

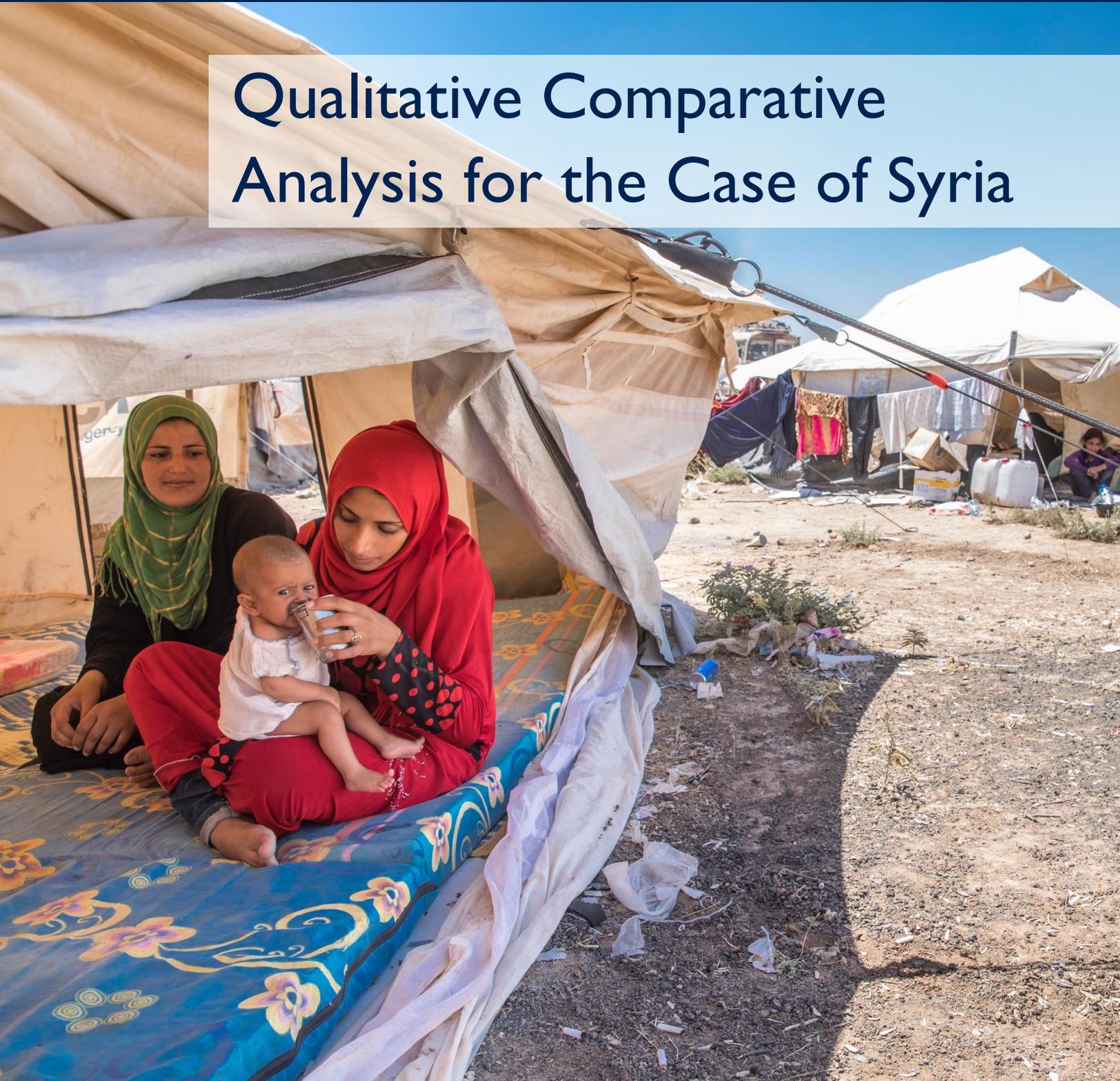


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FROM THE AMERICAN PEOPLE



HOUSEHOLD RESILIENCE DURING CONFLICT

Qualitative Comparative Analysis for the Case of Syria



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1. Executive Summary

The resilience of individuals, households, and communities to humanitarian crises such as conflict and natural disaster represents a growing field of interest amongst academics and humanitarian practitioners. Substantial progress has been made in the understanding of resilience, and how to detect and capture its multiple and complex dimensions. Typically, resilience has been measured predominantly through probabilistic methods using regression analysis to identify statistical relationships between independent variables and various well-being outcomes. More recently, qualitative methods have been used to measure resilience.

This paper contributes to the dialogue on methodological options by exploring the utility of applying Qualitative Comparative Analysis using fuzzy sets (fsQCA) for understanding complex causality and the conditions that support resilience in humanitarian contexts. This study uses secondary data collected from a 2017 Mercy Corps study on how Syrians cope with conflict and adapt their lives and livelihoods amidst the Syrian civil war.

The intended audience for this paper is primarily those engaged in research in development and humanitarian settings. This paper is meant to highlight the strengths and weaknesses of fsQCA and encourage its audience to explore the expansion of their methodological toolboxes for researching complex social phenomena. This paper also offers humanitarian and development practitioners a new approach to analyzing, interpreting, and applying research results to their programming.

As a method, fsQCA seeks to “meet the advantages” of both qualitative and quantitative research methods.¹ Using set theory (described in further detail in the body of this report), fsQCA is well suited for studying resilience and other complex social phenomena in humanitarian contexts and offers the following benefits:

1. FsQCA is flexible in that it can be applied to both quantitative and qualitative data sources.
2. FsQCA works well with small and medium sample sizes, which may benefit researchers with limited time and resources facing security and operational constraints. This methodology can also be used with both probability and non-probability based samples, and seeks instead to capture the greatest diversity possible.
3. FsQCA, by design, can assess complex causality. It can assess the presence and absence of multiple causal conditions simultaneously, identifying the myriad combinations of conditions that lead to an outcome. In practice, this means that fsQCA does not limit results to reporting the average case which might mask important variation, but instead provides the array of causal conditions leading to an outcome (or not) directly observed in the data. This offers practitioners insight into the various potential combinations of activities that should be sequenced, layered, or integrated in order to achieve development objectives.

¹ Berg-Schlusser, Dirk et al. (2009).

4. FsQCA is heavily reliant on contextual knowledge. It thus supports a participatory approach to research, bridging the expertise of local practitioners with researchers.

Fuzzy-set QCA, however, requires careful calibration of causal conditions and outcomes in order for the findings to be reliable and valid. When studying people affected by humanitarian crises, the researcher should have deep case knowledge *and* regular communication with the population under study and/or have on-going contact with local practitioners. Such requirements may be contrary to the typical “expert evaluator” profile, which assumes that an expert has a set of skills that can be transferable to any humanitarian situation globally.

2. Background, Motivation, and Research Questions

In 2017, Mercy Corps undertook a comprehensive study to understand how Syrians cope with conflict and adapt their lives and livelihoods amidst the Syrian civil war. *Wages of War* represents one of the first documented empirical attempts to understand how a variety of factors or conditions support different dimensions of household resilience during a protracted conflict.² Relying on survey data and qualitative interviews with members of households and community representatives in Syria (more detailed methodology presented in the box below), *Wages of War* sheds light on the range of complex factors that enable or impede households from adapting their livelihoods and improving their welfare. These findings were instrumental in advancing an understanding of civilian coping during war, identifying potential factors that support resilience capacities, and tailoring humanitarian action to better support such capacities.

The Wages of War: Learning From How Syrians Have Adapted Their Lives Through Seven Years of Conflict

The goal of this study was to understand what factors, if reinforced, hold the greatest potential to strengthen Syrian households’ abilities to adapt their livelihoods to better cope with the crisis. To answer this question, 1,168 households were randomly selected in 124 communities and 350 community key informants were purposively selected to be surveyed in 115 communities in north, northeast and south-central Syria. The sample was stratified by community characteristics including whether or not they were rural or urban communities, and how exposed they were to conflict (low, medium, and high). Econometric models were specified to explore statistical relationships between coping strategies, livelihood adaptation and household welfare. Household welfare was defined in terms of food security, psychosocial well-being, expenditures, and housing quality. Factors thought to influence household welfare outcomes included market functionality, access to cash and capital, social capital and networks, livelihood dynamics, pre-conflict education and assets, and exposure to conflict. Qualitative semi-structured interviews were conducted with individuals that had successfully adapted their livelihoods by either starting a new income generation activity or re-starting a pre-conflict activity. In total, 82 interviews were conducted in 10 communities with male and female youth and adults, with nearly half of study participants working in local governance, business, humanitarian action, or the medical or education sectors. Interview transcripts were coded by theme and sought to understand the factors that support or impede livelihood adaptation (Howe et. al. 2018 & USAID 2013).

