# **Appendix I: Food-related violence**

Table A1, below, summarises the years of coverage for each country case.

**Table A1. Time periods of coverage for each case country when temporal lags are included**

|  |  |
| --- | --- |
| **Case** | **Years of Coverage** |
| Benin | 2017-2020 |
| Burkina Faso | 2014-2020 |
| Cameroon | 2019-2020 |
| Chad | 2014-2020 |
| Ghana | 2017-2020[[1]](#footnote-1) |
| Guinea | 2017-2020 |
| Liberia | 2018-2020[[2]](#footnote-2) |
| Mali | 2014-2020 |
| Mauritania | 2014-2020 |
| Niger | 2014-2020 |
| Nigeria | 2016-2020 |
| Senegal | 2014-2020 |
| Sierra Leone | 2017-2020[[3]](#footnote-3) |
| Somalia | 2017-2020 |
| South Sudan | 2017-2020 |
| Togo | 2017-2020 |

Table A2, below, lists the key terms used to code for food-related conflict events, an example of the corresponding event notes illustrating a sample event, the count of that key term, and a list of exclusion criteria based on common terms returning false positives.

**Table A2. Food-related Violence: Count of Key Coding Terms in Benin, Burkina Faso, Cameroon, Chad, Ghana, Guinea, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Somalia, South Sudan and Togo, 2014-2020**

|  |  |  |
| --- | --- | --- |
| **Key term** | **Example of event notes and ACLED Event ID** | **Count of key term** |
| banana | ‘04 February 2020. In Mogadishu (Mogadishu City, Banadir), Al Shabaab militants killed a banana trader, suspecting him of working with the Somali military intelligence.’  SOM30460 | 2 |
| cassava | ‘Two people died in a communal clash between 2 neighbouring communities of Mbaduku in Vandeikya Council and Obudu Local Government in Cross River State. Youths from Obodu destroyed a cassava farm and that led to the fight that claimed the 2 lives.’  NIG10235 | 4 |
| cereal | ‘On 1 March 2020, suspected Fulani militiamen attacked several Dogon villages in the area of Baye (Bankass, Mopti), killed at least four people, seized hundreds of livestock, and burned hundreds of granaries and cereals.’  MLI3543 | 1 |
| crop | ‘On 12 June 2020, a gun battle erupted between groups from the two villages of Sambaya, Franwalia subdivision, and Diarraya, Kintinian subdivision (Siguiri, Kankan) over the ownership of a cropland. Several people were shot and injured.’  GUI1706 | 25 |
| food | ‘On 6 March 2020, a member of a local militia was injured when Boko Haram attacked the village of Kouyape, in Mayo Moskota subdivision (Mayo-Sava, Extreme-Nord). Militants burnt a house, and took away foods and goods.’  CAO3072 | 252 |
| grain | ‘26 April. Unidentfied gunmen attacked Kargi and Kugu villages, killed two people, wounded two civilians and stole cows and grains. Fatalities split between both events.’  NIG14497 | 7 |
| groundnut\* | - | 0 |
| maize | ‘On August 16, suspected ISWAP/Boko Haram militants detained a group of farmers from Mourtchati and seized their donkeys loaded with maize while they were returning from the bank of Lake Chad, the farmers were subsequently released.’  NIR981 | 3 |
| milk | ‘26 March. Al Shabaab shot and killed one person and another was wounded in the milk market of Bosasso. The deceased was later revealed to be an intelligence officer. The Attacker escaped the scene.’  SOM20388 | 25 |
| millet | - | 0 |
| plantain | ‘On 5 May 2019, there was an attack on a workshop for multiplication of plantain and banana Crops at the Charles Yimbo Secondary School, Bomotoke town (Timidale Chiefdom) Moyamba District. The attack reportedly happened at the orders of the Paramount chiefs. Two villagers were seriously injured.’ SIE4933 | 1 |
| potato | - | 0 |
| rice | ‘07 October (or around). Two clans of Eggon Ethnic Group clashed over a rice farm in Mada community. Three people were killed and eight injured.’  NIG15492 | 12 |
| sorghum | ‘Gunmen shot and killed a farmer in the week of 6 March as he resisted an attempt to loot his sorghum on his way to the market in Kwajieno County in Wau. Police arrested a suspect the following week.’  SSD3757 | 2 |
| sugar | ‘A civilian man was shot and killed by al Shabaab fighters in Dhurey (20km SE of Waajid) in the evening of 02/01. The man was killed after he was caught with 20kg of sugar in an attempt to defy the economic blockade imposed by al Shabaab.’  SOM16590 | 6 |
| animal | ‘On 28 April 2020, [individual] opened fire against a group of camel herders watering their animals at a river near his property on the outskirts of the capital Ndjamena (N'Djamena), one young herder was killed.’  CHA1071 | 55 |
| camel | ‘08 May. Due to alleged camel ownership disputes, pastoralists from Omar Mohamud and Saad clans clashed at Laasadheerdheer area in Jariiban. Some were wounded.’  SOM28419 | 48 |
| cattle | ‘On 29 March 2020, Boko Haram attacked the village of Ouloumsao, near Afade village (Makary, Logone-Et-Chari, Extreme-Nord). They took away 229 cattle, killed one person and injured several others. The military forces then intervened and repelled them, thus retrieving 20 of the stolen cattle.’  CAO3130 | 961 |
| goat | ‘AS fighters confiscated an estimated 50 goats and 30 cows from Biimaal nomadic families at Nagaadweyne village (17km NE of Marka) in the morning of 08/11. Shortly after the incident, the victims informed Biimaal militias, who engaged AS in an armed clash outside the village, which reportedly lasted for about an hour. The Biimaal militias managed to get back the livestock. An AS vehicle (mini-bus) was reportedly destroyed during the clash and the men on board were killed, numbers not known.’  SOM21181 | 35 |
| livestock | ‘On 7 October 2020, presumed JNIM militants attacked the Dogon village of Tissagou (Bankass, Mopti). Village defense responded to the attack, three Dogon were reportedly killed, and tricycles, motorbikes, and livestock seized by the militants.’  MLI4353 | 511 |
| sheep | ‘On 21 July 2019, presumed ISGS militants attacked the village of Zambila (Dablo, Sanmatenga). The militants killed two people described as Koglweogo militiamen, burned a tractor, and seized a motorbike and three sheep.’  BFO1890 | 35 |
| famine | ‘An armed man shot indiscriminately at a food distribution site in Abduwak town. Four people were killed and seven others were injured. The perpetrator escaped from the scene. The food was collected through the support of local collective teams in Somalia and the diaspora for famine prevention in Abudwak and surrounding areas. Investigations were reported to be ongoing.’  SOM22784 | 2 |
| farm | ‘On 8 September 2020, unknown individuals equipped with machetes killed and mutilated a security guard at a farm in Pede (Kandi, Alibori).’  BEN309 | 817 |
| field | ‘On September 30, suspected JNIM militants killed six civilians in the farming fields of the village of Kargo.’  BFO2059 | 67 |
| hunger | - | 0 |
| hungry | - | 0 |
| starv\* | ‘15 December, on or about. Report that military forces and the Civilian JTF sexually assaulted and starved civilians in a Bama Boko Haram displacement camp in 'late 2015 and early 2016.’  NIG12404 | 4 |
| granar\* | ‘On 17 February 2020, suspected Fulani militiamen attacked the Dogon village of Guemeto-Tereli, killed five people, burned houses and granaries, and seized livestock.’  MLI3518 | 41 |
| market | ‘On 8 August, clashes between suspected cattle herders and dealers were witnessed at Ngurore Cattle Market in Yola South Local Government Area. One dead and 4 injured.’  NIG12957 | 854 |
| trade | ‘17 July. Boko Haram fighters killed six traders when they ambushed a convoy of lorries under military escort in at Mussini village, some 16 kilometres (10 miles) from Gamboru. There was no report of response from military forces.’  NIG12813 | 229 |
| trading | ‘31 December. Police hit two young men suspected of illegal market trading with a machete while held in custody in Yaounde police station.’ | CAO1929 |
| Exclusion terms: | airfield; football field; hunger strike; khat [market / trading]; oil field; playing field | |
| **Total Food-Related Violent Events** | | 3,504\* |

