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Technical Report

Climate, Mobility, and Food and Nutrition Security in Vietnam's Mekong Delta: Insights from Bạc Liêu

December 2025



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Executive summary

This technical report presents the findings of a partnership between the Alliance of Bioversity International and CIAT (The Alliance, a CGIAR research center) and the Vietnam Ministry of Health's National Institute of Nutrition (NIN) to examine the linkages between climate change, human mobility, and household food and nutrition security (FNS) outcomes in the Mekong Delta. Following the co-development a climate-related mobility survey questionnaire that was added to the 2024 National Nutrition Surveillance (NNS) in Bạc Liêu province¹, this report provides initial analysis to support research, policy development, and programming strategies in climate-vulnerable, high out-migration areas in southern Vietnam.

Between September and November 2024, Bạc Liêu's Department of Health's Center for Disease Control (CDC) collected data from approximately 400 migrant-sending households in four rural districts, one district-level town, and one city in Bạc Liêu province, purposively sampled from the wider NNS cohort of 1,530 households using a screening question based on recent mobility experience. The sample is predominantly rural and includes households experiencing diverse climate hazards, migration outcomes, and food and nutrition security challenges. Data analysis incorporates both descriptive statistics and econometric approaches including t-tests and multivariable regressions to explore the effects of climate stressors, migration patterns, remittance flows, household size, caregiving arrangements, and ethnicity on food and nutrition security (FNS) indicators. Due to the pilot nature of the data collection, the purposive selection of the sample, and the lack of a comparison group of households without migrants, the statistical relevance of results beyond the research sample (e.g., at provincial level) is limited. These factors also prevent establishing direct causal links between climate, mobility, and FNS variables. While the findings offer valuable initial insights, these limitations should be acknowledged and used to guide and inform future research efforts.

Key results from the pilot analysis aimed to inform future research design include:

- Climate-related hazards are associated with negative FNS outcomes, including food insecurity (FI), child malnutrition, and negative infant and young child feeding practices (IYCF), with diverse and nuanced links to both slow- and fast-onset climate hazards.
- Remittances can mitigate FNS risks, especially in households exposed to climate-related hazards, as increased remittance values correlate with reductions in child stunting and small body mass index (small BMI).
- Children in households with migrant mothers face higher stunting rates, highlighting caregiving challenges despite financial support.

¹ At the time of data collection, from September through November 2024, the now-former Bạc Liêu province consisted of four rural districts (Hòa Bình, Đông Hải, Vĩnh Lợi, Hồng Dân), one district-level town (Giá Rai), and one provincial city (Bạc Liêu). In June 2025, following Vietnam's national administrative restructuring under Resolution No. 202/2025/QH15 and Resolution No. 1655/NQ-UBTVQH15, Bạc Liêu was merged into Cà Mau province, and all district-level units were dissolved. The former Bạc Liêu province was reorganized into 25 new ward-level units (e.g., Bạc Liêu Ward, Vĩnh Trạch Ward, Hiệp Thành Ward, Giá Rai Ward, Hồng Dân Ward, Định Thành Ward, and Phước Long Ward, among others). These changes occurred after the survey period; therefore, all results reported here refer to the administrative boundaries that were in effect in during data collection in late 2024.

- Larger households experience greater food insecurity (FI) and lower minimum meal frequency (MMF) likely due to resource dilution.
- Households classified as part of the Hoa and Kho-me ethnic minorities have higher food insecurity (FI) and lower minimum dietary diversity (MDD), reflecting systemic inequalities among migrant-sending households.
- Infant and young child feeding (IYCF) indicators present mixed results, indicating complex influences under climate change stresses and migration outcomes.

Building on these insights, we recommend updating and integrating the climate-related mobility survey module within the national NNS process to enable statistically representative analysis across rural and urban contexts. Tailoring hazard lists, streamlining survey components, and collaborating with local partners to enhance monitoring accuracy and policy relevance. Interdisciplinary, mixed-method, and longitudinal research, strengthened multi-sectoral coordination, and attention to gender, household composition, and ethnic disparities are necessary to inform adaptive, evidence-based policies for climate resilience, migration, and improved FNS outcomes in the Mekong Delta and similar contexts.

By embedding mobility and climate-sensitive data collection within Vietnam's National Nutrition Surveillance, this partnership can support advancing Vietnam's National Strategy on Nutrition, Vietnam's National Action Plan on Food Systems Transformation, and broader regional initiatives that support efforts to foster food-secure, climate-resilient futures.

² No other ethnic minorities are identified in the sample.

1. Introduction

This research stems from a partnership between Vietnam Ministry of Health's National Institute of Nutrition (NIN) and The Alliance of Bioversity International and CIAT (The Alliance, a CGIAR research center). NIN is mandated to research nutritional needs, propose measures to improve health, identifying means of using nutrition to prevent and treat disease, research food hygiene, and generally support linkages between nutrition and national socio-economic development. Through the National Nutrition Surveillance (NNS) system, NIN delivers granular, longitudinal food and nutrition security data essential for evidence-based policy formulation. Established in 2024, the Scaling for Impact Program leads CGIAR efforts to tackle global poverty, food insecurity, and climate risks by applying transdisciplinary science, fostering partnerships, generating evidence, and delivering integrated solutions to maximize impact and minimize duplication.

The NIN-Alliance research partnership involved co-development and pilot implementation of a novel climate-related mobility questionnaire module that was integrated into the 2024 NNS monitoring survey in Bạc Liêu, a climate-vulnerable, high out-migration province in Vietnam's Mekong Delta. The module collects data specifically from migrant households, capturing information on exposure to climate-related hazards, types of household mobility forms, demographics of migrants, remittances, as well as household-level food and nutrition security (FNS) indicators. By doing so, it fills critical evidence gaps on how climate hazards and human mobility contribute to food and nutrition security outcomes in deltaic households.

Between September and November 2024, the Bạc Liêu Department of Health's Center for Disease Control (CDC), in coordination with NIN and The Alliance, conducted pilot data collection in Bạc Liêu using a purposive sub-sample of approximately 400 households drawn from the NNS cross-sectional sample of 1,530 households. The sample exclusively included households who reported a mobility outcome (migration, displacement, planned relocation) in the prior five years. The research sample targeted between 56 and 90 households per district across six NNS districts (approximately 14–20 households per commune/ward), including Đông Hải, Hòa Bình, Vĩnh Lợi, Hồng Dân, district-level town Giá Rai, and Bạc Liêu city.

Key findings from the pilot sample show that climate-related hazards are strongly linked to negative food and nutrition security outcomes. These include food insecurity, child malnutrition, and poor infant and young child feeding practices, with varied effects from slow-onset events (drought, sea-level rise, waterlogging, shifting rainfall patterns, increased agricultural pests or diseases) and fast-onset hazards (flood, extreme heat, extreme storms). While migration can improve food and nutrition security through remittances that reduce some climate-related risks, vulnerabilities persist. Caregiving challenges affect migrant mother households, larger households face resource dilution, and ethnic minority households experience systemic inequalities. These factors lead to higher food insecurity and lower dietary diversity.

Despite limitations in sample representativeness, these initial insights offer a robust empirical and theoretical foundation to guide refined and upscaled studies. These studies can, in turn, inform policies integrating climate resilience, mobility dynamics, and food and nutrition security within the Mekong Delta and climate-sensitive regions in Vietnam. Looking ahead, sustained research efforts are essential to deepen understanding of the evolving interactions among climate stressors, mobility patterns, and food and nutrition security, particularly as these dynamics intensify amid ongoing environmental and socio-economic change. Building on pilot results, embedding an enhanced climate-sensitive mobility module within Vietnam's National Nutrition Surveillance system would provide timely, localized data to inform

policies integrating climate resilience, mobility dynamics, and food and nutrition security within the Mekong Delta and climate-sensitive regions in Vietnam. Looking ahead, sustained research efforts are essential to deepen understanding of the evolving interactions among climate stressors, mobility patterns, and food and nutrition security, particularly as these dynamics intensify amid ongoing environmental and socio-economic change. Building on pilot results, embedding an enhanced climate-sensitive mobility module within Vietnam's National Nutrition Surveillance system would provide timely, localized data to inform targeted policies (including Vietnam's National Strategy on Nutrition and National Action Plan on Food Systems Transformation) on climate adaptation, migration, and nutrition across regional and national levels.

After introducing the survey, data collection, and key sample characteristics (Section 2: Mapping the climate, mobility, and FNS nexus in Bạc Liêu: Survey, data collection, and sample Characteristics), this report presents the research hypotheses and methodology (Section 3: Exploring climate, migration, and FNS links: An econometric analysis). Key results of the econometric analysis are then presented in relation to each key hypothesis (Section 4: Initial findings on climate, migration, and FNS in Bạc Liêu: T-tests and regression insights on key hypotheses) followed by recommendations on sample and survey design based on results and identified limitations (Section 5: Recommendations for improved survey design and implementation). Lastly, a summary table provides concluding remarks on the key lessons learned from the pilot and recommends how future research can support enhanced policy and programming impact (Section 6: Guidance to support policy development).

2. Mapping the climate, mobility, and FNS nexus in Bạc Liêu: Survey design, data collection, and sample characteristics

2.1 Survey design

The Vietnam National Nutrition Surveillance (NNS) system is a standardized annual monitoring process that involves measuring, weighing, and surveying children under 5 years of age from selected households across provinces and cities to assess nutrition status and inform policy. Data collection is overseen by provincial health officials under the Ministry of Health's guidance, with efforts focused on tracking anthropometric indicators, infant and young child feeding practices, micronutrient coverage, and household food access, with the aim of guiding investment and policy decisions at multiple administrative levels.

The climate-related mobility questionnaire module integrated into the NNS survey was developed in 2023-2024 by the Alliance, in partnership with NIN and with significant input through participatory activities with local stakeholders in Vietnam's Mekong Delta region, including representatives from Alive & Thrive, Can Tho University, the Can Tho Center for Disease Control and Prevention (CDC), the General Statistics Office of Vietnam, Plan International, and Slowfood Community in Vietnam. Following a series of participatory review processes with NIN and CDC Bạc Liêu, the survey module was tested in Phước Long district, as part of the implementation of the NNS in Bạc Liêu province.

The questionnaire⁴ includes several climate and mobility-relevant components:

⁴ For more details on the survey, see Annex 2.1 English translation of survey module on climate, mobility, and FNS.

1. a climate component to collect data on household exposure to slow- and fast-onset environmental hazards;
2. a displacement component, collecting data on climate-related displacement;
3. a planned relocation component, collecting data on household participation in state-led relocation initiatives;
4. an immobility component, collecting data on involuntary immobility of household members;
5. a migration component, collecting demographic data of household members classified as migrants;
6. a financial component, collecting demographic data on the migrant household members who contributes the greatest amount to household income;
7. a component collecting data on remittances flows;
8. a component collecting data on households' main food purchasing channels and;
9. a food consumption component, collecting key dietary indicators to support the analysis of food and nutrition security within the climate–mobility context.

2.2 Data collection

Data collection was conducted by CDC Bạc Liêu between September and November 2024 as part of the NNS implementation, in coordination with NIN and The Alliance. A sub-sample of approximately 400 households was drawn from the total NNS sample of 1,530 households using a screening question to purposively select households that had experienced mobility in the five years preceding the survey. To conduct the NNS, each year NIN selects 30 clusters per province or city using a probability-proportionate-to-size method, stratifying urban and rural areas. From each chosen commune or ward, children under five years old are randomly selected from three to five villages in specified age groups, resulting in 1,530 children per province and 99,450 children nationwide. Within this general sample, the sample subset used for this research targeted 56-90 households in each of six selected NNS districts, or 14–20 households per commune/ward, including Đông Hải, Hòa Bình, Vĩnh Lợi, Hồng Dân, district-level town Giá Rai, and Bạc Liêu city. After data collection. This sampling strategy yielded 402 responses.

2.3 Key climate, mobility, and FNS indicators: Sample and household characteristics

Based on the survey's conceptual framework (see Figure 1, below) and the components outlined above, a set of the most relevant climate, mobility, and food and nutrition security (FNS) indicators were selected to describe key household characteristics of the pilot sample.

⁴ For more details on the screening question, see Annex 2.2 Screening question.

⁵ Except for Hà Nội and Hồ Chí Minh City, where 60 clusters are selected per city.