² To access the *Wages of War* report, go to: <https://www.mercycorps.org/research-resources/wages-war>

The inherent complexity of resilience, emergent research questions, and myriad research design challenges and constraints warrant a versatile, diverse, and complementary methodological toolkit to better understand and measure resilience. This in turn can facilitate investment in more effective strategies to build resilience. This paper leverages the data collected for the *Wages of War* study and investigates the possibility of broadening the methodological options for studying resilience, and particularly resilience in complex humanitarian settings.

USAID defines **resilience** as “*the ability of people, households, communities, countries and systems to mitigate, adapt to and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth.*” As described in the USAID Resilience Measurement Practical Guidance Note series, “resilience capacities are the strategies and resources individuals (or households, communities, systems) have access to and knowledge of to prevent, mitigate and make decisions to prepare for shocks and stresses.”^{3,4}

The resilience of individuals, households, and communities to humanitarian crises such as conflict and natural disaster represents a growing field of interest amongst academics and humanitarian practitioners. Substantial progress has been made in the understanding of resilience, and how to detect and capture its multiple and complex dimensions. Typically, resilience has been measured predominantly through probabilistic methods using regression analysis to identify statistical relationships between independent variables and various well-being outcomes—similar to the methodology of the *Wages of War* study.⁵ More recently, qualitative methods have been used to measure resilience, although this practice is limited.^{6,7}

This study involves the exploration of an alternative methodology—Qualitative Comparative Analysis (QCA) using fuzzy sets—or **fsQCA**—for studying various resilience capacities using the *Wages of War* data set. Qualitative Comparative Analysis (of which fsQCA is a part) has been described as a middle path between, or “striving to meet the advantages” of both, qualitative and quantitative methods.⁸ Based on Boolean algebra and set theory, it is a research approach designed to understand complex social phenomena. In broad terms, “each case is examined in terms of its degree of membership in different combinations of causally relevant conditions ... researchers can consider cases’ varying degrees of membership in all of the logically possible combinations of a given set of causal conditions and then use set-theoretic methods to analyze—in a logically disciplined manner—the varied connections between causal conditions and the outcome.”⁹

McAdam and Boudet aptly depict the dilemma often faced by social science researchers, “the choice is between ‘thin’ large N studies that allow researchers to generalize to broader populations versus ‘thick’ case studies that yield a rich, holistic understanding of a phenomenon in question, but without being able

³ Picon, Diana. (2018).

⁴ Vaughan, E. and Frankenberger, T. (2018)

⁵ Sagara, B., Smith, L. (2018).

⁶ Béné, C. (2020)

⁷ Maxwell, Daniel et al. (2015).

⁸ Berg-Schlosser, Dirk et al. (2009).

⁹ Ragin, C. (2008)

to tell us anything about the representativeness of the specific case on offer.”¹⁰ Kaminsky and Jordan, who have looked at fsQCA for water, sanitation and hygiene (WASH) programs, describe the methodological pitfalls they face with quantitative methods where “close-ended questionnaires allow statistical analysis but force individual responses into predetermined schema that may or may not be appropriate ... [and that] quantitative methods prove relationships but struggle to discover how or why variables contribute to the outcome of interest.” On the flip side, qualitative research allows for local knowledge and is “well suited to discovering how and why ... However, qualitative findings cannot be statistically generalized, and the very nuance of the answers ... can mean they are relatively difficult to communicate and apply in different contexts.”¹¹ Threading the needle, or inhabiting the space between quantitative and qualitative methods, is fsQCA.¹²

Until now, fsQCA has had very limited application to the study of resilience. While fsQCA was developed in the disciplinary fields of sociology and political science, for example, to study social movements or political systems, there is growing interest in its application to other fields.¹³ For example, fsQCA has been used to evaluate the success of a large-scale public health program in the UK, and to understand what contributes to recovery—particularly related to housing—following the 2004 tsunami.^{14,15} Authors have also extolled the benefits of applying fsQCA to evaluate WASH programs and to understand community recovery from Hurricane Katrina.¹⁶ These studies posed a range of research questions to understand complex causality, and used both existing and newly collected quantitative and qualitative data sets of various sizes. Our study will add to the burgeoning literature of diverse applications of fsQCA by applying the method to data coming from an active humanitarian crisis.

Qualitative Comparative Analysis is well suited to the study of resilience, and particularly in humanitarian contexts for four main reasons. First, fsQCA works well with small and medium sample sizes (e.g. between 10 and 100), where cases are purposively selected to exhibit the most possible diversity, in contrast to drawing a large random sample representative of an entire population.¹⁷ Generally speaking, these small to medium sample size applications of QCA are typically aimed at building theories around the phenomena being studied by studying a sample of cases selected to represent the theorized array of unique combinations of causal conditions (usually 4-8) relevant to the outcome at hand.¹⁸ This requires deep case knowledge. It is possible for fsQCA to be applied to larger samples (e.g. more than 100 cases) to examine more causal conditions (e.g. 6-12), build and test theory, and not be as dependent on deep case knowledge.¹⁹

¹⁰ McAdam and Boudet (2012) were specifically describing researchers of social movements, but we believe this relates to all social science inquiry.

¹¹ Kaminsky, J and Jordan E. (2017)

¹² We encourage the reader we encourage the reader to consult the work of Charles Ragin for a more comprehensive and technical description of the methodologies. For example: Ragin, C (2008), Rihoux, B. and Ragin C. (2009), Ragin, C. and Fiss, P (2017)

¹³ See for example: Ragin, C. and Fiss, P. (2017); McAdam and Boudet (2012)

¹⁴ Jordan, E. & Javernick-Will, A. (2014)

¹⁵ Warren, J., Wistow, J., Bambra, C. (2013).

¹⁶ Jordan, E., Javernick-Will, W and Amadei, B. (2011)

¹⁷ Kaminsky, J. & Jordan, E. (2017)

¹⁸ Greckhamer, T., Misangyi, & V., Fiss, P. (2013)

¹⁹ For a full treatment of the tradeoffs to sampling approaches for QCA, please refer to Greckhamer, T., Misangyi, V. & Fiss, P. (2013).

In humanitarian settings, where time and resources may be limited due to security and operational constraints, the efficiency of a smaller sample is appreciated. Second, fsQCA is also flexible in that it can be applied to both quantitative and qualitative data sources.²⁰ Third, a main strength is its ability to assess complex causality. FsQCA is thus able to shed light on the conceptual intricacy of resilience, and the variety of social, economic, and psychological conditions that exist independently or operate in concert to promote or impede its expression. Finally, fsQCA relies heavily on contextual knowledge. As such, the expertise of practitioners can be harnessed in order to distinguish between meaningful and non-meaningful thresholds, variation, and results. This methodology thus supports a participatory approach to research, bridging the expertise of local practitioners with researchers. These points will be elaborated on in the *Methodology* section covering *Strengths* of fsQCA.

This study is framed around the original research question posed by the *Wages of War* study.

We ask what factors, if reinforced, have the greatest potential to strengthen Syrian households' ability to adapt their lives and livelihoods, and cope with the crisis? Additional questions are specific to the fsQCA method. The study asks what combination of enabling factors facilitate welfare outcomes for Syrian households. An overarching objective is to assess the utility of fsQCA in the study of resilience for this particular data set and other humanitarian contexts marked by conflict or natural disasters.

There are three main outcomes of interest that embody different dimensions of well-being identified in the literature—food security, psychosocial well-being, and adaptation of livelihoods. These well-being outcomes are particularly at risk for being compromised in emergency settings.²¹ Put simply, we ask what combination of conditions are present (or absent) in households that lead them to have higher levels of food security, psychosocial well-being, and adapt their livelihoods—as indicated by a household's ability to start a new livelihood activity or to start a pre-conflict livelihood activity—in the face of conflict and related shocks. Explanatory conditions—also identified in the literature—are characteristics found within communities *and* households and are related to markets, access to cash and capital, social connectedness, exposure to conflict, quality of governance, existence of public services, as well as gender and youth inclusion in local governance representation and income generation.²² The results of this study show that there is utility for including fsQCA as an arrow in the quiver of methodological possibilities for studying resilience in humanitarian settings.

