Impacts of armed conflict on household dietary diversity and food consumption patterns[*]

Benjamin Y. Avuwadah[†]

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Abstract

Armed conflict poses significant challenges to efforts targeted at ending hunger and improving both household nutrition and food consumption worldwide. Within countries, armed conflict events cause chronic disruptions to agricultural and food production systems as well as food distribution networks. But there is limited evidence on how various forms of conflict affect household dietary diversity and food consumption. In this study, we estimate the effects of different types of conflict, defined by the perpetrator, on household dietary diversity and food consumption patterns. Our empirical strategy draws on variation in household exposure to conflicts over space, time, and perpetrators of conflicts to estimate panel fixed effects models that account for observed household characteristics as well as time invariant household-level unobservable characteristics across survey years. We find that while households exposed to conflict generally consume less diverse food, households tend to consume more of easily storable and less perishable food groups such as staples, pulses and sugars, and less of highly perishable food items like fruits, vegetables, and dairy products. We also find that specific conflict types affect household trade-offs between consumption of own-produced foods and purchased foods for particular food groups. Our findings have implications for targeting of food security programs and food-related humanitarian response plans.

Keywords: Conflict, Food consumption, Food Diversity, Armed Violence, Rural Development.

JEL Classification: J43, F51, D13, Q12, Q18, D74

1 Introduction

Armed conflict poses significant challenges to efforts targeted at ending worldwide hunger and improving household nutrition and food consumption (FAO et al., 2019). Armed conflict is especially problematic in developing countries where conflict causes disruptions in agricultural and food production systems as well as food distribution networks (Struble and Aomari, 2003; FAO et al., 2019). An estimated 60 percent of the 815 million undernourished people and about 79 percent of the 155 million malnourished and stunted children – together a majority of the world's hungry – live in countries affected by conflict (Holleman et al., 2017).

Income uncertainties and food price fluctuations can raise concerns about food availability and consumption for rural households in developing countries (Adhvaryu et al., 2014; Maccini and Yang, 2009). Conflict presents an additional shock that can further threaten rural households' food security and ability to earn an income (Martin-Shields and Stojetz, 2019). Thus, the question of how conflict affects household food consumption patterns and food security is one that has garnered the attention of researchers and policymakers. Available studies depict a complex relationship between conflicts and household food consumption and related outcomes – one that poses several challenges to estimating a causal effect of conflict on household food consumption. One group of studies on the conflict-food consumption nexus find that extreme volatility in food prices and acute food shortages are potential triggers of conflict incidents (Arezki and Brückner, 2011; Bellemare, 2015; Berazneva and Lee). Another group of studies provides evidence of the negative effects of conflicts on multiple dimensions of food security including: dietary diversity and access to adequate quantity and quality of food (Dabalen and Paul, 2014; George et al., 2019); household economic performance measured in consumption expenditure (Serneels and Verpoorten, 2015); calorie intake and level of food expenses (Verwimp and Muñoz-Mora, 2018; D'Souza and Jolliffe, 2013), farmers' investment decisions and household aggregate consumption (Arias et al., 2019), children's health status, nutritional status and anthropometric outcomes (Bundervoet et al., 2009; Akresh et al., 2012; Minoiu and Shemyakina, 2014), as well as household consumption smoothening coping mechanisms (Justino, 2009; Ogbozor, 2016).

While available studies provide considerable evidence to support the negative effect of conflict on household dietary related outcomes, the analyses in the available studies are limited to analyzing the impact of either an aggregated conflict measure or a single type of conflict. No

previous study has assessed the potential heterogeneous effects of different conflicts on household food consumption. This presents a gap in the literature in regions of the world where conflict is not just prevalent, but it is possible to disaggregate the effects of conflict across different perpetrators. Nigeria is one such country that has contested with several qualitatively different security concerns such as violent clashes between farmer and herder communities, the Boko Haram insurgency, Niger-Delta crises, and other communal or state militia violence, as well as violence perpetrated by law enforcement agencies (Kaila and Azad, 2019). While these security concerns may collectively pose huge challenges to Nigeria at the macro level, their effects at the micro level on household food consumption outcomes can vary based on several factors. Thus, it is imperative to investigate the effects of conflict perpetrated by various actors on household food consumption patterns.

In this paper, we analyze the effects of five different types of conflict categorized by the perpetrator (Boko Haram insurgency, farmer-herder communities, state militia groups, law enforcement agencies, and all other conflicts not falling into any of the mentioned categories) on household dietary diversity and food consumption patterns. Specifically, we explore the relationships between our conflict measures – aggregated fatality for all conflicts and fatality counts for the five types of conflict – on two measures of household food diversity: the food consumption score (FCS) and the Berry-index (BI).[1] To further understand the effects of conflict on food consumption patterns, we disaggregate the impacts of conflict on household food consumption of eight different food groups (staples; pulses; vegetables; fruit; meat and fish; milk; sugar; and oil), measured in kilograms per capita.

Based on available evidence and our understanding of the motives of the perpetrators of violence, we expect our analysis to show evidence of differential effects of conflict across the various conflict types. We expect that an increase in conflicts such as those involving Boko Haram insurgents, farmer and herdsmen and state militia actors are more likely to negatively affect food diversity and consumption since the actions of these conflict actors lead to severe disruptions in economic opportunities and food supply chains. However, we expect that conflict incidents initiated by actors such as law enforcement agencies may cause households to increase overall consumption and diversity of the foods they consume. This is because law enforcement

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[1]Berry-index (BI) is a Simpson-index diversity measure that is constructed from the eight food groups used to construct the FCS.

agencies seek to maintain stable climates where households can access output and input markets as well as obtain stable streams of income (Kaila and Azad, 2019; USDoJ, 2003). Further, we expect some level of trade-offs across food groups due to exposure to different conflict types.

We base the stated expectations on how we anticipate each conflict type would affect the mechanisms or avenues that determine the quantity of food households consume. The avenues are mainly price shocks, income and wage shocks, input shocks and infrastructure shocks. The general idea is that a particular conflict type can affect any of these avenues positively or negatively, relative to the household, which then affects households' ability to obtain food items. For instance, if conflict actors – such as Boko Haram insurgents – cause supply shortages for a particular crop, which results in increase in price of that particular crop, then households, are likely to consume less (either through the selling of own-produce to take advantage of the high price or purchase a smaller quantity) of that crop or even substitute it with a relatively cheaper alternative and vice versa. Similarly, if a conflict negatively affects households' income generating opportunities and households experience an overall reduction in total disposable income, then households would consume less food both in diversity and quantity. Depending on the type of conflict households experience, households may consume more cereals or staples and less protein or highly perishable crops or even less of all food groups if conflicts are extremely disruptive. We allow our empirical analysis to show the impact heterogeneity of conflict on household food consumption since we do not have any evidence of how the various conflicts cause trade-offs in the consumption of different food groups ex ante.

Our estimation strategy draws on variation in household exposure to conflict over space, time, and conflict actors (differentiated by perpetrators) as applied to the first three waves (2010 - 2016) of the nationally representative General Household Survey (GHS) panel dataset for Nigeria and geo-coded conflict records from the Armed Conflict Location Event Data (ACLED) project database. We verify our assertions of household food consumption by estimating panel fixed effects models that account for observed household characteristics as well as time-invariant household-level unobservable characteristics across survey years using household and survey year fixed effects as well as local government area (LGA) specific time trends.

We find that the aggregated effects of conflict on household dietary diversity are strongly negative. However, there is significant impact heterogeneity of the various conflicts household dietary diversity and consumption of different food groups. We find that while Boko Haram

violence decreases consumption of fruits and increases consumption sugars, farmer-herder conflict increases consumption of staples and pulses but decreases consumption of vegetables. Law enforcement violence increases the consumption of staples but reduces the consumption of pulses and milk, and all other effects are not statistically significant. Since several studies have highlighted the strong association between the quantity of own-produced food or purchased food consumed and household dietary diversity (Powell et al., 2015; Jones, 2017; Koppmair et al., 2017), we conduct a set of analyses that investigate the effects of conflict on household consumption of own-produced and market-purchased food items. Our findings portray interesting trade-offs in household consumption of own-produced food items and food purchased from markets. For instance, while Boko Haram violence decreases consumption of own-produced vegetables and milk but increases consumption of purchased fruits, farmer and herder violence decreases consumption of own-produced staples but increases consumption of purchased staples, pulses and sugar.

Overall, our findings contribute to the growing literature on understanding the effects of conflicts on household food consumption in several ways. First, we build upon recent studies like George et al. (2019), Dabalen and Paul (2014) and Brück and d'Errico (2019) by estimating and discussing the relative magnitudes more granular measurements of variation in household exposure to conflicts. For instance, while George et al. (2019) provide evidence on the effect of conflict on food security in Nigeria, the authors limit their analyses to a single type of conflict at the local government area (LGA) level. George et al. (2019) and other prior studies use conflict variables measured at the relatively larger administrative area level that only leads to averaging the effects of conflict over many potentially unaffected households. Compared to previous studies, our setup provides more power to find significant average effects since unaffected households become controls on condition that some households within the larger administrative area are out of the reach of spillovers from conflict incidents.

Second, we show that the effects of specific violent conflicts on household dietary diversity and food consumption may vary depending on the type of actor that perpetrates the conflict incidents that households experience. While conflict can affect the type of food items available to households, families generally fall back on food items that are readily available to them even if the food item is not what households prefer. We build upon the finding of Dabalen and Paul (2014) and George et al. (2019) by showing that although conflict causes significant declines in household dietary diversity, exposure to various conflicts can cause households to consume more of food

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items such as stables, pulses and sugar that are less perishable and can easily be stored at home even if they are purchased from the market, and less of vegetables, fruits and milk products which perish easily. Like other available studies, Dabalen and Paul (2014) and George et al. (2019) use the food consumption score (FCS), which is a standard measure for nutritional adequacy and health outcomes, as their main outcome variable to measure food security. However, doing so does not allow them to observe potential heterogeneity in household food consumption across different food items and food groups. That is, certain conflicts (depending on the motives and tactics of the perpetrators) may cause households to increase consumption of a particular food group.

Third, this study adds to the limited number of studies that use panel data to investigate how conflict affects food consumption. Most of the available literature use cross-sectional data to arrive at their conclusions. According to Verwimp et al. (2019), only a handful of panel data studies on the effects of conflict on food consumption exists, and an improvement in this regard is profoundly needed. This paper builds on studies such Dabalen and Paul (2014), Brück and d'Errico (2019) and George et al. (2019) to provide evidence that strengthens our understanding of the effects of conflict on household food consumption. Finally, our findings provide additional perspectives to the discourse effect of conflict on food consumption patterns which can inform policy work pertaining to the designing and targeting of food aid and food consumption initiatives that are targeted at improving food security and dietary diversity in Nigeria.

The paper proceeds as follows: Section 2 presents a contextual overview of the background for this study. Section 3 describes the data and empirical strategies implemented in the analysis. We present the results in section 4, and section 5 concludes.

2 Background

2.1 Food consumption in Nigeria

The United States Department of Agriculture's (USDA) International Food Security Assessment (IFSA) estimates that about 8.6 percent of Nigeria's population was food insecure as of 2016 (Rosen et al., 2016). In 2018, the Uppsala Conflict Data Program (UCDP) categorized Nigeria as being at high risk of famine (UCDP, 2018). The percentage of food insecure Nigerians increased

slightly to about 9 percent in June 2020 (SWAC/OECD, 2020). Several factors were identified as causes of severe food insecurity in Nigeria. These include the transformation of agricultural lands for infrastructural purposes, armed conflict, climate change, soil degradation, erosion of the genetic base of agricultural biodiversity, water scarcity, and poor governance (Kah, 2017). Conflict impacts food consumption patterns by hindering economic growth through disruptions in agricultural production systems, input/output distribution and market channels, and increasing unemployment levels (George et al., 2019).

2.2 Conflicts in Nigeria

While Nigeria has a long history of conflict and war (Odozi and Oyelere, 2019), prevailing security concerns in Nigeria include violence perpetrated by Boko Haram insurgents, farmer-herder clashes, and violence by state militia and law enforcement agents. Data from ACLED show that between 2009 and 2019, conflict involving Boko Haram insurgents accounted for about 25 percent of all conflict incidents in Nigeria. Farmer-herder clashes and state militia conflicts represented about 21 and 13 percent, respectively, of all conflict incidents with at least one recorded fatality between 2009 to 2019.

2.2.1 Boko Haram

Boko Haram is an Islamic jihadist group based in northeastern Nigeria whose operations spread through the majority (if not all) of the states in the country but are more predominant in the Lake Chad area of West Africa. Since Boko Haram's first uprising in 2009, the group has attained notoriety for threatening stability and security in Nigeria and other neighboring countries at large. Between 2009 and 2021, the group has carried out over 5000 attacks resulting in more than 300,000 casualties, over 250,000 people fleeing into neighboring countries, and another 3 million have become internally displaced persons (IDPs) as a result of the group's activities (CFR, 2016).

The activities of the Boko Haram group have resulted in disruptions in the food production and supply chains across different geographic areas in Nigeria. The disruptions include livestock losses, destruction of irrigation, input supply systems, and farming facilities. These happenings have intensified constraints households face in acquiring food, exacerbated food security issues

and plunged most of the households in the affected areas into dire poverty (Kah, 2017; George et al., 2019). Kah (2017) indicate that there is an ongoing food crisis in the Lake Chad region of West Africa as a result of the instability created by the Boko Haram insurgency. This is also supported by a FEWS-NET report that indicated that households in the worst affected areas experience extreme levels of acute food insecurity and famine (FEWSNET, 2020). In addition, annual grain flow between Borno and its partner states in trade decreased from 294,940 tons before 2011 to about 94,500 tons in 2014 (Sidney et al., 2017). Compared to the previous five-year average, the production of sorghum, millet and rice in the Borno state dropped 82 percent, 55 percent and 67 percent, respectively, in 2016 (FEWSNET, 2016), while conflicts more than doubled during the same period. In the three most affected states of Borno, Adamawa and Yobe, the estimated impacts of the conflict on agriculture (farmlands, livestock, farm assets and equipment) between 2009 and 2015 are around $3.7 billion (World-Bank et al., 2015). Farmers in Borno, Yobe and Adamawa prioritize their safety and are no longer able to produce sufficient quantities of food crops to meet the demand from other parts of Nigeria (Kah, 2017).

Further, Adelaja and George (2019) show evidence that the increased intensity of Boko Haram attacks reduces output of some of the major staple crops such as sorghum, cassava, soya and yam. Additionally, about 9.1 million people have been affected by food insecurity issues in the three most affected northern states due to delayed planting, missed harvest seasons due to the scarcity of available physical and human capital, and increased food prices (Awodola and Oboshi, 2015; Adelaja and George, 2019). The group's activities directly affects food availability in Nigeria through the destruction of agriculture markets, roads, bridges, and border crossing; limited access to markets; and disruptions in the food distribution systems, all of which may have driven up food prices, reduced food accessibility and increased incentive to produce in neighboring states (George et al., 2019).

2.2.2 Farmer-Herder Conflicts

Farmer-herder clashes are prevalent in the Middle-Belt and North Central regions of Nigeria.[2] The conflict's main actors are sedentary farmers and nomadic livestock-herding groups (pastoral-

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[2]Benue, Taraba, Nassarawa, Plateau, Kaduna and Katsina are some of the Middle-Belt states that have been experienced the devastating effects of the clashes between farmers and herders (Chinyere et al., 2018)

ists) who clash over land and water use (Kaila and Azad, 2019). Since farmers and pastoralists rely on similar agricultural resources to fuel their operations, factors such as seasonal climate variations, increasing population, drying of waterholes, and shifting in rainfall pattern leading to drought as a result of the changing climate intensifies the competition of the two groups for scarce resources and are potential causes of recent escalating tenses between pastoralist and sedentary crop farmers (ICG, 2018; FAO, 2011).

Recent escalation in clashes between the two groups may have negative effects on food production, it's availability and consumption in Nigeria. Some of the consequences of recent escalating clashes include the destruction of farmlands and properties, looting of livestock and damaging of crops, widespread displacement of people (Idowu, 2017). More specifically, increases in attacks by herdsmen in Benue state in 2018 resulted in about a 45 percent decline in food production (Babagana et al., 2019).

2.2.3   State militia, law enforcement and "other" conflicts

In this section, we discuss the three remaining conflict types: state militia actors, law enforcement agencies and all other conflicts. First, we discuss conflict perpetrated by state militia agents. State/ethnic militias are groups mainly established to help protect/defend local areas against exploitation from the government and other local groups. Interestingly, some state/ethnic militia groups may play major or minor roles of well-defined conflict associations such as conflict involving insurgents or farmer and herder groups. Other types of state militia-related conflicts include incidents with organized crime groups, communal tensions, and resource-related conflicts in the south-south Niger Delta area. The Niger Delta region contains vast reserves of oil and gas, which play an important role in the Nigerian economy. The region's oil and gas resources have been the center of most of the area's violent unrest. The Niger Delta militants demand more local control and management of oil revenue as well as community compensation for pollution from resource exploration. Due to the Nigerian government's dependence on oil, conflicts in the area affect Nigeria's public policy (Nwokolo et al., 2018), further making a point for the relevance of quantifying the effects of these conflicts. Conflicts perpetrated by state militias have the potential to affect household food consumption negatively, though there is little evidence.

Second, we discuss conflict incidents perpetrated by law enforcement agents. Compared to

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the state militia actors, conflict incidents perpetrated by law enforcement actors like the military or police are typically influenced by the duty of law enforcement agencies to protect citizens or civilians, properties and prevent crime (Odisu, 2016). Law enforcement agencies confront other perpetrators of violence when they judge the latter to be breaking the law. While law enforcement agencies are responsible for protecting civilians, there are some major concerns about the role law enforcement agencies play in maintaining stability in the country. For example, Amnesty International (2019) government soldiers and the police kill civilians indiscriminately in efforts to ensure the safety of all citizens. Thus, the actions of law enforcement agents can also cause disruptions in food availability and have negative consequences on household food consumption.

Finally, our last conflict category is conflict events perpetrated by all other conflict incidents that do not neatly fit into one of the preceding categories into the catch-all "other" conflict category. Perpetrators of conflict in this group are usually motivated by a broad class of factors, including social, political, and economic grievances.

