MONITORING FOOD INSECURITY AND VULNERABILITY IN YEMEN

Results from the Yemen Mobile Phone Monitoring Survey Round II

Data collected in February and March 2023
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ABBREVIATIONS

FCS  Food consumption score (FCS)
HBS  Household Budget Survey (HBS)
IPC  Integrated Food Security Phase classification (IPC)
IRG  Internationally Recognized Government (IRG)
MIE  Main income earners (MIE)
mVAM Mobile Vulnerability Analysis and Mapping (mVAM)
rCSI Reduced coping strategies index (rCSI)
WFP  World Food Program (WFP)
EXECUTIVE SUMMARY

The World Bank carried out a second phone survey to monitor food insecurity and vulnerability in Yemen. The survey, implemented between January and March 2023, aims to provide an update on the welfare of Yemeni households. The survey draws on a probability sample of 1,455 respondents, 711 of whom are based in rural areas, while 467 and 277 are living in urban and semi-urban areas respectively. Most of the respondents are male (1,116 men versus 339 women).

The results show that around 43 percent of households have inadequate food consumption, among whom 20 percent experience poor food consumption. A relatively large proportion of households live on an unbalanced diet composed mainly of staple starches. Disparities in food insecurity are significant and relate to characteristics such as displacement and employment status.

Notably, food security has improved, particularly in Houthi-controlled areas. The share of households with poor or borderline food consumption scores decreased from 50 to 43 percent between Round 1, implemented in August-September 2022, and Round 2, conducted between January and March 2023. In Round 1, we found that households in Houthi-controlled areas were worse off in terms of food security compared to their counterparts in IRG-controlled areas. This changed in Round 2, where food security is better in Houthi-controlled areas. This improvement could be explained by the easing of restrictions on fuel at Al Hodeida port in early 2023, a decrease in international wheat prices, and potentially the introduction of price caps for food items in Houthi controlled areas since December 2022.
Access to basic drinking water services represents a key challenge. Around one-third of households have access to water through a piped connection, but this is much lower for rural households. Most households (79 percent) do not collect drinking water in their own dwelling or on their own land. Around 67 percent of households take more than 30 minutes to collect water if not located on the premises.

Access to electricity from the public grid is very limited. Only 15 percent of Yemini households use electricity from the public network as the main source of lighting. The penetration of the public grid is lower in rural areas (7 percent) than in either urban (26 percent) or semi-urban areas (15 percent). With little coverage of publicly provided electricity in Houthi-controlled areas, households tend to use solar energy as their main source of lighting (81 percent in Houthi-controlled areas compared with 45 percent in IRG-controlled areas, respectively). Around three-quarters (73 percent) of the population use wood as main cooking fuel, with wide variations across areas of residence.

Forced migration due to the conflict affected around 43 percent of households, among whom 18 percent returned home. This means that 25 percent of surveyed households remain currently displaced. Households who moved because of the conflict did so early on and moved multiple times.

A slim majority of respondents (55 percent) worked in the past 12 months. Employment is lower among female respondents, with the proportion of female respondents working about one-third that of male respondents (28 versus 79 percent). Labor income (wage—private or government—or sales and profit from business) is the most important source of household income, as reported by 71 percent of surveyed household.

Some households, particularly the more food secure, are able to sell assets or use savings. But many households have already exhausted the usual coping strategies. Unavailability of coping strategies is typically more frequent among the relatively more food insecure. With fewer options left to deal with adverse shocks, households are using destructive coping strategies such as sending children to work or engaging in high-risk work. We found that 3 percent of respondents report female children were married to ease financial stress in the last three months alone. Many households face high vulnerability from overlapping sources.

The results of this survey underscore the multitude of challenges facing Yemeni households in an ever evolving context. Current shocks, including sustained currency depreciation and price upsurges, continue to strain the precarious living conditions Yemenis face. Following on from the first mobile phone monitoring survey, we will continue to regularly implement agile welfare phone surveys to update the rapidly evolving context.
INTRODUCTION

While current prospects for peace are relatively optimistic for Yemen, challenges to human welfare remain acute amid an entrenched humanitarian crisis and a volatile macroeconomic environment. The local currency further depreciated in 2022, generating fast erosion of household purchasing power. Remittances are also expected to decrease from many Gulf countries as they are encouraging the hiring national citizens. Exposure to natural disasters such as flash floods are expected to continue. On the other hand, easing of restrictions at the Hodeida port are likely to improve food availability.

Household living conditions in Yemen are thus bound to change rapidly, prompting need for agile monitoring. Almost four months after the first round of a survey monitoring food insecurity and employment of the Yemeni population, the World Bank implemented a second round of this monitoring survey between January and March 2023. The survey seeks to update understanding of food security and stresses to Yemeni livelihoods. It tackles four themes: food insecurity, displacement, access to water and electricity, and coping strategies. The survey thus fills a crucial data gap, representing a public good for those interested in Yemen.

The current report presents the main updates drawing from the second round of survey data. It is structured as follows: Section 2 describes the methodology, Section 3 presents the results before concluding with Section 4.

1 World Food Program, “Yemen Food Security Update; January, 2023”
2 METHODOLOGY

2.1 Sampling

The survey draws on a probability sample of adult Yemenis (age 18 and older) with mobile phones proportionately spread across 21 governorates based on the latest population projections. A total of 1,455 respondents completed the interview, among whom 642 participated in the first round. Phone interviews conducted between January and March 2023 used a questionnaire consisting of four sections mainly focusing on food insecurity, displacement experience, access to and quality of water and electricity, and coping strategies. Phone interviews conducted in August and September 2022 used a questionnaire also consisting of four sections but mainly focusing on labor market experiences and food insecurity. Although implemented by phone, we believe the survey is adequately representative of the target population since mobile phone ownership was widespread in Yemen prior to conflict. According to the 2014 Household Budget Survey (HBS)—the last nationally representative survey—81 percent of Yemeni households owned a mobile phone. While there is no recent national data on mobile phone ownership, representative data of areas under Internationally Recognized Government (IRG) control show that mobile phone ownership increased from 84 percent in 2014 to 92 percent in 2021 (Yemen Human Development Survey, 2021). Additionally, the World Food Programme (WFP) mobile

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2 Socotra island is excluded because of the small population size.

