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# Nigeria LSMS Resilience Analysis-Phase I

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# Acknowledgements

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REAL is a consortium-led effort to synthesize evidence on the impact of USAID-funded resilience programming, strengthen the capacity of Monitoring and Evaluation practitioners to engage in context-specific resilience analysis, and share relevant learning with USAID Missions, host governments, implementing partners and other key stakeholders. The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or of the United States Government.

# Motivation

Nigeria has emerged as Africa's largest economy, while remaining a cause for concern for humanitarian organizations. Economic growth is inextricably linked to oil markets, which has been sluggish in recent years. The benefits of growth are not equitable either: in 2010, nearly two out of three Nigerians lived on less than \$1.25 USD per day. Recurrent humanitarian crises and conflict in the Niger Delta and the North East continue to disrupt lives and livelihoods. In the North-East Boko Haram has been responsible for the deaths of over 17,000 and displacement of 3.3 million people since 2009. Conflict poses a major threat to poverty alleviation and development by destroying infrastructure, markets and contributing to deficiencies in economic and health status indicators. Building household and community resilience to conflict and other major shocks is critical for preserving development gains and ensuring sustainable long-term growth.

## Research Question

Understanding what makes households and communities resilient to conflict is fundamental for smart investment of humanitarian and development resources. Despite a proliferation of interventions and programs focused on building resilience, the concept of resilience to conflict shocks remains underexplored, with little evidence upon which to base investment and programming decisions. This analysis begins to address this evidence gap by re-analyzing available secondary data to study what household and community characteristics are important sources of resilience when confronted by conflict and other shocks.

To answer this question, this analysis first assesses the impact of conflict shocks on key household welfare/well-being outcome indicators and analyzed the interactions between conflict and other shocks. Next, the role of various resilience capacities in mitigating the negative effects of conflict on household welfare is tested. The analysis concludes by exploring whether these capacities are unique for resilience to conflict or whether they also important resilience capacities for other shocks as well. Answering these questions will allow development actors, including the Nigerian government, to gain a better understanding of conflict and other shock dynamics, and to design resilience-building investments that are responsive to these risks and that can maximize impact among vulnerable populations.

## SUMMARY RESULTS

- › Conflict has deleterious effects on household hunger and child nutrition
- › A better enabling environment (transformative resilience capacities), including access to basic services and functions like village institutions, financial services, infrastructure, and electricity reduces the impact of conflict on child nutrition
- › These same resilience capacities support household food security and consumption when they are confronted by other (primarily economic) shocks
- › Several commonly assumed resilience capacities (with respect to resilience to climatic shocks) were not found to mitigate the effects of conflict on household wellbeing outcomes, including access to insurance, receipt of remittances, and livelihood diversity

# Empirical Strategy

The analysis draws from the World Bank Living Standards Measurement Study (LSMS) Nigeria General Household Survey.<sup>1</sup> The LSMS provides a unique opportunity to study conflict and resilience dynamics because it is comprised of panel data (data collected from the same households over time) collected in three waves from 2010-2016, coinciding with the rise of violence associated with Boko Haram. Using panel data like this enables analysis of trends over time to determine what characteristics are associated with improved wellbeing outcomes in the face of conflict. Constrained by the available data, the analysis focuses on absorptive and transformative capacities and three types of outcomes: child nutritional status, economic welfare, and food security (see table below).

Capacities measured	Wellbeing outcomes
<b>Absorptive</b> <ul style="list-style-type: none"><li>• Access to banking services</li><li>• Access/use of insurance</li><li>• Risk aversion of household head</li><li>• Trust index of household head</li><li>• Remittances</li></ul> <b>Adaptive</b> <ul style="list-style-type: none"><li>• Livelihood diversification</li></ul> <b>Transformative</b> <ul style="list-style-type: none"><li>• Presence of community groups</li><li>• Presence of basic services and infrastructure</li><li>• Household and community access to electricity</li></ul>	<b>Child nutrition</b> <ul style="list-style-type: none"><li>• Wasting</li><li>• Underweight</li><li>• Stunting</li></ul> <b>Economic status</b> <ul style="list-style-type: none"><li>• Household expenditures (consumption)</li><li>• Household asset base</li></ul> <b>Food security</b> <ul style="list-style-type: none"><li>• Food consumption score</li><li>• Household hunger scale</li></ul>

The third round of the LSMS survey contains a module on community and household exposure to conflict with questions on violent events, perpetrators, causes, and consequences over the previous five years. The module covers common crime, intra-household violence, and other events that may not be related to conflict by outside actors. To distinguish conflict from other crime, this analysis defines conflict as experiencing a violent or conflict related event (e.g. robbery, displacement, etc.), perpetrated by militants, insurgency, pastoralists, military/law enforcement for religious, political, or militant reasons. It is likely the case that conflict does not affect households at random and there may be some inherent differences between conflict and non-conflict affected households. Because of this likelihood, it is not possible to measure causal relationships. Instead, this analysis reports potential relationships between capacities, shocks, and wellbeing, while controlling differences as appropriate.

