

Census Planning and Conduction

I. Census Planning

Population and housing census is one of basic national censuses and should be conducted decennially in accordance with the Statistics Act (Article 3, 4 and 10 of the Statistics Act, Article 7, 25 to 32 of the Enforcement Rules of the Statistics Act). The census is designed to collect the socioeconomic characteristics of population, household composition, housing as well as other related information of the country. Data compiled are used as a major reference to formulate national policies, implement urban development plans and enhance academic researches.

The first census was launched in 1956 after the government relocated to Taiwan. The following three times of the census were conducted in 1966, 1980 and 1990 respectively. All these four censuses were carried out by the Ministry of Interior in conjunction with the Population Census Office of the Executive Yuan. After the amendment of the Household Registration Law in 1997 and abandonment of the Population Census Law in 1999, the responsibility of conducting the census had been transferred to the Department of Census, Directorate-General of Budget, Accounting and Statistics (DGBAS), Executive Yuan. The 1990 and 2010 Census were held by the Department of Census, DGBAS accordingly.

In order to plan the census, the authority had reviewed past census experiences, invited scholars and experts of demographical, statistical and social studies to review and make advise on the census plan, collected census documents of the United Nations (Principles and Recommendations for Population and Housing Censuses) and absorbed the experiences of worldwide countries, including, the United States of America, Canada, Australia, Japan, Singapore, South Korea, Sweden, Finland and Netherlands, etc.

In the preparatory stage, census tests had been performed twice in April of 2008 and 2009 respectively to examine the feasibility and cost-effectiveness of alternative enumeration methods, roster compilation, questionnaire design and contents, data processing and other related administrative operations. The Geographic Information System (GIS) was used to establish digital enumeration areas covering whole Taiwan-Fukien area. The enumeration area was clear in boundary and homogeneous in household characteristics. Therefore, it was used as a basic unit for sampling. Two times of field address check had been performed in September of 2009 and April of 2010 to update the registered addresses. The random stratified cluster sampling and the separate ratio estimation were adopted as sampling and estimation methodology of the census after several alternative simulation models had been evaluated. A census rehearsal had been conducted 1 year prior to the census reference day in 2009 to make sure the whole census operations went smoothly. The census plan and detailed operational plans had been finally implemented in August of 2009 and approbated by the Executive Yuan. All preparatory works were completed before the end of August of 2010.

The last census was conducted based on a complete enumeration. In order to integrate the national resources, reduce the field workloads and enhance data quality, the authority had made a great reformation on the way of data collection in the 2010 Census by integrating official registration files and linking these files with the data collected from the sampling survey to compile population and housing census statistics, known as the Register and Sample-assisted Census. A total of 16% enumeration areas were sampled and each household and person in these areas was visited. The number of census workers employed was much less than the number employed in the 2000 Census. The census had compiled and disseminated relatively more detailed and delicate statistics of population and housing than the previous census for the government and public use.

II. Census Operations and Contents

1.Census reference period : The census reference day was December 26 of 2010 and the census reference (standard) time was 00.00.A.M. of that day. The census reference week was one week prior to the census reference day (December 19 to 25).

2.Enumeration period : The enumeration lasted four weeks from December 26 of 2010 to January 22 of 2011.

3.Geographic scope : The Census covered all counties and cities of Taiwan-Fukien area.

4.Coverage :

(1) Housing : All housing units located within the border of the sampled enumeration areas of Taiwan-Fukien area at the census reference time were supposed to be interviewed, including :

- ① Occupied house, occupied collective living quarter, other places but occupied
- ② Unoccupied house

(2)Household and population :All households and population have been living or plan to live within the border of the sampled enumeration areas of Taiwan-Fukien area for 6 months or more at the census reference time were supposed to be interviewed, including :

- ①Nationals as well as government employees stationed abroad and their dependents living with them (not include those studying abroad, engaged in business or resided overseas, away from the border for 6 months or more).
- ②Foreigners, foreign labors as well as the population of the Chinese Mainland, Hong Kong and Macau (not include foreign government employees stationed in Taiwan-Fukien area and their dependents living with them).

