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Engendering informality statistics

Overview and methodology of labour force survey
pilot studies in Uganda and Peru

Antonio R. Discenza, Michael Frosch, Kieran Walsh
Statistical Standards and Methods Unit

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of Statistics



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Acronyms

CAPI	Computer-assisted personal interview
CBR	Centre for Basic Research (Uganda)
FGD	Focus Group Discussions
ICLS	International Conference of Labour Statisticians
ICSE-18	International Classification of Status in Employment 2018
IDI	In-Depth Interviews
ILO	International Labour Organization
ILOSTAT	ILO's statistical database
INEI	Instituto Nacional de Estadística e Informática (Peru)
LFS	Labour Force Survey
PAPI	Paper-and-pencil personal interview
UBoS	Uganda Bureau of Statistics

▶ Acknowledgement

This project relied on the generous support of the Bill & Melinda Gates Foundation. The project also benefitted from ongoing close engagement with staff of the Foundation throughout, all of whom are thanked for their interest and commitment to the project.

While the project was managed by the ILO it relied on the enormous efforts and great expertise of many outside the ILO. In particular, the ILO would like to thank staff of the Centre for Basic Research in Uganda and Grupo de Análisis para el Desarrollo (GRADE) of Peru for their enthusiasm and support for various stages of the work. The project could not have advanced without the generous provision of expertise and time from many working at the Uganda Bureau of Statistics and the Instituto Nacional de Estadística e Informática of Peru. Given the scale of the project, too many people in these organisations were involved to list here, but all are thanked for their invaluable contribution.

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▶ 1 Background

Gender equality is at the core of the ILO Decent Work mandate and is fundamental to achieving the global goals for sustainable development. Data and statistics support quantification of gender concerns, taking action and monitoring impact. Women's economic empowerment and the world of work is high among the priorities, and with informal jobs accounting for the bulk of women's employment globally, engendering informality statistics is crucial.

The framework of international standards for statistics on informality underwent review between 2018 and 2023. This was in response to strong demand from the 20th International Conference of Labour Statisticians (ICLS) for standards that promote better measurement and understanding of informality across countries². National and international experts in labour statistics formed a working group coordinated by the ILO Department of Statistics to complete the work and provided recommendations to the 21st ICLS in October 2023 as input to the newly adopted standards for measuring the informal economy³.

Cutting across the work to develop statistical standards is the need to engender statistics. The aim being that data producers can collect and produce statistics without gender bias, they produce statistics that are relevant to understanding gaps in gender equality, and they systematically analyse and disseminate data that are both sex-disaggregated and gender-responsive. Engendering statistics is an ongoing priority for the ILO Department of Statistics, a priority shared by its partners, including the Bill & Melinda Gates Foundation, UN Women, and the Women in Informal Employment: Globalizing and Organizing (WIEGO).

Undertaking labour force pilot studies and tests in parallel to the revision of statistical standards brings major benefits. Such tests create the opportunity to develop and try different measurement approaches, reflecting the evolving proposals from working group discussions. They also allow reconsideration of those proposals in the light of evidence on the measurement challenges they would create. ILO has accumulated experience in such testing over recent years, particularly through a comprehensive round of pilot studies in 2015-2017 to inform guidance and tools on recommended labour force survey (LFS) approaches to implement the 19th ICLS, as well as more recent studies on topics such as the measurement of unpaid domestic and care work and others⁴.

² International Labour Organization (ILO), Department of Statistics. 2018. Report III, Report of the Conference (ICLS/20/2018/3). 20th International Conference of Labour Statisticians, Geneva, 10–19 October 2018.

³ https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/normativeinstrument/wcms_901516.pdf

⁴ ILO Pilot Studies. <https://ilostat.ilo.org/resources/lfs-resources/>

Given the above, the ILO initiated the Engendering Informality Statistics project at the end of 2020 (the project) with funding from the Bill & Melinda Gates Foundation. The main activity of the project was to test statistical concepts and household survey questionnaires to generate evidence on what works when collecting data. Cognitive interviews were used to test survey questions in 2021 and pilot field tests of labour force survey questionnaires in 2022 provided quantitative data for analysis of measurement approaches with a gender lens. The project objectives, testing methodologies and findings are summarized in this report. The project has supported the working group in its discussions and drafting of the standards and the findings will be used to support countries on implementation, data production and analysis of gender and the informal economy.

► 2 Objectives and scope of the pilot studies in Uganda and Peru

Testing statistical concepts, questions, and question sequences used in labour force surveys is one way of ensuring data producers can operationalize the new standards practically and effectively. The ILO is using testing to enhance the generic labour force survey questionnaire to accommodate the changed standards and, potentially, offer new questions that respond to changes in data needs, particularly those relevant to gender and informality.

The objectives of this testing are to:

1. Explore the extent we can identify informality in an unbiased and comprehensive way for both women and men in different types of employment.
2. Reveal which questions and question sequences of the tested alternatives are most effective and efficient in collecting data on informal employment and informal enterprises.
3. Generate ideas for new questions that respond to changes in data needs, particularly those relevant to gender and informality.
4. Produce evidence to support further development of robust standards and methods for the production of informality statistics.

Following initial research and consultations the following topics were selected as a focus for the studies:

- i. Identification of informality in line with emerging proposals from the working group
- ii. Identification of dependent contractors (based on ICSE-18 as established in Resolution I of the 20th ICLS)
- iii. Identification of contributing family workers (ICSE-18) plus measurement of their motivation for working in a family business
- iv. Motivation of independent workers (as defined by ICSE-18) for operating a business
- v. Decision making in family businesses – this is related to ICSE-18 but also relevant to the understanding of agency
- vi. Earnings of “independent workers” as defined by ICSE-18
- vii. Earnings of “dependent workers” as defined by ICSE-18
- viii. Asset ownership in business (types and valuation)

- ix. ICT use in businesses (including digital platforms)
- x. Access to finance for businesses (only tested in the quantitative test in Peru)

The findings on these topics will be published on an incremental basis through a series of separate reports.

An important objective of the testing was to identify which questionnaire content is suitable to use, but also, by extension to establish if it is possible to cover the topics listed above in a labour force survey, considering burden and the quality of the data generated. The conclusions on each of the topics reflect both of these considerations – i.e. whether the topic is suitable for inclusion in a labour force survey and, if so, with what questions.

▶ 3 Pilot project design and country coverage

The project provided funding to conduct tests in two countries. Initially the cognitive testing was planned for both countries, but more resource intensive and therefore costly quantitative test was limited to only one country⁵. Criteria for selecting countries included high rates of informality across multiple sectors of the economy, experience conducting qualitative testing, and willingness and availability to undertake the work within the project timelines. Following consultation with project stakeholders and ILO Regional Offices and potential countries, Peru and Uganda were selected.

