

TECHNICAL NOTES

2021 Family Income and Expenditure Survey Visit 1

I. Introduction

a. Background

The Family Income and Expenditure Survey (FIES) is a survey on family income and expenditure of households undertaken by the Philippine Statistics Authority (PSA) across the country. It is the main source of data on family income and expenditure in the Philippines. The 2021 FIES is the nineteenth survey conducted from the time it started in 1957.

The FIES provides data that are needed in the different aspects of the country's economic conditions. Specifically, it is the basic source of information for the following:

- a. estimation of the household account in the System of National Accounts and balances;
- b. measurement of the Human Development Index (HDI);
- c. measurement of poverty; and
- d. measurement of the levels of living of different sections of the population and disparities in levels of living across geographical regions and socio-economic groups and for inter temporal comparisons of these levels and disparities.

Other important uses of the FIES are as follows:

- a. provides basic data for studies on the distinctive effects of direct and indirect taxation and of social benefits, for the formulation of income and fiscal policies and for the estimation of tax receipts;
- b. supplies information for assessing the impact on living standards of existing or proposed social and economic programs and for formulating welfare-oriented policies; and
- c. generates data needed for statistical demand analysis leading to the estimation of income, price and cross elasticity of demand, among other things.

b. Objectives

The FIES aims to accomplish the following objectives:

- a. to gather data on family income, sources of income, family expenditure and related information affecting family income and expenditure levels and patterns in the Philippines;
- b. to determine the income distribution, levels of living and spending patterns, and the degree of inequality among families;
- c. to provide benchmark information to update the weights used in the estimation of Consumer Price Index (CPI); and
- d. to provide inputs in the estimation of the country's poverty threshold and incidence.

c. Scope and Coverage

The 2021 FIES gathers data on income and expenditure that include the sources of income in cash and in kind and the levels of consumption by item of expenditure, among others. About 2,785 data items are included in the 2021 FIES questionnaire.

The 2021 FIES was conducted in two separate operations. The first round was in July 2021 which gathers data for the period January 1 to June 30, 2021 while the second

round was in January 2022 which gathers data for the period July 1 to December 31, 2021. The data presented for this report only covered the first half of 2021.

The 2021 FIES has a national sample of approximately 174,000 households deemed sufficient to provide reliable estimates at the national, regional, provincial levels, and selected HUCs. These sample housing units are selected from the 2013 Master Sample (MS) for household-based surveys of the PSA.

The reporting unit is the household, which means that the statistics emanating from this survey will refer to the characteristics of the population residing in private households. Persons who reside in the institutions are not within the scope of the survey.

The concept of family was used for the FIES. A family consists of household head, spouse, unmarried children, ever-married children, son-in-law or daughter-in-law, parents of the head or spouse and other relatives who are members of the household.

Two or more persons not related to each other by blood, marriage or adoption is also considered in this survey. However, in terms of income and expenditure information, only the income and expenditure of the member who is considered as the household head is included.

d. Standard Classification Systems

The FIES, as in any survey, adopts standard classification systems, as follows:

- a. 2009 Philippine Standard Industrial Classification (PSIC)
- b. 2012 Philippine Standard Occupation Classification (PSOC)
- c. 2020 Philippine Classification of Individual Consumption According to Purpose (PCOICOP)

e. Limitations of the Data

The user of the data presented in this report should bear in mind that the data are the results of a sample survey and, accordingly, are subject to sampling variations because observations were not taken from the entire population.

Survey estimates may also be affected by non-sampling errors such as deliberate under or over reporting of income and expenditures, or reluctance on the part of the respondents to reveal their true levels of income or expenditures.

Considering that both cash and non-cash expenditures and income are gathered in the FIES, valuation of non-cash income and expenditures may pose some problems. The instructions are to use market prices prevailing in the locality for goods and services received as gifts, and farm gate prices for goods consumed from own production.

The 2013 Master Sample, was used in the FIES 2021 with province and highly urbanized cities as domains. The number of samples is around 176,000 sample households. Careful evaluation should be done in comparing the results of the FIES 2021 with other FIES results prior to the implementation of the 2013 MS design.

While the FIES 2021 adopted the 2020 Philippine Classification of Individual Consumption According to Purpose (PCOICOP), the expenditure data for FIES 2021 presented in this report were regrouped based on FIES 2018 major expenditure groupings for the purpose of comparability.

II. Concepts and Definitions

a. Reference Period

The reference period for this survey round is the first half of 2021 covering January to June 2021.

b. Concepts

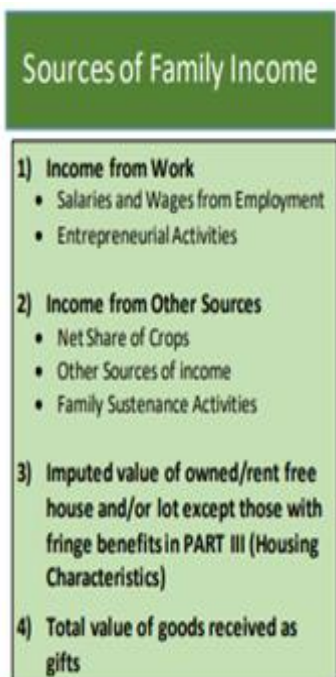
Family Size

This refers to the total number of family members enumerated. Included as family members are those whose relationship to the household head is any of the following: spouse; son or daughter; father or mother; son- or daughter-in-law; sister or brother; granddaughter or grandson; or other relative.