**\***Note: The total records count differs from the total count of each individual term, as some terms appear more than once in the same record.

# **Appendix II: Robustness tests on model specifics**

**Table A2. Number of people per Admin1 in IPC/CH Phase 3 or above by conflict categories, 180 days**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Model 11**  Total Conflict Events | **Model 12**  Battle Events | **Model 13**  Anti-Civilian Events | **Model 14**  Non-Food-Related Violence Events | **Model 15**  Food-Related Violence Events |
| Total Events 180 days | .008\*\*  (.003) |  |  |  |  |
| Battle Events 180 days |  | .009  (.006) |  |  |  |
| VAC­ Events 180 days |  |  | .022\*\*\* (.006) |  |  |
| Non FRV Events 180 days |  |  |  | .008\*  (.003) |  |
| FRV Events 180 days |  |  |  |  | .083\*\*\*  (.024) |
| Precipitation Difference | -1.405\*\*\*  (.392) | -1.333\*\*\* (.395) | -1.44\*\*\* (.386) | -1.436\*\*\*  (.396) | -1.447\*\*\*  (.391) |
| Temperature Difference | .741\*  (.312) | .822\*  (.344) | .664\*  (.295) | .71\*  (.318) | .79\*\*  (302) |
| Nightlights | -.076\*\* (.025) | -.076\*\* (.025) | -.068\*\*  (.025) | -.072\*\*  (.025) | -.068\*\* (.025) |
| Log Population | 1.533\*\*\*  (.165) | 1.621\*\*\*  (.16) | 1.488\*\*\* (.164) | 1.577\*\*\*  (.161) | 1.526\*\*\*  (.161) |
| Voice and Accountability | -.63\*\*\*  (.115) | -.681\*\*\*  (.117) | -.625\*\*\*  (.11) | -.648\*\*\*  (.114) | -.635\*\*\*  (.109) |
| Log Food and Nutrition Aid | .125\*\*\*  (.036) | .124\*\*\*  (.037) | .124\*\*\*  (.036) | .121\*\*\*  (.037) | .123\*\*\*  (.036) |
| Lag IPC/CH Phase 35 | 2.17e-06\*\*\*  (5.25e-07) | 2.19e-06\*\*\*  (5.32e-07) | 2.18e-06\*\*\* (4.63e-07) | 2.15e-06\*\*\* (5.20e-07) | 2.17e-06\*\*\*  (4.99e-07) |
| Constant | .595  (.925) | .075  (.898) | .893  (.916) | .4001  (.899) | .685  (.905) |
| Observations | 1,645 | 1,645 | 1,645 | 1,645 | 1,645 |

Note: Standard errors in parentheses. \*\*\*p =< 0.001, \*\*p =< 0.01, \*p =< 0.05, † p =< 0.1.