In Peru, the national statistical office – INEI – was engaged to undertake qualitative testing in 2021, having experience with this since first being involved in ILO pilot studies in 2015-2017. A local research organization – GRADE – was also engaged to manage the project and provide language and technical support throughout. The same organizations were re-engaged to support the qualitative tests conducted in 2022.

In Uganda, the qualitative testing was undertaken in 2021, in partnership with the Centre for Basic Research (CBR), a local non-governmental organization specializing in research. The Uganda Bureau of Statistics (UBoS) managed the quantitative testing undertaken in 2022.

The ILO designed the tests, prepared the questionnaires and supporting documentation, developed the computer-assisted personal interview (CAPI) software used for the quantitative tests, training the local research teams. All stages were undertaken in close collaboration with the implementing partners in the countries.

⁵ The savings on travel due to Covid-19 restrictions made sufficient funding available to support testing in two countries.

Peru is an upper-middle income country in South America with a population of 31.2 million people (50% female). Predominantly urban (80%), employment is mainly in the services sector (40%), followed by agriculture, fishing and mining (26%), trade (19%), manufacturing (9%) and construction (6%).

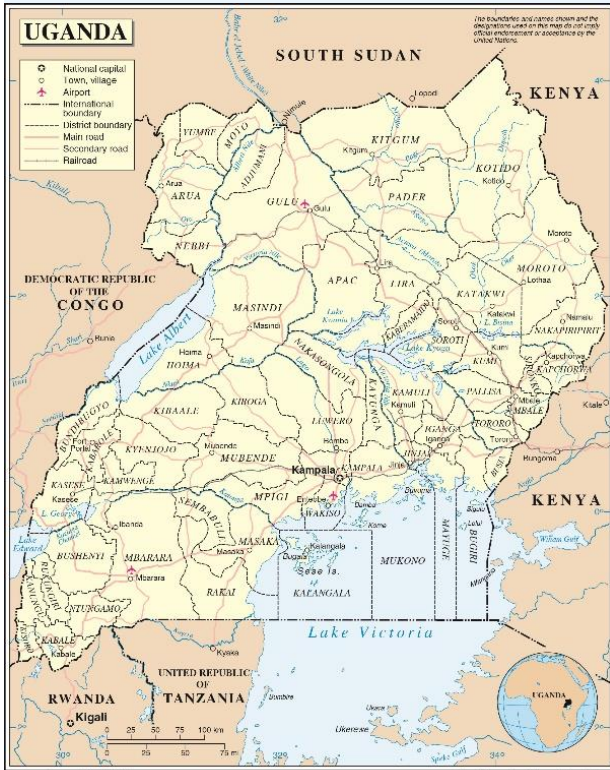
Peru has medium-to-high equality between women and men based on key human development indicators.⁶ There are persistent gender differences in labour force participation with men's participation rate at 81% compared to women's at 65% (2019). There has been almost no change in overall rates or gender gaps in the preceding 10 years.

Around three quarters (73%) of the employed population are in informal employment with informality being higher among employed women (76%) than men (70%). The overall rate of informality has been gradually trending downwards over the last decade and is more prevalent in rural than urban areas. Informality is high across all sectors, particularly in agriculture, fishing and mining (94%) and transport and communications (81%).

Data sources: INEI. [Evolución de los Indicadores de Empleo e Ingreso por Departamento, 2007-2018](#) and [Brechas de Género 2020](#).



⁶ Based on the Human Development Indicators (HDI) of life expectancy at birth, expected years of schooling, mean years of schooling and estimated gross national income per capita. UNDP. 2022.



Map No. 5002 Rev. 4/1 BRITISH NATIONALS
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Uganda is a low-income country in Eastern Africa with a population of nearly 43 million people (51% female). Most live in rural areas (71%) although a gradual rural-urban shift is evident.

Uganda has medium equality between women and men based on key human development indicators⁷. Subsistence agriculture is a source of livelihood for many, and labour force participation is at 58% for men and 39% for women.

Employment is concentrated in the trade, agriculture, forestry and fishing, and manufacturing sectors.

Most are in informal jobs – 94% of women and 90% of men in employment are informal. Informality is slightly higher in rural (94%) than urban areas (89%) and rates decrease with higher levels of

education.

Data source: Uganda Bureau of Statistics 2021, The National Labour Force Survey 2021 – Main Report, Kampala, Uganda.

⁷ Based on the Human Development Indicators (HDI) of life expectancy at birth, expected years of schooling, mean years of schooling and estimated gross national income per capita. UNDP. 2022

▶ 4 Methodology

4.1 Qualitative tests

The complexities involved in measuring work make cognitive interviews an obvious choice for testing the development of labour force survey methodology, especially when looking for generic solutions in a cross-cultural context. Cognitive interviews combine the asking of survey questions as they would be in a real survey with a discussion between interviewer and the participant about how the questions were understood. This generates evidence on whether questions are understood as intended, whether they work to get at the information being sought from participants, and if there are any issues with the wording, response categories or question sequence that need correcting.

Partners were identified in each country who would manage implementation of the qualitative testing, conduct the interviews, and collate the results. In Uganda, the Centre for Basic Research (CBR) brought strong qualitative research experience and much needed local knowledge to the process. In Peru, the main partner was the household survey team at the national statistical office (Instituto Nacional de Estadística e Informática (INEI)) that conducts a regular labour force survey and uses cognitive interviewing for national questionnaire development. An independent research organization – GRADE – was engaged to support management of the project including translation and interpretation between the English and Spanish languages.

As shown in **Table 1**, two rounds of cognitive interviews were conducted, providing a means to test and retest different questions. The first round focused on existing questions from the ILO's generic LFS questionnaire⁸ related to identifying informality. The second round tested a different set of questions, this time concentrating on gender-related data useful for contextualizing informal work.

Before developing the questions for testing in the second round of cognitive interviews, the Centre for Basic Research in Uganda was engaged to conduct Focus Group Discussions (FGDs) and In-Depth Interviews (IDIs) to generate evidence relevant to measuring the use of earnings and assets by owners of small informal businesses. The findings from the focus group discussions and individual interviews were used as inputs to develop the second round of questions for cognitive testing.