3 Methods

3.1 Data

To estimate the effects of various conflict types on dietary diversity and food consumption patterns, we use household-level food consumption data from the first three rounds of the nationally representative GHS-Panel which is part of the Living Standard Measurement Study (LSMS) integrated surveys and geo-coded conflict information from ACLED database for Nigeria.

3.1.1 Household food consumption data and construction of outcome variables

The household-level data from the first three waves of the GHS we employ were collected between 2010 and 2016 during two household visits (i.e., post-planting and post-harvest) each survey year. We use data for both the post-planting and post-harvest survey periods for each household which leads to two observations each year for all households used in our analysis. By considering both post-planting and post-harvest data in our analysis, we are able to control for seasonal variation in household food availability and consumption. We are also able to account for potential seasonal

effects of conflict since it is possible that conflict incidents that occur during the agricultural season may affect households differently than conflicts that occur out of season. We extract data on household consumption of various food items during a 7-day reference period and categorize the food items into eight food groups following WFP (2008).

We use two variables to measure household-level dietary diversity in our analysis – the FCS and Berry-index (BI). The FCS is a standard measure for categorizing and tracking households' dietary diversity, nutrient intake and food security (**?**). We calculate the FCS measure by capturing the household consumption frequencies of the eight food groups and multiplied by the standardized food group weight:

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\begin{aligned}
FCS = &(\text{staples} \times 2) + (\text{pulses} \times 3) + (\text{vegetables} \times 1) + (\text{fruit} \times 1) + (\text{meat/} \\
&\text{fish } \times 4) + (\text{milk} \times 4) + (\text{sugar} \times 0.5) + (\text{oil} \times 0.5)
\end{aligned}
\tag{1}
$$

The weights assigned to the food group are based on the relative nutritional value of the consumed food groups (WFP, 2008). Food groups comprised of nutritionally dense foods, such as animal products, receive larger weight than those containing less nutritionally dense foods, such as tubers (WFP, 2008). Households are then categorized as poor, borderline, or acceptable based on their FCS. Specifically, FCS scores between $0 - 21$ are poor, $21.5 - 35$ are borderline, and greater than 35 are acceptable (WFP, 2008). Additionally, to better understand how conflict impacts food consumption patterns, we analyze the effect of conflict on per capita household consumption of the eight food groups used to construct the FCS.

Our second dietary diversity measure, Berry-index (BI), is a Simpson index-type diversity measure that captures the number and the distribution of food items that households consume (Drescher et al., 2007). The BI also represents the diversity of household food consumption across different food groups. We construct the BI from the set of eight food groups that we used to construct the FCS. Specifically, we define the BI as $1 - \sum_{j=1}^{8} P_{ij}^2$ where P_{ij} is the proportion of food group j for household i's total food consumed one week before surveys, such that $P_{ij} = \frac{w_{ij}}{W_{ij}}$, where w_{ij} is the weight in kilograms of food group j consumed by of household i, and W_i is the total sum of all food groups, w_{ij}, consumed by the household. The BI is bounded between 0 and $1 - P_{ij}^2$, where a household's food consumption is considered diverse as the BI approaches 1 and less diverse as it approaches 0 (Drescher et al., 2007).

To better understand how conflict impacts food consumption patterns and which food groups

may drive changes, we analyze the effect of conflict on per capita household consumption of the eight food groups used to construct the FCS and the BI. In addition, we analyze the effects of conflict on the consumption of own produced food and market purchased food for each food group, measured by per capita kilogram consumption of each food group one week before interviews were conducted. These analyses are necessary because the literature currently shows mixed findings on the contribution of own-produced and purchased food to household dietary diversity (Fraval et al., 2020). As additional checks for the effects of conflict household food consumption, we assess the effects of conflict on an alternate set of food groups following (Leung, 1968; Kennedy et al., 2011). The food groups represent a set of twelve food groups that comprise cereals/grains; roots, tubers and other starches; vegetables; fruits; meat; eggs; fish; legume, nuts and seeds; milk/milk products; oils and fats; sweets; and spices and beverages. This set of twelve food groups is used interchangeably with the eight food groups in the food consumption and diversity literature (Maxwell et al., 2013).

3.1.2 Household and community level variables

We include household and community level controls from the GHS survey in all estimations. Household-level control variables used are household size, age of household head, gender of household head, household farm size, the average distance from homes to plots, an indicator variable of whether a household is in a rural or urban area, an indicator variable of whether the household head has had any form of formal education, and total household income. We also account for heterogeneity across communities (EAs) with community-level controls including the distance (measured in kilometers) from the household's EA to the nearest road, market, administrative center and population center, as well as climate variables like annual rainfall and mean annual temperature.

The distance to road variable is measured as the EA's distance to the nearest trunk road (mainly federal roads and some with state links). The distance to population center variable measures each EA's distance to the nearest town with population greater than 20,000. The distance to population center variable measures each EA's distance to the nearest town with population greater than 20,000. The location of EAs is constructed with random location offsets to maintain the confidentiality of households.[3]

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[3]The range for offsets is constructed based on an urban/rural classification. A range of 0 to 2 km is

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3.1.3 Conflict data and construction of conflict measures

In this section, we discuss the conflict variables used in our analysis to capture the effects of conflict on household food consumption. We use geo-coded conflict data from the the Armed Conflict Location and Event Data (ACLED) project database to construct our conflict variables. The geo-coded conflict records from ACLED represent a range of violent conflict incidents by several agents, including governments, rebels, militias, communal groups, political parties, external actors, rioters, protesters, and civilians (Raleigh et al., 2010). We use a string-search based on the qualitative description of actors and associate actors (i.e., "*actor1*" or "*associate_actor_1*") in the dataset to extract conflict incidents perpetrated by actors for the various types of conflict we focus on (i.e., conflict perpetrated by Boko Haram insurgents, farmers and herders/pastoralists, state militias, and law enforcement). Conflicts that do not fit into any of these four conflict categories are classified into the "all other" conflict category. We classify all conflict incidents into one of these conflict categories. For each of these conflict types, we select only conflict incidents from the data for which the actors in the conflict are the instigators/perpetrators of violent clashes.

Our key independent variables of interest in the estimations are the aggregated fatality measure that is a sum of fatalities from all conflict types within twelve months before each survey was conducted as well as the total number of fatalities from conflict incidents perpetrated by each actor category – Boko Haram, farmer-herder, state militia, law enforcement, and "other" types of conflicts for the same time period. As a robustness check, we also define progressively larger radii around each EA (starting with 5 kilometers, and then to 10 kilometers) for which we capture all fatalities that resulted from conflict incidents for each conflict type. The alternate conflict measures enable us to investigate the relative time and distance effect of conflict on household food consumption.

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used as offset for household in urban areas and 0 to 5 km offset range for household in rural areas. Offset points are constrained at the state level, and there may be some precision issues for clusters located near borders (NBS, 2015).

3.2 Descriptive statistics

3.2.1 Outcome variables

We present the summary statistics of our outcome variables in panels A to D of Table 1. The table shows that during the reference week (one week before interviews were conducted), on average, household FCS fall within the poor to borderline category – average FCS is about 21.Further, with a mean BI of 0.0.55 we see that the average household has a slightly better than average food diversity as captured by the BI. With regards to the specific food groups, we see that while households, on average, consumed more kilograms of staples (5.63) than any other food group, households consume less of milk and milk products that any other food group (0.68). This consumption pattern is reflected across both own consumed food and purchased food.

3.2.2 Control variables

Panel E in Table 1 also shows descriptive statistics of household and community (EA) level variables. Overall, sixty-nine percent (68 percent) of the household in the GHS data live in the rural parts of Nigeria. The average household size is 6 people. The average age of household heads is about 51 years with 17 percent of these household heads being females. About 67 percent of the household heads have had some form of basic formal education. At the community-level, average distance from the community center to a main road is 8.9 kilometers. The average distances to the population center, market, nearest border, and administration center are 20.7 km, 67.2 km, 312.98 km, and 64.31 km, respectively. The annual mean temperature is 26.4oC and mean 12-month total rainfall is 1,451.28 millimeters.

3.2.3 Conflict variables

Descriptive statistics of the conflict measure used in our analysis are presented in Table 2. On average, the total number of fatalities recorded within 10 km of households EA (0.69) is about three times what was recorded with 5km of household EA (0.25). With respect to the specific conflict types, Table 2 shows that more fatalities (both total counts and means) are recorded for Boko Haram conflict than any other conflicts within 5 km and 10 km radii of EA. Farmer-herder conflict events resulted in the next highest number of fatalities.

3.3 Empirical Strategy

In this section, we present our estimation strategy for assessing the effects of different types of conflicts on household dietary diversity and food consumption patterns. We use the following empirical model to estimate the impacts of the different types of conflicts on household food consumption patterns:

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\begin{aligned}
F_{ihlpt} = \gamma + \alpha_1 \text{ conflict } BH_{ihpt} + \alpha_2 \text{ conflict } FH_{ihpt} + \alpha_3 \text{ conflict } SM_{ihpt} + \alpha_4 \\
\text{conflict law}_{ihpt} + \alpha_5 \text{ conflict Other}_{ihpt} + X'_{ijltp}\beta + \tau_i + v_t + \eta_p + \kappa_{lt} + \varepsilon_{ihltp}
\end{aligned}
\tag{2}
$$

where F_{ihlpt} represents the specific dependent variable of interest (our diversity measures and per capita quantity of different food groups consumed) for household i in EA h, LGA l, planting season p, and survey year t. Excluding our diversity measures, we transform F_{ihlpt} via the inverse hyperbolic sine (IHS) to reduce any skewness in our food consumption variables, and improve the interpretability of our results across different outcomes, as well as reduce the effect of outliers on the estimated parameters (Aihounton and Henningsen, 2021; Bellemare and Wichman, 2020). Also, the IHS transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variable but allows for zeroes in the data (Bellemare and Wichman, 2020). The independent variables of interest are the number of fatalities from conflict incidents instigated by Boko Haram, farmer-herder, state militia, law enforcement and other conflict types actors recorded for household i within 5 km radius of the EA h during the twelve months period before the interviews were conducted. The coefficients on these conflict measures represent the differential effect of each conflict type on the food consumption outcome variables. As alternative definitions of conflict measure, we use conflict measure for the five specified conflict types within 10km of the EA twelve months before each survey period as robustness checks.

The matrix X'_{ihlpt} represents the set of (time-varying) household-level and EA-level controls variables as discussed in Section 3.1.2. Additionally, τ_i indicates the household-level fixed effects, v_t are the survey year fixed effects, η_p are the survey season fixed effects, κ_{lt} represents the LGA-specific time trends which is constructed by interacting LGAs and a time trend for survey years to control for specific LGA-level changes over time, and ε_{ihltp} is the error term. The household-level fixed effects controls for possible time invariant unobservables that may vary across different EAs, and survey year fixed effects account for possible cross-sectionally invariant factors, which

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could potentially introduce spurious associations that may bias the estimated effects of conflict. All regressions are estimated using panel fixed-effect models with standard errors clustered at the EA level.

4 Results and discussion

5 Results and discussion

We present the results of our panel fixed-effects models in Table 3 to 6. Results of our robustness checks in Tables A2 to A11 in the appendix where we present the effects of alternative measures of conflict within 10km radii of household's EAs. The regression coefficients along with the respective clustered robust standard errors in parenthesis are reported in the tables.

5.1 The effect of conflicts on the diversity of food households consume

Table 3 reports the regression results for the estimated effect of our conflict measures (both aggregated fatality counts and fatality counts for the various types of conflict we focus on) within 5km of the households EA on food diversity outcomes. The results using fatality counts aggregated across all five conflict types show that households exposed to an additional fatality from armed conflict experience a significant decline in food diversity, as measured by the FCS, on average, about a 0.15 decrease in FCS, which translates to about 0.2 percent decrease in the FCS.Similarly, we find that an additional fatality from conflicts perpetrated by "other" conflict actors decreases the BI by 0.004 points. Although modest, the impact we find on our diversity measures, particularly the FCS, is consistent with findings from previous studies regarding the impact of conflict on household food diversity. For instance, Dabalen and Paul (2014) and George et al. (2019) find that households exposed to armed conflict experience a significant reduction in dietary diversity.

Further, the results from our regressions using fatalities disaggregated by the perpetrator of the conflict show that households exposed to an additional fatality from violence perpetrated by Boko Haram insurgents and actors in all other conflicts within about 5km radius of households EA experience about a 0.119 and a 0.341 decline in the FCS, which translates to slight percent decreases in the FCS of about 0.1 and 0.3 percent, respectively. We also find that households

exposed to an additional fatality from violence perpetrated by actors in all other conflicts category experience about a 0.004 decline in the BI. Collectively, these results support findings from previous studies, which indicate that armed conflict negatively affects the diversity and adequacy of food items households consume. Thus, the current finding adds to the considerably large body of literature that indicates that armed conflicts do not only make households less food secured (George et al., 2019; Dabalen and Paul, 2014; D'Souza and Jolliffe, 2013; Fadare et al., 2019), but they also make household more vulnerable to crises which in turn can have telling negative effects on health, cognitive and physical development of household members, particularly children (Brück and d'Errico, 2019).

5.2 The effect of conflicts on household consumption of different food groups

Tables 4 reports the regression results for the estimated effect of violence, measured by the fatalities for each conflict type within 5km of the households EA on IHS transformations for the values of household per capita consumption of food items categorized into food groups. Overall, we find various types of conflicts have heterogeneous effects on the type of food items households consume. The direction and magnitude of the estimated effects also vary considerably across conflict types. For instance, violence perpetrated by Boko Haram insurgents within 5km radius of household's EA decreases household consumption of fruits by 0.03 percent but increase consumption of sugars by about 1.2 percent. Violence perpetrated by farmers and herders increase consumption of staples, and pulses by about 1.6 percent, and 0.7 percent, respectively. Additionally, we find that state militia violence decreases consumption of pulses by about 1.3 percent. Violence by law enforcement agents also increase consumption of staples by about 0.027 percent but decreases pulses and milk consumption by 1.4 percent and 2.9 percent, respectively. All other effects are not statistically significant.

Overall, the results suggest negative effects of conflict on household food diversity measured by the FCS across conflict types. Our finding of negative effects of conflict perpetrated by actors such as Boko Haram insurgents, farmer and herders, state militia agents, and law enforcement agents on consumption of fruits, vegetables, pulses, and sugars, respectively, give an indication of how the disruptive effects of conflict can affect consumption and attainment of necessary nutrients

needed for growth and physical wellbeing. Additionally, the heterogeneity in our results also back our assumption that households in a particular geographic area will consume a combination of food items available to them based on how conflict actors in that particular geographic affect the availability and accessibility of food items in specific food groups. We speculate that, perhaps, households in areas where clashes between farmer-herders are prevalent usually rely on root crops that bear yields underground, have relatively longer life span and can easily be stored at home for a longer time even if the items are purchased from the market. If this assertion is true, then our finding that households exposed to farmer-herder conflict consume more staples and pulses (most of which are underground yield-bearing crops and can be stored for a longer time) and less of vegetables (most of which are highly perishable) is not surprising.

5.3 The effect of conflicts on household consumption own-produced food groups

Given a decline in the diversity of food consumed, we seek to understand if this change comes from the diversity of foods planted for home consumption. Specifically, we assess the effects of conflict on household consumption of own-produced food items and we report the results in Table 5. Each table shows the estimated effects of violence, measured by the fatalities for each conflict type within 5km of the household's EA on the IHS transformations for the values of household consumption of food produced by the household categorized into various food groups. The results show that while violence perpetrated by Boko Haram actors decreases consumption of own-produced vegetables and milk by about 0.1 percent and 0.01 percent, respectively. We also find that farmer-herder conflict decreases consumption of own-produced staples by about 0.05 percent, state militia violence increases consumption of own-produced pulses by about 1.9 percent and law enforcement violence increases consumption of own-produced staples and fruits by about 4.7 percent and 1.6 percent, respectively. In addition, households exposed to an additional fatality from violence perpetrated by agents in all "other" conflict category decrease consumption of staples, vegetables, fruits and milk by about 2.9 percent, 1 percent. 1.8 percent and 0.03 percent, respectively.

These results align with our expectation of how different types of conflict affect household engagement in the cultivation of crops for consumption purposes or more broadly, engagement

in agricultural activities. We assume that since disruptive conflict incidents such as ones perpetrated by Boko Haram insurgents, farmers and herders, and other conflict actors are more likely to cause household to decrease the cultivation of certain types of crops, which in turn reduces household consumption of home production. Similarly, these disruptive conflicts can also incentivized households to sell more and consume less of the food items the households produce if the conflict incidents cause disruptions in supply chains that lead to rises in the prices of foods items such that households feel better off selling their produce than consuming them. On the other hand, some of the positive results we find for violence perpetrated by law enforcement agents can be attributed to the fact that law enforcement agents can create a safe and enabling environment for households to cultivate crops which can increase household consumption of the crops there are able to cultivate.

5.4 The effect of conflicts on household consumption of purchased food items

Similar to the previous section, we also investigate the contribution of purchased food items to overall household food consumption by analyzing the effects of conflict on household consumption of food items purchased from the market. The results are presented in Table 6, which shows regression results for the estimated effect of violence, measured by the fatalities for each conflict type within 5km of the households EA on the inverse hyperbolic sine transformations for the values of household consumption of purchased food items categorized into the eight food group. The results show that households exposed to an additional fatality from Boko Haram violence experience about a 0.3 percent increase in consumption of purchased vegetables. Violence perpetrated by farmer and herder groups results in about 2 percent, 0.7 percent and 1.3 percent increase in consumption of purchased staples, pulses and sugars. Violence perpetrated by state militia actors also results in about 0.6 percent decrease in consumption of pulses purchased from the market. Similarly, while an additional fatality from violence perpetrated by law enforcement actors results in, on average, about 4.4 percent, 2 percent and 2.9 decrease in consumption of staples, pulses and sugars, respectively.