This paper does not argue against the utility of regression analysis for measuring resilience; a reasonable application of a well-established analytical approach that has been demonstrated effectively across several contexts in recent years.^{23,24,25} Instead, we endeavor to expand the methodological toolkit available for resilience measurement to researchers and practitioners.

²⁰ For explanations of QCA for qualitative data see: Basurto, X. & Speer, J. (2012)

²¹ For justification of the operationalization of resilience, see Howe et al. (2018)

²² For justification of the operationalization of resilience see Howe et al. (2018)

²³ Heng Cai et al. (2018)

²⁴ Craft, T. (2019)

²⁵ Barrett, C. & Upton, J. (2018)

3. Methodology

3.1. Overview & Concepts

This section defines key terms and concepts for fsQCA, which are supplemented in Annex A. While aiming to strike a middle path between qualitative and quantitative approaches, QCA is, at heart, a case-oriented research methodology designed specifically to understand complex setrelationships. Being **case oriented** requires the researcher to have a deep and theoretical understanding of the phenomena being studied. **Sets** are a foundational concept of fsQCA and pertain to “any collection of distinct objects (called members, which may be individuals, households, communities or other unit of analysis) considered as a whole. A set can be described by certain properties or characteristics.”²⁶ In quantitative methodological terms, we would be concerned with variables and the value that a variable takes for a particular member in a sample. There are two main types of Qualitative Comparative Analysis—crisp set QCA (csQCA) and fuzzy-set QCA (fsQCA). CsQCA relies on the dichotomous definition of outcomes and conditions, taking the value of either 0 or 1. FsQCA, in contrast, allows for more gradation, where a case (e.g. member of a sample) will belong to a range of sets (variables) to varying degrees (assigned a numerical value ranging from 0 to 1). To illustrate with an oversimplified example: The most basic type of set relation is a subset. We can say that Border Collies are a subset of dogs. In other words, all Border Collies have full membership in the set of dogs. However, if we look at the set of black and white dogs, not all Border Collies fit into this set, because not all Border Collies are black and white. Thus, Border Collies have only partial membership in the set of black and white dogs. When translating research questions into set-theoretic thinking, the outcome of interest will form a set, and each causal condition that leads to the outcome will be a set. As described below, cases will have degrees of membership in the outcome set as well as each set of causal conditions. These set-relationships will ultimately help us answer the specified research questions.

One of the foundations of this method is that it sheds light on complex causality. In other words, fsQCA identifies which conditions need to be present or absent for an outcome of interest to occur. Given the complexity of the study of resilience, and the conditions that support it, we believe that fsQCA is better suited than csQCA to unpack this complexity. **Causal recipes** are the pathways that exist for an outcome to manifest. The expectation is that there are multiple causal recipes for a given outcome, meaning there is **equifinality**. Social phenomena, including resilience, are theorized to be influenced by a variety and confluence of diverse factors, and as such, fsQCA may be an ideal method to unpack this complexity.

When applying QCA to a research question, the first order of business is to define the outcome or **outcomes of interest** central to the research question. In traditional quantitative research terms, this would be defined as the dependent variable. Next would be identifying the **conditions** that are expected to influence the outcomes of interest, or the independent variables. How these outcomes and conditions are defined is based on the researchers’ in-depth quantitative and qualitative knowledge of the area of study. After the conditions and outcomes are defined, the researcher then decides which **cases** to include in the inquiry. A case is “considered as a complex combination of properties, a specific ‘whole’

²⁶ Rihoux, B. & Ragin, C. (2009)

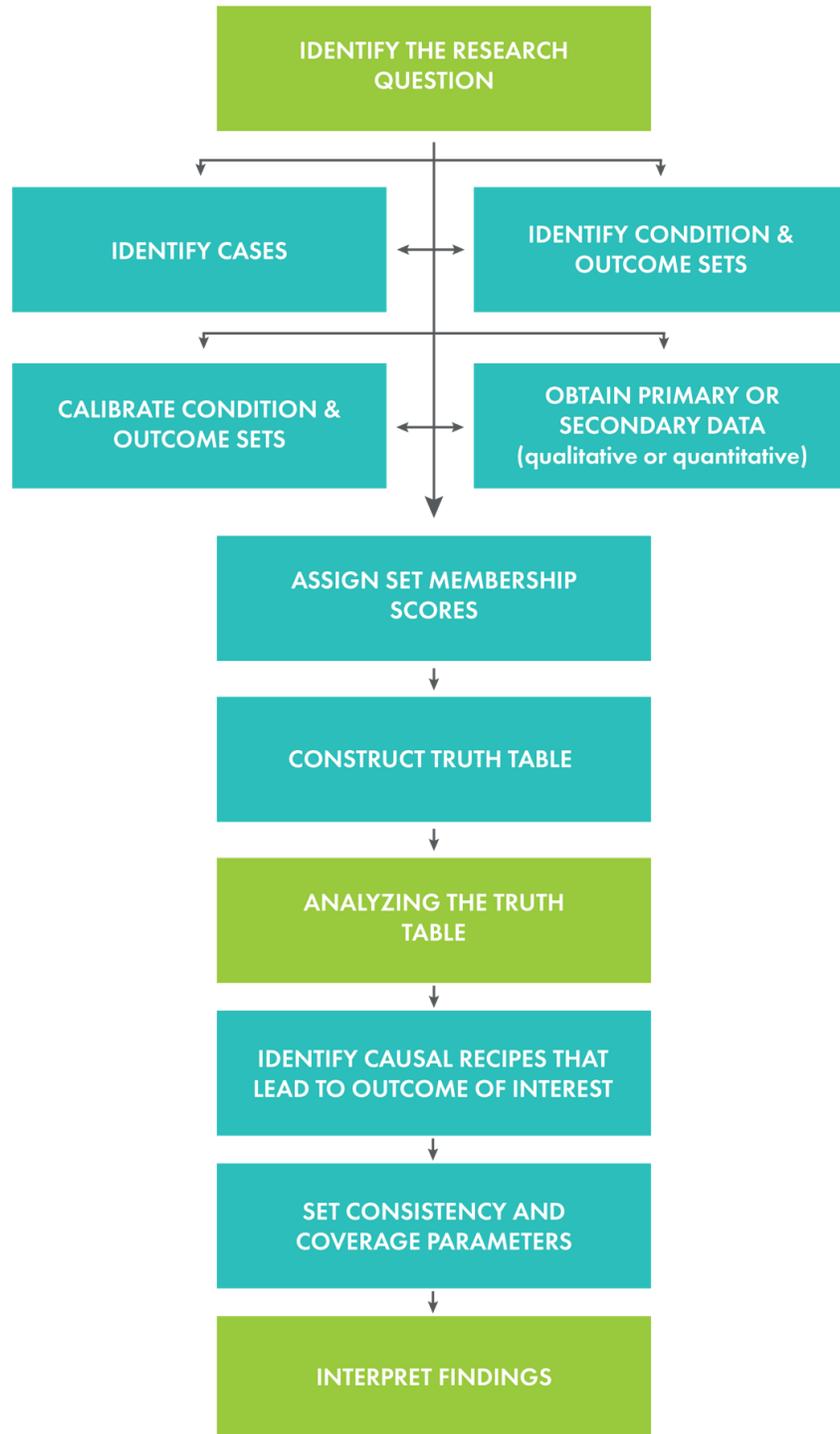
that should not be lost or obscured in the course of analysis.”²⁷ More concretely, cases are the units that make up one’s research target of inquiry. They could be based on countries, communities, households, individuals, or other units of relevant analysis. The number of cases is not specified, as the results are not based on probabilities, and is often a function of resources, and how many potential causal conditions have been identified. FsQCA has been successfully applied to small, medium, and large samples.^{28,29}

This process and subsequent steps are represented graphically in Figure 2 below, and described in detail in the following narrative.

