**Appendix**

Table A1: Definition of control variable used in the analyses.

|  |  |
| --- | --- |
|  |  |
| Variable Name | Variable Definition |
| Is a rural household | Takes the value 1 if the household lives in a rural area |
| Share of females in the household | Number of females in the household over household size |
| Female-headed household | Takes the value 1 if the head of household is a female |
| Household size | Number of household members |
| Age of household head | Age of the head of household |
| Marital status hh head: divorced/separated/widowed | Takes the value 1 if the hh head is divorced or separated or widowed |
| Marital status hh head: never married/informal union | Takes the value 1 if the hh head is never married or is in an informal union |
| Education hh head: Primary education | Takes the value 1 if the hh head has some primary education |
| Education hh head: Secondary education | Takes the value 1 if the hh head has some secondary education |
| Education hh head: Higher than secondary education | Takes the value 1 if the hh head has some tertiary education |
| Mobile phone access | Takes the value 1 if the hh has access to a mobile phone |
| Log (Total annual per capita expenditure) | Log (Total annual per capita expenditure) |
| Females in the hh own land | Takes the value 1 if females in the hh own land |
| Females in the hh own assets | Takes the value 1 if females in the hh own non-farm asset |
| Females in the hh has control over income | Takes the value 1 if females in the hh make a decision about the use of hh income |
| Females in the hh make decisions on agriculture | Takes the value 1 if the females in the hh can own land |
| HH used positive/ambiguous shock coping strategies | Takes the value 1 if the receive some assistance or engage in new income activities or take some loan following a shock |
| HH used no or negative shock coping strategies | Takes the value 1 if households sold some assets or has a member migrating or reduced expenditure on education and health following a shock |
| Community has an agricultural group | Takes the value 1 if the hh lives in a community that has an agricultural group |
| Community has a saving & credit group | Takes the value 1 if the hh lives in a community that has a saving or credit group |
| Community has a youth group | Takes the value 1 if the hh lives in a community that has a youth group |
| Community has a bank/financial institution | Takes the value 1 if the hh lives in a community that has a bank or financial institution |
| Community has a bus/public transportation stop | Takes the value 1 if the hh lives in a community that has a bus or public transportation stop |

Notes: The table lists key variables used in the analysis and their definitions

Table A2: Correlation between the different dimensions of the food insecurity experience scale

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Worried about not having enough food | Unable to eat preferred food | Ate only a few kinds of food | Skipped meals | Ate less than you should | Ran out of food | Were hungry but did not eat | Went a whole day without food |
| Worried about not having enough food | 1.00 |  |  |  |  |  |  |  |
| Unable to eat preferred food | 0.69 | 1.00 |  |  |  |  |  |  |
| Ate only a few kinds of food | 0.68 | 0.75 | 1.00 |  |  |  |  |  |
| Skipped meals | 0.64 | 0.60 | 0.67 | 1.00 |  |  |  |  |
| Ate less than you should | 0.69 | 0.67 | 0.73 | 0.74 | 1.00 |  |  |  |
| Ran out of food | 0.61 | 0.56 | 0.59 | 0.64 | 0.65 | 1.00 |  |  |
| Were hungry but did not eat | 0.58 | 0.54 | 0.57 | 0.67 | 0.63 | 0.67 | 1.00 |  |
| Went a whole day without food | 0.36 | 0.32 | 0.34 | 0.44 | 0.38 | 0.43 | 0.52 | 1.00 |

Notes: The table shows the correlation between the 8 dimensions of the food insecurity experience scale using the pooled samples of LSMS-ISA/GHS-2018/19, NLPS Round 2, 4, and 7. The correlation coefficients range from 0.32 to 0.75, with most of the coefficients above 0.5. Given the strong correlation between these eight food insecurity indicators, using a sub-set of the indicator should provide a broad and comprehensive view of the food security situation of households in Nigeria.

Figure A1: Component loadings of the dimensions of the food insecurity experience scale on the first two factors obtained from the PCA of the eight dimensions FIES



Notes: The figure shows the scatterplots of the eight indicators of food insecurity in the plane formed by the first two factors obtained from the principal component analysis of the eight dimensions FIES using the pooled samples of LSMS-ISA/GHS-2018/19, NLPS Round 2, 4, and 7. It confirms the strong correlation between these indicators of food insecurity. It also reveals that these indicators can be grouped into three categories. The first group consists of the indicator “went a whole day without food”, which reflects the most severe food insecurity situation characterized by the lack of food for a whole day. The second group reflects inadequate access to food during the day, and consists of the indicators “were hungry but did not eat”, “ran out of food”, and “skipped meals”. The third group includes the indicators “worried about not having enough”, “ate less than you should”, “worried about not having enough”, “unable to eat preferred food”, and “ate only a few kinds of food”. Together, these indicators in the third group capture the low diversity of diet and the mismatch between desired consumption and actual food available. Our analysis captures one indicator in each of these three groups.