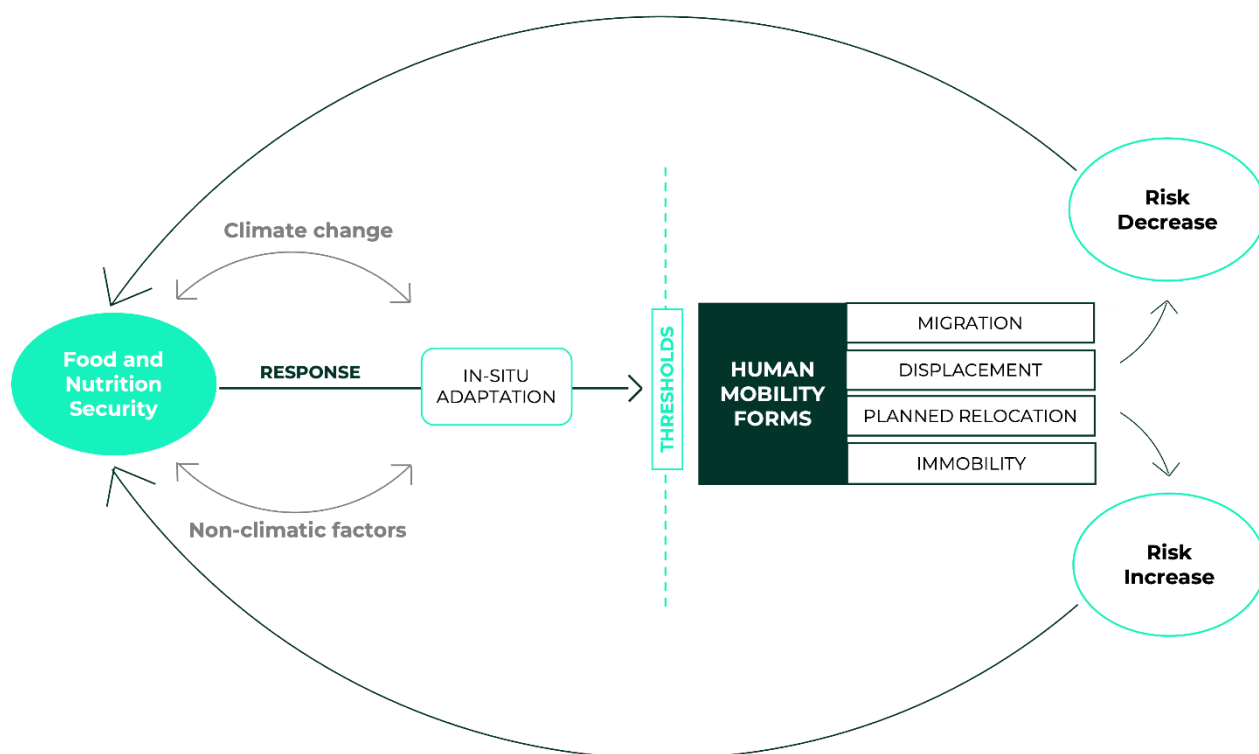


Figure 1. Conceptual framework of the climate-related mobility survey. Adapted from (McLeman et al., 2021; Vaselli et al., 2024).

The climate and mobility indicators, corresponding broadly to Components 1, 5, 6, and 7 of the survey modules, were drawn and adapted from a more extensive provisional list of indicators co-developed by the Alliance and NIN (Vaselli et al., 2024). Additionally, FNS indicators related to moderate-to-severe food insecurity (FI), malnutrition, and infant and young child feeding practices (IYCF) were drawn and adapted from the NNS. The complete list of selected indicators is provided in Annex 1.2 Overview of key indicators. Additional components of the survey module that were excluded from this analysis due to limited relevance in the pilot sample, including components 2, 3, 4, 8, and 9 are discussed in Section 5: Recommendations for improved survey design and implementation, with recommendations to enhance their relevance in future data collection exercises.

The surveyed migrant-sending households in Bạc Liêu face diverse climate-related hazards, show predominantly male and working-age migration patterns, receive remittances of widely varying amounts, and experience notable food insecurity and child nutrition challenges⁷.

The pilot sample consists exclusively of migrant-sending households, predominantly from rural areas⁸. Specifically, 82.1% of these households are classified as rural, which aligns with the targeted proportions of sampled communes and wards across the surveyed districts in Bạc Liêu, including Đông Hải, Hòa Bình, Vĩnh Lợi, Hồng Dân, district-level town Giá Rai, and Bạc Liêu city. On average, each household reported approximately 1.66 migrant members, with the number of migrants per household ranging from 1 to 6.

Approximately half of the households (50.3% of the sample) reported exposure to climate hazards in the previous five years. Of these, 53% experienced only slow-onset hazards, 36% experienced only fast-onset hazards and 11% experienced both fast and slow-onset hazards. Among slow-onset hazards, the most frequently reported were changing rainfall patterns, affecting 88 households, followed by waterlogging, which impacted 19

⁷ For a detailed overview of indicators' minimum, maximum, mean and standard deviation values in the research sample, see Annex 1.2 Overview of sample and household characteristics.

⁸ For a detailed list of rural and urban surveyed sub-districts, see Annex 1.3 Overview of sample districts and rural/urban classification of sub-districts.

households. Increased agricultural pests or diseases were reported by five households, droughts affected three households, and sea-level rise was reported by one household. For fast-onset hazards, extreme heat was the most common, impacting 80 households. Floods affected four households, and extreme storms were reported by two households.

Migration predominantly involves male migrants of working age. On average, households reported just under one male migrant (0.97) per household, compared to 0.69 female migrants. Most migrants are aged between 16 and 44 years, representing the prime working age group, while very few are children or older adults. Specifically, 57.6% reported at least one migrant member aged 30-44 years, 47.1% of households reported at least one migrant member aged 16-29 years, 2.4% of households reported at least one migrant member over 59 years, and 1.1% of households reported at least one migrant member aged 15 or below. Moreover, 44.1% of households include migrant parents⁹ with a child under two years who remained in the household. Maternal migration¹⁰ was reported in 6.8% of households, with potential implications for childcare and nutrition.

The quantity of remittances received by households in the previous year varied greatly, ranging from 1 to 200 million Vietnamese Dong (VND)¹¹. On average, households received approximately 33.6 million VND in remittances the year prior to the survey, representing a significant contribution to households' resources (approximately 54.2%)¹² compared to the per capita average yearly income in Bạc Liêu in 2024 (General Statistic Office, 2025). However, half of the households received less than 24 million VND (median value), highlighting significant differences in financial support across households.

A majority of principal economic migrants, defined as the current migrant in a household who provides the greatest share of financial support among that household's current migrant members, as reported by the surveyed household member, have been away from home for over one year, and are thus classified here as long-term migrants. This includes 175 principal economic migrants (53%) who left between one and five years before the survey, and 68 (20%) who left more than five years ago (see Figure 2, below). Conversely, 27% of principal economic migrants are short-term migrants, with 56 (17%) having left less than three months prior, and 33 (10%) between three months and one year before the survey (see Figure 2, below).

⁹ Households with members that are currently living away from home and have left at least one child below two years of age behind are classified as having migrant parents.

¹⁰ Households with a "migrant mother" are identified through proxy indicators. These households include a current migrant who left behind at least one child below two years of age, at least one migrant household member who is female, and a survey respondent who is not the mother.

¹¹ As of November 20, 2025, US \$1.00 = VND 26,307.20 (xe.com, 2025).

¹² Preliminary data from the General Statistics Office, published in June 2025, reports an average monthly income per capita of VND 5.17 million for 2024 in Bạc Liêu, which corresponds to approximately VND 62.04 million per year.

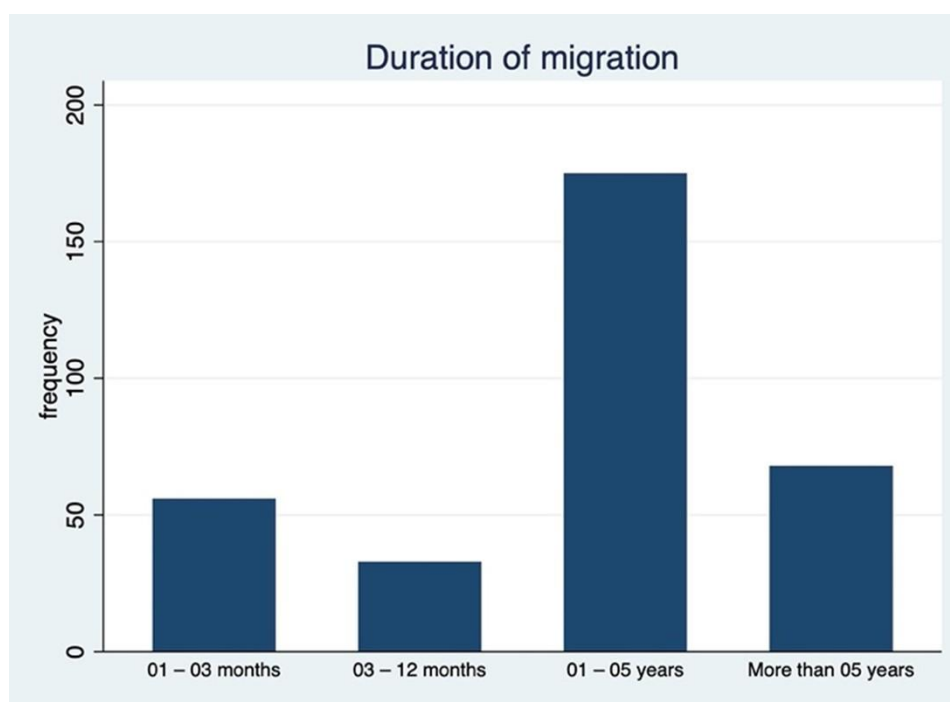


Figure 2. Duration of migration of household members classified as principal economic migrants at the time of the survey.

The food and nutrition security profile of households highlights diverse socio-economic challenges and consumption patterns. Approximately 13.2% of households experience moderate-to-severe food insecurity (FI), based on the FIES scale adjusted for the distribution of food insecurity severity in the sample¹³. This indicates significant difficulties in accessing adequate food due to a lack of money or other resources. Child nutritional status highlights notable vulnerabilities: stunting affects 15.7% of the households with children under five, wasting is present in 5.9% of households, and underweight prevalence affects 7.5% of households. Additionally, the co-occurrence of overweight (7.7%) and small body mass index (BMI)¹⁴ (6.4%) suggests a dual burden of over- and under-nutrition within the sample.

Infant and young child feeding (IYCF) indicators, which assess feeding practices of children under two years, highlight challenges for sufficient and healthy diets. In only 41.1% of the households, children aged 6–23 months achieve minimum dietary diversity (MDD), and in 37.9% meet minimum meal frequency (MMF), with just 23.2% receiving the minimum acceptable diet (MAD). Conversely, consumption of sweet beverages (SwB) is reported in 23.7% of households, whereas consumption of unhealthy food sentinel (UFC) is lower but still present at 5.3%. Additionally, in 21.1% of households, children consumed zero vegetables or fruits (ZVF), indicating poor dietary quality. Exclusive breastfeeding under 6 months (EBF) is maintained in only 21.6% of the households, while continued breastfeeding (CBF) for children between 12 and 23 months occurs in 18.9% of households.

3. Exploring climate, migration, and FNS linkages: An econometric analysis

This section builds on the climate, migration, and food and nutrition security (FNS) data presented above to offer a preliminary econometric analysis of the key relationships among these variables. It is grounded in the theoretical assumption that climate change, various forms of human mobility (including immobility, displacement, planned relocation, and migration), and FNS are interlinked through multi-directional relationships. This is detailed in the conceptual framework jointly developed by the Alliance and NIN (Vaselli et al., 2024). The

¹³ For more details on the definition of the FI indicator adjusted to the pilot sample, see Annex 1.1 Overview of key Indicators and Annex 1.4 Distribution of severity of food insecurity across the sample.

¹⁴ The small BMI indicator was added to this pilot study but is not currently measured by the NNS. For more details on the indicator, see Table A1.1 in Annex 1.

framework highlights how human mobility and social, economic, political, and climatic factors interact to influence food and nutrition security outcomes, with mobility both increasing and decreasing related risks (Rigaud et al., 2018; Ober, 2019; Adger et al., 2021; FAO et al., 2023; Savelli et al., 2023). Conversely, changes in social, economic, and climatic conditions, alongside food and nutrition security, are also expected to shape diverse forms of mobility (McLeman et al., 2021; Tuholske et al., 2024).