**Table A3. Number of people per Admin1 in IPC/CH Phase 3 or above by conflict categories, 365 days**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Model 16**  Total Conflict Events | **Model 17**  Battle Events | **Model 18**  Anti-Civilian Events | **Model 19**  Non-Food-Related Violence Events | **Model 20**  Food-Related Violence Events |
| Total Events 365 days | .004\*\*  (.002) |  |  |  |  |
| Battle Events 365 days |  | .006†  (.003) |  |  |  |
| VAC­ Events 365 days |  |  | .012\*\*\*  (.004) |  |  |
| Non FRV Events 365 days |  |  |  | .003\*  (.001) |  |
| FRV Events 365 days |  |  |  |  | .041\*\*\*  (.012) |
| Precipitation Difference | -1.4\*\*\*  (.391) | -1.364\*\*\* (.396). | -1.451\*\*\*  (.39) | -1.454\*\*\*  (.398) | -1.455\*\*\*  (.393) |
| Temperature Difference | .63\*  (.321) | .597\*  (.348) | .582†  (.307) | .624†  (.33) | .655\*  (.302) |
| Nightlights | -.076\*\*  (.025) | -.076\*\*  (.025) | -.067\*\*  (.025) | -.072\*\*  (.025) | -.068\*\*  (.025) |
| Log Population | 1.526\*\*\*  (.165) | 1.611\*\*\* (.159) | 1.49\*\*\*  (.163) | 1.582\*\*\* (.159) | 1.513\*\*\*  (.161) |
| Voice and Accountability | -.615\*\*\*  (.117) | -.666\*\*\*  (.159) | -.612\*\*\*  (.111) | -.631\*\*\*  (.117) | --599\*\*\*  (.111) |
| Log Food and Nutrition Aid | .127\*\*\* (.036) | .125\*\*\* (.04) | .125\*\*\*  (.036) | .122\*\*\*  (.037) | .126\*\*\*  (.036) |
| Lag IPC/CH Phase 35 | 2.11e-06\*\*\*  (5.32e-07) | 2.14e-06\*\*\*  (5.48e-07) | 2.10e-06\*\*\*  (4.65e-07) | 2.09e-06\*\*\* (5.29e-07) | 2.03e-06\*\*\*  (5.17e-07) |
| Constant | .645  (.921) | .165  (.894) | .898  (.914) | .395  (.89) | .79  (.905) |
| Observations | 1,645 | 1,645 | 1,645 | 1,645 | 1,645 |

Note: Standard errors in parentheses. \*\*\*p =< 0.001, \*\*p =< 0.01, \*p =< 0.05, † p =< 0.1.

**Table A4. Number of people per Admin1 in IPC Phase 3 or above by conflict event categories, including spatial-temporal lag for neighbouring violence, 90 days**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Model 21**  Total Conflict Events | **Model 22**  Battle Events | **Model 23**  Anti-Civilian Events | **Model 24**  Non-Food-Related Violence Events | **Model 25**  Food-Related Violence Events |
| Total Events | .008†  (.005) |  |  |  |  |
| Battle Events |  | .004  (.007) |  |  |  |
| VAC­ Events |  |  | .025\*  (.01) |  |  |
| Non FRV Events |  |  |  | .007  (.005) |  |
| FRV Events |  |  |  |  | .093\*\* (.037) |
| Precipitation Difference | -1.517\*\*\*  (.398) | -1.508\*\*\*  (.399) | -1.536\*\*\*  (.391) | -1.53\*\*\*  (.4) | -1.587\*\*\*  (.393) |
| Temperature Difference | .826\*  (.325) | .898\*\*  (.351) | .804\*\*  (.304) | .831\*\*  (.333) | .9\*\*  (.307) |
| Nightlights | -.068\*\*  (.025) | -.065\*\*  (.024) | -.065\*\*  (.025) | -.065\*\*  (.024) | -.062\*\*  (.025) |
| Log Population | 1.5\*\*\*  (.161) | 1.529\*\*\*  (.158) | 1.481\*\*\*  (.161) | 1.524\*\*\*  (.158) | 1.483\*\*\*  (.16) |
| Voice and Accountability | -.59\*\*\*  (.113) | -.608\*\*\*  (.112) | -.596\*\*\*  (.11) | -.6\*\*\*  (.112) | -.59\*\*\*  (.109) |
| Log Food and Nutrition Aid | .115\*\*  (.036) | .111\*\*  (.037) | .113\*\*  (.037) | .112\*\*  (.037) | .113\*\* (.036) |
| Lag IPC/CH Phase 35 | 1.98e-06\*\*\* (1.98e-06) | 2.00e-06\*\*\*  (4.34e-07) | 1.99e-06\*\*\*  (4.32e-07) | 1.98e-06\*\*\*  (4.59e-07) | 2.00e-06\*\*\*  (4.56e-07) |
| Total Events Neighbouring Admins | .004\*\*  (.001) | .005\*\*\*  (.001) | .004\*\*  (.001) | .004\*\*  (.001) | .004\*\*  (.001) |
| Constant | .872  (.894) | .716  (.875) | 1.004  (.891) | .766  (.876) | 1.02  (.889) |
| Observations | 1,645 | 1,645 | 1,645 | 1,645 | 1,645 |

Note: Standard errors in parentheses. \*\*\*p =< 0.001, \*\*p =< 0.01, \*p =< 0.05, † p =< 0.1.

