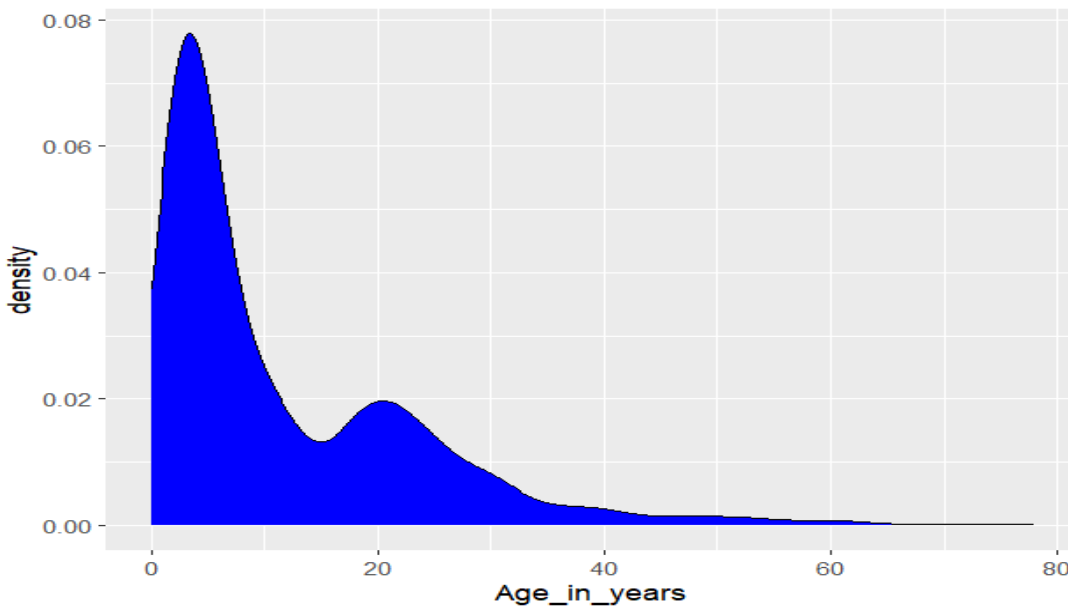
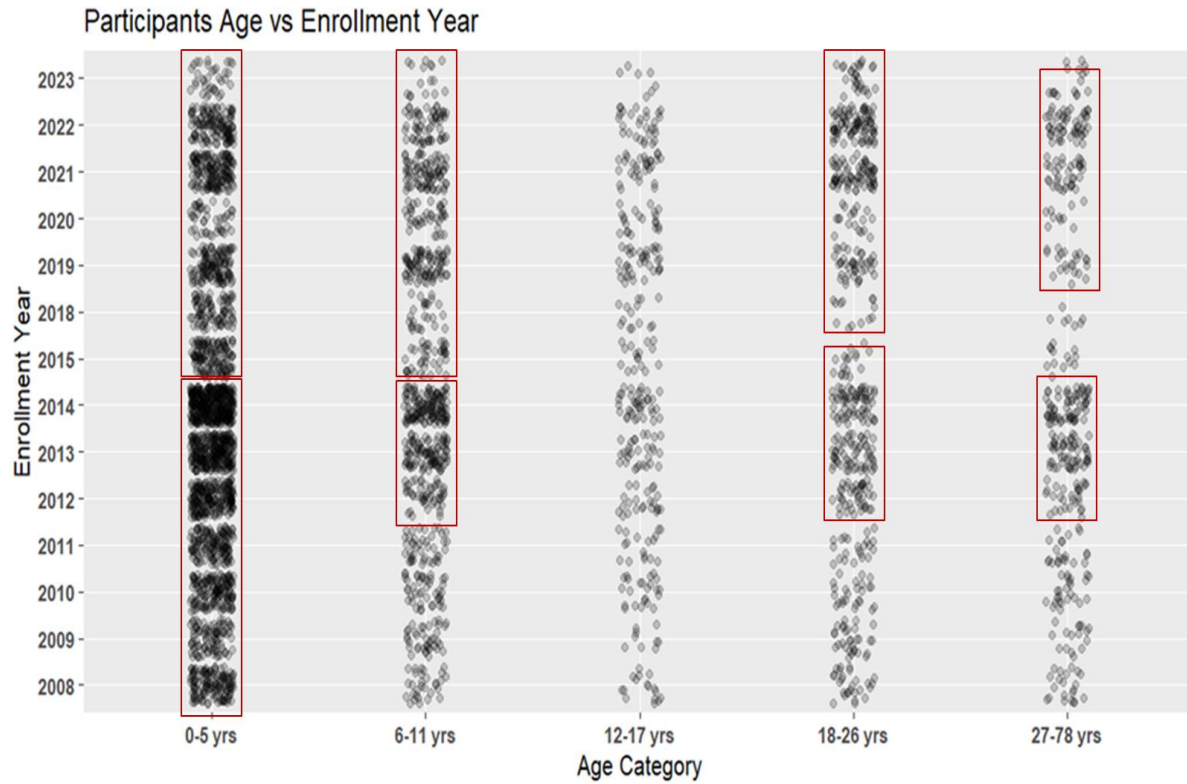