²⁷ Berg-Schlusser, Dirk et al. (2009)

²⁸ Vis, Barbara. (2012)

²⁹ Greckhamer, T., Misangyi, & V., Fiss, P. (2013)

Figure 2: The fsQCA Process

Once the outcomes of interest, causal conditions, and cases have been identified, the researcher will **calibrate** the degree to which each case has membership in each causal condition and outcome set. For crisp-set QCA, researchers assign a dichotomous score of 1 or 0, meaning that cases are either fully in or fully out of the set. For example, Syria is fully in the set of countries currently at war, and thus would

receive a score of 1. But what about Mali? Civil war is not always an either/or phenomenon and many conflict scholars would argue that several countries currently inhabit the space between “at war” and “not-at-war.” It would be difficult to assign Mali a clean membership score of 1 or 0 for the set of countries currently at war, given the patterns of violence there. Fuzzy-set QCA was designed specifically to capture cases that have partial membership within a set. In other words, in fsQCA, membership scores exist on a continuous scale between 0 and 1. Score 1 is still fully in the set, and 0 is still fully out of the set, but now .5 is the cross over point and values between .5 and .99 indicate being more in the set than out, and values between .09 and .5 are cases more out of the set than in. Based on a clear rationale grounded in external criteria, Mali could be deemed more in the set of countries currently at war (e.g. .8) or more out of the set of countries currently at war (e.g. .3). There are both indirect and direct methods for calibrating fuzzy-set membership scores, and scores can be continuous or based on a 5- or 7-point scale.³⁰ However, membership scores are always anchored in qualitative case knowledge and evidence, “qualitative anchors make it possible to distinguish between relevant and irrelevant variation.”³¹

For this study, there are three main **outcomes of interest** that capture different dimensions of resilience: food security, psychosocial well-being, and livelihood adaptation. As described above, the **causal conditions** theorized to affect these outcomes for the *Wages of War* study include: access to markets, social connectedness, exposure to conflict, quality of governance, the presence of youth and female income earners and the general economic situation of the household.³² The **cases** are households and have already been interviewed using quantitative survey instruments as part of the *Wages of War* study.

Once each causal condition and outcome has been assigned set membership scores, the researcher creates a **truth table**, which is the core of fsQCA. In short, the truth table will display all of the possible configurations or causal recipes that could exist given a data set.

The research can then determine: 1) all the individual conditions that are sufficient or necessary for a given outcome, and then 2) the causal recipes that are sufficient or necessary for a given outcome. Kaminsky and Jordan provide a succinct definition of sufficiency and necessity in QCA, represented graphically in Figure 1 below.

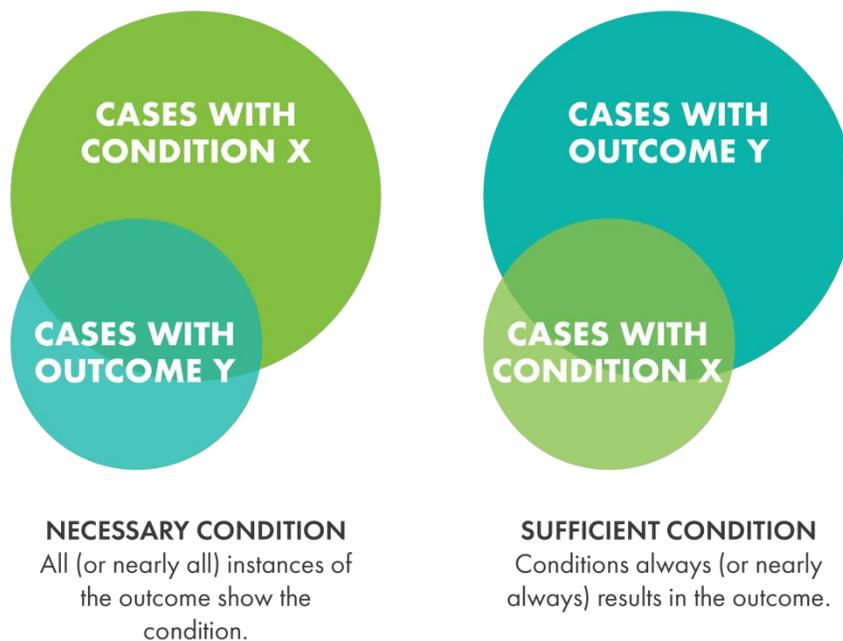
“**Sufficiency** is a measure of the degree to which an individual causal condition is a subset of the outcome. If a specific condition always (or nearly always) results in a positive outcome, that condition would be deemed sufficient...**Necessity** measures the degree to which the outcome is a subset of individual causal conditions, meaning that, if all (or nearly all) cases where the outcome is present have a particular condition present, we would consider that condition necessary.”³³

³⁰ See Chapter 5: Calibrating Fuzzy Sets in: Ragin, *Redesigning Social Inquiry: Fuzzy Sets and Beyond*.

³¹ Ragin, C. Charles. (2008)

³² These were defined as part of the *Wages of War* study.

³³ Kaminsky, J. & Jordan, E. (2017)

Figure 3: Venn Diagrams of Necessary and Sufficient Conditions

If in this study it was found, for example, that the combination of high social connectedness and strong market functionality was nearly always present in food secure households, then we could say that this combination was sufficient for a household to be food secure. In contrast, if this study found that all the cases of food secure households had high social connectedness and strong markets, we could claim that this combination was necessary for food security. In social science, the bar for necessity is much higher than for sufficiency. In this study, we focus on finding conditions or combinations of conditions that are sufficient to lead to each outcome.

There are two metrics which are essential to the analysis of the truth table—consistency and coverage. **Consistency** “gauges the degree to which the cases sharing a given combination of conditions agree in displaying the outcome in question. That is, consistency indicates how closely a perfect subset relation is approximated.”³⁴ Simply put, the higher the consistency score, the stronger the relationship between the conditions and the outcome. **Coverage**, “by contrast, assesses the degree to which a cause or causal combination ‘accounts for’ instances of an outcome.”³⁵ This is particularly important when there is equifinality, or when there are multiple causal recipes that lead to the same outcome. Coverage, “gauges empirical relevance or importance.”³⁶ In reporting results, consistency and coverage scores are reported for each recipe. Coverage scores tend to be lower than consistency scores, namely when there are multiple pathways to an outcome, given that multiple recipes account for instances of an outcome.³⁷

³⁴ Ragin, C. Charles. (2008)

³⁵ IBID

³⁶ IBID

³⁷ Schneider, C. & Wagemann, C. (2010)

In terms of process, the researcher will create a truth table spreadsheet from the membership scores for the outcome and the causal conditions included in the analysis (See Table I below for an example). The truth table includes all the possible combinations of conditions, and the number of cases that belong to each combination. Then, the researcher must prepare the spreadsheet for analysis by classifying some combinations of conditions (rows) as relevant to the analysis and some as irrelevant—this is done by selecting both a frequency threshold and a consistency threshold. The frequency threshold is selected based on the number of cases in each row (i.e., the number of cases exhibiting each combination). When the number of cases is small, the frequency should be 1 or 2, and the frequency threshold should generally increase as the N increases. Then, the researcher must distinguish combinations of conditions that are consistent subsets of the outcome from those that are not. Generally speaking, the consistency score should be set above .8, whereas the frequency threshold depends on the number of cases in the analysis.³⁸

Table I: Truth table for households that avoid severe household hunger (HHS)

Row #	Favorable economic situation	Strong social connect- edness	Women and/or youth income earners	Good gover- nance	Exposure to intense conflict	Number of conforming cases (house- holds)	**Raw consis- tency	PRI consis- tency	SYM consis- tency
1	1	0	0	0	1	100	.82	.64	.66
2	1	0	1	0	1	57	.84	.62	.63
3	0	0	0	0	1	46	.85	.61	.62
4	1	0	0	1	1	98	.86	.71	.72
5	0	0	1	0	1	25	.86	.53	.54
6	1	0	1	1	1	48	.88	.71	.74
7	1	1	0	0	1	49	.88	.68	.68
8	0	0	0	1	1	20	.89	.66	.66
9	0	0	1	1	1	17	.89	.61	.61
10	1	0	1	0	0	23	.89	.72	.72
11	1	1	0	1	1	66	.89	.74	.75
12	0	0	0	0	0	36	.9	.76	.76
13	1	0	0	0	0	42	.9	.78	.8
14	1	1	1	0	1	61	.9	.76	.76
15	0	1	0	0	1	27	.91	.69	.68
16	0	0	1	0	0	14	.91	.71	.73
17	1	1	0	1	0	52	.91	.81	.82
18	1	0	1	1	0	22	.92	.79	.8
19	0	1	1	0	1	17	.92	.65	.66
20	1	0	0	1	0	37	.92	.83	.83

³⁸ Ragin, Charles C. (2009)

Row #	Favorable economic situation	Strong social connect- edness	Women and/or youth income earners	Good gover- nance	Exposure to intense conflict	Number of conforming cases (households)	**Raw consis- tency	PRI consis- tency	SYM consis- tency
21	1	1	1	0	0	37	.92	.81	.81
22	1	1	1	1	1	49	.92	.79	.8
23	0	0	1	1	0	12	.92	.75	.75
24	0	0	0	1	0	16	.93	.8	.81
25	1	1	0	0	0	39	.93	.84	.84
26	0	1	1	0	0	34	.93	.8	.81
27	1	1	1	1	0	34	.93	.83	.84
28	0	1	1	1	0	15	.93	.77	.77
29	0	1	0	1	0	20	.93	.81	.82
30*	0	1	0	1	1	11	-	-	-
31*	0	1	1	1	1	7	-	-	-
32	0	1	0	0	0	38	.95	.87	.88

*Indicates rows that fail to meet the frequency threshold of 1% of cases.