**Table A5. Number of people per Admin1 in IPC Phase 3 or above by conflict event categories, including national-level count of violence, 90 days**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Model 26**  Total Conflict Events | **Model 27**  Battle Events | **Model 28**  Anti-Civilian Events | **Model 29**  Non-Food-Related Violence Events | **Model 30**  Food-Related Violence Events |
| Total Events | .009†  (.005) |  |  |  |  |
| Battle Events |  | .007  (.003) |  |  |  |
| VAC­ Events |  |  | .029\*\*  (.011) |  |  |
| Non FRV Events |  |  |  | .009†  (.005) |  |
| FRV Events |  |  |  |  | .116\*\*  (.039) |
| Precipitation Difference | -1.696\*\*\*  (.393) | -1.698\*\*\*  (.396) | -1.748\*\*\*  (.392) | -1.717\*\*\*  (.396) | -1.814\*\*\*  (.398) |
| Temperature Difference | .743\*  (.333) | .804\*  (.369) | .715\*  (.312) | .737\*  (.339) | .807\*  (.319) |
| Nightlights | -.073\*\*  (.025) | -.071\*\*  (.025) | -.067\*\*  (.025) | -.069\*\* (.025) | -.066\*\*  (.025) |
| Log Population | 1.49\*\*\* (.163) | 1.531\*\*\*  (.159) | 1.456\*\*\*  (.162) | 1.515\*\*\* (.16) | 1.463\*\*\*  (.16) |
| Voice and Accountability | -.506\*\*\*  (.124) | -.514\*\*\*  (.125) | -.503\*\*\* (.122) | -.513\*\*\*  (.124) | -.481\*\*\*  (.122) |
| Log Food and Nutrition Aid | .114\*\*\*  (.036) | .111\*\*  (.036) | .111\*\*  (.036) | .11\*\*  (.036) | .11\*\*  (.036) |
| Lag IPC/CH Phase 35 | 2.18e-06\*\*\*  (5.05e-07) | 2.27e-06\*\*\*  (5.00e-07) | 2.14e-06\*\*\*  (4.66e-07) | 2.18e-06\*\*\*  (5.05e-07) | 2.18e-06\*\*\*  (4.97e-07) |
| National Count of Events - Calendar Year | .000\*\*\*  (.000) | .001\*\*\*  (.000) | .000\*\*\*  (.000) | .000\*\*\*  (.000) | .000\*\*\* (.000) |
| Constant | 1.072  (.911) | .862  (.893) | 1.312  (.908) | .971  (.895) | 1.316  (.904) |
| Observations | 1,645 | 1,645 | 1,645 | 1,645 | 1,645 |

Note: Standard errors in parentheses. \*\*\*p =< 0.001, \*\*p =< 0.01, \*p =< 0.05, † p =< 0.1.

**Table A6. Number of people per Admin1 in IPC Phase 3 or above by conflict event categories, including harvest season control, 90 days**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Model 31**  Total Conflict Events | **Model 32**  Battle Events | **Model 33**  Anti-Civilian Events | **Model 34**  Non-Food-Related Violence Events | **Model 35**  Food-Related Violence Events |
| Total Events | .014\*\*  (.005) |  |  |  |  |
| Battle Events |  | .016  (.011) |  |  |  |
| VAC­ Events |  |  | .035\*\*\* (.01) |  |  |
| Non FRV Events |  |  |  | .014\*\*  (.006) |  |
| FRV Events |  |  |  |  | .119\*\*\*  (.036) |
| Precipitation Difference | -1.673\*\*\*  (.383) | -1.583\*\*\*  (.39) | -1.681\*\*\*  (.383) | -1.706\*\*\* (.388) | -1.68\*\*\*  (.388) |
| Temperature Difference | .413  (.314) | .473  (.35) | .434  (.295) | .387  (.318) | .577\*  (.303) |
| Nightlights | -.06\*  (.026) | -.058\*  (.026) | -.052\*  (.026) | -.054\*  (.026) | -.053\*  (.026) |
| Log Population | 1.321\*\*\*  (.176) | 1.397\*\*\*  (.172) | 1.294\*\*\*  (.175) | 1.354\*\*\*  (.172) | 1.34\*\*\*  (.174) |
| Voice and Accountability | -.483\*\*\*  (.108) | -.525\*\*\*  (.111) | -.501\*\*\*  (.101) | -.494\*\*\*  (.107) | -.527\*\*\*  (.102) |
| Log Food and Nutrition Aid | .198\*\*\*  (.032) | .198\*\*\*  (.032) | .195\*\*\*  (.032) | .196\*\*\*  (.032) | .191\*\*\*  (.033) |
| Lag IPC/CH Phase 35 | 2.05e-06\*\*\*  (.59e-07) | 2.16e-06\*\*\*  (6.18e-07) | 1.98e-06\*\*\*  (5.32e-07) | 2.05e-06\*\*\* (5.92e07) | 2.09e-06\*\*\*  (5.76e-07) |
| Harvest Season | -.784\*\*\*  (.13) | -.778\*\*\* (.131) | -.784\*\*\*  (.13) | -.796\*\*\*  (.13) | -.733\*\*\*  (.133) |
| Constant | 2.309\*  (1.042) | 1.826†  (1.032) | 2.486\*\*  (1.03) | 2.18\*  (1.028) | 2.18\*  (1.03) |
| Observations | 1,645 | 1,645 | 1,645 | 1,645 | 1,645 |

Note: Standard errors in parentheses. \*\*\*p =< 0.001, \*\*p =< 0.01, \*p =< 0.05, † p =< 0.1.

