Supplementary Material:

Spatial patterns of child mortality in Nanoro HDSS site, Burkina Faso

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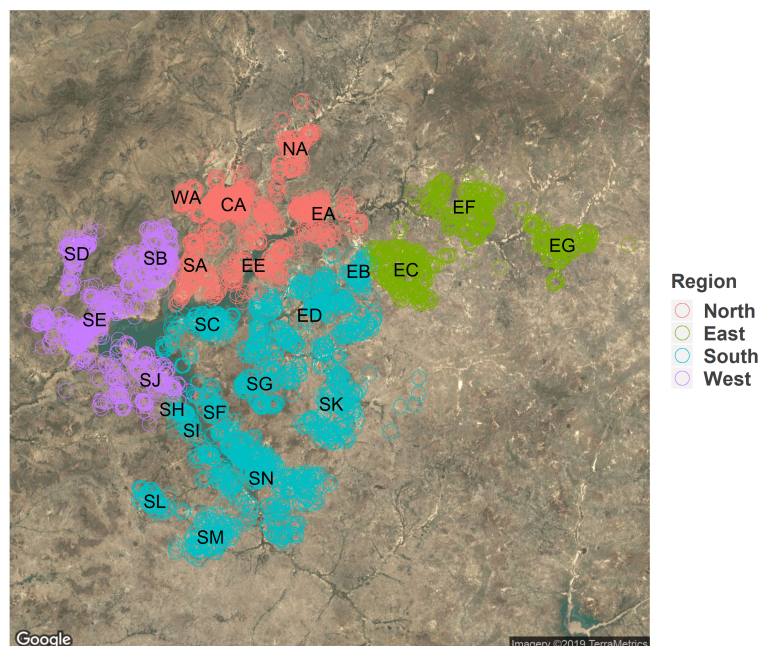
[¥]Equally contributed

