第5次 韓國·日本·中國 및 ASEAN 統計局長會議 參席結果報告書

1990. 2

經濟企劃院 調査統計局

目　　　次

1. 出張者

    o   調査統計局   局長   理事官   李   康   雨

    o   調査統計局   人口課長   書記官   金   日   炫

    o   調査統計局   人口課   統計事務官   崔   鳳   鎬

2. 出張期間

    1990. 1. 22(月) - 1. 27(土)

3. 出張地

    日本 東京

4. 出張目的

    o   日本 總務廳 統計局 主管 第 5次 韓國·日本·中共 및 ASEAN 6個國의
        中央 統計 責任者 會議 參席

    o   1990年 人口 및 住宅센서스의 效率的이고 效果的인 實施準備를 위하여 相互
        意見 交換 및 資料蒐集

    o   또한 統計組織의 效率的인 改編 作業과 關聯하여 日本의 統計制度 現況視察

5. 會議日程 및 業務遂行活動

	會議日程 및 業務遂行活動
1. 23(火)	
09 : 30	**歡迎辭**
09 : 40	**議題採擇**
10 : 00	**國別 報告書 發表 參席 및 討議** (인도네시아, 말레이지아, 필리핀 **發表**)
13 : 30	**國別 報告書 發表 參席 및 討議** (싱가포르, 中共 **發表**)
15 : 00	**國別 報告書 發表 參席 및 討議** (**韓國**, 日本 **發表**)
18 : 00	**總務廳 長官 主催 리셉션 參席**
1. 24(水)	
09 : 00	人口센서스 資料處理 主題發表 參席 및 討議 (인도네시아, 말레이지아, 싱가포르, 日本 **發表**)
11 : 30	人口센서스 品質管理 主題發表 參席 및 討議 (日本 **發表**)
13 : 00	人口센서스 資料의 正確性 主題發表 參席 및 討議 (日本 **發表**)
14 : 00	人口센서스 結果의 活用 및 分析 主題發表 參席 및 討議 (필리핀, 日本 **發表**)
15 : 15	人口推計 主題發表 參席 및 討議 (**韓國**, 日本 厚生省, 日本 統計局 **發表**)
18 : 00	日本 統計局長 主催 리셉션 參席

	會議日程 및 業務遂行活動
1. 25(木)	
09 : 30	日本統計協會主管 資料普及 심포지움 主題發表 參席 및 討議 (인도네시아, 日本, 韓國, 필리핀의 4個國만 發表하고 기타 參席者는 討議에만 參與하였음)

13 : 00	日本 統計局 및 統計센터 訪問
	
	  - OMR 시스템 視察
	
	  - 컴퓨터 施設 및 데이타 베이스 시스템 視察
	
	  - 調査票 保管 倉庫 視察

14 : 00	閉會辭
14 : 00 - 18 : 00	日本 統計센터 所長外 5人과 日本의 1990年 人口센서스 準備 狀況 및 問題点에 관한 討議
18 : 00	日本統計協會長 主管 리셉션 參席
1. 26(金)	
	시즈오카縣의 統計調査 現況, 資料管理 및 分析活動 視察

6. 出張成果

o 우리나라 代表의 健議로 向後 2-4年後에 開催될 第 6次 會議부터 韓國의
調査統計局長 과 中共의 國家統計局長이 Observer資格이 아닌 正式 會員
資格으로 參加토록 하는 成果를 이루었음.

o 第 5次 韓國·日本·中共 및 ＡＳＥＡＮ 6個國의 中央統計 責任者 會議에 參席하여 우리나라의 1990年 人口 및 住宅센서스 計劃, 人口推計 및 統計 資料 活用 極大化 方案에 대한 3種의 報告書의 發表 및 參席者間 活潑한 討議를 通하여 우리나라의 統計活動을 紹介.

o 특히 韓國에서 發表한 人口推計 論文과 關聯하여 韓國이 經驗한 人口轉換 (出産力 低下)모델이 많은 開發途上國에게 알려질 수 있도록, 美國 東西 센터 人口問題硏究所 主催 人口세미나 및 ESCAP主管 세미나등에 韓國이 參席하여 發表토록 하는 要請이 있었음.

o 1990年 人口 및 住宅센서스 自動化 시스템(ＯＭＲ시스템) 導入에 따르는 問題點 解決 및 改善을 위하여 日本 總務廳 統計센터 所長과의 長時間 面談을 通하여 日本의 經驗習得 및 資料蒐集

o 同會議 參席者間 相互 統計技術 協力 增進 圖模

o 地方縣의 訪問 및 統計 責任者와의 討議를 通하여 地方에서의 統計作成 現況 및 데이타 베이스의 活用技法을 聽取함으로서, 우리나라의 地方統計 機關 活性化 方案 圖模 및 小地域 統計 生産 改善 圖模

附錄 1：參加機關 及 姓名

附錄 1 ： 參加機關 및 姓名

姓 名	職 位	機 關	國 名	備 考
Azwar Rasjid	Director-General	Central Bureau of Statistics	Indonesia	ASEAN
Khoo Soo-Gim	Deputy Chief Statistician	Department of Statistics	Malaysia	ASEAN
Tomas P. Africa	Administrator	National Statistics Office	Philippines	ASEAN
Lau Kak-En	Deputy Chief Statistician	Department of Statistics	Singapore	ASEAN
Mitsuru Ide	Director-General	Statistics Bureau	Japan	Host
Sun Jingxin	Deputy Director-General	State Statistical Bureau	People's Republic of China	Observer
Kang-Woo Lee	Director-General	National Bureau of Statistics	Republic of Korea	Observer
Kwok Kwan-Kit	Regional Advisor	Statistics Division of ESCAP	Thailand	Observer
Ananda Meegama	Director	Statistical Institute for Asia & the Pacific	Japan	Observer
J. R. Rele	Professor	East-West Population Institute	U.S.A.	Observer
Wang Yang	Section Chief	Department of Foreign Affairs, State Statistical Bureau	People's Republic of China	Partaker
Yoshio Suzuki	Director-general	Statistics Center	Japan	

姓　名	職　位	機　關	國　名	備　考
Il-Hyun Kim	Director	Population Division of National Bureau of Statistics	Republic of Korea	Partaker
Bong-Ho Choi	Assistant Director	Population Division of National Bureau of Statistics	Republic of Korea	Partaker
Shigemi Kono	Director-General	Institute of Population Problems,Ministy of Health & Welfare	Japan	
Shozo Kamisawa	Director	Statistical Standards Department,Statistics Bureau	Japan	
Hirohiko Koyama	Director	Statistical Survey Department, Statistics Bureau	Japan	
Teijiro Kiso	Councilor	Director-General's Secretariat, Statistics Bureau	Japan	
Hiroshi Kuwahara	Director	General Affairs Division, Statistics Bureau	Japan	
Takanobu Negi	Director	Population Census Division,Statistics Bureau	Japan	
Toshio Sasaoka	Director	Labour Force Statistics Division, Statistics Bureau	Japan	

附録2：蒐集資料目録

附錄 2 : 蒐集資料目錄

發行機關	題 目
各國 發表 報告書	1990年 인도네시아 人口센서스 槪要(英文)
	1991年 말레이시아 人口 및 住宅센서스 計劃(英文)
	필리핀의 1990年 人口 및 住宅센서스 特徵(英文)
	싱가포르의 1990年 人口센서스의 새로운 점(英文)
	태국의 1990年 人口 및 住宅센서스(英文)
	중공의 1990年 人口센서스 準備 및 實施(英文)
	일본의 1990年 人口센서스 槪要(英文)
	1990年 인도네시아 人口센서스 資料處理計劃(英文)
	1990年 말레이시아 人口 및 住宅센서스 資料處理計劃(英文)
	싱가포르의 1990年 人口센서스에 있어서 새로운 컴퓨터시스템 (英文)
	일본 人口센서스의 資料處理(英文)
	일본 人口센서스의 品質管理(英文)
	일본 인구센서스 資料의 正確性 分析(英文)
	필리핀에서의 센서스 資料의 活用 및 分析(英文)
	일본에서의 센서스 資料의 普及 및 活用(英文)
	일본의 將來人口推計(英文)
	일본의 人口推定(英文)
	일본에서의 資料普及現況(英文)
	인도네시아에서의 資料普及에 관한 政策(英文)
	필리핀에서의 統計資料普及現況(英文)

發行機關	題　　　　　　　目
總務廳 統計局	統計情報 總索引, 1988 A Guide to Statistics Bureau and Statistics Center, 1990 Statistical Handbook of Japan, 1989 Japan Statistics in Brief 1989 Statistical Handbook of ASEAN, China, Korea and Japan 1990 News Bulletin, Vol. 23-3, 1 October 1989 1988 人口移動 統計年報 人口移動 統計季報, 第 3分期 勞動力 調査 特別調査 報告書, 1989 勞動力 調査年報, 1988 勞動力 調査月報, 1989. 11 勞動力 調査 標本設計의 解說 家計調査 參考 資料, 第 51號 家計調査 參考 資料, 第 53號 家計調査 參考 資料, 第 54號 家計調査 달력, 1990 1985年 國勢調査 調査區 ID 1985年 國勢調査 市區町村 ID OMR시스템 개요 調査內容 畵面編輯 例 레이저 프린터에 의해 인쇄된 例

發行機關	題　　　　　目
總務廳 統計局	調査票 保管 비닐봉투
	調査票 運搬用 장갑
	문구류(필통, 연필, 연필깍기, 지우개)
	마스크
	귀마개
	調査票 수송시 상자에 부착하는 표지
	調査票 케이스에 부착하는 표지(1%, 99%)
總務廳 統計局 及 統計센터	統計局 及 統計센터 內線 電話番號 一覽表
	統計調査員 手當 一覽表
	1985年 國勢調査 關係書類 及 用品 一覽表(調査關係 Ⅰ 及 Ⅱ, 製表關係 Ⅱ, 弘報關係)
	1990年 國勢調査 調査區 設定의 手引
	센서스 地圖化 시스템 關聯事項(同 시스템의 기능, 同 시스템의 적용실험결과, 新人口集中地區와 同 시스템의 適用에 대하여, 基本單位區에 대하여, 基本單位區의 必要性)
	1985年 國勢調査 調査票 케이스(400매)
	1985年 國勢調査 調査票 케이스(1200매)
厚生統計協會	1985年 市·區·町·村別 生命表
自治省 行政局	全國人口·世帶數 及 人口動態表, 1989
特種製紙株式會社	會社案內, OMR紙 見本

發行機關	題　　　　　目
靜岡縣 （시즈오카현）	靜岡縣勢要覽, 1988 1989年 靜岡縣 統計 그래프 콘테스트 學生 優秀作品 포스터 Shizuoka Today and Tomorrow(英文) 시즈오카현의 歡迎辭 및 統計業務紹介 시즈오카현 데이타 베이스에서의 出力 例
Statistics Council	日本政府統計活動에 대한 중·장기 計劃 報告書
東西센터 人口問題研究所	70 Years of Fertility Change in Korea : New Estimates 　from 1916 to 1985, Reprints of the East-West Population 　Institute, No. 231 Fertility Levels and Trends in India, 1951-81, Reprints 　of the East-West Population Institute, No. 217

附錄 3 : 韓國의 發表論文

Fifth International Meeting of the
Heads of National Statistical Offices
of ASEAN Countries and Japan
23-26 January 1990
Tokyo, Japan

Speech for the Country Report

of the Republic of Korea

Kang-Woo Lee

Director-General

National Bureau of Statistics

Economic Planning Board

Speech for the Country Report

of the Republic of Korea

Kang-Woo Lee

Director-General

National Bureau of Statistics

Economic Planning Board

Mr. Chairman, Distinguished Participants, Ladies and Gentlemen :

I would like to express at the outset my sincere appreciation to the Statistics Bureau of Japan for their kind invitation for me to participate in this International Meeting of the Heads of National Statistical Offices of ASEAN Countries and Japan. It is a great pleasure to have this opportunity to present you what we have done and what we will do with regard to the 1990 Population and Housing Census in the Republic of Korea.

In Korea, the next Population and Housing Census will be conducted as of November 1, this year. This census will comprise the fourteenth census of population and the sixth census of housing in the series of census taking in Korea since 1925.

The population and housing censuses are Designated Statistics numbers 1 and 2 based on provisions of the Statistics Law. The provision of the Census Decree of Korea stipulates that a full-scale census is to be taken in years ending in zero and a simplified census in years ending in five.

Planning for this census has been underway for some time. The main goals for the 1990 census are, like many other countries, as follows : one, improvement in the coverage and content accuracy;

two, a more timely release of the data collected; three, attaining of a proper balance between the need for information and the time it takes respondents to complete the questionnaire; four, keeping the total cost of the census reasonable; and five, producing as many small area statistics as possible.

In addition to these goals, if I mention about some of the major issues confronting us as we are now planning for the 1990 census, they are as follows : first, automation in data input is to be introduced; second, data collection methodology will be changed from door-to-door interviewing method by enumerators to the self-enumeration method by respondents; and third, the data requirement for numerous users is to be met.

Bearing the above goals and issues for the 1990 census in mind, I will explain our experiences in census taking and plans for the coming census.

In Korea, the National Bureau of Statistics, which is a semi-autonomous organization under the Economic Planning Board of the Korean government, has the overall responsibility for the planning, execution, tabulation and publication of the census. The organizational structure is well shown in the section of census ogranization in the paper given to you.

The total budget obtained for the year of 1990 is about 31.6 million dollars, excluding salaries to be paid for regular staff in both central offices and local government agencies. The breakdown of the budget is as follows : 75.8 percent is allocated for enumerators and interviewers in main field operations; 1.6 percent for mapping in urban areas; 0.8 percent for the execution of dress rehearsal; 3.3 percent for publicity; 0.5 percent for post-enumeration survey; 7.6 percent for the printing of manuals and questionnaires; 0.9 percent for the data input; and 9.4 percent for the others.

In the 1990 census, two types of questionnaires will be used. One is the short form containing "complete items" asked of the entire population and the other is the long form containing "sample items" in addition to the complete items. They are shown in Table 1. Compared with the previous censuses, one of the striking features is that the items on household income and expenditures appear newly in the 1990 census, although it is not easy to obtain accurate information.

In order to accurately enumerate all population within a limited time, delineation of the boundaries of enumeration districts(ED) is needed. Last December, we completed this work for rural area, while for urban area this work is scheduled to be completed by the end of April, this year.

Two points of difference in mapping work compared to pre-

vious censuses, are as follows : first, a six digit mesh code will be introduced for each ED from which various small area statistical maps can easily be drawn up; and second, the ED maps used for the 1985 census will again be utilized for the 1990 census, from which ED changes can be easily detected.

Three pilot surveys have been conducted thus far for the preparation of the 1990 census. Through these pilot surveys conducted, the followings are found to be remarkable.

First, introduction of the self-enumeration method is needed since household members who are away from home increase; Second, it is necessary to use supplementary (conventional) questionnaires in addition to the OMR questionnaires. Using OMR questionnaires only was found to be risky due to the low level of awareness of OMR forms by the general public as well as by enumerators ; Third, the work of marking ticks is necessary for transcribing information from supplementary questionnaires to OMR questionnaires. It was, however, found that marking ticks for items on relationship to household head, place of residence one year and five years ago, and place of work or schooling was difficult for enumerators. Thus, the work of marking ticks on those items will be done by coders recruited separately; Fourth, the work of classification of industry and occupation is necessary to be done by the central office.

Turning to the enumeration procedures, the population will be counted on the de jure cencept. With a view to assign two EDs in non-sampled areas and one ED in sampled areas, about 107 thousand enumerators and nine thousand supervisors will be recruited on a temporary basis. They will be given two days for instruction, three days for the preparatory works, ten days for main enumeration and one day for manual editing.

Once the OMR questionnaires are returned to the National Bureau of Statistics, some manual checking and editing to detect missing entries will be carried out. Then, the reading, except for items on occupation and industry, will be processed by two or three reading machines installed at the National Bureau of Statistics.

After finishing the reading works, we will perform the work of classification of industry and occupation on the basis of the entries on the questionnaires.

In order to carry out the data preparation, particularly for manual editing and coding for occupational and industrial classification, about 500 girls with a minimum qualification of a high school degree will be recruited on a temporary basis for one year.

The first results of the 1990 census, the preliminary counts of population, households and housing units by minor administrative

units will be released in March 1991. Then, to meet the urgent need for census data, an advance report on the basis of sample tabulation will be published in November 1991. After completion of the complete count tabulation, final reports will be published in December 1992.

In addition to providing data in the form of publications, the National Bureau of Statistics is willing to provide the census data upon request, in the form of special tabulations and tapes containing raw data for a variety of users.

Meanwhile, in order to increase the use of the census results, the National Bureau of Statistics will have a research project on various topics with professors at universities and researchers at research institutes. Following this, seminars on the results will be organized. The seminar held in November last year on the results of the 1985 census was found to be very fruitful and encouraging.

To summarize the statements mentioned earlier, there are some distinctive features in the 1990 Population and Housing Census. The major features are as follows :

First, we will introduce the OMR system to speed up data processing. Second, we will adopt the sample enumeration using the long form questionnaire to meet the needs of diverse users. Third, we will insert new census items such as monthly income, living

expenditures and sources of income. Fourth, we will introduce the self-enumeration method from the door-to-door interview method. Fifth, we will introduce a mesh code system for each enumeration district to draw up various small area statistical maps. Sixth, we will prepare effective training materials such as audio-visual aids. Seventh, we will execute in-depth analysis projects on various topics with professors and research institutes, and organize seminars with these results.

It is, however, found to be very difficult to count all the people and grasp all the characteristics correctly within a limited time span. It is a well known fact that census conducting is usually subject to many errors including coverage and content inaccuracies.

Accordingly, some problems which we will face at various stages of the census operation will carefully be examined for further improvement. We will also carry out studies on experiences other countries have had.

In closing, I wish once again to extend my gratitute for this opportunity provided me here today. It was indeed a pleasure and an honor to speak in front of you. I look forward to maintaining our relationship of close cooperation with the central statistical bureaus of all countries represented here at this most meaningful meeting.

Thank you !

The 1990 Population and Housing
Census of the Republic of Korea

Kang-Woo Lee

Director-General

National Bureau of Statistics

Economic Planning Board

Contents

I . Introduction

The next Population and Housing Census will be conducted as of November 1, 1990. This census will comprise the fourteenth census of population and the sixth census of housing in the series of census taking since 1925. Tables 2 and 3 in the appendix present a summary of Korean these censuses.

The population and housing censuses are Designated Statistics Nos. 1 and 2 based on provisions of the Statistics Law. The provision of the Census Decree of Korea stipulates that a full-scale census is to be taken in years ending in zero and a simplified census in years ending in five. The 1990 census will be implemented in accordance with the Population and Housing Census Regulations of Economic Planning Board Order No. 52.

Planning for this census has been underway for some time. The main goals for the 1990 census are as follows : (1) improvement in the coverage and content accuracy; (2) a more timely release of the data collected; (3) attaining of a proper balance between the need for information and the time it takes respondents to complete the questionnaire; (4) keeping the total cost of the census reasonable; and (5) producing as many small area statistics as many as possible.

In addition to these goals, some of the major issues confronting us as we plan the 1990 census are as follows : (1) automation in data input to be introduced; (2) data collection methodology will be changed from door-to-door interviewing method by enumerators to the self-enumeration method by respondents; and (3) the data requirement for numerous uses is to be met.

Bearing the above goals and issues for the 1990 census in mind, we will examine the past experiences in census taking and plans for the up coming census.

II. Census Organization

The National Bureau of Statistics (NBOS) is a semi-autonomous organization under the Economic Planning Board of the Korean Government. The major functions of the bureau include the collection and analysis of major statistics such as censuses, the development of a national statistical plan, the establishment of statistical standards including concepts and classifications, and the overall coordination of the country's statistical activities. The NBOS is headed by a Director-General assisted by two Deputy Director-Generals and contains 10 divisions.

The Population Statistics Division, with a regular staff of about 30, is the principal division responsible for population statistics. The division is responsible for other activities in addition to the population census, such as vital registration and the Continuous Demographic Survey.

The Population Statistics Division is responsible for the content and execution of the census, including questionnaire design, table formats, analysis of the results, and recruitment and training of enumerators. It is also responsible for coordinating the activities of other divisions concerned with the population census.

The other division closely associated with the census is Data Processing. The Data Processing Division is responsible for editing, coding, data preparation, and tabulation. Along with the permanent organizational structure, a working group for the 1990 census was established under the Director of the Population Statistics Division. The group is composed of those members of division staff with previous experience in census taking, as well as subject-matter specialists in various fields.

The main functions of the group are to review the census plan and to provide technical and operational assistance to the Population Statistics Division.

Advisory functions for the 1990 census are provided by the Statistical Council. In addition, Technical Advisory Committee and 1990 Census Users' Meeting were organized to supplement the function of the Statistical Council. The Statistical Council is a regular advisory body that makes recommendations on all aspects of government statistical activities. The Technical Advisory Committee for the 1990 census is mainly composed of demographers, economists, and statisticians from universities and research institutes. The main function of the committee is to review the census plan and make recommendations on subjects to be covered in the census. The 1990 Census Data Users' Meeting includs representatives of government agencies, research institutes, and business organizations.

In addition to central organization, local government hierarchy will play an important role in the 1990 census, as well. The Republic of Korea is divided into nine provinces(Do) and six special cities(Shi) which have the same status as provinces. Each province contains cities(Shi) and counties(Gun). The county is sub-divided into collections of townships(Myeon) and towns(Eup). The six special cities and two other large cities are subdivided into wards(Gu), which are again sub-divided into sub-wards(Dong). The other cities consist of sub-wards only. In all, there are 67 cities, six special cities, 67 Gu, 137 Gun, 179 Eup, 1,260 Myeon and 2,083 Dong offices as of 1 December 1989.

The local governmnet hierarchy is particularly important in the designation of enumeration districts, recruiting and training of enumerators, and the supervision of the enumeration.   The Minister of the Economic Planning Board will direct the governors of the provinces to supervise the execution of the census operation, and the governors will appoint census officials down the administrative hierarchy within their jurisdiction.   The main function of the census officials at the local level is to train enumerators in cooperation with the census supervisors from the central office.

The primary responsibilities of the central and local offices are as follows:

National Bureau of Statistics

   1. Arrangement of the budget for the census

   2. Overall planning

   3. Preparation of general guide manuals for local governments

   4. Preparation of guide manual for designating up enumeration districts

   5. Printing and distribution of census materials

   6. Pretest and questionnaire design

   7. Post-enumeration operation

   8. Convening the working and liaison committees

Local Government Offices

   1. Directing and instructing lower-level local government officials

   2. Recruiting census enumerators and appointing census officials

   3. Training the lower-level government officials and enumerators

   4. Designating up enumeration districts

   5. Enumeration

Figure 1 : Census Organization
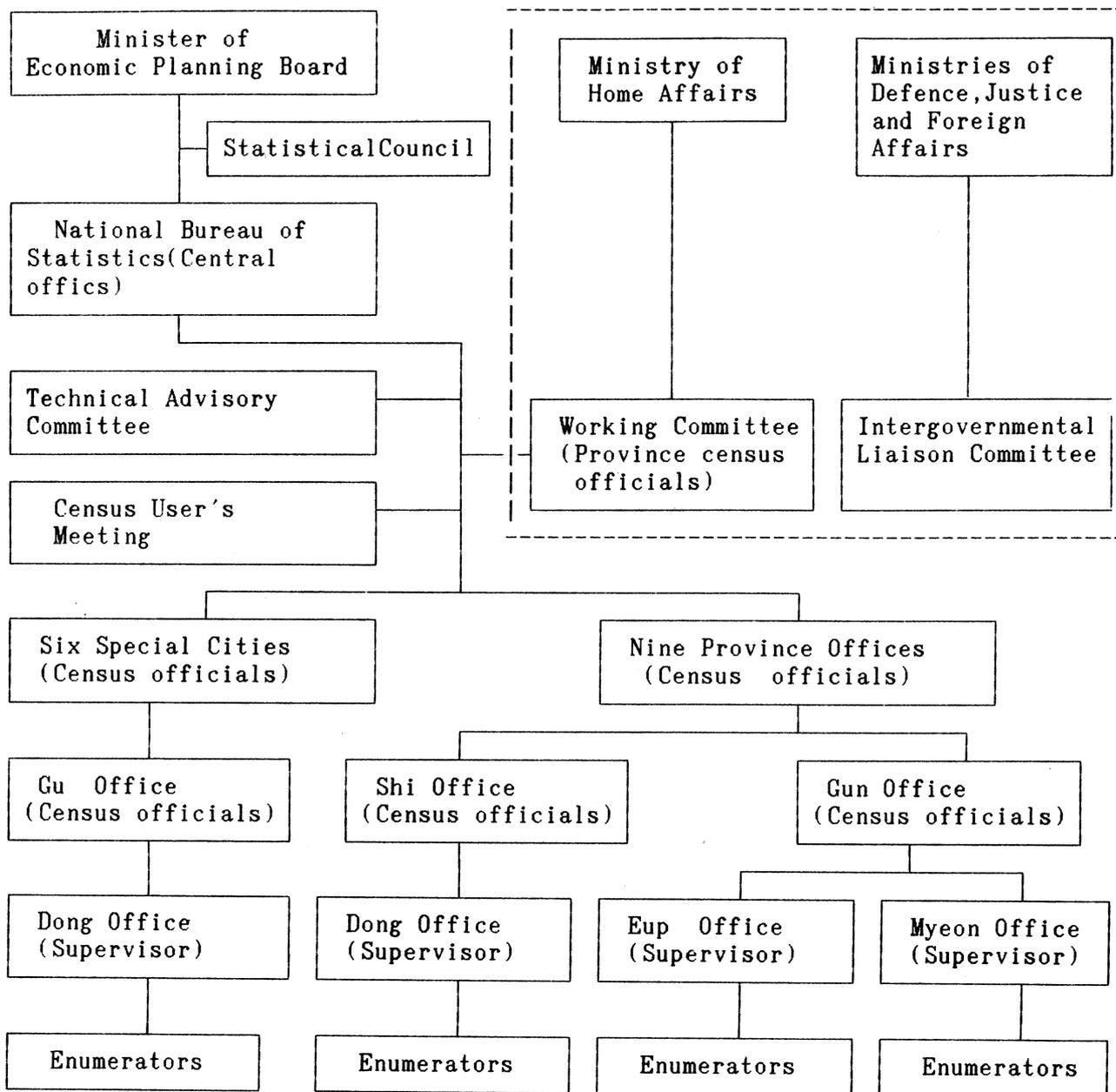
Ⅲ. Budget

The total budget obtained for the year of 1990 is about 21,147 million Won
(equivalent to U.S. $31.6 million dollars), excluding salaries to be paid for
regular staff in both central offices and local government agencies. The total
budget downs budget is as follows: 75.8 percent is allocated for enumerators
and interviewers in main field operations; 1.6 percent for mapping in urban
areas; 0.8 percent for the execution of dress rehearsal; 3.3 percent for
publicity; 0.5 percent for post-enumeration survey; 7.6 percent for the
preparation of manuals and questionnaires; 0.9 percent for the data input;
and 9.4 percent for others.

Ⅳ. Census Items

In the 1985 census, information on all items was collected via complete
enumeration. However, in the 1990 census, two types of questionnaires will be
used in the general districts; a short form containing "complete items" asked
of the entire population and a long form containing "sample items" in addition
to the complete items. Both questionnaires will include household and
housing items. The contents of the questionnaire are listed in Table 1.

Table 1 : Census Items

Items	1980		1985	1990	
	Complete	Sample	Complete	Complete	Sample
(Population)					
Name	O	O	O	O	O
(Origin of the family name)			(O)		
Relationship to household head	O	O	O	O	O
Sex	O	O	O	O	O
Age	O	O	O	O	O
Marital status	O	O	O	O	O
School attendance and educational attainment	O	O	O	O	O
Religion			O		
Place of birth		O	O	O	O
Place of residence one year ago		O	O		O
Place of residence five years ago		O	O		O
Major field of study		O			
Commuting status		O		O	O
Place of work or schooling		O		O	O
Departure & arrival time to the place of work or school				O	O
Principal means of transportation		O		O	O
Age at first marriage		O			O

Table 1 : Census Items (continued)

Items	1980		1985	1990	
	Complete	Sample	Complete	Complete	Sample
(Population)					
Number of children ever-born classified by children surviving and dead children		○	○		○
Type of economic activity		○	○		○
Working status for pay or profit		○			○
Looking for work		○			○
Industry		○	○		○
Status of employment		○			○
Occupation		○	○		○

Table 1 : Census Items (continued)

Items	1980		1985	1990	
	Complete	Sample	Complete	Complete	Sample
(Household)					
Type of living quarters	○	○	○	○	○
Type of household classi- fied by representative, attached or collective household	○	○	○	○	○
Tenure or ownership	○	○	○	○	○
Amount of rental charge			○	○	○
Number of rooms occupied	○	○	○	○	○
Source of drinking water	○	○		○	○
Type of cooking fuel	○	○	○	○	○
Type of heating fuel	○	○		○	○
Type of household appliances					
Newspaper subscriptions	○	○			
TV sets	○	○	○	○	○
Telephones	○	○	○	○	○
Refrigerators	○	○	○	○	○
Washing machines	○	○	○	○	○
Pianos or organs	○	○	○		
Room air conditioners	○	○	○	○	○
Streo systems				○	○
Vido tape recorders			○	○	○
Private cars			○	○	○
Personal computers				○	○
Disability or handicap	○	○			
Monthly average amount of expenditures					○
Monthly average amount of income					○
Sources of income					○

Table 1 : Census Items (continued)

Items	1980		1985	1990	
	Complete	Sample	Complete	Complete	Sample
(Housing)					
Construction material of outer walls	O	O		O	O
Construction material of roof	O	O		O	O
Total area of floor space	O	O	O	O	O
Total ground area	O	O		O	O
Number of households in housing unit	O	O	O	O	O
Number of rooms	O	O	O	O	O
Year of construction	O	O		O	O
Housing facilities installed					
Type of cooking system	O	O	O	O	O
Type of toilet system	O	O	O	O	O
Type of bathing system	O	O	O	O	O
Piped water system	O	O		O	O
Type of main heating system	O	O	O	O	O
Type of multi-housing system			O	O	O

V. Census Mapping and Establishment of EDs

The preparation of adequate maps, such as census base maps and ED maps is indispensable for carrying out the census operation successfully. The census base maps prepared for each Dong, Eup and Myeon on a single sheet show location, roads and other possible landmarks by which the boundary of EDs are delineated.

In the preparation of census base maps, the following mapping materials are utilized :1) aerial photographic maps with a scale of 1:1,200 mainly for special and large cities, 2) municipal planning maps with a scale of 1:5,000 mainly for small cities and 3) topographic maps and maps of land registers with a scale of 1:12,500 for rural areas.

From these basic mapping materials, the delineation of the boundary of EDs was completed for rural areas at the end of November 1989, on the basis of criteria laid down by NBOS. The number of EDs delineated in rural areas are as follows, while the delineation of the boundaries of EDs for urban areas is scheduled to be completed by the end of April 1990.

Table 2 : Number of General EDs in rural areas

T o t a l	49,647
Ordinary EDs	47,154
Island EDs	1,375
Dormitory EDs	806
Social Welfare Institution EDs	258
Foreigner and Tourist Hotel Residence EDs	54

Two points of difference in mapping work compared to previous censuses, are as follows: 1) a six digit mesh code will be introduced for each ED from which various small area statistical maps can be easily drawn up; and (2) the ED maps used for the 1985 census will again be utilized for the 1990 census,

Ⅳ. Pilot Surveys

Three pilot surveys have been conducted thus far for the preparation of the 1990 census. Dates, areas covered and the aspects of the study of those pilot surveys are as follows :

- First pilot survey

Date   : July 20 - 31, 1989
Areas covered   : 20 EDs in 10 Dong, Eup and Myeon
Aspects of study : (1) Feasibility of introducing self-enumeration method
                  (2) Enumeration methods of household members who are
                      apt to be away from home
                  (3) Adequacy of form and design of questionnaires(special
                      attention was given to the respondents' reluctance to
                      answer questions on occupation, monthly expenditure,
                      income, household appliances, the respondents' memory
                      bias on residence one and five years ago)
                  (4) The printing quality of OMR questionnaires

- Second pilot survey

Date   : Sept. 21 - 30, 1989
Areas covered   : 20 EDs in Dajeon and Cheonan city
Aspects of study : (1) Method of selection and assignment of enumerators
                  (2) Adequacy of form and design of questionnaires and
                      other enumeration documents

(3) Response rate and completeness of contents of self-enumeration method

(4) Enumeration methods of households members who are apt to be away from home

(5) Amount of work required of the enumerator

- Third pilot survey

Date   : Nov. 1 - 8, 1989

Areas covered   : 187 EDs in Kimcheon city

Aspects of study : (1) Feasibility of introducing the self-enumeration method

(2) Utilization of both supplementary questionnaires and OMR questionnaires

(3) Method of selection, assignment and training of enumerators

(4) Enumeration methods of households members who are apt to be away from home

-Fourth pilot survey (Dress rehearsal)

The fourth pilot survey (dress rehearsal) is scheduled to be conducted during April of 1990, covering all provinces.

Through the three pilot surveys previously conducted, the following are recommended:

(1) Introduction of the self-enumeration method is needed since households members who are away from home increase ;

(2) It is necessary to use supplementary questionnaires in addition to the OMR questionnaires. Using OMR questionnaires only was found to be risky due to the low level of awareness of OMR forms by the general public as well as by enumerators ;

(3) The work of marking ticks is necessary for transcribing information from supplementary questionnaires to OMR questionnaires. It was, however, found that marking ticks for items on relationship to household head, place of residence one year and five years ago, and place of work or schooling was difficult for enumerators. Thus, the work of marking ticks on those items will be done by coders recruited separately;

(4) The work of classification of industry and occupation is necessary to be done by the central office

(5) Utilization of the instruction leaflet is necessary to explain how to fold and seal the completed questionnaire when a respondent do not wish to hand the completed questionnaire directly to the enumerator.

VII. Population and Housing Units to be Enumerated in the Census

7.1　Population

The population will be counted on the basis of the de jure concept. In the census, the de jure population refers to those persons who usually live in an area on the date of census. However, the persons who are living in Special EDs will be enumerated exceptionally at their respective places, but will be allocated to the usual residence of their family. In the case of persons who have no usual residence, they will be enumerated at the place where they are found at the time of the census.

Although the following persons are away from home at the time of the census they will be enumerated at the usual residence of their family: 1) Civilians who are away from home for business or travel, 2) Those who are in police-station detention houses (not a penitentiary), 3) Those who are travelling abroad at the time of the census, 4) Hospital patients and their attendants, 5) Government officials abroad for trip or training purposes and 6) Crew members in vessels, airplanes and locomotives.

Excluded from the census enumeration will be 1) workers and students who are living abroad at the time of the census, 2) foreign diplomatic corps, foreign personnel working in UN organization, their suites and their dependents, and 3) foreign military personnel, military civilians and their dependents.

7.2　Housing

All housing units within the areas defined by the census will be canvassed. Housing units are classified into detached dwellings, apartments, town-houses

However, the following units are excluded.

1) Military barracks

2) Camps in prison, police detention houses, juvenile reformatory institutions

3) Housing units and office buildings where foreign diplomats, foreign military personnel and their dependents, foreign military personnel and their dependents were living.

Ⅶ. Enumeration Procedures

In the 1990 census, the basic items will be collected on the basis of complete enumeration using a short form, while other items concerning migration, fertility and economic activity will be on a sample basis using a long form.

On the average, two EDs in non-sampled areas and one ED in sampled areas will be assigned to one enumerator.

For the four days prior to the main enumeration period, which will extend from November 1 to 9, each enumerator will prepare a map of their ED showing the location of each household and will prepare a list of all households in the ED. The enumerator will be also instructed to paste slips of paper showing the household serial numbers on the entrance of the housing units. Then, the enumerator will deliver the supplementary form of census questionnaire for each household.

In the main enumeration period, the enumerator will call at the household again and collect questionnaires. If a questionnaire is not completed by the respondents, the enumerator will complete the questionnaires herself by interviewing responsible member of the household. The population count will be

made largely on the basis of the de jure concept.

After completing and examining the supplementary questionnaires, the enumerator will be requested to mark ticks on the OMR questionnaires. The enumerator will also be given three days of manual editing. The completed supplementary and OMR questionnaires, household lists and ED maps will be then submitted to the Dong, Eup and Myeon offices where they will be checked by supervisors and census officials, and then forwarded to the National Bureau of Statistics through each level of the local government.

Ⅸ. Publicity

In view of the deteriorating situation in public cooperation in statistical surveys in recent years, publicity is considered very important to get full cooperation in the census-taking, and a great amount of resources are appropriated for publicity activities.

Publicity will be executed intensively for one month before the main survey begins. The publicity materials will be completed in July of 1990. The publicity activities are as follows: preparing materials for publicity, drafting an announcement for broadcasting, making leaflets, offering prizes for census slogans and posters, publicizing the census on the street, making commemorative postage stamps and enlisting the cooperation of other organizations.

X . Data Preparation

Once the OMR questionnaires are returned to the National Bureau of Statistics, some manual checking and editing to detect missing entries will be carried out. Then, the reading, except for items on occupation and industry, will be processed by two reading machines installed at NBOS.

After finishing the reading works, NBOS will perform the work of classification of industry and occupation on the basis of the entries on the questionnaires.

In order to carry out the data preparation particularly for manual edits and coding for occupational and industrial classification, about 500 girls with a minimum qualification of a high school degree will be recruited on a temporary basis for one year.

X I . Publication

The first results of the 1990 census, the preliminary counts of population, households and housing units by minor administrative units (i.e., Dong, Eup and Myeon) will be released in March 1991. These preliminary counts will be based on summary sheets prepared by the enumerators.

To meet the urgent need for census data, an advance sample tabulation of the main characteristics on population size and its structure, migration, fertility, households and housing units will be made on the basis of a two percent sample of households selected systematically. The Advance Report will be published in November 1991.

After completion of the complete count tabulation, the Report for the Whole Country, Provincial Reports for 15 provinces will be published in June 1992. Afterwards, Special Reports for Internal Migration, Fertility and Economic Activity will be published in December 1992.

In addition to providing data in the form of publications, the National Bureau of Statistics is willing to provide the census data upon request in the form of special tabulations and tapes containing raw data to a variety of users.

Meanwhile, in order to increase the use of the census results, the National Bureau of Statistics will have a research project on various topics with professors at universities and researchers at research institutes. Following this, seminars on the results will be organized. The seminar held in November 1989 on the results of the 1985 census was found to be very fruitful and encouraging.

XⅡ. Evaluation

In order to get an estimate of the completeness of coverage as well as a measure of response variability of a few key items, post-enumeration surveys have been carried out in each Korean census since 1960. PES designs in 1970 and 1975 were essentially the response variance type (dual system estimate).

However, matching records was found to be a very difficult task in the Korean context for the following reasons : 1) the address system is not systematic and orderly; 2) some people maintain addresses which are different from their actual usual residence; 3) it is difficult to obtain accurate

information on the addresses of out-migrants; 4) it is difficult for enumerators for PES to identify the correct ED boundaries which were canvassed in the census ; and 5) it is difficult to satisfy the condition of independence between the census and the PES.

These considerations led to the adoption of a response-bias design for the 1985 PES, using dependent reenumeration as in 1960, 1966 and 1980.

The emphasis was on obtaining complete coverage and accurate responses and on eliminating the source of errors in the census. In order to ensure as complete coverage as possible, the PES enumerators were selected from experienced and qualified enumerators of the National Bureau of Statistics and were trained by the NBOS staff.

The 1985 PES was taken during the period 1-10 December 1985. It covered a stratified random sample of 425 EDs. The total number of households enumerated was approximately 0.3 percent of the total households.

It was estimated from the 1985 PES that the omission rate was 1.69 percent and the duplication rate was 1.30 percent among non-migrants. It was thus found that the net omission rate among non-migrants between the census date and the date of PES was 0.39 percent. The types of omission and duplications are shown in Table 3.

For the next census, the response-bias design using dependent reenumeration as in 1985 will be adopted to check the completeness and quality of the census data.

In addition to the PES, data from the vital registration data and resident registration data will be utilized to estimate the completeness of the coverage.

Table 3 : Percentage Distribution of Omitted and Duplicated Persons by Type

Omitted Persons		Duplicated Persons	
T y p e	%	T y p e	%
Total	100.0	Total	100.0
Omission of students or workers living alone	10.1	Inclusion of persons who are not residing but keeping resident register	23.2
Omission of persons living in buildings not intended for human habitation	6.1	Inclusion of persons who are not residing on deliberately enumerators	30.9
Omission of persons who were away from home for business or travel	8.3	Inclusion of persons who moved away	0.8
Omission of relatives or lodgers	19.6	Inclusion of persons who are temporarily residing	3.7
Omission of children newly born	2.5	Inclusion of persons who are enlisted in military service	4.2
Omission due to non-contact to household	35.1	Inclusion of children who are residing away home	19.8
Omission due to misdelineation of ED boundaries	4.0	Inclusion of workers or students who are living abroad	4.3
Others	14.3	Others	13.1

Note : Based on non-migrants between census date and the time of PES.

Evaluation of the question on attendance at an educational institution is possible by comparing the aggregated data against statistics on enrollment collected by the Ministry of Education. These statistics on student enrollment are comparable to census data on educational attendance, with the differences being minor as shown in Table 4.

Table 4 : Comparison between two sources

	Number of students according to census	Number of students according to Ministry of Education
Total	11,181,196	11,151,868
Primary School	4,872,793	4,856,752
Middle School	2,778,808	2,787,012
High School	2,351,342	2,230,279
Junior College	206,339	242,114
University & Over	971,914	1,035,711

XⅢ. Conclusion

As mentioned in the previous sections, there are some distinctive features in the 1990 Population and Housing Census. The major features are as follows:

1) The introduction of the OMR system to speed up data processing.

2) The adoption of the sample enumeration to meet the needs of diverse users.

3) The insertion of new census items such as monthly income, living expenditures and sources of income.

4) The introduction of self-enumeration method from the door-to-door interview method.

5) The introduction of a mesh code for each enumeration district to draw up various small area statistical maps.

6) The preparation of effective training materials such as audio-visual aids.

7) The execution of in-depth analysis projects on various topics with professors, research institutes and seminar organization.

It is, however, found to be very difficult to count all the people and grasp all the characteristics correctly within a limited time span. It is a well known fact that census conducting is usually subject to many errors including coverage and content inaccuracies.

Accordingly, some problems which we will face at various stages of the census operation will be carefully examined for further improvement. We will also carry out studies on experiences other countries have had.

Appendix Table 1 : Timetable of Census Operations

Census Operation	Month & Year
Preparatory work	
Budget determination	Dec, 1989
Census topic selection and classification of concepts	Jan, 1989 - Dec, 1989
Questionnaire design	Oct, 1989 - Feb, 1990
Tabulation design	Oct, 1989 - Feb, 1990
Pilot surveys	Jan, Sep, Nov, 1989, and Mar, 1990
Meetings	
Technical advisory committee meeting	Aug, Nov, 1989, and Mar, Jun, 1990,
Census users' meeting	Jun, 1989, and Feb,. 1990
Technical working group meeting	once in every two months
Establishment of EDs	
Establishment of EDs in rural areas	Aug. 1989 - Dec, 1989
Establishment of EDs in urban areas	Dec, 1989 - Apr, 1990
Appointment and training of enumerators	Oct, 1990
Publicity	Mar, 1990 - Oct, 1990
Census referance date	1 Nov, 1990
Main enumeration	1-10 Nov, 1990
PES	1-10 Dec, 1990
Data processing and tabulation	Dec, 1990 - Nov, 1991
Publication	
Preliminary report	Mar, 1991
Advance report	Nov, 1991
Final reports	June - Dec, 1992

Appedix Table 2 : Censuses of Korea

Census Year	Reference date	Title	Classification of residence	
1925	Oct. 1	Simplified Population Census	De facto	First population census in a modern sense
1930	Oct. 1	Population Census	De facto	Include items on economic activity and occupation
1935	Oct. 1	Population Census	De facto and de jure	De jure concept was introduced
1940	Oct. 1	Population Census	De facto	Included items on place of birth and permanent domicile
1944	May 1	Simplified Population Census	De facto	
1949	May 1	Population Census	De facto	Included item on residence before 15 Aug. 1945
1955	Sep. 1	Population Census	De facto	
1960	Dec. 1	Population & Housing Census	De jure	1) First use of sampling theory for 10% sample tabulation 2) First housing census
1966	Oct. 1	Population Census	De jure	10% sample enumeration on labor force and fertility
1970	Oct. 1	Population & Housing Census	De jure	10% sample enumeration on labor force, fertility, migration and some specific items of housing
1975	Oct. 1	Population & Housing Census	De jure	5% sample enumeration on labor force, fertility, migration and some specipic items of housing
1980	Nov. 1	Population & Housing Census	De jure	15% sample enumeration on labor force, fertility and migration
1985	Nov. 1	Population & Housing Census	De jure	Complete enumeration for all items

Appendix Table 3 : Census Population.[1]

	Korean only	Total Population	Sex ratio	Population density	Population of urban population(%)	Average[2] household member	Seoul population	Busan population
1925	19,020,030	19,522,945	105.5	88	4.35	5.24	342,626	106,642
1930	20,438,108	21,058,305	104.5	95	5.56	-	394,240	146,098
1935	22,208,102	22,899,038	. 103.8	104	7.01	5.30	444,098	182,503
1940	23,547,465	24,326,327	101.7	110	11.59	-	935,440	249,734
1944	25,133,352	25,917,881	99.0	117	12.90	-	988,537	329,215
1949	20,166,756	20,188,641	102.1	205	17.21	-	1,446,019	473,619
1955	21,502,386	21,526,374	100.1	219	24.53	5.45	1,574,868	1,045,183
1960	24,954,290	24,989,241	100.8	254.	28.00	5.56	2,445,402	1,163,671
1966	29,159,640	29,192,762	101.5	297	33.54	5.49	3,793,280[3]	1,426,019[3]
1970	31,435,252	31,465,654	100.8	320	41.17	5.24	5,535,725	1,879,904
1975	34,678,972	34,706,620	101.3	351	48.38	5.04	6,889,502	2,453,173
1980	37,406,815	37,436,315	100.5	378	57.25	4.62	8,364,379	3,159,766
1985	40,419,652	40,448,486	100.2	408	65.38	4.16	9,639,110	3,514,798

Note :   [1]   Data before 1945 are for all Korea; data for subsequent years are for the Republic of Korea only
[2]   For ordinary households excluding foreigner's household.
[3]   Korea only

Population Projection

in the Republic of Korea

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Population Division

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Contents

I. Introduction

As is well known, the total number as well as the age structure of the future population is essential for the formulation of various national plans. The population projections in Korea were made almost every five years as soon as the latest updated population data are availble from the population census. The historical perspective is shown in Table 1.

The forecast procedures have an iterative nature as shown in Figure 1 : they start from the preparation of the base population from the latest population census, then calculating the future level of fertility, mortality and migrations.

Therefore, it is necessary to estimate, on the ground of the past observations, the main demographic features in the population; fertility, mortality and migration.

The latest population projection made as of November of 1988 was a revised population projection having a two-year interval from the previous one. The reason for making the new population projection was mainly due to the unexpected rapid decline in fertility.

In the former projection, the level of TFR was assumed to decrease from 2.8 in 1980 to 2.1 in 1985 and further to 1.75 in 1995. However, the actual level of fertility was found to be 1.7 in 1984, which is below the replacemen level. The low level of fertility is also observed to continue in the following years. This is the principal reason behind making a new population projection.

Table 1. Historical Perspective of Population Projection in Korea

Name of Person or Organization	Proje-cted period	Base Populat-ion	Year of Work	Title of Publication
Kim Yun	1955-1975	1955 census	1960	Research paper on Demographic Training & Research Center, Bombay
Choe Ehn-Hyun	1960-1980	1960 census	1963	Monthly Statistics of Korea, NBOS, No.6-7, 1963, pp.5-54
Im Tae-Bin	1960-1980	1960 census	1963	Monthly Statistics of Korea, NBOS, No.11-12, 1963, pp.5-47
N B O S	1960-2000	1960 census	1963	Mimeographed
N B O S	1966-1986	1966 census	1970	A Comprehensive Study on 1966 Population Census, NBOS, 1970
Population Council	1970-2150	1970 census	1974	Republic of Korea ; Country Prospects, New York
Kim Dae-Young	1960-2040	"	1975	Analysis Report No.75-11, Korea Development Institute
E S C A P	1970-2100	"	1978	Illustrative Population Projectio-ns for the Republic of Korea
N B O S	1975-1985	1975 census	1976	Mimeographed
N B O S	1960-1975	"	1975	Estimates of Population for 1960-1975
Hong Sa-Won	1975-2075	"	1978	Population Status Report : Korea, Korea Development Institute
U N	1950-2025	"	1982	Demographic Indicators of Countri-es Assessed in 1980
N B O S	1976-2050	1980 census	1981	Report on Population Planning Sector in the 5th Five-year Social and Economic Development Plan
N B O S	1985-2023	1985 ce-nsus(2% sample)	1986	Report for Population Planning Sector in the 6th Five-year Social and Economic Development Plan
N B O S	1985-2020	1985cen-sus(com-plete e-numerat-ion)	1988	Revised Projection (mimeographed)

Figure 1. Flow Chart for Population Projection by the Component Method
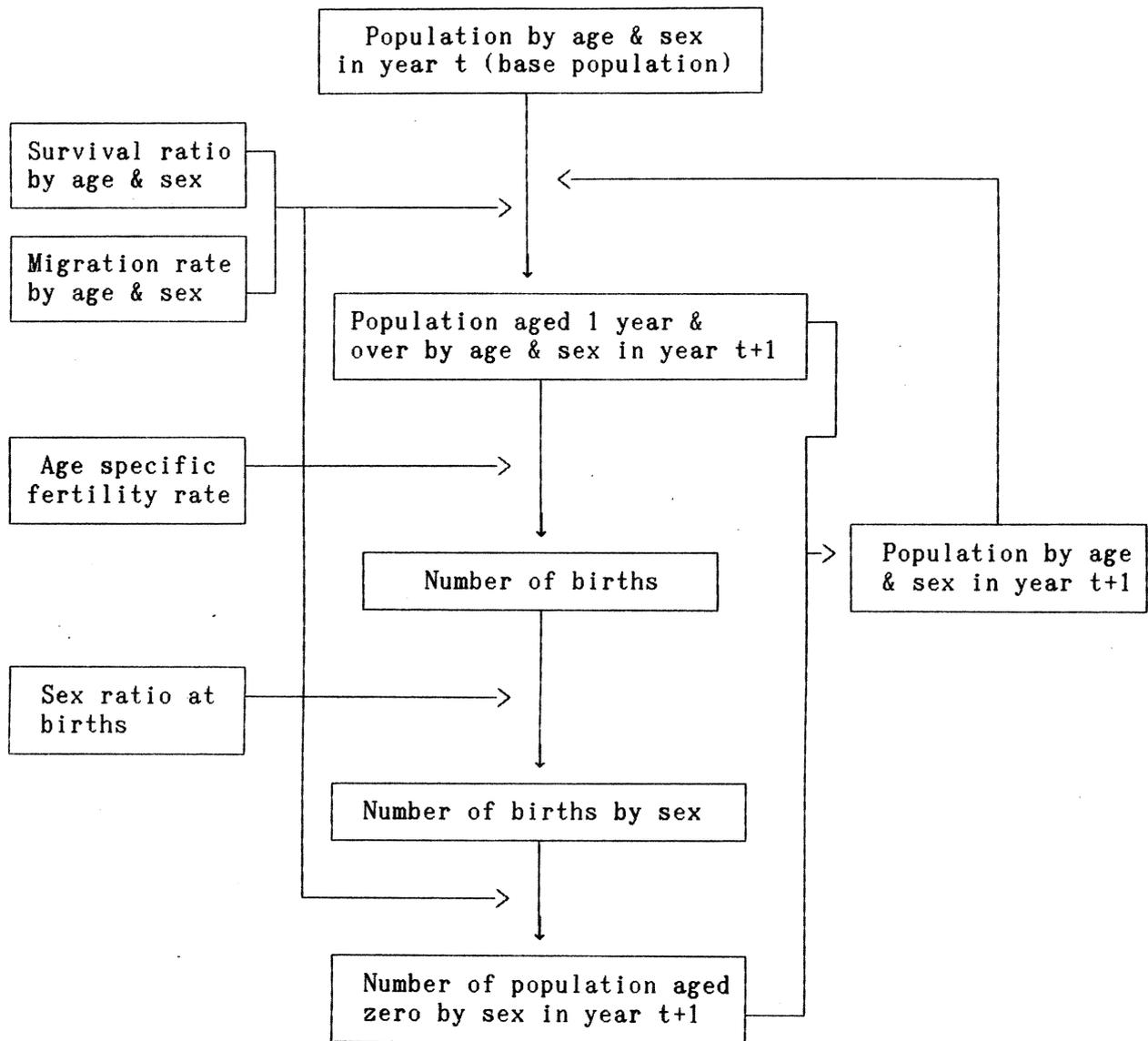
II. Preparation of the Base Population

The preparation of the base population by age and sex is basically derived from the results of population census. But the age data from the census are usually subject to some errors such as under-enumeration and mis-statement of ages in specific ages. In case of Korea, efforts have been made to obtain the correct age-sex structure of the population through asking additional items on age since the 1966 population census such as the animal symbol of birth year and traditional Korean age counting system.

Nevertheless, it has been revealed from the post-enumeration surveys as well as from the analysis of cohort sex ratios and cohort survival ratios between the censuses that there have some errors in age data derived from the population census. To summarize, there have been under-enumerations of population in the zero age group of both sexes, in 24-29 age groups of males and in 19-23 age groups of females. It also seemed that there have been age mis-statement in some ages where the year has 13 months according to the lunar calendar system.

Accordingly, the data on age structure from censuses were revised taking into consideration the errors mentioned above. Smoothing the age data was also accomplished using the following equation.

$Xi = 1/4 (Xi_{-1} + 2Xi + Xi_{+1})$, where Xi is the number of population aged i.

Ⅲ. Assumption of Vital Rates

Assumption of vital rates is usually based on the past trend. The medium
assumption in the recent population projection made as of November, 1988 is
as follows :

1) The total fertility rate (TFR) level of 1.7 observed in 1985 will be

   continued. In Korea, reproduction is under almost complete control

   and it also appears certain that a return to large families is unlikely.

2) The life expectancy at birth will be increased by 0.5 years per annum

   until it reaches 70 years and by 0.25 years after it is above 70 years.

3) The number of emigrants will be 38,800 annually.

Trend of Fertility and Mortality in Korea

	1960	1970	1980	1985	1986	1987	1988
T F R	6.0	4.3	2.8	1.71	1.65	1.59	1.61
Life expectancy at birth							
total	55.1	63.2	65.8	68.7	69.2	69.5	70.1
male	52.7	59.8	62.7	64.6	65.1	65.4	66.0
female	57.7	66.7	69.1	73.1	73.6	73.8	74.5

Ⅳ. Results of Population Projection

On the basis of the population projection made by the National Bureau of Statistics in November of 1988, the one percent level of population growth rate is expected to continue for the time being.   Finally, zero population growth rate will be attained in the year 2020. At that time, it is expected that the total number of population will be 50,193 thousand in the Republic of Korea.

Meanwhile, the age structure of the Korean population based on the projection shows the following implications.

First, the number of young population aged below 15 years old will be continuously decreased.   Second, the number of older population aged 65 years and over will be rapidly increased.   Third, the number of reproductive population aged 15-64 years will continue to increase.

Thus, in terms of manpower supply, the Korea is believed to have the position of sufficient stock of manpower supply for coming next 30 years. In other words, in terms of manpower demand, creating of job opportunities will be continuously needed.

Appendix Table 1 : Results of Population Projection up to 2020 by Assumptions

Year	Total Population			Crude Birth Rates			Increase Rates (%)		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
1985	40,806	40,806	40,806	16.4	16.4	16.4	0.93	0.93	0.93
1986	41,184	41,184	41,184	16.1	16.5	16.7	0.90	0.95	0.97
1987	41,557	41,575	41,584	15.7	16.5	17.0	0.88	0.96	1.00
1988	41,921	41,975	42,001	15.3	16.5	17.2	0.84	0.97	1.03
1989	42,275	42,380	42,434	14.9	16.5	17.3	0.81	0.97	1.06
1990	42,619	42,793	42,883	14.4	16.4	17.5	0.77	0.97	1.07
1995	44,271	44,870	45,295	14.2	15.9	17.9	0.74	0.91	1.12
2000	45,827	46,828	47,842	13.3	14.7	17.5	0.60	0.75	1.04
2010	47,759	49,486	51,872	10.5	11.6	13.6	0.25	0.30	0.61
2020	47,530	50,193	54,096	8.9	10.8	13.6	-0.17	-0.01	0.43

Appendix Table 2 : Total Population & Increase Rate (Medium)

(thousand)

Year	Population	No. of Births		No. of Deaths		Increase No.	
			CBR		CDR		Increase rate (%)
1985	40,806	669	16.38	251	6.16	378	0.93
1989	42,380	697	16.45	246	5.81	412	0.97
1990	42,793	701	16.39	248	5.80	414	0.97
1991	43,207	705	16.31	250	5.79	416	0.96
1992	43,623	708	16.23	252	5.79	417	0.96
1993	44,040	711	16.14	255	5.80	416	0.95
1994	44,456	712	16.02	259	5.83	414	0.93
1995	44,870	713	15.88	264	5.87	410	0.91
1996	45,281	711	15.71	269	5.95	403	0.89
1997	45,684	708	15.49	275	6.02	394	0.86
1998	46,078	702	15.24	281	6.09	382	0.83
1999	46,461	695	14.96	289	6.22	367	0.79
2000	46,828	686	14.66	295	6.31	352	0.75
2005	48,407	631	13.03	335	6.93	256	0.53
2010	49,486	574	11.60	384	7.76	151	0.30
2015	50,025	540	10.79	443	8.85	57	0.11
2020	50,193	540	10.75	503	10.02	4	-0.01

Appendix Table 3 : Age Structure of Population (Medium)

(thousand)

Year	Population	Aged 0-14	(%)	Aged 15-64	(%)	65 & over	(%)	Depend-ency ratio (%)
1985	40,806	12,305	30.15	26,759	65.58	1,742	4.27	52.49
1986	41,184	11,994	29.12	27,400	66.53	1,790	4.35	50.31
1987	41,575	11,706	28.16	28,024	67.41	1,846	4.44	48.36
1988	41,975	11,451	27.28	28,619	68.18	1,905	4.54	46.67
1989	42,380	11,238	26.52	29,178	68.85	1,964	4.64	45.25
1990	42,793	11,070	25.87	29,697	69.40	2,026	4.73	44.10
1991	43,207	10,942	25.33	30,176	69.84	2,089	4.83	43.18
1992	43,623	10,841	24.85	30,625	70.20	2,157	4.95	42.44
1993	44,040	10,747	24.40	31,062	70.53	2,231	5.07	41.78
1994	44,456	10,641	23.94	31,505	70.87	2,310	5.20	41.11
1995	44,870	10,516	23.44	31,957	71.22	2,397	5.34	40.41
1996	45,281	10,363	22.89	32,425	71.61	2,493	5.50	39.65
1997	45,684	10,227	22.39	32,859	71.93	2,598	5.69	39.03
1998	46,078	10,138	22.00	33,225	72.11	2,714	5.89	38.68
1999	46,461	10,111	21.76	33,510	72.13	2,839	6.11	38.65
2000	46,828	10,132	21.64	33,724	72.02	2,972	6.35	38.86
2005	48,407	10,079	20.82	34,641	71.56	3,687	7.62	39.74
2010	49,486	9,624	19.45	35,579	71.90	4,283	8.66	39.09
2015	50,025	8,884	17.76	36,239	72.44	4,903	9.80	38.04
2020	50,193	8,264	16.46	36,183	72.09	5,746	11.45	38.72

Appendix Table 4 : Trend of School Going Population

	1985	1990	1995	2000	2010	2020
Total	40,806 (100.0)	42,793 (104.9)	44,870 (110.0)	46,828 (114.8)	49,486 (121.3)	50,193 (123.0)
Sub-total (6-21)	13,747 (100.0)	13,388 (97.4)	12,022 (87.5)	11,347 (82.5)	10,712 (77.9)	9,638 (70.1)
Primary school (6-11)	4,863 (100.0)	4,751 (97.7)	3,967 (81.6)	4,056 (83.4)	3,958 (81.4)	3,305 (68.0)
Middle school (12-14)	2,780 (100.0)	2,348 (84.5)	2,431 (87.4)	1,936 (69.6)	2,055 (73.9)	1,797 (64.6)
High school (15-17)	2,709 (100.0)	2,607 (96.2)	2,365 (87.3)	2,118 (78.2)	2,042 (75.4)	1,891 (69.8)
University (18-21)	3,395 (100.0)	3,682 (108.4)	3,259 (96.0)	3,237 (95.3)	2,657 (78.3)	2.645 (77.9)

Appendix Table 5 : Trend of Marriageable Population

	Males aged 25-29	Females aged 20-24	Sex ratio
1980	1,584,377	2,015,317	78.6
1985	2,092,942	2,089,009	102.6
1988	2,173,548	2,051,104	106.0
1989	2,171,786	2,075,866	104.6
1990	2,159,842	2,116,618	102.0
1991	2,159,442	2,162,673	99.9
1992	2,160,858	2,199,328	98.3
1995	2,230,876	2,148,296	103.8
2000	2,269,375	1,887,746	120.2
2010	1,931,561	1,535,299	125.8

I. Demographic Transition in Korea

The Korean population has experienced all stages of demographic transition since the 1920s, before which it had stayed at pre-transitional stage characterized by high level of fertility and mortality.