**Table A7. Number of people per Admin1 in IPC/CH Phase 3 or above by conflict event categories, controlling for 15-year climate variability, 90 days**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Model 36**  Total Conflict Events | **Model 37**  Battle Events | **Model 38**  Anti-Civilian Events | **Model 39**  Non-Food-Related Violence Events | **Model 40**  Food-Related Violence Events |
| Total Events | .015\*\*  (.005) |  |  |  |  |
| Battle Events |  | .019†  (.01) |  |  |  |
| VAC­ Events |  |  | .038\*\*\*  (.012) |  |  |
| Non FRV Events |  |  |  | .015\*\*  (.006) |  |
| FRV Events |  |  |  |  | .137\*\*\*  (.04) |
| Precipitation Difference (15) | -1.5\*\*\*  (.339) | -1.356\*\*\*  (.344) | -1.526\*\*\*  (.338) | -1.507\*\*\*  (.344) | -1.526\*\*\*  (.332) |
| Temperature Difference (15) | -.746\*\*  (.252) | -.729\*\*  (.255) | -.661\*\*  (.251) | -.75\*\*  (.253) | -.614\* (.26) |
| Nightlights | -.077\*\*  (.025) | -.076\*\*  (.024) | -.07\*\*  (.025) | -.072\*\*  (.025) | -.069\*\*  (.024) |
| Log Population | 1.526\*\*\*  (.168) | 1.604\*\*\*  (.164) | 1.509\*\*\*  (.167) | 1.57\*\*\*  (.163) | 1.538\*\*\*  (.166) |
| Voice and Accountability | -.558\*\*\*  (.111) | -.603\*\*\*  (.11) | -.583\*\*\*  (.107) | -.576\*\*\*  (.11) | -.596\*\*\*  (.106) |
| Log Food and Nutrition Aid | .141\*\*\*  (.036) | .139\*\*\*  (.037) | .136\*\*\*  (.037) | .136\*\*\*  (.036) | .136\*\*\*  (.037) |
| Lag IPC/CH Phase 35 | 1.94e-06\*\*\*  (5.02e-07) | 2.00e-06\*\*\*  (5.33e-07) | 1.94e-06\*\*\*  (4.31e-07) | 1.93e-06\*\*\*  (5.02e-07) | 2.00e-06\*\*\*  (4.79e-07) |
| Constant | 1.256 (.962) | .749  (.94) | 1.354  (.955) | 1.054  (.94) | 1.173  (.951) |
| Observations | 1,645 | 1,645 | 1,645 | 1,645 | 1,645 |

Note: Standard errors in parentheses. \*\*\*p =< 0.001, \*\*p =< 0.01, \*p =< 0.05, † p =< 0.1.

**Table A8. Number of people per Admin1 in IPC/CH Phase 3 or above by conflict event categories, controlling for 30-year climate variability, 90 days**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Model 41**  Total Conflict Events | **Model 42**  Battle Events | **Model 43**  Anti-Civilian Events | **Model 44**  Non-Food-Related Violence Events | **Model 45**  Food-Related Violence Events |
| Total Events | .014\*\*  (.005) |  |  |  |  |
| Battle Events |  | .018†  (.009) |  |  |  |
| VAC­ Events |  |  | .038\*\*\*  (.012) |  |  |
| Non FRV Events |  |  |  | .015\*\*  (.005) |  |
| FRV Events |  |  |  |  | .137\*\*\*  (.04) |
| Precipitation Difference (30) | -1.653\*\*\*  (.364) | -1.512\*\*\*  (.374) | -1.667\*\*\*  (.362) | -1.666\*\*\*  (.368) | -1.737\*\*\*  (.355) |
| Temperature Difference (30) | -.81\*\*  (.255) | -.828\*\*\*  (.257) | -.725\*\* (.254) | -.819\*\*\* (.256) | -.707\*\*  (.262) |
| Nightlights | -.077\*\*  (.025) | -.075\*\*  (.024) | -.07\*\* (.024) | -.072\*\*  (.025) | -.069\*\*  (.024) |
| Log Population | 1.521\*\*\*  (.168) | 1.597\*\*\*  (.164) | 1.502\*\*\*  (.167) | 1.563\*\*\*  (.164) | 1.527\*\*\*  (.167) |
| Voice and Accountability | -.541\*\*\*  (.112) | -.582\*\*\*  (.111) | -.566\*\*\*  (.109) | -.557\*\*\*  (.111) | -.573\*\*\*  (.107) |
| Log Food and Nutrition Aid | .145\*\*\*  (.036) | .143\*\*\*  (.037) | .139\*\*\*  (.037) | .14\*\*\*  (.037) | .14\*\*\*  (.037) |
| Lag IPC/CH Phase 35 | 1.95e-06\*\*\* (4.99e-07) | 2.00e-06\*\*\* (5.26e-07) | 1.95e-06\*\*\*  (4.30e-07) | 1.94e-06\*\*\*  (4.99e-07) | 2.00e-06\*\*\*  (4.75e-07) |
| Constant | 1.312  (.965) | .839  (.943) | 1.409  (.958) | 1.12  (.943) | 1.309  (.958) |
| Observations | 1,645 | 1,645 | 1,645 | 1,645 | 1,645 |

Note: Standard errors in parentheses. \*\*\*p =< 0.001, \*\*p =< 0.01, \*p =< 0.05, † p =< 0.1.