Family Income

Total family income includes primary income and receipts from other sources received by all family members during the reference period (January to June 2021), as participants in any economic activity or as recipients of transfers, pensions or grants. Primary income includes: salaries and wages, commissions, tips, bonuses, family and clothing allowances, transportation and representation allowances, honoraria, and other forms of compensation; and net receipts derived from the operation of family-operated enterprises or activities, and practice of a profession or trade.

Income from other sources include: imputed rental values of owner-occupied dwelling units, interests, rentals including landowner's share of agricultural products, pensions, support, and value of food and non-food items received as gifts by the family (as well as the imputed value of services rendered free of charge to the family). Also included as part of family income are receipts from family sustenance activities which are not considered as family-operated enterprise.



The diagram is a green-bordered box with a title 'Sources of Family Income' at the top. It contains a numbered list of four categories, each with sub-points:

Sources of Family Income	
1) Income from Work	<ul style="list-style-type: none">• Salaries and Wages from Employment• Entrepreneurial Activities
2) Income from Other Sources	<ul style="list-style-type: none">• Net Share of Crops• Other Sources of Income• Family Sustenance Activities
3) Imputed value of owned/rent free house and/or lot except those with fringe benefits in PART III (Housing Characteristics)	
4) Total value of goods received as gifts	

Following the International Labour Organization (ILO)'s concept of income, the FIES 2021 excludes: profits from sale of stocks and bonds; backpay and proceeds from insurance; net winnings from gambling, sweepstakes and lotteries; and inheritance, as part of family income. However, these are included as part of other receipts.

Main Source of Income

This refers to the source from which most of the income of the family is obtained. If the family has more than one source of income, the main source to be considered is the one where the bulk of income is derived.

Salaries and Wages from Employment

It includes all forms of compensation, whether in cash or in kind and those received by family members who are regular or occasional/seasonal workers in agricultural and non-agricultural industries.

Net Share of Crops, Fruits and Vegetables Produced, Aquaculture Products Harvested or Livestock and Poultry Raised by Other Households

This refers to the share of harvested crops, fruits, vegetables, aquaculture products and others received by the household from tenants, or a fixed rent or any amount out of the

produce received from tenants during the reference period. It also includes the share of the family from the proceeds of the sale of livestock which the family owned but raised by others, and disposed of during the reference period, although there was no landlord-tenant relationship between the sample family and the one who raised it.

Received as Gifts

The received as gifts include all food and non-food items received in kind by the family during the reference period. For food items, alcoholic beverages and tobacco received in kind, only those consumed by the family during the reference period are included. Foodstuff received in the form of support, assistance or relief is likewise considered as gifts. However, food items, alcoholic beverages and tobacco consumed by a family member at parties attended, or food items offered to him or her by friends are not included.

Food and non-food items received as gifts include those received from other households, charitable institutions, the government, or from persons abroad, free of charge.

Entrepreneurial Activity

An entrepreneurial activity or a family-operated activity is any economic activity, business or enterprise, whether in agriculture or in non-agriculture sector, engaged in by any member of the family as an operator or as self-employed.

The included family-operated activities are those which are operated as single proprietorship or loose partnership, without formal organization. Thus, partnerships, corporations, associations, and the like which are formally organized and registered with the Securities and Exchange Commission (SEC) are excluded.