5.Enumeration method : Enumeration was conducted mainly by “personal interview” and part by leave-out/pick-up and on-line Internet questionnaire upon request. Official registration data were used as a reference to assist the personal interview.

6.Questionnaire items :

①Housing	a . Living status b . House usage c . Total number of rooms and baths/toilets
②Household	a . Type of household b . Home ownership c . Whether having other self-owned house d . The year move in
③Population	a . Name and sex b . Date of birth c . Nationality d . Marital status e . Relationship to householder f . Educational attainment g .Language usage h .Usually living status i . Living place 5 years ago j . Main family living supporter k .Working status within the census reference week l . Work or school place m .Number of children and their nearest living place n . Long-term care status

7.Demarcation of census area :

(1)Enumeration area and supervision area : GIS was used to set up digital enumeration areas of the counties and cities in Taiwan-Fukien area. Each supervision area contained 8-10 enumeration areas to facilitate the interview and assigning of workloads.

(2)Managerial area : Managerial areas were demarcated based on the number of population and sampled enumeration areas as well as the number of townships, cities and districts in a county or city. Basically, each county or city set up one managerial area. However, the number of managerial areas was increased accordingly with the number of sampled enumeration areas. To unify the census operations, the authorities undertaken the specific survey also set up managerial areas to facilitate the survey.

8.Sampling design :

(1)Population for sampling : The digital enumeration areas (each contained 110±30 households) covering whole Taiwan-Fukien area were used as the population for sampling.

(2)Sampling methodology : “Random stratified cluster sampling” was adopted for all general survey households. Townships, cities and districts of each county and city in Taiwan-Fukien area were used as the sub-population. The enumeration area was the basic unit of the sampling. The total sampling rate was 16%. Basically the group quarters composed of more than 100 persons or with specific features were fully interviewed by the assistance of the authorities in charge of the businesses.

(3)Estimation methodology : The separate ratio estimation was adopted to estimate the characteristic values of each subpopulation. Use the sum of the sample characteristic values and the total number of the sampled registered population (or households) from the same stratum and the same township/city/district to calculate the ratio. The characteristic values of each sub-population were estimated by that ratio.

9.The scope and coverage of the specific survey : Group quarters and population with specific features were interviewed by the authorities in charge of the businesses.

Organization	Scope and coverage
Ministry of Defense	Commanders, officers, soldiers and students usually living in the barrack dormitories, military schools, training centers, military hospitals, military prisons or detention centers as well as clerks, contract workers of military firms.
Coast Guard Administration, Executive Yuan	Military personnel usually living in the dormitory at the place where duty is offered by the task force, department or headquarter.
National Police Administration, Ministry of Interior	Dormitory students of Central Police University and Taiwan Police College.
National Conscription Agency, Ministry of Interior	Those on substitute duty and usually living at the collective or individual living place provided by the duty-demand organization.
Veterans Affairs Commission, Executive Yuan	Veterans and their relatives usually living in the Honorable Citizens Home or self-paid nursing institutions.
Department of Health	Patients hospitalized or stayed in the state-owned or private hospitals, clinic centers or nursing homes for 6 months or more.
Ministry of Foreign Affairs	Government employees stationed abroad and their dependents living with them as well as fellows hired privately.
Ministry of Education	Dormitory students of junior college or higher level.
Ministry of Justice	Inmates of prisons, detention centers and correction centers.
Council of Labor Affairs, Executive Yuan	Foreign industry labors and foreign nursing workers of the convalescent hospitals.

