TECHNICAL NOTES
OCTOBER 2020 LABOR FORCE SURVEY

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 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.

b. Objectives

The LFS aims to provide a quantitative framework for the preparation of plans and formulation of policies affecting the labor market.

Specifically, the survey is designed to provide statistics on levels and trends of employment, unemployment, and underemployment for the country, as a whole, and for each of the administrative regions.

c. Scope and Coverage

With regions as domain, survey operations for October 2020 LFS ran from 08 to 31 October 2020, and covered 44,257 eligible sample households.

Overseas Filipino Workers are not considered part of the labor force in the Philippines. Hence, in the LFS, data on economic characteristics of household members who are overseas workers are not collected. For the LFS reports, they are excluded in the estimation of the size of working population, that is, population aged 15 years and older, and in the estimation of the labor force.

The provision of minimum health protocols like masks, face shield, and alcohol were provided to all PSA officials and statistical researchers who did the survey.

d. Developments in the October 2020 LFS

The LFS, as in any survey, adopts recent developments in statistical methodology/processes and in the education system. The table below summarizes the revisions in the LFS

Item	October 2020 LFS
Population projections	The population projections based on the 2015 Population Census (POPCEN 2015) has been adopted to generate the labor force statistics. For comparability, population projections based on the POPCEN 2015 was likewise used in the October 2019 labor force statistics.
Adoption of the Philippine Standard Industrial Classification (PSIC)	♦ Starting April 2012 LFS, the codes for industry adopted the 2009 PSIC. Prior to this, codes for industry used the 1994 PSIC.
Adoption of the Philippine Standard Occupation Classification (PSOC)	♦ The 2012 PSOC was adopted starting April 2016. The 1992 PSOC had been used prior to this rounds.
Adoption of the Philippine Standard Classification of Education (PSCED)	♦ In January 2019, the 2017 Philippine Standard Classification of Education (PSCED) has been adopted. The categories for highest grade completed were also revised considering the K to 12 program in the education system.
Data Collection	♦ In April 2017 round, Computer Aided Personal Interviewing (CAPI) using Tablet was utilized in the LFS enumeration. ♦ Starting April 2020, for the first time, a hybrid approach was used in data collection, a mixed mode of CAPI face-to-face interview, whenever possible, and a telephone interview.
Additional Questions	♦ Question on vocational course was also introduced in the April 2012 LFS questionnaire. ♦ In April and October 2020 LFS round, ECQ/Lockdown/COVID-19 Pandemic was included in the reasons for working more than 48 hours, less than 40 hours, and not looking for work.

II. Concepts and Definitions

a. Reference Period

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

b. Employment Status Concepts

1. **Population 15 Years Old and Over**

   This refers to number of population 15 years old and over excluding overseas workers. Overseas workers are excluded in the estimation of the size of working population (population aged 15 years and over) since the data on their economic characteristics are not collected because they are not considered part of the labor force in the country.

2. **In the Labor Force or Economically Active Population**

   This refers to persons 15 years old and over who are either employed or unemployed in accordance with the definitions described below.

3. **Employed**

   Employed persons include all those who, during the reference period are 15 years old and over as of their last birthday and are reported either:

   a. At work, i.e., those who do any work even for one hour during the reference period for pay or profit, or work without pay on the farm or business enterprise operated by a member of the same household related by blood, marriage or adoption; or

   b. With a job but not at work, i.e., those who have a job or business but are not at work because of temporary illness or injury, vacation or other reasons. Likewise, persons who expect to report for work or to start operation of a farm or business enterprise within two weeks from the date of the enumerator's visit are considered employed.

4. Underemployed

   Underemployed persons include all employed persons who express the desire to have additional hours of work in their present job, or an additional job, or to have a new job with longer working hours. Visibly underemployed persons are those who work for less than 40 hours during the reference period and want additional hours of work.

5. Unemployed

Starting April 2005, the new unemployment definition was adopted per National Statistical Coordination Board (NSCB) Resolution Number 15 dated October 20, 2004. As indicated in the said resolution:

Unemployed persons include all those who, during the reference period, are 15 years old and over as of their last birthday and reported as persons:

a) Without work, i.e., had no job or business during the reference period;

b) Currently available for work, i.e., were available and willing to take up work in paid employment or self-employment during the reference period, and/or would be available and willing to take up work in paid employment or self-employment within two weeks after the interview date; and

c) Seeking work, i.e., had taken specific steps to look for a job or establish a business during the reference period, or

d) Not seeking work due to the following reasons: (1) fatigued or believed no work available, i.e., discouraged workers; (2) awaiting results of previous job application; (3) temporary illness or disability; (4) bad weather; and/or (5) waiting for rehire or job recall.

6. Persons Not in the Labor Force

Persons 15 years old and over who are neither employed nor unemployed according to the definitions mentioned. Those not in the labor force are persons who are not looking for work because of reasons such as housekeeping, schooling, and permanent disability. Examples are housewives, students, persons with disability, or retired persons.

III. 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, Enumeration Areas (EAs)/barangays 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 households, a maximum of three sample households were randomly selected.

Sampling Frame

The 2013 MS sampling frame was constructed based on the results of the 2015 Population Census. The EA Reference File (EARF) of the 2015 Census of Population was used as the PSU frame while the 2015 list of households for each of the PSUs were 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 (HUCs) (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/HUC) is divided into exhaustive and non-overlapping area segments known as Primary Sampling Units (PSUs) with about 100 to 400 households. Thus, a PSU can be a barangay/Enumeration Area (EA) or a portion of a large barangay, or two or more adjacent small barangays/EAs.