Table A3: Comparing the characteristics of hh in the covid survey to hh not in the covid survey

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | All households | | HH selected in the NLPS | | HH not selected in the NLPS | | Sig. |
|  | Mean | Se | Mean | Se | Mean | Se |  |
| At least one female in the hh is part of a SG | 45% | 1% | 46% | 1% | 44% | 1% |  |
| Food Insecurity Experience Scale | 2.37 | 0.04 | 2.27 | 0.07 | 2.43 | 0.05 |  |
| In last 30 days, hh skipped meals | 27% | 1% | 26% | 1% | 28% | 1% |  |
| In last 30 days, hh ate only a few kinds of food | 41% | 1% | 40% | 1% | 42% | 1% |  |
| In last 30 days, hh went a whole day without food | 25% | 1% | 25% | 1% | 25% | 1% |  |
| Is a rural household | 69% | 1% | 63% | 1% | 72% | 1% | \*\*\* |
| Share of females in the household | 50% | 0% | 50% | 1% | 50% | 0% |  |
| Female-headed household | 18% | 1% | 16% | 1% | 19% | 1% | \* |
| Household size | 5.53 | 0.05 | 5.86 | 0.09 | 5.34 | 0.06 | \*\*\* |
| Age of household head | 48.85 | 0.22 | 48.82 | 0.34 | 48.87 | 0.28 |  |
| Marital status hh head: divorced/separated/widowed | 18% | 1% | 16% | 1% | 20% | 1% | \*\* |
| Marital status hh head: never married/informal union | 6% | 0% | 6% | 1% | 6% | 0% |  |
| Education hh head: Primary education | 24% | 1% | 25% | 1% | 23% | 1% |  |
| Education hh head: Secondary education | 26% | 1% | 28% | 1% | 25% | 1% |  |
| Education hh head: Higher than secondary education | 16% | 1% | 17% | 1% | 16% | 1% |  |
| Mobile phone access | 95% | 0% | 98% | 0% | 93% | 0% | \*\*\* |
| Log Total annual per capita expenditure | 12.02 | 0.01 | 12.06 | 0.02 | 12.00 | 0.01 | \*\* |
| Community has an agricultural group | 80% | 1% | 82% | 1% | 79% | 1% | \*\* |
| Community has a savings & credit group | 44% | 1% | 46% | 1% | 42% | 1% | \* |
| Community has a youth group | 81% | 1% | 81% | 1% | 81% | 1% |  |
| Community has a bank/financial institution | 29% | 1% | 33% | 1% | 26% | 1% | \*\*\* |
| Community has a bus/public transportation stop | 46% | 1% | 51% | 1% | 44% | 1% | \*\*\* |
| HH used positive/ambiguous shock coping strategies | 35% | 1% | 35% | 1% | 36% | 1% |  |
| HH used no or negative shock coping strategies | 13% | 0% | 12% | 1% | 13% | 1% |  |
| Females in the hh own land | 25% | 1% | 23% | 1% | 26% | 1% |  |
| Females in the hh own assets | 74% | 1% | 75% | 1% | 73% | 1% |  |
| Females in the hh has control over income | 86% | 0% | 87% | 1% | 85% | 1% |  |
| Females in the hh make decisions on agriculture | 81% | 1% | 83% | 1% | 81% | 1% |  |

Notes: FSG = female saving group. The table shows means, percentages, and standard errors of key variables at baseline (2018/19) for all households, household included in the NLPS and households not included in the NLPS. We find that the likelihood of having a female household member being part of a female saving group is statistically the same for households selected to be included in the covid phone survey and households not selected for the survey (46% and 44%, respectively). The table also indicates that the food security situations of the two groups of households are not statistically different. However, inclusion in the covid phone survey appears to be statistically correlated with several household and community characteristics such as the residence in rural area, being headed by a male, being a large household, having access to a mobile phone, and residing in a community with better access to financial and transportation services. Consequently, it is important for the analysis to account for this difference in the likelihood of being selected in the phone survey. We do so by adjusting the sampling weight to the probability of being in the covid phone survey. This probability is obtained by running a probit regression of a dummy variable indicating the inclusion in the phone survey and the household and community level variables discussed in Table A. The regression results a presented in Table A3. \*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A4: Probit regression of the probability of inclusion in the NLPS on selected household and community variables in the baseline survey (LSMS-ISA/GHS-2018/19)

|  |  |
| --- | --- |
|  | Inclusion in the NLPS |
| Is a rural household | -0.183\*\* |
|  | (0.073) |
| Share of females in the household | 0.089 |
|  | (0.136) |
| Female-headed household | -0.023 |
|  | (0.140) |
| Household size | 0.051\*\*\* |
|  | (0.010) |
| Age of household head | 0.001 |
|  | (0.002) |
| Marital status hh head: divorced/separated/widowed | -0.043 |
|  | (0.135) |
| Marital status hh head: never married/informal union | -0.048 |
|  | (0.136) |
| Education hh head: Primary education | 0.184\*\* |
|  | (0.072) |
| Education hh head: Secondary education | 0.177\*\* |
|  | (0.076) |
| Education hh head: Higher than secondary education | 0.118 |
|  | (0.085) |
| Mobile phone access | 0.458\*\*\* |
|  | (0.159) |
| Log (Total annual per capita expenditure 2018-2019) | 0.228\*\*\* |
|  | (0.056) |
| Females in the hh own land | -0.009 |
|  | (0.074) |
| Females in the hh own assets | 0.063 |
|  | (0.081) |
| Females in the hh has control over income | 0.021 |
|  | (0.079) |
| Females in the hh make decisions on agriculture | -0.039 |
|  | (0.070) |
| HH used positive/ambiguous shock coping strategies | -0.022 |
|  | (0.060) |
| HH used no or negative shock coping strategies | 0.014 |
|  | (0.090) |
| Community has an agricultural group | 0.013 |
|  | (0.069) |
| Community has a savings & credit group | 0.152\*\* |
|  | (0.065) |
| Community has a youth group | -0.053 |
|  | (0.080) |
| Community has a bank/financial institution | 0.024 |
|  | (0.073) |
| Community has a bus/public transportation stop | -0.012 |
|  | (0.066) |
| Constant | -3.910\*\*\* |
|  | (0.748) |
| Observations | 4,975 |

Note: The table shows the results of the probit regression of a binary variable indicating the inclusion in the NLPS on selected household and community variables in the baseline survey (LSMS-ISA/GHS-2018/19). The predicted probability from this regression is used to adjust the survey weight with the inverse probability of being selected in the phone survey.