⁸ ILO: Labour Force Survey Resources. <https://ilostat.ilo.org/resources/lfs-resources/>

Table 1. Key milestones and dates for the qualitative testing

		Uganda	Peru
Round 1 of cognitive interviews			
Training		10-16 August 2021	28-30 September 2021 (training trainers)
			11-16 October 2021 (training interviewers)
Fieldwork		17-28 August 2021	18-23 October 2021
Focus Group Discussions and Individual Interviews			
		10-13 November 2021	Not applicable
Round 2 of cognitive interviews			
Training		25-27 November 2021	30 Nov-1 December 2021 (training trainers)
			6-9 December 2021 (training interviewers)
Fieldwork		2-11 December 2021	13-19 December 2021

The research was conducted in Mukono District, covering the villages of Kayaja (urban) and Namayiba (rural). Cognitive interviews had already been conducted in the same district and villages making them a convenient choice for this activity. The team held separate FGDs for men and women, two with each for a total of four (4) FGDs. A total of 38 participants participated in the FGDs (20 men (11 in urban and 9 in rural areas) and 18 women (8 in urban and 10 in rural)). Eight (8) individual in-depth interviews were also successfully completed. The work was conducted from 10 to 13 November 2021.

Figure 1: Photo of focus group discussion being held in Uganda



The ILO team developed the set of technical materials for cognitive interviewing in English based on the methods used in [previous rounds of testing in Sri Lanka](#) and as part of the [19th ICLS related pilot studies](#). The core documents were (a) the questionnaire being tested and (b) the cognitive protocol that guides how the interviewer should probe the participant's understanding of the questions asked. Questionnaires included more questions than were

being cognitively tested (such as those needed to identify that a respondent was employed, identify the status in employment etc.). The number of questions for cognitive probing were limited to around 10-15 question to keep the interviews manageable⁹. The core documents were accompanied by guides for each role (interviewer, notetaker, observer), reporting templates, and explanatory notes for each question.

Questionnaires were shared with the respective national statistical offices for review and advice on adaptation to the national context. In Peru, all materials were translated into Spanish. In Uganda, the team worked in English and agreed on verbal translation of key terms in the questionnaire and cognitive protocol to be used when interviewing in local languages.

Peru managed the work across four teams of all female staff from INEI (field staff, methodologists, and project managers). Each team comprised one interviewer, one note-taker and one observer. The interview method was the face-to-face paper and pencil interview (PAPI) in the Spanish language. In Uganda, the work was overseen by a project manager and a survey manager. The interviews were carried out by two teams of three researchers each playing the role of interviewer, notetaker or observer. The interview method was the face-to-face paper and pencil interview (PAPI) in the local language based on English version documents.

Strict protocols were established to minimize the health risks associated with Covid-19. Both Peru and Uganda had national protocols in place that were adapted for the cognitive interviews and aligned with [technical guidance](#) from the Intersecretariat Working Group on Household Surveys.

Delivery of training by the ILO team was conducted virtually. In Uganda, the training was at the Centre for Basic Research over five full days for the first round and four half days for the second round. The main objectives were to train local researchers in the ILO's methodology for cognitive interviewing; test the national adaptations of the methodology; and provide the opportunity for the teams to practice before actual field work. As INEI was already experienced with cognitive interviewing, the approach was slightly different in Peru. A three-day training of trainers was held online and focused on familiarising the team with the questions being tested and the issues for testing.

The first round of cognitive interviews was conducted in Uganda, in urban and rural areas of the Mukono District, between 17 and 28 August 2021. Round two was conducted in urban and rural areas of the Wakiso District, between 2 and 11 December 2021. In Peru, the fieldwork for Round 1 took place from 18 to 23 October 2021. Four districts of Metropolitan Lima were visited. Participants from rural areas were selected from the provinces of Huaral, Huaura, Cañete and

⁹ Benes, E and Walsh, K. (2018). ILO LFS Pilot Studies Cognitive Interview Tests: Methodology, process and outcomes. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_627874.pdf

Barranca. In the second cognitive test, fieldwork took place between 13 and 18 December 2021 and covered the same urban and rural areas.

Cognitive interviews involved a purposive sample of 40 participants per round of interviews for a total of 80 interviews in each country (160 combined total). The primary sampling criteria was to interview a similar number of women and men from urban and rural areas who worked in certain kinds of jobs, mainly informal. A general representation of different ages and education levels were secondary criteria. The ILO team developed the sample design and provided CBR and INEI with targeted ranges for each of the primary and secondary criteria. For the primary criteria, the actual participants were close to or precisely what was targeted.

The qualitative testing provided rich evidence on how effective existing and potential new questions are to collect data needed for gender-sensitive analysis of informality. Where questions were found to be problematic, it was usually possible to see patterns and generate solutions to improve the wording, add examples, change the sequencing, or use the lessons to identify where guidance and training should be provided to interviewers.

4.2 Quantitative tests

Three waves of quantitative tests with a random sample of households were conducted – two waves of testing in Uganda (same households at different times (seasons) of the year) and a single wave in Peru. In the original project plan it was only proposed to undertake quantitative testing in Uganda, but due to savings on travel (due to Covid-19 restrictions) sufficient funding was available to also support testing in Peru.

Similar questionnaires were tested in all three waves, differing only slightly as adjustments were made given lessons learnt from earlier rounds and adaptations were made to national context.

Two slightly different questionnaires were used in each round (Approaches A and B), with both questionnaires administered in the same period to different samples of randomly selected households of the same size (using a split sample design). In Uganda, over 1,600 households were interviewed in wave 1 and roughly the same households interviewed in wave 2 for simplicity of design and to allow for longitudinal observations if considered useful. The test in Peru was a smaller scale with just over 800 households interviewed (see [Table 4](#)).

The questionnaires are based on the [ILO's model labour force surveys](#) (job-start) with adjustments and additional questions on topics related to gender and informality (see list above). Approaches A and B differ only for about 30 (10%) of the questions. As such, the questionnaires share a common structure, with 25 short modules to gather the data needed to

identify respondents labour force status and, for those in employment, detailed information on their job or jobs, such as the topics listed earlier and other common topics such as working time.

4.3 Sample Design

The sample prioritised coverage of a range of informal activities (agricultural and non-agricultural) and the main agricultural crops of the country. Oversampling of urban areas was done to ensure the variety of informal activities carried out in urban areas are included. The sample will target locations that are cost-efficient to work in and require minimal variation in the languages into which the questionnaire needs to be translated.

In Uganda, the total planned sample was 2,000 households (see **Table 2**), with approaches A and B to be administered to a randomly split sample of 1,000 households each. The first wave of data collection was planned to be conducted in July 2022 and the second in October 2022. A household listing exercise was conducted by UBoS in May 2022 to support the sample design.