**There are three calculations of consistency. Raw consistency is used in the Truth Table Analysis.

In setting the frequency and consistency thresholds for the analysis, the aim is for results that provide a good balance of consistency and coverage scores. For this study, given the relatively large N sample, we take the position that consistency scores for both the overall solution and the individual causal recipes should be no less than .7 (see below for solutions versus individual recipes).³⁹ For the individual recipes, this means that 70% of the cases that share the specific combination of conditions exhibit the outcome.

The truth table analysis gives three overall “solutions”—complex, parsimonious, and intermediate.⁴⁰ A **solution** refers to all of the recipes that are consistent (based on the parameters of the analysis) with the outcome. So, for example, the solution can comprise three or four recipes that lead to an outcome. The results of the analysis include a solution consistency score and a solution coverage score, and each of the individual recipes in the solution has a consistency and coverage score of its own.

It is possible and often an important step to examine different thresholds and to assess the consequences of raising/lowering the consistency or frequency cut-offs.⁴¹ Reporting multiple results for each outcome

³⁹ Schneider, C. and Wagemann, C. (2010)

⁴⁰ That fsQCA produces three different solutions—complex, parsimonious, and intermediate—stems from “limited diversity,” or the absence of cases that exhibit all logical possible combinations of the relevant causal conditions. Limited diversity is the rule in the study of social phenomena, and fsQCA seeks to transparently address this issue by offering ways to simplify the truth table and the results of the analysis based on the pool of causal combinations lacking empirical cases (i.e. logical remainders). See Ragin, C. & Sonnett, J. (2005) for a full treatment on how this addressed.

⁴¹ See, e.g., Skaaning, SE (2009)

also helps avoid the charge that the thresholds have been arbitrarily selected and can help deal with the issue of no apparent threshold value (this happens when the consistency and frequency scores are tightly clustered together).

3.2. Strengths of fsQCA and differences with Probability-based Statistical Models

Some of the main strengths of fsQCA lie precisely where it differs from probability-based statistical methods. As described above, fsQCA allows for understanding causal complexity of social phenomena—it is combinatorial in that it can assess the presence and absence of multiple causal conditions simultaneously, identifying the myriad causal recipes that may lead to an outcome. It also allows for equifinality, or the recognition that multiple pathways or causal recipes can lead to a specific outcome. In contrast, statistical models look at the relative importance of individual independent variables on the values of a dependent variable.

Put simply, statistical methods treat each independent variable, by itself, as having an influence on the probability of an outcome. The more there is overlap between independent variables, the more they are correlated, and thus, the harder it is to know the influence on an outcome. Social scientists have tried to overcome this by creating interaction terms, but they “are not only cumbersome and difficult to interpret but also tend to be highly co-linear with each other and other component variables.”⁴²

Relatedly, statistical analysis relies on central tendencies (or mean/average) of a sample, and deviations from this central tendency. Relying on the mean of variables may be problematic for studying complexity because the process of averaging values across a sample may water down important variation between observations. The mean value and the deviation from it, may or may not be meaningful for the study at hand. For probability-based statistical analysis, “all variation is considered equally relevant.”⁴³ With fsQCA, studying cases and set membership, the researcher is able to study various configurations of conditions and how they may lead to an outcome without losing meaning through collinearity and/or concentrating on mean values.

A second strength is the capacity for fsQCA to be applied to smaller, non-probabilistic samples. Probability-based statistical methods require larger sample sizes, randomly selected from a population, in order to draw robust conclusions about that population. The goals of fsQCA are different, in that the “cases are selected to exhibit the greatest possible variety of configurations... [as this will] result in the richest possible explanations of relationships among the variables.”^{44,45} Relying on a smaller sample size or a population of convenience is particularly beneficial for those working in humanitarian emergencies.

A third strength of fsQCA relates to incorporation of case-specific knowledge into the methodology. In order to calibrate membership scores, in-depth knowledge is required in order to distinguish between meaningful and non-meaningful variation. In humanitarian settings where practitioners are present, this

⁴² Ragin, C. Charles. (2008)

⁴³ Ragin, C. Charles. (2008)

⁴⁴ Kaminsky, J. & Jordan, E. (2017)

⁴⁵ The authors also make reference to Gross, M. (2010) and Berg-Schlusser et al. (2009) in their discussion in sample size.

method can harness important knowledge that can feed directly into the research methodology. As such, this method promotes participatory research methods, where local practitioners can be engaged as valuable research partners.

It is important to note that fsQCA, which is based on set theory, takes relationships as asymmetrical. Indeed, set-theoretic arguments are unlike correlational analysis which is symmetrical. By asymmetrical we mean that any consistent connection found by the analysis does not imply the inverse relationship. That is, the combination of conditions that lead to an outcome may differ from the combination of conditions linked to the absence of the outcome. A modified example from Ragin helps to illuminate asymmetry.⁴⁶ Say that religious fundamentalists are consistently found to be politically right-wing, and we argue that this is a meaningful and potentially causal relationship. If we assume symmetrical relationships, individuals who are not religious fundamentalists should consistently be found to be politically left-wing. By assuming asymmetrical relationships, however, fsQCA does not see this as the case.

3.3. Potential Weaknesses of fsQCA

From the quantitative side, there have been concerns that fsQCA methods are unstable and unreliable.⁴⁷ Arguments along this vein are varied, but one of the most common is the perception that the calibration of causal conditions and outcomes are too sensitive, and minute changes in calibration produce vastly different findings. This may lead to certain causal pathways appearing sufficient for an outcome when they are not, or that results become inconsistent when simulations are used.^{48,49} Detailed counter-arguments assert that simulations were erroneously designed, and critics under-appreciated one of the central tenets of fsQCA, which is for researchers to have intimate understanding of empirical cases and relevant theory in order to calibrate conditions and outcomes.⁵⁰

From the qualitative side, there are concerns that the process of calibrating causal conditions and outcomes is in itself reductionistic representation of complex social phenomenon. Transforming qualitative information into numeric data holds the risk of a “false sense of precision...”⁵¹

We concede that both sets of critiques may be valid, and that all methodologies suffer from inherent weaknesses. In order to both heed the warnings posed by critics of fsQCA, and to follow the fundamentals of the method, we painstakingly calibrated each condition and outcome through a process that invoked 1) our own in-depth knowledge of humanitarian emergencies and the Syrian context; 2) regular fact-checking with conflict-affected Syrians in Syria; and 3) “blind” calibrating, or a type of inter-coder reliability measure between the researchers.

When considering a more practical application of fsQCA in humanitarian settings, the success of this methodology is contingent on access to local knowledge. It would be inadvisable to hire a research consultant with no prior knowledge of the context to engage in a study utilizing fsQCA. At a minimum,

⁴⁶ Ragin, C. Charles. (2008)

⁴⁷ For good overview of main critiques and rebuttals of QCA, see the special issue in Sociological Methodology volume 44 Issue 1 2014.

⁴⁸ Lucas, S. & Szatrowski, A. (2014)

⁴⁹ Kroglund, C., Danny Choi, D. & Poertner, M. (2015)

⁵⁰ Fiss, P., Marx, A., Rihoux, B. (2014)

⁵¹ Kaminsky, J. & Jordan, E. (2017)

the researcher would need to be in communication with the population under study and work with local researchers or practitioners to engage in proper iterative calibration of conditions and outcomes, as described in the previous paragraph. This preference for case specific knowledge runs contrary to many of the current practices in humanitarian research, where the skills of “experts” are assumed to be transferable to any humanitarian situation.⁵²

3.3.1. Applying fsQCA to the Study of Resilience in Syria

As described above, this study relies on quantitative data collected in 2017 as part of the *Wages of War* project. The study sample included members of households and community key informants in three regions within Syria—northeast, north, and south-central Syria. In total, representatives from 1,168 households and 350 key informant interviews were surveyed in 124 communities.⁵³ Qualitative interviews were conducted with a sub-sample of households that had successfully adapted their livelihoods either by starting a new livelihood or restarting a pre-conflict livelihood. However, this fsQCA analysis focuses exclusively on the quantitative survey data.