Based on these assumptions, this preliminary analysis of pilot data introduces a novel approach using NIN's annual NNS data collection to examine how mobility and climate change, mediated by other socio-economic factors, may be associated with increased or decreased risks to children's food and nutrition security. To this end, in this pilot analysis we selected three key hypotheses derived from a thematic and geographically specific literature review (Vaselli et al., 2024). The main findings are then presented in Section 4, below, to identify significant links between climate, migration, and FNS in surveyed districts of Bạc Liêu, highlight remaining data gaps, and guide the finalization and integration of the survey module into the yearly NNS process (see Section 5 for further detail).

3.1 Key hypotheses: Climate and migration linkages with FNS outcomes

Three main hypotheses are formulated and tested through econometric methods:

- Hypothesis 1: Exposure to climate hazards is associated with negative food and nutrition security (FNS) outcomes;
- Hypothesis 2: Migration is associated with positive household FNS outcomes through remittance receipt;
- Hypothesis 3: Parental migration¹⁴ is associated with negative FNS outcomes for children remaining in the household (see Figure 3, below).

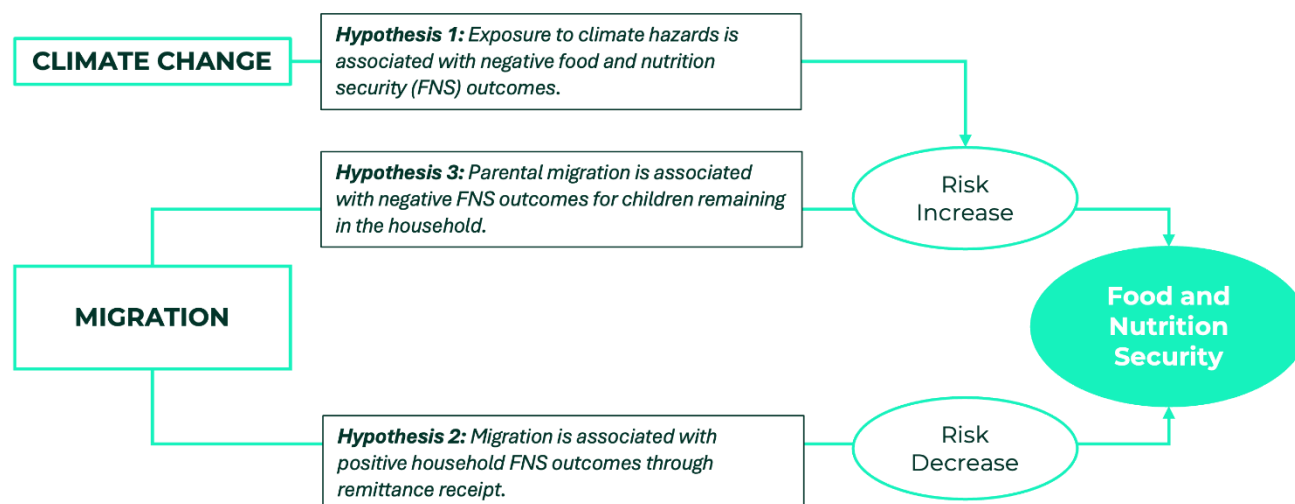


Figure 3. Visual representation of the three key hypotheses.

¹⁴ Households are classified as having migrant parents when current migrant household members have left behind at least one child below two years of age.

Hypothesis 1 reflects evidence that, in Vietnam, the exposure to both fast- and slow-onset climate hazards may negatively contribute to FNS outcomes (Nguyen, 2016; Bayrak et al., 2022). This assumption is particularly valid in rural contexts, including much of the Mekong Delta, where households' reliance on local food, land, and water systems (FLWS) for subsistence production and livelihood generation is more pronounced than in urban contexts.

Hypothesis 2 assumes, in line with the literature, that remittances can significantly contribute to households' access to safe and nutritious food, hence supporting positive FNS outcomes. In Vietnam, remittances are generally found to improve household FNS by increasing dietary diversity, calorie intake, and spending on proteins, vegetables, and fruits, with the strongest benefits observed in low-income regions and female-headed households (Vo, 2023).

Hypothesis 3 builds on the assumption that, while migration can contribute to households' FNS, parental migration specifically can negatively affect FNS outcomes due to a lack of childcare. While parental migration is found to increase per capita expenditure, it may also negatively impact children's health, education, and nutrition due to reduced parental care (Nguyen, 2016).

3.2 Analysis methods

To provide an initial descriptive exploration of the data, this analysis begins with simple two-group t-tests. A t-test assesses whether the mean of a food and nutrition security outcome significantly differs between two groups. This step is useful for highlighting meaningful patterns, but it is not intended to establish causation.

In particular, following our main hypotheses, four main t-tests are run:

- a. Exposure to climate hazards: households exposed to climate-related hazards vs. not exposed (Hypothesis 1)
- b. Remittances: households receiving above vs. below the median total remittance value in the last 12 months (Hypothesis 2).
- c. Parental migration (children <2): households where current migrants are parents of children under two vs. not parents (Hypothesis 3).
- d. Migrant mother (children <2): households with a migrant mother¹⁵ vs. households without a migrant mother (Hypothesis 3).

Each comparison is applied to key food and nutrition security outcome indicators (e.g., FI, malnutrition indicators, and IYCF indicators such as MDD, MMF, MAD, SwB, UFC, and ZVF). Differences in FNS results are presented in percentage points and accompanied by p-values which express the likelihood that the observed gap occurred by chance; smaller p-values indicate the gap is less likely to be random, hence more significant. Relevant results

¹⁵ Households with a "migrant mother" are identified through proxy indicators, including multiple conditions: the household has current migrants who left behind at least one child below two years of age; at least one of the migrants is a woman; the respondent is not the mother.

are discussed in Section 4.1, 4.2, and 4.3.

While t-tests highlight interesting patterns between climate, migration, and FNS, they do not adjust for other socio-economic factors (such as household size and composition, rural/urban location, ethnicity, and other demographic variables) that may influence the results. This means that observed differences may reflect a mix of these factors rather than the specific effects of interest. To provide more comprehensive estimates of the associations between climate or migration variables and food and nutrition security outcomes, we also perform multivariable OLS regression analyses. These models control for relevant household characteristics expected to influence FNS outcomes, enhancing precision and enabling us to determine whether the descriptive findings from the t-tests remain consistent when accounting for household context. Specifically, the following regression model is applied:

$$FNS_i = \beta_1 C_i + \beta_2 R_i + \beta_3 Moth_i + \beta_4 Ch_i + \beta_5 Eth_i + \varphi_d + \varepsilon_i,$$

where

FNS_i is one selected food and security indicator for each household i ,
 C_i is a dummy equal to 1 if the household i was exposed to any climate hazard,
 R_i represents the value of remittances (in log) that household i received in the last twelve months,
 Ch_i counts for the number of children living in the household i ,
 $Moth_i$ is a dummy equal to 1 if the mother is a migrant with children under 2 left behind in household i ,
 Eth_i is a dummy equal to 1 if the household i is an ethnic minority, finally
 φ_d are district fixed effects and
 ε_i are error terms are clustered at district level.

Regression findings are presented below in Section 4.4.

4. Initial findings on climate, migration, and FNS in Bạc Liêu: T-tests and regression insights on key hypotheses

Building on the analysis of significant t-test results for selected climate, migration, and food and nutrition security (FNS) indicators, this section offers a descriptive overview of key observed links between climate and migration variables with food insecurity, malnutrition, and infant and young child feeding (IYCF) practices. Full results of the t-test are reported in the Annexes 1.5 - 1.8. These three observations (Sections 4.1, 4.2, and 4.3) broadly confirm and detail the main research hypotheses and are further examined through econometric regression analysis (Section 4.4).

4.1 Observation 1: FNS Challenges in households exposed to climate hazards

Food Insecurity: Households exposed to climate-related hazards exhibit notably higher levels of moderate-to-severe food insecurity (FI)¹⁶ compared to those unaffected. This pattern is particularly evident among households experiencing slow-onset climate stresses. Specifically, 25.7% of households exposed to climate hazards report

¹⁶ FI was calculated on a different sample than malnutrition and IYCF indicators, only including responses with migrants who had left home at least one year prior to the survey, to align data with the 12-month time of FIES questions.

moderate-to-severe food insecurity, while the prevalence among unaffected households is under 1% (see Figure 4, below). Among these, households exposed to slow-onset hazards (such as drought, waterlogging, changing rainfall patterns, increasing agricultural pests or diseases and sea level rise) report a higher incidence at 34.7%, compared to 15.5% among those exposed to fast-onset events, like floods, extreme heat, and extreme storms.

Malnutrition: Among the households exposed to climate hazards, 8.4% have children below 5 years of age experiencing wasting, compared to 3.2% of the households not exposed to climate hazards (see Figure 4, below).

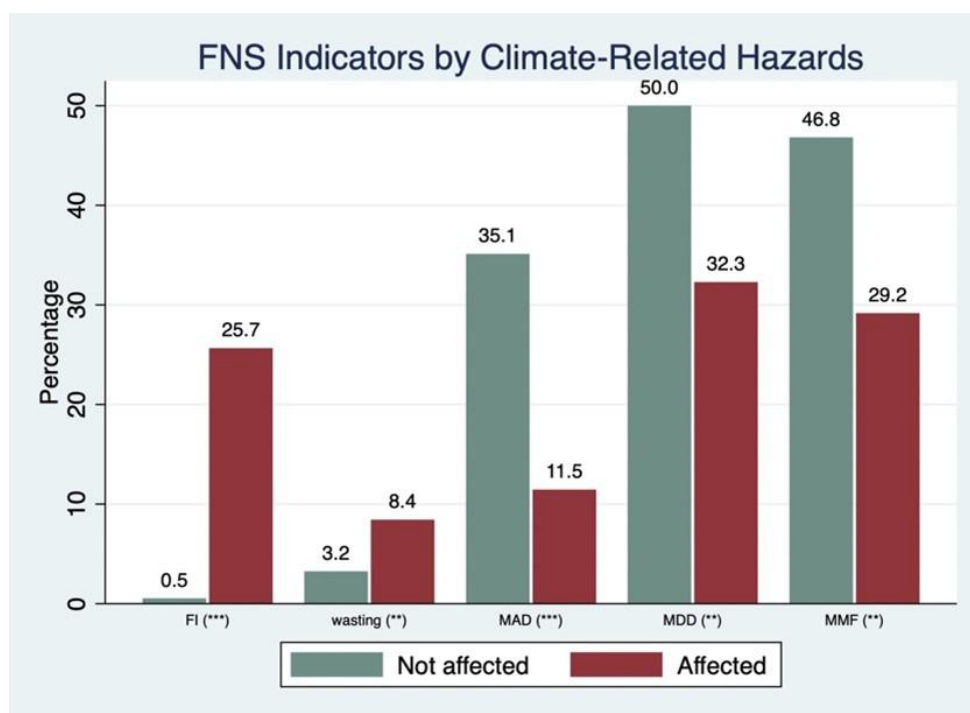


Figure 4. Overview of key food and nutrition security (FNS) indicators among households with and without reported exposure to climate hazards in the five years before the survey.

Infant and Youth Feeding Practices: Only 11.5% of the households exposed to climate hazards have children aged 6–23 months receiving a minimum acceptable diet (MAD), compared to 35.1% in unaffected households (see Figure 4, above). Similarly, 32.3% met minimum diet diversity (MDD) versus 50%, and 29.2% met minimum meal frequency (MMF) versus 46.8% (see Figure 4, above). Additionally, among the households exposed to fast-onset climate hazards (including floods, extreme heat, and extreme storms), children below 2 years are more likely to have consumed sweet beverages (SwB) and unhealthy food (UFC) in the day before the interview (36.3% vs 15.4% and 13.7% vs 1.9% respectively).