III. Preparatory Operation

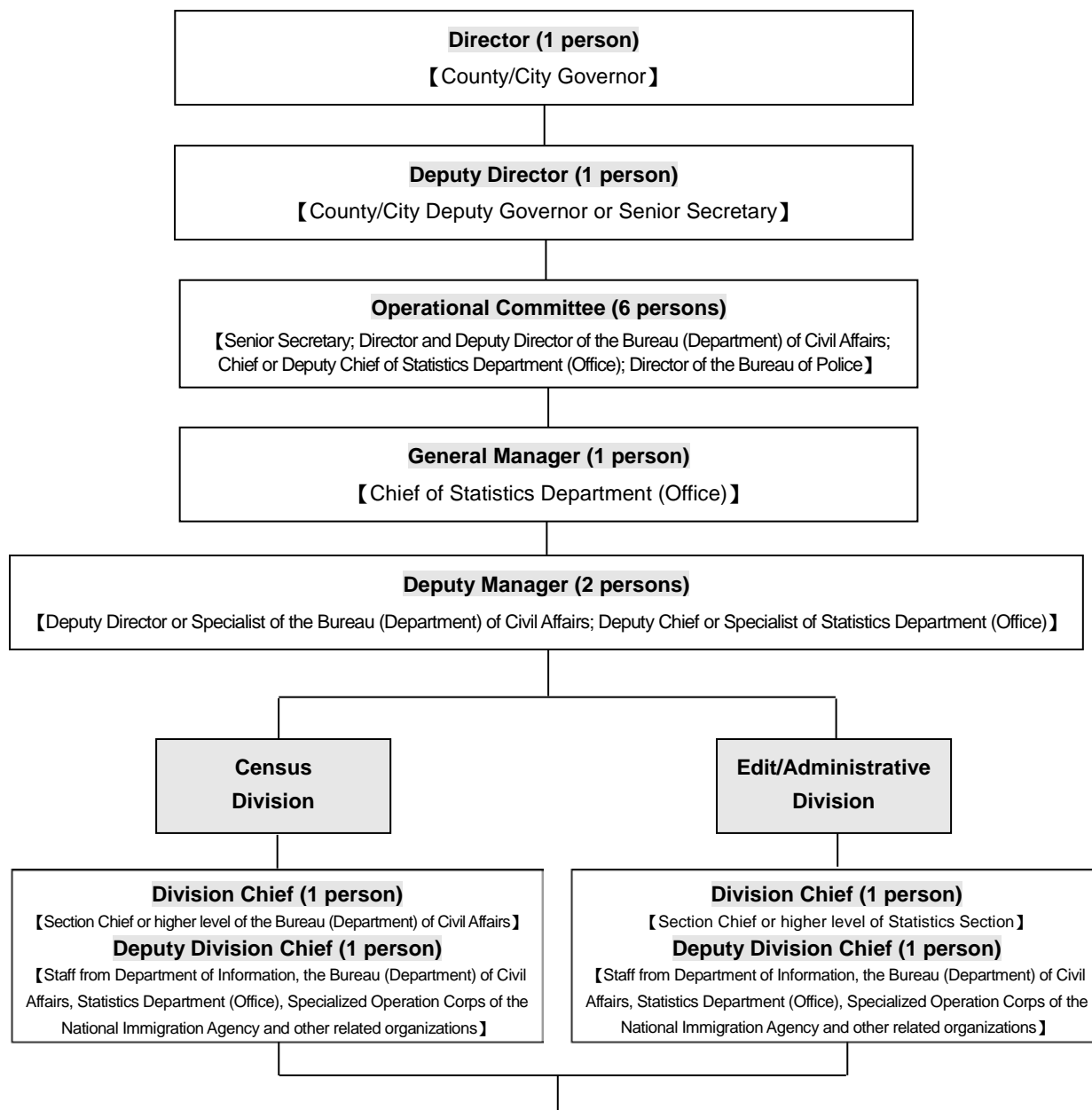
1. Establishment of the census organization : The Census was primarily directed, prepared, conducted and administered by the Department of Census, DGBAS and was coordinated, advised and reviewed by the Census Evaluation Committee. The census organizations were under the supervision of the Department of Census, DGBAS and performed their functions accordingly.

