

LABOUR FORCE

SAMPLE DESIGN

SAMPLE DESIGN

The sample design adopted for STATIN Labour Force surveys and its other social and demographic household surveys is one of the appropriate designs for large scale surveys. It is also referred to as the 'paired selection design', as **two** first stage Primary Sampling Units (PSUs) are selected from **each** stratum or Sampling Region.

First Stage - Selection of Primary Sampling Units (PSUs)

All dwelling units in Jamaica are assigned to Enumeration Districts (EDs) and it is these EDs that are used to form the Primary Sampling Unit (PSU) for the labour force sample.

Contiguous or adjoining EDs are joined to form Sampling Regions or strata of similar size. The EDs are joined in such a way that each sampling region: -

- (a) Is wholly contained within one of Jamaica's 14 parishes
- (b) contains approximately the same number of dwellings and,
- (c) is expected to be composed of similar dwelling units

Every attempt is made to construct purely urban or rural Sampling Regions. The number of sampling regions will vary from parish to parish because of the unequal distribution of dwellings per parish. From each sampling region, two EDs are selected with probability proportionate to size (pps), using the number of dwellings as the measurement of size. The formation of a large number of sampling regions, and the selection of samples from each one ensures a more even distribution of the sample across all geographic and administrative areas. The sampling regions are updated approximately at every three to four year interval to account for movements in the population.

Second Stage – Selection of Dwellings

Within each of the PSUs selected from the master sample, the field staff compiles a list of all dwellings during house-to-house visits. From this list of all dwellings for each ED, 32 dwellings are selected as a systematic sample with a random start.

Four quarterly labour force surveys are conducted each year in January, April, July and October using a panel formation. The 32 dwellings selected from each selected PSU are divided into 8 panels of 4 dwellings each.

Panel designed surveys are considered useful when:

- (i) Several rounds of data collection are needed to measure changes over time
- (ii) It is necessary to collect easily accessible information which can be reported accurately
- (iii) It is not necessary to follow movers from a dwelling since the incoming household serves as a replacement and
- (iv) It is necessary to minimize respondent fatigue

The 8 panels in the Master Sample are formed in a manner such that each panel is a systematic sub-sample of the Master Sample. If we label the panels A, B, C, D, E, F, G and H, then for the first survey the panels A, B, C and D are canvassed, for the second C, D, E and F, etc. It should be observed that the panels are repeated after one year, and that a half of each quarterly panel is repeated in successive surveys. The repeating of the panels after one year allows for annual comparison (most of the dwellings are repeated) while the repeating of a half of the panel between successive surveys allows for some measure of quarterly comparison since a half of the dwellings are repeated.

Survey Number	Panels
1	A B C D
2	C D E F
3	E F G H
4	G H A B
5	A B C D

Sample Size

The current labour force sample is 254 sampling regions or 508 PSUs. With 16 dwellings being canvassed in each survey, this means that a total of 8,128 households are visited during each labour force survey. This represents approximately 28,448 individuals or about one per cent of Jamaica's population.

Weights

The weights applied to the labour force survey data include a Non-Response Weight and a Post-Stratification Weight. Non-response adjustment factors are applied at the Enumeration District (ED) level, with adjustments being made for dwellings that did not respond. The Post-Stratification Weights are applied to raise the sample population to the 'All Jamaica' population, using the age/sex structure and Census population totals or inter censal estimates.

Reliability of the Estimates

The total error of the estimates from a survey is the difference between the estimate and the true population value that it estimates i.e. the sampling and non-sampling errors.

Sampling Error

The survey estimates of the labour force are based on a scientifically selected probability sample, rather than a census of the entire population. When a sample rather than the entire population is surveyed, there is a chance that the sample estimates may differ from the results obtained from a census of the population. The sample used was one of many possible samples, each of which could have produced different estimates.

The exact differences, or sampling error, vary depending on the particular sample selected, and its variability is measured by the standard error of the estimate. There is about a 95 per cent chance, or level of confidence, that an estimate based on a sample will differ by no more than 1.96 standard errors from the true population value because of sampling error. Analyses relating to the Labour Force Survey are generally conducted at the 95 per cent level of confidence.

Non-Sampling Error

Non-sampling errors will always occur whenever a survey is conducted. The inability to obtain information about all cases in the sample, errors in recording or coding the data are general examples of non-sampling error in a survey. Although these errors cannot be measured STATIN has implemented quality assurance procedures to reduce them in the survey. These include an intense training programme for the data collecting staff and the continuous encouragement of the respondents to participate fully and answer accurately to all the questions in the survey.

ESTIMATION PROCEDURES

ESTIMATION PROCEDURES

The sampling regions being of equal size and the fact that the probability of selection of the second stage units is equal in all strata, simplifies the estimation formulae as shown below.