The overall process of demographic transition in the Korean population is divided into three phases. The first period termed as early transitional stage lasted from the 1920s to the early 1960s. During this period, constant high fertility and continuously decreasing mortality prevailed. The second phase started from the early 1960s with overall modernization and lasted up to the year 1984, showing a rapidly decreasing fertility level and gradually improved mortality condition. The third phase started from the mid 1980s, characterized by stable fertility below the replacement level.

That is to say, Korea is believed to be in the process of going beyond the demographic transition. In other words, reproduction in Korea is under almost complete control except some groups of women.

In the future, the current low level of fertility will continue having the total fertility rate as 1.7. More broadly, TFR will be in the range from 1.5 to 2.0. It also appears certain that a return to large families is unlikely.

Even within this seemingly low and narrow range, socio-economic differentials persist, and economic conditions and government policy could affect couple's decisions about family size intentions.

Thus, the rate of population growth showed a gradual and steady downward trend. The rate decreased from 3 percent in 1960 to one percent in 1986. The trend of demographic transition which Korea has experienced is shown in Table 1

and Figure 1. On the basis of new population projection made by NBOS in November 1988, taking into consideration of the above facts, one percent level of population growth rate will be expected to continue for the time being. Finally, zero

population growth rate will be attained in the year 2020, having the 50,193 thousand population.

Assumption in the new population projection is as follow : 1) the TFR level of 1.70 observed in 1985 will be continued, 2) the life expectancy at birth will be increased by 0.5 years per annum when it reach 70 years and by 0.25 years when it is above 70 years, 3) the number of emigrants will be 38,800 annually.

On the basis of the new population projection, the age structure of Korean population shows the following implications.

First,the number of young population aged below 15 years old will be continuously decreased. Second, the number of older population aged 65 years and over will be rapidly increased. Third, the number of reproductive population aged 15-64 years will continue to increase.

Thus, in terms of manpower supply, the Korea is believed to have the position of sufficient stock of manpower supply for coming next 30 years. In other words, in terms of manpower demand, creating of job opportunities is continuously needed.

Finally, if we mention about future direction of population policy in Korea at the stage of post demographic transition, more efforts should be given to the qualitative aspects of population policy.

Based on elaborate studies on demographic and socio-economic factors,it is urgently needed to prepare systematic and comprehensive national measures and programmes for upgrading the quality of the population, and to adopt an integrated approach to human development by taking into account the relationship between population and development.

Especially, as far as the family planning program concerned, it is believed that the program has reached its demographic objectives, but it continues to have important social welfare functions.

Table 1 : CBR, CDR and NI

(per thousand population)

	C B R	C D R	N I
1916 - 20	47.5	31.6	15.9
1921 - 25	48.0	29.5	18.5
1926 - 30	45.9	26.4	19.5
1931 - 35	45.5	23.3	22.2
1936 - 40	43.3	21.4	21.9
1941 - 45	42.1	19.5	22.6
1946 - 50	39.9	15.8	24.1
1951 - 55	41.0	14.3	26.7
1956 - 60	43.0	12.8	30.2
1966	31.9	8.6	23.3
1970	29.5	9.8	19.7
1975	24.7	7.6	17.1
1980	24.0	7.4	16.5
1981	23.1	6.4	16.7
1982	22.2	6.5	15.7
1983	19.8	6.8	13.0
1984	17.1	6.2	10.9
1985	16.4	6.2	10.2
1986	15.8	6.1	9.7
1987	15.5	6.1	9.4
1988	15.8	5.9	9.9

Figure 1 : Trends of CBR, CDR and NI

II . Levels and Trends in Fertility

2.1 Changes in CBR and TFR

Three standard measures of fertility in Korea since 1960 were present-
ed in the Table 2.1 : crude birth rate, total fertility rate and estimated
number of births. The data were derived from two sources. The data for 1960
to 1979 were from the results of population census using the so- called own
children method, while the data for 1980 to 1987 were from the so-called
Continuous Demographic Survey which are conducted every month by the National
Bureau of Statistics.

As shown in this table, the estimated crude birth rate(CBR) suggests
that there has been a downward trend except in 1979 to the extent that it
reached a level of 16 per thousand population in 1987. With an already low
level of mortality around 13 in 1960 and 6 in 1985, the rate of population
increase has consequently dropped from 2.88 per cent druing 1955-1960 to 1.0
per cent in 1985. However, the fertility decline in Korea was not uniform.
It has some fluctuation of sharp decline or slow decline.

By periods, the crude birth rate for 1955-60 reached a level of around
40 with a peak point around in 1960, which may be attributed to the baby boom
that resulted from the return of soldiers enlisted in the Korean War. However,
these high birth rate which began in the mid-1950s lasted only until 1962 when
it started a dramatic decline during the next 5 to 6 years to reach 32 in
1967. But during the subsequent 5 years until 1972, the trend showed a temp-
orary slackening of the rate of decline, maybe due to the threshold effect in
declining.

After the stationary status between 1967 and 1972, the period 1972-76
experienced a resumption of the steep decline in the crude birth rate to reach

Table 2.1 : Number of Births, CBR and TFR ; 1960-87

	Esimated No. of Birth(000)	C B R (%)	T F R
1960 [1]	1,060	42.64	5.98
1961 [2]	1,103	42.83	6.02
1962	1,104	41.65	5.85
1963	1,140	41.82	5.89
1964	1,035	36.99	5.23
1965	1,028	35.81	4.95
1966	1,003	34.07	4.84
1967	956	31.73	4.50
1968	1,010	32.75	4.66
1969	994	31.68	4.54
1970	998	30.96	4.47
1971	1,028	31.25	4.54
1972	1,020	30.45	4.41
1973	953	27.94	4.01
1974	918	26.46	3.75
1975	847	24.02	3.33
1976	796	22.21	3.00
1977	808	22.19	2.94
1978	785	21.25	2.74
1979	851	22.67	2.83
1980	854	22.41	2.71
1981 [3]	893	23.10	2.64
1982	872	22.10	2.37
1983	791	19.80	2.09
1984	693	17.10	1.96
1985	674	16.40	1.71
1986	658	15.80	1.65
1987	651	15.50	1.59
1988	665	15.80	1.61

Source : 1) Cho, The Determinants of Fertility in the Republic of Korea, 1982, p.38

2) For 1961-80, NBOS, The Levels and Trends of Fertility, 1984

3) For 1981-88, NBOS, Esimates obtained from vital registration

22 in 1976. Between 1976 and 1981 the fertility did not show any decline. A CBR of 22 continued for these five years. Meanwhile, turning to the earlier in 1980s, there is an evidence that another sharp decline began to start from 1982 to reach a CBR of 17 in 1984.

But from 1985, it was observed that CBR reached a level of 16 and sustained this level up to 1987. Thus, the annual population growth rate with a CBR of 16 and a CDR of 6 is found to be a level of one per cent from 1985. This is the rate which Korea attained for the first time in demographic transition.

On the other hand, the estimated total fertility rate(TFR) also showed a pattern of decline comparable to that of the crude birth rate as shown in figure 3.1. The TFR was around 6 in 1960 and it decreased rapidly to reach the level of 4.5 in 1967. But for next 5 years to 1972, the level of 4.5 continued. Then, the TFR began to drop rapidly starting 1973 until 1976 to reach a TFR of 3 in 1976. As it were in the crude birth rate, the TFR continued the decline between 1976 and 1981 but a much slower pace, reaching a TFR of 2.6 in 1981.

Turning to earlier in 1980s, another sharp decline began to start from 1982 to reach a TFR of 1.8 in 1984. This fact is very interesting in a sence that the level of a TFR of 1.8 is below replacement level. This low level of TFR as 1.7 has been also continued up to 1987. And it will be a question to encounter when and to what level the decline will be finished, or whether this low level will continue.

It is also noteworthy to mention about the fluctuation in the TFR during 1977-79 when it was 2.94 in 1977 plumetted to 2.74 in 1978 and again increased to 2.83 in 1979. The unexpected lower fertility in 1978 is attributed to the horse year. Since there is a common belief that children especially daughters born in the horse year are most likely to be unlucky in their future life, therefore, that year tended to show a lower level of fertility than that of the adjacent years because couples planned to have their births either before or after that year.

In the lunar calendar system of Far-Eastern countries of Asia, every year has a symbol charaterized by one of twelve animals(mouse,cow,tiger, rabbit,dragon,etc.) which is given once in every 12 years cycle. According to this system, the year of 1978 was given the symbol of a horse. The fear of having children who would be unfortunate in the future life encouraged women to become effective users of contraceptives which consequently resulted in the lower level of fertility in 1978 compared to that of 1979. This fact can substantiate the widespread use of birth control in Korean society and the importance of attitudes rather than the availability of contraceptives.

2.2 Age-Specific Fertility Rates and Marital Fertility Rates

The age specific fertility rates for the period of 1960-87 are shown in Table 2.2 and Figure 2.2. As shown in this table, it reveals that there has been a continuous decline of fertility in all age groups during the last decades except in 1979. Looking at the fertility level of the verious age groups reveals that the decline was of a negligible value in the age category 15-19 years. However, fertility of females in the age group 20-24 years showed a significant decline.

The most important feature of fertility decline during this period was manifested in the crucial decline in the reproductive performance of females in the age category 25-29 years as well as 30-34 years. But if we look at the speed of decline for these three age groups,it was not uniformly declined over time. The speed of decline for these age groups showed a same pattern of decline as that of CBR and TFR, which can divide the overall period into five period; 1960-67, 1967-72, 1973-76, 1977-81, 1982-84 and 1985 to present.

It is also noted from the table that the most fertile age group has always been those women aged 25-29 years, the second most fertile group was 30-34 until 1972; thereafter it was the 20-24 age group. This clealy shows that after 1972 child-bearing activities have tended to concentrate among younger age women. In other words, married women have begun to have their children and finish their child-bearing sooner, mostly before reaching the age of 30 years. Thus, it is the women aged 20-29 years who are responsible for

the largest proportion of births occurring every year in recent time - 47.8 per cent in 1960; 58.3 per cent 1972; 69.4 per cent in 1977; 76.7 per cent 1980; 85.3 per cent in 1987. If we consider the women aged 30-34 years, the proportion of births occurring among women aged 20-34 increases to 97.3 per cent in 1987 from 70.7 in 1960. This would indicate that in Korea overall fertility trends have by and large been determined by the reproductive behavior of married women aged 20 to 34 years.

Meanwhile, fertility of females at the ages beyond 35 years tended to taper off quite rapidly after reaching a peak in the age interval 25-29 years. The proportion of births occurring among ages 35 and more is almost negligible taking only 2.1 per cent as of 1987.

However, if we consider marital fertility rate which refers to rate for currently married women only as shown in Table 2.3 and Figure 2.3, the picture is somewhat different from that age-specific birth rates.

Except in the last intercensal period, birth rates for married women at ages 20-24 remained virtually constant and at ages 15-19 has been somewhat erratic as shown in table. The trend in fertility at ages 25-29 has been gradual but slow. Birth rates for currently married women age 30 and over fell steadily throughout the period.

The reason birth rates at ages 20-24 fell for all women but remained relatively constant for currently married women is that age-specific proportions married fell at these ages. The proportions currently married fell substantially at ages 20-24, and moderately at ages 25-29. Also the reason birth rates at ages 15-19 has been erratic is that the proportions married at these ages are too small.

Table 2.2 : Age Specific Fertility Rates

	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1960	35.0	249.0	323.0	273.0	204.0	96.0	16.0
1961	36.0	247.8	330.3	276.0	203.0	95.9	13.6
1962	31.0	238.5	332.3	267.5	195.2	92.4	13.4
1963	28.1	244.2	338.7	273.1	191.0	89.6	12.1
1964	23.1	217.2	310.3	243.0	165.9	75.3	10.6
1965	21.5	212.0	309.0	225.7	146.4	64.5	10.3
1966	22.2	212.5	310.0	218.5	136.3	59.5	9.2
1967	19.8	190.0	302.7	208.7	119.8	51.8	8.2
1968	19.8	196.8	319.7	218.0	120.2	49.4	7.3
1969	18.2	187.6	313.8	216.0	119.2	47.1	6.5
1970	16.9	190.4	314.7	211.0	112.5	43.2	6.2
1971	18.1	202.7	320.7	215.3	108.6	38.1	4.6
1972	17.6	196.8	317.4	207.1	102.9	35.4	4.9
1973	16.3	187.2	300.3	178.6	86.1	29.5	4.1
1974	15.4	181.2	291.5	160.5	72.7	24.6	3.3
1975	13.7	163.2	267.9	139.9	59.3	19.4	2.7
1976	13.3	157.5	248.3	116.5	47.3	14.8	2.0
1977	12.8	154.8	253.4	113.7	39.8	11.9	1.7
1978	12.5	152.7	238.5	101.7	31.8	8.7	1.3
1979	12.0	161.4	255.8	101.0	28.1	6.9	1.1
1980	9.5	154.7	248.4	96.7	25.8	5.9	0.8
1981	8.2	167.3	244.7	84.6	27.2	5.2	0.7
1982	7.8	153.9	222.6	67.4	18.0	3.1	0.6
1983	7.5	134.9	200.4	51.5	18.6	4.2	-
1984	5.7	124.6	172.5	43.6	10.6	2.7	-
1985	5.5	115.5	169.0	42.0	8.9	1.7	-
1986	3.8	107.1	168.6	42.2	6.5	0.6	-
1987	2.4	102.6	169.8	40.0	6.0	0.5	-

Source : Same as table

Table 2.3 : Age Specific Marital Fertility Rates

	1960	1966	1970	1975	1980	1985
15-19	600	582.7	595.1	529.0	582.8	823.5
20-24	447	445.9	450.2	438.5	458.4	413.8
25-29	351	345.2	365.1	308.7	292.4	209.0
30-34	298	232.7	223.1	148.2	102.5	45.0
35-39	232	148.2	122.3	63.6	27.6	8.5
40-44	117	70.2	52.8	22.0	6.6	1.9
45-49	22	12.0	8.1	3.4	1.0	0.5

Note : The rates were calculated from ASFR shown in table 2.2 divided
by proportions currently married from various census result

2.3 Births by Birth Order

Another dimension for analyzing fertility, in addition to the age of
mother, is the order of birth of the child. Order of birth refers to the
number.of children born alive to the mother, including the present child. The
simplest way of analyzing births classified by order of birth consists of
calculating the proportional distribution of the births by order. Such a
percentage distribution of births by order is much less affected by under-
registration of births than are rates and can be computed without use of
population data(Shryock, 1976)

The percentage distribution of births in a year by birth order for the
period of 1970-87 is shown in Table 2.4. It is first noted from this table
that there has been a change in the structure of birth orders. The proportion
of births for parity 3 and over have recorded continuous and substantial decl-
ine roughly corresponding to the declines in fertility rates of women aged 30
years and over.

In the case of parity one, the proportion of births has been rapidly
increasing to reach 54 per cent in 1987. In the case of parity 2, the propo-
rtion of births for the parity has also shown a continuous increase but at a
lower rate than that of parity 1. Thus, the proportion of births for parity 1

and 2 accounts for the majority of total births born in a year to reach 92 per cent in 1987. It is, therefore, clear that the decline in the birth rate has largely been due to decline in the proportion of births of higher orders.

Table 2.4 Percentage Distribution of Births by Birth Order;1970-87

Unit : %

	1	2	3	4	5	6+
1970	25.0	21.8	18.8	14.3	9.6	10.3
1971	25.7	22.3	18.7	14.0	9.2	10.1
1972	26.7	23.7	18.6	13.2	8.6	9.2
1973	28.0	24.5	18.1	12.3	8.2	8.9
1974	31.2	25.5	17.8	11.1	7.0	7.4
1975	34.0	27.6	17.3	9.4	5.7	6.0
1976	34.5	29.3	17.4	8.8	4.9	5.1
1977	35.9	30.9	17.2	7.9	4.1	4.1
1978	38.5	31.7	16.8	7.1	3.3	3.2
1979	38.5	33.3	17.1	6.4	2.6	2.3
1980	39.4	31.6	16.8	6.7	2.9	2.7
1981	40.9	33.8	16.5	5.5	2.0	1.4
1982	41.8	35.7	14.8	4.8	1.7	1.1
1983	44.8	38.5	11.1	3.6	1.3	0.7
1984	49.5	38.1	8.4	2.6	0.9	0.5
1985	51.5	38.0	7.4	2.0	0.7	0.4
1986	52.9	37.8	6.8	1.7	0.6	0.2
1987	54.1	38.0	5.7	1.6	0.3	0.2

Note : The data for 1970-86 were derived from the vital registration system, while the data for 1987 were from the Continuous Demograpic Survey

Statistical Dissemination

It is an great honor for me to briefly introduce statistical

activities we perform and the dissemination of statistical data

to the users.

The National Bureau of Statistics, or NBOS, of Korea, as the

responsible organization for comprehensive planning, standardizing,

coordinating, compiling and processing major national basic statistics,

conducts and disseminates 22 types of statistics including the

Population and Housing Census. Further, NBOS collects various

statistical data from other organizations and disseminates them to

the users.

As our topic for this symposium is dissemination of statistical

data, I will briefly explain our present situation and problems as

well as our planned solutions.

As for the dissemination of data, dissemination of statistical

data can be roughly divided into two areas: one is in the form of

publications and the other electronic media.

In the case of publications, NBOS not only publicates results

collected by ourselves but also produces comprehensive publications

by collecting data from various sources. Additional descriptions

and criteria we set for publications and dissemination will be pro-

vided to you later.

For electronic media, the data required by users are available

through a data base system in the form of tapes, diskettes and

computer read-outs, provided upon individual requests.

Also, processed and stored microdata are available in the form

of magnetic tapes and computer read-outs.

With regard to the statistical publications, NBOS produces and

disseminates 43 statistical series. As the nature and the size of

circulation differs for each individual material produced, we can

not apply the same criteria to all publications.

Accordingly, we have formulated various principles to meet each

given situation.

In general, preference for free distribution are given as follows:

- Korean Central Government organizations, the Korean national

    assembly, diplomatic organizations abroad and other public

    organizations for administration purposes;

- National and public libraries, university libraries, mass

    media organizations, political parties and public research

    institutes for publicity;

- Related institutes, associations and major firms for publicity

    and cooperation purposes;

- Members of statistical committees and technical committees;

- The Government Publication Sale Center for publicity and others

    for data exchange; and

- International and foreign organizations, usually on an exchange

basis.

In regard to the paying users, they are referred to the Korean

Statistical Association for purchase.

At this time, let us turn our attention to electronic media.

Dissemination through electronic media is in the form of

terminals, magnetic tapes, diskettes and computer read-outs.

As for a brief description on the development of NBOS data base

system, the first data base system was launched in 1977, following

its introduction in 1976, beginning with consumer price indexes using

a batch process. The system was further developed to be equipped with

an on-line system in 1980.

Ever since, we have concentrate enormous of energy to expand the

volume and develop diverse retrieving systems for users. We have

installed a hieractical data base system, using IMS, to fit the

existing IBM 4381 (16MB) computer, with 10 expert members working for

it.

In our current DB system, 660 thousand socio-economic statistical

series, covering the period from 1960 and onward, on population,

industry, finance, health, society, etc., have been stored. The data

produced by ourselves are automatically up-dated, those collected from

other organizations in the form of magnetic tapes and those not

computerized through manual entry.

The data base for users is divided into two types; one is in the form of utilizing an on-line system through terminals, with the other utilizing the batch process. For on-line users, the menu drive method is provided for unskilled users.

In the batch process, tabulation is readily available for the data produced by ourselves with computer languages in making publications.

Also, the data are readily accessible only by entering data base codes, as in the case of the utilizing computer package such as SAS, SPSS, BMDP and X-11 ARIMA.

All the data aforementioned are available through any terminals of NBOS's computer network. The organizations using the system are NBOS, the Economic Planning Board and the Board of Audit and Inspection, with 150 terminals, including national research institutes.

In addition, unpublicated and unloaded detailed data, and the microdata for regression analysis and correlation analysis are required by the users on magnetic tapes.

In the case of microdata, however, we are concerned with the problem of protecting these data from unauthorized discloure or modification.

We also suppress the disclosure of data collected through sample surveys considering possible distortion arising from hasty utilization of data without taking into account their possibly

containing standard errors. With these problems, considering it

undesirable for us not to utilize these tremendous cost-consuming

statistical data, which are so valuable for socio-economic researchers,

we have prepared the following precautionary measure:

Upon the users' request, NBOS releases data after checking

their appropriateness in utilization, confidentiality and standard

errors. In this case, the users either come to NBOS to make

necessary programs or entrust NBOS with the work, paying costs

according to the volume of the job.

Now, I would like to bring your attention to the problems arising

from dissemination.

In publications, we are obliged to limit the circulation volume as

a result of our limited budget.

As for the electronic media, the number of computer terminal using

organizations are still limited and the growing demand for the microdata

is falling heavily on NBOS.

In this connection, we are in the process of improving the system

and finding the necessary solutions.

In relation to the publications, as aforementioned, we have

allowed the Korean Statistical Association to reproduce our publications

for sale, rendering services through our library, loading as much

unpublicated data as possible.

Regarding electronic media, we plan to expand our network to all government organizations by the end of this year, and later to other agencies.

Last but not least, is the solution to establishing the needed conditions for adequate disclosure protection for microdata.

As one conceivable solution, NBOS is considering designating appropriate agencies to handle this matter.

I hope I have satisfactorily explained my Bureau's Statistical Dissemination to you. If you have any questions or comments, I would be very happy to entertain them any time convenient to you.

Thank you.

Statistical Series by NBOS

Periodicity	Title	Circulation
Monthly	Production, Shipment and Operation Rate Indexes	600
	Machinery Orders Received	300
	Construction Orders Received	350
	Consumer Prices	350
	Business Cycles	150
	Composite Indexes of Business Indicators	250
	Prompt Report of Major Statistics	500
	Monthly Statistics of Korea	1,200
Quarterly	Korean Economic Indicators	600
	Mining and Manufacturing Production by Region	400
Annually	Annual Report on the Vital Statistics	300
	Yearbook of Migration Statistics	300
	Cause of Death Statistics	300
	Annual Report on the Economically Active Population Survey	550
	Annual Report on Family Income and Expenditure Survey	450
	Annual Report on the Price Survey	450
	Social Indicators in Korea	1,000
	Annual Report on Current Industrial Production Survey	400
	Report on Mining and Manufacturing Survey	400
	Report on Transportation Survey	300
	Report on Construction Work Survey	400
	Annual Report on Wholesale and Retail Trade Survey	500
	Annual Report on the Survey of Services	500
	Annual Regional Statistics	650
	Major Statistics of Foreign Economy	1,000
	Major Statistics of Korean Economy	1,300
	Basic Descriptive Statistics for Education and Students	5,000
	Korea Statistical Yearbook	1,200
	Korea Statistical Handbook	1,000

Periodicity	Title	Circulation
Triennially	Report on the Employment Structure Survey (Cities and Provinces)	1,000
Quinquennially	Population and Housing Census (Vol. 1~4) Report on Industrial Census (Vol. 1,2) Establishment Census of Korea	1,000 500 800
Decennially	National Wealth Survey of Korea (Vol. 1~5)	1,000
Non-periodicals	Korean Classification of Administrative Districts Korean Standard Industrial Classification Korean Cause of Death Classification Standard Classification of Occupation Korea's Statistical Survey Korean Standard Industrial Classifications Koreans' Life Table Korea's Regional Estimated Population Koreans' Family Name and Family Origins (Vol. 1,2)	300 300 300 300 400 500 600 600 500
Total	43	

附錄 4 : 센서스關聯 質問事項

日本訪問時 센서스 關聯 質問事項

1. OMR 機械 處理 能力

   N7814 OMR 機의 最大速度는 150 SPM (Sheet Per Minute)이고 日本의 境遇 實際 稼動 速度는 最大速度의 72%(108 SPM), 實際稼動 時間은 1日 平均 6時間 15分이었다고 듣고 있다.

   또한, OMR 機 運營을 專門用役機關에 맡기고 專門技術者가 運營要員과 함께 繼續 勤務하면서 機械故障에 對備하였다는 데,

   ○ 韓國의 경우, 1日 2交代 勤務에 의해 10時間 30分 程度를 計劃하고 있는데 日本의 經驗으로 볼 때, 이 程度의 可動時間이 무리가 없다고 보는지?

   ○ 韓國의 境遇, 現在까지는 自體 職員에 의해 運營할 計劃인데 日本의 經驗으로 볼 때, 自體 職員에 對한 運營方式의 問題點은 무엇이라고 생각되는지?

   만약 OMR機 運營을 專門用役機關에 맡길 境遇와 專門技術者가 常時勤務를 해야 할 境遇의 具體的 考慮事項은 무엇인지?

2. OMR 종이의 紙質 問題

   OMR 調査票의 紙質問題는 매우 重要하다고 듣고 있다. 日本에서는 OMR 用紙에 에 對한 自體 規格을 制定하여 活用하고 있고, 이 規格이 日本工業規格(JIS) 보다 더 嚴格하다고 듣고 있다.

   ○ 紙質 向上을 爲한 業界의 活動과 統計局의 支援策은 무엇이 있는지?

   ○ 종이 製作者의 選定 方法 및 統計局에서의 紙質테스트 方法은 어떠한지?

○ 종이 製作과 印刷를 나누어 入札에 부치고 있다는데 그 이유는?

○ 종이製作期間, 印刷期間, 印刷後 保管期間등은 얼마나 所要되었으며 業務遂行時 考慮해야 할 事項은 무엇인지?

3. 센서스 企劃要員과 資料處理要員과의 協助, 調整을 원활히 하기 爲한 組織上의 考慮事項

   日本의 境遇, 統計局 國勢調査課에서 調査企劃業務를, 統計센타의 人口製表1課에서 調査票의 審査業務를, 情報處理課에서 製表프로그램 作成, 電子計算機室에서 OMR 器機 運營을 맡고 있는데,

○ 이들이 課 간의 協助, 調整을 원활히 하기 爲한 人力 또는 組織管理는 어떻게 하고 있는지?

4. 센서스 弘報 關聯 內容

○ 센서스 弘報를 爲해 天皇이나 首相이 對國民 協助를 爲한 放送이나 談話文等을 發表하고 있는지?

○ 天皇이나 首相의 親書등에 依한 方法으로 地方의 도도부현 責任者에게 센서스 業務의 協助 또는 督勵를 하고 있는지?

○ 統計局에서 가장 力點을 두고 推進하고 있는 弘報方法은 무엇인지?

5. 蒐集對象資料

o 平成 2年 國勢調査 Master Plan

o 總務廳 統計센타 統計研修院의 組織 및 人力現況, 課程別 研修教材

o 最近 勞動力 調査結果에 대한 特別 分析資料

o 各種 事業體 및 家口對象 調査別 標本設計 槪要 및 標本管理方法

o 人口센서스 Mapping 시스템의 推進現況에 대한 資料

o "汎用 샘플링시스템" 構築 關聯資料 (勞動力調査 標本調査 의 解說)

附錄5：1985年 國勢調査 關聯事項 및 用品 一覽表

昭和60年国勢調査　関係書類及び用品一覧

～　調査関係　その1　～

(調査書類)

1 調査票

2 　同　（大都市用）

3 調査票（不在世帯用）

4 　　　同　　　（大都市用）

5 英文調査票

6 国勢調査についてのお願い

7 　　　　同　　　　（大都市用）

8 点字パンフレット

9 世帯名簿

10 調査単位名簿

11 調査区要図

12 市区町村要計表

13 都道府県要計表

14 都道府県・市区町村コード表（指導員用）

15 　　　　同　　　　（調査員用）

16 調査票表紙

17 　同　（1％抽出世帯用）

18 　同　（30人以上の単身者の世帯用）

19 不在世帯用調査票等表紙

20 調査票仕切紙（30人以上の単身者の世帯用）

21 世帯名簿等表紙

22 調査票配布済み証（シール）

23 連絡ノモ

24 指導員証

25 調査員証

26 英文調査員証

(指導用書類)

27 調査の手引

28 　同　：補正施設地域用

29 　同　（自衛隊地域用）

30 指導員の手引

31 質疑解答集（市区町村用）

32 市町村事務取扱要領

33 指示注意事項集

34 地方事務の概要

35 市町村事務の概要

36 地方集計の手引　その1

37 　同　　　その2

38 産業分類・職業分類の解説

39 産業分類

40 職業分類

41 公務災害事務の手引

42 昭和60年度 統計調査国勢調査 地方公共団体委託費経理の手引

(その他の書類)

43 国勢調査要綱

44 国勢調査令及び国勢調査施行規則

45 集計事項及び結果表様式

46 指導員名簿

47 調査員名簿

48 任命辞令（指導員用）

49 　同　（調査員用）

50 感謝状（指導員用）

51 　同　（調査員用）

52 　同　（調査協力者用）

53 表彰状

昭和60年国勢調査　関係書類及び用品一覧
～　調査関係　その2　～

（調査用品）

1　調査セット

2　太軸ボールペン

3　書件票入れ（ファイル）

4　調査票整理袋（ビニール袋）

5　調査書類入れ（手提げ袋）

6　調査書類入れ名札

7　従事者章（バッジ）

8　従事者用徽章

9　従事者用腕章

10　指相当化済み証

11　調査員指導用調査票（説明用調査票）

12　　　　　　　同
　　（大都市用）

13　拡大調査票（東大都市用は除く）

14　説明用例図集（内容を含む）

15　説明用スライド

16　オーバーヘッドプロジェクター用図解
　　シート

17　調査員指導用ビデオテープ及び16ミリ
　　フィルム（リーフレットを含む）

18　調査票ケース

19　　　　　同　　　（大都市用）

20　調査票ケース標示用紙

21　調査票輸送箱

22　　　　　同　　　（大都市用）

23　あて名用紙（調査票返送用）

24　「関係書類及び用品の輸送箱（輸送箱一覧
　　を含む）

（事後調査）

25　調査票

26　事後調査についてのお願い

27　世帯名簿

28　調査の手引

29　調査票表紙

30　調査員証

（世帯へのアンケート）

31　国勢調査に関するアンケート

32　「国勢調査に関するアンケート」の別添

33　アンケート返送用封筒

（調査区設定）

34　調査区設定要領

35　指示及び注意事項(主管課長会議)

36　　　　　同　　　　　（地方別事務打合せ会）

37　地方事務の概要

38　調査区設定の手引

39　調査区一覧表

40　町丁・字一覧表

41　調査区数・調査区地図枚数一覧表

42　国勢統計区別調査区番号対応表

昭和60年国勢調査　関係書類及び用品一覧
～ 広 報 関 係 ～

1　シンボルマーク版下

2　従事者章版下

3　広報計画の概要

4　広報マニュアル

5　国勢調査のあらまし（調査員募集用リーフレット）

6　やさしい国勢調査

7　国勢調査の話（一般用）

8　国勢調査のはなし（学校教材用）

9　みんなの参加する昭和60年国勢調査（事業所用）

10　協力依頼用リーフレット（公団住宅入居者用）

11　　　　同　　　　（公務員宿舎用）

12　　　　同　　　　（大学用）

13　昭和60年度　ご存じですか？政府広報テレビ・ラジオ番組表

14　「フォト」（昭和60年9月15日号）

15　雑誌「統計」（1984年8月号，1985年1月号・7月号・8月号）

16　「国勢調査ポスター及び標語募集」用ポスター

17　国勢調査ポスター及び標語募集要調

18　入選メモ及び特選ポスターセット

19　入選作品巡回展示用パネル

20　「ものしり博士の国勢調査ゼミナール」16mmフィルム及びビデオテープ

　　「ものしり博士の国勢調査ゼミナール」リーフレット

21　「ものしり博士の国勢調査ゼミナール」ビデオテープ（英語版）

　　「ものしり博士の国勢調査ゼミナール」英語版台本

22　「さわやかな風のように」16mmフィルム及びビデオテープ

　　「さわやかな風のように」リーフレット

23　「さわやかな風のように」ビデオテープ（英語版）

　　「さわやかな風のように」英語版台本

24　横断幕及び懸垂幕

25　タクシーリヤウィンド広告用ステッカ

26　国勢調査カード

27　広報用ポスター（調査区・一般用）

28　　　同　　　（官公庁・事業所等用）

29　　　同　　　（小学校掲出用）

30　　　同　　　（中学校掲出用）

31　　　同　　　（車内中吊り用）

32　　　同　　　（駅貼り用）

昭和60年国勢調査　関係書類及び用品一覧
〜製表関係　その2〜

1　産業分類項目表

2　産業大分類項目名及び内容例示

3　産業分類　分類項目名，説明及び内容例示

4　産業分類索引

5　産業大分類格付の手引

6　国・地方公共団体・政府関係機関等の産業分類適用例

7　職業分類項目表

8　職業大分類項目名及び内容例示

9　職業分類　分類項目名，説明及び内容例示

10　職業分類索引

11　職業大分類格付の手引

12　主要産業・地場産業の製造工程図解及び職業分類適用例

13　産業・職業分類適用上の注意事項

14　産業・職業分類適用上の注意事項ファイル用バインダー

15　全国主要事業所リスト

16　百貨店リスト，各種商品卸売業事業所リスト

17　百貨店リスト，各種商品卸売業事業所リストファイル用バインダー

附錄6 : 센서스 地圖化 關聯事項

センサス・マッピング・システムの機能

入力・更新機能

- 図形の形状及び位置情報入力
- 図形の面積測定
- ラベル点(図形の名称)・当該図形の統計情報等の入力
- 図形の位置座標の変換
- 個々の図形のより大きな地図へのはめ込み

解析機能

- 各図形を重ねた場合の空白・重複部分の調整
- 各図形の属性による分類等
- 既成図形上に必要な点・線・面の作成
- 絶対的位置座標による地理情報分析
  - 最短経路，時間距離，エリア集計
- 各図形の統計情報等加工演算
  - 計算，データ検索，更新等

データベース機能

- 図形情報及び統計情報のデータベース化

出力機能

- 図形の図表示
- 統計表出力

アプリケーション・ソフト

上記各機能を各種業務への適用するためのソフト
業務の例：人口集中地区画定，統計地図作成，，小地域区分の設定及びデータ提供，標本調査における標本の抽出，小地域統計の分析

センサス・マッピング・システム適用実験及びその結果について
（第1次）

1　実験の趣旨

　人口集中地区の画定作業など，国勢調査調査区を図形情報として扱う各種業務については，最近における状況変化等を踏まえ，より効率的，正確に行うため，ＯＡ化が必要となってきた。

　そのため，図形情報をコンピュータで処理し得るセンサス・マッピング・システムを研究し，また，その機能が人口集中地区画定作業等に応用可能かどうかについて検討を行った。

　その結果，「調査区の設定，利用等に関する研究会（座長：官房審議官，昭和62年9月〜昭和63年3月）」の小研究グループ「コンピュータ処理に関するグループ」における「地図情報システムに関する検討結果最終報告」にあるとおり適用が基本的に可能であるとの結論を得た。

　こうした結論を踏まえ，センサス・マッピング・システムを大量，短期間処理を前提とする実務へ適用した場合の問題点を探るため，以下の実験を行ったものである。

2　実験の概要

　センサス・マッピング・システムには，いくつかのソフトウェアが開発されているが，今回の実験では，現在のところ最も開発が進んでいると見なされていて，解析機能に優れた特徴を持つアーク・インフォ（ARC/INFO，米国エスプリ社開発，日本代理店パスコ）を適用することとし，このソフトウェアが持つ機能のうち，人口集中地区画定の作業工程に合わせ，①図形の入力，面積測定，②絶対的位置座標へのはめ込み処理，③図形の接合処理，④統計解析，⑤図出力，の各機能について実験を行った。

　入力実験の対象として，大都市近郊の中都市で，各種の地理的特徴を備えており，かつ，調査区地図の精度としては平均以下のものとし

て，茨城県土浦市の調査区地図（市区町村全図を含む20枚）について，調査区界及び調査区地図界を乾式コピーで複写したものにより入力した。

　　　〔土浦市〕人口：12万人　　世帯数：3万7千　　人口集中地区：3地区
　　　　　　　調査区数：約700

3　実験及びその結果
　(1)　調査区界の入力実験
　　ア　実験の内容
　　　　土浦市の調査区地図界及び調査区界を，ハンドデジタイザーを用いて複写した調査区地図から，直接，磁気テープに入力した。
　　　　ハンドデジタイザーは，ARC/INFOにおける入力システムで，ボード上に入力対象の地図を固定し，入力すべき境界線をスタイラスペンでなぞることにより磁気テープに入力するものである。入力することにより自動的に面積が計測される。その際，各図形に対する同コンピュータ上の識別番号であるラベル点を打つことになるが，この場合，人口中心点が記入されているものについては，その点をラベル点とした。
　　　　この図形の識別番号と調査区番号を照合するためのコーデングシートを別に作成し，これをパンチ入力する必要があるが，今回は量的に少ないこともあり，ハンドデジタイザーの入力と同時に，調査区番号をパンチ入力した。

　　イ　結果
　　　　入力した調査区界について出力図と元の調査区地図を照合したところ，一部に次のとおり一致しないものがあった。
　　　・　湖岸線，行政界など複雑な曲線をもつ場合。
　　　・　1調査区地図のうち，上部を一致させると下部が一致しないような場合。
　　　・　マイラーベースに出力したものと，紙に出力したものとで

一致しなかった。なお，マイラーベースの方が一致度が高かった。

　これらは，入力時にハンドデジタイザーの操作を丁寧に行うこと，又は，調査区地図の精度を向上（すなわち，調査区界の太さの大小，不明確さ等の排除）によって避けられるものと考えられる。一般的には，これらの不一致は微小なものと考えられ，その後の作業上からは大きな問題とはならないものと考えられる。

　そのほか，ラベル点，調査区番号の入力に関していくつかミスはあったものの，検査等の充実により解決され得る。

　また，拡大，縮小部分図について，入力の方法を画一しておく必要がある。

　さらに，コーディングシートの方法等も画一しておく必要がある。

(2) 調査区地図の市区町村全図等へのはめ込み実験

ア　実験の内容

　各調査区地図から調査区界を入力すると各調査区地図の境域も入力されるが，この調査区地図の境域を別に入力した市区町村全図上に，ジグソーパズルのようにあてはめる実験を行った。

　これは，人口集中地区画定作業において，予定地域を編成する際に必要なものである。

　また，土浦市の市区町村全図は縮尺が4万分の1で鮮明性に欠けるものであったので，別に茨城県を通して入手した土浦市都市計画図（縮尺1万分の1，以下1/1万計画図という。）上に調査区地図界を転記したものも入力し，これを用いての，はめ込み実験も行った。

　このはめ込みを行うためには，各地図の位置座標があれば容易であるが，調査区地図には，もともとこの位置座標を示す情報がないので，各調査区地図の位置を示す対象点を計測する方法ではめ込みを行った。

　この対象点を計測する方法は，各調査区地図とそのはめ込みの

もととなる基図上で同一場所を示す点，すなわち対象点を計測し，これをもとにはめ込みを行う方式で，地形・地物方式及び界線方式がある。

地形・地物方式は，各調査区地図内の地形・地物を４点選定するもので，界線方式は，調査区地図の境界線上の形状を基に４点選定するものである。

イ　対象点計測上の問題点

(ア) 1/1万計画図へのはめ込みは，地形・地物方式により行った。

この場合1/1万計画図の地図的精度が比較的良いこともあって，この対象点の不一致はほとんどなく，したがって，対象点の計測ミスによる，はめ込みのずれはほとんどないが，調査区地図間における境域の不一致による非接合が発生している。これは，調査区地図の精度上の問題であって，その非接合部分は，行政界あるいは，見通し線等の個所に多かった。

(イ) 市区町村全図へのはめ込みは，市区町村全図上の地形・地物が不明確であったので，地形・地物方式ではなく，界線方式により対象点の計測を行った。形状等により，同一地点を判断することが非常に難しいため，計測された対象点に不一致が見られ，そのため正確なはめ込みが行なわれない例がいくつかあった。

これを，解決するためアーク・インフォの機能の一つであるアフェイン変換を行ったが，これは，対象点のずれを境域全体に平均的に分散する機能であるため，はめ込みそのものはうまくいくとしても，もとの調査区の形状その他が変化してしまうという問題があった。

そのため，人口集中地区編成の重要な要素である連接状況の判断ができない場合が生じることになる。

ウ　今後の問題点

対象点のずれによって発生する問題は，その後の作業にも影響

を与えることから正確な計測が不可欠である。そのため，市区町村全図の精度の向上，あるいは界線方式と地形・地物方式の併用等を考慮する必要がある。また，必要に応じて市区町村全図については，精度が良く縮尺の大きい地図に転記するなどの方式を検討する必要がある。

なお，アフェイン変換の方法は極めてわずかな対象点のずれを修正する場合には，人口集中地区画定作業でも有効と思われるが，対象点の計測ミス等によるずれを修正する場合には誤差も大きくなるので問題である。

(3) コンピュータによる決めつけ接合処理

前記の，はめ込み実験の結果，調査区地図界が接合しない個所が生じるが，この接合しない個所をコンピュータの決めつけにより接合させる実験を行った。

この方法は，アーク・インフォの機能としていくつかあるが，人口集中地区画定作業に適用しうる方法としては，不必要とされる線を消去する方法が適当と考えられるので，この方法を実験した。この不必要とされる線を消去する方法として，例えば，はめ込みのもととなる全図の調査区地図界を優先させ，各調査区地図界を消去する方法と，非接合部分のうち短かい線を優先し，長い線を消去する方法がある。これらの方法は，いずれにしても周辺の調査区の形状は変化せざるを得ないため，人口集中地区設定作業上必要な連接の判断を誤る場合がある。

これまでの実験の結果，非接合が生じた原因を見ると，次のとおりである。

① 調査区地図そのものの不正確性又は，マニアルによる入力ミスから生じるもの。

② 計測した対象点によって生じたもの。

③ 対象点のずれを補正するための，アフェイン変換によって生じたもの。

上記①の非接合は，微小なものが大半であり，コンピュータによ

る決めつけ接合を行なっても，さほど大きな問題は生じないと考えられる。しかし，②，③の部分は，人口集中地区画定作業に問題が生じるので，こうした非接合部分が生じないよう工夫する必要がある。

(4) 統計解析機能

　計測した調査区別の面積と，別に付加した調査区別人口，世帯情報等を用いて，人口密度，世帯密度の計算，それらの分布データなどを作成した。

　これらについては，特に問題はなかった。

(5) 図出力

　コンピュータ・マップとして，次の4種類のものを出力した。

　　①　入力した調査区界そのものを，マイラーベースに出力

　　②　はめ込み実験したものを，マイラーベースに出力

　　③　コンピュータ決めつけにより接合したものを，都市計画図及びマイラーベースに出力

　これらについては，出力作業そのものには問題はなく，これまで検討された問題点がこれらの図に表現された。

　なお，入力された調査区地図界を，背景情報のある地図へ出力した場合には，背景情報である同一地物上への出力はできない場合がある。したがって，人口集中地区境界原図（縮尺2.5万分の1）の作成に当たっては，手作業による部分も考慮することが必要である。

4　今後の課題

　(1) アーク・インフォ以外のソフトウェアを用いての実験

　(2) アーク・インフォを用いての今後の検討課題

　　　ア　調査区地図界入力時の精度向上

　　　　・　検査システムの確立

　　　イ　はめ込み方法上の改善

　　　　・　市区町村全図の精度向上

・　対象点計測方法の改善

　　　　・　界線方式及び地形・地物方式の併用の検討

　　ウ　コンピュータ決めつけ

　　　　・　コンピュータ決めつけによる部分の限定化

(3) シミュレーションの再実験

　　今回の実験は，はめ込み，あるいは非接合の問題を探ることが主
であったので，これらの問題点を含めたシミュレーション実験となっ
た。

　　したがって，正確な入力結果等によるシミュレーション実験を再
度行なう必要がある。

(4) その他

新人口集中地区の設定とセンサス・マッピング・システムの適用
について

1．趣旨

　　人口集中地区については，市町村内のいわゆる市街地を区画し，
　その区域の結果を表章するため，昭和３５年国勢調査時以降，各回
　国勢調査ごとに設定されその結果の公表が行われてきた。この人口
　集中地区の結果は，行政上その他の資料として，各方面で利用され
　る重要なものである（利用状況は別紙１のとおり）。

　　この設定の基準及び方法については，時系列上の断層の発生を避
　けるため，昭和３５年国勢調査時に定められたものをそのまま用い
　てきている。

　　しかし，実態その他の状況等から今後同様な形で行って行くこと
　は困難で，今後の人口集中地区のあり方等を研究した上，新しい人
　口集中地区を設定しその結果を公表していく必要がある。

　　これを実現するためには，センサス・マッピング・システムを活
　用することが必要である。

　　センサス・マッピング・システムにより，新人口集中地区を設定
　し，これを平成５年に公表することを前提として，基本単位区界の
　磁気テープ入力等の実験，新人口集中地区の研究を進めた上，全基
　本単位区界の磁気テープ入力及びセンサス・マッピング・システム
　の導入を図ろうとするものである。

２．人口集中地区設定の基準及び方法の見直しの必要性

(1) 人口集中地区は，次の三つの基準に合致する区域として画定されている。

　　① 市区町村の境域ごとに

　　② 人口密度1平方キロメートル当たり約4000人以上の調査区が互いに隣接して

　　③ 全体として，人口が5000人以上を形成する。

(2) こうした基準に沿って，人口集中地区を設定するため，これまでは，各調査区ごとに

　　① 各調査区の境域を調査区地図の写しから切り取り

　　② これを面積測定器にかけて面積を測定し

　　③ 1調査区平均250人という平均的基準から算定した人口密度1平方キロメートル当たり約4000人となる面積(0.0625平方キロメートル)，以下となる調査区を選定した上

　　④ 調査区地図(写し)上で，この調査区を特定し，これらが隣接しているか否かの判定を行ない

　　⑤ これらの隣接した区域の全体の人口が，当該国勢調査結果の確定人口により5000人以上を有するかどうかを判定する。

という方法により人口集中地区の設定を行ってきた。

(3) しかし，この基準及び方法には，手作業による限界及び時系列比較の必要性等により，次のような問題があり，今日に至っているが，現在では，実態との乖離が拡大しているため，つぎのような観点から見直しを行う必要がある。

　　① 上記(2)の調査区平均人口による面積基準を用いたのは，③及び④の作業が，膨大でかつ短期間に終了させなければならないために用いられたものであるが，近年の平均世帯

人員の減少のため，1調査区当たり人口は昭和35年当時は約250人であったが，昭和60年では1調査区当たり156人と減少している。

このため，人口密度が1平方キロメートル当たり約4000人に満たない調査区までも人口集中地区に含められてしまっている。

しかし，短絡的にこの問題を解決しようとすると，時系列比較が不可能となるため利用上不便をきたすことになる。

この点も含め，設定の基準及び方法を見直し，新人口集中地区の設定を検討する必要がある。

② 調査区を単位に人口集中地区が設定されているが調査区は，各回調査ごとに，特に市街地については，設定替えされることになり，したがって実態は変わらないにもかかわらず，調査区の区域が変わるために人口集中地区の区域も変わってしまうことがある。

これの解決のためには，集計上の恒久的な最小地域区分である基本単位区を用いることにより解決されるが，そうするためには，設定基準の見直しはもちろん，基本単位区の量(調査区の約2.4倍)を考慮しての作業計画も検討する必要がある。

3. センサス・マッピング・システムを適用する必要性

(1) センサス・マッピング・システムの人口集中地区設定作業への適用

センサス・マッピング・システムは，一般には，地理情報システムと言われ，磁気テープ化された各種地理情報と各種統計情報を連結し，計算，分析，図化等の機能を備えた一連のシステムである。これを人口集中地区の設定作業に適用すると，次のような手順となる。

コンピュータに直結したハンドデジタイザーを用いて，調査区地図上に描かれている調査区（基本単位区）界の界線をなぞることにより，その形状が位置座標に変換され磁気テープ上に読み込まれると同時に，各基本単位区の面積が自動的に計算され記録される。これに人口情報を付加することにより各基本単位区ごとの人口密度が計算される。

さらに，磁気テープに入力された調査区地図は市町村，都道府県又は全国の各レベルに各調査区地図の地理的位置にはめ込まれ，各基本単位区の隣接状況もコンピュータで認識される。

これにより，各種基準による同一の基本単位区が寄せ集まった区域の特定を行うことができる。

したがって，人口集中地区の予定地域の編成も，このシステムで行うことが可能で，かつ，コンピュータ処理であるから，新人口集中地区開発のための各種基準によるシミュレーションも可能となるものである。

(2) センサス・マッピング・システムを適用することのメリット

ア　基本単位区界をコンピュータに入力すると同時に，面積の測定ができ，他の人口情報とのコンピュータ内連結及び記録が可能であるから，従来の面積測定器へかけるための調査区界片の切り抜き作業，測定した面積データの整理などの作業が省略できる。

イ　人口集中地区予定地域の編成が，コンピュータで行えるから，そのための手間が省けるとともに，各種のシミュレーションも人手を要することなく可能となる。

ウ　基本単位区数は調査区の約2.4倍と見込まれるが，そうし
　　　た大量のものを使用しての各種作業も可能となる。

(3) センサス・マッピング・システムを適用することの必要性
　　基本単位区をベースとした新人口集中地区の設定が必要である
　ことは既に述べたとおりであるが，そのためには，早期の公表の
　必要があるため，大量の人手を要することになるが，これは不可
　能である。
　　また，新しい人口集中地区を設定するに当たっては，時系列比
　較等も考慮することが必要であることなどから，各種の基準によ
　り，シミュレーションを行う必要があり，これは人手で行うこと
　は不可能である。
　　したがって，上記のメリットを持つセンサス・マッピング・シ
　ステムを適用することは不可欠である。

4．平成5年に新人口集中地区の平成2年国勢調査結果を公表する必要性

　　平成2年国勢調査による人口集中地区の結果についても，従来と同様の時期に公表する必要があり，そのためには，問題が内在しているにしても，従来と同じ方法により設定し，その結果を公表する。
　　一方，新人口集中地区の設定についても，時系列の比較を考慮すると，平成2年国勢調査によるものをも作成する必要があるため，平成7年国勢調査による新人口集中地区の公表前に，平成2年国勢調査によるものを設定し，公表していく必要がある。
　　しかし，設定される新人口集中地区は，これまでと同様，今後20年，30年と使用していくこととなるものであるから，その基準や方法の策定に当たっては慎重を期す必要がある。
　　そのため，平成元年度から平成4年度にかけて，研究，実験を進め，平成5年度に新人口集中地区の結果の公表を行うものである。

5．人口集中地区画定作業以外の各種業務への適用

　　人口集中地区画定作業のために，導入されるセンサス・マッピング・システム及び入力される基本単位区情報は，次のような業務にも適用することが可能で，そのため結果の正確化，省力化等が図られることになる。

(1) 統計地図作成作業

　　① 人口分布図の作成
　　　　ドットの位置を決める人口密集地域の特定が可能である。

　　② 人口地図の作成
　　　　市区町村単位だけでなく，調査区又は基本単位区を単位とした人口地図の作成作業が可能となる。
　　　　主題，階級区分，配色等の選定に当たって最適の人口地図の検討が可能である。

(2) メッシュ同定作業
　　機械で同定が可能となり人手が省ける。絶対的位置（経緯度）のメッシュ線による同定が可能となるため，同定作業の正確化が図れる。

(3) 小地域区分の設定及びデータ提供
　　調査区単位による各種小地域区分の設定及びデータ提供が容易となる。

(4) 標本調査区の抽出
　　調査区の絶対的距離と地理的情報を踏まえた標本調査区の抽出が可能となる。
　　調査区の絶対的位置が付加されることにより，調査区が変化しても同一地域の重複調査の排除ができる。

(5) 小地域区分による統計の作成及び分析
　　地理情報を絡めた地域分析が可能となる。

別紙1

人 口 集 中 地 区 の 利 用

1 法令上の利用

（1）地方交付税

ア 地方交付税法第13条第7項

態容補正を行う場合に市町村の階級（種別）区分をする一つの指標として人口集中地区人口を使用

イ 地方交付税に関する省令 第10条第12項

・ 普通態容補正係数

「消防費」

国勢調査令によって調査した昭和60年10月1日現在における町村のうち人口集中地区がある町村を対象として係数0．60を乗ずる。

ウ 地方交付税に関する省令 第12条第2項

・ 投資態容補正係数

「河川費」

長大河川延長比率算出に当たり，対象から除く府県を特定する基準と成る数値を国勢調査令によって調査した昭和60年10月1日現在における人口集中地区面積を使用して算出する。

「その他の土木費」

人口集中地区人口比率を使用

「その他の諸費」

人口集中地区面積比率を使用

エ 地方交付税に関する省令 附則 第8条の2第1項第1号

・ 投資態容補正係数

「道路橋りょう費」

人口集中地区人口を使用

オ 地方交付税に関する省令 附則 第11条の2第1項第2号及び第3号

「交通安全対策特別交付金」

人口集中地区人口を使用

カ　環境衛生関係営業の運営の適正化に関する法律施行令　第1条の3第1項
第1号第2号及び第4

「理容業」

従業員を決定するための市町村区分に人口集中地区人口を使用

「美容業」

従業員を決定するための市町村区分に人口集中地区人口を使用

「クリーニング業」

従業員を決定するための市町村区分に人口集中地区人口を使用

(2) 租税特別措置法

ア　租税特別措置法施行規則　第6条第3項第2号ロ(2)，　第3号ハ若しくは
第4号ハ又は第20条の8第3項第2号ロ(2)，　第3号ハ若しくは第4号
ハ

・　特定再開発建築物に係る割増償却制度

申請に係る所在地が次に掲げる市の区域内にあり，かつ，人口集中地区
の区域内にある場合に，申請者に対し，総務庁長官の証明書を交付

①　都市再開発法施行令第1条の3に規定する市

②　最近の国勢調査の結果による人口が20万人以上の市

③　道府県庁所在の市

イ　租税特別措置法施行規則　第18条の5第3項若しくは第5項第7号又は
第22条の8第4項若しくは第6項第7号

・　市街地再開発事業の保留床取得に対する事業用資産の買換え特例制度の
適用対象地域の拡大（所得税・法人税）

申請に係る所在地が次に掲げる市の区域内にあり，かつ，人口集中地区
の区域内にある場合に，申請者に対し，総務庁長官の証明書を交付

①　都市再開発法施行令第1条の3に規定する市

②　道府県庁所在の市

3　その他の利用

(1) 人口集中地区及び準人口集中地区境界原図の閲覧による利用

ア	日本住宅公団	首都圏の地域構造分析
イ	茨城県土木部下水道課	都市集落の位置確認に利用
ウ	千葉県都市部下水道課	同上
エ	宮城県土木部下水道課	同上
オ	建設省都市局下水道部下水道企画課	同上（石川県，兵庫県，新潟県）
カ	日本交通公社	七つのモデル定住圏域における鉄道の利用促進策の検討資料
キ	建設省都市計画課	都市計画基準（市街化区域の設定条件）の検討資料
ク	農林水産省構造改善局地域計画課	集落の位置確認に利用（農村整備参考資料）
ケ	八王子市経済部商工観光課	将来人口予測
コ	郵政省郵政大臣官房経理部	従来，行政上の市郡別データを使用していたが，市部の実態に合わせて人口集中地区に換えたいと思っている。その検討資料
サ	警察庁交通企画課	防犯対策の一環としての検討資料

シ　以上公的機関以外
　　・大学生及び大学院生の研究論文資料
　　・建設省の委託を受けた設計関係会社
　　・都道府県の委託を受けた都市環境計画研究所

別紙 2　　　　　　　　　　　新人口集中地区設定及び結果の公表スケジュール

事　　　　　　　　項	平成元年度				平成2年度				平成3年度				平成4年度				平成5年度				平成6年度				平成7年度				平成8年度			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1　平成2年国勢調査による新人口集中地区の設定																																
(1) 基本単位区界の入力テスト（業者委託）(特定の1市)		─																														
(2) 基本単位区界の入力及びはめ込みテスト（業者委託）(中京圏3県)						─																										
(3) センサス・マッピング・システムの導入　ア コンピュータ及びソフトウェアの導入　イ カスタマイズ部分の開発及びテスト									─																							
(4) 基本単位区界の入力（残り44県）											────────																				
(5) 各種基準による人口集中地区画定のシミュレーション及び分析											───																				
(6) 各種基準による人口集中地区の画定及び利用者との検討													───																		
(7) 新人口集中地区の全面的設定と平成2年国勢調査結果の公表																	───														
(8) 研究会等の開催	4　回				4　回				4　回				(各省庁連絡会等を開催)																			
2　平成7年国勢調査による新人口集中地区設定とその公表																																
(1) 基本単位区の修正，その他																							───								
(2) 要計表人口に基づく予定地域の編成																											───				
(3) 新人口集中地区の確定																													───		
(4) 平成7年国勢調査による新人口集中地区の結果の公表																													注1) ───			

注1) 平成2年国勢調査による新人口集中地区の結果との比較分析をも行う。

従来の方式とセンサス・マッピング・システム方式との比較　（人口集中地区画定作業）

業　務　の　流　れ

（センサス・マッピング・システム方式）　　　　調　査　区　地　図　　　　　（従来の方式）
（約200万基本単位区，約5万枚）

各1枚　　　　　　　　　　　各2枚

一枚は切り抜き用，他の
一枚は人口集中地区予定
地域の編成用。

ハンドデジタイザーで基
本単位区界を入力，基本
単位区番号をパンチ入力
する。

基本単位区界及び，
基本単位区番号の入
力

調査区の切り抜き

各調査区を手により切り
抜く。

ハンドデジタイザーと直
結したシステムの中で面
積を測定し，別に入力し
た人口情報と合わせ人口
密度を自動的に計算する。

基本単位区別面積の
自動計測及び人口密
度計算

調査区別面積の測定

面積測定機に切り抜いた
ものをかけて面積を測定
する。

調査区別人口密度の
計算

調査区ごとの面積及び人
口をパンチ入力し人口密
度を計算する。

人口密度による画定基準
に基づく予定地域をコン
ピュータ内で編成する。

人口集中地区予定地
域の編成

調査区地図上での人
口集中地区予定地域
の編成

人口密度基準に基づく予
定地域を調査区地図上に
手で転記する。

統一された縮尺の地図に
重ね得る人口集中地区境
界原図をコンピュータに
より作成する。

人口集中地区境界原
図の作成

各調査区の接合，人口確
定数による見直し，都市
的施設の存在などの審査
・修正を必要に応じて調
査区地図も参照しながら
行う。

審査及び修正

各調査区の接合，人口確
定数による見直し，都市
的施設の存在などの審査
・修正を行う。

人口集中地区境界原
図の作成，審査及び
修正

調査区地図は縮尺が大き
く，かつ，必ずしもこれ
を統一することが適当で
ないため，縮尺が小さく
統一された縮尺の地図に
転記した上，再度，審査
修正を行う。

人口集中地区境界図
の印刷・校正

（備　考）　これは，人口集中地区画定作業を図化したもので，センサス・マッピング・システムを利用するこ
とにより，人口分布図などの統計地図の作成の機械化，新しい統計地域区分による必要な統計の作成
表示が可能となる。

基本単位区について

基本単位区は次のような方法により，区画された境域である。

1　住居表示実施済地域においては，住居表示に関する法律でいう街区を基本単位区とする。なお，街区は，市町村内の町又は字の区域を道路，鉄道若しくは軌道の線路その他の恒久的な施設又は河川，水路等によって区画された地域で，世帯数はおおむね20〜30戸，面積はおおむね3,000〜5,000平方メートルの大きさが目安となっている。