These differences are statistically significant (p-values ranging between 0 and 0.033), highlighting a negative link between exposure to climate hazards and households' food and nutrition security. These results align with Hypothesis 1 (see Section 3.1) and with increasing evidence demonstrating how both slow- and fast onset climate change-related hazards undermine livelihoods in rural households (which represent more than 80% of the pilot survey sample), most notably for small-scale agriculture-dependent households. Particularly, the reported climate-related hazards, such as floods, rising temperatures, changing rainfall patterns, and droughts, have been shown to reduce agricultural yields, damage household assets, and weaken economic resilience in Vietnam's Mekong Delta (Bayrak et al., 2022; Thi Nguyen et al., 2015). Collectively, these stresses can impact food availability and accessibility in the region, worsening FNS outcomes.

4.2 Observation 2: Better nutrition for children linked to higher remittances

Malnutrition: Among households that received more than the median value of VND 24 million in remittances in the 12 months prior to data collection, children under five experienced significantly less stunting (4.5%) compared to households that received fewer remittances (22.2%) (see Figure 5, below).

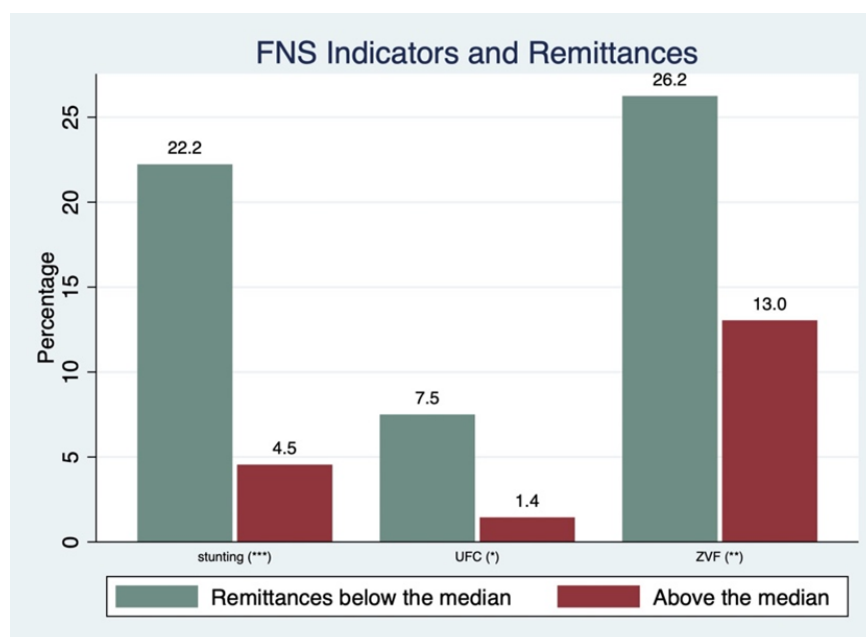


Figure 5. Overview of key food and nutrition security (FNS) indicators among households that received remittances below and above the median value of 24 million VND in the year before the survey.

Infant and Youth Feeding Practices: Among households that received more than 24 million VND in remittances in the 12 months preceding the interview, children under two are less likely to have consumed unhealthy food (UFC) in the previous day (1.4% compared to 7.5%) (see Figure 5, below). Additionally, in these households, children under two are less likely to have gone without consuming vegetables or fruit (ZVF) in the previous day (13.0% compared to 26.2%) (see Figure 5, above).

These differences are statistically significant (p-values ranging between 0 and 0.083), highlighting a positive link between remittances above VND 24 million per annum and household FNS, particularly concerning children's nutrition and feeding practices. These results are consistent with Hypothesis 2 and related literature showing that remittances can enhance economic security in migrant-sending households and contribute positively to food and nutrition outcomes (Vo, 2023). However, other important factors not accounted for in the t-test (such as socio-economic variables, shifting consumer behavior, market accessibility, or food costs) may also play a critical role in mediating how remittances contribute to FNS outcomes.

4.3 Observation 3: The role of parental migration on children's food and nutrition security

Food insecurity: While parental migration¹⁷ in the sample does not show a significant association with variations in food insecurity among households with children under two, households where the mother is classified as a migrant¹⁸ experience notably worse food security. Specifically, 26.9% of these households face moderate-to-severe food insecurity (FI), compared to 12.1% in households without migrant mothers (see Figure 6, below).

Malnutrition: In households without migrant parents, children under two years old have higher rates of wasting and underweight than in households with parental migration (see Figure 7 below). Approximately 10.6% of children in these households are affected by wasting, and 11.4% have a small body mass index

¹⁷ Households are classified as having migrant parents when current migrant household members have left behind at least one child below two years of age.

¹⁸ Households with a "migrant mother" are identified through proxy indicators, including multiple conditions: the household has current migrants who have left behind at least one child below two years of age; at least one of the migrants is a woman; the respondent is not the mother.

(small BMI), compared to only 2.9% and 1.9%, respectively, in households with migrant parents (see Figure 7, below). This difference likely reflects the general positive association of remittances with household food and nutrition security (see Observation 2). However, when focusing specifically on households where the mother is classified as a migrant, the association reverses: more children under five experience stunting (34.6% vs. 14.4%) (see Figure 6, below).

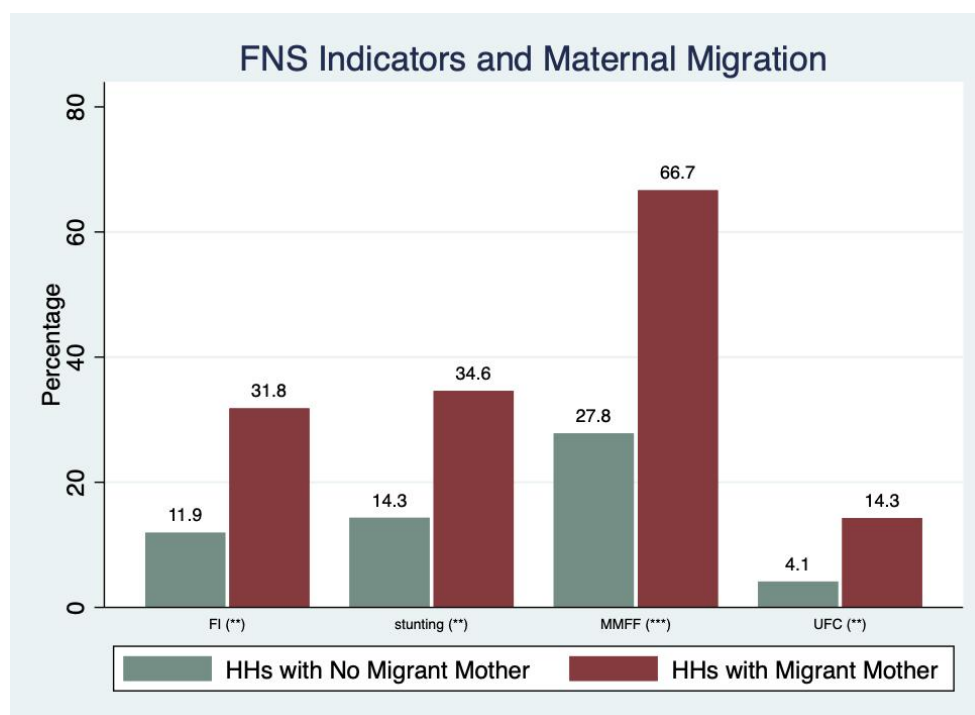


Figure 6. Overview of key food and nutrition security (FNS) indicators for children under 2 years with and without maternal migrants.

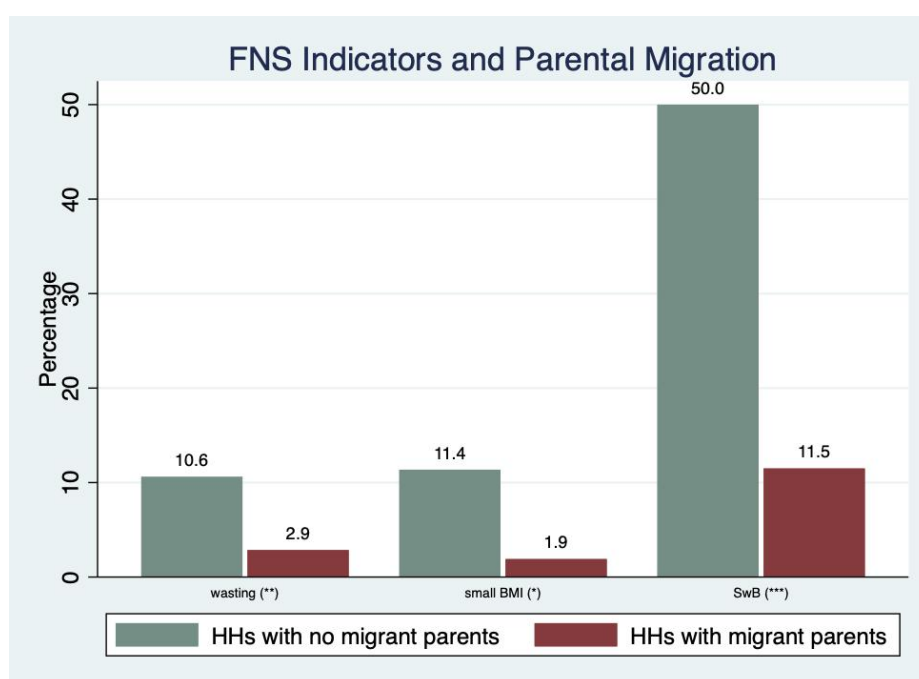


Figure 7. Overview of key food and nutrition security (FNS) indicators for children under 2 years with and without migrant parents.

Infant and Youth Feeding Practices: Children under two in households without migrant parents are much more likely to drink sugary beverages (SwB), with a rate of 50% compared to only 11.5% in households with migrant parents (see Figure 7, below). This result aligns overall with the assumed positive association in the sample between remittances (see Observation 2 above) and healthier food practices. Conversely, in households where the mother is classified as a migrant, children consume unhealthy foods (UFC) more frequently, with a rate of 14.3% compared to 4.1% in households without migrant mothers (see Figure 6, above). While the t-test cannot establish such links, this difference highlights that unhealthy feeding practices may both relate to limited access to healthy food (which can be compensated through remittances) as well as to lack of maternal care.

These results are statistically significant (p-values ranging between 0 and 0.05) and align in part with Hypothesis 3. Specifically, these findings highlight a twofold association of parental migration with both positive and negative FNS outcomes, where maternal migration and gender roles are critical variables. This in part reflects recent research highlighting the diverse ways migration influences FNS through remittances, for example, through the mediation of childcare dynamics, whereas protracted parental absence may negatively affect children's FNS (Nguyen, 2016). This t-test may reflect a complex interplay between the economic benefits of migration and the caregiving challenges shaped by gendered migration roles that require further exploration.

4.4 Understanding linkages: Regression model with key variables and FNS indicators

Using regression analysis on migrant-sending households and controlling for key variables linked to food and nutrition security, the study confirms strong associations between households' exposure to climate hazards and negative FNS outcomes (see Figure 8, below). Among socio-economic factors, remittance value and the presence of migrant mothers with children under two are confirmed as significant variables linked to FNS outcomes. Additionally, the regression highlights the importance of household size and the systemic socio-economic challenges facing ethnic minority households as influential factors shaping these outcomes. These socio-economic elements likely shape how households respond to climate stress, influence consumer behavior, and ultimately affect food and nutrition security. The regression validates earlier observations (see Sections 4.1, 4.2, and 4.3) on critical indicators such as moderate-to-severe food insecurity (FI) and malnutrition. However, only some infant and young child feeding (IYCF) indicators, including minimum acceptable diet (MAD) and minimum meal frequency (MMF), show significant but mixed results, suggesting complexities in how climate and migration affect feeding practices. This inconsistency partly arises from sample size limitations and the selection of control variables, highlighting opportunities for further research (see Section 5).