Notation:

Strata (sampling regions)	L
Sub-units (dwellings) in sampling regions	M (same for all regions)
Number of first stage units (EDs) selected from a sampling region	2 (same for all regions)
Number of second stage units (dwellings) drawn from one selected ED	m (same for all EDs)
Unit Value for the "j th " sub-unit in the "i th " primary unit (ED)	Y_{ij}
Sample mean for the "i th " selected ED in the "s th " region	\bar{Y}_{1s}
Sample mean for the "s th " region	\bar{Y}_s

The Sample Mean is given by the formula:-

$$\bar{Y} = \frac{\sum_{s=1}^L \sum_{i=1}^2 \sum_{j=1}^m Y_{ij}}{L \times 2m}$$

Where:

\sum represents "summation"

The variance of the Sample Mean (the square root of which is called the Standard Error) is given by the formula

$$V(\bar{Y}) = \frac{1}{4L^2} \sum_{s=1}^L (\bar{Y}_{1s} - \bar{Y}_s)^2$$

The above simple formulae hold good only when:-

- (a) the sampling regions are of approximately equal size in terms of the second stage units, i.e. dwellings;
- (b) two first stage units, i.e. PSUs are selected from each sampling region with probability proportional to their size (in terms of the second stage units) with replacement;
- (c) the design is self-weighting, that is, the probability of selection of a second stage unit is the same for all units in the population, which in effect means a uniform overall sampling fraction for all regions with equal number of second stage units being selected from first stage units;

Reliability of the Estimates

The total error of the estimates from a survey is the difference between the estimate and the true population value that it estimates i.e. the sampling and non-sampling errors.

Sampling Error

The survey estimates of the labour force are based on a scientifically selected probability sample, rather than a census of the entire population. When a sample rather than the entire population is surveyed, there is a chance that the sample estimates may differ from the results obtained from a census of the population. The sample used was one of many possible samples, each of which could have produced different estimates. In other words the estimates derived from the selection of different sample designs may differ from each other. One measure of the likely difference is given by the standard error (SE) which indicates the extent to which an estimate might have vary by chance because only a sample of dwellings was included. Another measure of the likely difference is the relative standard error (RSE) which is obtained by expressing the SE as a percentage of the estimate.

There is about a 95 per cent chance, or level of confidence, that an estimate based on a sample will differ by no more than 1.96 standard errors from the true population value because of sampling error. For example the table below shows that the survey estimated the employment rate to be 85.1 per cent in October 2014 and the relative standard error to be 0.58. This means that we are 95 per cent confident that the estimated employment rate will be between 86.2 per cent and 84 per cent.

Non-Sampling Error

Non-sampling errors will always occur whenever a survey is conducted. The inability to obtain information about all cases in the sample, errors in recording or coding the data are general examples of non-sampling error in a survey. Although these errors cannot be measured STATIN has implemented quality assurance procedures to reduce them in the survey. These include an intense training programme for the data collecting staff and the continuous encouragement of the respondents to participate fully and answer accurately to all the questions in the survey.

The Percentage Standard Errors of Employment and Unemployment rates by sex are presented in the table below.

Rates	Period	
	October 2013	October 2014
	Both Sexes	
Employment Rate	85.8	85.1
Relative Standard Error	0.59	0.58
Unemployment Rate	14.2	14.9
Relative Standard Error	3.53	3.32
	Males	
Employment Rate	89.4	90.1
Relative Standard Error	0.63	0.59
Unemployment Rate	10.6	9.9
Relative Standard Error	5.34	5.34
	Female	
Employment Rate	80.0	80.6
Relative Standard Error	0.95	0.93
Unemployment Rate	20.0	19.4
Relative Standard Error	3.80	3.87

MEASURING UNDEREMPLOYMENT-TECHNICAL NOTES

MEASURING UNDEREMPLOYMENT – TECHNICAL NOTES

CONCEPTS

Underemployment

Underemployment (Time Related) occurs when employed persons would like to work more hours, at the prevailing wage rates, than they actually work and are actively seeking and available to work those additional hours. Therefore, in order to be classified as underemployed, one must have **worked less than 35 hours per week** in the reference period, be **available to work additional hours** and **looking for additional hours of work**.

STATIN, on the recommendation of the International Labour Organization (ILO), through its Harmonization Project, adopted the use of 35 hours per week as proxy for fulltime employment thus, working less than 35 hour per week, **involuntarily**, may be classified as part-time work.

It must be noted that, the **reason** for working less than 35 hours per week must be taken into account. If a person works less than 35 hours per week because he, for example, did not want to work more hours, it is clear that this is voluntary and not for **economic reasons**. On the other hand, if a person reported that only part-time work was available, he may be classified as underemployed.

In January 2010 a question was added to the Jamaica Labour Force questionnaire to capture those persons who looked for additional work. Consequently, information on underemployment may be computed. It was also assumed that those persons who sought additional hours of work, during the four weeks up to and including the reference week were available for additional hours of work. Prior to October 2011, only data on Employment, Unemployment and Persons Outside the Labour Force were published.

