

SURVEY COVERAGE AND METHODOLOGY

INTRODUCTION

The 2009 comprehensive Labour Force Survey is the thirty-second in the series of mid-year labour force surveys conducted in Singapore by the Manpower Research and Statistics Department of the Ministry of Manpower. The survey was not carried out in 1990, 1995, 2000 and 2005 because of the conduct of the General Household Survey (1995 and 2005) and the Population Census (1990 and 2000) by the Singapore Department of Statistics, Ministry of Trade and Industry.

2 The Labour Force Survey is conducted under the Statistics Act (Chapter 317) which empowers the Director of the Manpower Research and Statistics Department to collect data on the economic activities of the population in Singapore. The Act also ensures that individual information obtained from the survey is kept confidential and used only for the purpose of producing aggregate statistics.

OBJECTIVE AND COVERAGE

3 The objective of the survey is to collect data on the economic activities of the population, including detailed information on employment and unemployment, characteristics of the labour force and economically inactive persons.

4 The survey covers private households on the main island of Singapore. It excludes workers living in construction worksites, dormitories and workers' quarters at the workplace and persons commuting from abroad to work in Singapore.

DATA COLLECTED

5 The survey questionnaire was designed to collect pertinent data on the personal characteristics of the population and detailed information on the economic characteristics of the labour force. The items collected in the questionnaire included:

For All Persons

Gender

Age

For Persons Aged Fifteen Years And Over

Marital status

Educational attainment

Field of study

Activity status

For Employed Persons Aged Fifteen Years And Over

Occupation

Industry

Gross monthly income

Employment status

Whether working full-time, part-time or serving National Service

Whether employed on permanent or term contract basis

Usual hours worked

Duration of employment in present job

Willingness and availability of part-timers to work additional hours

For Unemployed Persons Aged Fifteen Years And Over

Duration of unemployment

Action taken to look for work

Working experience

Previous occupation

Previous industry

Reason for leaving previous job

For Economically Inactive Persons Aged Fifteen Years And Over

Reason for being economically inactive

Working experience

Whether persons intend to look for work in future

Preference for full-time or part-time work

CONCEPTS AND DEFINITIONS

6 *Household*

A household is made up of persons who share common accommodation and food arrangements. A household may consist of only one person or many persons.

7 *Reference Period*

This refers to the week preceding the date of the survey interview.

8 *Educational Attainment*

This refers to the highest level or standard which a person has passed or attained either through attendance at an institution of learning or through correspondence or self-study. The classification of educational attainment is based on the Singapore Standard Educational Classification (SSEC), 2000. A person is classified into one of the following categories according to the highest qualification attained:

No Formal Qualification/ Lower Primary	: This refers to those who have never attended school, or have primary education but without Primary School Leaving Examination (PSLE) certificate or their equivalent, or have Certificate in Best 1-3.
Primary	: This refers to those who have PSLE or other certificate of equivalent standard, or have Certificate in Best 4
Lower Secondary	: This refers to those who have secondary education without GCE 'O'/'N' Level pass or equivalent, or have Certificate in Wise 1-3, or basic vocational certificates (incl. ITE Basic vocational training).
Secondary	: This refers to those who have at least 1 GCE 'N'/'O' Level pass, or Technical Certificate at NTC Grade 3 level, Certificate of Competency, Certificate of Vocational Training, BCA Builder Certificate, or other certificates/qualifications of equivalent standard.
Upper Secondary	: This refers to those who have at least 1 GCE 'A' Level pass or other certificates/qualifications of equivalent standard. It also includes those who have NITEC, higher NITEC or equivalent (including Certificate of Office Skills, Certificate in Business Skills, Technical Certificate at NTC Grade 2 level, Advanced Builder Certificate), or Master NITEC or equivalent (including Technical Certificate at NTC Grade 1 level, Polytechnic certificates), or other advanced certificates (e.g. SIM Certificates).
Polytechnic Diploma	: This refers to those who have Polytechnic diploma, or Polytechnic advanced diploma (including Polytechnic advanced/post/specialist/management/graduate diploma), or Polytechnic post-diploma certificate.
Other Diploma and Professional Qualification	This refers to those who have qualifications awarded by professional bodies, or National Institute of Education (NIE) Diploma, or other diploma qualifications (e.g. SIM diploma).
Degree	: This refers to those who have Bachelor Degree, or Postgraduate Diploma (including NIE postgraduate diploma), or Masters or Doctorate.