In Peru, the total planned sample was 800 households, with approaches A and B to be administered to a randomly split sample of 400 households each. Data collection was planned to be conducted during October-November 2022.

Table 2. Overview of test and sample design

	Number of households			Anticipated number of individual respondents of working age *	Timing (2022)
	Approach A	Approach B	Total		
Uganda Round 1	1,000	1,000	2,000	5,400	July
Uganda Round 2	1,000	1,000	2,000	5,400	October
Peru	400	400	800	2,060	Oct-Nov
Total	2,400	2,400	4,800	12,860	

* Calculated as (total households x a x p%), with a = average household size (5 in Uganda, 3.4 in Peru) and p = percentage of population working age and older (53.9% in Uganda, 75.7% in Peru).

4.4 Training and fieldwork

The first wave of data collection in each country started with seven days of training for interviewers and supervisors. The same teams were used for the second wave in Uganda, so the second round of training was completed in four days. Fieldwork ran over several weeks with interviewers using CAPI, transmitting data to a central server at the NSO, that was then shared with ILO for review on a weekly basis (see **Table 3**).

Table 3. Key milestones and dates for the quantitative testing

Quantitative testing	Uganda Round 1	Uganda Round 2	Peru
Implementation agreement	April 2022	April 2022	August 2022
Training	27 June – 4 July 2022	26 - 29 September 2022	17 - 23 October 2022
Fieldwork	5 July – 23 August 2022	2 - 31 October 2022	25 October – 5 December 2022
Final dataset ready for analysis	September 2022	December 2022	January 2023

Figure 2: Photo of training and fieldwork being held in Peru



4.5 Characteristics of the achieved samples

In Uganda, the number of households interviewed in each of the rounds was slightly lower than the 2,000 planned (see **Table 4** below). Across the two rounds and the two approaches, the average household size was 4.7, the average age of the reference person 45.3 years and the proportion of households with a female person of reference just below 30 per cent. The percentage of household members of working age was around 60 per cent, slightly higher than expected. As result, the number of respondents of working age was close to 9.2 thousand, slightly lower than the 10.8 thousand expected (see **Table 2** above).

In Peru, the number of households interviewed in the single round was slightly higher than the 800 planned. Across the two approaches, the average household size was 3.6, the average age of the reference person 48 years and the proportion of households with a female person of reference equal to 55%. The percentage of household members in working age was around 71%, slightly lower than expected. As result, the number of respondents in working age was around 2.1 thousand, slightly higher than originally expected.

Table 4: Achieved samples, number of households, household size and respondents of working age

	Number of households			Average household size	Proportion of households with a female reference persons	Average age of reference persons	Proportion of respondents in working age	Number of respondents in working age
	Approach A	Approach B	Total					
Uganda Round 1	824	830	1,654	4.6	0.30	45.4	0.61	4,680
Uganda Round 2	850	786	1,636	4.8	0.27	45.2	0.58	4,529
Peru	407	413	820	3.6	0.55	48.0	0.71	2,134
Total	2,081	2,029	4,110	4.5	0.34	45.9	0.61	11,343

A more detailed table that compares the characteristics of the achieved samples for the different approaches can be found in **Table A. 1** in the Annex.

In terms of distribution by sex and age groups, the samples are generally well balanced across rounds in Uganda (see **Table 5**). In Peru, the differences were a little higher than in Uganda, but still generally acceptable considering the smaller sample size. A more detailed table that compares the distribution across the different approaches can be found in **Table A. 2** in the Annex.

Table 5: Achieved samples of respondents in working age by sex and age groups

	UGANDA Round 1			UGANDA Round 2			PERU		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
14-24 years	17.8	19.4	37.2	18.7	19.2	37.9	12.3	12.4	24.7
25-34 years	10.1	11.0	21.2	10.1	11.5	21.6	8.9	10.6	19.5
35-44 years	8.1	8.7	16.8	7.7	7.9	15.7	7.9	10.0	17.9
45-54 years	6.0	5.3	11.4	5.5	5.4	10.9	7.3	7.9	15.2
55-64 years	3.3	3.8	7.1	3.4	4.0	7.5	5.5	6.6	12.0
65 years +	3.3	3.0	6.4	3.2	3.3	6.5	5.6	5.1	10.6
Total	48.7	51.3	100.0	48.6	51.4	100.0	47.4	52.6	100.0

Table 6 below shows the sample distribution by sex and relationship to the person of reference of the household in the different survey round. The samples are well balanced across survey rounds in Uganda and are also generally well balanced across approaches in both Uganda and Peru (see the more detailed **Table A. 3** in the Annex).

Table 6: Achieved samples of respondents in working age by sex and relationship to the person of reference, by survey round.

	UGANDA Round 1			UGANDA Round 2			PERU		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
Reference Person	24.7	10.6	35.3	25.9	9.9	35.7	17.5	20.9	38.4
Spouse/Partner	2.4	20.0	22.4	1.2	21.9	23.1	10.2	12.8	23.0
Son/Daughter	14.9	13.2	28.1	14.0	12.3	26.3	14.3	12.6	26.9
Mother/Father	0.1	0.8	0.9	1.5	1.6	3.2	1.2	1.6	2.9
Other relative	4.7	4.9	9.6	4.0	4.2	8.3	3.7	4.0	7.7
Other unrelated	0.7	0.7	1.4	0.4	0.3	0.7	0.5	0.6	1.1
Domestic worker	1.1	1.1	2.2	1.6	1.1	2.8			
Total	48.7	51.3	100.0	48.6	51.4	100.0	47.4	52.6	100.0

To correct the minor sample unbalances by sex, age-group and place of residence across survey rounds and approaches, sample weights were calculated to benchmark the sample estimates to a common reference population within each country. The next section gives more details on the weighting procedure.

4.6 Weighting samples to a common demographic structure

Given the difference observed between the samples from the two approaches within each survey round, and to facilitate a direct comparison of the figures and estimates from the different samples, grossing weights have been calculated to benchmark the sample results to a common reference population. Separately for each of the two countries, weights were calculated in two steps, as follow:

- Firstly, starting from base weights equal to 1 for all households, correction factors have been calculated to produce intermediate weights that make the estimated number of households interviewed in each enumeration area (EA) for both samples equal to the mean of the households interviewed overall in the EA (for example, if in a generic EA, sample A has 7 household interviewed and sample B 10, then the intermediate weights of those households will produce an estimate of 8.5 (mean of 7 and 10) in both samples. This correction helps to rebalance the samples over each EA and at the same time produce a minimal correction factor of the base weights. Moreover, the sum of the weights over the two sample is equal to the total sample size.
- Lastly, final weights have been calculated separately for the different sets of microdata (four for Uganda and two for Peru) by calibration, using as benchmark the joint distribution by strata, urban and rural domains, sex and age groups obtained as averages of the samples' distributions (obtained using the intermediate weight from the previous step). This further correction helped to rebalance the samples over each of the calibration cells of the joint distribution, hence facilitating the comparative analysis.