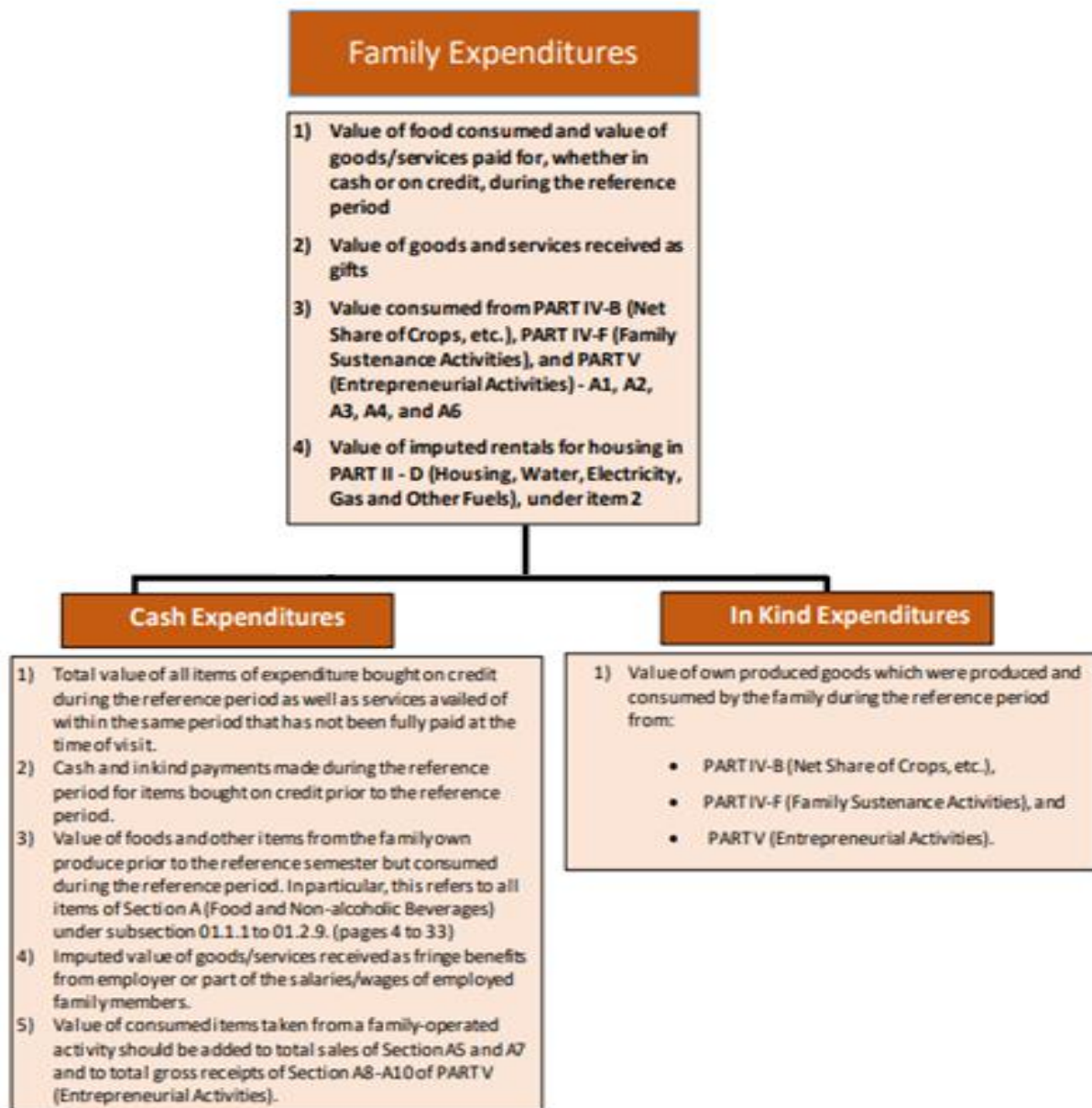
Family Sustenance Activity

A family sustenance activity is also a family activity but unlike an entrepreneurial activity, the produce is mainly for home consumption. A family is considered engaged in a family sustenance activity if there was a disposal (consumed and/or a small proportion was sold, given away) during the reference period. Occasionally, sales are made when the harvest or produce is more than enough for family consumption.

Family Expenditures

Family expenditures refer to the expenses or disbursements made by the family purely for personal consumption during the calendar year 2021. Value consumed from net share of crops, fruits and vegetables produced, aquaculture products harvested or livestock raised by other households, family sustenance and entrepreneurial activities are considered as family expenditures. Gifts, support, assistance or relief in goods and services received by the family from friends, relatives, and others, are also included as part of family expenditures.

They exclude all expenses in relation to farm or business operations, investment ventures, purchase of real property, and other disbursements which do not involve personal consumption.



Food Consumption

The items included in this portion cover the actual consumption (not expenditure) of the family during the past week.

Consumed at Home

This includes the food prepared at home and eaten in the place of work, in school, or in any place other than home.

Food consumption covers only the actual consumption of the family, as well as of domestic helpers and other persons employed by the family to do odd jobs around the house, and family guests. The guests may be relatives or non-relatives who are not members of the household, but had stayed with or visited the family for less than a week during the past week. The consumption of boarders and other persons in the same household not related to the family is excluded from this category.

Food Regularly Consumed Outside the Home

This includes food regularly bought and eaten by the family members outside the home like snacks, lunch and others and those cooked food bought outside the home but eaten at home. The daily allowance for snacks and meals at school of members of the household who are

attending school is also covered in this category. No value given to food consumed by a family member at parties he attended or food items occasionally offered by friends.

Housing, Water, Electricity, Gas and Other Fuels

This refers to the total family expenses for actual and imputed rentals of housing and consumption of water, electricity, gas and other fuels during the reference period. The rentals for housing normally include payment for the use of the land on which the property stands. Also included is the imputed rent of the dwelling unit occupies by the family-owner. The maintenance and repair of the dwelling include products and materials purchased for minor maintenance and repair. The total value of the service of both cost of labor and materials are covered.