**Table A9. Number of people per Admin1 in IPC Phase 3 or above by conflict categories, 90 days, quarterly fixed effects**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Model 46**  Total Conflict Events | **Model 47**  Battle Events | **Model 48**  Anti-Civilian Events | **Model 49**  Non-Food-Related Violence Events | **Model 50**  Food-Related Violence Events |
| Total Events | .013\*\*  (.005) |  |  |  |  |
| Battle Events |  | .015  (.009) |  |  |  |
| VAC­ Events |  |  | .036\*\*  (.012) |  |  |
| Non FRV Events |  |  |  | .013\*  (.006) |  |
| FRV Events |  |  |  |  | .13\*\*\*  (.041) |
| Precipitation Difference | -1.379\*\*\*  (.395) | -1.3\*\*\*  (.398) | -1.412\*\*\*  (.391) | -1.397\*\*\*  (.4) | -1.444\*\*\* (.394) |
| Temperature Difference | .879\*\*  (.314) | .954\*\*  (.339) | .872\*\*  (.3) | .869\*\*  (.319) | .999\*\*\* (.301) |
| Nightlights | -.079\*\*\* (.024) | -.077\*\*\*  (.024) | -.072\*\* (.024) | -.074\*\*\* (.024) | -.07\*\* (.024) |
| Log Population | 1.544\*\*\*  (.166) | 1.613\*\*\*  (.163) | 1.52\*\*\*  (.166) | 1.484\*\*\*  (.162) | 1.54\*\*\*  (.165) |
| Voice and Accountability | -.629\*\*\*  (.114) | -.668\*\*\*  (.116) | -.641\*\*\*  (.109) | -.644\*\*\*  (.114) | -649\*\*\*  (.108) |
| Log Food and Nutrition Aid | .135\*\*\*  (.037) | .135\*\*\*  (.038) | .131\*\*\*  (.037) | .131\*\*\*  (.038) | 131\*\*\*  (.037) |
| Lag IPC/CH Phase 35 | 2.21e-06\*\*  (.057) | 2.30e-06\*\*\*  (.055) | 2.19e-06\*\*\*  (.4.84e-07) | 2.21e-06\*\*\*  (5.42e07) | 2.25-06\*\*\*  (5.15e-07) |
| Constant | .509  (.924) | .095  (.903) | .686  (.919) | .331  (.9) | .585  (.92) |
| Observations | 1,645 | 1,645 | 1,645 | 1,645 | 1,645 |

Note: Standard errors in parentheses. \*\*\*p =< 0.001, \*\*p =< 0.01, \*p =< 0.05, † p =< 0.1.

**Table A10. Number of people per Admin1 in IPC Phase 3 or above by conflict categories, 90 days, year fixed effects**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Model 51**  Total Conflict Events | **Model 52**  Battle Events | **Model 53**  Anti-Civilian Events | **Model 54**  Non-Food-Related Violence Events | **Model 55**  Food-Related Violence Events |
| Total Events | .011\*  (.005) |  |  |  |  |
| Battle Events |  | .014  (.009) |  |  |  |
| VAC­ Events |  |  | 0.32\*\*  (.011) |  |  |
| Non FRV Events |  |  |  | .012\*  (.006) |  |
| FRV Events |  |  |  |  | .117\*\*  (.037) |
| Precipitation Difference | -1.738\*\*\*  (.4) | -1.687\*\*\*  (.401) | -1.74\*\*\* (.397) | -1.76\*\*\*  (.404) | -1.758\*\*\* (.399) |
| Temperature Difference | .625  (.386) | .702†  (.416) | .588  (.369) | .616  (.39) | .753\*  (.368) |
| Nightlights | -.097\*\*\*  (.023) | -.096\*\*\*\*  (.023) | -.09\*\*\* (.022) | -.093\*\*\*  (.023) | -.09\*\*\*  (.023) |
| Log Population | 1.457\*\*\*  (.163) | 1.502\*\*\*  (.161) | 1.434\*\*\*  (.164) | 1.483\*\*\*  (.161) | 1.442\*\*\*  (.163) |
| Voice and Accountability | -.634\*\*\*  (.112) | -.662\*\*\*  (.113) | -.644\*\*\* (.108) | -.643\*\*\*  (.112) | -.643\*\*\*  (.106) |
| Log Food and Nutrition Aid | .176\*\*\* (.033) | .181\*\*\*  (.034) | .173\*\*\*  (.033) | .175\*\*\*  (.034) | .176\*\*\*  (.033) |
| Lag IPC/CH Phase 35 | 2.26e-06\*\*\*  (.5.61e07) | 2.29e-06\*\*\* 9.5.63e-07) | 2.24e-06\*\*\*  (5.16e07) | 2.25e-06\*\*\*  (6.51e-07) | 2.27e06\*\*\*  (5.36e07) |
| Constant | 1.438  (.929) | 1.179  (.92) | 1.593†  (.104) | 1.336  (.916) | 1.543†  (.928) |
| Observations | 1,645 | 1,645 | 1,645 | 1,645 | 1,645 |

Note: Standard errors in parentheses. \*\*\*p =< 0.001, \*\*p =< 0.01, \*p =< 0.05, † p =< 0.1.