2　住居表示実施済地域以外の地域では，上記1でいう街区の基準に沿って，区画された区域を基本単位区とする。

3　なお，以上の区画内に国勢調査結果の集計上必要な地域区分の境界があった場合には，これにより分割した区域を基本単位区とする。

4　基本単位区の区画の例を図示すると次のとおりである。

例図1　河川の区域を一つの基本単位区に含めた例
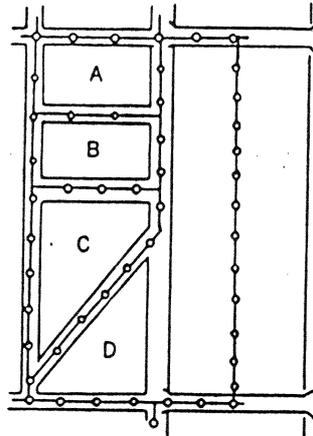
河川の区域を一つの基本単位区（D基本単位区）に含める。

例図2　街区又は街区に準じる区画を旧市町界で分割し，それぞれを基本単位区とした例
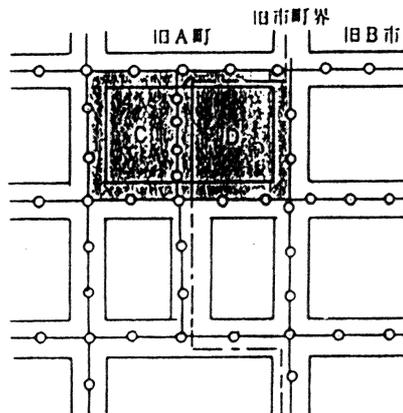
明りょうな地物で囲まれた境域として，網模様の区域全体で1基本単位区とすべきものであるが，結果集計上必要な旧市町界があるのでこの境界で区切ってC及びDの二つの基本単位区とした。

基本単位区の必要性

　従来から，調査員の担当区域を示す調査区を利用して，各種小地域統計の作成が行なわれてきたが，調査区は，調査員としての仕事量の均一化を図るという趣旨から，調査対象である世帯数（50世帯）を主たる基準として設定されているため，境域の性格が，地番界，自治会等の境界によるなど一様でないほか，その境界が各回の国勢調査ごとに，変更されることになる。そのため，小地域統計の需要の増加及び多様化が進んでいる最近の状況から，調査区を小地域統計の作成の単位として利用することが適さなくなった。

　そこで，小地域統計を必要とする各方面からの要望もあって，平成2年国勢調査から，各種の小地域統計の作成が可能であり，かつ，同一地域における過去のデータの作成も可能となるような，地理的に明りょうで恒久的な区画，すなわち基本単位区を設定することとした。

　一方，調査区設定事務の効率化の必要性及び標本調査の増加に伴う，調査対象の負担軽減に対処するためにも，この基本単位区の設定が必要となっている。

　これらについて具体的に述べると次のとおりである。

1　各種小地域統計の作成

　調査員は，調査区を受け持つことになるが，この場合，調査票等の整理を当該調査区内にある基本単位区ごとに行うことにより，基本単位区別の集計ができる。

　一方，基本単位区は，地理的にも小さな区画で市町村内の各種行政区域，あるいは町丁・字などの地域区分の境域をまたがることなく設定されるから，基本単位区別結果を用いることにより，こうした地域区分へのまとめあげが可能となり，小地域統計に係る各種需要に応じることができる。

　さらに，この基本単位区の境域は，恒久的に用いることを前提としているから，当該時点だけでなく，過去における基本単位区別結果があれば，これのまとめあげをすることにより，同一地域内の人口等の変動状況をも把握可能となる。

　このようにして利用できる小地域区分の例は，別紙1に掲げると

おりである。

これらのうちの具体的な利用の例をいくつか挙げると次のとおりである。

(1) 学校区単位の男女年齢別人口等から，将来の当該学校区の学童人口の把握が可能となるが，その変動の状況によって，学校区割の変更又は学校の新設，廃止等の検討の資料として利用できる。

(2) 上水道管轄区域の場合には，各管轄区域の人口，世帯又は昼間人口等を把握し，過去の比較が可能となるが，その変動の状況によっては，上水道配管等の敷設の検討データとして利用できる。

(3) 投票所区についていうと，投票所区ごとの年齢別人口及びその変動等を把握することにより，投票所の場所，設置の組み替え等を検討する資料として利用できる。

2　調査区の設定

基本単位区は，街区又は街区に準じた区画であるから，明りょうな地物により区画され，世帯数規模としても20〜30世帯の区画となっている。したがって，地続きの基本単位区をおおむね50世帯になるように組み合わせることで，調査区の設定が可能となる。

すなわち，従来は調査区を設定する際，現地を巡回しておおむねの世帯数を把握した上，調査区の設定を行った。この場合，おおむね50世帯という基準があるため，50世帯となるような地域を現地で，世帯数を数えながら特定し，調査区の画定を行った。これに対し，基本単位区が設定されていると，基本単位区ごとの世帯数を現地で把握した上，これにより，机上で50世帯となるよう組合せの検討及び調査区の設定が可能となるから，従来よりも正確かつ容易な設定が行なわれる。

3　標本調査での対象地域の重複排除（調査環境悪化に対する対応）

標本調査における標本の抽出の単位として調査区が抽出される。

この場合，無作為に抽出されるのが原則であるから，ある調査で抽出された調査区が，別の調査においても抽出されることがあり，その場合に当該調査区内に居住する世帯から，協力が得られないという苦情が多く出されている。そのため，調査員及び調査員を指導

する地方から，例えば，ある調査で抽出された調査区については，数年間は，他の調査では抽出しないという措置がとれないかという要望が多く出されている。

　調査区は，各回国勢調査ごとに，番号も境域も変わってしまうから，過去のある標本調査で抽出されたかどうかについては，把握できないが，基本単位区が設定されると，基本単位区が，どの調査区に当てはまるかという情報が各回調査ごとに把握されるから，この基本単位区を通じて，調査区が，過去の標本調査で抽出された区域であるかどうかの把握が可能となる。これにより，ある標本調査の標本抽出をする際，例えば，過去5年間に他の標本調査で抽出された区域以外の区域から，調査区の抽出を行うことが可能であるから，調査対象者の協力を円滑に得ることができる。

別　紙

基本単位区に基づき，統計編成を行う地域区分の例

1　広域行政区域
   ・　都市計画区域，地域開発計画区域，交通計画区域，防犯・防災計画区域，環境・衛生
     計画区域など
2　市町村内小地域区分
   ・　町丁・字，支所・出張所区，学校区，町内会，自治会，連合自治会・町内会，保健所
     管轄区域，消防署管轄区域，上・下水道管轄区域，地域の特性（オフィス街，繁華街，
     商圏，工場地区，市街地，農業地域など），選挙区，投票所区など
3　その他
   ・　人口集中地区，メッシュ同定など

附録7：OMR機器　解説

# OMR (Optical Mark Reader)

System Configuration


```
┌──────────────┐        (Mark Data)      ╭─────────────────╮
│              │──────────────────────▶  │ Magnetic tape unit │
│    OMR       │                         │   (N9814-31)     │
│         ╭────┴─────╮                   ╰─────────────────╯
└─────────│ Console  │
          │(PC-9800LV)│       (Image Data)   ┌─────────────┐
          ╰──────────╯────────────────────▶ │      ○      │
             │                               │ Optical disk unit │
             │                               └──(N9816-32)──┘
             │
             │                               ┌─────────────┐
             └─────────────────────────────▶ │   Printer   │
                                             │  (N9816-35) │
                                             └─────────────┘
```
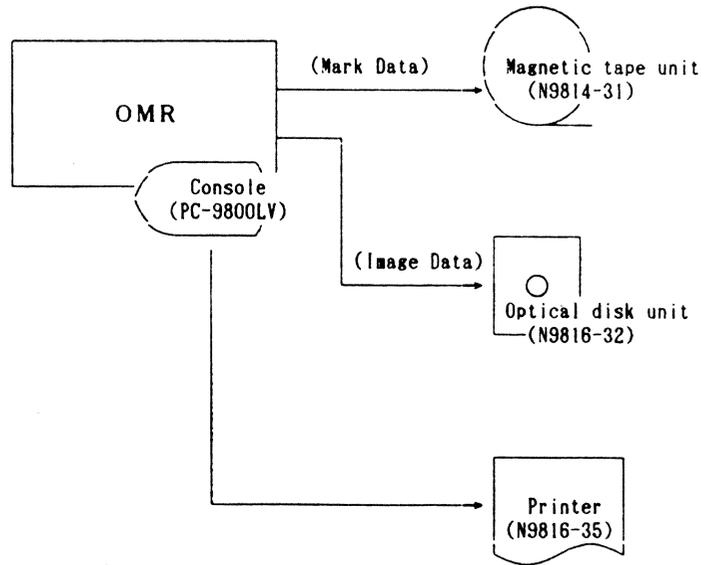
Specification

Reading speed	150 sheets/minute (Sheet size 364 X 257 mm)
	180 sheets/minute (Sheet size 297 X 210 mm)

Marks	———————— Filing Media Magnetic tape	
Size of marking box	(1.5 - 2 mm) X (3 - 4mm)	
Interval of marking box	Longitude min. 4.5 mm	
	Lateral 6.5 mm (regular interval)	
Number of marks	(74 X 37)/sheet (Max. 2,738 marks)	
Other features	Simultaneous reading of both sides	
	Programable software control (such as mark	
	to code conversion for each survey item)	

Images	———————— Filing Media Optical disk	
Size of image	Max. 70 X 175mm	
Number of portions	1 portion on each side	
Other features	Reading side is selectable	
Hopper	1,000 sheets, Automatic conveyer system	
Stacker	Output stacker is changeable automatically by specific kind of sheet	
	2 stackers (500 sheets each) for accepted sheets	
	1 stacker (200 sheets) for rejected sheets	
Monitoring system	Information is printed automatically when trouble occurs	
Magnetic tape unit	Recording density 6,250 bytes/inch	
	Data transfer speed 800 Kbytes/sec.	
Optical disk unit	Capacity 3.6 Gbytes	
	Data transfer speed 452 Kbytes/sec.	
	Recording method Constant line speed, non-erasable	
Printer	Type Kanji (Japanese character) serial printer	
	Printing speed 320 characters/sec.	
	Font 7,014 characters (Include alphanumeric letters)	
	Width 136 alphanumeric letters /line	

OMR (Optical Mark Reader) System Configuration

OMR

Reading speed   150 sheets/minute (Sheet size 364 ×257 mm)

Optical disk unit

Magnetic tape unit

Sheet feeder

Stacker

Console

Capacity : 3.6Gbytes
about 50,000 sheets
(Sheet size 297 ×210 mm)

(Mark Data)

(Image Data)

Printer
320 characters/sec.

ONLINE DATA PROCESSING

Questionnaire	OMR	MT	ACOS 950		OP (Office Processor)	Terminal

ABCDE

Questionnaire

Input
Code and
Image Data

MT
code
data

ACOS
950

Optical
Disk

image
data

Optical
Disk
Unit

OP
(Office
Proce-
ssor)

Terminal

Code and
Image

Image
Printer

Code and
Image

Host Computer

Terminal
(Distributed Processing System)

附錄8 : 日本의 住民登錄制度 槪要 및 住民登錄法

9 住民基本台帳制度のあらまし

住民基本台帳制度とは，市町村（東京都の特別区を含む。以下同じ。）において，その住民について記録するための基本的な制度です。

市町村が，その区域内の住民に対して，ゆきとどいた，もれのない行政事務を行うためには，正確な記録が必要なことはいうまでもありません。そして，その記録を作るためには，住民から，住所を変更したときなどには届出をしてもらわなければなりません。その届出に基づいて，市町村は住民についての記録を作り，選挙人名簿や学齢簿等の作成，居住関係の公証その他あらゆる住民に関する事務の基礎としようとするものであります。

住民基本台帳制度は，このような住民の住所の変更などに関する届出及びこれに基づき市町村が住民に関する記録を正確かつ統一的に行うための制度であり，住民に関するすべての事務の処理の基礎となるものであります。

従来，市町村において住民を記録するものとしては，住民登録制度があり，住民基本台帳制度は，これを踏襲したものではありますが，さらに住民の住所の変更などによる届出に関する制度を統合し，簡素化するとともに，住民に関する各種の台帳に関する制度をも統合することにより住民の利便を増進し，行政の近代化に対処するため，昭和42年に定められたものであります。

住民基本台帳制度のしくみ

住民基本台帳制度は，おおよそ次のようなしくみになっています。

1 住民基本台帳

市町村は，その住民について記録した住民票で構成される住民基本台帳を備えることとされています。住民票は，住民の届出または市町村長の職権によって作成され，おおむね次のことがらが記載されます。

(1) 氏名，生年月日，男女の別，世帯主の氏名及び世帯主との続柄，本籍，住所
(2) 選挙人名簿に登録の事実
(3) 国民健康保険及び国民年金の被保険者の資格に関する事項
(4) 児童手当の支給を受けている者の資格に関する事項

この住民基本台帳は，住民に関するあらゆる事務の処理の基礎となるものであり，選挙人名簿や学齢簿は，住民基本台帳の記録にもとづいて作られ，また，国民健康保険，国民年金，児童手当，印鑑証明などの事務も，住民基本台帳を基礎として行われます。

2 戸籍の附票

住民票に記載されることがらの一部は，戸籍簿にも記載されています。ですから，戸籍と密接に連絡することによって，住民票の正確性や利用価値も高まります。そこで，本籍地に戸籍の附票がおかれ，その人の住所に変更があった場合や新しく住所を定めた場合に，住所地の市町村からの通知によってその新しい住所が戸籍の附票に記載されます。また逆に，戸籍の届出によって住民票の記載の修正を要するときには，本籍地の市町村長から住所地の市町村長に通知がなされ，住民票がなおされます。

3 届　　出

住民基本台帳制度で住民に届出を義務づけているものは，次のとおりです。

(1) よその市町村から住所を移してきたときは，14日以内に転入届をすること。

(2) 同じ市町村内で住所を移したときにも，14日以内に転居届をすること。

(3) よその市町村に住所を移そうとするときには，前もって現住所地の市町村に転出届をすること。

(4) 世帯主が変わった場合または世帯の所属が変わった場合には，その日から14日以内に世帯変更届をすること。

　住民が住所・世帯を変更したことにともなうあらゆる届出は，以上の届出をすればよいことになっています。なお，転出届と転入届との手続きを図示すると別図のようになります。

　届出は，それぞれ本人がしなければなりませんが，世帯主が本人に代わってすることもできます。また，本人が届出をすることができないときには，世帯主が届出義務者になります。

　届出義務者が，正当な理由なしに期間内に届出しないときには，5,000円以下の過料に処せられます。

4　そ　の　他

　住民基本台帳法の定めるところにより市町村長が行った処分について不服がある場合には，異議の申立てをすることができます。そして，この裁決に不服のある場合には，都道府県知事に審査請求をすることができます。

（別　図）
転出届と転入届との関係・手続き
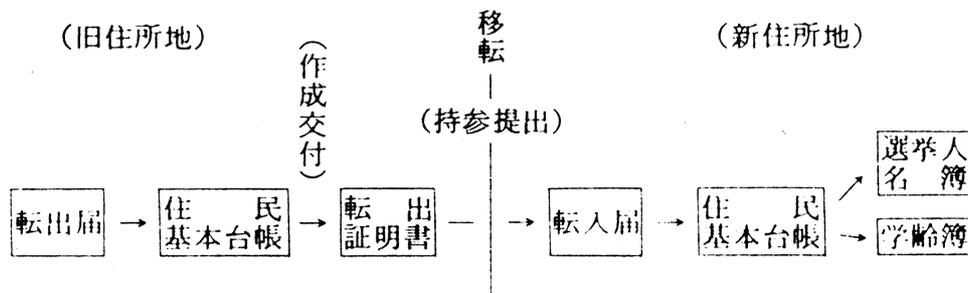
（届出事項）
1　氏名
2　転出先
3　転出予定年月日
(4)　国民健康保険被保険者証記号番号
(5)　国民年金の被保険者である旨
(6)　児童手当の支給を受けている旨

（届出事項）
1　氏名
2　住所
3　転入年月日
4　前住所
5　世帯主との続柄
(6)　国民健康保険の被保険者である旨および職業
(7)　国民年金手帳の記号番号
(8)　児童手当の支給を受けていた旨

（注）　○印のある事項は，それぞれ国民健康保険または国民年金の被保険者，児童手当の支給を受けている者が届出書に附記するもので，この届出書に国民健康保険被保険者証または国民年金手帳を添えて届出をすることとされています。

住所と世帯の意味

(1) 住　　所

　地方自治法第10条では，市町村の区域内に住所を有する者をその市町村の住民とすると規定してあります。そして，民法第21条は，生活の本拠をその住所とすると定めています。住民基本台帳法でいう住所も，公職選挙法や国民健康保険法などでいう住所も同じ意味で使われていることはいうまでもありません。生活の本拠とは，一般的な私的生活の中心であり，職業上の活動場所などではありません。住所の認定にあたっては，客観的な居住の事実を基礎とし，これに本人の主観的な居住の意思をあわせて決定します。

(2) 世　　帯

　世帯とは，居住と生計を共にする社会生活上の単位をいいます。営業のための使用人，寄宿舎などの居住者などは，居住が一緒であっても生計を共にするものではないので，各人がそれぞれの世帯をつくっているとみられます。

　世帯員のうちで，その世帯を主宰する者を世帯主といいます。

10 住民基本台帳法

第1章　総　　則

（目　的）

第1条　この法律は，市町村（特別区を含む。以下同じ。）において，住民の居住関係の公証，選挙人名簿の登録その他の住民に関する事務の処理の基礎とするとともに住民の住所に関する届出等の簡素化を図り，あわせて住民に関する記録の適正な管理を図るため，住民に関する記録を正確かつ統一的に行う住民基本台帳の制度を定め，もつて住民の利便を増進するとともに，国及び地方公共団体の行政の合理化に資することを目的とする。

　　（昭60法76・一部改正）

（国及び都道府県の責務）

第2条　国及び都道府県は，市町村の住民の住所又は世帯若しくは世帯主の変更及びこれらに伴う住民の権利又は義務の異動その他の住民としての地位の変更に関する市町村長（特別区の区長を含む。以下同じ。）その他市町村の執行機関に対する届出その他の行為（次条第3項及び第21条において「住民としての地位の変更に関する届出」と総称する。）がすべて一の行為により行なわれ，かつ，住民に関する事務の処理がすべて住民基本台帳に基づいて行なわれるように，法制上その他必要な措置を講じなければならない。

　　（昭44法30・一部改正）

（市町村長等の責務）

第3条　市町村長は，常に住民基本台帳を整備し，住民に関する正確な記録が行われるように努めるとともに，住民に関する記録の管理が適正に行われるように必要な措置を講ずるよう努めなければならない。

　　（昭60法76・一部改正）

2　市町村長その他市町村の執行機関は，住民基本台帳に基づいて住民に関する事務を管理し，又は執行するとともに，住民からの届出その他の行為に関する事務の処理の合理化に努めなければならない。

3　住民は，常に，住民としての地位の変更に関する届出を正確に行なうように努めなければならず，虚偽の届出その他住民基本台帳の正確性を阻害するような行為をしてはならない。

　　（昭44法30・追加）

4 何人も，住民基本台帳の閲覧又は住民票の写し，住民票に記載をした事項に関する証明書若しくは戸籍の附票の写しの交付により知り得た事項を使用するに当たって，個人の基本的人権を尊重するよう努めなければならない。
　　（昭60法76・追加）
（住民の住所に関する法令の規定の解釈）
第 4 条　住民の住所に関する法令の規定は，地方自治法（昭和22年法律第67号）第10条第1項に規定する住民の住所と異なる意義の住所を定めるものと解釈してはならない。
　第2章　住民基本台帳
（住民基本台帳の備付け）
第 5 条　市町村は，住民基本台帳を備え，その住民につき，第7条に規定する事項を記録するものとする。
（住民基本台帳の作成）
第 6 条　市町村長は，個人を単位とする住民票を世帯ごとに編成して，住民基本台帳を作成しなければならない。
2　市町村長は，適当であると認めるときは，前項の住民票の全部又は一部につき世帯を単位とすることができる。
3　市町村長は，政令で定めるところにより，第1項の住民票を磁気テープ（これに準ずる方法により一定の事項を確実に記録しておくことができる物を含む。以下同じ。）をもって調製することができる。
　　（昭60法76・追加）
（住民票の記載事項）
第 7 条　住民票には，次に掲げる事項について記載（前条第3項の規定により磁気テープをもつて調整する住民票にあつては記録。以下同じ。）をする。
　　（昭60法76・一部改正）
　一　氏　名
　二　出生の年月日
　三　男女の別
　四　世帯主についてはその旨，世帯主でない者については世帯主の氏名及び世帯主との続柄
　五　戸籍の表示。ただし，本籍のない者及び本籍の明らかでない者については，その旨
　六　住民となった年月日
　七　住所及び一の市町村の区域内において新たに住所を変更した者については，その住所を定めた年月日
　　（昭60法76・一部改正）
　八　新たに市町村の区域内に住所を定めた者については，その住所を定めた旨の届出の年月日（職権で住民票の記載をした者については，その年月日）及び従前の住所
　　（昭60法76・一部改正）
　九　選挙人名簿に登録された者については，その旨
　十　国民健康保険の被保険者（国民健康保険法（昭和33年法律第192号）第5条及び第6条の規定による国民健康保険の被保険者をいう。第28条及び第31条第3項において同じ。）である者については，その資格に関する事項で政令で定めるもの
　　（昭58法83・一部改正）
　十一　国民年金の被保険者（国民年金法（昭和34年法律第141号）第7条その他政令で定

める法令の規定による国民年金の被保険者をいう。第29条及び第31条第3項において同じ。）である者については，その資格に関する事項で政令で定めるもの

（昭58法83・一部改正）

十一の二　児童手当の支給を受けている者（児童手当法（昭和46年法律第73号）第7条の規定により認定を受けた受給資格者をいう。第29条の2及び第31条第3項において同じ。）については，その受給資格に関する事項で政令で定めるもの

（昭46法73・追加，昭58法83一部改正）

十二　米穀の配給を受ける者（食糧管理法（昭和17年法律第40号）第8条の4の規定に基づく政令の規定により米穀の配給が実施される場合におけるその配給に基づき米穀の配給を受ける者で政令で定めるものをいう。第30条及び第31条第3項において同じ。）については，その米穀の配給に関する事項で政令で定めるもの

（昭56法81，昭58法83・一部改正）

十三　前各号に掲げる事項のほか，政令で定める事項

（昭60法76・追加）

（住民票の記載等）

第8条　住民票の記載，消除又は記載の修正（以下「記載等」という。）は，政令で定めるところにより，この法律の規定による届出に基づき，又は職権で行なうものとする。

（住民票の記載等のための市町村長間の通知）

第9条　市町村長は，他の市町村から当該市町村の区域内に住所を変更した者につき住民票の記載をしたときは，遅滞なく，その旨を当該地の市町村の市町村長に通知しなければならない。

2　市町村長は，その市町村の住民以外の者について戸籍に関する届書，申請書その他の書類を受理し，又は職権で戸籍の記載をした場合において，その者の住所地で住民票の記載等をすべきときは，遅滞なく，当該記載等をすべき事項をその住所地の市町村長に通知しなければならない。

（選挙人名簿の登録等に関する選挙管理委員会の通知）

第10条　市町村の選挙管理委員会は，公職選挙法（昭和25年法律第100号）第22条第1項若しくは第2項若しくは第26条の規定により選挙人名簿に登録したとき，又は同法第28条の規定により選挙人名簿から抹消したときは，遅滞なく，その旨を当該市町村の市町村長に通知しなければならない。

（昭44法30・一部改正）

（住民基本台帳の閲覧）

第11条　何人でも，市町村長に対し，住民基本台帳の閲覧を請求することができる。

2　前項の請求は，請求事由その他自治省令で定める事項を明らかにしてしなければならない。ただし，自治省令で定める場合には，この限りでない。

3　市町村長は，第1項の請求に対し，政令で定めるところにより，住民基本台帳に代えて，住民基本台帳又はその一部の写し（第6条第3項の規定により磁気テープをもって住民票を調製することにより住民基本台帳を作成している市町村にあっては，当該住民基本台帳又はその一部に記録されている事項を記載した書類。第44条において同じ。）を閲覧に供することができる。

4　市町村長は，第1項の請求が不当な目的によることが明らかなとき又は住民基本台帳の閲覧により知り得た事項を不当な目的に使用されるおそれがあることその他の当該請求を拒む

に足りる相当な理由があると認めるときは、当該請求を拒むことができる。

（昭60法76・全部改正）

（住民票の写し等の交付）

第12条　何人でも、市町村長に対し、住民票の写し（第6条第3項の規定により磁気テープをもって住民票を調製している市町村にあっては、当該住民票に記録されている事項を記載した書類。以下同じ。）又は住民票に記載をした事項に関する証明書（以下「住民票記載事項証明書」という。）の交付を請求することができる。

2　前項の請求は、請求事由その他自治省令で定める事項を明らかにしてしなければならない。ただし、自治省令で定める場合には、この限りでない。

3　市町村長は、第1項の住民票の写しの交付の請求があったときは、特別の請求がない限り、第7条第4号、第5号及び第9号から第13号までに掲げる事項の全部又は一部の記載を省略した写しを交付することができる。

4　市町村長は、第1項の請求が不当な目的によることが明らかなときは、これを拒むことができる。

5　第1項の請求をしようとする者は、郵便により、同項の住民票の写し又は住民票記載事項証明書の送付を求めることができる。

（昭60法76・全部改正）

（住民基本台帳の脱漏等に関する委員会の通報）

第13条　市町村の委員会（地方自治法第138条の4第1項に規定する委員会をいう。）は、その事務を管理し、又は執行するに当たって、住民基本台帳に脱漏若しくは誤載があり、又は住民票に誤記若しくは記載漏れがあると認めるときは、遅滞なく、その旨を当該市町村の市町村長に通報しなければならない。

（住民基本台帳の正確な記録を確保するための措置）

第14条　市町村長は、その事務を管理し、及び執行することにより、又は第10条若しくは前条の規定による通知若しくは通報若しくは第34条第1項若しくは第2項の調査によって、住民基本台帳に脱漏若しくは誤載があり、又は住民票に誤記若しくは記載漏れがあることを知ったときは、届出義務者に対する届出の催告その他住民基本台帳の正確な記録を確保するため必要な措置を講じなければならない。

2　住民基本台帳に記録されている者は、自己又は自己と同一の世帯に属する者に係る住民票に誤記又は記載漏れがあることを知ったときは、市町村長に対してその旨を申し出ることができる。

（昭60法76・追加）

（選挙人名簿との関係）

第15条　選挙人名簿の登録は、住民基本台帳に記録されている者で選挙権を有する者について行なうものとする。

2　市町村長は、第8条の規定により住民票の記載等をしたときは、遅滞なく、当該記載等で選挙人名簿の登録に関係がある事項を当該市町村の選挙管理委員会に通知しなければならない。

（昭44法30・追加）

3　市町村の選挙管理委員会は、前項の規定により通知された事項を不当な目的に使用されることがないよう努めなければならない。

（昭60法76・追加）

第3章　戸籍の附票

（戸籍の附票の作成）

第16条　市町村長は，その市町村の区域内に本籍を有する者につき，その戸籍を単位として，戸籍の附票を作成しなければならない。

（戸籍の附票の記載事項）

第17条　戸籍の附票には，次に掲げる事項を記載する。

　一　戸籍の表示

　二　氏　名

　三　住　所

　四　住所を定めた年月日

（戸籍の附票の記載等）

第18条　戸籍の附票の記載等は，職権で行なうものとする。

（戸籍の附票の記載等のための市町村長間の通知）

第19条　住所地の市町村長は，住民票の記載等をした場合に，本籍地において戸籍の附票の記載の修正をすべきときは，遅滞なく，当該修正をすべき事項を本籍地の市町村長に通知しなければならない。

2　前項の規定により通知を受けた事項が戸籍の記載と合わないときは，本籍地の市町村長は，遅滞なく，その旨を住所地の市町村長に通知しなければならない。

3　本籍が一の市町村から他の市町村に転属したときは，原籍地の市町村長は，遅滞なく，戸籍の附票に記載してある事項を新本籍地の市町村長に通知しなければならない。

（住民票の写しの交付に関する規定の準用）

第20条　第12条第1項，第2項，第4項及び第5項の規定は，戸籍の附票の写しの交付について準用する。この場合において，同条第2項中「自治省令」とあるのは，「法務省令・自治省令」と読み替えるものとする。

　　　（昭60法76・全部改正）

第4章　届　　　出

（住民としての地位の変更に関する届出の原則）

第21条　住民としての地位の変更に関する届出は，すべてこの章に定める届出によって行なうものとする。

（転入届）

第22条　転入（あらたに市町村の区域内に住所を定めることをいい，出生による場合を除く。以下この条において同じ。）をした者は，転入をした日から14日以内に，次に掲げる事項を市町村長に届け出なければならない。

　一　氏　名

　二　住　所

　三　転入をした年月日

　四　従前の住所

　五　世帯主についてはその旨，世帯主でない者については世帯主の氏名及び世帯主との続柄

　六　国外から転入をした者その他政令で定める者については，前各号に掲げる事項のほか政令で定める事項

2　前項の規定による届出をする者（同項第6号の者を除く。）は，住所の異動に関する文書で政令で定めるものを添えて，同項の届出をしなければならない。

（転居届）

第 23 条　転居（一の市町村の区域内において住所を変更することをいう。以下この条において同じ。）をした者は，転居をした日から 14 日以内に，次に掲げる事項を市町村長に届け出なければならない。

一　氏　名

二　住　所

三　転居をした年月日

四　従前の住所

五　世帯主についてはその旨，世帯主でない者については世帯主の氏名及び世帯主との続柄

（転出届）

第 24 条　転出（市町村の区域外へ住所を移すことをいう。以下同じ。）をする者は，あらかじめ，その氏名，転出先及び転出の予定年月日を市町村長に届け出なければならない。

（世帯変更届）

第 25 条　前 3 条の場合を除くほか，その属する世帯又はその世帯主に変更があった者（政令で定める者を除く。）は，その変更があった日から 14 日以内に，その氏名，変更があった事項及び変更があった年月日を市町村長に届け出なければならない。

（世帯主が届出を行なう場合）

第 26 条　世帯主は，その世帯に属する他の者（次項において「世帯員」という。）に代わって，この法律の規定による届出をすることができる。

2　世帯員がこの法律の規定による届出をすることができないときは，世帯主が世帯員に代わって，その届出をしなければならない。

（届出の方式）

第 27 条　この法律の規定による届出は，政令で定めるところにより，書面でしなければならない。

（国民健康保険の被保険者である者に係る届出の特例）

第 28 条　この法律の規定による届出をすべき者が国民健康保険の被保険者であるときは，その者は，当該届出に係る書面に，その資格を証する事項で政令で定めるものを附記するものとする。

（国民年金の被保険者である者に係る届出の特例）

第 29 条　この法律の規定による届出をすべき者が国民年金の被保険者であるときは，その者は，当該届出に係る書面に，その資格を証する事項その他必要な事項で政令で定めるものを附記するものとする。

（児童手当の支給を受けている者に係る届出の特例）

第 29 条の 2　この法律の規定による届出をすべき者が児童手当の支給を受けている者であるときは，その者は，当該届出に係る書面に，その受給資格に関する事項で政令で定めるものを附記するものとする。

　　　（昭 46 法 73・追加）

（米穀の配給を受ける者に係る届出の特例）

第 30 条　この法律の規定による届出をすべき者が米穀の配給を受ける者であるときは，その者は，当該届出に係る書面に，米穀の配給に関する事項で政令で定めるものを附記するものとする。

　　　（昭 56 法 81・一部改正）

第5章　雑　　　則
（国又は都道府県の指導等）
第31条　国又は都道府県は，この法律の目的を達成するため，市町村に対し，この法律の規定により市町村が処理する事務について，必要な指導を行うものとする。

2　主務大臣又は都道府県知事は，前項の事務に関し必要があると認めるときは，市町村長に対し，報告を求め，又は助言若しくは勧告をすることができる。

3　主務大臣は，前項の規定による助言又は勧告をしようとするときは，国民健康保険の被保険者，国民年金の被保険者及び児童手当の支給を受けている者に関する事項については厚生大臣，米穀の配給を受ける者に関する事項については農林水産大臣に協議するものとする。

4　市町村長は，主務大臣又は都道府県知事に対し，第2項の規定による助言又は勧告を求めることができる。

　　（昭58法83・追加）

（不服申立て）
第31条の2　この法律の規定により市町村長がした処分に不服がある者は，都道府県知事に審査請求をすることができる。この場合においては，異議申立てをすることもできる。

　　（昭58法83・一部改正）

（不服申立てと訴訟との関係）
第32条　前条に規定する処分の取消しの訴えは，当該処分についての審査請求の裁決を経た後でなければ，提起することができない。

（関係市町村長の意見が異なる場合の措置）
第33条　市町村長は，住民の住所の認定について他の市町村長と意見を異にし，その協議がととのわないときは，都道府県知事（関係市町村が2以上の都道府県の区域内の市町村である場合には，主務大臣）に対し，その決定を求める旨を申し出なければならない。

2　主務大臣又は都道府県知事は，前項の申出を受けた場合には，その申出を受けた日から60日以内に決定をしなければならない。

3　前項の決定は，文章をもってし，その理由を附して関係市町村長に通知しなければならない。

4　関係市町村長は，第2項の決定に不服があるときは，前項の通知を受けた日から30日以内に裁判所に出訴することができる。

（調　査）
第34条　市町村長は，定期に，第7条に規定する事項について調査をするものとする。

2　市町村長は，前項に定める場合のほか，必要があると認めるときは，いつでも第7条に規定する事項について調査をすることができる。

3　市町村長は，前2項の調査に当たり，必要があると認めるときは，当該吏員をして，関係人に対し，質問をさせ，又は文書の提示を求めさせることができる。

4　当該吏員は，前項の規定により質問をし，又は文書の提示を求める場合には，その身分を示す証明書を携帯し，関係人の請求があったときは，これを提示しなければならない。

（秘密を守る義務）
第35条　住民基本台帳に関する調査に関する事務に従事している者又は従事していた者は，その事務に関して知り得た秘密を漏らしてはならない。

（住民に関する記録の保護）
第36条　市町村長の委託を受けて行う住民基本台帳に関する事務の処理に従事している者

又は従事していた者は，その事務に関して知り得た事項をみだりに他人に知らせ，又は不当な目的に使用してはならない。

　　（昭60法76・追加）

（資料の提供）

第37条　国の行政機関又は都道府県知事は，それぞれの所掌事務について必要があるときは，市町村長に対し，住民基本台帳に記録されている事項に関して資料の提供を求めることができる。

　　（昭60法76・一部改正）

（指定都市の特例）

第38条　地方自治法第252条の19第1項の指定都市（次項において「指定都市」という。）に対するこの法律の規定の適用については，政令で定めるところにより，区を市と，区の区域を市の区域と，区長を市長とみなす。

2　前項に定めるもののほか，指定都市に対するこの法律の規定の適用については，政令で特別の定めをすることができる。

（適用除外）

第39条　この法律は，日本の国籍を有しない者その他政令で定める者については，適用しない。

（主務大臣）

第40条　この法律において主務大臣は，自治大臣とする。ただし，第9条第2項の規定による通知に関する事項及び第3章に規定する戸籍の附票に関する事項については，法務大臣及び自治大臣とする。

（政令への委任）

第41条　この法律の実施のための手続その他その施行に関し必要な事項は，政令で定める。

　　第6章　罰　　則

（罰　則）

第42条　第35条の規定に違反して秘密を漏らした者は，1年以下の懲役又は3万円以下の罰金に処する。

第43条　第34条第3項の規定による質問に対し，答弁をせず，若しくは虚偽の陳述をし，又は文書の提示を拒み，妨げ，忌避し，若しくは虚偽の文書を提示した者は，5万円以下の罰金に処する。

第44条　偽りその他不正の手段により，第11条第1項若しくは第3項の規定による住民基本台帳の閲覧若しくは住民基本台帳若しくはその一部の写しの閲覧をし，第12条第1項の住民票の写し若しくは住民票記載事項証明書の交付を受け，又は第20条の戸籍の附票の写しの交付を受けた者は，5万円以下の過料に処する。

　　（昭60法76・追加）

第45条　第22条から第25条までの規定による届出に関し虚偽の届出（第28条から第30条までの規定による付記を含む。）をした者は，他の法令の規定により刑を科すべき場合を除き，5千円以下の過料に処する。

　　（昭60法76・一部改正）

2　正当な理由がなくて第22条から第25条までの規定による届出をしない者は，5千円以下の過料に処する。

　　（昭44法30，昭60法76・一部改正）

第 46 条　前 2 条の規定による過料の裁判は，簡易裁判所がする。

（昭 60 法 76・追加）

附　則（抄）

（施行期日）

第 1 条　この法律は，公布の日から起算して 6 月をこえない範囲内において政令で定める日（以下「施行日」という。）から施行する。ただし，第 15 条の規定はこの法律の公布の日から起算して 2 年をこえない範囲内において政令で定める日から，附則第 11 条（地方税法（昭和 25 年法律第 226 号）第 8 条第 1 項の改正部分を除く。）の規定は昭和 45 年 1 月 1 日から施行する。

附　則（昭 44.5.16 法 30）

（施行期日）

第 1 条　この法律は，昭和 44 年 7 月 20 日から施行する。

附　則（昭 46.5.27 法 73）（抄）

（施行期日）

第 1 条　この法律は，昭和 47 年 1 月 1 日から施行する。（以下省略）

附　則（昭 53.7.5 法 87）（抄）

（施行期日）

第 1 条　この法律は，公布の日から施行する。

附　則（昭 56.6.11 法 81）（抄）

（施行期日）

1　この法律は，公布の日から起算して 1 年を超えない範囲内において政令で定める日から施行する。

附　則（昭 58.12.10 法 83）（抄）

（施行期日）

第 1 条　この法律は，公布の日から施行する。（以下省略）

附　則（昭 60.6.25 法 76）

1　この法律は，公布の日から起算して 1 年を超えない範囲内において政令で定める日から施行する。

2　この法律の施行前にした行為に対する過料に関する規定の適用については，なお従前の例による。

附錄9 : 시즈오카縣 訪問時의 人事말

The Courtesy Call on governer from

The Participants of

the Fifth International Meeting of

the Heads of National Statistical Offices of

ASEAN Countries and Japan

第5回日本・アセアン統計局長会議視察団知事表敬

静　　岡　　県

平成2年1月26日

January 26, 1990

SHIZUOKA PREFECTURE, JAPAN

The address of Vice Governor

The Participants of the Fifth International
Meeting of the Heads of National Statistical
Offices of ASEAN Countries and Japan,
Ladies and gentlemen,
Welcome to Shizuoka prefecture!
I would like to express my hearty welcome to you
on behalf of the 3 million 650 thousand people
of our prefecture.

I have heard that the main purpose of this visit
to Shizuoka is to inspect the organization for
conducting of the statistical administration of
the local government.
It is said that today we are in information
oriented society, in order to decide the policy
of national and local governments, statistics
take important part in providing the basic data.

We make survey of statistics speedy and
accurate. We have opened the Information Center
of Statistics. There, staff members help users
to know how to use statistics so that many
people may be able to use easily the results of
the statistical surveys. People can read and
borrow statistical books and analyze the data of
statistics by using computer. We hope this
center will help to people to use statistical
information for their daily lives.

Although your stay in our prefecture is short,
you will be able to inspect our statistical
activities in detail and I hope our statistical
activities are instructive to your countries.

We have been promoting on our internatinal
exchange programs actively, in 1988, we have
settled South-East Asian Representative Office
at Singapore to strengthen ties between
Southeast Asian countries and Shizuoka
prefecture. I think it is of great worth
recieving your courtesy call under these
circumstances.

Our prefecture is located in the central part of Japan, on the north, there is Mt. Fuji and the Pacific Ocean is on the south. We are surrounding by beautiful nature and the climate is mild. On the other hand, industries are also prosperous, Our prefecture is famous for manufacturing Japan's superior Industrial products such as motorcycles and pianos and it is also famous for agricultural products, such as delicious musk melons and green tea.

I shall be happy if these will remain one of the stories of your visit to Shizuoka.

Finally, I hope your visit to Japan will be enough succesful to prove the development of statistics in your countries. I wish the friendship which binds Japan and your countries will not only endure, but grow even stronger.

The explanation of
Director General of Statistics Division

I am Shizuo Unno, Director General of Statistics Division. First of all I would like to explain an outline of the statistical activities in our prefecture.

we have 57 staff members in our division and our division is the largest one in this prefectural office.
It is divided into 10 sections and each section's staff work their special fields.
To classify our work, it consists of three parts. The first is the statistical surveys which are entrusted by the national government and the second is statistical surveys which are conducted by prefectural government. The last one is to publish and disseminate by these results of statistical surveys for the use of the people in Shizuoka Prefecture.

This year's budget of our division is approximately 537 million yen. It includes 473 million yen of trust money from the national government. And it stands about 88% in the whole budget.

This year we are going to conduct 25 censuses and surveys which are entrusted by Management and Coordination Agency and 6 ministries and agencies. Also we independently conduct 4 censuses and we have 7 projects of analyses and compilations of statistics. So the number of statistical censuses and surveys to be taken amounts 36 this year.

As this year's main statistical surveys, there are the National Survey of Family Income and Expenditure which is taken every 5 years, and a new Survey on Service Industries and the Census of Commerce and the Census of Manufactures.
Soon the 1990 World Agricuture Census will be conducted in February of this year, so we are preparing for this census.

Statistical activities which were conducted by our prefectural government were for the Prefectural Citizen's Accounts of Shizuoka Prefecture 1987, 1985 Input-Output Tables of Shizuoka Prefecture and Statistical Index of Shizuoka Prefecture which collects the results of statistical surveys according to Tokyo, Hokkaido and all the other prefectures which are deeply concerned about people's lives. We have published various statistical books including these.

We conduct statistical surveys which are entrusted by the national government sharing parts with munincipal governments.
Enumerators are appointed by governor. They are engaged in statistical surveys by visiting people.
Now, about 2,800 enumerators are registered, for various statistical surveys.

Nowadays, people have a tendency that they don't want their privacy disturved. Under such circumstances, we have some difficulties to make surveys. So we are making efforts to ask those unwilling to respond several times to cooperate in the survey.

Next, I would like to explain the organization for conducting the 1990 Population Census which will be taken as of Oct. 1st, 1990.

As the first step of the preparation for the 1990 Population Census, we have demarcated the Basic Unit Blocks and the Enumeration Districts as of Oct. 1st, 1989. This is to make the responsible area of each enumerator clear, because the Populatin Census requires to survey entire population and households without omission and duplication. One Enumeration District consists of 40 to 70 households.
We have demarked about 21 thousand Enumeration Districts.

The population which we will survey is supposed to be about 3 million 650 thousand and the number of households will be 1 million 110 thousand.
The budget for this census is 1 thousand 103 million 580 thousand yen and 21 thousand enumerators will be stationed.

To make the Population Census smoothly, it is very important to appoint excellent enumerators. It is also important to get people's understandings and cooperation. So we would like to make efforts to develop public relations through newspapers, radio, T.V. and publicities of munincipal governments.

Next I would like to explain the dissemination and publication of the results of statistical surveys.
We have founded the Information Center of Statistics so that people may be able to use the results of statistical surveys. The Information Center houses 12 thousand books. People can make use of high-level information compiled statistics by using computer. Especially during the summer vaction, pupils and students of elementary and high schools come to visit and collect material data for their assignments.

We hold Statistical Graph Contest every year with cooperation of Board of Education so that pupils and students of elementary and high schools may become familiar with statistics.
This year 6,876 manuscripts were applied for the Contest, and among these 15 manuscripts were honored with excellent awards by governor.
Please look at the poster of the excellent manuscripts of the Statistical Graph Contest on your table.

The Information Center also has published the compendia of statistics such as Statistical Year Book of Shizuoka Prefecture and Statistical Handbook of Shizuoka Prefecture. Please look at the Statistical Handbook of Shizuoka Prefecture on your table.

Now I want to conclude my explanation. After
this, please go to the Information Center of
Statistics and we would like to explain about
the use of the Statitical Data Base.
Do you have any questions?
Thank you very much.

附錄10 : 시즈오카縣의 Data Base 出力資料例示

各 歳 別 男 女 別 人 口

昭 和 60 年　　　総 数

地　域		総数 人 c001	男 人 c002	女 人 c003
静 岡 市	001	468,362	229,590	238,772
浜 松 市	002	514,118	254,614	259,504
沼 津 市	003	210,490	104,656	105,834
清 水 市	004	242,166	118,495	123,671
熱 海 市	005	49,374	22,365	27,009
三 島 市	006	99,600	49,054	50,546

出 典 : 国 勢 調 査

各歳別男女別人口　　　　　　　　　　　　　　　　　　　　H 2. 1.25
昭和60年　　　総数　　　　　　　　単位：　　　人
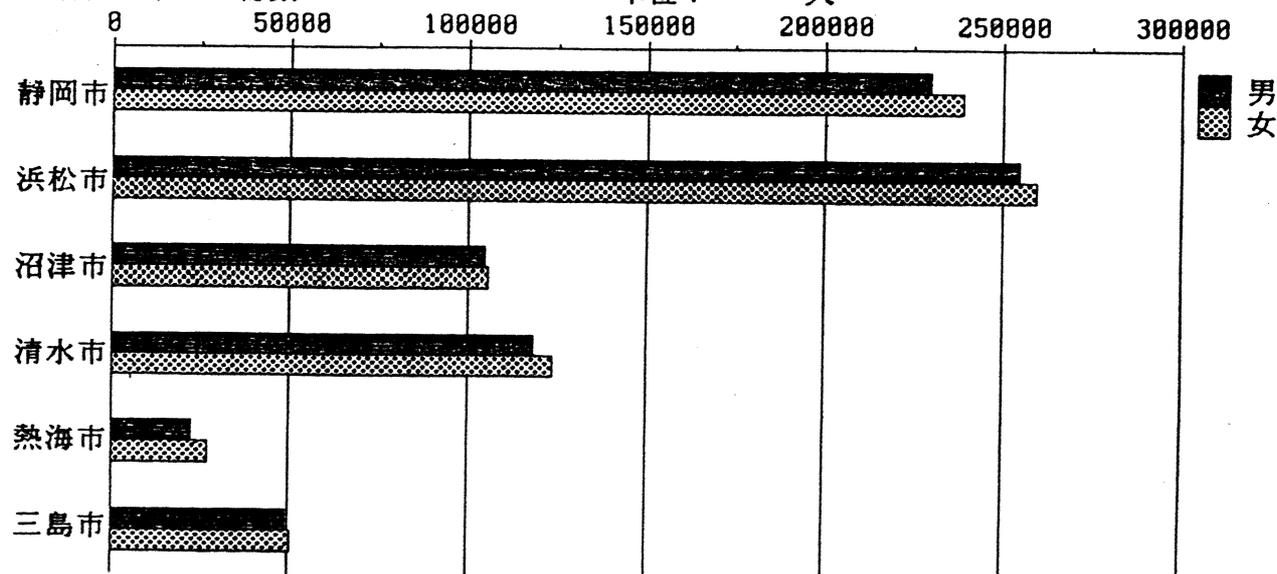
出典：国勢調査

自 動 車 保 有 台 数

地　　　域		平 成 1年 乗 用 車 台 数	平 1年 4月 住 基 台 帳 世 帯 数	1 世 帯 当 た り
		台	世 帯	台
		C001	C002	C003
県 計	001	1,006,195	1,098,147	0.9
静 岡 市	002	130,078	153,131	0.8
浜 松 市	003	156,476	167,078	0.9
沼 津 市	004	64,766	69,378	0.9
清 水 市	005	63,588	74,028	0.9
熱 海 市	006	9,910	20,658	0.5
三 島 市	007	27,959	33,832	0.8
富 士 宮 市	008	35,008	33,952	1.0
伊 東 市	009	16,285	26,965	0.6
島 田 市	010	18,852	20,130	0.9
富 士 市	011	70,424	63,999	1.1
磐 田 市	012	25,030	24,215	1.0
焼 津 市	013	28,480	31,563	0.9
掛 川 市	014	18,666	18,699	1.0
藤 枝 市	015	31,477	32,370	1.0
御 殿 場 市	016	22,258	24,503	0.9
袋 井 市	017	13,997	14,029	1.0
天 竜 市	018	6,343	6,420	1.0
浜 北 市	019	21,809	21,381	1.0
下 田 市	020	6,958	10,750	0.6
裾 野 市	021	14,118	14,391	1.0
湖 西 市	022	11,599	12,971	0.9
東 伊 豆 町	023	3,458	5,503	0.6
河 津 町	024	1,965	2,824	0.7
南 伊 豆 町	025	2,307	3,636	0.6
松 崎 町	026	1,891	2,951	0.6
西 伊 豆 町	027	1,649	2,813	0.6
賀 茂 村	028	928	1,322	0.7
伊 豆 長 岡 町	029	4,150	4,367	1.0
修 善 寺 町	030	4,854	5,304	0.9
戸 田 村	031	1,119	1,465	0.8
土 肥 町	032	1,275	2,019	0.6
函 南 町	033	8,958	9,937	0.9
韮 山 町	034	4,638	5,149	0.9
大 仁 町	035	4,322	4,594	0.9
天 城 湯 ケ 島 町	036	2,117	2,223	1.0
中 伊 豆 町	037	1,965	1,966	1.0
清 水 町	038	8,814	8,873	1.0
長 泉 町	039	9,376	10,517	0.9
小 山 町	040	6,083	7,310	0.8

出 典 ： 自 動 車 保 有 台 数 調

縦 01/01   横 01/01

属性 II		昭和60年 県計 総就業者	昭和60年 県計 男就業者	昭和60年 県計 女就業者	就業者割合 構成比
		人	人	人	%
		C01	C02	C03	C04
卸・小売業	001	382,189	191,888	190,301	41.0
金融保険業	002	44,845	20,706	24,139	4.8
不動産業	003	9,365	5,807	3,558	1.0
運輸通信業	004	98,825	84,779	14,046	10.6
電気ガス等	005	9,623	8,001	1,622	1.0
サービス業	006	339,544	161,901	177,643	36.4
公務	007	47,936	40,133	7,803	5.1
列合計	008	932,327	513,215	419,112	100.0

出典 ： 国勢調査

産業、従業上の地位別就業者
　　　昭和60年　　　　　　　　　県計

総数
932,327
男就業者　女就業者
513,215　419,112
単位：　　　　人

卸・小売業 37%　　卸・小売業 45%
金融保険業 4%　　金融保険業 6%
不動産業 1%　　不動産業 1%
運輸通信業 17%　　運輸通信業 3%
電気ガス等 2%　　電気ガス等 0%
サービス業 32%　　サービス業 42%
公務 8%　　公務 2%
出典：国勢調査

【予測結果】
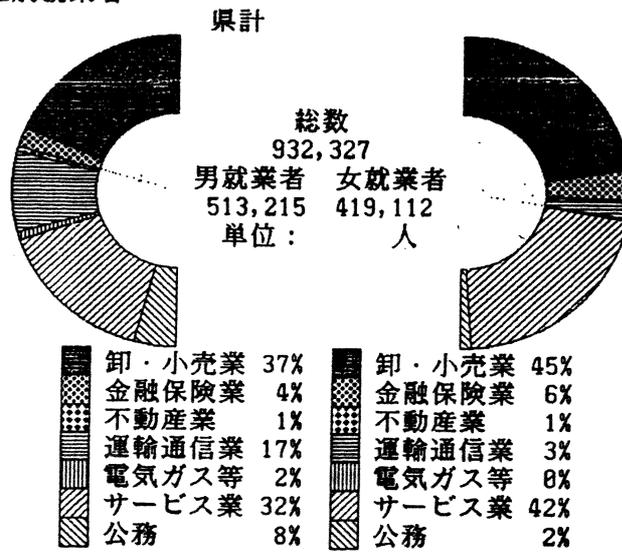
分析結果期間　1965年　　　　～　　2000年

項　目　ID	A	B	C	D	
期　　　　　型	年次	年次	年次	年次	
項　目　名	分析データ	予測値	残差	傾向値	
年					
1989	3655759	3649342	6416	3649342	
1990		3664303			
1991		3677669			
1992		3689425			
1993		3699554			
1994		3708042			
1995		3714878			
1996		3720053			
1997		3723559			
1998		3725394			
1999		3725552			
2000		3724035			

【処理選択】　　　処理を選択してください。　　1　　　1:分析結果の保存　2:手法変更
　　　　　　　　　　　　　　　　　　　　　　　　　　　3:分析メニュー　　4:予測値変更

1 0／F　　2残差ｸﾞﾗﾌ 3数値表示　4分析結果　5手法詳細　6カタログ　7補助機能　8
R＊　　　〈英数〉

【静岡県　　　の予測結果】
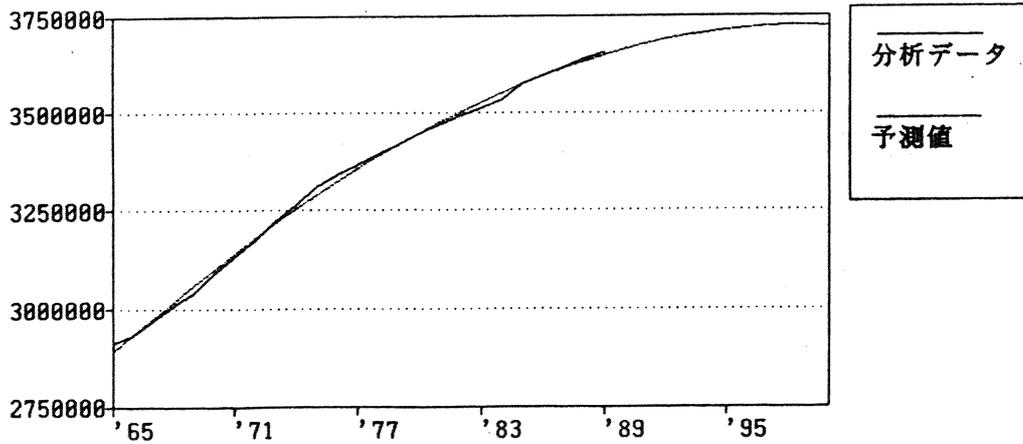
県内市町村の老人人口比率
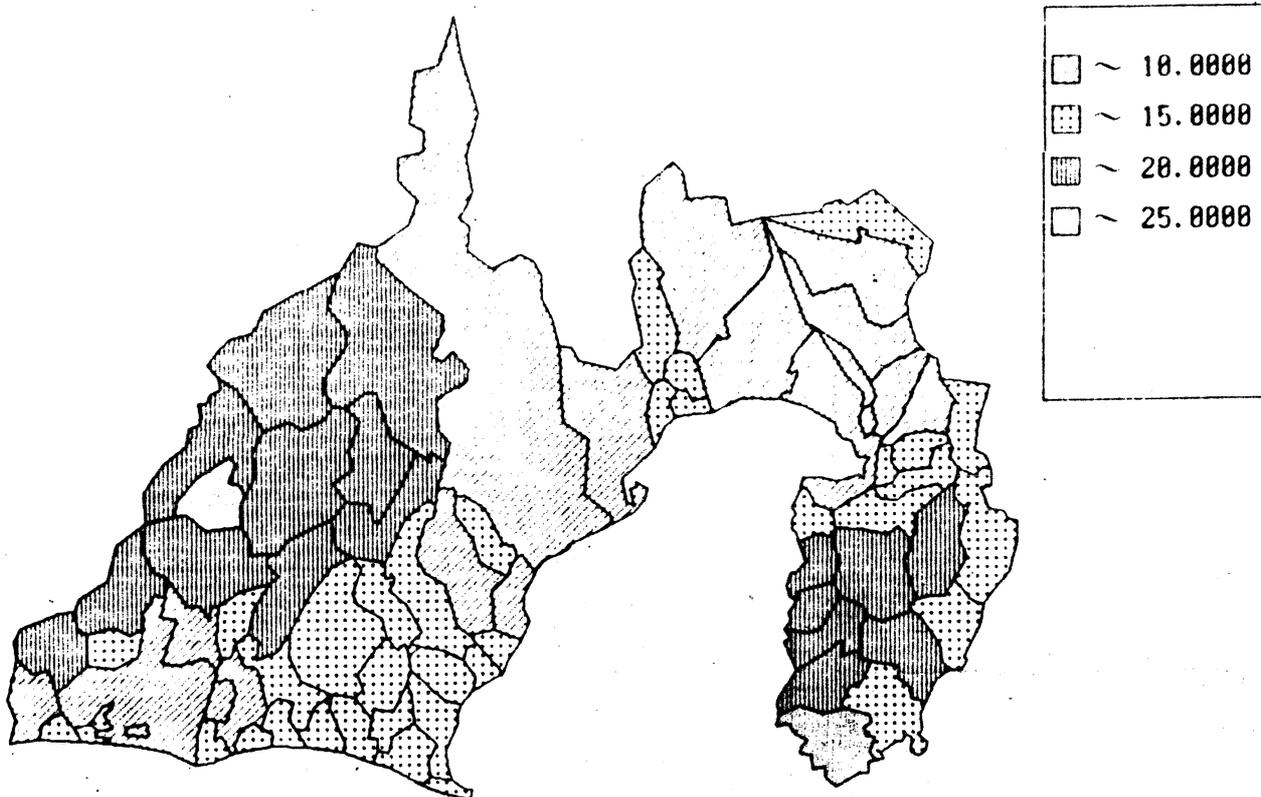
附錄11：各國別 發表報告書

THE 1990 INDONESIAN POPULATION CENSUS

By

Azwar Rasjid

Director General, CBS

To be presented in the Fifth International Meeting of the Head of National Statistical Office of ASEAN Countries and Japan.

THE 1990 INDONESIAN POPULATION CENSUS

By

Sugito and Sugiarto

Central Bureau of Statistics, Indonesia

1. Introduction

Since independence, 3(three) population censuses have been carried out in Indonesia. Thus, the coming 1990 population census will be the fourth.

The 1961 Population Census used a 2(two)-stage field operation: first was the household listing in March and second was the full-fledged enumeration in October. The 31st of October was determined as the Census Day. In this census, two types of questionnaire were used: one for individual information and the other for household information.

The second census was planned in 1970, but due to budget limitation, it was undertaken in 1971. In almost every aspect this census was much better than the previous one. Data were collected in 2 stages as well. First, a household listing and a complete census was conducted in June-July; it was integrated with voter registration for the 1971 election. Second, full-fledged enumeration of the sampled households/population took place in September-October. Census data was taken to be

September 24th 1971. Like the previous censuses, the 1980 Population Census was also carried out in 2 stages.

The coming 1990 Population Census will be undertaken according to the Government Law No. 21 of 1979, Presidential Decree No. 3 of 1988 on the CBS responsibility, and the Minister of Home Affairs' instructions on implementation.

2. General Information

The preparation of the 1990 Population Census (which is more known by its Indonesian acronym SP'90) began in 1987. This SP'90 is a major undertaking covering several stages. They include (i) planning which includes mapping of the census blocks and the determination of urban-rural classification of every single village (desa / kelurahan), (ii) field operation, (iii) data processing and (iv) analysis and presentation. Experience in 1980 shows that such a census may take at least 6 years to complete.

To support the analysis stage of the census undertaking, a Bureau of Analysis and Development was set up in 1980. Previously, analysis was carried out peripherally, but since then the analysis stage has been taken into consideration far in advance.

3. Coverage

As in the previous censuses, interview will be conducted in all regions and will include all population. Enumeration of ship-crew, isolated populations, and homeless population/driffers will be undertaken simultaneously, but the information collected will be limited to sex and age. Foreigners will also be included, except members of diplomatic corps.

As in the 1971 and 1980 censuses, the 1990 population census will also be implemented in 2 stages. First, all households/buildings will be registered and all population will be interviewed on main characteristics, i.e. age, sex, relation to the household-head and marital status. This is called complete census. Second, which is sampled census, selected households will be surveyed on more detailed information. The sample size is about 2 million households.

4. Time-Table

The 1990 Population Census will be undertaken in 6 years, with the following activities in each year:

(i) 1987/1988

Planning and preparation, including several pilot-studies on mapping.

(ii) <u>1988/1989</u>

a. Mapping operation for all regencies, districts and villages, including enumeration area (EA) in all provincial capital cities and municipalities.

b. Pilot studies on complete and sample enumeration.

c. Research on determination of village boundaries and urban-rural classification.

d. Preparation of master sampling frame.

e. Mapping activities.

(iii) <u>1989/1990</u>

a. Preparation and planning for the mapping of a 20 percent of enumeration areas in all urban areas in the regencies, excluding provincial capital cities and municipalities.

b. Preparation of a master sampling frame.

c. Preparation and planning for complete and sample census.

(iv) <u>1990/1991</u>

a. Checking village and EA maps.

b. The implementation of complete and sample census.

c. Collection of data for village data bank (PODES).

d. Post Enumeration Survey (PES).

(v) <u>1991/1992</u>

Data processing and evaluation, especially for data quality.

(vi) 1992/1993

Publication and data analysis.