From Children to Adults? Shifting Age Patterns of Malaria in Kenya, 2008 – 2023.

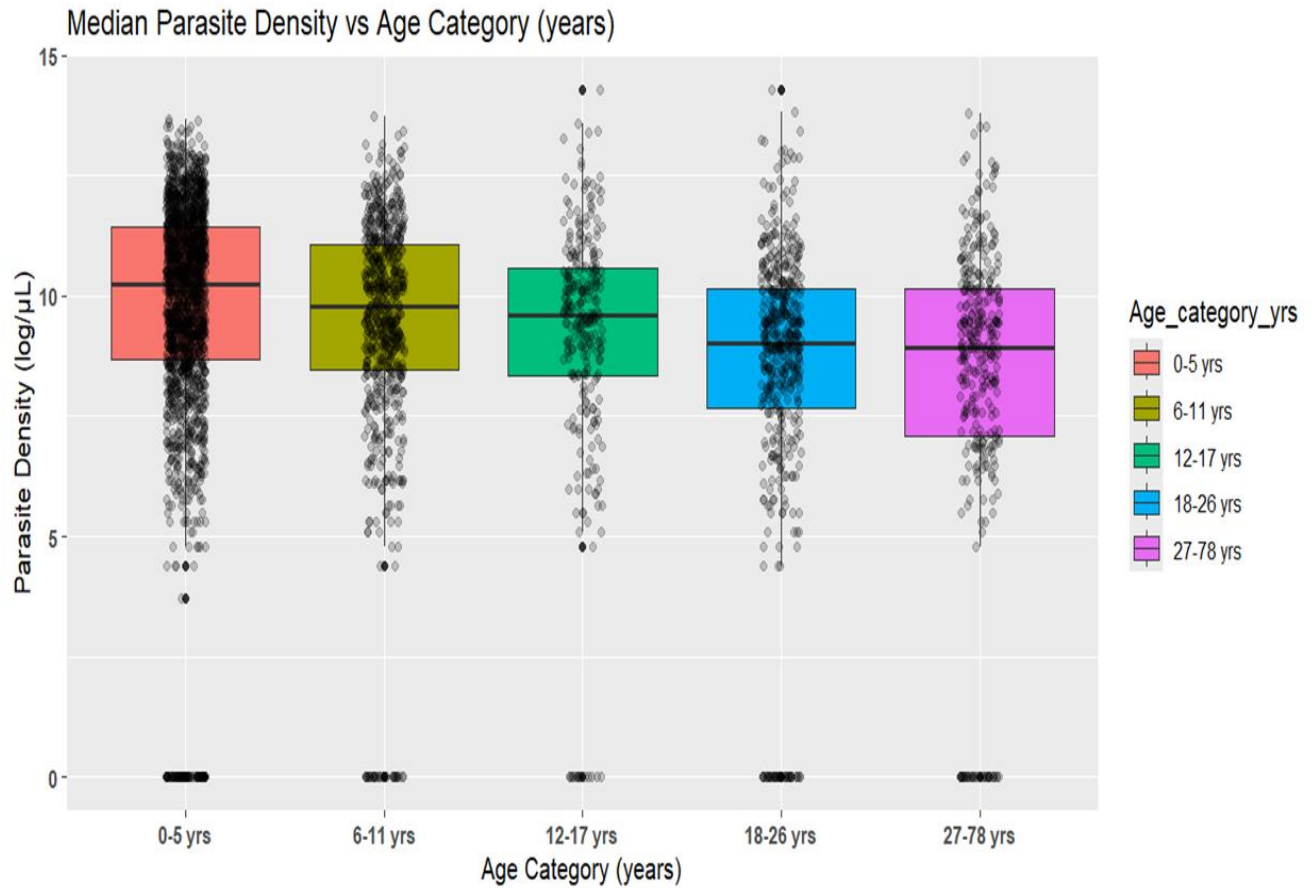
Gladys Chemwor¹, Benjamin Opot¹, Agnes C. Cheruiyot¹, Redemptah Yeda¹, Risper Maisiba¹, Maurine Mwalo¹, Jackline Juma¹, Raphael Okoth¹, Edwin Mwakio¹, Farid Salim¹, Charles Okudo¹, Doris Njoroge¹, Michal Ohaga¹, Milton Obilo³, Christopher Ekuttan³, Robert C. Haynes², Luis Pow Sang², Bernhards R. Ogutu⁴, Dennis Juma¹, Hoseah M. Akala^{1*}