The next sections provide more details about the calculation of weights in the two countries.

4.6.1 Weighting samples in Uganda

In Uganda, information was collected with both questionnaires over two survey rounds, hence estimates can be produced from four main datasets (Round1_A, Round1_B, Round2_A and Round2_B).

The achieved samples were slightly reduced compared to the planned ones. They were spread over 93 enumeration areas (EAs), within the urban and rural areas of 35 districts within the regions of Kampala, Buganda South, Bunyoro, and Ankole. Within each EA, ten households were selected for each of the two questionnaires, using a split sample design. The theoretical samples envisaged a total of 930 households for each questionnaire. In round 2, the same households sampled in Round 1 were planned to be re-interviewed.

Interviews were administered through computer assisted personal interviews (CAPI) on tablets. The CAPI questionnaires were built using the CSPro software. Data were pre-processed and anonymized by the UBoS and subsequently shared with the ILO for further processing and analysis.

To facilitate a direct comparison of the figures and estimates produced from the four samples in Uganda (two approaches in each of the two rounds), it was decided to use sample weights to benchmark each sample population to a common reference population. This reference population (also called the benchmark population) is calculated as the average of the four sample distributions.

Calibrated weights were calculated for the four sets of microdata using the same approach based on several sets of benchmarks for the different estimation domains (the four regions), by sex and age group (see **Table 7**). Unlike post-stratification that requires a complete-multiway distribution as benchmark, calibration allows to use a combination of multi-way and marginal distributions, also available for different sub-groups of population. For example, in the case of Uganda:

- Sex by 7 age-groups for Buganda South, Bunyoro and Ankole
- Sex by 4 age-groups for Kampala (given the low sample size)
- Sex by 3 age-groups for the Urban samples of Buganda South, Bunyoro and Ankole (given the low sample size) .
- Sex by 6 age-groups for the Rural samples of Buganda South, Bunyoro and Ankole (given the lower sample size with respect to the total of urban and rural).

Table 7: Benchmarks used in the calibration of the four samples in Uganda

Benchmarks	Geographical domains	Sex	Age groups within Domains			
			Kampala	Buganda South	Bunyoro	Ankole
1	Total for the Domain	Men	0-13	0-13	0-13	0-13
2	Total for the Domain	Men	14-24	14-24	14-24	14-24
3	Total for the Domain	Men	25-34	25-34	25-34	25-34
4	Total for the Domain	Men	35+	35-44	35-44	35-44
5	Total for the Domain	Men		45-54	45-54	45-54
6	Total for the Domain	Men		55-64	55-64	55-64
7	Total for the Domain	Men		65+	65+	65+
8	Total for the Domain	Women	0-13	0-13	0-13	0-13
9	Total for the Domain	Women	14-24	14-24	14-24	14-24
10	Total for the Domain	Women	25-34	25-34	25-34	25-34
11	Total for the Domain	Women	35+	35-44	35-44	35-44
12	Total for the Domain	Women		45-54	45-54	45-54
13	Total for the Domain	Women		55-64	55-64	55-64
14	Total for the Domain	Women		65+	65+	65+
15	Urban part of the Domain	Men		0-13	0-13	0-13
16	Urban part of the Domain	Men		14-34	14-34	14-34
17	Urban part of the Domain	Men		35+	35+	35+
18	Urban part of the Domain	Women		0-13	0-13	0-13
19	Urban part of the Domain	Women		14-34	14-34	14-34
20	Urban part of the Domain	Women		35+	35+	35+
21	Rural part of the Domain	Men		0-13	0-13	0-13
22	Rural part of the Domain	Men		14-24	14-24	14-24
23	Rural part of the Domain	Men		25-34	25-34	25-34
24	Rural part of the Domain	Men		35-44	35-44	35-44
25	Rural part of the Domain	Men		45-54	45-54	45-54
26	Rural part of the Domain	Men		55+	55+	55+
27	Rural part of the Domain	Women		0-13	0-13	0-13
28	Rural part of the Domain	Women		14-24	14-24	14-24
29	Rural part of the Domain	Women		25-34	25-34	25-34
30	Rural part of the Domain	Women		35-44	35-44	35-44
31	Rural part of the Domain	Women		45-54	45-54	45-54
32	Rural part of the Domain	Women		55+	55+	55+

4.6.2 Weighting samples in Peru

In Peru, information was collected with both questionnaires over a single survey round, hence estimates can be produced separately from two main datasets (Approach A and B) or as a total.

The samples were spread over 80 clusters, 40 for each sample, within the urban and rural areas of the Departments of Lima, Huánuco, Piura and Ucayali. In each sample, 8 clusters (conglomerates) were in rural areas and 32 in urban areas. Within each cluster, ten dwellings

were selected and assigned to a specific questionnaire and additional 5 dwellings were selected for substitutions. The theoretical samples envisaged a total of 400 dwellings for each questionnaire/sample. Any dwelling selected at the time of the interview could be made up of a single household or multiple households.

The sample was distributed between the urban and rural areas, with greater coverage of urban areas in order to cover the widest range of economic activities, in particular informal ones, as possible. While the same stratification approach was applied for samples A and B, unlike Uganda, different enumeration areas were used for the two approaches.

Also for the pilot in Peru, to facilitate a direct comparison of the figures and estimates produced from the two samples, it was decided to use sample weights to benchmark each sample population to a common reference population – this being the average of the two samples based on selected characteristics.

Calibrated weights were calculated for the two sets of microdata using the same approach based on several sets of benchmarks for different weighting domains, by sex and age group (see **Table 8**). Given the smaller sample size than Uganda, the number of benchmarks used were simply the sex and age-group distribution (7 groups) within each of the 3 weighting domains. It is important to point out that the weighting domains have been created grouping rural and urban strata together with the only scope to reduce the bias due to the sampling variability and are not estimation domains in this case.