The complete census will be started in mid September and will continue to 1st of November, 1990. The 31st of October is the Census Day.

5. Sampling Method

As noted before there are various activities supporting the implementation of both complete and sample census. The most importance of all are mapping and determination of Enumeration Areas (EAs).

Mapping aims at identifying region and its boundaries to allow correct coverage. As this activity clearly takes sufficient time, it has been conducted since 1987. In determining EA, it is expected that the number of buildings/households in each EA will be more or less equal, ranging from 200 to 300 units. It is anticipated to have 150,000 to 200,000 EAs.

Further activities as noted before include urban-rural classification, listing and numbering of buildings and households, complete census, sample census, collecting village information for village data bank (PODES), and post enumeration survey. The basis for classifying urban and rural villages in the 1990 population census are the same with those used in the 1980 Population Census. This

is to allow comparative study between urban and between rural areas over the decade 1980-1990. The determination whether a given village is an urban or rural village is based on its total acore on several characteristics, namely population density, percentage of agricultural households and the availability of urban facilities such as schools, streets, electricity, hospitals, and others.

In the 1990 Population Census there will be no changes in the classification procedure, but a number of villages will be revisited to check any foreseeable changes. Revisit is necessary mainly due to:

(i) to determine whether those villages having the score between 17 and 22 in 1986 can be classified urban or rural. In 1980, urban villages were those having score at least 23 and rural villages were those with score 16 and less. Those villages having score between 17 and 22 were then classified based on additional information obtained from the revisit.

(ii) there are villages which change their urban - rural status due to reclassification.

It has been estimated that around 9,000 villages have to be revisited to ensure the right classification.

In complete census, only main information is collected due to various reasons, such as the number and quality of field-workers, time and cost. Complete census will

be carried out door to door, excluding homeless/drifters, ship-crews and isolated populations who will be enumerated simultaneously using special field-workers.

To obtain more reliable information and to reduce double-counting and undercoverage, additional improvements over the previous census will be undertaken:

1. The boundaries of each EA which have been determined in the mapping process should be strictly followed.

2. Listing of buildings and households before the complete census will be carried out around 3 months in advance.

Sample census which is planned to be carried out together with complete census will collect more detailed information. Sampling rate is planned about 5 percent of the households/population. Compared with the 1980 Population Census, there will be some further modifications, such as:

(i) sampling rate will vary among regencies / municipalities, with the aim of assuring a sufficient sample size to allow for presenting data at the regency/municipality level.

(ii) data at the provincial level will be presented for urban and rural areas separately. At the regency/municipality level, however, this disaggregation will not be followed due to efficiency reason.

(iii) the sample size is planned to be around 2 million households, which is considered to be manageable considering the allocated processing and publishing period of 2 years and to be sufficiently moderate to balance sampling and non sampling errors.

Sample selection will be done in 2(two) stages. The first stage is the selection of EAs systematically from the list of geographically ordered districts, villages and EAs. Each regency and municipality in considered as one domain of study. Second stage is the selection of households from selected EAs. The selection differs for urban and rural areas, mainly due to transportation considerations. For urban areas, the households are selected systematically from the household list, while for rural areas the households are selected sistematically through sampling of clusters of households.

A self-weighting design is used in each regency/municipality to permit the use of simple estimation procedures including ratio estimates. The above sampling procedure is applicable to "ordinary" households in selected EAs, both in "ordinary" and special EAs. For special households including prisons, hostels and others, sampling is done directly to the members. The same sampling fraction will be applied to both ordinary and special households in the selected EAs. The minimum sample size

for each regency/municipality is 3,000 households, except in East Timor and Irian Jaya. In each selected EA, the sampling fraction is between 1 and a quarter. It is expected to have around 60 to 80 households in each EA, except that for small EA the sampling rate will be one.

6. Analysis and Data Presentation

As indicated before, analysis of social and population statistics done by the Central Bureau of Statistics has been reinforced by the establishment of Bureau of Analysis and Development in 1980. The first step of the Analysis is mainly data evaluation, aiming at identifying the weaknesses of the data which should be considered in further analysis and for improving the quality of the data itself. Without doing the analysis by itself it would be very difficult for the CBS to understand the weaknesses of the concepts and definitions used, the appropriate sequence of questions, the quality of the data collected, and the consumers' needs.

However, because social and population statistics is a wide and diverse subject, the resource limitation of the CBS obliges CBS to cooperate with other institutions in conducting the analysis. This also has its own advantage, i.e. all concerned institutions will have more sense of belonging and will feel responsible toward the success of this major undertaking.

There are two types of analysis which will be carried out, i.e. profile analysis and determinant analysis. Profile analysis will present population profile including mortality, fertility and family planning, labour force and social welfare. Determinant analysis will include analysis using theoretical framework regarding social and population aspects. Both analysis will be presented for national and provincial level.

There will be several publications to be issued which can be grouped into:

(i) Planning: includes publications regarding methodology, mapping results, villages by urban and rural classification, and the results of survey on village information (PODES).

(ii) Complete census: Series L which will include total number of population by sex, marital status and age group at national, provincial and regency/municipality level.

(iii) Sample census: Series 8 which will present the results of sample survey at national and provincial level. Cross-tabulation will be presented covering information on population characteristics, migration, education, fertility/family planning, welfare, labour force, and housing.

(iv) Maps: Population map and social welfare maps.

(v)   Analysis: publications presenting profile and determinant analysis.

(vi) Population components: publications consisting of fertility rate, mortality rate and migration and population projection based on data obtained in the 1990 Population Census.

7. Closing Remarks

It can be summed up that the basic differences between the 1980 and the coming 1990 Population Censuses lie mainly on 2 aspects. The first is sampling aspect where in the coming 1990 Population Census, unlike in the previous 1980 Population Census, different sampling procedures will be employed for urban and rural areas. The second is related to the contents of the items in the sample-census. In the 1980 Population Census there were questions on family planning, but in the coming population census such questions will not be accomadated. In addition, the 1990 Population Census will provide more analytical publications which is obviously an improvement over the previous 1980 census.

DATA COLLECTED IN POPULATION CENSUSES
OF INDONESIA
1961,   1971, 1980 and 1990 (PILOT)

Item	Population census			
	1961	1971	1980	1990

I. HOUSEHOLD AND HOUSING UNIT

Item	1961	1971	1980	1990
1. Type of building	-	-	V	V
2. Number of dwelling units in the building	-	V	V	V
3. Number of households in the dwelling unit	-	-	V	V
4. Ownership status of dwelling unit	-	V	V	V
5. Number of rooms	V	V	-	-
6. Primary construction material of				
- roof	V	V	V	V
- outer wall	V	V	V	V
- floor	V	V	V	V
7. Floor area (square meter)	-	-	V	V
8. Type of lighting	-	V	V	V
9. Type of cooking fuel	-	V	V	V

i

Item	Population Census			
	1961	1971	1980	1990
10. Source of drinking water	-	V	V	V
11. Source of water for bathing/washing	-	V	V	V
12. Location of source of water	-	V	-	-
13. Bathing facility	-	-	V	V
14. Toilet facility	-	V	V	V
15. Access to/ownership of durable goods	-	-	V	V
16. Area of agricultural land owned/operated	V	-	V	-
17. Number of poultry/ livestock	V	-	V	-
18. Type of garbage collection	-	V	-	-
19. Type of garbage disposal	-	V	-	-

ii

Item	Population Census			
	1961	1971	1980	1990

II. INDIVIDUAL CHARACTERISTICS

Item	1961	1971	1980	1990
1. Name	V	V	V	V
2. Serial number of household member	-	V	V	V
3. Relationship to head of household	V	V	V	V
4. Sex	V	V	V	V
5. Age (years)	V	V	V	V
6. Date of birth known	-	-	V	V
7. Date of birth	-	-	V	V
8. Marital status	V	V	V	V
9. Religion	V	V	V	V
10. Citizenship	V	V	V	V
11. Place of birth (province)	V	V	V	V
12. Ever lived in another province	-	V	-	V
13. Province of previous residence	-	V	V	V
14. Duration of residence	-	V	V	V

iii

Item	Population Census			
	1961	1971	1980	1990
15. Province of residence 5 years ago	-	-	V	V
16. Does own mother live in the same household	-	-	V	V
17. Name and number of household member	-	-	V	V
18. School attendance	V	V	V	V
19. Highest level attended	-	-	V	V
20. Hihgest class/grade attended	-	-	V	V
21. Educational attairment	V	V	V	V
22. Field of study	-	V	V	V
23. Language used at home	V	V	V	V
24. Able to speak Bahasa Indonesia	V	V	V	V
25. Literacy	V	V	V	V
26. Did you feel ill during the previous week	-	-	V	-
27. Disability (type of)	-	-	V	-

iv

Item	Population Census			
	1961	1971	1980	1990

III. HOUSEHOLD MEMBERS 10 YEARS AND OVER

Item	1961	1971	1980	1990
1. Primary activity in the previous week	V	V	V	V
2. (If not working) did you work for at least one hour in the previous week?	-	-	V	V
3. Has a job but temporarily not working	-	-	V	V
4. Have you ever worked?	-	V	V	V
5. Total number of hours worked every day in the previous week	-	-	V	V
6. Number of hours worked in primary activity in the previous week	-	-	V	V
7. Occupation in primary activity in the previous week	V	V	V	V
8. Industry in primary activity in the previous week	V	V	V	V

v

Item	Population Census			
	1961	1971	1980	1990
9. Employment status in primary activity in the previous week	V	V	V	V
10. Has a secondary activity in the previous week	-	-	V	V
11. Industry in secondary activity in the previous week?	V	-	V	V
12. Did you look for work in the previous week?	-	-	V	V
13. Reason for not looking for work	-	-	V	V
14. Did you work in the past year?	-	V	V	V
15. Industry in the past year	-	-	V	V
16. Employment status in agriculture in the last season?	-	V	-	-

vi

Item	Population Census			
	1961	1971	1980	1990

IV. EVER MARRIED WOMEN

Item	1961	1971	1980	1990
1. Number of marriages	-	-	V	V
2. Month and year of first marriage	-	-	V	V
3. Age at first marriage	-	-	V	V
4. Number of children				
- ever born	V	V	-	V
- surviving	V	V	V	V
- died	-	-	V	V
5. Month and year of birth of last child	-	-	V	V
6. Last live birth survive?	-	-	V	V
7. Contraceptive method currently used	-	-	V	-
8. Contraceptive method ever used	-	-	V	-

vii

FIFTH INTERNATIONAL MEETING OF THE HEADS OF   NATIONAL
STATISTICAL OFFICES OF ASEAN COUNTRIES AND JAPAN
(Agenda Item No. 3: Country Reports)

PLANNING FOR THE POPULATION AND HOUSING
CENSUS OF MALAYSIA, 1991

1.   History

        Malaysia was formed in 1963 and comprises the eleven states
(in addition to the Federal Territory of Kuala Lumpur and Labuan)
of Peninsular Malaysia, Sabah and Sarawak.   The country has a
fairly long history of census taking.   Census counts and
estimates were recorded as early as 1750 though it was only for
Melaka, one of the states in Peninsular Malaysia.   The first
census covering the whole of Peninsular Malaysia was conducted in
1911 and since then censuses were conducted in 1921,   1931,   1947
and 1957.   As for the state of Sabah, the first census was
conducted in 1901 and the most recent census prior to joining
Malaysia was carried out in 1960.   The state of Sarawak conducted
its first census in 1939 and its most recent census prior to
joining Malaysia was carried out in 1960.

        The first census for the whole of Malaysia was conducted in
1970 and the most recent census for the country was conducted in
June 1980.   Preparations are earnestly in progress for the
undertaking of the next Population and Housing Census of Malaysia
in August 1991.

2. Legal Basis for Census Taking

In Malaysia, census taking is a federal responsibility as provided for in the constitution. The legal basis for the census is provided by the Census Act of 1960 (revised 1969), which empowers the government to conduct a census from time to time. The responsibility for conducting the 1991 Population and Housing Census of Malaysia is vested with the Department of Statistics which will implement the project in collaboration with the state governments.

3. Census Organization

In planning for the 1991 Population and Housing Census of Malaysia, it is envisaged that the organisation of the census will not be too different from that adopted for the censuses in 1970 and 1980.

For the 1991 Population and Housing Census, a Statistical Steering Committee (SSC) under the Chairmanship of the Chief Secretary to the government has been established. Other members of the Committee are the Secretary General of the Treasury and the Director General of the Public Services Department, the Governor of Bank Negara Malaysia, The Director General of the Economic Planning Unit and the Chief Statistician of Malaysia. The committee provides policy guidelines on financial and manpower requirements of the census as well as on the planning and execution of the census project.

The government has also set up a technical committee known as the Main Users Committee (MUC) to assist the SSC on technical matters. The MUC is headed by the Director General of the Economic Planning Unit. Other members of the MUC are drawn from key user ministries (such as Education, Health and Housing), departments and central agencies of the government.

The overall census project will be headed by the Commissioner of Census, who is also the Chief Statistician of Malaysia. The Census Commissioner will be assisted by two teams of officials; one at the headquarters level while the other will be drawn from officers of the various state governments. The team at the headquarters level will be responsible for planning, preparation of census documents, data processing, preparation of reports and dissemination of census data. The team at the state level will be primarily responsible for the organization, supervision and enumeration work at the ground level. A senior officer of each state will be appointed as a Deputy Census Commissioner and District Superintendents drawn from each district. Supervisors will be principally drawn from serving government officers while enumerators, on the other hand, will be recruited from the open market. It is estimated that a total of some 36,000 enumerators and 3,600 supervisors will be required for the 1991 Census.

It is envisaged that for the 1991 Population and Housing Census of Malaysia, the field centres and branch offices of the Department of Statistics at the state level will play a greater role in the census. In 1980, their role was limited to helping out in the supply of census forms to the states and districts which experienced shortages. In the 1991 Census, they will be involved in field verification of census maps, training, providing technical assistance to district officers wherever required, dealing with hard to enumerate areas and problems faced by the districts during enumeration, enhancing supervisory controls with a view to improving the quality of census data as well as compiling preliminary field count summaries.

4. Census Costs

The total expenditure for the 1980 Census covering the period 1979 to 1982 amounted to about 49 million ringgit. The major expenditure item was salaries and allowances paid to temporary field staff and temporary census checkers and coders, amounting to 30 million ringgit or about 61 per cent of the total. Other major costs were transport and travelling incurred during census enumeration phases and the rental of computer for census processing.

Current estimates for the conduct of the 1991 Population and Housing Census indicate the total cost will be in the region of 100 million ringgit.

5. Census Approach

5.1 Number of Stages

The 1980 Population and Housing Census was conducted in two stages. The first stage was the Housing Census which consisted of listing of all living quarters in the country and recording of such housing characterstics as type of living quarters, type of material used for walls and roofs, type of lighting, toilet facilities and water supply. The second stage was basically a Population Census whereby detailed characteristics of each individual present in the living quarters on Census Night was obtained. The 1991 Population and Housing Census will be conducted as a single stage, unlike that in 1980 whereby it was done in two stages. Because of less items proposed for the 1991 Census, the census questionnaire has been consolidated into a single questionnaire, thus negating the need to have a two stage Housing and Population Census.

5.2 Method of Enumeration

Like 1980, the method of enumeration will be one whereby the enumerator needs to go from house to house and obtain the various particulars needed in the census questionnaire by way of interview of any adult or responsible member of the household. Pre-test studies indicate that self-enumeration, even in urban areas, is not a feasible proposition at this stage in Malaysia.

6. Census Topics

The 1991 census questionnaire is expected to contain a lesser number of items compared to that for 1980. In the 1980 Census, the Living Quarters form contained a total of 40 questions; the Household form had 21 questions and the Persons form contained 44 questions. While the 1991 Census questionnaire is yet to be finalised, it is expected that the following topics will be included in the census questionnaire:-

Population

1. Sex
2. Relationship to head of household
3. Date of Birth
4. Age
5. Ethnic Group
6. Religion
7. Highest level of education attained/currently attending
8. Marital Status
9. Citizenship
10. Place where found at time of census
11. Place of Birth
12. Duration of residence in present locality

13. Place of last previous residence
14. Type of activity (short reference period - 7 days)
15. Employment Status
16. Occupation
17. Industry

Household

1. Number of households
2. Number of persons in household

Housing

1. Location of Living Quarters
2. Type of Living Quarters
3. Occupancy
4. Water Supply
5. Type of lighting
6. Type of toilet
7. Year of construction

7. Mapping

Like in 1980, the Census of 1991 will require the whole country to be divided into separate enumeration blocks (EBs), each containing 80-120 living quarters or about 500 persons. Each EB will be the area of work of one enumerator. These EBs will be grouped into units of covenient size (8-10 blocks) to form census circles, each of which constitutes the responsibility of a supervisor. A group of 8-10 census circles constitutes a census district which will be the responsibility of a district superintendent. Two or three census districts will make up one administrative district which will be the responsibility of an assistant commissioner.

In terms of maps, two different sets of maps need to be prepared for the 1991 Census. Firstly, the enumeration block sketch map needs to be prepared for each of the 36,000 EBs. Secondly, census district maps which are drawn on a scale of 1:63,360 for rural areas and 1:25,000 or larger for urban areas need to be prepared. Preparation of these two sets of maps for the 1991 Population and Housing Census is progressing smoothly.

The preparation of EB maps for the 1991 Census involves a review of the 1980 EB maps taking into account current data on the EBs obtained from intercensal surveys conducted by the Department of Statistics as well as external sources relating to housing development (both public and private obtained from developers). The principle of the 1980 EB boundaries is kept in mind during the review. EBs that exceed the workload size of an enumerator are subdivided into more manageable EBs while those below the required size are combined with other adjacent under-sized EBs.

In the 1980 Census, the EB maps that were prepared were of different sizes and this posed handling and operational problems during enumeration. For the 1991 Census, the EB maps will be prepared in a uniform size to facilitate ease in handling during field enumeration.

In the process of preparation of census maps for the 1991 Census, considerations are also given to the usage of maps after enumeration. This is in relation to the presentation and provision of census statistics in the form of maps. At enumeration block level, plans are underway to incorporate a Geographic Information System (GIS) into the census data base. In this way, the usefulness of census data will not only be greatly enhanced by the addition of a spatial dimension but also by the flexibility of data retrieval made feasible by the availability of modern computer technology.

8. Census Pre-tests/Trial Census

An essential feature in census taking is the need to conduct tests on various aspects of a census plan prior to the conduct of the actual census. Towards this end, a couple of census pre-tests were undertaken in 1989 in preparation for the Census in 1991. The pre-tests had as their objective the testing of the relative efficiency of alternative formats of the draft census schedules in terms of compactness and clarity of concepts and definitions. In addition, the pre-tests were carried out to test the wording and layout of questions as well as response categories contained in the questionnaire. Another area of test was with respect to the design and usefulness of the instruction manual with a view of identifying and rectifying any deficiencies.

Apart from the pre-tests, a Trial Census or Pilot Census is planned to be held in 1990, a year ahead of the actual census. The ·Trial Census will represent a dress rehearsal of the census field organization, recruitment, training, census forms and schedules, enumeration procedures and instructions, processing (manual and computer), tabulation and other important aspects of the census. The Trial Census will yield as its by-product important information on speed-rates relating to the average time for enumerating a single household as well as for editing, coding and data entry. This information will be extremely useful in estimating the staff required at the various stages as well as giving invaluable information on cost requirements.

9. Recruitment and Training

The recruitment of census staff as well as their training for the 1991 Census will not differ substantially from that adopted in the 1980 Census. The responsibility of recruitment of enumerators and supervisors will be placed in the hands of the district officers who will be provided with guidelines as to the type of qualifications required of supervisors and enumerators.

In the 1980 Census, enumerators had at least a secondary education, that is, 11 years of schooling and possess at least a Sijil Persekolahan Malaysia (equivalent to a School Certificate). It was preferred that they be from the local area to which they were assigned to enumerate in order to overcome possible language problems and unfamiliarity with the area. Supervisors on the other hand were generally required to have at least 13 years of schooling and possess a Sijil Tinggi Persekolahan (equivalent to the Higher School Certificate). Supervisors consisted of school leavers as well as serving government officers and teachers.

The training of census personnel was on a decentralised basis. A group of about 10 enumerators were trained by a supervisor who in turn were trained in groups of 10 by a district superintendent. District Superintendents were trained by headquarters staff at each regional training centre. This method of training, to be effective, meant that each tier of trainers should impart the same knowledge and instructions that they received to the next lower level without altering materially the original meaning and intent of the census questions and instructions.

It is planned that for the 1991 Census, experienced staff in the state offices of the Department of Statistics will be heavily involved in the training of the census personnel at the state and district level. With this approach, it is hoped that the resultant training will be more standardised and uniform with the same message being communicated to some 36,000 enumerators and 3,600 supervisors. These experienced staff will also serve to clear any doubts that are raised during the training of census officers. The use of video tapes as a medium of conveying instructions with regard to filling-in of questionnaire, fieldwork procedures and interviewing techniques is being looked into with the expressed purpose of ensuring uniformity in instructions and training.

10. Publicity

The publicity used in the 1980 Population and Housing Census proved to be effective and the strategies used will be employed with a greater intensity for the 1991 Census. In 1980, the publicity for the census was conducted by the Ministry of Information through a joint committee of the Ministry of Information and the Department of Statistics. Films were shown over the national television networks; slides were shown at the local cinemas; publicity and feature write-ups appeared in the national and local newspapers; posters were distributed and displayed; talks and explanations were given by the Information Department's mobile units; postmarks were utilised. Small calenders promoting the census were distributed to school children and members of the public. The census song was also played over radio and television. Posters, pamphlets and leaflets highlighting the census date were widely distributed.

It is envisaged that the state offices of the Department of Statistics will operate a toll-free telephone enquiry service to assist the general population in clearing any doubts that they may have regarding the census. A "missed persons" campaign urging all persons to call the local census office in cases where they have not been enumerated is also being considered. The inclusion of census messages with the telephone and electricity bills being sent out to consumers can also be implemented.

11. Post-enumeration Survey

A post-enumeration survey (PES) designed to estimate coverage and content errors will be conducted after the census enumeration in 1991 as was done in 1980. The results from the PES will be used to adjust census counts which will be incorporated in the General Report of the Population Census.

In the 1980 Census, the PES involved a re-enumeration of a one-stage 5 per cent cluster sample of enumeration blocks (EBs). In order to ensure the independence of the PES, the project was carried out by a different division of the Department of Statistics. The temporary staff recruited, if found to be former census enumerators, were assigned to different areas from the ones they worked in during the census. Furthermore, information from the census was only used at the reconciliation stage. All information for the PES was collected afresh. Different questionnaires were developed and used for the PES although the concepts and definitions remained the same.

The information collected during the 1980 PES was matched with that obtained from the census and the matching was done at three levels, namely the living quarters (LQ) level, household level and the person level. For units that could not be matched, a field verification exercise was carried out. The PES showed that the overall level of under-enumeration was 4.4 per cent in 1980. Under-enumeration was found to be higher in the urban areas than in the rural areas. In terms of age, under-enumeration was found to be high in ages 0-4 years, 15-29 years and 60 years and above. Sex-wise, under-enumeration was higher among males as compared to females.

In addition to the PES, the population census counts for the age group 0-4 according to sex and ethnic group were also checked against population estimates based on forward surviving the births occurring in the five years before the census using registration data. The results of that check suggested that PES failed to capture the full extent of under-enumeration in that age-group.

The PES for the 1991 Census will be conducted along the same lines as that for the 1980 Census. Weaknesses in the 1980 PES will be identified and improved upon. Special attention will be paid to those age groups where under-enumeration was found to be high, especially that of 0-4 years. As for the 1980 Census, demographic analysis besides the PES will also be used to measure census coverage.

12. Data Processing

12.1 Manual Processing

Before the census forms can be processed by the computer, there are a number of operations that need to be performed manually. In the 1980 Census, all census forms were transported from the various districts and states to the headquarters in Kuala Lumpur. These census forms were checked manually against control totals to ensure that all the returns were accounted for. The census forms were then sent to the coding section for coding of information relating to place of last previous residence, occupation and industry. On completion of the coding process, the forms were sequenced and batched before being sent to the computer for data capture. Quality control checks were also performed at every stage of manual processing. Preliminary field count summaries were manually compiled and presented as a first release of the 1980 Population and Housing Census data.

It is envisaged that there will be dramatic changes with respect to processing for the 1991 Census. Firstly, plans are afoot for processing to be undertaken on a decentralised basis in 6 regional centres (4 in Peninsular Malaysia and 1 each in Sabah

and Sarawak). The rationale for decentralised processing is primarily based on the need to minimise the transportation of census forms from the far flung areas of the country to a central processing centre. In the 1980 Census, delays were experienced in the transportation of forms especially from Sabah and Sarawak to the processing centre in Kuala Lumpur. The processing of census forms nearer to the data source at the 6 regional centres will make it possible for the exploitation of local knowledge for coding (especially migration which tends to be more short distance in nature) as well as verification of data inconsistencies found in the census schedules. Moreover, this decentralised approach will give the Department's regional officers experience and exposure for future post-census surveys whereby the questionnaires can be processed regionally rather than be sent to the headquarters for processing. In implementing this approach of decentralised processing, problems such as shortage of skilled and experienced staff as well as ensuring that instructions for checking, coding, quality control, etc. are uniformly carried out will surface. These problems are however, expected to be overcome by the deployment of experienced staff to the regional offices for short periods of time when they are most required apart from having a centralised training of regional staff. In addition it is hoped that with the development of a detailed and standardised instruction manual to be used by all the 6 regional centres, the problem of uniformity will be resolved.

In the field of coding, plans are underway to introduce certain changes with a view of facilitating coding work. In the 1980 Census, the coding of "place of last previous residence" was hampered somewhat since the locality list used was not comprehensive and up-to-date. However, for the coming census, work is already in progress to prepare a locality index based on information from the 1980 Census and this will be updated from the recent household surveys undertaken by the Department. In addition to the coding of "place of last previous residence", clerical coding of occupation and industry in the 1980 Census proved to be a time consuming process since these items of information are known to be complex and difficult to code. In this regard, the Department is pursuing the possibility of using computer - assisted coding (CAC) for the forthcoming census for the coding of these items of information. CAC lists the possible codes drawn from a computer dictionary or reference file of codes that are likely to match given descriptions for the operator to select the most appropriate code. With this approach, it is hoped that the coding process will improve data quality and greater timeliness.

Statistical quality control procedures, which were used in the 1980 Census, enhanced efficiency and accuracy of coding. They will continue to be used in the 1991 Census. At each stage of data processing operation, a sample of census forms for each E.B. will be selected and inspected to see the extent of errors.

Another manual operation that was performed in the 1980 Census, was the compilation of field count summaries. For the 1991 Census plans are underway for this compilation to be performed at the regional offices of the Department of Statistics using micro-computers. This is expected to result in a more timely and accurate set of preliminary population counts.

12.2 Computer Processing

The mode of data entry for the Malaysian Censuses conducted in 1970 and 1980 was through the optical mark reading (OMR) approach. However, for the 1991 Census, micro-computers will be used as the medium for data entry. This new approach will avoid many of the technical problems associated with the use of OMR as follows:-

(a) The use of OMR necessitates a considerable lead time since special paper needs to be used for printing and has to be ordered well in advance.

(b) OMR also require that stringent conditions (e.g. printing position, special ink, etc.) be observed in the printing of the forms. If these conditions are not observed, the rejection rate could be rather high.

(c) OMR machines are not extensively used in the country. As such, there are a limited number of models as well as suppliers for these machines. Availability of maintenance and spare parts as well as technical support is also rather wanting.

In the 1980 Census, the problem of shortage of census schedules at some centres did occur although a reasonable percentage of extra forms were given to each centre and a further back-up supply was provided for at the state level. As an emergency measure, the census questionnaire was printed on non-optical forms and distributed immediately to those centres experiencing shortages. The information on these non-OMR forms were then transcribed onto OMR forms at headquarters before data capture. Such transcription problems need not arise if the census schedule used is other than OMR as is proposed for the 1991 Census.

The rapid advances in micro-computers, bringing in its train enhanced processing speeds, large internal storage capacity and large random access memories, have created an environment whereby they can be used for data entry of census information.

Moreover, data entry can be done with a generalised software package. For the 1991 Census, plans are underway to use the IMPS (Integrated Microcomputer Processing System) which is available from the U.S. Bureau of Census. The module called CENTRY of this package will be used for data entry while editing and tabulations will be done using the CONCOR and CENTS modules respectively. The Department does not therefore have to mobilise the necessary skilled manpower to develop its own systems and programs. In the 1980 Census, the entire suite of programs for validation, imputation and generation of tables was written by the staff of the Department of Statistics.

Editing of data at the data entry stage will be restricted to checking that codes keyed-in fall within a given range. If the code for a response is outside the given range it would be considered as an unknown. This minimal check is adopted in order to allow the operators to concentrate on data entry work without much interruption.

The validation and imputation phase will be performed automatically by the computer according to the specification rules given for cases of missing information or inconsistencies of data. Imputation for most variables will be made on the basis of partial information from the same record. For variables that are deemed to be important, the method of hot deck will be employed to impute unknowns.

13. Publication and Dissemination of Census Data

The tabulation and publication plan for the 1991 Census is expected to be very similar to that adopted in 1980. The first report expected from the 1991 Census will be a field count summary which will show the number of living quarters (vacant and occupied) households and persons (male and female) for the state and administrative districts of the country. It is expected to be released within 4 months after the completion of the census.

Anticipating the great demand for census data as soon as the census is completed, it is planned that an advance or provisional report based on a sample will be produced though its circulation may be confined to key government agencies and central planning bodies. In terms of coverage of topics, this report will be fairly comprehensive although the data shown will not be at the lower geographical levels (i.e. district, mukim etc). A main report based on a full census count is also to be

produced followed by state reports and reports at the district and mukim level for a few selected important characteristics. In addition to this, special reports focussing on certain topics of special interest will be produced.

In the 1980 Census, the publication of reports entailed firstly the cumbersome and lengthy process of cutting out the required data from the computer print-outs and pasting it onto pre-prepared composer-typed formats before being sent for printing. For the 1991 census, plans are underway to exploit the modern computer technology towards improving production and release of census results. New technology enables the production of publication quality copy directly from computer files with minimal manual intervention. It is hoped that with the acquisition of laser jet printers for the 1991 Census, the cumbersome process of cutting and pasting data onto pre-prepared composer typed formats as practised in 1980 will be overcome.

In the 1980 Census, a volumnious number of tables were produced in hard copies in anticipation of requests for such tables some day by users. The data from these tables, though in unpublished form, were made available to users on request. The drawback of this approach was that these tables required a large storage space and retrieval of data was not always easy. Advances in computer technology makes it possible to store data in table formats in the form of optical discs and retrieval to be performed whenever required. Plans are underway to look into the feasibility of using such an approach to storing data for the coming 1991 Census

The dissemination of data will not only be through the traditional means of publication alone. It will be augmented with a range of media including maps, sample tape, other electronic media, seminars and the like.

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MAJOR FEATURES OF THE

1990 CENSUS OF POPULATION AND HOUSING

OF THE PHILIPPINES*

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I. OVERVIEW. (Sections 1.0 - 4.8)

1.0. Introduction

1.1. A population and housing census refers to the entire process of collecting, compiling, evaluating, analyzing, and publishing data about the population and the living quarters of a country or of a well-defined part of a country.

1.2. On May 1, 1990, the 9th census of population and the 3rd census of housing will be conducted in the Philippines.

1.3. The 1990 Census of Population and Housing (CPH) is designed to take inventory of the total population and housing units in the Philippines and to collect information about their characteristics. The census of population is the source of information about the size and spatial distribution of our economic and cultural characteristics. The census of housing, on the other hand, provides information on the supply of housing units, together with the structural characteristics and facilities which have bearing on the maintenance of privacy, health and the development of normal family living conditions. These kinds of information are vital for making rational plans and programs for development and will set up benchmarks for special groups in the population mentioned in the 1986 Constitution such as women, youth, disabled, cultural communities, etc.

2.0. Authority

2.1. Section 2 of Commonwealth Act No. 591, approved on 19 August 1940, authorized the Bureau of the Census and

Statistics, now the National Statistics Office (NSO), to collect by enumeration, sampling or other methods, statistics and other information concerning population and to conduct, for statistical purposes, investigations and studies of social and economic conditions in the country, among others.

2.2. Batas Pambansa Blg. 72, which was passed on 11 June 1980, further accorded the NSO the authority to conduct population censuses beginning 1 May 1980 and every ten years thereafter without prejudice to the undertaking of special censuses on agriculture, commerce, housing and other sectors as may be approved by the National Economic and Development Authority.

2.3. More recently, Executive Order No. 121, otherwise known as the Reorganization Act of the Philippine Statistical System, which was passed on 30 January 1987, declared that the NSO shall be the major statistical agency responsible for generating general purpose statistics and for undertaking such censuses and surveys as may be designated by the National Statistical Coordination Board (NSCB).

3.0. **Census Organization**

3.1. The NSO is the agency responsible for the formulation and execution of plans to undertake the CPH. At its helm is an Administrator who is assisted by a Deputy Administrator. It has 2 line departments, 2 staff departments and 3 support staff offices.

NSO has permanent field offices in 13 regions, 73 provinces and some 900 cities/municipalities of the country. For Metro Manila, 7 census offices have been established.

3.2. Outside the NSO organization, special bodies are created to make possible the needed interagency cooperation

and involvement in carrying out the CPH. The censuses will be under the supervision and coordination of the NSCB which shall issue such rules and regulations as may be necessary for the successful undertaking and completion of the census. The Administrator of the NSO who is responsible for the overall census operation is at the same time the Executive Officer of the NSCB for the CPH. Provincial, city and municipal census boards headed by the local government executives serve as counterparts of the NSCB at the local government level. The local census boards shall provide such facilities and assistance as shall be required by the NSO.

4.0. Methodology and Scope of the Census

4.1. Unlike in previous censuses, the 1990 CPH will use two methods of gathering information. One, the usual personal interview method wherein the enumerator asks the questions from the respondent and simultaneously records the respondent's answers to the questionnaire. The other method is the use of self administered questionnaires (SAQ). Here the enumerator distributes the questionnaires to the households in designated SAQ areas and collects the accomplished questionnaire from the household at an appointed date.

4.2. The field data collection activities involve simultaneous mapping, listing, selection of sample households, and enumeration of the population in every enumeration area (EA). The household will be used as the enumeration unit. A complete listing of living quarters and/or housing units shall be done including vacant housing units, simultaneously with the listing and enumeration of households.

4.3. The total number of census field personnel to be recruited from among Division Superintendents, principals and teachers will be about 1000 Census Area Supervisors, 8000 Team Supervisors and 40,000 enumerators. These will be trained in the third and fourth of the four level trainings to be undertaken.

4.4. This census will be carried out through the combination of complete enumeration and sampling. A systematic cluster sampling design will be adopted instead of systematic random sampling, with each city/municipality treated as a domain.

4.5. CPH Form 2 (Common Household Questionnaire) will be used to enumerate all households except for those in sample clusters. It contains 11 demographic items and 8 housing items. Also, in addition to these items, 24 additional demographic and housing items will be asked of households in sample clusters using CPH Form 3 (Sample Household Questionnaire). Note that the items in CPH Form 2 can be made available at the barangay level and the additional items in CPH Form 3, at the city/municipality level. The institutional population will be enumerated using CPH Form 4 containing 8 demographic items.

4.6. At the provincial level, accomplished forms will be prepared for machine processing. This will involve checking the completeness of the count of accomplished forms, verification of geographic identification, ensuring of legibility of entries, and coding of entries. The accomplished questionnaires will then be transmitted to the regional census office for machine processing to include data entry and verification, completeness checking and updating.

4.7. A Census Evaluation Survey (CES) will be conducted one month after the census enumeration. The CES aims to measure the completeness of coverage of the CPH and the quality of information gathered in both the population and housing censuses. The NSO will subcontract through the Philippine Social Science Council a consortia of universities or institutions to implement the field enumeration and matching operations plan. This will enable the NSO staff to fully devote their time and effort to the CPH and ensure the complete independence in field operations between the CPH and the CES.

4.8. Sp·cial procedures will be employed by specialized agencies to enumerate persons who live in places other than the regular housing units like the homeless and tribal populations.

II. MAJOR FEATURES. (Sections 5.0 - 11.3)

5.0. Consultation With Data Users

5.1. The Consultative Meetings With Data Users of the 1990 Population and Housing sought to determine users' data needs from the activity. More specifically, it aimed to come out with the subjects and questions to be included in the questionnaire. While consultations were done for the past censuses, it is for the 1990 census that consultations were first held in the regions. Conducted in the 14 regions of the country, the one-day consultative meetings were convened during the last quarter of 1987.

5.2. For every meeting, a review of past population and housing censuses was presented. This included the concepts used, the definitions of terms adopted in the past censuses, and the justification for inclusion of such topics

in the past censuses.

Also discussed were the planning considerations for the 1990 CPH like census methodology (method of enumeration, unit of enumerations, sampling); scope and coverage (items or topics to be collected, geographic area coverage); and method of data processing and tabulation. Questions and suggestions brought out by the participants were also considered in planning out the census.

To have a basis for the topics to be included in the census questionnaires, participants were asked to fill up checklists for the topics recommended for inclusion in population and housing portions. The participants were also asked to rank the topics given according to the importance of these in their planning activities. They were also asked to give the suggested tabulations for the topics.

5.3. Aside from the regional meetings, consultations were made through the inter-agency and technical committees organized by the NSCB. Most of the users from the government's national offices were represented in these committees. One-on-one consultations with specialized agencies were also made like the National Commission Concerning Disabled Persons and the Bureau of Disabled Persons of the Department of Social Welfare and Development for the disability questions; the Institute of National Language for the question on ability to speak Filipino; and the National Manpower and Youth Council and the Bureau of Technical and Vocational Education of the Department of Education, Culture and Sports for the questions on vocational and technical skills.

Other sources of suggestions in the 1990 CPH questionnaire included workshops organized by NSO to review

the census questionnaires and manuals as well as correspondence from individuals, organizations, foundations, local officials and representatives from the Philippine Congress.

5.4. Evaluation of the recommendations was made using the following criteria:

1. Need for the data in planning, both at the national level and local level;

2. Ability by the NSO, in coordination with the user agencies, to formulate clear and concise instructions for the item;

3. Suitability of topic for data collection, i.e., respondents must be willing to give adequate information; questions must not be controversial or offensive to the respondents, etc.;

4. Availability of resources for the census undertaking; and

5. Comparability not only with past census data but with international statistics as well.

5.5. Based on these criteria, twelve (12) new population topics were added to the 1980 CPH list:

overseas worker indicator	employment status
religious affiliation	occupation in the past week
disability	industry in the past week
mother tongue	availability for work
place of previous residence	looking for work
duration in present residence	reason for not looking for work

On the other hand, eight (8) new housing topics were added to the 1980 CPH list as follows:

state of repair	monthly rental of housing unit or lot
presence of telephone	
presence of motor vehicle	sources of financing
land ownership	usual manner of garbage disposal
acquisition of housing unit	

The complete list of items to be collected in the 1990 CPH is shown in Appendix A.

5.6. After arriving at which topics were to be included in the census, the decision of which would be in CPH Form 2 was made on the basis of which variables were identified to be required for benchmarking at the barangay level.

Some sectors have expressed reservations on the length of the questionnaire, finding even the short form to be long. However, it is felt that limiting the number of questionnaire items further will be reneging on the 1986 Constitutional mandates by the statistical system.

6.0. **Self Administered Questionnaire**

6.1. The following criteria were used to identify the areas for the SAQ:

1. It is an urban area.

2. Most of the houses in the area are fortified with high walls.

3. The residents in the area are generally apathetic to interviews by census enumerators.

4. The residents are away at work during the day.

5. The area has an identified boundary.

6.2. The operation will be closely coordinated with the barangay captain or president of the homeowners association of the village. The questionnaire will be distributed together with an instruction sheet and cover letter to the households. The accomplished questionnaire will be collected from the household five (5) days after it was distributed.

7.0. **Sampling**

7.1. While the word `census' denotes the complete enumeration of units within a defined territory

simultaneously, the 1990 CPH, due to financial and manpower constraints, will be carried out through the combination of complete enumeration and sampling.

7.2. All households will be enumerated and asked basic questions on population and housing while a ten percent sample of these households will be asked to answer questions in addition to the basic ones. Thus, basic demographic, soci-economic and housing characteristics will be available at the barangay or village level for the items in the Common Household Questionnaire (CPH Form 2). Information from the additional items to be asked on a sample basis, using the Sample Household Questionnaire (CPH Form 3), will be available at the municipality level.

7.3. In the choice of the sampling design for collecting detailed information in the 1990 CPH, six criteria combining both objectives and constraints were considered in selecting the sampling design. These are practicality, bias control, precision of estimates (a coefficient of variation of 10% or less), economy of resources (not more than a 20% sample), time constraints (availability of teachers only for a short period of time) and mapping constraints. Taking these criteria into consideration, a systematic cluster sample in all enumeration areas (EAs), with cluster size of five households, will be applied in the 1990 CPH. (EAs refer to census areas of about 300 households each.)

7.4. It is worth mentioning that other different designs were considered. Among them were (a) ten percent systematic sampling as used in the 1980 CPH, (b) one stage cluster design with EAs as clusters, (c) one stage cluster design with EAs subdivided further into clusters of 50 households or less and (d) a two-stage design. [Sturdevant, 1989].

7.5. A ten percent systematic sampling design was initially planned for the 1990 CPH. However, a similar scheme (although using varying rates) in the 1970 and 1980 censusesallegedly brought about a systematic bias towards the selection of small households by enumerators. A longer form was administered to sample households; hence the burden of enumeration was heavier. An enumerator found his load partially alleviated whenever the household chosen as sample according to the scheme happened to be small. A good number appeared to have chosen small houeholds as a matter of convenience even if this was not in accordance with the design.

Results indicated later that average household sizes, sex ratios by age group, and family composition patterns obtained from the sample differed from the non-sample households. There was an over representation of small households in the sample which tended to be very young families or those of the very old. Hence, this implied distortions in the census characteritics influenced by age such as education, literacy and economic activity. [Lewis, 1989]. It has also been forwarded that some members of sample households were purposedly omitted in the enumeration by the interviewers.

7.6. The one-stage cluster design with EAs as clusters would allow an enumerator no leeway in the selection of sample households since each EA will be enumerated 100% with either CPH Form 2 or 3 and not a combination of both. However many municipalities will have a sample of one or zero and have no variances calculated. Large EA's selected would need to be subdivided to reduce workloads, but the amount of cartographic work needed to bring this about in a year's time will be tremendous. Based upon the barangay size

distribution of households in 1980, this could comprise nearly half of all barangays in 1990.

Moreover, the within heterogeneity criterion of a cluster may not be satisfied as in the case of economic activity in the rural area. We may face the situation of interviewing 200 households on their activity when interviewing just 10 or 20 households may be enough to establish that it is a fishing EA. The sample variance of single-stage cluster sampling improves not on the increase in sample size, but in the increase in the number of clusters [Cochran, 1977].

7.7. In order to obtain any kind of sampling efficiency, the EAs would have to be divided in clusters of fifty or less households. However, the mapping problems at this late stage in the preparations appear monumental to even consider this scheme seriously.

7.8. The two-stage design consists of first enumerating all EAs using CPH Form 2 and then selecting sample households at the second stage from the sampling frame provided by the accomplished listing forms, CPH Form 1. However, this was shelved despite the efficiency of the design since the enumeration of an EA has to be completed first before the listing sheets can be prepared for sample selection. There might not be sufficient time to complete the second stage of enumeration considering that the services of teachers will be utilized for the operations and any spillover into the next month, June, will preclude the availability of teachers due to the opening of classes.

7.9. In order to minimize selection bias and at the same time obtain efficient and accurate estimates at the

municipal level, systematic cluster sampling will be adopted in the 1990 CPH. In this sampling scheme, the municipalities are treated as domains. An EA will be divided into clusters of size 5 and a corresponding number of sample of the clusters will be obtained for each EA. Households in sample clusters will be enumerated using CPH Form 3. The rest of the households will be enumerated using CPH Form 2.

The sampling rates will depend on the size of the municipality where the EA is located. The different sampling rates are listed below:

No. of Households in the Municipality	Sampling Rate in the EA
1 - 500	100%
501 - 1500	20%
1501 and above	10%

7.10. An example of the mechanics of this sampling design is shown in the next two illustrations.

Illustration 1:

Suppose an EA has 121 households and this EA is within the municipality which has 3000 households. In this case, a 10% sampling rate will be applied. With 121 households, the EA will be divided into 25 clusters wherein 24 clusters will have a size of 5 households and 1 cluster, with 1 household.

Cluster No.	Household No.				
1	1	2	3	4	5
2	6	7	8	9	10
3	11	12	13	14	15
.					
.					
.					
21	101	102	103	104	105
22	106	107	108	109	110
23	111	112	113	114	115
24	116	117	118	119	120
25	121				

Getting a 10% rate, an EA with 25 clusters will have sample of 2 or 3 clusters. As a rule, the random start should be from 1 to 10. If the random start is 5, the sample households will have serial numbers

```
        21 to 25
        71 to 75
       121.
```

Thus, there will be a total of 11 sample households.

Municipalities with less than 1500 households will be identified before enumeration using the estimated number of of households in 1990 based on the 1980 CPH.

To ensure that all EAs have at least one sample cluster, circular sampling will be employed. The mechanics of this procedure is shown in Illustration 2.

llustration 2.

Suppose an EA has 42 households and this EA is within the municipality which has 3000 households. In this case, a 10% sampling rate will be applied. With 42 households, the EA will be divided into 9 clusters wherein 8 clusters will have a size of 5 households and 1 cluster, with 2 households.

Cluster No.	Household No.				
1	1	2	3	4	5
2	6	7	8	9	10
3	11	12	13	14	15
4	16	17	18	19	20
5	21	22	23	24	25
6	26	27	28	29	30
7	31	32	33	34	35
8	36	37	38	39	40
9	41	42			

Getting a 10% rate, an EA with 9 clusters will have a sample of 1 cluster. If the random start is 10, circular sampling will be employed since there are only 8 clusters with a

complete set of 5 households. Thus, clusters 9 and 10 will be comprised of the following households

Cluster No.	Household No.				
9	41	42	1	2	3
10	4	5	6	7	8

and household numbers 4 to 8 will be re-interviewed as sample households.

The serial numbers for the sample households by cluster number and random start for 20% and 10% sampling rate in the EA are shown in Appendix B and Appendix C, respectively. Thus, if an enumerator is assigned a random start of 3, all the household serial numbers in this column will be interviewed as sample households. These are households with serial numbers

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 11 to  15
 61 to  65
111 to 115
161 to 165
211 to 215, etc.
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The sampling rate for the systematic cluster sampling is equal to the number of households in selected sample clusters divided by the total households in the EA. Thus, to get the estimates, the sample observations will be multiplied by the inverse of the probability of selection.

8.0. Decentralized Data Processing

8.1. Data processing is a set of operations that translates the data collected into a useful set of statistical information. The decennial 1990 CPH is probably one of the largest and costliest data processing operations that the country will undertake. Data processing involves many stages, each of which should be dealt with carefully to come up with accurate and reliable results.

8.2. While it is preferable to carry out all census processing activities in a single location, the convergence of microcomputers and the relatively affordable means to acquire these equipment have paved the way for the consideration of decentralized data processing approach for the 1990 CPH.

8.3. The approach of decentralizing of data processing is not actually new in the Philippine experience of census taking. In the 1975 and 1980 censuses, coding and manual editing of the questionnaires were done at the provincial offices. However, machine processing, which includes keypunching of coded questionnaires, machine editing and tabulations, was done at the Central Office.

Centralized machine processing was vulnerable to a number of problems encountered like the delay in the transmission of manually edited and coded questionnaires. Some schedules were also found to be unedited or uncoded. Thus, the transmitted census forms were again reviewed, edited and coded resulting in the delay in the release of the census results.

8.4. For the 1990 CPH, fourteen (14) regional census offices will be equipped with microcomputers to decentralize processing up to completeness check. This will include the manual preparation of the documents, data entry and the completeness check stage of data cleaning. The manual processes will include folioing of accomplished questionnaires, the assigning of codes to specific responses, the review of geographic identification codes, and the preliminary checks of certain key items. Then, the questionnaires will be keyed. Finally a completeness check will be made to ascertain that all questionnaires are

accounted for and that these documents carry the correct geographic identification. [Africa, 1989].

8.5. With the data encoding simultaneously done at fourteen(14) regional offices rather than at one central location, preliminary census results can be disseminated earlier at the regional and lower sub-national levels. Moreover, with this approach, early corrective action on doubtful entries and questionnaires can be initiated close to the source of data. This in effect places a significant amount of accountability on the field offices for the quality of data. Bulky questionnaires need not be transported but in its stead, data stored in diskettes will be transferred through tape streamers to the Central Office for further machine processing: editing and tabulation. There are other advantages which spill over into the medium term such as the improvement of manpower skills and transfer of computer technology to the field offices. [Ward, 1988].

Moreover the current hardware component of the NSO processing machinery is built around an IBM 4341 mainframe installed in 1981 considered old and obsolete taking into account the latest advances in computer technology. It was logical to lessen the dependence on it and adopt distributed processing as an alternative.

8.6. While the regional census offices have been given the responsibility of processing data from selected surveys, the census activity will require these offices to handle at least eight times more than the number of micros each has. The perceived, though manageable, disadvantages to this approach are the slightly higher cost of computer maintenance and supplies outside Manila and limited availability of personnel with technical expertise in the regions. While

regional operation revolves around data encoding only, it will require substantial technical support from the Central Office to ensure that these operational procedures will not be the bottlenecks of the early release of CPH results.

9.0. Census Evaluation Survey (CES)

9.1. In the ensuing CES, a two stage sampling design, with province as the first stage and barangay/EA as the second stage, will be used. A sample of 180 segments (with a per segment average of 75 households for the urban areas and 200 households for the rural areas) will be selected and direct estimation of coverage error will be produced for three domains, namely Metro Manila, Other Urban Areas and Rural Areas.

9.2. A sample of approximately 21,625 private houeholds in the segments spread throughout the country will be reinterviewed one month after the census enumeration. Matching of the survey data for these sample segments with the corresponding census records following a set of matching criteria will be done to determine "matched", "non-matched", and "possible matched" households and persons.

Field follow-up visit will be conducted to determine the final match status of "possible match" and "non-matched" cases. For instance a follow up visit will be made to find out whether or not persons or households listed in the census but not in the CES were correctly enumerated in the census.

9.3. Estimates of the coverage rate, missed rate, and erroneous rate in the 1990 CPH will be generated. Indicators of the reliability or consistency of census responses to selected items will also be calculated.

10.0. Special Enumeration

10.1. Although most of the interviews can be accomplished by following the regular enumeration procedures, there are some special enumeration situations that will be handled somewhat differently.

10.2. The homeless population is defined as those persons who, at the time of the census are without a shelter that can be considered living quarters. They carry their few possessions with them, sleeping in the street, in doorways, on piers, parks, railroad stations, transportation depots, or in any other space.

Enumeration of the homeless population will be conducted by the Department of Social Welfare and Development (DSWD) on the midnight of 30 April 1990 in all places of the country where they are found. It will start at 11 p.m. and last until the whole area shall have been covered.

10.3. The existence of tribal groups is another problem, considering that those people live in forested hills and mountains that may be impenetrable by enumerators if the usual enumeration will be applied. On the other hand, a double count of the population due to existence of nomedic tribes is also possible.

Tribal groups can be classified into modern tribes and primitive tribes. Modern tribes are already integrated in modern society; thus, they will be enumerated using the regular enumeration procedure. Primitive tribes have not been assimilated into the market economy and the rest of the community. The regional branches of the Office of the Northern/Southern Cultural Communities and the Bureau of Forest Development provincial offices will be tapped to link

up with the tribal chiefs and to indicate places where forest dwellers live.

11.0. <u>Summary</u>

11.1. The major features introduced in the 1990 CPH are geared to produce responsive, timely and accurate statistics. The Consultative Meetings With Data Users and other fora on the census questionnaire content will address to the dilemma of local planners on the lack of statistics for use in their respective areas. With the introduction of decentralized data processing based at the regional offices, it is hoped that processing of census results can be facilitated to produce the much-needed benchmark data even for the smallest political unit in the country. The adoption of the systematic cluster design sets a precedent on the use of variations in the sampling procedures discussed in the textbooks. This design will hopefully solve the bias observed in previous censuses.

11.2. In consonance with the 1990 CPH slogan, "SENSONG PAMBAYAN, SANDIGAN NG KAUNLARAN" (National Census, Basis for Progress), it is seen that the census undertaking can be a powerful agent for social change as a result of having a clearer picture of the population, its demographic and socio-economic characteristics. These data will be of great importance in focusing on special interest groups in relation to planning and initiating livelihood and welfare projects. The 1990 CPH preparatory activities, aside from those discussed in this paper, also include other innovations in terms of enumeration of the homeless population in coordination with the Department of Social Welfare and Development, and the cultural communities in consultation

with the Offices of Northern (ONCC) and Southern Cultural Communities (OSCC), and the use of self-administered questionnaires in selected areas of the country. Coordination with other agencies for their assistance in the census enumeration activity is being done under aegis of the NSCB. A Census Evaluation Survey (CES) of the 1990 CPH will be conducted right after the CPH to estimate census coverage error as was conducted after the 1990 CPH.

11.3. These and other developments as outlined in Appendix D have emerged after exhaustive studies were conducted and scenarios drawn up in line with the CPH objective to provide benchmarks and small area statistics on the population and its characteristics in aid of planning and countryside development.

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New Approach in the Conduct of
Singapore's Census of Population, 1990

Presented by Mr Lau Kak En

Singapore

New Approach in the Conduct of
Singapore's Census of Population, 1990

Introduction

Population census taking in Singapore dated back to 1871, about fifty years after its founding in 1819. The first census in Singapore as an independent nation was conducted in 1970 and the last census was conducted in 1980. The next census to be taken is the 1990 Population Census. The planning and preparation of the 1990 Census began in early 1988 and the Pilot Run of the Census was conducted in May 1989. This Census adopts a new methodology, expands its scope and coverage and makes extensive use of information technology. A comprehensive household database will be established at the end of the Census.

Broader Scope and Coverage

A total of 68 information items will be gathered in the 1990 Population Census, more than double the number of items collected in the 1980 Census. Some of the items that had been included in the sample schedule in 1980 are upgraded to the main schedule. These are questions on transport, education, language or dialect spoken in the household and fertility. Ambulatory status of the aged, name and address of employer for a working person, name and address of school or other educational institution for a student, sector of employment, field of study for a university or polytechnic graduate, are new items. All topics covered in the sample enumeration are new. They are leisure, voluntary community services, religious practices and child-care arrangements. A separate household schedule is introduced to gather information on housing and household structure. To facilitate automatic coding of household structure by computer, data on linkages between spouses and parent-child relationship are collected. The census coverage has been expanded to include for the first time Singaporeans who reside overseas because of work, study or otherwise.

Use of Administrative Records and Databases

Information on individuals and households that has already been captured in existing databases and is relevant to census-taking is utilised for the conduct of the 1990 Population Census. The key data hubs that provide core information on individuals and households are the People Hub and the House Frame Master maintained by the Ministry of Home Affairs and the Department of Statistics respectively. The People Hub contains particulars of individuals like name, address, date of birth, sex, ethnic group, etc. The House Frame Master is a database containing basic data on dwelling units such as address, type of dwelling unit, electoral division, etc. It was created from data gathered in the 1980 Census of Population and is regularly updated from the records of government authorities such as the Building Control Division of the Ministry of National Development and the Housing and Development Board.

Other sources of individual information include data on level of education attended by students obtained from the Ministry of Education, various colleges and universities, information on car ownership from the Registry of Vehicles and residential telephone numbers from the Singapore Telecoms.

Data Administration and Unique Identification Numbers

In order for data from various sources to be merged into a single database, there must exist unique numbers for identifying individual records. There already exists in Singapore a system of identifying individuals through Unique Identification Numbers (UIN) for Singapore Citizens and Permanent Residents and Foreign Identity Numbers (FIN) for foreigners who are working or studying or staying in Singapore. These identification numbers provide the most important key in linking data on individuals from various sources. In the Establishment Hub, each establishment or organisation is uniquely identified by a Central Registration Number.

A national standard address format has been established and adopted for use in various government data-hubs to facilitate data-sharing. Hence, addresses of dwelling units or buildings are coded in a standard format. The coded address serves as the key for placing individuals in their respective houses. This is done by merging the data from the People Hub with the House Frame Master using coded address as the key.

Further, data from different sources but pertaining to the same piece of information will have to follow a common system of classification and coding. If not, they have to be converted to standard classifications and formats using computer programmes or through manual efforts. Items are collected at the most detailed level to facilitate data manipulation and generation of different statistical tables to meet various requirements.

Pre-Census Survey on Employers

In addition to official records, a pre-census Survey on Employers is being conducted to gather information on occupation and place of work of employees and type of economic activity carried out by the firm. This survey covers more than half of the workforce. It will also generate information on the type of sector (public or private) in which a person is employed. The occupational descriptions given by employers and the corresponding codes are captured and will be used as data dictionary on occupations in the census proper for automatic or computer-assisted coding of occupations.

Computerised Reticulation

For the purpose of the Census, Singapore is divided into census divisions and districts according to the electoral register. Each census district is further subdivided into smaller reticulated units to facilitate census operations. In past censuses, reticulation was carried out manually by the Survey Department based on survey maps. Currently, this is computer generated. Using road maps and directories,

a proximity code for each street or road within each census district is inserted. The proximity code which is in a running sequence, links each street to another according to their physical proximity. Using the proximity codes and the House Frame Master, the addresses of dwelling units of a particular census district are arranged in an order that reflect their physical position along a certain route. Dwelling units are then serially arranged and divided into reticulated units. A reticulated unit on an average consists of 25 dwelling units which are serially numbered by the computer. This renders the field reconnaissance and house numbering phase of the 1980 Population Census unnecessary.

Creation of Pre-Census Household Database

Using unique identification numbers, the individual data from the People Hub and other relevant individual data from various sources are merged into a common database. This database is again merged with the reticulated houses using coded address to create the Pre-Census Household Database. This database plays a very important role in the conduct of the 1990 Population Census and the processing of census data. Firstly, it serves as a sampling frame for selecting samples based on prior knowledge of the characteristics of the houses or households. Secondly, individual records of persons staying at each address are pooled together for pre-printing of data onto census schedules. Schedules with pre-printed data are easier to be completed by respondents and enumerators alike. Thirdly, it is also used to generate a control listing of dwelling units in each reticulated unit to facilitate fieldwork. Last, but not least, it is used for the development of computerised systems for the capture, verification and processing of data gathered in the census. The Census Household Database being developed using database management system, IDMS/DB, it permits the checking of duplicate records and provides on-line facilities to retrieve information. Using this database, the results of the census will also be updated as at Census Day. Census tabulations for census publications, monograph writers and other users will be generated from this database.

Pre-printing of Data

Instead of merely providing respondents with blank forms, the census schedules used in the 1990 Population Census are to be pre-printed with available data on individuals and households. Pre-printing of data saves time and effort on the part of enumerators and respondents in filling the schedules. They only need to verify the pre-printed data and to amend or update them if necessary. The enumerators can concentrate on asking questions on items with no pre-printed entries and checking on consistency of answers. Time spent on coding and keying in of data from census schedules is minimised as only amendments and data for items with no pre-printed information need to be keyed in.

New Census Questionnaire Design

The 1990 census schedules are designed to accommodate the new approach adopted. The schedules are prepared such that they facilitate pre-printing of data extracted from the Pre-Census Household Database. Questions are phrased

in such a way that they are easily understood by form fillers in self-enumeration. Items are pre-coded to minimise manual coding effort in the office. Three types of census schedules are used in the 1990 Population Census. The Household Schedule collects information on the household and housing characteristics and demographic data of individual household members. The Enumeration Schedule for Individuals contains questions on economic activity, education, language, transport, fertility, income and religion and is to be answered by everybody. The sample schedule for Individuals is to be answered by household members of selected households only. It contains questions on participation in arts, social and recreational activities, childcare arrangements and religious practices.

Priority Enumeration

Another innovation introduced in the 1990 Population Census is to accord higher priority for enumeration and processing of data collected from 10 per cent of the population. This is to facilitate the early release of census data to users in government agencies and the monograph writers. Data based on the 10 per cent enumeration is expected to be ready within three months of the fieldwork. In turn, the monograph writers are expected to finalise their monographs in time for scheduled releases.