3 This was lower in rural areas at 75 percent, and for some governorates: Saada (52 percent), Abyan (57 percent) and Al Hodeidah (64 percent).
Vulnerability Analysis and Mapping (mVAM) phone survey finds that for households with access to at least one phone, households own a similar number of phones to that of the 2014 HBS, except for some governorates where the number of mobile phones declined due to significant population migration.\(^4\)

### 2.2 Sample description

The survey targeted adult respondents in the household, with 1,116 male and 339 female respondents providing survey responses.\(^5\) After weighting the observations to correspond with projected population figures at the governorate level, around 52 percent of respondents are main income earners (MIE), 47 percent are female, 71 lived under the control of the Houthis (Figure 2.2.1), and 67 percent are aged between age 25 and 59 (Figure 2.2.2). Approximately, 21 percent of respondents have lower than first level or elementary education, while 18 percent achieved higher education (Figure 2.2.2). Around 50 percent of respondents live in rural areas, and respectively 31 and 18 percent live in urban and semi-urban areas (Figure 2.2.3). All results presented in this report are produced by the authors from collected data and are weighted to be as representative as possible (see Annex B for further explanation of weighting methods), unless otherwise specified.

**Figure 2.2.1:** Relationship of respondents to main income earner, respondent gender, and area of control (using sampling weights)

![Figure 2.2.1](image)

Note: Area of control is determined by merging district-level control data from The International Crisis Group.

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5  Table A1 in Annex A presents both weighted and unweighted tabulations of selected characteristics.
**Figure 2.2.2: Age and education among respondents (using sampling weights)**

<table>
<thead>
<tr>
<th>Age of respondents (years)</th>
<th>Education of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>18–24</td>
<td>No education or lower than first level: 21</td>
</tr>
<tr>
<td>25–35</td>
<td>Completed elementary/primary or pre-high school: 31</td>
</tr>
<tr>
<td>35–59</td>
<td>High school: 30</td>
</tr>
<tr>
<td>60+</td>
<td>Higher education: 18</td>
</tr>
</tbody>
</table>

**Figure 2.2.3: Place of residence**

- Urban: 51%
- Semi-urban: 31%
- Rural: 18%
The results section is organized around the four survey modules: food security, access to water and electricity, experience of displacement, and coping strategies.

### 3.1 Food security

Around 43 percent of households have inadequate (poor or borderline) food consumption, among whom 20 percent experience poor food consumption (Figure 3.1.1). Approximately 42 percent of surveyed households in areas under Houthi control could not consume enough food to meet their basic dietary needs, compared to 46 percent among households under IRG control. Food insecurity is more acute in rural and semi-urban areas than in urban areas. Displaced households face a higher likelihood of having poor food consumption (23 percent) than non-displaced households (19 percent), and households receiving food assistance are more likely to experience poor food consumption compared to households not receiving food assistance. Household food consumption is worse for respondents not working, with 55 percent reporting inadequate food consumption compared to 38 percent when working.

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6 The food consumption score (FCS) is based on information about food frequency and dietary diversity. Poor: FCS below 28; Borderline: FCS between 28 and 42; and acceptable: FCS above 42.
Box 3.1.1: Measuring food insecurity in Yemen

This survey measures food security using the food consumption score, which measures the frequency and diversity of household food consumption. More nutritionally-dense foods, such as meat and leafy vegetables, receive a higher weight in the score. The continuous score ranges from zero to 112 and is used to divide households into three different groups: poor food security score (FCS<=28), borderline score (28<FCS<=42), and acceptable score (FCS>42). Sometimes poor and borderline are grouped together.

As Yemen faces a severe food security crisis, a number of agencies monitor this score regularly. It is considered to be sensitive to small changes in context and household experiences. Along with the reduced coping strategy index (rCSI)—also collected through WFP phone surveys—additional data from face-to-face annual food security assessment and subject matter experts, this information is used to determine the Integrated Food Security Phase classification (IPC) of each district in Yemen. As of December 2022, 17 million people, over 53 percent of the population, were likely to have experienced acute food.

Figure 3.1.1: Distribution of households by food consumption groups (%)

Food insecurity remains acute in all governorates. The mean food consumption score (FCS) varies between 38 (Albayda) and 64 (Marib). In five governorates, the average food consumption score is at or below the critical threshold of 42, but this is not statistically significant.
Figure 3.1.2: Food consumption score by governorate – higher is better

![Bar chart showing food consumption scores by governorate. The scores range from 0 to 80, with Al-Mahwit having the highest score and Al-Mahra, Al-Jawf, and Rima combined for similar levels of food security. The mean FCS threshold is 42.]

Note: The observations in Al-Mahra, Al-Jawf, and Rima have been combined with neighboring governorates under the same control (IRG or Houthi) and similar levels of food security because the sample sizes are insufficient to produce governorate level estimates with sufficient confidence.

Figure 3.1.3: Food consumption score by survey round

![Bar chart showing food consumption scores by survey round for all regions and by urban, semi-urban, rural, Houthi, and IRG categories. The scores range from 0 to 100, with the highest scores in Round 1 for all categories except Houthi, which has the highest score in Round 2.]

Note: The observations in Al-Mahra, Al-Jawf, and Rima have been combined with neighboring governorates under the same control (IRG or Houthi) and similar levels of food security because the sample sizes are insufficient to produce governorate level estimates with sufficient confidence.
Food security has evolved since the previous survey round, indicating the fluid living conditions in a conflict affected context such as Yemen. Overall, in Round 2 (January-March 2023), food security improved compared to round 1 (August-September 2022) as the share of households with poor or borderline food consumption scores decreased from 50 to 43 percent. The proportion reporting poor food consumption remained unchanged in rural areas, while it declined in both urban and semi-urban areas. This reflects the fluidity of the situation and highlights the sensitivity of the measure to capture variations in food consumption over short periods of time. Similarly, while in Round 1 relatively more households had inadequate food consumption in Houthi-controlled than IRG-controlled areas, in Round 2 households in Houthi-controlled areas are less likely to experience inadequate food consumption. The latest IPC Acute food insecurity and acute malnutrition analysis also notes the improvement in food security. While this analysis does not determine the reason for improvements, it cautions that any changes are likely to be temporary as food aid is expected to decrease. Nonetheless, we could interpret this improvement in food security, a result of improvement in urban areas and areas under Houthi control, as related to three main factors: the easing of restrictions of fuel at Al Hodeida port in early 2023, the decrease in international wheat prices, and the introduction of price caps for food items in Houthi controlled areas since December 2022.