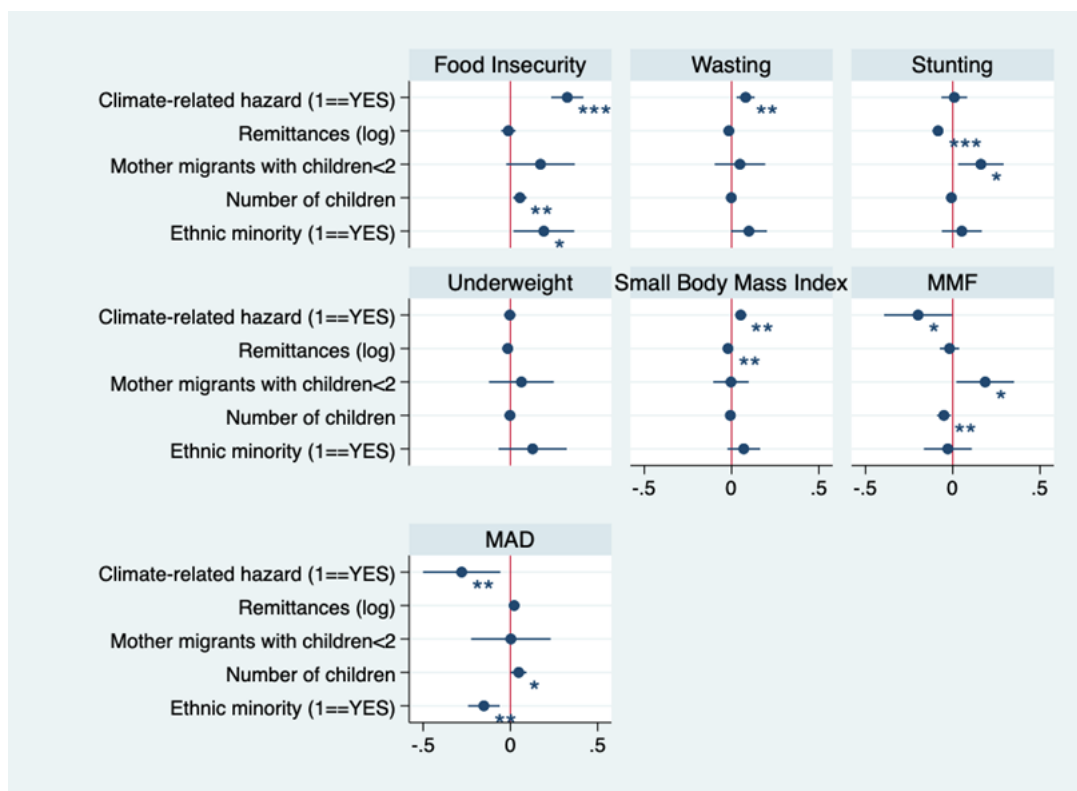


Figure 8. Overview of selected results of the regression analysis for key FNS indicators (on the right) and climate, migration, and demographic variables (on the left). The x-axis shows differences in percentage points, while asterisks indicate whether the difference is significant (*), very significant (**), or extremely significant (***). Results with no asterisks are not statistically significant.

Exposure to climate change-related hazards is confirmed to be associated with significantly greater risk for FNS outcomes. Affected households face a 32 percentage-point rise in moderate-to-severe food insecurity, an 8-point increase in child wasting under five. Additionally, these households see reductions in MMF by 19 points and MAD by 28 points. These results strongly support Hypothesis 1 and expand on Observation 1, demonstrating the substantial effect of climate hazards on FNS with improved precision and magnitude.

Where households are exposed to climate change-related hazards, remittances are confirmed to contribute to the mitigation of FNS risks. Remittances provide additional financial resources that contribute to FNS and likely support households managing the effects of climate-related hazards. This additional support improves their ability to source sufficient and nutritious food, reducing their vulnerability to food insecurity and malnutrition. Higher remittance amounts are linked to fewer nutritional challenges: a 1% increase in remittances is associated with an 8 percentage-point drop in the share of households with stunted children under five. These findings confirm Hypothesis 2 and provide robust evidence supporting Observation 2's findings.

However, in households with children under two where the mother is a migrant, remittances do not fully offset worsened nutritional outcomes. Such households show a 16 percentage-point increase in stunting compared to those without migrant mothers. Confirming Hypothesis 3's assumption related to maternal migration and consistent with Observation 3, this result suggests that childcare challenges linked to maternal migration may undermine the protective effect of remittances on children's nutrition.

Beyond the variables examined in the t-tests, the regression highlights that larger households and ethnic minority

increase FNS risks. Households with higher numbers of children show a higher incidence of moderate-to-severe food insecurity (FI) and are less likely to meet minimum meal frequency (MMF). Specifically, one more child in the household is associated with an increase of five percentage points of FI and a reduction of 5 percentage points of MMF. This likely occurs due to resource dilution, where limited food and financial resources must be shared among more family members, as found in other rural contexts (Olayemi, 2012). Conversely, households with more children are more likely to meet children's minimum acceptable diet (MAD). This result, apparently counterintuitive, should be further explored through additional variables. Additionally, households that reported being part of ethnic minorities (Hoa and Khơ-me) tend to experience significantly greater moderate-to-severe food insecurity (FI) (19 percentage points) and a reduction in MAD (15 percentage points) as compared to the households that are not part of ethnic minorities. This disparity reflects existing evidence (Vuong et al., 2022) and may arise from multiple social and economic factors, including possible exclusion from services, lower income opportunities, and historical marginalization, which collectively reduce their access to sufficient nutrition and/or shape nutritional practices.

Together, these findings highlight the intricate interplay of climate change, migration, and socio-economic factors in shaping household food and nutrition security. These results stress the need for targeted interventions and continued monitoring that account for both environmental impacts and household dynamics to effectively address FNS vulnerabilities. This nuanced analysis advances understanding beyond the initial hypotheses and underscores the complexity of sustaining FNS amid climate and migration challenges.

5. Recommendations for improved survey design and implementation

Building on the preliminary analysis of the pilot climate-related mobility survey module presented in Section 4, this section provides guidance to strengthen the survey design and implementation. These recommendations aim to enhance the survey's capacity to generate more accurate and actionable data that can directly inform national FNS, development, and climate adaptation policies.

5.1 Survey limitations, remaining data gaps, and recommended actions

Sample selection and integration within the NNS survey framework

The pilot sample was purposively selected from the larger NNS sample using a screening question. This approach was necessary due to limited resources and the smaller pilot size of approximately 400 households in Bạc Liêu province, compared to the representative NNS sample of 1,530 households. While this method ensured the pilot's relevance by focusing on a statistically significant group of migrant-sending households, it does not provide statistical representativeness at the provincial level, unlike the NNS sample. Additionally, resource limitations meant the pilot lacked a comparison group of households without migrants, restricting the ability to establish causal links between households' exposure to climate hazards, migration, and food and nutrition security.

To address these limitations, it is recommended to increase the sample size of the climate-related mobility module to match that of the full NNS sample, ensuring consistency across the data sets. This would enable statistically representative analysis at district and provincial levels and allow meaningful comparisons between rural and urban contexts. Furthermore, better integrating the climate-mobility module within the National Nutrition Strategy process is crucial to align research with broader policy frameworks. While this pilot's scope and timing

did not permit full integration with the NNS survey (e.g., the two surveys have been run in parallel, causing the repetition of some questions), a more comprehensive integration in future data collection cycles will enhance data contextualization and collection efficiency and enable the practical application of findings for policy and programming.

Survey component 1: Climate hazards

While the climate change hazards component of the questionnaire effectively identified links between exposure to climate hazards and food and nutrition security (FNS) outcomes, some adjustments are recommended to improve the accuracy and actionability of monitoring outputs. For example, the lists of slow- and fast-onset hazards affecting households could be tailored to rural and urban contexts, respectively, using the sub-district area code to select the appropriate list. To provide a more complete understanding of climate-FNS connections, the component could also include a list of experienced impacts, such as effects on financial resources, household assets, family networks, and estimated loss values. This would better capture the mediating factors linking exposure to and impacts of climate hazards to FNS outcomes.

Survey components 2 and 3: Displacement and planned relocation

As the pilot data collection counted too few displaced or relocated households for meaningful analysis, these data were not discussed. While this limitation could be related to the relatively small pilot sample, these indicators are increasingly relevant in Vietnam, where 2.8 million internal displacements were triggered by floods and storms between 2020 and 2024 (IDMC, 2024). Purposively targeting geographies where these phenomena are pronounced would result in future survey activities producing data of sufficient computational power. Additionally, deeper collaboration with local partners implementing the survey could result in clearer questionnaire wording and improved respondent comprehension of questions related to these phenomena.

Survey component 4: Involuntary immobility

Involuntary immobility is a complex phenomenon that, despite its relevance for FNS risks and relevant nutrition and climate change policies (see Vaselli et al., 2024), remains complex to track. As the pilot data collection did not collect reliable data regarding involuntary immobility, we recommend that alternative ways be explored with local stakeholders to identify key socio-economic proxy indicators that may lead to involuntary immobility, hence indirectly influencing FNS risks. For example, family arrangements, lack of social networks in destination areas, physical constraints, or limited economic resources could all contribute to involuntary immobility (Schewel, 2020) and/or limit households' successful in-situ adaptation to climate hazards and FNS risks.

Survey Component 5: Migration

The migration component of the survey collects essential demographic data on household migrants, including their parental roles. To improve accuracy, it is recommended to develop clear indicators explicitly identifying whether the mother and the father of children measured by the NNS are migrants (instead of using a proxy indicator). This will enable a more precise understanding of how maternal and paternal migration status relate to IYCF practices and child FNS outcomes in general. In addition, the module could capture the duration and intermittency of maternal and paternal migration (e.g., how long and how frequently mothers are absent from the household) to better assess its temporal effects on child breastfeeding, childcare arrangements, and feeding practices.

Survey components 6, 7, 8, and 9: Economic migration, remittances, main food purchasing channels, and food consumption

Module components 6, 7, 8, and 9 collect data on the value and frequency of remittances received by migrant-sending households, households' primary food purchasing channels, and 24-hour household food consumption patterns. The pilot analysis revealed significant relationships between remittance values above the median and improved household food and nutrition security (FNS). However, remittance effects on FNS depend not only on threshold amounts but also on contextual and mediating factors. Future research can further explore how migration, remittances, and households' main food purchasing strategies relate to climate impacts, consumption behaviors and food systems transformations more broadly. To enhance the accuracy and policy relevance of monitoring, it is recommended to identify and track locally relevant mediating variables (such as consumer preferences, climate-related impacts on market access, food price volatility, and local food availability) that can support explaining how remittances translate into dietary and nutritional outcomes. These variables should capture the distinct pathways through which remittances contribute to FNS in both urban and rural households, considering variations in urban food systems, dietary transitions, and lifestyle factors. Although component 9 is not part of the standard NNS, it was introduced by NIN to capture household food consumption and IYCF-related behaviors that are essential for understanding FNS within climate–mobility contexts. To improve coherence and strengthen policy relevance, future rounds should formalize this component and align it more closely with climate- and mobility-specific indicators to ensure systematic and comparable assessment of how climate stressors and migration shape dietary quality and nutrition outcomes.

6. Guidance to support policy development

This pilot study explored the complex links between climate change, migration, and food and nutrition security (FNS) in Vietnam, highlighting key socio-economic and demographic influences on household outcomes. While based on a limited sample without causal claims, the findings offer valuable insights to guide further research for policy action. Table 1, below, presents key insights aligned with Vietnam's National Nutrition Strategy 2021–2030 and vision to 2045 and the National Action Plan on Food Systems Transformation, supporting national goals to reduce malnutrition, improve diet quality, and address inequalities among vulnerable groups.

	Key lessons on climate, migration, and FCNS linkages	Key recommendations for future research and policy uptake
1	Climate-related hazards are associated with negative FNS outcomes, including FI, child malnutrition, and negative IYCF practices, with diverse and nuanced implications for both slow- and fast-onset climate hazards.	Conduct focused studies to quantify climate impact pathways on FNS using representative samples and disaggregating rural and urban impacts to inform climate sensitive FNS policies.
2	Remittances mitigate FNS risks, especially in households exposed to climate-related hazards, as increased remittance values correlate with reductions in child stunting and low BMI.	Investigate how remittance usage varies across rural and urban areas while tracking locally specific mediating variables to identify pathways linking remittances value, food purchasing channels, and FNS outcomes amid climate hazards and food systems transformation, thereby informing localized mechanisms to enhance FNS.

