TECHNICAL NOTES
LABOR FORCE SURVEY WITH WORKING CHILDREN RIDER QUESTIONS

I. Introduction

a. Background

The Labor Force Survey (LFS) is a nationwide quarterly survey of households conducted by the Philippine Statistics Authority (PSA) to gather data on the demographic and socio-economic characteristics of the population.

Starting October 2017, the LFS was modified to capture data on the current demographic and economic activity status of the children aged 5 to 17 years old during the reference week, specifically the socio-economic characteristics of working child and the child laborers aged 5 to 17 years old 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, hours worked, and region. Further, the survey is also designed to generate statistics on child labor aged 5 to 17 years old.

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[1] 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

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[1] Section 3(a), Implementing Rules and Regulations, Republic Act No. 9231 Amending RA No 7610

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 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.

5. **Hazardous Work and Activities**

Department of Labor and Employment (DOLE) Order No. 149, Series of 2016 enumerates the different work and activities declared 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 toxics; 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[2] 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 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

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[2] Republic Act 9231 and its Implementing Rules and Regulations (IRR) of the Republic Act 9231 - *"Special Protection of Children Against Child abuse, Exploitation and Discrimination Act"*

types of work from which children should be protected as stated in the Section 12-A of 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 Order No 149 based on the Philippine Standard Industrial Classification and 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.

The LFS was not able to capture the time a child usually carried out the work.

IV. Sampling Design and Estimation Methodology

The LFS, being a household-based survey, used the 2013 Master Sample (MS) design of which 4 replicates equivalent to a total of 42,768 secondary sampling units (SSUs) or sample housing units were included as samples. Using a two-stage cluster sampling design, barangays/Enumeration Areas (EAs) were selected at the initial sampling stage as the primary sampling units (PSUs), while the housing units within the selected PSUs are selected as the SSUs. Generally, all households within the sample housing unit are also considered as sample households. However, for housing unit with more than three (3) households, a maximum of three (3) sample households were randomly selected.

Sampling Frame

The 2013 MS sampling frame was constructed based on the results of the 2015 Census on Population (POPCEN 2015). The EA Reference File (EARF) of the POPCEN 2015 was used as the PSU frame while the 2015 list of households for each of the PSUs was used as the SSU frame.
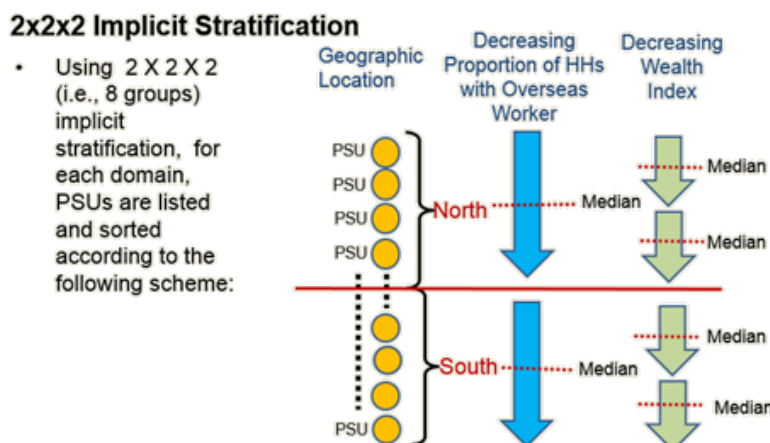
Sampling Domain

To provide subnational or provincial level statistics with precise estimates, the 2013 MS has 117 major domains as follows: 81 provinces (including the newly created

province Davao Occidental); 33 highly urbanized cities (including 16 cities in the National Capital Region); and 3 other areas (Pateros, Isabela City, and Cotabato City).

Primary Sampling Units

In the 2013 MS Design, each sampling domain (i.e., province/Highly Urbanized City (HUC)) is divided into exhaustive and non-overlapping area segments known as PSUs with about 100 to 400 households. Thus, a PSU can be a barangay/EA or a portion of a large barangay, or two or more adjacent small barangays/EAs.

2x2x2 Implicit Stratification

The PSUs are then ordered according to the following: (1) North-South/West-East Geographic location; (2) Decreasing Proportion of HHs with Overseas Worker; and (3) Decreasing Wealth Index.

Replicates

Four replicates are used in all 117 sampling domains. A replicate is composed of ordered list of PSUs. Most of the provinces, that is, 75 out of 81, have six PSUs per replicate while in HUCs, eight PSUs form a replicate. Small domains such as Batanes, Guimaras, Siquijor, Camiguin, Apayao, and Dinagat Islands have three PSUs per replicate.