Figure 3.1.4: Stacked food frequency of main food groups (median)

Note: Red and black lines indicate poor and borderline food security thresholds, respectively.

7 These results follow a similar pattern to the numbers reported by the WFP mobile Vulnerability Assessment Survey and the FAO’s high frequency survey.
8 Yemen Partial Analysis IPC Acute Food Insecurity and Acute Malnutrition Analysis. June 7 2023
10 Yeti Bimonthly Economic Update: November December 2022
Households with a poor FCS consume an unbalanced diet composed mainly of staple starches (Figure 3.1.4). Animal protein and pulses are not present in the diet of households with a poor FCS below 28. Staple starches (including potatoes, rice, bread, wheat, flour, pasta and other grains) are consumed at all levels of the FCS. Consumption of animal protein and milk is more frequent among households enjoying high levels of FCS. Yemeni households do not often consume large amounts of fruits and vegetables.

The results of another measure—the “reduced coping strategies index”—are largely in line with the food consumption score and follow similar patterns by group. Another measure of food security, rather than asking respondents about what they consumed, the index is based on the coping strategies households adopt in response to limited access to food.11

A slim majority (55 percent) of households received food assistance. More households in areas under IRG control received assistance compared with those under Houthi control (59 versus 53 percent), a similar finding to the first round. Displaced households, who experience worse food security, are still more likely to receive food assistance (59 percent) compared with non-displaced households (54 percent). Households in rural areas, also with worse food security, are more likely to receive food assistance than those in either urban or semi-urban areas (Figure 3.2.5). Households with borderline food consumption are more likely to receive food assistance (62 percent), but not as much as households with poor food consumption (53 percent). This slightly contrasts with the first round of the phone survey, which indicates that households with poor consumption scores were mostly likely to receive assistance but there was little difference between borderline and acceptable scores. This could indicate that better targeting is needed, but might also be explained by many households being clustered around the poor and borderline food security cut-off points with movement in and out of food insecurity throughout the year.

Figure A1 in Annex A presents reduced coping strategy index (rCSI) by governorate.

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11 Figure A1 in Annex A presents reduced coping strategy index (rCSI) by governorate.
Most food assistance received is provided “in kind” (86 percent). The proportion of households reporting in-kind food assistance is higher in Houthi-controlled compared to IRG-controlled areas; but it varies little by displacement status or place of residence. Receiving food assistance in the form of vouchers is uncommon (three percent).

Figure 3.1.6: Form of food assistance

Note: The categories are not mutually exclusive; hence they may sum up to over 100.

12 In-kind assistance, or non-monetary assistance, usually consists of food baskets in Yemen.
3.2 Access to water and electricity

Access to clean drinking water in Yemen is low. Twenty-two percent of Yemeni households access their drinking water through pipes directly into their dwelling, but this is much lower in rural areas at 16 percent. Rural households are most likely to use an unprotected well and are more likely to rely on rain water collection (listed as “other” in Figure 3.2.1). When respondents are asked to rate the quality of their drinking water across five dimensions (smell, taste, color, clarity and safety) on a scale from 1 to 5, drinking water from an unprotected well has the lowest average rating.

Figure 3.2.1: Main Source of drinking water
Many households do not collect drinking water from their own dwelling or land. Only 21 percent of households collect drinking water on the premises. Households in rural areas are more likely to collect water from their own land and less likely to collect water outside of their own premises. Households in Houthi-controlled areas are more likely to collect drinking water on the premises than those under IRG control (22 versus 19 percent).
For those who do not access drinking water on the premises, 67 percent take more than 30 minutes to collect water. This share is lowest in urban areas and highest in rural areas. Even if rural households are less likely to collect drinking water elsewhere, they spend more time collecting water compared to urban and semi-urban counterparts. There is also a strong correlation with food security, indicating that households with less access to food also have less access to water.

**Figure 3.2.4: Time it takes to collect drinking water and come back**

Access to basic drinking water services is highly constrained, as 36 percent of respondents said they were able to access basic drinking water services. Access to basic drinking water services combines information not only on sources of drinking water but also on time it takes to collect drinking water.

While access appears similar across rural, semi-urban, and urban households, this indicator could be masking differences in access as rural households are more likely to rely on rainwater collection (classified as an improved source), while urban households rely on water delivered by a tanker/truck (defined as unimproved) (Figure 3.2.1). Around 40 percent of households in IRG-controlled areas have access to basic drinking water services, while 34 percent have access among households in Houthi-controlled areas. The share of households with access to basic drinking water services is 32 percent for households with a poor FCS; this is lower than the share among households whose FCS is borderline (37 percent) or acceptable (35 percent).

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13 In particular, access to basic water services is defined as access to an improved water source (i.e. sources that are covered and protected from outside contamination, including piped water, protected wells, protected springs and rainwater collection) provided that the round trip to collect water is not longer than 30 minutes.
Access to electricity from the public grid is very limited. Only 15 percent of Yeminis use electricity from the public network as the main source of lighting. However, this share is much larger in IRG-controlled areas (45 percent) than in Houthi-controlled areas (2 percent). The penetration of the public grid is lower in rural areas (seven percent) than in either urban (26 percent) or semi-urban areas (15 percent). There are large differences across levels of food security, as households with poor food consumption scores are less likely to have access to the public grid (11 percent). Most households (81 percent) use solar energy as their main source of lighting in Houthi-controlled areas, while 45 percent rely on solar energy in IRG-controlled areas.

Figure 3.2.6: Households’ main source of electricity for lighting
Wood is the most commonly used cooking fuel. Around three-quarters (73 percent) of surveyed households use wood as the main cooking fuel, with wide variations across areas of residence. While 88 percent of rural households rely on wood as a cooking fuel, this proportion is 53 percent among urban households, which are more likely to use cooking gas. Wood is more commonly used in Houthi-controlled areas. Wood usage is also more frequent among households with a poor FCS than those with borderline or acceptable FCS.