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	Key lessons on climate, migration, and FCNS linkages	Key recommendations for future research and policy uptake
3	Children in households with migrant mothers face higher stunting rates, suggesting caregiving challenges despite financial support.	Explore childcare dynamics in migrant-sending households and quantify FNS implications with representative samples to inform gender-sensitive FNS policies.
4	Larger households experience greater food insecurity (FI) and lower minimum meal frequency (MMF) due to resource dilution.	Research intra-household food allocation and resource constraints in differently sized families to inform targeted FNS support.
5	Hoa and Khơ-me ethnic minority households have higher food insecurity (FI) and lower dietary diversity (MDD) reflecting systemic inequalities among migrant-sending households.	Study socio-economic factors affecting ethnic minorities' FNS and barriers to service access to inform more inclusive climate and migration sensitive FNS policies.
6	Infant and Young Child Feeding (IYCF) indicators present mixed results, indicating complex influences under climate and migration stress.	Conduct interdisciplinary and mixed-method research on behavioral, environmental, and socio-economic drivers of IYCF practices in FNS vulnerable communities.
7	Integrated monitoring and multi-sectoral coordination are critical to addressing evolving climate and migration challenges.	Design longitudinal, mixed-method studies and strengthen intersectoral research collaboration to inform adaptive, evidence-based policies.

Table 1. Summary of key lessons and recommendations for future research for policy uptake.

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Annex 1: Methodological notes from statistical analysis

A1.1 Overview of key indicators

Indicator	Definition	Reference(s)
Food and Nutrition Security (FNS)		
Moderate-severe food insecurity (FI)	Dummy=1 if food insecurity severity, as measured using the Rasch model applied to local context, the FIES scale, is >0. The choice of 0 as the threshold to distinguish food security from moderate-severe food insecurity has been made based on the distribution of food insecurity severity of the households in our sample (see Annex 1.4).	FIES indicators adjusted for local context, the FAO, 2016 ¹⁹ ; FAO, 2018 ²⁰
Wasting	Dummy=1 if the weight-for-height score of the youngest child (below 5 years of age) is <-2 of the WHO Child growth standards median	WHO, n.d. ^{20A} ; Leroy, 2011 ^{20B}
Small BMI	Dummy=1 if the body mass index (BMI)-for-age score of the youngest child (below 5 years of age) is <-2 SD of the WHO Child growth standards median	Leroy, 2011 ^{20B}
Stunting	Dummy=1 if the height-for-age score of the youngest child (below 5 years of age) is <-2 SD of the WHO Child growth standards median	WHO, n.d. ^{20A} ; Leroy, 2011 ^{20B}
Underweight	Dummy=1 if the weight-for-age score of the youngest child (below 5 years of age) is <-2 SD of the WHO Child growth standards median	WHO, n.d. ^{20A} ; Leroy, 2011 ^{20B}
Minimum dietary diversity 6–23 months (MDD)	Dummy= 1 if children between 6–23 months of age consumed foods and beverages from at least five out of eight defined food groups during the previous day	WHO & UNICEF, 2021 ²¹
Minimum meal frequency 6–23 months (MMF)	Dummy=1 if children between 6–23 months of age consumed solid, semi-solid or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more during the previous day	WHO & UNICEF, 2021 ²¹
Minimum acceptable diet 6–23 months (MAD)	Dummy=1 if children between 6–23 months of age consumed a minimum acceptable diet during the previous day	WHO & UNICEF, 2021 ²¹
Sweet beverage consumption 6–23 months (SwB)	Dummy=1 if children between 6–23 months of age consumed a sweet beverage during the previous day	WHO & UNICEF, 2021 ²¹

¹⁹ <https://openknowledge.fao.org/server/api/core/bitstreams/823b2fcd-bc52-4371-a31d-ea2aa74e63d5/content>

²⁰ https://elearning.fao.org/pluginfile.php/491591/mod_scorm/content/5/story_content/external_files/SDG2.1.2_lesson4.pdf

^{20A} <https://www.who.int/data/nutrition/nlis/info/malnutrition-in-children>

^{20B} <https://EconPapers.repec.org/RePEc:boc:bocode:s457279>

²¹ <https://www.who.int/publications/i/item/9789240018389>

Indicator	Definition	Reference(s)
Food and Nutrition Security (FNS)		
Unhealthy food consumption 6–23 months (UFC)	Dummy=1 children 6–23 months of age consumed selected sentinel unhealthy foods during the previous day	WHO & UNICEF, 2021 ²¹
Zero vegetables or fruit consumption 6–23 (ZVF)	Dummy= 1 if children between 6–23 months of age did not consume any vegetables or fruits during the previous day	WHO & UNICEF, 2021 ²¹
Climate Hazards		
Household exposure to climate hazards	Dummy=1 if the household experiences at least 1 climate hazards selected from the list below: • flood • drought • extreme storm • extreme temperatures (heatwaves) • increased soil salinity • saltwater intrusion • waterlogging • increase in agricultural pests or disease (crops or livestock) • changing rainfall patterns (increasing or decreasing rainfall, changing timing of rainy and dry seasons) • landslides (in residential or agricultural land) • land subsidence (in residential or agricultural land) • sea-level rise	Vaselli et al., 2024 ²²
Households exposed to fast-onset climate hazards	Dummy=1 if the household experiences at least 1 climate change-related hazard selected from the list below: • floods • extreme storm • extreme temperatures • landslides (in residential or agricultural land)	Vaselli et al., 2024 ²²

Table continued on next page

²² <https://hdl.handle.net/10568/145347>

Indicator	Definition	Reference(s)
Climate Hazards		
Households exposed to slow-onset climate related hazards	Dummy=1 if the household experiences at least 1 climate change-related hazard selected from the list below: • drought • increased soil salinity • saltwater intrusion • waterlogging • changing rainfall patterns (increasing or decreasing rainfall, changing timing of rainy and dry seasons) • increase in agricultural pests or disease (crops or livestock) • land subsidence (in residential or agricultural land) • sea level rise	Vaselli et al., 2024 ²²
Migration		
Migrant-sending household	Dummy=1 if the respondent's household has at least 1 migrant. <u>Migrant</u>: household member who is currently living away since at least 1 month, excluding if they moved away for purposes of recreation, holiday, religious pilgrimage, or medical treatment. <u>Household member</u>: people with family and extended family relationships who lived together for at least 6 months in the last 5 years. Children younger than 6 months are also part of the household.	Vaselli et al., 2024 ²²
Principal economic migrant	The current migrant in a household who provides the greatest share of financial support among that household's current migrant members, as reported by the surveyed household member	Authors' own definition
Short-term migrant	Dummy=1 if the principal economic migrant has been away from the household for less than 12 months.	Adapted from IOM, 2019 ²³

²² <https://hdl.handle.net/10568/145347>

²³ https://publications.iom.int/system/files/pdf/iml_34_glossary.pdf

Indicator	Definition	Reference(s)
Migration		
Long-term migrant	Dummy=1 if the respondent's household has at least 1 migrant. <u>Migrant</u>: household member who is currently living away since at least 1 month, excluding if they moved away for purposes of recreation, holiday, religious pilgrimage, or medical treatment. <u>Household member</u>: people with family and extended family relationships who lived together for at least 6 months in the last 5 years. Children younger than 6 months are also part of the household.	Adapted from IOM, 2019 ²³
Rural household	Household located in a rural unit ("Commune")	GSO, n.d. ²⁴
Short-term migrant	Dummy=1 if the principal economic migrant has been away from the household for less than 12 months.	Adapted from IOM, 2019 ²³
Household with parental migrants	Household where current migrants have left behind at least 1 child below 2 years of age	Vaselli et al., 2024 ²²
Household with maternal migrant	Household where current migrants have left behind at least 1 child below 2 years of age; at least 1 of the migrants is a woman; the respondent is not the mother	Vaselli et al., 2024 ²²
Value of remittances	Total value in VND of the total remittances received by the household from all its migrants in the past 12 months.	Vaselli et al., 2024 ²²

²² <https://hdl.handle.net/10568/145347>

²³ https://publications.iom.int/system/files/pdf/iml_34_glossary.pdf

²⁴ <https://danhmuchiachinh.gso.gov.vn/>

A1.2 Overview of sample and household characteristics

Profile of migrant-sending households				
Variable	Mean value	Standard deviation	Min value	Max value
Rural household	0.821	0.384	0.000	1.000
Number of migrants	1.663	0.864	1.000	6.000
Value of remittances	33.601	33.626	1.000	200.000
Households exposed to climate hazards	0.503	0.501	0.000	1.000
Households exposed to fast-onset climate hazards	0.237	0.426	0.000	1.000
Household exposed to slow-onset climate hazards	0.324	0.468	0.000	1.000

Table 3. Descriptive overview of the profile of migrant-sending households in the sample

Profile of migrants				
Variable	Mean value	Standard deviation	Min value	Max value
Gender				
Number male migrants	0.974	0.715	0.000	5.000
Number female migrants	0.689	0.624	0.000	3.000
Age				
0-15 years (1==YES)	0.011	0.102	0.000	1.000
16-29 years (1==YES)	0.471	0.500	0.000	1.000
30-44 years (1==YES)	0.576	0.495	0.000	1.000
45-59 years (1==YES)	0.113	0.317	0.000	1.000
>59 years (1==YES)	0.024	0.152	0.000	1.000
Households with children under two years with parent migrants	0.441	0.498	0.000	1.000
Households with children under two years with mother migrants	0.068	0.253	0.000	1.000

Table 4. Descriptive overview of the profile of migrants in the sample

Profile of migrant-sending households

Variable	Mean value	Standard deviation	Min value	Max value
Moderate-severe food insecurity	0.132	0.338	0.000	1.000
Stunting	0.157	0.365	0.000	1.000
Wasting	0.059	0.235	0.000	1.000
Underweight	0.075	0.263	0.000	1.000
Overweight	0.077	0.267	0.000	1.000
Small BMI	0.064	0.245	0.000	1.000
Minimum dietary diversity 6–23 months (MDD)	0.411	0.493	0.000	1.000
Minimum meal frequency 6–23 months (MMF)	0.379	0.486	0.000	1.000
Minimum acceptable diet 6–23 months (MAD)	0.232	0.423	0.000	1.000
Sweet beverage consumption 6–23 months (SwB)	0.237	0.426	0.000	1.000
Moderate-severe food insecurity	0.132	0.338	0.000	1.000
Stunting	0.157	0.365	0.000	1.000
Wasting	0.059	0.235	0.000	1.000
Underweight	0.075	0.263	0.000	1.000
Overweight	0.077	0.267	0.000	1.000
Small BMI	0.064	0.245	0.000	1.000
Minimum dietary diversity 6–23 months (MDD)	0.411	0.493	0.000	1.000
Minimum meal frequency 6–23 months (MMF)	0.379	0.486	0.000	1.000
Minimum acceptable diet 6–23 months (MAD)	0.232	0.423	0.000	1.000
Sweet beverage consumption 6–23 months (SwB)	0.237	0.426	0.000	1.000
Unhealthy food consumption 6–23 months (UFC)	0.053	0.224	0.000	1.000
Zero vegetables or fruit consumption 6–23 (ZVF)	0.211	0.409	0.000	1.000
Bottle feeding 0–23 months (BoF)	0.568	0.497	0.000	1.000
Exclusive breastfeeding under 6 months (EBF)	0.216	0.412	0.000	1.000
Continued breastfeeding 12–23 months (CBF)	0.189	0.393	0.000	1.000

Table 5. Descriptive overview of the food and nutrition security profile of migrant-sending households in the sample

A1.3 Overview of sample districts and rural/urban classification of sub-districts

Area Code	District	Commune/Ward	Rural/Urban
31981	Dong Hai	Xã Long Điền	Rural
31993	TX dong hai	Xã Định Thành	Rural
31988	TX dong hai	Xã An Trạch A	Rural
31985	TX dong hai	Xã Điền Hải	Rural
31975	Dong Hai	Xã Long Điền Đông	Rural
31915	Hoa Binh	Xã Minh Diệu	Rural
31927	Vinh Loi	Xã Vĩnh Hậu	Rural
31924	Vinh Loi	Xã Vĩnh Mỹ B	Rural
31933	Hoa Binh	Xã Vĩnh Mỹ A	Rural
31882	TP Bac Lieu	Xã Vĩnh Thanh	Rural
31858	Hong Dan	Xã Vĩnh Lộc	Rural
31863	Hong Dan	Xã Ninh Thạnh Lợi A	Rural
31864	Hong Dan	Xã Ninh Thạnh Lợi	Rural
31846	Hong Dan	Xã Ninh Quới	Rural
31849	Hong Dan	Xã Ninh Quới A	Rural
31828	TP Bac Lieu	Phường 8	Urban
31840	TP Bac Lieu	Xã Hiệp Thành	Rural
31822	TP Bac Lieu	Phường 7	Urban
31834	TP Bac Lieu	Xã Vĩnh Trạch	Rural
31942	TX Gia Rai	Phường 1	Urban
31951	TX Gia Rai	Phường Láng Tròn	Urban
31957	Hong Dan	Xã Tân Phong	Rural
31963	TX Gia Rai	Xã Phong Thạnh A	Rural
31969	TX Gia Rai	Xã Tân Thạnh	Rural
31900	Vinh Loi	Thị trấn Châu Hưng	Rural
31912	Vinh Loi	Xã Châu Thới	Rural
31906	Vinh Loi	Xã Hưng Thành	Rural

Table 6. Sample districts and communes/wards

A1.4 Distribution of severity of food insecurity across the sample

We measure food insecurity severity using the Rasch model applied to the FIES scale, as indicated in (FAO, 2016) and (FAO, 2018). We then computed a dummy variable equal to 1 for the households with food insecurity severity higher than 0; 0 otherwise. The choice of 0 as the threshold to distinguish food security from moderate-severe food insecurity has been made based on the distribution of food insecurity severity of the households in our sample (see Figure 9).