For a family who shares facilities with other households or whose total consumption of water, electricity, gas and other fuels include both personal and business expenses, only an estimate of the family's personal consumption is reported. If the electricity and water are included in the rental paid for the house, an approximate amount for the electricity and water is deducted.

Imputed Rent of Owner-Occupied Dwelling Unit

Imputed rent is the estimated amount that the owner of a dwelling unit would charge if he or she were to rent his or her entire dwelling unit monthly, unfurnished and excluding the costs for utilities. The rental value is based on the prevailing rate in the locality. Imputed rent differs from amortization payments. Imputed rent refers to the value of the house/lot based on its utility, while amortization payments refer to the periodic payments made by the family on real property they acquired on installment basis. The imputed rent of free housing enjoyed by the employees is also included.

Furnishings, Household Equipment and Routine Household Maintenance

This includes the value of furniture and furnishing, carpets and other floor coverings, repair of furniture, household textiles and appliances, glassware, tableware and household utensils, tools and equipment for house and garden, and goods and services for routine household maintenance, for example dinnerware, silverware and kitchen utensils acquired within the reference period for family use, including those bought or received during special occasions. If these are made at home for family use, the total value of the materials and the cost of labor paid are reported as the value of the finished product. However, the value of labor rendered by a household member, free of charge, is not included.

All major household appliances such as refrigerator, washing machine, cooking range and air conditioner, house and garden tools acquired on a cash basis during the reference period are included.

The furnishing and household equipment purchased on installment basis during the reference period are also included. The reported total value of the furnishing and household equipment are the total amount of installments paid plus the initial down payment made on the items during the reference period.

Taxes

The following forms of taxes were included in the survey:

- 1) **Income Tax** – refers to the tax levied on the income of a working person in pursuit of his or her occupation.
- 2) **Real Estate Tax** – refers to the tax imposed on real property of the family (e.g., house and lot for family use) in proportion to its value. This includes real estate tax levied on real property of the family used for personal purposes. Therefore, taxes levied on private properties of the family used solely for business purposes are excluded.
- 3) **Other Direct Taxes** – refer to taxes which are demanded from a taxpayer, who shoulders the burden of the tax; or tax which the taxpayer cannot shift to another. Specific examples

are inheritance tax, alien certificate of registration (ACR) and donor's tax. Other taxes paid by the family such as customs duties paid for personal effects bought from abroad, amusement tax and taxes paid as a consumer are also included.

III. Sampling Design and Estimation Methodology

A. The 2013 Master Sample for Household-based Surveys

The PSA carries out nationwide regular household-based surveys such as that of FIES every three years.

To be more efficient in the conduct of surveys, PSA designs a master sample consists of randomly assigned and selected set of geographic areas with non-overlapping and discernable boundaries known as the primary sampling units (PSUs). The primary sampling unit (PSU) can be (1) the whole barangay, or (2) a portion of a large barangay, or (3) combinations of small barangays.

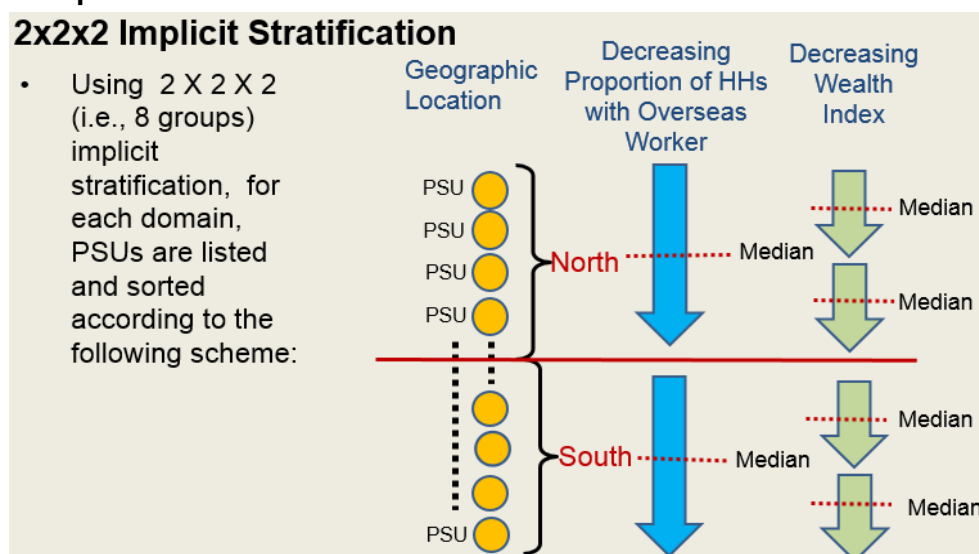
A.1 Provinces and Highly Urbanized Cities as Sampling Domain

To provide sub-national 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).

A.2 Primary Sampling Units

In the 2013 Master Sample 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. For the whole country, 87,098 PSUs are formed from 42,036 barangays.

