Humanitarian Needs in Conflict Settings: Evidence from Eastern DRC

CAPSTONE REPORT

Prepared for Impact Initiatives

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Acronyms

Acronym	Definition
ACLED	Armed Conflict Location & Event Data Project
DRC	Democratic Republic of Congo
HH	Household
IDP	Internally displaced person
M23	March 23 movement
MSNA	Multi-Sectoral Needs Assessment
ODA	Official development assistance
OLS	Ordinary least squares
PEPFAR	President's Emergency Plan for AIDS Relief
PP	Percentage point
RQ	Research question
SD	Standard deviation
SNFI	Shelter and non-food items
TB	Tuberculosis
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WASH	Water, sanitation and hygiene

Executive Summary

Motivation

Eastern Democratic Republic of Congo (DRC) is home to one of the world's most severe and protracted humanitarian crises, with millions of people displaced and in acute need across the eastern provinces of Ituri, Nord Kivu, and Sud Kivu. In early 2025, two simultaneous shocks dramatically worsened conditions in the region: the withdrawal of the United States Agency for International Development (USAID) funding, which removed a major source of humanitarian assistance, and a sharp escalation in armed conflict driven by the resurgence of the March 23 (M23) and affiliated armed groups. Given the recent timeline and the reduction in aid funding, it has thus far been difficult for humanitarian actors to determine how to address need in the rapidly changing landscape.

Data & Methods

This report uses the Impact Initiatives' Multi-Sector Needs Assessment (MSNA) and ACLED conflict data from 2024 and 2025 to provide quantitative evidence on what is driving humanitarian need across health zones in eastern DRC and how those drivers changed between the two years. This analysis specifically asks:

- What is the change in humanitarian need across health zones between 2024 and 2025, both by overall need and by sector?
- What was the change in different potential drivers of humanitarian need–aid received, barriers to aid, conflict, household shocks, and displacement– between 2024 and 2025?
- What factors are associated with humanitarian need in 2024 and 2025, respectively?
- What factors are related to the change in humanitarian need between 2024 and 2025?

To answer these questions, we construct a health zone–year panel dataset by aggregating household-level MSNA responses to the health zone level and merging with ACLED conflict data.

Key Findings & Policy Implications

The USAID withdrawal is visible in every province. All three provinces experienced reduced access to healthcare and safe water, decreasing food scores, and increased damage to shelters. However, each province saw distinct patterns in the change in need across 2024 and 2025: Ituri and Nord Kivu saw the most change in decreasing healthcare and water access, while Sud Kivu saw the largest changes in decreasing healthcare access and increasing shelter damage. Barriers to accessing aid and conflict also increased across all three provinces, though Sud Kivu experienced the largest increase in barriers to aid and Nord Kivu experienced the largest increase in conflict across years.

Household shocks are the most robust predictor of humanitarian need. Experiencing a shock predicted households' humanitarian need in both 2024 and 2025, while the change in shocks across years also predicted the change in need in 2025. This suggests that humanitarian aid should be targeted based on household shocks to reach the households with the largest need.

Measured conflict is negatively correlated with humanitarian need. This indicates that humanitarian aid should not be targeted using conflict concentration and instead should be targeted by household shocks. This suggests a need for more integrated approaches that combine emergency assistance with resilience-building programs.

I. Introduction

Eastern DRC is one of the most severe and longer running humanitarian crises in the world. As of 2025, an estimated 21.2 million people required humanitarian assistance across the country while 26.6 million were experiencing acute food insecurity (OCHA, 2025). In the three eastern provinces of Ituri, Nord Kivu, and Sud Kivu alone, more than 5.35 million people were displaced, driven by decades of armed conflict, institutional fragility, and recurrent shocks that have made sustained recovery exceptionally difficult (OCHA, 2025).

For humanitarian organizations to operate efficiently in this challenging context, programming and resource allocation decisions require understanding what is driving need, how those drivers are changing, and which interventions are most likely to reduce vulnerability at the margin. These questions became especially urgent in early 2025, when two simultaneous shocks hit the region: the withdrawal of USAID funding, which removed $387 million from DRC operations alone and humanitarian funding coverage to just 26% of requirements, and a sharp escalation in armed conflict driven by the M23 advance into Nord Kivu and Sud Kivu (Mbah et al., 2025; OCHA Financial Tracking Service, 2025; IOM, 2025). With need rising and resources shrinking at the same time, the ability to identify and prioritize the most consequential drivers of humanitarian need became an operational necessity. Identifying not just where need is highest but what is driving it and how those drivers are changing has the potential to meaningfully improve how humanitarian assistance is targeted, prioritized, and advocated for in one of the world's most complex and underfunded crises. To do this, we ask the following research questions.

Humanitarian need

RQ1A: What is the change in humanitarian need in 2024 and 2025, both by overall need and by sector?

RQ1B: What was the change in potential drivers of humanitarian need — aid received, barriers to aid, conflict, displacement, and household shocks — between 2024 and 2025?

Drivers of humanitarian need over time

RQ2A: What factors are related to humanitarian need in 2024 and 2025, respectively?

RQ2B: What factors are related to the change in humanitarian need between 2024 and 2025?

The paper is structured as follows: Section II provides country context on the historical roots of the crisis and the USAID withdrawal and M23 escalation in 2025 that motivate the analysis. Section III then discusses the relevant literature, followed by section IV, which describes the MSNA and ACLED data sources, variable construction, and panel construction. Sections V and VI present the empirical strategy and findings, demonstrating that areas with the most conflict do not have the largest need, and rather than household shocks are the best predictor of humanitarian need. Sections VII and VIII discuss limitations and conclude with policy implications for Impact Initiatives and directions for future research.

II. Country Context

2.1 The Humanitarian Crisis in Eastern DRC

Eastern Democratic Republic of the Congo (DRC), particularly Nord Kivu, Sud Kivu, and Ituri, has experienced a protracted and complex conflict since the mid-1990s, rooted in weak state formation, regional geopolitics, and contested authority (Autesserre, 2010; Stearns, 2011; Reyntjens, 2009). Colonial governance systems prioritized extraction and institutionalized weak accountability and politicized ethnic identities, dynamics that persisted after independence and were reinforced under Mobutu's patrimonial regime (Nzongola-Ntalaja, 2002; Lemarchand, 2009; Halabo, 2020). These historical legacies contributed to enduring disputes over land, citizenship, and political representation, particularly in the Kivu provinces (Mamdani, 2001; Vlassenroot & Huggins, 2005).

The 1994 Rwandan genocide marked a critical turning point, transforming eastern DRC into a regionalized conflict zone. The influx of refugees, including armed groups, triggered cross-border interventions and culminated in the First and Second Congo Wars, embedding the region within a broader geopolitical security complex (Prunier, 2009; Stearns, 2011; Mathys, 2017).

Contemporary conflict is highly fragmented, involving a proliferation of armed groups, militias, and state actors operating within localized and overlapping systems of control (Stearns, 2011; Halabo, 2020). Violence extends beyond direct confrontation to include governance practices such as taxation, territorial control, and regulation of civilian movement (Autesserre, 2010). Armed actors operate within "conflict economies," extracting resources through trade, mineral exploitation, and extortion, often with blurred distinctions between state and non-state actors (Cuvelier et al., 2013; Warren, 2011).

2.2 Humanitarian Conditions and Vulnerability

Humanitarian vulnerability in the DRC is multidimensional, shaped by the interaction of conflict, displacement, food insecurity, and service disruption. As of 2025, over 21.2 million people require humanitarian assistance, with eastern provinces disproportionately affected (OCHA, 2025).

Displacement remains the most critical indicator of vulnerability. The DRC hosts over 7.8 million internally displaced persons (IDPs), with more than half concentrated in Nord Kivu, Sud Kivu, and Ituri (IPC, 2025; WHO, 2025). Displacement disrupts livelihoods, reduces access to services, and increases exposure to protection risks, including gender-based violence (Leal, 2025; Physicians for Human Rights, 2025b). Importantly, displacement is not only a consequence of conflict but also a mechanism of territorial control, reinforcing instability.

Food insecurity is widespread and closely linked to conflict dynamics. Between January and June 2025, 27.7 million people faced an Integrated Food Security Phase Classification of phase 3 or worse, including 3.9 million in emergency conditions (IPC, 2025). Conflict-driven displacement, market disruption, and restricted agricultural access underpin these outcomes, particularly in eastern regions.

Health system disruption further amplifies vulnerability. Conflict and funding shortfalls have led to facility closures, reduced vaccination coverage, and shortages of essential medicines, increasing mortality risks, particularly among children (Physicians for Human Rights, 2025a; Peltier et al., 2026).

These indicators collectively demonstrate that humanitarian need in the DRC is not static but continuously reproduced through the interaction of violence, institutional weakness, and constrained service delivery.

2.3 The Dual Shock of 2025

Global Aid Retrenchment

Humanitarian vulnerability was heightened by the global withdrawal of the United States Agency for International Development (USAID) when President Trump entered his second term in office. Historically, the US has been the single largest donor of official development assistance (ODA) since the 1980s and primarily provided funding through USAID (Our World in Data, n.d.; OECD, n.d.; Roy, 2025). On January 20, 2025—his first day in office, Trump issued an executive order pausing all new foreign aid and calling for a 90-day review of all existing foreign assistance as part of his "America First" policy (Kates et al., 2025). Within weeks, the administration paused all existing programs, placed staff on leave, and cancelled 83% of USAID programs, or over 5,000 contracts. However, it granted waivers for some life-saving health and humanitarian services, including PEPFAR, TB and malaria vaccination programs, and emergency food assistance. The US also reduced funding or exited multiple key multilateral institutions in the humanitarian sector: agencies and alliances reliant on US contributions, including the World Food Programme, UNICEF, and Gavi faced immediate budget contractions, program suspensions, and supply chain disruptions (Kenny, 2025; Physicians for Human Rights, 2025b). The US also exited the World Health Organization, where it had previously been one of the organization's largest donors (World Health Organization, 2024; Kenny, 2025). By the end of 2025, USAID was enveloped and reorganized into the State Department and had only issued one new international disaster assistance grant– for Gaza (Kenny & Sandefur, 2025; Roth, 2025; USA Spending, n.d.). [JC1] Suddenly, the country that funded 61% of the world's foreign aid in 2023, 30% of all annual ODA, and 42% of all humanitarian aid in 2024 had exited the global aid system after a shift in US policy (Lombardo & Patrick, 2025).