Figure S 1. The Nanoro health district is divided to four regions; north, east, south and west of lake.
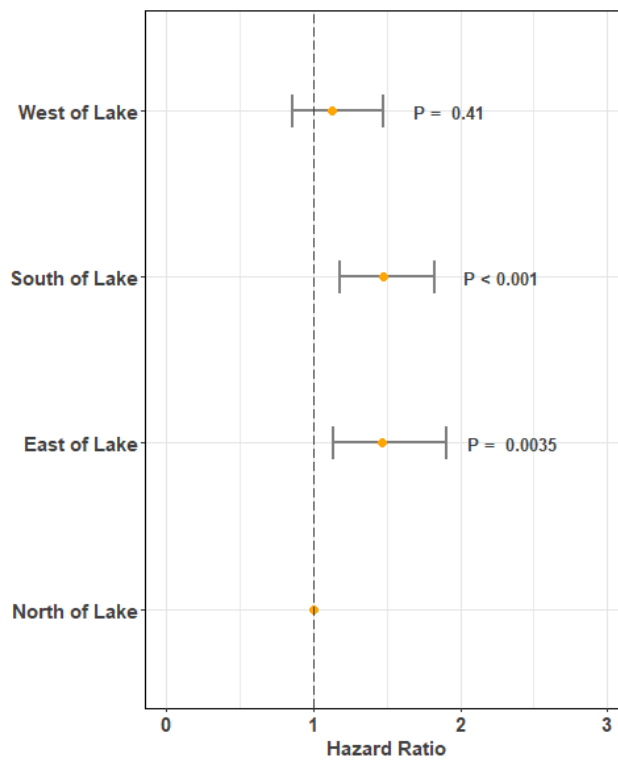
Figure S 2. Hazard ratios associated with the probability of mortality of children under-5. Risk factors reducing the probability of death have hazard ratios lower than 1 to the left of the vertical dashed line. Hazard ratios (yellow points), 95% confidence intervals (horizontal lines) and the p values are given. The variables with the yellow points on the vertical dashed line represent the reference groups.