A.3 2x2x2 Implicit Stratification



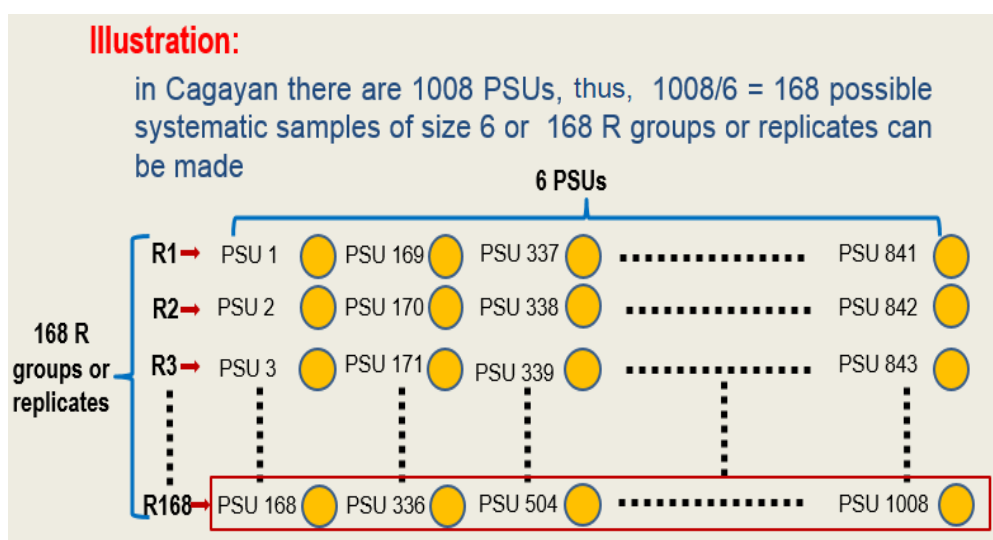
The PSUs are then ordered according to the following: (1) North-South/West-East Geographic Location; (2) Decreasing Proportion of HHs with Overseas Worker; and (3) Decreasing Wealth Index.

A.4 Replicates

From the ordered list of PSUs, all possible systematic samples of six PSUs will be drawn to form a replicate for most of the province domain i.e., 75 out of 81 provinces while all possible systematic samples of eight PSUs will be drawn to form a replicate for most of the HUCs, i.e., 31 of 33 HUCs.

Small province domains such as Batanes, Guimaras, Siquijor, Camiguin, Apayao, and Dinagat Islands will have three PSUs per replicate. For other HUCs, San Juan City and Lucena City have three and five PSUs per replicate while the other urban areas, Pateros, and City of Isabela also have three PSUs per replicate while Cotabato City has an allocation of five PSUs per replicate.

For instance, in Cagayan with 1008 PSUs formed. A total of $1008/6 = 168$ possible systematic samples of size six or 168 R groups or replicates can be made. The 168 replicates formed are then sorted at random so that the first four replicates will be in the first round, next four in the second round, and so on.



A.5 Sample Allocation Scheme

For each domain, a total of four sample replicates will be allotted for each survey round. However, the total number of sample from Secondary Sampling Units (SSUs) will be allotted proportionately to the measure of size of the PSU. Thus, a PSU with only 100 households (HHs) would have less number of sample HHs than PSUs with 400 HHs but on the average there will be 12 sample HHs allotted for each PSUs in Highly Urbanized Cities (HUCs) and an average of 16 sample HHs for every PSUs in province domains.

A total national sample of approximately 180,000 sample households was utilized for this survey round.

Domain	Sample PSUs per Domain			Sample SSUs (Housing Units/Households) per Domain		
	Per Replicate	Per Round	Per Year	Per Replicate	Per Round	Per Year
75 Province Domain (16 SSUs per PSU)	6	24	96	96	384	1,536
6 small provinces (Batanes, Guimaras, Siquijor, Camiguin, Apayao and Dinagat Islands) (16 SSUs per PSU)	3	12	48	48	192	768
31 HUCs (12 SSUs per PSU)	8	32	128	96	384	1,536
2 small HUCs (12 SSUs per PSU)						
San Juan City	3	12	48	36	144	576
Lucena City	5	20	80	60	240	960
3 other urban areas (12 SSUs per PSU)						
Pateros	3	12	48	36	144	576
City of Isabela	3	12	48	36	144	576
Cotabato City	5	20	80	60	240	960
National	735	2,940	11,760	10,692	42,768	171,072

A.6 Estimation Procedure

A.6.1 Base weight computation ($w_{\tau\alpha\beta}$)

The base weight is computed as the inverse of selection Probability

$$w_{\tau\alpha\beta} = \frac{A}{a} \times \frac{B_{\tau\alpha}}{b_{\tau\alpha}}$$

Where:

A - total number of PSUs in the domain

a - number of sample PSUs in the domain

β - refers to the housing unit treated as the SSU

τ - refers to the replicate that ranges from 1 to 4 for LFS or 1 to 16 for FIES 2018