The aid cuts were immediate and deep in DRC. As one of USAID's largest recipients in 2024, the DRC experienced a $387 million reduction in aid in 2025, second only to Ukraine in absolute terms (Mbah et al., 2025; Sandefur & Kenny, 2025). The impact has been especially felt in health and food aid, which are necessary due to the armed crisis and resulting displacement in eastern DRC (Oxfam, 2026). Within the first month of USAID cuts, clean water programs were abandoned (Leal, 2025). Vaccination programs for critical diseases, healthcare awareness and screening activities, and family planning services all but disappeared. If any services remained, patients were now forced to pay for previously free services, causing many to remain untreated and suffer serious if not fatal outcomes (Physicians for Human Rights, 2025a). Care for survivors of sexual violence, including post-rape care kits, declined in a region plagued by conflict-related sexual violence, especially in eastern DRC (Physicians for Human Rights, 2025a). Already limited food aid has been further rationed despite worsening need and increased displacement (World Food Programme, 2025a-b). Ultimately, the DRC only received 26% of all required humanitarian funding in 2025, and only 34% of the country's humanitarian funding need in the past five years have been met (OCHA Financial Tracking Service, n.d.-b; Humanitarian Funding Forecast, 2025).

Escalation of Conflict

Simultaneously, armed conflict in eastern DRC escalated sharply in early 2025. The M23 armed movement, backed by regional actors, advanced rapidly through Nord Kivu, capturing the city of Goma in January 2025 before pushing south to seize Bukavu, the capital of Sud Kivo. The offensive dismantled existing IDP sites, forcing hundreds of thousands of people to flee again,

and severely disrupted humanitarian access along major supply routes. Between January and March 2025 alone, over one million individuals were newly displaced across Nord Kivu and Sud Kivu (IOM, 2025). The simultaneous collapse of aid funding and escalation of conflict created a compounding crisis: humanitarian actors lost resources precisely when displacement and protection needs were surging, and the zones most affected by violence were also the zones where access for both aid delivery and data collection was most severely constrained.

III. Literature Review

This section reviews existing literature on the relationship between conflict, humanitarian aid, and humanitarian need in eastern DRC. It highlights three key themes relevant to this study: the drivers of humanitarian need in conflict settings, the effects of aid provision, and access bias in both conflict and humanitarian data.

3.1 Drivers of Humanitarian Need in Conflict Settings

Humanitarian need in conflict settings is not produced by violence alone but emerges through a set of indirect and interacting mechanisms, including displacement, service disruption, and constraints on access. Eastern DRC illustrates this dynamic clearly: despite sustained humanitarian engagement, need remains widespread and uneven because it is continuously regenerated by conflict and mediated by political and operational constraints (OCHA, 2026; Kabemba, 2013). Here, we refer to "humanitarian need" as measurable welfare and access outcomes (displacement, food insecurity, disease burden, and service availability) rather than conflict intensity alone.

A central driver of humanitarian need is the indirect impact of conflict on civilian welfare. Violence disrupts livelihoods, displaces populations, and undermines basic service provision, producing acute needs even in areas not experiencing active fighting. In eastern DRC, repeated cycles of displacement and return, combined with the destruction of infrastructure and markets, have led to persistent food insecurity and limited access to healthcare (OCHA, 2026). Service collapse is particularly critical: funding shortfalls and insecurity have contributed to the closure of health facilities and nutrition centers, leaving millions without access to care and exacerbating vulnerability (OCHA, 2026). These dynamics show that need is often driven as much by the erosion of systems as by direct exposure to violence.

A second key driver is the uneven ability of humanitarian actors to reach affected populations. Conflict fragmentation, territorial control by armed groups, and insecurity create access constraints that shape where aid can be delivered. As a result, humanitarian assistance often fails to align spatially with need, particularly in areas where violence is most intense or governance is contested (Lischer, 2003; Anderson, 1999). In eastern DRC, recent escalations, including the M23 offensive, have disrupted major urban centers and supply routes, further complicating humanitarian access and deepening disparities in assistance coverage. These constraints mean that populations with the greatest needs are often the hardest to reach.

The literature also highlights how humanitarian need is shaped by the political economy of aid. Assistance is not neutral: it can be diverted, taxed, or captured by armed actors, and may inadvertently sustain conflict dynamics. Lischer (2003) shows that aid can provide material and political resources to armed groups, while Anderson (1999) argues that aid reshapes local power relations even when delivered impartially. In eastern DRC, historical and contemporary evidence demonstrates that humanitarian resources can become embedded in conflict economies, influencing incentives for violence and control over territory. This complicates the relationship between aid and need, as assistance may both alleviate and reproduce vulnerability.

Humanitarian need is further driven by gaps between needs and response capacity. Underfunding and donor prioritization mean that aid does not scale proportionately with need. In 2026, for example, humanitarian actors in DRC targeted only a subset of those requiring assistance due to funding shortfalls, leading to reduced service provision and increased unmet need (OCHA, 2026).

Declines in assistance, such as reductions in food aid or healthcare access, can themselves generate additional need, creating a feedback loop in which shrinking response capacity worsens humanitarian outcomes.

Recent empirical work emphasizes that the drivers of humanitarian need vary across space and time. While aggregate studies suggest that aid can reduce conflict on average (Mary & Mishra, 2020), subnational analyses show that localized aid can intensify competition among armed actors and produce uneven outcomes (Findley et al., 2023). In eastern DRC, overlapping conflicts and shifting territorial control create highly uneven patterns of displacement, service access, and vulnerability, reinforcing the importance of spatially disaggregated analysis.

3.2 Forms and Effects of Humanitarian Aid Provision

Cash and vouchers represent "the most significant evolution" in humanitarian assistance in DRC over the past decade, with programming shifting over time from in-kind aid to seed fairs, non-food item fairs, food vouchers, and unconditional cash — though their reach remains constrained by an unstable financial system and identity documentation requirements that displaced populations may not be able to meet (Bailey, 2017). Health system support has been equally critical: health zones have sustained service delivery through adaptive mechanisms including the redeployment of military nurses, mobilizing non-governmental organization subsidies, relocating facilities, and negotiating with belligerents, though planned activities frequently suffered when conflict intensified (Makali et al., 2023). At the broadest level, the empirical record on aid's life-saving impact is strong: higher ODA funding between 2002 and 2021 was associated with a 23% reduction in all-age mortality and a 39% reduction in under-five mortality globally, with declines exceeding 50% for malaria and 70% for HIV/AIDS, and USAID alone is estimated to have prevented over 90 million deaths over two decades (da Silva et al., 2026; Cavalcanti et al., 2025).

The effectiveness of aid in conflict settings is nonetheless subject to significant constraints. Insecurity remains a major constraint on delivery, as violence restricts humanitarian access, disrupts supply chains, and increases operational risks — with forced deviations and ambushes of aid convoys among the most severe threats, and roadblocks, route closures, and warehouse looting capable of triggering secondary crises when supply chains break down (Malhouni & Mabrouki, 2024; Mukuku & Govender, 2025). Beyond physical access, the presence of valuable aid resources may incentivize armed groups to loot supplies or target civilians to capture aid flows, potentially reinforcing patterns of violence (Wood & Sullivan, 2015). Lischer (2003) shows that humanitarian assistance can provide material and political resources to armed groups — documented directly in eastern DRC when aid to refugee camps in the 1990s sustained combatants alongside civilian populations — while Anderson (1999) argues that even impartially delivered assistance reshapes local power relations, reinforcing existing dividers or conferring legitimacy on actors who control distribution channels. Findley et al. (2023) find that geographically concentrated aid is associated with increased military fatalities in sub-Saharan Africa even when civilian harm effects are weak. These dynamics complicate the relationship between aid and need, but do not negate aid's essential protective function — rather, its effects depend heavily on local security conditions, delivery mechanisms, and the broader political context in which it operates.

3.3 Forms and Effects of Humanitarian Aid Withdrawal

While the literature on aid provision is extensive, the consequences of abrupt withdrawal have received comparatively less systematic attention, which makes 2025 an important empirical case. Aid spending has been chronically underfunded, with only 50% of humanitarian need funded globally in 2024 and a resulting $25 billion gap between needs and funding — a year when 305 million people needed aid or protection, of whom 30% did not receive support and 53% of all major global humanitarian crises went unfunded (OCHA Financial Tracking Service, n.d.; Humanitarian Action, 2025; Leal, 2025). This chronic underfunding created a system heavily dependent on a small number of major donors and acutely vulnerable to shifts in donor policy, with the US funding 61% of the world's foreign aid in 2023 and 42% of all humanitarian aid in 2024 (Mbah et al., 2025; Lombardo & Patrick, 2025). When President Trump cancelled 83% of USAID contracts in January 2025, donor retrenchment spread globally in a pattern of mutually reinforcing cuts — what Fink and Redaelli (2011) term bandwagoning — with major European donors cutting funding by 20% to 53% and Saudi Arabia, Japan, and Qatar reducing contributions by approximately 30% to 40%, while compensating increases from Canada, Switzerland, and the UN Central Emergency Response Fund fell far short of the scale previously provided (Kates et al., 2025; Yüksel, 2026; Vigersky, 2025; Mbah et al., 2025).

IV. Data

4.1 Data Sources

Impact Initiatives MSNA

Impact Initiatives' annual Multi-Sectoral Needs Assessment (MSNA) survey results in the DRC provide information on a number of potential causes and effects of humanitarian aid, which can be measured both before and after the simultaneous USAID withdrawal from the region and an increase in conflict in early 2025. It contains questions about different sectors and household experiences, including demographics, education, water and sanitation, health, nutrition, shelter, shocks, and displacement. The surveys were conducted in the eastern provinces of Ituri, Nord-Kivu, and Sud-Kivu from June - September 2024 and July - September 2025 (Impact Initiatives, 2024b & 2025b). The annual surveys contain information from 9,859 and 7,488 households, respectively.

In 2024, the data is representative for four different population groups at the territory level: non-displaced, on-site internally displaced persons (IDP), IDPs hosted by families, and returnees at the territory level. It is also representative for the overall population at the health zone level. Households were randomly selected proportional to the population size of the four population groups within the primary sampling unit (PSU). The PSU for non-displaced households was a polygon from the Geo-Referenced Infrastructure and Demographic Data for Development (GRID) 2020 data, while the PSU for on-site IDPs was the displacement site and the PSU for IDPs hosted by families and returnees was the locality. Random cluster sampling was used in areas accessible to enumerators, while snowball sampling was used to conduct remote key informant interviews in areas where an entire health zone was not accessible for in-person surveying.

In 2025, the data is representative at the health zone level for the overall population, without disaggregation by population group. The PSU was the cluster or village, with two different questionnaires used due to the sensitivity of certain indicators. This resulted in certain indicators not being measured across all surveyed health zones.