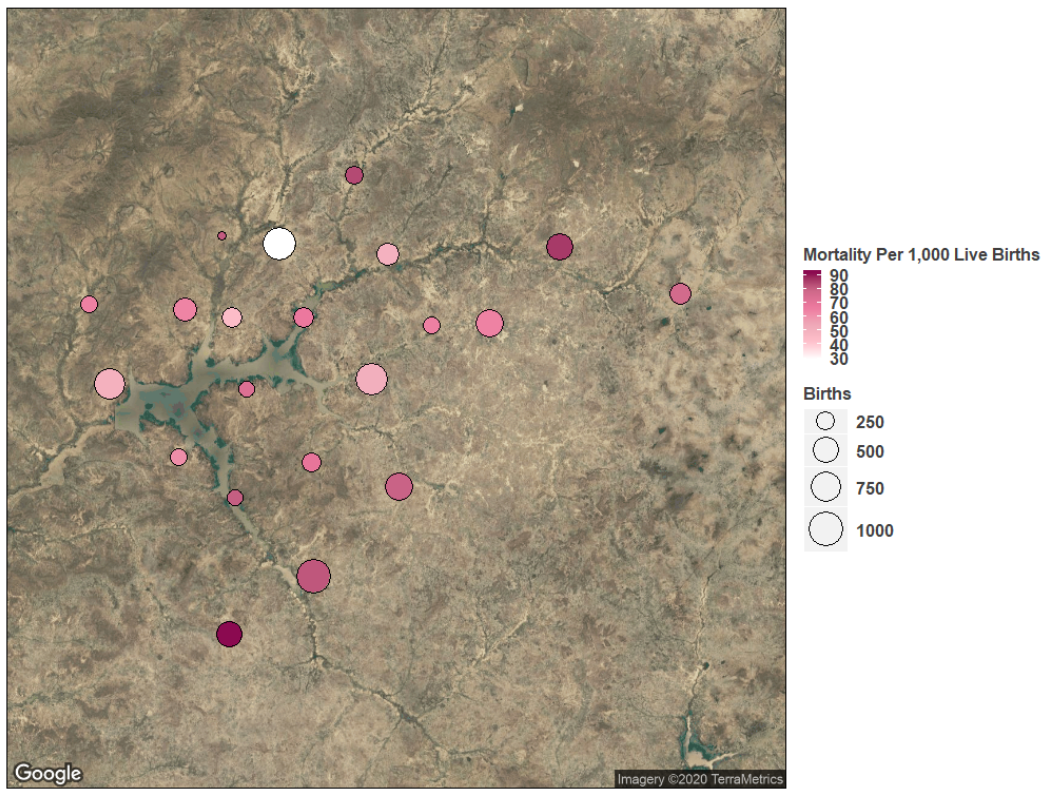
Figure S 3. Mortality per 1,000 live births per village for children under-5. Each circle represents a village and the size of circle represents the number of live births. The lighter color indicates lower mortality rate and darker color indicates a higher mortality rate.
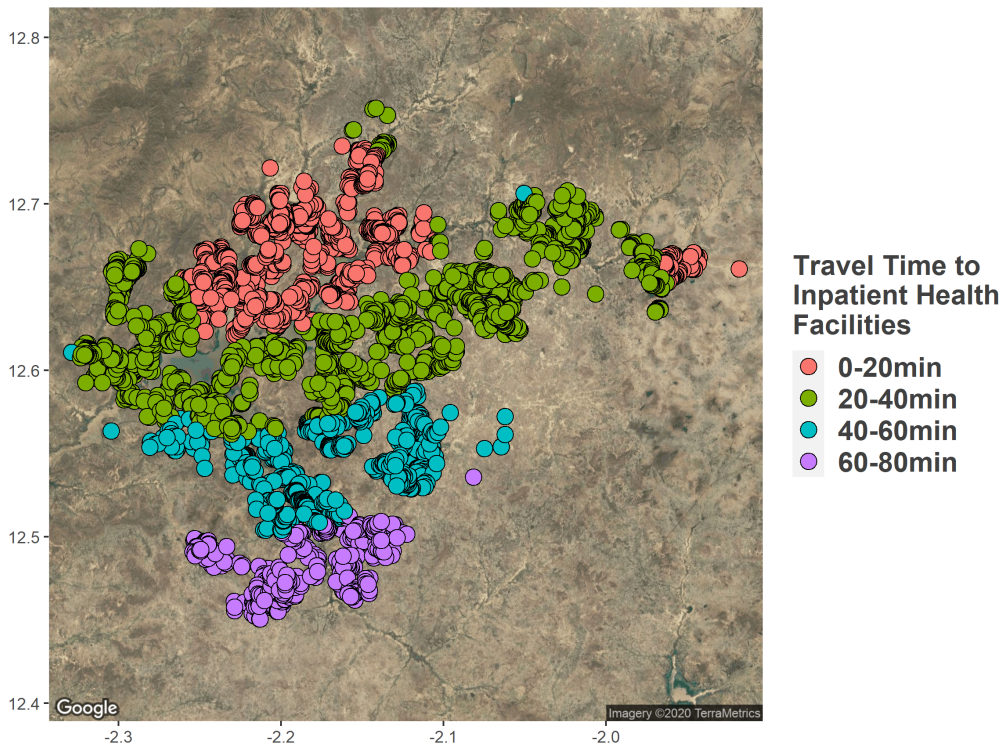
Figure S 4. Travel time of children under-5, living in the Nanoro health district, from an inpatient health facility. Each circle represents an individual.
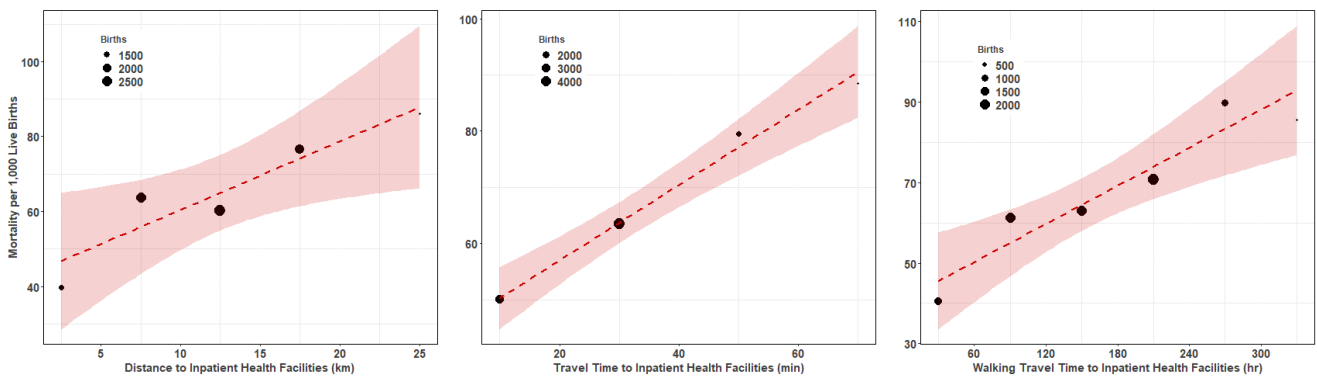