Table 8: Benchmarks used in the calibration of the two samples in Peru

Benchmarks	Geographical domains	Sex	Age groups within Domains		
			Strata 1,3,4,5 (Urban)	Stratum 2 (Urban)	Strata 6,7,8 (Rural)
1	Total for the Domain	Men	0-13	0-13	0-13
2	Total for the Domain	Men	14-24	14-24	14-24
3	Total for the Domain	Men	25-34	25-34	25-34
4	Total for the Domain	Men	35-44	35-44	35-44
5	Total for the Domain	Men	45-54	45-54	45-54
6	Total for the Domain	Men	55-64	55-64	55-64
7	Total for the Domain	Men	65+	65+	65+
8	Total for the Domain	Women	0-13	0-13	0-13
9	Total for the Domain	Women	14-24	14-24	14-24
10	Total for the Domain	Women	25-34	25-34	25-34
11	Total for the Domain	Women	35-44	35-44	35-44
12	Total for the Domain	Women	45-54	45-54	45-54
13	Total for the Domain	Women	55-64	55-64	55-64
14	Total for the Domain	Women	65+	65+	65+

► 5 The explicit test of proxy effect

It is well known that collecting employment-related information in household surveys by proxy impacts data quality¹⁰. Respondent protocols often fall back on interviewing the “most knowledgeable household member” who is asked to provide information on themselves and all other eligible household members.

Depending on who is selected to report the information (referred to as the “proxy respondent”) about a target respondent there can be various impacts, for example underreporting the work of women, for whom gender roles tend to blur the boundary between employment and other forms of work.¹¹

Misreporting by proxy respondents might stem from a lack of knowledge about the target respondent’s work activities. Proxy respondents may not know the details of employment others are engaged in, particularly detailed information like working hours, type of contract or arrangement, and the legal status of the economic unit where they are employed. Differences in proxy versus self-reports can also be a product of social norms, such as men being unaware of women’s paid work activities or unwilling to report them, or women reporting men as employed when they are not, due to social desirability.¹² Quantifying these effects can, however, be challenging requiring dedicated experimental approaches.

► Box 1. Previous tests of proxy effects

The MEXA experiment, conducted in 2014 by the World Bank Living Standards Measurement Study (LSMS), the United Nations Evidence and Data for Gender Equality (EDGE) project and the Uganda Bureau of Statistics (UBoS), was designed specifically to test proxy effect on data about asset ownership. The experiment provides a relevant example of testing proxy effect on the collection of individual level data.

The MEXA study was limited to households that had a ‘principal couple’ and tested five different approaches to data collection. The recommendations emerging were to “1) *reduce the reliance on a single respondent, notably the most knowledgeable household member, 2) expand the practice of interviewing multiple age-eligible individuals per household, with a focus on the members of the principal couple if a couple is present, and 3) probe directly and solely*

¹⁰ Koolwal, G. 2021. [Improving the Measurement of Rural Women’s Employment: Global Momentum and Survey Research Priorities](#). World Development, Volume 147;

Kilic, T., Koolwal, G. and Moylan, H. 2020. *Are You Being Asked? Impacts of Respondent Selection on Measuring Employment* (February 18, 2020). World Bank Policy Research Working Paper No. 9152, Available at SSRN: <https://ssrn.com/abstract=3540980>;

Muller, M. and Sousa, L. 2020. [Underestimating Women’s Economic Engagement in Rural Honduras](#). Policy Research Working Paper: No. 9217. World Bank, Washington, DC; and ILO and World Bank Group. 2021. *Measuring Women and Men’s Work: Main Findings from a Joint ILO and World Bank Study in Sri Lanka*.

¹¹ Desiere, S. and Costa, V. 2019. [Employment Data in Household Surveys: Taking Stock, Looking Ahead](#). World Bank Group, Policy Research Working Paper 8882.

¹² Abraham, R., Anjum, N., Lahoti, R. and Swaminathan, H. 2022. (S)he said what? Comparing self and proxy reported employment status.

regarding respondents' personal ownership of, and rights to assets, whether exclusively or jointly with someone else."

MEXA showed that it possible to limit proxy reporting in low- and middle-income country settings such as Uganda and remain cost-effective. This required careful questionnaire design and pre-testing and managing fieldwork with agile teams that were able to schedule interviews around respondent availability.

Another experiment, conducted in India in early 2020, examined how respondent selection in household surveys can affect labour estimates. It involved a male-female interviewer pair interviewing a randomly selected adult male and adult female from each household in the sample. Both were asked the same questions about time spent in household production and their labour market-related activities. If the selected pair were spouses, both were also asked the same questions about their spouse's participation in work activities during the last week. The experiment found "significant under-reporting of women's work, when reported by men. Women's employment rate decline by nearly 6 percentage points when men report on behalf of women, compared to when women report about themselves." There was no significant difference in participation rates for men between what women reported about their spouse's work activities compared to what the men reported for themselves. There were, however, differences in the type of employment, with men more likely to report themselves as self-employed or unpaid workers, with women tending to report their male spouse as wage worker.

Both experiments provide gender-related evidence of proxy effect as well as guidance about designing a survey experiment to test proxy versus self-reporting.

The quantitative tests conducted under *the Engendering Informality Statistics* project were concerned with the accurate identification of informality and related contextual variables, such as earnings and investment in formal compared to informal businesses. As with asset ownership, these are topics for which proxy reporting could bias the results. While testing proxy effect was not a primary objective of this project it is, however, an important potential source of bias and the ILO was strongly encouraged by the technical advisory group of the project to assess its impacts through the pilot studies. Reflecting this the pilot studies were designed to incorporate measures of proxy effect as far as is practical.

The dedicated test of proxy effect was attached to the second round of quantitative testing in Uganda and the single round in Peru. No changes were applied to the typical approach to proxy interviewing used by UBoS and INEI to collect data for its labour force survey.

The approach needed to fit within already allocated resources and limited time available, including integration in the CAPI tool already developed for data collection. The aim was to obtain both a self and proxy report about a selected individual within the household that would allow a direct comparison of differences in reporting. To minimise cost implications, rules that constrain respondent eligibility were avoided, with availability of working age respondents being the primary criteria for selection.

The protocol used was that in each household where multiple working age respondents are present and available to be interviewed, the household would be interviewed as normal

obtaining as many direct interviews conducted in private as practical. Once all interviews were complete, one target respondent could be selected by the interviewers to be the focus of an extra proxy interview, with the proxy respondent to be the reference person (where possible) or another available household member of working age.

Special training was provided, and the CAPI questionnaire was adapted to support the interviewers to implement the protocol. They were instructed to only attempt the extra proxy interview if the direct interviews had not already been overheard by the proxy respondent.

Table 9 below shows the weighted distributions of the respondents that participated to the test of proxy effect by the relation of the target respondent to the person of reference of the household and the relation of the proxy respondent to the target respondent, respectively for Uganda Round 2 and Peru¹³.