The results discussed in this section illustrate the trade-offs between consumption of own produce food and food purchased from the market. We find that while households exposed to

law enforcement and state militia violence consume more of own-produced staples and pulses, respectively, the same households consume less of staples and pulses purchased from the market. Similarly, while households exposed to farmer-herder violence consume less of own-produced staples, the same households consume more of staples purchased from the market. The finding is lacking in the current literature. The degree and level of trade-off presented by the findings in this study indicates that although households might prefer consuming their own-produced items or even purchasing food from the market, exposure to different types of conflict ultimately affects how much households consume and the sources of food items that the households consume.

5.5   Robustness checks

In this section, we discuss the findings of the additional analyses we conduct to check the robustness and validity of our main results. First, we use conflict measures (aggregated fatalities counts and fatalities all each conflict type) within 10 km of household EAs to assess the effect of conflict on dietary diversity and food consumption (Tables A2 to A11). We find consistent, and in some cases, even show stronger effects of conflict on food consumption. For example, we find an additional increase in our aggregate conflicts measure causes a 0.12 decline in the FCS. This effect is largely due to violence perpetrated by Boko Haram insurgents, farmer and herder groups and state militia violence, which cause a 0.11, 0.18 and 0.78 decrease in the FCS, respectively. In addition, the results presented in Tables A2 to A5 are all consistent with the results from our primary estimations and also show interesting trade-offs between household consumption of own-produced food and food purchased from the market.

Second, we also conduct our analyses using our base and alternate conflict measure to assess the effect of conflict on a set of twelve food groups that are used interchangeably with the eight we use in our primary analysis. We represent these results in Tables A6 to A11. Overall, the results from these estimations are also consistent with our primary findings but we observe that the significance of the effects we obtain decrease as we move from 5 km conflict measure to the 10 km conflict measure.

6   Conclusion

The question of how conflict affects household dietary diversity and food consumption patterns is critical to understanding the relationship between violence and food security. While the current literature provides considerable evidence to support the fact that conflict generally has a negative effect on household dietary diversity and related outcomes, there is still limited research on how different perpetrators of violence affect household consumption of different food groups. The existing literature either assesses the aggregated effects of conflict by grouping all violent events together or the impacts of specific conflict actors/actor dyads in separately while ignoring the potential effects of conflicts perpetrated by other sets of actors.

We fill the gap in the current literature by assessing the effect of different conflict types on household food diversity and consumption patterns. Our estimation strategy exploits variation in household exposure to conflict across geographic space, time, and more importantly, the perpetrator of conflict incidents using a nationally representative panel dataset and geo-coded conflict records. Our results show strong aggregated negative effects of conflict on household FCS. But we also find significant heterogeneity in the impacts of conflict perpetrated by various actors on household dietary diversity and consumption of various food groups. In addition, we find significant trade-offs between consumption of own-produced and purchased food. However, collectively, our results indicate that exposure to conflict causes households to consume more of food items such as stables, pulses and sugar that are less perishable and can easily be stored at home even if they are purchased from the market, and less of vegetables, fruits and milk products which perish easily.

Our results also have several implications for future research and discussions about food security in developing countries. For instance, while we find interesting trade-offs between consumption of own-produced and purchased foods, we still find strong overall and heterogeneous negative effects of conflict. While own-produced food can improve the diversity of household food, we speculate that our findings show that channels such as access to functioning input and output markets are more important to improvements in household dietary diversity than production. Our findings also have strong implications for policy work on food aid and efforts to improve food security in conflict-affected regions of the world.

Tables

Table 1. Summary statistics of outcome variables

Statistic	N	Mean	St. Dev.	Min	Max
Panel A: Diversity measures					
Food consumption score (FCS)	27,870	20.63	20.66	1.17	102.20
Berry-index (BI)	27,870	0.55	0.17	0.00	0.86
Panel B: Per capita quantity of food consumed					
Staples	28,570	5.63	11.33	0.00	576.66
Pulses	26,059	0.68	1.11	0.00	28.29
Vegetables	27,716	3.00	7.85	0.00	430.39
Fruits	21,702	0.73	5.05	0.00	367.28
Meat and Fish	28,570	0.90	2.78	0.00	125.80
Milk	22,201	0.28	1.54	0.00	60.00
Sugar	24,887	0.55	2.03	0.00	150.15
Oil	27,318	0.66	2.63	0.00	152.00
Panel C: Per capita own-produced food consumed					
Staples	28,570	2.36	6.30	0	298
Pulses	26,059	0.13	0.50	0.00	14.64
Vegetables	27,716	0.23	2.22	0.00	156.20
Fruits	21,702	0.20	1.37	0.00	64.00
Meat and Fish	28,570	0.05	0.81	0	112
Milk	22,201	0.01	0.17	0.00	8.08
Sugar	24,887	0.01	0.97	0.00	150.15
Oil	27,318	0.07	1.53	0.00	152.00
Panel D: Per capita purchased food consumed					
Staples	28,570	3.27	8.60	0.00	576.66
Pulses	26,059	0.55	1.01	0.00	28.29
Vegetables	27,716	2.77	7.48	0.00	430.39
Fruits	21,702	0.53	4.86	0.00	367.28
Meat and Fish	28,570	0.85	2.66	0.00	125.80
Milk	22,201	0.26	1.54	0.00	60.00
Sugar	24,887	0.54	1.79	0.00	60.75
Oil	27,318	0.59	2.13	0.00	112.50
Panel E: Control Variables					
Age of household head (years)	27,840	51.41	15.12	15.00	98
Total farm area (Ha)	28,570	0.66	1.23	0	8
Household size (count)	28,570	6.36	3.41	1	35
Any education (0/1)	26,876	0.67	0.47	0.00	1.00
Average distance to plots (km)	28,570	1.03	4.79	0	89
Distance to main road (km)	28,566	8.88	13.18	0.00	115.20
Rural household (0/1)	28,570	0.68	0.47	0	1
Female headed households (0/1)	28,570	0.17	0.38	0	1
Distance to population center (km)	28,566	20.71	18.79	0.06	130.50
Distance to main market (km)	28,566	67.17	43.55	0.28	214.36
Distance to nearest border (km)	28,566	312.98	181.38	1.50	671.80
Distance to administration center (km)	28,566	64.31	55.06	0.18	442.70
Annual mean temperature oC	28,566	26.36	0.92	21.00	28.80
Annual precipitation (mm)	28,566	1,451.28	643.36	324.00	3,906.00
Total income	28,570	323,263.50	651,537.20	−415,600	9,480,000

Notes: The table presents descriptive statistics of the outcome and control variables use in the empirical analysis. All quantities of food groups consumed represent pre capita (Kg/household size) total household consumption of food items categorized into each food group. The food items are recorded for one week before the survey was conducted.

Table 2. Descriptive statistics of conflict measures

Statistic	Total fatalities	Mean	St. Dev.	Min	Max
Aggregated fatalities					
Total fatalities within 5km	7,152	0.25	3.62	0	91
Total fatalities within 10km	19,665	0.69	7.01	0	190
Boko Haram conflicts					
Fatalities within 5km	4,635	0.16	3.11	0	91
Fatalities within 10km	12,557	0.44	6.24	0	190
Farmer-herder conflicts					
Fatalities within 5km	3,205	0.04	0.95	0	39
Fatalities within 10km	1,136	0.11	1.87	0	66
State militias conflicts					
Fatalities within 5km	361	0.01	0.40	0	19
Fatalities within 10km	1,569	0.05	0.82	0	20
Law enforcement conflicts					
Fatalities within 5km	574	0.02	0.40	0	19
Fatalities within 10km	1,579	0.06	0.72	0	23
All other conflicts types					
Fatalities within 5km	446	0.02	0.34	0	12
Fatalities within 10km	755	0.03	0.42	0	12

Notes: The table presents summary statistics of the conflict variables used in the analysis. The table shows fatalities recorded within 5 km and 10 km of households EA for each conflict type. Fatalities conflict measures for each conflict type are obtained from conflict incidents perpetrated by the main actors of each conflict type. The conflict measure presented here are from conflicts incidents spanning a 12 month period before the interviews for each survey period was conducted. N = 28,570.

Table 3. Effect of conflict on household food diversity

	Food consumption score		Berry-index	
	(1)	(2)	(3)	(4)
Total fatalities (5km radius)	−0.148***		0.0004	
	(0.056)		(0.0007)	
Boko Haram fatalities (5km radius)		−0.119**		0.0001
		(0.053)		(0.0008)
Farmer-herder fatalities (5km radius)		0.350		0.0023
		(0.249)		(0.0024)
State militia fatalities (5km radius)		0.760		0.0250
		(2.045)		(0.0680)
Law enforcement fatalities (5km radius)		−0.075		−0.0160
		(2.875)		(0.031)
Other fatalities (5km radius)		−0.341*		−0.004***
		(0.181)		(0.0007)
Age of household head	−0.009	−0.009	0.001**	0.001**
	(0.064)	(0.064)	(0.000)	(0.000)
Total farm area	0.351	0.348	0.003	0.003
	(0.391)	(0.391)	(0.003)	(0.003)
Household size	−2.203***	−2.205***	−0.000	−0.001
	(0.389)	(0.389)	(0.002)	(0.002)
Any education	0.234	0.234	0.018*	0.018*
	(0.632)	(0.632)	(0.009)	(0.009)
Distance to plots	−0.067	−0.068	0.000	0.000
	(0.048)	(0.048)	(0.000)	(0.000)
Distance to main road	−0.089	−0.089	−0.000	−0.000
	(0.058)	(0.058)	(0.001)	(0.001)
Rural household	54.414***	54.419***	−0.082	−0.082
	(17.937)	(17.937)	(0.057)	(0.057)
Female headed households	−4.072	−4.072	−0.053	−0.053
	(2.840)	(2.840)	(0.046)	(0.046)
Distance to population center	−0.003	−0.003	−0.000	−0.000
	(0.042)	(0.042)	(0.000)	(0.000)
Distance to main market	−0.029	−0.029	−0.000	−0.000
	(0.073)	(0.073)	(0.001)	(0.001)
Distance to nearest border	−0.043	−0.042	0.001***	0.001***
	(0.039)	(0.039)	(0.000)	(0.000)
Distance to administration center	−0.048	−0.048	0.000	0.000
	(0.032)	(0.032)	(0.001)	(0.001)
Annual mean temperature	−1.037	−1.037	0.012	0.012
	(2.394)	(2.396)	(0.016)	(0.016)
Annual precipitation	−0.007	−0.007	−0.000	−0.000
	(0.015)	(0.015)	(0.000)	(0.000)
Total income	−0.000	−0.000	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
Planting season	−1.116*	−1.121*	0.010***	0.010**
	(0.0162)	(0.0079)	(0.0182)	(0.0120)
Household fixed effects	Yes	Yes	Yes	Yes
Planting season fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes
Observations	17,375	17,375	17,375	17,375
Adjusted R^2	0.275	0.275	0.2819	0.2819

Notes: The table presents results for estimating the effects of fatalities within 5km of EAs on the diversity of foods households consume. The outcome measures of interest are the food consumption score (FCS) and Berry-index (BI). Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 4. Effect of conflict on household consumption of food in different food groups.

	IHS staples	IHS pulses	IHS vegetables	IHS fruit
	(1)	(2)	(3)	(4)
Boko Haram Fatalities (5km radius)	0.00014	0.00254	−0.00215	−0.00314***
	(0.00230)	(0.00172)	(0.00268)	(0.00116)
Farmer-herder fatalities (5km radius)	0.01524***	0.00723**	−0.00934**	0.00703
	(0.00450)	(0.00330)	(0.00446)	(0.00565)
State militia fatalities (5km radius)	−0.01630	−0.01292*	0.00218	−0.01019
	(0.01365)	(0.00670)	(0.01851)	(0.01470)
Law Enforcement fatalities (5km radius)	0.00272**	−0.01381**	−0.00099	−0.00696
	(0.00437)	(0.00436)	(0.02831)	(0.01851)
Other fatalities (5km radius)	0.00978	0.00389	0.00252	−0.02376**
	(0.01709)	(0.00844)	(0.02680)	(0.01385)
Age of household head	0.00107	0.00225**	0.00268*	0.00120
	(0.00157)	(0.00111)	(0.00150)	(0.00185)
Total farm area	0.01695	0.01089*	0.00749	0.00946
	(0.01051)	(0.00655)	(0.00805)	(0.00783)
Household size	−0.04250***	−0.03194***	−0.08473***	−0.03600***
	(0.00938)	(0.00598)	(0.00776)	(0.00855)
Distance to plot(s)	−0.00096	0.00113	−0.00125	−0.00020
	(0.00152)	(0.00090)	(0.00126)	(0.00214)
Any education	−0.02634	−0.01183	0.07090**	0.02989
	(0.02831)	(0.01637)	(0.02789)	(0.02593)
Distance to main road	0.00049	0.00100	−0.00713***	−0.00547***
	(0.00279)	(0.00125)	(0.00195)	(0.00182)
Rural household	−0.05420	0.02409	−0.23837***	0.04214
	(0.10638)	(0.05539)	(0.07528)	(0.12611)
Female headed households	0.20409	−0.03711	−0.05790	0.00276
	(0.15836)	(0.09345)	(0.12398)	(0.13380)
Distance to population center	0.00429**	0.00178**	−0.00153	−0.00098
	(0.00203)	(0.00087)	(0.00148)	(0.00114)
Distance to main market	−0.00025	−0.00037	−0.00126	−0.00155
	(0.00189)	(0.00098)	(0.00119)	(0.00117)
Distance to nearest border	−0.00061	0.00000	0.00171*	0.00001
	(0.00088)	(0.00035)	(0.00095)	(0.00037)
Distance to administration center	−0.00076	−0.00047	−0.00041	−0.00123
	(0.00143)	(0.00061)	(0.00071)	(0.00085)
Annual mean temperature	0.08050	0.02421	0.10758	0.02126
	(0.05742)	(0.04028)	(0.06677)	(0.04844)
Annual precipitation	−0.00038	−0.00012	−0.00040	0.00014
	(0.00023)	(0.00011)	(0.00028)	(0.00021)
Total income	0.00000*	0.00000	0.00000**	−0.00000
	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Planting season	−0.06918***	−0.02586***	0.10253***	−0.03325***
	(0.01602)	(0.00790)	(0.01823)	(0.01200)
Household fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes
Observations	26,572	24,236	25,880	19,913
Adjusted R^2	0.51983	0.44898	0.66236	0.36770

Notes: The table presents results for estimating the effects of fatalities within 5km of EAs on the quantity of different food groups households consume. The food groups presented in this table are staples, pulses, vegetables and fruits. The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 4. Continued

	IHS meat and fish	IHS milk	IHS sugars	IHS oil
	(1)	(2)	(3)	(4)
Boko Haram Fatalities (5km radius)	−0.00061	0.00024	−0.00074	−0.00091
	(0.00154)	(0.00185)	(0.00133)	(0.00137)
Farmer-herder fatalities (5km radius)	0.00129	0.00485	0.01215**	−0.00115
	(0.00692)	(0.00695)	(0.00481)	(0.00400)
State militia fatalities (5km radius)	−0.00601	0.00200	0.00245	−0.01078
	(0.01302)	(0.01785)	(0.00802)	(0.01724)
Law Enforcement fatalities (5km radius)	0.00294	0.01194	−0.02909***	−0.01364
	(0.01493)	(0.01857)	(0.01071)	(0.01536)
Other fatalities (5km radius)	−0.00108	−0.00528	0.00593	0.00465
	(0.00697)	(0.02190)	(0.01679)	(0.01151)
Age of household head	0.00075	0.00132	0.00062	−0.00081
	(0.00102)	(0.00121)	(0.00138)	(0.00083)
Total farm area	0.00962	0.00399	−0.00331	0.01325***
	(0.00592)	(0.00623)	(0.00562)	(0.00508)
Household size	−0.06024***	−0.02401***	−0.03330***	−0.03901***
	(0.00597)	(0.00643)	(0.00716)	(0.00407)
Distance to plot(s)	−0.00005	−0.00085	−0.00007	−0.00083
	(0.00071)	(0.00098)	(0.00113)	(0.00078)
Any education	0.02770	0.00567	0.08309***	0.00945
	(0.01792)	(0.01477)	(0.01936)	(0.01412)
Distance to main road	−0.00383**	−0.00001	−0.00355**	−0.00131
	(0.00154)	(0.00142)	(0.00138)	(0.00107)
Rural household	−0.12407	−0.02449	−0.19004**	0.01451
	(0.07561)	(0.05535)	(0.07580)	(0.04097)
Female headed households	−0.02365	−0.03815	−0.09686	−0.04536
	(0.11588)	(0.08269)	(0.09640)	(0.07103)
Distance to population center	−0.00160	0.00146	−0.00102	0.00026
	(0.00116)	(0.00093)	(0.00092)	(0.00062)
Distance to main market	−0.00127	0.00182**	−0.00466***	0.00104
	(0.00100)	(0.00087)	(0.00120)	(0.00087)
Distance to nearest border	0.00074*	−0.00036	0.00279***	−0.00016
	(0.00043)	(0.00036)	(0.00047)	(0.00028)
Distance to administration center	−0.00010	−0.00092	−0.00074	−0.00032
	(0.00069)	(0.00083)	(0.00066)	(0.00042)
Annual mean temperature	0.02587	0.02598	−0.00253	0.04178
	(0.03387)	(0.03629)	(0.05027)	(0.02570)
Annual precipitation	−0.00000	0.00038	−0.00046	−0.00021**
	(0.00028)	(0.00031)	(0.00043)	(0.00009)
Total income	−0.00000	0.00000	−0.00000	0.00000
	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Planting season	−0.00601	0.08653***	0.09767***	0.07384***
	(0.00814)	(0.01058)	(0.00977)	(0.00858)
Household fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes
Observations	26,572	20,415	23,076	25,486
Adjusted R^2	0.57683	0.23406	0.28322	0.35466

Notes: The table presents results for estimating the effects of fatalities within 5km of EAs on the quantity of different food groups households consume. The food groups presented in this table are meat and fish, milk, sugars and oils. The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 5. Effect of conflict on household consumption of own-produced food.