Figure S 5. Mortality per 1,000 live births for children under-5 versus subgroups of distance, travel time and walking travel time to inpatient health facilities. Circle size represents the number of births within each subgroup.

Figure S 6. Mortality per 1,000 live births for children under-5 versus subgroups of distance, travel time and walking travel time to outpatient health facilities.Circle size represents the number of births within each subgroup.
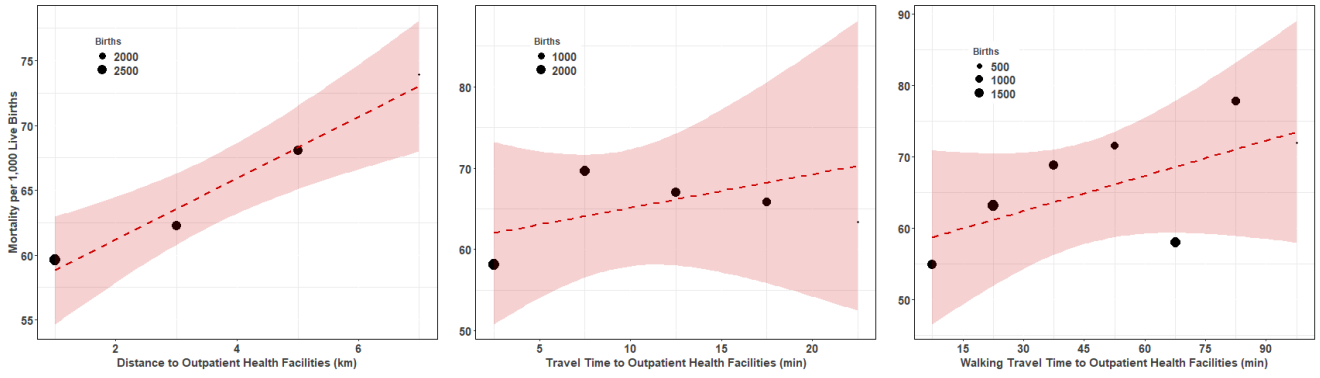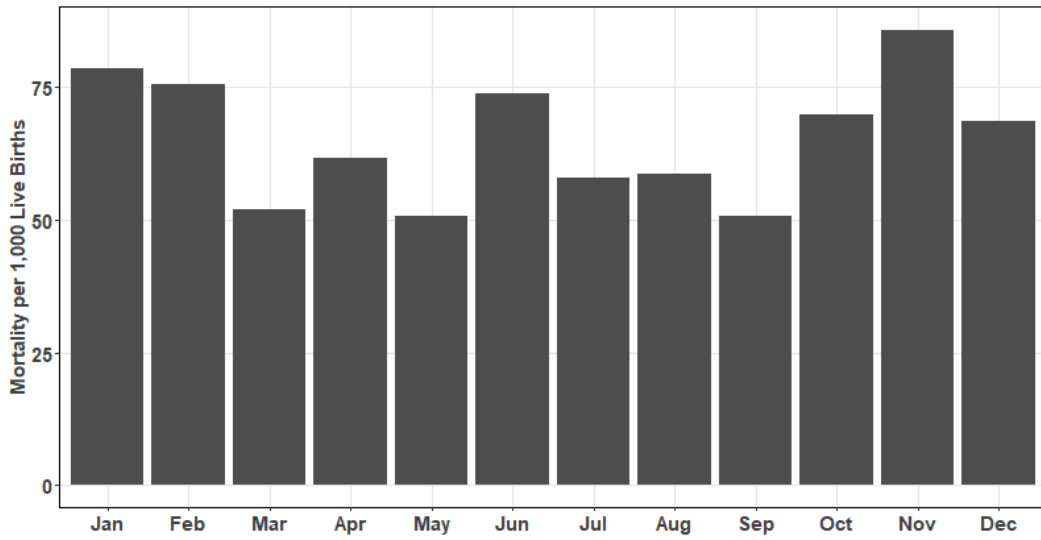

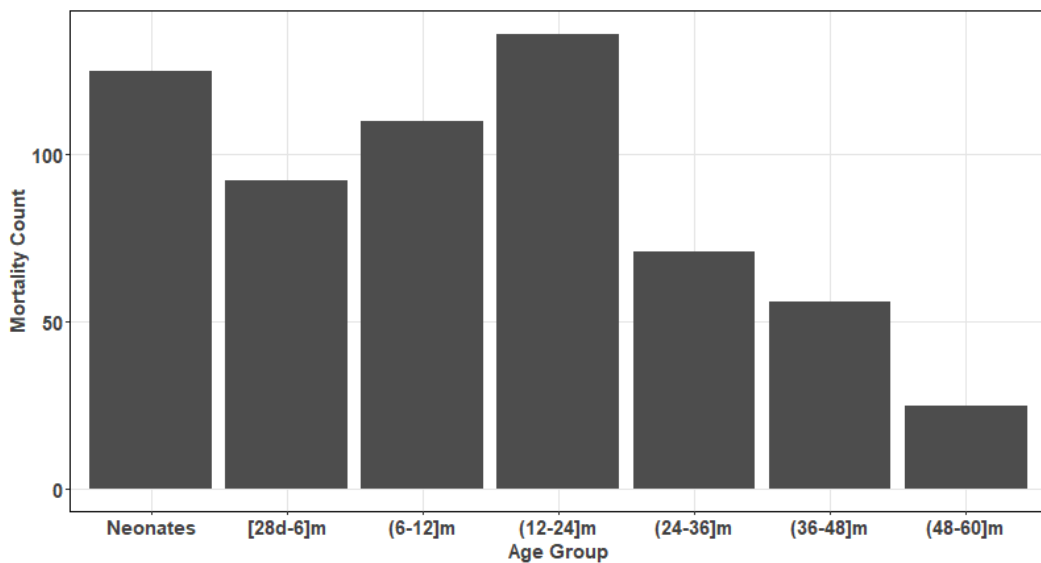**Figure S 7.** Mortality per 1,000 live births for each event month.

