	0.0	3.9	**0.0**	0.0	0.0	**5.0**	1.5	10.9	**2.3**	2.1	2.5
	Alfirdos	**2.6**	0.0	8.8	**1.0**	0.0	6.0	**80.9**	58.8	95.8	**4.0**	3.3	4.5
	Asslaya	**69.4**	52.8	89.7	**3.5**	0.0	8.3	**43.0**	29.1	72.8	**2.0**	1.9	2.0
	Aubgabar	**20.8**	8.1	37.0	**0.0**	0.0	0.0	**2.2**	0.0	6.6	**0.7**	0.6	0.9
	Aubmatarg	**4.9**	0.0	12.1	**0.0**	0.0	0.0	**10.9**	4.6	19.0	**1.1**	0.8	1.3
	Sharia (part)	**52.1**	3.1	84.4	**2.1**	0.0	6.3	**66.7**	30.1	90.7	**2.6**	2.4	2.8
	Yaseen (part)	**25.0**	1.6	51.6	**10.9**	0.0	26.7	**98.4**	95.2	100.0	**2.0**	1.8	2.1
	All state except capital	**12.7**	6.6	21.1	**7.9**	3.3	14.3	**68.9**	55.3	80.7	**1.8**	1.6	2.0
	Al Deain Town	**33.8**	21.7	48.6	**31.4**	20.1	44.0	**79.1**	65.6	90.7	**2.7**	2.3	3.2
West Darfur	Algenea	**41.2**	0.0	68.8	**56.9**	0.0	95.3	**84.3**	57.9	100.0	**2.9**	1.8	3.7
	Baida	**11.1**	1.3	26.0	**1.6**	0.0	5.9	**13.6**	4.2	28.2	**2.5**	2.1	2.9
	Forbranga	**65.7**	40.0	86.9	**3.0**	0.5	7.3	**13.5**	6.7	21.6	**2.5**	2.2	2.8
	Gabal Moon	**56.8**	36.9	74.4	**22.2**	10.1	33.8	**49.0**	27.1	72.0	**1.6**	1.5	1.8
	Habilla	**60.1**	27.0	83.2	**1.2**	0.0	3.3	**95.3**	84.2	99.2	**2.4**	2.2	2.7
	Kerenik	**50.1**	19.4	76.7	**15.1**	5.7	28.8	**43.6**	22.4	72.3	**3.1**	2.8	3.4
	Kulbus	**21.4**	4.3	40.7	**0.9**	0.0	3.3	**70.7**	43.9	89.8	**3.1**	2.9	3.4
	Serba	**19.8**	10.9	28.2	**5.6**	2.1	10.4	**48.3**	36.0	58.9	**1.3**	1.1	1.6
	All state except capital	**34.5**	21.2	53.7	**5.1**	3.1	8.5	**37.5**	27.6	50.5	**2.4**	2.1	2.6
	Algenea Town	**53.5**	39.9	66.4	**29.1**	17.5	39.7	**88.4**	80.8	95.1	**2.7**	2.4	3.0
	Morne Camp*	**84.7**	62.3	95.2	**51.1**	44.4	60.4	**98.8**	93.7	99.9	**3.3**	3.1	3.5
Central Darfur	Azoum	**63.4**	0.0	85.3	**3.2**	0.0	14.7	**58.5**	49.0	70.8	**2.9**	2.5	3.2
	Bendsi (part)	**57.0**	39.0	67.7	**12.2**	5.4	20.4	**79.6**	48.9	87.2	**2.6**	2.1	2.9
	Mukjar (part)	**37.4**	20.5	51.5	**48.5**	34.4	60.7	**70.7**	57.8	82.4	**2.3**	2.1	2.7
	Nertati	**16.3**	0.0	63.3	**29.4**	3.9	45.7	**48.9**	17.6	65.3	**1.6**	1.3	2.2
	Rokiro	**72.9**	51.6	90.3	**67.8**	44.6	87.1	**76.8**	64.3	88.7	**1.9**	1.2	2.4
	Um Dukhun (part)	**77.0**	64.5	87.0	**9.1**	4.7	15.4	**22.0**	12.1	31.2	**2.0**	1.7	2.3
	Wadi Salih (part)	**46.2**	28.3	63.8	**7.8**	3.5	12.3	**36.3**	17.4	54.3	**1.8**	1.4	2.2
	Zalingei	**46.1**	27.5	64.0	**22.2**	11.7	31.9	**32.3**	19.7	44.2	**2.3**	1.7	2.7
	All state except capital	**55.9**	46.5	66.2	**9.6**	5.9	14.2	**55.4**	47.6	62.1	**2.6**	2.3	2.8
	Zalingi Town	**68.0**	53.8	80.8	**58.0**	43.0	73.3	**89.3**	78.6	98.1	**4.9**	4.6	5.0
	Mukjar Town*	**36.9**	21.3	51.6	**48.4**	35.8	60.4	**70.3**	55.2	82.5	**2.3**	2.0	2.7
	Um Dokhon Town*	**76.9**	66.5	85.7	**9.0**	3.7	15.6	**23.0**	13.0	33.7	**2.0**	1.7	2.4

9.3.2 Iodized salt consumption (Figure 69)

A sample of household salt was tested in every household surveyed using rapid testing kits (UNICEF standard iodate salt testing kits). Salt tested as containing equal to or more than 15 parts per million (ppm) of iodine was considered as adequately iodized. This is the same definition as used on the SHHS, where national coverage of iodized salt use was found to be 9.1%. Since 2010 there has been an increase in the number of states with a law banning the sale of non-iodized salt in the state. Critically, Red Sea, which manufactures and supplies approximately 97% of Sudan's salt, recently passed this law at state level (1 January 2012), impacting the salt available in all states, including those without a law. Iodized salt use has increased across the country and, surprisingly, is now lowest in Khartoum, Gezira and Northern states.

Figure 75: Classification map of proportion of households using adequately iodized salt (=>15ppm)

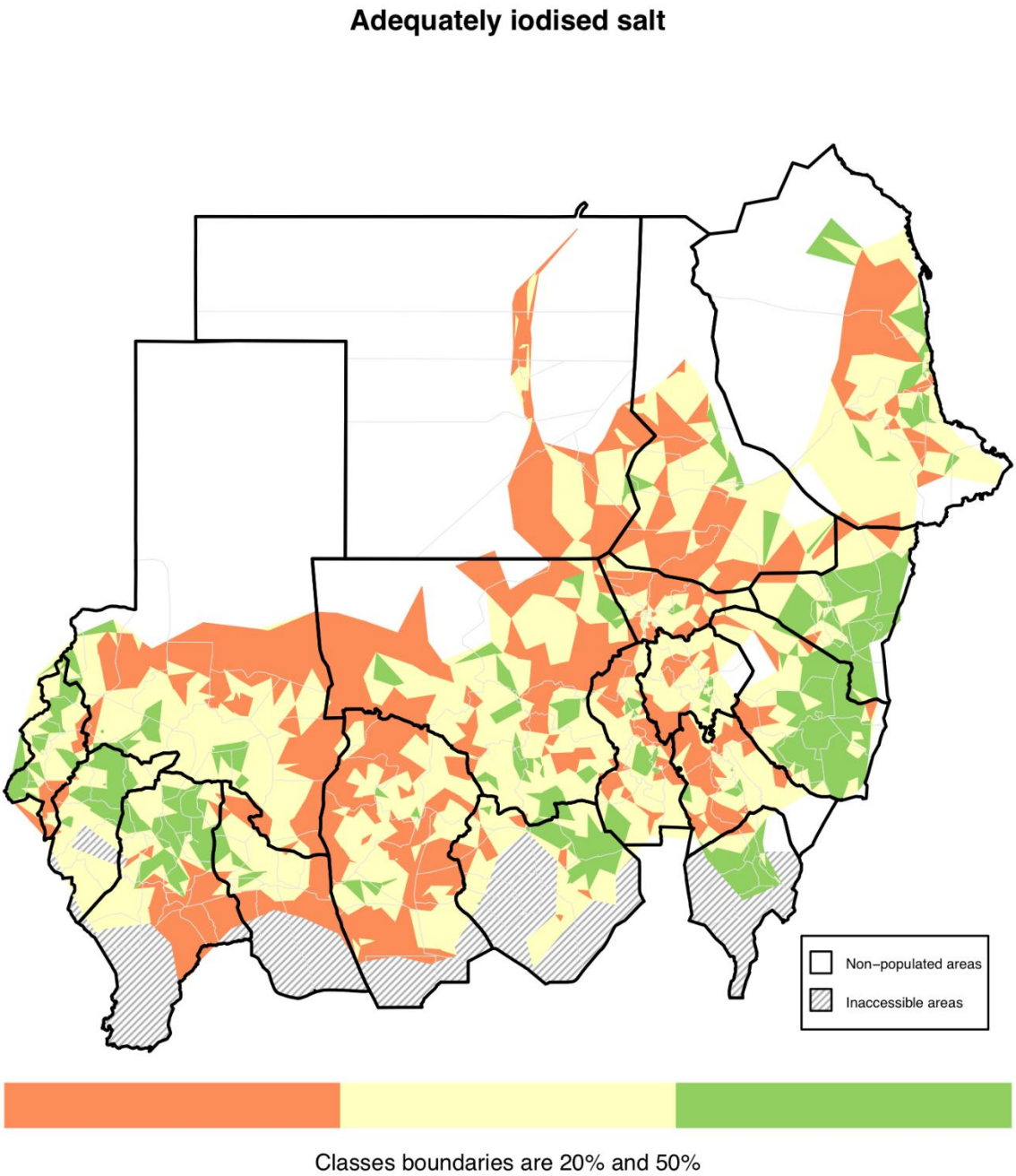


Table 16: Iodised salt and household hunger, results by locality

State	Locality	Adequately iodized salt (>= 15 ppm)			Mean household hunger score			Household hunger: No hunger			Household hunger: Moderate hunger			Household hunger: Severe hunger		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Red Sea	Ageeg	**25.3**	15.8	33.5	**0.9**	0.8	1.1	**60.7**	51.9	69.9	**39.7**	30.2	48.0	**0.0**	0.0	0.0
	Alganeb Alolib	**41.5**	28.7	53.7	**0.1**	0.0	0.2	**98.5**	96.0	100.0	**1.4**	0.0	3.9	**0.0**	0.0	0.0
	Dordaib	**44.9**	22.9	64.6	**0.1**	0.1	0.2	**94.7**	90.7	98.7	**5.2**	1.7	9.8	**0.0**	0.0	0.0
	Haia	**45.1**	26.8	61.7	**0.0**	0.0	0.1	**99.0**	96.4	100.0	**1.1**	0.0	2.9	**0.0**	0.0	0.0
	Haliab	**93.9**	83.9	100.0	**0.2**	0.0	0.6	**91.8**	79.2	100.0	**7.8**	0.0	17.6	**0.0**	0.0	0.0
	Japitalmadin	**34.4**	27.9	41.9	**0.2**	0.2	0.3	**98.6**	95.2	100.0	**1.4**	0.0	5.1	**0.0**	0.0	0.0
	Sawaken	**6.5**	1.9	14.0	**0.5**	0.3	0.7	**89.0**	79.2	94.3	**10.9**	5.7	22.5	**0.0**	0.0	0.0
	Senkat	**19.1**	0.0	53.5	**0.9**	0.8	1.0	**94.0**	88.3	97.8	**6.4**	3.2	11.5	**0.0**	0.0	0.0
	Tokar	**31.8**	26.4	38.3	**0.1**	0.1	0.2	**97.1**	95.3	98.7	**2.8**	1.4	4.9	**0.0**	0.0	0.0
	Port Sudan	**46.4**	37.1	57.5	**0.1**	0.0	0.2	**97.2**	95.3	98.6	**2.6**	1.1	4.9	**0.0**	0.0	0.1
	All state	**38.7**	34.7	43.3	**0.3**	0.2	0.3	**91.3**	88.4	93.6	**9.1**	6.7	11.7	**0.0**	0.0	0.1
Kassala	Aroma	**73.1**	56.2	83.0	**0.3**	0.2	0.4	**90.5**	85.1	94.3	**10.0**	5.7	14.6	**0.0**	0.0	0.0
	Hamshkoreb	**46.5**	34.8	55.9	**0.1**	0.0	0.2	**97.0**	93.1	99.6	**2.8**	0.4	5.9	**0.0**	0.0	0.0
	Kshmalgrba	**50.8**	41.4	64.8	**0.0**	0.0	0.0	**100.0**	100.0	100.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Nahr Atbara	**87.5**	78.1	94.4	**0.0**	0.0	0.0	**100.0**	99.9	100.0	**0.0**	0.0	1.9	**0.0**	0.0	0.0
	North Delta	**80.7**	69.3	88.0	**0.0**	0.0	0.1	**99.6**	97.8	100.0	**0.5**	0.0	2.2	**0.0**	0.0	0.0
	Rify Kassala	**71.9**	63.8	80.6	**0.0**	0.0	0.1	**100.0**	100.0	100.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Rural Halfa	**30.2**	14.0	50.1	**0.1**	0.0	0.1	**98.4**	95.8	100.0	**1.6**	0.0	4.2	**0.0**	0.0	0.0
	Talkok	**78.6**	72.8	84.1	**0.3**	0.2	0.6	**94.7**	90.1	98.9	**4.5**	0.9	8.9	**0.9**	0.0	2.6
	Wadalhlew	**96.9**	91.2	100.0	**0.2**	0.1	0.4	**92.2**	85.9	97.8	**8.6**	2.6	14.8	**0.0**	0.0	0.0
	West Kassala	**87.5**	49.9	94.8	**0.5**	0.3	0.6	**88.5**	81.3	96.1	**11.5**	4.5	18.8	**0.0**	0.0	0.0
	All state except capital	**73.0**	67.7	77.5	**0.2**	0.1	0.2	**96.9**	95.4	98.5	**2.6**	1.5	4.2	**0.3**	0.0	0.7
	Kassala Town	**66.7**	54.9	79.5	**0.1**	0.0	0.1	**98.8**	96.2	100.0	**0.9**	0.0	3.5	**0.0**	0.0	0.0
	Hamoshkoreib Town*	**46.7**	36.3	58.7	**0.1**	0.0	0.2	**97.1**	93.4	99.6	**3.0**	0.4	6.7	**0.0**	0.0	0.0
Gedaref	Al Gadaref Wasat	**62.0**	52.1	73.1	**0.1**	0.0	0.1	**98.4**	96.4	99.7	**1.6**	0.2	3.5	**0.0**	0.0	0.0
	Al Mafaza	**33.3**	19.6	44.8	**0.1**	0.0	0.2	**96.9**	90.2	100.0	**3.1**	0.0	8.7	**0.0**	0.0	0.0
	Albutana	**28.7**	21.6	37.3	**0.3**	0.1	0.5	**88.8**	80.4	96.2	**11.7**	3.6	19.8	**0.2**	0.0	0.8
	Alfashaga	**34.9**	28.5	43.8	**0.1**	0.1	0.2	**96.3**	90.4	98.4	**3.7**	1.8	9.6	**0.0**	0.0	0.0
	Alfaw	**14.9**	9.3	21.9	**0.0**	0.0	0.1	**100.0**	98.6	100.0	**0.0**	0.0	2.3	**0.0**	0.0	0.0
	Algalabat Al Garbiya	**51.0**	20.8	68.8	**0.1**	0.0	0.9	**95.8**	78.1	100.0	**4.2**	0.0	22.9	**0.0**	0.0	3.1
	Algalabat Al Shargiya	**79.7**	61.6	89.1	**0.1**	0.0	0.3	**96.1**	88.3	99.3	**3.9**	0.8	10.9	**0.0**	0.0	0.0
	Algurisha	**71.6**	47.8	86.6	**0.5**	0.3	1.0	**82.2**	71.2	91.6	**17.5**	9.4	28.4	**0.3**	0.0	1.9
	Alrahad	**20.8**	6.3	32.3	**0.0**	0.0	0.0	**100.0**	100.0	100.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Basonda	**66.7**	54.4	77.1	**0.2**	0.1	0.3	**93.6**	89.3	97.1	**6.5**	2.7	10.5	**0.0**	0.0	0.0
	Gula Alnahal	**74.2**	64.4	81.3	**0.3**	0.1	0.5	**92.6**	86.7	96.1	**7.4**	3.7	13.7	**0.0**	0.0	0.0
	All state except capital	**52.1**	47.5	57.0	**0.2**	0.1	0.2	**94.8**	92.8	96.3	**5.1**	3.8	6.6	**0.0**	0.0	0.2
	Gedarif Town	**63.7**	51.7	78.0	**0.2**	0.1	0.3	**96.3**	92.4	98.9	**3.8**	0.7	8.1	**0.0**	0.0	0.0
Blue Nile	Baw (part)	**98.4**	93.8	100.0	**0.1**	0.0	0.3	**95.3**	89.1	100.0	**3.1**	0.0	10.9	**0.0**	0.0	0.0
	Damazin	**41.7**	29.1	56.3	**0.0**	0.0	0.0	**100.0**	100.0	100.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Giessan (part)	**51.0**	40.9	65.6	**0.1**	0.0	0.1	**98.5**	95.1	99.7	**1.4**	0.3	5.1	**0.0**	0.0	0.0
	Kurmuk (part)	**91.7**	79.2	97.9	**0.2**	0.0	0.4	**95.8**	83.3	100.0	**4.2**	0.0	14.6	**0.0**	0.0	0.0
	Rosairs (part)	**59.1**	50.3	66.8	**0.2**	0.1	0.3	**93.8**	91.0	96.5	**6.1**	3.2	9.0	**0.0**	0.0	0.0
	Tadamon (part)	**65.6**	54.7	79.7	**0.4**	0.2	0.7	**89.1**	80.4	95.4	**10.9**	3.1	20.3	**0.0**	0.0	0.0
	All state except capital	**57.1**	51.1	63.3	**0.2**	0.1	0.2	**95.5**	93.0	97.2	**4.8**	2.8	7.1	**0.0**	0.0	0.0
	Damazin Town	**63.5**	49.1	74.3	**0.0**	0.0	0.3	**98.7**	89.3	99.7	**1.3**	0.3	12.4	**0.0**	0.0	0.0
	Roseris Town	**77.7**	68.8	85.2	**0.3**	0.1	0.4	**89.9**	82.0	96.6	**10.5**	4.8	17.2	**0.0**	0.0	0.0

