Additional file 1

Dog bites and snakebites notified in Sierra Leone, 1 January 2021 to 1 June 2026: a national descriptive surveillance study

Table S1: Annual dog-bite and snakebite notifications, with rates per 100,000 population in parentheses, by district, Sierra Leone, 2021 to 2025.

District	Dog bites					Snakebites				
	2021	2022	2023	2024	2025	2021	2022	2023	2024	2025
Bo	65 (8.6)	21 (2.8)	39 (5.2)	16 (2.1)	19 (2.5)	15 (2.0)	7 (0.9)	34 (4.5)	9 (1.2)	21 (2.8)
Bombali	142 (36.7)	217 (56.0)	212 (54.7)	230 (59.4)	286 (73.9)	66 (17.0)	112 (28.9)	147 (38.0)	149 (38.5)	212 (54.7)
Bonthe	52 (17.5)	28 (9.4)	19 (6.4)	5 (1.7)	5 (1.7)	23 (7.7)	10 (3.4)	6 (2.0)	4 (1.3)	4 (1.3)
Falaba	19 (11.4)	9 (5.4)	18 (10.8)	23 (13.8)	48 (28.9)	18 (10.8)	25 (15.0)	37 (22.3)	32 (19.3)	24 (14.4)
Kailahun	72 (13.1)	62 (11.3)	85 (15.4)	72 (13.1)	67 (12.2)	54 (9.8)	72 (13.1)	79 (14.4)	64 (11.6)	52 (9.4)
Kambia	32 (8.7)	31 (8.4)	46 (12.5)	33 (9.0)	15 (4.1)	30 (8.2)	39 (10.6)	49 (13.3)	28 (7.6)	35 (9.5)
Karene	16 (5.5)	21 (7.2)	17 (5.9)	16 (5.5)	21 (7.2)	32 (11.0)	45 (15.5)	60 (20.7)	53 (18.3)	50 (17.2)
Kenema	57 (7.4)	63 (8.2)	45 (5.8)	58 (7.5)	54 (7.0)	58 (7.5)	48 (6.2)	43 (5.6)	43 (5.6)	23 (3.0)
Koinadugu	15 (7.3)	32 (15.5)	14 (6.8)	27 (13.1)	26 (12.6)	21 (10.2)	62 (30.1)	71 (34.4)	63 (30.6)	46 (22.3)
Kono	142 (22.9)	159 (25.6)	197 (31.7)	310 (49.9)	620 (99.9)	22 (3.5)	33 (5.3)	39 (6.3)	38 (6.1)	32 (5.2)
Moyamba	87 (25.1)	88 (25.4)	57 (16.4)	58 (16.7)	70 (20.2)	30 (8.7)	41 (11.8)	43 (12.4)	41 (11.8)	42 (12.1)
Port Loko	50 (9.5)	58 (11.0)	66 (12.5)	63 (11.9)	40 (7.6)	62 (11.7)	49 (9.3)	106 (20.1)	76 (14.4)	49 (9.3)
Pujehun	75 (17.5)	51 (11.9)	64 (14.9)	52 (12.1)	46 (10.7)	34 (7.9)	40 (9.3)	62 (14.4)	26 (6.1)	24 (5.6)
Tonkolili	37 (6.6)	10 (1.8)	33 (5.9)	72 (12.9)	61 (10.9)	35 (6.3)	42 (7.5)	65 (11.7)	68 (12.2)	28 (5.0)
Western Area Rural	141 (21.3)	109 (16.5)	87 (13.1)	90 (13.6)	105 (15.9)	19 (2.9)	18 (2.7)	26 (3.9)	16 (2.4)	14 (2.1)
Western Area Urban	38 (6.2)	37 (6.1)	40 (6.6)	16 (2.6)	29 (4.8)	1 (0.2)	1 (0.2)	0 (0.0)	8 (1.3)	4 (0.7)
Sierra Leone	**1,040 (13.8)**	**996 (13.2)**	**1,039 (13.8)**	**1,141 (15.1)**	**1,512 (20.0)**	**520 (6.9)**	**644 (8.5)**	**867 (11.5)**	**718 (9.5)**	**660 (8.7)**

Counts are the platform totals for each district and year, which add death entries to case entries. Their five-year sums exceed the case counts of Table 2 by the recorded deaths. Rates use the 2021 census district population.