(1) Specific survey organization : The authority in charge of the businesses set up "Population and Housing Census Center" or assigned an administrator from October 1 of 2010 to February 28 of 2011 (Population and Housing Census Center of the Ministry of Defense closed on March 15, 2011).

(2) Census organization of county/city : Each county and city in Taiwan-Fukien area set up "Population and Housing Census Department" (the Census Department) from September 1 of 2010 to February 28 of 2011. There were Census Division and Edit/Administrative Division under each department. The Census Division was composed of civil affairs staff and was responsible for assigning of workloads, recruitment of census workers, personal interview and performance evaluation. The Edit/Administrative Division was composed of statistical staff and was responsible for training of enumerators, census promotion, review and submit of census documents, performance evaluation.

(3) Census organization of township/city/district : Each township, city and district set up "Population and Housing Census Office" (the Census Office) from September 21 of 2010 to February 20 of 2011. The Census Office was responsible for assigning of workloads, recruitment and training of census workers, check and submit of census documents, promotion, personal interview and performance evaluation.

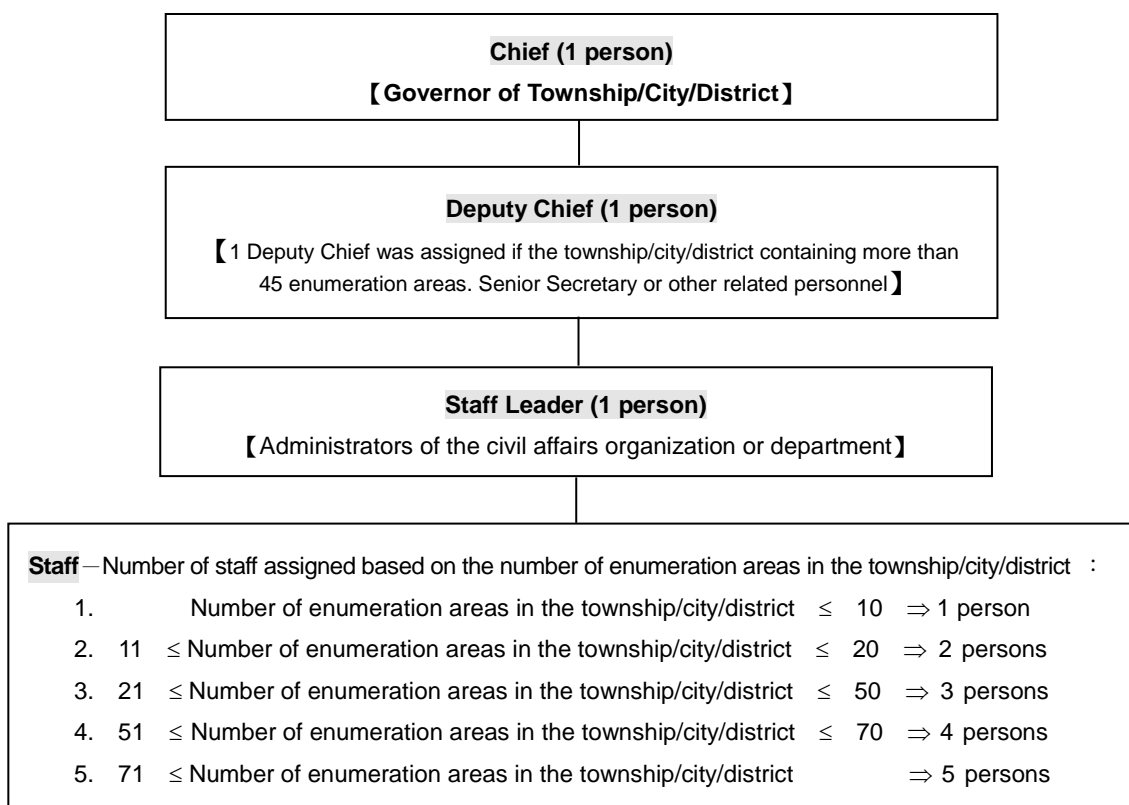
Population and Housing Census Department of County/City