The third round of the survey also contains a module on exposure to other shocks regarding the frequency, severity, and consequences of 22 shocks over the five years prior. To facilitate analysis, an aggregate index of

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<sup>1</sup> Data is available here:  
<http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTLSMS/0,,contentMDK:23635560~pagePK:64168445~piPK:64168309~theSitePK:3358997,00.html>

other shocks was created where households reporting any non-conflict shock considered as affected by “other” shocks, and conversely, households that did not report these shocks were considered unaffected.

This analysis uses three estimation models for this analysis. The first is a difference-in-difference (DD) specification that compares changes from the baseline (2010) to the endline (2016), controlling for regional trends and household demographics. This specification describes the relationship between conflict (or other shocks) and a given wellbeing outcome (e.g. food security, child nutrition, economic status).

The second specification is an extension of DD and is a difference-in-difference-in-difference (DDD) model as described by Imbens and Wooldridge (2007).<sup>2</sup> The DDD estimator adds a layer of complexity by comparing households with the specified capacity (e.g., diverse income sources or access to electricity) to those without the capacity when they experience a shock. This specification describes the relationship between a capacity on a given wellbeing outcome in the face of a shock. The third specification is an analysis-of-covariance (ANCOVA) model that serves as a robustness check of the DDD model, because it controls for any baseline differences in outcomes that exist between comparison groups.

While the LSMS sample was stratified by region, due to the infrequent occurrence of conflict, it is not possible to estimate the models at the regional level. Some descriptive regional analysis for the North-East was conducted however, which offers insights into the most conflict-affected region in Nigeria. The data set is also incomplete, as nearly 140 households in Borno and Yobe states could not be visited due to insecurity and 57 households could not be located. Due to these missing data, this analysis likely underestimates the effects of conflict assuming these households were particularly negatively affected by conflict.

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<sup>2</sup> See: [https://www.nber.org/WNE/lect\\_10\\_diffindiffs.pdf](https://www.nber.org/WNE/lect_10_diffindiffs.pdf)

# Effects of Conflict

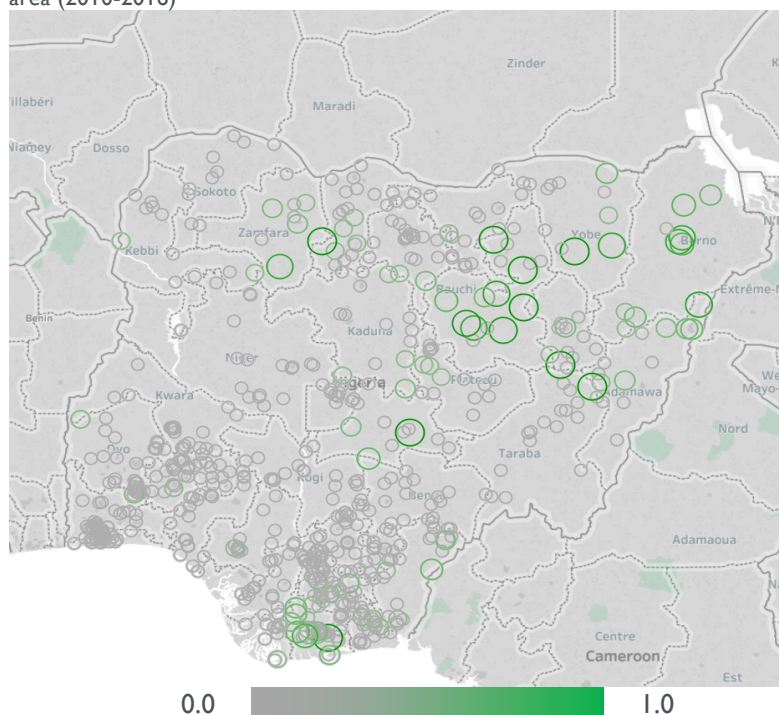
Between 2010 and 2016, five percent of Nigerian households report being exposed to conflict, primarily concentrated in the northeast and Niger Delta regions (see figure). The North-East was disproportionately affected by conflict, with 58 percent of all reported conflict events coming from households located in the North-East.