Eric Nzirakaindi Ikoona et al. Dog bites and snakebites notified in Sierra Leone, 1 January 2021 to 1 June 2026: A national descriptive surveillance study. Journal of Interventional Epidemiology and Public Health. 2026; 9(4):182. https://doi.org/10.37432/jieph-d-26-00188

Table S2: Notified dog-bite and snakebite cases by month and year, Sierra Leone, January 2021 to May 2026.

Event	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	January to May, n (%)
Dog bites	2021	77	78	96	135	67	96	57	45	93	83	86	124	1,037	453 (43.7%)
	2022	88	110	104	95	82	88	73	42	75	69	73	94	993	479 (48.2%)
	2023	66	81	114	85	85	115	69	107	75	81	79	78	1,035	431 (41.6%)
	2024	103	95	104	98	86	73	79	75	71	144	119	85	1,132	486 (42.9%)
	2025	117	127	161	128	139	97	114	89	81	162	161	133	1,509	672 (44.5%)
	2021 to 2025	**451**	**491**	**579**	**541**	**459**	**469**	**392**	**358**	**395**	**539**	**518**	**514**	**5,706**	**2,521 (44.2%)**
	2026, January to May	*154*	*137*	*155*	*130*	*141*								*NC*	*717*
Snakebites	2021	0	3	29	65	57	38	61	42	60	44	55	40	494	154 (31.2%)
	2022	26	31	36	36	39	66	82	71	60	50	65	52	614	168 (27.4%)
	2023	35	30	43	65	76	95	83	119	85	64	90	51	836	249 (29.8%)
	2024	43	39	40	36	68	58	93	70	65	75	67	37	691	226 (32.7%)
	2025	28	33	22	45	62	87	92	63	58	72	46	42	650	190 (29.2%)
	2021 to 2025	**132**	**136**	**170**	**247**	**302**	**344**	**411**	**365**	**328**	**305**	**323**	**222**	**3,285**	**987 (30.0%)**
	2026, January to May	*37*	*16*	*52*	*58*	*58*								*NC*	*221*

Counts are notified cases from the weekly reports, grouped by calendar month. NC, not calculated for a partial year. The percentage is the January to May share of the yearly total. From May to October, the months of the rainy season, facilities notified 2,612 (45.8%) of 5,706 dog bites and 2,055 (62.6%) of 3,285 snakebites from 2021 to 2025. Deaths recorded from January to May numbered 1, 1, 3, 6, 3 and 6 after dog bites and 9, 4, 7, 9, 4 and 3 after snakebites in 2021 to 2026. Snakebite joined the weekly form in January 2021, and the first snakebite notifications date from February 2021.

Table S3: Notified dog-bite and snakebite cases, notification rates, recorded deaths and notified case fatality ratios by age band of the weekly form, Sierra Leone, 2021 to 2025.

Age band	Population (share)	Dog bites				Snakebites			
		Notified cases (% of event)	Rate per 100,000 per year (95% CI)	Deaths	CFR, % (95% CI)	Notified cases (% of event)	Rate per 100,000 per year (95% CI)	Deaths	CFR, % (95% CI)
Under 5 years	998,870 (13.2%)	1,002 (17.6%)	20.1 (18.8 to 21.3)	7	0.70 (0.28 to 1.43)	300 (9.1%)	6.0 (5.3 to 6.7)	8	2.67 (1.16 to 5.19)
5 years and older	6,549,832 (86.8%)	4,704 (82.4%)	14.4 (14.0 to 14.8)	15	0.32 (0.18 to 0.53)	2,985 (90.9%)	9.1 (8.8 to 9.4)	116	3.89 (3.22 to 4.64)
All	**7,548,702 (100%)**	**5,706 (100%)**	**15.1 (14.7 to 15.5)**	**22**	**0.39 (0.24 to 0.58)**	**3,285 (100%)**	**8.7 (8.4 to 9.0)**	**124**	**3.77 (3.15 to 4.48)**
Rate ratio, under 5 years against 5 years and older (95% CI)			*1.40 (1.30 to 1.50)*				*0.66 (0.59 to 0.74)*		

CFR, notified case fatality ratio: deaths recorded among notified cases divided by notified cases. CI, confidence interval, exact Poisson for rates and exact binomial for CFRs. Age-band populations apply the under-5 share of the 2015 census, 938,453 of 7,092,113 (13.2%), to the 2021 census population of 7,548,702. Person-years are the population multiplied by five. Every notification carried an age band. The intervals reflect the counts and carry no allowance for the age-structure assumption.