County/City	No. of Staff	County/City	No. of Staff	County/City	No. of Staff	County/City	No. of Staff
Taipei City	14	Taichung County	12	Pingtung County	13	Chiayi City	5
Kaohsiung City	11	Changhua County	12	Taitung County	8	Tainan City	8
Taipei County	19	Nantou County	9	Hualien County	9	Kinmen County	4
Yilan County	8	Yunlin County	10	Penghu County	5	Lienchiang County	2
Taoyuan County	12	Chiayi County	10	Keelung City	7		
Hsinchu County	9	Tainan County	13	Hsinchu City	6		
Miaoli County	9	Kaohsiung County	13	Taichung City	10	Total	238

Note : Taichung City and Taichung County, Tainan City and Tainan County, Kaohsiung City and Kaohsiung County were administered as Taichung City, Tainan City and Kaohsiung City respectively from December 25 of 2010. New Taipei City (former Taipei County), Taipei City, Taichung City, Tainan City and Kaohsiung City are 5 municipalities in Taiwan area. Kinmen County and Lienchiang County are located in Kinma area.

Population and Housing Census Office of Township/City/District



2. Recruitment of census workers :

To accomplish the census mission and enhance the functions of the census organization, not only administrative staff was assigned to each level of the census organization but enumerators, supervisors, administrators and managers were employed as well to perform personal interview, review census forms and documents, oversee census operations and other related businesses respectively. The number and duty of the census worker in the local census organization were stated as follows :

(1) Enumerator : One enumeration area was assigned to one enumerator. Enumerators were recruited either from government staff of civil affairs, household registration, social affairs, education, statistics, budget and accounting, etc. or from civil labor force including chief of the village, general managers of mansions, housekeepers, unemployed college graduate students, etc. by the Census Department, the Census Office and supervisors of the Census Division. Enumerators accounted for a total of 10,826 persons and were responsible for personal interview in their assigned enumeration areas.

(2) Supervisor : One supervision area was assigned to one supervisor. Supervisors were recruited from government staff of civil affairs, household registration, statistics, budget and accounting, education or other qualified individuals by the Census Department and the Census Office. Supervisors accounted for a total of 1,366 persons and their responsibility was to supervise enumerators on personal interview and assist in solving problems encountered during or after interview.

(3) Administrator : One supervision area was assigned to one administrator. Administrators were recruited either from government staff of civil affairs, household registration and long-term contracted enumerators or from experienced enumerators, supervisors or other qualified individuals by the Census Department. Administrators accounted for a total of 1,250 persons and were mainly responsible for reviewing enumeration rosters and census forms for accuracy and completeness.

(4) Manager : One managerial area was assigned to one manager. Managers were recruited from experienced census staff and officers. Managers accounted for a total of 27 persons and their responsibility was to superintend the quality of the

completed work, recommend corrective action to keep operations on schedule and assist in the oversight of census department and office functions.