**Table A11. Number of people per Admin1 in IPC Phase 3 or above by conflict fatality categories, 90 days**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Model 56**  Total Conflict Fatalities | **Model 57**  Battle Fatalities | **Model 58**  Anti-Civilian Fatalities | **Model 59**  Non-Food-Related Violence Fatalities | **Model 60**  Food-Related Violence Fatalities |
| Total Fatalities | .004\*  (.002) |  |  |  |  |
| Battle Fatalities |  | .004  (.003) |  |  |  |
| VAC­ Fatalities |  |  | .01\*\*  (.003) |  |  |
| Non FRV Fatalities |  |  |  | .004\*  (.002) |  |
| FRV Fatalities |  |  |  |  | .019\*\*  (.007) |
| Precipitation Difference | -1.47\*\*\*  (.394) | -1.314\*\*\*  (.396) | -1.342\*\*\*  (.389) | -1.441\*\*\*  (.393) | -1.31\*\*\* (.391) |
| Temperature Difference | .32  (.334) | .566  (.451) | .456  (.362) | .326  (.338) | .972\*\*  (.321) |
| Nightlights | -.069\*\*\* (.026) | -.075\*\* (.025) | -.068\*\*  (.025) | -.071\*\*  (.025) | -.072\*\*  (.025) |
| Log Population | 1.565\*\*\*  (.166) | 1.619\*\*\*  (.166) | 1.553\*\*\*  (.166) | 1.584\*\*\* (.165) | 1.594\*\*\*  (.163) |
| Voice and Accountability | -.663\*\*\*  (.116) | -.702\*\*\*  (.118) | -.699\*\*\*  (.107) | -.676\*\*\*  (.155) | -.701\*\*\*  (.108) |
| Log Food and Nutrition Aid | .122\*\*\*  (.037) | .125\*\*\*  (.037) | .122\*\*\*  (.037) | .123\*\*\* (.037) | .121\*\*\*  (.037) |
| Lag IPC/CH Phase 35 | 2.09e-06\*\*\*  (5.66e-07) | 217-e06\*\*\*  (5.47e-07) | 2.20e-06\*\*\*  (5.01e-07) | 2.10e-06\*\*\*  (5.60e-07) | 2.26e-06\*\*\*  (5.12e-07) |
| Constant | .556  (.943) | .113  (949) | .527  (.923) | .424  (.931) | .2  (.908) |
| Observations | 1,645 | 1,645 | 1,645 | 1,645 | 1,645 |

Note: Standard errors in parentheses. \*\*\*p =< 0.001, \*\*p =< 0.01, \*p =< 0.05, † p =< 0.1.

**Table A12. Number of people per Admin1 in IPC Phase 3 or above by conflict categories, 90 days, linear regression**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Model 61**  Total Conflict Events | **Model 62**  Battle Events | **Model 63**  Anti-Civilian Events | **Model 64**  Non-Food-Related Violence Events | **Model 65**  Food-Related Violence Events |
| Total Events | 1234.325†  (660.379) |  |  |  |  |
| Battle Events |  | 2160.967  (1472.864) |  |  |  |
| VAC­ Events |  |  | 3262.176\*  (1482.931) |  |  |
| Non FRV Events |  |  |  | 1298.214†  (777.207) |  |
| FRV Events |  |  |  |  | 12668.93\*\*  (5302.811) |
| Precipitation Difference | 16232.82  (28422.28) | 17491.36  (28972.4) | 16598.83  (28357.43) | 14352.78  (28209.45) | 16031.74  (28377.45) |
| Temperature Difference | 284081.2\*  (143503.9) | 283330.1\*  (141642.1) | 28803.3\*  (144113.1) | 282282.7\*  (142083.7) | 300307\*  (147070.5) |
| Nightlights | -3889.211\*\* (1402.899) | -3325.556\*  (1322.339) | -3149.784\*  (1305.494) | -3235.779\*  (1302.25) | -2789.597\*  (1248.527) |
| Log Population | 58701.42\*\*\*  (9886.042) | 62928.19\*\*\*  (10225.82) | 56838.79\*\*\* (10146.69) | 61303.42\*\*\* (9982.457) | 57850.31\*\*\* (10166.08) |
| Voice and Accountability | -38572.92\*\*\* (10578.54) | -41030.65\*\*\*  (10795.64) | -39514.09\*\*\* (10157.85) | -39108.42\*\*\* (10724.19) | -41966.1\*\*\*  (9559.212) |
| Log Food and Nutrition Aid | 1192.027  (1504.089) | 1360.936  (1541.226) | 1077.035  (1464.667) | 1097.54  (1517.812) | 1062.409  (1479.342) |
| Lag IPC/CH Phase 35 | .707\*\*\*  (.028) | 702\*\*\* (.032) | .712\*\*\*  (.031) | .708\*\*\*  (.028) | .709\*\*\* (.03) |
| Constant | -506352.3\*\*\*  (79141.76) | -430861.1\*\*\* (81313.12) | -395624.5\*\*\*  (82782.94) | -418439.3\*\*\*  (79396.28) | -403013.2\*\*\* (84850.6) |
| Observations | 1,645 | 1,645 | 1,645 | 1,645 | 1,645 |

Note: Standard errors in parentheses. \*\*\*p =< 0.001, \*\*p =< 0.01, \*p =< 0.05, † p =< 0.1.