	IHS staples	IHS pulses	IHS vegetables	IHS fruit
	(1)	(2)	(3)	(4)
Boko Haram Fatalities (5km radius)	−0.00092	0.00072	−0.00124***	−0.00027
	(0.00069)	(0.00071)	(0.00042)	(0.00017)
Farmer-herder fatalities (5km radius)	−0.00481**	0.00005	−0.00143	−0.00031
	(0.00161)	(0.00211)	(0.00411)	(0.00283)
State militia fatalities (5km radius)	−0.02039	0.0189***	0.00405	−0.00665
	(0.02770)	(0.00749)	(0.00998)	(0.01192)
Law Enforcement fatalities (5km radius)	0.04705**	0.00689	0.00808	0.01546**
	(0.02034)	(0.00631)	(0.00836)	(0.00696)
Other fatalities (5km radius)	−0.02934**	−0.00656	−0.00977***	−0.01818**
	(0.01193)	(0.01000)	(0.00379)	(0.00877)
Age of household head	0.00183	0.00075	0.00028	0.00058
	(0.00178)	(0.00069)	(0.00070)	(0.00104)
Total farm area	0.06722***	0.01228***	0.01668***	0.01605**
	(0.01332)	(0.00455)	(0.00616)	(0.00629)
Household size	−0.00889	−0.00809**	−0.00265	−0.01228**
	(0.01033)	(0.00315)	(0.00522)	(0.00513)
Distance to plot(s)	0.00288	−0.00080	0.00010	0.00095
	(0.00207)	(0.00057)	(0.00090)	(0.00113)
Any education	−0.00470	−0.02033	0.02477*	0.00804
	(0.03325)	(0.01282)	(0.01269)	(0.01272)
Distance to main road	0.00453	0.00120	0.00107	−0.00071
	(0.00299)	(0.00086)	(0.00084)	(0.00097)
Rural household	0.67586***	0.01021	0.15739***	0.15307**
	(0.13136)	(0.01515)	(0.03036)	(0.06285)
Female headed households	−0.12595	−0.00279	0.00604	0.01815
	(0.13884)	(0.02432)	(0.07464)	(0.06411)
Distance to population center	0.00873***	0.00247***	0.00097	0.00022
	(0.00202)	(0.00059)	(0.00059)	(0.00072)
Distance to main market	0.00099	0.00038	−0.00012	−0.00061
	(0.00214)	(0.00038)	(0.00043)	(0.00040)
Distance to nearest border	−0.00138	−0.00025	0.00020	0.00011
	(0.00094)	(0.00022)	(0.00020)	(0.00016)
Distance to administration center	−0.00137	0.00005	−0.00008	−0.00042
	(0.00119)	(0.00021)	(0.00037)	(0.00049)
Annual mean temperature	0.01879	−0.00761	−0.01708	0.01994
	(0.09672)	(0.02192)	(0.02891)	(0.04460)
Annual precipitation	0.00030	0.00004	0.00030***	0.00015***
	(0.00029)	(0.00005)	(0.00009)	(0.00006)
Total income	0.00000***	0.00000***	0.00000	0.00000
	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Planting season	−0.08160***	−0.03545***	0.07892***	0.00182
	(0.01453)	(0.00648)	(0.00752)	(0.00703)
Household fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes
Observations	26,572	24,236	25,880	19,913
Adjusted R²	0.56742	0.30062	0.22006	0.27056

Notes: The table presents results for estimating the effects of fatalities within 5km of EAs on the quantity of own-produce food groups households consume. The food groups presented in this table are staples, pulses, vegetables and fruits. The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 5. Continued

	IHS meat and fish	IHS milk	IHS sugars	IHS oil
	(1)	(2)	(3)	(4)
Boko Haram Fatalities (5km radius)	−0.00040	−0.00008*	−0.00003	−0.00019
	(0.00035)	(0.00004)	(0.00002)	(0.00033)
Farmer-herder fatalities (5km radius)	−0.00044	0.00012	−0.00045	−0.00091
	(0.00088)	(0.00040)	(0.00039)	(0.00104)
State militia fatalities (5km radius)	0.00061	0.00045	0.00048	−0.00589
	(0.00251)	(0.00125)	(0.00042)	(0.00590)
Law Enforcement fatalities (5km radius)	0.00078	0.00126	−0.00002	0.00568
	(0.00197)	(0.00104)	(0.00069)	(0.00434)
Other fatalities (5km radius)	−0.00145	−0.00291*	0.00013	0.00124
	(0.00092)	(0.00157)	(0.00045)	(0.00186)
Age of household head	0.00027	0.00033	0.00007	−0.00019
	(0.00033)	(0.00031)	(0.00016)	(0.00024)
Total farm area	0.00804**	−0.00083	−0.00076	−0.00072
	(0.00314)	(0.00104)	(0.00049)	(0.00208)
Household size	−0.00042	−0.00018	−0.00076	−0.00311**
	(0.00182)	(0.00115)	(0.00087)	(0.00143)
Distance to plot(s)	−0.00021	−0.00012	−0.00011	0.00017
	(0.00028)	(0.00012)	(0.00023)	(0.00021)
Any education	0.00839	0.00466	−0.00119	0.01292***
	(0.00566)	(0.00597)	(0.00114)	(0.00457)
Distance to main road	0.00020	−0.00001	−0.00003	0.00002
	(0.00044)	(0.00063)	(0.00009)	(0.00036)
Rural household	0.01960	−0.00262	−0.02209	0.12814***
	(0.01350)	(0.00388)	(0.02402)	(0.03035)
Female headed households	0.01933	0.00457	0.00288	−0.00856
	(0.01585)	(0.00511)	(0.00263)	(0.04350)
Distance to population center	−0.00025	0.00063**	−0.00001	−0.00002
	(0.00030)	(0.00030)	(0.00006)	(0.00026)
Distance to main market	−0.00026	−0.00012	−0.00013	−0.00188***
	(0.00018)	(0.00016)	(0.00011)	(0.00041)
Distance to nearest border	−0.00008	0.00003	0.00007	0.00020**
	(0.00009)	(0.00005)	(0.00006)	(0.00008)
Distance to administration center	−0.00005	0.00013	−0.00007	0.00016
	(0.00014)	(0.00015)	(0.00006)	(0.00014)
Annual mean temperature	−0.03386***	0.00783	0.00268	0.00899
	(0.01248)	(0.01310)	(0.00360)	(0.01434)
Annual precipitation	0.00008	0.00001	−0.00004	−0.00005
	(0.00008)	(0.00002)	(0.00004)	(0.00004)
Total income	0.00000	0.00000***	0.00000	−0.00000
	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Planting season	0.00554*	0.00690***	0.00126	0.00324
	(0.00294)	(0.00197)	(0.00093)	(0.00225)
Household fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes
Observations	26,572	20,415	23,076	25,486
Adjusted R^2	0.19364	0.29013	0.09542	0.20322

Notes: The table presents results for estimating the effects of fatalities within 5km of EAs on the quantity of own-consumed food groups households consume. The food groups presented in this table are meat and fish, milk, sugars and oils. The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 6. Effect of conflict on household consumption of purchased food.

	IHS staples	IHS pulses	IHS vegetables	IHS fruit
	(1)	(2)	(3)	(4)
Boko Haram Fatalities (5km radius)	−0.00010	0.00204	−0.00164	0.00334***
	(0.00211)	(0.00210)	(0.00249)	(0.00119)
Farmer-herder fatalities (5km radius)	0.02008***	0.00718**	0.00966	0.00725
	(0.00343)	(0.00282)	(0.01079)	(0.00670)
State militia fatalities (5km radius)	−0.01055	−0.00598 **	−0.00123	−0.00450
	(0.01194)	(0.00173)	(0.02060)	(0.01176)
Law Enforcement fatalities (5km radius)	−0.01483	−0.01996***	−0.00336	−0.02013
	(0.01772)	(0.00758)	(0.02823)	(0.01820)
Other fatalities (5km radius)	0.01523	0.01152	0.00749	0.03935
	(0.01630)	(0.00794)	(0.02554)	(0.02835)
Age of household head	0.00012	0.00154	0.00243	0.00054
	(0.00177)	(0.00111)	(0.00155)	(0.00178)
Total farm area	−0.02591***	−0.00023	−0.00130	−0.00520
	(0.00921)	(0.00680)	(0.00833)	(0.00759)
Household size	−0.04181***	−0.02388***	−0.08608***	−0.02588***
	(0.00945)	(0.00638)	(0.00819)	(0.00794)
Distance to plot(s)	−0.00149	0.00206**	−0.00129	−0.00116
	(0.00162)	(0.00085)	(0.00122)	(0.00183)
Any education	−0.02908	0.01371	0.06220**	0.02268
	(0.03019)	(0.01810)	(0.02838)	(0.02489)
Distance to main road	−0.00027	0.00008	−0.00780***	−0.00467***
	(0.00258)	(0.00121)	(0.00193)	(0.00180)
Rural household	−0.43055***	0.02212	−0.30237***	−0.06332
	(0.10727)	(0.05730)	(0.07647)	(0.12127)
Female headed households	0.28812*	−0.02855	−0.06623	0.00402
	(0.17330)	(0.10205)	(0.12074)	(0.12384)
Distance to population center	−0.00121	−0.00048	−0.00222	−0.00138
	(0.00195)	(0.00085)	(0.00147)	(0.00115)
Distance to main market	−0.00092	−0.00064	−0.00102	−0.00114
	(0.00124)	(0.00086)	(0.00126)	(0.00114)
Distance to nearest border	0.00013	0.00021	0.00154	−0.00013
	(0.00049)	(0.00033)	(0.00094)	(0.00034)
Distance to administration center	−0.00004	−0.00059	−0.00033	−0.00101
	(0.00097)	(0.00070)	(0.00073)	(0.00065)
Annual mean temperature	0.06557	0.03159	0.12177	−0.01277
	(0.08649)	(0.03753)	(0.07528)	(0.05459)
Annual precipitation	−0.00050***	−0.00013	−0.00050**	0.00003
	(0.00015)	(0.00012)	(0.00025)	(0.00018)
Total income	0.00000*	−0.00000	0.00000**	−0.00000*
	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Planting season	−0.01475	0.00616	0.05877***	−0.03441***
	(0.01662)	(0.00749)	(0.01761)	(0.01005)
Household fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes
Observations	26,572	24,236	25,880	19,913
Adjusted R^2	0.51035	0.38962	0.64752	0.34259

Notes: The table presents results for estimating the effects of fatalities within 5km of EAs on the quantity of purchased food groups households consume. The food groups presented in this table are staples, pulses, vegetables and fruits. The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.
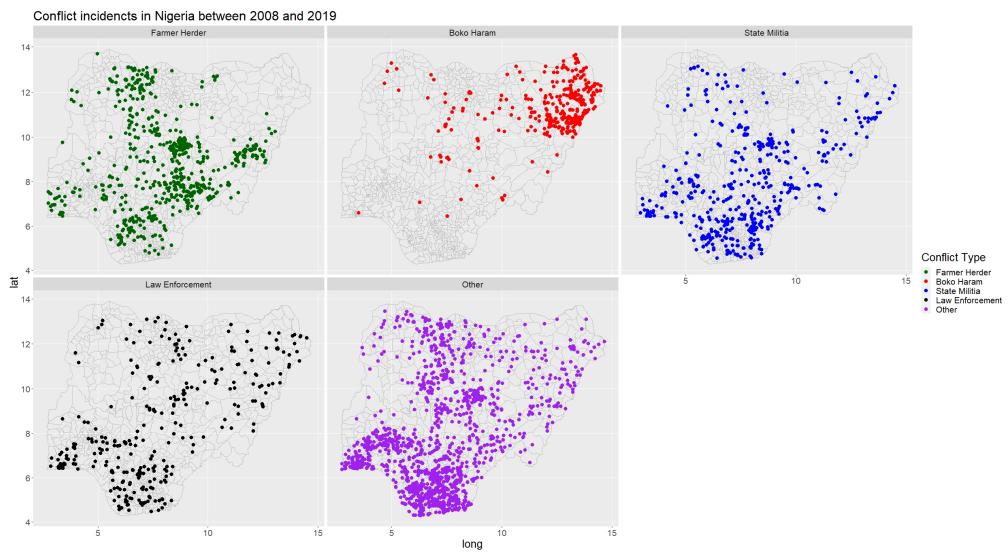
Table 6. Continued

	IHS meat and fish	IHS milk	IHS sugars	IHS oil
	(1)	(2)	(3)	(4)
Boko Haram Fatalities (5km radius)	−0.00025	0.00032	−0.00072	−0.00073
	(0.00152)	(0.00184)	(0.00133)	(0.00121)
Farmer-herder fatalities (5km radius)	0.00179	0.00474	0.01258***	−0.00045
	(0.00709)	(0.00669)	(0.00449)	(0.00377)
State militia fatalities (5km radius)	−0.00676	0.00154	0.00199	−0.00616
	(0.01341)	(0.01684)	(0.00784)	(0.01378)
Law Enforcement fatalities (5km radius)	0.00290	0.01069	−0.02902***	−0.01831
	(0.01513)	(0.01833)	(0.01079)	(0.01379)
Other fatalities (5km radius)	−0.00054	−0.00239	0.00574	0.00407
	(0.00687)	(0.02130)	(0.01653)	(0.01204)
Age of household head	0.00054	0.00097	0.00057	−0.00073
	(0.00097)	(0.00118)	(0.00138)	(0.00083)
Total farm area	0.00348	0.00476	−0.00260	0.01391***
	(0.00583)	(0.00625)	(0.00560)	(0.00503)
Household size	−0.05937***	−0.02397***	−0.03282***	−0.03611***
	(0.00608)	(0.00650)	(0.00709)	(0.00406)
Distance to plot(s)	0.00008	−0.00073	0.00004	−0.00096
	(0.00073)	(0.00101)	(0.00110)	(0.00081)
Any education	0.01932	0.00142	0.08409***	−0.00323
	(0.01771)	(0.01399)	(0.01936)	(0.01420)
Distance to main road	−0.00408***	0.00003	−0.00356**	−0.00132
	(0.00143)	(0.00134)	(0.00138)	(0.00104)
Rural household	−0.13637*	−0.02193	−0.17880**	−0.11179***
	(0.07560)	(0.05556)	(0.07430)	(0.03702)
Female headed households	−0.03962	−0.04292	−0.09880	−0.03725
	(0.11446)	(0.08243)	(0.09664)	(0.05863)
Distance to population center	−0.00139	0.00086	−0.00102	0.00025
	(0.00114)	(0.00096)	(0.00092)	(0.00060)
Distance to main market	−0.00108	0.00194**	−0.00456***	0.00287***
	(0.00103)	(0.00088)	(0.00121)	(0.00081)
Distance to nearest border	0.00079*	−0.00040	0.00274***	−0.00035
	(0.00044)	(0.00036)	(0.00047)	(0.00028)
Distance to administration center	−0.00005	−0.00106	−0.00067	−0.00048
	(0.00066)	(0.00085)	(0.00066)	(0.00038)
Annual mean temperature	0.04875	0.01820	−0.00528	0.03197
	(0.03393)	(0.03402)	(0.05006)	(0.03013)
Annual precipitation	−0.00005	0.00037	−0.00043	−0.00017*
	(0.00033)	(0.00032)	(0.00042)	(0.00009)
Total income	−0.00000	−0.00000	−0.00000	0.00000
	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Planting season	−0.00985	0.07953***	0.09660***	0.07126***
	(0.00855)	(0.01032)	(0.00973)	(0.00843)
Household fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes
Observations	26,572	20,415	23,076	25,486
Adjusted R^2	0.57334	0.22499	0.28367	0.35711

Notes: The table presents results for estimating the effects of fatalities within 5km of EAs on the quantity of purchased food groups households consume. The food groups presented in this table are meat and fish, milk, sugars and oils. The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Figures

Figure 1. Spatial representation of incidents of conflict for various conflict actors in Nigeria between 2008 and 2019.

Notes: The plot show spatial representation of conflict incident perpetrated by five actors in Nigeria. The five conflict actors are Boko Haram insurgents, farmer-herder, state militia, law enforcement and all "other" conflict violence. Data used are from the ACLED Project.

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A Appendix

A.1 Tables

Table A1. Summary statistics of outcome variables

Statistic	N	Mean	St. Dev.	Min	Max
Per capita quantity of food consumed					
Cereal	27,620	3.28	7.03	0.00	480.39
Tubers and Starch	25,998	3.02	7.69	0.00	573.32
Vegetables	27,720	3.12	7.04	0.00	301.00
Fruits	21,706	0.86	5.18	0.00	638.28
Meat	24,404	0.40	1.46	0.00	150.00
Eggs	19,829	0.37	1.46	0.00	60.00
Fish	25,457	0.61	1.42	0.00	46.08
Legumes and nuts	26,063	0.68	1.11	0.00	28.29
Milk and milk stuff	21,946	0.56	1.08	0.00	28.29
Oil and fats	27,323	0.71	5.24	0.00	150.00
Sweets	24,892	0.55	2.04	0.00	150.15
Condiments and beverages	24,409	0.84	3.79	0.00	197.01
Per capita own produced food consumed					
Cereal	27,620	1.28	3.39	0.00	114.71
Tubers and starch	25,998	1.23	5.51	0.00	498.20
Vegetables	27,720	0.23	2.22	0.00	256.20
Fruits	21,706	0.20	1.37	0.00	64.00
Meat	24,404	0.04	0.85	0.00	112.50
Eggs	19,829	0.03	0.36	0.00	15.29
Fish	25,457	0.02	0.20	0.00	9.18
Legumes and nuts	26,063	0.13	0.50	0.00	14.64
Milk and milk stuff	22,206	0.01	0.17	0.00	8.08
Oil and fats	27,323	0.07	1.53	0.00	150.00
Sweets	24,892	0.01	0.97	0.00	150.00
Condiments and beverages	24,409	0.01	0.24	0.00	21.04
Per capita purchased food consumed					
Cereal	27,620	1.89	6.16	0.00	480.39
Tubers and starch	25,998	1.59	5.48	0.00	573.31
Vegetables	27,720	2.77	7.48	0.00	301.39
Fruits	21,706	0.53	4.86	0.00	638.28
Meat	24,404	0.37	2.36	0.00	225.15
Eggs	19,829	0.33	1.44	0.00	60.00
Fish	25,457	0.60	1.40	0.00	46.08
Legumes and nuts	26,063	0.55	1.01	0.00	28.29
Oil and fats	27,323	0.59	2.13	0.00	112.50
Milk and milk stuff	22,206	0.26	1.54	0.00	60.00
Sweets	24,892	0.54	1.79	0.00	60.75
Condiments and beverages	24,409	0.80	3.77	0.00	197.01

Notes: All quantities of food groups consumed represent pre capita (Kg/household size) total household consumption of food items categorized into each food group. The food items are recorded for one week before the survey was conducted.