9 *Field of Study*

This refers to the principal discipline, branch or subject matter of study that leads to the award of the highest qualification attained at polytechnic and university levels.

10 *Activity Status*

Persons are classified as economically active or inactive.

Economically Active Population : This refers to persons aged fifteen years and over who were either employed or unemployed during the reference period. This group is also known as the labour force.

Economically Inactive Population : This refers to persons aged fifteen years and over who were not working, did not have a job to return to and were not actively looking for a job during the reference period.

11 *Employed Persons*

This refers to persons aged fifteen years and over who, during the reference period:

- i) worked for one hour or more either for pay, profit or family gains; or
- ii) had a job or business to return to but were temporarily absent because of illness, injury, breakdown of machinery at workplace, labour management dispute or other reasons.

12 Unemployed Persons

This refers to persons aged fifteen years and over who did not work but were available for work and were actively looking for a job during the reference period. They include persons who were not working but were taking steps to start their own business or taking up a new job after the reference period.

13 Unemployment Rate

This is defined as the percentage of unemployed persons to the total economically active persons aged fifteen years and over.

14 Long-Term Unemployed Persons

This refers to persons who have been unemployed for 25 weeks or more.

15 Long-Term Unemployment Rate

This is defined as the percentage of long-term unemployed persons to the total economically active persons aged fifteen years and over.

16 Underemployed Persons

This refers to persons aged fifteen years and over who are working less than 35 hours a week and are willing and available to engage in additional work.

17 Underemployment Rate

This is defined as the percentage of underemployed persons to the total employed persons aged fifteen years and over.

18 *Duration of Unemployment*

This refers to the number of complete weeks between the date when action was first taken to look for a job and the date of the survey interview.

19 *Age-Gender Specific Labour Force Participation Rate*

This is defined as the proportion of the population in the specific age and gender group who are economically active.

20 *Age-Gender Specific Employment Rate*

This is defined as the proportion of the population in the specific age and gender group who are employed.

21 *Employment Status*

This refers to the position or status of an employed person in relation to other persons within the organisation for which he worked. Employed persons are divided into the following four categories:

- i) Employers : These are persons who employ at least one paid worker in their business or trade.
- ii) Employees : These are persons who work for employers in return for regular wages or salaries.
- iii) Own Account Workers : These are persons who operate their own business without employing any paid workers in the conduct of their business or trade.
- iv) Contributing Family Workers : These are persons who assist in the operation of family business without receiving regular wages or salaries.

22 *Type of Employment*

Employed persons can be categorised into those working on full-time or part-time basis.

- i) Full-time : This refers to employment where the normal hours of work is 35 hours or more in a week.
- ii) Part-time : This refers to employment where the normal hours of work is less than 35 hours a week.

Employees can be categorised into those employed on term contract or permanent basis.

- i) Term Contract : Employees on term contracts refer to those on fixed-term contract of employment that will terminate on the expiry of a specific term unless it is renewed, as well as those on casual/on-call employment (i.e. where persons are employed on ad hoc basis, as and when the company requires additional manpower).
- ii) Permanent : Permanent employees refer to those employed for an unspecified duration, i.e. they are not on term contracts.

23 *Occupation*

This refers to the type of work performed by a person, which may not necessarily be related to his training, skill or professional qualification. In the case of a person who performs two or more kinds of work, his occupation would refer to the one in which he spent the greatest part of his working time and/or from which he derived the greatest share of his income during the reference period. The classification of occupations is based on the Singapore Standard Occupational Classification (SSOC), 2005.

24 Industry

This refers to the major kind of activity undertaken by the establishment, enterprise, firm or organisation in which the person worked during the reference period. It is related to the principal class of goods produced or services rendered by the organisation. The classification of industries is based on the Singapore Standard Industrial Classification (SSIC), 2005.

25 Gross Monthly Income

This refers to the total amount of income earned from employment during the full calendar month preceding the date of the interview. For employees, this would include wages or salaries, allowances, overtime, commission, tips and bonuses. It would also include the employee's Central Provident Fund contribution but not the employer's contribution for the employee. For employers and own account workers, it refers to the total receipts from sales and services performed less the business expenses incurred.