State	Locality	Adequately iodized salt (>= 15 ppm)			Mean household hunger score			Household hunger: No hunger			Household hunger: Moderate hunger			Household hunger: Severe hunger		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
South Kordofan	Abujebiha (part)	**41.2**	29.3	51.8	**0.5**	0.4	0.6	**88.0**	82.6	92.3	**11.7**	7.1	17.9	**0.0**	0.0	0.0
	Al Tadamoon (part)	**72.5**	53.9	86.4	**0.7**	0.5	1.0	**79.3**	72.4	86.5	**20.7**	13.2	27.2	**0.0**	0.0	0.0
	Alabaseya	**30.2**	20.8	41.7	**0.6**	0.3	0.8	**82.3**	75.0	90.5	**14.3**	7.3	23.6	**2.1**	0.0	6.3
	Algoz	**35.2**	25.0	49.2	**0.2**	0.1	0.4	**91.3**	84.2	96.3	**8.8**	3.0	16.1	**0.0**	0.0	0.0
	Allirri	**47.9**	39.3	57.3	**0.7**	0.5	0.9	**78.7**	66.6	87.6	**21.4**	12.6	30.8	**0.5**	0.0	2.6
	Alreif Alshargi	**37.5**	24.0	51.0	**0.4**	0.1	1.0	**88.5**	72.9	99.0	**11.5**	1.0	26.0	**0.0**	0.0	0.0
	Dilling (part)	**78.1**	65.5	90.6	**0.1**	0.0	0.2	**100.0**	100.0	100.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Gadeir (part)	**32.8**	27.3	40.6	**0.7**	0.6	0.8	**82.8**	77.5	86.8	**17.9**	13.5	23.0	**0.0**	0.0	0.0
	Habeila (part)	**26.6**	18.2	35.4	**0.2**	0.1	0.4	**94.7**	88.0	99.5	**5.2**	1.0	12.0	**0.0**	0.0	1.0
	Rashad (part)	**11.5**	4.2	21.7	**0.2**	0.1	0.6	**91.0**	68.3	99.0	**9.0**	1.0	28.3	**0.0**	0.0	0.0
	All state except capital	**42.5**	37.4	48.3	**0.5**	0.4	0.5	**86.8**	83.9	88.8	**13.2**	10.5	16.0	**0.1**	0.0	0.4
	Kadugli Town	**52.8**	43.1	63.4	**0.4**	0.3	0.6	**87.5**	81.2	92.7	**12.0**	7.2	18.3	**0.0**	0.0	0.0
	Talodi Town	**37.1**	27.0	45.0	**0.6**	0.4	0.8	**81.7**	74.0	89.2	**17.4**	8.8	26.2	**0.0**	0.0	0.0
West Kordofan	Abo Zabad	**37.9**	19.5	55.2	**0.4**	0.2	0.7	**86.2**	76.8	92.3	**14.4**	5.8	24.2	**0.0**	0.0	0.0
	Abyei (NOT AAA)	**25.8**	20.3	33.2	**0.2**	0.1	0.4	**93.1**	87.3	97.8	**6.8**	2.2	13.9	**0.0**	0.0	0.0
	Al Khowi	**28.8**	17.0	38.4	**0.2**	0.1	0.3	**95.6**	92.0	98.3	**4.6**	1.2	8.4	**0.0**	0.0	0.2
	Al Odaya	**5.3**	0.8	11.1	**0.5**	0.4	0.7	**78.4**	72.0	83.3	**21.9**	17.1	28.6	**0.0**	0.0	0.0
	Al Salam	**32.4**	25.4	40.2	**0.6**	0.4	0.7	**82.8**	76.9	87.5	**17.4**	12.6	23.6	**0.0**	0.0	0.0
	Aldebab	**18.9**	13.1	25.0	**0.4**	0.2	0.7	**87.4**	78.7	94.7	**13.1**	5.4	22.0	**0.0**	0.0	0.0
	Almearam	**14.8**	8.8	22.6	**0.3**	0.1	0.4	**91.1**	85.9	96.9	**7.8**	1.9	13.6	**0.0**	0.0	0.0
	Alsnout	**26.2**	20.6	32.0	**0.2**	0.1	0.2	**94.3**	91.0	97.2	**6.1**	3.5	9.0	**0.0**	0.0	0.0
	Babanusa	**31.0**	17.5	40.5	**0.6**	0.4	0.7	**80.5**	73.9	86.4	**19.6**	12.8	26.8	**0.0**	0.0	2.3
	En Nuhud	**11.9**	6.6	20.1	**0.2**	0.1	0.3	**94.8**	90.3	97.7	**5.2**	2.5	9.1	**0.0**	0.0	0.0
	Ghebeish	**12.9**	8.3	18.9	**0.4**	0.2	0.5	**87.7**	82.2	91.6	**11.5**	8.0	16.4	**1.1**	0.0	2.8
	Kailak (part)	**38.7**	21.8	46.8	**0.2**	0.1	0.4	**92.4**	86.4	95.5	**7.3**	4.6	14.7	**0.0**	0.0	0.0
	Lagawa (part)	**9.7**	5.6	15.3	**0.1**	0.1	0.2	**94.3**	88.5	97.6	**5.8**	2.5	10.3	**0.0**	0.0	0.5
	Wad Bandah	**39.6**	26.2	51.4	**0.2**	0.2	0.4	**94.3**	88.6	98.7	**5.6**	1.1	11.6	**0.0**	0.0	0.0
	All state except capital	**25.2**	21.7	29.3	**0.3**	0.2	0.3	**91.0**	89.3	92.5	**8.6**	7.3	10.1	**0.1**	0.0	0.4
	Fula Town	**30.0**	21.7	39.5	**0.3**	0.2	0.5	**91.0**	85.2	95.3	**8.4**	3.8	13.3	**0.9**	0.0	3.4
North Kordofan	Bara	**46.1**	37.6	55.9	**0.1**	0.1	0.2	**98.6**	96.4	100.0	**1.2**	0.0	2.9	**0.2**	0.0	0.9
	El Rahad	**0.0**	0.0	37.1	**0.0**	0.0	0.2	**100.0**	93.3	100.0	**0.0**	0.0	5.1	**0.0**	0.0	0.0
	Jebrat El Sheikh	**4.2**	0.7	9.9	**0.6**	0.6	0.7	**71.1**	66.9	75.4	**29.3**	24.6	33.2	**0.0**	0.0	0.0
	Sheikan	**47.9**	37.0	58.1	**0.2**	0.1	0.4	**93.4**	89.1	96.5	**6.8**	2.7	10.2	**0.0**	0.0	0.0
	Sowdari	**28.7**	24.0	34.2	**0.1**	0.1	0.1	**98.8**	97.9	99.6	**1.2**	0.5	2.1	**0.0**	0.0	0.0
	Umm Daam	**7.6**	0.0	24.1	**0.2**	0.0	0.5	**96.6**	82.4	100.0	**3.5**	0.0	17.5	**0.0**	0.0	0.0
	Umm Rawaba	**28.7**	21.4	35.8	**0.4**	0.3	0.5	**85.8**	81.1	89.8	**14.4**	10.5	18.2	**0.3**	0.0	0.9
	West Bara	**33.8**	18.4	50.4	**0.2**	0.0	0.3	**97.4**	94.1	100.0	**2.3**	0.0	5.7	**0.0**	0.0	0.0
	All state except capital	**30.0**	26.3	34.3	**0.3**	0.3	0.4	**89.6**	87.2	91.4	**10.5**	8.5	12.3	**0.1**	0.0	0.3
	El Obeid Town	**46.0**	36.1	59.8	**0.2**	0.1	0.4	**91.9**	86.7	96.0	**8.4**	3.5	14.1	**0.0**	0.0	0.0
White Nile	Alsalam	**36.6**	25.1	48.9	**0.8**	0.5	1.0	**76.1**	67.5	84.3	**23.3**	16.2	32.0	**0.0**	0.0	1.2
	Ed Douiem	**21.1**	12.9	31.1	**0.2**	0.1	0.4	**94.6**	88.9	98.7	**5.3**	0.3	11.1	**0.0**	0.0	0.5
	El Gutaina	**33.3**	20.4	50.9	**0.3**	0.2	0.5	**87.4**	80.9	92.5	**11.9**	5.5	17.7	**0.3**	0.0	1.3
	El Jabalain	**17.8**	9.4	29.4	**0.3**	0.2	0.7	**87.5**	71.9	92.7	**12.5**	6.3	21.6	**0.0**	0.0	5.5
	Guli	**63.0**	50.2	78.1	**0.5**	0.1	1.0	**85.2**	66.8	97.8	**11.6**	1.3	27.0	**2.2**	0.0	7.1
	Kosti	**41.7**	28.0	54.0	**0.7**	0.4	1.2	**79.2**	57.4	93.1	**20.8**	7.1	42.1	**0.0**	0.0	0.0
	Rabak	**11.8**	0.0	26.9	**0.3**	0.1	0.7	**86.3**	75.0	96.1	**13.0**	3.8	25.1	**0.0**	0.0	0.0
	Tandalti	**1.1**	0.0	16.7	**0.2**	0.1	0.4	**94.8**	89.1	99.0	**6.2**	1.0	13.6	**0.0**	0.0	0.0
	Umm Remta	**26.9**	10.6	40.6	**0.3**	0.1	0.7	**89.4**	78.1	98.2	**10.0**	1.3	22.5	**0.6**	0.0	3.1
	All state except capital	**30.7**	24.8	36.5	**0.4**	0.3	0.5	**88.8**	85.3	91.8	**10.7**	8.0	14.4	**0.8**	0.3	1.5
	Kosti Town	**50.4**	40.9	58.5	**0.5**	0.3	0.7	**85.6**	79.9	91.1	**14.2**	8.3	19.8	**0.0**	0.0	1.8
	Rabak Town	**35.8**	27.2	48.8	**0.5**	0.4	0.7	**83.3**	75.8	89.5	**16.1**	9.2	23.1	**0.0**	0.0	1.4