Table A2. Effect of conflict within 10km of EA on household food diversity

	Food consumption score		Berry-Index	
	(1)	(2)	(3)	(4)
Total fatalities (10km radius)	−0.116***		0.000	
	(0.039)		(0.001)	
Boko Haram fatalities (10km radius)		−0.106**		0.001
		(0.051)		(0.001)
Farmer-herder fatalities (10km radius)		−0.177*		0.000
		(0.099)		(0.001)
State militia fatalities (10km radius)		−0.782***		−0.000
		(0.002)		(0.227)
Law enforcement fatalities (10km radius)		−0.370		0.001
		(0.004)		(0.329)
Other fatalities (10km radius)		−0.409		−0.003
		(0.008)		(0.441)
Age of household head	−0.008	−0.008	0.001**	0.001**
	(0.000)	(0.000)	(0.064)	(0.064)
Total farm area	0.003	0.003	0.351	0.347
	(0.003)	(0.003)	(0.391)	(0.391)
Household size	−0.001	−0.000	−2.206***	−2.208***
	(0.002)	(0.002)	(0.389)	(0.388)
Any education	0.018*	0.018*	0.222	0.229
	(0.009)	(0.009)	(0.632)	(0.634)
Distance to plots	0.000	0.000	−0.068	−0.067
	(0.000)	(0.000)	(0.048)	(0.048)
Distance to main road	−0.000	−0.000	−0.090	−0.089
	(0.001)	(0.001)	(0.058)	(0.058)
Rural household	−0.081	−0.083	54.465***	54.257***
	(0.057)	(0.057)	(17.950)	(17.758)
Female headed households	−0.053	−0.053	−4.051	−3.953
	(0.046)	(0.046)	(2.834)	(2.781)
Distance to population center	−0.000	−0.000	−0.003	−0.003
	(0.000)	(0.000)	(0.042)	(0.041)
Distance to main market	−0.000	−0.000	−0.029	−0.030
	(0.001)	(0.001)	(0.073)	(0.072)
Distance to nearest border	0.001***	0.001***	−0.042	−0.043
	(0.000)	(0.000)	(0.039)	(0.039)
Distance to administration center	0.000	0.000	−0.048	−0.048
	(0.001)	(0.001)	(0.032)	(0.032)
Annual mean temperature	0.012	0.012	−1.043	−1.070
	(0.016)	(0.016)	(2.397)	(2.399)
Annual precipitation	−0.000	−0.000	−0.007	−0.007
	(0.000)	(0.000)	(0.015)	(0.015)
Total income	0.000**	0.000**	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Planting season	0.010***	0.010***	−1.127*	−1.154*
	(0.004)	(0.004)	(0.608)	(0.611)
Household fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes
Observations	17,375	17,375	17,375	17,375
Adjusted R²	0.283	0.282	0.275	0.275

Notes: The table presents results for estimating the effects of fatalities within 10km of EAs on the diversity of foods households consume. The outcome measures of interest are the food consumption score (FCS) and and Berry-index (BI). Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table A3. Effect of conflict on household consumption of food in different food groups.

	IHS staples	IHS pulses	IHS vegetables	IHS fruit
	(1)	(2)	(3)	(4)
Boko Haram Fatalities (10km radius)	−0.00121	0.00023	0.00181	0.00095
	(0.00211)	(0.00115)	(0.00210)	(0.00114)
Farmer-herder fatalities (10km radius)	0.00700	0.00404	0.00901**	0.00186
	(0.00538)	(0.00292)	(0.00447)	(0.00384)
State militia fatalities (10km radius)	0.01177	−0.00961**	0.03667**	0.00151
	(0.00987)	(0.00407)	(0.01691)	(0.01273)
Law Enforcement fatalities (10km radius)	−0.02881*	−0.00814	−0.02688*	0.00835
	(0.01522)	(0.00808)	(0.01618)	(0.01075)
Other fatalities (10km radius)	0.00899	0.01604	0.00389	0.02556
	(0.01527)	(0.01089)	(0.02340)	(0.02304)
Age of household head	0.00106	0.00225**	0.00267*	0.00134
	(0.00157)	(0.00110)	(0.00150)	(0.00176)
Total farm area	0.01696	0.01089*	0.00741	0.00947
	(0.01051)	(0.00654)	(0.00805)	(0.00783)
Household size	−0.04257***	−0.03199***	−0.08484***	−0.03585***
	(0.00936)	(0.00599)	(0.00774)	(0.00854)
Distance to plot(s)	−0.00094	0.00113	−0.00122	−0.00023
	(0.00151)	(0.00090)	(0.00126)	(0.00214)
Any education	−0.02506	−0.01140	0.07215***	0.02902
	(0.02834)	(0.01634)	(0.02793)	(0.02614)
Distance to main road	0.00071	0.00108	−0.00696***	−0.00547***
	(0.00278)	(0.00124)	(0.00194)	(0.00181)
Rural household	−0.05889	0.02415	−0.24331***	0.04343
	(0.10658)	(0.05533)	(0.07542)	(0.12578)
Female headed households	0.20538	−0.03592	−0.05828	0.00445
	(0.15883)	(0.09381)	(0.12310)	(0.13383)
Distance to population center	0.00430**	0.00178**	−0.00152	−0.00099
	(0.00203)	(0.00087)	(0.00147)	(0.00114)
Distance to main market	−0.00032	−0.00044	−0.00120	−0.00159
	(0.00190)	(0.00099)	(0.00118)	(0.00119)
Distance to nearest border	−0.00058	0.00000	0.00177*	0.00002
	(0.00089)	(0.00035)	(0.00093)	(0.00037)
Distance to administration center	−0.00077	−0.00047	−0.00041	−0.00123
	(0.00143)	(0.00061)	(0.00070)	(0.00085)
Annual mean temperature	0.07613	0.02233	0.10646	0.02149
	(0.05770)	(0.04068)	(0.06702)	(0.04889)
Annual precipitation	−0.00038	−0.00012	−0.00038	0.00014
	(0.00023)	(0.00011)	(0.00028)	(0.00022)
Total income	0.00000*	0.00000	0.00000***	−0.00000
	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Planting season	−0.06699***	−0.02571***	0.10728***	−0.03161***
	(0.01603)	(0.00802)	(0.01732)	(0.01211)
Household fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes
Observations	26,572	24,236	25,880	19,913
Adjusted R^2	0.52003	0.44886	0.66337	0.36802

Notes: The table presents results for estimating the effects of fatalities within 10km of EAs on the quantity of different food groups households consume. The food groups presented in this table are staples, pulses, vegetables and fruits. The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table A3. Continued

	IHS meat and fish	IHS milk	IHS sugars	IHS oil
	(1)	(2)	(3)	(4)
Boko Haram Fatalities (10km radius)	−0.00032	−0.00037	−0.00130	−0.00023
	(0.00143)	(0.00097)	(0.00092)	(0.00075)
Farmer-herder fatalities (10km radius)	0.00028	0.00341	0.00769**	0.00052
	(0.00400)	(0.00350)	(0.00365)	(0.00223)
State militia fatalities (10km radius)	0.00614	0.01252	0.00863	−0.00521
	(0.00995)	(0.00761)	(0.00781)	(0.00409)
Law Enforcement fatalities (10km radius)	0.00323	−0.00014	−0.00736	−0.00491
	(0.00893)	(0.01158)	(0.01060)	(0.00586)
Other fatalities (10km radius)	−0.02070	−0.00536	−0.02107	0.00330
	(0.01318)	(0.02577)	(0.02001)	(0.00901)
Age of household head	0.00075	0.00138	0.00065	−0.00081
	(0.00102)	(0.00120)	(0.00138)	(0.00082)
Total farm area	0.00963	0.00411	−0.00325	0.01326***
	(0.00593)	(0.00623)	(0.00562)	(0.00508)
Household size	−0.06023***	−0.02430***	−0.03349***	−0.03893***
	(0.00598)	(0.00643)	(0.00714)	(0.00408)
Distance to plot(s)	−0.00005	−0.00083	−0.00003	−0.00082
	(0.00071)	(0.00099)	(0.00113)	(0.00078)
Any education	0.02741	0.00567	0.08307***	0.00966
	(0.01797)	(0.01483)	(0.01941)	(0.01412)
Distance to main road	−0.00385**	0.00006	−0.00353**	−0.00132
	(0.00154)	(0.00140)	(0.00139)	(0.00107)
Rural household	−0.12481*	−0.02624	−0.18917**	0.01490
	(0.07530)	(0.05504)	(0.07586)	(0.04105)
Female headed households	−0.02340	−0.03624	−0.09508	−0.04603
	(0.11551)	(0.08327)	(0.09674)	(0.07077)
Distance to population center	−0.00160	0.00149	−0.00103	0.00026
	(0.00116)	(0.00093)	(0.00092)	(0.00062)
Distance to main market	−0.00126	0.00176**	−0.00473***	0.00106
	(0.00100)	(0.00087)	(0.00121)	(0.00087)
Distance to nearest border	0.00074*	−0.00033	0.00282***	−0.00017
	(0.00043)	(0.00036)	(0.00047)	(0.00028)
Distance to administration center	−0.00010	−0.00092	−0.00073	−0.00031
	(0.00069)	(0.00082)	(0.00066)	(0.00042)
Annual mean temperature	0.02591	0.02461	−0.00371	0.04236
	(0.03390)	(0.03614)	(0.05007)	(0.02582)
Annual precipitation	−0.00000	0.00037	−0.00046	−0.00021**
	(0.00028)	(0.00031)	(0.00043)	(0.00009)
Total income	−0.00000	0.00000	−0.00000	0.00000
	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Planting season	−0.00545	0.08867***	0.09963***	0.07353***
	(0.00828)	(0.01040)	(0.00994)	(0.00865)
Household fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes
Observations	26,572	20,415	23,076	25,486
Adjusted R²	0.57694	0.23484	0.28355	0.35440

Notes: The table presents results for estimating the effects of fatalities within 10km of EAs on the quantity of different food groups households consume. The food groups presented in this table are meat and fish, milk, sugars and oils. The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table A4. Effect of conflict on household consumption of own produced food.

	IHS staples	IHS pulses	IHS vegetables	IHS fruit
	(1)	(2)	(3)	(4)
Boko Haram Fatalities (10km radius)	0.00034	0.00062*	−0.00089***	−0.00008
	(0.00043)	(0.00034)	(0.00029)	(0.00014)
Farmer-herder fatalities (10km radius)	−0.01871***	−0.00060	−0.00187	−0.00195
	(0.00562)	(0.00158)	(0.00256)	(0.00228)
State militia fatalities (10km radius)	−0.00511	−0.00805**	−0.00068	−0.00327
	(0.00943)	(0.00373)	(0.00690)	(0.00587)
Law Enforcement fatalities (10km radius)	0.04042***	0.00652**	0.01049**	0.01521***
	(0.01273)	(0.00317)	(0.00431)	(0.00532)
Other fatalities (10km radius)	−0.02200	−0.00408	−0.00443	−0.02084**
	(0.01878)	(0.00549)	(0.00623)	(0.00896)
Age of household head	0.00180	0.00075	0.00028	0.00057
	(0.00178)	(0.00069)	(0.00070)	(0.00104)
Total farm area	0.06734***	0.01232***	0.01670***	0.01610**
	(0.01330)	(0.00455)	(0.00616)	(0.00628)
Household size	−0.00846	−0.00805**	−0.00264	−0.01222**
	(0.01032)	(0.00314)	(0.00522)	(0.00512)
Distance to plot(s)	0.00285	−0.00081	0.00010	0.00095
	(0.00207)	(0.00057)	(0.00090)	(0.00113)
Any education	−0.00583	−0.02069	0.02433*	0.00693
	(0.03313)	(0.01281)	(0.01273)	(0.01273)
Distance to main road	0.00435	0.00115	0.00103	−0.00083
	(0.00300)	(0.00085)	(0.00084)	(0.00097)
Rural household	0.67846***	0.01087	0.15853***	0.15396**
	(0.13098)	(0.01510)	(0.03027)	(0.06267)
Female headed households	−0.12690	−0.00310	0.00577	0.01855
	(0.13900)	(0.02432)	(0.07468)	(0.06409)
Distance to population center	0.00871***	0.00247***	0.00097	0.00024
	(0.00202)	(0.00059)	(0.00059)	(0.00072)
Distance to main market	0.00108	0.00040	−0.00012	−0.00059
	(0.00213)	(0.00037)	(0.00043)	(0.00040)
Distance to nearest border	−0.00142	−0.00026	0.00020	0.00010
	(0.00093)	(0.00022)	(0.00021)	(0.00016)
Distance to administration center	−0.00135	0.00005	−0.00008	−0.00042
	(0.00119)	(0.00021)	(0.00037)	(0.00049)
Annual mean temperature	0.02272	−0.00584	−0.01640	0.02247
	(0.09584)	(0.02174)	(0.02895)	(0.04412)
Annual precipitation	0.00030	0.00004	0.00030***	0.00015***
	(0.00029)	(0.00005)	(0.00009)	(0.00006)
Total income	0.00000***	0.00000***	0.00000	0.00000
	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Planting season	−0.08358***	−0.03649***	0.07899***	0.00123
	(0.01460)	(0.00648)	(0.00760)	(0.00726)
Household fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes
Observations	26,572	24,236	25,880	19,913
Adjusted R^2	0.56782	0.30110	0.22018	0.27109

Notes: The table presents results for estimating the effects of fatalities within 10km of EAs on the quantity of own-produced food groups households consume. The food groups presented in this table are staples, pulses, vegetables and fruits. The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

	IHS meat and fish	IHS milk	IHS sugars	IHS oil
	(1)	(2)	(3)	(4)
Boko Haram Fatalities (10km radius)	−0.00035**	−0.00007**	−0.00006	0.00004
	(0.00014)	(0.00003)	(0.00005)	(0.00020)
Farmer-herder fatalities (10km radius)	0.00003	−0.00013	−0.00001	−0.00055
	(0.00075)	(0.00030)	(0.00035)	(0.00050)
State militia fatalities (10km radius)	0.00030	0.00026	−0.00012	−0.00170
	(0.00117)	(0.00034)	(0.00026)	(0.00138)
Law Enforcement fatalities (10km radius)	−0.00072	0.00129*	−0.00048	0.00305**
	(0.00148)	(0.00073)	(0.00092)	(0.00123)
Other fatalities (10km radius)	0.00102	−0.00151	0.00076	−0.00038
	(0.00236)	(0.00099)	(0.00101)	(0.00159)
Age of household head	0.00027	0.00033	0.00007	−0.00019
	(0.00033)	(0.00031)	(0.00016)	(0.00024)
Total farm area	0.00803**	−0.00082	−0.00077	−0.00071
	(0.00314)	(0.00104)	(0.00049)	(0.00208)
Household size	−0.00043	−0.00019	−0.00077	−0.00306**
	(0.00182)	(0.00115)	(0.00087)	(0.00143)
Distance to plot(s)	−0.00021	−0.00012	−0.00011	0.00017
	(0.00028)	(0.00012)	(0.00023)	(0.00021)
Any education	0.00843	0.00459	−0.00117	0.01280***
	(0.00567)	(0.00597)	(0.00115)	(0.00456)
Distance to main road	0.00021	−0.00002	−0.00003	−0.00000
	(0.00044)	(0.00064)	(0.00009)	(0.00036)
Rural household	0.01951	−0.00248	−0.02214	0.12827***
	(0.01351)	(0.00389)	(0.02401)	(0.03033)
Female headed households	0.01930	0.00462	0.00286	−0.00889
	(0.01585)	(0.00511)	(0.00263)	(0.04347)
Distance to population center	−0.00025	0.00063**	−0.00001	−0.00001
	(0.00030)	(0.00030)	(0.00006)	(0.00027)
Distance to main market	−0.00027	−0.00012	−0.00013	−0.00187***
	(0.00018)	(0.00016)	(0.00011)	(0.00041)
Distance to nearest border	−0.00008	0.00003	0.00007	0.00019**
	(0.00009)	(0.00005)	(0.00006)	(0.00008)
Distance to administration center	−0.00005	0.00013	−0.00007	0.00016
	(0.00014)	(0.00015)	(0.00006)	(0.00014)
Annual mean temperature	−0.03412***	0.00794	0.00258	0.00962
	(0.01256)	(0.01314)	(0.00360)	(0.01440)
Annual precipitation	0.00008	0.00001	−0.00004	−0.00005
	(0.00008)	(0.00002)	(0.00004)	(0.00004)
Total income	0.00000	0.00000***	0.00000	−0.00000
	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Planting season	0.00568*	0.00692***	0.00125	0.00318
	(0.00297)	(0.00198)	(0.00094)	(0.00227)
Household fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes
Observations	26,572	20,415	23,076	25,486
Adjusted R^2	0.19368	0.29016	0.09544	0.20320

Notes: The table presents results for estimating the effects of fatalities within 10km of EAs on the quantity of own-consumed food groups households consume. The food groups presented in this table are meat and fish, milk, sugars and oils. The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table A5. Effect of conflict on household consumption of purchased food.

