

A school malaria parasitaemia survey for routine surveillance at district level in Mainland Tanzania



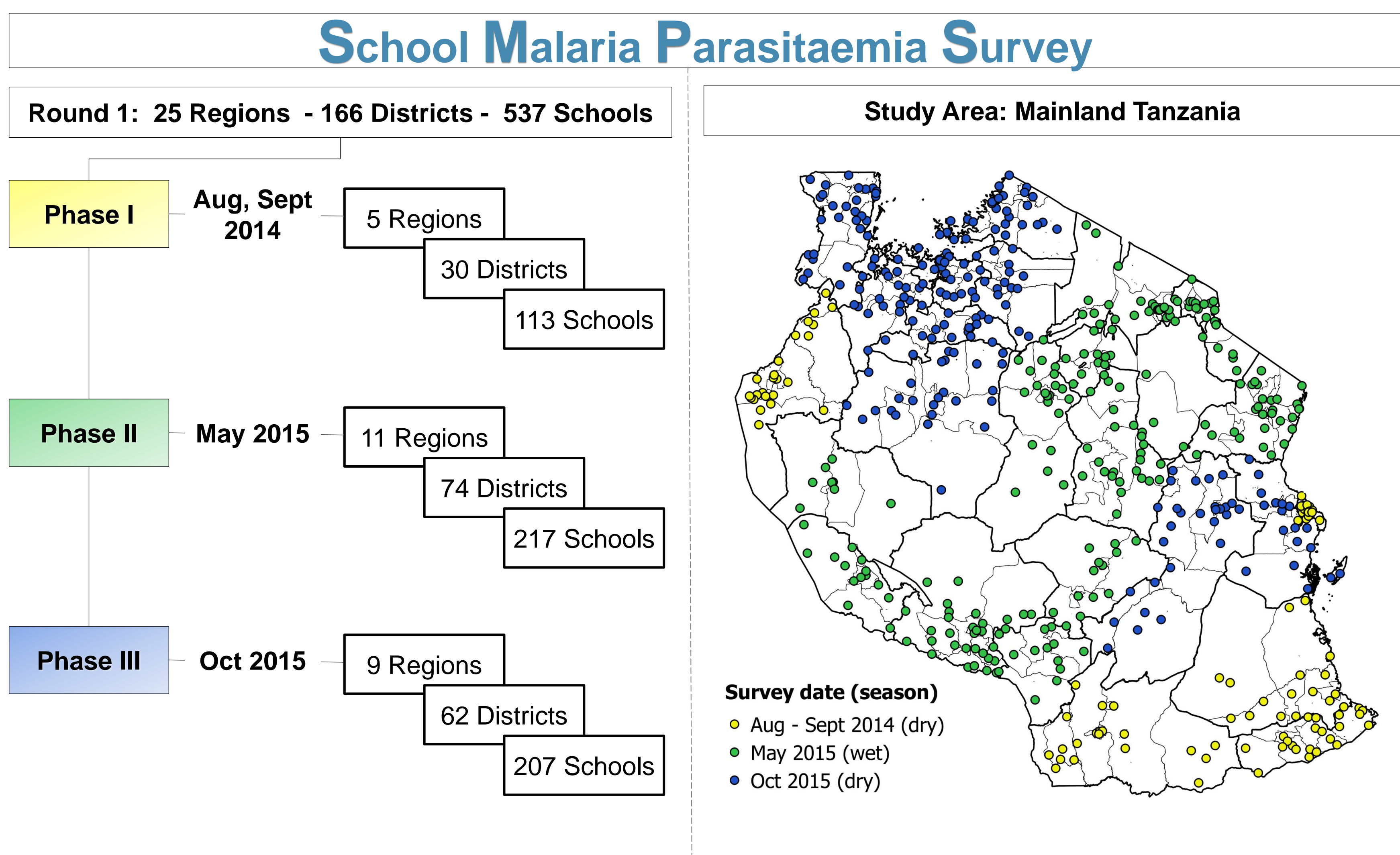
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Rationale

- Heterogeneity in transmission calls for identification of populations and areas at greatest need for interventions at local levels.
- School surveys have gained increased attention for national surveillance, complementing malaria indicator surveys.
- To-date, only few nationwide at district-level representative data is available on the malaria burden in school aged children.

Summary & Methods

- The SMPS is a nationwide school survey implemented to collect risk factors of malaria prevalence and bednet use in primary school children in Tanzania.
- Children were tested for malaria using mRDT's and interviewed about bednet ownership and use, recent history of fever and treatment, household size, and their parent's education.
- Data was collected during 3 data collection phases of 14 days.
- Local district teams visited in total 357 schools, and interviewed and tested 49,113 children.
- The sample was powered at district level using a multistage stratified proportional probability sampling method adjusted for prevalence and population density.