State	Locality	Adequately iodized salt (>= 15 ppm)			Mean household hunger score			Household hunger: No hunger			Household hunger: Moderate hunger			Household hunger: Severe hunger		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
Sennar	Abu Hijar	**28.3**	21.1	34.4	**0.2**	0.1	0.2	**96.5**	92.5	99.2	**3.9**	0.8	8.2	**0.0**	0.0	0.0
	Al Dindir	**35.2**	24.1	44.9	**0.4**	0.3	0.6	**89.7**	83.2	95.3	**9.8**	4.2	17.7	**0.0**	0.0	0.0
	Aldali & Almazmoum	**14.6**	9.6	22.9	**0.3**	0.1	0.4	**88.5**	82.8	93.5	**11.5**	6.5	16.9	**0.0**	0.0	0.5
	Alsooki	**38.7**	30.4	47.7	**0.3**	0.2	0.4	**91.6**	84.4	96.5	**8.6**	3.3	16.0	**0.0**	0.0	0.0
	Sennar	**10.2**	5.9	14.8	**0.1**	0.0	0.2	**95.5**	91.5	98.6	**4.6**	1.7	7.9	**0.0**	0.0	0.0
	Sharg Sennar	**29.3**	18.7	40.1	**0.1**	0.1	0.3	**95.7**	91.7	98.2	**4.3**	1.4	7.4	**0.0**	0.0	0.0
	Sinja	**52.1**	33.0	64.1	**0.4**	0.2	0.6	**83.9**	74.5	92.2	**16.2**	8.9	24.6	**0.0**	0.0	0.0
	All state except capital	**24.9**	20.4	29.5	**0.2**	0.2	0.3	**91.4**	89.0	93.5	**8.7**	6.5	10.7	**0.0**	0.0	0.1
	Sennar Town	**31.4**	20.6	43.0	**0.1**	0.0	0.1	**97.8**	93.7	100.0	**2.1**	0.0	5.9	**0.0**	0.0	0.0
	Sinja Town	**53.9**	42.5	65.7	**0.1**	0.1	0.2	**96.6**	93.2	98.9	**3.7**	1.2	8.3	**0.0**	0.0	0.0
El Gezira	El Hasaheisa	**20.8**	11.3	34.3	**0.0**	0.0	0.4	**100.0**	93.8	100.0	**0.0**	0.0	3.3	**0.0**	0.0	4.4
	El Kamlin	**47.3**	32.4	60.0	**0.1**	0.0	0.3	**97.2**	92.5	100.0	**2.7**	0.0	6.8	**0.0**	0.0	0.0
	El Managil	**5.2**	1.8	23.6	**0.0**	0.0	0.1	**98.7**	95.9	99.4	**1.5**	0.6	3.5	**0.0**	0.0	0.0
	Janub El Gezira	**40.7**	26.1	54.6	**0.2**	0.1	0.3	**96.2**	92.8	98.9	**3.9**	1.2	7.3	**0.0**	0.0	0.0
	Madani Al Kobra	**40.0**	19.7	66.7	**0.2**	0.0	0.5	**93.3**	80.0	100.0	**6.7**	0.0	20.0	**0.0**	0.0	0.0
	Sharg El Gezira	**23.8**	15.0	34.4	**0.3**	0.2	0.4	**86.0**	79.1	91.9	**14.7**	8.3	20.6	**0.0**	0.0	0.0
	Umm El Gura	**27.9**	18.7	37.7	**0.2**	0.0	0.6	**93.9**	84.1	100.0	**5.8**	0.0	16.3	**0.0**	0.0	2.5
	All state except capital	**17.2**	9.5	28.3	**0.1**	0.1	0.2	**96.7**	93.7	98.1	**3.3**	1.8	6.0	**0.0**	0.0	0.3
	Madani Town	**47.5**	36.9	60.7	**0.1**	0.0	0.2	**98.1**	94.0	100.0	**1.6**	0.0	7.2	**0.0**	0.0	0.0
Khartoum	Bahari	**25.3**	18.8	32.9	**0.1**	0.0	0.1	**98.3**	95.6	100.0	**1.7**	0.0	4.7	**0.0**	0.0	0.3
	Gabel Awlia	**14.6**	6.8	21.9	**0.3**	0.2	0.4	**92.5**	88.5	95.6	**6.2**	3.4	10.3	**1.3**	0.0	2.8
	Karrarri	**10.4**	5.5	26.1	**0.1**	0.1	0.2	**97.0**	93.9	99.0	**3.0**	1.3	6.5	**0.0**	0.0	0.0
	Khartoum	**22.7**	16.3	30.1	**0.2**	0.0	0.3	**93.9**	87.6	98.0	**7.0**	2.0	12.9	**0.0**	0.0	0.0
	Shareg Elnile	**24.7**	20.1	30.8	**0.2**	0.1	0.3	**94.3**	90.1	97.6	**5.3**	1.7	9.8	**0.2**	0.0	0.9
	Umbada	**21.3**	10.3	31.7	**0.1**	0.1	0.2	**95.6**	91.1	98.4	**4.6**	2.1	8.2	**0.0**	0.0	0.5
	Umdrman	**23.8**	17.5	30.0	**0.0**	0.0	0.0	**100.0**	99.1	100.0	**0.0**	0.0	0.6	**0.0**	0.0	0.0
	All state	**21.0**	17.8	24.0	**0.1**	0.1	0.2	**95.9**	94.5	97.1	**4.0**	2.7	5.6	**0.2**	0.0	0.5
Northern	Alborgeg	**33.3**	0.0	66.7	**0.0**	0.0	0.0	**100.0**	100.0	100.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Aldabba	**30.8**	26.6	35.4	**0.1**	0.1	0.1	**96.8**	95.5	98.0	**3.1**	2.1	4.4	**0.0**	0.0	0.0
	Algoled	**26.2**	17.0	36.0	**0.2**	0.1	0.3	**91.2**	85.5	96.3	**8.3**	2.8	14.5	**0.5**	0.0	2.9
	Dalgo	**8.5**	4.5	13.5	**0.1**	0.0	0.1	**97.6**	96.0	98.8	**2.4**	0.9	4.3	**0.0**	0.0	0.0
	Dongola	**18.8**	12.1	27.7	**0.1**	0.0	0.2	**96.0**	92.1	99.3	**3.2**	0.4	5.8	**0.9**	0.0	2.4
	Halfa	**12.7**	8.9	15.7	**0.0**	0.0	0.0	**100.0**	99.3	100.0	**0.0**	0.0	0.8	**0.0**	0.0	0.0
	Merawi	**13.7**	10.8	16.8	**0.1**	0.1	0.2	**95.6**	92.6	97.6	**4.3**	2.1	7.2	**0.0**	0.0	0.5
	All state except capital	**16.0**	14.0	18.3	**0.1**	0.0	0.1	**97.7**	96.7	98.3	**2.1**	1.4	3.0	**0.2**	0.0	0.4
	Dongola Town	**14.4**	8.9	20.3	**0.0**	0.0	0.2	**98.8**	95.0	100.0	**1.3**	0.0	5.7	**0.0**	0.0	0.0
River Nile	Abu Hamad	**32.9**	25.0	39.6	**0.2**	0.1	0.3	**92.4**	88.3	96.1	**7.5**	4.1	11.9	**0.0**	0.0	0.0
	Albuhaira	**27.1**	16.2	35.4	**0.0**	0.0	0.0	**100.0**	99.4	100.0	**0.0**	0.0	0.3	**0.0**	0.0	0.0
	Atbara	**47.4**	32.0	62.3	**0.5**	0.3	0.7	**81.8**	74.2	91.1	**18.2**	9.2	27.1	**0.0**	0.0	0.7
	Barbar	**65.4**	49.4	77.2	**0.1**	0.0	0.3	**97.3**	88.4	100.0	**2.5**	0.4	10.6	**0.0**	0.0	0.0
	Ed Damer	**44.1**	36.7	50.6	**0.3**	0.2	0.5	**88.4**	82.4	92.9	**11.1**	5.9	19.0	**0.0**	0.0	0.0
	El Matammah	**14.2**	9.2	19.5	**0.2**	0.1	0.4	**92.6**	89.6	95.8	**7.4**	4.3	11.2	**0.0**	0.0	0.0
	Shendi	**26.7**	18.9	34.1	**0.5**	0.3	0.7	**82.4**	70.4	90.8	**18.1**	9.3	28.2	**0.0**	0.0	0.0
	All state except capital	**36.2**	32.1	40.7	**0.3**	0.2	0.3	**91.2**	88.6	92.8	**8.8**	6.9	11.4	**0.0**	0.0	0.1
	Atbara Town	**44.4**	35.1	52.9	**0.1**	0.0	0.2	**97.8**	93.1	100.0	**2.2**	0.0	6.8	**0.0**	0.0	0.0
	El Damar Town	**41.4**	30.9	50.4	**0.1**	0.0	0.2	**98.3**	93.5	100.0	**1.7**	0.0	6.8	**0.0**	0.0	0.0

State	Locality	Adequately iodized salt (>= 15 ppm)			Mean household hunger score			Household hunger: No hunger			Household hunger: Moderate hunger			Household hunger: Severe hunger		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
North Darfur	Al Fasher	**38.2**	28.9	45.1	**0.4**	0.2	0.7	**86.5**	76.6	92.6	**13.3**	7.2	25.2	**0.0**	0.0	0.0
	Al Koma	**28.2**	20.0	36.0	**0.1**	0.0	0.2	**99.2**	94.5	100.0	**0.8**	0.0	4.7	**0.0**	0.0	0.0
	Al Malha	**8.5**	5.1	13.3	**0.2**	0.1	0.3	**98.3**	96.1	99.5	**1.5**	0.2	3.9	**0.2**	0.0	1.3
	Al Seref	**52.4**	41.2	61.8	**1.1**	0.7	1.4	**58.7**	47.2	72.8	**39.6**	28.2	55.5	**0.0**	0.0	0.0
	Al Tina	**66.7**	54.0	78.4	**0.0**	0.0	0.0	**100.0**	100.0	100.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Al Twasha	**16.0**	9.4	22.2	**0.1**	0.0	0.2	**98.1**	92.2	100.0	**2.3**	0.0	9.4	**0.0**	0.0	0.0
	Allait	**15.8**	1.6	39.7	**0.2**	0.1	0.4	**93.0**	88.2	97.6	**7.0**	2.4	11.7	**0.0**	0.0	0.0
	Ambaro	**4.9**	1.2	8.7	**0.2**	0.1	0.3	**96.3**	92.7	98.3	**3.6**	1.4	7.0	**0.0**	0.0	0.0
	Dar Alsalam	**47.3**	38.4	54.5	**0.1**	0.1	0.2	**99.5**	96.9	100.0	**0.9**	0.0	3.6	**0.0**	0.0	0.0
	Kabkabia	**45.1**	35.9	52.8	**0.3**	0.1	0.4	**90.2**	84.1	95.9	**9.8**	3.8	16.6	**0.0**	0.0	0.0
	Karnoi	**27.1**	12.1	39.8	**0.2**	0.1	0.5	**91.7**	82.2	97.9	**8.2**	2.3	18.5	**0.0**	0.0	0.0
	Kelemendo	**52.3**	43.7	60.2	**0.3**	0.2	0.4	**89.5**	83.2	93.4	**10.9**	5.5	16.1	**0.0**	0.0	0.0
	Kutum	**58.5**	48.5	67.0	**0.0**	0.0	0.1	**100.0**	99.2	100.0	**0.0**	0.0	1.0	**0.0**	0.0	0.0
	Mallit	**15.8**	10.2	21.5	**0.3**	0.2	0.4	**100.0**	99.2	100.0	**0.0**	0.0	0.6	**0.0**	0.0	0.6
	Saraf Omra	**43.8**	31.2	53.2	**0.5**	0.3	0.7	**84.4**	73.4	94.7	**14.1**	6.2	24.6	**0.0**	0.0	0.0
	Tawila	**38.3**	27.8	49.6	**0.1**	0.0	0.2	**96.9**	94.2	99.1	**2.7**	0.5	5.8	**0.0**	0.0	0.0
	Umkadada	**9.8**	3.1	18.4	**0.2**	0.1	0.3	**93.8**	90.3	96.4	**6.3**	3.7	9.2	**0.0**	0.0	0.0
	All state except capital	**28.3**	25.2	31.1	**0.2**	0.1	0.2	**96.7**	95.6	97.3	**3.2**	2.4	4.3	**0.0**	0.0	0.2
	El Fashir Town	**28.6**	19.4	36.3	**0.7**	0.3	1.2	**75.4**	60.8	88.2	**24.9**	14.4	41.1	**0.0**	0.0	0.0
	Zamzam Camp*	**33.3**	24.4	43.4	**0.6**	0.3	1.0	**80.2**	67.4	90.8	**19.0**	7.8	31.2	**0.0**	0.0	0.0
	El Sireif Camp*	**51.7**	40.2	62.1	**1.0**	0.7	1.4	**59.3**	44.8	74.1	**39.7**	23.6	54.1	**0.0**	0.0	0.0
South Darfur	Al Rudoom (part)	**1.5**	0.0	3.1	**0.5**	0.3	0.7	**82.4**	75.2	89.9	**17.0**	11.6	25.2	**0.0**	0.0	0.0
	Alwehda	**62.5**	49.5	71.9	**1.4**	0.9	1.7	**50.8**	36.7	68.9	**40.6**	28.5	52.3	**8.6**	2.5	17.2
	Belil	**82.3**	72.9	91.7	**0.0**	0.0	0.1	**100.0**	100.0	100.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Buram	**1.9**	0.0	7.5	**0.6**	0.3	0.9	**77.3**	64.6	87.9	**22.1**	11.2	34.7	**0.0**	0.0	0.0
	Dimso	**3.0**	0.0	7.3	**0.2**	0.0	0.3	**94.8**	88.5	100.0	**5.2**	1.0	10.6	**0.0**	0.0	0.0
	El Salam	**95.5**	65.2	100.0	**0.2**	0.0	0.5	**92.4**	80.7	100.0	**8.1**	0.0	19.4	**0.0**	0.0	0.0
	Gerieda	**46.2**	0.0	69.6	**0.3**	0.1	0.7	**91.3**	76.9	100.0	**9.1**	0.0	24.5	**0.0**	0.0	0.0
	Id Elfirsan	**37.0**	17.7	60.4	**0.2**	0.1	0.3	**93.2**	89.0	96.4	**6.8**	3.1	9.9	**0.0**	0.0	0.0
	Kass	**49.2**	39.1	57.0	**0.7**	0.6	0.9	**73.1**	66.4	79.7	**25.8**	19.5	32.4	**0.0**	0.0	1.2
	Katila	**0.0**	0.0	0.0	**0.0**	0.0	0.1	**99.6**	96.4	100.0	**0.0**	0.0	4.9	**0.0**	0.0	0.0
	Kubum	**17.4**	6.8	32.6	**0.1**	0.0	0.1	**97.5**	93.1	100.0	**2.5**	0.0	6.9	**0.0**	0.0	0.0
	Mershing	**56.3**	40.5	75.0	**0.8**	0.5	1.1	**84.4**	71.7	93.9	**15.6**	3.1	28.1	**0.0**	0.0	0.0
	Netiga	**37.3**	26.6	47.1	**1.1**	0.6	1.7	**63.1**	42.5	84.8	**38.1**	16.0	59.4	**0.0**	0.0	0.0
	Rahad Elberdi (part)	**57.1**	40.7	66.5	**0.0**	0.0	0.1	**100.0**	96.7	100.0	**0.0**	0.0	2.6	**0.0**	0.0	0.6
	Toluss	**1.6**	0.0	6.3	**0.1**	0.0	0.3	**98.4**	93.8	100.0	**1.6**	0.0	7.8	**0.0**	0.0	0.0
	Um Dafog (part)	**40.0**	15.0	60.0	**0.2**	0.0	0.5	**90.0**	75.0	100.0	**10.0**	0.0	25.0	**0.0**	0.0	0.0
	All state except capital	**31.4**	24.6	39.6	**0.3**	0.2	0.4	**90.8**	86.6	94.2	**8.8**	6.1	11.6	**0.5**	0.0	1.3
	Nyala Town	**31.1**	22.2	39.9	**0.1**	0.1	0.3	**96.7**	93.5	99.2	**3.4**	0.4	7.0	**0.0**	0.0	0.0
	Kalma Camp*	**34.7**	26.1	45.9	**1.2**	0.9	1.5	**57.9**	49.5	66.5	**40.6**	30.8	50.7	**0.0**	0.0	2.3

