Supplemental file S1.

The following tables (Tables S1–S6) depict results of spatial scan statistics analysis (separately for the six kebeles).

We only reported the most likely clusters irrespective of their significant level.

Table S7 describes the socio-geographic profiles of the six kebeles.

Table S1 –Purely spatial scans statistics of the most likely clusters for wasting and stunting, Bati Lejano Kebele, Butajera, Ethiopia 2014,

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Wasting | Severe wasting | Severe underweight | Stunting | Severe stunting |
| Houses included in the cluster | 17 | 15 | 15 | 158 | 172 |
| Coordinates | 8.10342N38.4734E | 8.10339N38.4728E | 8.10492N38.4732E | 8.01728N38.4692E | 8.01728N38.4692E |
| Radius(decimal degree) | 0.0025 | 0.0024 | 0.0021 | 0.080 | 0.080 |
| Population (children) | 17 | 15 | 15 | 158 | 172 |
| Observed cases | 8 | 7 | 7 | 85 | 46 |
| Expected cases | 1.67 | 0.88 | 1.5 | 63.99 | 32.32 |
| Cases/100000 | 46961.4 | 46570.1 | 46570.1 | 53686.1 | 26688.8 |
| observed / Expected | 4.8 | 7.98 | 4.66 | 1.33 | 1.42 |
| Relative risk (RR) | 5.57 | 10.31 | 5.28 | 1.58 | 1.87 |
| Log likelihood ratio | 6.674690 | 9.168306 | 5.610188 | 4.920049 | 4.325985 |
| P-value | 0.16 | 0.015 | 0.36 | 0.62 | 0.75 |

Table S2 –Purely spatial scans statistics of the most likely clusters for wasting and stunting, Dobena Kebele, Butajera, Ethiopia 2014,

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Wasting | Severe wasting | Severe underweight | Stunting | Severe stunting |
| Houses included in the cluster | 16 | 8 | 6 | 26 | 64 |
| Coordinates | 8.077590 N, 38.436760 E | 8.072370 N, 38.440850 E | 8.071860 N38.440980 E | 8.095710 N38.436970 E | 8.073010 N 38.440990 E |
| Radius(decimal degree)  | 0.19  | 0.10  | 0.10  | 0.12  | 0.36  |
| Population (children) | 16 | 8 | 6 | 26 | 64 |
| Observed cases | 6 | 4 | 4 | 21 | 30 |
| Expected cases | 1.42 | 0.31 | 0.45 | 13.51 | 15.77 |
| Cases/100000 | 37422.4 | 49896.5 | 66528.7 | 80602.1 | 46778.0 |
| observed / Expected | 4.23 | 12.82 | 8.95 | 1.55 | 1.9 |
| Relative risk (RR) | 4.67 | 15.44 | 9.79 | 1.6 | 2.15 |
| Log likelihood ratio | 4.294818 | 6.848533 | 5.370928 | 1.875899 | 5.914730 |
| P-value | 0.76 | 0.11 | 0.42 | 1.00 | 0.31 |

Table S3 –Purely spatial scans statistics of the most likely clusters for wasting and stunting, Dirama Kebele, Butajera, Ethiopia 2014,

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Wasting | Severe wasting | Severe underweight | Stunting | Severe stunting |
| Houses included in the cluster | 156 | 124 | 159 | 29 | 9 |
| Coordinates | 8.16329N38.4033E | 8.17072N38.3995E | 8.16381N38.4026E | 8.1565N,38.4224E | 8.15717N38.4217E |
| Radius(decimal degree) | 0.011 | 0.016 |  0.012 | 0.0019 | 0.00097 |
| Population (children) | 156 | 124 | 159 | 29 | 9 |
| Observed cases | 31 | 16 | 22 | 20 | 7 |
| Expected cases | 18.18 | 7.99 | 13.17 | 10.76 | 1.57 |
| Cases/100000 | 19830.7 | 12876.5 | 13807.8 | 68822.8 | 77616.8 |
| observed / Expected | 1.7 | 2.00 | 1.67 | 1.86 | 4.45 |
| Relative risk (RR) | 4.83 | 5.21 | 4.62 | 2.03 | 4.93 |
| Log likelihood ratio | 9.252676 | 6.332639 | 6.202896 | 3.552882 | 5.296089 |
| P-value | 0.0075 | 0.11 | 0.14 | 0.86 | 0.32 |

Table S4 –Purely spatial scans statistics of the most likely clusters for wasting and stunting, Misrak Meskane Kebele, Butajera, Ethiopia 2014,