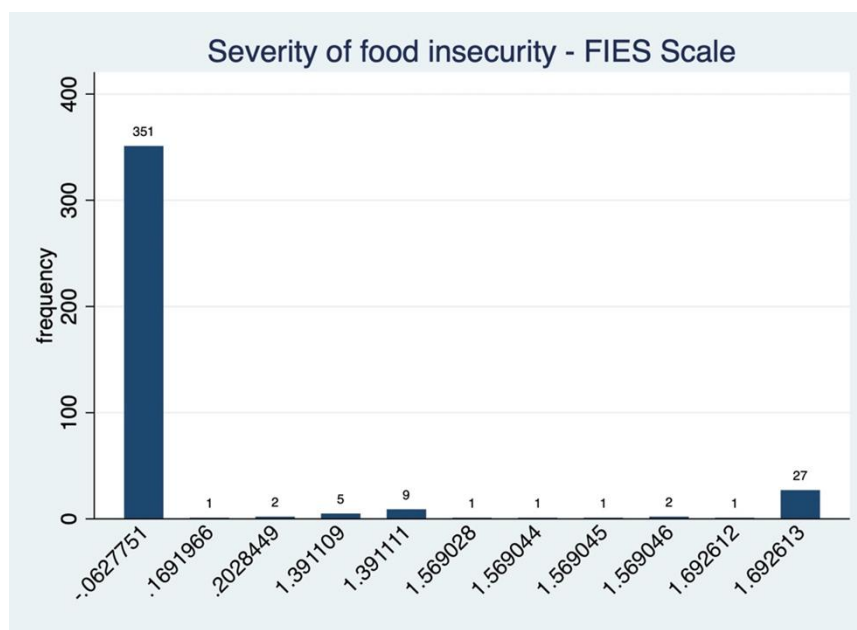


Figure 9. Distribution of the severity of food insecurity according to the FIES scale.

A1.5 Two-sample t-test with equal variances comparing FNS indicators between households exposed and households not exposed to climate hazards

	obs1	obs2	Mean1	Mean2	dif	St Err	t value	p value
FI	189	191	.005	.257	-.252	.033	-7.8	0
stunting	185	190	.146	.169	-.022	.037	-.6	.551
wasting	185	190	.033	.084	-.052	.024	-2.15	.033
underweight	185	190	.06	.089	-.03	.027	-1.1	.27
small bmi	185	190	.049	.079	-.03	.026	-1.2	.232
overweight	185	190	.087	.069	.018	.028	.65	.514
Ever breastfed (EvBF) by neg climat~1	94	96	.915	.875	.04	.044	.9	.373

Table continues on next page

	obs1	obs2	Mean1	Mean2	dif	St Err	t value	p value
Minimum milk feeding frequency for non-breastfed children 6–23 months (MMFF) by neg clima~1	94	96	.308	.334	-.025	.068	-.35	.716
Egg and/or flesh food consumption 6–23 months (EFF) by neg clima~1	94	96	.67	.511	.16	.071	2.25	.025
Minimum acceptable diet 6–23 months (MAD) by neg clima~1	94	96	.351	.115	.237	.059	4	0
Sweet beverage consumption 6–23 months (SwB) by neg clima~1	94	96	.224	.25	-.026	.062	-.45	.668
Unhealthy food consumption 6–23 months (UFC) by neg clima~1	94	96	.032	.073	-.041	.033	-1.25	.208
Zero vegetable or fruit consumption 6–23 months (ZVF) by neg clima~1	94	96	.192	.229	-.037	.06	-.65	.526
Bottle feeding 0–23 months (BoF) by neg clima~1	94	96	.596	.541	.054	.072	.75	.455
Early initiation of breastfeeding (EIBF) by neg climat~1	94	96	.489	.344	.145	.071	2.05	.042
Exclusive breastfeeding under 6 months (EBF) by neg climat~1	94	96	.16	.271	-.112	.06	-1.85	.063

Table continues on next page

	obs1	obs2	Mean1	Mean2	dif	St Err	t value	p value
Mixed milk feeding under 6 months (MixMF) by neg climat~1	94	96	.011	.011	0	.015	0	.988
Continued breastfeeding 12-23 months (CBF) by neg climat~1	94	96	.244	.136	.11	.057	1.95	.055
Introduction of solid, semi-solid or soft foods 6-8 months (ISSSF) by neg climat~1	94	96	.032	.094	-.062	.035	-1.75	.081
Minimum dietary diversity 6-23 months (MDD) by neg climat~1	94	96	.5	.323	.177	.071	2.5	.013
Minimum meal frequency 6-23 months (MMF) by neg climat~1	94	96	.468	.291	.176	.07	2.55	.012
Mixed milk feeding under 6 months (MixMF) by neg climat~1	94	96	.011	.011	0	.015	0	.988

A1.6 Two-sample t-test with equal variances comparing FSN indicators between households receiving below and above-median remittances

	obs1	obs2	Mean1	Mean2	dif	St Err	t value	p value
FI	154	134	.163	.112	.051	.041	1.25	.219
stunting	153	132	.222	.045	.177	.04	4.4	0
wasting	153	132	.066	.053	.013	.028	.45	.662
underweight	153	132	.091	.045	.046	.03	1.5	.13
small bmi	153	132	.066	.053	.013	.028	.45	.662
overweight	153	132	.059	.045	.013	.026	.5	.616

Table continues on next page

	obs1	obs2	Mean1	Mean2	dif	St Err	t value	p value
Ever breastfed (EvBF) by remittance~e	80	69	.875	.927	-.052	.05	-1.05	.291
Minimum milk feeding frequency for non-breastfed children 6–23 months (MMFF) by remittance~m	80	69	.35	.232	.118	.075	1.6	.117
Egg and/or flesh food consumption 6–23 months (EFF) by remittance~m	80	69	.562	.638	-.075	.081	-.95	.354
Minimum acceptable diet 6–23 months (MAD) by remittance~m	80	69	.212	.246	-.034	.07	-.5	.626
Sweet beverage consumption 6–23 months (SwB) by remittance~m	80	69	.212	.304	-.092	.072	-1.3	.202
Unhealthy food consumption 6–23 months (UFC) by remittance~m	80	69	.075	.015	.06	.035	1.75	.083
Zero vegetable or fruit consumption 6–23 months (ZVF) by remittance~m	80	69	.263	.131	.132	.066	2	.045
Bottle feeding 0–23 months (BoF) by remittance~m	80	69	.5	.623	-.123	.082	-1.5	.133
Early initiation of breastfeeding (EIBF) by remittance~e	80	69	.425	.464	-.039	.082	-.45	.638
Exclusive breastfeeding under 6 months (EBF) by remittance~e	80	69	.188	.276	-.088	.069	-1.25	.205
Mixed milk feeding under 6 months (MixMF) by remittance~e	80	69	0	.029	-.029	.019	-1.55	.127
Continued breastfeeding 12–23 months (CBF) by remittance~e	80	69	.175	.246	-.072	.067	-1.05	.288
Introduction of solid, semi-solid or soft foods 6–8 months (ISSSF) by remittance~e	80	69	.062	.058	.005	.04	.1	.908
Minimum dietary diversity 6–23 months (MDD) by remittance~e	80	69	.375	.45	-.074	.081	-.9	.361

	obs1	obs2	Mean1	Mean2	dif	St Err	t value	p value
Minimum meal frequency 6–23 months (MMF) by remittance~e	80	69	.4	.348	.052	.08	.65	.515

A1.7 Two-sample t-test with equal variances comparing FSN indicators between households with parental migrants and households without parental migrants

	obs1	obs2	Mean1	Mean2	dif	St Err	t value	p value
FI	133	105	.143	.134	.009	.045	.2	.834
stunting	132	105	.137	.172	-.035	.047	-.75	.457
wasting	132	105	.106	.029	.077	.034	2.3	.022
underweight	132	105	.084	.057	.026	.034	.75	.44
small bmi	132	105	.114	.019	.095	.034	2.85	.005
overweight	132	105	.106	.048	.059	.036	1.65	.101
Ever breastfed (EvBF) by children u~i	28	87	.822	.908	-.087	.069	-1.25	.211
Minimum milk feeding frequency for non-breastfed children 6–23 months (MMFF) by children ~h	28	87	.428	.31	.118	.103	1.15	.254
Egg and/or flesh food consumption 6–23 months (EFF) by children ~h	28	87	.678	.54	.139	.107	1.3	.201
Sweet beverage consumption 6–23 months (SwB) by children ~h	28	87	.5	.115	.385	.082	4.75	0
Unhealthy food consumption 6–23 months (UFC) by children ~h	28	87	.072	.058	.014	.052	.25	.79
Zero vegetable or fruit consumption 6–23 months (ZVF) by children ~h	28	87	.214	.173	.042	.085	.5	.622
Bottle feeding 0–23 months (BoF) by children ~h	28	87	.75	.517	.233	.106	2.2	.03

	obs1	obs2	Mean1	Mean2	dif	St Err	t value	p value
Early initiation of breastfeeding (EIBF) by children u~i	28	87	.428	.425	.004	.108	.05	.976
Exclusive breastfeeding under 6 months (EBF) by children u~i	28	87	.178	.276	-.098	.095	-1.05	.306
Mixed milk feeding under 6 months (MixMF) by children u~i	28	87	0	.011	-.011	.021	-.55	.573
Continued breastfeeding 12-23 months (CBF) by children u~i	28	87	.107	.149	-.043	.076	-.55	.578
Introduction of solid, semi-solid or soft foods 6–8 months (ISSSF) by children u~i	28	87	.072	.092	-.021	.061	-.35	.74
Minimum dietary diversity 6–23 months (MDD) by children u~i	28	87	.535	.356	.179	.106	1.7	.093
Minimum meal frequency 6–23 months (MMF) by children u~i	28	87	.322	.38	-.058	.105	-.55	.584
Early initiation of breastfeeding (EIBF) by children u~i	28	87	.428	.425	.004	.108	.05	.976
Exclusive breastfeeding under 6 months (EBF) by children u~i	28	87	.178	.276	-.098	.095	-1.05	.306
Mixed milk feeding under 6 months (MixMF) by children u~i	28	87	0	.011	-.011	.021	-.55	.573
Continued breastfeeding 12-23 months (CBF) by children u~i	28	87	.107	.149	-.043	.076	-.55	.578
Introduction of solid, semi-solid or soft foods 6–8 months (ISSSF) by children u~i	28	87	.072	.092	-.021	.061	-.35	.74
Minimum dietary diversity 6–23 months (MDD) by children u~i	28	87	.535	.356	.179	.106	1.7	.093

Table continues on next page

	obs1	obs2	Mean1	Mean2	dif	St Err	t value	p value
Minimum meal frequency 6–23 months (MMF) by remittance~e	28	87	.322	.38	-.058	.105	-.55	.584