State	Locality	Adequately iodized salt (>= 15 ppm)			Mean household hunger score			Household hunger: No hunger			Household hunger: Moderate hunger			Household hunger: Severe hunger		
		Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL	Estimate	95% LCL	95% UCL
East Darfur	Abukarinka	**51.0**	30.7	67.2	**0.7**	0.4	1.0	**86.5**	70.8	96.4	**13.0**	4.0	28.7	**0.0**	0.0	0.0
	Adilla (part)	**1.6**	0.0	6.4	**0.1**	0.1	0.2	**94.5**	89.8	98.4	**5.5**	1.6	9.4	**0.0**	0.0	0.0
	Al Deain	**35.9**	22.5	50.9	**0.2**	0.1	0.2	**96.9**	92.5	100.0	**3.1**	0.0	6.7	**0.0**	0.0	0.0
	Alfirdos	**0.0**	0.0	5.0	**0.1**	0.0	0.2	**97.4**	90.5	100.0	**2.5**	0.0	9.9	**0.0**	0.0	0.0
	Asslaya	**61.1**	48.6	72.2	**0.2**	0.1	0.5	**100.0**	88.6	100.0	**0.0**	0.0	11.6	**0.0**	0.0	0.0
	Aubgabar	**0.0**	0.0	3.3	**0.0**	0.0	0.1	**100.0**	100.0	100.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Aubmatarg	**13.1**	3.1	29.4	**0.2**	0.0	0.4	**93.4**	85.3	98.4	**6.6**	3.1	13.2	**0.0**	0.0	0.0
	Sharia (part)	**4.2**	0.0	9.4	**0.7**	0.5	1.0	**74.0**	63.5	86.5	**26.0**	14.6	38.5	**0.0**	0.0	0.0
	Yaseen (part)	**62.5**	46.9	75.0	**0.7**	0.6	0.9	**92.2**	84.4	97.0	**7.8**	3.1	15.6	**0.0**	0.0	0.0
	All state except capital	**31.9**	19.6	44.4	**0.4**	0.3	0.5	**91.9**	88.0	95.3	**8.2**	4.9	12.8	**0.0**	0.0	0.0
	Al Deain Town	**27.3**	18.0	38.9	**0.3**	0.2	0.6	**89.5**	79.6	95.9	**10.5**	3.3	19.7	**0.0**	0.0	0.0
West Darfur	Algenea	**39.2**	0.0	68.8	**0.3**	0.0	0.9	**92.2**	65.8	100.0	**7.8**	0.0	29.0	**0.0**	0.0	0.0
	Baida	**72.4**	45.8	90.0	**0.0**	0.0	0.2	**100.0**	95.1	100.0	**0.0**	0.0	5.5	**0.0**	0.0	0.0
	Forbranga	**3.0**	0.0	12.6	**0.3**	0.1	0.7	**88.0**	77.2	98.2	**11.2**	1.8	23.4	**0.0**	0.0	0.0
	Gabal Moon	**49.0**	38.4	56.7	**0.2**	0.1	0.5	**92.9**	84.8	98.4	**7.3**	2.3	16.8	**0.0**	0.0	0.0
	Habilla	**13.7**	1.7	24.4	**0.1**	0.1	0.2	**97.4**	94.0	99.6	**2.7**	0.8	5.7	**0.0**	0.0	0.0
	Kerenik	**23.9**	5.0	56.4	**0.1**	0.0	0.1	**98.4**	96.5	99.3	**1.3**	0.5	3.1	**0.4**	0.1	1.1
	Kulbus	**58.6**	42.8	75.1	**0.0**	0.0	0.0	**100.0**	100.0	100.0	**0.0**	0.0	0.0	**0.0**	0.0	0.0
	Serba	**38.0**	30.2	46.9	**0.3**	0.2	0.6	**91.7**	83.3	96.4	**6.2**	1.0	15.2	**2.1**	0.5	5.2
	All state except capital	**24.1**	15.5	38.6	**0.1**	0.1	0.2	**96.3**	94.2	97.9	**3.1**	1.5	4.8	**0.8**	0.4	1.5
	Algenea Town	**33.2**	22.4	44.2	**0.1**	0.0	0.2	**95.9**	91.7	99.1	**3.7**	0.9	6.9	**0.0**	0.0	1.8
	Morne Camp*	**70.7**	31.2	86.3	**0.1**	0.0	0.4	**95.4**	87.0	98.9	**4.4**	1.4	15.0	**0.0**	0.0	0.0
Central Darfur	Azoum	**23.5**	6.3	57.8	**0.3**	0.2	0.6	**89.0**	81.4	95.2	**11.3**	4.9	19.5	**0.0**	0.0	0.0
	Bendsi (part)	**30.1**	20.4	39.1	**0.3**	0.1	0.5	**91.4**	82.8	96.8	**8.6**	3.7	16.1	**0.0**	0.0	0.0
	Mukjar (part)	**55.6**	45.8	65.3	**0.2**	0.1	0.4	**93.0**	87.5	97.2	**6.8**	3.1	12.6	**0.0**	0.0	0.0
	Nertati	**62.9**	38.3	77.6	**0.3**	0.1	0.6	**85.5**	75.0	93.5	**14.8**	5.7	26.3	**0.0**	0.0	0.0
	Rokiro	**40.7**	25.7	59.0	**0.5**	0.3	0.8	**82.1**	71.3	91.9	**18.6**	8.5	30.5	**0.0**	0.0	0.0
	Um Dukhun (part)	**47.5**	36.9	58.5	**0.1**	0.0	0.3	**96.1**	91.7	99.5	**4.2**	1.0	9.0	**0.0**	0.0	0.0
	Wadi Salih (part)	**43.3**	33.5	51.1	**0.3**	0.2	0.6	**87.5**	77.7	95.8	**13.0**	4.8	24.6	**0.0**	0.0	0.0
	Zalingei	**48.3**	43.4	55.2	**0.1**	0.0	0.2	**95.6**	92.3	98.3	**4.2**	1.5	7.9	**0.0**	0.0	0.0
	All state except capital	**32.0**	25.3	39.1	**0.3**	0.2	0.4	**89.7**	86.4	92.5	**10.1**	7.8	13.2	**0.0**	0.0	0.0
	Zalingi Town	**87.2**	79.3	92.7	**0.3**	0.1	0.5	**91.6**	85.6	97.0	**8.1**	2.4	14.8	**0.0**	0.0	0.0
	Mukjar Town*	**54.3**	45.6	64.5	**0.2**	0.1	0.4	**92.8**	87.4	97.2	**7.3**	3.3	12.7	**0.0**	0.0	0.0
	Um Dokhon Town*	**47.7**	38.4	59.5	**0.1**	0.0	0.3	**96.3**	91.6	99.4	**3.9**	0.6	9.1	**0.0**	0.0	0.0

9.3.4 Household food security (Figures 70, 71, 72 and 73)

Household hunger was assessed using the household hunger scale, a validated method with standard questioning techniques[8] [15]. Very low household hunger rates were observed, consistent with findings from the two S3M pilot surveys in Sudan where this indicator was also measured. Teams reported difficulties in obtaining convincing responses from the interviewees due to the sensitive nature of the questions and the local psychosocial and religious structure of the people who are not open to such kind of food and eating related discussions, therefore these results should be interpreted with these cultural considerations in mind. The reason for including this indicator at this survey was to build a picture of reported hunger across the country that can be used as a Sudan specific baseline for comparison at further surveys. Trend data from within the same context should be able to show changes.

There were 3 parameters that were used to assess household hunger: households reporting having no food to eat or drink, household members sleeping hungry, or household members not eating at all for a whole day and night, number of times each reported in the last 1 month[15]. Households scored 1 per indicator if it occurred less than 10 times in the last month and 2 per indicator if more than 10 times in the month. Results of 0-1 are classified as no hunger, 2-3 as moderate hunger and 4-6 as severe hunger. In all states, very high proportions of households reported no hunger and average hunger scores at locality level are consistently below one.

Maps showing proportion of households reporting no hunger, moderate hunger and severe hunger are also shown, with similar results – almost zero households reporting severe hunger and the large majority reporting no hunger. On the map showing moderate hunger (Figure71), some pockets of potentially worse household food security can be seen, especially on the border between North and South Kordofan and White Nile, some locations in Red Sea, some locations in South and Central Darfur and some locations in River Nile State.

[15] Questions for household hunger scale

Household Hunger Score: Questions	Number of times reported for each question and score. Maximum score = 6.
4. How many times in the last 1 month is there no food in your house because of no access to food	0 time – score = 0
5. How many times in the last 1 month did you or anyone in this household sleep hungry because of no adequate food in your house?	<10 times – score = 1
6. How many times in the last 1 month did you spend a day and a night without eating or having any food at all, you or anyone in your household, because of no adequate food in your house	10 times or more – score = 2

Figure 76: Classification map of mean household hunger score

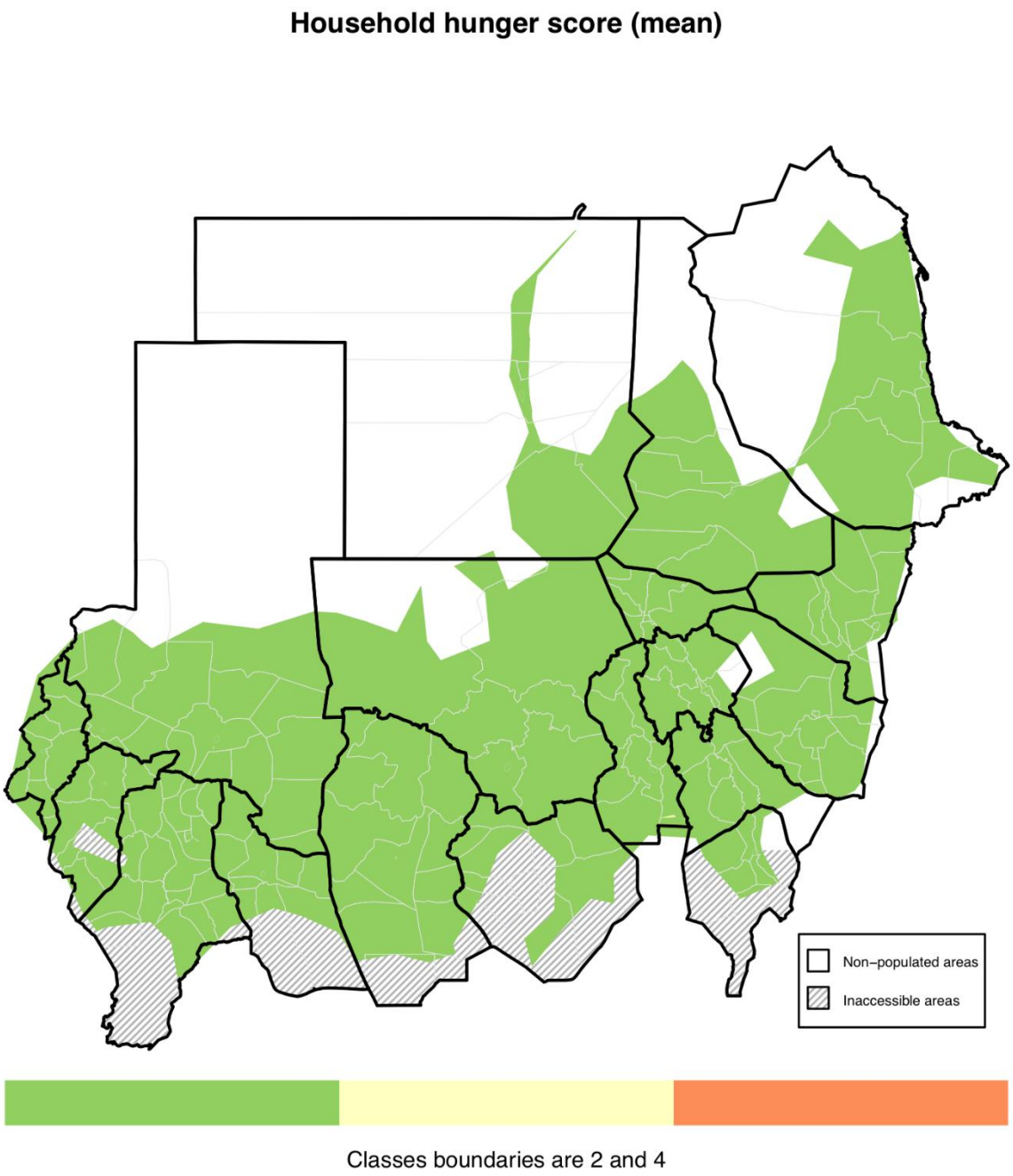


Figure 77: Classification map of no hunger estimates – proportion of households reporting no hunger

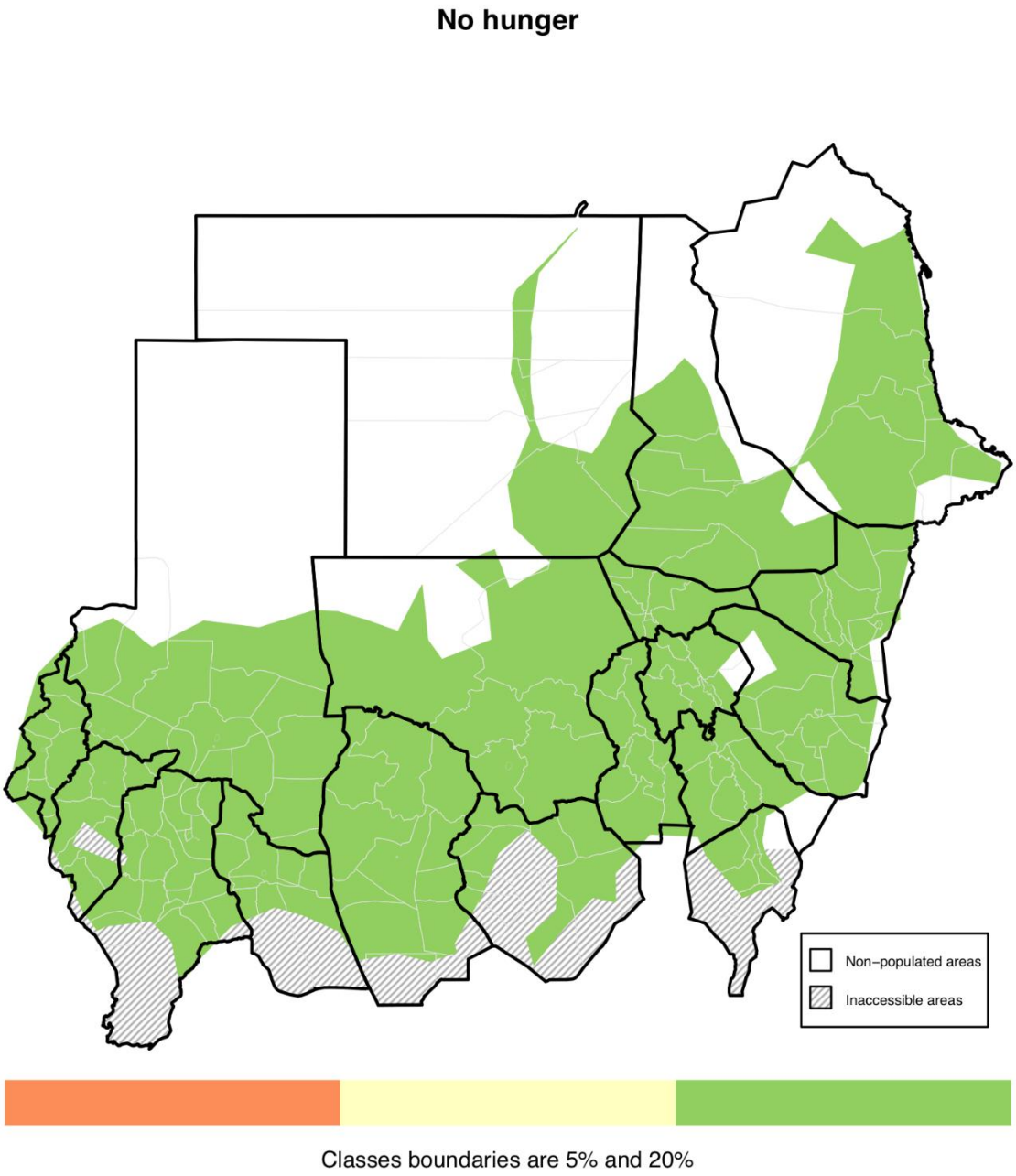


Figure 78: Classification map of moderate hunger estimates – proportion of households with a moderate hunger score

