

## **TECHNICAL NOTES**

### **LABOR FORCE SURVEY WITH WORKING CHILDREN RIDER QUESTIONS**

#### **I. Introduction**

##### **a. Background**

The stability and growth of a country's economy hinges on its ability to produce goods and services for both domestic and international use. Labor represents an important factor of production, hence, the improvement of the quality of the labor force, and efforts to make it more productive and responsive to growth are necessary for the development of the economy. A clear knowledge and understanding of the size, composition, and other characteristics of the segment of the population is a big step in this direction. A continuing supply of the data on labor force is indispensable to national and local development planning.

The Labor Force Survey (LFS) is a vehicle to gather such data on the demographic and socio-economic characteristics of the population with nationwide coverage and conducted on a quarterly and monthly mode by interviewing households. The Philippine Statistics Authority (PSA) implements the LFS.

Starting in 2017, every October round of the LFS has been intentionally modified to collect essential demographic and economic data on children aged 5 to 17. This focus specifically targets the socio-economic characteristics of working children and child laborers in this age group, ensuring a comprehensive understanding of their status in the country.

##### **b. Objectives**

The October LFS aims to provide a quantitative framework for the preparation of plans and formulation of policies affecting the labor market. Further, it provides information on the economic activities of children 5 to 17 years old, which are needed for national development planning and implementing programs and regulations towards reducing the worst forms of child labor.

Specifically, the survey is designed to provide statistics on working children disaggregated by sex, age group, broad industry group, and hours worked. Further, the survey is also designed to generate statistics on child labor 5 to 17 years.

#### **II. Concepts and Definitions**

##### **a. Reference Period**

The reference period for this survey is the "past week" referring to the past seven (7) days preceding the date of visit of the enumerator or the interviewer.

## **b. Concepts and Definitions**

### **1. Child**

Refers to any person under 18<sup>1</sup> years of age.

### **2. Work**

Work is defined as any economic activity that a person does for pay, (in cash or in kind, in any establishment, office, farm, private home), or for profit, or without pay on family farm or business, or an activity done by a farm operator or member of his family on another's farm on exchange labor arrangement.

- a. Work for pay** - any economic activity that a person does for an employer, whether in an establishment, office, farm, or private residence (other than his or her own), and receives salary/wage, commission, tips, in cash or in kind, or other forms of compensation such as free meals, free living quarters, and educational support.
- b. Work for profit** - any economic activity that a self-employed person does for profit in own business such as sari-sari store, online selling, farm, and dress shop; or for fees in the practice of one's profession or trade. Making a single article that is intended for sale is considered as work for profit.
- c. Work without pay on family farm or business** - any economic activity that a person does without pay on a farm or business that is being operated by another family member in the same household.
- d. Work by a farm operator or by his family member on another household's farm on exchange labor** - any economic activity that a farm operator or a member of his family does on a farm being operated by another household on exchange labor arrangements. An exchange labor arrangement is usually practiced by agricultural workers during the height of rice planting and harvesting seasons.

### **3. Looked for work**

The child had looked or searched for work at least once during the week prior to the survey.

### **4. Working Child**

A child is considered working or economically active if the child had a job or business, or was engaged either as paid or unpaid in the family farm or business, at any time for at least one hour during the week prior to the survey. The reference age range in this report for the estimate of working children is 5 to 17 years old.

---

<sup>1</sup> Section 3(a), Implementing Rules and Regulations, Republic Act No. 9231 Amending RA No. 7610.

## 5. Hazardous Work and Activities

Department of Labor and Employment (DOLE) Department Order No. 149, Series of 2016 enumerates the different work and activities declared as hazardous for persons below 18 years of age:

- a. Work and activities under the following industrial classifications:
  - i. Mining and Quarrying;
  - ii. Construction;
  - iii. Transportation and Storage;
  - iv. Water Supply, Sewerage, Waste Management and Remediation Activities;
  - v. Forestry and Logging;
  - vi. Fishing and Aquaculture;
  - vii. Hunting, Trapping and Related Service Activities;
  - viii. Security and Investigation; and
  - ix. Manufacturing, specifically of alcoholic beverages, tobacco, pyrotechnics, rubber and plastic products, chemicals and chemical products, basic metals, and weapons and ammunitions.
- b. Work and activities under the following occupational classifications:
  - i. Farmers and other Plant Growers, specifically, preparatory, tending, harvesting and post-harvesting activities;
  - ii. Animal producers, specifically, rearing, harvesting, post-harvesting activities and working in slaughterhouses;
  - iii. Physical Sciences, Life Sciences and Health Associate Professionals, includes tasks involving operating radiation emitting machines, high power laboratory, medical, dental and electronic equipment; extracting, collecting or processing human or animal blood, fecal remains and other body fluids or chemicals;
  - iv. Sales and Services Elementary Occupations, including work that requires use of dangerous power tools, machines or devices; handling, use and application of or exposure to toxic, corrosive, flammable and combustible substances; selling of alcoholic beverages, tobacco and pyrotechnics and chemicals; and courier and delivery service-related tasks that expose the child to road accidents and carrying of heavy loads;
  - v. Personal and protective services workers, including, escorting, accompanying or guiding tourists in dangerous activities; personal care of persons with communicable diseases; housekeeping-related tasks that require use of power instruments and handling toxic chemicals; bartending, cooking involving the use of pressurized cookers and similar equipment; work exposed to sexual abuse;
  - vi. Customer Services clerks, including, inbound and outbound sales and technical support or contact center services to clients over phone or internet; work in gambling facilities;
  - vii. Other craft and related trade workers involving driving or operating of high-power machineries or equipment; sanding, varnishing, painting and tasks related to textile and garments; or
  - viii. Other work and activities declared as hazardous.

## 6. Child labor

Child labor<sup>2</sup> is defined as any work or economic activity performed by a child that subjects him/her to any form of exploitation or is harmful to his/her health and safety or physical, mental, or psychological development.

### III. Limitations

Hazardous work and activities to children below 18 years are identified in DOLE Department Order No. 149 Series of 2016. While unsafe and unhealthy workplaces pose risks or hazards to children, even long working hours and nighttime work are viewed as hazardous types of work from which children should be protected as stated in Section 12-A of the Republic Act (RA) No. 9231 as follows:

- (1) "A child below fifteen (15) years of age may be allowed to work for not more than twenty (20) hours a week: Provided, that the work shall not be more than four (4) hours at any given day";
- (2) "A child fifteen (15) years of age but below eighteen (18) shall not be allowed to work for more than eight (8) hours a day, and in no case beyond forty (40) hours a week"; and
- (3) "No child below fifteen (15) years of age shall be allowed to work between eight o'clock in the evening and six o'clock in the morning of the following day and no child fifteen (15) years of age but below eighteen (18) shall be allowed to work between ten o'clock in the evening and six o'clock in the morning of the following day".

In this report, child labor includes:

- a. Hazardous work identified in the DOLE Department Order No. 149 based on the Philippine Standard Industrial Classification and the Philippine Standard Occupational Classification; or
- b. Child working on long hours:
  - i) A child below fifteen (15) years of age may be allowed to work for not more than twenty (20) hours a week;
  - ii) A child fifteen (15) years of age but below eighteen (18) shall not be allowed to work beyond forty (40) hours a week; and
  - iii) A child fifteen (15) years of age but below eighteen (18) shall not be allowed to work at nighttime or the entire day.

### IV. Sampling Design and Estimation Methodology

The LFS, being a household-based survey, used the 2023 Geo-enabled Master Sample (GeoMS) design from which 4 replicates were drawn that includes 44,913 secondary sampling units (SSUs) or sample housing. Using a two-stage cluster sampling design with barangays or enumeration areas (EAs) or groups of nearby barangays or EAs as the primary sampling unit (PSU), and housing units serving as the secondary sampling unit (SSU) within the PSUs. In the first stage, PSUs are systematically selected from the Master Sample PSU frame of each sampling domain with equal probability. During the second stage of selection, housing units are drawn systematically for each sample PSU. Generally, all households within the sample

---

<sup>2</sup> Republic Act No. 9231 and its Implementing Rules and Regulations (IRR) - "*Special Protection of Children Against Child Abuse, Exploitation and Discrimination Act*"

housing unit are also considered as sample households. However, for housing unit with more than three households, a maximum of three sample households were randomly selected.