### Figure 3.2.7: Households’ three mostly used types of fuel for cooking

<table>
<thead>
<tr>
<th>AREA OF CONTROL</th>
<th>RESIDENCE</th>
<th>FOOD SECURITY STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>Borderline</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Not displaced</td>
<td>Displaced</td>
<td></td>
</tr>
<tr>
<td>Wood</td>
<td>Gas cylinder</td>
<td>Straw, leaves, etc</td>
</tr>
<tr>
<td>73</td>
<td>60</td>
<td>12</td>
</tr>
<tr>
<td>80</td>
<td>53</td>
<td>13</td>
</tr>
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<td>79</td>
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<td>16</td>
</tr>
<tr>
<td>67</td>
<td>71</td>
<td>10</td>
</tr>
</tbody>
</table>

Note: The categories are not mutually exclusive; hence they may sum up to over 100.

### 3.3 Displacement

**Being displaced is common in Yemen, and many have not returned home.** The survey collected detailed information about the households’ experience of displacement in the context of the conflict. The survey asked respondents whether their households have ever been forced or obliged to flee from somewhere else, as well as the reasons for their displacement. Around 43 percent of respondents moved because of the conflict, among whom 18 percent have been able to return home, meaning that 25 percent remain displaced. Households who moved because of the conflict did so early on, as around half of households (48 percent) moved within a year of the conflict. The proportion of those who moved due to the conflict tapered off gradually from 2016 onward. Respondents continue reporting displacement because of the conflict even in 2022 but to a lesser degree.

**Households’ initial conflict-induced displacement is often followed by subsequent displacements.** Around 60 percent of households forced to move resided in at least two districts since first moving, with 40 percent living in only one district. Around 36 percent of displaced households chose their current destinations because it was the closest safe place, while 30 percent reported they remained in their current residence mainly because of livelihood opportunities. Six percent reached their current place of residence because they did not have any other choice.
**Figure 3.3.1: Displacement status and year of displacement**

*a. Displacement status*

- Never displaced: 58%
- Currently displaced due to conflict: 25%
- Returned home after being displaced: 17%

*b. Year of displacement*

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>9</td>
</tr>
<tr>
<td>2015</td>
<td>36</td>
</tr>
<tr>
<td>2016</td>
<td>16</td>
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<tr>
<td>2017</td>
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<td>11</td>
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<td>2019</td>
<td>4</td>
</tr>
<tr>
<td>2020</td>
<td>6</td>
</tr>
<tr>
<td>2021</td>
<td>4</td>
</tr>
<tr>
<td>2022</td>
<td>2</td>
</tr>
</tbody>
</table>

**Figure 3.3.2: Districts of residence since displacement and reasons for choosing destination**

*a. Number of different districts of residence since households first moved*

- 1 district: 43%
- 2 districts: 30%
- 3+ districts: 27%
- 36 districts: 1%

*b. Reasons for the choice of destination*

<table>
<thead>
<tr>
<th>Reason</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>It was the closest safe place</td>
<td>36</td>
</tr>
<tr>
<td>There are better livelihood opportunities</td>
<td>25</td>
</tr>
<tr>
<td>I had friends and family here/there</td>
<td>15</td>
</tr>
<tr>
<td>It is our hometown</td>
<td>11</td>
</tr>
<tr>
<td>I did not have a choice</td>
<td>8</td>
</tr>
<tr>
<td>Other (Specify)</td>
<td>5</td>
</tr>
</tbody>
</table>
3.4 Employment, income sources, and coping strategies

Employment and income sources

A slim majority of respondents (55 percent) worked in the past 12 months (Figure 3.5.1). Employment is significantly lower among female respondents, at almost one-third of that of male respondents (28 versus 79 percent). Respondents from IRG-controlled areas are more likely to work than those from Houthi-controlled areas (60 versus 53 percent). Respondents in displaced households are slightly less likely to work than those from non-displaced households. There is also a notable correlation with food security status as households with poor food consumption scores are least likely to be employed, followed by households with borderline food consumption.

Labor income (wage—private or government—sales and profit from business) is the most important source of household income, with 71 percent of households reporting this as their main income source. For 65 percent of households, private sector wages represent the main income source, followed by sales of crops or livestock (16 percent). Relatively more households in Houthi-controlled areas rely primarily on private labor income compared with those in IRG-controlled areas (66 versus 61 percent). Considering the disruption in public sector employment in Houthi-controlled areas, it is not surprising that virtually no respondents report irregular or regular government salary as their main source of income in these areas. Displaced households are more likely to report private labor income as their main income source than those that are not displaced. Households with adequate food consumption are more reliant on private labor income.
Figure 3.4.2: **Most important sources of household income**

<table>
<thead>
<tr>
<th>AREA OF CONTROL</th>
<th>RESIDENCE</th>
<th>FOOD SECURITY STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houthis</td>
<td>Urban</td>
<td>All</td>
</tr>
<tr>
<td>11%</td>
<td>12%</td>
<td>16%</td>
</tr>
<tr>
<td>16%</td>
<td>12%</td>
<td>12%</td>
</tr>
<tr>
<td>8%</td>
<td>13%</td>
<td>9%</td>
</tr>
<tr>
<td>6%</td>
<td>13%</td>
<td>11%</td>
</tr>
<tr>
<td>11%</td>
<td>20%</td>
<td>11%</td>
</tr>
<tr>
<td>11%</td>
<td>18%</td>
<td>66%</td>
</tr>
<tr>
<td>10%</td>
<td>9%</td>
<td>61%</td>
</tr>
<tr>
<td>10%</td>
<td>13%</td>
<td>63%</td>
</tr>
<tr>
<td>13%</td>
<td>18%</td>
<td>63%</td>
</tr>
<tr>
<td>13%</td>
<td>12%</td>
<td>71%</td>
</tr>
<tr>
<td>14%</td>
<td>14%</td>
<td>64%</td>
</tr>
<tr>
<td>12%</td>
<td>20%</td>
<td>58%</td>
</tr>
<tr>
<td>12%</td>
<td>15%</td>
<td>68%</td>
</tr>
</tbody>
</table>

**Legend:**
- Private labor income
- Sale of crop/livestock
- Regular government salary
- Irregular government salary
- Support from family or friends
- Other

Around 51 of respondents say household income is at least somewhat sufficient to cover food costs; but only 15 percent of households report household income as absolutely sufficient. For 37 percent of respondents, household income is somewhat sufficient, while 23 percent say household income is insufficient to cover food costs. This highlights the level of stress facing households even to meet basic needs.