Not all health zones were surveyed both years, as conflict and inaccessibility affected survey access across years, and health zones with localities with fewer than 20 households were excluded from the sampling frame in both years for logistical reasons, meaning the situation of the most isolated or at-risk communities is not always captured in the data.

ACLED Conflict Data

To determine the effect of conflict on humanitarian need, we use geolocated conflict data from the Armed Conflict Location and Event Data Project (ACLED) (2026). This provides information on the date, type, and location of conflicts across the DRC at the event-date level. We use DRC data from January 1, 2024 - April 3, 2025 (the most recently available data), limiting the data to only conflict types that we hypothesize will lead to humanitarian need. Therefore, we exclude most "strategic development" events, or nonviolent events that may trigger future violence or contribute to future political dynamics. We include all actor types, as the names of actors may change over time despite representing the same group.

To make conflict comparable across years when the data only captures three months of 2025 conflict events, we limit the 2024 conflict data to be the average conflict count over three months. We use this data to create a dataset of the number of conflict events over a three month time period at the health zone level (admin3) through a simple count of conflict events, given greater uncertainty in reported fatality figures.

4.2 Index Construction

The dependent variable of humanitarian need is an index containing different measures of need that a household may experience. Impact Initiatives uses the MSNA data to create an annual multi-sectoral needs index (MSNI), which we initially planned to use as the dependent variable. The index comprises six overarching sectors of need, each which have a variety of sup-indices and weighted inputs: food security, health, education, WASH, SNFI, and protection. The MSNI is the maximum severity level attained by households across all categories, ranging from 1 (minimal/no need) to 4+ (very extreme needs) (Impact Initiatives, 2025c).

We aimed to use the MSNI as the dependent variable, though we were unable to due to data limitations. We received 2024 data containing the share of households receiving each MSNI score at the health zone level, though in 2025 the data only contained the share of households "in need" (score >= 3) or "in acute need" (score >= 4). In an attempt to obtain an MSNI that was comparable across years, we calculated the share of households in each health zone and year that received a severity score of 3+, as this indicates the share of households with humanitarian needs. However, the share of households at the province level with an MSNI score of 3+ decreased across years, implying that humanitarian need reduced and contradicting the hypothesis that humanitarian needs increase with a reduction of aid and an increase in conflict. We also considered reconstructing the MSNI score ourselves using the sectoral scores provided in the annual data. However, there was no sectoral score for health provided in 2024, thus limiting our ability to recreate an index across years.

We instead construct our own index using MSNA inputs meant to address similar input categories to the MSNI index. Table 1 below summarizes the inputs to the index and how they relate to the needs categories used in the MSNI index. We do not include the protection category of needs in our index because the protection inputs in the MSNI index measure perceptions of safety and threats, which we believe may have collinearity with our independent variables.

To construct the index, we first re-order the input variables' values so that higher numbers indicate worse outcomes. We standardize each input by subtracting the mean and dividing by the standard deviation. We then take the mean of these standardized scores, making the resulting index comparable across years and greater value indicating greater humanitarian need.

Table 1: Inputs into dependent variable index construction

Needs category	Variable	Definition
Food security	Food score	Average food consumption score. The score is composed of different food categories that are rated from 0-7 for the number of days in the last week that they were consumed, then are weighted by food category to create one composite food consumption score. The food consumption score is categorized as poor if <= 21, borderline if between 22 and 35, and acceptable if > 35. To create an index that logically increases as humanitarian need increases, we inverse the food score so that a higher number means worse food consumption.
Education	No education access	Share of HH with a child who is unable to attend school. Calculated as 1 - (share of HH with child attending school / share of HHs with child of school age).
Health	No healthcare access	Share of HH not receiving needed healthcare. Calculated as 1 - (share of HH that experienced a health issue and received care / share of HHs that experienced a health issue).
WASH	No water	Share of HH with the main water source reported as water collection, unprotected collection, purchased bottled/cart/kiosk, or other. This is meant to represent HHs that don't report safe water sources (piped, purchased potable, or tap water).
SNFI	Shelter damage	Share of HH reporting any damage.

4.3 Explanatory Variables

To measure the impact of hypothesized drivers of humanitarian need, we focus on a set of hypothesized drivers based on existing literature and the context of eastern DRC:

Table 2: Independent variable definitions and sources

Variable	Logic	Definition	Source
Conflict	A primary driver of displacement, market disruption, service collapse, and protection risks in eastern DRC.	Count of conflict events in the health zone over a three month average.	ACLED
Aid provision	A central feature in eastern DRC as well as a feature that largely changed with the withdrawal of USAID in early 2025.	Share of HH that received humanitarian aid in the past 12 months.	MSNA
Barriers to aid	Humanitarian assistance may mitigate need, while barriers to access may exacerbate it.	Share of HH that experienced a barrier to receiving aid in the past 12 months.	MSNA
Displacement	A central feature of the eastern DRC crisis and directly affects access to shelter, food, livelihoods, and services.	Share of HH reporting displacement in the past 12 months.	MSNA
Shocks (composite)	Recent shocks, whether conflict-related, climate-related, agricultural, or health shocks, may increase vulnerability and compound existing needs.	Share of HH experiencing any household shock in the past 6 months.	MSNA

To further unpack how household shocks are associated with humanitarian need, we deconstruct the various household shocks collected in the MSNA data. We use these non-exclusive shocks to create eight overarching shock categories, as described in table 3 below.

Table 3: Decomposed shock categories

Shock category	MSNA input variables
Climate	Climatic disturbances (floods, rainfall deficits, etc.) resulting in low agricultural production compared to a normal period of the year; climatic disturbances unrelated to agriculture (floods, eruptions, etc.) and affecting a home or public buildings
Conflict	Armed or inter-ethnic conflicts (with or without population displacement); land disputes (with or without population displacement)
Displacement	Forced displacement of populations
Food or seed unavailable	Unavailability of food on the market; unavailability of seeds/agricultural inputs
Health	Human disease outbreaks or pandemics; serious illness of one or more household members; death of an economically active household member
Livestock or crop	Crop infestation by insects resulting in low production compared to normal year; crop damage by wild animals; plant diseases resulting in low production compared to a normal year; livestock disease; crop looting or livestock theft
Lost employment	Loss of employment by a household member
Market	Significant decline in producer prices; rise in market prices for essential food products

Note: The overarching shock categories include the shock categories in 2025 that codify the same shocks but are included separately in the MSNA results as sensitive health zones.

4.4 Panel Construction

We aggregate household-level MSNA responses to the health zone level in both years, which is the smallest administrative unit that is representative in both years.[1] To address the change in sampling populations across years, we incorporate weights provided in the MSNA data. Weights are provided at the health zone-population level in 2024 and the health zone level in 2025. We apply these to the independent variables discussed below to ensure that certain populations are not over-represented in 2024.

Conflict events are aggregated to the health zone (admin3) and year and averaged to a three month conflict event count. We divide the total number of conflict events at the health zone level in 2024 by 4 to get the average number of conflict events every three months. This then is comparable to the 2025 conflict data, which only contains three months of conflict events.

The two datasets are merged on health zone name and year. This results in 46 health zones surveyed in-person across both the 2024 and 2025 MSNA data, which is then merged with the ACLED data. This results in 14 health zone year observations (15%) that do not contain conflict counts after merging. For the first-difference models, change variables are constructed as the 2025 value minus the 2024 value for each health zone observed in both years. Ultimately, this leads us to comprise a dataset with the characteristics described in table 4 below.

[1] Health zones are the primary administrative units for humanitarian and public health response in DRC (Makali et al., 2023).

Table 4: Health zone descriptive statistics, 2024 - 2025

	2024				2025			
	Mean	**Min**	**Max**	**Obs**	**Mean**	**Min**	**Max**	**Obs**
Humanitarian need								
Index	-0.10	-1.39	1.11	46	0.10	-2.16	1.18	46
Food score	67.73	43.15	81.10	46	65.38	38.54	74.91	46
Education	0.36	0.20	0.55	46	0.32	0.12	0.49	46
Healthcare	0.29	0.08	0.65	46	0.42	0.19	0.60	46
Water	0.56	0.04	0.98	46	0.65	0	0.97	46
Shelter damage	0.51	0.28	0.83	46	0.59	0.19	0.89	46
Drivers of need								
Conflict events	4.16	0	37.50	46	10.37	0	81	46
Aid provision	0.21	0	0.66	46	0.14	0	0.50	46
Barriers to aid	0.53	0.004	0.92	46	0.74	0.40	1.00	46
Displacement	0.15	0.001	0.42	46	0.12	0	0.57	46
Shocks	0.58	0.26	0.83	46	0.69	0.20	0.99	46

V. Empirical Strategy

We use simple differences in means, binary regressions, and multivariate regressions to understand the relationship between the different drivers of humanitarian need.

5.1 RQ1: Humanitarian need (descriptive statistics)

RQ1A: What is the change in humanitarian need in 2024 and 2025, both by overall need and by sector?

RQ1B: What was the change in potential drivers of humanitarian need — aid received, barriers to aid, conflict, displacement, and household shocks — between 2024 and 2025?

We compute the health zone – year means of the index and of each hypothesized driver of humanitarian need for 2024 and 2025 separately. We also report the unweighted mean change across years.

5.2 RQ2: Drivers of humanitarian need over time (OLS)

RQ2A: What factors are related to humanitarian need in 2024 and 2025, respectively?

To identify which factors are associated with humanitarian need across health zones and years, we estimate a pooled OLS model at the health zone – year level:

Regression 1: $$Index_{hz,t} = \alpha + \beta 1Conflict_{hz,t} + \beta 2Displacement_{hz,t} + \beta 3AidProvision_{hz,t} + \beta 4BarrierstoAid_{hz,t} + \beta 5Shocks_{hz,t} + \varepsilon_{hz,t}$$

Where *conflict, displacement, aid provision, barriers to aid,* and *shocks* refer to the respective indicator of humanitarian need in health zone *hz* and year *t* (2024 or 2025).

RQ2B: What factors are related to the change in humanitarian need between 2024 and 2025?

To examine how changes across years impact the relationship between drivers of need and humanitarian need, we estimate a first-difference model that relates the change in humanitarian need between 2024 and 2025 to changes in conflict exposure, displacement, aid provision, barriers to aid, and shocks.