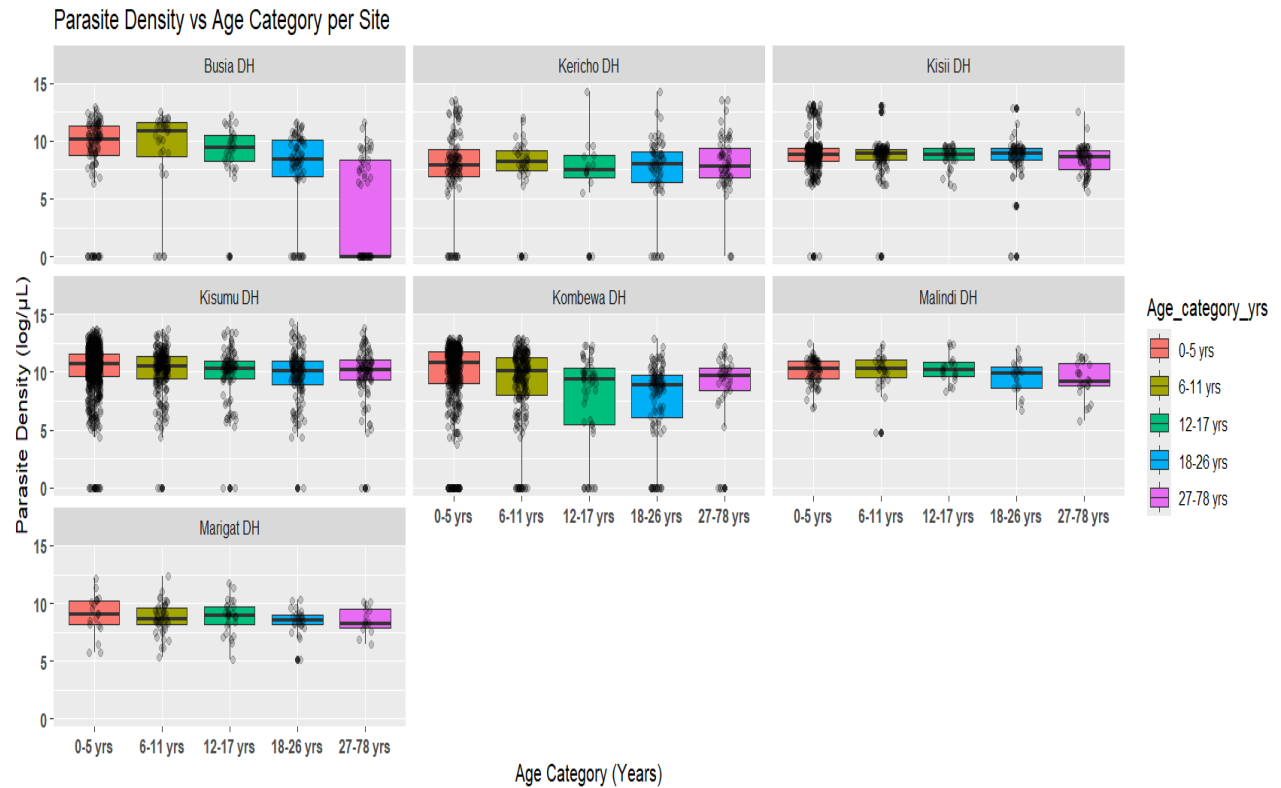
Supplementary Figure 1: Overall age density of the participants. Density plots for the age of the study participants revealed two peaks for young children and young adults.