In Uganda Round 2, the test involved 591 respondents, of which 223 male target respondents (37.8% of the total) and 367 females (the remaining 62.2%). Overall, 31.6% of the target respondents were reference persons (RP), 40.4% spouse/partners and 28% other members of the households (of which about half were sons/daughters). The single largest group of target respondents within the proxy test were females who were the spouse of the reported household reference person (38.8% of the total) followed by male household reference persons (23.9%).

In terms of proxy respondents, in Uganda, those who reported information on behalf of their spouse/partners made up 57.5% of all proxy respondents. The share of sons/daughters reporting information about their parents was the 12.5%, while about 30% of the interviews were answered by other household members (parents, others related/unrelated).

In Peru, the test involved 530 target respondents, of which 257 were males respondents (48.6% of the total) and 272 females (the remaining 51.4%). Unlike Uganda, only 11.5% of the target respondents (61 respondents) were reference persons. The vast majority of target respondents were spouse/partners (48.7%) and other members (39.8%, among which 3 out of 4 were sons/daughters). The group of female spouse/partners were the most prevalent among target respondents (27.6% of the total, much less than Uganda).

In terms of the profiles of the proxy respondents, in Peru, those who reported information on behalf of their spouse/partners made up 52.6% of the group, similar to the proportion in Uganda. The share of sons/daughters reporting information about their parents was 6.8%, much lower than Uganda. About 40% of the interviews were answered by other household members (usually parents on behalf of their children, but also others related/unrelated).

¹³ To analyze in depth proxy effect with a sufficient number of cases, given the low sample size and the very low proportion of employed, samples A and B for Uganda wave 2 have been put together, and the same has been done for Peru.

The findings from this dedicated study are the subject of a separate report in this series, while selected findings are also incorporated in some of the thematic reports, where considered to be particularly relevant – such as in the report on the identification of informality, where important proxy effects were observed and quantified.

Table 9: Number of respondents to the explicit test of proxy effect by relationship of the target respondent to the person of reference and relation of the proxy respondent to the target respondent. Uganda Round 2 and Peru (weighted counts and percent distribution).

		Uganda (A+B)	Relation of proxy respondent to the target respondent				Relation of proxy respondent to the target respondent			
			Spouse/ Partner	Son / Daughter	Other members	Total	Spouse/ Partner	Son / Daughter	Other members	Total
			Weighted counts				% Distribution			
Sex of target respondent and relation to the person of reference	Males	Reference person HH	123	5	13	141	20.9	0.8	2.2	23.9
		Spouse/Partner	8	1		9	1.4	0.2		1.6
		Other members	2	24	47	73	0.3	4.0	8.0	12.4
		Total	133	30	60	223	22.6	5.0	10.2	37.8
	Females	Reference person HH	5	9	32	46	0.9	1.5	5.4	7.8
		Spouse/Partner	199	14	16	229	33.8	2.3	2.8	38.8
		Other members	2	22	69	92	0.3	3.7	11.7	15.6
		Total	206	44	117	367	34.9	7.5	19.8	62.2
	Total	Reference person HH	128	14	45	187	21.7	2.3	7.6	31.6
		Spouse/Partner	208	15	16	239	35.2	2.5	2.8	40.4
		Other members	3	46	116	165	0.6	7.7	19.6	28.0
		Total	339	74	177	591	57.5	12.5	30.0	100.0
			Weighted counts				% Distribution			
		Peru (A+B)	Relation of proxy respondent to the target respondent				Relation of proxy respondent to the target respondent			
			Spouse/ Partner	Son / Daughter	Other members	Total	Spouse/ Partner	Son / Daughter	Other members	Total
Sex of target respondent and relation to the person of reference	Males	Reference person HH	19	4	6	30	3.6	0.8	1.2	5.6
		Spouse/Partner	108	3	1	112	20.4	0.6	0.2	21.2
		Other members	2	6	108	115	0.4	1.1	20.4	21.8
		Total	129	13	115	257	24.4	2.5	21.7	48.6
	Females	Reference person HH	13	10	8	31	2.5	1.9	1.5	5.8
		Spouse/Partner	137	6	4	146	25.8	1.1	0.7	27.6
		Other members		7	88	95		1.4	16.6	18.0
		Total	150	23	100	272	28.3	4.4	18.8	51.4
	Total	Reference person HH	32	14	14	61	6.1	2.7	2.7	11.5
		Spouse/Partner	245	9	5	258	46.2	1.7	0.9	48.7
		Other members	2	13	196	211	0.4	2.5	37.0	39.8
		Total	279	36	215	530	52.6	6.8	40.5	100.0

* based on direct answers provided by target respondents

▶ References

- Gardner J., Walsh K. and Frosch M. (2022). Engendering informality statistics: gaps and opportunities. Working paper to support revision of the standards for statistics on informality. ILO Working Paper 84. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_861882.pdf
- ILO. (1982). Resolution concerning statistics of the economically active population, employment, unemployment and underemployment. Report of the 13th International Conference of Labour Statisticians . Geneva: ILO.
https://www.ilo.org/public/libdoc/ilo/1982/82B09_651_engl.pdf
- ILO. (2013a). Resolution I concerning statistics of work, employment and labour underutilization. Report III. Report of the Conference. 19th International Conference of Labour Statisticians. Geneva, 2–11 October 2013: ILO.
https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_234124.pdf
- ILO. (2013b). National practices in the measurement of the economically active population, employment, unemployment and time- related underemployment: Household-based sources. Room document 12. 19th International Conference of Labour Statisticians. Geneva: ILO. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_222950.pdf
- ILO. (2018a). Resolution I concerning statistics on work relationship. 20th International Conference of Labour Statisticians. Geneva, 2–11 October 2013: ILO.
https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_648693.pdf
- ILO. (2018b). LFS Pilot Study Programme. (ILO, Producer) Retrieved from ILO:
http://www.ilo.org/stat/Areasofwork/Standards/lfs/WCMS_484981/lang--en/index.htm
- ILO. (2023a). Resolution I concerning statistics on the informal economy. 21st International Conference of Labour Statisticians. Geneva, 11–20 October 2023: ILO
https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/normativeinstrument/wcms_901516.pdf

ILO. (2023b). Resolution II to amend the 19th ICLS resolution concerning statistics of work, employment and labour underutilization. 21st International Conference of Labour Statisticians. Geneva, 11–20 October 2023: ILO.
https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/normativeinstrument/wcms_230304.pdf

ILO. (2023c). International Classification of Status in Employment (ICSE-18) Manual. Geneva, Last updated: August 2023: ILO. <https://ilostat.ilo.org/resources/concepts-and-definitions/classification-status-at-work/>.