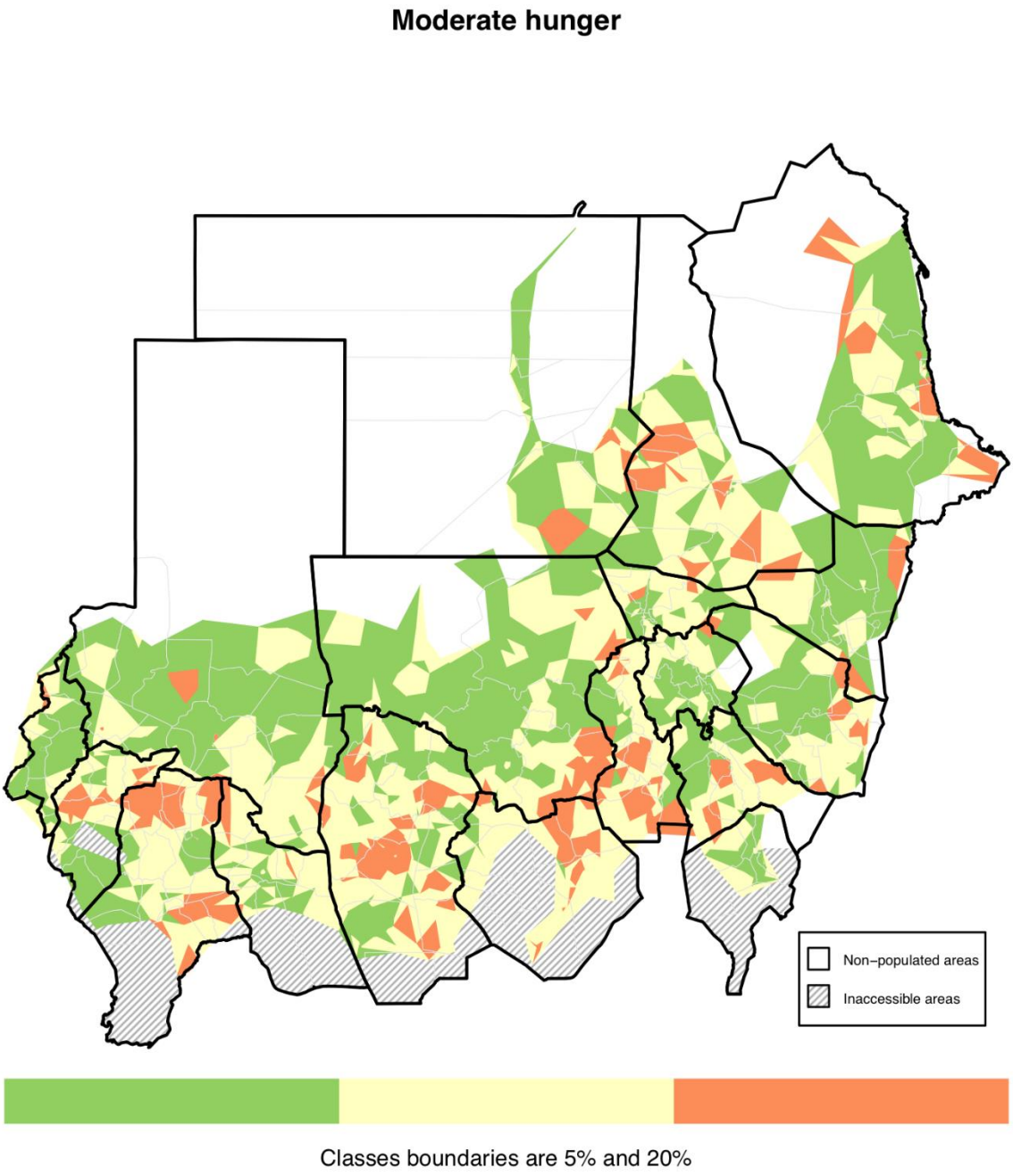
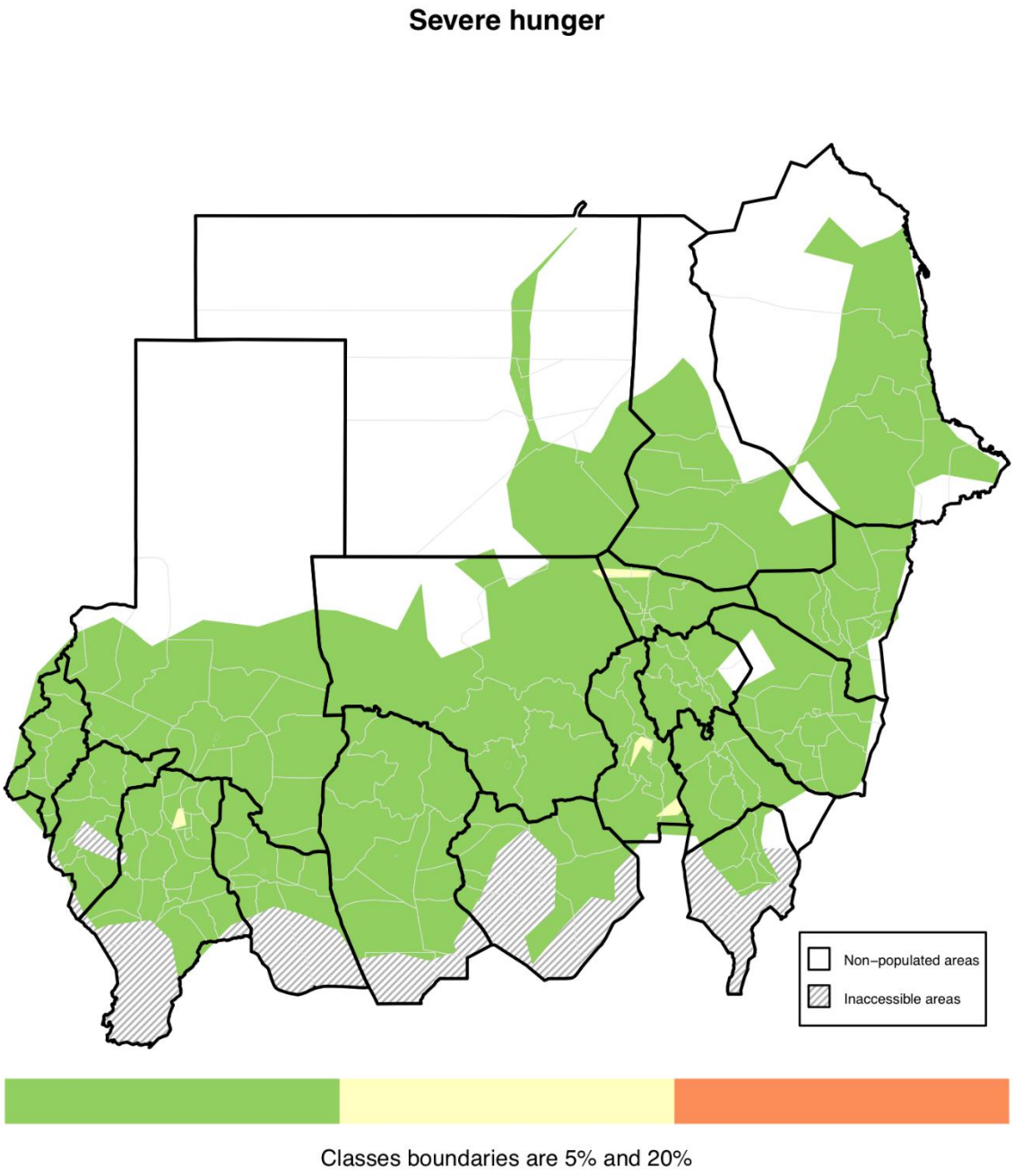


Figure 79: Classification map of severe hunger estimates – proportion of households with a severe hunger score



10. Recommendations

A. Implement revisions to the Maternal and Child Health Acceleration Plan based on the S3M results, targeting most needy localities.
B. Produce a phased, costed national CMAM scale-up plan using the S3M results to locate areas in highest need.
C. Accelerate vaccination coverage of Rota, PCV, MCV1, 2, Penta and meningitis in areas of high prevalence of related diseases.
D. Revision of the age restriction of Rota vaccine given the reported high prevalence of diarrhoea.
E. Expand existing efforts in raising mothers awareness and practices related to IYCF, health seeking, danger signs, home treatment, maternal nutrition and micronutrients, and implement extensive awareness campaigns in areas of high need.
F. Immediately verify and establish reasons for the high prevalence of night blindness among pregnant women and carryout appropriate response based on results.
G. Further investigate reasons for low up-take of ante-natal care.
H. Closely monitor the quality of ante-natal care services in terms of midwife performance and mother's satisfaction with services.
I. Increase the Government employment for midwives at state level.
J. Ensure availability of sufficient Fefol and Vitamin A in Sudan to cover needs.
K. Prioritize drinking water projects and expanding them to be based on evidence.
L. Further investigation of reasons behind the poor use of improved sanitation facilities possibly through a knowledge, attitude, and practices (KAP) study.
M. Improve hand washing practices through effective hygiene promotion interventions and awareness campaigns.
N. Provide national leadership to ensure that response based on the S3M results is multi-sectorial and includes coordinated action from different Ministry of Health departments as well as different Government Ministries.
O. Use results from the Sudan S3M as baseline coverage data for relevant national programs, including the expanded program of immunisation (EPI).
P. Ensure results are disseminated to all states and all Government Ministries for use for programing.
Q. Resource mobilisation and advocacy using the S3M results and revised plans.
R. Continued use of S3M data to produce additional indicators and possible relational analysis to help understanding the situation based on programs' needs.

APPENDICES

Appendix 1: Sample size calculations

For ***S3M***, sample size requirements are estimated at the level of the triangular tile which is 187 sq. km in area size. In sparsely populated areas there are some tiles larger than this, however few tiles exceed this. Given this, sample size calculations should take into consideration and correct for a finite population expected from an area of this size. It can also be expected that relatively high sampling proportions can be achieved even with small sample sizes per triangular tile.

1. For indicators for children aged 6 – 59 months (i.e. anthropometry, vitamin A supplementation coverage) and for indicators for children aged 0 – 59 months and for indicators with households with children aged 0 – 59 months (i.e. indicators on micronutrients, period prevalence of illnesses, ITN coverage, WASH, food security)

Using a classic sample size estimator that applies finite population correction[16] and with parameters such as a precision of ± 10%, estimated prevalence of 50% and given the number of children aged 6 – 59 estimated above, the estimated sample size needed is 97.

2. For indicators that report mean values

As for indicators that report mean values such as the household dietary diversity score (HDDS) and the household hunger scale (HHS), the sample size requirement is expected to be lesser than those for proportions. Using computer simulation approach, appropriate sample size can be determined based testing different sample sizes to generate normal distributions that model the estimated mean and standard deviation of the indicator of interest. For HDDS, a previous local survey done in Sudan of a similar population as that of Gedaref report that a mean HDDS of 7 with 80% of households having a HDDS ranging from 6 to 8 (out of a total of 12) and a standard deviation of 1.4. These values were used in the simulations conducted for different sample sizes as shown below:

Table 17: Sample size simulation for HDDS

Sample size	2.5 %	50%	97.5%
108	6.735568	7.000364	7.265865
96	6.719216	7.000738	7.281015
84	6.699993	6.999905	7.300155
72	6.676483	6.998897	7.323241
60	6.646951	6.999717	7.354019
48	6.605229	6.997527	7.397992
36	6.542951	6.998234	7.463502
30	6.497972	6.999487	7.504049
18	6.356535	7.000866	7.644761
15	6.294062	7.000629	7.707627
12	6.205118	6.999778	7.794020

Given these results, a sample size of at least 18 per triangle will be enough to report a mean HDDS with a precision of ± 10%.

For HHS, simulation was conducted with an assumed mean HHS of 4 and a standard deviation of 1[16]. The results of this simulation are as follows:

[16] HHS is a relatively new indicator and there is a limited set of surveys assessing HHS that can provide mean and SD hence assumed values were utilized for the simulation.

Table 18: Sample size simulation for HHS

Sample size	2.5 %	50%	97.5%
108	3.810833	3.999463	4.188037
96	3.800095	3.999948	4.201100
84	3.787383	3.999898	4.214665
72	3.768702	3.999262	4.230703
60	3.745323	3.999803	4.252231
48	3.718451	4.000403	4.284440
36	3.675008	3.998906	4.327041
30	3.640962	4.000847	4.358496
18	3.536006	4.001142	4.464660

Given these results, a sample size of at least 30 per triangle will be enough to report a mean HHS with a precision of ± 10%.

3. For indicators for children aged 0 – 36 months (i.e. IYCF indicators)
Using the classic sample size estimator that applies finite population correction and with parameters such as a precision of ± 10, estimated prevalence of 50%, a sample size as low as 73 per triangle would be big enough for almost all possible 0 – 36 month population size scenarios at the triangle level.

As for indicators that report means such as mean ICFI score, simulations were done to determine sample size requirement similar to what has been described above but using an estimated mean ICFI score of 3.1 and standard deviation of 0.9[17]. The results of the simulation is as follows:

Table 19: Sample size simulations for ICFI

Sample size	2.5 %	50%	97.5%
108	2.930754	3.099711	3.269153
96	2.920365	3.099969	3.280525
84	2.906483	3.099606	3.292043
72	2.891165	3.100038	3.307440
60	2.871615	3.099395	3.327924
48	2.845610	3.099572	3.354999
36	2.807440	3.099238	3.393193
30	2.777629	3.099834	3.421498

Given these results, a sample size of at least 36 per triangle will be enough to report a mean ICFI score with a precision of ± 10%.

4. For indicators for children aged 12 – 23 months (i.e. immunisation coverage)
Using the classic sample size estimator with a precision of ± 10, estimated prevalence of 50%, it is estimated that sample sizes of as small as 31 to at most 59 children aged 12 – 23 months is needed.

[17] This is based on data from a survey from a similar population in Niger.

Given the limited age range of the population to be sampled for immunisation coverage, an effective sample size for this indicator can only be achieved by increasing the sample size for the full age range of 0 – 59 months to be sampled by at least five (5) times. This will make the overall sample size requirement per triangle too big to be practical.

To address this, it is suggested to change the immunisation coverage indicator from proportion to classification, which requires much lesser sample size. For classification, sample size can be calculated by simulating a hyper geometric distribution of the probability of coverage classification based on the expected size of the total population to be sampled at the triangle level, the upper and lower thresholds for classification and alpha and beta errors of 10%. Given the finite nature of the population of interest at the triangle level, the hyper geometric distribution is done without replacement. These calculations can be performed using a specially designed sample size calculator called hyperLQAS calculator[18].

Using the expected number of children aged 12 – 23 months per triangle area, the following sample sizes are required:

Table 20: Estimated sample sizes for classifying immunisation coverage

	No. of children aged 12 - 23	**Upper threshold for 50% / 80% cut-offs**	**Lower threshold for 50% / 80% cut-offs**	**Sample size**
Scenario 1	263 and below	90%	70%	24
Scenario 2	246 and above	90%	70%	25

Design of within-village surveys (second-stage sampling)

The preceding sample size calculations were used to inform the design of the second-stage or within-village sampling.