Conflict and other shocks disproportionately affect poor and vulnerable households. Despite being highly localized, conflict represents a major disruption to daily life. Households most frequently report displacement, reduced income or assets, reduced food consumption, and

family death as the main consequences of conflict. During this same period, nearly one-third of Nigerian households report experiencing other economic, health, climate or asset-based shocks, resulting in perceived reduction in income, eroded asset bases and food insecurity. Most households report experiencing just one shock event.<sup>3</sup> When households report multiple events, they are most likely to be multiple economic shocks or an economic shock combined with one other health, climate, or asset-based shock. Again, households in the North-East appear to be disproportionately affected, with more than one-quarter of households reporting multiple shocks residing in this region.

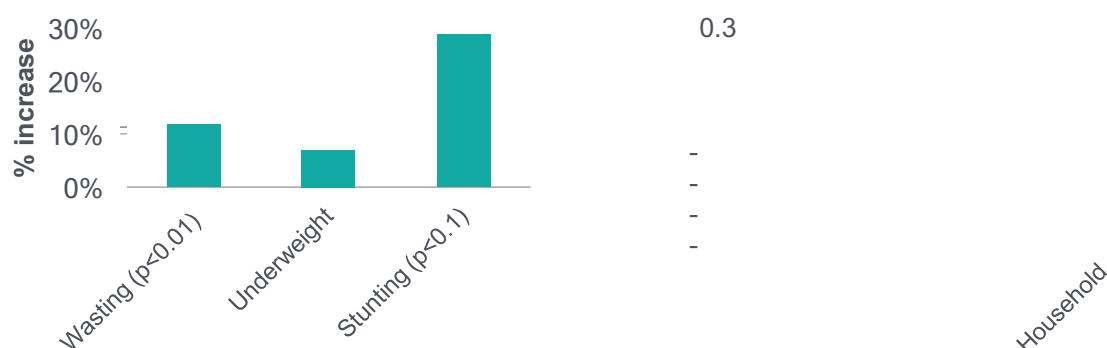
Difference-in-difference estimates suggest the consequences of conflict are severe, particularly for child nutritional outcomes with significant increases in the incidence of stunting and wasting (left panel below). Conflict is also negatively related to household food security, as indicated by the reduced food consumption score in the right panel below. Surprisingly, no statistically significant relationships were found for experiential indicators of food security (i.e. coping strategies index and household hunger scale) or indicators of economic welfare (not pictured).

Figure 1: Proportion of household experiencing conflict by LSMS enumeration area (2010-2016)



<sup>3</sup> This may not be an accurate representation of the complex forces influencing the lives and livelihoods of these households and may instead be a limitation of respondent recall data biased to the most salient event experienced and not an exhaustive inventory of their experiences.

Figure 2: Effects of conflict on child nutrition and household food security



While households were unlikely to report exposure to multiple shocks, there is some indication that when they are, there may be complex interactions resulting in particularly negative outcomes for households. Households reporting both conflict and climate shocks, for example are more likely to have an eroded asset base than households experiencing either of those shocks independently.

## Resilience to Conflict and Other Shocks

Despite the deleterious effects of conflict on household wellbeing, there is evidence of key characteristics that seem to make households more resilient to the effects of conflict. The figure below summarizes the results of the triple-differences model in a “heat map” that indicates the direction (positive “+”, or negative “-”) and statistical significance of relationships.<sup>4</sup> For both economic outcomes and the food consumption score “higher is better”; therefore a positive relationship is desired – i.e. an increase in a given capacity results in an increase in economic status/food security. For nutrition indicators and the household hunger scale “lower is better”; therefore, a negative relationship is desired – i.e. an increase in a given capacity results in a decrease in malnutrition rates/household hunger scale.

Transformative resilience capacities in particular seem to make significant contributions to household resilience. A better enabling environment comprised of basic community services like village institutions, markets, infrastructure and access to electricity reduces the impact of conflict on all measures of child nutrition (see figure below).

<sup>4</sup> The number of plusses or minuses corresponds to the strength of the evidence of the relationship, i.e. p-values. The colors are redundant with the direction and statistical significance indicated by the plusses (represented by shades of green) and minuses (represented by shades of red; the deeper the shade, the stronger the evidence of the relationship).