A1.8 Two-sample t-test with equal variances comparing FSN indicators between households with migrant mothers and households with no migrant mothers

	obs1	obs2	Mean1	Mean2	dif	St Err	t value	p value
fies mod severe fi~g	268	22	.119	.318	-.198	.075	-2.64	0.004
stunting by mother~r	349	26	.144	.346	-.203	.073	-2.75	.006
wasting by mother ~2	349	26	.058	.077	-.019	.048	-.4	.682
underweight by mot~n	349	26	.072	.116	-.044	.053	-.8	.415
small bmi by mother~r	349	26	.066	.038	.028	.05	.55	.583
overweight by moth~d	349	26	.08	.038	.042	.054	.75	.443
Ever breastfed (EvBF) by mother mig~0	169	21	.899	.857	.043	.072	.6	.554
Minimum milk feeding frequency for non-breastfed children 6–23 months (MMFF) by mother mi~	169	21	.278	.666	-.389	.105	-3.7	.001
Egg and/or flesh food consumption 6–23 months (EFF) by mother mi~	169	21	.58	.666	-.087	.115	-.75	.449
fies mod severe fi~g	268	22	.119	.318	-.198	.075	-2.64	0.004
stunting by mother~r	349	26	.144	.346	-.203	.073	-2.75	.006
wasting by mother ~2	349	26	.058	.077	-.019	.048	-.4	.682
underweight by mot~n	349	26	.072	.116	-.044	.053	-.8	.415
Minimum acceptable diet 6–23 months (MAD) by mother mi~	169	21	.225	.286	-.061	.098	-.6	.535

Table continues on next page

	obs1	obs2	Mean1	Mean2	dif	St Err	t value	p value
Sweet beverage consumption 6–23 months (SwB) by mother mi~	169	21	.255	.095	.159	.098	1.6	.106
Unhealthy food consumption 6–23 months (UFC) by mother mi~	169	21	.042	.143	-.102	.052	-1.95	.05
Zero vegetable or fruit consumption 6–23 months (ZVF) by mother mi~	169	21	.231	.048	.183	.094	1.95	.052
Bottle feeding 0–23 months (BoF) by mother mi~	169	21	.544	.762	-.217	.114	-1.9	.058
Early initiation of breastfeeding (EIBF) by mother mig~0	169	21	.456	.095	.36	.112	3.25	.002
Exclusive breastfeeding under 6 months (EBF) by mother mig~0	169	21	.225	.143	.082	.096	.85	.392
Mixed milk feeding under 6 months (MixMF) by mother mig~0	169	21	.012	0	.012	.024	.5	.619
Continued breastfeeding 12-23 months (CBF) by mother mig~0	169	21	.201	.095	.106	.091	1.15	.245
Introduction of solid, semi-solid or soft foods 6–8 months (ISSSF) by mother mig~0	169	21	.071	0	.071	.057	1.25	.209
Minimum dietary diversity 6–23 months (MDD) by mother mig~0	169	21	.414	.381	.033	.115	.3	.771
Minimum meal frequency 6–23 months (MMF) by mother mig~0	169	21	.349	.619	-.27	.111	-2.45	.016
Sweet beverage consumption 6–23 months (SwB) by mother mi~	169	21	.255	.095	.159	.098	1.6	.106
Unhealthy food consumption 6–23 months (UFC) by mother mi~	169	21	.042	.143	-.102	.052	-1.95	.05
Zero vegetable or fruit consumption 6–23 months (ZVF) by mother mi~	169	21	.231	.048	.183	.094	1.95	.052

	obs1	obs2	Mean1	Mean2	dif	St Err	t value	p value
Bottle feeding 0–23 months (BoF) by mother mi~	169	21	.544	.762	-.217	.114	-1.9	.058
Early initiation of breastfeeding (EIBF) by mother mig~0	169	21	.456	.095	.36	.112	3.25	.002
Exclusive breastfeeding under 6 months (EBF) by mother mig~0	169	21	.225	.143	.082	.096	.85	.392
Mixed milk feeding under 6 months (MixMF) by mother mig~0	169	21	.012	0	.012	.024	.5	.619
Continued breastfeeding 12-23 months (CBF) by mother mig~0	169	21	.201	.095	.106	.091	1.15	.245
Introduction of solid, semi-solid or soft foods 6–8 months (ISSSF) by mother mig~0	169	21	.071	0	.071	.057	1.25	.209
Minimum dietary diversity 6–23 months (MDD) by mother mig~0	169	21	.414	.381	.033	.115	.3	.771
Minimum meal frequency 6–23 months (MMF) by mother mig~0	169	21	.349	.619	-.27	.111	-2.45	.016

Annex 2. Methodological notes from survey design

A2.1 English translation of survey module on climate, mobility and FNS

0.1	Name of investigator		0.4 Province/City		__ __
0.2	District		0.5 Commune/ Ward		__ __
0.3	Investigation date	__ / __ / __	0.6 Village/Hamlet/Group		__ __
Full name of the Investigator (Tel. Tel.):			0.7 Code Number		__ __
#	Question	Answer Options			
Part 1: Exposure to climate hazards					
1	In the past 5 years (from October 2019 to present), have any of the following events affected your household? (Choose multiple answers)	A. Flood B. Drought C. Extreme storm D. Extreme temperatures (Heatwaves) E. Increased soil salinity F. Saltwater intrusion G. Waterlogging H. Increase in agricultural pests or disease (crops or livestock) I. Changing rainfall patterns (increasing or decreasing rainfall, changing timing of rainy and dry seasons) J. Landslides (in residential or agricultural land) K. Land subsidence (in residential or agricultural land) L. Sea-level rise M. Any other; please specify _____ N. Not relevant			
Part 2: Displacement					
2	<u>In the past 5 years (from October 2019 to present)</u> , how many times has your household had to move to a new residence due to damage or danger from environmental hazards (e.g. floods, inundation, droughts, extreme storms, heat waves, increased soil salinity, land subsidence, landslides, rising sea levels, etc.)?	0 times -> <i>move to part 3</i> 1 - 2 times More than 3 times			
2.1	Considering your most recent move, which of the following hazards has forced your household to move? (Choose multiple answers)	A. Flood B. Drought C. Extreme storm D. Extreme temperatures (Heatwaves) E. Increased soil salinity F. Saltwater intrusion G. Waterlogging H. Increase in agricultural pests or disease (crops or livestock) I. Changing rainfall patterns (increasing or decreasing rainfall, changing timing of rainy and dry seasons) J. Landslides (in residential or agricultural land) K. Land subsidence (in residential or agricultural land) L. Sea-level rise M. Any other; please specify _____ N. Not relevant			

Part 3: Planned relocation

- 3** In the past 5 years (from October 2019 to present) , has your household ever participated in any resettlement program ?
(Choose only 01 answer)
- A. Yes
B. No

Part 4: Involuntary Immobility

- 4** In the past 5 years (from October 2019 to present) , have you ever wanted to move elsewhere but did not have the opportunity or resources to move?
(Choose only 01 answer)
- Opportunities may include employment, education and family circumstances (e.g. marriage);*
- Resources may include financial means or friends and family who can assist with moving.*
- A. Yes
B. No

Part 5: Information about migrating household members

- 5** Currently, how many members of your household have been living away from home for at least 1 month?
Living away from home does not include moving for recreational purposes, vacation, religious pilgrimage or medical treatment.
- ___ Record the total number of members living away from home, including children:
People
If total members = 0 , write "0 0 " , skip Part 5 and Part 6, Go to Part 7
- 5.1** What is the gender of the members living away from home (migrant)?
- Number of men: ___
Number of women: ___
Number of members of other genders: ___
The total number of males, females and other genders will equal the total number of migrant members stated in question 5.
- 5.2** What is the age range of the members living away from home?
- Number of members < 15 years old ___
Number of members 15 – 29 years old ___
Number of members 30 – 44 years old ___
Number of members 45 – 59 years old ___
Number of members > 59 years old ___
- 5.3** Among the members living away from home, are there any members with children under 5 years old currently living here with your household?
- A. Yes
B. No
- If Yes, how many children are left behind? Check the appropriate answer (multiple answers may be selected)
- ___ At least 01 child from 2 - 5 years old.
___ At least 01 child < 2 years old

Part 6: Details of migrants who provide the most financial support to households

6	Among the members who are living away from home (migrants), who is the one who provides the most financial support to the household?	Specify this member's NAME : If no migrant is providing financial support to the household, skip Part 6, go to Part 7 and check the option below. No members provide financial support
6.1	What is the relationship between [NAME] and you? (Choose only 01 answer)	A. They are your son/daughter B. They are your daughter-in-law/son-in-law C. They are your wife/husband D. They are your biological parent E. They are your father/mother-in-law F. They are your grandchild G. They are other relatives H. Other, please specify
6.2	How old is [NAME] ? (Choose only 01 answer)	A. < 15 years old B. 15 - 29 years old C. 30 - 44 years old D. 45 - 59 years old E. > 59 years old
6.3	What is the gender of [NAME] ?	A. Female B. Male C. Other
6.4	When has [NAME] moved/left the household?	A. < 01 month ago B. 01 – 03 months ago C. 03 – 12 months ago D. 01 – 05 years ago E. > 05 years ago
6.5	Where has [NAME] moved to?	A. Nation..... B. Province (if in Vietnam)
6.6	What is the main sector of employment of [NAME] at their new residence? (Choose only 01 answer)	A. Agriculture, forestry, fishing (e.g. farming/forestry/fishing, aquaculture) B. Workers in industry, construction, manufacturing (e.g. manual labor; factory workers, construction site workers) C. Transportation services (for example: driving passenger vans, cargo vans, cars, traditional motorbike taxis, technology motorbike taxis such as Grab , SM., taxi driver ...) D. Services in education, health care or in government agencies or units (for example: teachers, health workers, office workers, employees in government agencies or units) E. Services in the tourism or hospitality industry F. Porter, maid, work for hire on a case-by-case basis, specify which industry..... G. Services in the banking and finance sector (e.g. bank employees; employees in investment companies, sales staff) I. Other, please specify..... J. Don't know

Part 7. Remittances

7 In the past 12 months, approximately how much money has your household received in total from migrant members? This [NAME] ? (Choose only 01 answer) Note: do not read the answer options	A. No remittances were received yet B. Received, clearly state the estimated total amount received in the past 12 months:VND C. Don't know, can't answer Note: if the respondent does not want to provide information, do not attempt to ask and choose answer c.
7.1 During the past 12 months, how many times has your household received remittances from all members who have migrated? (Choose only 01 answer) Note: Choose the most suitable frequency range	A. No money has been received yet, ☐ go to question 8 B. About once a year C. About 2 - 3 times/year (every 4 - 6 months) D. About 4 - 6 times/year (every 2 - 3 months) E. About once a month F. About 2 times / month G. About once a week H. More than once a week
7.2 In the past 12 months, approximately how much money did your household receive in total from all members who migrated? (Choose only 01 answer)	VND Note: if the respondent does not want to provide information, do not attempt to ask, and check the following option: Don't know, do not answer

Part 8. Main Food Purchasing Channel

8 Where does your household buy most of the food it consumes during the week? (Choose only 01 answer)	A. Supermarket B. Convenience store/ Minimart C. Specialized shops D. Formal open Market (Traditional Market) E. Consumer Cooperative F. Informal, spontaneous street market (strip market) G. Online shopping H. Colleagues/relatives I. Other, please specify
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9. Household food consumption in last 24 hours

Please list all foods consumed by the household and any household member from early morning yesterday to early morning today, including foods prepared in the home or purchased for home consumption, excluding foods consumed and eaten outside the home by the household or household member].

Meal names: 3 main meals: breakfast, lunch, dinner and snacks during the day: morning snack, afternoon snack and evening snack. Ask and write down the order of the meals during the day.

Dish name: ask and write down in order by meal (breakfast, lunch, dinner and snacks; ask after one meal before moving on to the next). Dish names must include all ingredients and preparation methods.

Name of ingredients of mixed dishes: Mixed dishes: are dishes with 2 or more ingredients (excluding water). For these dishes, column (2) the interviewer writes the name of the dish and asks for more information about the ingredients of that dish in column (3).

Meal name	Dish Name	Main ingredient in the mixed dish

A2.2 Screening question

Hiện tại và trong vòng 05 năm gần đây, Ông/Bà hoặc bất kỳ thành viên nào trong gia đình Ông/Bà phải thay đổi chỗ ở hoặc đi làm ăn, đi công tác xa nhà từ 01 tháng trở lên không? (không tính việc chuyển đi vì mục đích giải trí, nghỉ mát, hành hương tôn giáo hoặc chữa bệnh)

Within the last 5 years, have you or anyone in your household changed where they lived or lived away from home (Excluding if they moved away for purposes of recreation, holiday, religious pilgrimage, or medical treatment.)?

CÓ --> Tiếp tục thu thập thông tin trong bảng hỏi

YES --> Continue interview the Mobility questionnaire



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