	IHS staples	IHS pulses	IHS vegetables	IHS fruit
	(1)	(2)	(3)	(4)
Boko Haram Fatalities (10km radius)	−0.00170	−0.00025	0.00224	0.00100
	(0.00201)	(0.00121)	(0.00203)	(0.00116)
Farmer-herder fatalities (10km radius)	0.01359**	0.00473*	0.00937**	0.00352
	(0.00559)	(0.00251)	(0.00470)	(0.00334)
State militia fatalities (10km radius)	0.02253**	−0.00285	0.03815**	0.00410
	(0.00987)	(0.00436)	(0.01686)	(0.01125)
Law Enforcement fatalities (10km radius)	−0.04351***	−0.01402*	−0.03018*	−0.00455
	(0.01516)	(0.00759)	(0.01594)	(0.01036)
Other fatalities (10km radius)	0.00770	0.02038*	0.00312	0.04394**
	(0.01650)	(0.01054)	(0.02239)	(0.02179)
Age of household head	0.00012	0.00154	0.00242	0.00068
	(0.00177)	(0.00110)	(0.00155)	(0.00168)
Total farm area	−0.02596***	−0.00026	−0.00139	−0.00524
	(0.00920)	(0.00680)	(0.00832)	(0.00760)
Household size	−0.04204***	−0.02396***	−0.08617***	−0.02578***
	(0.00941)	(0.00639)	(0.00817)	(0.00789)
Distance to plot(s)	−0.00145	0.00207**	−0.00126	−0.00118
	(0.00161)	(0.00085)	(0.00122)	(0.00183)
Any education	−0.02735	0.01447	0.06360**	0.02274
	(0.03003)	(0.01804)	(0.02844)	(0.02515)
Distance to main road	0.00004	0.00021	−0.00761***	−0.00456**
	(0.00257)	(0.00121)	(0.00192)	(0.00178)
Rural household	−0.43725***	0.02158	−0.30792***	−0.06275
	(0.10728)	(0.05719)	(0.07658)	(0.12083)
Female headed households	0.29019*	−0.02707	−0.06646	0.00532
	(0.17351)	(0.10250)	(0.11980)	(0.12356)
Distance to population center	−0.00118	−0.00048	−0.00221	−0.00140
	(0.00195)	(0.00085)	(0.00146)	(0.00116)
Distance to main market	−0.00104	−0.00073	−0.00095	−0.00120
	(0.00124)	(0.00087)	(0.00125)	(0.00117)
Distance to nearest border	0.00019	0.00023	0.00160*	−0.00010
	(0.00051)	(0.00033)	(0.00092)	(0.00034)
Distance to administration center	−0.00006	−0.00060	−0.00034	−0.00101
	(0.00097)	(0.00070)	(0.00072)	(0.00065)
Annual mean temperature	0.05905	0.02815	0.12047	−0.01468
	(0.08506)	(0.03791)	(0.07548)	(0.05487)
Annual precipitation	−0.00051***	−0.00014	−0.00048*	0.00003
	(0.00015)	(0.00012)	(0.00025)	(0.00018)
Total income	0.00000*	−0.00000	0.00000**	−0.00000*
	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Planting season	−0.01074	0.00723	0.06361***	−0.03227***
	(0.01642)	(0.00758)	(0.01682)	(0.01009)
Household fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes
Observations	26,572	24,236	25,880	19,913
Adjusted R²	0.51102	0.38965	0.64863	0.34320

Notes: The table presents results for estimating the effects of fatalities within 5km of EAs on the quantity of purchased food groups households consume. The food groups presented in this table are staples, pulses, vegetables and fruits. The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

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	IHS meat and fish	IHS milk	IHS sugars	IHS oil
	(1)	(2)	(3)	(4)
Boko Haram Fatalities (10km radius)	−0.00001	−0.00030	−0.00125	−0.00024
	(0.00146)	(0.00097)	(0.00091)	(0.00065)
Farmer-herder fatalities (10km radius)	0.00016	0.00355	0.00772**	0.00099
	(0.00361)	(0.00337)	(0.00367)	(0.00223)
State militia fatalities (10km radius)	0.00621	0.01224*	0.00877	−0.00368
	(0.00979)	(0.00744)	(0.00775)	(0.00412)
Law Enforcement fatalities (10km radius)	0.00399	−0.00143	−0.00696	−0.00776
	(0.00874)	(0.01141)	(0.01045)	(0.00587)
Other fatalities (10km radius)	−0.02196*	−0.00385	−0.02186	0.00390
	(0.01321)	(0.02615)	(0.01985)	(0.00918)
Age of household head	0.00054	0.00103	0.00060	−0.00073
	(0.00097)	(0.00117)	(0.00138)	(0.00083)
Total farm area	0.00350	0.00488	−0.00252	0.01390***
	(0.00584)	(0.00624)	(0.00560)	(0.00502)
Household size	−0.05936***	−0.02426***	−0.03300***	−0.03606***
	(0.00609)	(0.00650)	(0.00707)	(0.00406)
Distance to plot(s)	0.00008	−0.00071	0.00008	−0.00095
	(0.00073)	(0.00101)	(0.00110)	(0.00081)
Any education	0.01900	0.00149	0.08405***	−0.00291
	(0.01776)	(0.01405)	(0.01941)	(0.01421)
Distance to main road	−0.00411***	0.00010	−0.00355**	−0.00131
	(0.00143)	(0.00132)	(0.00139)	(0.00103)
Rural household	−0.13708*	−0.02383	−0.17789**	−0.11156***
	(0.07528)	(0.05524)	(0.07435)	(0.03710)
Female headed households	−0.03931	−0.04105	−0.09700	−0.03766
	(0.11409)	(0.08297)	(0.09700)	(0.05841)
Distance to population center	−0.00139	0.00089	−0.00103	0.00024
	(0.00114)	(0.00096)	(0.00092)	(0.00060)
Distance to main market	−0.00107	0.00188**	−0.00463***	0.00287***
	(0.00103)	(0.00088)	(0.00121)	(0.00081)
Distance to nearest border	0.00079*	−0.00036	0.00277***	−0.00035
	(0.00044)	(0.00035)	(0.00047)	(0.00028)
Distance to administration center	−0.00005	−0.00106	−0.00066	−0.00047
	(0.00066)	(0.00085)	(0.00066)	(0.00038)
Annual mean temperature	0.04899	0.01672	−0.00639	0.03201
	(0.03396)	(0.03392)	(0.04988)	(0.03026)
Annual precipitation	−0.00005	0.00036	−0.00043	−0.00017*
	(0.00033)	(0.00032)	(0.00042)	(0.00009)
Total income	−0.00000	−0.00000	−0.00000	0.00000
	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Planting season	−0.00937	0.08165***	0.09857***	0.07102***
	(0.00870)	(0.01015)	(0.00991)	(0.00850)
Household fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes
Observations	26,572	20,415	23,076	25,486
Adjusted R^2	0.57346	0.22579	0.28401	0.35690

Notes: The table presents results for estimating the effects of fatalities within 5km of EAs on the quantity of purchased food groups households consume. The food groups presented in this table are meat and fish, milk, sugars and oils. The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table A6. Effect of conflict on household consumption of food in different food groups

	IHS cereal	IHS tuber	IHS vegetables	IHS fruit	IHS meat	IHS eggs
	(1)	(2)	(3)	(4)	(5)	(6)
Boko Haram Fatalities (5km radius)	0.001	−0.001	−0.002	0.003***	−0.002	0.004**
	(0.002)	(0.003)	(0.003)	(0.001)	(0.001)	(0.002)
Farmer-herder fatalities (5km radius)	0.021	0.012**	0.009	0.007	0.002	0.005
	(0.013)	(0.005)	(0.009)	(0.006)	(0.002)	(0.012)
State militia fatalities (5km radius)	−0.011	−0.039	0.002	−0.010	−0.016*	0.047*
	(0.016)	(0.031)	(0.019)	(0.015)	(0.009)	(0.027)
Law Enforcement fatalities (5km radius)	−0.018	0.032	−0.001	−0.007	0.006	−0.011
	(0.017)	(0.037)	(0.028)	(0.019)	(0.010)	(0.038)
Other fatalities (5km radius)	0.026*	−0.019	0.003	0.024	0.016	−0.068
	(0.016)	(0.037)	(0.027)	(0.026)	(0.012)	(0.054)
Age of household head	0.000	0.002	0.003*	0.001	0.001	−0.000
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)
Total farm area	0.005	0.023**	0.007	0.009	0.009*	0.004
	(0.008)	(0.010)	(0.008)	(0.008)	(0.005)	(0.009)
Household size	−0.043***	−0.039***	−0.085***	−0.036***	−0.023***	−0.010
	(0.008)	(0.009)	(0.008)	(0.009)	(0.006)	(0.010)
Distance to plot(s)	−0.000	0.000	−0.001	−0.000	−0.000	0.003
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)
Any education	−0.023	−0.004	0.071**	0.030	0.019	0.016
	(0.025)	(0.032)	(0.028)	(0.026)	(0.014)	(0.025)
Distance to main road	0.002	−0.004**	−0.007***	−0.005***	−0.001	0.006**
	(0.003)	(0.002)	(0.002)	(0.002)	(0.001)	(0.003)
Rural household	−0.112*	0.017	−0.238***	0.042	−0.138**	−0.243
	(0.067)	(0.108)	(0.075)	(0.126)	(0.056)	(0.161)
Female headed households	−0.006	0.244*	−0.058	0.003	0.060	−0.118
	(0.133)	(0.137)	(0.124)	(0.134)	(0.134)	(0.173)
Distance to population center	0.005**	0.001	−0.002	−0.001	−0.001	0.002
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Distance to main market	0.002	−0.004**	−0.001	−0.002	0.001	0.001
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Distance to nearest border	−0.001	0.002***	0.002*	0.000	0.000	0.001
	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
Distance to administration center	−0.001	0.000	−0.000	−0.001	−0.002***	−0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
Annual mean temperature	0.037	0.201***	0.108	0.021	−0.028	0.020
	(0.040)	(0.054)	(0.067)	(0.048)	(0.035)	(0.083)
Annual precipitation	−0.000	−0.000**	−0.000	0.000	0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Total income	−0.000	−0.000	0.000**	−0.000	−0.000	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Planting season	−0.005	−0.084***	0.103***	−0.033***	0.013*	−0.042***
	(0.012)	(0.017)	(0.018)	(0.012)	(0.007)	(0.015)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25,776	24,174	25,880	19,913	22,590	18,049
Adjusted R²	0.697	0.500	0.662	0.368	0.344	0.251

Notes: The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

	IHS fish	IHS legumes	IHS milk	IHS oils	IHS sweets	IHS beverages
	(1)	(2)	(3)	(4)	(5)	(6)
Boko Haram Fatalities (5km radius)	0.001	0.003	0.000	−0.001	−0.001	−0.004
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.003)
Farmer-herder fatalities (5km radius)	0.001	0.007**	0.005	−0.001	0.012**	0.015
	(0.007)	(0.003)	(0.007)	(0.004)	(0.005)	(0.010)
State militia fatalities (5km radius)	−0.000	−0.013*	0.002	−0.011	0.002	−0.025
	(0.024)	(0.007)	(0.018)	(0.017)	(0.008)	(0.029)
Law Enforcement fatalities (5km radius)	−0.002	−0.014	0.012	−0.014	−0.029***	−0.058**
	(0.021)	(0.009)	(0.019)	(0.015)	(0.011)	(0.025)
Other fatalities (5km radius)	−0.009	0.004	−0.005	0.005	0.006	0.067
	(0.013)	(0.008)	(0.022)	(0.012)	(0.017)	(0.042)
Age of household head	−0.000	0.002**	0.001	−0.001	0.001	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Total farm area	0.001	0.011*	0.004	0.013***	−0.003	0.006
	(0.006)	(0.007)	(0.006)	(0.005)	(0.006)	(0.009)
Household size	−0.061***	−0.032***	−0.024***	−0.039***	−0.033***	−0.030***
	(0.007)	(0.006)	(0.006)	(0.004)	(0.007)	(0.011)
Distance to plot(s)	0.000	0.001	−0.001	−0.001	−0.000	−0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Any education	−0.018	−0.012	0.006	0.009	0.083***	0.011
	(0.020)	(0.016)	(0.015)	(0.014)	(0.019)	(0.024)
Distance to main road	−0.002	0.001	−0.000	−0.001	−0.004**	−0.007***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Rural household	−0.037	0.024	−0.024	0.015	−0.190**	−0.217**
	(0.078)	(0.055)	(0.055)	(0.041)	(0.076)	(0.105)
Female headed households	−0.047	−0.037	−0.038	−0.045	−0.097	−0.080
	(0.118)	(0.093)	(0.083)	(0.071)	(0.096)	(0.099)
Distance to population center	−0.001	0.002**	0.001	0.000	−0.001	−0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Distance to main market	−0.002*	−0.000	0.002**	0.001	−0.005***	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Distance to nearest border	0.001**	0.000	−0.000	−0.000	0.003***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Distance to administration center	0.001	−0.000	−0.001	−0.000	−0.001	−0.004***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Annual mean temperature	0.062**	0.024	0.026	0.042	−0.003	0.062
	(0.031)	(0.040)	(0.036)	(0.026)	(0.050)	(0.063)
Annual precipitation	0.000	−0.000	0.000	−0.000**	−0.000	−0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Total income	−0.000	0.000	0.000	0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Planting season	−0.016**	−0.026***	0.087***	0.074***	0.098***	−0.025**
	(0.008)	(0.008)	(0.011)	(0.009)	(0.010)	(0.012)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23,630	24,236	20,415	25,486	23,076	22,604
Adjusted R^2	0.514	0.449	0.234	0.355	0.283	0.365

Notes: The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table A7. Effect of conflict on household consumption of own produced food.

	IHS cereal	IHS tuber	IHS vegetables	IHS fruit	IHS meat	IHS eggs
	(1)	(2)	(3)	(4)	(5)	(6)
Boko Haram Fatalities (5km radius)	−0.001*	0.000	−0.001***	−0.000	−0.000	−0.000
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Farmer-herder fatalities (5km radius)	−0.013	−0.003	−0.001	−0.000	−0.000	0.001
	(0.012)	(0.004)	(0.004)	(0.003)	(0.001)	(0.001)
State militia fatalities (5km radius)	−0.009	−0.012	0.004	−0.007	0.001	0.002
	(0.026)	(0.011)	(0.010)	(0.012)	(0.002)	(0.001)
Law Enforcement fatalities (5km radius)	0.044**	0.013	0.008	0.015**	−0.000	0.000
	(0.019)	(0.008)	(0.008)	(0.007)	(0.001)	(0.002)
Other fatalities (5km radius)	−0.031***	−0.006	−0.010***	−0.018**	−0.002	−0.008
	(0.009)	(0.012)	(0.004)	(0.009)	(0.001)	(0.006)
Age of household head	0.001	0.002	0.000	0.001	0.000	−0.000
	(0.002)	(0.002)	(0.001)	(0.001)	(0.000)	(0.001)
Total farm area	0.038***	0.045***	0.017***	0.016**	0.008**	0.007*
	(0.011)	(0.011)	(0.006)	(0.006)	(0.003)	(0.004)
Household size	−0.008	−0.006	−0.003	−0.012**	−0.001	0.000
	(0.007)	(0.008)	(0.005)	(0.005)	(0.001)	(0.002)
Distance to plot(s)	0.001	0.003*	0.000	0.001	−0.001	0.001
	(0.002)	(0.002)	(0.001)	(0.001)	(0.000)	(0.001)
Any education	−0.006	0.002	0.025*	0.008	0.008	0.001
	(0.031)	(0.023)	(0.013)	(0.013)	(0.006)	(0.009)
Distance to main road	0.006*	−0.001	0.001	−0.001	−0.000	0.000
	(0.003)	(0.002)	(0.001)	(0.001)	(0.000)	(0.001)
Rural household	0.145***	0.651***	0.157***	0.153**	0.013	−0.002
	(0.056)	(0.122)	(0.030)	(0.063)	(0.013)	(0.024)
Female headed households	−0.168**	−0.010	0.006	0.018	0.010	0.004
	(0.073)	(0.129)	(0.075)	(0.064)	(0.019)	(0.020)
Distance to population center	0.011***	−0.000	0.001	0.000	0.000	0.000
	(0.002)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)
Distance to main market	0.002	−0.002	−0.000	−0.001	−0.000	−0.001*
	(0.002)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Distance to nearest border	−0.002	0.001	0.000	0.000	−0.000	0.000*
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Distance to administration center	−0.001	−0.001	−0.000	−0.000	−0.000	0.000
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Annual mean temperature	0.021	0.034	−0.017	0.020	−0.013*	0.022
	(0.083)	(0.083)	(0.029)	(0.045)	(0.007)	(0.024)
Annual precipitation	0.000	0.000	0.000***	0.000***	0.000***	−0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Total income	0.000***	0.000	0.000	0.000	0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Planting season	−0.025*	−0.035***	0.079***	0.002	0.002	0.000
	(0.014)	(0.011)	(0.008)	(0.007)	(0.002)	(0.004)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25,776	24,174	25,880	19,913	22,590	18,049
Adjusted R^2	0.599	0.574	0.220	0.271	0.155	0.135

Notes: The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

	IHS fish	IHS legumes	IHS milk	IHS oils	IHS sweets	IHS beverages
	(1)	(2)	(3)	(4)	(5)	(6)
Boko Haram Fatalities (5km radius)	−0.000**	0.001	−0.000*	−0.000	−0.000	−0.000
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Farmer-herder fatalities (5km radius)	−0.000	0.000	0.000	−0.001	−0.000	−0.000
	(0.000)	(0.002)	(0.000)	(0.001)	(0.000)	(0.000)
State militia fatalities (5km radius)	0.000	−0.009	0.000	−0.006	0.000	−0.000
	(0.001)	(0.007)	(0.001)	(0.006)	(0.000)	(0.000)
Law Enforcement fatalities (5km radius)	0.001	0.007	0.001	0.006	−0.000	0.001**
	(0.001)	(0.006)	(0.001)	(0.004)	(0.001)	(0.000)
Other fatalities (5km radius)	−0.001	−0.007	−0.003*	0.001	0.000	−0.001*
	(0.001)	(0.010)	(0.002)	(0.002)	(0.000)	(0.000)
Age of household head	−0.000	0.001	0.000	−0.000	0.000	−0.000
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Total farm area	0.002	0.012***	−0.001	−0.001	−0.001	0.004
	(0.001)	(0.005)	(0.001)	(0.002)	(0.001)	(0.002)
Household size	0.001	−0.008**	−0.000	−0.003**	−0.001	−0.002*
	(0.002)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)
Distance to plot(s)	0.000	−0.001	−0.000	0.000	−0.000	−0.000
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Any education	0.001	−0.020	0.005	0.013***	−0.001	−0.001
	(0.004)	(0.013)	(0.006)	(0.005)	(0.001)	(0.003)
Distance to main road	0.000	0.001	−0.000	0.000	−0.000	−0.000
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Rural household	0.006	0.010	−0.003	0.128***	−0.022	0.023***
	(0.012)	(0.015)	(0.004)	(0.030)	(0.024)	(0.008)
Female headed households	0.007	−0.003	0.005	−0.009	0.003	−0.005
	(0.007)	(0.024)	(0.005)	(0.043)	(0.003)	(0.003)
Distance to population center	−0.000	0.002***	0.001**	−0.000	−0.000	0.000
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Distance to main market	−0.000	0.000	−0.000	−0.002***	−0.000	−0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Distance to nearest border	−0.000	−0.000	0.000	0.000**	0.000	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Distance to administration center	−0.000	0.000	0.000	0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Annual mean temperature	−0.028**	−0.008	0.008	0.009	0.003	0.004
	(0.013)	(0.022)	(0.013)	(0.014)	(0.004)	(0.003)
Annual precipitation	0.000	0.000	0.000	−0.000	−0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Total income	−0.000	0.000***	0.000***	−0.000	0.000	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Planting season	0.005*	−0.035***	0.007***	0.003	0.001	0.000
	(0.003)	(0.006)	(0.002)	(0.002)	(0.001)	(0.001)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23,630	24,236	20,415	25,486	23,076	22,604
Adjusted R^2	0.196	0.301	0.290	0.203	0.095	0.068

Notes: The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table A8. Effect of conflict on household consumption of purchased food.