- 3. Compilation of enumeration rosters :** To enhance the full coverage of interviewees and reduce missing data, the roster and the road/street boundary list were compiled based on the household registration file dated June 2010 from the Ministry of Interior and the address file classified by village. The roster and the road/street boundary list were distributed to local census organizations as a reference to assist personal interview. As for the specific survey, rosters were compiled based on the official records maintained by the authorities undertaken the businesses.
- 4. Training of census workers :** To maintain the quality of the data, keep operations on schedule and attain the census target, it was imperative that census workers fully understand the implications and significance of the Census, such as operation rules and regulations, interview skills, ways to report and review census forms, etc. The training program was carried out as follows :
 - (1) Census promulgation meeting :** The meeting was held by the Department of Census, DGBAS on August 18 of 2010. Directors, deputy directors, chiefs and deputy chiefs of the Statistics Department (Office) and the Bureau (Department) of Civil Affairs in each county and city government as well as the persons in charge of the specific surveys were all invited to the meeting.
 - (2) Census Administration System (CAS) workshop :** The workshop was held by the Department of Census, DGBAS and the Census Department respectively from August to September of 2010. All staff and clerks in charge of the related businesses were designated by the Department of Census, DGBAS, the county and city government as well as the township, city and district office to attend the workshop.
 - (3) Local staff seminar :** The seminar was held by the Census Department from September to October of 2010. Directors, deputy directors, chiefs, deputy chiefs, division chiefs and deputy division chiefs of the Census Department and the Census Office participated in the seminar.
 - (4) Census instructor and manager workshop :** The workshop was held by the Department of Census, DGBAS in 3 sessions from November 11 to 12, November 15 to 16, and November 23 respectively. All instructors, managers, division chief and deputy division chief of the Census Center of the Ministry of Defense, staff and other qualified individuals were designated by the Department of Census, DGBAS to attend the workshop.
 - (5) Local training :** The training was jointly held by the Census Department and the Census Office from November 22 to December 21 of 2010 at transportation convenient places. Administrators, supervisors, enumerators, clerks and other designated individuals participated in the training.
 - (6) Specific survey training :** The training was held by the authorities undertaken the specific survey respectively in the beginning of December. Division chief, deputy division chief, staff and survey workers attended the training.
- 5. Initiating of census promotion :** To make the public fully aware of the purposes and implications of the Census nationwide, the Department of Census, DGBAS had designed multi ways of promotion, including posters, slogans, LED, short films, TV programs, etc. Media promotion program was outsourced to civil media company. These materials were also provided to local census organizations to motivate public cooperation. In addition, the Department of Census, DGBAS had designed promotion writing pad and calendar and distributed it to elementary school students and teachers to encourage census participation.

IV. Census Conduction

- 1. Enumeration :** The enumeration started from December 26 of 2010 to January 22 of 2011. Enumerators were required to wear identification badge and bring census forms, rosters, road/street boundary list and map, and other census documents to visit each household personally in his or her assigned enumeration areas. Enumerators either collected the completed form right after the interview or collected the form at later date if the interviewee was not at home and requested to report the form by self.

The interviewees also may fill out the census form on the Internet. All completed forms and documents were forwarded to supervisors for further check and review.

2.Supervision of field work : During the enumeration stage of the census, supervisors were required to assist the enumerators perform personal interview, solve problems and keep work on schedule. All completed forms and documents were reviewed before forwarded to the administrator.

3.Administration of census forms : Administrators were required to check and review the completeness and validity of the response on the census form thoroughly and deliberately based on the edit rules set forth ahead. Any tiny incompleteness or error was corrected accordingly by the administrator but any unresolved response was further checked and corrected by returning forms to the supervisors or enumerators.

4.Oversight of census operations : Managers were required to keep intensive communications with the local census organizations, attend work review seminar, assist the census workers solve problems and recommend corrective action to assure data quality.

5.Submit of census documents : Local census organizations were required to submit the completed census forms and documents to the Department of Census, DGBAS from February 17 to 22 of 2011.

V. Post Enumeration Survey

To assess the non-sampling error as well as data quality, the Department of Census, DGBAS had carried out the post enumeration survey from March 1 to 15 of 2011 by sampling appropriate size of samples to perform the personal interview.

VI. Data Processing

1.Method : The completed census forms were sent to the Department of Census, DGBAS for data processing after reviewed by the local census organizations. Most of the data were processed mainly by electronic computing system and part by data clerks.

2.Software application : The Department of Census, DGBAS adopted the Optical Character Recognition (OCR) technology to scan the census forms, recognize and edit the data. Census form scanning and on-line editing were outsourced to the private software company. Other software design and PC operations were performed by the Department of Information Management and the Department of Census, DGBAS. All software design was completed before the end of December of 2010.