New Sampling Design

The availability of extensive prior information on households such as geographic distribution and ethnic composition as a result of the creation of the Pre-Census Household Database facilitates the development of efficient and effective sample designs. For the selection of the 10 per cent sample for priority enumeration, the reticulated units within each census division are ordered according to the ethnic composition in the reticulated units in which 1-in-10 sample is taken. The advantage of having the Pre-Census Household Database is most evident after a sample is generated. Preliminary information based on existing records of all households can be extracted from the database, making it possible to compare the characteristics of the sample with that of the entire pool of households. In fact, the current census approach allows all the possible systematic samples to be generated thereby enabling the most representative sample to be selected.

Cost and administrative considerations dictate that the sample for the sample enumeration should be a sub-sample of the priority sample. However, while the priority sample is designed to be self-weighting and representative, the small numbers of the minority races (Malays and Indians) in some CDs implies that if inter-CD comparisons were to be meaningful, the minority races have to be deliberately over-sampled. The information available in the household database allows the households of each CD to be assigned to three strata, that is, Chinese, Malay and Indian. With an average household comprising 5 members, theoretical considerations suggest that 60 households from each stratum would be sufficient for inter-CD comparisons. However, the disproportional allocation entailed in this sampling design means that the sub-sample would not be a representative sample, and post-stratification based on population stratum weights would have to be used to obtain estimates at the CD and national level.

Self-enumeration

Personal interview was the only method adopted for the conduct of previous censuses. Enumerators had to interview household members to obtain information and enter them in the census questionnaires. Today, higher level of education among Singaporeans has made selective self-enumeration possible. For households which choose to self-enumerate, census schedules will be left with household members to complete. Explanatory notes in English or other official languages such as Malay, Chinese or Tamil will be provided to assist households in filling the census schedules. Since available data from selected databases are pre-printed, respondents only need to fill in information pertaining to items with no pre-printed data and where necessary, amend and update the pre-printed information. Enumerators, however, has to check the completeness of forms when they return to collect them on appointed date from the households. Where self-enumeration is unlikely to be effective, personal interview method will continue to be used. In the pilot run of the census carried out in May 1989, the self-enumeration method was found to be effective as it saved about 25 per cent of the enumerators' effort and time.

Final Household Database Update

30 June 1990 is designated Census Day, the day of reference for census taking. A final enumeration is usually done on this day to ensure information collected is valid as at this date. However, unlike past censuses, final enumeration on the 30 June 1990 will not be conducted on the field by enumerators but carried out in the office. This is done by using birth and death records to update the Census Household Database.

On-Line System for Control and Monitoring

In the 1990 Census, computerised on-line systems are developed to control and monitor work progress on census fieldwork as well as data processing in the office.

In the census field operation, each enumerator has to record his/her daily work progress on a progress record sheet which is printed on the folder. Periodically, hand-held computers will be used by field supervisors to capture the progress record of each enumerator. The information from the hand-held computer will be up-loaded onto a laptop computer when the van which carries it visits the census operational centre. The data will be subsequently transferred to the mainframe computer for generating periodic reports on work progress by specific census area. The data will also be used as input into the Payroll System for the calculation of salaries and allowances of enumerators.

The data processing control system tracks the flow of some 30,000 census folders through all the different phrases of data processing namely, manual editing and coding, data entry, automatic coding, computer-assisted coding, batch editing, and database updating. Bar-code readers will be used for data capture of the folders containing completed census schedules. The system provides on-line facilities for data

update, validation and retrieval and generates periodic or ad hoc reports for monitoring the progress of data-processing.

Form Scrutiny and Data Editing

When the filled census schedules are returned to the Census Office, they are subject to editing of items and scrutiny for completeness of questionnaires. Where there is a need to clarify with a particular household on some entries, the editors can make use of the telephone number provided in the schedule to contact the household concerned.

Data Capture, Coding and Validation

Personal computers are used to capture data from census schedules. For information that has been pre-printed on the schedules, only amended data need to be captured, thus reducing a substantial amount of effort in the keying in of data.

Most of the census items are pre-coded. However some items like industrial activity, occupation and place of work requires answers to be given in descriptive forms. Coding of answers in descriptive forms will be carried out with the assistance of computers as far as possible in order to reduce manual coding effort and at the same time increases the accuracy of coding. Automatic coding requires the matching of descriptive answers with the keywords or word-strings stored in data dictionaries. For the coding of industrial activity, a data dictionary is created using names of companies from the Establishment Hub. Common abbreviations of words such as PL for Private Limited are also included. If the name of the company is matched, then the Industrial Activity Code, the Central Registration Number, Address of Work Place and Employment Sector are automatically coded.

Similarly, occupations in descriptive forms can be automatically coded when entries are matched with the data dictionary created from the Singapore Standard Occupational Classification. It also contains occupational titles and synonyms, alternative occupational titles and feminine terms such as Policewoman and waitress. The data dictionary is enhanced as and when new occupational descriptions or new synonyms and abbreviations are encountered.

If descriptive records on occupation and industrial activity cannot be automatically coded, the records will be rejected for computer-assisted coding. This involves manual effort in searching the correct code associated with the descriptive answer from the Establishment Hub or the data dictionary. A total of 40 on-line workstations are required to handle rejected records for computer-assisted coding.

Certain information is not explicitly collected from the households but is derived or generated by computer. In such a case, computer programmes are written to make the derivations and to automatically encode the information derived. In the 1990 Population Census, the structure of household and family composition will be derived in this way. Based on information on spouse linkage, parent and child linkage and relationship to the head of household of each household member, data on the

number of generations, the number of couples and the number of family nuclei in a particular household can be derived and the household structure automatically coded.

All census records will undergo a stringent verification and compatibility checks. They will only be loaded into the Census Household Database when the records are error free.

Census Tabulations and Data Dissemination

Census tables will be published in hard copies as in the past. However, in the 1990 Census, the tables will be generated using the Table Producing Language (TPL). The TPL/Postscript interface will be used to provide high quality output to be printed on desk-top laser printers for publication. In addition, the census data will be selected, aggregated and formatted for loading into the Public Access Time Series (PATS) database. This will provide PATS users and subscribers on-line access to the census data using their personal computers through the communication line. Census results will also be disseminated using magnetic tapes or cartridges. These methods of dissemination of census results are of particular interest to users who intend to re-classify or manipulate the data for their own analysis.

To facilitate the generation of ad hoc tables requested by monograph writers and government agencies, a special enquiry and retrieval software (INQR) has been developed. The 1980 and 1990 census data will also be converted using common codes and classifications. Three coded items on occupation, industrial activity and census district in the 1980 Census have been converted using 1990 Census classifications. The 1990 Census classifications and codes are more comprehensive than the 1980 Census. They have to be converted to 1980 classifications to permit meaningful analysis to be made.

Benefits of the New Approach

The obvious benefits of the new approach is the saving of time and manpower in field operations and data-capture. With greater reliance on official records, data are more accurate and less imputations are necessary. This increases the reliability of the census results. The linking of various databases serve not only as a massive exercise to render all data collected by various authorities to be consistent for the use of census-taking, it inadvertently results in a common pool of information that can be constantly updated. There are also potential benefits to be reaped from the setting up of the Census Household Database in the future. The Household Database provides a comprehensive sampling frame for the conduct of specialised surveys for non-census years. It could also be linked to other data sources to generate cross-tabulation of data. Since many items can be constantly updated, longitudinal studies on cohorts and target groups can be rigorously pursued with greater ease. The most crucial benefit of the 1990 census will be the fact that the foundation would have been laid for future censuses to be conducted with greater ease and if need be, at more regular intervals than the 10-year lapse in the past.

The 1990 Population and Housing Census of Thailand

by

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1. <u>History and Background of Population and Housing Census of Thailand</u>

The first national census was organized in 1909. The following censuses were in 1919, 1929, 1937, 1947, 1960, 1970 and 1980. The first five censuses were conducted by the Ministry of Interior. Since 1952 the National Statistical Office (NSO) has been in charge of conducting the censuses, under the authorization of 1952 Statistical Act.Which was revised in 1965. The sixth population census which was undertaken in 1960 presented statistics for each province and for the whole kingdom, as well as a separate report for the northeastern region, most of the statistics published in the report were tabulated on an amphoe (district) basis except some data were tabulated on a tambon (commune) and village basis.

The 1970 Population and Housing Census was the first census which employed electronic data processing equipment (IBM 360) in processing the data. It was also the first census from which the NSO had produced a report on evaluation and adjustment of the census population as well as detailed analytical reports on major subjects of population characteristics in addition to the basic characteristics reports for the changwat (province), regions and the whole kingdom. The analytical reports were based on the sample census tape which was randomly selected from the whole census data by computer and the topics of studies were fertility, economic and migration etc..

The 1990 Population and Housing census of Thailand will be conducted in April 1990, with April 1 as Census reference date. This census will be the ninth population census and the third housing census to be conducted in Thailand.

The preparatory work of the 1990 Population and Housing Census was started in the late 1986. Two pre-tests were taken in various provinces in 1987 and 1988 aiming at testing the applicability of the questionnaire, concepts and field instructions. In 1989 a pilot census was conducted in in one province in order to experiment every phase of census taking and to find ways and means to solve the emerging problems and it is expected that similar problems will arise in the actual census.

2. Committee Structure

According to the 1965 Statistical Act. The responsibility for conducting the census rests upon the NSO. In addition to providing the government and the public with primary and secondary data, the NSO is in charge of improving the level of knowledge and enhancing the cooperation of the people in order to increase the usefulness of data collection.

The NSO is a government agency with departmental status under the Office of the Prime Minister. The administration within the NSO is divided into seven divisions.

1. Office of the Secretary is responsible for correspondence, personnel, finance, office supply, procurement and maintenance, and other services which are not specifically assigned to other divisions.

2. Population Survey Division is responsible for overall planning and coordination of the population and housing census as well as sample surveys pertaining to population, housing, labor force, education and other related social statistics.

3. Economic Survey Division is responsible for censuses and sample surveys pertaining to agriculture, wholesale and retail trade, industry, household expenditure and related economic statistics.

4. Statistical Techniques Division is responsible for sampling design for sample censuses or surveys, evaluation and analysis of census or survey results as well as preparing maps for censuses and surveys, reviewing all statistical project proposals of government agencies for technical soundness and priority.

5. Field Operation Division is responsible for organizing and administering field operations for censuses and surveys.

6. Data Processing Division is responsible for data processing operations of census and survey data and data processing for other government agencies as well as private organization.

7. Statistical Information Division is responsible for issuing publications including census, survey reports as well as other statistical publications, and for planning and implementing census and survey publicity program.

The implementation of the 1990 Population and Housing Census has been technically the responsibility of the NSO, particularly under the Population Survey Division. However, since the population census is the most important statistical project, involving other divisions within the NSO and various government agencies, a committee was established in 1987 by the Council of Ministers namely the Advisory Committee on the 1990 Population and Housing Census.

A Working Group on the 1990 Population and Housing Census was also set-up in the NSO. The Working Group is composed of all directors and those who involve in the census work. Moreover, 4 Sub-working groups were also formed i.e., the Sub-working group on "Planning for Questionnaire and Field Instruction, Sub-working group on "Mapping", Sub-working group on "Publicity Program" and Sub-working group on "Data Processing Planning".

3. Design and Execution

   Coverage of the census

   The coverage of the 1990 Population census will be the same as in 1980 census or covering all persons residing in the country as of the census date, 1 April. The population under the coverage will be all Thai nationals; civilian citizens of foreign countries having their usual residences in Thailand, or those who have resided in Thailand at least three months; persons having their usual residences in Thailand, but who have been at sea or temporarily abroad as of the census dates; and government officials, both military and civilian, including Thai diplomatic personnel, and their families located abroad.

   Persons who will not be enumerated are nomadic group, i.e. hill tribes and fishing groups having no fixed place of residence; foreign military and diplomatic personnel and their families located in Thailand; and citizens of foreign countries temporarily visiting or travelling in Thailand for less then three months and refugees or illegal immigrants located in camps provided by the government.

   The basic unit of enumeration will be household. All households and persons usually residing in each household will be enumerated. All persons falling within the scope of the census will be enumerated on a de jure basis except the students who will be enumerated on a de facto basis.

   Schedule Content

   Form I. Form I is used as household listing form

   Form II. Form II is used as enumeration form and has two types: Short Form and Long Form. Short Forms with 14 population questions are used to enumerate every household (see topics 1-14 below) and Long form with 30 population questions and 16 housing questions are used for sample households. The schedule content are as follows:

Topics to be covered in the 1990 Census
_____

In the 1990 Population and Housing Census of Thailand, the following topics are planned to be included in the census schedule :-

Population Topics

1. Type of living quarters

2. Type of Construction materials

3. Type of households (Private or Collective)

4. Language usually speaking in household

5. Name

6. Relationship to head of household

7. Sex

8. Month, year of birth

9. Age

10. Highest grade completed

11. Marital Status

12. Occupation of last year

13. Industry of last year

14. Work status of last year

15. Line number of mother

16. Religion

17. Place of birth

18. Duration of present residence

19. Previous changwat of residence (for those who resided at the present residence less than 5 years)

20. Move from village or municipality

21. Reason for moving

22. School attendance

23. Literacy

24. No. of children born alive in this household

25. No. of children born alive who live elsewhere

26. No. of children born alive who died

27. Contraceptive practice

28. Occupation of last week

29. Reason of not work

30. Physical disability and type of disability.

Housing topics (for private household only)

1. Type of structure of the private house (single unit structure, multi-unit structure)

2. Type of construction materials

3. Whether or not this house is used for commercial purpose

4. Tenure of household living quarter.

5. Monthly rent.

6. Advanced payment

7. Ownership of land (for owner)

8. Ownership of rented dwelling (for renter)

9. Number of rooms regularly used for sleeping

10. Water supply system (water supply and drinking)

11. Type of lighting

12. Toilet facilities

13. Place used for cooking

14. Type of fuel used for cooking

15. Consumer durable goods: radio, television, electric fan, bicycle, motor cycle etc.

In the 1980 census topic on "age at first marriage" was asked, but at this time it was dropped out and the topic on "physical disability and type of disability." was added.

Publicity

For the publicity program of the 1990 Population and Housing Census, the NSO will utilized various mass media such as newspaper, radio and television, broadcasting. For the rural area, NSO will launch publicity campaign through local authorities and local social activity centers i.e., wat (temple), school, market place, local health center etc.. For this purpose, various kinds of publicity materials will be used such as posters, broughures, wood and boards etc..

Budget

The total budget for the 1990 Population and Housing Census is estimated at 237 million baht ($ US. 9.3 million). Of this amount, 24 million baht will be allocated in the 1989 fiscal year (covering October 1988 through September 1989) for Pilot Census in one province and for printing questionnaires to be used in 1990. The remainder will be allocated for costs of field work and for the tabulation and publication of reports.

Census Map

As for the census map, the NSO has prepared a completely new set of base maps for the 1990 census. Maps are made for the Bangkok Metropolis, all municipal areas and large villages. There are two types of maps: enumeration district map and master map. The enumeration district map shows boundaries, street, lanes, canal and other land marks, location of houses and block boundaries within an ED. Size of an enumeration district will be approximately 200-300 house. A large enumeration district in municipal area may consist of one or more blocks.

The master map shows the location of all enumeration districts in each municipal area or each district in the Bangkok Metropolis, Sanitary District and a large village. Since map is the most important tool for field work to identify the boundary of ED, therefore base map has been up-dated since 1988.

Pretest and Pilot Census

Two pretests of the Population and Housing Census of Thailand had been conducted in 1987 in areas with heterogeneous population, selected on a purposive sample basis. The objectives of these pretests are as follows:

1. To test the applicability and appropriateness of listing form, enumeration form and instructions for enumerators and crew leaders.

2. To test the appropriateness of concepts, wording and format of census forms.

3. To study various problems arising from field operations and find appropriate solutions.

After the pretest, a Pilot Census of Population was conducted in April-May 1989, in the province of Nakhon Prathom, an "average" province with 616,000 inhabitants, some 50 kilometers from Bangkok. However only three districts out of six were covered in this operation.

The primary objective of the Pilot Census is (I) to test the field organizational structure and effectiveness of controlling system,(II) to test the effect and applicability of sampling selection, (III) to test enumeration procedures and some of the programs and other computer techniques to be used in census tabulations and(IV) to test the quality of temporary employees, who hold Bachelor's Degree or Vocational Level of Education, working as supervisors and enumerators for the census field works.

Training and Field Work

Crew Leaders and Enumerators

In the previous censuses of Thailand, crew leaders and enumerators were selected from local school teachers and appointed by the Secretary General of the NSO.

In the 1990 census, the field supervisors and the enumerators will be recruited from persons holding Bachelor Degree and high school graduates respectively. There will be altogether 1,775 supervisors and 17,750 enumerators.

For the 1990 Population and Housing Census, training of personnel will organized in three stages (see figure 2). Subject matter officers will be first selected from program technicians of the NSO, who had participated in the planning of the census. In the first stage, subject matter officers will train about 100 master trainers (selected from technicians of the NSO), and all provincial statistical officers. In the second stage, master trainers will train field supervisors. In the third stage, field supervisors will train enumerators. The in-class training will last one week for field supervisors and one week for enumerators, each training period will also include field practice. The training course will be equiped with standard instruction manuals, overhead projector, flip chart and tape recorders.

Enumeration Procedures

Enumeration procedures will be divided into three types according to the administrative areas as follows:

1. The Bangkok Metropolis:

    All persons and private households in each enumeration district will be listed and enumerated using the Short-Form. But for those 20% selected sample households, the Long Form will be used on both population and housing questions.

Collective households will be enumerated by the Long Form, on detailed population characteristics, and will not be interviewed on the housing questions.

2. Municipal Areas:

All persons and households will be listed and enumerated on the Long Form for detailed informations of population and housing, except for collective households, questions on housing will not be asked.

3. Non-Municipal Areas: Two phases will be performed:

Phase I: In each village or enumeration district, all persons and private households will be listed and enumerated with the Short Form. Collective households will be interviewed with Long Form, but only on population questions.

After listing is completed in each enumeration district, field supervisors will select a 20% sample of private households.

Phase II: Sample private households will be interviewed with the Long Form on both population and housing questions.

Evaluation

After the completion of the census field work, a Post Enumeration Survey (PES) will be conducted in order to evaluate the completeness and the quality of the data obtained as well as to evaluate the quality and efficiency of the census enumerators. All PES interviewers will be the regular field staff of the National Statistical Office. A PES will be conducted as part of the 1990 Population and Housing Census of Thailand with the following objectives:

1. To investigate coverage errors, i.e. errors in the total count of population, resulting from erroneously missing or double counting of population.

2. To investigate content errors, i.e. errors in characteristics

reported for persons who were counted.

In order to investigate both the coverage and content errors for the

whole kingdom, a sample survey will be conducted in about 4% of the census

enumeration districts both in and outside the municipal areas.

Beside the PES, an evaluation by using demographic techniques will

also be employed for investigating the coverage of the census.

Tabulation and publication plan

The tabulation and publication of census data will be divided into

three stages:

1) A preliminary report (by manual tabulation) of population by sex

and households by province, region and the whole kingdom. This report will be

published within 6 months after the end of enumeration period. Population

growth during the inter-censal period, 1980-1990, will also be published for

each province.

2) Advanced Report of basic characteristics, based on a specific

percent sample, by region and the whole kingdom.

3) Reports of population and housing data by province, region and the

whole kingdom. These series should be completed within 2 years after

completion of field work.

Special tabulation: In 1990, special tabulations are also planned

for a series of monograph reports in various subjects such as migration,

fertility, etc.. A sample size is not yet designed, but will be large enough

to represent municipal and non-municipal areas and regions.

Census Calendar

1990 Population and Housing Census of Thailand

Steps	1987	1988	1989	1990	1991	1992	1993
1. Preparation and Planning of the Census							
1.1 Coverage and Procedure of the census	▭						
1.2 Budget	▭						
1.3 Preparation of questionnaire and instructions for enumerators	▭▭						
1.4 Planning for Data processing		▭▭					
(Instruction for manual and machine editing, data entry and tables to be tabulated)							
1.5 Developing Program and tabulation			▭▭				
1.6 Preparation of maps			▭▭				
1.7 Publicity			▭▭				
1.8 Conducting Pilot Census				▭			
1.9 Planning post-enumeration survey (conducting PES and evaluating results)				▭ ▭			
2. Field Enumeration							
2.1 Recruitment of field personnel				▭			
2.2 Training field personnel				▭			
2.3 Census enumeration				▭			
2.4 Conducting post-enumeration survey				▭			
3. Data Processing							
3.1 Manual editing, coding and verifying			▭	▭▭		▭	
3.2 Data Entry			▭	▭▭		▭	
3.3 Machine edit				▭▭		▭	
3.4 Analysis of data				▭▭		▭	
3.5 Evaluating and analysing of the results of the post-enumeration survey					▭		

Census Calendar

1990 Population and Housing Census of Thailand

Steps	Year						
	1987	1988	1989	1990	1991	1992	1993
4. Preparation of Census Results							
4.1 Preliminary report				▭			
4.2 Advance report				▭			
4.3 Final report					▭		
4.4 Analytical report						▭	

Figure 1. Organization Chart of the National Statistical Office

Figure 1. Organization Chart of the National Statistical Office
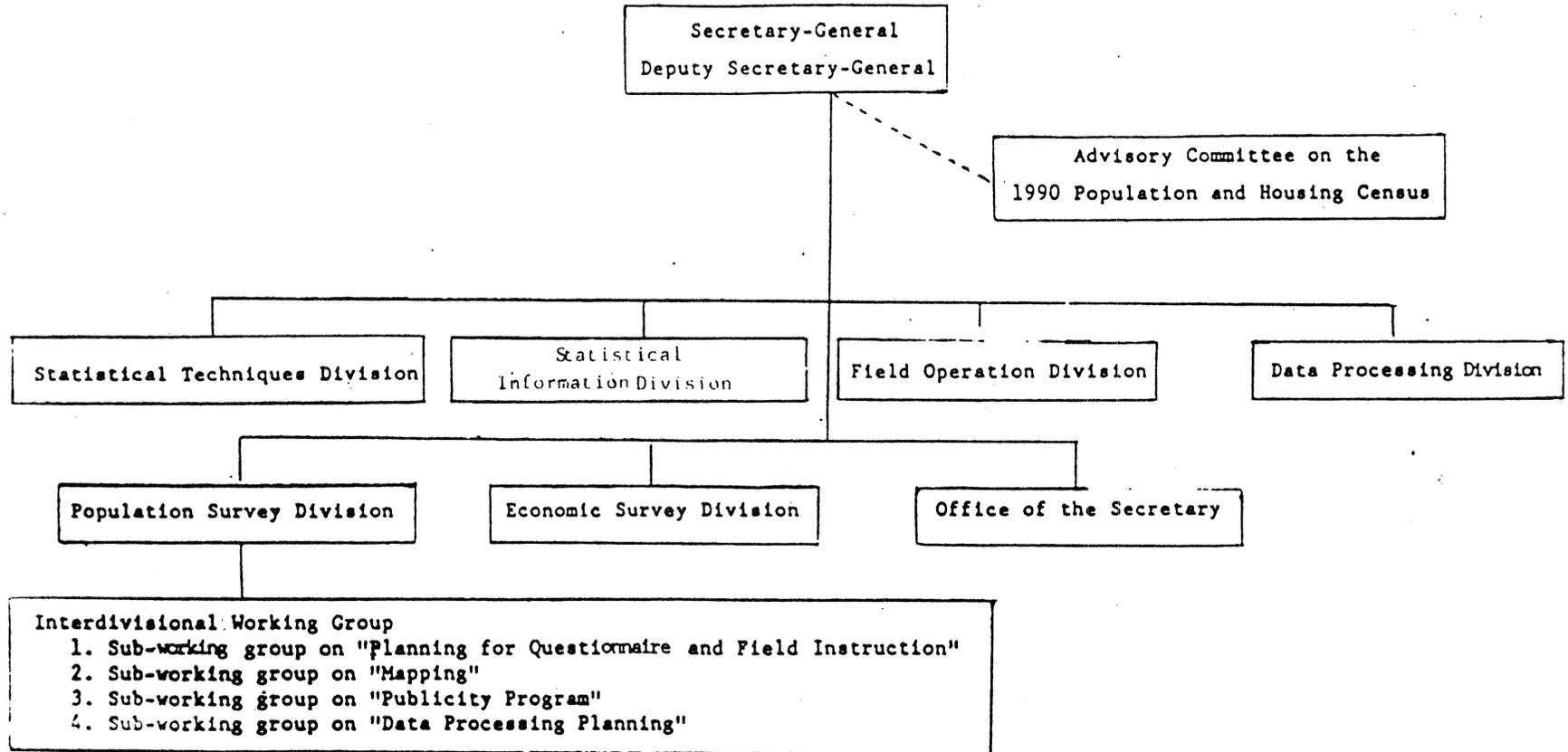
1990 Census Training Program

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                    ┌─────────────────────────────┐
                    │  Subject-Matter  Officers   │
                    └─────────────────────────────┘
                                   │
          ┌────────────────────────┴────────────────────────┐
          │                                                  │
┌─────────────────────────┐              ┌─────────────────────────────────────┐
│ Master Trainers (100)   │              │ Provincial Statistical Officers (73)│
└─────────────────────────┘              └─────────────────────────────────────┘
          │                                                  │
┌─────────────────────────┐              ┌─────────────────────────────────────┐
│ Field Supervisors (1,775)│             │ Statisticians at each province      │
└─────────────────────────┘              └─────────────────────────────────────┘
          │
┌─────────────────────────┐
│ Enumerators (17,750)    │
└─────────────────────────┘
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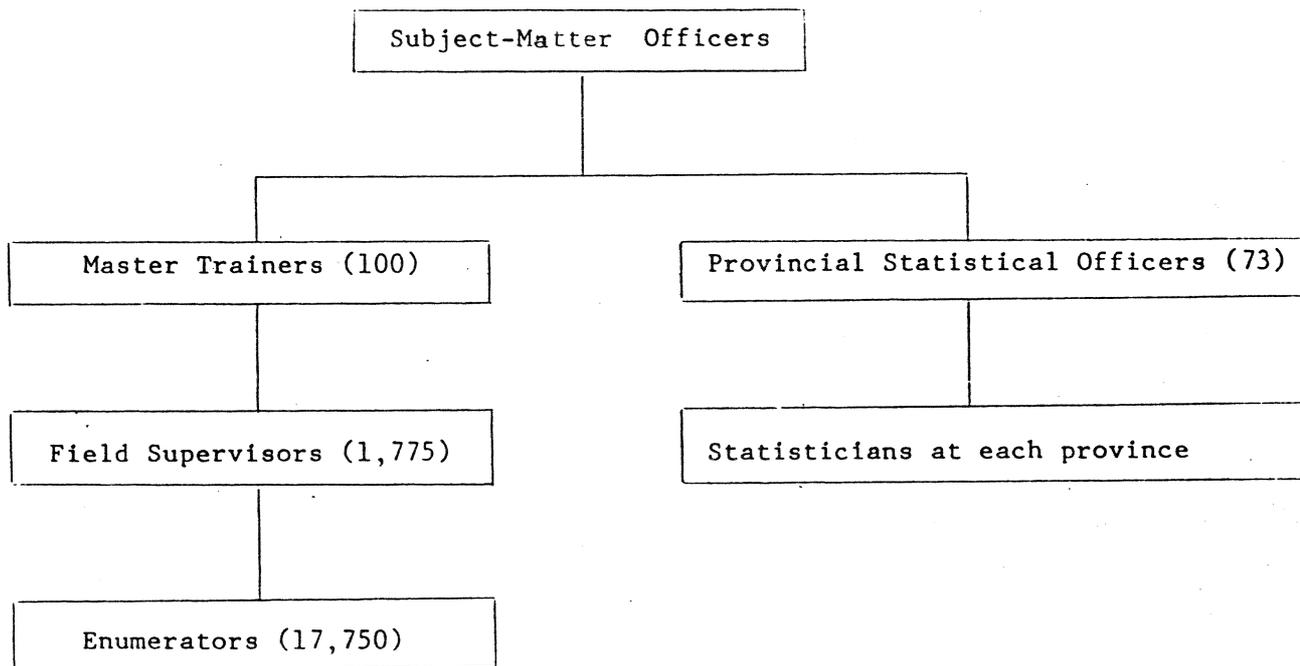
PREPARATIONS AND IMPLEMENTATION OF
1990 POPULATION CENSUS OF CHINA

SUN JINGXIN

STATE STATISTICAL BUREAU
PEOPLE'S REPUBILC OF CHINA

THE FIFTH INTERNATIONAL
MEETING OF THE HEADS OF
NATIONAL STATISTICAL OFFICES
OF ASEAN COUNTRIES AND JAPAN

23-26 JANUARY 1990
TOKYO, JAPAN

THE PREPARATIONS AND IMPLEMENTATION OF 1990 POPULATION CENSUS OF CHINA

I. The background.

China is a country with the largest population in the world, and the population issue has always been a major concern for the Chinese government and the Chinese people.

To gain a clear picture of the changes in the number, distribution, structure and quality of China's population that have taken place since 1982 national population census, the Chinese government has decided to conduct the fourth national population census in 1990, following the previous successful population census in 1982 and the 1% population survey in 1987. This is done to serve for the formulation of the plan and the strategy for the national economic and social development.

The preparation of the 1990 population census started in early 1988. In May of 1989, the Chinese government declared issued a circulation announcing that it would conduct its fourth national population census.

A census of more than one billion people requires strong census organizations. China has not set up permanent census offices. However, Chinese government boasts a tradition of centralized leadership with coordination of various departments concerned when conducting work involving a broad masses. During the previous three national population censuses, temporary census leading bodies were established by the governments at various levels, under the leadership of the State Council. The coming census will be conducted based on he past experience of success. Census bodies will be set up at various levels including central government, provinces, prefectures, counties, townships and villages/neighbourhood committees, so as to form a nationwide census network nationwide. The following figure shows the network:

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      The Leading Group of the Fourth
      National Population Census
      under the State Council (1)
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      The Leading Groups of Population
      Census of Provinces, Autonomous
      Regions and Municipalities (30)
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        The Leading Groups (Offices)
          of Population Census of
         Prefecture-level Cities and
         Autonomous Regions (334)
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      The   Leading   Groups of population
        Census of Counties   Autonomous
      Counties, County-level Cities and
               Districts (2831)
-------------------------------------


-------------------------------------
      The Population Census of Townships,
        Towns, or Sub-districts (60,000)
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-------------------------------------
        The Population Census Groups of
            Villages or Neighbourhood
              Committees (840,000)
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Various levels of governments have set up census bodies, with a leading official   of the local governments taking   the Chairmanship. Officials from other departments also participate in these bodies, such as planning, statistics, household registration, family planning, civil affairs, propaganda, finance, labour, personnel affairs, public health, commerce, agriculture, etc,. The census is listed as an important item on the agenda of government work. All the important problems of the census will be discussed and settled by governments at various levels. This ensures the effective leadership over the census.

Up to now, the leading groups of population census above county level have already been established.

Population census of one billion needs a general mobilization of all the people. The scope of mobilization work includes leaders,

the census bodies and the masses, while its content includes organizational mobilization and mental preparation for the census.

In the respect of mental preparation, the significance of population census should be made clear -- it is an important investigation on national conditions and strength; a vital foundation for a country's scientific policy-making procedures; and the basis for scientific administration of a country. The population census of 1990 will fully mobilize all means of the media to give extensive publicity about the census. Census staff at grass-roots levels will be mobilized to do the job so that everybody will realize that to report faithfully in the census is every citizen's glorious obligation.

The organizational mobilization work represents a new characteristic of 1990 population census. The Chinese government has decided that all staff for the 1990 population census will be recruited from the society. First of all, census agencies at various levels should be established and assured of their effective function, then it is the organization of the census enumerators. The population census of 1990 will be conducted in a larger scale than the census of 1982. The quality of the census staff and their training will be critical for the census, which has been proved true in the previous censuses and in the population sample surveys of the recent years.

Organizational mobilization work should be done both "vertically" and "horizontally". Vertical work means the mobilization from provinces down to townships and assurance of each item of work being fulfilled. Horizontal work refers to the mobilization of all departments in a given area. In this way, an extensive mobilization network which covers the whole country will be established to guarantee the successful fulfilment of the census tasks.

The Statute for the Fourth National Population Census, which is based on suggestions of various departments concerned and has been experimented time and again, was signed on 25 October 1989 by Premier Li Peng and issued as the State Council's No. 45 Decree of the People's Republic of China.

Work concerning verification of household registers and publicity on population census has been started. Other preparation work including address coding, identification of industries and occupations, fund raising, preparation of goods and materials, development of computer programmes for data entry, editing and tabulation, is also going on as scheduled.

II. Main characteristics and new improvements.

The 1990 census, compared with the 1982 census, faces many new situations and problems, because in the eight years between the two censuses, great changes have taken place in the economic and political life of the Chinese people. These emerging problems

should be seriously addressed when planning and implementing carrying out the population census.

---- Along with the change of the distribution and supply system, the cloth coupon has been abolished; the system of distributing grain ration according to the number of family members in rural areas has also been changed. This has affected residents' initiative in household registration, and the number of people who failed to report household registration agencies increased. More people are registered in one place but live in another. So, how to gain the accurate figure on all total number of the population will be a problem we have to deal with in the 1990 census.

---- Along with the implementation of reform and open door policy, population migration has been increased. The inter-regional flow is more frequent, and the floating population in urban areas has soared up by a big margin. Such new situation will make future census more difficult to conduct. The enumeration of the floating population without omission nor duplication will pose as an important task.

---- Along with the extensive family mechanisms planning programme and the enforcement of reward and penalty, some people are more reluctant to report faithfully the number of their family members than before, especially on new births that were beyond the family planning policy would allow.

----. Along with the changing way of economic life, the pattern of occupations and industries of the employed has become more complicated. Large number of agricultural population have shifted to other industries and have turned out to be multi-job-holders. These have added difficulties to the survey on economic activities of the population. Another important task in the 1990 population census is therefore to get a clear picture about the eminent change on economic activities so as to serve the economic reform.

In views of these changes, we regard adapting to the new situations and solving new problems as characteristics of the 1990 census. While working out the census statute and planning its implementation, the following measures have been taken into consideration.

II-1. Increase the content of the census questionnaire.

In order to make comparisons with the last census, China's 1990 population census will keep the 19 items included in the 1982 census. They are as follows: name, relationship to the head of the household, sex, age, nationality, status of household registration, education, industry, occupation, status of inactive population, marital status, births given by women and survived children, birth of women at child-bearing age during one year, types of household, address, number of persons in the household, births and deaths in the household, and number of permanent residents who have stayed at another place more than one year. To

meet the needs for new information, the 1990 census would be different from the 1982 census in the following aspects:

II-1-1. Two items will be added. One is "permanent residence as of 1 July 1985", and the other is, "the reason for moving to the present address". This will help to understand the number of migrated population, the direction of and reasons for migration.

II-1-2. "Agricultural household" and "non-agricultural type household" are added in the item of "household status and type". This will help to reflect China's population in both urban and rural areas, especially the changes of population who are provided grain ration according to city and town grain rationing system, . and the shift of the surplus labour force in the rural areas.

II-1-3. Educational attainment (in schooling , graduated or drop-out) is included in the item of "education" in order to accurately reflect the actual educational level of the population and to assess the quality of China's population and labour force.

II-1-4. The reference time of births and deaths of the population is changed from one year before the census to one and half years before the reference census time. This will facilitate more accurately calculation of China's birth rate, death rate and natural increase rate and the estimation of the life expectancy of the population.

II-1-5. For people who died within one and half years before the census, data were collected on education, marital status and before death. This information is important for the analysis and study of the relationship between health and the status of education, marriage and occupation. It is also helpful in the improvement of public health facilities.

Owing to the limited funds available, the 1990 population census will establish items for survey on the basis of the principle "less items, but better quality". Only items representative of population's most basic characteristics could be included.

II-2. The necessity of verifying household registration before the census.

China has a rather straightened system of household registration, under which everybody has to register his/her name, sex and age. The head of the household is responsible in reporting the birth, death and migration in his household to the relevant registration offices. Therefore, it is undoubtedly logical to make reference to the household registration in the census taking, which conforms with the actual situation in China.

Before the 1982 population census, household registers were corrected by stages and in groups. Those who failed to report or made duplicated reports were picked up and corrected, thus facilitating the full scale census. As mentioned above, there has

been more population newly added to floating population since 1982. More persons have household registration in different places than they live. Cases of non-reporting of new births or deaths happened now and then. It therefore appeared to be very important to verify the system of household registration.

It is true that household registration will be referred to in completing census questionnaires, but it is not restricted by the data from the household registration. More over, the census registration is not just to copy the data from the household registration. In the 1982 census for example, some people who had been registered even after household registration verification were enumerated in the census, when information of actual residing place (residing period over one year) was different from a person's household registration, the person was usually enumerated according to his/her actual residing status during the census.

To get co-operation from the people during the verification of household registration and in the census enumeration, in the course of preparation for the 1990 census, we will attach greater importance to publicity. We will particularly publicize the points that the population census will not affect any of residents' rights and obligations; that all those who have failed to report to their household registration agencies are welcome to register this time, and their liability will not be pursued; and that no personal and household registration data will be used for the purpose other than census data compilation. Thus, people will be free from worries about faithful reporting.

II-3. Improvement of the method of census data collection.

The practice of 1982 population census was mainly in a way that respondents went to enumeration centers at pre-scheduled time. (It was estimated that about 80% of the enumerated population were enumerated in this way.) However, the experience from the annual sample surveys of population changes and the 1% population sample survey conducted in 1987 shows that household visits provide the opportunities for enumerators to understand on the spot the actural number of the family member and other special features of the household. It also facilitates respondents to give answers to the question, especially sensitive questions related to privacy of the households, e.g., pre-marriage pregnancy, adopting of children and the like, which respondents are not willing to report in the enumeration centers. In this case, an interview will bring a more personal atmosphere and reduce the concerns of respondents, thus guarantee the confidentiality of respondents. This is also a way to secure the registration quality. It brings a closer relationship between the enumerators and respondents and is thus well-accepted. We will therefore take this approach as our chief method for the 1990 Census.

II-4. Strict quality control measures.

The Chinese government has set up detailed checking rules for 1990 population census in order to obtain a highly quality census data. After the census enumeration, the supervisors should instruct the enumerators for an over-all check, to find and correct the errors. To ensure the quality of enumeration, it is required that quality control groups at all levels of census offices should be set up, namely, offices at village, town and residential districts. In the process of enumeration, the staff members of quality control are supposed to go their respective enumeration areas to check if there are any omission data of reporting on number of persons, births and deaths in a household by asking the neighbours.

They also check if the questionnaires filled by enumerators are eligible, if any items are missed or wrongly filled, and if the items are logically linked. They do have rights in deciding whether the work done by the enumerators should be done again according to the standards of quality control.

There will be two additional procedures (recheck and acceptance) of the major work, ie, the enumeration, manual tabulation, coding, data entry, computer tabulation. The leading group of the national population census under the State Council are in the process of deciding national unified standards for recheck and acceptance different stages. The work can be continued to the next stage only when it meet these standards. In case it does not reach the requirement it must be return to the field right away, a "shortline feed-back" as it is called, in order to make the correction soon after the error are detected.

The following chart shows the flow of quality control:

Quality guarantee measures	Quality control measures		
to reduce occurrence of errors	to reduce errors which have occurred	to control permissible error rate	
census registration	check	acceptance	sample quality check
manual tabulation	check	acceptance	publication of summary figures
coding	check	acceptance	
data entry	check (verification)	acceptance	
		computer editing	
computer tabulation	tabulation editing	manual verification	publication of detailed figures

II-5. Improvement on the design of computer tabulation.

In general, China's 1982 population census obtained a high quality, the process of data processing was also successful, but due to the lack of experience, there were only 93 tabulation sheets with fewer requirements for machinery tabulations, thus left some important information untabulated, which hindered the utilization of the data, especially limited the social benefit of

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the census results as it affected analytical work.

There will be are 700 tables designed for computer tabulation for the 1990 census. Not only does the number of tabulations surpass of that in the 1982 census, but the contents to be tabulated are also increased. We will still attach attention on the actural utilization of these tables, especially on the timeliness of the tabulation so as to obtain a greater social benefit from the census.

II-6. Adoption of a more decentralized model in data processing.

In China's 1982 population census, the data were processed in two stages, at provincial and national levels. It has been decided that in 1990 population census we will adopt a more decentralized model featured in "three stages and four steps" in data processing, i.e., to perform the data entry and tabulation by levels from prefecture, province, and the central government. The followings explain how the system works:

II-6-1. The first stage -- at prefecture (city) level. Two steps should be completed at prefecture's (city's) statistical computer centers.

The first step refers to completion of the source data entry, check, editing, error correction with micro computers with township as the unit of batch work, resulting in the generation of township source data files.

The second step involves re-editing of the township source data files by using super-micro computer 80386, and merging of township source data files to form the county source data files. These files are then tabulated and processed to produce the county aggregated data files and tabulations which go to the nest level, province. Finally prefecture/city tabulation is executed on the basis of previous steps.

II-6-2. The second stage -- at provincial (municipality, autonomous region) level, where the third step of work is carried out.

The third step is the work to complete check and acceptance of the county aggregated data files from all prefectures/cities in the provinces before they are reported to the central level. Provincial tabulation will be made aggregated data files from the counties.

II-6-3. The third stage -- the central (national) level where the fourth step is to be done by the computer center in SSB.

The work for the fourth steps involves the check-and-accept all of the provinces (municipality and autonomous regions), and finish the final tabulation at national level.

There are three advantages in adopting the above data processing

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model:

a) paralleled and decentralized data entry system saves time compared with sequential centralized data entry.

b) When quality problems arise, they can be reflected in time and be solved right away.

c) It shortens the period of tabulation, which allows the users at all levels share the data and make analysis timely.

This data processing model passed the tests successfully in processing data of 1% national population sample survey in 1987. The model meets the needs of a census with a large population like China where the means of communications are rather backward, while guaranting the quality in data entry.

Please refer to the following chart that shows the system of data processing flow of the population census:

10

data
processing
with
micro
computers

```
                                                    start
                                                      ↓
                                                    census questionnaire
                                                    storage
                                                      ↓
                                                    questionnaire transfer
                                                    and entry
                                                      ↓
                                                    preview check
    ┌─────────────────────────────────────────────→ │
    │                                                 ↓
    │                                                data entry
    │                                                  ↓
    │                                                prove reading (15%)
    │        Yes                                        ↓
    ←──────────── re-entry? ←── No ←──────  qualified?
    │            No │                                Yes │
    │               ↓                                    │
    │            correction ──────────────────────────→ ↓
    │            No                                   correction editing,
    │                   ↑   ↑                         village level
    │        Yes        │   │                  No       ↓
    ←──────────── re-entry? ←───────────────────  qualified?
    │                   │   │                        Yes │
    │              No   │   │                            ↓
    │        Yes    │   │                      No     5% quality sampling
    ←──────────── re-entry? ──────────────────── qualified?
    │                                               Yes │
    │                                                   ↓
    │                                                source data diskettes,
    │                                                township level
```

-------Prefecture / city level -------------------------------------

```
                                                    re-editing, village level
                        No                            ↓
    return     ←──────────────────────────  qualified?
    to
    micro                                          Yes ↓
    computer                                       merge and form source data
                                                   for  counties
                                                     ↓
    data processing                                form & tabulate
    with super                                     aggregated data tape
    micro-computer                                 for counties
    80386                                            ↓
                                                   tabulation for counties
                                                     ↓┌──────────────────┐
    (follow-up                                     classification         │
    work)                                          conversion             │
                                                   process      report    │
                                                     ↓          to upper
                                                   prefecture/city  level
                                                   tabulation       ↓
```

11

```
                                      ┌──────────────────┐
                                      ↓
                              deliver and receive
                              aggregated data tape,
                              county level
                                      ↓
                              copy 1/4  inch tape
                              to 1/2 inch tape
                                      ↓
                              check and accept,
                              provincial level
                                      ↓
     return
     to                    No
     prefecture  ←───────────   qualified?
     processing
                              Yes   ├────────────┐
                                                 │
     (follow-up                classification    │
      work)                    conversion        ↓
                              process          report
                                      ↓        to upper
                              tabulation,      level
                              provincial level   │
                                      ↓          │
                              establish          │
                              data base,         │
                              provincial level   │

────processing at provincial level──────────────────────────┤───────
                                      ↓
                              deliver and receive
                              aggregated data tape
                              of counties
                                      ↓
                              check & accept test,
                              national level
     return to              No         ↓
     provincial  ←──────────   qualified?
     processing               Yes  ↓
                              national tabulation form
                                      ↓
                              hand-over to State Council
                                      ↓
                              establish national
                              population data base
                              (follow-up work)
```

Difficulty in conducting the population census in China is quite evident. The amount of work involved is enormous as China has a population of more than one billion. Economically and culturally, China is still backward, and its various regions are uneven in development. There have been many places not easily accessible due to poor transportation. Nevertheless, it should be stressed

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that in China, governments at all levels enjoys high prestige among the people, posseses a highly centralized socialism system, The Chinese people are equipped with strong sense of political thought, the system of the household registration is fairly complete, the carders are modest, hard-working and eager to learn, and people are patriotic and very supportive of the Government's work.

Another point to be stressed is that we will draw on experience and practice of other countries and develop our own methods according to China's actual situation as we did in 1982 population census. In 1990 census, we will earnestly learn advanced experience and methods of other countries to improve our work in the light of China's conditions, and improve the population census with Chinese characteristics.

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Form for Deaths
(Jan. 1, 1989--June 1, 1989)

Household address_____ Enumeration district_____

Remarks,

Each person						Persons age 6 and over	Persons aged 15 and over	
1.Serial No. of ED&HH	2.Name	3.Sex	4.Nation ality	5.Date of birth	6.Date of death	7.Educational level	8.Marital status at the time of death	9.Occupation before death
		1. M 2. F		Born in the year_____ month____	Dead at ___years of age year____ month____	1.never to school 2.primary 3.junior middle 4.senior middle 5.technical secondary 6.college 7.post graduate	1.never married 2.married 3.widowed 4.divorced	
⊓⊓⊓⊓	⊓⊓⊓	⊓	⊓⊓	⊓⊓⊓ ⊓⊓	⊓ ⊓⊓	⊓	⊓	⊓⊓⊓
		1. M 2. F		Born in the year_____ month____	Dead at ___years of age year____ month____	1.never to school 2.primary 3.junior middle 4.senior middle 5.technical secondary 6.college 7.post-graduate	1.never married 2.married 3.widowed 4.divorced	
⊓⊓⊓⊓	⊓⊓⊓	⊓	⊓⊓	⊓⊓⊓ ⊓⊓	⊓ ⊓⊓	⊓	⊓	⊓⊓⊓
		1. M 2. F		Born in the year_____ month____	Dead at ___years of age year____ month____	1.never to school 2.primary 3.junior middle 4.senior middle 5.technical secondary 6.college 7.post-graduate	1.never married 2.married 3.widowed 4.divorced	
⊓⊓⊓⊓	⊓⊓⊓	⊓	⊓⊓	⊓⊓⊓ ⊓⊓	⊓ ⊓⊓	⊓	⊓	⊓⊓⊓
		1. M 2. F		Born in the year_____ month____	Dead at ___years of age year____ month____	1.never to school 2.primary 3.junior middle 4.senior middle 5.technical secondary 6.college 7.post-graduate	1.never married 2.married 3.widowed 4.divorced	
⊓⊓⊓⊓	⊓⊓⊓	⊓	⊓⊓	⊓⊓⊓ ⊓⊓	⊓ ⊓⊓	⊓	⊓	⊓⊓⊓
		1. M 2. F		Born in the year_____ month____	Dead at ___years of age year____ month____	1.never to school 2.primary 3.junior middle 4.senior middle 5.technical secondary 6.college 7.post-graduate	1.never married 2.married 3.widowed 4.divorced	
⊓⊓⊓⊓	⊓⊓⊓	⊓	⊓⊓	⊓⊓⊓ ⊓⊓	⊓ ⊓⊓	⊓	⊓	⊓⊓⊓

Enumeration_____ Date_____Month_____Day Checker_____ Date_____Month_____Day Supervisor_____

1990 NATIONAL POPULATION CENSUS QUESTIONNAIRE

Reference time, 00,00 July 1, 1990
Respondents must provide information honestly.
Enumerators must record the answers accuratrly.

Household Address _____ Enumeration District _____ Enumeration area (No.____, _____ street)   Name of the Institutional Household_____

1.Serial No.of the household	2.Household type 1.Domestic 2.Institutional	3.No. of persons in the household	4. No. of births in the household in the				5.No. of deaths in the household in the			6.No. of persons in the HH away from this country or city for more than 6 months	Remarks,
			1st 6 months of 1989	2nd 6 months of 1989	1st 6 months of 1990		1st 6 months of 1989	2nd 6 months of 1989	1st 6 months of 1990		
		M ____ F ____ Total ____	M ____ F ____ Total ____	M ____ F ____ Total ____	M ____ F ____ Total ____		M ____ F ____ Total ____	M ____ F ____ Total ____	M ____ F ____ Total ____	M ____ F ____ Total ____	

Each person								Persons aged 6 and over	Persons aged 15 and over				Women aged 15-64	Women aged 15-49
1.Name	2.Relationship to head of household	3.Sex	4.Age	5.Nationality	6.Status and nature of registration	7.Status of permanent residence before July 1, 1985	8.Reasons for migration	9. Educational level	10.Industry	11.Occupation	12.Status of non-working people	13.Marital status	14.No. of children ever born and now living	15.Birth since Jan.1, 1989
	1.head of household 2.spouse 3.child 4.grandchild 5.parent 6.grandparent 7.other relative 8.non-relative	1.M 2.F	Born in the year month		1.residing and registered here 2.residing here over 1 year, but registered elsewhere 3.living here < 1 year absent from reg. place over 1 year 4.living here with registration unsettled 5.used to reside here;is now abroad with no registration 1.agricultural registration 2.non-agricultural registration	residence 1.this county /city; 2.other county /city in same province; 3.other province _____province residence in 1.street committee of cities; 2.town; 3.township;	1.job transfer 2.job assignment 3.work/business 4.study/training 5.to relative/friend 6.retired/resigned 7.moved with family 8.marriage 9.others	1.never to school 2.primary 3.junior middle 4.senior middle 5.technical secondary 6.college 7.post-graduate 1.student 2.graduate 3.under-graduate 4.other			1.students 2.housekeeping 3.awaiting school enrollment 4.awaiting job assignment in city/town 5.retired 6.disabled/aged 7.others	1.never married 2.married 3.widowed 4.divorced	children born alive _____Male _____Female children living at present _____Male _____Female	0.no birth 1st half 1989 1.M 1. 2.F 2. 2nd half 1989 3.M 3. 4.F 4. 1st half 1990 5.M 5. 6.F 6.
	2.spouse 3.child 4.grandchild 5.parent 6.grandparent 7.other relative 8.non-relative	1.M 2.F	Born in the year month		(same as above)	(same as above)	(same as above)	(same as above)			(same as above)	(same as above)	(same as above)	(same as above)
	3.child 4.grandchild 5.parent 6.grandparent 7.other relative 8.non-relative	1.M 2.F	Born in the year month		(same as above)	(same as above)	(same as above)	(same as above)			(same as above)	(same as above)	(same as above)	(same as above)
	3.child 4.grandchild 5.parent 6.grandparent 7.other relative 8.non-relative	1.M 2.F	Born in the year month		(same as above)	(same as above)	(same as above)	(same as above)			(same as above)	(same as above)	(same as above)	(same as above)
	3.child 4.grandchild 5.parent 6.grandparent 7.other relative 8.non-relative	1.M 2.F	Born in the year month		(same as above)	(same as above)	(same as above)	(same as above)			(same as above)	(same as above)	(same as above)	(same as above)

Respondent_____ Enumerator_____ Date_____ Month_____Day   Head of Household_____ Total Pages_____ Page No._____ Page in the Booklet_____

FIFTH INTERNATIONAL MEETING OF
THE HEADS OF NATIONAL STATISTICAL
OFFICES OF ASEAN COUNTRIES AND JAPAN
(23 - 26 January 1990)
TOKYO, JAPAN

Outline of the Plan for the 1990 Population Census of Japan

Statistics Bureau / Statistics Center

Management and coordination Agency

Japan

Outline of the Plan for the 1990 Population Census of Japan

I   General Features of the Population Census of Japan

1.   The Population Census of Japan has been conducted every five years since 1 October 1920, except for 1945 immediately after World War II. (In place of 1945, an extraordinary census was conducted in 1947.) The 1990 Census is the fifteenth in its history.

2.   There are two types of the Population Census in Japan: the full-scale census and the simplified census. The former type is conducted in the years (A.D.) ending with the digit of 0, while the latter type is conducted in the years ending with the digit of 5. Both types cover the same population, that is, all persons living in Japan, but the number of topics covered differs between the two types. In the full-scale census, 22 topics are included, while in the simplified one 17 topics are included.

II   The Program of Execution of the 1990 Population Census

Legal Basis
3.   The 1990 Census will be conducted as of 0:00 a.m. of 1 October 1990 in accordance with the Statistics Law (Law No. 18, 1947) and the following orders:
  i) Cabinet Order Concerning the Population Census (Cabinet Order No. 98, 1980);
 ii) Regulations on Execution of the Population Census (Order of the Prime Minister's Office, No.21, 1980);
iii) Order Concerning the Standards for the Demarcation of the Population Census Enumeration Districts (Order of the Prime Minister's Office, No.24,).
These law and orders stipulate the coverage, the topics and the enumeration procedures of the Census. They also require the persons covered by the Census to respond to the enumeration, and the persons engaged in the Census to keep in confidence the information obtained in the process.

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Area Covered by the Census

4. The Census covers the entire territory of Japan, except for the following islands:
- Habomai Islands, Shikotan Island, Kunashiri Island, and Etorofu Island;
- Takeshima in Goka-mura, Oki-gun, Shimane-ken.

Persons Enumerated in the Census

5. In earlier censuses, the persons enumerated in the Census were counted at the places where they were at the time of the Census on the basis of "de facto" concept. But since the 1950 Census, they were counted at the places where they usually lived as of the census date based on the "de jure" concept.

6. In the 1990 Census, all the persons who have been living or will be living in Japan for three months or more are to be enumerated. But the following categories of persons are excluded from the coverage:
- Foreign diplomatic corps and consular corps, their suite and dependents;
  Foreign military personnel, including both military corps and civilians, and their dependents.

Topics to be investigated

7. The 1990 Census includes the following 22 questions:
(for individuals)
  (a) Name;   (b) Sex;   (c) Year and month of birth;
  (d) Relationship to the head of household;
  (e) Marital status;   (f) Nationality;
  (g) Place of residence five years ago;
  (h) Level of education (Whether in school or graduated, etc.);
  (i) Labor force status;
  (j) Name of establishment and kind of business (industry);
  (k) Kind of work (occupation);
  (l) Status in employment;   (m) Place of work or school;
  (n) Transportation to the place of work or school;
  (o) Commuting time;
(for households)

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(a) Type of household;   (b) Number of household members;
(c) Type of household income; (d) Type and tenure of dwelling;
(e) Number of dwelling rooms; (f) Area of floor space of dwelling;
(g) Type of building and number of stories.

Census Organization

8. The 1990 Census will be conducted under the direction of the Statistics Bureau, Management and Coordination Agency through the following channel:

```
┌──────────────────────────────────────────────────┐
│ Director-General (Minister of State)             │
│   of the Management and Coordination Agency      │
└──────────────────────────────────────────────────┘
                        │
                        ▼
        ┌──────────────────────────────┐
        │ Governors of prefectures     │
        │ to, do, fu and ken           │
        └──────────────────────────────┘
                        │
                        ▼
        ┌──────────────────────────────┐
        │ Mayors of municipalities     │
        │ shi, ku, machi and mura      │
        └──────────────────────────────┘
                        │
                        ▼
            ┌──────────────────────┐
            │ Supervisors          │
            └──────────────────────┘
                        │
                        ▼
            ┌──────────────────────┐
            │ Enumerators          │
            └──────────────────────┘
```
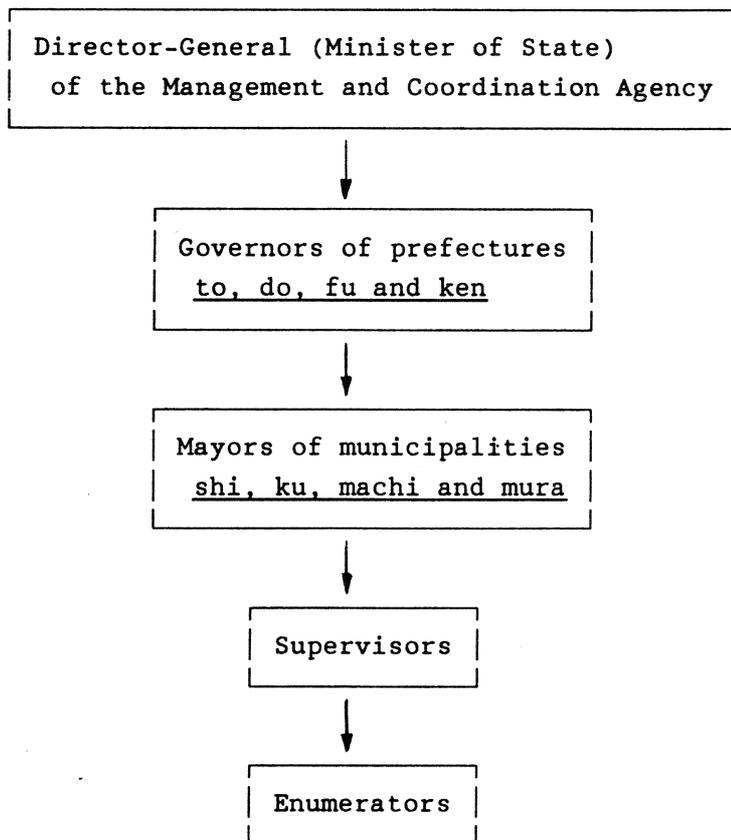
9. The Statistics Bureau is responsible for planning, preparation of documents, and supervision of the local operations. The Statistics Center is responsible for the tabulation of the data, and the results are released and published by the Statistics Bureau.

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10. In each prefecture, the Statistics Division takes charge of the census operation. The work of the Statistics Division includes distribution of materials for the Census to the municipalities, training of municipal census staff, and collection and examination of the census returns from the municipalities.

11. The municipal offices execute the work directly related to the field operation, including demarcation of enumeration districts, recruitment of supervisors and enumerators, training of the supervisors and enumerators, and examination of the census returns before submission to the prefectures.

12. About 800 thousand enumerators, and 60 thousand supervisors will undertake field operation throughout Japan. They are all appointed as temporary government officials by the Director-General (Minister of State) of the Management and Coordination Agency. Supervisors are responsible for supervising the enumerators and the examination of the census returns.

Demarcation of Enumeration Districts (EDs)

13. The Enumeration Districts (EDs) are designed to define the areas assigned to the enumerators. The EDs also serve as basic units for compiling small area statistics and as sampling units for various sample surveys.

14. There are three kinds of EDs:
 - ordinary EDs, constituting about 95% of all the EDs;
 - water EDs, covering the harbors and the like;
 - special EDs, having extremely small population or special
   institutions.
Ordinary EDs normally comprise from 40 to 70 households, and on the average about 50 households.

15. The EDs were demarcated as of 1 October 1989, one year before the census date. In case amendments are needed for unavoidable reasons (e.g. change of municipal boundaries, significant change in population after the demarcation, etc.), they are taken into account. The boundaries of EDs are finally fixed as of the census date.

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16. In the 1990 Census, a new concept of unit area is introduced in demarcating the EDs. It is called Basic Unit Blocks (BUBs). BUBs are demarcated by clear and almost permanent landmarks, such as streets and rivers, etc. In the urban area, a BUB normally corresponds to a street block. BUBs are more or less permanent and correspond to the address designations.

17. The BUBs are used both as units for compiling small area statistics and units for defining the EDs. Because of the way BUBs are defined, the comparability of small area statistics over time will be improved. The small area statistics can be better connected to the address designations. An ED may be defined as a BUB or a combination of BUBs. In some cases, a BUB may be split to make some EDs.

Enumeration Procedure

18. The Census of Japan has employed the delivery-collection procedure. From 23 to 30 September 1990, every enumerator visits all the households in the EDs to which he/she is assigned. He/she delivers the households the questionnaires and leaflets requesting for cooperation and asks them to complete the questionnaires, giving instructions for filling. On this occasion, the enumerator records the name of the head of the household and the number of household members on the "List of Households", and at the same time, the location of the household is marked with the household number in the "Enumeration District Map" drawn by the enumerator.

19. Within seven days after the census date, the enumerators visit the households again to collect the completed questionnaires. At that time, the enumerators check the questionnaires with the list of households previously recorded and examine the contents of the questionnaire for possible omissions or errors. In addition, they also complete the enumerator's items in the questionnaires.

20. In case a questionnaire cannot be filled by the household members themselves for such reasons as absence, the enumerator may ask the neighbors the names, sex, and number of household members of

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the absent households, and fill in the questionnaires on behalf of the absent households.