Regression 2:

$$\Delta Index_{hz} = \alpha + \beta 1\Delta Conflict_{hz} + \beta 2\Delta Displacement_{hz} + \beta 3\Delta AidProvision_{hz} + \beta 4\Delta BarrierstoAid_{hz} + \beta 5\Delta Shocks_{hz} + \varepsilon$$

To further understand how specific shocks are associated with humanitarian need, we then decompose household shocks to the broad categories in table 3 above.

Regression 3:

$$Index_{hz,t} = \alpha + \beta 1ClimateShock_{hz,t} + \beta 2ConflictShock_{hz,t} + \beta 3DisplacementShock_{hz,t} + \beta 4FoodSeedShock_{hz,t} + \beta 5HealthShock_{hz,t} + \beta 6LivestockCropShock_{hz,t} + \beta 7HealthShock_{hz,t} + \beta 8LostEmploymentShock_{hz,t} + \beta 9MarketShock_{hz,t} + \varepsilon$$

Again, we also estimate a first-difference model that relates the change in humanitarian need between 2024 and 2025 to changes in different household shocks.

Regression 4:

$$\Delta Index_{hz} = \alpha + \beta 1 \Delta ClimateShock_{hz} + \beta 2 \Delta ConflictShock_{hz} + \beta 3 \Delta DisplacementShock_{hz} + \beta 4 \Delta FoodSeedShock_{hz} + \beta 5 \Delta HealthShock_{hz} + \beta 6 \Delta LivestockCropShock_{hz} + \beta 7 \Delta HealthShock_{hz} + \beta 8 \Delta LostEmploymentShock_{hz} + \beta 9 \Delta MarketShock_{hz} + \varepsilon$$

Across all regressions, robust standard errors are clustered at the health zone level.

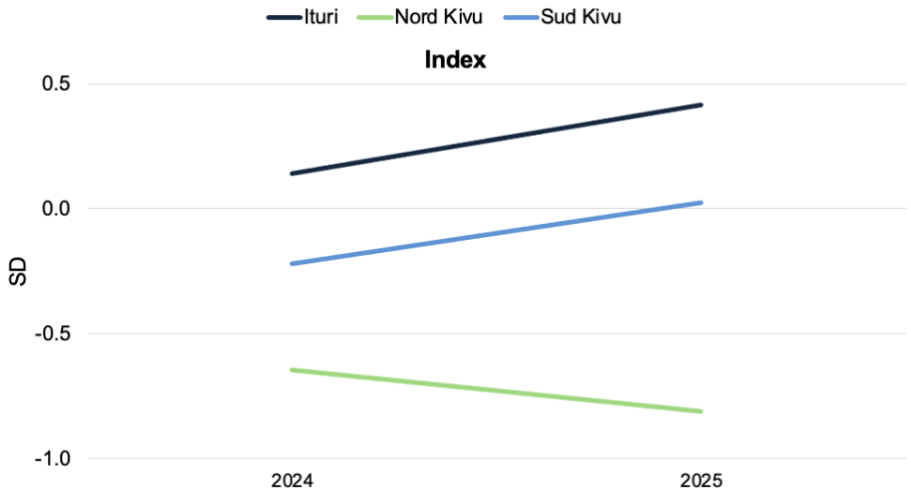
VI. Results

6.1 The USAID withdrawal is visible in every province, though in distinct ways

Humanitarian need increased substantially between 2024 and 2025 across provinces, making the USAID withdrawal visible in every province despite manifesting differently across Ituri, Nord Kivu, and Sud Kivu. Using our composite index, we first explore the overall change in need across years, as seen in figure 5 below. We find that Ituri has the highest absolute level of humanitarian need of the three provinces in 2025 as well as the largest change in needs across years. Sud Kivu has a lower humanitarian need but changed by roughly the same amount as did Ituri's need level across years.

Interestingly, Nord Kivu's overall humanitarian need was the lowest of the three provinces in both years and also decreased across years. There are two potential explanations for this. First, Nord Kivu's capital is Goma, the largest city in eastern DRC, which may suggest Nord Kivu had a lower humanitarian need because it is a large economic hub with relatively better services and aid presence. However, it may also be driven by the fact that only 6 out of 34 health zones in Nord Kivu were surveyed in the MSNA data across both years, suggesting that the worst-affected areas that were inaccessible were common in Nord Kivu and their needs are not reflected in the data (Malembaka et al., 2021).

Figure 5: Ituri and Sud Kivu have increasing humanitarian need while Nord Kivu's need is decreasing across years, 2025-2025



Note: Estimates are the province-level average index score for each year. The index is a composite of five sectoral indicators — food consumption, education access, healthcare access, water access, and shelter damage — each standardized using a pooled mean and standard deviation across both years. Higher values indicate greater humanitarian need.

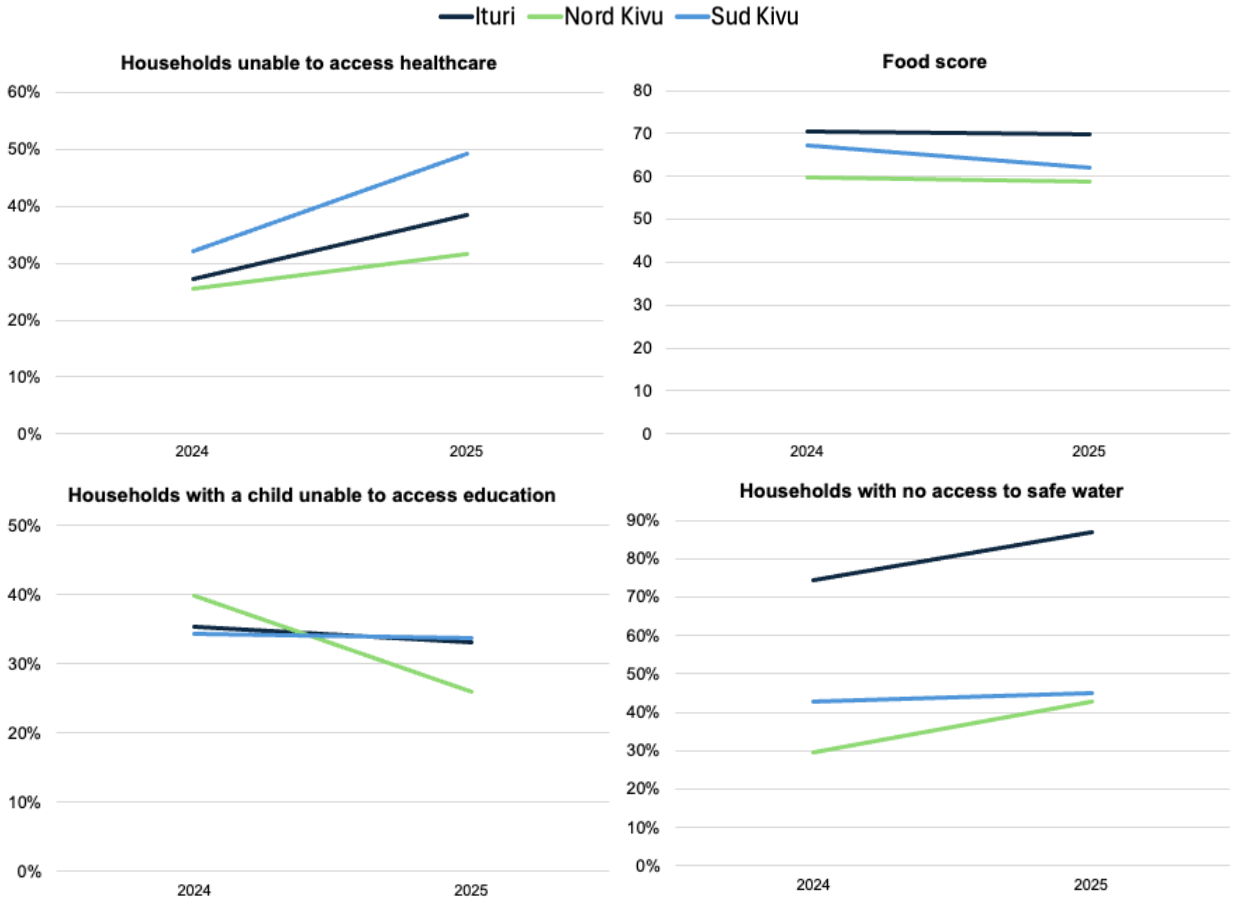
To understand why each provinces' needs change in distinct ways, we look into the changes in each input into the humanitarian need index: food security, access to education, healthcare, and water, and shelter damage. This reveals that the drivers of need differ meaningfully across provinces, as shown in figure 6 below.[2] Across all three provinces, humanitarian need worsened in nearly every sectoral component of the index between 2024 and 2025, with the notable exception of education access, which improved in all three provinces. This broad deterioration

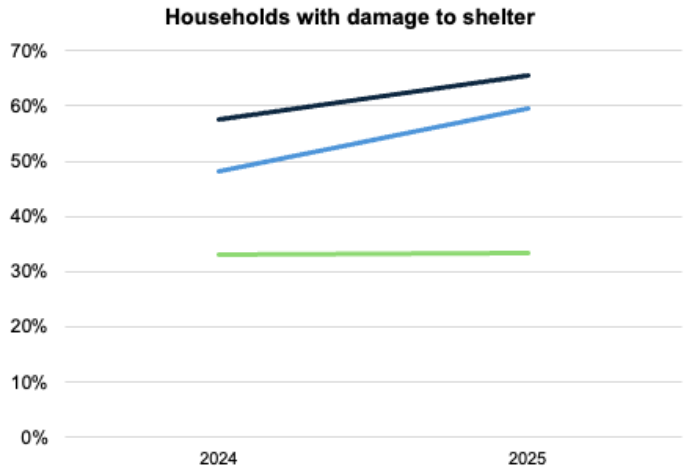
[2] Table 14 in the appendix contains the exact values for changes across all inputs into the humanitarian need index and years.

across food security, healthcare, water access, and shelter provides the baseline against which province-level differences should be understood.

Within this overall trend, the specific drivers of change differ by province. In Ituri, increasing need is mainly driven by reduced healthcare access and declining access to safe water, while the persistently high level of need across both years is also shaped by a large share of households reporting shelter damage. In Sud Kivu, worsening conditions are similarly driven by reduced healthcare access alongside an increase in damaged household shelters. Nord Kivu presents the most striking pattern. Despite generally worsening conditions across the sectoral drivers of need, the province's overall index declined, indicating relatively improving composite need, exclusively because of a dramatic improvement in childhood education access. In other words. Here, the overall mean reduction in need in Nord Kivu is driven exclusively by decreased need in access to education.