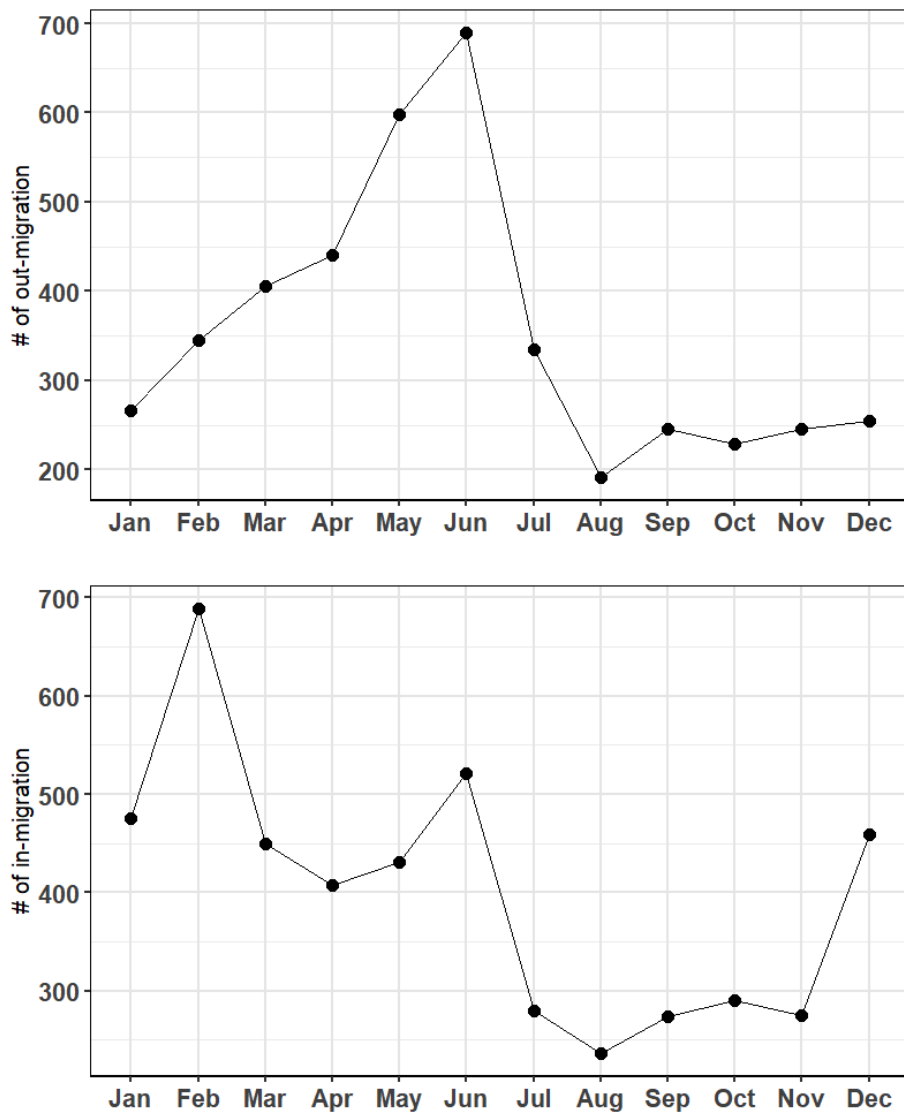**Figure S 8.** Mortality count by age group.