III Tabulation and Publication of the Results

21. All the questionnaires are collected at the Statistics Center for processing. They are read by optical mark readers (OMRs), and tabulated by using the computer system. The tabulated results are officially released by the Statistics Bureau. The tabulations and releases of the results are done in the following groups of data:

    i)   Preliminary Counts of the Population;
    ii)   Prompt Sample Tabulation;
   iii)   The First Basic Complete Tabulation;
    iv)   The Second Basic Complete Tabulation;
    v)   The Third Basic Complete Tabulation;
    vi)   Detailed Sample Tabulation;
   vii)   Tabulation on Place of Work or Schooling;
  viii)   Tabulation on Internal Migration;
    ix)   Tabulation by BUB (Basic Unit Block);
    x)   Tabulation by Census Tract.

Further details on the phases of tabulation are described in the paper "Dissemination and Use of the Results of the Population Census".

IV Main Features of the 1990 Population Census

22. There are four main features of the 1990 Census. The first one is the emphasis on the production of statistics concerning the aged population. In Japan, the population 65 years old and over was a little less than 5% of the total population until 1950, but since then, percentage went up gradually, namely 5.7% in 1960, 7.1% in 1970, 9.1% in 1980, and 10.3% in 1985. This speed of aging is faster than the experiences of most other countries. It is, therefore, necessary in Japan to plan the public policy and carry out various measures in this field. For this purpose, the statistics obtained from the Population Census are expected to play an important role.

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23. The second feature is the emphasis on the statistics focusing on the change in industrial and occupational structures in recent years. In Japan, there is a rapid shift of the economy from manufacturing to services. From the 1990 Census, detailed data on the growth of service industries both at the national and the regional levels will be obtained.

24. The third feature is the emphasis on the statistics of internal migration. The inflow of population to the metropolitan areas is still continuing due to the high concentration of urban functions, although the speed is slowing down. At the same time, the commuting zones are spreading wider and wider, as people working in the central part are moving their dwellings out to the fringes of the metropolitan area due to the high land prices in the central area. In order to grasp such movement clearly and in detail, in the 1990 Census, the data on migration over the last five years will be compiled. At the same time, to grasp the daily movement of population, the data on destinations of commuting, transportation, and commuting time will be compiled from the Census.

25. The fourth feature is the emphasis on the statistics of foreigners living in Japan. As the international links in the economy and society become stronger in recent years, the number of foreigners living in Japan is rapidly increasing. To provide clear pictures on the status of the foreigners living in Japan, in the 1990 Census, the tables on the foreigners will be expanded, and detailed data on the age structure, employment, household composition, etc. by nationality will be produced.

V Preparation for the 1990 Census

Planning Committee and the Headquarters
26. In preparation of the 1990 Census, the Planning Committee for the 1990 Population Census was established within the Statistics Bureau and the Statistics Center in February 1987. Under this committee, nine subcommittees and five project teams were established

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to prepare plans on specific matters.

27. The Planning Committee was reorganized in October 1989 to become the Headquarters for Execution of the 1990 Population Census. The Headquarters consisted of four divisions and seven units covering a wide range of different responsibilities. Many prefectures and municipalities are also expected to establish similar organizations for mobilizing the staff of the entire offices to execute extremely large scale of the census operation.

Pilot Surveys

28. Four pilot surveys were conducted in order to test the enumeration procedures and design of the questionnaires. In 1988, three pilot surveys were conducted in some selected municipalities, and in 1989 a full dress rehearsal was conducted in all the 47 prefectures. The final plans are drawn on the basis of the results of these pilot surveys. Each pilot surveys aimed at testing the following points:

a) the First Pilot Survey
- possibility of introducing a sampling procedure for some of the topics;
- appropriateness of certain topics;
- forms of questionnaires, appropriateness of the design;
- procedure of enumeration of the absent households;
- means of keeping confidentiality.

b) the Second Pilot Survey
- appropriateness of certain topics and their response choices;
- forms of questionnaires, appropriateness of the design;
- procedure of enumeration of the absent households;
- means of keeping confidentiality;
- possibility of improving the industrial coding.

c) the Third Pilot Survey
- appropriateness of assigning two EDs for one enumerator;
- possibility of problems in the new procedure of demarcating the EDs;
- forms of questionnaires, appropriateness of the design;

d) the Fourth Pilot Survey (Full Dress Rehearsal)
- appropriateness of the enumeration procedure;

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- appropriateness of the survey documents (e.g. manuals, instructions, etc.);
- forms of questionnaires, appropriateness of the design;
- appropriateness of the overall program and operations in prefectures and municipalities.

Study on Improvement of the Enumeration Procedures

29. In recent years, there are many phenomena which create unfavorable conditions for conducting the Population Census. For example, because of the increase in awareness of privacy, the number of persons unwilling to cooperate in the surveys and censuses is increasing. The number of households which cannot be contacted during the daytime is also increasing due to increase of one-person households and higher rate of labor participation of women. In order to overcome such difficulties, the Statistics Bureau has been holding several meetings with statistical staff of prefectural Statistics Divisions to discuss and consider possibility of improving the enumeration procedures. As prefectures and municipalities play very important roles in the field work of the Census, cooperation between the Statistics Bureau and the prefectural Statistics Divisions is very important in preparation of the next census.

Meetings with Other Ministries

30. In order to obtain from various ministries and agencies the opinions and the requests on the plan of conducting the 1990 Census, the Statistics Bureau has held three meetings gathering representatives of other ministries and agencies within the government. The final one is to be held in March 1990, and the Statistics Bureau will request all the ministries and agencies to cooperate for smooth execution of the 1990 Census.

Statistics Council

31. The Statistics Council is an advisory body to the Director-General of the Management and Coordination Agency (MCA) on various important matters concerning statistics. In March 1989, Director-General of MCA requested the Council for opinions concerning the plan for the 1990 Population Census. The Council referred this matter to the Subcommittee on Population and Labor Statistics. The

Subcommittee met five times since then, and finally in November 1989 the Council submitted the report of opinions, in which the Council endorsed the plan in general terms and added some observations.

VI Measures to be taken to Overcome New Problems in the 1990 Census

Enumeration of Foreigners

32. Compared with the past censuses, many more foreigners who do not understand Japanese language are to be enumerated in the 1990 Census. As the languages they use are expected to be quite diverse, questionnaires and pamphlets for instructions and other materials will be translated into several languages. In the past censuses, only English version was prepared.

Absent Households

33. In recent years, it is becoming more and more difficult for the enumerators to get in touch with the households in the daytime. Although the enumerators generally make great efforts to contact with the households at night as well, the activities at night are limited because of the possible danger. In case the enumerators cannot meet the households in spite of all the efforts, the enumerators are allowed to ask the neighbors for information of the absent households and to fill in the questionnaire using that information. This trend is still escalating, and some new measures will have to be devised in addition to the existing ones.

Apartments with Remote-Controlled Locks

34.   In the metropolitan areas, the number of apartments with remote-controlled locks is increasing because more and more people want to control the visits of salespersons and other unidentified visitors. With such locks, the visitors can only contact with the household members through an intercom at the entrance of the building, and only when the household members unlock the entrance door by the remote control, the visitor can visit the household. From the past experience, many households living in such apartments tend to refuse to cooperate in the censuses and the sample surveys.

35. In order to avoid the refusal to cooperate in the Census, the Statistics Bureau plans to place a special emphasis on publicity for those households living in such apartments and the companies responsible for maintenance of such buildings.

Protection of Confidentiality

36. Along with the increase in awareness of the privacy among the citizens, more people are having fears on the possible disclosure and misuse of the personal information. The Statistics Law prohibits the persons engaged in censuses and surveys from disclosing the information obtained in the censuses and surveys or passing it to other bodies. Using the questionnaires for other purposes than for compiling statistics is also prohibited. In addition, in 1988, a new act was established to protect the confidentiality of the personal data collected by the government and processed on the computer, although the information collected for statistical purposes are not covered by this act but covered by the existing acts on statistics.

37. Under the circumstances where people are more strongly aware of the confidentiality of personal data, it is necessary for the Statistics Bureau not only to strengthen the measure for protecting privacy but also to win the confidence of the people on the protection of privacy. For this purpose, for those households who do not want the enumerators to look into the questionnaires they have submitted, the respondents are allowed to enclose and seal the questionnaire. In addition, in the appointment of enumerators, efforts are made to avoid assigning the enumerators to the EDs where acquainted people may live. In the 1990 Census, more specific instructions and intensive training than before on the measures to keep the confidentiality of the contents of the questionnaires are to be provided to the enumerators.

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DATA PROCESSING

OF THE 1990 INDONESIAN POPULATION CENSUS

By

Azwar Rasjid
Director General, CBS

To be presented in the Fifth International Meeting
of the Head of National Statistical Office of ASEAN
Countries and Japan.

DATA PROCESSING
OF THE 1990 INDONESIAN POPULATION CENSUS[*]

By

Azwar Rasjid

Director General, CBS

1. Background

The 1990 Population Census of Indonesia will be conducted in 3 (three) stages, i.e.:

- the Complete Census which will be using questionnaire identified as SP90-LII
- the Sample Census with questionnaire SP90-S
- the Village Condition Survey with questionnaire SP90-PODES

The Complete Census will be undertaken around the first half of October 1990, the results of which will be used among others, to select sampled households to be enumerated in the Sample Census. The Sample Census is scheduled to begin right after the completion of Complete Census, and to be completed at the end of October 1990.

Village Condition Survey, on the other hand, will be conducted in December 1990. About 68 000 villages will be

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surveyed, and its characteristics such as facilities available, resources,etc. will be recorded.

To process the results of the afore mentioned Population Census, the Central Bureau of Statistics (CBS) has recently procured new computer systems. A large mainframe has been installed at the central office (CBS in Jakarta) and 6 mini computers have been installed in 6 provincial offices. Each of the remaining 21 provincies (Indonesia consists of 27 provincies) is equipped with at least 3 PCs, which connected to the mainframe at the central office through Public Switched Telephone Network (PSTN).

Beside on-line terminals (89 PCs) at the Central Office, there are also 80 PCs dedicated for data entry operations. Each of the six provinces equipped with mini computers is supported with 7 to 20 on-line terminals which may function as data entry whenever necessary. The on-line terminals at central office as well as at provincial offices can operate as stand alone PCs.

2. Complete and Sample Census

2.1. Estimated processing volume of Complete and Sample Census

The Complete Census is extremely voluminous. Therefore, eventhough the CBS has recently been equipped with a big computer system, the system is still unable to accomodate

the processing of the Complete Census results should it be processed in its original forms i.e. SP90-LII. The volume of SP90-LII is projected to be about 42 million (equal to the number of households). To overcome such situation CBS plans to process the summary of SP90-LII, the summary of which will be done by enumerators during the field operation. The summary form of SP90-LII which is planned to be processed by computer and is identified as SP-90-RWLII,represents the aggregate data of each enumeration district. The estimated number of enumeration districts are 177.076 with about 60 (sixty) characters of information in each SP90-RWLII document. The number of characters in this connection will demonstrate the volume of data entry operation.

The aim of processing the Complete Census is to obtain the total number of population by geographical area, by urban and rural, and by sex. The results of the processing will be released at the end of 1990.

Different from that of Complete Census, the Sample Census which comprise of about 2 157 000 sampled households will be processed in its original form. With an estimated average of 5 (five) members per household, the number of characters of information per household are about 600 (six-hundred). It is obvious that special effort is necessary to process the result of Sample Census.

Table given in Annex shows the number of corresponding document to be processed by computer i.e. SP90-RWLII, SP90-S, and SP90-PODES. The number of documents are also shown by province. As for the SP90-S as well as SP90-PODES documents, the maximum number of characters of information are fixed, the SP90-S documents on the other hand will vary according to the number of household members. The average of 618 characters given in the table for SP90-S is based on the assumption that the average household member is 5 (five).

2.2. Time schedule and processing procedures

As mentioned, the result of Complete Census processing will be released at the end of 1990. Since tens of thousands of enumerators are to be employed, the SP90-LII summarized into SP90-RWLII by enumerators is relatively easy to accomplish within a short period of time.

The SP90-RWLII documents will be compiled in provincial offices and each province will process its corresponding documents. Looking at the distribution of SP90-RWLII of each province, it is obvious that the processing time will not exceed two weeks, given that existing processing resources in the respective province is at least 2 PCs. Spare time for accumulating the documents at the provincial office is estimated to be one month after enumeration in October 1990. Therefore, the release of

processing results at the end of 1990 is quite reasonable, taking into account that one week is allocated for compilation at CBS. In this connection, each province should send the result to CBS the latest is in the third week of December 1990 through data communication network.

The processing of Sample Census differs from that of Complete Census in the extent of distributed processing. In the case of Sample Census, only six provinces which have mini computers are assigned to process Sample Census documents. Each of these provinces will be responsible to process its own data, whereas the data of the remaining provinces will be processed at CBS. Of the six provinces, two are unable to process all of their respective documents since the number of documents to be processed is far beyond the available computing capacity. In this case the documents exceeding the computing capacity of each of the two provinces, will be sent to CBS for processing

Beside the need for early release of Complete Census processing results, a relatively detail information at national level is expected from Sample Census as early as possible. To meet this requirement CBS will process 10 percent of the Sample Census documents to obtain advance tabulation as temporary results, not more than 9 (nine) months after enumeration. The 10 percent documents will be processed at CBS, including 10 percent from the six pro-

vinces. The documents are selected following a sampling procedure and have been determined prior to enumeration. Hence, the corresponding documents can be sent directly to CBS for advance processing immediately after enumeration.

All documents of Sample Census are planned to have been validated to obtain clean data within 1½ years beginning from January 1991. Further processing will be tabulation, when all data have been compiled together including from the six provinces. The main tables will be processed at CBS for publication as well as for analytical purposes.

The provincial offices may obtain clean data from CBS after main tables have been released. With the available computer facilities, each province may process the clean data for their specific needs, such as a more detail tabulation of their respective province. However revalidation or reimputation on the data by the province is not allowed.

2.3. Software used

2.3.1. Complete Census

The result of Complete Census will be obtained from the processing of SP90-RWLII documents as mentioned earlier. The principal data to be derived from SP90-RWLII is total population by geographical division and sex, which

is needed for determining inflation factor to be used in the processing of Sample Census.

The software for the processing of Complete Census will be developed at CBS in order to maintain uniformity of software used in each provincial office. To transmit processing result to CBS from provincial offices, CROSSTALK communication software will be employed. Besides, ETOS-520 a proprietory software of NEC, will also be employed as alternative to CROSSTALK. If CROSSTALK is to be used for PC to PC communication, ETOS-520 is to be used for PC to mainframe (ACOS-1520) communication.

The means of communication between CBS and provincial offices will be PSTN or SKDP (Packet Data Communication System). The use of data communication facilities intended mainly for data transmission which will reduce considerably the transport of documents from the provinces to the central office. In addition, overall processing time will be shortened.

2.3.2. Sample Census

The cleaning process of the Sample Census results is the most challenging and time consuming processing step. For cleaning purpose, the items observed will be classified into two groups. Firstly, the group of items which will be edited (validated by the program) and correction

will be applied to the error items by matching the item with its corresponding information in the original document. Include in this group are the following items:

- relation of household member to head of household
- age
- marital status
- sex
- selected items of education, labour force, and fertility.

Secondly, the group of items which will be imputed directly should an inconsistency encountered. Include in this group are the following items:

- household information
- member of household
- migration
- remaining items of education, labour force, and fertility, which are not included in the first group.

Although several computer packages are available for editing and correction such as CONCOR, CBS has decided to write its own programs to be applied in the cleaning stage. These programs (validation and imputation programs) will be developed at CBS and will be converted afterwards to run on the computer at six provinces which will involve in the processing of Sample Census.

For tabulation, CBS will employ mainly CENTS-4 package. Since statistical tables to be produced from census results are almost of matrix forms, hence CENTS-4 can serve most of CBS requirements. Only in particular case own written program is necessary for tabulation.

For analysis purposes, CBS used to employ several packages. In most of the cases SPSS is used quite extensively. However, for specific needs of particular analysis, written programs sometimes unavoidable.

It is worth noting that tabulation as well as analysis with the aid of computer facilities are no longer concentrated in DP Center at CBS. Even validation and imputation are sometimes executed by subject matter people if the survey is relatively small and available software can cope with it. In this connection a package such as ISSA has proven its capacity as an integrated software to process survey results, and has successfully support the processing of some survey results done by subject matter people.

3. Village Conditions

As of now, processing of village condition Survey (SP90-PODES) is not yet definitely formulated. However, distributed processing is planned to be implemented.

If in case of SP90-S, the processing will be held at CBS and 6 provinces, the SP90-PODES on the other hand will be processed at CBS and the other 21 provinces. The reason why the result of SP90-PODES from 6 provinces will be processed at CBS is that the computing capacity in each of the 6 provinces is still dedicated to process SP90-S, whereas each of the other 21 provinces has completed the processing of SP90-RWLII, hence it can accomodate the processing of their own SP90-PODES documents.

The processing of SP90-PODES is scheduled to begin in March 1991. Although only PCs are available in each of 21 provinces, but due to relatively small amount of SP90-PODES documents, the processing will be completed in time. The software used for processing will be own written program for validation and imputation and most likely will be developed at CBS, and CENTS-4 as well as own written program for final tabulations and reports.

Table in Annex demonstrates the volume of SP90-PODES documents. The figure may change during the data collection since the existing villages may still split due to government decree. The maximum number of characters of SP90-PODES document are 523 as shown in the Annex.

Number of documents of SP90-RWLII, SP90-S and
SP90-PODES by province

Name of Province	SP90-RWLII 1)	SP90-S 2) (Households)	SP90-PODES 3) (Villages)
1. D.I. Aceh	6 264	52 500	5 610
2. Sumatera Utara	10 771	118 200	5 669
3. Sumatera Barat	4 854	69 600	3 493
4. R i a u	3 034	40 200	1 232
5. J a m b i	2 326	35 100	1 416
6. Sumatera Selatan	5 797	70 500	2 673
7. Bengkulu	1 446	19 500	1 122
8. Lampung	5 263	58 200	1 917
9. DKI Jakarta	6 417	78 900	260
10. Jawa Barat	31 632	338 100	7 053
11. Jawa Tengah	26 796	301 800	8 444
12. D.I. Yogyakarta	3 137	39 900	438
13. Jawa Timur	31 227	371 700	8 347
14. B a l i	2 453	45 000	609
15. Nusa Tenggara Barat	2 860	42 000	565
16. Nusa Tenggara Timur	2 843	58 200	1 721
17. Timor Timur	737	12 600	441
18. Kalimantan Barat	5 964	42 300	4 732
19. Kalimantan Tengah	1 884	29 400	1 206
20. Kalimantan Selatan	3 465	49 800	2 415
21. Kalimantan Timur	2 211	29 700	1 160
22. Sulawesi Utara	2 539	37 500	1 382
23. Sulawesi Tengah	1 859	23 700	1 345
24. Sulawesi Tenggara	1 274	20 100	808
25. Sulawesi Selatan	5 894	117 000	1 440
26. M a l u k u	2 496	22 800	1 884
27. Irian Jaya	1 633	32 700	964
J u m l a h	177 076	2 157 000	68 346

1) 60 characters per document

2) Average of 618 characters per document (assuming 5 members per household)

3) 523 characters per document

FIFTH INTERNATIONAL MEETING OF THE HEADS OF NATIONAL
STATISTICAL OFFICES OF ASEAN COUNTRIES AND JAPAN
(Agenda Item No. 6: Data Processing of
the Population Censuses)

DATA   PROCESSING   OF THE MALAYSIAN
1991 CENSUS OF POPULATION   AND HOUSING

1.   Introduction

A major   task of the forthcoming Malaysian 1991   Census   of
Population   and   Housing is how to meet the demands of users   for
timely and accurate census information. This task is by no means
easy to carry out because it involves the collection and
processing of some 26 million census forms.

As data processing is a major bottleneck for timely and full
utilization of census information,   there is a pressing need to
adopt policies that would incorporate effective techniques   for
the various components of data processing.   These components of
data processing include organization, proper arrangement and flow
of forms, coding, quality controls, data entry, editing and
imputations, tabulations and data presentation.   The need for
close cooperation between subject matter personnel and data
processing staff in the formulation and implementation   of
processing plans should not be overlooked in this quest to meet
the data needs of users.   This paper discusses some of these
major issues that are being reviewed by Malaysia in her effort to
develop an effective data processing programme for the 1991
Census.

2.   Organization

As part of the plan to speed up data processing,   a policy
option is being considered to decentralise census processing at
regional level.   A total of six centres will be set up, that is,
four in Peninsular Malaysia and one each in Sabah   and   Sarawak.

Data processing in these six regions will be limited to checking of census forms, coding of occupation, industry and place of residence, and compilation of preliminary population counts for Malaysia and her component states, districts and towns. In addition, census data will be captured on diskettes using micro-computers in the regional offices. The data stored on diskettes will then be sent to the headquarters in Kuala Lumpur for consolidation, editing and imputation and tabulation by the main-frame computer.

In the previous two censuses, data processing was done centrally at the headquarters in Kuala Lumpur. The decision to decentralise data processing for the 1991 Census is therefore a major move from past practices.

The rationale for decentralised data processing can be summarized as follows:

a) to minimise the problem of transportation of census forms from numerous districts to one receiving centre in Kuala Lumpur, especially from Sabah and Sarawak;

b) to allow processing near the data source to take advantage of local knowledge for verification of data inconsistencies found in census questionnaires; and

c) to provide employment opportunities for the unemployed in the states.

It is envisaged that decentralised data processing for the 1991 Census will create a shortage of skilled data processing and subject-matter staff as the available manpower will need to be shared among the six competing regional centres. As processing

will be carried out in six different places, it is a major task to ensure instructions are uniformly carried out. To overcome these two problems, the following aspects will be studied:

a) development of standardised instruction manuals for office processing staff;

b) development of computer programs for data entry, and compilation of population counts for use in the six regional centres;

c) the provision of appropriate and adequate data processing equipment;

e) development of strategies and procedures for control and balancing of census forms; and

d) centralised training of regional staff or staff to be posted to regional centres at an early stage.

3. Coding and Quality Controls

As coding of census responses is a laborious and time-consuming operation, the 1991 Census questionnaire will be designed to limit the number of items that require coding. It is planned that only three items of information will require coding, based on descriptions recorded in the questionnaires. These items are occupation, industry, and place of previous residence for urban and rural strata and administrative district classifications.

Despite the strategy of limited coding, it is envisaged that coding will continue to be a major bottleneck in data processing in the 1991 Census, as in the past. The difficulty in allocating strata and district codes based on place of previous residence is because a comprehensive index of localities for each major town and district in the country was not available for use in the 1980

Census.   To minimise this difficulty in the coming Census,   work
has already started to prepare a locality index, based on
information drawn from the last Census and updated from recent
household surveys.

The need for more examples to describe the common types of
occupation and industry is considered a major factor for
improving the accuracy and speed of coding of these items.
Appropriate steps are being taken to compile these examples which
will be incorporated in the coding manuals for use in the coming
census.

Malaysia recognises the important role played by computer-
assisted coding (CAC) for difficult-to-code items such as
occupation, industry and place of previous residence. CAC lists
the possible codes drawn from a computer dictionary or reference
file of codes that are likely to match given descriptions for the
operator to select the most appropriate code.   In statistically
developed countries this coding method has been found to be more
efficient than clerical coding, involving considerable reductions
in processing staff, improved data quality and greater timeliness
of results.   The effectiveness of CAC, however, depends on the
availability of a comprehensive reference file of codes.   For
this reason, attention is paid for the development, coverage and
accuracy of these files, with the aim that these files be ready
in time for the coming census.

Statistical quality control procedures to enhance efficiency
and accuracy of coding will be used in the 1991 Census.   To
identify processing problems and errors at the right time for
effective management control, micro-computers will be used widely
to speed up computations of the appropriate statistics for
decision making.

4. Data Entry

One of the major processing tasks involves preparing census information for data entry. The traditional methods of data entry are key to disc/tape and the reading of data recorded on special paper by optical mark reader (OMR). In the previous two censuses, Malaysia used the OMR for reading census data. However, micro-computers will be used as the medium for data entry in the 1991 Census. It is envisaged that this new approach of data entry will reduce many of the technical problems faced in the previous censuses. Moreover, these micro-computers can be used after the Census by the Department of Statistics to process future surveys and to facilitate analysis of data.

The main reasons for rejecting the OMR are as follows:

(i) The limited time available for printing of questionnaires on special paper as a lead time of at least 6 months is required. There is no guarantee that the local suppliers can meet the Department's schedule for supplying the printed questionnaires.

(ii) The stringent conditions of the printing and handling of the forms so that the OMR will not reject them e.g. special ink and printing positions.

(iii) If the OMR is purchased, it cannot be discarded after the 1991 Housing and Population Census and should be used for other surveys. This again means surveys can be delayed as suppliers will not be able to supply the forms in time. The cost of conducting the surveys will be more expensive due to the higher cost of such forms.

(iv) The price of the OMR, whether it is purchased or on a rental basis, is rather expensive.

(v) There are neither many models nor many suppliers in the country, thus making the supply of OMR less competitive in the local market.

(vi) Limited availability of maintenance and spare parts as well as technical support.

The rapid advances in micro-computers, including enhanced processing speeds, hard disks with large internal storage capacity and large random access memories have provided a new technology suited for data entry of the 1991 Census data. Moreover, data entry can be done with a generalized software package called IMPS (Integrated Microcomputer Processing System) available from the U.S. Bureau of the Census. The module called CENTRY of this package will be used for data entry using micro-computers. For editing and tabulating census results, the modules called CONCOR and CENTS will be used.

5. Editing and Imputations

Editing involves checks carried out and changes made in the completed questionnaires by census clerical staff or by the computer. Imputation is the process of filling in with plausible answers the blank spaces on the questionnaires or substituting alternate answers for responses considered unacceptable, such as response codes outside the acceptable range, or a response that is not consistent with the response for another related question.

The issue confronting us is not whether to edit or even to impute but what kinds of edits and imputations are permissible and how much is acceptable. In identifying the kinds and extent of editing and imputation for the coming Census, the following requirements will be taken into consideration:

a) editing should improve or retain data quality;

b) specification rules should not be too complex as to delay processing;

c) imputations are required for unknowns of variables that are used as major classifiers in many census tables;

d) need to remove obvious inconsistencies for key variables; and

e) the percentage of imputations done should be small.

Based on these requirements, there will be some manual editing, involving the checking of responses for race and sex by cross reference to the names and relationships recorded in the questionnaires. In Malaysia, names of persons are usually helpful in determining the sex and even the race of the respondents. As names are not captured, it is not possible to use this information for computer editing.

Editing at the data entry stage, restricted to checking whether the codes that are keyed-in fall within the given range will also be made. The objective of this operation is to ensure that the correct codes are keyed-in. However, should the codes recorded in the questionnaires fall outside the range, the operators are not allowed to intervene to resolve these errors through consultations with the subject matter staff. This procedure is adopted to allow the operators to concentrate on data entry work, without interruptions.

The extent of out of range codes is expected to be very small. This is largely due to the fact that the census questionnaire is designed for mainly pre-coded questions. Nevertheless, if the code for a response is outside the given range it would be considered as an unknown.

Imputations of unknowns for most variables will be made on the basis of partial information obtained from the same record. For example, the age of a non-migrant respondent will be imputed on the basis of the duration of stay at present place of residence. For variables that are major classifiers of census tables, the method of hot deck will be used to impute unknowns, based on information from another record with the same characteristics specified by the hot deck rules. CONCOR will be used to develop the programs for editing and imputations of census data.

6. Tabulations and data presentation

As part of the overall strategy to speed up processing, the tabulation package CENTS will be used to produce census tabulations. Besides overcoming the problem of shortage of skilled programmers, the use of CENTS will also speed up the development of tabulation programs.

Several measures are being planned to speed up the release of census information to users. These are;

a) advanced tabulations based on a sample of enumeration blocks will be produced and released ahead of the final tabulations;

b) tabulations that are not in demand will not be produced (including composite tabulations);

c) the use of IMPS and micro-computers for formatting tables;

d) to eliminate the need for retyping and proof reading, computer printouts will be designed for direct photo-offset printing;

e)   to enhance the appearance of census publications, computer printouts will be printed by laser printers; and

f)   the use of electronic media such as magnetic tapes, cartridge diskettes, optical disks, etc. for dissemination of census data.

7.   Conclusion

As data processing is known to be a bottleneck for timely and full utilization of census information, Malaysia pays great attention to develop an effective data processing programme that will include measures to overcome this problem.   Early planning involving both the subject matter statisticians and data processing staff to develop such a programme is a key factor for a successful census.   In this regard, a closer collaboration between these two groups is being fostered from the stage of census planning through data entry to the development of tabulation programs.

Department of Statistics,
Kuala Lumpur,
Malaysia,
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New Computerised Systems for the
Singapore's Census of Population, 1990

Presented by Mr Lau Kak En

Singapore

New Computerised Systems for the Singapore's Census of Population, 1990

Introduction

A new approach in Census taking is adapted for the conduct of the 1990 Census of Population. The new census methodology and operational procedures entail a widespread utilisation of Information Technology. More computer resources and professional manpower are devoted to the development of computerised application systems to support the conduct of the 1990 Population Census. This paper briefly describes the following computerised systems that have been developed or under development :-

a) Computerised Reticulation
b) Creation Of Pre-census Household Database
c) Sample Selection
d) Extraction And Pre-printing Of Data
e) Recruitment and Job Assignment System
f) Monitoring of Field Work Progress
g) Payroll System
h) Control And Monitoring of Data Processing
i) Data Capture System
j) Automatic and Computer Assisted Coding
k) Validation and Error Correction
l) Final Database Update
m) Tabulations and Data Dissemination

Computerised Systems

Each computerised system is highlighted in the following paragraphs. The flow-chart of the various system are given in Annex A.1 to A.12.

Computerised Reticulation

A computerised system is developed to generate reticulated units (RUs) for census enumeration. Maps and road directories are used to derive proximity codes for streets within each census district. Using the proximity codes and the House Frame Master, the addresses of dwelling units in a particular census district are arranged and reticulated into logical units of about 25 houses each. Reticulated units are serially numbered and a census house number will be serially assigned to each house.

Creation of Pre-Census Household Database

As the 1990 Census of Population utilises information on individuals and households that already have been captured in Government databases, the following tasks were carried out to facilitate merging of various databases for the creation of the Pre-Census Household Database.

a) established a comprehensive classification and coding system for use in the Census;

b) discussed with various organisations on data transfer from their operational or administrative registers/ databases for use in the Census and established main keys (Unique Identification Numbers, Work Permit Holder Number, Address, etc) for data merging;

c) established the conversion procedures and approaches if the data received were different from the classifications and codes of the Census;

d) conducted investigation and set up error correction measures if the ·records received are rejected during the data conversion processes;

e) Set up individual master file based on information of individuals in the People Hub. Education information of individuals received from the Ministry of Education and various educational institutions and employment information received from various organisations are updated to the individual masterfile;

f) Develop systems for data capture, processing and extraction of data (occupation, industrial activity, name of employer and address of work place) from the Survey on Employers;

g) The Pre-Census Household Database is created by merging individual records from various organisations with the household information from the Computerised Reticulation System. The common key for this merging is address in national coded format. Those unmatched individuals are rejected and printed by census district for fieldwork investigation. This database is the central core of the whole of the 1990 Population Census System. It will be used for sample selection, pre-printing of data onto schedules, verification of data collected from the field work, updating of census data as at census date, generation of tabulations etc;

h) The Pre-Census Household Database is stored in IDMS/DB database management system. It provides on-line retrieval and update facilities for Census data processing.

The following data items are available in the Pre-Census Household Database:

I   Data items for the whole population:

1)   Unique Identification Number
2)   Name
3)   National Coded Address
4)   Sex
5)   Ethnic/Dialect Code
6)   Date of Birth
7)   Citizenship
8)   Type of Census House
9)   Telephone Number
10)   Census District
11)   Reticulated Unit
12)   Census House Number
13)   Census Household Number

II   Data items available partially:

1)   Activity/Occupational Status
2)   Name of Employer
3)   Activity of Firm
4)   Occupation
5)   Address of Work Place
6)   Level of Formal Education Attending
7)   Highest Level/Qualification Attained

Sample Selection

A computerised system has been developed to select 10 percent of the population for priority enumeration. Within each Census Division, the ethnic composition of each RU is derived. The RUs are then sorted according to three clusters namely Chinese, Indian and Malay. The RUs with 100 percent Chinese population are grouped under the Chinese Cluster. Of the remainders, those RUs without Malay population are grouped under Indian Cluster. The remaining RUs constituted the Malay Cluster. The three Clusters are then arranged in the sequence of Malay, Indian and Chinese clusters. Within each cluster, the RUs are sorted in descending order of the ethnic ratio. Under normal sample selection procedure, a random number will be chosen as a starting number for selection. However, as prior information on ethnic composition is available in the Pre-Census Household Database, a complete series of random starts are used to select all possible systematic samples. The sampled results are printed, analysed and the one with the most representativeness in terms of ethnic composition and overall size, is chosen.

A sub-sample is further selected from this 10% sample for sample enumeration. To ensure that the minority groups are adequately represented in the sample, all the households are sorted according to the three main ethnic groups to form the Chinese, Malay and Indian strata. Sixty households for each stratum are systematically selected. As the samples for the 3 ethnic groups are disproportionately selected, post stratification based on population stratum weights would have to be used to obtain estimates at the Census Division and National level.

Extraction and Pre-Printing of Data

A total of about 3 million Main Enumeration Schedules, 800,000 Household Enumeration Schedules and 200,000 Sample Schedules will be required for pre-printing of information. In addition, an Address Control List will also be printed for control and monitoring purposes. The information is extracted from the Pre-Census Household Database according to the reticulated unit sequence of field enumeration in each Census Division. A total of 40 days will be needed for pre-printing of data onto the schedules. Two laser printers and two high speed systems printers will be used for pre-printing of data.

Recruitment and Job Assignment

This system handles the recruitment, allocation of staff to various census districts for fieldwork. It provides facilities to capture personal particulars of applicants, print letters of appointment, identity pass, letters of authorization and assign enumerators to areas of their choice or those nearest to their homes.

Monitoring of Field Work Progress

Hand-held computers will be used by supervisors to capture data on the progress of field work of each enumerator. The captured data will be uploaded periodically onto a laptop computer. The data will be subsequently transferred to the mainframe computer for generating of progress reports. They will also be used as input into the Payroll system for the calculation of salaries and allowances of enumerators.

Payroll System

This system handles the payment of salaries and allowances to the Census staff. All staff are paid either on daily or monthly rate. Civil servants seconded to the Census project are given honoraria. Enumerators are paid according to the number of days worked. However, if the number of schedules completed by an enumerator is above the 'baseload' level, he will be paid on the excess on a piece-rate basis. All payments are made through a bank using magnetic tape transfer.

Control and Monitoring of Data Processing

This system facilitates the tracking and control of the data processing phase of the census project particularly, the movement of folders containing the completed schedules. Bar-code readers will be used to capture the folders' reference numbers in each stage of data processing. On-line enquiry and batch reporting are also incorporated to assist the Census Office to control and monitor the progress of each phase of data processing namely Coding and Editing, Data Capture, Validation, Automatic Coding and Computer Assisted Coding.

Data Capture

The completed census schedules are subject to editing of items and scrutiny for completeness of the schedules. Subsequently, items will be manually coded with the exception of Industrial Activity, Occupation, Address or Polling District of Work Place and pre-coded items.

KeyEntry III software package is used in the data capture system. Working in two shifts, 40 personal computers will be required to capture data from all types of census schedules within 3 months. The captured data will be uploaded to the mainframe computer via the IRMA Link for further processing.

Only amended data items or new items need to be captured, thus reducing a substantial amount of effort on data entry.

Automatic and Computer Assisted Coding

Computerised systems are developed for automatic coding of Industrial Activity, Occupation and Household Structure.

For automatic coding of industrial activity, a data dictionary is created using information from the Establishment Hub such as names of companies including abbreviations in various forms. Establishment Hub is a database which contains detailed information such as name, address, Central Registration Number, industrial activity, etc of all firms and organisations in Singapore. Automatic coding of SSIC requires the matching of descriptive answers in the schedules with that of the data dictionary. If the name of establishment is matched, the SSIC, the Central Registration Number, Workplace (the business address of the employer), Employment Sector and the corresponding polling districts are obtained from the Establishment Hub and automatically coded and entered into the relevant records.

For the facilitation of automatic coding of Occupation, a data dictionary consisting of common synonyms and abbreviations of occupational titles is created. For common occupational titles which cannot be coded but are industry dependent, a dummy occupation code is entered for subsequent derivation of the occupation codes based on various criteria such as industrial activity, employment sector, educational qualification, incomes and etc. The data dictionary is enhanced as and when new occupation descriptions or new synonyms and abbreviations are rejected during the automatic coding.

Records which cannot be automatically coded will be handled by the computer assisted coding system. This involves searching and selecting manually the correct code associated with the descriptive answer. A total of 40 on-line workstations are required to handle the rejected records from automatic coding.

Household Structure will be coded automatically according to the relationship between head of household and each of the remaining household members, linkage between spouses and parent and child relationship.

Validation and Error Correction

All Census records will go through a stringent verification and compatibility checks. The error records will be downloaded to personal computers for correction. Only error free records will be updated into the Census Household Database which is residing in the mainframe computer.

Final Database Updates

Census enumeration is to be carried out before the Census Day. Final enumeration was carried out in 1980 to update the census schedules. However in the 1990 Census, the final enumeration phase will not be carried out in the field. It will be replaced by updating the Census Household Database using deaths and births records provided by the Registry of Births and Deaths. The structure of household affected by the change will also be subsequently updated.

Tabulations and Data dissemination

TPL (Table Producing Language) will be used for generating census tabulations. The TPL/Postscript interface will provide high quality printouts from desk-top laser printers for publication.

To facilitate comparative analysis, the 1980 and 1990 Censuses data should be converted to a common classifications and codes. Data items from the 1980 Census that will be converted to the 1990 classification because of changes in classifications and codes are Polling District, Occupation and Industry Activity. The 1990 Census codes and classifications are more comprehensive than the 1980, therefore, the following data items will be converted to the 1980 classifications for comparative analysis. These items comprise Type of House, Type of Household, Ethnic/Dialect Group, Birth Place, Citizenship, Language Literate in, Education Attending, Qualification Attained, Residential Status, etc.

To enable timely completion of the monographs, preliminary tabulations based on 10 percent priority enumeration will be generated. This will provide a quick preliminary census data for monograph writers.

Census data will be disseminated through printed publications, tapes, cartridges, and computer printouts etc. Census data will also be aggregated, extracted and formatted for loading into the Public On-line Access Time Series (PATS) Database. This will provide PATS subscribers to have on-line access to the Census data using their personal computers through the communication lines.

Computer Hardware, Software and DP Professional Manpower Requirements

Additional computer resources and manpower were provided under the second development phase of the Department of Computer Information Services for the development of computer systems for the 1990 Census of Population project. The computer hardware and software used for various system development and implementation of the 1990 Population Census are :-

a) a Facom M760/20 mainframe computer with 18 MIPs
b) 10 GB of DASD storage
c) 200 cartridges
d) 120 IBM AT compatible Personal Computers
e) 43 units of Hand-held Computers
f) 4 Postscript desktop Laser Printers
g) 3 Laptop computers
h) 6 Bar-code readers
i) 1 IBM 3800 Laser Printer
j) 2 Facom fast speed impact printers
k) 1 Facom laser printer

The main software packages and programming languages used for developing various computerised systems are :-

a) IDMS/DB
b) ADS/ONLINE
c) COBOL
d) PL/I
e) TPL/Postscript
f) SAS
g) KeyEntry III
h) BASIC
i) DBASE IV

The list of hardware and software used in each system is given in Annex B.

A total of 21 man-years of professional manpower efforts are provided for the development and implementation of various application systems.

The project team comprises :-

a)   1 Deputy Director
b)   1 Project Manager
c)   4 Project Leaders
d)   14 Programmer Analysts

The Organisation Chart of the project team is given in Annex C.

Conclusion

The successful implementation of the various computerised systems for the 1990 Population Census will result in :

a)   the reduction in manpower performing administrative functions, field operations, coding and data entry;

b)   the enhancement of efficiency in data collection, processing, compilation and publication of census data;

c)   the reduction in data inconsistency and increasing reliability and accuracy of data collected;

d)   the creation of an infrastructure for the continuous update of the Census Household Database and facilitating future census taking;

e)   the creation of a comprehensive household database for selecting of samples for specialised surveys conducted in non-census years;

f)   the establishment of linkages with other data sources for the Census Household Database and generation of cross-tabulation of data for analysis;

g)   permitting snapshots of the updated Census Household Database be taken at periodic intervals for the purpose of making longitudinal studies on cohorts or target groups;

CENSUS OF POPULATION 1990
OVERVIEW OF COMPUTERISED SYSTEMS

1

```
COMPUTERISED
RETICULATION
```

2

```
CREATION OF
PRE-CENSUS
HOUSEHOLD
DATABASE
```

3

```
SAMPLE
SELECTION
```

4

```
EXTRACTION &
PRE-PRINTING
OF DATA
```

5

```
RECRUITMENT &
JOB ASSIGNMENT
```

6

```
MONITORING OF
FIELD WORK
PROGRESS
```

7

```
PAYROLL
```

A

```
                                    ┌─────┐
                                    │  A  │
                                    └─────┘
                                       │
                                       │
                                       ▼
                           9  ┌──────────────────────┐
                              │                      │
         ┌───────────────────▶│    DATA CAPTURE      │
         │                    │                      │
         │                    └──────────────────────┘
         │                               │
         │                               ▼
  8  ┌──────────────────┐      10 ┌──────────────────────┐
     │ CONTROL &        │         │ AUTOMATIC &          │
     │ MONITORING OF    │◀───────▶│ COMPUTER ASSISTED    │
     │ DATA PROCESSING  │         │ CODING               │
     └──────────────────┘         └──────────────────────┘
         │                               │
         │                               ▼
         │                    11 ┌──────────────────────┐
         │                       │ VALIDATION &         │
         └──────────────────────▶│ ERROR                │
                                 │ CORRECTION           │
                                 └──────────────────────┘
                                            │
                                            ▼
                                 12 ┌──────────────────────┐
                                    │ FINAL                │
                                    │ DATABASE             │
                                    │ UPDATE               │
                                    └──────────────────────┘
                                            │
                                            ▼
                                 13 ┌──────────────────────┐
                                    │ TABULATION &         │
                                    │ DATA                 │
                                    │ DISSEMINATION        │
                                    └──────────────────────┘
```

CENSUS OF POPULATION 1990
COMPUTERISED RETICULATION

ENTER PROXIMITY CODES → STREET DATA

HOUSE-FRAME MASTER

MERGE PROXIMITY CODE TO DATA & SORT

DATA CONVERSION

RETICULATION & ASSIGN RU NUMBER

UPDATE RU ↔ RU FILE — FINAL → ASSIGN HOUSE NUMBER

AMENDED RECORDS

PRINT SUMMARY LISTING

RETICULATED HOUSE RECORDS

AMEND RU ← USER VERIFY
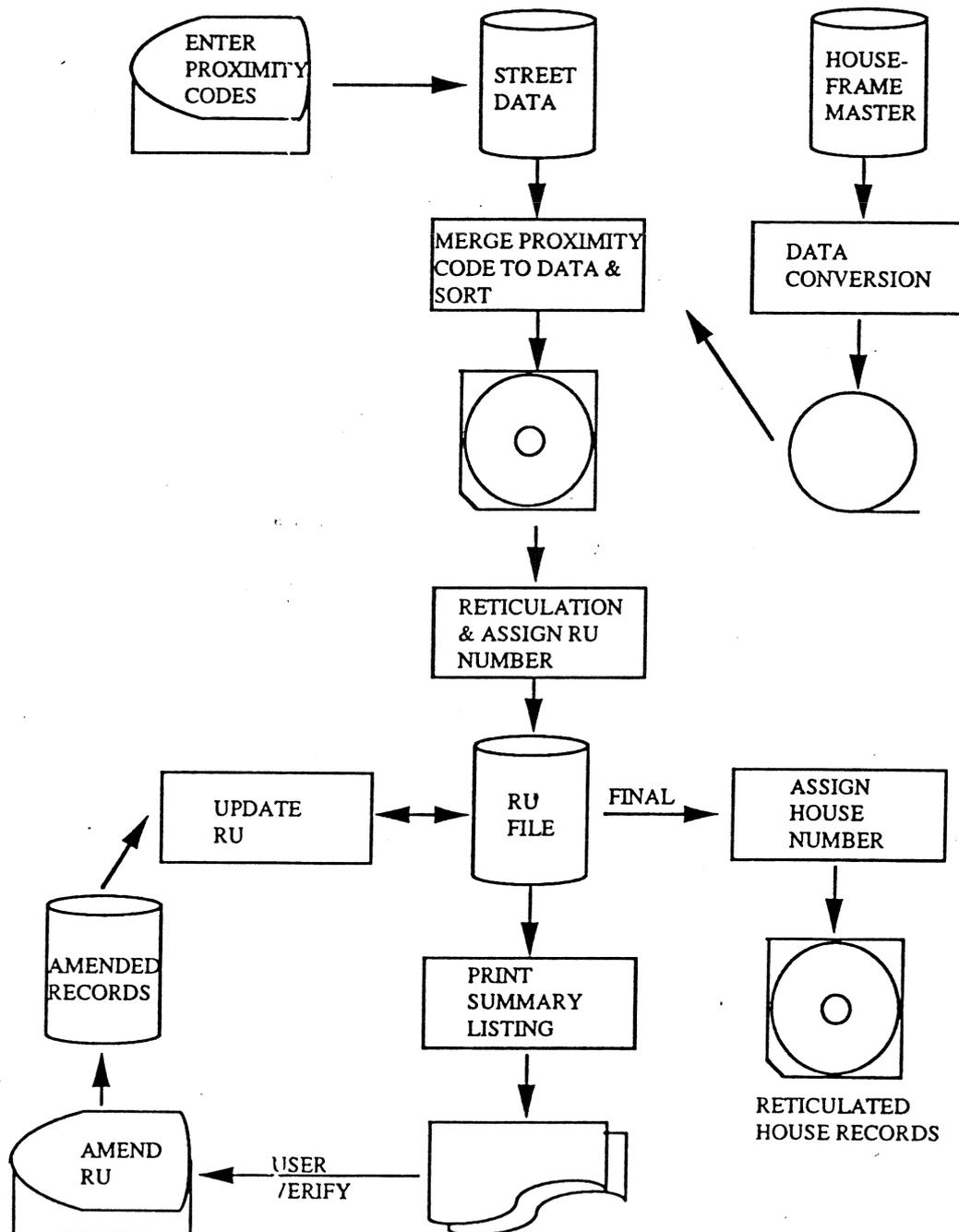
RU: RETICULATED UNIT

CENSUS OF POPULATION 1990
CREATION OF PRE-CENSUS
HOUSEHOLD DATABASE
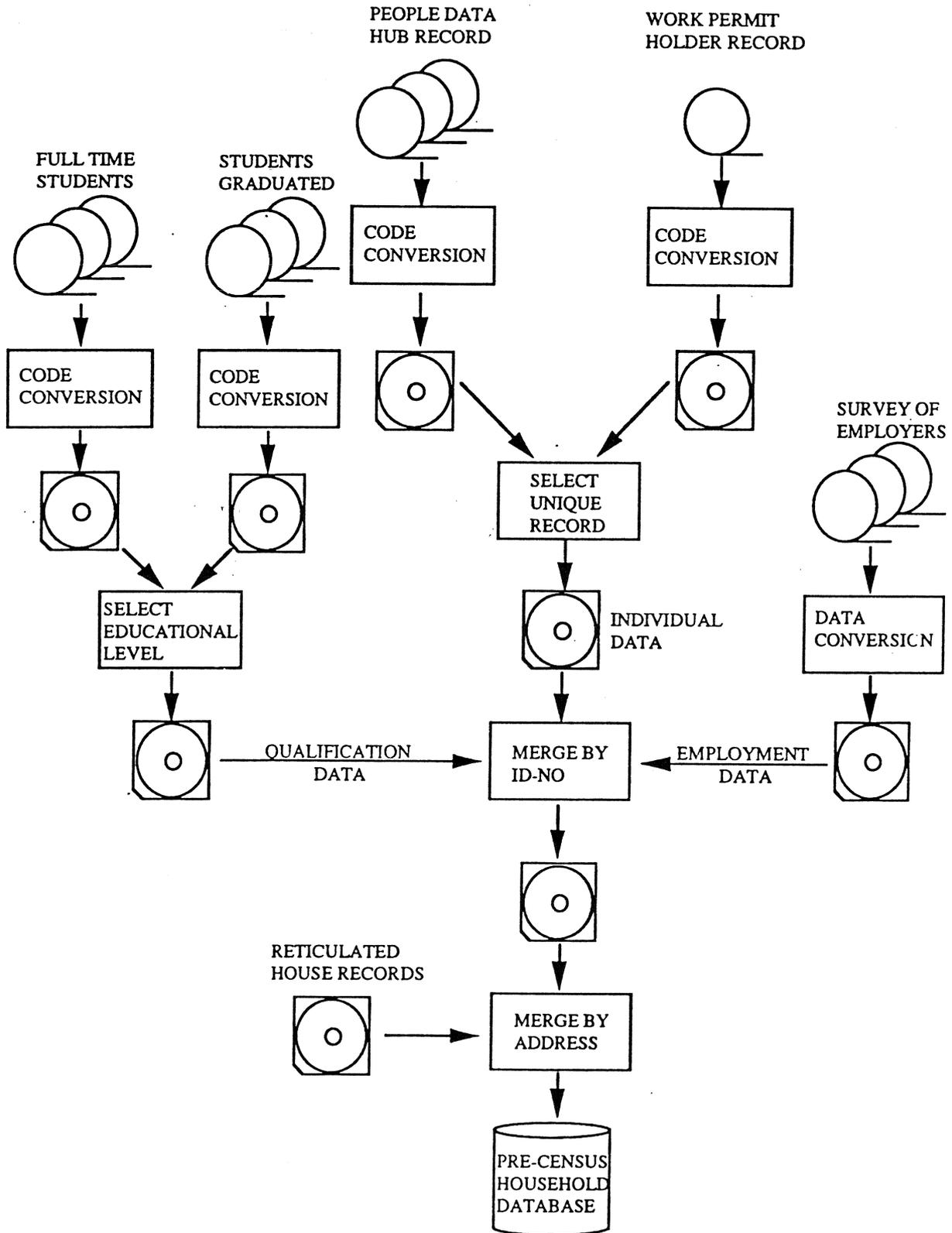
CENSUS OF POPULATION 1990
SAMPLE SELECTION AND
PRE-PRINTING OF DATA

PRE-CENSUS
HOUSEHOLD
DATABASE

SELECTION OF
RU FOR PRIORITY
ENUMERATION

10%
PRIORITY
RU

REMAINING
90% RU

FROM THE 10%
PRIORITY RU,
SUB-SAMPLES
ARE FURTHER
SELECTED FOR
SAMPLE
SCHEDULE

SUB-SAMPLE
SELECTION

PRINT HOUSEHOLD
SCHEDULE, MAIN
SCHEDULE AND
ADDRESS CONTROL

SAMPLE
DATA

HOUSEHOLD
SCHEDULE

MAIN
SCHEDULE

ADDRESS
CONTROL

TO PRINT
INDIVIDUAL
DATA ONTO
SAMPLE
SCHEDULE

PRINT
SAMPLE
SCHEDULE

SAMPLE
SCHEDULE

CENSUS OF POPULATION 1990
RECRUITMENT & JOB ASSIGNMENT

```
┌──────────────────┐
│ APPLICATION      │
│ REGISTRATION     │
└──────────────────┘
         │
         ▼
   ╭──────────────╮
   │ PERSONNEL    │ ──────────────────────►  ┌──────────────────┐
   │ DATABASE     │                          │ EXTRACTION &     │
   ╰──────────────╯                          │ PRINTING         │
         │                                   └──────────────────┘
         ▼              CENSUS                      │
┌──────────────────┐   IDENTITY                     │
│ GENERATION OF    │   PASS            LETTER OF     CERIFICATE
│ INTERVIEW LETTER │                   AUTHORISATION OF SERVICE
└──────────────────┘
         │
         ▼
   INTERVIEW
   LETTER                          ONLINE
                                   ENQUIRY /
         │                         UPDATE
         ▼
┌──────────────────┐   ╭──────────╮    ┌──────────────────┐
│ INTERVIEW &      │   │ CENSUS   │ ◄─►│ FIELD WORK       │
│ SELECTION        │   │ DISTRICT │    │ ALLOCATION       │
└──────────────────┘   │ INFORMATION │ └──────────────────┘
         │             ╰──────────╯           │
         ▼                                    ▼
   LETTER OF                            PERSONNEL
   APPOINTMENT                          ALLOCATED
                                        BY CD
         │
         ▼
   TO SUCCESSFUL
   APPLICANTS
```

CENSUS OF POPULATION 1990
MONITORING OF FIELD WORK

COMPLETION OF
CENSUS SCHEDULES BY
EACH ENUMERATOR

DATA CAPTURE
INTO HAND-HELD
COMPUTERS

HAND-HELD
COMPUTERS

UPLOAD DATA INTO
LAPTOP COMPUTER

LAPTOP
COMPUTERS

UPLOAD DATA
INTO PERSONAL
COMPUTER

PROGRESS
RECORDS

GENERATION OF
PROGRESS REPORTS

CREATION OF
PAYMENT RECORDS

PAYMENT
RECORDS

FILE
TRANSFER

TRANSFER
RECORDS TO
MAINFRAME

ADMINISTRATION &
PAYROLL SYSTEMS

DCIS/P90/HHC

CENSUS OF POPULATION 1990
PAYROLL SYSTEM

CENSUS OF POPULATION 1990
CONTROL & MONITORING OF
DATA PROCESSING

Completed Census
Schedules in Folders

PHASES

Registration — Stick Bar Code Labels & Update Folder Information

Manual Edit — Scan Bar Code Labels to indicate Receipt/ Completion

Manual Coding — Scan Bar Code Labels to indicate Receipt/ Completion

Data Entry — Scan Bar Code Labels to indicate Receipt/ Completion

Computer Coding — Update of Status Through Batch Job

Batch Edit — Update of Status Through Batch Job

Control Database

Ad-hoc Enquiry

Status Reports

Status Reports

DCIS/P90/CTL

CENSUS OF POPULATION 1990
DATA CAPTURE SYSTEM

Returned Schedules

↓

Manual Coding — Except coding of Occupation (SSOC) and Industry (SSIC) codes, address of workplace

↓

Coded Forms — Batched by specified sequence

↓

Data Entry — a. Using 40 PCs to capture data in 2 shifts
b. Unchanged pre-printed data will not be captured

↓

○

↓

File Transfer — All data files will be transfered to the mainframe computer for processing using the file transfer communication software

↓

Captured Data From Schedules

↓

Pre-Census Household Database → **Data Extraction** → **Merged Coded Records except SSIC & SSOC**

CENSUS OF POPULATION 1990
AUTOMATIC AND COMPUTER ASSISTED
CODING OF SSIC & SSOC

Merged
Coded
Records
except SSIC
& SSOC

SSIC
Data
Dictionary

SSIC
Automatic
Coding

Formatted Estab Name
as index (search) key

Coded
SSIC
Records

Uncoded
SSIC
Records

Computer
Assisted
Coding

Interface with Estab
Hub database to obtain
employer information

Coded
SSIC
Records

SSOC
Data
Dictionary

SSOC
Automatic
Coding

Dummy SSOC codes used
for industry dependent
SSOC codes

Formatted SSOC
Description
as index (search)
key

Conversion
Of
Dummy SSOC

Conversion
Tables

Uncoded
Records

Coded
Records

records
which fail
conversion

Coded
SSIC &
SSOC
Records

SSOC
Manual Coding
& Update Data
Dictionary

SSOC
Manual
Coding

Automatic
Coding Of
Household
Structure

Coded
Records

CENSUS OF POPULATION 1990
VALIDATION AND ERROR CORRECTION

Coded Records

Error Checks → Error Free Records

Error Records

Verification & Compatibility Checks → Accepted Records

Rejected Records

File Transfer

Download error/verification files to PC for error correction

Error Correction

a. Editor will check and amend data on the hard copy listing
b. Data entry staff will then key punch corrected data onto the PC

File Transfer

After completion of error correction, upload file to mainframe for Batch editing

DCIS/P90/EC

CENSUS OF POPULATION 1990
FINAL DATABASE UPDATE

Accepted
Records

Birth &
Death
Records

Pre-Census
Household
Database

Update
Pre-Census
Household
Database

Census
Household
Database

Update Data
As At Census
Day

1990
Census
Household
Database

Duplicated
Records

File
Transfer

Batch Edit
&
Error Correction System

Reject duplicate
records accepted in
different batches

Download to PC
file for error
correction

DCIS/P90/DB

CENSUS OF POPULATION 1990
TABULATION AND DATA DISSEMINATION

LIST OF HARDWARE AND SOFTWARE USED IN THE 1990 POPULATION CENSUS

S/NO	SYSTEM	SOFTWARE/ LANGUAGE USED	HARDWARE
1	Computerised Reticulation	COBOL, PL/I	FACOM 760
2	Creation Of Pre-Census Household Database	IDMS/DB COBOL	FACOM 760
3	Sample Selection	COBOL, PL/I	FACOM 760
4	Extraction & Pre-Printing Of Data	COBOL	FACOM 760 IBM 3090 * 2 Laser Printers 2 Impact Printers
5	Recruitment & Job Assignment	IDMS/DB COBOL	FACOM 760 PC
6	Field Work Progress Report	IDMS/DB COBOL DBASE IV BASIC	43 Hand-held Computers 3 Laptop Computers
7	Payroll System	COBOL, PL/I IDMS/DB	FACOM 760
8	Control And Monitoring Of Data Processing	DBASE IV COBOL	6 Bar-code Readers 6 PCs FACOM 760
9	Data Capture	KeyEntry III FTTSO	40 PCs
10	Automatic & Computer Assisted Coding	COBOL, PL/I IDMS/ DB, PCGATE	FACOM 760 40 PCs
11	Validation & Error Correction	IDMS/DB COBOL, PL/I PCGATE, FTTSO	FACOM 760 10 PCs
12	Final Database Update	COBOL IDMS/DB	FACOM 760
13	Tabulation & Data Dissemination	TPL, SAS TPL/Postscript ABSTRACT INQR	FACOM 760 4 Postscript Desktop Laser Printers Magnetic Cartridges

* part of the schedules will be printed using IBM 3800 laser printer in Computer Services Department, Ministry of Finance

1990 POPULATION CENSUS PROJECT DEVELOPMENT TEAM ORGANISATION CHART

```
                    ┌──────────────┐
                    │   Director   │
                    └──────┬───────┘
                    ┌──────┴───────┐
                    │  By Director │
                    └──────┬───────┘
                    ┌──────┴───────┐
                    │ Project Mgr  │
                    └──────┬───────┘
   ┌──────────────┬────────┼────────┬──────────────┐
┌──────────┐ ┌──────────┐ ┌──────────┐ ┌──────────┐
│ Project  │ │ Project  │ │ Project  │ │ Project  │
│ Leader   │ │ Leader   │ │ Leader   │ │ Leader   │
└────┬─────┘ └────┬─────┘ └────┬─────┘ └────┬─────┘
┌──────────┐ ┌──────────┐ ┌──────────┐ ┌──────────┐
│3 Program-│ │2 Program-│ │2 Program-│ │2 Program-│
│mer       │ │mer       │ │mer       │ │mer       │
│Analysts  │ │Analysts  │ │Analysts  │ │Analysts  │
└──────────┘ └──────────┘ └──────────┘ └──────────┘
```
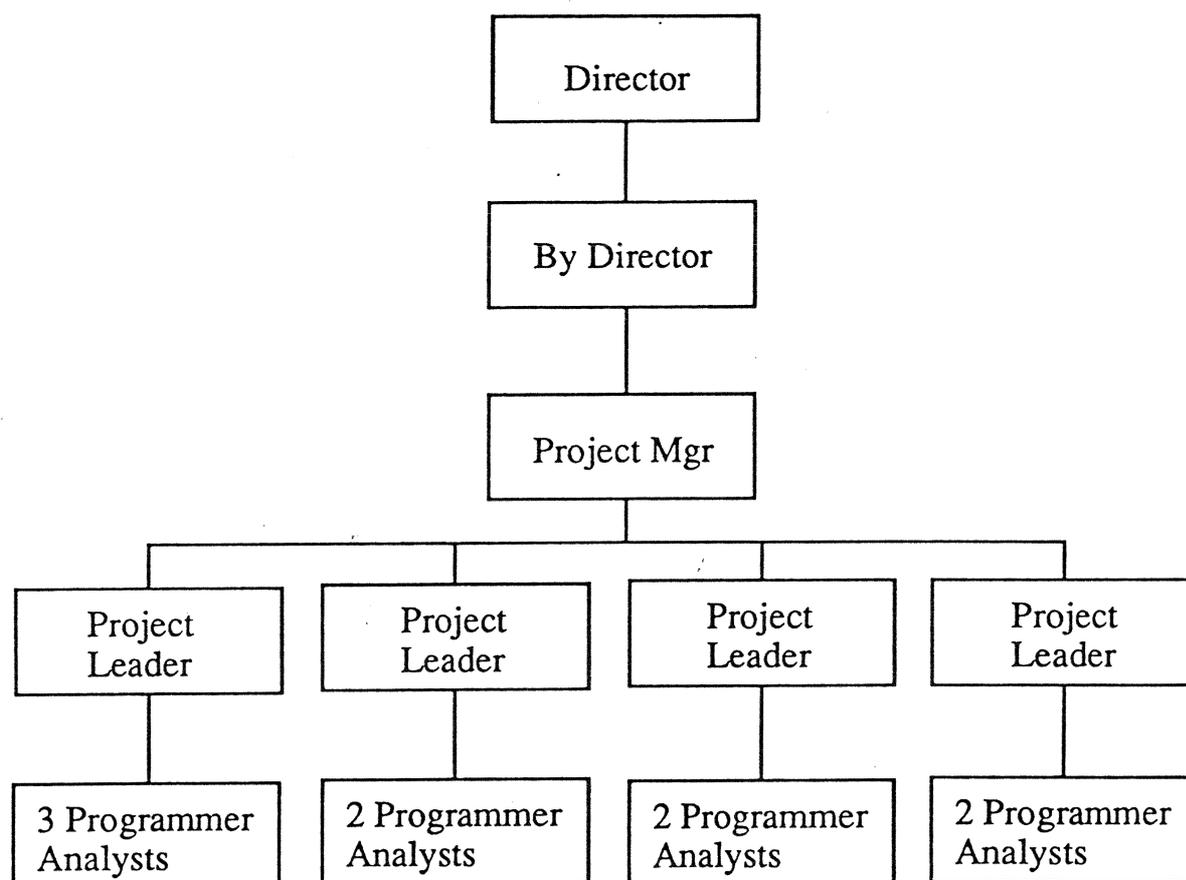
- Computerised Reticulation
- Pre-Census Household DB Creation
- Address Conversion
- Recruitment, Job Assignment & Payroll
- Code Files Maintenance

- Data Capture
- Computer Assisted Coding
- Final Database Update
- Validation & Error Correction

- Hand-held Computer
- Control & Monitoring Of Data Processing
- Field Work Progress Report

- Extraction & Pre-printing Of Data
- Tabulation
- Sample Selection

DCIS/P90/OC

Data Processing in the Population Census

Introduction
1. This paper describes the past developments and the future plans
in data processing of the Population Census of Japan. The first
part describes the transition of computer systems used for census
data processing since the first introduction of the computer system
in 1961 in order to provide the background information. In the
second part, the plans for the 1990 Census will be given.