2x2x2 Implicit Stratification
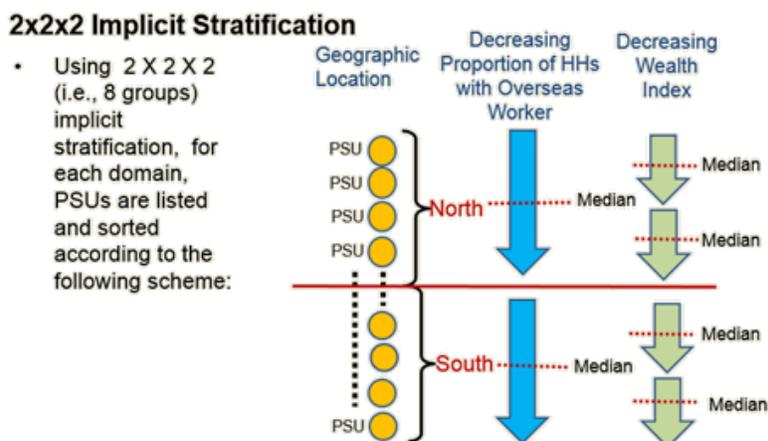
The PSUs are then ordered according to the following: (1) North-South/West-East Geographic location; (2) Decreasing Proportion of Households (HHs) with Overseas Worker; and (3) Decreasing Wealth Index.

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, has six PSUs per replicate while in HUCs, eight PSUs form a replicate. Small domains such as Guimaras, Siquijor, Camiguin, Apayao, and Dinagat Islands had 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 Highly Urbanized Cities (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
5 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

$$w_{p\tau\alpha\beta} = \frac{A_p}{a_p} \, x \, \frac{B_{p\tau\alpha}}{b_{p\tau\alpha}}$$

where:

A_p - total number of PSUs in the domain p

a_p - total number of sample PSUs in the domain p

$B_{p\tau\alpha}$ - total number of housing units in PSU α , and replicate τ in domain p

$b_{p\tau\alpha}$ - total number of sample housing units in PSU α , and replicate τ in domain p

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

$$w_{p\tau\alpha\beta} = \frac{A_p}{a_p} \, x \, \frac{B_{p\tau\alpha}}{b_{p\tau\alpha}}$$

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

$$w_{p\tau\alpha\beta\gamma} = \frac{A_p}{a_p} \, x \, \frac{B_{p\tau\alpha}}{b_{p\tau\alpha}} \, x \, \frac{C_{p\tau\alpha\beta}}{c_{p\tau\alpha\beta}}$$

where:

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

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

Base Weight Adjustment

The base weight was adjusted for unit non-response and was further calibrated to conform to the known or projected population count. The projected population count used was November 2019.

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

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

Applying this to the base weight, we have:

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

Further calibration was made to conform with known population count, as follows:

Age Group	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 was):

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

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:

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

- For each of the sampling domain which considered 4 sample, the estimate for the weighted total was derived using:

$$\hat{Y}_p = \sum_{\tau=1}^{4}\sum_{\alpha=1}^{a_\tau}\sum_{\beta=1}^{b_{\tau\alpha}} w'_{p\tau\alpha,fin}\, y_{p\tau\alpha\beta} \qquad l = 1 \text{ to } 4 \text{ replicates}$$

- For the region

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

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

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

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

where

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

n - total number of regions in the country

Estimation of Proportions

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

$$\hat{p}_r = \frac{\sum_{p=1}^{mr} \sum_{\tau=1}^{4} \sum_{\alpha=1}^{a_\tau} \sum_{\beta=1}^{b_{\tau\alpha}} w'_{p\tau\alpha,fin} x_{p\tau\alpha\beta}}{\sum_{p=1}^{mr} \sum_{\tau=1}^{4} \sum_{\alpha=1}^{a_\tau} \sum_{\beta=1}^{b_{\tau\alpha}} w'_{p\tau\alpha,fin} y_{p\tau\alpha\beta}}$$

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 had 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 was 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:

$$SE^2(r) = var(r) = \frac{1-f}{x^2} \sum_{h=1}^{H} \left[\frac{m_h}{m_h - 1} \left(\sum_{i=1}^{m_h} z_{hi}^2 - \frac{z_h^2}{m_h} \right) \right]$$

in which

$z_{hi} = y_{hi} - rx_{hi}$, and $z_h = y_h - rx_h$

where h represents the stratum which varies from 1 to H,
        m_h is the total number of clusters selected in the hth stratum,
        y_{hi} is the sum of the weighted values of variable y in the ith cluster in the hth stratum,
        x_{hi} is the sum of the weighted number of cases in the ith cluster in the hth stratum, and
        f is the overall sampling fraction, which is so small that it is ignored.

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 was a very complex operation and it may happen that reported/encoded entries during data collection may have some omissions and implausible or inconsistent entries. Editing was meant to correct these errors.

During the interview, embedded editing was activated and errors/inconsistent entries were detected by the program. Editing was also done using 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 is 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 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 Central Office.

IV. Dissemination of Results

The October 2020 LFS results shall be disseminated online at the PSA website at www.psa.gov.ph/statistics/survey/labor-and-employment/labor-force-survey.gov.ph, releasing the press release and the preliminary tables. The final estimates of the October 2020 LFS will be released through the following

- Special Releases, six months after the data collection; and
- ISH Bulletin, 10 months after the data collection.

For comparative purposes, October 2019 estimates were computed using 2015 POPCEN based population projection.

VI. Contact Information

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