## **Sampling Frame**

The 2023 GeoMS sampling frame is constructed based on the results of the 2020 Census of Population and Housing. The EA Reference File (EARF) of the 2020 Census of Population is used as the PSU frame while the 2020 list of households for each of the PSUs is used as the SSU frame.

## **Sampling Domain**

To provide subnational or provincial level statistics with precise estimates, the 2023 GeoMS has 118 sampling domains. Listed as follows: 82 provinces (including Maguindanao del Norte and Maguindanao del Sur); 33 highly urbanized cities (including 16 cities in the National Capital Region); and 3 other urban areas (Pateros, Isabela City, and Cotabato City). However, the domain for generating estimates for working children from the LFS is national, as only a few sample households have working children.

## **Primary Sampling Units**

In the 2023 GeoMS Design, each sampling domain (i.e., province/HUC) is divided into exhaustive and non-overlapping area segments known as Primary Sampling Units (PSUs) with about 100 to 300 households. A PSU can be any of the following:

- a) A single enumeration area (EA) barangay; or
- b) Two or more adjacent small EAs within the same barangay; or
- c) Two or more adjacent small barangays of the same city/municipality; or
- d) Portion or an EA of a multi-EA barangay.

Out of the 42,046 barangays in the Philippines, 127,028 PSUs were formed. A significant number of these PSUs, or about 15 percent of the total PSUs were formed in Region IVA. CAR has the fewest PSUs formed, making up about 2 percent of the total.

## **Replicates**

From the ordered list of PSUs, all possible systematic samples of six PSUs are drawn to form a replicate for most of the province domain i.e., 76 out of 82 provinces while all possible systematic samples of eight PSUs are drawn to form a replicate for most of the HUCs, that is, 31 of 33 HUCs.

Three (3) PSUs are drawn to form a replicate for small provinces/HUC domains such as Batanes, Guimaras, Siquijor, Camiguin, Apayao, and Dinagat Islands, and 3 to 5 PSUs per replicate are allocated for small HUCs such as San Juan City and Lucena City and for special areas such as Pateros, Isabela City, and Cotabato City.

## Sample Allocation Scheme

The total number of sample Secondary Sampling Units (SSUs) are allotted proportionately to the measure of size of the PSU. Thus, a PSU with lesser number of housing units/households would have a lesser number of sampled SSUs than those PSUs with larger number of housing units/households. On the average, a total of 12 sample Housing Units are allotted for each sample PSUs in Highly Urbanized City domain while 16 sample housing units/households are allotted for every PSUs in province domain.

## Base Weight Computation

The base weight is computed as the inverse of selection probability.

$$w_{p\alpha\beta} = \frac{A_p}{\alpha_p} \times \frac{B_{p\alpha}}{b_{p\alpha}}$$

where:

$A_p$  - total number of PSUs in domain p

$\alpha_p$  - total number of sample PSUs in domain p

$B_{p\alpha}$  - total number of housing units in PSU  $\alpha$  in domain p

$b_{p\alpha}$  - total number of sample housing units in PSU  $\alpha$  in domain p

For housing units with at most three households, the base weight is computed as

$$w_{p\alpha\beta} = \frac{A_p}{\alpha_p} \times \frac{B_{p\alpha}}{b_{p\alpha}}$$

For housing units with more than three households, the base weight is computed as

$$w_{p\alpha\beta\gamma} = \frac{A_p}{\alpha_p} \times \frac{B_{p\alpha}}{b_{p\alpha}} \times \frac{C_{p\alpha\beta}}{c_{p\alpha\beta}}$$

where:

$C_{p\alpha\gamma\beta}$  - total number of households in the sample housing unit

$c_{p\alpha\gamma\beta}$  - the number of sample households in the sample housing unit=3

## Base Weight Adjustment

The base weight is adjusted for unit non-response and further calibrated to conform to the known or projected population count. The projected population count used for the October 2023 LFS was October 2023.