I Transition of the Computer System for Census Data Processing

2. The outline of transition of the computer systems for census
data processing in Japan is given in Table 1. At the Statistics
Center, the first computer system, IBM 705, was introduced in 1961
in the data processing of the 1960 Population Census. At that time,
punch cards were used for data entry, and it took 40 months to
complete the work of data capture.

3. In the 1965 Census, two optical character readers (IBM 1418)
were introduced in order to directly capture the data which had been
transcribed from the questionnaires to the mark cards by the
enumerators at the Statistics Center. As a result, the efficiency
of data capture was improved and the period was shortened to 20
months.

4. In the 1970 Census, four new optical mark readers (OMRs) were
introduced. This time, mark sheets of A4 size (210mm x 297mm) were
used to transcribe the contents of the questionnaires filled by the
households. Only one side of the mark sheet was used for
transcription and each mark sheet could contain the data for up to
two persons. Because of the large size of the mark sheet, a
conventional mark sheet readers could not be used. For this reason,
a new model was specially developed by Nippon Electric Corporation
(NEC) to meet the specifications designed by the Statistics Center.

5. At the same time, two sets of new main-frame computers were
additionally introduced for data processing. They were operated
under an operating system specially developed by the Statistics
Center to process tabulation works efficiently. A new output device,
editing system with Kanji (Chinese characters) (JEM 2450), was also
introduced. This system could directly output the originals of photo

1

offset printing, and the process starting from the computer output to the press was significantly reduced. Before the introduction of this system, the printouts from the line printers were manually pasted on the preprinted forms with titles, heads and stubs of the tables in order to produce the originals of the photo offsets.

6. In the 1975 Census, the questionnaire was changed to the self-completion form so that no transcription work is needed. For this purpose, the questionnaire was designed to include both the questions and the mark fields on the same sheet. At the same time, the size of the sheet was enlarged to B4 (257mm x 364mm) and each questionnaire could contain the data for up to four persons. Along with this change of the questionnaire, the OMRs were fundamentally upgraded so that the precision of data capture might be improved.

7. The main-frame computer was also upgraded so that multiple processing could be done. As for the software, Tree Logic Language (TLLAN) was developed, and the productivity and the reliability of the programs were improved. The system for examining the consistency of tables was also developed in order to detect the possible inconsistency among the statistical tables.

8. In the 1980 Census, the OMRs were improved so that they could read both sides of the mark sheets in one pass. With this improvement, the number of feeding of the questionnaires to the OMRs was reduced. The Kanji printer was also replaced by a new model with a higher printing speed, and along with this change, the system for designing the table forms was developed.

9. In addition, a prototype on-line system for correcting errors in the questionnaires was developed and tested in preparation for the next census. In the conventional method, if an error was detected by the data editing program, the questionnaire containing the error was taken out from the storage and the error was corrected on the sheet so that it could be input again by the OMRs. This process was quite time consuming, because the questionnaires had to be transported and because the corrected questionnaires could be fed to the OMRs only in batch. But with the on-line system, in most cases, it was not necessary to take out the questionnaires, and the corrections could be done real time. The experimental operation with the prototype system provided useful information for the improvement in the next census.

10. In the 1985 Census, with the successful experience of the test

2

in the previous census, the on-line error correction system was fully applied in the production, using 50 on-line terminals in the peak processing period. Along with this change, the main-frame computer was upgraded, and the capacity of the disk storage was greatly expanded. In addition, several systems for supporting the tabulation works were developed in order to improve the efficiency of the manual operation.

II   Plans for the 1990 Census

11.   In the 1990 Census, some new features in data processing are planned to be introduced in order to improve the accuracy and the efficiency of processing. Three major points of improvement are given below, namely the input device, distributed processing system, and the system for supporting the table examination.

New Input Device
12.   As the OMRs used in the 1985 Census has become obsolete, a new input device is planned to be introduced in the 1990 Census. For this purpose, the Statistics Center has been developing a new OMR system since 1986.

13.   The OMRs used in the 1985 Census was originally designed and developed on the basis of technologies available in early 1970s, and by the time of the data processing of the 1990 Census, nearly 20 years will have passed since its design. In this age of rapid technological development, 20 years is an extremely long period, and the available technologies are quite different between the past and the present. In twenty years, it has become difficult to maintain some of the parts for the OMR systems. Using old technologies is usually not cost efficient, and it has become preferable to develop a new system with new technologies.

14.   The OMR which was used until the 1985 Census had the following features:
  i) the capability to output the levels of darkness of the marks on the questionnaire;
  ii) the capability to read both sides of the sheet in one pass with two sets of sensors;
  iii) the capability to recognize up to five types of sheets in the same batch of sheets by reading the first line of the sheets.

15.   The new OMR has been designed to have the following features in

3

addition to the old one:
  i) the capability to capture the images of the hand-written characters and to record them on optical disks (Code data are stored on the magnetic tapes, as in the past.)
  ii) the capability to compare the darkness of the marks in a specified area overlapping in more than one line and to output the code for the darkest mark;
  iii) automatic loading of a stack of sheets placed in advance on the conveyor, when the hopper becomes empty;
  iv) narrower interval of mark areas (6.5mm for the new machine, while 7.0mm for the old machine).

16. With the new features, following improvements in the data processing are expected to be achieved:
  i) the work of industrial and occupational coding will become more efficient, as the images of the written responses can be displayed together with the marked responses, and it becomes unnecessary for the clerks to go back to the questionnaires;
  ii) the workload on the host computer is reduced because the comparison of darkness of marks and code and format conversions are all done on the OMR, not on the host computer as in the past;
  iii) the operation of OMRs will become easier due to automatic loading of questionnaires;
  iv) the questionnaire design can be more flexible than before because of the narrower mark field interval.

Distributed Processing System
17. In the 1990 Census, the data processing was designed by taking account of the following requirements:
  i) data editing and error correction procedures have to be made more efficient;
  ii) the image data of the written responses will be utilized in the industrial and occupational coding;
  iii) the work load on the main-frame computer has to be reduced.
To satisfy the requirements, the on-line error correction system adopted in the previous census was strengthened to include data editing functions, and most of this process is to be done on the local processors.

18. The distributed system is planned to comprise about 10 units of distributed processors to which up to 160 terminals are connected. Other devices attached to the system include optical disks for image

4

storage, image printers, Kanji printers, and floppy disk drives.
The distributed processors are connected together by LAN (Local Area
Network) connected by Ethernet. The configuration is shown on Fig.
1.

Fig. 1
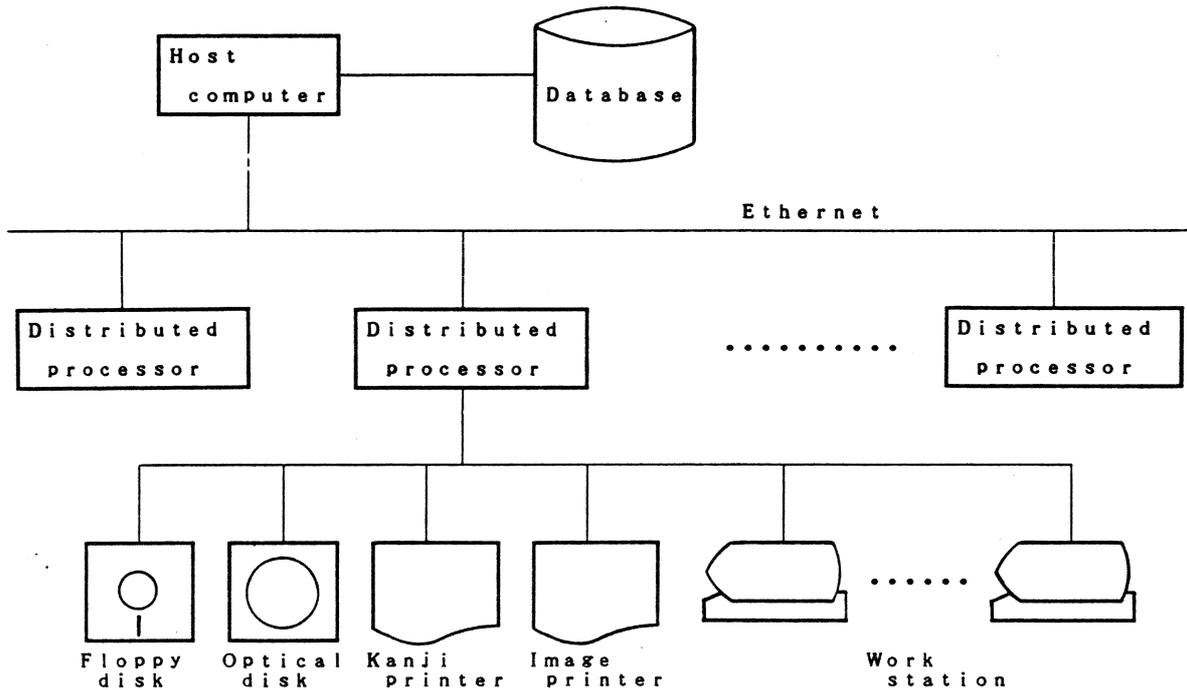
19. The functions to be included in the system are as follows:
a) <u>Error corrections and data check functions</u>

When the clerks enter the correction data from the key board, the
validity of the code and the logical consistency of the entered data
are immediately examined by the system. In this way, the correction
data entered in the system will become more reliable.
b) <u>Image data processing functions</u>

When the questionnaires are read by the OMR, code data are recorded
on the magnetic tape and image data are recorded on the optical disk.
In the data processing work, the code data are stored in the magnetic
disks of the host computer and the image data are stored in the
optical disks of the distributed processing system. When the clerks

5

refer to these data, both the code data and the image data are displayed or printed together. In this manner, all the necessary information to determine the industrial and occupational codes is given to the clerks from the terminal or the printouts. They do not have to refer to the original questionnaires for coding.

c) <u>Data and operation management functions</u>

In order to achieve flexibility and efficiency of operation and assure the proper handling of the data, following functions are to be included in the system:

  i) The size of the lot for processing can be changed as much as needed;

 ii) To avoid the possible misuse of the terminals, the functions made available only for the supervisors and those available for the general clerks are separated;

iii) The printouts can be directed to either the local printers or the printer of the host computer as specified by the users;

 iv) The system keeps the records on the progress of work automatically, and output them in a specified format regularly;

  v) The system recognizes and confirms the users, and security measures are taken.

The System for Supporting the Table Examination

20. In order to assure the correctness of the tabulated results, it is necessary to examine the tables produced as a result of the tabulation works. But the process of examination usually requires an intensive work of experienced clerks. In order to make this process more efficient, a new system for supporting the table examination is introduced in the 1990 Census.

21. The system consists of the following subsystems, and they can be also used for processing other statistical surveys.

a) <u>Automatic examination of consistency</u>

The sums of the detailed figures are compared with the totals shown within the same table. The parts in different tables which should have the identical figures are compared, and the parts which do not match are detected.

b) <u>Production of tables of comparative statistics</u>

In order to examine the validity of the tabulated results in comparison with the previous census results or the data from other related sources, tables containing such data are produced as specified by the clerks in charge of the table examination.

c) <u>Retrieval of the individual data</u>

When some abnormal figures are detected by the subsystems described

above, it is necessary to find out its causes, and if it proves to be an error, it is necessary to reprocess the data. In order to support the work of finding out the causes, a subsystem is developed to enable the clerks to search and display or print the individual data from the terminals in a conversational operation.

Table 1   Changes in the Hardware Configuration of the Computer Systems Used
in the Population Census and Main Features of Tabulation Work

Time of Introduction	Mainframes (main storage capacity)	Input System	Output System	Main Features of Tabulation Work
1961	IBM 705-II (40K) Cycle time 17 μs/5c Magnetic tape system 10 units	Punch Cards *40 months*	Line printer	
1965	NEAC 2200-200 (32K) Cycle time 2 μs Magnetic tape system 7 units	Optical character reader (OCR) IBM 1418 2 units Size of sheet 175 mm x 90 mm Reading speed 300 sheets/minute	Line printer NEAC 2200-200 Printing speed 950 lines/minute	Data entry by an optoelectronics method *<20 months>* *① 1 card → 1 person ∴ 빅장* *② error → erase 하든지 여러분.*

1970	NEAC 2200-400 (80K)
	NEAC 2200-500* (256K)
	*Cycle time 1.5 μs/8c
	Magnetic tape system 7 units
	Magnetic disk drive 70 MB
		Optical mark reader (OMR)
		NEAC 240P 4 units
		Sheet size 297 mm x 210 mm
		Reading speed 220 sheets/minute
			Kanji editing system
			JEM-2450
			Printing speed 200 lines/minute
				-The development of an operating system
				  for tabulation
				-The introduction of OMR
				-The development of a Kanji editing system
				  (production of the block copy for report,
				  and the output of microfilm)

1975	NEAC 2200-575 (512K)
	Cycle time 650 ns/8c
	Magnetic tape system 10 units
	Magnetic disk drive 500 MB
		Optical mark reader (OMR)
		NEAC 240P-I 4 units
		Sheet size 364 mm x 257 mm
		Reading speed 200 sheets/minute
			Same as above	-Introduction of mark sheet questionnaires *one side only*
				-The development of a tree logic
				  language-based development of programs
				-The development of an automatic
				  examination system

1980	NEAC ACOS-800 (5M)
	Cycle time 420 ns/8B
	Magnetic tape system 7 units
	Magnetic disk drive 4 GB
		Optical mark reader (OMR)
		NEAC 781 5 units
		Sheet size 364 mm x 257 mm
		Reading speed 200 sheets/minute
			High-speed Kanji printer
			NEAC 7370
			Printing speed 7,000 lines/minute
				-The introduction of an OMR that can read the
				  both sides of the questionnaires in one pass
				-The development of a prototype system
				  for on-line data correction
				-The development of a system for automatic
				  examination of final results
				-The development of a Kanji editing system
				  for high-speed Kanji printer

1985	NEAC ACOS-950 (16M)
	Cycle time 300 ns/8B
	Magnetic tape system 7 units
	Magnetic disk drive 24 GB
		Optical mark reader (OMR)
		NEAC 7815 4 units
		Sheet size 364 mm x 257 mm
		Reading speed 200 sheets/minute
			Same as above	-Introduction of an on-line data
				  correction system
				-The development of a table
				  examination support system

FIFTH INTERNATIONAL MEETING OF
THE HEADS OF NATIONAL STATISTICAL
OFFICES OF ASEAN COUNTRIES AND JAPAN
(23 - 26 January 1990)
TOKYO, JAPAN

Quality Control in the Population Census

Statistics Bureau / Statistics Center

Management and Coordination Agency

Japan

Quality Control in the Population Census

I Introduction

1. This paper describes an outline of the quality control measures taken in the operation of the 1985 Population Census of Japan. In the quality control program of the Population Census, an emphasis is placed on counting the population without omission or duplication and on assuring the correctness of the contents filled in the questionnaires. Various measures were taken in the demarcation of the Enumeration Districts (EDs), field work, and tabulation. A similar quality control is planned to be implemented in the 1990 Census.

II Quality Control in the Demarcation of EDs

2. One year before the census date, that is, 1 October 1984, the EDs were demarcated and the ED maps and other documents describing the EDs were prepared. In case the landmarks such as streets and railroad lines used for delimiting the EDs had changed from the date of demarcation till the census date, the ED maps were redrawn as needed. By making accurate maps and documents describing the EDs, the area assigned to each enumerator becomes clear, and the possibility of omission and duplication becomes smaller.

III Quality Control in the Field Work

(1) Quality Control at the Enumerator's Level

Before Distribution of Questionnaires
3. Before distributing the questionnaires to the households, the enumerators visited the EDs assigned to them and confirmed the area of the EDs, using the maps that were prepared at the time of the demarcation of the EDs. On this occasion, the enumerators drew schematic maps of the EDs, and recorded on these maps the boundaries delimiting the EDs, streets and housing units so that they might be able to recall easily the area of the EDs and the locations of the housing units to be visited.

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Distribution of Questionnaires

4. At the time of distributing the questionnaires, it is important that the enumerators visit all the households to be counted with a correct understanding of the definition of population coverage, i.e. persons usually living in the EDs on the census date (as of 1 October). For this reason, in the Enumerators' Manual, clear descriptions and many examples were given concerning the households and household members who were apt to be neglected in the enumeration. From 23 to 30 September, the enumerators visited all the households in their EDs and distributed to them the questionnaires together with the leaflets "Requests for Cooperation". In the leaflet, detailed instructions for completing the questionnaires were given with several examples for describing the industries and the occupations so that the coding could be correctly done at the Statistics Center.

5. On this occasion, the enumerators put at the entrance of each housing units a sticker to certify the distribution of the questionnaires in order to avoid omission or double counting of the households. They also entered in the List of Households the names of the heads of households and other relevant information. At the same time, they recorded the locations of the households by putting the household numbers in the schematic maps they had drawn on the first visit to the EDs.

6. If there were households temporarily absent at the time of the distribution of the questionnaires, the enumerators tried to contact the household members by leaving notes informing the households of the planned time of revisit or request for contact by phone, and revisited later. In case it was not possible to contact the household members, the enumerators left to the housing unit the questionnaires for absent households which were printed on ordinary paper instead of the questionnaires of OMR paper which could not be folded.

Collection of Questionnaires

7. From 1 till 7 October, the enumerators revisited the households and collected the questionnaires. On this occasion, they confirmed whether there was any change in the households or household members during the time from the distribution of the questionnaires till 1

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October. If there were any changes, the enumerators corrected the entries in the List of Households and the schematic maps, and redistributed additional questionnaires if necessary. If there were households which could not be contacted at all during the enumeration period or were not willing to cooperate in the enumeration, the enumerators informed the supervisors and followed their instructions. To ensure the complete counting of the people, advertisements, etc. were made in early October to request those who had not been contacted by the enumerators to contact the municipal offices.

Examination of Questionnaires

8. After collecting the questionnaires, the enumerators confirmed that all the questionnaires were collected by comparing the schematic maps, the List of Households, and the questionnaires. They also confirmed that the household numbers and the numbers of household members in the questionnaires were identical to those in the List of Households. If the questionnaires were stained, folded, broken, or marked in ink not recognized by OMRs, the enumerators transcribed the contents to new questionnaires so that they could be read by OMRs correctly. For thin marks in the questionnaires, the enumerators made the marks clear and dark on the questionnaires. The enumerators also examined the contents of the questionnaires to look for the omission of entry, errors and inconsistencies.

(2) Quality Control at the Supervisor's Level

Supervising the Enumerators

9. In order to assure that the enumerators had correctly covered the areas of the EDs and that they correctly enumerated the households and the persons, the supervisors confirmed the enumerators whenever necessary. The supervisors also gave instructions when they were consulted by the enumerators on detailed matters such as how to fill in the questionnaires.

Substitute Response

10. In case an enumerator informed that a household had been absent for the whole enumeration period and that no response had been obtained, the supervisor instructed the enumerator to look for a neighbor through whom any information about the absent household

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could be obtained. If such a neighbor could be found, the enumerator was allowed to complete the questionnaire on the basis of that information. This substitute response was applied only if it was confirmed through the substitute respondent that the absent household would agree to be enumerated in this way.

11. In case the substitute response could not be applied, the enumerator asked the neighbors the name and sex of the members of the absent household, and the number of household members, and completed only these items in the questionnaire. In case there was a household which would not cooperate in the enumeration in spite of all the persuasions by the enumerator, the supervisor took place to enumerate the household. If even the supervisor could not persuade such a household, they reported the case to the municipal office and the office took charge of such cases.

Examination of the Questionnaires and Other Documents

12. The supervisors examined intensively the list of households and the schematic maps submitted by the enumerators after the enumeration. If they found possible omissions or duplications in the enumeration, they instructed the enumerators to reexamine the questionnaires and the actual status. The supervisors also examined the questionnaires to detect and correct the missing or erroneous entries and the inconsistency among different response items. If errors or incompleteness were found, the supervisors instructed the enumerators to reexamine the contents, and if necessary, to reenumerate the households concerned.

(3) Quality Control in Municipalities

Supervision of Supervisors

13. The municipal office assigned the enumerators to the EDs according to the characteristics so that the enumerators could smoothly work in the areas assigned. If necessary, the staff of municipal offices visited influential persons in the localities in order to ask cooperation in the enumeration. They also took charge of enumeration when neither the enumerators nor the supervisors could persuade a household unwilling to cooperate.

Examination of the Questionnaires and Other Documents

14. In the examination of the questionnaires and other documents at the municipal offices, an emphasis was placed on the examination of the number of completed questionnaires and the comparison between the List of Households and the questionnaires. The examination of the contents of the questionnaires supplemented the examination at the supervisors' level, and the staff mainly examined the contents of the industry and occupation items. In case someone reported to the municipal office after the collection of the questionnaires that he/she had been enumerated twice or not at all, the circumstances were examined and the questionnaires and other documents were corrected as necessary.

(4) Quality Control in Prefectures

Supervision of Municipalities

15. In order to assist the municipal offices in examining the contents of the industry and occupation items in the questionnaires, the prefectural offices prepared some materials to be used in the examination of the questionnaires. The materials were designed to be suitable for the characteristics of the municipalities, and included some examples classifying typical industries and occupations in the municipalities, possible difficult cases to handle in the municipalities, and the procedure and the methods of examination of the questionnaires and documents.

Examination of Questionnaires and Other Documents

16. In the examination at the level of prefectures, an emphasis was placed on the number of questionnaires, sorting and ordering of the questionnaires, coverage of the population and the households. In case incompleteness or errors were found, they were completed or corrected by the prefectural staff whenever possible.

IV Quality Control at the Stage of Tabulation

(1) Outline

17. At the Statistics Center, efforts were made to improve the quality of the data and streamline the jobs of tabulation in order to provide accurate statistics promptly. For this purpose, before

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the start of each phase of tabulation, an intensive training was given to all the clerks engaged in the tabulation work. The outline of the tabulation work of the 1985 Population Census is as follows:

```
┌─────────────────────────────┐
│ Receipt of the questionnaires │
│      and registration        │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│   Contents examination       │
│       and coding             │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│    Data input (OMRs)         │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│      Data editing            │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│  Examination of the error list │
│     and error correction      │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│   Aggregation by computer     │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│    Output of the tables       │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│  Examination of the tables    │
└─────────────────────────────┘
```
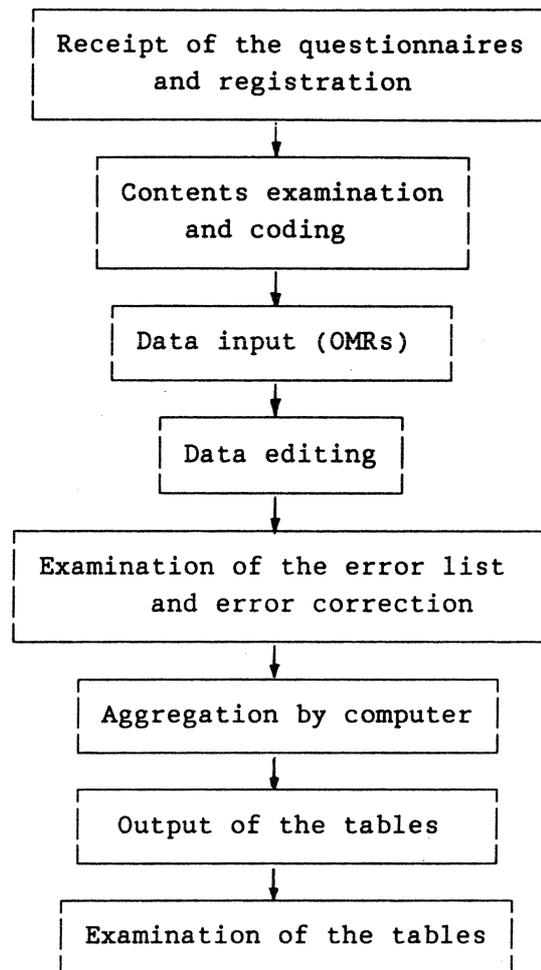
Quality control measures taken at each step will be described below.

Receipt of the Questionnaires and Registration, Contents Examination and Coding

18. When the questionnaires were submitted by the prefectures to the Statistics Center, they were examined and registered. Then, the questionnaires were stored in the storage room so that they might be easily used in the tabulation work. To keep the confidentiality

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of the private information, entrances to the storage room and access to the questionnaires were tightly controlled.

19. After that, the contents of the questionnaires were examined strictly by the clerks to ensure the accuracy of processing in the next steps. The emphasis of examination was placed on the items which were essential to counting the household numbers correctly and the numbers of household members. Then, depending on the phase of tabulation, the industrial and occupational codes were marked on the questionnaires. In this process, the idea of Total Quality Control (TQC), commonly adopted in the industrial sectors in Japan, was introduced in the 1985 Census, and some new measures were taken. The details are described later in a separate chapter.

Data Editing and Error Correction

20. Data editing was done by the computer in order to detect the missing and erroneous entries and logical inconsistencies in the data, and, if possible, to correct them judging from the logical relation within the same questionnaires. Errors detected in this step were all printed out in the "Check List", and the list was examined by the clerks. The errors in the list were grouped into "vital errors", "errors corrigible by the computer", and "possible errors". For the errors corrigible by the computer, the errors and the correct codes determined by the computer were printed together, and the clerks examined the validity of the codes determined by the computer. Only if the codes were not acceptable, they were manually corrected, but otherwise, no action was taken. The possible errors refer to the abnormal cases or apparent logical inconsistencies, and the data of such cases were printed together with the reason for the possibility of errors. The clerks made corrections if they judged that the detected cases were errors. In this process, the original questionnaires were referred to as far as possible.

Table Examination

21. The table examination could be divided into the form examination and the contents examination. The form examination includes a) the comparison of the cells among different tables which have to be identical by definition, b) comparison of the totals given in the table with the actual sums of the detailed figures given in the same

tables, c) comparison of the figures in certain cells with some constants obtained from other data sources, and d) confirming the cells which would be zero by definition. These comparisons and confirmations were all done by the computer.

22. In the contents examination, supplementary tables were produced to compare the results obtained from the tabulation with the past results ordered in time series data, or in relation to other related statistics. In addition, comparisons between different regions and with the results of the previous census were extensively done to look for abnormalities.

23. If any errors or inconsistencies were found in the examined tables, the causes were sought and appropriate measures were taken, depending on the case. In case it was necessary to examine the contents of the original questionnaires, they were retrieved by the computer to the terminal display. If any errors causing the abnormalities were found, they were immediately corrected and the full set of data were retabulated.

(2) Quality Control in Industrial and Occupational Coding

Idea of Quality Control
24. Among all kinds of manual tabulation work, the industrial and occupational coding is most likely to be affected by manual errors. For this part of tabulation work, the idea of Total Quality Control (TQC) was introduced in the work for the first time in the 1985 Census. The following points were the basic concepts of TQC, and they were emphasized to the clerks involved in the work.

i) Quality Control Based on Facts
It is important to take measures of quality control on the basis of correct and objective understanding of the problems. For this reason, verifications of codes for a sample of the coding results were done continuously by a special team. On the basis of the problems observed in this verification, countermeasures were taken.

ii) Preventing the Reoccurrences of the Problems
Reliable results cannot be produced continuously just by correcting the errors whenever detected. Every error has certain causes, and

it is necessary to take measures addressed to the real causes of the problems in order to prevent the reoccurrence of errors. For this reason, if the errors were detected in the sample verification, they were corrected, and at the same time the causes were sought. Every week, a newsletter called "Quality Control News" was distributed to all the clerks to give information on what kinds of errors occurred in the previous week and the possible causes.

iii) Participation of All the Persons Involved

As the work of coding involves a large number of clerks, it is not possible for only a small number of persons, such as management groups, to grasp all the problems. For this reason, the TQC program was designed to let all the staff participate in the program. The clerks were organized into small groups of six to eight persons, and they regularly had meetings for discussing the problems and possible measures.

Organization of Quality Control

25. The Quality Control Program was implemented in the following organization:

i) Quality Control Committee

The Committee, chaired by Director-General of the Statistics Center, considered and determined the policy of the Quality Control Program.

ii) Quality Control Team

The Team, headed by Director of the Population Tabulation Department of the Statistics Center, reported to the Quality Control Committee, and took charge of day-to-day operation of quality control. It collected information needed for quality control and analyzed it for day-to-day operation and planning the improvement measures.

iii) Verification Team

The Verification Team, headed by a unit chief specially appointed for this purpose, continuously sampled the coding results, and verified their correctness. The records of individual errors were returned to the coding units concerned, and the information obtained in the process of verification was reported to the Quality Control Committee and the Team. It also served as an important source for preparing materials for training of the staff.

iv) Question Handling Team

In case the coding units or sections have questions on coding or difficult cases to treat, it is necessary to handle such cases in a uniform manner. To handle such cases, this team was established. The records of the questions and difficult cases served an important source for planning of quality control measures.

Verification of the Coding Results

26. Samples for the verification of the results were drawn from the lots (or certain blocks of questionnaires) according to a systematic sampling. The size of the lot was determined so that the coding work could be done without being interfered. The sampling ratios, total sample size, and the size of the lots were as follows:

Tabulation Phase	Sampling Ratio (percent)	Total Number in the Samples	Lot Size (number of questionnaires)
1% Prompt Tabulation	19.08%	78,726	(Prefectures)
Second Phase	1.58%	646,610	about 60,000
Third Phase	1.79%	726,000	about 60,000
Detailed Sample	4.49%	355,200	about 30,000

27. A control limit was determined for the percentage of the occurrence of coding errors for each phase. If the error rate of a certain lot was higher than the limit, the causes were sought by the Quality Control Team, and the errors were corrected. The coding clerks were given some sessions for additional instructions to avoid the reoccurrences. The control limit was computed in the following formula:

$$\text{Upper Control Limit} = P_0 + 3\sqrt{\frac{P_0(1 - P_0)}{n}}$$

where "P_0" refers to the control level (average);
and "n" refers to the sample size.

28. The results of the verification were used in the following ways:

i) the records of errors were returned to the coding unit in charge within one day after the coding, and the unit considered the possible measures for preventing the reoccurrences;

ii) the unit chiefs were informed of the error occurrence ratios once every month, and were encouraged to understand the problems and give appropriate guidance to the coding clerks;

iii) in the Quality Control News, the typical errors observed in the previous week were given with additional explanations.

(3) Other Activities in the Quality Control Program

Training

29. For quality control, some training sessions were given to all the clerks before and during the period of coding work. At first, before the coding work, training on the coding system and the work itself was given. Then, after the coding work started, mid-term training was held to give additional instructions based on the errors which were observed in the quality control activities. In addition, special trainings were given to the clerks of the units whose error ratios of the coding results had exceeded the control limit.

Cross Checks

30. For the minor group coding of industrial and occupational classifications, the results of coding were cross-checked by the coding clerks of different coding units. The minor group coding, which was applied to the 1% and 20% Sample Tabulations, is more difficult and requires more careful checks than the major group coding.

Handling of Difficult Cases

31. If there were some cases difficult to treat or some questions on the coding standard which could not be solved within a coding unit, the unit could consult with the Question Handling Team. The questions and difficult cases were first gathered within the same unit, but then they were passed to the Team if they were not solved.

Group Meetings

32. To promote the participation of all the coding clerks, meetings to discuss the causes of errors and the countermeasures were held once every week in every coding unit. The knowledge and awareness in quality could be deepened through these meetings, as the clerks teach one another, and think to propose measures for improvement in these meetings.

V Conclusion

33. At present, the details of the quality control program for the 1990 Population Census are still being considered. But it is expected to be based on the 1985 program and some improved features are expected to be introduced after reviewing the past program.

FIFTH INTERNATIONAL MEETING OF
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(23 - 26 January 1990)
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Analysis of the Accuracy of the Results of

the Population Census

Statistics Bureau / Statistics Center

Management and Coordination Agency

Japan

Analysis of the Accuracy of the Results of the Population Census

Introduction

1. In Japan, two kinds of analyses are made in order to measure the accuracy of the results of the Population Census. One is the comparison between the census population and the population based on the Basic Resident Resister(BRR), and the other is the Post Enumeration Survey(PES) which is conducted about two months after the Population Census. This paper describes the methods and the major results of both kinds of analyses.

I Comparison with the Population of the Basic Resident Register

Method of Comparison

2. Every Japanese citizen living in Japan is required by law to be registered in BRR at the municipal office of his/her address. BRR, therefore, serves as an important data source of the population of Japanese citizens. By comparing the data of BRR with those of the Population Census, consistency of the two independent data sources can be examined, and as a result, the accuracy of the census data can be measured in relation to BRR. The results of the comparison for the 1985 Census are given below.

3. The scope of BRR differs a little from that of the Population Census. One major difference is that BRR only covers Japanese citizens living in Japan while the Population Census covers both Japanese and foreigners living in Japan. In the comparison, the population of foreigners were excluded from the census population in order to compensate the difference.

4. There is another major difference in the scope resulting from the difference in the concept of residence. In BRR, those who are to be absent from the resident address for less than a year are recorded on the basis of the resident address while in the Population Census such people are, in principle, recorded on the basis of the address of the current location. In the same manner, those who are

abroad for more than three months but less than a year are recorded in BRR but not in the Population Census. In the comparison of the BRR and census figures, no adjustment was made for these differences.

5. The reference dates of the two data sources are also different. The reference date of the Population Census is 1 October of the years ending with 0 or 5 while the data of BRR are compiled as of 31 March every year. In the comparison for the 1985 population figures, the BRR data were obtained by averaging the figures for 31 March 1985 and 31 March 1986 in order to reduce the effect of time difference.

Results of Comparison

6. For the whole area of Japan, the population of BRR exceeded that of the Population Census by 35 thousand (0.03%). In breaking down this figure by prefecture, the populations of BRR mostly exceeded those of the Population Census in most prefectures as with the whole country. But for the prefectures with or near large cities, the census figures were higher than the BRR figures. For example, for Tokyo the census population was 0.89% higher than the BRR population. Other prefectures of this type include Miyagi (0.73%), Saitama (0.60%), Aichi (0.46%), Fukuoka (0.32%), and Osaka (0.26%). On the other hand, for the prefectures which are mostly composed of rural areas, the census population was less than the BRR population, namely Aomori (lower by 1.74%), Okinawa (1.45%), Wakayama (1.28%), Tokushima (1.03%), and Iwate (1.00%).

7. The above differences of the two sets of population figures may be attributed to the internal migration of students and seasonal workers. They often come from rural areas to work or study in the metropolitan areas, but they do not always register their movement in the Resident Register. Consequently, in the rural area, the Census population tends to be lower than the BRR population, while in the urban area the figure tends to be reverse.

8. Another possible source of difference is the way of recording the population living in institutions (e.g. hospitals, etc.) for a long period. In the Population Census, they are counted at the

institutions, while in BRR they tend to remain in the registers of the municipalities of the resident address.

9. It is difficult to determine the absolute level of accuracy of the census results from the comparisons summarized above. But the results of the comparisons roughly indicate that the census results are quite consistent with the BRR figures.

II Post Enumeration Survey

Outline of the Survey

10. Another important data source for measuring the accuracy of the Census results is the Post Enumeration Survey (PES). In Japan, PES is conducted about two months after the Population Census in order to evaluate the accuracy in the coverage and contents.

11. For the 1985 Census, PES employed a cluster sample with enumeration districts (EDs) as the sampling unit. Out of about 800 thousand EDs, about 1,900 EDs were randomly selected with sampling ratios of 1/350 for urban areas and 1/700 for rural areas. Within the sample EDs, following persons (about 350 thousand in number) were enumerated and filled in the PES questionnaires as of 15 December 1985:

   A) persons living in the sample ED as of the PES date;
   B) persons temporarily living away from the sample ED as of the PES date but who were members of households living in the sample ED;
   C) persons who had been enumerated in the Census in the sample ED but who were not living there as of the PES date.

12. The survey items of PES were as follows:
   (for all persons)
      i) name;
     ii) sex;
    iii) relationship to the head of household;
   (for persons of categories A and B)
     iv) year and month of birth;
      v) address as of the census date;

(for persons of category A)
- vi) whether having a residence other than v) and the address if any;
- vii) whether having been away from the ED for more than a week around the census date and the reason of absence;
- viii) whether having responded to the census enumeration, and the location where having received the census questionnaire;
- ix) reason for suspecting the possible double counting or omission;
- x) possible location of having been enumerated other than v);
- xi) type of household;

(for persons of category B)
- xii) reason for not living with the family;

(for persons of category C)
- xiii) reason for moving out after the census date.

13. Most of PES was conducted using self-completion questionnaires distributed by the enumerators, just as in the census enumeration. But information on the survey items ix) and x) were obtained by interviews by the enumerators. The enumerators employed in PES were selected and assigned to the sample EDs so that no PES enumerator might be assigned to the same ED of which he/she took charge at the time of the Census.

Processing of the PES Returns

14. For analyzing the results of PES, the questionnaires were matched to those of the Census, and the state of consistency, omission and duplication was examined.

15. For every person who filled in and returned a PES questionnaire, the questionnaires of the following EDs were examined to find out the Census questionnaire which was filled in by the same person:
- i) the ED where the person received the PES questionnaire;
- ii) the ED where the person received the Census questionnaire as described in PES survey item viii);
- iii) the ED of the residence as of the Census date as described in PES survey item v);

iv) the ED of other residence as described in PES survey item
vi);

v) the EDs neighboring the EDs described from ii) to iv) above.
The corresponding questionnaires for the persons enumerated in PES
were tabulated by classifying the persons into the following four
categories:

i) persons who were enumerated in the Census without
omission or duplication;

ii) persons who were omitted from the Census enumeration;

iii) persons who were counted more than once in the Census
enumeration;

iv) persons whose Census questionnaires were not found due to
the incomplete responses in PES;

Results of PES

16.   According to PES of the 1985 Census, the persons who were
enumerated in the Census constituted more than 99% of the population,
and those who were possibly omitted or double-counted were less than
1%. The rate of omission was relatively higher for the new-borns and
the persons in the twenties. Males tended to have higher rate of
omission. Those who had more than two addresses at the time of the
Census tended to have a higher possibility of omission or
double-counting.

III   Plan for the Analysis of the Accuracy of the 1990 Census

17.   In the 1990 Census, a PES similar to that of the 1985 Census
is planned to be conducted.   In the 1990 Census, conditions of
conducting the Census are expected to become less favorable, because
citizens are expected to be less willing to cooperate in the Census
than before, and the rate of absence from home will be higher due to
the increase of women working outside home.   To overcome the
unfavorable conditions, the sampling ratio of PES is planned to be
made higher than in the 1985 PES.   In addition, in the 1990 PES some
new questions are to be introduced so that the response errors may
be analyzed for major enumeration items.

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The Use and Analysis of Census Data in the Philippines

National Statistics Office

Republic of the Philippines

THE USE AND ANALYSIS OF CENSUS DATA IN THE PHILIPPINES

In planning the 1990 Census of Population and Housing, enhancement of the utility of the census data was behind almost every decision made. It was felt that users will be more appreciative of the results of the census if these could address their needs for specific types of data at a certain level of quality and within an optimum time frame.

New Census Topics.

Through a more active topic solicitation process, the needs of data users have become more apparent. A careful evaluation of each topic suggested for inclusion in the census was made taking into consideration the total résources that the government can reasonably put up for the census operations and the practicality of asking such topic in a census operation. As a result of the evaluation, decisions were made to include some new topics and to modify operational procedures in ways that were deemed appropriate towards making the census data more useful.

One new topic that was decided for inclusion is the question on disability. The first and only time that this topic was included in Philippine census was in 1948. The need for some measures of the physical well-being of the population has been felt more intensely in recent times. It is felt that in order to properly address the issue of providing the needs of those suffering from permanent handicaps and of making them more useful citizens, policy makers and planners must be aware of their numbers, who and where they are, and what they do. The question on disability, to some extent, may also provide some indicators of the morbidity status of the population and of the broader concept called quality of life.

Another topic that was introduced into the 1990 census questionnaire pertains to migration. Although previous censuses collected migration questions by asking each person their residence as of a fixed period in the past (i.e., 5 years prior to the census), they were considered limited in the sense that they could not provide indicators of patterns of population redistribution in the recent years. Hence, in addition to the usual question on residence 5 years ago, the 1990 cenus of population seeks to ask each person's last place of residence and timing of his move to the present residence. It is hoped that with these questions, we will be able to generate statistics on migration that pertain to the more recent period. This is considered especially relevant in this period of great economic adjustments when people are thought to be more mobile as they try to seek the places of economic opportunity.

New Approaches.

With the governmnet policy of decentralized planning, the demand for small area statistics has increased. The 1990 census of population has, as one its major objectives, sought to make possible the disaggregation of data while still

maintaining the practical considerations of collecting some questions on a sample basis. A more rational survey design has therefore been conceived. Questions which were thought needed at the most disaggregated level, which is the barangay, were placed on the short questionnaire. Those required at the next higher level of disaggregation were placed in the long questionnaire; these are items that will be collected on a sample basis. In the design of the sample, however, particular attention was made to the fact that there were domains (municipalities) which were very small and for which the national sampling fraction was insufficient to provide reliable estimates. Thus a variable sample fraction was decided upon.

A new operational procedure has been introduced to improve coverage and this is the use of self-administered questionnaires. While the interview method remains to be the most ideal approach to enumeration given the level of literacy of the population and the geographical terrain of the country, it is nevertheless recognized that a segment of the population can be more completely and accurately enumerated if a self-administered questionnaire is provided. The use of this approach will be concentated in the places of residence of those in the upper strata of society who are generally more literate than the rest of the population and whose living quarters are more distinct and more identifiable through the house address system. This approach entails a pre-canvass of addresses prior to the actual distribution of the questionnaires.

Another modification in operations that has been decided for the 1990 census is the decentralized data processing and the use of micro-computers for doing some aspects of machine process. This bold approach towards data processing was decided upon with the view that it will reduce processing time while at the same time solve logistics problems that would otherwise be encountered if the questionnaires were brought and processed in one central place.

Preparation of regional processing centers have actually begun a couple of years back when the regional offices of the National Statistics Office were provided with few units of micro-computers and made to process the questionnaires of some of the sample surveys undertaken by the office. These actions have built up the capability of these regional offices for machine processing so that the 1990 census will not be actually their first attempt at processing the data they themselves have collected. The experiences so far have indicated that decentralized data processing is possible and practical and in fact contributory to a more timely release of data, even on a preliminary basis.

The next section discusses the Philippine experience on the use of census data. These uses may be broadly classified into political and legislative, administrative, and academic or research purposes.

Political Uses.

The Philippines has a bicameral system of government. Its Constitution provides that the House of Representatives shall be composed of not more than 250 members (unless otherwise fixed by law) who shall be elected from legislative

districts in accordance with the number of their respective inhabitants. It provides that for every 250,000 population, one representative will be elected to represent them. The count of the population will be determined through a census of population. The Constitution further provides that within 3 years after every census taking, Congress shall make a reapportionment of legislative districts.

In formulating their political strategies, politicians use census data to determine the number of electorate in their areas. On the other hand, election registrars use the results of the census to validate the number of voters that register in various electoral precincts.

Clearly, whether for official or other purposes, census data on the count and the age structure of the population of administrative geographic areas are being used in the political arena.

Legislative Uses.

In the creation of administrative area, namely, barangays, cities, municipalities or provinces, the size of the population that will be encompassed by such creation is a primary consideration. Thus, according to the local government code, barangays, municipalities and provinces, can only be created if they would cover a minimum of 1,000, 10,000 and 500,000, respectively. A pre-requisite to the passage of any legislation creating a new administrative unit is a certification from the National Statistics Office as to the size of the population of the areas under consideration. Such certification is based on the official count of population as obtained in censuses.

Even the reclassification of cities from component to highly urbanized cities is contingent on proof of attainment of a minimum number of inhabitants, which proof is derived from the results of the census.

A number of other legislative requirements are based on the size of the population to which they apply. In the matter of disposition and allotment of national revenue, the share of local governments is computed on the basis of a formula that gives a weight of 70% to size of population, 20% to land area and the remaining 10% is allocated on an equal sharing basis. The allocation of the number of police and firefighters and other administrative services has also been made contingent on the distribution and location of population. So are permits to open up hospitals and cockpits. Once again, we point to the legal backing on the usage of census data.

Administrative Uses.

The types of demographic information that have been requested from the statistical office and the types of agencies or individuals that made these requests indicate the extent and the nature of usage of census data.

Data from censuses have been requested and used by planners, policy makers, managers and administrators, both in the government and private sectors. The government uses these data to improve or expand the delivery of social

services and to determine where certain types of social services may have to be put up. For example, the information on the number of school-going population has served to indicate the number of school houses, number of teachers, textbooks, and other educational facilities that will be required to provide adequate education to the population.

In the immunization program of the Department of Health, information on the number of infants and young children is used to provide the basis for determining the extent of immunization services needed and thus also help to determine the amount to be spent in the program. This applies as well in the area of maternal care and family planning services and other health programs wherein the target population is identified by their demographic characteristics.

The designs of the transportation and communication systems have utilized information on the distribution of the population across geographic areas. Migration data from the censuses indicate the patterns and volume of population movement. These are major considerations tht go into the planning and provision of public transport services.

Employment statistics derived from censuses provide information about the characteristics of the labor force which are far more comprehensive than those obtained through sample surveys. In addition to information on the number of employed persons, census data provides data on the number of persons employed in relatively specific occupation and industry groups. This type of information has been used not only by government planners in the labor sector but also by private professional organizations, small entrepreneurs and big establishments.

Housing census data have likewise provided valuable input in the assessment of the living conditions of the people and in the formulation of housing programs. The identification of blighted and slum areas has been made possible through an analysis of the housing data derived in the censuses. The census also provides data on the existence of population concentration not serviced by electricity and safe water system. These data have been used as basis for the expansion in the delivery of these facilities.

Even the private sector makes extensive use of housing data, Real Estate developers, for example, depend on census data for their business. So do manufacturers of household appliances like televisions sets, radios, cooking ranges.

Academic And Research.

In the academic field, census data are used to demonstrate the impact of population growth on the environmental and other aspects of life. They are used to demonstrate the relationship between population and other disciplines of study.

Higher level students and other private researchers use census data for their research on the social characteristics and behavior of the population. Such data are particularly useful in studies that focus on small areas since censuses are about the only source of statistics on small geographic units and thus can be used as the data base for synthetic estimates of intercensal surveys.

A successful census will spawn off better statistics. Frames for subsequent special surveys can be developed from the census results. It also provides auxiliary information for improved estimation through regression and ratio estimates.

Conclusion.

The huge expenditures spent in collecting census data can only be justified by the utility which these data provide for the understanding of the economic and social conditions and cultural characteristics of the people which, in turn, are the bases for the formulation of plans and programs to improve their conditions.

As outlined in this paper, preparations for the 1990 census had proceeded with the intention of greatly enhancing the utility of census data from the construction of the questionnaire to the release of table outputs. Data identified as priority through a rigorous screening process is targetted to become available and accessible to local users in less time than it was in the past. And with much hope, the national census can then be used as a basis for national progress, as it is intended to be.

FIFTH INTERNATIONAL MEETING OF
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Dissemination and Use of the Results of

the Population Census

Statistics Bureau / Statistics Center

Management and coordination Agency

Japan

Dissemination and Use of the Results of the Population Census

Introduction

1. The results of the Population Census of Japan are widely used for planning and execution of various public policies. They are also used in academic studies, such as demographic analyses. To meet a wide variety of the needs of the users, the Census returns are tabulated in several stages and a large number of reports and monographs are produced. This paper describes the outline of the program for dissemination and use of the census data.

I Phases of Tabulation and Release of the Data

2. The Population Census is an extremely rich source of information on the state of the nation, and the questionnaires are tabulated to provide statistics on a wide variety of themes. Since urgency of statistical needs differs from theme to theme, the tabulations of the census data are performed in several phases.

Prompt Tabulations

3. The earliest releases come from prompt tabulations which are performed before the complete-count tabulation in order to meet the most urgent needs. In Japan, it normally takes almost one year to obtain the complete-count figures of the population and the households by processing all the questionnaires although efforts have been made to reduce the processing time. The prompt tabulations are performed by following a different procedure from that of the complete count. There are two kinds of prompt tabulations: summary sheet tabulation and 1% sample tabulation.

4. The summary sheet tabulation is performed by summing up the figures in the summary sheets produced in the process of enumeration in the municipalities. When an enumerator collects the questionnaires filled by the households, he/she makes an ED summary

sheet, which contains the population by sex and the number of the households for the ED of which he/she is in charge. The ED summary sheets are summed up at each municipal office to produce the same statistics for the municipality. The municipal summary sheets are finally summed up for the whole country to produce the population by sex and the number of households by municipality and prefecture. In every census, the summary sheet figures are different from the complete-count figures because of some errors in identifying the persons and the households at the time of enumeration, but the difference is usually very small. In the 1985 Census, the difference for the total population of Japan was about 1,700, and the sum of the absolute values of differences for all the municipalities was about 4,000.

5. Another kind of prompt tabulation is 1% sample tabulation. In this tabulation, approximately one percent of all the questionnaires of the whole country are extracted by a systematic sampling for the prompt tabulation. The results of the sample tabulation are subject to sampling errors and they do not provide detailed cross-tabulations, they provide the most fundamental figures covering all the topics of the Census. Until the 1985 Census, the questionnaires were sampled by the municipalities, and they were submitted to the Statistics Center separately to the rest of the questionnaires. In the 1990 Census, however, all the questionnaires are to be submitted to the Statistics Center together, and the sampling is to be done at the Statistics Center.

First Phase Tabulation
6. The complete-count tabulation is performed in three phases. In the first phase, the topics of tabulation are limited to the basic demographic and household characteristics, such as sex, age, marital status, nationality, household type, housing conditions, etc. These topics are all coded by the households themselves or the enumerators, and they can be processed without any manual coding. The results of the first phase tabulation are released prefecture by prefecture from half year to one year after the enumeration.

Second and Third Phase Tabulations

7. After the completion of the first phase tabulation, the second phase tabulation is started. The topics newly included in this phase are industry (major group), labor force status, status in employment, place of work or study, time for commuting, etc. After the second phase, the third phase, which includes occupation (major group), is started. The second and the third phases are separated from the first phases because industrial and occupational coding requires much time for processing but the statistics of the basic demographic and household characteristics are needed much before the statistics on industry and occupation. The industrial and occupational coding is manually processed, and the codes are marked on the questionnaires. The questionnaires are fed to the optical mark readers in each of the three phases.

Detailed Sample Tabulation

8. After the completion of the complete-count tabulations, the detailed sample tabulation is performed, which is the final part of all the tabulations. In this tabulation, industrial and occupational codes are given to the minor group level. As the coding at the minor group level requires much more time than at the major group level, it is not possible to put the minor group code to all the questionnaires. The workload is reduced by applying the minor level coding to a set of questionnaires systematically sampled at the Statistics Center. The sample size is usually much larger than that of the prompt tabulation, as the detailed tabulation requires geographical breakdown at the municipality level. In the 1985 Census, approximately 20% of all the questionnaires were sampled.

9. The results of all the tabulations mentioned above are published in 270 volumes of printed reports of about 100,000 pages. A full set of the reports measures as wide as 7 meters. In addition, there are a large number of pages of computer printouts containing the detailed results which are not included in the reports. Those who need to use such detailed results can refer to the printouts at the Statistics Bureau or the Statistics Divisions of prefectures.

II Uses of the Census Results

Uses in the Law

10. The results of the Population Census is widely used in the
public administration and finance, and these uses are made mandatory
by law in many cases. The laws requiring the use of the census
results are mainly the ones concerning the local administration, such
as the Local Autonomy Act and the Local Taxation Act.

11. The number of representatives for the assemblies of prefectures
and municipalities has to be determined according to the census
population as stipulated by the Local Autonomy Act. The fixed,
component of local tax incurred on all the residents regardless of
the income level has to be determined according to the census
population as stipulated by the Local Taxation Act. The amounts of
transfer from the national tax to the local governments, which
constitute about twenty percent of the budgets of the local
governments on the average, also have to be determined according to
the population, the number of households, and the numbers of employed
persons by industry, all of which have to be taken for the Population
Census as stipulated by law. In this manner, the census statistics
are indispensable for the local administration in Japan.

Other Uses in Public Administration

12. The census figures are used in other fields of public
administration although such uses may not necessarily be stipulated
by law. Some of the typical examples are given below.

13. The census statistics are used in formulating and executing the
welfare policy for the aged people, both at the national and the
local levels. The population of Japan is rapidly aging in the last
decade, and this trend will continue for a few more decades. For
this reason, the welfare policy for the aged people is a very
important area in the public administration in Japan. As the census
statistics are available on quite detailed topics, such as

employment, household composition, housing conditions, etc., at both the national and the local levels, they are essential to the policy planning and execution.

14. Other typical uses of the census statistics include the planning of public works, such as public housing, road construction, water supply system, sewerage system, etc. Designing such facilities and determining their locations and capacities have to reflect the population distribution and its change over time, and for these purposes, the census statistics are very useful.

15. Disaster prevention is also an important field which requires the census statistics. For a country with a high population density and prone to earthquakes, it is necessary to grasp in detail the conditions of the areas concerned. For this purpose, the figures such as population both in the nighttime and daytime, population density, housing conditions, etc, all of which are available from the Census, are essential for disaster prevention and contingency planning.

16. The census statistics are also very useful in planning regional redevelopment programs, as it requires the history and the future projection of the population and economic activities of the areas concerned. The Population Census is a very important data source for this purpose.

Use as a Frame for Sample Surveys

17. The results of the Population Census also serve as a frame for sample surveys employing the area sampling method. In the Population Census, the entire land of Japan is divided into enumeration districts (EDs), which normally comprise about 50 households on the average. The ED serves as a good sampling unit due to its uniformity. The EDs are used in various sample surveys on persons or households. For example, the Statistics Bureau itself uses the EDs as sampling units in the Labour Force Survey (monthly), the Family Income and Expenditure Survey (monthly), the Employment Status Survey (quinquennnial), etc. Outside the Bureau, various opinion

polls of the government and the private organizations also employ EDs as the sampling units. To provide necessary information for sample design for such surveys and polls, the census results are produced on the basis of the EDs. The census figures are also used as the benchmark figures for estimation from the sample data.

Analytical Reports

18. The census results are also used in various analyses, studies and projections. The Statistics Bureau, therefore, publishes several series of analytical reports, monographs, and statistical maps other than the basic reports mentioned in para. 10. Major analytical reports are briefly described below.

19. "The Reference Report Series" contains important data for analyzing the census data for specific themes, such as aged population, households with aged persons, industry, occupation, commuting, etc. Each volume of the Series contains compact tables extracted from the basic reports with comparisons with the past census figures or related statistics, and detailed interpretations of the figures are also given. "The Abridged Report Series" is also published with a similar purpose and style for providing regional analysis. For each prefecture, one volume of report is published.

20. "The Densely Inhabited Districts of Japan" is a report specializing in the densely inhabited districts (DIDs), which are demarcated according to the results of every Census. DIDs are, in a sense, statistically defined urban areas determined on the basis of the data of EDs. For this reason, even in the same city, some areas with a high concentration of population may be designated as DID, but other areas with very low population density, such as outskirts of the city with farms, may not be designated as DID. The concept of DID is more objective than the administrative designations (i.e. city, town, village), and is quite often preferred to grasp the state of the urban population. The report is widely used in urban planning, transportation planning, public sanitation planning, etc.

21. In order to present the census data visually so that the

geographical distribution may be observed at a glance, some series of maps are published. There are a few series of maps based on the administrative boundaries of municipalities. In addition, the grid-square maps are also produced. The census data are rearranged into grid-squares which are defined by longitude and latitude. The grid-square is advantageous in comparison with the administrative areas, because it does not change over time and because the size of grid-square is almost uniform and the comparison among the unit areas is easy.

22. After the completion of all the tabulations, the final report entitled "Population of Japan" is published. The report for the 1985 Census is planned to be published in March 1990. In addition, "the Census Monograph Series", which gives in-depth analyses of some important topics, is being published with cooperation of some experts outside the Statistics Bureau.

III Major Features in the 1990 Census

23. In the 1990 Population Census, some new features for data dissemination are to be introduced in addition to the measures mentioned above. They are described below.

Expansion of the Tabulations on the Aged and the Foreigners
24. In Japan, the population is rapidly aging in recent years as mentioned above, and such a change is expected to give a significant impact on the society and the economy. For this reason, in the 1990 Census, the tabulation on the aged population is planned to be expanded so that detailed data on employment, household conditions, housing conditions, etc. of the aged population may be obtained.

25. Another important change taking place in recent years in Japan is the rapid increase of the foreigners in Japan. In order to formulate appropriate policies on this change, detailed tabulations on the foreigners will be conducted in the 1990 Census so that employment, household conditions, etc. by nationality may be provided.

Improvement in Small-Area Statistics

26. In the 1990 Census, the small-area statistics will be improved due to the introduction of the "Basic Unit Block", which is a new geographical unit for data representation. In the past Censuses, the enumeration districts (EDs) were used both as the unit for enumeration and data representation. But EDs were designed mainly for enumeration so that the burden for enumerators may be evenly distributed, that is, each ED may normally contain 50 households. For this reason, the boundaries of the EDs may change over time as the population in the small areas often changes. Such changes in boundaries made it difficult to compare the statistics by ED in time series.

27. In the 1990 Census, a new unit area called "Basic Unit Block" (BUB) is introduced so that the boundaries may be stable. The BUBs are defined on the basis of street blocks or other clear landmarks, and are to be used as the units for data representation. The EDs will remain to be used as units for enumeration. With the introduction of BUBs, it will become possible to compare the small area statistics over time without any reorganization. The small-area statistics based on BUBs are also expected to be more advantageous than those based on EDs because the former are generally easier to relate to the address designations.