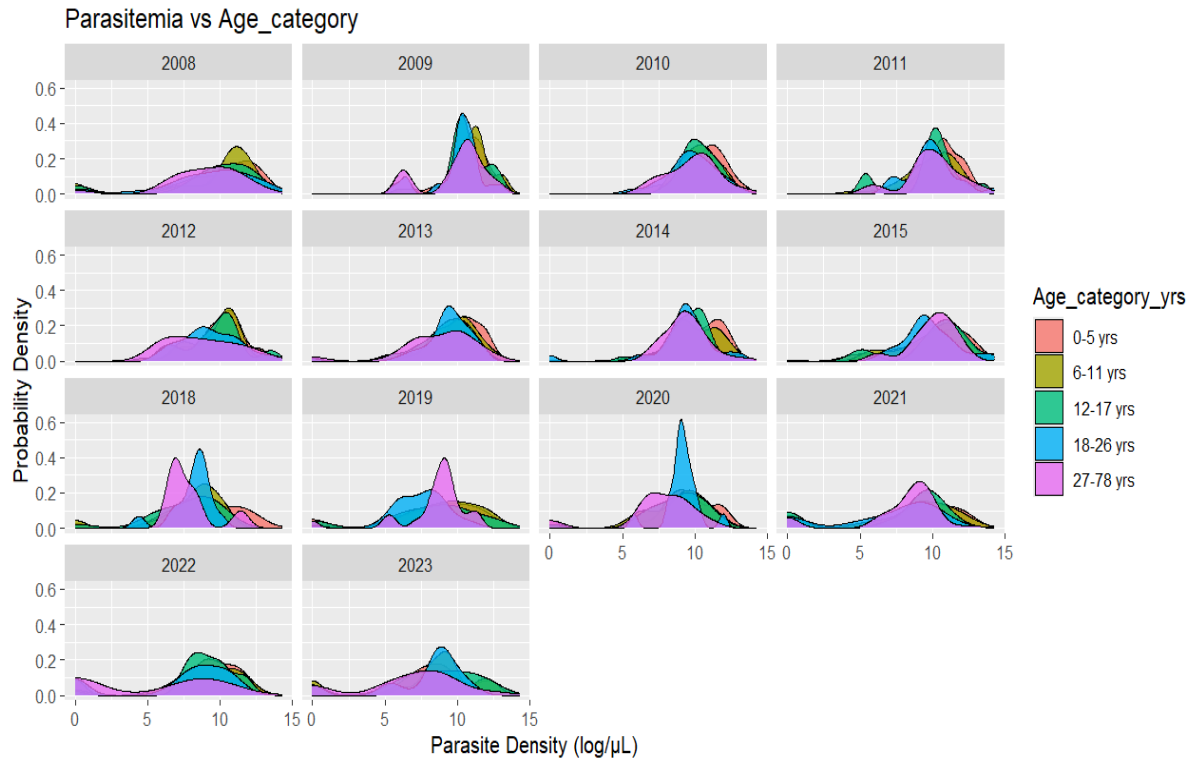
Supplementary Figure 2: Age categories (in years) of participants enrolled during the study period. Each dot represents a participant. The darker regions depict periods with higher number of participants than the less dark zones. Variations occurred within each age-band over time.