Table S4: Case-based dog-bite and snakebite records by age in years, Sierra Leone, 2021 to 2025.

Age	Dog bites, n (%)	Snakebites, n (%)	Population share, 2015 census
Under 5 years	263 (9.6%)	41 (3.4%)	13.2%
5 to 14 years	942 (34.5%)	204 (16.8%)	28.8%
15 to 24 years	575 (21.1%)	315 (25.9%)	58.0% (15 years and older)
25 to 44 years	625 (22.9%)	475 (39.0%)	
45 to 64 years	254 (9.3%)	159 (13.1%)	
65 years and older	71 (2.6%)	23 (1.9%)	
All with age recorded	**2,730 (100.0%)**	**1,217 (100.0%)**	**100%**

Age is age in completed years on the case-based record. One snakebite record had no age. In the weekly aggregate counts, children under 5 years formed 1,002 (17.6%) of 5,706 dog bites and 300 (9.1%) of 3,285 snakebites (Table S3).

Table S5: National notification rates per 100,000 population per year under the census denominator and two population growth assumptions, Sierra Leone, 2021 to 2025.

Event	Denominator	2021	2022	2023	2024	2025	2021 to 2025	Rate ratio, 2025 against 2021
Dog bites	2021 census population in every year	13.7	13.2	13.7	15.0	20.0	15.1	1.46
	Growth of 1.04% a year (intercensal rate)	13.7	13.0	13.4	14.5	19.2	14.8	1.40
	Growth of 2.2% a year (United Nations estimate)	13.7	12.9	13.1	14.0	18.3	14.5	1.33
Snakebites	2021 census population in every year	6.5	8.1	11.1	9.2	8.6	8.7	1.32
	Growth of 1.04% a year (intercensal rate)	6.5	8.1	10.8	8.9	8.3	8.5	1.26
	Growth of 2.2% a year (United Nations estimate)	6.5	8.0	10.6	8.6	7.9	8.3	1.21

Under each growth assumption, the 2021 census population of 7,548,702 was compounded forward one year at a time from 2021. The same growth rate was applied to every district. Five-year rates fall by 2.1% at 1.04% growth and by 4.3% at 2.2% growth.

Table S6: Mean annual district notification rates per 100,000 population, with district rank in parentheses, under 2021 and 2015 census denominators, Sierra Leone, 2021 to 2025.

District	Population, 2015 census	Population, 2021 census	Change, %	Dog-bite rate (rank)		Snakebite rate (rank)	
				2021 census	2015 census	2021 census	2015 census
Bo	575,478	756,975	+31.5	4.2 (16)	5.5 (15)	2.2 (15)	2.8 (15)
Bombali	422,960	387,236	−8.4	56.1 (1)	51.4 (2)	34.7 (1)	31.8 (1)
Bonthe	200,781	297,561	+48.2	7.3 (12)	10.8 (9)	3.1 (13)	4.6 (13)
Falaba	205,353	166,205	−19.1	14.1 (5)	11.4 (7)	15.9 (3)	12.9 (4)
Kailahun	526,379	550,435	+4.6	13.0 (7)	13.6 (6)	11.3 (6)	11.9 (7)
Kambia	345,474	367,699	+6.4	8.5 (10)	9.1 (11)	9.3 (8)	9.9 (9)
Karene	285,546	290,313	+1.7	6.1 (14)	6.2 (14)	15.4 (4)	15.7 (3)
Kenema	609,891	772,472	+26.7	7.1 (13)	9.0 (12)	5.3 (11)	6.7 (11)
Koinadugu	204,019	206,133	+1.0	11.1 (8)	11.2 (8)	25.3 (2)	25.6 (2)
Kono	506,100	620,703	+22.6	46.0 (2)	56.4 (1)	5.3 (12)	6.4 (12)
Moyamba	318,588	346,771	+8.8	20.6 (3)	22.5 (4)	11.0 (7)	12.0 (5)
Port Loko	530,865	528,038	−0.5	10.4 (9)	10.4 (10)	12.0 (5)	11.9 (6)
Pujehun	346,461	429,574	+24.0	13.4 (6)	16.6 (5)	8.3 (9)	10.3 (8)
Tonkolili	513,984	557,257	+8.4	7.6 (11)	8.2 (13)	8.1 (10)	8.8 (10)
Western Area Rural	444,270	662,156	+49.0	16.0 (4)	23.9 (3)	2.7 (14)	4.1 (14)
Western Area Urban	1,055,964	609,174	−42.3	5.1 (15)	2.9 (16)	0.5 (16)	0.3 (16)
Sierra Leone	**7,092,113**	**7,548,702**	**+6.4**	**15.1**	**16.1**	**8.7**	**9.3**