Figure 6: Average change in humanitarian need index inputs by province, 2024-2025





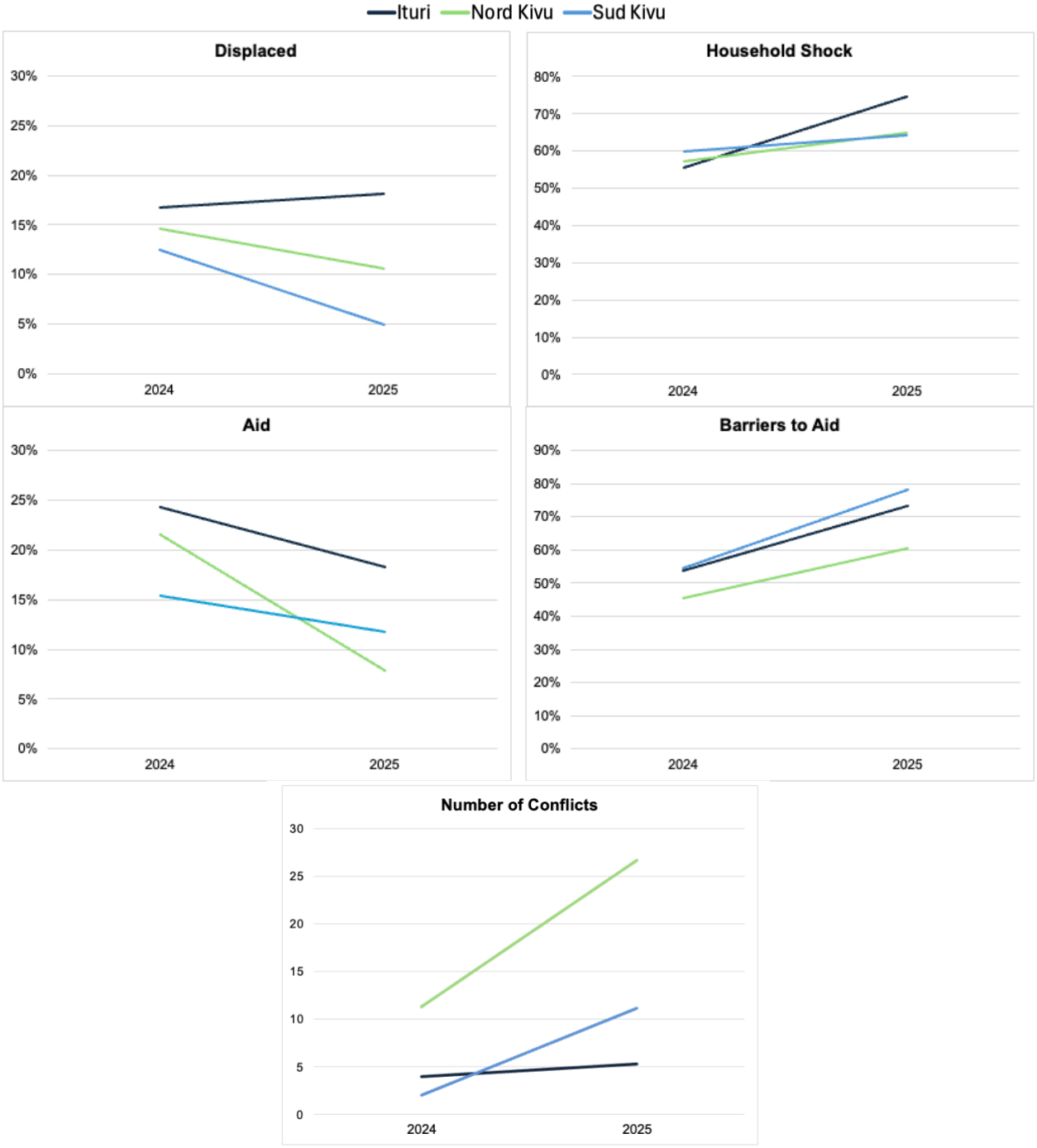
Note: Estimates are the province-level average for each year. Food score represents the average food consumption score and is composed of different food categories that are rated from 0-7 for the number of days in the last week that they were consumed, then are weighted by food category to create one composite food consumption score. The food score is then inverted so that a higher number means worse food consumption.

After understanding the patterns of changing needs across provinces, we now examine how different predicted drivers of need change across provinces in 2024 and 2025, as shown in figure 7 below.[3] Across all three provinces, there was a large decrease in already scarce aid as well as a large and consistent increase in households experiencing barriers to receiving aid, suggesting that humanitarian assistance became both less available and harder to access regardless of region.

Each province also had distinct trends relating to the drivers of humanitarian need. Displacement is most prominent in Ituri across both years, despite Ituri being the province least affected by conflict. This might be because of displacement from other provinces towards Ituri, although the data do not allow us to test for this. While Sud Kivu has a larger drop in displacement across years than Nord Kivu, Nord Kivu maintains higher absolute shares of displaced households, which suggests that households are also displaced within the province rather than solely across provinces. Nord Kivu also saw the most rapid decline in aid provision and increase in conflict across provinces. The concentration of aid loss in Nord Kivu is expected given that the escalation of regional conflict in 2025 likely reduced access for the remaining humanitarian actors still operating in the province, including those who had continued to serve Ituri and Sud Kivu following the USAID withdrawal. Meanwhile, household shocks intensified most rapidly in Ituri despite little change in conflict

[3] Table 14 in the appendix contains the exact values for changes across all hypothesized drivers of need and years.

Figure 7: Provinces experience varying changes in the drivers of humanitarian need, 2024-2025



Note: Drivers of need are calculated as the weighted share of households experiencing the given driver for all variables described in table 2 except conflict at the province-year level. Conflict is calculated as the average count of conflicts every three months.

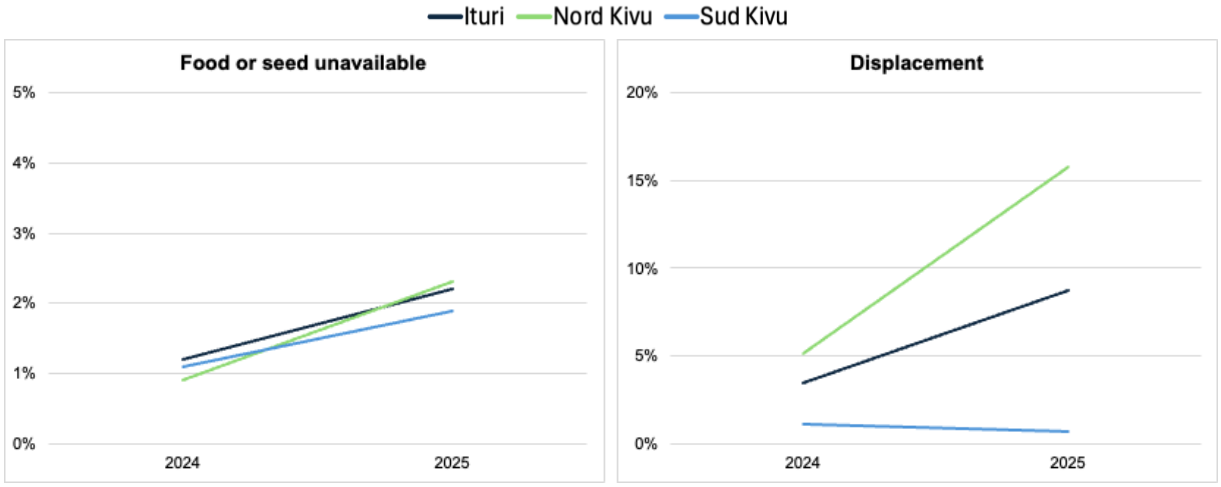
To better understand how household shocks manifest across provinces, we examine the province-level changes in various categories of household shocks across 2024 and 2025, as

shown in figure 8 below.[4] Food and seed unavailability as well as unemployment rose in all three provinces across years.

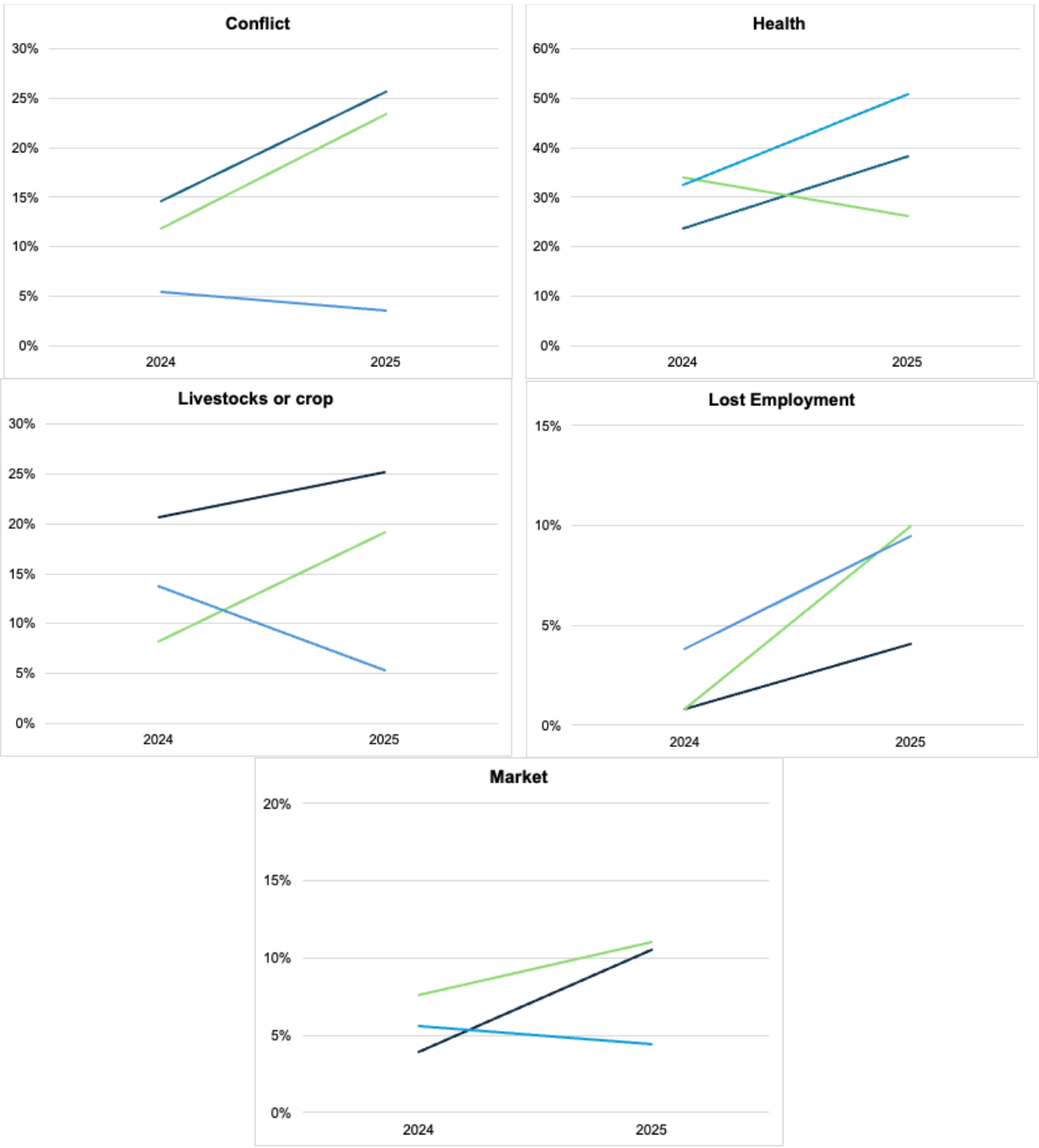
Each province saw distinct changes across various household shocks. Ituri and Sud Kivu saw the largest change across years in increased health shocks, while Nord Kivu saw the largest change across years in conflict shocks. This is likely explained by the fact that the sectarian violence is concentrated in Nord Kivu, while the USAID withdrawal in the region primarily reduced health programming that was felt in the provinces not experiencing acute conflict (Mukena, 2025). Unemployment rose most steeply in Nord Kivu, which could be explained by the M23 resurgence and territorial expansion in Nord Kivu shutting down economic activity. Similarly, displacement from Nord Kivu could contribute to increased job loss, as displaced individuals often lose their livelihoods.