α - refers to PSU (varies across the 117 domains)

$B_{\tau\alpha}$ - total number of housing unit in PSU α and replicate τ

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

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

$$w_{\tau\alpha\beta} = \frac{A}{a} \times \frac{B_{\tau\alpha}}{b_{\tau\alpha}}$$

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

$$w_{\tau\alpha\beta\gamma} = \frac{A}{a} \times \frac{B_{\tau\alpha}}{b_{\tau\alpha}} \times \frac{C_{\tau\alpha\gamma}}{c_{\tau\alpha\gamma}}$$

Where:

\mathcal{Y} - refers to number of households within sample housing unit

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

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

A.6.2 Estimation of Total (\hat{Y})

A.6.2.1 Regional Total

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

Total of the estimates of Y for all provinces in the region

Where:

\hat{Y}_p - estimate of Y for province p

m_r - the total number of provinces in region r

A.6.2.2 Provincial/HUC Total

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

Average of the estimates for the 16 replicates

Where:

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

A.6.2.3 Replicate Total

$$\hat{Y}_{p\tau} = \sum_{\alpha=1}^a \sum_{\beta=1}^{b_{\tau\alpha}} w_{p\tau\alpha\beta} y_{p\tau\alpha\beta}$$

Value of the sample household for variable Y multiplied by its corresponding weight

Where:

$y_{p\tau\alpha\beta}$ - is the value of the sample household for the variable of interest

$w_{p\tau\alpha\beta}$ - is the corresponding weight of the sampled housing unit

Thus, the provincial/HUC total can be also expressed as

$$\hat{Y}_p = \frac{1}{16} \sum_{\tau=1}^{16} \sum_{\alpha=1}^a \sum_{\beta=1}^{b_{\tau\alpha}} w_{p\tau\alpha\beta} y_{p\tau\alpha\beta}$$

A.6.3 Estimation of Variance (\hat{V})

A.6.3.1 Replicate Total

$$\hat{V}(\hat{Y}_{p\tau}) = \underbrace{(1 - f_{p1})a_p s_{p\tau1}^2}_{\text{Between PSU variance}} + f_{p1} \sum_{\alpha=1}^{a_p} \underbrace{(1 - f_{p2})b_{p\alpha} s_{p\tau2}^2}_{\text{Within PSU variance}}$$

Where:

f_{p1} and f_{p2} - 1st and 2nd stage sampling rates, respectively, of domain p
 a_p - number of sample PSUs in domain p

$s_{p\tau1}^2$ and $s_{p\tau2}^2$ - 1st and 2nd stage sampling variance, respectively, of domain for replicate τ

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

A.6.3.2 Provincial/HUC Total

$$\hat{V}(\hat{Y}_p) = \frac{1}{16} \sum_{\tau=1}^{16} \hat{V}(\hat{Y}_{p\tau}), \text{ since the replicates are independent}$$

Where:

$\hat{V}(\hat{Y}_{p\tau})$ - variance of the replicate total of domain p for replicate τ

A.7 Base Weight Adjustment

Base weight will be adjusted to consider cases of unit non-response. Further adjustment will be made also so that the final weighted estimates will conform to the known population count/value.

Enhancement of Estimation Procedure

Enhancements were made to simplify estimation of totals and variance and for a more user-friendly microdata file. In this process, the four replicates are merged into one set of sample for the province/HUC to get rid of the individual estimation of replicate totals and variances.

A.7.1 Base Weight – refers to the raising factor attached to a sampling unit (i.e, PSU and SSU) so that the estimate of totals approximates that of the base population (2015 Census of Population).

$$w'_{p\tau\alpha} = \frac{A_p}{16a_p} \times \frac{B_{p\tau\alpha}}{b_{p\tau\alpha}} \quad \text{Instead of} \quad w_{p\tau\alpha\beta} = \frac{A_p}{a_p} \times \frac{B_{p\tau\alpha}}{b_{p\tau\alpha}}$$

Thus,

$$w'_{p\tau\alpha} = \frac{w_{p\tau\alpha}}{16}$$

Where:

$w'_{p\tau\alpha}$ - is an adjusted weight ignoring replicates (enhancement of estimation procedure)

A_p - number of PSUs in domain p

$B_{p\tau\alpha}$ - number of housing unit in PSU α in replicate τ in domain p

a_p - number of sample PSUs in domain p

$b_{p\tau\alpha}$ - number of sample housing unit in PSU α in replicate τ in domain p

A.7.2 Estimation of Total and Rates

$$\hat{Y}_p = \sum_{\tau=1}^{16} \sum_{\alpha=1}^a \sum_{\beta=1}^{b_{\tau\alpha}} w'_{p\tau\alpha\beta} y_{p\tau\alpha\beta}$$

$$\hat{R} = \frac{\hat{Y}}{\hat{X}} \quad \text{is the rate of interest}$$

Where:

$y_{p\tau\alpha\beta}$ is an estimate (of a HH) of a parameter in housing unit β in PSU α in replicate τ in domain p

\hat{Y} is the estimated total with the characteristic of interest, and

\hat{X} is the estimated total population

For example, if \hat{R} is the estimated unemployment rate, then \hat{Y} is the estimated total unemployed and \hat{X} is the estimated total population in the labor force.