Improvement in Data Dissemination on Computer-Readable Media

28. Although the data were already disseminated with magnetic tapes in the past censuses, the time of release of the tapes was long after the release of the printed reports because the tapes were produced by reorganizing the tapes for the print. Such a delay caused dissatisfaction on the side of the users. In the 1990 Census, the production of the magnetic tapes will be integrated into the tabulation process so that the work of reorganization may no longer be needed. In addition, the dissemination of the census data through an on-line database will be made available to other government organizations in the 1990 Census.

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Future Population Projections for Japan

Institute of Population Problems

Ministry of Health and Welfare

Japan

FUTURE POPULATION PROJECTIONS FOR JAPAN

INSTITUTE OF POPULATION PROBLEMS
MINISTRY OF HEALTH AND WELFARE

1. Introduction

Why should population projections, particularly the ones by sex and age, be prepared? One reason for it is that government agencies and non-governmental organizations require them as important tools for many kinds of socio-economic planning and similarly business firms and corporations utilize them as basic data for envisaging their enterprises. The other reason is that population projections are needed for projections of sub-national populations and functional population groups, e.g., population by states and regions, labour force, households and families, school enrollment, and population of pension recipients, old-age patients, etc.

The present paper attempts to describe an outline of the official population projections for Japan prepared by the Institute of Population Problems, Ministry of Health and Welfare. It also undertakes to discuss generally the current status of methodology in demographic projections. However, it has several limitations. First, it does not deal with the evaluation and adjustment of census and vital statistics. Secondly it does not encompass subnational and sectoral projections.

Demographic projections are used to obtain a clear understanding of demographic phenomena as well as for planning purposes. They provide quantitative measures of the potentialities of the present demographic situation and of demographic processes which are under way. Since they are prepared on the basis of assumed trends in the various components of population growth, the projection results present the net outcome of the interactions among those trends. For instance, given certain fertility and mortality assumptions, the projection technique makes it possible to determine the effect of different sex/age structures on the numbers of births and deaths and hence on the growth of the population. Similarly, projections provide a means of studying the effects of changes in birth and death rates on the age structure, dependency ratio, etc. It has also been suggested that projections may be used to evaluate the effect of change in population policy.

2. Postwar Nine Future Population Projections by Institute of Population Problems

Institute of Population Problems, Ministry of Health and Welfare, had already published population projections before World War II, in responding to many requests from various quarters of government and business groups. In the postwar period, nine series of population projections have been prepared, namely, in 1955, 1957, 1960, 1964, 1969, 1975, 1976, 1981 and 1986.

Table 1 shows projected total population and aged population in the above-mentioned nine different years for the year 2000, including the proportions of the population aged 65 years and over among total population and their sex ratio. Projected total population tends to increase when projections are prepared in more recent years. Sex ratio in the aged population tends to become smaller recently, probably reflecting more appreciable increases in the life expectancy for the elderly females. Though there is the only assumptions prepared for mortality, international migration, sex ratio at birth, respectively, four variants of fertility including the constant assumption, have been prepared throughout the nine series of projections.

3. The Latest Projections Prepared in 1986

In 1986, the Institute of Population Problems published the latest projections based on the complete count of census conducted in 1985. The cohort-component method has been used as before. This method requires four kinds of prospective values, that is, fertility, mortality, international migration, and sex ratio at birth. Three series of projections were prepared with respect to fertility, that is, high, medium and low variants.

The only assumptions were posited for the other three elements. Hence, projections are conducted according to the future trajectories of fertility. In addition, three series of analytical projections were prepared, namely 1) assuming the fertility constant at the 1986 level, 2) assuming the mortality constant at the 1986 level and 3) assuming both the fertility and mortality constant at the 1986 level. All the projections were made by single age for single years up to the year 2085.

Figure 1 illustrates flows of computational steps in the cohort-component method as utilized in

Table 1. Total Population and the Aged Population of Japan
Projected for the Year 2000

Year of Projection	Population (000's)	Population aged 65 years and over	
		Proportion	Sex Ratio
1955	105,034	13.4	74.0
1957	101,389	13.8	73.7
1960	113,053	12.8	72.4
1964	121,353	14.5	82.3
1969	131,838	13.4	83.6
1975	135,154	13.9	75.1
1976	133,676	14.3	74.5
1981	128,119	15.6	74.8
1986	131,192	16.3	73.7

Source: Institute of Population Problems, Ministry of Health and Welfare, Population Projections for Japan

Figure 1. Basic Steps Involved in Preparing the Population Projections for Japan
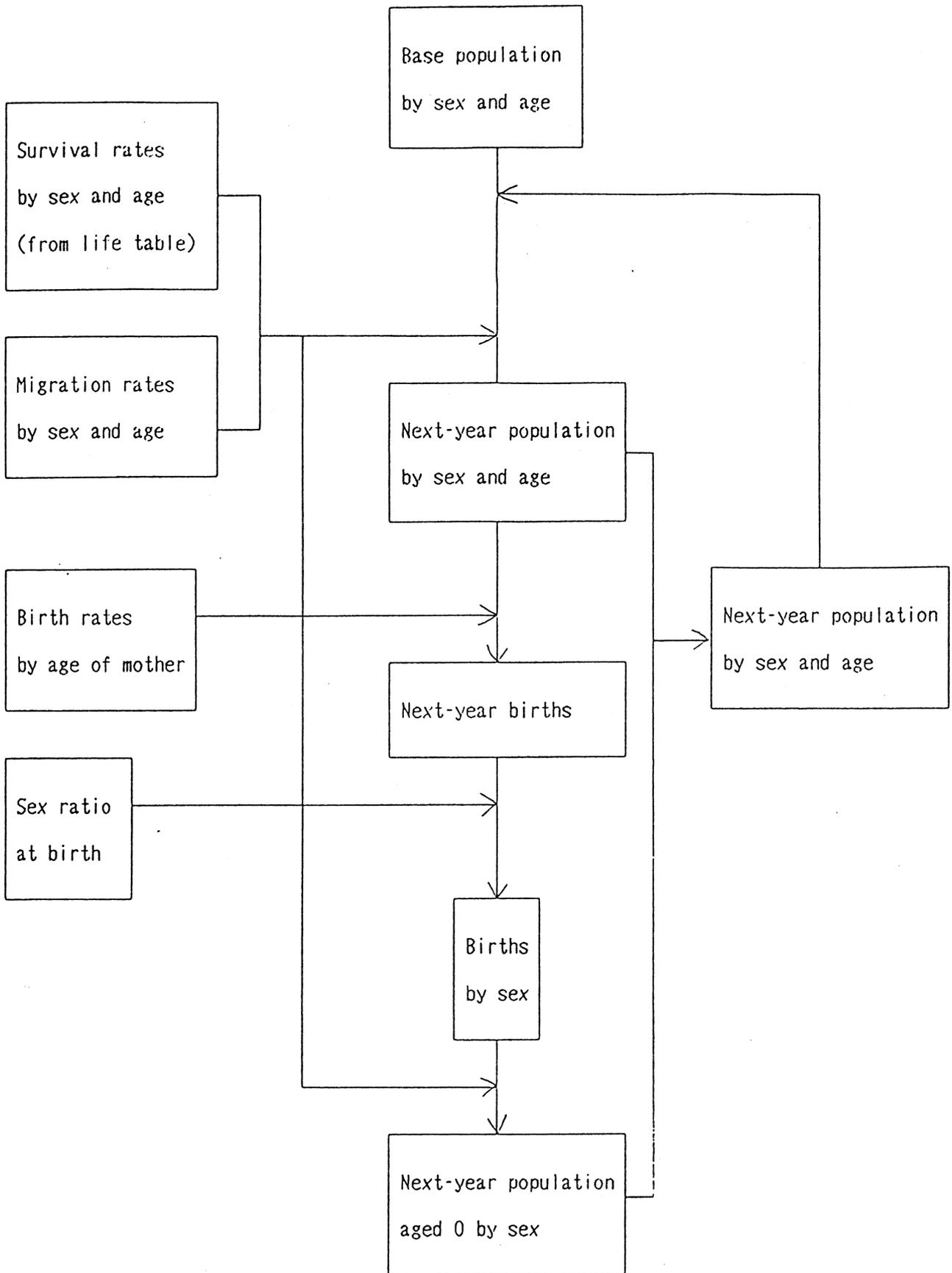
the year 1986 projections. First we need the base line population by sex and age at the starting point, that is, October 1st, 1985. Next we project the next year population. Let us take, for example, a cohort of population aged 10 years. The size of cohort become slightly smaller next year when it gets one year older, according to operation of survival rates projected for the population from 10 to 11 years old. The schedule of survival rates is obtained from the future life tables constructed for the projections.

As a next step, assumed migration rates are applied to the population to obtain additions of new comers or to subtract attritions of out-migrants. In order to project the population under 1 year, calculations are made to apply the projected schedules of age-specific fertility rates to the female population of reproductive ages, generating newly born babies during the one-year span between October 1, 1986 and October 1, 1987. The newly born babies are then broken down into male and female babies by the already assumed sex ratio at birth for future years. Thus calculated male and female babies are projected to obtain the population under 1 year, after applying the pertinent survival rates. As a next step, international migration is considered for the population under 1 year thus calculated.

Repeating these procedures every year, projections can be performed by sex and age for every year. Besides, calculation can be made for various population indices, including age dependency ratio, prospective vital statistics indicators such as annual births, deaths, crude birth and death rates, natural increase rates.

3.1. Base Line Population

The base line population data for projections are the population by sex and age derived from the one-hundred percent tabulation of the census conducted on October 1, 1985.

3.2. Assumptions on Fertility

There are two methods for projections of future birth rate. One is the period-fertility rate method. The other is the cohort-fertility rate method. The former is to estimate future fertility, using a trend of annual birth rate, that is, birth rate by age of mother. This method has two weaknesses. One is that it is open to question that annual change of birth rate is determined whether by the change of cohort's completed fertility or by temporary delay of birth because of change of timing of birth. The other

weakness is that it cannot deal with change of the pattern of marriages. Consequently, many developed countries have instead adopted the cohort-fertility rate method for future projection. The projections prepared by the Institute of Population Problems have adopted this method since 1976. Cohort-fertility rate method needs information on the progression of birth of every birth cohort of woman. As for the cohorts which have not completed their fertility, estimation is made of their level of completed fertility and timing of births. In estimating them, data are required for the timing of marriage and birth, lifelong unmarried rate and planned number of births. Conversion can be made from the estimated cohort fertility rate to period fertility rate by mother's age and into total fertility rate. The trends of projected total fertility rate by variants are shown in Figure 2.

3.2.1. Assumptions on Fertility : Medium Variant

With respect to the assumptions on fertility, the Institute's projections have formulated the following basic assumptions.

(1) Ages at marriages for the birth cohort of 1950 and for the cohort following henceforth would increase in future, but the trend would stop increasing among those of birth cohorts which were unmarried at the time of projections.

(2) Percentage of singles throughout their life would not increase further appreciably. In other words, almost every member of a cohort would get married sooner or later.

(3) There is little change for intentions of birth of couples. Hence, little or no change of the level of completed fertility has been assumed.

(4) Accumulated fertility of each birth cohort up to some certain ages has become lower than that of the cohort placed immediately before because of their delayed marriages. But completed fertility would be the same as that for preceding cohorts, that is 2.00, because of the catching-ups of late births.

Figure 2 shows the projected changes of fertility. According to the projections, total fertility rate would attain a flat bottom in a few years, reflecting an acceleration of late marriages. But it would increase again to 1.84 in 1990, 1.92 in 1995 and 2.00 by 2025. Mean age at birth was 27.7 years in 1970 and 28.3 years in 1985, respectively, and it would become 29.0 years by 2025.

Figure 2. Trends and Prospects of Total Fertility
Rate : High, Medium, and Low Variants
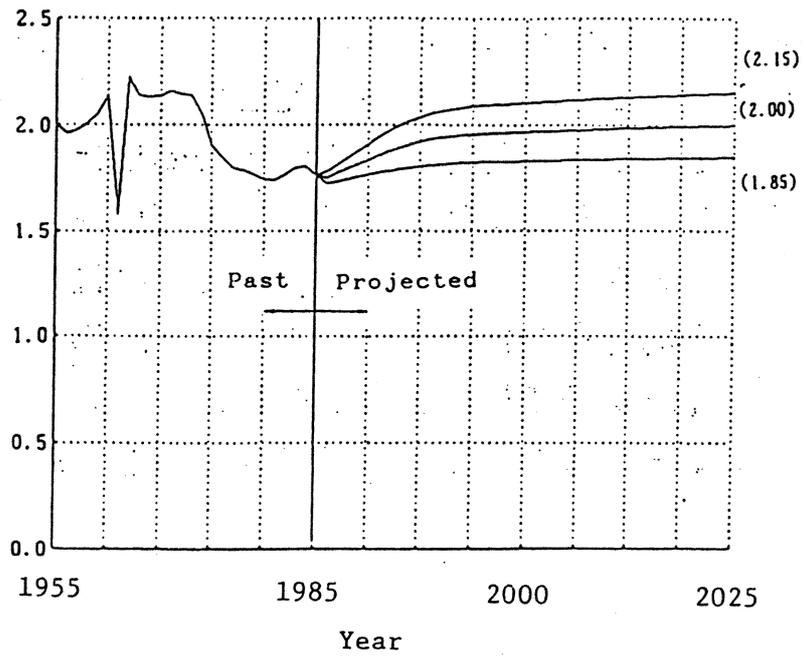
3.2.2. Assumptions on Fertility : High Variant

The high variant assumes that the completed fertility is 2.15. This assumption corresponds to the case that late marriage would soon end and almost every member of cohort would achieve the mean number of children as observed by the latest National Fertility Survey conducted in 1987. In this variant, total fertility rate would rise soon after the projection date, that is, October 1, 1986, and become 2.09 in 2000 and 2.15 in 2025.

3.2.3. Assumptions on Fertility : Low Variant

Low variant of projection assumes that the completed fertility level is at 1.85. This assumption corresponds to the case that almost every cohort of woman would be married and have the same mean intended number of children among couples as in the middle variant. However, it was assumed that late marriages could not make a catch-up of late births because of their decline in fecundity, hence that the late married cohort could attain the size of 2.00 as complete fertility, which is equivalent to 1.8 as complete fertility for all females. In this case, total fertility rate would rise from 1987, but would be kept at the level lower in the second half of 1980s than that of 1985 and is assumed to be be 1.83 in 2000 and 1.85 in 2025, respectively.

3.3. Assumptions on Survival Rates and Life Expectancy

Projections require a schedule of survival rates by sex and age to estimate (t+1) year population from t year population. Estimates of survival rates by sex and age require a construction of of future life tables. There are four methods of making future life tables: (a) use of model life table, (b) use of best life tables, (c) projections of death rates by age, and (d) method taking into account cause of death. In developing countries where the average span of life is short, data of deaths are often not complete. They often frequently utilize model life tables for estimation of mean span of life. In Japan, for the period 1955 to 1965, when the life expectancy had been approaching the levels of European and North American countries, an effort was made to construct best life tables based on the available mortality data of those developed countries.

Recently, Japan records the longest life expectancies. Every year Japan witnesses a solid increase in life expectancy. Hence, it is no longer useful to construct world's best life tables according to which future levels may be forecast for the life expectancies among Japanese. Consequently, the projections by the Institute assume the only mortality model based on analyses of past mortality trends by sex and age and by cause of death.

Trajectories of life expectancies for males and females are are shown in Figure 3. In 1985, life expectancy was 74.84 years for males and 80.46 years for females respectively. In 1988, it was 75.54 years for males and 81.30 years for females respectively. Our projections assume that it would increase up to 76.81 years for males and 82.69 years for females by 2000. By 2025, it would reach 77.87 years for males and 83.85 years for females. The difference between the life expectancy for males and females is expected to enlarge. Our analysis demonstrates that a greater portion of extension of life expectancy can be explained by the improvement in the survival rates among the middle-aged and the aged.

3.4. Assumptions on International Migration

Net international migration has been very small in Japan. Hence, the previous projections did not take the migration elements into projections. In view of the increasing magnitude and importance of international migration, however, efforts have been made in the 1986 projections to project future net migration rates by sex and age. The assumptions were made on the basis of past trends of net international migration.

3.5. Assumptions on Sex Ratio at Birth

Variance of sex ratio at birth is very small. Hence it was assumed to keep the 1985 ratio constant, at 105.53 since 1985.

4. Results of Projections

4.1. Trends of Total Population

The population of Japan as of October 1, 1985 was 121,049,000. According to medium variant projections (Figure 4), the population would continue to grow and become 131,192,000 by 2000, and then

Figure 3. Trends and Prospects of Life Expectancy

$(\overset{\circ}{e}_0)$

(Years)

Year
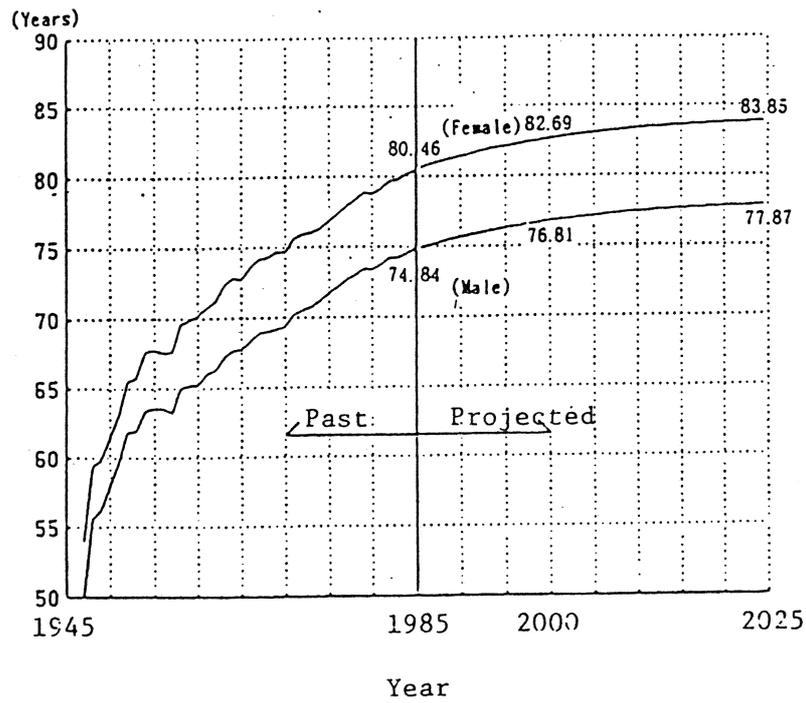
Figure 4. . Growth of Total Population

Population
(ten million)

Year
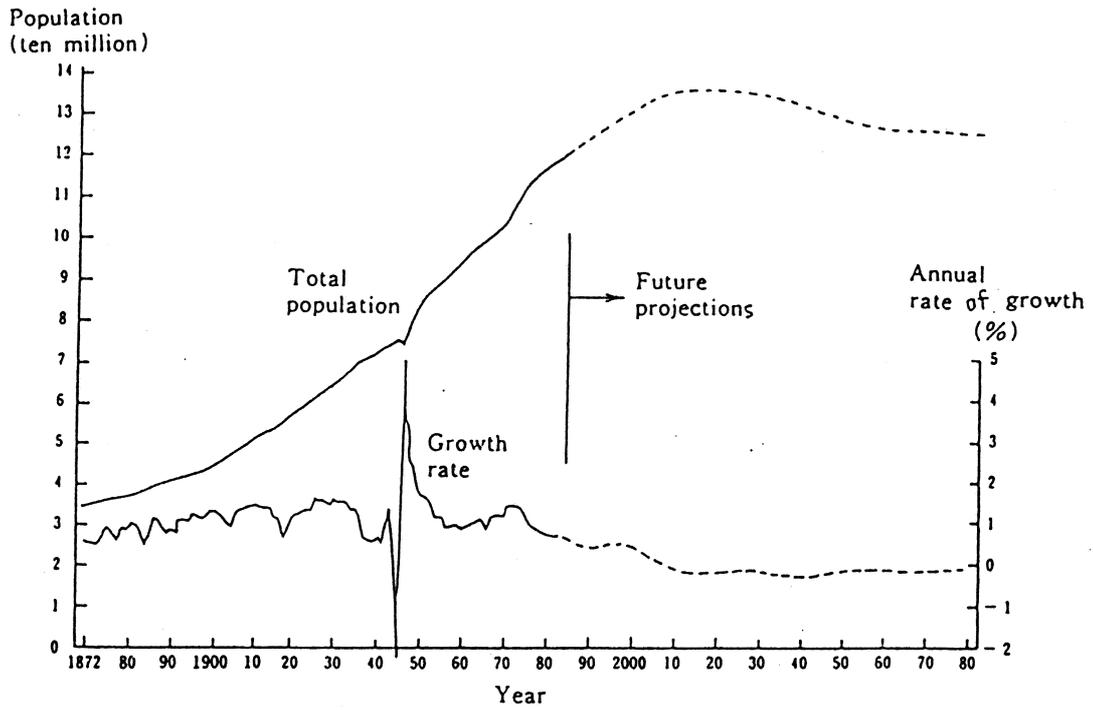
- Sources : Statistics Bureau, Management and Coordination Agency,
  Population Census of Japan, and *Population Estimates
  Series,* and Institute of Population Problems, Ministry
  of Health and Welfare, *Future Population Projections
  for Japan.*

would reach the peak at 136,030,000 in 2013. Thereafter, it would gradually decrease to 134,642,000 by 2025 and would come down further to 124,066,000 by 2085.

The rate of population increase is 0.5 percent at present, but it would reveal temporary increases in the period 1990-1997. After this period, however, the rate would plummet and after 2013 it would become negative.

4.2. Trends of Population by Age: Population Aging

Population is often classified by three major age groups, that is, children under 15 years, productive age group between 15 and 65 years, and aged group 65 years and over. In 1985, the size of the child population was 26,042,000, that of the productive age group at 82,534,000 and the aged group at 12,472,000. According to the medium variant projections, the youth would keep decreasing down to 22,351,000 by 1994 as a consequence of the assumed decline in fertility. After that, effects of rise in fertility would be captured and the youth population would then turn to increase. The young age group would be 25,466,000 in 2008 at the peak. After that time, a cycle of 28 years of births would repeat along with a cycle of birth rate. Productive-age population would increase to 87,151,000 in 1995, but it would turn to decrease to 81,102,000 by 2025.

Probably the most salient feature of the future demographic changes in Japan as outcome of projections would be population aging. Population aging can be shown by any other projections for Japan prepared by different projectionists, including those of the United Nations. It is considered inevitable future paths which Japan must be tracking. Population aging can be measured by various indices, but the most popular one deals with the proportion of total population which is aged 65 and over. Table 2 and Figure 5 show the trends in the age structure of population as projected for Japan. From the table and figure, future increases in the aged is obvious. The proportion of the aged which is currently at 12 percent would substantially increase up to more than 20 percent of the total population by the early decades of the 21st century and would reach nearly a quarter of the total population by the middle of the 21st century. At the same time, by the year 2010, the population aged 65 and over would surpass the population under 15 years of age, signaling the imminent graying of Japan.

At present, the aged dependency ratio, that is the ratio of the aged population to the working

Table 2. Projections of the Future Population by Broad Age Groups

Year	Population (thousands)				Percent distribution		
	Total	0-14	15-64	65+	0-14	15-64	65+
1985	121,049	26,042	82,534	12,472	21.5	68.2	10.3
1990	124,225	23,132	86,274	14,819	18.6	69.4	11.9
1995	127,565	22,387	87,168	18,009	17.5	68.3	·14.1
2000	131,192	23,591	86,263	21,338	18.0	65.8	16.3
2005	134,247	25,164	84,888	24,195	18.7	63.2	18.0
2010	135,823	25,301	83,418	27,104	18.6	61.4	20.0
2015	135,938	23,876	81,419	30,643	17.6	59.9	22.5
2020	135,304	22,327	81,097	31,880	16.5	59.9	23.6
2025	134,642	22,075	81,102	31,465	16.4	60.2	23.4
2030	134,067	23,009	80,057	31,001	17.2	59.7	23.1
2035	133,133	23,914	78,278	30,941	18.0	58.8	23.2
2040	131,646	23,798	76,110	31,738	18.1	57.8	24.1
2045	130,017	22,809	75,824	31,384	17.5	58.3	24.1
2050	128,681	21,967	76,433	30,281	17.1	59.4	23.5
2055	127,704	22,017	76,770	28,917	17.2	60.1	22.6
2060	126,947	22,728	76,107	28,112	17.9	61.3	22.1
2065	126,215	23,266	74,751	28,199	18.4	59.2	22.3
2070	125,518	23,095	73,746	28,677	18.4	58.8	22.8
2075	124,890	22,466	73,739	28,685	18.0	59.0	23.0
2080	124,401	22,066	74,256	28,079	17.7	59.7	22.6
2085	124,066	22,277	74,473	27,316	17.7	60.0	22.0

Source: Institute of Population Problems, *Future Population Projections for Japan*, December 1986.
Notes Medium-variant projections (as of October 1st)

Figure 5. Trends and Prospects of Proportion of Populations by Broad Age Group :
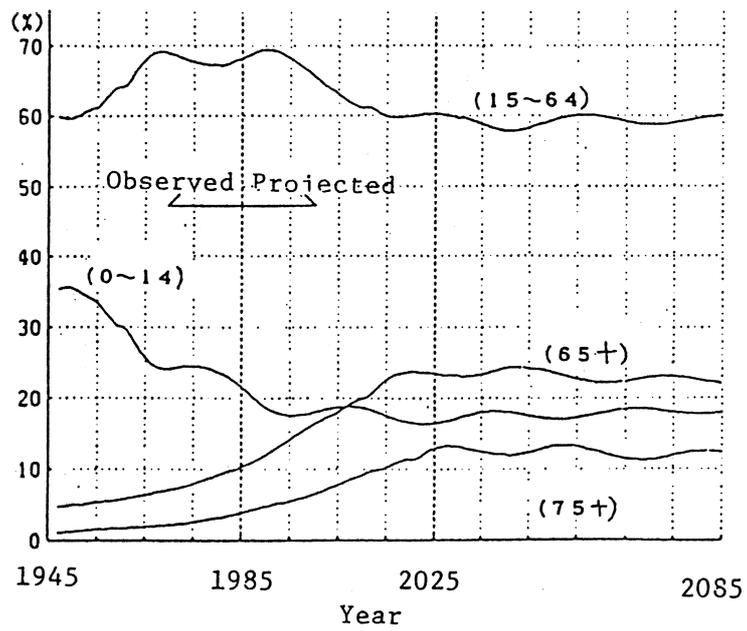
Source: Same as in Figure 4.

age population between 15 and 64 years is only 17 per cent. The ratio would then increase quite rapidly and come close to the level of 40 per cent by the end of the first quarter of the next century and would remain at the level for a long time (Figure 6).

5. Future Consideration

Although projections for Japan have not always been conducted on a regular basis, it has recently been prepared once every five years, on the basis of the quinquennial population census conducted by the Bureau of Statistics. Since the Japan Bureau of Statistics makes available for us of sex-age tabulations of population very promptly after the conduct of census, the Institute of Population Problems has greatly benefited from an access to such data.

There are more than several points in the future to be improved upon population projections. First, projections should be prepared not only by sex and age, but also by marital status. Secondly, for improvement of accuracy and comprehensiveness of projections, more elements should be taken into account for projections, e.g. parity, marriage, and socio-economic variables. In recent years, advances have been made in demography to enable to construct multi-state life tables and two-sex model of marriage. It is, therefore, strongly hoped that with this upgrading sophistication of projection methods and increasing availability of needed demographic data, next series of projections would be more accurate, more technically sound and useful, in compliance with ever-expanding demands from users for more detailed and more comprehensive information.

Figure 6. Trends and Prospects of Dependency
Ratios: Medium Variant
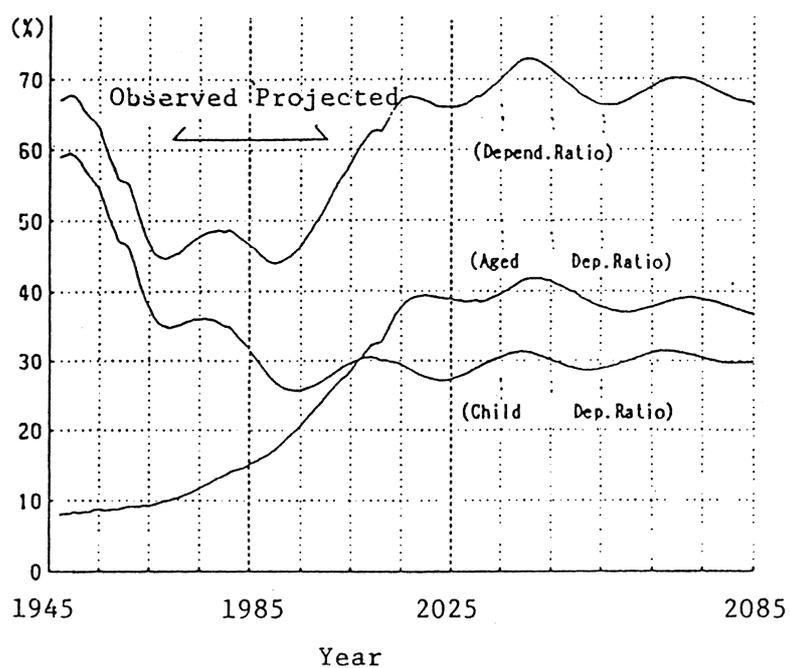
Source: Same as in Figure 4.

FIFTH INTERNATIONAL MEETING OF
THE HEADS OF NATIONAL STATISTICAL
OFFICES OF ASEAN COUNTRIES AND JAPAN
(23 - 26 January 1990)
TOKYO, JAPAN

Current Population Estimate

Statistics Bureau / Statistics Center

Management and Coordination Agency

Japan

Current Population Estimate

I Outline of the Population Estimates in Japan

Purpose

1. Although the Population Censuses provide detailed population figures for the whole country and by prefecture and municipality every five years, the figures are not available for the inter-censal period. In order to fill the gap of population figures for this period, population estimates are computed at a regular interval on the basis of the census population figures. The Statistics Bureau has been publishing the population estimates every month and every year since 1921, the next year of the first Population Census of Japan. The population estimates are widely used for such purposes as basic figures in public administration, the benchmark populations for the estimates for sample surveys, and analyzing the population trend.

Coverage

2. The coverage of the population estimate is the same as that of the Population Census, that is, all persons living in Japan as of the reference date of the estimate, including both Japanese and foreigners. But the following persons are excluded from the estimates just as in the Population Census:

- foreign diplomatic corps and consular corps, their suite and dependents;
- foreign military personnel, including both military corps and civilians, and their dependents.

Publications

3. The Statistics Bureau computes and publishes the following kinds of population estimates every month and every year:
(Estimated as of the 1st day of every month)
    i) the population of the whole country;
    ii) the population of the whole country by five-year

age group;

(Estimated as of 1 October every year)

iii) the population of the whole country by sex and single year of age;

iv) the population by prefecture and sex;

v) the population by prefecture, five-year age group, and sex;

(Published on occasions)

vi) the population of those who have reached 20 years of age (on 15 January every year, the Coming-of-Age Day);

vii) the number of children (on 5 May every year, the Children's Day);

viii) the population of the elderly (as of 15 September every year, the Respect-for-the-Aged Day).

The monthly estimates are published in the "Monthly Report on Current Population Estimates" (Japanese and English), and the annual estimates are published in the "Population Estimates" (Japanese only). The occasional estimates are published in press releases called "Statistics Bureau Information".

II   The Procedure of Computation

Basic Concept

4. The process of computation of the population estimates can be expressed by the following formula:

Population Estimate
= (Base Population) + (Natural Increase) + (Social Increase) + (Net Increase Caused by Change of Nationalities).

5. In the above formula, the "Base Population" refers to the census population for the estimate immediately after the Population Census, while on the rest of the dates it refers to the population estimate of the preceding period. The "Natural Increase" is the number of births minus the number of deaths in the period concerned. The "Social Increase" refers to the number of immigrations minus the

number of emigrations for the period concerned. The "Net Increase Caused by Change of Nationalities" refers to the number of persons having obtained Japanese nationality minus the number of persons having lost Japanese nationality during the period concerned.

Population of the Whole Country by Single Year of Age and Sex

6. In the estimate of the population of the whole country by single year of age and sex, which is computed as of 1 October every year, the numbers of births and immigrations are added to the base population of the previous year, and the numbers of deaths and emigrations are subtracted. The base population is taken from the population estimate of the previous year, but in case the previous year is the census year, the census population is used as the base population. As to the population aged 0 year, the base population is the number of births during the year preceding the reference date. In case of the estimate for the Japanese nationality, the net increase by change of nationalities by age is added.

Population by Prefecture

7. In the estimate of the population by prefecture and sex, in addition to the above additions and subtractions, internal migrations are taken into account: the number of persons moving in each prefecture is added and the number of persons moving out from each prefecture is subtracted.

8. In the estimate of the population by prefecture, five-year age group, and sex, some adjustments are needed as some of the basic statistics such as the internal migration statistics are not available by age group. For this reason, the computation is done in two stages. First, a set of tentative estimates are produced by breaking down the number of incoming and outgoing populations by age groups on the basis of the age distribution obtained from the past distribution. In the second stage, the tentative estimates produced in the first stage are adjusted so that the total of the figures for all the prefectures may be equal to the population estimate of Japan for every age group and the total of the figures for all the age groups may be equal to the total population estimate for every

prefecture. The adjustment is done by iterative computation of proportional corrections.

III Data for Population Estimates

9. The following materials are used for computations of the population estimates:

Data	Source	Producer
Number of births Number of deaths	Vital Statistics	Ministry of Health and Welfare
Number of immigrations Number of emigrations	Report of Statistics on Legal Migrants	Ministry of Justice
Number of persons moving in or moving out	Report on Migration Based on the Basic Resident Register	Statistics Bureau
Persons obtaining or losing Japanese nationality	Records on the Official Gazette	Ministry of Justice
Other data	Population Census	Statistics Bureau
	Population estimates produced by prefectures	Prefectures

Vital Statistics

10. Vital statistics cover cases of births, deaths, marriages, divorces and stillbirths which are reported in accordance with the Family Registration Law. Municipalities tabulate the cases regularly in a fixed format, and report the figures to the Ministry of Health

and Welfare. The Ministry of Health and Welfare, then, compiles the reported figures and publishes the results in the following reports:

   Monthly Report on Vital Statistics (provisional) published four months after the reference period

   Prompt Report on Vital Statistics published two months after the reference period

   Annual Report on Vital Statistics published in the following year.

Immigration Statistics

11. Immigration statistics are compiled by local immigration offices every month and every year, and they are reported to the Ministry of Justice. The figures are published in "Monthly Report on Statistics of Justice". When the immigration statistics are used for the population estimates of the first day of the current month, the immigration statistics for the previous month are used. For estimating the population as of 1 October every year, the immigration statistics for the period from October of the previous year till September of the reference year are used.

Report on the Internal Migration Derived from the Basic Resident Register

12. The statistics on internal migrations are compiled from the information based on the Basic Resident Register. Every Japanese citizen is required by law to register at the municipal office of his/her residence. The data on the newly registered persons, i.e. persons moving in, are compiled every month by the prefectures and reported to the Statistics Bureau. The statistics include the number of persons by sex and municipality of previous residence, but not the figures by age. For computing the population estimates by prefecture, the figures of the internal migration of the previous year (from October of the previous year till September of the reference year) are also used.

Persons Obtaining or Losing Japanese Nationality

13. The Statistics Bureau compiles the statistics on changes of

nationalities from the official notice published by the Ministry of Justice in the Official Gazette. The figures cover those who are naturalized to Japan, obtaining or losing Japanese nationality.

Other Data Sources

14. There are two kinds of other data sources : the Population Census and the population estimates produced by the prefectures. These are used to supplement the above-mentioned data sources for adjustment or breakdowns of some detailed figures. For example, to compute the population estimates by prefecture, age group, and sex, the internal migration statistics broken down by age are obtained for some prefectures from the data of the population estimates produced by the prefectures, and for other prefectures the breakdown figures are estimated from the previous census data using the survival method.

IV Evaluation and Future Tasks

Evaluation

15. The monthly and annual estimates computed five years after the Census date are not necessarily equal to the population figures of the next Census, but the differences are generally very small. In order to close the gap in time series, correctional computation is retroactively done for the inter-censal period, whenever the new Census population figures are obtained. In the past, the gaps between the census population and the estimates based on the previous census population are as follows:

Year	Census Population	Population Estimate	Difference (persons)	(%)
1970	104,665,171	104,832,753	167,582	0.16
1975	111,939,643	111,298,011	- 641,632	-0.57
1980	117,060,396	117,039,112	- 21,284	-0.02
1985	121,048,923	120,961,996	- 86,927	-0.07

Future Tasks

16. Although the population estimates for the total population are already highly reliable and it is difficult to improve them further, the breakdown figures have some room for improvements. For example, the internal migration figures broken down by age are not available, or the numbers of births and deaths of foreigners and the numbers of immigrations and emigrations are not broken down by prefecture. If the breakdowns become available, the reliability of the population estimates by prefecture will be improved. The Statistics Bureau is making efforts to develop more detailed data sources so that more reliable estimates can be computed.

Policy on data dissemination

of the Central Bureau of Statitistics

the Republic of Indonesia

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1. CBS as data provider

The Central Bureau of Statistics (CBS) functions primarily as data provider. Besides, according to Statistical Act, CBS will function as coordinator of all statistical activities among government agencies. The coordinating function of CBS is aimed at the attainment of standardization and avoidance of duplication of work, especially for nation wide statistical activities such as censuses and surveys. The undertaking of the censuses and most of the nation wide surveys will be done by CBS. However, each government agency may still conduct survey (data collection) on sectoral level by their own, should the availability of such data is a necessity for the agency concerned.

As mentioned earlier, CBS will be responsible for the undertaking of censuses and surveys. CBS also collects data from several sources, i.e. from authentic documents such as import and export documents, from the results of registration such as population registration, and from other agencies responsible for sectoral data.

The data collected by CBS and its branch offices either from primary sources or from secondary sources will be processed by computer at the CBS or at the provincial offices. The raw data

as well as processed data are stored in computer media or in computer data base system to be accessed by users.

2. Data dissemination

2.1. Publication

The conventional system of disseminating the statistical data is in the form of printed materials such as books, pocketbooks, leaflets etc. At present CBS and its branch offices at provincial, district and sub-district levels, are publishing hundreds of publications, covering various aspects, i.e. population, agriculture, industry, trade, and national account.

The CBS' publications are mostly periodicals, i.e. monthly, quarterly, or yearly. However, some of the publications are of ad hoc type, which originated from the data collected for a specific need. CBS also publishes data form censuses every 10 years, i.e. the result of population census, agricultural census, and economic census, each conducted in the year ending with 0, 3, and 6 respectively. The intercensal census on population is a survey on population conducted between two censuses in the year ending with 5.

The CBS realized that the data dissemination in the form of publication of printed materials can no longer satisfies the requirements of data users. The emerging needs of the users may be categorized as follows :

(i). The need for statistical data (table) not available in CBS' publications but available in computer printouts.

(ii). The need for statistical data which are not processed by CBS but the data are available in the source data stored in computer media.

(iii). The need for accessing statistical data base system.

The three categories mentioned above will be explained in the following.

2.2. Computer printouts

Due to limitation of budget and printing capacity, not all computer processing outputs are published in book form. However, users may obtain necessary data in the form of computer printout at the CBS. The printout available for the users are the processed data where the individual information have already been eliminated.

Since the printout usually maintained by CBS for archival or for evaluation purposes, hence those who want to obtain the data from the printout should copy it by themself.

2.3. Source data on computer media

In many cases, data users are more interested in source data rather than processed data for publication, especially when a user wants to use the data as input for a particular analysis on specific topic.

To serve such needs, CBS provides option to copy the requested data onto the computer media, such as magnetic tapes and diskettes. To release source data on computer media, certain

conditions established by CBS should be agreed upon by the user, i.e. :

a. individual identification in the source data should be eliminated

b. user may not reproduce the source data for the third party prior to CBS' approval

c. all cost incurred in the reproduction should be borne by the user.

2.4. Direct access to a statistical data base system

The recent trend shows that data users tend to obtain data in a relatively short period of time. To serve this kind of need, CBS has developed data base system i.e. RIQS, a relative type data base system, and ADBS, a network type data base system. These two data base systems have been developed at the CBS only, and not yet available at branch offices. However, the branch offices can access and retrieve the information in the data base system at the CBS through a data communication network.

The RIQS developed at CBS is originally aimed at the fulfilment of internal needs. As a matter of fact data stored in RIQS are condensed form of CBS' publication. However, RIQS has advantage in the sense that the data in RIQS are more up to date compare to that of book publications. The subject matter can update the statistical data directly from their terminal right after final or clean data available. In this connection, Data Processing Personels are primarily responsible for data base development and administration whereas data handling is the

responsibility of subject matter specialists.

Although RIQS is originally developed for internal use, to date two government agencies have already applied to become subscribers of the CBS' RIQS. Beside the two government agencies, some private companies have observed possibility of becoming CBS data base subscribers. Sooner or later, the subscribers will definitely increase in number covering a variety of users groups. Since on-line access to CBS data base system is still in embryonic stage, the CBS therefore still lacking of rules and mechanism to serve the non CBS users. Very soon such rules and mechanism will be issued, the formulation of which is almost finalized.

In addition to RIQS, as has been mentioned earlier, CBS has developed ADBS which focussed on export and import statistics, and next industrial statistics. The ADBS development is intended to facilitate subject matter people to be able to manage the data by themself, for instance error correction, updating, and to output the processing results through on-line operation.

Since ADBS deals with individual data as well, the data for on-line access by non CBS users has to be reformatted in such a way so that individual identification can not be retrieved. The access to ADBS data needs special arrangements on top of rules and mechanism as applied to RIQS.

3. Some problems on data dissemination

As data provider, CBS has to serve the needs of a variety groups of users, i.e. policy makers, private companies, analysts, and many others. It is therefore understandable that CBS cannot accomodate the needs of all users.

In connection to data to be published or disseminated, it is realized that computer media as well as on-line access to source of data is becoming more and more popular. But on the other hand, hardware and software compatibility is not yet satisfactorily solved so far. Users are likely to avoid dependency on a particular brand, which of course in its turn will influence flexibility of participation in a computer data network system.

Beside compatibility, communication network cannot fully support data communication as yet. It is also worth to note that cost of data communication facilities is relatively high. This aspect may cause reluctancy on the users side to use this facilities.

Lastly, CBS sometimes cannot anticipate exactly the demand for a particular publication. The publication might be over supplied but might also be running out of stock due to a large volume of demand. To overcome such situation CBS plans to provide copy of publications in computer media such as diskettes or micro-fische. Having the copy of publication in computer media, CBS can then reduce the volume of printed publications. Hence, over supplied of publication can be avoided, whereas whenever a publication run out of stock user will be able to obtain copy in computer media.

DISSEMINATION OF STATISTICAL DATA

Yuki Miura
Japan Statistical Association

Users of official statistics

In any country, production of basic statistics is the responsibility of the government statistical offices and such statistics are produced either through censuses and surveys or from administrative records. As the census taking and statistical surveys are costly operations, it is not possible for private organizations to conduct statistical surveys on a commercial basis except for small scale surveys with limited scope. Therefore statistics which are reliable and of wide use have to be produced by the government. Important statistics are sometimes derived from administrative records which are in possession of government offices.

Official statistics are used in the central government for policy-making, evaluation of results of implementation of specific policies, economic and social planning and its appraisal, analysis of the present state of population, economic and social conditions, future projections, appropriation of funds, and many other administrative purposes. In the local governments, they are used for regional planning and various local administrative purposes relating to services to residents. Hence the central and local governments are the main users of official statistics and their administrative uses should be given a high priority in the production and dissemination of statistics.

There are however many other users of official statistics who should not be neglected. They are private enterprises and organizations, researchers in universities and research institutes, and libraries. In private enterprises, statistics play an important role in decision-making on location of factories, offices and stores, in planning of production and sales, in market research, in making business policies and so on. In universities and research institutes, statistics are essential for academic researches in many fields such as demographic, social and economic analysis. In libraries, statistical data are important information frequently referred to by general public.

Use of statistics in private enterprises or by researchers in universities and research institutes is not merely for the interest of profits nor for the sake of academic satisfaction of researchers, but it ultimately contributes to the betterment of people's life and the advance of social science. It is highly for public interests. Therefore, a role of government statistical offices as producer of official statistics is not only to

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serve for administrative uses by central and local governments, but also to meet needs of private sectors and researchers. It is important to keep in mind that statistics are common information and property shared by the public.

Another important use of official statistics is international use. In the present age when strong economic ties and inter-dependence exist between different countries in the world, inter-national uses of statistics are extremely important.

Dissemination of statistical data

It is a role of statistical offices to produce accurate and reli-able statistics and provide users with timely data. It is however not practicable if not at all impossible to provide statistical data free of charge to many users including those in private sectors who may have different needs for statistics.

Since enormous expenses are required in the conduct of statisti-cal surveys and data processing, there may be an argument that users of statistics should pay as beneficiaries a part of cost for production of statistics in compensation for services of statistical data. This however depends on the public accounts system in the country.

In some countries, there is a special account for statistical ac-tivities and a part of expenses of the statistical office for production and dissemination of statistics can be recovered by revenue from users of statistics. In this case, the statistical office can strengthen its service for providing statistics to users, thereby can increase its revenue. This increase in revenue can increase data service capability of the statistical office.

On the other hand, in some other countries, revenue from sales of statistical data to users goes to the national treasury, and this will not help the statistical office improve its services to users. Japan is the case and data processing and database capability of the Statistics Bureau is not sufficient to meet in-creasing needs of many users including those in private sectors.

To solve this problem, the Statistics Bureau and other government agencies responsible for official statistics normally have non-profit public-service corporations under their supervision. These public-service corporations are private organizations which often complement work of the government agencies.

The Japan Statistical Association is one of those non-profit public-service corporations. The Association works very closely with the Statistics Bureau and the Statistics Center and its functions include publication of statistical books and reports, dissemination of statistical data and diffusion of knowledge of

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statistics, co-operation in the conduct of censuses and statistical surveys, research in theory and practices of statistics, and international co-operation in statistics.

The Statistics Bureau provides statistics in various forms to the government agencies free of charge. Reports of censuses and statistical surveys and other statistical publications such as Japan Statistical Yearbook and Monthly Bulletin of Statistics published by the Statistics Bureau are sent to the government agencies free of charge. Magnetic tapes of statistical data are also offered to the government agencies upon request. In addition, the online database called SISMAC (Statistical Information System of Management and Coordination Agency) is in operation since April 1989 and the government agencies outside the Statistics Bureau can have access to this database. Within the Statistics Bureau and the Statistics Center, SISMAC is used for statistical analysis, editing of statistical tables for printing, and other work.

For local governments, statistical publications compiled and issued by the Statistics Bureau are provided free of charge. Upon request, statistical data on magnetic tapes are offered to the local governments. If the requested data are limited to those related to the respective areas, the service will be provided free of charge. Otherwise, data on magnetic tapes will be offered at cost through the Japan Statistical Association.

For private users, the Statistics Bureau does not directly provide statistical publications and statistical data in machine readable form, but such services are provided at cost through the Japan Statistical Association.

Role of the Japan Statistical Association in the dissemination of statistical data

With the permission of the Statistics Bureau, the Japan Statistical Association prints additional copies of census volumes, reports of statistical surveys, and other statistical publications compiled and issued by the Bureau, and sells them to private users. In addition to the Bureau's publications, the Association edits and publishes a monthly magazine "Tokei" (Statistics), which contains articles in topics related to statistics contributed by scholars and experts. The Association also compiled and published, in collaboration with the Statistics Bureau, Historical Statistics of Japan in five volumes in 1988-89, which contains time series of major statistics over 100 years. Furthermore, the Association published statistical monographs in various topics written by experts, which provide analyses of population and consumer statistics.

The Association with the permission of the Statistics Bureau also sells statistical data on magnetic tapes and on floppy disks.

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Files of statistical tables tabulated in censuses and surveys conducted by the Statistics Bureau are arranged in an appropriate form and recorded on magnetic tapes, and relevant information is given in the documents. Statistical data available in the form of magnetic tapes include population and establishment census data, data from quinquennial major statistical surveys, data for monthly surveys such as Family Income and Expenditure Survey, Consumer Price Indices and Labour Force Survey, and data for 1 kilometer grid squares. Data for grid squares are available on microfiches as well.

Main users of magnetic tapes are database businesses, private enterprises, and universities and research institutes who are in possession of main frame computers.

Target users of statistical data on floppy disks are private firms, researchers and other individuals who are users of micros. Presently, data on floppy disks on sale include 20 years time series of major data on household expenditures based on the monthly Family Income and Expenditure Survey and data on consumer price indices. Data are arranged on floppy disks in the format of Lotus 1-2-3 spread sheet.

Meeting increasing and diversified needs of users

Needs of users of statistics are ever increasing and diversified. Private enterprises are often interested in detailed data in specific branches of economic activities, data for specific groups of population and households, data for specific groups of commodities, or data for small geographic areas. Researchers in universities and research institutes may be interested in detailed cross-classified data or individual data sets to which they can apply a multi-variate analysis.

As demands for statistics increase and become diversified, volume of data tabulated in censuses and statistical surveys increases substantially, so that it becomes impossible for the Statistics Bureau to publish all the tabulated data in printed publications. Therfore, a part of detailed multidimensional cross-tabulations, small area statistics such as census data for enumeration districts and grid square data are not included in the publications and are available only in the form of computer printouts, microfiche or magnetic tapes.

When the desired data have not been tabulated, agencies of the central and local governments may request the Statistics Center to make special tabulations if the Center's resources permit. They may also obtain approval of Director-General of Management and Coordination Agency for use of individual data from censuses or surveys, and make special tabulations by themselves.

For users in private sectors, the confidentiality principle is

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strictly applied, and they are not permitted to have access to individual data. In some countries, general use tapes containing individual data from censuses or surveys are made available to users after removing any information from which users may identify individuals, either persons or enterprises. In Japan, however, such general use individual data sets have never been compiled and made available to users.

New forms of dissemination of statistical data

Traditional forms of dissemination of statistics are printed matters and microfiches. With the progress and spread of computers, dissemination of statistical data on magnetic tapes has become common, but this form is limited to those users who use main frame computers. In recent years, with the rapid spread of micro computers and user-friendly software packages, there are demands for data on floppy disks and CD-ROMs.

The Japan Statistical Association is studying, in close collaboration with the Statistics Bureau, feasibility of use of CD-ROMs as a media for dissemination of statistical data. A CD has a memory capacity of about 500 MB, and can record a large volume of data, several hundred times the floppy disk. Target users of data on CD-ROM are those using micros. As a CD-ROM can record enormous amounts of data in many files, it is necessary to provide on the CD-ROM some softwares for retrieving necessary files, editing statistical tables and making simple processing like graphs.

Price for CD-ROM drivers connected to personal computers is becoming lower, but cost for pressing a master CD is still high. So unless a large number of copies are produced, the unit price for the data CD will be high.

Presently, the Association is considering three possibilities of CD-ROM. Firstly, all the census data including those not published in the printed census volumes may be offered to users on CD-ROMs. The merit is, as in the case of microfiche, to be able to keep enormous amounts of census data in a compact form. Furthermore, if appropriate softwares are provided, it is possible to retrieve the necessary data, and process them for analysis and draw statistical graphs by micro computers. In this sense, CD-ROMs will be of greater use than microfiches.

The second approach will be to arrange the statistical data in such a way that can be convenient for data analysis. Census data for 1990 as well as in previous several rounds may be filed on CD-ROMs for easy reference to time series analysis.

The third type of data which may be worth publishing on CD-ROM is census and other data for grid square areas. The whole area of Japan is divided into approximately 370 thousand grid squares of

1 square kilometer by using latitude and longitude. Census data including censuses of population, establishment, commerce, and agriculture are tabulated for these areas, and data are available in the form of computer printouts, microfiches, and magnetic tapes. If census data for 1 kilometer grid squares are made available on CD-ROMs, a scope of users of such data may be extended to cover those using micro computers.

Another media of disseminating statistical data is an online database. As mentioned earlier, SISMAC of the Statistics Bureau presently serves for administrations of the central government. Extension of its service to the prefectural governments is under consideration.

However, services of online databases for users in private sectors and in universities and research institutes, and for other end-users will have to be left to private database business firms. In this regard, the Japan Statistical Association will serve as a primary distributor of database, and provide database business firms which will serve as secondary distributors and a part of end-users with statistical database on magnetic tapes, floppy disks, or CD-ROMs. Online databases with various added values will be left to secondary distributors and other database businesses.

Machinery to get users' needs

For effective production and dissemination of statistical data, the statistical offices and organizations responsible for distribution of statistics have to decide on types of data produced, formats of databases, media for distribution of databases, functions attached to the database, and other elements, on the basis of users' needs.

The Statistics Bureau holds users meetings and tries to get users' needs, at the planning stage of censuses and major surveys. Such meetings are usually held with users of the central government, prefectural governments, and major cities. Needs of researchers in universities and research institutes are heard at the meetings of Research Groups consisting of scholars and researchers in respective fields of statistics. However, presently, there is no good machinery like user conferences through which needs of end-users or private users can be heard, except occasional meetings with people in the database business or private economic institutions,

As the construction of databases requires substantial input of human and financial resources, it is essential to have a good machinery to get needs of a wide range of users, and take account of those needs.

1. STATISTICAL DATA DISSEMINATION IN THE PHILIPPINES

1.1 Institutions/Structures for Data Dissemination

Institutional measures have been effected by the major statistical agencies, which provide the bulk of statistical data in the Philippine Statistical System (PSS) to enable them to reach a wider segment of their clientele. Such measures concern the formal organization of a separate group of staff primarily to handle data dissemination and marketing.

The National Statistical Coordination Board (NSCB), as the highest policy-making and central coordinating body of the government on statistical matters, has created a Statistical Information Management Service which is tasked, among others, to facilitate referral and exchange of statistical data/information among users both as national and international levels. It also maintains a statistical library which provides support to researchers.

Meanwhile, the National Statistics Office (NSO), the country's sole general purpose statistical agency, has a Publication and Information Division which programs the printing and release of the statistical series, bulletins, newsletters and other publications. As the NSO

has established its own small printing shop, the said Division thus also attends to the typing, editing, proofreading, layouting and other processes involved in the printing of publications. Within the Division is a library and Statistical Information Unit which services researchers.

The Bureau of Agricultural Statistics (BAS), as the principal agency of the government for agricultural statistics, has a Data Processing and Agricultural Information Division whose main activity is data management to include the development and maintenance of a regular publication program.

Another major statistical agency in which a similar set-up can be seen is the Bureau of Labor and Employment Statistics (BLES) which is charged with the implementation and maintenance of a labor and employment statistical system. The bureau has a Technical Services Division which has been tasked to maintain a data bank on labor and employment statistics and to ensure the smooth flow of information from data producers to users.

The Statistical Research and Training Center (SRTC), a newly created agency mandated to develop and implement a comprehensive research and training program, has started the establishment of a statistical library and statistical computing laboratory through its Research and Publication Division. The library aims to facilitate and enhance research and training by providing

statistical materials while the laboratory aims to
address the development and maintenance of public-
use-files and data user's access to these files.

In most government departments, on the other
hand, statistical information dissemination is a
main function of a staff unit, generally called
the Research and Statistics Unit of the Planning
Service. This unit is also normally charged with
the preparation of the agency publications.

1.2 New Instrument for Informing Users of Publication
and Data Availability

The NSCB has prescribed the adoption by all
government agencies of a statistical calendar
which is a listing of statistical activities
currently and proposed to be undertaken together
with the objectives, data to be generated,
publications to be produced, and time of release
of expected outputs. The statistical calendar,
available for over 100
agencies/departments/offices, will thus enable the
users to know when they should expect the data to
be available, in what type these shall be made
available and from which agency they should expect.

1.3 Channels/Methods Adopted for Data Dissemination

In the Philippine setting, the main bulk of
statistical information is disseminated through
printed documents/hard copies while the use of
magnetic media is fast becoming popular. In some
cases, more direct means of information transfer
and exchange are adopted.

Publications.

The results of censuses and surveys and statistics which are administrative by-products of agency regulatory functions are made available to users in printed documents and publications, like yearbooks, directories, compendia, bulletins, computer print-outs, annual reports, unpublished tables, newsletters, booklets, brochures, etc. The regularity of these reports/publications can be weekly, monthly, quarterly, semestral or annual. Furthermore, these publications can be classified into (1) ssummary publications; (2) subject-matter series; (3) classifications; and, (4) maps.

The NSCB maintains threee summary publications, which can be used in any time-series analysis, entitled: Economic Indicators (released every 3rd week of the month); Philippine Statistical Yearbook (Annual) and Economic and Social Indicators (annual). The subject-matter series type of publication it prepares is the National Income Accounts of the Philippines. Lastly, it publishes manuals on standard classifications systems on industry, commodity, occupation, etc. as the agency mandatde to prescribe uniform standards and classification systems in the country.

The NSO generates summary publications, subject-matter series and maps. At present,

it carries almost thirty publications with frequencies ranging from quarterly, semestral, annual and special releases. On top of these publications, weekly and monthly reports, specifically on price indices, are released. Some regional and provincial branches have begun to publish their own quarterly reports.

The BAS has come up with a comprehensive program for the dissemination of its statistical publications. Its calendar of statistical publication outputs identified about 50 with daily, weekly, monthly, biennial and annual frequencies and these are classified into (1) general-purpose; (2) crop statistics; (3) livestock, poultry and fishery statistics; (4) market information; (5) food statistics; (6) socio-economic statistics; and (7) agricultural survey frames, commodity standards and other manuals.

The BLES, meanwhile, is presently publishing the following: (1) Yearbook of Labor Statistics (at least biennial); (2) current labor statistics (monthly); (3) selected labor indicators (semestral); (4) technical notes (monthly); (5) regional profile (annual); and (6) labor and employment report (monthly).

For other agencies, the usual ways of disseminating results of their statistical

activities are through regular or special reports which can be published or in mimeographed forms. If not disseminated, these can be made available upon request.

Magnetic Media.

With the increasing usage of computers, the use of magnetic media in information exchange has become popular although still on a limited scale. Under this scheme has emerged a few statistical data bases and transfer of magnetic tapes, micro-films or micro-fiche. A more recent innovation initiated by the SRTC is its establishment of a system in cooperation with NSO for the development, maintenance and dissemination of public-use-files which is aimed at making the data produced by the PSS more accessible and available to a greater number of data users.

Broadcast and Print Media.

With the use of these forms of media, the transmission of information becomes faster and a wider geographical coverage is reached. At the subnational level, the use of radio broadcast, like in the daily releases of prices to farmers, is resorted to. Also falling under this is the conduct of press conferences and releases right after compilation of the data. These are regularly done for the GNP, CPI, labor force and foreign trade series.

Personal/Direct Contacts.

Personal contacts can be between or among statisticians through verbal information and presentation of results and participation in scientific congresses, conferences, and symposia.

2. ISSUES AND PROBLEMS ON DATA DISSEMINATION

2.1 Inadequate Infrastructure Facilities

Modern techniques for fast data transfer is still not within the grasp of developing countries. A case in point is the Philippines where although there are numerous computers installed even in the government agencies, the exchange of information through direct linkage, i.e., on-line transfer between the data user and the source, is virtually nil. Deficiency in data communications in the country is still a predominant problem. Considering the highly decentralized structure of data production and storage, such situation inhibits growth in information technology and consequently, in data dissemination.

2.2 Non-appreciation of Statistics

A number of methods have been implemented for statistics to reach its target recipient. Nonetheless, confusion and apathy are still apparent. Perhaps a more effective venue to invoke the absorptive capacity of the data users is the inclusion in training programs of not only

the appreciation of statistics but also a thorough
understanding of its proper utilization by
explaining the characteristics of the available
data together with its limitations. These
materials should also find its way to the media
for wider impact.

2.3 Limited Resources and Capabilities

Budgetary constraints and limited technical
expertise have also posed constraints in the early
release of the results of statistical inquiries
and the effective dissemination of same to
beneficiaries. These factors have, for some
agencies, led to largely inadequate programs
for data dissemination and promotion.

2.4 Weak Data Dissemination at the Subnational Level

At the regional and subregional levels, the
accessibility of data to users is wanting. The
situation is occasioned by several cases -- the
agency regional office must seek clearance from
its central office (CO) prior to releasing the
data; or, the data collected at the said levels
and have undergone preliminary processing thereat
are still subjected to further processing at the
CO. In any of these cases, the length of time for
availability of results at the subnational levels
is extended. This situation is now being improved
through the decentralization of data processing
and the provision of requisite facilities.

3. VISION FOR THE 1990s

The PSS sees the 1990s as one that will be characterized by greater access to and wider dissemination of information complemented with the use of faster and highly interactive but more cost-effective information technologies. With a national telecommunications program to be implemented soon, data interchange in and out of the country will be enhanced and disseminating statistical products will not be as cumbersome and constrained as it was in the '80s.