Results

Characteristics of children tested

Table 1: Characteristics of sampled pupils and positivity rate

Variables	Total tested		Positive tested	
	N	%	N	positivity rate (%)
Total	49,113	100	10,627	21.6%
Residence				
Urban	9,708	19.8	588	6.1
Rural	39,405	80.2	10,039	25.5
Standard				
Pre-primary	13	0.0	0	0.0
I	7,591	15.5	1,854	24.4
II	7,442	15.2	1,748	23.5
III	7,439	15.1	1,672	22.5
IV	7,492	15.3	1,647	22.0
V	7,414	15.1	1,692	22.8
VI	7,493	15.3	1,509	20.1
VII	4,091	8.3	498	12.2
Missing	138	0.3	7	11.0
Sex				
Male	24,205	49.3	5,606	23.2
Female	24,681	50.3	4,940	20.0
Missing	227	0.5	81	35.7
Age (years)				
- mean (SD)	10.6	(2.34)	-	-
<9	9,075	18.5	1,651	18.2
9-<10	12,710	25.9	2,720	21.4
10-<13	13,644	27.8	3,044	22.3
>=13	13,268	27.0	3,128	23.6
Missing	416	0.9	84	20.2

Varying prevalence among schools within regions

The prevalence ranged from < 0.1% - 53% among regions. The variation of the malaria prevalence between schools was greatest in high prevalence regions and marked by few outlying schools in low prevalence regions.

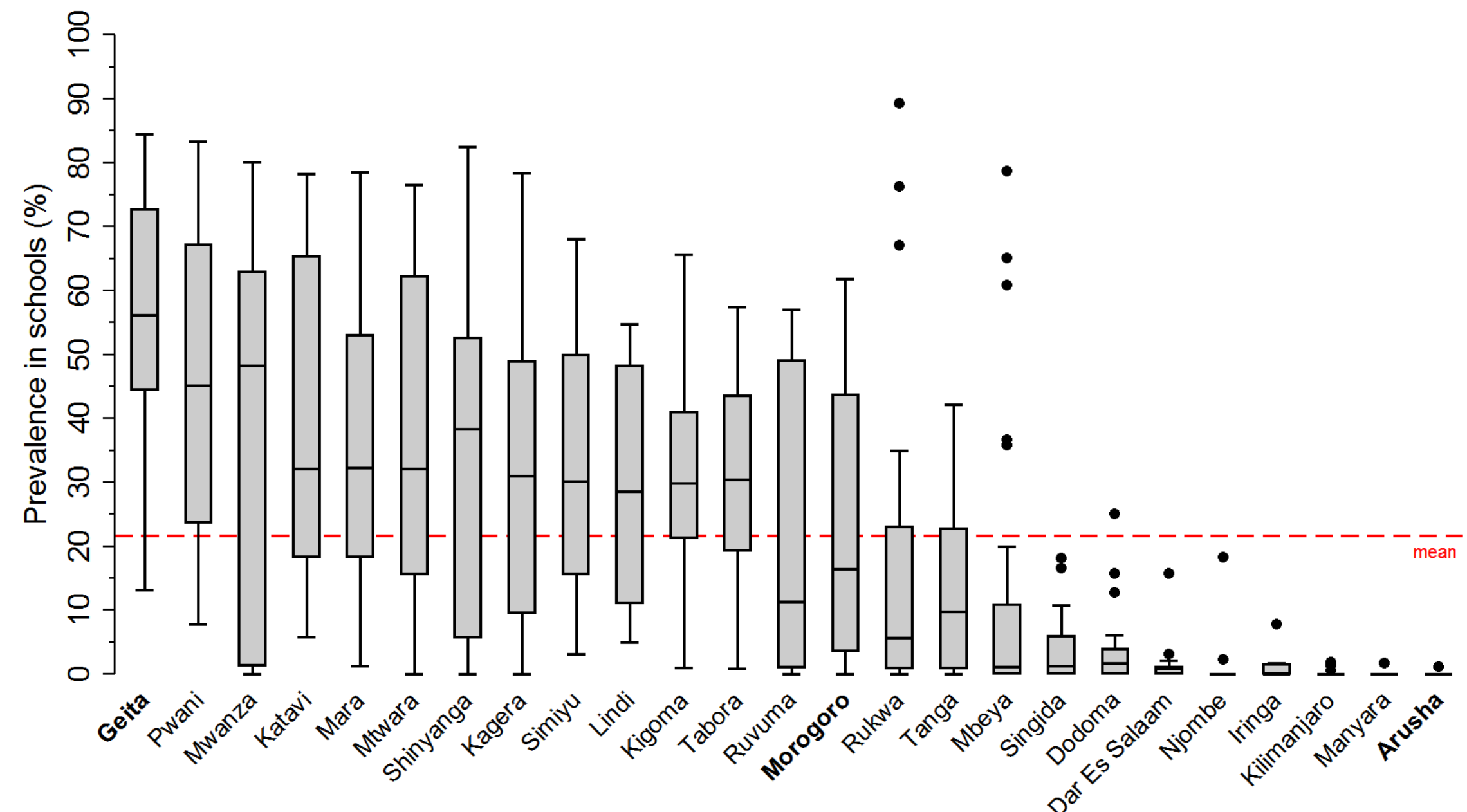


Figure 1: Distribution of malaria prevalence in schools within regions, sorted by regional mean malaria prevalence. The grey box visualises the inter-quartile range (25% to 75%) of the school prevalence within each region.