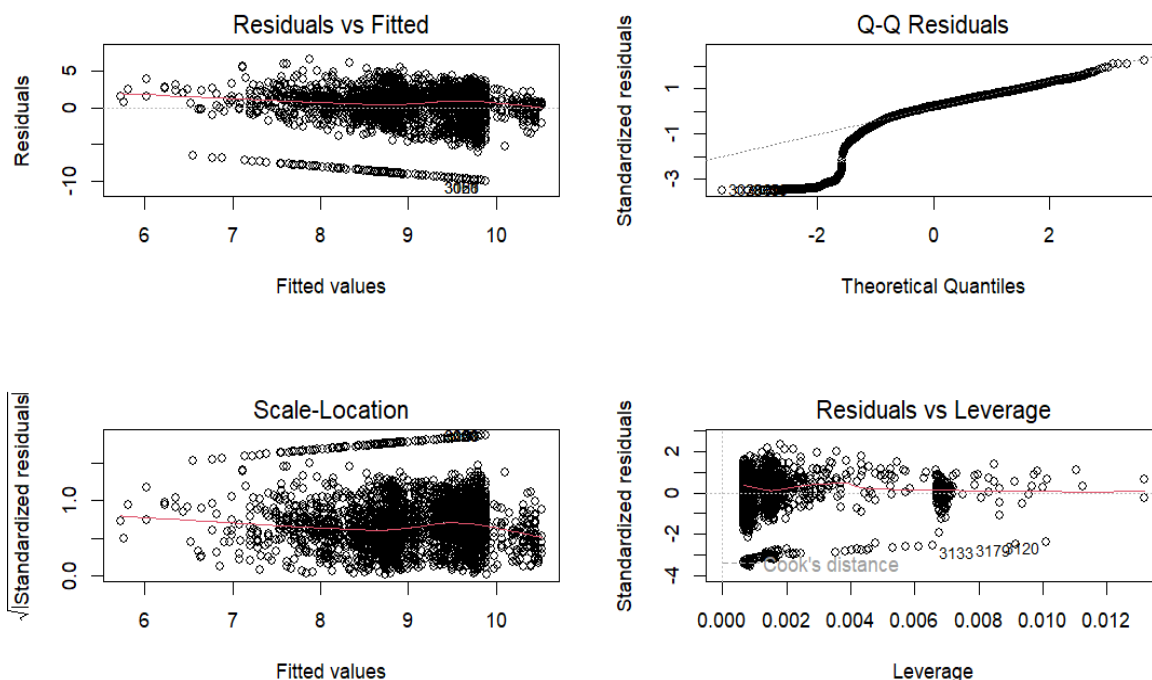
Supplementary Figure 3: Box plots illustrating parasite density across age categories. Each dot represents an observation. The line inside the box represents the median. The whisker represents the range of parasite density values, from smallest to largest. Children had higher parasite density than adults.



Supplementary Figure 4. Box-plots illustrating the distribution of parasite density across five age-bands at seven study sites. The line across each box plot represents the median while the whisker shows the range. There was variation across sites with Kombewa, Kisumu and Marigat having 0-5yrs with high parasitemia compared to the other age categories.