Resilience measurement typically relies on examining relationships between three categories of variables: shock(s), resilience capacities, and well-being.⁵⁴ Defining these variables is driven by the research or evaluation questions and is highly context specific. For the *Wages of War* study, the researchers were interested in exploring relationships between coping strategies, livelihood adaptation, and household well-being in the context of a humanitarian crisis. One of the primary shock measures was exposure to intense conflict as measured by displacement, property damage, injury or death. Factors (or sources of resilience) thought to influence household well-being outcomes included market functionality, access to cash and capital, social capital and networks, livelihood dynamics, pre-conflict education and assets, and exposure to conflict. Household well-being was defined in terms of food security, psychosocial well-being, expenditures, and housing quality. Each of these indicators is discussed in detail below.

We calibrated each of the outcomes of interest and causal conditions into fuzzy sets, assigning each household with set membership scores for the outcomes and causal conditions. Details on how the conditions and outcomes were calibrated, as well as other information about our analyses, can be found in the Calibration Guide appendix.

3.4. Outcomes of Interest

The three outcomes of interest stipulated for this study include 1) household food security as measured by the Household Hunger Scale (HHS) as well as scores on the Coping Strategies Index (CSI), often referred to as distressful coping;⁵⁵ 2) levels of psychosocial well-being as reported on the Human Security Index; and 3) livelihood adaptation as measured by a household restarting a pre-conflict livelihood activity or starting a new livelihood activity since the start of the war.

⁵² For an analysis of thematic expertise versus local knowledge see: Autesserre, S. (2014)

⁵³ See Howe et al. (2018) for more details on methodology.

⁵⁴ For more information on resilience measurement, please refer to Sagara, B and Smith, L. (2018)

⁵⁵ For HHS indicator definition please refer to: Ballard, T., Swindale, A., & Deitchler, M. (2011)

Food Security: One core manifestation of resilience during both war and peacetime is food security, or the capacity for households to provide sufficient and regular nutrition for all of its members. This study relies on two measures of food security—the Household Hunger Scale (HHS) and the Coping Strategies Index (CSI). While these scales are correlated, they can be used in tandem to capture different dimensions of household food security. The HHS inquires about the most severe experiences of food insecurity (i.e. absence of any food, going to bed hungry, and going a whole day without eating any food) to identify the households that are the most food insecure. The CSI measures a wider array of behaviors related to food consumption, including more moderate forms of food insecurity. The CSI is likely to be more sensitive to small changes in food security over time, while HHS tends to identify extremely food insecure households which may not vary much during “good times” but could increase rapidly in a humanitarian crisis.⁵⁶ For our analysis, both sets are calibrated to include the most severely food insecure households according to the specific scale.

Psychosocial well-being: Psychosocial well-being is increasingly being recognized for the “the central role that psychosocial factors and individual perceptions play in people’s construct of resilience” and is therefore central to the welfare of households more generally, and the ability to cope and adapt during a conflict more specifically.^{57,58} This set of analyses relies on answers provided to the battery of questions known as the Human Security Index (HSI).⁵⁹ These questions cover two types of fear—one related to fear of material loss and one related to fear of physical safety. The former describes fear of not being able to provide for one’s family, fear of losing income sources, fear of losing one’s home, or fear of displacement. The latter involves fearing for one’s personal safety, fearing for the safety of one’s family, and the extent to which the family worries about the respondent’s safety.

Livelihood Adaptation: In trying to understand resilience in the Syria context, the *Wages of War* study focused on a sub-sample of the study population that had successfully either re-started a pre-war livelihood activity or started a new livelihood activity since the beginning of the war. This sub-group of livelihood adapters (approximately 1/3 of the sample) were calibrated in the outcome set of households that successfully adapted their livelihoods.

3.5. Causal Conditions

The causal conditions theorized to be related to the three outcomes described above include:

- Exposure to intense conflict as measured by displacement, property damage, injuries or killing of family members.
- Social connectedness as measured by recent social and economic contact with people outside the community in the prior month and regular access or usage of digital and/or analog network technologies.
- The presence of female and youth (male or female) income earners in a household.

⁵⁶ Interview with nutrition scientist at Tufts University, August 2019, see also: Maxwell, D., Coates, J. & Vaitla, B. (2013).

⁵⁷ Béné, C., et. al. (2019).

⁵⁸ USAID (2018)

⁵⁹ For more information on the Human Security index, refer to: Hamayel et. al. (2014) and Ziadni, M. et. al. (2011)

- Market functionality as measured by physical proximity to markets and stable prices for wheat, bread and fuel.
- Access to economic resources as measured by remittances and access to savings and loans.
- Inclusive governance as measured by local government responsiveness and inclusion of women and youth in the council.
- Provision of social infrastructure such as education, WASH and health.

For some analyses, we combined two conditions into a larger macrocondition. A macrocondition is similar to an index or composite variable, where several components are meaningfully combined.⁶⁰ Macroconditions were created because one of the difficulties of using configurational methods such as fsQCA is the staggering number of logical combinations of conditions, a number which increases as the number of causally relevant conditions in the analysis increases. Thus, we found it useful to construct macroconditions out of our initial pool of conditions when there were compelling theoretical and empirical reasons to do so. For more details on how these macroconditions were created for this paper, and in fsQCA more generally, readers should review the appended Calibration Guide and review Ragin and Fiss (2017) and Ragin (2015).

For this paper, there are two main macroconditions:

- A favorable economic situation includes households that are in communities with market functionality *and* have access to economic resources.
- Good governance includes households in communities that have inclusive governance *and* provision of social infrastructure.

Our basic model included the following conditions: social connectedness, favorable economic situation, gender/youth household income, good governance, and intense conflict exposure. Other than gender/youth household income, these are all macroconditions. When this model produced ambiguous findings, we tested other models using individual components of the macroconditions, ones that made sense for the specific outcome being analyzed. This was done by breaking apart some of the macroconditions and running the component sets in the model, such as using strong market functionality instead of favorable economic situation.

3.6. Setting Thresholds

For this study, we ran several analyses for each outcome, using different threshold settings, and report multiple results for each outcome. First, our baseline thresholds were generally .85 for the consistency threshold and a frequency threshold of 5 cases when running the “Truth Table Algorithm” in fsQCA (Version 3.0). Second, we set the thresholds higher, usually between .85 and .9 (using any ‘natural gaps’ in that range to place the cutoff) and a frequency cutoff of either 5 or 10 cases. In all of our analyses, the thresholds were always set above a consistency of .8 and always at a frequency of 5 or more cases.

⁶⁰ Macroconditions are created through either a compensatory approach to average components; a weakest-link approach (logical and) where a case must exhibit all components to be in the set; a substitutable-conditions approach (logical or) where a case must exhibit at least one component to be in the set; or a mix. See; Ragin, C. and Fiss, P. (2017)

What the multiple thresholds end up giving is first a more coarse-grained analysis, and then finer-grained analyses for each of the outcomes. As noted, what we aim for initially are results that have a good balance between consistency and threshold scores (both above a .7), while in the later analyses we set the consistency threshold higher (meaning the results often sacrifice some coverage for higher consistency). Each set of results are valid in terms of capturing patterns in the data based on configurational analysis, but in particular, here, the first sets of results primarily include monocausal recipes whereas the second sets of results primarily include combinatorial recipes. These combinatorial recipes give a more detailed look at the single conditions from the initial analysis. For example, while the initial analysis finds that strong social connections lead to households avoiding severe hunger, the secondary analysis finds that two combinations with strong social connections (strong social connections and good governance, and strong social connections and female/youth wage earners) lead to households avoiding severe hunger. In general, the way that multiple results work together in fsQCA can be useful in terms of triangulating with multiple methods but also in guiding a multi-method research design particularly to hone in on the case level in order to unravel causal mechanisms. As we will show below, these offer unique insights into the sequencing, layering, integration, and targeting of activities.

In addition, the raising/lowering of thresholds is an important activity because it helps to ensure against the charge that the thresholds have been arbitrarily selected—a central critique of fsQCA. It also helps to manage the issue of no apparent threshold value, which is when the consistency and frequency scores are tightly clustered together.

4. Findings

The following findings represent an analysis of household and community sources of resilience for Syrian households to better manage the effects of ongoing conflict shock and protect or improve key food security, psychosocial well-being and livelihood adaptation outcomes. We present the most salient combinations of causally relevant conditions (or pathways) that are linked to resilience (see Figure 1 for an example truth table for food security [HHS] and Figure 2 for a corresponding Venn diagram of the results of the truth table analysis). The findings are based on careful calibration of conditions and outcomes and reflect solutions that meet minimum requirements for consistency and coverage scores, as discussed above.