Figure 3.4.3: **Over the last 3 months, has household income been enough to cover food costs?**

<table>
<thead>
<tr>
<th>AREA OF CONTROL</th>
<th>RESIDENCE</th>
<th>FOOD SECURITY STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houthis</td>
<td>Urban</td>
<td>All</td>
</tr>
<tr>
<td>15%</td>
<td>22%</td>
<td>11%</td>
</tr>
<tr>
<td>26%</td>
<td>23%</td>
<td>23%</td>
</tr>
<tr>
<td>37%</td>
<td>36%</td>
<td>37%</td>
</tr>
<tr>
<td>23%</td>
<td>28%</td>
<td>28%</td>
</tr>
<tr>
<td>28%</td>
<td>21%</td>
<td>14%</td>
</tr>
<tr>
<td>35%</td>
<td>40%</td>
<td>15%</td>
</tr>
<tr>
<td>36%</td>
<td>39%</td>
<td>5%</td>
</tr>
<tr>
<td>29%</td>
<td>25%</td>
<td>10%</td>
</tr>
<tr>
<td>19%</td>
<td>24%</td>
<td>19%</td>
</tr>
</tbody>
</table>

**Legend:**
- Yes, absolutely
- Yes, somewhat
- No, not really
- Not at all
Amid the protracted conflict, food insecurity remains central. Widespread food insecurity due to the conflict has been exacerbated by several factors including the currency crisis, fast-paced inflation, and reduction in humanitarian aid.¹⁴ Half of households do not have enough income to cover food costs, and just under half are in a status of poor or borderline food security. This begs the question of how households have been surviving. In the next section we investigate the coping strategies households have adopted.

Coping strategies

Some households, particularly the more food secure, were able to sell assets or use savings to ease their financial situation. The sale of non-productive assets is more common than selling livestock (which is more relevant in rural areas, figure not shown), selling productive assets, selling land or using savings, all of which are rather uncommon. The less food secure are less likely to report the use of any of these coping strategies compared to more food-secure Yemenis. However, this striking result is explained by the fact that for many Yemenis, particularly the food insecure, the usual coping strategies are unavailable.

Many households have already exhausted usual coping strategies. Around 69 percent of households did not have any livestock, while 66 and 63 percent of households had neither productive assets nor land, respectively. Unavailability of coping strategies is typically more common among the relatively more food insecure. For example, 42 percent of households with a poor FCS did not have any valuable items compared with 57 percent among those with an acceptable FCS.

With fewer options left to deal with adverse shocks, households are using destructive coping strategies such as sending children to work or engaging in high-risk work. Around 19 percent of households report a child younger than 15 started working in the last three months to support household income, while 33 percent report withdrawing children from school to ease financial pressure in the last three months. This finding is consistent with qualitative interviews that indicate the temporary withdrawal of children from school, and sometimes into work, is a necessary coping strategy during times of hardship. Around 19 percent of respondents say household members have engaged in high-risk employment. Feedback from the data collection indicates that most respondents could recognize high-risk activities without requiring further prompts. Specific examples of high-risk activities described by the respondents include working in an uninsured iron factory, working late at night in isolated regions, engaging in stone-breaking or mountain climbing in mountainous areas, smuggling qat across borders, working alongside the military or other armed forces, and traditional well digging without the use of machinery. Alarmingly, 3 percent of respondents said that female children married to ease financial stress.

Alarminglly, 3 percent of respondents said that female children were married to ease financial stress over the last three months alone. Child marriage has been a concern in Yemen even before the current conflict started, as 16 percent of women between the ages of 20 and 49 were married before 15 years of age according to the Demographic Health Survey of 2013. Notably, in 2013 the median age of marriage was lower amongst younger women, potentially indicating an improvement in the incidence of child marriage in the future. However, today any of these changes are likely to be reversed, as more households are forced to marry their female children for financial relief amidst devastating living conditions.

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15 Voices from Yemen (World Bank 2023).
**Figure 3.4.6: Last-resort coping strategies adopted in the last three months (November 2022 to February 2023)**

- **Child started working**: 19 All samples, 18 Poor food security, 20 Borderline food security, 18 Acceptable food security
- **Child pulled out of school**: 33 All samples, 51 Poor food security, 37 Borderline food security, 27 Acceptable food security
- **Female child married to ease financial burdens**: 3 All samples, 5 Poor food security, 2 Borderline food security, 3 Acceptable food security
- **Household member engaged in high risk work**: 19 All samples, 23 Poor food security, 21 Borderline food security, 18 Acceptable food security

**Figure 3.4.7: Household distress**

- **ALL**
  - Urban: 86 Any coping strategy, 45 Last resort coping strategies
  - Semi-urban: 85 Any coping strategy, 40 Last resort coping strategies
  - Rural: 87 Any coping strategy, 43 Last resort coping strategies
  - Houthis: 86 Any coping strategy, 49 Last resort coping strategies
  - IRG: 85 Any coping strategy, 50 Last resort coping strategies
  - Not displaced: 85 Any coping strategy, 32 Last resort coping strategies
  - Displaced: 90 Any coping strategy, 55 Last resort coping strategies

**Residence**
- Urban
- Semi-urban
- Rural

**Area of Control**
- Houthis
- IRG

**Displacement Status**
- Not displaced
- Displaced
A few main findings emerge for our second round of phone surveys of Yemeni households:

- Food insecurity remains an acute challenge in Yemen, and current food assistance is not sufficiently targeted to the poorest groups.
- Access to services is also concerning, with a minority of households having access to basic water services, public electricity, and fuel for cooking.
- Many Yemenis are still displaced, having moved from their homes early in the conflict.

Nonetheless, when comparing the results of this survey with the first phone survey conducted in August-September 2022, we see a slight improvement of food security. This could be explained by the easing of restrictions of fuel at Al Hodeida port in early 2023, the decrease in international wheat prices, and the introduction of price caps for food items in Houthi controlled areas since December 2022.

Many respondents were working over the last year, and the majority of households report labor income as their main source of income. However, only a small minority report that household income is sufficient to make ends meet. This result is similar to what was found in the first round of the phone survey, which focused on the livelihood options of Yemenis. While many Yemenis worked, the nature of work was precarious and often temporary. For this reason, in this phone survey round we aimed to further investigate how Yemenis are surviving.