A.7.3 Base Weight Adjustment

The base weight will be adjusted for unit non-response using weighting class adjustment as adjustment factor. The adjustment (A_{p1}) will be made within province/HUC using the following adjustment factor:

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

* - using base weight

The non-response adjustment ($w'_{p\tau\alpha,adj}$) is the product of the base weight and the adjustment factor, that is,

$$w'_{p\tau\alpha,adj} = w'_{p\tau\alpha} \times A_{p1}$$

Further adjustment will still be made by calibration to conform to known population counts/values.

For example, the 10-year interval age group and sex distribution from projected population by provinces is given in this table:

Age Group	Sex	
	Male	Female
0-14	c1	c2
15-24	c3	c4
25-34	c5	c6
:	:	:
65 and over	c13	c14

The population adjustment factor by class (age group-sex category) (A_{p2c}) is:

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

Where:

A_{p2c} - is an adjustment factor for class (c1,c2,...c14) where c1 refers to Male aged 0-14, c2 refers to Female aged 0-14,...,c14 refers to Female aged 65 and over

$\hat{X}_{pc,adj}$ - is the weighted estimate of the population for age-sex class c where the weight used is the weight adjusted already for non-response

X_{pc} - is the projected total population for age-sex class c

The final weight or the calibrated weight ($w'_{p\tau\alpha,fin}$) is the product of non-response adjusted weight and the population adjustment factor, that is,

$$w'_{p\tau\alpha,fin} = \underbrace{w'_{p\tau\alpha,adj}}_{\text{Non-response adjusted weight}} \times \underbrace{A_{p2c}}_{\text{Population adjustment factor by class (age group-sex category)}}$$

Non-response adjusted weight

Population adjustment factor by class (age group-sex category)

A.7.4 Estimation of Variance (\hat{v})

A.7.4.1 Estimator of Variance at the regional level

Treating the provinces/HUCs as strata within the region, the estimate of the regional total variance is,

$$\hat{V}(\hat{Y}_r) = \sum_{p=1}^{m_r} \hat{V}(\hat{Y}_p)$$

Where, m_r refers to the number of province/HUC domain in region r

A.7.4.2 Estimator of variance of rates

Taylor Series Linearization Method is used,

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

Where:

$c(\hat{Y}, \hat{X})$ – covariance of \hat{Y} and \hat{X} , and

$$\hat{R} = \frac{\hat{Y}}{\hat{X}} \quad \text{- is the rate of interest}$$

Where:

\hat{Y} - is the estimated total with the characteristic of interest, and

\hat{X} - is the estimated total population

A.7.4.3 Model-Assisted Variance

Instead of purely design-based variance, model-assisted variance is used,

$$V(\hat{Y}_{cal}) \cong V(\hat{Y}_{GREG}) = \left[1 - r^2 + O(n^{-1/2}) \right] V(\hat{Y}_{des})$$

Where:

\hat{Y}_{des} is the design-based estimate,

n is the sample size, and

r^2 is coefficient of determination in a regression model

Calibration improves efficiency and the variance produced by the Generalized Regression (GREG) Model is asymptotically unbiased.

IV. Data Checking, Coding, and Filtering Prior to Estimation of Proportions

The FIES 2021 questionnaire contained 2,785 data items and a summary for comparing income and expenditures. The questionnaires were subjected to a rigorous manual and machine edit checks for completeness, arithmetic accuracy, range validity and internal consistency.

The major steps in the machine processing are as follows:

1. Data entry
2. Completeness check
3. Matching of visit records
4. Consistency and macro edit (big edit)
5. Generation of the Public Use File (PUF)
6. Tabulation

Steps 1, 2 and 4 were done right after each visit. The remaining steps were carried out only after the second visit had been completed. Steps 1 to 4 were done at the Provincial and Regional Office, while Steps 2 to 6 were completed in the Central Office. After completing Steps 1 to 4, data files were transmitted to the Central Office where a summary file was generated. The summary file was used to produce the consistency tables as well as the preliminary and textual tables.

When the generated tables showed inconsistencies, selected data items were subjected to further scrutiny and validation. The cycle of generation of consistency tables and data validation were done until questionable data items were verified.

The Census and Survey Processing System (CSPro) was used in processing the survey data for the 2021 FIES Visit 1. CSPro is a software package for entry, editing, tabulation, and dissemination of census and survey data.

CSPro lets you create, modify, and run data entry, batch editing, and tabulation applications from a single, integrated development environment. It processes data on a case basis (one or more questionnaires), where a case can consist of one or many data records.