From the 1996 survey onwards, data on the bonus received during the last 12 months preceding the survey were obtained separately to derive the gross monthly income. This gives better estimates of gross monthly income from employment.

26 Usual Hours Worked

This refers to the number of hours that a person usually works in a typical week, regardless of whether he is paid or not. The concept of usual hours of work differs from that of normal hours of work referred to in contractual arrangements. For a person who has just started work during the reference period, usual hours of work refers to the number of hours per week he is expected to work in that job. For a multiple jobholder, it should be aggregated from the hours spent at all the jobs.

27 Discouraged Workers

This refers to persons outside of the labour force who are currently not looking for a job because they believe their job search would be in vain. Reasons cited for being discouraged include belief that there is no suitable work available, employers' discrimination and lack of necessary qualifications, training, skills or experience.

28 Training Participation Rate

The training participation rate (also known as training incidence rate) is defined as the proportion of residents aged 15 to 64 in the labour force who had engaged in some form of job-related structured training or education activities over the 12-month period ending June. Job-related structured training or education refers to training that is related to a current or future job. It includes classroom training, private lessons, correspondence courses, workshops, seminars, structured on-the-job training (OJT) and apprenticeship training. However, it excludes informal on-the-job training such as watching a video on management skills, observing others perform a task at work, time spent at work learning new tasks and keeping up to date with work-related developments by reading journals/newspapers and informal discussions.

29 Training Intensity

Training intensity is defined as the duration of structured training per adult. It is derived by multiplying the training participation rate by average training days per trainee.

30 Residents

Residents (also known as locals) refer to Singapore citizens and Permanent Residents.

SAMPLING DESIGN

31 The sample used for the mid-year Labour Force Survey is selected using a two-stage stratified design. For the determination of an appropriate sample size, studies on the sample estimates and variances were made. Other factors that were taken into consideration were cost, time and manpower resources. The sample selection is undertaken by the Singapore Department of Statistics, Ministry of Trade and Industry, which maintains a National Database on Dwellings in Singapore. The selection is done in accordance with the specified sampling criteria.

32 The sampling units for the first stage consist of sampling divisions demarcated by geographical boundaries (based on URA's planning areas). To improve the efficiency of the sample selection and the quality of the sample, sampling divisions that contain relatively small number of housing units are merged with larger entities to reduce the variation in size of the sampling divisions.

First Stage Sample Selection of Sampling Divisions

33 During the first stage selection, the sampling divisions are stratified into three predominant housing types, namely, 'Public Flats', 'Private Houses and Flats' and 'Others' which include shophouses and attap/zinc-roofed houses. From this, a certain number of sampling divisions are systematically selected. The probability of a particular sampling division being selected is proportionate to the number of housing units in that sampling division.

Second Stage Sample Selection of Individual Houses

34 Within each selected sampling division, the housing units are stratified by the following housing types:

- i) HDB flats and other public flats;
- ii) Condominiums and private flats;
- iii) Landed properties; and
- iv) Others which include shophouses and attap/zinc-roofed houses.

35 For every chosen sampling division, a fixed number of housing units is selected by systematic sampling with a random start. The probability of selection for the housing units is inversely proportionate to the size of the sampling division.

36 This method of two-stage stratified sampling yields an overall equal probability and self-weighting sample. It also ensures good control over the desired sample size.

PLANNING, ORGANISATION, FIELDWORK AND DATA VERIFICATION

37 The Manpower Research and Statistics Department undertook the planning and operation of the survey. These included the preparation of the questionnaire and related documents, survey design, recruitment and training of staff, supervision and control of field work, editing and checking on the completed cases, data verification and compilation.

38 Field operation for the 2009 survey was carried out from 25 May to 31 July 2009. Around 100 temporary interviewers and 18 permanent staff were involved in the survey operation. The majority of the field staff were university undergraduates and polytechnic students as the period of the field operation coincided with their vacation. Each interviewer was equipped with a computer notebook and a telephone with headset. Comprehensive training sessions comprising classroom and role-play were conducted for the field interviewers.