Yemeni households are resorting to destructive coping strategies to feed their families. As the severe conflict has been protracted, Yemenis have exhausted usual coping strategies and are no longer able to sell assets or land or use savings. Instead, the most poor and vulnerable are resorting to high-risk work, taking children out of school, and child labor. These coping strategies will have consequences long after the conflict is over and require immediate significant investments in human capital.
**ANNEX A: FURTHER TABLES**

**Table A.1: Weighted and unweighted distributions of selected characteristics**

<table>
<thead>
<tr>
<th></th>
<th>Unweighted</th>
<th></th>
<th></th>
<th>Weighted</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Male</td>
<td>Female</td>
<td>All</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td><strong>AREA OF CONTROL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Houthi-controlled areas</td>
<td>69.3</td>
<td>72.9</td>
<td>70.1</td>
<td>71.6</td>
<td>72.9</td>
<td>72.2</td>
</tr>
<tr>
<td>Internationally recognized government (IRG)</td>
<td>30.7</td>
<td>27.1</td>
<td>29.9</td>
<td>28.4</td>
<td>27.1</td>
<td>278</td>
</tr>
<tr>
<td><strong>GENDER</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>100.0</td>
<td>0.0</td>
<td>76.7</td>
<td>100.0</td>
<td>0.0</td>
<td>53.3</td>
</tr>
<tr>
<td>Female</td>
<td>0.0</td>
<td>100.0</td>
<td>23.3</td>
<td>0.0</td>
<td>100.0</td>
<td>46.7</td>
</tr>
<tr>
<td><strong>Age (mean)</strong></td>
<td>34.3</td>
<td>33.0</td>
<td>34.0</td>
<td>35.5</td>
<td>32.1</td>
<td>33.9</td>
</tr>
<tr>
<td><strong>Percent currently displaced due to conflict</strong></td>
<td>22.7</td>
<td>23.9</td>
<td>23.0</td>
<td>21.0</td>
<td>21.8</td>
<td>21.4</td>
</tr>
<tr>
<td><strong>Household size (mean)</strong></td>
<td>10.4</td>
<td>9.5</td>
<td>10.2</td>
<td>10.3</td>
<td>9.9</td>
<td>10.1</td>
</tr>
<tr>
<td><strong>Number of observations</strong></td>
<td>1,116</td>
<td>339</td>
<td>1,455</td>
<td>1,116</td>
<td>339</td>
<td>1,455</td>
</tr>
</tbody>
</table>

**Figure A.1: Reduced coping strategies index across governorates – higher is worse**

![Reduced coping strategies index across governorates](image)

**Note:** The observations in Almahra, Aljawf, and Rima have been combined with neighboring governorates under the same control (IRG or Houthi) and similar levels of food security because the sample sizes are insufficient to produce governorate level estimates with sufficient confidence.
ANNEX B: METHODOLOGY, SAMPLING DESIGN AND WEIGHT CONSTRUCTION

Methodology

The survey relied on a combination of panel response and random digit dialing, relying on the range of valid numbers, with up to seven attempts when a phone number was not reached—that is, the call unanswered, not picked up, picked up but unable to complete the interview at that time.

Table B.1: Distribution of target and achieved samples by governorate

<table>
<thead>
<tr>
<th>Governorate</th>
<th>Target sample (N)</th>
<th>Achieved sample (N)</th>
<th>Achievement rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ibb</td>
<td>74</td>
<td>161</td>
<td>217.6</td>
</tr>
<tr>
<td>Abyan</td>
<td>84</td>
<td>53</td>
<td>63.1</td>
</tr>
<tr>
<td>Alamana</td>
<td>63</td>
<td>170</td>
<td>269.8</td>
</tr>
<tr>
<td>Albayda</td>
<td>74</td>
<td>60</td>
<td>81.1</td>
</tr>
<tr>
<td>Aljawf</td>
<td>84</td>
<td>10</td>
<td>11.9</td>
</tr>
<tr>
<td>AlHudeida</td>
<td>74</td>
<td>86</td>
<td>116.2</td>
</tr>
<tr>
<td>Aldaleh</td>
<td>84</td>
<td>55</td>
<td>65.5</td>
</tr>
<tr>
<td>Almahwit</td>
<td>52</td>
<td>40</td>
<td>76.9</td>
</tr>
<tr>
<td>Almahra</td>
<td>63</td>
<td>5</td>
<td>7.9</td>
</tr>
<tr>
<td>Taiz</td>
<td>63</td>
<td>84</td>
<td>133.3</td>
</tr>
<tr>
<td>Hajja</td>
<td>63</td>
<td>86</td>
<td>136.5</td>
</tr>
<tr>
<td>Hadramout</td>
<td>73</td>
<td>106</td>
<td>145.2</td>
</tr>
<tr>
<td>Thamar</td>
<td>73</td>
<td>112</td>
<td>153.4</td>
</tr>
<tr>
<td>Rima</td>
<td>84</td>
<td>17</td>
<td>20.2</td>
</tr>
<tr>
<td>Shabwa</td>
<td>84</td>
<td>27</td>
<td>32.1</td>
</tr>
<tr>
<td>Saada</td>
<td>73</td>
<td>66</td>
<td>90.4</td>
</tr>
<tr>
<td>Sanaa</td>
<td>63</td>
<td>103</td>
<td>163.5</td>
</tr>
<tr>
<td>Aden</td>
<td>63</td>
<td>57</td>
<td>90.5</td>
</tr>
<tr>
<td>Amran</td>
<td>63</td>
<td>70</td>
<td>111.1</td>
</tr>
<tr>
<td>Lahj</td>
<td>73</td>
<td>55</td>
<td>75.3</td>
</tr>
<tr>
<td>Marib</td>
<td>73</td>
<td>32</td>
<td>43.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,497</strong></td>
<td><strong>1,455</strong></td>
<td><strong>97.2</strong></td>
</tr>
</tbody>
</table>
Further challenges arose during data collection. Table B1 shows the distribution of both target and achieved samples by governorate. The survey achieved target sample sizes in excess in 9 of 21 governorates; but due to unstable or limited network coverage, the achieved sample failed to reach the target in the remaining 12 governorates, where completion rates ranged from 8 percent (Almahra) to 90 percent (Aden). Some governorates restrict international calls over particular phone networks, severely limiting the success rates for the survey’s Jordan-based call center. The survey was eventually ended before achieving the target sample in some governorates, while overachieving in others, as searching for eligible respondents was excessively costly in terms of both time and money. To adjust for the initial survey design and distortions introduced by failure to achieve target sample sizes, we constructed household and individual survey weights using the 2017 population estimates by governorate.