3.Data input :

(1)Paper form : Census forms were scanned, recognized and edited by OCR technology.

(2)On-line Internet questionnaire : Data were edited on line and stored in the census database. On-line Internet questionnaire design was outsourced to the private company.

4.Compilation of statistical tables : Statistical data were reviewed thoroughly and cross tabulated to meet the demand of data users.

VII. Compilation and Dissemination of Census Report

The Census compiled three types of report: Preliminary Summary Report, General Report including Abstract Report I and II, Abstract Summary Report (both in Chinese and English version), County/City Report (a total of 25 volumes), Census Definition, Method and Operation Report as well as Thematic Supplementary Report including the Indigenous Population Report, the Handicapped Population Report, the Nationals Health and Clinic Report. These statistical reports were compiled and disseminated consecutively from July to December of 2012 for public use.

VIII. Renovation on the Census

To enhance data quality and efficiency of the census operations, the Department of Census, DGBAS had made reformations on the following aspects :

- 1.the Register and Sample-assisted Census :** The last census was conducted based on a complete enumeration. With the rapid changing of socio-economic environment and considering of the well-developed computerized official registration system, the Department of Census, DGBAS had made a great reformation on the way of data collection in the 2010 Census by integrating official registration files and linking these files with the data collected from the sampling survey to compile population and housing census statistics. Both data quality and operations efficiency were further enhanced. A total of 16% enumeration areas were sampled and each household and person in these areas was visited. However, group quarters and population with specific features such as servicemen on active duty, dormitory students of junior college or higher level, inmates of detention centers were fully interviewed by the authorities in charge of the businesses.
- 2.Policy-oriented questionnaire items :** To meet the increasing demand of national policies, economic infrastructure plans and related emerging social issues, a total of 5 items were added to the 2010 Census, including "Language usage", "Industry", "Occupation", "Number of children and their nearest living place", "Whether having other self-owned house". Data collected from the sampling survey were linked with official registration files to compile more detailed and delicate census statistics for the government and public use.
- 3.Digital enumeration areas for sampling :** GIS was used to integrate registered addresses with household registration data to set up digital enumeration areas covering whole Taiwan-Fukien area. The enumeration area was clear, steady and homogeneous in terms of both boundary and household characteristics. Therefore, it was an appropriate unit for sampling. The enumeration area was also relatively decent to be used as a reference to assign workloads to reduce missing and duplicates.
- 4.Intensive training programs :** The census had employed a total of 17,000 enumerators and the number was much less than the number employed in the 2000 Census by 80%. The enumerators were recruited mainly from government staff and qualified civilian labor force. The training was enhanced by highlight the key point of the census operations in the instructor's guide, setting up standard procedure of interview, making more examples to show how to fill out the census form and review for completeness and accuracy, making short films to show how to perform an interview, offering practice sessions in the workshop, etc.
- 5.Multi ways of promotion :** To motivate the public cooperation, multi ways of promotion were designed including press and media programs. Slogan as "3 NO and 2 YES" was displayed on all promotion materials. "3 NO" stands for "No, the interviewer will not disclose your personal data to anyone.", "No, the interviewer will not ask you any data other than census form items." and "No, the interviewer will not ask you to provide your bank account number." "2 YES" stands for "Yes, the interviewer will show you his/her identification card when he/she visits you." and "Yes, the interviewer will send the notice of visit to you personally." Census writing pad and calendar were designed and distributed to elementary school students and teachers to encourage census participation.
- 6.Extensive use of census data :** The census had compiled not only the Preliminary Summary Report and the General Report but released Thematic Supplementary Report as well including the Indigenous Population Report, the Handicapped Population Report, Nationals Health and Clinic Report by linking with the official registration data and hence may provide more detailed census statistics for the government and public use.