	IHS cereal	IHS tuber	IHS vegetables	IHS fruit	IHS meat	IHS eggs
	(1)	(2)	(3)	(4)	(5)	(6)
Boko Haram Fatalities (5km radius)	0.002	−0.001	−0.002	0.003***	−0.001	0.004**
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
Farmer-herder fatalities (5km radius)	0.027***	0.013*	0.010	0.007	0.002	0.004
	(0.007)	(0.007)	(0.011)	(0.007)	(0.003)	(0.012)
State militia fatalities (5km radius)	−0.007	−0.031	−0.001	−0.005	−0.017*	0.045
	(0.022)	(0.026)	(0.021)	(0.012)	(0.010)	(0.028)
Law Enforcement fatalities (5km radius)	−0.040**	0.028	−0.003	−0.020	0.007	−0.011
	(0.019)	(0.035)	(0.028)	(0.018)	(0.011)	(0.038)
Other fatalities (5km radius)	0.041***	−0.020	0.007	0.039	0.018	−0.060
	(0.014)	(0.032)	(0.026)	(0.028)	(0.012)	(0.055)
Age of household head	−0.000	0.000	0.002	0.001	0.001	−0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.003)
Total farm area	−0.026***	−0.015	−0.001	−0.005	0.002	−0.002
	(0.009)	(0.009)	(0.008)	(0.008)	(0.005)	(0.008)
Household size	−0.034***	−0.042***	−0.086***	−0.026***	−0.022***	−0.010
	(0.009)	(0.010)	(0.008)	(0.008)	(0.006)	(0.010)
Distance to plot(s)	−0.000	−0.002	−0.001	−0.001	0.000	0.003
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)
Any education	−0.053*	0.005	0.062**	0.023	0.010	0.016
	(0.029)	(0.031)	(0.028)	(0.025)	(0.013)	(0.024)
Distance to main road	−0.001	−0.004**	−0.008***	−0.005***	−0.001	0.006**
	(0.003)	(0.002)	(0.002)	(0.002)	(0.001)	(0.003)
Rural household	−0.210***	−0.563***	−0.302***	−0.063	−0.149***	−0.241
	(0.079)	(0.119)	(0.076)	(0.121)	(0.056)	(0.164)
Female headed households	0.087	0.296**	−0.066	0.004	0.048	−0.122
	(0.130)	(0.145)	(0.121)	(0.124)	(0.138)	(0.175)
Distance to population center	−0.002	0.001	−0.002	−0.001	−0.001	0.001
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Distance to main market	0.001	−0.002	−0.001	−0.001	0.001	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Distance to nearest border	−0.000	0.001***	0.002	−0.000	0.000	0.000
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
Distance to administration center	−0.001	0.000	−0.000	−0.001	−0.002***	−0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
Annual mean temperature	0.008	0.178*	0.122	−0.013	−0.016	−0.002
	(0.047)	(0.096)	(0.075)	(0.055)	(0.034)	(0.079)
Annual precipitation	−0.000	−0.001***	−0.000**	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Total income	−0.000*	−0.000	0.000**	−0.000*	−0.000*	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Planting season	0.017	−0.052***	0.059***	−0.034***	0.011	−0.042***
	(0.013)	(0.016)	(0.018)	(0.010)	(0.007)	(0.014)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25,776	24,174	25,880	19,913	22,590	18,049
Adjusted R²	0.550	0.442	0.648	0.343	0.354	0.260

Notes: The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

	IHS fish	IHS legumes	IHS milk	IHS oils	IHS sweets	IHS beverages
	(1)	(2)	(3)	(4)	(5)	(6)
Boko Haram Fatalities (5km radius)	0.001	0.002	0.000	−0.001	−0.001	−0.004
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.003)
Farmer-herder fatalities (5km radius)	0.002	0.007**	0.005	−0.000	0.013***	0.015
	(0.007)	(0.003)	(0.007)	(0.004)	(0.004)	(0.010)
State militia fatalities (5km radius)	−0.000	−0.006	0.002	−0.006	0.002	−0.025
	(0.023)	(0.005)	(0.017)	(0.014)	(0.008)	(0.030)
Law Enforcement fatalities (5km radius)	−0.003	−0.020***	0.011	−0.018	−0.029***	−0.058**
	(0.021)	(0.008)	(0.018)	(0.014)	(0.011)	(0.026)
Other fatalities (5km radius)	−0.009	0.012	−0.002	0.004	0.006	0.067
	(0.013)	(0.008)	(0.021)	(0.012)	(0.017)	(0.042)
Age of household head	−0.000	0.002	0.001	−0.001	0.001	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Total farm area	−0.000	−0.000	0.005	0.014***	−0.003	0.002
	(0.006)	(0.007)	(0.006)	(0.005)	(0.006)	(0.008)
Household size	−0.061***	−0.024***	−0.024***	−0.036***	−0.033***	−0.028***
	(0.007)	(0.006)	(0.006)	(0.004)	(0.007)	(0.011)
Distance to plot(s)	0.000	0.002**	−0.001	−0.001	0.000	−0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Any education	−0.020	0.014	0.001	−0.003	0.084***	0.012
	(0.020)	(0.018)	(0.014)	(0.014)	(0.019)	(0.024)
Distance to main road	−0.003**	0.000	0.000	−0.001	−0.004**	−0.007***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Rural household	−0.040	0.022	−0.022	−0.112***	−0.179**	−0.237**
	(0.078)	(0.057)	(0.056)	(0.037)	(0.074)	(0.103)
Female headed households	−0.052	−0.029	−0.043	−0.037	−0.099	−0.076
	(0.115)	(0.102)	(0.082)	(0.059)	(0.097)	(0.100)
Distance to population center	−0.001	−0.000	0.001	0.000	−0.001	−0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Distance to main market	−0.002	−0.001	0.002**	0.003***	−0.005***	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Distance to nearest border	0.001**	0.000	−0.000	−0.000	0.003***	0.002**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Distance to administration center	0.001	−0.001	−0.001	−0.000	−0.001	−0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Annual mean temperature	0.078**	0.032	0.018	0.032	−0.005	0.059
	(0.031)	(0.038)	(0.034)	(0.030)	(0.050)	(0.063)
Annual precipitation	0.000	−0.000	0.000	−0.000*	−0.000	−0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Total income	−0.000	−0.000	−0.000	0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Planting season	−0.020**	0.006	0.080***	0.071***	0.097***	−0.025**
	(0.008)	(0.007)	(0.010)	(0.008)	(0.010)	(0.012)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23,630	24,236	20,415	25,486	23,076	22,604
Adjusted R^2	0.504	0.390	0.225	0.357	0.284	0.365

Notes: The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table A9. Effect of conflict within 10km of EA on household consumption of food in different food groups

	IHS cereal	IHS tuber	IHS vegetables	IHS fruit	IHS meat	IHS eggs
	(1)	(2)	(3)	(4)	(5)	(6)
Boko Haram Fatalities (10km radius)	0.0004	0.0025	0.0018	0.0010	0.0001	0.0016
	(0.0011)	(0.0023)	(0.0021)	(0.0011)	(0.0009)	(0.0016)
Farmer-herder fatalities (10km radius)	0.0077	0.0024	0.0090**	0.0019	0.0022	0.0048
	(0.0059)	(0.0064)	(0.0045)	(0.0038)	(0.0028)	(0.0075)
State militia fatalities (10km radius)	0.0183**	−0.0031	0.0367**	0.0015	−0.0051	0.0343
	(0.0085)	(0.0159)	(0.0169)	(0.0127)	(0.0049)	(0.0253)
Law Enforcement fatalities (10km radius)	−0.0362**	−0.0003	−0.0269*	0.0084	−0.0025	−0.0040
	(0.0141)	(0.0183)	(0.0162)	(0.0107)	(0.0075)	(0.0205)
Other fatalities (10km radius)	0.0144	−0.0191	0.0039	0.0256	−0.0027	−0.0856***
	(0.0159)	(0.0280)	(0.0234)	(0.0230)	(0.0090)	(0.0306)
Age of household head	0.0003	0.0020	0.0027*	0.0013	0.0014	−0.0003
	(0.0015)	(0.0017)	(0.0015)	(0.0018)	(0.0010)	(0.0027)
Total farm area	0.0049	0.0235**	0.0074	0.0095	0.0090*	0.0044
	(0.0081)	(0.0101)	(0.0080)	(0.0078)	(0.0049)	(0.0088)
Household size	−0.0431***	−0.0391***	−0.0848***	−0.0358***	−0.0230***	−0.0104
	(0.0079)	(0.0095)	(0.0077)	(0.0085)	(0.0060)	(0.0108)
Distance to plot(s)	−0.0001	0.0002	−0.0012	−0.0002	−0.0003	0.0032
	(0.0012)	(0.0016)	(0.0013)	(0.0021)	(0.0007)	(0.0033)
Any education	−0.0211	−0.0039	0.0722***	0.0290	0.0190	0.0163
	(0.0254)	(0.0321)	(0.0279)	(0.0261)	(0.0138)	(0.0246)
Distance to main road	0.0020	−0.0040**	−0.0070***	−0.0055***	−0.0012	0.0062**
	(0.0026)	(0.0019)	(0.0019)	(0.0018)	(0.0011)	(0.0030)
Rural household	−0.1171*	0.0155	−0.2433***	0.0434	−0.1395**	−0.2412
	(0.0673)	(0.1078)	(0.0754)	(0.1258)	(0.0557)	(0.1621)
Female headed households	−0.0048	0.2423*	−0.0583	0.0044	0.0573	−0.1118
	(0.1331)	(0.1367)	(0.1231)	(0.1338)	(0.1342)	(0.1709)
Distance to population center	0.0048**	0.0007	−0.0015	−0.0010	−0.0006	0.0018
	(0.0019)	(0.0013)	(0.0015)	(0.0011)	(0.0007)	(0.0019)
Distance to main market	0.0016	−0.0036**	−0.0012	−0.0016	0.0011	0.0009
	(0.0019)	(0.0015)	(0.0012)	(0.0012)	(0.0008)	(0.0013)
Distance to nearest border	−0.0008	0.0019***	0.0018*	0.0000	0.0000	0.0006
	(0.0008)	(0.0005)	(0.0009)	(0.0004)	(0.0004)	(0.0006)
Distance to administration center	−0.0013	0.0000	−0.0004	−0.0012	−0.0017***	−0.0023*
	(0.0009)	(0.0012)	(0.0007)	(0.0008)	(0.0005)	(0.0014)
Annual mean temperature	0.0325	0.2065***	0.1065	0.0215	−0.0247	0.0145
	(0.0403)	(0.0535)	(0.0670)	(0.0489)	(0.0353)	(0.0835)
Annual precipitation	−0.0001	−0.0005**	−0.0004	0.0001	0.0001	−0.0000
	(0.0001)	(0.0002)	(0.0003)	(0.0002)	(0.0002)	(0.0002)
Total income	−0.0000	−0.0000	0.0000***	−0.0000	−0.0000	−0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Planting season	−0.0028	−0.0852***	0.1073***	−0.0316***	0.0121*	−0.0391***
	(0.0118)	(0.0170)	(0.0173)	(0.0121)	(0.0070)	(0.0145)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25,776	24,174	25,880	19,913	22,590	18,049
Adjusted R^2	0.6972	0.4996	0.6634	0.3680	0.3443	0.2527

Notes: The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

	IHS fish	IHS legumes	IHS milk	IHS oils	IHS sweets	IHS beverages
	(1)	(2)	(3)	(4)	(5)	(6)
Boko Haram Fatalities (10km radius)	0.0013	0.0002	−0.0004	−0.0002	−0.0013	−0.0018
	(0.0014)	(0.0012)	(0.0010)	(0.0007)	(0.0009)	(0.0017)
Farmer-herder fatalities (10km radius)	0.0006	0.0040	0.0034	0.0005	0.0077**	0.0167***
	(0.0038)	(0.0029)	(0.0035)	(0.0022)	(0.0036)	(0.0047)
State militia fatalities (10km radius)	0.0116	−0.0096**	0.0125	−0.0052	0.0086	0.0166
	(0.0097)	(0.0041)	(0.0076)	(0.0041)	(0.0078)	(0.0185)
Law Enforcement fatalities (10km radius)	0.0011	−0.0081	−0.0001	−0.0049	−0.0074	−0.0512***
	(0.0070)	(0.0081)	(0.0116)	(0.0059)	(0.0106)	(0.0166)
Other fatalities (10km radius)	−0.0105	0.0160	−0.0054	0.0033	−0.0211	0.0060
	(0.0138)	(0.0109)	(0.0258)	(0.0090)	(0.0200)	(0.0233)
Age of household head	−0.0001	0.0022**	0.0014	−0.0008	0.0006	−0.0007
	(0.0013)	(0.0011)	(0.0012)	(0.0008)	(0.0014)	(0.0017)
Total farm area	0.0011	0.0109*	0.0041	0.0133***	−0.0032	0.0056
	(0.0058)	(0.0065)	(0.0062)	(0.0051)	(0.0056)	(0.0087)
Household size	−0.0613***	−0.0320***	−0.0243***	−0.0389***	−0.0335***	−0.0295***
	(0.0066)	(0.0060)	(0.0064)	(0.0041)	(0.0071)	(0.0105)
Distance to plot(s)	0.0005	0.0011	−0.0008	−0.0008	−0.0000	−0.0016
	(0.0010)	(0.0009)	(0.0010)	(0.0008)	(0.0011)	(0.0014)
Any education	−0.0177	−0.0114	0.0057	0.0097	0.0831***	0.0134
	(0.0205)	(0.0163)	(0.0148)	(0.0141)	(0.0194)	(0.0238)
Distance to main road	−0.0025	0.0011	0.0001	−0.0013	−0.0035**	−0.0064***
	(0.0015)	(0.0012)	(0.0014)	(0.0011)	(0.0014)	(0.0014)
Rural household	−0.0372	0.0241	−0.0262	0.0149	−0.1892**	−0.2222**
	(0.0781)	(0.0553)	(0.0550)	(0.0411)	(0.0759)	(0.1054)
Female headed households	−0.0468	−0.0359	−0.0362	−0.0460	−0.0951	−0.0808
	(0.1181)	(0.0938)	(0.0833)	(0.0708)	(0.0967)	(0.0990)
Distance to population center	−0.0011	0.0018**	0.0015	0.0003	−0.0010	−0.0019
	(0.0009)	(0.0009)	(0.0009)	(0.0006)	(0.0009)	(0.0013)
Distance to main market	−0.0018	−0.0004	0.0018**	0.0011	−0.0047***	−0.0013
	(0.0011)	(0.0010)	(0.0009)	(0.0009)	(0.0012)	(0.0015)
Distance to nearest border	0.0010**	0.0000	−0.0003	−0.0002	0.0028***	0.0017***
	(0.0004)	(0.0004)	(0.0004)	(0.0003)	(0.0005)	(0.0006)
Distance to administration center	0.0006	−0.0005	−0.0009	−0.0003	−0.0007	−0.0036***
	(0.0007)	(0.0006)	(0.0008)	(0.0004)	(0.0007)	(0.0010)
Annual mean temperature	0.0620**	0.0223	0.0246	0.0424	−0.0037	0.0582
	(0.0312)	(0.0407)	(0.0361)	(0.0258)	(0.0501)	(0.0625)
Annual precipitation	0.0002	−0.0001	0.0004	−0.0002**	−0.0005	−0.0007**
	(0.0002)	(0.0001)	(0.0003)	(0.0001)	(0.0004)	(0.0003)
Total income	−0.0000	0.0000	0.0000	0.0000	−0.0000	−0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Planting season	−0.0148*	−0.0257***	0.0887***	0.0735***	0.0996***	−0.0209*
	(0.0081)	(0.0080)	(0.0104)	(0.0086)	(0.0099)	(0.0118)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23,630	24,236	20,415	25,486	23,076	22,604
Adjusted R^2	0.5140	0.4489	0.2348	0.3544	0.2836	0.3659

Notes: The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table A10. Effect of conflict within 10km of EA on household consumption of own produced food.