Figure S 9. In- and out-migration count by month.

Table S 1. Results of unadjusted Cox regression models for under-5 mortality. Hazard Ratios are presented with 95% confidence intervals in parentheses.

Parameters	Mortality per 1,000 live births	Hazard ratio	P-value
Distance to inpatient health facilities (km)			
$[0-5)$	39.69	-	-
$[5-10)$	63.70	1.48 (1.02,2.24)	0.045
$[10-15)$	60.19	1.42 (0.94,2.22)	0.11
$[15-20)$	76.52	1.77 (1.16,2.69)	0.008
20+	86.05	2.04 (1.34,3.09)	< 0.001
Walking travel time to inpatient health facilities (hr)			
$[0-1)$	40.39	-	-
$[1-2)$	61.31	1.39 (0.94, 2.07)	0.09
$[2-3)$	62.98	1.45 (0.95, 2.21)	0.08
$[3-4)$	70.77	1.63 (1.05, 2.53)	0.03
$[4-5)$	89.92	2.05 (1.35, 3.108)	< 0.001
5+	85.5	2.08 (1.18, 3.66)	0.01
Distance to outpatient health facilities (km)			
$[0-2)$	59.6	-	-
$[2-4)$	68.07	1.13 (0.85, 1.5)	0.43
$[4-6)$	62.27	1.03 (0.76, 1.4)	0.85
6+	73.93	1.19 (0.84, 1.72)	0.32
Walking travel time to outpatient health facilities (min)			
$[0-15)$	54.89	-	-
$[15-30)$	63.1	1.14 (0.68,1.92)	0.62
$[30-45)$	68.77	1.26 (0.79,2.02)	0.34
$[45-60)$	71.5	1.24 (0.73,2.10)	0.41
$[60-75)$	58.09	1.05 (0.64,1.73)	0.85
$[75-90)$	77.8	1.37 (0.79,2.35)	0.24
90+	71.9	1.31 (0.72,2.37)	0.38
Gender			
Male	66.87	-	-
Female	62.83	0.94 (0.80,1.1)	0.43
Religion			
Animist	71.71	-	-
Catholic	54.58	0.85 (0.67, 1.083)	0.19
Muslim	66.14	1.03 (0.83, 1.29)	0.75
Protestant	51.65	0.74 (0.52,1.05)	0.1
Unknown	155.04	1.82 (1.24, 2.65)	0.002
Ethnicity			
Mossi	63.61	-	-
Peulh	43.67	0.73 (0.38, 1.41)	0.35
Gourounsi	60	0.93 (0.77,1.12)	0.43
Unknown	137.4	1.68 (1.31,2.16)	< 0.001
Maternal education status*			
No Education	43.79	-	-
Some Education	20.07	0.48 (0.27,0.84)	0.01
Multiple birth status*			
Singleton	39.20	-	-
Twin/Triplet/Quadruplet	97.11	2.59 (1.72,3.91)	< 0.001

* Children born after the HDSS establishment.

Table S 2. Results of unadjusted cox regression models for under-5 mortality per 1,000 live births. Each risk factor was fitted to the model as a continuous variable. Hazard Ratios are presented with 95% confidence intervals in parentheses.

Parameters	Children Under-5	
	Hazard Ratio	P-value
Event month	1.05 (1.01,1.8)	0.009
Age (month)	0.97 (0.96,0.98)	< 0.001
Distance to inpatient health facilities (km)	1.03 (1.015,1.048)	< 0.001
Travel time to inpatient health facilities (min)	1.01 (1.004,1.015)	< 0.001
Walking travel time to inpatient health facilities (min)	1.002 (1.001,1.004)	< 0.001
Distance to outpatient health facilities (km)	1.022 (0.96,1.089)	0.46
Travel time to outpatient health facilities (min)	1.008 (0.985,1.031)	0.51
Walking travel time to outpatient health facilities (min)	1.002 (0.997,1.007)	0.40