In the paragraphs below we provide results of multiple threshold settings. Generally speaking, the initial analyses—which sought a good balance of consistency and coverage scores – found monocausal recipes. These initial results thus give a more coarse-grained analysis, revealing the broad relevance of certain single conditions for an outcome. When the consistency thresholds in the truth table analysis were raised, pathways that had previously been monocausal became a part of more complex, combinatorial recipes, providing for a more fine-grained understanding.

Appraising these multiple results together thus make both methodological and substantive sense and, as will be discussed, also offer a path for future studies. Below, we first present results with lower thresholds and as such provide a coarser picture. Results with a higher threshold are subsequently presented, which provide a more complex, fine-grained understanding of how conditions lead to outcomes. Recall from above that it is common to see coverage scores decrease when consistency

scores are raised. From a programmatic perspective, the coarser analyses offer users insight into combinatorial recipes of key programmatic leverage points to focus activities on that are likely to be more effective for a greater proportion of the population. However, as the analyses below will illustrate, this approach can be limited and might only offer insight into a foundational activity (or set of activities) that would be targeted to the population at large. The more complex recipes, however, offer more nuanced insights into specific combinatorial recipes that can inform how foundational activities are sequenced, layered, and integrated with supplementary activities for specific sub-populations.

4.1. Food Security

I. The Household Hunger Scale (HHS):

Analysis A (Lower Threshold):

For this set of results, the consistency threshold was set at .85 and a frequency threshold of 5 cases. The results show that there are three main monocausal pathways for a household to avoid extreme household hunger, as measured in coping behavior that is reflected in high HHS scores.⁶¹

- I. Households that have not been exposed to intense conflict were found to have avoided extreme household hunger.⁶²
- II. Households with strong social connectedness were found to have avoided extreme household hunger.⁶³
- III. Households located in communities marked by good governance were successfully able to avoid severe household hunger as measured by the HHS.⁶⁴

Analysis B (Higher Thresholds):

For the second sets of results, two rounds of higher consistency thresholds were set, allowing us to hone further in on the monocausal pathways. Two different thresholds were pursued.

For the first higher threshold analysis, consistency thresholds were set at .88 with a coverage threshold of 10 cases. The pathways (A1 and A2) stayed the same, but additional, more complex solutions arose.⁶⁵ These include:

- I. Households who were located in communities marked by good governance AND had in-house female or youth income earners were found to have successfully avoided extreme household hunger.⁶⁶

⁶¹ Results show a solution consistency of .75 and a solution coverage of .8

⁶² .81 consistency score and .59 coverage score.

⁶³ .81 consistency score and .5 coverage score.

⁶⁴ .78 consistency score and .57 coverage score.

⁶⁵ Results show a solution consistency threshold of .77 and solution coverage of .79

⁶⁶ .82 consistency and .27 coverage score.

For the second higher threshold analysis, consistency thresholds were set at .89 with a coverage threshold of 10 cases. For this analysis, one pathway stayed the same (A1), and two additional complex solutions arose.⁶⁷

- I. Households with strong social connectedness AND with female or youth wage earners were found to have successfully avoided extreme household hunger.⁶⁸
- II. Households with strong social connectedness AND located in communities marked by good governance were successfully able to avoid household hunger.⁶⁹

2. Household hunger as measured by high scores on the Coping Strategies Index (CSI)

Analysis A (Lower Threshold):

For this set of results, the consistency threshold was set at .85 and a frequency threshold of 5 cases. The results show that there are three main monocausal pathways for a household to avoid extreme household hunger, as measured in distressful coping behavior reflected in high CSI scores.⁷⁰

- I. As with extreme food insecurity as measured by the HHS, households that have not been exposed to intense conflict are found to have avoided exercising negative coping strategies to meet household food consumption as measured.⁷¹
- II. Second, and also as with the extreme HH hunger score, households with strong social connectedness are found to have avoided exercising negative coping strategies to meet household food consumption as measured by the CSI.⁷²
- III. Households that were found to avoid exercising negative coping strategies to meet household food consumption had female income earners and youth (male or female) income earners in the household.⁷³

Analysis B (Higher Thresholds)

The consistency threshold was set at .87 with a frequency threshold of 5 cases.⁷⁴ As a result, more fine-grained complex pathways emerge.

- I. Households were successfully able to avoid exercising negative coping strategies to meet household food consumption when they:
 - a. Were not exposed to intense conflict AND had a favorable economic situation.⁷⁵
 - b. Were not exposed to intense conflict AND lived in communities marked by good

⁶⁷ Results show a solution consistency of .8 and a solution coverage of .72

⁶⁸ .84 consistency and .27 coverage

⁶⁹ .86 consistency and .32 coverage

⁷⁰ Results show a solution consistency is .71 and solution coverage is .85.

⁷¹ .76 consistency score and .58 coverage score.

⁷² .77 consistency score and .49 coverage score.

⁷³ .7 consistency score and .43 coverage score.

⁷⁴ Results show a solution consistency of .75 and a solution coverage of .74.

⁷⁵ .81 consistency and .45 coverage

- II. Households were successfully able to avoid exercising negative coping strategies to meet household food consumption when they were not exposed to intense conflict AND had female and/or youth wage earners.⁷⁶
- III. Households were successfully able to avoid exercising negative coping strategies to meet household food consumption when there were:
 - a. Female and/or youth wage earners in the household AND a favorable economic situation.⁷⁷
 - b. Female and/or youth wages earners in the household AND household lived in communities marked by good governance.⁷⁸

4.2. Psychosocial Well-being

Analysis A (Lower Threshold)

For the first analysis, consistency thresholds were set at .83 with a frequency threshold of 5 cases.⁷⁹ The fsQCA identified two main pathways for households to avoid extreme fear as measured by a lack of psychosocial well-being on the HSI. One pathway is monocausal and the other is combinatorial.

- I. Households located in communities marked by strong market functionality successfully avoided extreme fear as measured by the HSI.⁸⁰
- II. Households located in communities marked by good governance AND households that had not been exposed to intense conflict (as a household) successfully avoided extreme fear and had better psychosocial functioning.⁸¹

Analysis B (Higher Thresholds)

For the second set of analyses, the consistency threshold was set at .86 with a frequency threshold of 10 cases.⁸² This analysis produced more fine-grained and complex combinatorial pathways for households to avoid poor psychosocial well-being.

- I. Households that successfully avoided extreme fear were:
 - a. Located in communities marked by strong market functionality AND had strong social connectedness.⁸³

⁷⁶ .78 consistency and .27 coverage

⁷⁷ .78 consistency and .36 coverage

⁷⁸ .79 consistency and .26 coverage

⁷⁹ Results show a solution consistency of .74 and a solution coverage of .72.

⁸⁰ .77 consistency score and .46 coverage score.

⁸¹ .79 consistency score and .41 coverage score.

⁸² Results show a solution consistency of .78 and solution coverage of .57.

⁸³ .82 consistency and .28 coverage

- b. Located in communities marked by strong market functionality AND had female and/or youth wage earners in the household.⁸⁴
 - c. Located in communities marked by strong market functionality AND had low exposure to intense conflict.⁸⁵
- II. Households who were located in communities marked by good governance AND had low exposure to intense conflict AND female/youth wage earners were more able to avoid extreme fear.⁸⁶

As seen from the discussion above, the results from the different frequency thresholds complement each other. The first results tended to yield monocausal recipes, and when consistency thresholds were set higher, combinatorial recipes appeared. In fact, the monocausal single conditions from the initial analyses become embedded in more complex configurations of conditions that lead to the outcomes of interest. However, the multiple results here are all valid in terms of being based in empirical evidence and describing the configurational patterns in the data. Taken together, they may be useful in further multi-method research, particularly as a guide for more in-depth, small N studies. Exploring results of multiple thresholds is critical to provide both high level results and more nuanced insights into the combinatorial recipes that matter for achieving development objectives. In order to define and interpret the different results, fsQCA is reliant on researchers with strong case knowledge.

4.3. Livelihood Adaptation

FsQCA was not able to produce consistent results for the outcome of livelihood adaptation, regardless of the lower or higher thresholds set. Given the lack of integrity of results, we do not report them here.