Sample Allocation Scheme

A total of four sample replicates were allotted. However, the total number of sample SSUs was allotted proportionately to the measure of size of the PSU. Thus, a PSU with only 100 HHs had less number of sample HHs than PSUs with 400 HHs but, on the average, there were 12 sample HHs allotted for each PSU in HUCs and an average of 16 sample HHs for every PSU in the province

A total national sample of 42,768 sample HHs was allotted for the quarterly rounds of the LFS.

Domain	4 Sample Replicates (Regional Level Estimate)	
	Number of Sample PSUs	Number of Sample Housing Units/HHs
75 Province Domain (16 SSUs per PSU)	24	384
6 small provinces (Batanes, Guimaras, Siquijor, Camiguin, Apayao, and Dinagat Islands) (16 SSUs per PSU)	12	192
31 HUCs (12 SSUs per PSU)	32	384
2 small HUCs (12 SSUs per PSU) San Juan City Lucena City	12 20	144 240
3 other urban areas (12 SSUs per PSU) Pateros City of Isabela Cotabato City	12 12 20	144 144 240
National	2,940	42,768

Base weight computation

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

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

where:
- A_p - total number of PSUs in domain p
- a_p - total number of sample PSUs in domain p
- $B_{p\alpha}$ - total number of housing units in PSU α in domain p
- $b_{p\alpha}$ - total number of sample housing units in PSU α in domain p

For housing units with at most 3 households the base weight is computed as

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

For housing units with more than 3 households the base weight is computed as

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

where:
- $C_{p\alpha y\beta}$ - total number of households in the sample housing unit
- $c_{p\alpha y\beta}$ - 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 October 2022 LFS was October 2022.

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:

$$w'_{p\alpha\beta_{adj}} = w_{p\alpha\beta} \; x \; A_{p1}$$

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):

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

Estimation of Totals

- For domain total

The estimate for the population total for a domain (province/HUC) is derived using:

$$\hat{Y}_p = \sum_{\alpha=1}^{a_p} \sum_{\beta=1}^{b\alpha} w'_{p\alpha,fin} \; y_{p\alpha\beta}$$

- For the regional total (if domain is below regional)

  The estimate for the population total for the region is derived as the sum of the estimated totals of its provinces/HUCs which is given as:

  $$\hat{Y}_r = \sum_{p=1}^{m_r} \left(\hat{Y}_p \right) = \underbrace{\hat{Y}_1 + \hat{Y}_2 + ... + \hat{Y}_{m_r}}_{\text{Weighted Province/HUC Totals}}$$

  where:

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

  m_r - total number of provinces/HUCs in the region

- For the national total

  The estimate for the population total at the national level is derived as the sum of the estimated regional totals which is given as:

  $$\hat{Y} = \sum_{r=1}^{n} \left(\hat{Y}_r \right) = \underbrace{\hat{Y}_1 + \hat{Y}_2 + ... + \hat{Y}_n}_{\text{Weighted Region Totals}}$$

  where:

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

  n - total number of regions in the country

Estimation of Proportions/Ratios

The estimation of a population proportion or ratio of the formula R = Y/X where Y and X are population totals for variables y and x, respectively, is derived using the formula $\hat{R} = \frac{\hat{Y}}{\hat{X}}$.

Estimation of Sampling Error

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

If the samples are selected using simple random sampling, it would have been possible to use straightforward formulas for calculating sampling errors. However, the LFS is the result of a multi-stage design, hence 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 of means, proportions, or ratios.

   a. **Sampling Error for Totals**

$$SE\left(\hat{Y}_p \right) = \sqrt{\hat{V}\left(\hat{Y}_p \right)}$$

$$\hat{V}\left(\hat{Y}_p \right) = (1 - \frac{a_p}{A_p})a_p s^2 + \frac{a_p}{A_p} \sum_{\alpha=1}^{a_p} (1 - \frac{b_{p\alpha}}{B_{p\alpha}}) b_{p\alpha} s_\alpha^{\,2}$$

where:

$$s^2 = \frac{\sum_{\alpha=1}^{a_p}(y_{p\alpha}-\frac{\widehat{y_p}}{a_p})^2}{a_p-1} \qquad\qquad S_\alpha{}^2 = \frac{\sum_{\beta=1}^{b_{p\alpha}}(y_{p\alpha\beta}-\frac{y_{p\alpha}}{b\alpha})^2}{b_\alpha-1}$$

$y_{p\alpha} = \sum_{\beta=1}^{b_{p\alpha}} w'_{p\alpha,fin}\, y_{p\alpha\beta}$ is the weighted total for psu α.

b. Sampling Error for Proportions or Ratios

The Taylor series linearization method is used to estimate the variance of a proportion or a ratio.

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.

VI. Contact Information

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

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