Sampling Weights

In a similar fashion to round 1, we calculated two sets of weights for the sample respondents. The first are termed “individual-level” weights used for weighting individual-level responses. The second are termed “household-based” weights used for weighting household-level responses.

Sampling Design

All respondents for round 1 were invited for an interview for round 2. Of the 1297 respondents that participated in round 1, 643 individuals participated in round 2. A total 1456 individuals participated in round 2. The study population was taken to be either belonging to the frame developed from round 1 or the population frame. To facilitate calculations, these were considered to be non-overlapping. Sample quotas were used to obtain a diverse set of individuals across the governorates of Abyan, Aden, Al-Baida, Al-Dhale, Al-Hodeida, Al-Jawf, Al-Maharr, Al-Mahweet, Amran, Dhamar, Hadramout, Hajja, Ibb, Laheg, Mareb, Remah, Saadah, Sanaa City, Sanaa Region, and Shabwah. Table B2 presents the sample distribution by governorate and round 1 participation.
## Table B.2

<table>
<thead>
<tr>
<th>Governorate</th>
<th>Governorate Code</th>
<th>Sample count, newly recruited participants (sample percentage)</th>
<th>Sample count, Round 1 participants (sample percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abyan</td>
<td>12</td>
<td>30 (0.0206)</td>
<td>23 (0.0158)</td>
</tr>
<tr>
<td>Aden</td>
<td>24</td>
<td>33 (0.0227)</td>
<td>24 (0.0165)</td>
</tr>
<tr>
<td>Al-Baida</td>
<td>14</td>
<td>31 (0.0213)</td>
<td>29 (0.0199)</td>
</tr>
<tr>
<td>Al-Dhale</td>
<td>30</td>
<td>38 (0.0261)</td>
<td>17 (0.0117)</td>
</tr>
<tr>
<td>Al-Hodeida</td>
<td>18</td>
<td>47 (0.0323)</td>
<td>39 (0.0268)</td>
</tr>
<tr>
<td>Al-Jawf</td>
<td>16</td>
<td>5 (0.0034)</td>
<td>5 (0.0034)</td>
</tr>
<tr>
<td>Al-Maharh</td>
<td>28</td>
<td>4 (0.0027)</td>
<td>1 (0.0007)</td>
</tr>
<tr>
<td>Al-Mahweet</td>
<td>27</td>
<td>18 (0.0124)</td>
<td>22 (0.0151)</td>
</tr>
<tr>
<td>Amran</td>
<td>29</td>
<td>33 (0.0227)</td>
<td>37 (0.0254)</td>
</tr>
<tr>
<td>Dhamar</td>
<td>20</td>
<td>54 (0.0371)</td>
<td>58 (0.0398)</td>
</tr>
<tr>
<td>Hadramout</td>
<td>19</td>
<td>72 (0.0495)</td>
<td>34 (0.0234)</td>
</tr>
<tr>
<td>Hajja</td>
<td>17</td>
<td>46 (0.0316)</td>
<td>40 (0.0275)</td>
</tr>
<tr>
<td>Ibb</td>
<td>11</td>
<td>102 (0.0701)</td>
<td>60 (0.0412)</td>
</tr>
<tr>
<td>Laheg</td>
<td>25</td>
<td>30 (0.0206)</td>
<td>25 (0.0172)</td>
</tr>
<tr>
<td>Mareb</td>
<td>26</td>
<td>23 (0.0158)</td>
<td>9 (0.0062)</td>
</tr>
<tr>
<td>Remah</td>
<td>31</td>
<td>9 (0.0062)</td>
<td>8 (0.0055)</td>
</tr>
<tr>
<td>Saadah</td>
<td>22</td>
<td>35 (0.0240)</td>
<td>31 (0.0213)</td>
</tr>
<tr>
<td>Sanaa City</td>
<td>13</td>
<td>85 (0.0584)</td>
<td>85 (0.0584)</td>
</tr>
<tr>
<td>Sanaa Region</td>
<td>23</td>
<td>58 (0.0398)</td>
<td>45 (0.0309)</td>
</tr>
<tr>
<td>Shabwah</td>
<td>21</td>
<td>17 (0.0117)</td>
<td>10 (0.0069)</td>
</tr>
<tr>
<td>Taiz</td>
<td>15</td>
<td>43 (0.0295)</td>
<td>41 (0.0282)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>813</strong></td>
<td><strong>643</strong></td>
</tr>
</tbody>
</table>
Selection Probabilities, Round 1 Participants

Selection probabilities for round 1 participants that participated in round 2 were calculated as the probability of participating in round 1, multiplied by the probability they accepted the interview invite for round 2. With respect to individual-level selection probabilities, this was taken to be the inverse of the final/calibrated sampling weight for the individual from round 1 multiplied by the estimated probability they are “selected” for round 2. With respect to household-level selection probabilities, this was taken to be the inverse of the final/calibrated sampling weight for the individual's household from round 1 multiplied by the estimated probability the corresponding individual is “selected” for round 2.

For each set of weights, the estimated probabilities that individuals who participated in round 1 accepted the invite for round 2 was based on a logistic regression analysis. The following variables served as predictors in an exploratory main effects model: region of residence (in the form of collapsed governorates), gender, age, provided comments to round 1 survey, willing to do a follow-up for round 2 survey, education, household size, urban/rural place of residence, and employment status. It was found that the region of residence, age, willing to do follow-up, education, and employment status were significant predictors and were therefore used for a main effects model. Interaction effects were not explored as cross-tabulations revealed sparse cell counts for most of the pairings of the variables. The illustration below presents a histogram of the estimated selection probabilities of the round 1 participants based solely on the regression model. Those with selection probabilities at an extremum correspond to demographic profiles of individuals all of which who either accepted or refused the round 2 invitation for interview.

Figure B.1: Estimated selection probabilities, Round 1 follow-ups in blue
**Individual-Level**

For individuals not on the round 1 frame, the individual-level selection probabilities were modeled as if they were based on a stratified sampling design where the governorates serve as the strata. Projected population counts at the governorate level were available through a recent nationwide census/survey and were the same as those used for round 1 sample weighting. Hence, an individual’s selection probability was taken to be the ratio of the number of sampled individuals from the corresponding stratum, and which were not on the round 1 frame, and the projected governorate population size.