**Table A13. Number of people per Admin1 in IPC Phase 3 or above by conflict categories, 90 days, country fixed effects, clustered by year**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Model 66**  Total Conflict Events | **Model 67**  Battle Events | **Model 68**  Anti-Civilian Events | **Model 69**  Non-Food-Related Violence Events | **Model 70**  Food-Related Violence Events |
| Total Events | .01\*\*\*  (.003) |  |  |  |  |
| Battle Events |  | .009\*  (.004) |  |  |  |
| VAC­ Events |  |  | .03\*\*\*  (.007) |  |  |
| Non FRV Events |  |  |  | .011\*\*  (.004) |  |
| FRV Events |  |  |  |  | .093\*\*\*  (.028) |
| Precipitation Difference | -.855  (.555) | -.78  (.553) | -.896  (.576) | -.868  (.55) | -.953  (.627) |
| Temperature Difference | .514\*  (.202) | .668\*\*\* (.201) | .462\*\*  (.199) | .506\*\*  (.214) | .627\*\*\*  (.184) |
| Nightlights | -.045†  (.028) | -.045  (.029) | -.04  (.028) | -.041  (.028) | -.039  (.03) |
| Log Population | 1.452\*\*\* (.099) | 1.534\*\*\* (.084) | 1.452\*\*\*  (.095) | 1.495\*\*\*  (.076) | 1.469\*\*\*  (.093) |
| Voice and Accountability | -1.473\*\*  (.567) | -1.786\*\*  (.59) | -1.317\* (.572) | -1.555\*\*  (.582) | -1.417\*\*  (.54) |
| Log Food and Nutrition Aid | .067  (.168) | .077  (.17) | .067  (.175) | .073  (.174) | .068  (.175) |
| Lag IPC/CH Phase 35 | 1.36e-06\*\*\*  (1.55e-07) | 1.48e-06\*\*\*  (1.99e-07) | 1.38e-06\*\*\* (1.45e07) | 1.35e-06\*\*\* (1.59e-07) | 1.49e-06\*\*\*  (1.80e-07) |
| Constant | -1.517  (1.284) | -2.307\*  (1.138) | -1.372  (1.264) | -1.819  (1.192) | -1.527  (1.323) |
| Observations | 1,645 | 1,645 | 1,645 | 1,645 | 1,645 |

Note: Standard errors in parentheses. \*\*\*p =< 0.001, \*\*p =< 0.01, \*p =< 0.05, † p =< 0.1.

**Table A14. Number of people per Admin1 in IPC Phase 3 or above by conflict categories, 90 days, region fixed effects, clustered by year**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Model 71**  Total Conflict Events | **Model 72**  Battle Events | **Model 73**  Anti-Civilian Events | **Model 75**  Non-Food-Related Violence Events | **Model 75**  Food-Related Violence Events |
| Total Events | .01\*\*\* (.002) |  |  |  |  |
| Battle Events |  | .01\*\*  (.004) |  |  |  |
| VAC­ Events |  |  | .031\*\*\*  (.004) |  |  |
| Non FRV Events |  |  |  | .011\*\*\*  (.002) |  |
| FRV Events |  |  |  |  | .109\*\*\*  (.022) |
| Precipitation Difference | -1.354\*\*\*  (.3) | -1.281\*\*\*  (.313) | -1.422\*\*\*  (.299) | -1.364\*\*\*  (.302) | -1.44\*\*\*  (.338) |
| Temperature Difference | .655†  (.349) | .703†  (.379) | .632\*  (.317) | .639†  (.357) | .76\*  (.346) |
| Nightlights | -.083\*\*\*  (.025) | -.083\*\*\*  (.024) | -.077\*\*  (.025) | -.08\*\*\* (.025) | -.077\*\*  (.026) |
| Log Population | 1.621\*\*\*  (.153) | 1.69\*\*\*  (.164) | 1.587\*\*\*  (.159) | 1.653\*\*\*  (.161) | 1.618\*\*\*  (.153) |
| Voice and Accountability | -.393\*\*\*  (.078) | -.415\*\*\*  (.072) | -.394\*\*\*  (.081) | -.409\*\*\*  (.076) | -.384\*\*\*  (.085) |
| Log Food and Nutrition Aid | .126  (.083) | .124  (.085) | .124  (.084) | .122  (.085) | .122  (.085) |
| Lag IPC/CH Phase 35 | 1.93e-06\*\*\* (.2.36e-07) | 2.01e-06\*\*\*  (3.06e-07) | 1.91e-06\*\*\*  (2.04e-07) | 1.92e-06\*\*\*  (2.41e-07) | 2.01e-06\*\*\*  (2.54e-07) |
| Constant | .147  (.526) | .269  (.452) | .396  (.536) | .001 (.487) | .229  (.515) |
| Observations | 1,645 | 1,645 | 1,645 | 1,645 | 1,645 |

Note: Standard errors in parentheses. \*\*\*p =< 0.001, \*\*p =< 0.01, \*p =< 0.05, † p =< 0.1.

1. Data unavailable for Q1 2020 [↑](#footnote-ref-1)
2. Data unavailable for Q1 2018 [↑](#footnote-ref-2)
3. Data unavailable for Q1 2018 [↑](#footnote-ref-3)