Interestingly, displacement as a household shock reveals different trends than displacement as a driver of need. Figure 6 above finds decreasing displacement across years in Nord and Sud Kivu, while displacement as a household shock in figure 7 below finds increased displacement in Nord Kivu. This is likely due to the difference between how survey questions were asked in the MSNA. Displacement in figure 6 above is only asked to households that responded that they currently live with a host family or in a displacement camp. Meanwhile, displacement shocks as measured below can be responded to by any surveyed household regardless of travel status. This suggests that displacement shocks are a better measure of displacement than the selective displacement question in the MSNA.

Figure 8: Average change in household shocks by province, 2024-2025



[4] Table 14 in the appendix contains the exact values for changes across all non-exclusive shock categories and years.

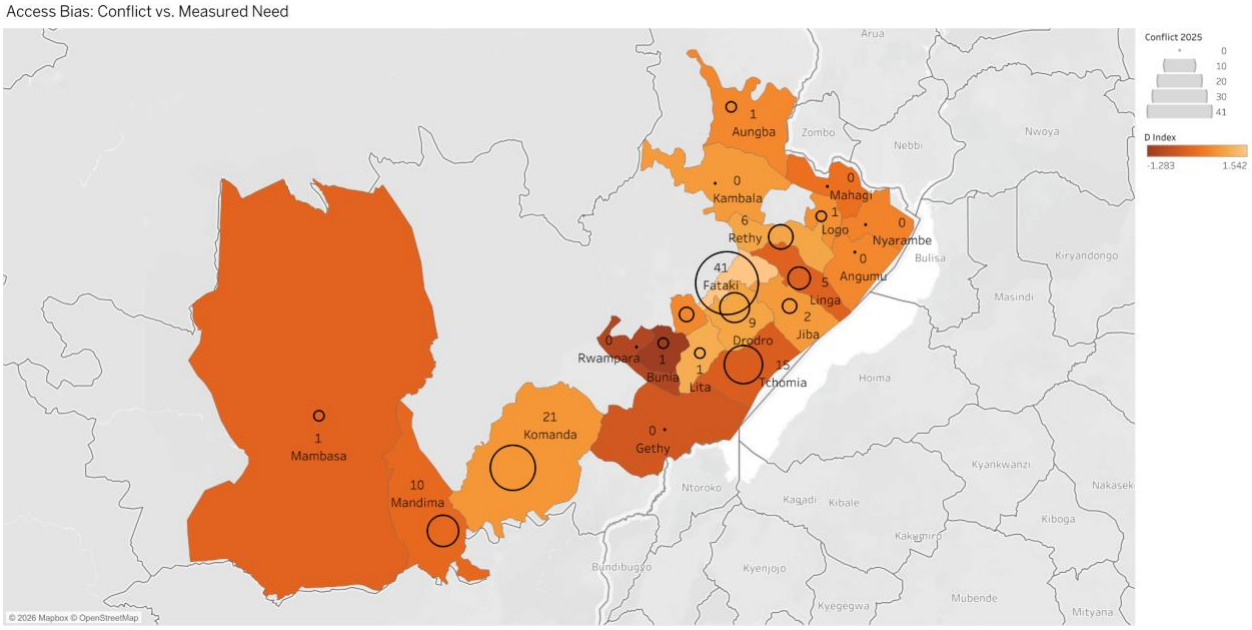


Note: Shares of households experiencing shocks are calculated as the weighted average of households experiencing a given shock across the province and year. Household shock categories are non-exclusive.

Ultimately, we find that the health zones with the highest needs are not the areas with the most conflict. The maps below show the change in conflict in varying shades and the change in humanitarian need across years in circle size, demonstrating the access-bias that exists across all three provinces. In Ituri, humanitarian need worsens across all health zones across years while conflict intensification is spread across the province. In Sud Kivu, need deteriorated most sharply in the northern health zones along Lake Kivu, which is consistent with reports of fighting being most intense in the Goma/Lake Kivu region. Nord Kivu has the starkest contrast between humanitarian need and conflict: humanitarian need is generally improving across years while

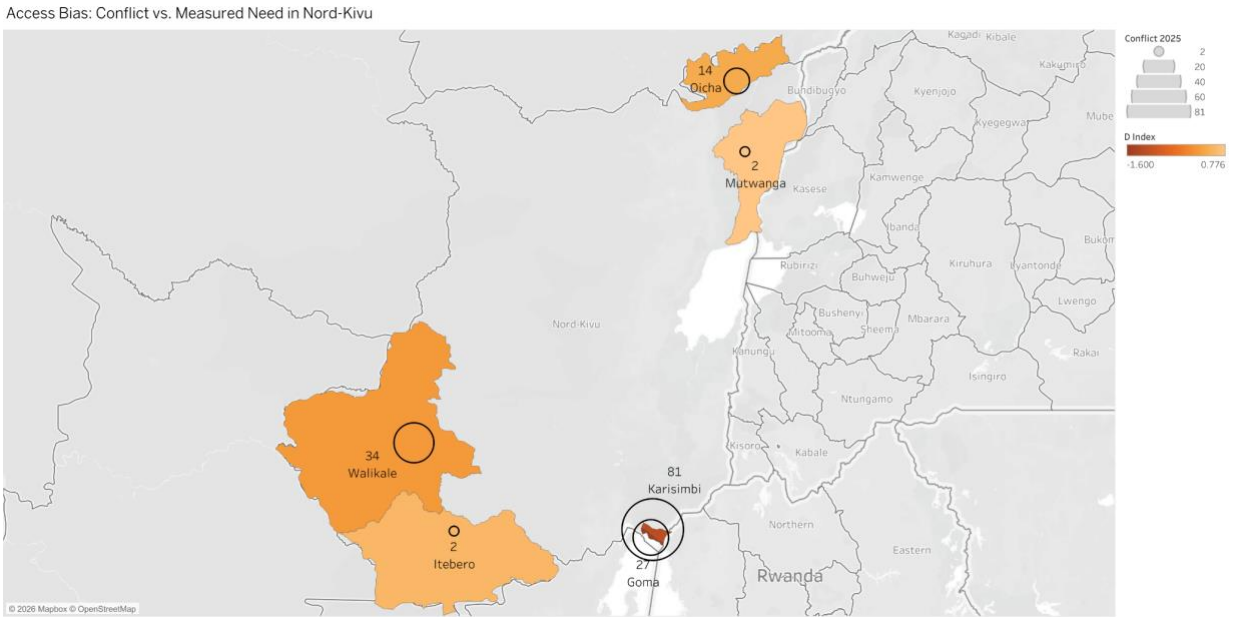
conflict is generally increasing and is focused in the capital region. However, some of the health zones with the largest amounts of conflict according to ACLED, including Kirotshe, Masisi, and Nyiragongo, are not included on the map because they were not surveyed in person in the MSNA across both years. This absence reflects the access constraints that prevented enumeration in some of the most conflict-affected areas of Nord Kivu.

Figure 9a: Change in humanitarian need index and conflict intensity by health zone, Ituri, 2024-2025