Miller et al. (2011). Design and analysis of cognitive interviews for comparative multinational testing. SAGE journals. Retrieved from
<http://journals.sagepub.com/doi/pdf/10.1177/1525822X11414802>

► Annex

Table A. 1: Achieved samples, number of households, household size and respondents of working age, by survey round and approach.

	Approach	Type of locality	Number of households	Average household size	Proportion of households with a female reference persons	Average age of reference persons	Proportion of respondents in working age	Number of respondents in working age
Uganda Round 1	A	Urban	309	4.3	0.34	44.2	0.67	887
	A	Rural	515	4.6	0.26	46.1	0.61	1,445
	B	Urban	335	4.4	0.33	42.8	0.63	922
	B	Rural	495	5.1	0.29	47.4	0.57	1,426
Uganda Round 2	A	Urban	335	4.4	0.31	43.1	0.60	883
	A	Rural	515	5.1	0.24	46.7	0.55	1,444
	B	Urban	326	4.3	0.32	43.2	0.63	880
	B	Rural	460	5.1	0.24	46.7	0.57	1,322
Peru	A	Urban	327	3.7	0.58	47.3	0.72	867
	A	Rural	80	3.7	0.46	54.5	0.70	207
	B	Urban	332	3.6	0.56	46.4	0.72	863
	B	Rural	81	3.6	0.42	50.7	0.68	197
Total			4,110	4.5	0.34	45.9	0.61	11,343

Table A. 2: Achieved samples of respondents in working age by sex and age groups, by survey round and approach.

	UGANDA Round 1			UGANDA Round 2			PERU		
	Approach A	Approach B	Total	Approach A	Approach B	Total	Approach A	Approach B	Total
Males									
14-24 years	18.0	17.7	17.8	18.9	18.4	18.7	12.8	11.7	12.3
25-34 years	10.0	10.3	10.1	9.9	10.3	10.1	8.1	9.7	8.9
35-44 years	8.4	7.8	8.1	7.5	7.9	7.7	7.6	8.1	7.9
45-54 years	5.7	6.3	6.0	5.7	5.3	5.5	7.1	7.5	7.3
55-64 years	3.3	3.3	3.3	3.3	3.5	3.4	6.3	4.6	5.5
65 years +	3.4	3.3	3.3	3.2	3.2	3.2	5.4	5.8	5.6
Total	48.8	48.7	48.7	48.4	48.7	48.6	47.4	47.5	47.4
Females									
14-24 years	19.0	19.8	19.4	19.4	19.0	19.2	12.6	12.3	12.4
25-34 years	11.2	10.8	11.0	12.0	11.0	11.5	9.6	11.6	10.6
35-44 years	8.3	9.1	8.7	7.7	8.1	7.9	9.9	10.2	10.0
45-54 years	5.8	4.9	5.3	5.1	5.7	5.4	8.1	7.7	7.9
55-64 years	3.9	3.7	3.8	4.3	3.7	4.0	6.7	6.4	6.6
65 years +	3.0	3.1	3.0	2.9	3.7	3.3	5.8	4.3	5.1
Total	51.2	51.3	51.3	51.6	51.3	51.4	52.6	52.5	52.6
Total									
14-24 years	37.0	37.4	37.2	38.3	37.5	37.9	25.4	24.0	24.7
25-34 years	21.2	21.1	21.2	21.9	21.3	21.6	17.7	21.3	19.5
35-44 years	16.7	16.9	16.8	15.3	16.1	15.7	17.5	18.3	17.9
45-54 years	11.5	11.2	11.4	10.8	11.0	10.9	15.2	15.3	15.2
55-64 years	7.2	7.1	7.1	7.6	7.3	7.5	13.0	11.0	12.0
65 years +	6.4	6.3	6.4	6.1	6.9	6.5	11.2	10.1	10.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table A. 3: Achieved samples of respondents in working age by sex and relationship to the person of reference, by survey round and approach.

	UGANDA Round 1			UGANDA Round 2			PERU		
	Approach A	Approach B	Total	Approach A	Approach B	Total	Approach A	Approach B	Total
Males									
Reference Person	25.0	24.5	24.7	26.3	25.4	25.9	16.7	18.3	17.5
Spouse/Partner	2.0	2.9	2.4	1.0	1.4	1.2	10.7	9.7	10.2
Son/Daughter	15.2	14.7	14.9	12.0	16.0	14.0	14.3	14.2	14.3
Mother/Father	0.1	0.1	0.1	2.9	0.1	1.5	1.2	1.2	1.2
Other relative	4.4	5.0	4.7	4.0	4.1	4.0	4.0	3.4	3.7
Other unrelated	0.6	0.9	0.7	0.5	0.3	0.4	0.5	0.6	0.5
Domestic worker	1.5	0.7	1.1	1.8	1.5	1.6			
Total	48.8	48.7	48.7	48.4	48.7	48.6	47.4	47.5	47.4
Females									
Reference Person	10.4	10.8	10.6	9.9	9.9	9.9	21.2	20.7	20.9
Spouse/Partner	20.2	19.8	20.0	22.1	21.6	21.9	12.8	12.8	12.8
Son/Daughter	13.0	13.4	13.2	11.0	13.7	12.3	13.3	11.9	12.6
Mother/Father	1.1	0.6	0.8	2.4	0.8	1.6	1.7	1.6	1.6
Other relative	4.5	5.3	4.9	4.6	3.9	4.2	2.8	5.3	4.0
Other unrelated	1.0	0.4	0.7	0.3	0.4	0.3	0.8	0.3	0.6
Domestic worker	1.1	1.1	1.1	1.2	1.0	1.1			
Total	51.2	51.3	51.3	51.6	51.3	51.4	52.6	52.5	52.6
Total									
Reference Person	35.3	35.3	35.3	36.1	35.3	35.7	37.9	39.0	38.4
Spouse/Partner	22.3	22.6	22.4	23.2	23.0	23.1	23.5	22.5	23.0
Son/Daughter	28.1	28.0	28.1	23.0	29.7	26.3	27.7	26.1	26.9
Mother/Father	1.2	0.6	0.9	5.3	0.9	3.2	2.9	2.8	2.9
Other relative	9.0	10.3	9.6	8.6	7.9	8.3	6.8	8.7	7.7
Other unrelated	1.6	1.2	1.4	0.7	0.7	0.7	1.3	0.8	1.1
Domestic worker	2.5	1.9	2.2	3.1	2.5	2.8			
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0