Figure 3: Conflict resilience capacities

	Economic Status		Child Nutritional Status			Food Security	
	Asset Index	Consumption	Stunting	Underweight	Wasting	Food Consumption Score	Household Hunger Scale
Diverse livelihoods							
Access to bank account			++				
Received remittances							
Risk averse			---				
Household used insurance							
Trust index		-					
Basic community services			--	---	-		
Community groups				--			
Electricity (household)			---		--		
Electricity (village)		+++			--		--

-/+ =  $p < 0.1$ , --/+ =  $p < 0.05$ , ---/+ =  $p < 0.01$

Community access to electricity had the additional benefits of bolstering food security (as measured by the household hunger scale) and economic status (as measured by household consumption). Surprisingly livelihood diversification, remittances, and access to insurance were not found to be related with any wellbeing measures, further highlighting the importance of capacities at the community and systems level. No statistically significant relationships exist either for asset indices or for food consumption scores.

Findings from this analysis do suggest that supporting transformative capacities like access to basic services also supports other wellbeing outcomes like household food security and consumption in times of non-conflict shocks. However, conducting the same analysis presented in the figure above on shocks other than conflict reveals that capacities found to support child nutrition outcomes in times of conflict have no detectable relationship with these same outcomes when confronted by other shocks. In other words, the presence of basic community services seems important for maintaining or improving nutritional status in times of conflict, however, in the context of other shocks, no relationship was detected between basic community services and nutritional outcomes. This highlights the concept that the importance of a capacity for resilience depends on both the shock and the outcome of interest. The implications for programming are that supporting these capacities may enable households to maintain or improve their child's nutritional status under times of conflict, but may not be sufficient when confronted with different shocks.

Where conflict is concentrated in the North-East there is considerable potential for building resilience. This is not simply because this region is disproportionately affected by conflict and other shocks vis-à-vis other regions in the country. The North-East also lags behind the rest of Nigeria in every single one of the key capacities identified in the analysis above. Households in the North-East are significantly less likely to have a large amount of community groups or infrastructure, with very limited access to electricity ( $p < 0.001$  for each of these capacities). Households in the North-East also lack access to financial services in the form of savings accounts and insurance products ( $p < 0.001$ ). While these were not found to be related to resilience to conflict, they do highlight the overall vulnerability and relative under-development of these communities.



Finally, there is some evidence that supporting these capacities not only makes households resilient to the effects of conflict, it may also reduce the incidence of violence – other Mercy Corps research suggests the propagation of Boko Haram is in part driven by discontent over lack of infrastructure and other basic services.<sup>5</sup>

## Conclusions

Taken as a whole, the results from this study show that programs that build transformative capacities have the greatest potential to improve resilience in the context of Nigeria – specifically in the form of improving child nutritional outcomes in the face of conflict and bolstering household food security and consumption in times of other (primarily economic) shocks. Programs that concentrate on building absorptive capacities (such as insurance) and adaptive capacities (like livelihood diversification) may be important, but are unlikely to promote or preserve development gains in the face of conflict. Based on these findings, the research highlights the need for development actors interested in promoting resilience in Nigeria to increase investments in strengthening access to essential services and functions like village institutions, financial services, community infrastructure, and electricity.

## Priorities for Further Research

This analysis raises additional questions that need to be better understood for programs to effectively strengthen resilience in the Nigeria context. Specifically, the main potential lines of inquiry in follow-on analysis of the Nigeria LSMS and other data are:

- Looking across all three waves of the LSMS, are there households that are able to escape economic poverty or food insecurity and sustain this throughout the survey period? What capacities are correlated with households that sustainably escape poverty or food insecurity? What capacities are correlated with households that are unable to escape?
- Mercy Corps' research on countering violent extremism suggests that the propagation of Boko Haram in Nigeria is driven in part by discontent over a lack of infrastructure and other basic government services – key capacities found in the LSMS re-analysis to support households' resilience to conflict shocks. Knowing this, are there other resilience capacities that provide double dividends by preventing conflict in the first place while simultaneously mitigating against the negative impacts of conflict on household wellbeing?

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<sup>5</sup> See [https://www.mercycorps.org/sites/default/files/Gifts\\_and\\_Graft\\_Mercy\\_Corps\\_Sept\\_2016.pdf](https://www.mercycorps.org/sites/default/files/Gifts_and_Graft_Mercy_Corps_Sept_2016.pdf)