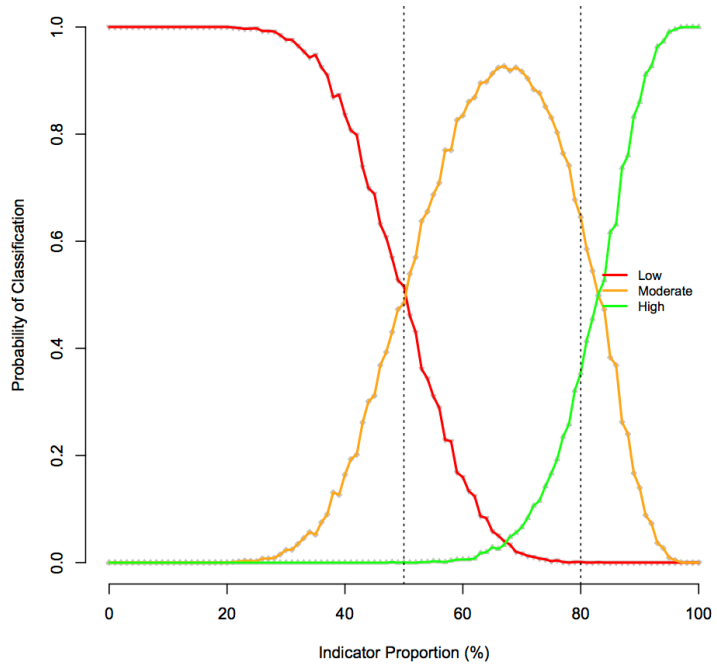
The following within-village sampling is proposed:

- A set of samples will be collected from one village at or near each selected sampling point. These samples are:
    - A sample size of n = 36 households per village for a total of n = 108 per triangular tile for the children survey. This is a sample of all households with children aged between 0 – 59 months collected using QTR and EPI3 (or EPI5 in large villages) to select households. This overall sample size will provide a sub-sample of n = 32 households per village (n = 96 per triangular tile) for the indicators for children aged 6 – 59 months. This overall sample size will provide a sub-sample of n = 22 households per village (n = 66 per triangular tile) for the indicators for children aged 0 – 36 months. This overall sample size provides minimum sub-samples for the other sets of indicators for proportions and means.

[18] This calculator can be accessed at http://www.brixtonhealth.com/hyperLQAS.html

- This overall sample size will also provide a sub-sample of $n = 7$ households per village ($n = 21$ per triangular tile) for the immunisation coverage indicator for children aged 12 – 23 months. This sub-sample will not be enough for estimation but can provide robust classification within acceptable alpha and beta error levels at the triangle level. A simulation of a three-class classifier for immunisation coverage based on a "worst-case" scenario of a sample size of 21 with a total 12 – 23 month population of 150 per triangle resulted in the following receiver operating characteristic (ROC) curve (*Figure 1*) and probabilities of correct classification by different classes and overall:

Figure 80: Receiver operating characteristic (ROC) curve for immunisation coverage classifier



Probability of correct classification by classes and overall

Low : 0.9142
Moderate : 0.8008
High : 0.805
Overall : 0.8583
Gross misclassification : 0

Appendix 2: PROBIT Estimator

It is proposed to estimate prevalence of GAM and subsequently SAM using a *PROBIT* estimator.

The *PROBIT function* is also known as the *inverse cumulative distribution function* or the *quantile function.* This function converts parameters of the distribution of an indicator (e.g. the mean and standard deviation of a *normally distributed* variable) into cumulative percentiles. This means that it is possible to use the *normal PROBIT* function with estimates of (e.g.) the mean and standard deviation of indicator values to estimate the proportion falling below a given threshold. For example, for data with a mean MUAC of 142 mm and a standard deviation of 14.5 mm the output of the *normal PROBIT* function for a threshold of 125 mm is 0.1205 meaning that 12.05% of children are predicted to fall below the 125 mm threshold (assuming that MUAC is a *normally distributed* variable). This is an estimate of prevalence of GAM. It is possible to use (e.g.) the WHZ indicator but this indicator is resource-intensive, is biased by body-shape, tends to exclude cases of kwashiorkor, and does not provide an estimate of need for CMAM services.

Confidence intervals are calculated by calculating upper and lower confidence limits on the observed mean using standard techniques and submitting these to the *PROBIT* function.

The main advantage of the *PROBIT* approach is that the required sample size is usually smaller than that required to directly observe the prevalence at a given threshold using a classical estimator.

The main disadvantage of the *PROBIT* approach is that it is (at present) limited to the collection of a single quantitative indicator (e.g. MUAC or WHZ) rather than a composite case-definition using either MUAC or WHZ and nutritional oedema. It should be noted, however, that children with nutritional oedema often have a low MUAC. This means that the effect of not collecting data on nutritional oedema on the resulting estimate of GAM is likely to be minimal. This is the case in the preliminary testing of the *PROBIT* estimator presented below. A team based at the London School of Hygiene and Tropical Medicine (LSHTM) is currently investigating combining MUAC and oedema in a *PROBIT*-based estimator. This estimator, when available, could be used with the method proposed here.

The *PROBIT* approach may seem complicated compared to direct observation of empirical frequency but the required calculations can be performed using functions available in spread sheet packages. The only inputs that are required are the mean and standard deviation of the MUAC found in the sample.

Appendix 3: Technical comment on the maps used for Sudan S3M
By Mark Myatt, Valid International / Brixton Health

The maps available to UNICEF were maps already used by the United Nations (UNDP and OCHA) working in Sudan. These were based on CBS data from 2005 and 2008 updated by UN agencies based on field reports and satellite imagery. The maps were checked for completeness using satellite imagery from the Google Earth project.

(1) OVERALL SAMPLE SIZE: Since we have a cluster sample we have the problem that a single missing village removes n = 32 mother-child pairs from the overall sample size. This may be an issue when calculating (e.g.) state level estimates. We attempt to minimise the problem by the use of alternate villages. We take, whenever possible, the nearest inhabited village. When this is done the effect is null and sample size maintained. There is a "knock-on" issue with tile shape and size with this approach (see below). When we cannot select an alternate village we will lose overall sample size. We can look at our data and show the magnitude of effect in terms of loss of precision.

For example:

White Nile State
n = 1900
DEFF (assumed) = 2
Effective sample size = 950
Precision of a 50% estimate = +/- 6.44%.

This is useful precision.

Precision increases with the square-root of the sample size. This means the effect of sample size loss is not linear. If, for example, we had planned a sample of n = 2850 (i.e. one third larger) we would have had:

White Nile State
n = 2850
DEFF (assumed) = 2
Effective sample size = 1435
Precision of a 50% estimate = +/- 5.18%

our 95% CI is 1.26% wider (absolute) and 24.3% wider (relative).

I doubt that our losses are as large as one third. Either way, estimating with a precision of +/- 6.44% is better than that aimed for at the stage of sample size calculations.

Note that these example calculations are "worst cases" in the sense that 50% is the case of maximum variance and DEFF = 2 might overestimate variance loss in our sample for most indicators. If we go with:

White Nile State

n = 1900
DEFF (assumed) = 1.5
Effective sample size = 950
Precision of an 80% estimate = +/- 2.7%.

TILE SHAPE AND SIZE: The issues here are moved points, empty points (no village), and missing points (villages not shown on our maps).

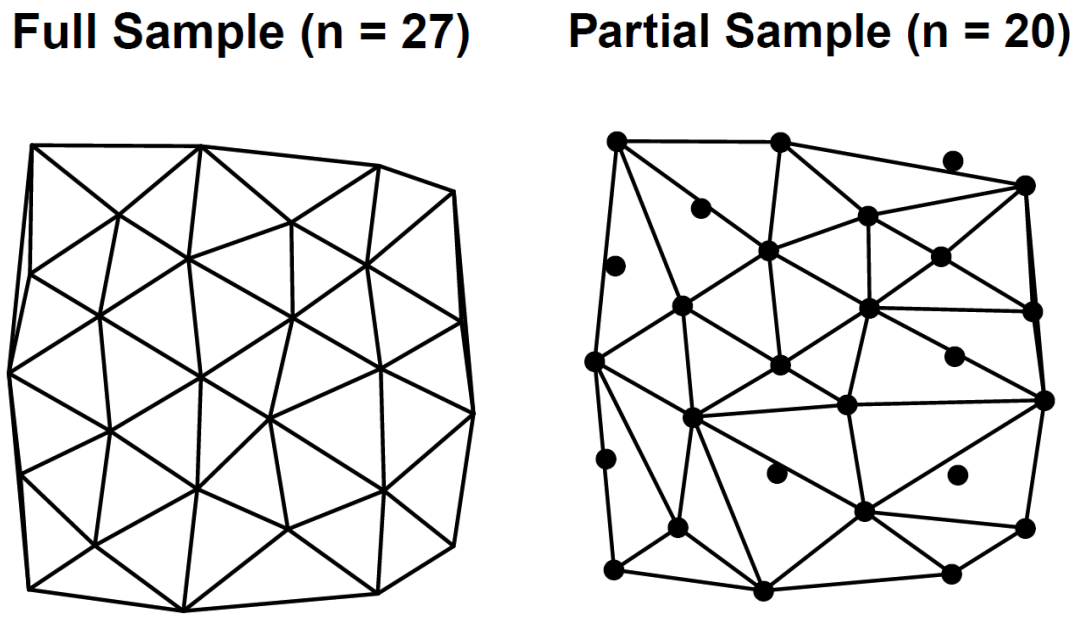
Moved points: We want out tiles to be as close to equilateral triangles as possible. The selection of a proximate alternate villages helps to ensure that the shape of the original triangles are not greatly distorted. Any major distortion will be corrected by the Delaunay Triangulation procedure that we apply to the collected data. This procedure is standard in S3M and ensures a unique triangulation which maximises the minimum internal angles in the tiles (i.e. it tries to makes equilateral triangles) while maintaining locality of the PSUs at each vertex of the triangle. This ability to "repair" the sampling network is a feature of the S3M method and makes S3M suited to uses in (e.g.) complex and natural emergencies where displacement may have occurred.

Empty points (no villages): The Delaunay Triangulation procedure (see above) also "repairs" the sampling network when we have empty points. This is common when we estimate (e.g.) coverage of CMAM programs and may have PSUs in which, because of low prevalence, there are no SAM cases. Coverage in such PSUs is treated as "undetermined" because the sample size is zero. This is the same situation as with an empty point. The consequences of this depend upon the location of the empty point. If this is on the edge of the surveyed area as, I think, many of our empty points are then there is little effect other than a small and localised contraction of the mapped area to match the populated area. If the empty point is in the centre of the surveyed area then the effect is localised and the area of the tiles near the missing point are increased slightly. The S3M method was designed to be robust to this problem. Figure A1.1 is showing the effect of dropping one-quarter of points from an S3M sample. In cases where many adjacent points are empty we will have very large tiles. With such tiles the homogeneity assumption breaks down and the tile is excluded from the map as being over-large. We have developed an interpolation method that goes some way toward addressing this problem which we will pilot on the Ghana data before applying it to the Sudan S3M data.

Missing points (villages not shown on our map): In the context of TILE SHAPE AND SIZE, missing points may have the effect of our mapping using a non-optimal sampling network. The effect of this is likely to be small since any distortion to a tile will be to move the vertex by about

d/2 (6 km in our case). The Delaunay Triangulation procedure will return a close-to-optimal sampling network anyway. The major issue with missing points is survey coverage (see below).

Figure A1.1: Re-triangulation for empty (dropped) points



SURVEY COVERAGE: Spatial samples are not constrained to be probability samples. In most cases there are systematic samples (as in S3M) or optimally biased samples (as in mineral exploration and in the proposed S3M urban sample modification) or convenience samples (as in much climatology). The S3M sample is designed to spread the sample evenly across the survey area and to extend to the edge of the survey area. Missing points (villages not shown on our map) in the centre of the survey area will have no effect on survey coverage. Missing points on the edge of the survey area will have the effect of reducing survey coverage (i.e. the survey will fail to cover the entire area). Such "edge effects" effects can be large since most area is on the periphery. My understanding is that we have experienced the opposite problem and have isolated empty points on the periphery.

SUMMARY: It is highly unlikely that we have any significant problems with the S3M sample. We could verify this by reference to a better map. We are, however, sceptical that the CBS maps will be any better than the maps used in this survey which will have been updated continually. This could be confirmed by comparison of the survey maps to the CBS maps if they are made available.

Appendix 4: Sample size details

State	Locality	Villages, town or camp surveyed	# of HH	Number of children included
Al Gezira	EL HASAHEISA	villages	**192**	**244**
	EL KAMLIN	villages	**225**	**293**
	EL MANAGIL	villages	**575**	**926**
	JANUB EL GEZIRA	villages	**288**	**408**
	MADANI AL KOBRA	villages	**32**	**39**
		town	**297**	**421**
	SHARG EL GEZIRA	villages	**400**	**577**
	UMM EL GURA	villages	**192**	**283**
	State total		**2201**	**3191**
Blue Nile	Baw	villages	**64**	**94**
	Damazin	villages	**96**	**157**
		town	**236**	**413**
	Giassan	villages	**513**	**753**
	Kurmuk	villages	**96**	**164**
	Rosairs	villages	**892**	**1425**
		town	**230**	**389**
	Tadamon	villages	**128**	**208**
	State total		**2255**	**3603**
Central Darfur	AZOUM	villages	**82**	**134**
	BENDSI	villages	**82**	**125**
	MUKJAR	camp	**179**	**332**
	NERTATI	villages	**73**	**123**
	Rokiro	villages	**59**	**108**
	UM DUKHUN	camp	**180**	**328**
	WADI SALIH	villages	**358**	**641**
	ZALINGEI	villages	**457**	**735**
		town	**199**	**366**
	State total		**1669**	**2892**
East Darfur	ABU GABRA	villages	**89**	**146**
	ABU KARINKA	villages	**195**	**308**
	ABU MATARG	villages	**61**	**111**
	ADILLA	villages	**110**	**175**
	AL DEAIN	villages	**120**	**198**
		town	**211**	**388**
	ALFIRDOS	villages	**141**	**212**
	ASSLAYA	villages	**88**	**144**
	SHARIA	villages	**96**	**165**
	YASEEN	villages	**64**	**106**
	State total		**1175**	**1953**

State	Locality	Villages, town or camp surveyed	# of HH	Number of children included
Gedaref	AL GADAREF	town	**269**	**398**
	AL GADAREF WASAT	villages	**560**	**872**
	AL MAFAZA	villages	**74**	**125**
	ALBUTANA	villages	**543**	**868**
	ALFASHAGA	villages	**459**	**722**
	ALFAW	villages	**150**	**250**
	ALGALABAT AL GARBIYA	villages	**96**	**157**
	ALGALABAT AL SHARGIY	villages	**127**	**175**
	ALGURISHA	villages	**320**	**505**
	ALRAHAD	villages	**96**	**148**
	BASONDA	villages	**289**	**410**
	GULA ALNAHAL	villages	**239**	**396**
	State total		**3222**	**5026**
Kassala	AROMA	villages	**180**	**281**
	HAMSHKOREB	villages	**90**	**150**
		town	**224**	**377**
	KASSALA	town	**251**	**393**
	KSHMALGRBA	villages	**126**	**180**
	NAHR ATBARA	villages	**54**	**68**
	NORTH DELTA	villages	**212**	**320**
	RIFY HALFA	villages	**192**	**295**
	RIFY KASSALA	villages	**160**	**258**
	TALKOK	villages	**255**	**399**
	WADALHLEW	villages	**102**	**159**
	WEST KASSALA	villages	**67**	**111**
	State total		**1913**	**2991**
Khartoum	BAHARI	Villages	**241**	**339**
	GABEL AWLIA	Villages	**311**	**482**
	KARRARRI	Villages	**248**	**348**
	KHARTOUM	Villages	**168**	**226**
	SHAREG ELNILE	Villages	**838**	**1273**
	UMBADA	Villages	**268**	**440**
	UMDRMAN	Villages	**298**	**472**
	State total		**2372**	**3580**
River Nile	ABU HAMAD	Villages	**346**	**523**
	ALBUHAIRA	Villages	**172**	**257**
	ATBARA	Villages	**161**	**245**
		Town	**271**	**396**
	BARBAR	Villages	**148**	**217**
	ED DAMER	Villages	**449**	**710**
		Town	**243**	**394**
	EL MATAMMAH	Villages	**401**	**638**
	SHENDI	Villages	**179**	**306**
	State total		**2370**	**3686**