For unit non-response adjustment (within domain p), the adjustment is computed as:

$$A_{p1} = \frac{\text{weighted} * \text{total number of eligible sample households}}{\text{weighted} * \text{total number of responding households}}$$

where:

weighted \* refers to the base weight

Applying this to the base weight, we have:

$$w'_{p\alpha\beta}{}^{adj} = w_{p\alpha\beta} \times A_{p1}$$

Further calibration is made to conform with known population count by age-sex as follows:

Age Group (in years)	Sex	
	Male	Female
0 – 14	C1	C2
15 – 24	C3	C4
25 – 34	C5	C6
35 – 44	C7	C8
45 – 54	C9	C10
55 – 64	C11	C12
65 and over	C13	C14

$$A_{p2c} = \frac{X_{pc}}{\hat{X}_{pc,adj}}$$

where:

- $X_{pc}$  - is the projected total population for age-sex class c  
 $\hat{X}_{pc,adj}$  - is the weighted estimate of the population for age-sex class c using the non-response adjusted weight

Hence, the final weight (calibrated weight is):

$$w'_{p\alpha,fin} = \underbrace{w'_{p\alpha,adj}}_{\substack{\text{non-} \\ \text{response} \\ \text{adjusted} \\ \text{weight}}} \times \underbrace{A_{p2c}}_{\substack{\text{population} \\ \text{adjustment} \\ \text{factor}}}$$

## Estimation of Totals

- Generally, the estimate for the weighted total for a sampling domain (province/HUC) considering the number of sample replicates was derived using:

$$\hat{Y}_p = \sum_{\tau=1}^l \sum_{\alpha=1}^{a_{\tau}} \sum_{\beta=1}^{b_{\tau\alpha}} w'_{p\tau\alpha,fin} y_{p\tau\alpha\beta} \quad l = 1 \text{ to } L \text{ sample replicates}$$

- For each of the sampling domain which considered 16 samples, the estimate for the weighted total was computed as the value of the sample household for variable Y multiplied by its corresponding weight using this formula:

$$\hat{Y}_p = \sum_{\tau=1}^{16} \sum_{\alpha=1}^{a_{\tau}} \sum_{\beta=1}^{b_{\tau\alpha}} w'_{p\tau\alpha,fin} y_{p\tau\alpha\beta} \quad l = 1 \text{ to } 16 \text{ replicates}$$

- For the Province/HUC

The estimate for the weighted total for the province/HUC was derived as the average of the estimates for the 16 replicates

$$\hat{Y}_p = \frac{1}{16} \sum_{\tau=1}^{16} (\hat{Y}_{p\tau}) = \frac{1}{16} (\hat{Y}_{p1} + \hat{Y}_{p2} + \hat{Y}_{p3} \dots + \hat{Y}_{p16})$$

Average of the estimates for the 16 replicates

where:

$\hat{Y}_{p\tau}$  - estimate of Y for replicate  $\tau$  in province p

- For the Region

The estimate for the weighted total for the region was derived as the sum of its weighted provinces/HUCs domain totals:

$$\hat{Y}_r = \sum_{p=1}^{m_r} (\hat{Y}_p) = \hat{Y}_1 + \hat{Y}_2 + \dots + \hat{Y}_{m_r}$$

Weighted Province/HUC Totals

where:

$\hat{Y}_p$  - estimate of total for province/HUC p

$m_r$  - total number of provinces/HUCs in the region

- For the entire country

$$\hat{Y} = \sum_{r=1}^n (\hat{Y}_r) = \hat{Y}_1 + \hat{Y}_2 + \dots + \hat{Y}_n$$

Weighted Region Totals

where:

$\hat{Y}_r$  - estimate of total for region r

n - total number of regions in the country

## Estimation of Proportions/Ratios

Rates will be computed as for example employment rate:

$$\hat{R} = \frac{\hat{Y}}{\hat{X}}$$

where:

$\hat{Y}$  = estimated total employed

$\hat{X}$  = estimated total population in the labor force



To estimate the weighted proportion  $\hat{p}_r$  in the  $r$ th region

$$\hat{p}_r = \frac{\sum_{p=1}^{mr} \sum_{\tau=1}^{16} \sum_{\alpha=1}^{a_\tau} \sum_{\beta=1}^{b_{\tau\alpha}} w'_{p\tau\alpha,fin} x_{p\tau\alpha\beta}}{\sum_{p=1}^{mr} \sum_{\tau=1}^{16} \sum_{\alpha=1}^{a_\tau} \sum_{\beta=1}^{b_{\tau\alpha}} w'_{p\tau\alpha,fin} y_{p\tau\alpha\beta}}$$

where:

$x_{p\tau\alpha\beta}$  = the total number of cases in the sample with a certain attribute  $x$

$y_{p\tau\alpha\beta}$  = the total number of cases in the sample.