Prevalence at district level

In 62 of the 166 districts, the prevalence was < 5% and in 18 districts > 50%. The prevalence was highest in Geita, Pwani, Mwanza, Katavi (>=40%); lowest in Arusha, Kilimanjaro, Manyara and Iringa (<1%).

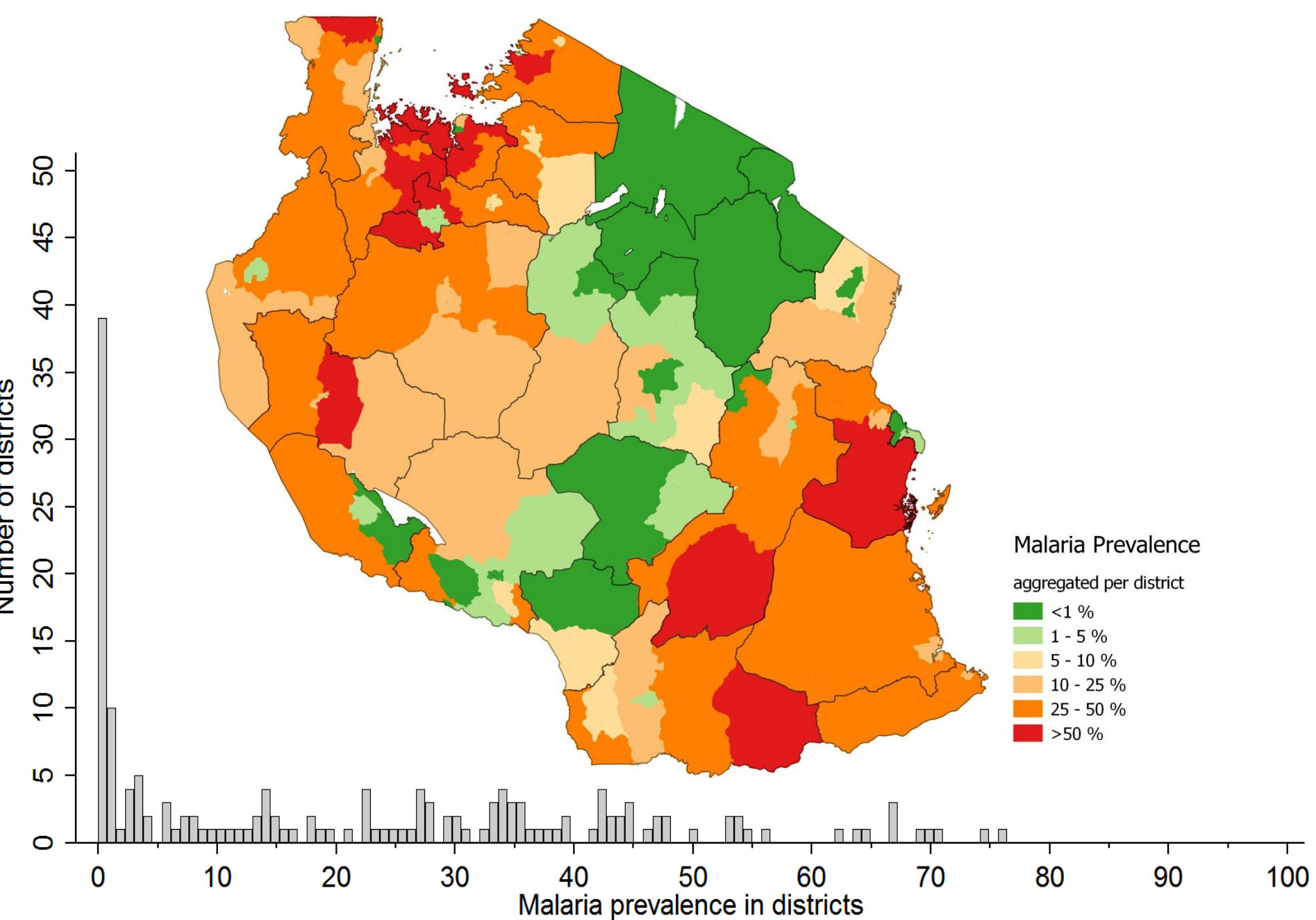


Figure 2: Geographical distribution of the malaria prevalence among school children, aggregated by district (map) and frequency of districts per malaria prevalence (histogram).

Conclusion

- School surveys are a practical, cost effective and time efficient approach for routine monitoring of the malaria prevalence at sub-regional level.
- Together with malaria indicator surveys, prevalence data can be used to support the risk-stratification and efficient resource allocation for malaria control strategies.

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