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Wasting | Severe wasting | Severe underweight | Stunting | Severe stunting |
| Houses included in the cluster | 23 | 7 | 16 | 30 | 6 |
| Coordinates | 8.04732N38.3333E | 8.05298N38.3098 E | 8.0446138.3142E | 8.05354N38.3224E | 8.04837N38.3228E |
| Radius(decimal degree) | 0.0023 | 0.00083 | 0.0023 | 0.0058 | 0.0016 |
| Population (children) | 23 | 7 | 16 | 30 | 6 |
| Observed cases | 8 | 4 | 5 | 21 | 6 |
| Expected cases | 1.97 | 0.32 | 0.89 | 10.69 | 1.02 |
| Cases/100000 | 34710.6 | 57024.6 | 31185.3 | 69855.1 | 99793.0 |
| observed / Expected | 4.07 | 12.6 | 5.61 | 1.97 | 5.89 |
| Relative risk (RR) | 4.49 | 14.1 | 6.22 | 2.04 | 6.13 |
| Log likelihood ratio | 5.486180 | 6.656266 | 4.721678 | 4.076722 | 5.757573 |
| P-value | 0.47 | 0.19 | 0.69 | 0.93 | 0.4 |

Table S5 –Purely spatial scans statistics of the most likely clusters for wasting and stunting, Shershera Bido Kebele, Butajera, Ethiopia 2014,

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Wasting | Severe wasting | Severe underweight | Stunting | Severe stunting |
| Houses included in the cluster | 7 | 3 | 7 | 49 | 114 |
| Coordinates | 8.17159N38.4348E | 8.17108N38.4346E | 8.17159N38.4348E | 8.17454N38.4365E | 8.17565N38.4296E |
| Radius(decimal degree) | 0.0020 | 0.00055 | 0.0020 | 0.0037 | 0.0089 |
| Population (children) | 7 | 3 | 7 | 49 | 114 |
| Observed cases | 5 | 3 | 3 | 26 | 27 |
| Expected cases | 0..94 | 0.26 | 0.55 | 15.13 | 17.35 |
| Cases/100000 | 71280.7 | 99793.0 | 42768.4 | 52951.4 | 23635.2 |
| observed / Expected | 5.3 | 11.5 | 5.48 | 1.72 | 1.56 |
| Relative risk (RR) | 6.13 | 13.35 | 6.37 | 2.13 | 3.43 |
| Log likelihood ratio | 4.568538 | 4.787417 | 2.830019 | 4.343988 | 5.612642 |
| P-value | 0.39 | 0.34 | 0.91 | 0.51 | 0.18 |

Table S6 –Purely spatial scans statistics of the most likely clusters for wasting and stunting, Yeteker Kebele, Butajera, Ethiopia 2014,

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Wasting | Severe wasting | Severe underweight | Stunting | Severe stunting |
| Houses included in the cluster | 23 | 7 | 113 | 30 | 6 |
| Coordinates | 8.04732N38.3333E | 8.05298N38.3098E | 8.04811N38.3113E | 8.05354N38.3224E | 8.04837N38.3228) E |
| Radius(decimal degree) | 0.0023 | 0.00083 |  0.0052 | 0.0058 | 0.0016 |
| Population (children) | 23 | 7 | 113 | 30 | 6 |
| Observed cases | 8 | 4 | 14 | 21 | 6 |
| Expected cases | 2.43 | 0.37 | 6.55 | 10.43 | 1.01 |
| Cases/100000 | 34710.6 | 57024.6 | 12363.7 | 69855.1 | 99793.0 |
| observed / Expected | 3.29 | 10.8 | 2.14 | 2.01 | 5.93 |
| Relative risk (RR) | 3.83 | 13.11 | 3.91 | 2.2 | 6.41 |
| Log likelihood ratio | 4.366339 | 6.229360 | 5.211794 | 4.579039 | 5.881470 |
| P-value | 0.65 | 0.17 | 0.39 | 0.61 | 0.25 |

Table S7 –Socio-geographic profiles of studied kebeles, Butajera, Ethiopia 2014,

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Names of kebeles  | Total population  | Total households  | Female headed households  | Agro ecology classification  | Geographic locations (coordinates)  |
| *Dobena* | 4582 | 999 | 267 | Lowland | 8.088041N, 38.43521E |
| *Bati Lejano* | 4367 | 953 | 234 | Lowland | 8.106163N, 38.47873E |
| *Yeteker* | 5017 | 1051 | 290 | Highland | 8.050005N, 38.32057E |
| *Shershera Bido* | 1951 | 451 | 132 | Highland  | 8.177929N, 38.42124E |
| *Misrak Meskane* | 3415 | 769 | 220 | Midland | 8.092852N, 38.36306 E |
| *Dirama* | 2492 | 569 | 138 | Midland | 8.160247N, 38.40986E |
|  |  |  |  |  |  |