39 The majority of the households completed the survey through telephone or internet. Households that did not respond through these options were enumerated through face-to-face interviews. Under the *Computer Assisted Telephone Interview (CATI)* system, the interviewer would key the information directly into the computer notebook as the interview was being conducted. The use of automatic routing in the *CATI* system ensured that all relevant questions were asked. The system also has an auto-error checking function to prompt interviewers of missing, invalid or inconsistent entries so that these can be

corrected on the spot. The information collected was subjected to further editing checks by field supervisors and CATI administrators.

40 The work of the interviewers was closely monitored to ensure the quality of the data collection. Supervisors also conducted random field checks by calling up selected households to verify the information collected. The data were subjected to further consistency and verification checks built into the computer system before processing.

RELIABILITY OF DATA

41 The results of the survey were grossed up to the resident population as at June 2009 (compiled by the Singapore Department of Statistics) using multiple estimation factors. Being a sample survey, the results were inevitably subjected to sampling and non-sampling errors.

42 Full coverage of the labour force is achieved by combining data on residents obtained from the survey with foreign workforce data compiled from administrative records.

Sampling Errors

43 In a sample survey, inferences about the target population are drawn from the data collected from the sample. Errors due to extension of the conclusions based on one sample to the entire population are known as sampling errors. The sampling error of an estimate is the difference between the estimated value obtained from a sample and the actual value from the population. Factors influencing the sampling error include the sample size, the sample design, method of estimation, the variability of the population and the characteristics studied.

44 The most common measure of the sampling error of an estimate is its standard error, which is a measure of the variation among the estimates derived from all possible samples. An alternative measure is the relative standard error of an estimate which indicates the standard error relative to the magnitude of the estimate. As a general rule, the smaller the group whose size is estimated or from which an estimate is being derived, the less precise that estimate is.

45 A sample estimate and an estimate of its standard error can be used to construct an interval that will, at specified levels of confidence, include the actual value. About 68, 95 and 99 per cent of estimates from all possible samples will fall within the interval defined by one, two or three standard errors respectively on either side of the estimate. By statistical convention, the confidence level has been set at 95 per cent.

46 For the 2009 survey, the estimated sampling errors of the main resident labour force estimates were as follows:

	Estimate	Standard Error	Relative Standard Error (%)	95% Confidence Interval	
				Lower	Upper
Economically Active Residents	1,985,742	6,125	0.31	1,973,738	1,997,746
Employed Residents	1,869,405	6,137	0.33	1,857,376	1,881,434
Unemployed Residents	116,337	2,133	1.83	112,157	120,517
Economically Inactive Residents	1,049,061	5,517	0.53	1,038,248	1,059,874
Resident Labour Force Participation Rate (%)	65.4	0.18	0.27	65.1	65.7
Resident Unemployment Rate (%)	5.9	0.11	1.83	5.7	6.1

47 As many sample estimates can be computed from the survey, it would be impractical to estimate the sampling errors for all estimates. A generalised table of sampling errors for the Labour Force Survey based on a simple random sample is presented as follows:

Size of Estimate	Proportion of Total Resident Population (%)	Standard Error	Relative Standard Error (%)	95% Confidence Interval	
				Lower	Upper
2,000,000	53.56	6,121	0.31	1,988,002	2,011,998
1,000,000	26.78	5,435	0.54	989,347	1,010,653
500,000	13.39	4,180	0.84	491,807	508,193
200,000	5.36	2,764	1.38	194,583	205,417
100,000	2.68	1,982	1.98	96,116	103,884
50,000	1.34	1,411	2.82	47,235	52,765
20,000	0.54	896	4.48	18,244	21,756
10,000	0.27	634	6.34	8,757	11,243
5,000	0.13	449	8.98	4,120	5,880
2,000	0.05	284	14.20	1,443	2,557
1,000	0.03	201	20.08	606	1,394
500	0.01	142	28.40	222	778
200	0.01	90	44.91	24	376

48 Data users are advised to take cognizance of the sampling error of the estimate and exercise judgement on whether the estimate is reliable for their intended purpose. Specifically, caution is to be exercised in interpreting results of detailed cross-tabulations for small sub-groups as these could have large sampling errors.

Non-Sampling Errors

49 Non-sampling errors could result from the varying interpretation of questions by respondents and interviewers, inability or unwillingness of respondents to provide correct information, mistakes in recording, coding and processing. These errors have been minimised by careful design of the questionnaire, intensive training and supervision of interviewers, as well as strict data processing controls.