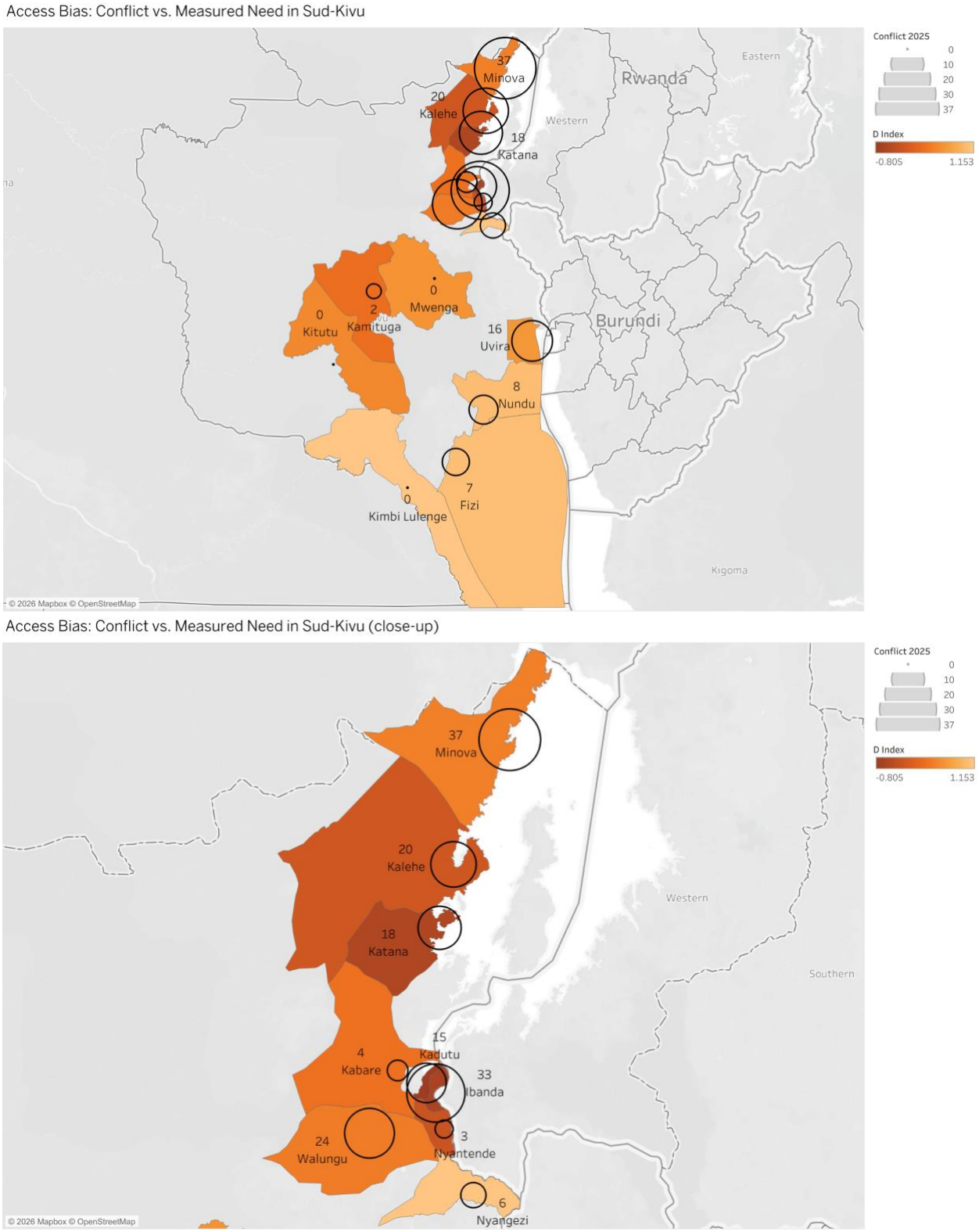
Note: Map contains only health zones surveyed in person in both the 2024 and 2025 MSNA.

Figure 9b: Change in humanitarian need index and conflict intensity by health zone, Nord Kivu, 2024-2025



Note: Map contains only health zones surveyed in person in both the 2024 and 2025 MSNA.

Figure 9c: Change in humanitarian need index and conflict intensity by health zone, Sud Kivu, 2024-2025



Note: Map contains only health zones surveyed in person in both the 2024 and 2025 MSNA.

6.2 Household shocks are the most robust predictor of humanitarian need

After better understanding how humanitarian aid changed between 2024 and 2025, we now examine the predictors of humanitarian need. Table 10 below contains four models that break down how drivers of need predict need.

The drivers of need in each year are distinct. In 2024, there are no significant relationships between the hypothesized drivers of need and humanitarian need, as seen in model 1 of table 10 below. Humanitarian need in 2025 is mainly driven by experiencing a barrier to aid in the past year (+2.314 SD), as seen in model 2 of table 10 below. Receiving aid and being displaced in the past year also predict humanitarian need, all three of which are intuitive given the regional context. When controlling for need in the prior year, experiencing a barrier to aid in the past year remained the largest significant predictor of need in 2025, as seen in model 3 of table 10.

The change in humanitarian need between 2024 and 2025 is mainly driven by household shocks, as seen in model 4 of table 10 below. Here, experiencing a barrier to aid or receiving aid are no longer significant predictors of the change in need across years. Only shocks positively predict humanitarian need (+1.478 SD). Meanwhile, experiencing displacement is associated with a decrease in humanitarian need, which may be explained by displaced households moving to safer areas with relatively better conditions, such as increased market access and NGO presence. Here, we also find that drivers of need explain a larger share of the variance of humanitarian need in 2025 compared to 2024, suggesting that the drivers of need have more predictive accuracy in 2025.

It is interesting to note that conflict does not significantly predict humanitarian need across any model when determining the predictors of need. Regressions 1-2 in table 10 below ACLED data to measure conflict, which is an external measurement of conflict outside of the MSNA survey. This suggests that when measured from outside sources that are not restricted to enumerator access, conflict does not predict humanitarian outcomes.

Table 10: Household shocks are the main predictor of humanitarian need, 2024-2025

	(1) 2024	(2) 2025	(3) 2025 + needs control	(4) Change
Log conflict events	-0.011	-0.106*	-0.098	-0.023
	(0.045)	(0.058)	(0.059)	(0.059)
Received aid in past 12 months	0.045	1.954***	1.892***	-0.028
	(0.455)	(0.612)	(0.640)	(0.854)
Experienced barrier to aid in past 12 months	0.684	2.314***	2.267***	-0.029
	(0.462)	(0.725)	(0.723)	(0.438)
Displaced in past 12 months	-0.743	1.378**	1.350**	-1.390**
	(0.495)	(0.620)	(0.627)	(0.653)
Experienced shock in past 6 months	-0.019	0.597	0.595	1.478***
	(0.655)	(0.379)	(0.378)	(0.422)
Humanitarian need in 2024			0.095	
			(0.127)	
Obs.	46	46	46	46
R^2	0.142	0.560	0.564	0.269
Mean of dep. var.	-0.103	0.103	0.103	-0.103

Note: The first two columns represent results for regression 1 at the year level to disaggregate drivers of humanitarian aid in each specific year. Column 3 adds a control for humanitarian need in 2024 to separate out the effect of the prior years' humanitarian need in predicting the current year's humanitarian need. Column 4 presents the results for regression 2. Dependent variable: humanitarian need index. Log conflict events is the log of the average number of conflicts per health zone in a three month period because conflict counts are heavily skewed. Robust standard errors are clustered at the health zone level and are shown in parenthesis. * p<0.10, ** p<0.05, *** p<0.01

As we see in the difference between models 1 and 2 in table 10 above, aid becomes a predictor of need rather than solving need in 2025. Therefore, we will now focus on the relationships between drivers of need and need in 2025 as well as the change across years. When we do this, the positive, statistically significant relationship between household shocks and humanitarian need holds across different models. In table 11 below, we find that shocks have a large positive individual association with humanitarian need in 2025 (+1.756 SD), though it has a lower level of significance ($p < 0.1$) as shown in model 5. Receiving aid, experiencing a barrier to aid, and experiencing displacement are also all independent predictors of need in 2025. The change in shock between 2024 and 2025 is also the largest predictor in change in humanitarian need across the two years (+1.156 SD), as shown in model 10.

Table 11: Bivariate relationship between drivers of need and humanitarian need, 2024-2025

	2025					Change				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Log conflict events	**Aid**	**Barrier to aid**	**Displaced**	**Shock**	**Log conflict events**	**Aid**	**Barrier to aid**	**Displaced**	**Shock**
Coeff.	-0.147	1.212***	1.446***	1.632***	1.756***	-0.033	-0.209	0.951***	-0.606	1.156***
	(0.067)	(0.444)	(0.461)	(0.563)	(0.351)	(0.069)	(0.758)	(0.337)	(0.731)	(0.335)
Obs.	46	46	46	46	46	46	46	46	46	46
R^2	0.127	0.071	0.105	0.091	0.320	0.005	0.003	0.097	0.018	0.177
Mean of dep. var.	0.103	0.103	0.103	0.103	0.103	-0.103	-0.103	-0.103	-0.103	-0.103

Note: Columns 1-5 represent a different independent variable within the equation $Index_{hz,t} = \alpha + \beta 1 X_{hz,t} + \varepsilon_{hz,t}$, where X is the hypothesized driver of need listed at each column heading in 2025. Columns 6-10 represent the same independent variables for the change across years as described in the equation $\Delta Index_{hz,t} = \alpha + \beta 1 \Delta X_{hz,t} + \varepsilon_{hz,t}$. Robust standard errors are clustered at the health zone level and shown in parenthesis. * p<0.10, ** p<0.05, *** p<0.01

When we decompose humanitarian need by its inputs, we identify the relationship between each driver of need and each sector of humanitarian need, as seen in table 12 below. Here, we find that receiving aid in the past year is a large predictor of worsening food scores (+17.836 SD) and shelter damage (+0.753 SD) in 2025, which is intuitive given that aid is often delivered in the form of food in eastern DRC. Experiencing a barrier to aid in the past year predicts a decrease in education access (+0.277 SD) and healthcare access (+0.437 SD) as well as an increase in shelter damage (+0.754 SD). Meanwhile, experiencing displacement in the past 6 months predicts a decrease in water access (+0.918 SD). Finally, experiencing a household shock predicts shelter damage (+0.276 SD), which is intuitive given that shelter damage can be a direct physical consequence of shocks.

Table 12: Factors related to humanitarian need, 2024-2025

	2025					Change				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Food score	**No edu access**	**No healthcare access**	**No water**	**Shelter damage**	**Food score**	**No edu access**	**No healthcare access**	**No water**	**Shelter damage**
Log conflict events	-1.805***	0.006	0.007	-0.098***	-0.011	-0.965	-0.000	0.005	-0.027	0.013
	(0.653)	(0.007)	(0.012)	(0.021)	(0.013)	(0.933)	(0.008)	(0.015)	(0.017)	(0.013)
Received aid in past 12 months	17.836**	0.160	0.170	0.026	0.753***	-4.222	0.111	-0.177	-0.062	0.118
	(8.091)	(0.121)	(0.175)	(0.279)	(0.140)	(9.103)	(0.164)	(0.148)	(0.152)	(0.140)
Experienced barrier to aid in past 12 months	8.096	0.277***	0.437***	-0.035	0.754***	-10.581	0.184**	-0.122	-0.287**	0.184
	(10.101)	(0.088)	(0.158)	(0.373)	(0.167)	(8.020)	(0.070)	(0.153)	(0.130)	(0.145)
Displaced in past 12 months	10.124	0.221*	-0.147	0.918**	0.150	-13.113*	-0.137	-0.332**	0.268*	-0.385**
	(7.503)	(0.119)	(0.126)	(0.398)	(0.128)	(7.758)	(0.090)	(0.142)	(0.157)	(0.160)
Experienced shock in past 6 months	9.870*	-0.043	0.033	0.111	0.276***	11.364	0.157**	0.200	0.129	0.385***
	(4.990)	(0.062)	(0.082)	(0.220)	(0.086)	(6.767)	(0.059)	(0.135)	(0.140)	(0.126)
Obs.	46	46	46	46	46	46	46	46	46	46
R^2	0.437	0.212	0.349	0.462	0.703	0.109	0.345	0.141	0.152	0.384
Mean of dep. var.	0.103	0.103	0.103	0.103	0.103	-0.103	-0.103	-0.103	-0.103	-0.103

Note: Columns 1-5 use each input of the humanitarian need index as the dependent variable in regression 1. Columns 6-10 use the change in each input of the index as the dependent variable in regression 2. Food score represents the average food consumption score and is composed of different food categories that are rated from 0-7 for the number of days in the last week that they were consumed, then are weighted by food category to create one composite food consumption score. The food score is then inverted so that a higher number means worse food consumption. Log conflict events is the log of the average number of conflicts per health zone in a three month period because conflict counts are heavily skewed. Robust standard errors are clustered at the health zone level and are shown in parenthesis. * p<0.10, ** p<0.05, *** p<0.01.