Supplementary Figure 5: Temporal distribution of malaria parasitemia across age categories (2008–2023). Kernel density plots illustrate the distribution of parasite density across five age groups (0–5, 6–11, 12–17, 18–26, and 27–78 years) for each study year. Each panel represents a single year, with colored density curves corresponding to age categories. The x-axis shows parasite density, while the y-axis represents the probability density. Overlapping curves allow comparison of parasitemia patterns across age groups within and between years.



Supplementary Figure 6: Residual plots for assessing performance of the fitted multiple regression model. The dependent variable (parasite density) was log-transformed to improve the model's performance.

Supplementary Table 1: Overall Temporal Age Categories, 2008-2023.

Enrolment Year	0-5 yrs n (%)	6-11 yrs n (%)	12-17 yrs n (%)	18-26 yrs n (%)	27-78 yrs n (%)
2008	141 (60.0)	30 (12.8)	16 (6.8)	27 (11.5)	21 (8.9)
2009	92 (49.5)	39 (21.0)	9 (4.8)	30 (16.1)	16 (8.6)
2010	153 (56.9)	43 (16.0)	23 (8.6)	25 (9.3)	25 (9.3)
2011	147 (59.0)	42 (16.9)	17 (6.8)	22 (8.8)	21 (8.4)
2012	215 (60.1)	49 (13.7)	23 (6.4)	42 (11.7)	29 (8.1)
2013	280 (54.0)	98 (18.9)	29 (5.6)	58 (11.2)	54 (10.4)
2014	401 (56.6)	139 (19.6)	38 (5.4)	66 (9.3)	64 (9.0)
2015	138 (61.3)	41 (18.2)	16 (7.1)	17 (7.6)	13 (5.8)
2018	89 (59.7)	26 (17.5)	14 (9.4)	13 (8.7)	7 (4.7)
2019	133 (42.4)	82 (26.1)	36 (11.5)	41 (13.1)	22 (7.0)
2020	43 (32.6)	39 (29.6)	21 (15.9)	19 (14.4)	10 (7.6)
2021	160 (42.3)	82 (21.7)	30 (7.9)	71 (18.8)	35 (9.3)
2022	130 (36.3)	60 (16.8)	29 (8.1)	87 (24.3)	52 (14.5)
2023	36 (34.6)	16 (15.4)	7 (6.7)	28 (26.9)	17 (16.4)
Total	2158 (51.6)	786 (18.8)	308 (7.4)	546 (13.1)	386 (9.2)

Assessment of the enrolled participants of varying age categories during the study period showed that age 0-5yrs had the highest enrolment followed by 6-11yrs while 12-17yrs were least.

Variable	OR	95% CI		p-value
		Lower	Upper	
Age (Years)	9.67	9.60	9.75	<0.000*
Ecological Region				
Highland Epidemic	1.94	1.22	3.09	<0.000*
Lake Endemic	4.99	3.18	7.85	0.001*
Enrolment Year				
2009	2.84	1.63	4.94	<0.000*
2010	2.42	1.47	3.98	<0.000*
2011	2.11	1.26	3.54	<0.004*
2012	1.29	7.93	2.13	<0.298
2013	1.22	7.73	1.93	<0.391
2014	1.82	1.18	2.80	<0.006*
2015	1.50	8.82	2.55	<0.134
2018	2.48	1.39	4.42	<0.000*
2019	2.67	1.64	4.34	<0.000*
2020	5.05	2.76	9.23	<0.026*
2021	1.49	9.32	2.38	<0.000*
2022	2.09	1.31	3.35	<0.000*
2023	2.59	1.35	4.94	<0.000*

Supplementary Table 2: Multiple linear regression summary table.

*p-value statistically significant

Summary of the multiple linear regression model. The model depicts the association of the dependent variable (parasite density) and the independent variables (age, ecological region and enrolment year). OR = 1 represents no association. CI =95% confidence interval.