	IHS cereal	IHS tuber	IHS vegetables	IHS fruit	IHS meat	IHS eggs
	(1)	(2)	(3)	(4)	(5)	(6)
Boko Haram Fatalities (10km radius)	0.0002	0.0002	−0.0009***	−0.0001	−0.0003**	−0.0001
	(0.0006)	(0.0002)	(0.0003)	(0.0001)	(0.0002)	(0.0001)
Farmer-herder fatalities (10km radius)	−0.0202***	−0.0048*	−0.0019	−0.0019	0.0000	−0.0000
	(0.0063)	(0.0028)	(0.0026)	(0.0023)	(0.0007)	(0.0005)
State militia fatalities (10km radius)	0.0018	−0.0044	−0.0007	−0.0033	0.0002	−0.0005
	(0.0087)	(0.0060)	(0.0069)	(0.0059)	(0.0012)	(0.0014)
Law Enforcement fatalities (10km radius)	0.0412***	0.0114*	0.0105**	0.0152***	−0.0005	−0.0003
	(0.0128)	(0.0069)	(0.0043)	(0.0053)	(0.0014)	(0.0018)
Other fatalities (10km radius)	−0.0235	−0.0042	−0.0044	−0.0208**	−0.0001	−0.0049
	(0.0160)	(0.0105)	(0.0062)	(0.0090)	(0.0025)	(0.0042)
Age of household head	0.0009	0.0015	0.0003	0.0006	0.0004	−0.0000
	(0.0015)	(0.0017)	(0.0007)	(0.0010)	(0.0003)	(0.0006)
Total farm area	0.0383***	0.0449***	0.0167***	0.0161**	0.0083**	0.0066*
	(0.0107)	(0.0109)	(0.0062)	(0.0063)	(0.0033)	(0.0039)
Household size	−0.0078	−0.0060	−0.0026	−0.0122**	−0.0011	0.0002
	(0.0072)	(0.0084)	(0.0052)	(0.0051)	(0.0014)	(0.0025)
Distance to plot(s)	0.0011	0.0031*	0.0001	0.0009	−0.0005	0.0006
	(0.0016)	(0.0019)	(0.0009)	(0.0011)	(0.0003)	(0.0007)
Any education	−0.0069	0.0016	0.0243*	0.0069	0.0082	0.0008
	(0.0304)	(0.0229)	(0.0127)	(0.0127)	(0.0062)	(0.0088)
Distance to main road	0.0055*	−0.0006	0.0010	−0.0008	−0.0001	0.0001
	(0.0030)	(0.0015)	(0.0008)	(0.0010)	(0.0002)	(0.0006)
Rural household	0.1478***	0.6521***	0.1585***	0.1540**	0.0128	−0.0023
	(0.0556)	(0.1224)	(0.0303)	(0.0627)	(0.0132)	(0.0240)
Female headed households	−0.1688**	−0.0101	0.0058	0.0186	0.0103	0.0044
	(0.0733)	(0.1286)	(0.0747)	(0.0641)	(0.0192)	(0.0202)
Distance to population center	0.0107***	−0.0004	0.0010	0.0002	0.0002	0.0003
	(0.0021)	(0.0011)	(0.0006)	(0.0007)	(0.0001)	(0.0004)
Distance to main market	0.0021	−0.0019	−0.0001	−0.0006	−0.0001	−0.0007*
	(0.0016)	(0.0014)	(0.0004)	(0.0004)	(0.0001)	(0.0004)
Distance to nearest border	−0.0016*	0.0005	0.0002	0.0001	−0.0000	0.0004*
	(0.0010)	(0.0004)	(0.0002)	(0.0002)	(0.0000)	(0.0002)
Distance to administration center	−0.0008	−0.0006	−0.0001	−0.0004	−0.0000	0.0002
	(0.0007)	(0.0010)	(0.0004)	(0.0005)	(0.0001)	(0.0002)
Annual mean temperature	0.0245	0.0357	−0.0164	0.0225	−0.0133*	0.0215
	(0.0825)	(0.0824)	(0.0290)	(0.0441)	(0.0071)	(0.0239)
Annual precipitation	0.0002	0.0001	0.0003***	0.0002***	0.0000***	−0.0002*
	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0000)	(0.0001)
Total income	0.0000***	0.0000	0.0000	0.0000	0.0000	−0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Planting season	−0.0261*	−0.0361***	0.0790***	0.0012	0.0023	0.0002
	(0.0140)	(0.0105)	(0.0076)	(0.0073)	(0.0023)	(0.0036)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25,776	24,174	25,880	19,913	22,590	18,049
Adjusted R²	0.5993	0.5739	0.2202	0.2711	0.1546	0.1348

Notes: The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

	IHS fish	IHS legumes	IHS milk	IHS oils	IHS sweets	IHS beverages
	(1)	(2)	(3)	(4)	(5)	(6)
Boko Haram Fatalities (10km radius)	−0.0001	0.0006*	−0.0001**	0.0000	−0.0001	0.0002
	(0.0000)	(0.0003)	(0.0000)	(0.0002)	(0.0000)	(0.0002)
Farmer-herder fatalities (10km radius)	−0.0001	−0.0006	−0.0001	−0.0005	−0.0000	−0.0012
	(0.0003)	(0.0016)	(0.0003)	(0.0005)	(0.0003)	(0.0015)
State militia fatalities (10km radius)	0.0003	−0.0080**	0.0003	−0.0017	−0.0001	0.0057
	(0.0005)	(0.0037)	(0.0003)	(0.0014)	(0.0003)	(0.0059)
Law Enforcement fatalities (10km radius)	0.0001	0.0065**	0.0013*	0.0031**	−0.0005	0.0006
	(0.0010)	(0.0032)	(0.0007)	(0.0012)	(0.0009)	(0.0017)
Other fatalities (10km radius)	0.0008	−0.0041	−0.0015	−0.0004	0.0008	−0.0051
	(0.0017)	(0.0055)	(0.0010)	(0.0016)	(0.0010)	(0.0053)
Age of household head	−0.0000	0.0008	0.0003	−0.0002	0.0001	−0.0002
	(0.0003)	(0.0007)	(0.0003)	(0.0002)	(0.0002)	(0.0003)
Total farm area	0.0015	0.0123***	−0.0008	−0.0007	−0.0008	0.0035
	(0.0014)	(0.0045)	(0.0010)	(0.0021)	(0.0005)	(0.0025)
Household size	0.0006	−0.0081**	−0.0002	−0.0031**	−0.0008	−0.0015*
	(0.0018)	(0.0031)	(0.0011)	(0.0014)	(0.0009)	(0.0008)
Distance to plot(s)	0.0001	−0.0008	−0.0001	0.0002	−0.0001	−0.0000
	(0.0003)	(0.0006)	(0.0001)	(0.0002)	(0.0002)	(0.0001)
Any education	0.0013	−0.0207	0.0046	0.0128***	−0.0012	−0.0011
	(0.0044)	(0.0128)	(0.0060)	(0.0046)	(0.0011)	(0.0026)
Distance to main road	0.0004	0.0012	−0.0000	−0.0000	−0.0000	0.0000
	(0.0005)	(0.0009)	(0.0006)	(0.0004)	(0.0001)	(0.0001)
Rural household	0.0063	0.0109	−0.0025	0.1283***	−0.0221	0.0222***
	(0.0119)	(0.0151)	(0.0039)	(0.0303)	(0.0240)	(0.0085)
Female headed households	0.0069	−0.0031	0.0046	−0.0089	0.0029	−0.0047
	(0.0071)	(0.0243)	(0.0051)	(0.0435)	(0.0026)	(0.0035)
Distance to population center	−0.0005	0.0025***	0.0006**	−0.0000	−0.0000	0.0000
	(0.0003)	(0.0006)	(0.0003)	(0.0003)	(0.0001)	(0.0001)
Distance to main market	−0.0002	0.0004	−0.0001	−0.0019***	−0.0001	−0.0002*
	(0.0002)	(0.0004)	(0.0002)	(0.0004)	(0.0001)	(0.0001)
Distance to nearest border	−0.0001	−0.0003	0.0000	0.0002**	0.0001	0.0001***
	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0000)
Distance to administration center	−0.0000	0.0001	0.0001	0.0002	−0.0001	−0.0000
	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)
Annual mean temperature	−0.0280**	−0.0058	0.0079	0.0096	0.0026	0.0039
	(0.0129)	(0.0217)	(0.0131)	(0.0144)	(0.0036)	(0.0032)
Annual precipitation	0.0001	0.0000	0.0000	−0.0000	−0.0000	0.0000
	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Total income	−0.0000	0.0000***	0.0000***	−0.0000	0.0000	0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Planting season	0.0048*	−0.0365***	0.0069***	0.0032	0.0013	0.0007
	(0.0026)	(0.0065)	(0.0020)	(0.0023)	(0.0009)	(0.0012)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23,630	24,236	20,415	25,486	23,076	22,604
Adjusted R^2	0.1960	0.3011	0.2902	0.2032	0.0954	0.0706

Notes: The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table A11. Effect of conflict within 10km of EA on household consumption of purchased food.

	IHS cereal	IHS tuber	IHS vegetables	IHS fruit	IHS meat	IHS eggs
	(1)	(2)	(3)	(4)	(5)	(6)
Boko Haram Fatalities (10km radius)	−0.0001	0.0022	−0.0009***	0.0010	0.0004	0.0017
	(0.0010)	(0.0023)	(0.0003)	(0.0012)	(0.0009)	(0.0016)
Farmer-herder fatalities (10km radius)	0.0187***	0.0039	−0.0019	0.0035	0.0021	0.0047
	(0.0065)	(0.0065)	(0.0026)	(0.0033)	(0.0024)	(0.0075)
State militia fatalities (10km radius)	0.0228***	0.0069	−0.0007	0.0041	−0.0054	0.0349
	(0.0075)	(0.0162)	(0.0069)	(0.0112)	(0.0044)	(0.0254)
Law Enforcement fatalities (10km radius)	−0.0614***	−0.0034	0.0105**	−0.0045	−0.0019	−0.0035
	(0.0142)	(0.0172)	(0.0043)	(0.0104)	(0.0073)	(0.0205)
Other fatalities (10km radius)	0.0235*	−0.0257	−0.0044	0.0439**	−0.0026	−0.0807**
	(0.0136)	(0.0267)	(0.0062)	(0.0218)	(0.0094)	(0.0314)
Age of household head	−0.0001	0.0004	0.0003	0.0007	0.0010	−0.0002
	(0.0015)	(0.0021)	(0.0007)	(0.0017)	(0.0010)	(0.0026)
Total farm area	−0.0260***	−0.0148	0.0167***	−0.0052	0.0017	−0.0021
	(0.0091)	(0.0092)	(0.0062)	(0.0076)	(0.0046)	(0.0085)
Household size	−0.0344***	−0.0423***	−0.0026	−0.0258***	−0.0220***	−0.0105
	(0.0086)	(0.0097)	(0.0052)	(0.0079)	(0.0059)	(0.0105)
Distance to plot(s)	−0.0003	−0.0024	0.0001	−0.0012	0.0002	0.0026
	(0.0014)	(0.0015)	(0.0009)	(0.0018)	(0.0008)	(0.0031)
Any education	−0.0507*	0.0053	0.0243*	0.0227	0.0096	0.0161
	(0.0284)	(0.0314)	(0.0127)	(0.0252)	(0.0133)	(0.0245)
Distance to main road	−0.0004	−0.0035**	0.0010	−0.0046**	−0.0011	0.0062**
	(0.0026)	(0.0017)	(0.0008)	(0.0018)	(0.0011)	(0.0030)
Rural household	−0.2173***	−0.5655***	0.1585***	−0.0628	−0.1496***	−0.2390
	(0.0798)	(0.1192)	(0.0303)	(0.1208)	(0.0557)	(0.1644)
Female headed households	0.0895	0.2944**	0.0058	0.0053	0.0450	−0.1159
	(0.1305)	(0.1446)	(0.0747)	(0.1236)	(0.1381)	(0.1729)
Distance to population center	−0.0023	0.0011	0.0010	−0.0014	−0.0008	0.0014
	(0.0019)	(0.0014)	(0.0006)	(0.0012)	(0.0007)	(0.0020)
Distance to main market	0.0007	−0.0015	−0.0001	−0.0012	0.0012	0.0016
	(0.0015)	(0.0011)	(0.0004)	(0.0012)	(0.0008)	(0.0014)
Distance to nearest border	−0.0002	0.0014***	0.0002	−0.0001	0.0000	0.0002
	(0.0005)	(0.0004)	(0.0002)	(0.0003)	(0.0004)	(0.0006)
Distance to administration center	−0.0010	0.0005	−0.0001	−0.0010	−0.0017***	−0.0025*
	(0.0008)	(0.0006)	(0.0004)	(0.0006)	(0.0005)	(0.0013)
Annual mean temperature	0.0007	0.1822*	−0.0164	−0.0147	−0.0132	−0.0070
	(0.0461)	(0.0971)	(0.0290)	(0.0549)	(0.0339)	(0.0800)
Annual precipitation	−0.0002	−0.0005***	0.0003***	0.0000	0.0000	0.0002
	(0.0001)	(0.0002)	(0.0001)	(0.0002)	(0.0002)	(0.0002)
Total income	−0.0000*	−0.0000	0.0000	−0.0000*	−0.0000*	−0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Planting season	0.0211	−0.0521***	0.0790***	−0.0323***	0.0103	−0.0395***
	(0.0129)	(0.0162)	(0.0076)	(0.0101)	(0.0069)	(0.0133)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25,776	24,174	25,880	19,913	22,590	18,049
Adjusted R^2	0.5511	0.4424	0.2202	0.3432	0.3542	0.2624

Notes: The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.

	IHS fish	IHS legumes	IHS milk	IHS oils	IHS sweets	IHS beverages
	(1)	(2)	(3)	(4)	(5)	(6)
Boko Haram Fatalities (10km radius)	0.0014	−0.0003	−0.0003	−0.0002	−0.0013	−0.0019
	(0.0014)	(0.0012)	(0.0010)	(0.0007)	(0.0009)	(0.0018)
Farmer-herder fatalities (10km radius)	0.0007	0.0047*	0.0035	0.0010	0.0077**	0.0179***
	(0.0037)	(0.0025)	(0.0034)	(0.0022)	(0.0037)	(0.0049)
State militia fatalities (10km radius)	0.0114	−0.0029	0.0122*	−0.0037	0.0088	0.0110
	(0.0097)	(0.0044)	(0.0074)	(0.0041)	(0.0078)	(0.0171)
Law Enforcement fatalities (10km radius)	0.0008	−0.0140*	−0.0014	−0.0078	−0.0070	−0.0516***
	(0.0069)	(0.0076)	(0.0114)	(0.0059)	(0.0105)	(0.0168)
Other fatalities (10km radius)	−0.0109	0.0204*	−0.0038	0.0039	−0.0219	0.0108
	(0.0135)	(0.0105)	(0.0261)	(0.0092)	(0.0199)	(0.0223)
Age of household head	−0.0001	0.0015	0.0010	−0.0007	0.0006	−0.0005
	(0.0013)	(0.0011)	(0.0012)	(0.0008)	(0.0014)	(0.0017)
Total farm area	−0.0002	−0.0003	0.0049	0.0139***	−0.0025	0.0023
	(0.0056)	(0.0068)	(0.0062)	(0.0050)	(0.0056)	(0.0084)
Household size	−0.0612***	−0.0240***	−0.0243***	−0.0361***	−0.0330***	−0.0282***
	(0.0066)	(0.0064)	(0.0065)	(0.0041)	(0.0071)	(0.0105)
Distance to plot(s)	0.0003	0.0021**	−0.0007	−0.0009	0.0001	−0.0015
	(0.0010)	(0.0009)	(0.0010)	(0.0008)	(0.0011)	(0.0014)
Any education	−0.0198	0.0145	0.0015	−0.0029	0.0841***	0.0145
	(0.0202)	(0.0180)	(0.0141)	(0.0142)	(0.0194)	(0.0236)
Distance to main road	−0.0029**	0.0002	0.0001	−0.0013	−0.0035**	−0.0064***
	(0.0014)	(0.0012)	(0.0013)	(0.0010)	(0.0014)	(0.0014)
Rural household	−0.0404	0.0216	−0.0238	−0.1116***	−0.1779**	−0.2420**
	(0.0782)	(0.0572)	(0.0552)	(0.0371)	(0.0743)	(0.1029)
Female headed households	−0.0515	−0.0271	−0.0411	−0.0377	−0.0970	−0.0770
	(0.1152)	(0.1025)	(0.0830)	(0.0584)	(0.0970)	(0.0994)
Distance to population center	−0.0007	−0.0005	0.0009	0.0002	−0.0010	−0.0019
	(0.0009)	(0.0008)	(0.0010)	(0.0006)	(0.0009)	(0.0013)
Distance to main market	−0.0017	−0.0007	0.0019**	0.0029***	−0.0046***	−0.0011
	(0.0011)	(0.0009)	(0.0009)	(0.0008)	(0.0012)	(0.0015)
Distance to nearest border	0.0010**	0.0002	−0.0004	−0.0003	0.0028***	0.0016***
	(0.0004)	(0.0003)	(0.0004)	(0.0003)	(0.0005)	(0.0006)
Distance to administration center	0.0006	−0.0006	−0.0011	−0.0005	−0.0007	−0.0037***
	(0.0007)	(0.0007)	(0.0008)	(0.0004)	(0.0007)	(0.0010)
Annual mean temperature	0.0783**	0.0282	0.0167	0.0320	−0.0064	0.0552
	(0.0311)	(0.0379)	(0.0339)	(0.0303)	(0.0499)	(0.0625)
Annual precipitation	0.0001	−0.0001	0.0004	−0.0002*	−0.0004	−0.0007**
	(0.0003)	(0.0001)	(0.0003)	(0.0001)	(0.0004)	(0.0003)
Total income	−0.0000	−0.0000	−0.0000	0.0000	−0.0000	−0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Planting season	−0.0184**	0.0072	0.0816***	0.0710***	0.0986***	−0.0213*
	(0.0084)	(0.0076)	(0.0101)	(0.0085)	(0.0099)	(0.0118)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
LGA-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23,630	24,236	20,415	25,486	23,076	22,604
Adjusted R²	0.5041	0.3897	0.2258	0.3569	0.2840	0.3654

Notes: The dependent variables are transformed by the inverse hyperbolic sine (IHS) transformation. The transformation is log-like, and thus helps account for the non-Gaussian form of the dependent variables but is capable of mathematically handling zeros. Robust standard errors clustered at the school level are reported in parenthesis. * significant at 10%, ** significant at 5%, *** significant at 1%.