To understand how best to target limited humanitarian aid based on household shocks, we break down how different shock types impact humanitarian need, as shown in table 13 below. In 2024, livestock and crop shocks predict increased humanitarian need (+2.857 SD), while climate shocks predict decreased humanitarian need (-1.493 SD). While counterintuitive, the negative relationship between climate shocks and humanitarian need in 2024 could be explained by the fact that the effects of the main climatic shocks in the region are also captured by other non-exclusive shock categories. For example, temperature increases and varied rainfall are known to increase food insecurity in eastern DRC, which may be considered a market shock (de Coning et al., 2023).

Health shocks predict need across models. In 2025, health shocks are a large predictor of increasing humanitarian need (2.142 SD). The change in health needs between 2024 and 2025 is also significant in predicting the change in humanitarian need between the two years (+1.795 SD), as shown in model two of table 13. This directly reflects the withdrawal of USAID services, as USAID focused on funding health programs in eastern DRC (Mukena, 2025) and suggests that humanitarian aid should be targeted based on household shocks to reach the households with the largest needs. Again we find that shocks explain a larger share of the variance of humanitarian need in 2025 compared to 2024, suggesting that shocks have more predictive accuracy in 2025.

In 2025, conflict shocks and losing employment also predicted changes in humanitarian need, as seen in model 1 of table 13 below. Losing employment was found to predict a decrease in humanitarian need (-5.813 SD), which, while counterintuitive, may be explained if remaining humanitarian aid is targeted to households that have lost their economic livelihoods. Meanwhile, conflict shocks predicted an increase in need in 2025. However, this is partially biased by the MSNA data limitations, as the independent variable conflict measures households reporting armed or interethnic conflict shocks in the MSNA data, which does not survey areas that are unsafe to reach due to conflict. Because this result is different from the non-significant association between conflict and need using an external data source in tables 10-12 above, we cannot say that conflict predicts need based on this model.

Table 13: Health shocks are the largest predictor of increased humanitarian need, 2024-2025

	(1) 2024	(2) 2025	(3) Change
Climate	-1.493***	2.513*	-0.519
	(0.524)	(1.260)	(0.559)
Conflict	-0.144	1.350***	-0.272
	(0.813)	(0.467)	(0.696)
Displacement	-2.212	-1.099	0.938
	(3.199)	(1.037)	(1.421)
Food or seed unavailable	-6.344	1.404	-1.847
	(7.002)	(2.035)	(3.605)
Health	0.269	2.142***	1.795***
	(0.411)	(0.399)	(0.456)
Livestock or crop	2.857***	0.069	0.878
	(0.786)	(0.713)	(0.734)
Lost employment	0.580	-5.813***	-2.216
	(1.347)	(1.477)	(1.797)
Market	0.334	0.024	1.723**
	(1.311)	(0.850)	(0.737)
Obs.	46	46	46
R^2	0.311	0.748	0.533
Mean of dep. var.	-0.103	0.103	-0.103

Note: Columns 1-2 present results for regression 3 at the year level. Column 3 presents the results for regression 4. Dependent variable: humanitarian need index. Shock categories are non-exclusive. Robust standard errors are clustered at the health zone level and are shown in parenthesis. * p<0.10, ** p<0.05, *** p<0.01.

Ultimately, this suggests that humanitarian aid should be targeted based on household shocks rather than by using conflict concentration. Since shocks are the most consistent predictor of humanitarian need in this analysis, interventions that stabilize livelihoods, support food access,

and reduce economic vulnerability may be more effective than simply responding to conflict. This also suggests a need for more integrated approaches that combine emergency assistance with resilience-building programs.

VII. Limitations

The analysis is mainly limited based on data restrictions, as it is incredibly difficult to collect accurate and detailed data in eastern DRC. One main data limitation is the restricted temporal coverage of the ACLED conflict data, which only captures the first three months of 2025. Dividing the 2024 conflict count by four to produce a quarterly average that is comparable with the 2025 data assumes that conflict is evenly distributed across quarters in 2024, which is unlikely given the seasonal and event-driven nature of armed conflict in eastern DRC. The early 2025 ACLED data also predates the most intense period of the M23 offensive, meaning our conflict measure may substantially undercount the violence that drove displacement and need in the second half of 2025.

Access bias in the MSNA data is also a concern. Health zones identified as physically unreachable due to security or logistical constraints were not surveyed (Impact Initiatives, 2024a). These zones likely face the most intense needs, meaning their disproportionate absence from the sample causes our estimates to understate the true relationship between the drivers and humanitarian need, biasing results toward zero. This likely explains the counterintuitive negative association between conflict events and some need indicators in our regression results, and it means our estimates of the relationship between conflict and need should be interpreted with caution.

Reverse causality is a concern for the aid provision coefficient. Humanitarian organizations direct assistance toward zones with greater need, meaning aid and high index scores may be positively correlated in the cross-section even if aid reduces need at the margin.

The small number of health zones in the sample (N = 46) limits statistical power and restricts the complexity of models we can estimate without risking overfitting. This is especially true where the results show that conflict is negatively associated with humanitarian need, which we hypothesize is partially due to limited MSNA data collection Nord Kivu, meaning this result may be due to limited data collection rather than actual reduced need.

Effects that are substantively meaningful may not reach conventional significance thresholds given the sample size. Specifications are kept simple to avoid overfitting, as including many predictors relative to the number of observations risks producing unstable estimates that reflect noise rather than genuine associations.

Finally, the observational design of the MSNA as a repeated cross-section rather than a randomized experiment precludes causal identification, as health zones are not randomly assigned to different levels of conflict, aid, or displacement. Thus, all models estimate associations rather than causal effects.

VIII. Conclusion

Eastern DRC's humanitarian crisis deepened substantially between 2024 and 2025, shaped by two compounding shocks: the withdrawal of USAID funding and the escalation of M23-driven conflict. This analysis demonstrates that the effects of these shocks were visible across all three eastern provinces, though they manifested differently in each. Ituri experienced the highest absolute level of need and the sharpest deterioration in healthcare access and safe water. Sud Kivu saw comparable increases in need, driven largely by collapsing healthcare access and rising shelter damage. Nord Kivu's apparent decrease in measured need almost certainly reflects the limits of the data rather than genuine improvement, given that only 6 of its 34 health zones were surveyed and the many of the conflict-affected areas were inaccessible to enumerators.

With substantial aid cuts, prioritization is more important than ever. Aid must be prioritized and targeted to sectors and locations with the highest needs. Our results suggest two ways to prioritize:

- *Addressing health needs is critical*. Health shocks were the greatest driver of need in 2025. Changes in health shock exposure predicted changes in need between 2024 and 2025 as well, likely reflecting the direct consequence of USAID's withdrawal from health programming. The findings suggest that as resources remain scarce, agencies reorient targeting frameworks around household-level shock exposure, especially health shocks, as the primary allocation signal.

- *Targeting based on conflict is not effective in reaching households with the highest need*. This means that aid targeting decisions anchored in conflict mapping alone will systematically miss the households with the greatest needs. Agencies should advocate for funding mechanisms that are responsive to household-level vulnerability rather than conflict geography alone and should build resilience-oriented programming alongside emergency response to address the compounding nature of shocks in this environment.

This report comes at a moment when the cost of misallocating scarce humanitarian resources has never been higher. Eastern DRC's population has absorbed simultaneous blows to its health system, food security, and shelter, not primarily due to conflict, but because the systems that protected households from shocks have been dismantled. The evidence points toward a clear reorientation: away from conflict geography as the organizing principle of aid delivery, and toward the household-level vulnerabilities that data consistently shows drive need. Doing so will require better data from inaccessible areas, more integrated programming that pairs emergency response with resilience-building, and a targeting logic grounded in what households are actually experiencing. Ultimately, this can align the humanitarian response with the crisis that residents are currently experiencing.

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X: Appendix

Table 14: Province-level humanitarian need inputs and driver averages, 2024-2025

	Ituri			Nord-Kivu			Sud-Kivu		
	2024	2025	PP change	2024	2025	PP change	2024	2025	PP change
Humanitarian need									
Index	0.14	0.42	0.28	-0.65	-0.81	-0.16	-0.22	0.02	0.24
Humanitarian need inputs									
Food score	70	70	0	60	59	-1	67	62	-5
No education access	35%	33%	-2%	40%	26%	-14%	34%	34%	-1%
No healthcare access	27%	39%	11%	26%	32%	6%	32%	49%	17%
No safe water	75%	87%	13%	29%	43%	13%	43%	45%	2%
Shelter damage	58%	65%	8%	33%	33%	0%	48%	60%	11%
Drivers of need									
Conflict	4	5	1	11	27	15	2	11	9
Displaced	17%	18%	1%	15%	11%	-4%	13%	5%	-8%
Household shock	56%	75%	19%	57%	65%	8%	60%	64%	4%
Aid	24%	18%	-6%	22%	8%	-14%	15%	12%	-4%
Barrier to aid	54%	73%	20%	45%	61%	15%	55%	78%	24%
Specific types of household shocks									
Conflict	15%	26%	11%	12%	23%	12%	5%	4%	-2%
Displacement	3%	9%	5%	5%	16%	11%	1%	1%	-0.5%
Food or seed unavailable	1%	2%	1%	1%	2%	1%	1%	2%	1%
Health	24%	38%	15%	34%	26%	-8%	32%	51%	18%
Livestock or crops	21%	25%	4%	8%	19%	11%	14%	5%	-8%
Lost employment	1%	4%	3%	1%	10%	9%	4%	9%	6%
Market	4%	10%	7%	8%	11%	3%	6%	4%	-1%

Note: Table contains the province-level mean for each year. Higher numbers represent higher need for the index and index inputs. Drivers of need and specific shock types are the independent variables used across models. Conflict is calculated as the average count of conflicts every three months. The specific types of household shocks are population-weighted shares of the households experiencing a given shock. Household shock categories are non-exclusive.