State	Locality	Villages, town or camp surveyed	# of HH	Number of children included
North Darfur	Al Fasher	Villages	384	601
		Town	239	387
		Camp	215	362
	Al Koma	Villages	127	189
	Al Malha	Villages	386	562
	Al Seref	Camp	211	375
	Al Tina	Villages	119	180
	Al Twasha	Villages	254	388
	Allait	Villages	127	206
	Ambaro	Villages	212	327
	Dar Alsalam	Villages	207	308
	Kabkabia	Villages	277	461
	Karnoi	Villages	82	118
	Kelemendo	Villages	251	380
	Kutum	Villages	388	608
	Mallit	Villages	379	602
	Saraf Omra	Villages	57	84
	Tawila	Villages	223	365
	Umkadada	Villages	331	552
	State total		4469	7055
Northern	ALBORGEG	Villages	6	8
	ALDABBA	Villages	203	287
	ALGOLED	Villages	154	234
	DALGO	Villages	221	311
	DONGOLA	Villages	231	333
		Town	249	384
	HALFA	Villages	180	238
	MERAWI	Villages	316	446
	State total		1560	2241
Northern Kordofan	Bara	Villages	695	1098
	El Rahad	Villages	62	112
	Jebrat El Sheikh	Villages	371	607
	Sheikan	Villages	404	688
		Town	253	401
	Sowdari	Villages	483	743
	Umm Daam	Villages	65	104
	Umm Rawaba	Villages	1019	1673
	West Bara	Villages	107	185
	State total		3459	5611

State	Locality	Villages, town or camp surveyed	# of HH	Number of children included
Red Sea	AGEEG	Villages	**169**	**258**
	ALGANEB ALOLIB	Villages	**232**	**332**
	DORDAIB	Villages	**151**	**223**
	HAIA	Villages	**196**	**284**
	HALIAB	Villages	**40**	**53**
	JAPITALMADIN	Villages	**117**	**155**
	PORT SUDAN	Villages	**845**	**1188**
	SAWAKEN	Villages	**77**	**106**
	SENKAT	Villages	**112**	**155**
	TOKAR	Villages	**187**	**250**
	State total		**2126**	**3004**
Sennar	Abu Hijar	Villages	**159**	**265**
	Al Dindir	Villages	**345**	**567**
	AlDali and AlMazmoum	Villages	**369**	**575**
	AlSooki	Villages	**263**	**444**
	Sennar	Villages	**318**	**501**
		Town	**280**	**413**
	Sharg Sennar	Villages	**319**	**519**
	Sinja	Villages	**154**	**265**
		Town	**244**	**386**
	State total		**2451**	**3935**
South Darfur	AL RUDOOM	Villages	**284**	**502**
	ALWEHDA	Villages	**120**	**189**
	BELIL	Villages	**96**	**154**
	BURAM	Villages	**104**	**178**
	DMSO	Villages	**66**	**105**
	EL SALAM	Villages	**130**	**215**
	GERIEDA	Villages	**23**	**31**
	ID ELFIRSAN	Villages	**149**	**266**
	KASS	Villages	**223**	**385**
	KATILA	Villages	**204**	**315**
	KUBUM	Villages	**138**	**239**
	MERSHING	Villages	**32**	**53**
	NETIGA	Villages	**103**	**183**
	Nyala	Town	**232**	**368**
		Camp	**218**	**378**
	RAHAD ELBERDI	Villages	**158**	**281**
	TOLUSS	Villages	**63**	**110**
	UM DAFOG	Villages	**12**	**22**
	State total		**2355**	**3974**

State	Locality	Villages, town or camp surveyed	# of HH	Number of children included
Southern Kordofan	Abujebiha	Villages	412	656
	Al tadamoon	Villages	284	491
	Alabaseya	Villages	84	161
	Algoz	Villages	289	472
	Allirri	Villages	183	301
	Alreif alshargi	Villages	96	184
	Dilling	Villages	64	124
	Gadeir	Villages	254	427
	Habeila	Villages	189	320
	Kadugli	Town	278	456
	Rashad	Villages	78	137
	Talodi	Camp	231	399
	State total		2442	4128
West Darfur	ALGENEANA	Villages	51	89
		Town	219	367
	BAIDA	Villages	205	349
	FORBRANGA	Villages	183	305
	GABAL MOON	Villages	262	437
	HABILLA	Villages	232	388
	KERENIK	Villages	533	892
		Camp	224	360
	KULBUS	Villages	179	286
	SERBA	Villages	178	269
	State total		2266	3742
Western Kordofan	Abo Zabad	Villages	121	191
	Abyei	Villages	377	606
	Al Khowi	Villages	341	555
	Al Odaya	Villages	149	242
	Al Salam	Villages	392	654
		Town	229	403
	Aldebab	Villages	193	325
	Almearam	Villages	73	118
	Alsnout	Villages	288	497
	Babanusa	Villages	116	188
	En Nuhud	Villages	368	588
	Ghebeish	Villages	487	766
	Kailak	Villages	272	433
	Lagawa	Villages	381	669
	Wad Bandah	Villages	426	676
	State total		4213	6911

State	Locality	Villages, town or camp surveyed	# of HH	Number of children included
White Nile	ALSALAM	Villages	**345**	**569**
	ED DOUIEM	Villages	**362**	**566**
	EL GUTAINA	Villages	**377**	**579**
	EL JABALAIN	Villages	**260**	**433**
	GULI	Villages	**177**	**285**
	KOSTI	Villages	**121**	**195**
		Town	**274**	**438**
	RABAK	Villages	**51**	**86**
		Town	**274**	**418**
	TANDALTI	Villages	**175**	**288**
	UMM REMTA	Villages	**160**	**245**
	State total		**2576**	**4102**
	COUNTRY TOTAL		**45094**	**71625**

Appendix 5: Cities, camps and localities included in the survey

State	City	Camps / other
White Nile	Kosti and Rabak	-
Gezira	Medani	-
Northern	Dongola	-
River Nile	Atbara and AtDamar	-
Gedaref	Gedaref	-
Kassala	Kassala and Hamesh Koreb	-
Blue Nile	Damazine and Rosaires	12 new villages and 2 large villages in Kurmuk Locality
Sennar	Sennar and Singa	-
North Kordofan	El Obeid	-
South Kordofan	Kadugli	-
West Kordofan	El Fula	-
Red Sea	Port Sudan - Urban S3M	-
Khartoum	Khartoum City - Urban S3M	-
North Darfur	El Fasher (including Abushok and Alsalam)	Zamzam and El Sereif
South Darfur	Nyala (including Otash, Dereige and Alsalam)	Kalma and Gereida
West Darfur	Geneina (including Grinding)	Mornei
Central Darfur	Zalingi (including Hassa Hissa)	Umdukhan and Mukjar
East Darfur	Eddain (including El Neem)	-

Localities ***not*** surveyed in the S3M (174 were included either in total or part, remaining 10 are below):

	State	Locality	Reason
1	South Kordofan	Al Buram	Inaccessible during S3M
2	South Kordofan	Heiban	Inaccessible during S3M
3	South Kordofan	Kadugli	Inaccessible during S3M (Kadugli town is available)
4	South Kordofan	Talodi	Inaccessible during S3M (Talodi town is available)
5	South Kordofan	Umm Durein	Inaccessible during S3M
6	South Darfur	Nyala North	Surveyed in S3M as part of Nyala town
7	South Darfur	Sharg Jabel Marra	Surveyed in S3M as part of Kass locality
8	South Darfur	Shattai	Surveyed in S3M as part of Kass locality
9	South Darfur	Sunta	Inaccessible during S3M
10	North Darfur	Al Waha	Surveyed in S3M as part of different localities

Appendix 6: References

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Appendix 7: Survey questionnaires

VILLAGE INFORMATION
Date |__|__|__|__|/|__|__|/|__|__|
Sample number : |__|__|__|__|__|__| Team number: |__|__|
Village name: _____ Population number: _____
Longditude with GPS machine: |__|__|° |__|__|.|__|__|__|' N
Lattitude with GPS: |__|__|° |__|__|.|__|__|__|' E

MINISTRY OF HEALTH - Nutrition Department - National S3M Survey

Household Questionnaire (include every household from the random starting point that has one child or more aged between 0 and 59 months)

Date:	**State:**		**Locality:**
Name of village:	**Number of sample point:**		
Number of household:	**Number of team:**		

This part for office use at data entry:		
Name of the reviewer:	Comments:	
Name of data enterer:	Comments	
Name of reviewer of data entry:	Comments	

		R1	R2	R3	R4	R5
No	**Name**	**Sex**	**Age**	**For everyone 6 years and more**		
		1 = Male 2 = Female	Record in completed years	Did you go to school ever in your life? 1 = yes 2 = No	Are you currently at school? 1 = yes 2 = No	Level of education achieved. Basic or Halwa (Koran), write the number of years.
1						
2						
3						
4						
5						
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15						

How many mothers in the surveyed household?	
How many children 0-59 months in the surveyed household?	

MPI 1	How many family members have completed 5 years or more of education?	
MPI 2	How many family members aged between 6 and 14 years are not educated?	

Record number of answer in corresponding square

R6	Does this house have electricity?	1 = Yes 2 = No	
R7	What is the **main** fuel used for cooking? Record one answer only - the main fuel used.	1 = Electricity 2 = Gas 3 = Kerosene 4 = Charcoal 5 = Wood 6 = Grass / straw / crops 7 = Dung	
R8	What is the floor made from (observation)	1 = Sand / dung / dirt 2 = Other - specify ……	
R9	Does the household own:	R9.1 = Radio	
	Read out list and tick all owned	R9.2 = Television	
		R9.3 = Fridge	
		R9.4 = Mobile / landline	
		R9.5 = Bicycle	
		R9.6 = Motorbike / Rickshaw (tuktuk)	
		R9.7 = Boat with engine	
		R9.8 = Car / lorry / truck / tractor	
		R9.9 = horse / donkey and cart	

	MUAC of Mother	Record to nearest mm: |_____||_____||_____|

Health behaviours

BH	What are the signs and symptoms that would lead you to take your child to the health center	BH.1 = Refuses food / drink / breast	
		BH.2 = Convulsions	
		BH.3 = Vomitting	
	Record all the mother says with a tick in the corresponding square, no prompting.	BH.4 = Bloody diarrhoea	
		BH.5 = Fever	
		BH.6 = Drowsiness / unconsciousness	
		BH.7 = Fast difficult breathing	
		BH.8 = Don't know	
		BH.9 = Other	

WASH

WS1	Where do you usualy get your drinking water? Record with a tcik for the main source in the corresponding box	
	Unsafe water source: Water from river, stream, small dam, hafia, lake, puddle, canal, rain, unprotected well, spring, water tankers, donkey carts.	**Safe water source:** Piped water to publuc tap, piped water into dwelling, water station, water tank, hand-pump, protected well, protected spring, bottled water
	☐	☐

WS2	Type of toilet Record with a tick for the toilet most usually used	
	Improved latrine: Toilet with drain Toilet with septic tank Toilet with drain to a hole Toilet with drain to unknown place Traditional latrine with cement cover	**Non-Improved latrine:** Drain to another place traditional latrine with no cover - open Hanging latrine Bucket No latrine Other
	☐	☐

WS3	How many households share this latrine? Record the number of households who are sharing, if none sharing record 0	_____|_____|

WS4	How do you dispose of child faeces	
	Healthy practice: Bathroom / latrine Buried	**Unhealthy practice:** In drain other than latrine or bathroom In the rubbish Remain on the ground Other
	☐	☐

WS5	When do you usually wash your hands?	WS5.1 = After defecation	☐
	Record a tick in the appropriate box.	WS5.2 = After cleaning child	☐
		WS5.3 = Before eating	☐
		WS5.4 = Before feeding child	☐
		WS5.5 = Before cooking	☐
		WS5.6 = Other	☐

Reproductive health

RH1	During your last pregnancy how many times did you go for ANC? Record number of visits, if none record 0	|_____||_____|	
RH2	When you went for ANC, who saw you?	RH2.1 = Doctor	☐
	Put a tick in appropriate square.	RH2.2 = Nurse	☐
		RH2.3 = Trained midwife	☐
		RH2.4 = TBA	☐
		RH2.5 = Doctor assistant	☐
		RH2.6 = Health visitor	☐
		RH2.7 = Other	☐
RH3	For how many months during your last pregnancy did you take these tablets? Show FEFOL and record number of months. If none record 0		☐
RH4	Who helped during the delivery of your last child?	1 = Doctor 2 = Nurse 3 = Trained midwife 4 = TBA 5 =Doctor assistant 6 = Health visitor 7 = Other	☐
RH5	During the post-partum 6 weeks, did you take this capsule? Show VITAMIN A capsule	1 = Yes 2 = No	☐
RH6	During your last pregnancy did you have any problem seeing in the night or evening / night blindness?	1 = Yes 2 = No	☐

ST	Can I see a sample of your salt which you use for your cooking in your house?	1 = Not iodised 2 = LESS than 15ppm 3 = GREATER than or equal to 15ppm 4 = No salt 5 = Refused to give salt	☐

Food security:
For the following questions record the number in the corresponding box

HH1	How many times in the last 1 month is there no food in your house because of no access to food	|_____||_____|
HH2	How many times in the last 1 month did you or anyone in this household sleep hungry because of no adequate food in your house?	|_____||_____|
HH3	How many times in the last 1 month did you spend a day and a night without eating or having any food at all, you or anyone in your household, because of no adequate food in your house	|_____||_____|

Shuffa Alsoghar:

C4D1	Have you heard of this slogan: *aham mafee al dar…hayat alshuffa'a alsoghar*	1 = Yes 2 = No	☐
C4D2	Have you seen this image before? (Show mother the sticker)	1 = Yes 2 = No	☐

Diet Diversity

		Household	Child 1	Child 2	Child 3	Child 4
DD1	Cereals:	_____	_____	_____	_____	_____
DD2	Roots and tubers:	_____	_____	_____	_____	_____
DD3	Carrot / Pumpkin	_____	_____	_____	_____	_____
DD4	Green leafy veg	_____	_____	_____	_____	_____
DD5	Any other veg	_____	_____	_____	_____	_____
DD6	Papaya / Mango	_____	_____	_____	_____	_____
DD7	Other fruits	_____	_____	_____	_____	_____
DD8	Meat or chicken	_____	_____	_____	_____	_____
DD9	Offal	_____	_____	_____	_____	_____
DD10	Eggs	_____	_____	_____	_____	_____
DD11	Fish	_____	_____	_____	_____	_____
DD12	Legumes and pulses	_____	_____	_____	_____	_____
DD13	Dairy products	_____	_____	_____	_____	_____
DD14	Oils and fats	_____	_____	_____	_____	_____
DD15	Sugar / honey / candy	_____	_____	_____	_____	_____
DD16	Soft drinks / tea / coffee	_____	_____	_____	_____	_____

Children 0-59 months

Child ID	AGE	SEX	ANT1	ANT2	ANT3	ANT4	DIA	ARI	FEV	DT	ITN	IMM1	IMM2	IMM3	IMM4	IMM5	IMM6	IMM7	IMM8	VITA	BF1	BF2	MF
	Record age of child in months	Record sex of child 1 = Male 2 = Female	MUAC (to the nearest mm) Record for children 0-59 months If <115mm refer to nearest OTP / HC. If <125mm refer to SFP / HC.	WEIGHT (to the nearest kg) Record for children 0-59 months	HEIGHT (to the nearest mm) Record for children 6-59 months	Bi-lateral ODEMA 1 = Yes 2 = No If yes refer to nearest OTP / HC	In the last 2 weeks has this child suffered from (read out list)			For any child who suffered from diarrhoea	Did (CHILD) sleep under a LLITN last night? 1 = Yes 2 = No	Has the child received the following vaccinations (ask to see vaccination card) 1 = YES with card 2 = YES history 3 = No 4 = Don't know 5 = Not appropriate for this child								Has the child received Vitamin A in the last 6 months? 1 = Yes 2 = No	Is (CHILD) breast feeding now? 1 = Yes 2 = No 3 = Not applicable	Did (CHILD) have any food or drink other than breast milk? 1 = Yes 2 = No 3 = Not applicable	How many times did this child eat mashed, pureed, solid or semi-solid foods since this time yesterday? Not including liquids or breast feeding.
							Diarrhoea 1 = Yes 2 = No	Cough with difficult breathing 1 = Yes 2 = No	Fever 1 = Yes 2 = No	How do you treat your child 1 = ORS 2 = ORS + home fluids 3 = Home fluids only 4 = Medicine 5 = Nothing 6 = Other 7 = Don't know		BCG (scar)	DPT1 + Hib1 + HepB1	DPT2 + Hib2 + HepB2	DPT3 + Hib3 + HepB3	OPV1	OPV2	OPV3	Measles				

وزارةالصحة - إدارةالتغذيةمسحالتغذيةباستخدامنهجيةS3M

استبيان قائمة الاسره (يتمتضمينكلالاسرالمختارةبصورةعشوائيةوبهاطفلأوأكثرمنعمر 0 - 59 شهراً)

التاريخ: |__|__|__|__|__|__|__|__| الولايه:..... المحليه:..... إسمالقرية :.....