## Estimation of Sampling Error

Sampling error is usually measured in terms of the standard error for a particular statistic (mean, percentage, etc.), which is the square root of the variance.

If the sample has been selected as a simple random sample, it would have been possible to use straightforward formulas for calculating sampling errors. However, the LFS is the result of a multi-stage design, and it is necessary to use more complex formulas.

Sampling errors are computed using statistical programs. These statistical programs use the Taylor linearization method to estimate variances for survey estimates that are means, proportions, or ratios.

The Taylor linearization method treats any percentage or average as a ratio estimate,  $r=y/x$ , where  $y$  represents the total sample value for variable  $y$ , and  $x$  represents the total number of cases in the group or subgroup under consideration. The variance of  $r$  is computed using the formula given below, with the standard error being the square root of the variance:

Its formula is given as follows:

$$SE(\hat{R}_p) \approx \frac{1}{\hat{X}_p^2} \left[ \hat{V}(\hat{Y}_p) + \hat{R}_p^2 \hat{V}(\hat{X}_p) - 2\hat{R}_p c(\hat{Y}_p, \hat{X}_p) \right]$$

where:

$$\hat{R} = \frac{\hat{Y}}{\hat{X}}$$

$$c(\hat{Y}, \hat{X}) = \frac{a_p}{a_{p-1}} \sum_{\alpha=1}^{a_p} \left( y_\alpha - \frac{\hat{Y}}{a_p} \right) \left( x_\alpha - \frac{\hat{X}}{a_p} \right)$$

$a_p$  = number of sample PSUs in domain  $p$

In the LFS, the 117 province/HUC domains are also treated as natural stratification while the PSUs are treated as clusters.

## **Data Checking, Coding and Filtering Prior to Estimation of Proportions**

Enumeration is a highly complex operation, and it may happen that the reported/encoded entries during data collection may have some omissions, and implausible/inconsistent entries. Editing is a process meant to correct these errors.

During the interview, embedded editing in the tablet was activated and errors/inconsistent entries were detected by the program. Editing was also done using the Computer-Aided Field Editing (CAFE) program after every interviewed household to ensure completeness and consistency of encoded entries. For monitoring of the status of data collection, LFS raw data from the tablet was uploaded to the PSA Central Office server as soon as the interview of a household/EA was completed.

Review and verification of the PSOC and PSIC codes and invalid values for LFS data items were done in the provincial office using the LFS Information System (LFS IS).

Further processing in the regional office such as ID validation, and completeness check, edit and matching of LFS sample households with the original List from Master Sample (MS) Form 6 were done to ensure that the number of household listed was fully covered.

Preliminary and final tabulations of data were done at the PSA Central Office.

## **V. Contact Information**

For technical concerns, you may contact the following PSA focal persons:

### **ADRIAN A. CEREZO**

Assistant National Statistician  
Social Sector Statistics Service  
Sectoral Statistics Office  
Philippine Statistics Authority  
Email address: a.cerezo@psa.gov.ph  
cc: ssss.staff@psa.gov.ph  
Telephone: (632) 8376-1883

### **MA. CORAZON L. DE LUNA**

Officer-in-Charge  
Labor Supply Statistics Division  
Social Sector Statistics Service  
Sectoral Statistics Office  
Philippine Statistics Authority  
Email address: psa.iesd.staff@psa.gov.ph  
cc: c.deluna@psa.gov.ph  
Telephone: (632) 8376-2092

For data requests, you may contact PSA focal person:

**SIMONETTE A. NISPEROS**

Chief Statistical Specialist

Knowledge Management and Communications Division

Information Technology Statistics Division

Office of the National Statistician

Philippine Statistics Authority

Email address: [info@psa.gov.ph](mailto:info@psa.gov.ph)

cc: [kmcd.staff@psa.gov.ph](mailto:kmcd.staff@psa.gov.ph)

Telephone: (632) 8462-6600 local 839