The common types of surveys in which CSPro is used are censuses (population and housing; agriculture; and economic), demographic and labor force surveys, household income and expenditure surveys, etc.

V. New Items in the 2021 FIES Questionnaire based on the 2020 PCOICOP

The FIES 2021 basically follow the same concepts and methodologies used in the FIES 2018. However, starting 2021, the new 2020 Philippine Classification of Individual Consumption According to Purpose (PCOICOP) was used in this survey.

SECTION	ITEMS	REMARKS
A. Expenditures and other disbursements		
1) Live animals, meat and other parts of slaughtered land animals	- Live land animals	New items in FIES 2021
2) Milk, other dairy products and eggs	- Skimmed milk - Other milk and cream (Cream, Other milk) - Non-animal milk (Coconut milk)	New items in FIES 2021
3) Fruits and Nuts	- Tropical fruits, fresh (Avocados, Coconuts) - Citrus fruits (fresh), Stone fruits and Pome fruits (fresh), Berries (fresh), Other fruits (fresh) - Frozen fruits	New items in FIES 2021
4) Sugar, confectionery, and desserts	- Nut purée, nut butter and nut pastes	New items in FIES 2021
5) Ready-made food and other food products n.e.c.	- Ready-made food	New items in FIES 2021
6) Services for processing primary goods for food and non-alcoholic beverages		New sub section in FIES 2021

SECTION	ITEMS	REMARKS
7) Alcohol production services		New sub section in FIES 2021
8) Clothing and Footwear	- Garments	<p>In FIES 2018, garments were based on age- and sex- grouping, for example, infants, boys 1-9 years old, men 18 years and over, women 18 years and over, among others)</p> <p>In the FIES 2021, clothing and footwear items were classified based on the needs of men and women, regardless of age and infants.</p>
12) Housing, water, electricity, gas and other fuels	- Security equipment (e.g., smoke detector, security alarms, security/surveillance cameras, door phones for dwellings, and fire extinguishers)	New items in FIES 2021
13) Health	<p>New Goods and Services in view of COVID-19 pandemic</p> <ul style="list-style-type: none"> - Covid-19 vaccines - Face Masks - Medicinal stockings (e.g. compression stockings) - Face shields - Medicinal gloves - Protective gowns and aprons - Covid-19 testing services both in public and private health facilities - Alcohol for medical uses - Oral contraceptives - Online consultation fees of public and private telehealth services 	New items/itemized in FIES 2021
14) Transport	<ul style="list-style-type: none"> - E-bikes, pedelecs (electric pedal-assisted bicycles) - Carpooling and ridesharing fare - Bus fare for point-to-point operation - Services of delivery of goods 	New items in FIES 2021
15) Information and communication	<ul style="list-style-type: none"> - Software excluding games - Bundled telecommunication services - Other information and communication services such as subscriptions to audio-visual content, streaming services and rentals of audio-visual contents 	New items in FIES 2021

SECTION	ITEMS	REMARKS
	<ul style="list-style-type: none"> - Information and communication equipment - Repair and rental of information and communication equipment 	Moved from Recreation 2018
16) Recreation, sport and culture	<ul style="list-style-type: none"> - Video game software, electronic games, and game apps 	New items in FIES 2021
17) Education	Tuition fee on the following: <ul style="list-style-type: none"> - Home-based or homeschool setting - Senior high school - Education for special groups - Post-secondary non-tertiary special education services 	New items in FIES 2021
18) Restaurants and accommodation services	<ul style="list-style-type: none"> - With full service (with waiter service) - With limited service (without waiter service, self-service, with or without seating) 	New section groupings in FIES 2021
19) Insurance and financial services		New division in FIES 2021 from Miscellaneous Goods and Services 2018
20) Personal care, social protection and miscellaneous goods and services		New division in FIES 2021 from Miscellaneous Goods and Services 2018
	<ul style="list-style-type: none"> - Repair and hire of jewelry and watches - Devotional articles and articles for religious and ritual celebrations - Articles for smokers (e.g., pipes, lighters, cigarette cases, ashtrays, etc.) - Repair and rental of other personal effects 	New items in FIES 2021
B. Income items and sub-items		
1) Other Sources of Income - Government institutions	<ul style="list-style-type: none"> - Social Amelioration Program (SAP) to Individuals in Crisis Situation, SAP for the Labor Sector, and SAP for the Transportation Industry 	New item added in FIES 2021
2) Entrepreneurial Activities - Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles - Manufacturing	<ul style="list-style-type: none"> - Goods Sold thru online or telephone - Percentage of the online/telephone sales from wholesale and retail sales 	New questions added in FIES 2021

SECTION	ITEMS	REMARKS
3) Expenditure Items Purchased Online / Telephone		New section added in FIES 2021

IV. Dissemination of Results

The 2021 FIES Visit 1 special release write-up and statistical tables are publicly available at the PSA website <https://psa.gov.ph/income-expenditure/fies>

VI. Contact Information

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