رقمالعينه: |__|__|__|__|__|__|__|__| رقم المنزل: |__|__| رقم الفريق: |__|__|

هذا الجزء خاص بتدقيق البيانات قبل وبعد الادخال
اسم مراجع البيانات.....ملاحظاته:.....
اسم مدخل البيانات:.....ملاحظاته:.....
اسم مراجع ادخال البيانات:.....ملاحظاته:.....
.....

الرقم	الاسم	النوع 1=ذكر 2= انتي	العمر (بالسنه) اذا كان العمر اقل من سنه ضع صفر	لكل الافراد من 6 سنه واكثر		
				هل دخلت المدرسه في حياتك 1=نعم 2= لا	حاليا في المدرسه 1=نعم 2= لا	درجة المستوي التعليمي (لو اساس/خلوه اكتب عدد السنين)
		(R1)	(R2)	(R3)	(R4)	(R5)
1						
2						
3						
4						
5						
6						
7						
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10						
11						
12						
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14						
15						

عدد الأمهات بالاسرة المبحوثة	

عدد الاطفال بالاسرة المبحوثة من 0 -59 شهر	

هذا الجزء لاستخدام المكتب فقط :

MPI.1 اي فرد من افراد الاسره اكمل 5 سنوات اواكثر في التعليم	|___|
MPI.2: اي فرد من افراد الاسره من 6 – 14 لم يدخل المدرسه	|___|

ضع رقم الاجابة فى الصندوق المخصص

R6: بيتكم فيهو كهرباء ؟	1= نعم |___| 2= لا
R7: الحاجه الاساسيه البتنجضوا بيها الاكل شنو ؟ اجابه واحده فقط	1 = كهرباء 2 = غاز 3= جاز\كيروسين 4 = فحم 5 = حطب |___| 6 = قش\قصب\بقايا المحاصيل 7 = ذبالة البهايم
R8: بلاط الارضيه(يمكن بالملاحظه):	1 = تراب- رمله – ذباله – روث البهايم 2 = اخري حدد..... |___|
R9: عندكم في بيتكم الاتي: قراءة كل الخيارات اذا كانت الاسره تغتني احد الخيارات المذكوره ضع علامة √في المربع المقابل	R9.1راديو |__| R9.2 تلفزيون |__| R9.3 تلاجه |__| R9.4 موبايل او تلفون ثابت |__| R9.5 عجله |__| R9.6 موتر- ركشه |__| R9.7 مركب بي مكنه |__| R9.8 عربيه – شاحنه – لوري- تراك |__| R9.9 كارو بي حصان او حمار

قياسات الام: المواك بالملم \|__\|__\|__\|

السلوك الصحي:

BH شنو الاعراض والعلامات البتخليكي تودي الطفل العيان للمركز الصحي اكتب كل ما تذكره الام ولا تقرأ لها الخيارات ضع √في المربع المقابل	BH.1 اذا رفض الاكل/الشراب /الرضاعة |___| BH.2 تشنجات |___| BH.3 طراش شديد |___| BH.4 دم في البراز |___| BH.5 حمي |___| BH.6 دوخه/فقدان الوعي/كسلان |___| BH.7 سرعة او صعوبة في التنفس |___| BH.8 لا اعرف |___| BH.9 اخري

المياه و اصحاح البيئه: WASH

WS1: في اغلب الاحيان بتجيبو موية الشراب من وين اكتب √ للمصدر الرئيسي فى الصندوق المخصص	
مصادر المياه الغير محميه: مياه (نهر-جدول –سد – حفير -بحيرة –بركة –قناة –امطار – ترعة) غير بئرغيرمحمي نبع غير محمي مياه منقولهبعربية تانكر \ كارو	**المصادر المياه المحميه:** ماءعبرماسورة (شبكةعامة) البداخلالمبنى ماءعبرماسورة (شبكةعامة) البداخلالحوش ماءعبرماسورة (شبكةعامة) ماسورةمياهعامة ماءعبرماسورة (شبكةعامة): دونكي – صهريج – مضخةيدوية (كرجاكة) بئرسطحيمحمية/مغطاه نبعمحمي مياه معبأه في قوارير (موية صحه)
___ |___|	___ |___|
WS2: نوع المرحاض\ المستراح\ الادبخانه العندكم شنو ضع √فى الصندوق المخصص للمرحاض الاكثر استخداما	
مراحيض محسنه: سيفونالشبكةمجاريعامة سيفونالحوضتخمير سيفونالمرحاضحفرة مرحاضحفرةمحسنبتهوية سيفونالمكانغيرمعروف مرحاضبلديبغطاءاسمنت ___ |___|	**مراحيض غير محسنه:** سيفونالمكاناخر مرحاضبلديمندونغطاء (مفتوح) مرحاضتخمير جردل لايوجد اخري ___ |___|
WS3مرحاضكم ده كم اسره بتشاركم فيهو اكتب عدد الاسر المشاركه اذا ما مشترك اكتب صفر |___|___|	

WS 4 كيف بتتخلصي من براز/ فسحة طفلك الصغير	
ممارسات صحيه: استخدمالطفلالحمّام/المرحاض وضُع/غُسل فيالحمام/المرحاض دفن ___ |__|	**ممارسات غير صحيه:** وضُع/غُسلفيمجرىالتصريفأوالمصرف أُلقيفيالقمامة (النفايات) تُركفيالعراء أخرى ___ |__|
WS5 عادة بتغسلي يدينك متين ضع علامة √ في المربع المقابل للاجابه المذكوره	____ WS5.1 بعدقضاءالحاجة |__| WS5.2 بعد تنظيف الطفل من التبرز |__| WS5.3 قبل الاكل |__| WS5.4 قبل اطعام الطفل |__| WS5.5 قبل الطبخ |__| WS5.6اخري |__|

الصحه الانجابيه:

RH1: اثناء حملك الاخير كم مره مشيتي للمتابعه اكتب عدد الزيارات و اذا لا لم تذهب ضع صفر	|__|__|
RH2 لما مشيتي للمتابعه الكشف عليكي منو ضع √	____ RH2.1 دكتور |__| RH2.2 ممرضه |__| RH2.3 دايه مدربه |__| RH.2.4دايه تقليديه |__| RH.2.5 مساعد طبي |__| RH.2.6 زايره صحيه |__| RH.2.7 اخري |__|
RH 3 الحبوب دي (الفيفول) اخدتيها لمدة كم شهر اكتب العدد اذا لم تاخذ اكتب صفر	|__|
RH 4 الولدك منو بولدك الاخير	1= دكتور 2= ممرضه 3= دايه مدربه |__| 4= دايه تقليديه 5= مساعد طبي 6= زايره صحيه 7= اخري
RH5 خلال فترة النفاس (6 اسابيع) اخدتي الكبسوله دي وريها كبسولة فتامين أ	1= نعم 2= لا |__|
RH6 في حملك الاخير كان عندك مشكله عدم شوف /طشاش بالليل/بالمغرب/عمي ليلي	1= نعم 2= لا |__|

اختبار الملح:

ST ممكن اشوف عينه من الملح البتستخدميهو للاكل في بيتكم	1 = غير ميودن (ما مضاف ليهو يود) 2= اقل من 15 ppm |__|

	3= اكتر من او يساوي 15 ppm 4= لا يوجد ملح بالمنزل 5= رفض

الامن الغذائي: الاسئله التاليه ضع العدد فى الصندوق المخصص

HH1 كم مرهفيالشهرالماضيحدثعدموجودطعامفيالمنزلبسببعدمأمكانيةالحصولعليه؟	|___|___|
HH2 كم مره فيالشهرالماضيحدثأننمتاوايفردمنأفرادالاسرةجائعاًبسببعدموجودطعامكافيفيالمنزل؟	|___|___|
HH3 كم مره فيالشهرالماضيحدثأنقضيتيومولياةبدونتناولأيطعامأوايفردمنأفرادالاسرةبسببعدموجودطعامكافيفيالمنزل؟	|___|___|

برنامج الشفع الصغار:

C4D1 سمعتي بي الشعار ده (اهم ما في الدار الشفع الصغار)	**1=** نعم 2= لا	|___|
C4D2 شفتي الصوره دي؟ وريها الصوره	1= نعم 2= لا |___|	

التنوع الغذائي للاسره: هذه الاسئله للام و كل طفل 6-59 شهر علي حداضع علامة √ فى الصندوق المخصص لكل اذا تناولت الام او الطفل الوجبة االمذكورة

منأمبارح ذي المواعيد دي وحتىالآنهلتناولتي (الام و الاطفال 6- 59 شهر) ايطعامأوشرابيحتويعلىأىمنالآتى (أسألعنكلطفلعلىحده)	الام	الطفل الاول	الطفل اللتاني	الطفل التالت	الطفل الرابع
DD1أيمنالحبوبالغذائية (ذرة/قمح/دخن ... إلخ)	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD2الدرنياتأوالنباتاتالجزريةالاخري (بطاطس/بصل/كسافا/بامبي)	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD3أيطعاميحتويعليالجزر/القرع/	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD4أيمنالخضرواتالورقيةالخضراءالداكنة او الداكنه الخضره (الجرجير/الخدرة/السلج ... الخ)	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD5اي من الخضروات الاخري	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD6أيفواكهالصغراء مثل بابايا, مانجو, برتقال ,ليمون, تفاح	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD7 أيفواكهاخرى	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD8أيمناللحومالحمراءأوالبيضاء (البقر/ الضان / الغنم/دجاج /الجرادأوالعنتدأوالسلطعونأوايحشراتاخري)	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD9الكبدأوالكلاويأوالقلوباوكمونية (أمفتفت)	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD10بيض	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD11 الاسماكطازجةأوجافةأوأطعمةبحرية	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD12 البقولياتأوالمكسرات (الفولالسوداني/ العدس /الفول/الفاصوليا ... إلخ)	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD13منتجاتالبان (جبنة/زبادي/وغيرها)	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD14أيأكلمضافإليهالدهونمثلالزيتأوالسمنأوالقشدة	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD15السكرأوالعسلأوالحلويات (كيك/باسطةوغيرها)	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا
DD16مياهمحلاةأومنكه (عصير/شاي /قهوة/شوربة/مياهغازية/ أي شرابمضافإليهالتوابلأوالبهارات)	ا__ا	ا__ا	ا__ا	ا__ا	ا__ا

			للأطفـــــال من عمر 0 الي 59 شـــهر																							
1: بيانات تعريفية			2: القياسات الجسمانية				3: الأمراض				4: الناموسيات	5: التحصين								6: فيتامين أ	7: الرضاعة الطبيعية		8: عدد الوجبات
CHILD	AGE	SEX	ANT1	ANT2	ANT3 6-59	ANT4	خلال الأسبوعين السابقين هل أصيب (أذكر اسم الطفل) بالاتي:			للطفل المصاب بالاسهال	ITN	أطلب كرت التطعيم (ان لم يوجد أسأل الام) عن التطعيمات التالية: ضع: 1 = نعم بكرت 2 = نعم بدون كرت 3 = لا 4 = لا أعرف 5 = لا ينطبق								VITA	BF1	BF2	MF
رقم الطفل	العمر بالشهور	النوع 1 = ذكر 2 = انثى	محيط منتصف الذراع MUAC (ملم) من 0-59 شهر إذا أقل من 115 ملم حوِّل لأقرب مركز معالجة داخلية/أو خارجية أو أقرب مركز صحى إذا أقل من 125 ملم حوِّل لأقرب مركز معالجة إضافية أو أقرب مركز صحى	وزن الطفل (كجم) من 0-59 شهر لأقرب منزلة عشرية	طول الطفل (سم) من 6-59 شهر لأقرب منزلة عشرية	الورم الغذائى 1 = نعم 2 = لا إن وجد حوِّل لأقرب مركز معالجة داخلية/أو خارجية أو مركز صحى	إسهال 1 = نعم 2 = لا	كحة أو صعوبة فى التنفس 1 = نعم 2 = لا	حمى 1 = نعم 2 = لا	كيف تمت معالجته: **1** - ملح التروية **2** - ملح التروية + سوائل منزلية **3**- سوائل منزلية فقط **4**- دواء **5**- لم يعطى اي شئ **6** - اخرى **7** - لا اعرف	هل نام (أذكر إسم الطفل) تحت ناموسية مشبعة الليلة الماضية؟ 1 = نعم 2 = لا	السل	الخماسى 1	الخماسى 2	الخماسى 3	الشلل 1	الشلل 2	الشلل 3	الحصبة	هل تناول (أذكر إسم الطفل) جرعة فيتامين (أ) فى الستة شهور الماضية ؟ (أعرض الكبسولة علي الأم) 1 = نعم 2 = لا 3= لا اعرف 4= لا ينطبق	هل يرضع الطفل حالياً ؟ 1 = نعم 2 = لا 3= لا ينطبق	هل تناول (أذكر إسم الطفل) اي طعام أو شراب غير لبن الثدي؟ 1 = نعم 2= لا 3 = لا ينطبق	من الزمن ده أمس و حتى الآن كم عدد المرات التى تناول فيها (أذكر إسم الطفل) طعام مهروس أو طعام عادي صلب أو شبه صلب (لا تشمل السوائل والرضاعة الطبيعية) أكتب عدد المرات
							DIA	ARI	FEV	DT		IMM1	IMM2	IMM3	IMM4	IMM5	IMM6	IMM7	IMM8				
			__ __ __	__ __ . __	__ __ __ . __																		
			__ __ __	__ __ . __	__ __ __ . __																		
			__ __ __	__ __ . __	__ __ __ . __																		
			__ __ __	__ __ . __	__ __ __ . __																		