The following histogram presents the corresponding sample design weights, which are taken to be the inverse of the modeled selection probabilities. Note that all individuals, i.e., those on and off the round 1 frame, are included.

**Figure B.2: Individual-level design weights**
Household-Level

Selection of households not from the round 1 frame was modeled as if selections were made with replacement and proportional to the household size. Population counts of the number of households were made available through the population projection counts, and the sample data was used to extrapolate to the full population of households. The selection probabilities of households were then based on the with replacement draw-by-draw selection probabilities, and was taken to be the complement of the probability that a household is not selected on any of the draws.

In some cases, extremely large and unrealistic household sizes were reported by the sample respondents. As this may be due to observational error, the set of household size observations were Winsorized at the 90th percentile which was found to be nine for these observations.

The selection probability for the sample respondents was taken to be the proportional to the resulting observations.

The following histogram presents the corresponding sample design weights, which includes households (individuals) both on and off the round 1 frame.

Figure B.3: Household-level design weights
Sample Calibration

For both the individual-level and household-level weights, a raking ratio calibration scheme is used to obtain the calibrated weights; see Deville et al. (1993) and Deville and Särndal (1992) for information relating to the calibration procedure. The R programming language (R Core Team, 2016) was used with the aid of the ‘survey’ package (Lumley, 2020, 2004) to calculate the calibrated weights.

Individual-Level

Sample calibration for the individual-level weights were based on 2017 gender and age projected counts by governorate.

Gender was classified as either male or female.

The age variable was discretized into the following categories: 18–24, 25–29, 30–34, 35–39, 40–49, 50–59, and 60+.

The following tables give the projected population distribution by count and percentage, along with the sample distribution by count and percentage.

### Table B.3

<table>
<thead>
<tr>
<th>Gender</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Count (Percentage)</td>
<td>6,976,999 (50.52%)</td>
<td>6,832,529 (49.48%)</td>
</tr>
<tr>
<td>Sample Count (Percentage)</td>
<td>1,117 (76.72%)</td>
<td>339 (23.28%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>18–24</th>
<th>25–29</th>
<th>30–34</th>
<th>35–39</th>
<th>40–49</th>
<th>50–59</th>
<th>60+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Count (Percentage)</td>
<td>3,794,334 (27.48%)</td>
<td>2,442,054 (17.68%)</td>
<td>1,933,798 (14.00%)</td>
<td>1,484,834 (10.75%)</td>
<td>1,880,523 (13.62%)</td>
<td>1,205,706 (8.73%)</td>
<td>1,068,279 (7.74%)</td>
</tr>
<tr>
<td>Sample Count (Percentage)</td>
<td>346 (23.76%)</td>
<td>231 (15.87%)</td>
<td>211 (14.49%)</td>
<td>227 (15.59%)</td>
<td>257 (17.65%)</td>
<td>118 (8.10%)</td>
<td>66 (4.53%)</td>
</tr>
</tbody>
</table>

As suggested by Battaglia et al. (2004), population and sample cell counts should be no smaller than 5%. The 60+ sample cell count is less than this threshold, and hence for sample calibration purposes the 60+ and 50-59 categories are collapsed.

The following histogram presents the distribution of the calibrated weights.

![Histogram of Individual-level calibrated weights](image)

In some cases, the responses from those individuals receiving the largest weights may be driving/skewing the distribution of the estimates. To mitigate such influence, Battaglia et al. (2004) suggest trimming the sample weights at five times the mean of the weights. The following histogram presents the distribution of the weights trimmed at this value.

Household-Level

Post-stratification for the household-level weights was based on the 2017 household counts by governorate.

As suggested by Battaglia et al. (2004), population and sample cell counts should be no smaller than 5%. Hence, the governorate areas were collapsed in the following manner to give cell counts above the suggested threshold.

Table B.4

<table>
<thead>
<tr>
<th>Governorate(s)</th>
<th>Population Count</th>
<th>Population Percentage</th>
<th>Sample Count</th>
<th>Sample Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abyan, Al-Baida, and Al-Dhale</td>
<td>252,712</td>
<td>0.0693</td>
<td>168</td>
<td>0.1154</td>
</tr>
<tr>
<td>Aden and Laheg</td>
<td>260,826</td>
<td>0.0715</td>
<td>112</td>
<td>0.0769</td>
</tr>
<tr>
<td>Al-Hodeida</td>
<td>478,127</td>
<td>0.1312</td>
<td>86</td>
<td>0.0590</td>
</tr>
<tr>
<td>Al-Jawf, Mareb, Saadah</td>
<td>250,291</td>
<td>0.0687</td>
<td>108</td>
<td>0.0742</td>
</tr>
<tr>
<td>Al-Maharh, Hadramout, and Shabwah</td>
<td>236,992</td>
<td>0.0650</td>
<td>138</td>
<td>0.0948</td>
</tr>
<tr>
<td>Al-Mahweet and Hajja</td>
<td>358,353</td>
<td>0.0983</td>
<td>126</td>
<td>0.0865</td>
</tr>
<tr>
<td>Amran</td>
<td>127,831</td>
<td>0.0351</td>
<td>70</td>
<td>0.0480</td>
</tr>
<tr>
<td>Dhamar and Remah</td>
<td>306,089</td>
<td>0.0840</td>
<td>129</td>
<td>0.0886</td>
</tr>
<tr>
<td>Ibb</td>
<td>367,470</td>
<td>0.1010</td>
<td>162</td>
<td>0.1113</td>
</tr>
<tr>
<td>Sanaa City</td>
<td>427,416</td>
<td>0.1172</td>
<td>170</td>
<td>0.1168</td>
</tr>
<tr>
<td>Sanaa Region</td>
<td>127,489</td>
<td>0.0350</td>
<td>103</td>
<td>0.0707</td>
</tr>
<tr>
<td>Taiz</td>
<td>451,993</td>
<td>0.1240</td>
<td>84</td>
<td>0.0577</td>
</tr>
</tbody>
</table>
The following histogram presents the distribution of the calibrated weights.

In some cases, the responses from those individuals receiving the largest weights may be driving/skewing the distribution of the estimates. To mitigate such influence, Battaglia et al. (2004) suggest trimming the sample weights at five times the mean of the weights. The following histogram presents the distribution of the weights trimmed at this value.
Figure B.7: Household-level trimmed weights