5. Discussion and Moving Forward

Applying fsQCA to the *Wages of War* dataset has revealed its strength in unpacking complex concepts related to the resilience and welfare of conflict-affected Syrians. As showcased, fsQCA hits a sweet spot between purely quantitative and qualitative methods, while drawing on the strengths of both. These detailed findings tell the story of actual households that have managed to avoid food insecurity or high levels of fear, and highlight the ways that different conditions exist together or separately in resilient households. Showing the relationships between diverse conditions allow for immediate programmatic recommendations.

For example, households that have higher psychosocial well-being are predominantly found in communities with strong market functionality. Within those communities with strong markets, households have lower levels of extreme fear when they have female and youth income earners, high levels of social connectedness, or have experienced lower levels of conflict. In looking at the food security of households, social connectedness is present in a large proportion of households that managed to avoid extreme hunger as measured by the HHS. Within that subset of socially connected households,

⁸⁴ .81 consistency and .23 coverage

⁸⁵ .83 consistency and .32 coverage

⁸⁶ .83 consistency and .21 coverage

we also observe that having female and youth income earners OR being located in communities marked by good governance were common conditions for food security. Humanitarians in this case could choose to support markets and social connectedness with the knowledge that the presence of each is associated with the food security and psychosocial welfare of Syrians. These results offer insight into possible combinations and targeting (at the household and community level) of activities.

Furthermore, fsQCA can be used in multi-method research. It can be combined with large-scale regression analyses, but is arguably most aptly paired with comparative case-study analysis. After having identified the various complex patterns through this study's analysis, one potential way forward would be for qualitative researchers to identify the households that exhibit certain pathways, and then conduct interviews to unravel what the actual mechanisms are that link specific combinations of conditions to outcomes.

For example, why does good government and women/youth income participation combine to consistently help families avoid severe household hunger? Or what is it about the combination of strong market functionality and social connectedness that consistently leads to household members avoiding extreme fear? Given that causal inference and interpretation are arguably only possible on the case level, it would be fruitful to use the fsQCA results from a project such as this one to guide case studies based on interviews, archival work, or even ethnography. One way to do this would be similar to what we have done in this report—first use fsQCA to analyze secondary data and then have the results guide in-depth, smaller N studies on a sample of cases.

Another route would be to collect original data as part of a multi-method research project that combines fsQCA with comparative case-studies, say in a study of 15-50 cases (whether individual households or entire local communities). As mentioned above, these cases would be selected to capture the largest range of variation possible, rather than seeking a representative sample. In this scenario, the process of calibrating causally relevant conditions and the outcomes of interest are based in various forms of data collection and fieldwork, rather than solely relying on secondary data. This calibration process would itself form the basis for comparative case-study analysis, in which researchers would verify the fsQCA results by demonstrating the “causality” of causal combinations and identifying causal mechanisms linking them to particular outcomes. Thus, researchers could successfully apply fsQCA to smaller N samples, as has been demonstrated in the studies focusing on disaster recovery, evaluation of WASH programs or public health campaigns.^{87,88,89}

6. Implications for using FsQCA to Research Resilience

This study has demonstrated the efficacy of using fsQCA to shed light on the complex household and community factors that support resilience in the midst of conflict. While we are not advocating to use fsQCA above all other methods—including statistical analyses or in-depth household or community case studies—fsQCA shows promising results as one option for humanitarian settings. We argue that fsQCA may be a preferred method for some fragile locations. It may also be more suitable when researchers

⁸⁷ Kaminsky, J. & Jordan, E. (2017)

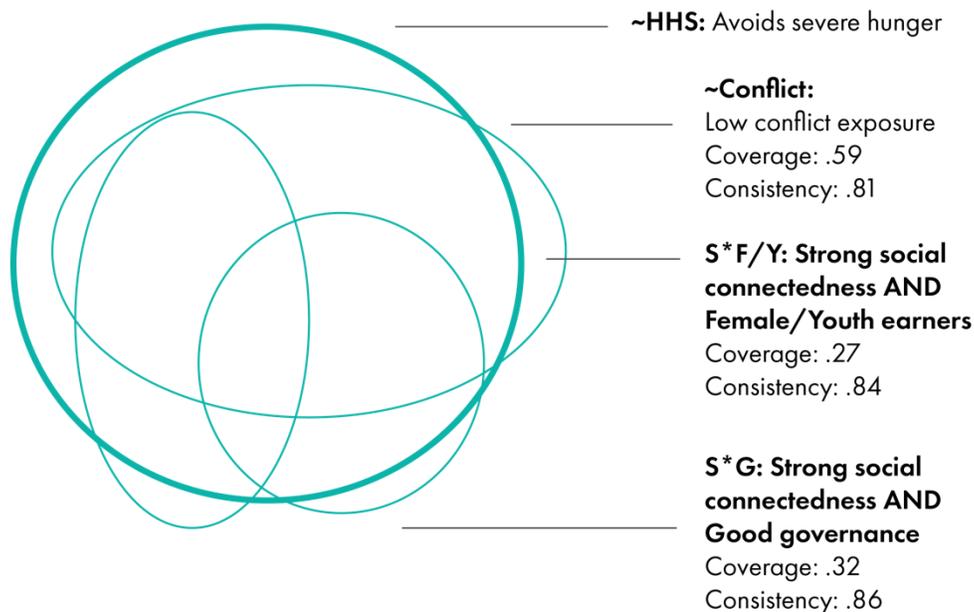
⁸⁸ Jordan, E. & Javernick-Will, A. (2014)

⁸⁹ Warren, J., Wistow, J., & Bamba, C. (2013)

are asking questions that get at combinatorial complexity, or when humanitarians are interested in precise thresholds of indicators or honing their targeting of assistance.

As described throughout the report, fsQCA can be used with both quantitative and qualitative data. It can decrease the need for large samples, which may be particularly useful in insecure areas or conflict zones where access is difficult. Thirdly, fsQCA tells the story of actual households, unraveling complexity thus supporting the targeting process and design of precise humanitarian interventions. Fourthly, fsQCA incorporates case-based knowledge and information from local practitioners and people affected by humanitarian crises, supporting a participatory approach. For this study, we incorporated our own in-depth knowledge of humanitarian emergencies and the Syrian context, solicited advice directly from conflict-affected communities and engaged in “blind” calibrating, or a type of inter-coder reliability measure between the researchers to improve the quality of the study. This helps ensure that findings are locally embedded and meaningful. With this, we recommend that fsQCA be folded into methodological tool kits, whether studying resilience or researching populations affected by humanitarian crises.

Figure 4: Venn diagram representation of the partitioning of set-theoretic consistency and coverage using fuzzy sets (based on the truth table in Figure 1) *



*These results are based on setting the frequency threshold to 12 and the consistency threshold to .89, an analysis which gives a solution consistency of .8 and a solution coverage of .72

Annex A

Glossary of Terms⁹⁰

Calibration: the process of assigning set membership scores to conditions and outcomes. Calibration is possibly only through the use of theoretical and substantive knowledge, which is essential to the specification of three qualitative breakpoints (full membership, full non membership and maximum ambiguity).⁹¹

Causal Condition: an explanatory variable that may affect the outcome.

Configuration or Causal Recipe: a combination of conditions relevant to a given outcome. It may correspond to one, more than one, or no empirical case (s). It corresponds to one row of a truth table.

Consistency: an assessment of the degree to which cases sharing a given combination of conditions agree in displaying the outcome in question. Consistency indicates how closely a perfect subset relation is approximated.⁹²

Coverage: an assessment of the degree to which a cause or causal combination accounts for instances of an outcome. When there are several paths to the same outcome, the coverage of a given causal combination is small.⁹³

Fuzzy-set membership score: the degree to which a given case belongs to a set, which can be any value between two qualitatively defined states: full membership (1) and full non-membership (0) in the set.

Necessity: a condition is necessary for an outcome if it is always present when the outcome occurs, and if it is never absent when the outcome occurs. The outcome is a subset of the cause.

Outcome: the variable to be explained by the conditions; usually the outcome is the main focus of a study.

Subset relation: A subset of relation exists whenever membership scores in one set are consistently less than or equal to membership scores in another set.

Sufficiency: a condition or combination of conditions is sufficient for an outcome if the outcome always occurs when the condition (or combination) is present. The cause is a subset of the outcome.

Truth Table: the display of all configurations (combinations of conditions) based on a given data set.

Venn Diagram: a graph showing all the possible mathematical or logical relationships between sets.

⁹⁰ Unless otherwise noted, definitions are based on the glossary in: Rihoux, B. & Ragin, C. (2009).

⁹¹ Ragin, C. (2008)

⁹² Ragin, C. (2008)

⁹³ Ragin, C. (2008).

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