Rates are notified cases over the five complete years divided by five times the census district population. Rank 1 is the highest rate. The 2015 populations are the 2015 Population and Housing Census totals for the current 16 districts. Spearman rank correlation between the two sets of district rates is 0.96 for dog bites and 0.99 for snakebites.

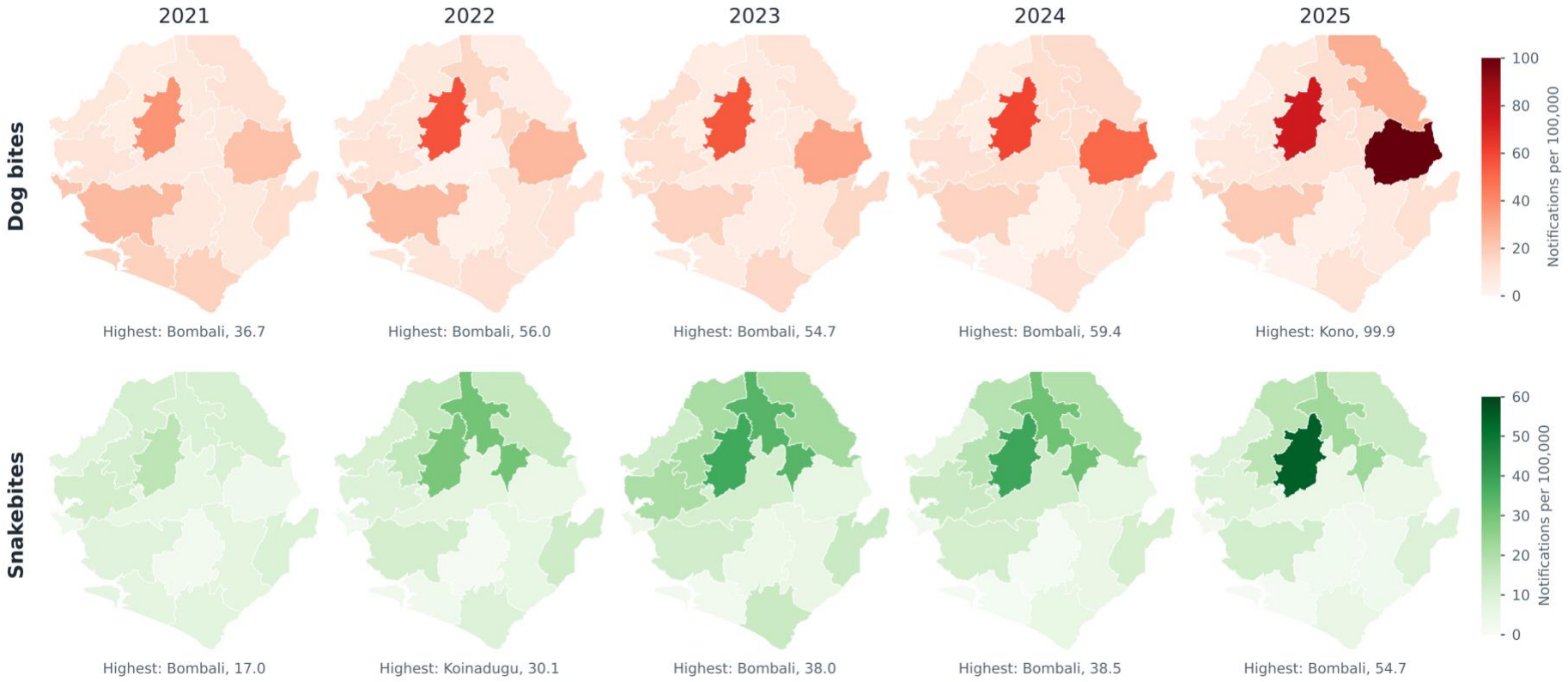
Table S7: STROBE checklist for observational studies, with the RECORD items for routinely collected health data, and the location of each item in the manuscript.