Estimates for Underemployment have been calculated for the period January 2010 to October 2011. It should be noted also that, due to the small numbers of reported cases, the categories for Industry, Employment Status and Age have been aggregated into larger/wider groups as follows:

Employment Status

Paid Employee
Own Account Worker
Other Worker

Paid Employee: The person may be a paid employee of Central or Local Government - Any Ministry or Department of Government or any Parish Council; Government Agencies - Statutory Bodies, Board or Agencies of Government; Private Sector Business - Privately owned businesses in any type of economic activity.

Own Account Worker: This includes any person who operated a farm or a business (for profit), who did not employ any paid help. If the farm or business operator had the help of unpaid workers then he should still be classified as "Own account worker". However, if he had both paid and unpaid help, he should be classified as "Employer".

Other Worker: Employer i.e. any person who operated his (or her) own farm or business (for profit), and who worked with paid help. Also "Unpaid Family Worker" i.e. all workers who worked either on a farm or in some economic activity, but without expecting to or receiving any payment in cash or kind. An Unpaid Worker is usually related to the individual with whom he works (by blood or marriage).

Industry Groups

Agriculture, Hunting, Forestry & Fishing
Other Goods Producing Sectors
Wholesale & Retail, Hotels & Restaurants & Transport
Financing, Ins., Real Est. & Business Services
Govt. & Other Services, Incl. Electricity, Gas & Water

Other Goods Producing Sectors include Mining, Construction and Manufacturing.

Government & Other Services include Education, Health & Social Work, Public Administration & Defence, Compulsory Social Security and Private Households with Employed Persons.

Harmonization Project

The Labour Market Harmonization Project (2007) sponsored by the International Labour Organization (ILO), involved five Caribbean territories namely Jamaica, Barbados, Trinidad & Tobago, St. Lucia and The Bahamas; provided a Labour Market Specialist, to determine what each territory needed to do in order to harmonize the Labour Market data collected in the Caribbean.

INFORMAL SECTOR EMPLOYMENT-TECHNICAL NOTES

INFORMAL SECTOR EMPLOYMENT – TECHNICAL NOTES

International Statistical Definition of the Informal Sector

At the 15th International conference of Labour Statisticians (ICLS) a conceptual framework for defining informality was developed. It defined employment in the informal sector in terms of production units or enterprises. According to Hussmanns (2004) in applying this definition the informal sector consist of household enterprises or unincorporated enterprises owned by households that are characterised by:

- Small size in terms of employment i.e. having a number of employees below a certain threshold
- Non-registration of the enterprise or its employees.
- Engagement in non-agriculture activities

At the 17th ICLS in 2002, the ILO proposed major changes to the definition of the informal sector. One of the major changes was to define the informal sector according to the employment characteristics of the worker, moving away from the 15th ICLS. Accordingly, the informal economy is defined in terms of type of production unit and type of job. (Hirway and Charmes, 2006)

Type of production unit is defined in terms of legal organization and enterprise related characteristics and are classified into formal sector enterprises, informal sector enterprises and households.

Type of job is defined in terms of status in employment and other job-related characteristics according to their formal or informal nature

Informal Sector Framework

The methodology used by the Statistical Institute of Jamaica (STATIN) to estimate the size of the informal sector closely followed the definition which was proposed by the 17th ICLS and focused on the main job of the respondents. The investigation of the informal sector by STATIN was drawn from information garnered from a new module which was specially developed and attached to the quarterly Labour Force Survey (LFS) to capture and measure employment in the informal sector. The module was developed in collaboration with the ILO Sub-regional Office in the Caribbean as part of a project to produce a harmonize Labour Force Survey questionnaire for the Caribbean.

Keeping as close to the conceptual framework of the informal sector by the ILO, the informal sector is defined only in respect of non-agriculture activities as it was decided that informal activities in the agriculture sector was difficult to estimate. For operational purposes the informal sector is defined in terms of the production units in which the activities take place. This is referred to as the enterprise approach as opposed to the job approach and comprises the following:

- All own-account workers and employers who own informal enterprises
- employees working in enterprises with less than 10 employees

- All contributing family members
- All employees in jobs where National Insurance Scheme (NIS) contribution is not deducted from their wages.

Accordingly, a person whose main job is not in agriculture is counted as working in the informal sector if his or her present job satisfies each of the following conditions shown in a single row in the Box below.

Box 1: Informal Employment Conditions by Employment Status

Employment Status	No. of persons at workplace	Is NIS Deducted?
Employee of Private Sector	Less than 10	No
Unpaid Family Workers	Less than 10	Yes or No
Employers	Less than 10	No
Own Account Worker	1	Yes or No

To derive the different categories of workers a number of steps had to be followed. Firstly since only persons who are employed are in the domain of the informal sector, the employment status of the respondents was determined. Secondly, only persons who were engaged in non-agriculture activities were included. Domestic employees employed by households were also excluded from the data as they are in an independent category that falls under neither the formal nor the informal sector. Thirdly, if respondents failed to answer any of the questions or answered “I don’t know” to the questions that are used to classify them then they would be placed into the unclassified category. Finally, persons are then classified in the formal or the informal sector workers based on the above definitions. For the remainder of the report, unless stated otherwise, the term “informal sector” excludes all domestic workers and workers in the agriculture sector.