RESPONSE

50 Of the 33,000 housing units selected in the initial sample, 1,494 households were excluded from the survey as they were unoccupied, non-residential or demolished. A total of 28,487 households responded to the survey, achieving an overall response rate of 90.4%.

IMPACT OF POPULATION REVISION ON LABOUR FORCE DATA

51 Being a sample survey, data obtained from the Labour Force Survey are grossed up using population estimates from Singapore Department of Statistics (DOS). DOS has refined the resident population estimates for June 2008 onwards to exclude Singapore residents who have been away from Singapore for a continuous period of 12 months or longer. Before June 2008, the labour force data are grossed up using DOS's original resident population estimates which comprise all persons whose usual residence is in Singapore. Hence, the resident labour force data for 2008 onwards are not strictly comparable with those published in earlier years.

52 To facilitate comparison with data for 2008 onwards, adjusted labour force estimates for 2007 based on the revised population estimates are published, alongside the original estimates in the key time series tabulations. The adjustment assumes that the proportion of persons overseas for at least 12 months in the 2007 Labour Force Survey was the same as that in the 2008 survey. Adjusted data for 2007 are denoted by the symbol ^a. The impact of the population revision is more significant for level data of large estimates such as the resident labour force or employed residents and less so for rates and proportions derived from level data of the same year as shown below.

	June 2007	June 2007 (adjusted)	Difference
	(a)	(b)	(b) - (a)
Economically Active Residents	1,918,100	1,878,000	-40,100
Employed Residents	1,842,100	1,803,200	-38,900
Unemployed Residents	76,100	74,800	-1,300
Economically Inactive Residents	1,026,500	1,009,200	-17,300
Resident Labour Force Participation Rate (%)	65.1	65.0	-0.1
Resident Unemployment Rate (%)	4.0	4.0	-
Resident Employment Rate of Population Aged 25-64 (%)	76.5	76.5	-

53 A suggested method to compute the change in the size of labour force over a period which spans 2007 is illustrated in the worked example below.

Example: Suppose we want to compute the change in the number of economically active residents from 1999 to 2009. With the break in series in 2007, we can estimate the change as follows:

<u>Year</u>	<u>Number of Economically Active Residents</u>
1999	1,595,900
2007 (Original)	1,918,100
2007 (Adjusted)	1,878,000
2009	1,985,700

The change from 1999 to 2009 can be computed by adding the following two components:

- Change from 1999 to 2007, based on original 2007 figures:
(1,918,100 – 1,595,900 = 322,200)
- Change from 2007 to 2009, based on adjusted 2007 figures:
(1,985,700 – 1,878,000 = 107,700)

Therefore, the change in number of economically active residents from 1999 to 2009 = 322,200 + 107,700 = 429,900

54 The method used for computing the change in level based on different start and end year is summarised as follows.

COMPUTATION OF CHANGE IN LEVEL OF LABOUR FORCE ESTIMATES

Start Year	End Year	Method for Computing Change
Earlier than 2007	Later than 2007	[End year level – 2007 (adjusted) level] + [2007 (original) level – start year level]
Earlier than 2007	2007	2007 (original) level – start year level
2007	Later than 2007	End year level – 2007 (adjusted) level
Earlier than 2007	Earlier than 2007	End year level – start year level
Later than 2007	Later than 2007	End year level – start year level

MARCH, SEPTEMBER AND DECEMBER SURVEYS

55 Since 1986, the Labour Force Survey is also conducted in March, September and December of each year mainly to obtain estimates of the unemployment rate. The March, September and December surveys effectively cover at least 6,000 households each.

LABOUR FORCE SURVEY SUPPLEMENT ON TRAINING, 2009

56 A Labour Force Survey Supplement on Training, 2009 was conducted from 1 August to 1 September 2009 following the close of the fieldwork for the mid-year Labour Force Survey. The Survey aimed to capture information on participation in job-related structured training by the resident labour force during the 12-month period ending June 2009. It also sought to identify the duration of training and training outcomes. The survey supplement covered a total of about 2,400 economically active residents aged 15 to 64 years (excluding full-time National Servicemen) randomly selected from the mid-year *Labour Force Survey, 2009*, of whom 2,256 or 94.0% responded.