Item	Recommendation	Location in the manuscript
STROBE 1a	Study design in the title or abstract	Title; Abstract, Methods
STROBE 1b	Informative and balanced abstract	Abstract
RECORD 1.1 to 1.3	Type of data, region and time frame in the title or abstract; linkage	Title; Abstract. No record linkage was performed
STROBE 2	Scientific background and rationale	Introduction, paragraphs 1 to 6
STROBE 3	Objectives	Introduction, final paragraph
STROBE 4	Key elements of study design	Methods, Study design
STROBE 5	Setting, locations and dates	Methods, Setting; Data source and preparation
STROBE 6	Eligibility criteria and sources of participants	Methods, Surveillance system and case definitions; Data source and preparation
RECORD 6.1 to 6.3	Methods of population selection; validation; linkage	Methods, Surveillance system and case definitions. Case definitions are clinical; no validation study or record linkage
STROBE 7	Outcomes, exposures and other variables	Methods, Surveillance system and case definitions; Measures and population denominators
RECORD 7.1	Codes and algorithms used to classify outcomes	Methods, Surveillance system and case definitions
STROBE 8	Data sources and measurement	Methods, Surveillance system and case definitions; Data source and preparation
STROBE 9	Efforts to address bias	Methods, Data source and preparation (triangulation of three aggregate exports); Measures and population denominators (sensitivity analysis)
STROBE 10	Study size	Methods, Data source and preparation (all notifications, no exclusions)
STROBE 11	Handling of quantitative variables	Methods, Measures and population denominators
STROBE 12	Statistical methods, missing data and sensitivity analyses	Methods, Data source and preparation; Measures and population denominators; Statistical analysis
RECORD 12.1 to 12.3	Data access, cleaning methods and linkage	Methods, Data source and preparation. No record linkage was performed
STROBE 13	Numbers of participants	Results, Notifications and deaths
RECORD 13.1	Selection of the persons included	Methods, Data source and preparation
STROBE 14	Descriptive data	Results, Person; Figure 1; Additional file 1, Tables S3 and S4
STROBE 15	Outcome data	Results, Notifications and deaths; Time; Tables 1 and 2
STROBE 16	Main results with precision	Results, Time; Person; Place; Tables 1 and 2; Figure 2; Additional file 1, Table S1 and Figure S1
STROBE 17	Other analyses	Results, Time, final paragraph; Place, final paragraph; Additional file 1, Tables S2, S5 and S6
STROBE 18	Key results with reference to the objectives	Discussion, first paragraph
STROBE 19	Limitations	Discussion, Strengths and limitations
RECORD 19.1	Implications of using data collected for another purpose	Discussion, Strengths and limitations
STROBE 20	Interpretation	Discussion, Dog bites; Snakebites
STROBE 21	Generalizability	Discussion, Implications for policy and practice, final paragraph
STROBE 22	Funding	Title page
RECORD 22.1	Access to protocol, raw data and programming code	Methods, Statistical analysis; Additional file 2

STROBE, Strengthening the Reporting of Observational Studies in Epidemiology. RECORD, Reporting of Studies Conducted Using Observational Routinely Collected Health Data.

Eric Nzirakaindi Ikoona et al. Dog bites and snakebites notified in Sierra Leone, 1 January 2021 to 1 June 2026: A national descriptive surveillance study. Journal of Interventional Epidemiology and Public Health. 2026; 9(4):182. https://doi.org/10.37432/jieph-d-26-00188

Figure S1: Annual dog-bite and snakebite notification rates per 100,000 population by district, Sierra Leone, 2021 to 2025.



Each panel maps the platform totals of Table S1 over the 2021 census district population. The label under each panel names the district with the highest rate in that year. District names appear in Figure 2.